

Integrated Management of Child Health

IMCI

pre-service education

A guide to evaluation



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Foreword

Medical schools play a key role in preparing the future cadres of health professionals who will be providing child health care services in the community, whether in the public or private sector. It is recognized that investment to enhance teaching in these institutions is as important as other key public health interventions, as well as being of support to those interventions. Effective teaching contributes to improving the quality of health care in a country; also, upgrading teaching represents a long-term response to the health care needs of a community.

Since its inception in the 1990s, when the Integrated Management of Child Health (IMCI) strategy was introduced in the Eastern Mediterranean Region, the WHO Regional Office for the Eastern Mediterranean recognized the need to introduce IMCI not only in the public health system but also in the teaching programmes of medical schools. Thus, it collaborated closely with the medical schools in the Region, and pioneered efforts in this area globally. Wide experience has since been gained in the Region. Based on that experience, the Regional Office has developed this IMCI pre-service education package to support countries and institutions in introducing IMCI in their teaching programmes, and in evaluating its use using standard approaches.

The advantage of this IMCI pre-service education approach is that it can be integrated with existing teaching programmes and does not necessitate the creation of new vertical structures. Further, it enhances the process of skills development that is key to improving the quality of care to children. I trust this package, with the instruments it offers, will be of great benefit to guide and support teaching institutions in their efforts to further enhance the quality of their teaching and, eventually, to produce qualified professionals ready to sustain the challenges ahead.



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WHO Regional Director for the Eastern Mediterranean

Preface

This publication is part of the IMCI pre-service education package developed by the WHO Regional Office for the Eastern Mediterranean. The package was developed as a set of tools to assist teaching institutions in introducing, implementing and assessing undergraduate teaching programmes that include the IMCI approach.

Medical and allied health professional schools play a key role in preparing the future cadres of health providers who will be providing child health care services in a country, whether in the public or private sector. An increasing number of medical schools in the Eastern Mediterranean Region have been taking steps in recent years to introduce the Integrated Management of Child Health (IMCI) approach into their undergraduate teaching programmes. The Regional Office, through its child and adolescent health and development programme, has been closely collaborating with these institutions in the task, when IMCI was introduced in the Region as a public health approach, and as an initiative to address future IMCI sustainability. Development of this package was based on this collaborative experience and on a recommendation from the Member States. It proposes a standard approach to each phase, from planning to evaluation.

The package comprises the following publications.

1. *IMCI pre-service education: orientation and planning workshop: facilitator guide* is designed to assist in the conduct of in-depth participatory workshops for teaching institutions to develop plans to introduce IMCI into the teaching programmes. The guide, tested in an intercountry workshop in July 2009, includes detailed guidelines, presentations and tools to support this task.
2. *IMCI pre-service education: teaching sessions*, with lesson plans to support planning and conduct of IMCI-related teaching sessions within the paediatric and community medicine teaching programmes, describes the student learning objectives, content and procedures of each session. The content was thoroughly reviewed by an expert group in 2008.
3. *IMCI pre-service education: guide to evaluation* is a comprehensive tool to assess whether IMCI pre-service education as a public health intervention improves students' competencies in managing main childhood health problems in outpatient settings. Extensively reviewed through expert consultations and tested in four medical schools, this guide comes with a user guide to data entry and analysis and a CD with the relevant e-forms and programme files.
4. *IMCI pre-service education: question bank* is a resource library of multiple-choice questions and case scenarios suitable for evaluations of IMCI pre-service education and student formative and summative assessments. It has already been used to develop student knowledge tests for evaluations in two medical schools, in 2009.
5. *IMCI pre-service education: e-lectures* on CD provides standard technical content as a resource to support IMCI-related teaching.
6. *IMCI pre-service education: e-learning material for students* on DVD is designed to support students' learning at their own pace through an electronic, interactive medium.

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Introduction

This guide was developed by the WHO Regional Office, based on the work of the technical committee on the evaluation of IMCI pre-service education evaluation, which was established for this specific purpose in 2005. Extensively reviewed through expert consultations, it was developed in response to a need expressed by Member States.

An increasing number of medical and allied health professional schools have taken steps in recent years to introduce the Integrated Management of Child Health (IMCI)¹ approach into their teaching programmes for undergraduate students. This guide is intended to support ministries of health, pre-service teaching institutions and partners in planning for and conducting evaluation of these efforts. It is expected to be particularly useful as a practical instrument for those designated as focal points for the evaluation at both ministries of health and teaching institutions.

The guide was conceived as a dynamic tool: it will be updated and more instruments will be added as more experience is acquired through its use and as new needs are identified by ministries of health and teaching institutions. It currently focuses on assessing teaching at paediatric departments as experience with evaluations of IMCI pre-service education has to date concentrated on them. It is envisaged that future work will expand the scope of the evaluations also to family medicine and community medicine departments. Updates will be posted on the web site of the WHO Regional Office for the Eastern Mediterranean at www.emro.who.int/cah, in the section on IMCI pre-service education.

¹ IMCI originally stood for Integrated Management of Childhood Illness. The scope of IMCI expanded in the Eastern Mediterranean Region over the years to emphasize not only the curative but also the promotive and preventive aspects of the child health strategy. The original acronym of IMCI was retained as this is how the strategy was globally referred to. IMCI is now promoted in the Region as the primary child health care strategy.

Chapter 1. Background and objective

1.1 Background

What is the IMCI strategy?

The Integrated Management of Child Health (IMCI) strategy is a public health strategy that aims at improving the quality of health care provided to children under 5 years of age both at primary health care facilities and at home, through its three components:

- improvement of health providers' performance;
- improvement of related elements of health system support;
- improvement of family and community practices.

This primary child health care strategy promotes a holistic approach to the management of under-five children, addressing promotive and preventive aspects of child health, as well as curative aspects of priority child health problems in a country.

What is IMCI pre-service education?

IMCI pre-service education refers to the introduction of IMCI-related clinical and public child health concepts and approaches in medical and allied health professional school teaching programmes before graduates enter service, including integrated protocols on the management of common child health problems at outpatient primary health care settings and interventions at family and community level. The methodology may vary from one country to another and even from one school to another.

Regional experiences in introducing public health programmes into teaching curricula

Countries in the Eastern Mediterranean Region have acquired useful experience with the introduction of the guidelines of some public health programmes into the teaching curricula of medical and allied health sciences, such as control of diarrhoeal diseases and the Expanded Programme on Immunization (EPI). These experiences have provided a teaching model both for the use of standardized clinical protocols and approaches to disease management and for giving attention to priority public child health problems in teaching. Collaboration between ministries of health and teaching institutions has been a major outcome of those experiences. However, the sustainability of these teaching approaches has been adversely affected by the failure to institutionalize them and by the inadequate training of some of the teaching staff to master those public health subjects.

Main objective of IMCI pre-service education

IMCI pre-service education is seen in the Region as one of the most important interventions to upgrade the teaching quality of public child health-related subjects in order to improve students' related competencies and, eventually, health provider performance in both the public and private sectors, ensuring sustainability and scaling-up of IMCI. The Regional Office has adopted a standardized approach to the introduction of IMCI into teaching programmes in order to assist countries and institutions in this task.

Importance and relevance of IMCI pre-service education

IMCI pre-service education is seen as important and relevant to the following partners involved in implementing the IMCI strategy because of what it is expected to offer, as summarized below.

Teaching institutions

- Strengthens the teaching of priority child health problems by using standardized protocols for case management.
- Improves the quality of outpatient teaching of paediatrics, family medicine, community medicine and public health for medical and allied health sciences students by:
 - strengthening students' knowledge and skills in managing common child health problems;
 - strengthening students' communication skills by practising counselling with the child caregivers;
 - exposing students to real-life situations in dealing with children, also at community level.
- Enhances the overall teaching quality in the school, by promoting active learning, improving student-teaching staff relationships and strengthening interdepartmental coordination, to mention but a few. This would contribute to enhancing the reputation of the institution.
- Facilitates the establishment or strengthening of links between the teaching institution, the health system and the community in the country.

Ministry of Health

- Ensures new graduates' acceptability of the IMCI strategy and its syndromic approach adopted in the health system.
- Facilitates better fitting of the new graduates into the Ministry of Health existing health system.
- Disseminates the concept of IMCI and provides knowledge and skills to health staff who will choose to work in other public and private health sectors.
- Alleviates the Ministry of Health training burden, in terms of financial costs, human resources and time.
- Increases IMCI coverage and overcomes the problem of the high turnover of trained health providers and the need to keep training new health providers in IMCI. This ensures IMCI sustainability at health facility level.
- Improves the quality of child health care at health facilities and in the community.
- Reduces the cost of child health care through the use of standard protocols and child health promotion and prevention approaches.

Other public and private health care sectors

Sectors which apply the IMCI strategy:

- Facilitates the fitting of the new graduates into their health system.
- Improves the performance of their health providers.
- Reduces the cost of child health care.

Sectors which do not apply the IMCI strategy:

- Sensitizes and improves health providers' attitudes towards the IMCI guidelines.
- Improves health providers' skills (e.g. recognition of clinical signs, counselling).

New graduates in the field (both public and private sectors)

- Provides them with an integrated protocol for systematic, action-oriented management of children under five years of age, which enables rapid identification and urgent referral of severe cases.
- Provides them with a link to real-life situations where diagnostic tools and medicines may be scarce.
- Builds their confidence and ability to work within the country's existing health system.
- Helps them link and perform promotive, preventive and curative care.
- Provides them with additional skills in important areas, such as counselling, that enable more effective communication with family members.

1.2 Objective of the evaluation of IMCI pre-service education

The main objective of evaluating IMCI pre-service education is to assess whether IMCI pre-service education as a public health intervention improves students' competencies in managing main childhood health problems and promoting child health in outpatient settings and the community before graduation and their clinical performance after graduation. It aims also at assessing whether the quality of teaching has improved as a result of the introduction of IMCI into pre-service education.



Chapter 2. What to evaluate

Evaluation of IMCI pre-service education would mostly entail assessing: the establishment of an environment supportive to IMCI pre-service education at all levels; the planning process at national and institutional level; the quality of IMCI-related teaching; student competencies in child health care; knowledge, skills and attitudes of the new graduates; the benefits of the investment to the teaching institution and the health system; and the sustainability of the approach. This concerns evaluating both process and its results.

2.1 Process

Process evaluation will require the evaluation of the approach followed for the introduction of IMCI pre-service education at both national and institutional level, including also inputs.

National level

Evaluation at this level mainly consists of the evaluation of the planning for IMCI pre-service education from the early phases of IMCI introduction in the country, including the following.

a) Creation of a supportive environment

- Identification of partners:
 - Ministry of Health departments
 - teaching institutions
 - legislative and advisory councils
 - professional syndicates and societies
 - UN agencies and other organizations
 - research institutions
 - other partners (such as the community).
- Creation of ownership, which includes partners' early involvement and continuous participation in IMCI introduction, adaptation, planning, implementation, monitoring and evaluation, and contribution to the national IMCI task force, review bodies and key events.
- Obtaining the endorsement and commitment of decision-makers to IMCI pre-service education at national level.
- Establishment of a national management structure for IMCI pre-service education.
- Establishment of an effective coordination mechanism between the Ministry of Health, institutions and key partners for IMCI pre-service education.
- Raising awareness and sensitizing the teaching institutions and key partners to IMCI using different mechanisms.

b) Identification of targeted institutes, activities, responsibilities, resources, time frame and monitoring and evaluation (as key elements of planning for IMCI pre-service education).

c) Commitment made to IMCI pre-service education at national level.

Institutional level

Evaluation at this level consists of the evaluation of the following.

a) Identification of concerned departments

Discussions initiated by the national IMCI pre-service management structure² with the teaching institution to agree on the departments that will be involved in pre-service education. Paediatric, community medicine and family medicine departments are usually the main departments that will be fully involved in the IMCI teaching.

b) Orientation workshop/s

Planning for and conducting the orientation workshop with the concerned departments, usually organized and carried out by the IMCI pre-service management structure, including:

- Identification and distribution of responsibilities
- Identification of the participants
- Development of schedule
- Decision on methodology and tools to be used for the orientation
- Description of the expected outcome of the workshop.

c) Official endorsement by the institution and concerned departments

- Level of endorsement
- Mode of endorsement
- Timing of endorsement (e.g. early in the process)
- Whether the endorsement has been translated into action (see below).

d) Establishment of a management structure

- Agreement on the members of the working group or task force at institutional level
- Nomination of the focal point
- Terms of reference and responsibilities of the group and focal point
- Distribution of tasks among departments (complementarities to ensure covering of all the IMCI tasks).

e) Planning workshop

Usually the national IMCI pre-service management structure conducts a planning workshop with the IMCI working group of the institution, during which the situation at the teaching institution is reviewed and a plan of action is developed. The plan is expected to cover the following.

- Setting targets
- Learning objectives
- Placement of IMCI in the teaching programme of the identified departments
- Teaching options (e.g. IMCI as a synthesis block, dispersed in the teaching or as a satellite)
- Training of teaching staff in IMCI case management and facilitation skills
- Teaching process:
 - methodology
 - materials
 - preparation of the training sites
 - students to trained staff ratio
 - schedule

² The structure differs according to the country's situation, e.g. it could be the national IMCI task force, including academics from different institutes, or the national IMCI pre-service education task force.

- Students' assessment: type, methods, content (IMCI elements included) and its contribution to the overall students' evaluation
 - Budget:
 - items for costing:
 - training of staff
 - teaching materials
 - supplies and equipment
 - transportation of students, if any, to training sites
 - salaries for part-time staff, if any
 - source of funds
 - Monitoring and re-planning: development and use of tools and utilization of results for re-planning.
- f) **Implementation of the plan**
- Activities implemented according to the plan
 - Facilities where students are trained
 - Targets achieved.
- g) **Sustainability**
- Sustainability of the approach to date
 - Measures taken to ensure sustainability
 - Measures planned to maintain sustainability.

2.2 Results

This would entail an evaluation of what the IMCI pre-service education approach has resulted in at national, institutional and health care delivery levels. The word "results" is used here as some of the items listed in this section are not "outcomes" properly speaking (e.g. costs, quality of teaching) and should otherwise have been included in the previous section. They are included together as "results" here as they are often perceived as important "results" that the introduction of IMCI into pre-service education is expected to achieve, such as reducing the burden of costs of in-service training and improving the quality of teaching, in addition to the results on student competencies (outcomes) and, ultimately, performance (effectiveness).

National level

Evaluation at this level refers to the benefits of IMCI pre-service education to the ministry of health and partner institutions. It includes an analysis of the following:

- a) Expected benefits to the ministry of health (e.g. financial, human resources, time, responsiveness to public health needs, graduates fitting into the existing system);
- b) Costs in the early phase of introduction of IMCI pre-service (e.g. orientation and training of teaching staff, teaching and assessment material, audiovisuals and exchange of visits between institutions);
- c) Costs of IMCI in-service training before and after IMCI pre-service education;

Institutional level

Evaluation at this level consists of an evaluation of the following:

- a) attitudes and satisfaction of teaching staff and students towards IMCI teaching and learning;
- b) quality of teaching;
- c) acquisition of essential IMCI competencies by students.

Health care delivery level

Evaluation at this level consists of assessment of the knowledge, skills and attitudes of the new graduates before they receive any in-service refreshment training on IMCI, to determine the effect of IMCI teaching on their competencies and their acceptance of IMCI and to identify their needs for additional training³.



³ The IMCI Health Facility Survey tool, properly adapted, can be used to address this question (*Health facility survey tool to evaluate the quality of care delivered to sick children attending outpatient facilities*. WHO, Geneva, 2003). Samples of the tool and methodology used in the Region are available at: <http://www.emro.who.int/cah/surveys.htm#Section3>.

Chapter 3. Planning for the evaluation

The decision to carry out the evaluation is usually made by the national IMCI coordinator, the national committee on IMCI pre-service education—in countries in which it has been established—or the concerned departments of the teaching institution involved. This section is meant to assist the coordinator designated for the evaluation in planning for the evaluation itself.

A briefing on the purpose and methodology of this evaluation should be provided to the institution involved and all those concerned well ahead of the evaluation. This will enable preparation for the evaluation as outlined in the checklist on the following page and described in detail in this section (Table 1).

The evaluation may be conducted by teams with members from outside the country or outside the teaching institution involved (external evaluation). In principle, some aspects of the evaluation can be conducted periodically by the teaching institution on its own (internal evaluation), if staff have developed capacity in all the required evaluation tasks. This is, however, very demanding.

The first evaluation in a country provides an opportunity to gain experience with it and adapt the evaluation instruments and methodology as appropriate. Therefore, besides interviews at national level, the first evaluation usually includes a visit to only one teaching institution, also because of logistics and cost considerations (e.g. duration of the evaluation, number and availability of staff involved, costs and other arrangements). Subsequent evaluations in the same country can also serve as a follow-up on the main recommendations made in the previous evaluations and may cover more institutions, based on a number of factors (e.g. availability of evaluation persons, financial resources, timing).

It should be emphasized that the information collected at institutional level during this evaluation is part of the broader context of the evaluation, namely the introduction of IMCI into pre-service education in a country as a public health intervention to sustain child health efforts in the future. It should also serve the institution/s concerned to learn how well the teaching programme is doing and what could be done to further strengthen it, rather than compare it with other teaching institutions.

Table 1. Checklist for the evaluation of IMCI pre-service education

Task	When (timing)
Planning for the evaluation	
Plan for the evaluation	
a) Identify the teaching institution	Beginning of the academic year
b) Select the coordinating team	
c) Define the objectives	
d) Assign the tasks	
e) Collect preliminary information	
f) Decide when to conduct the evaluation	
g) Select the evaluation team	
h) Plan for data entry, analysis and dissemination of findings	
i) Draft the schedule	
j) Contact the evaluation team	
k) Write to the teaching institution and partners	
l) Estimate and secure the budget	
Finalize the plans	
a) Confirm the availability of partners and evaluation team members	1 month before the date of the evaluation
b) Finalize the schedule	
c) Sample students	
d) Adapt and reproduce the forms	
e) Arrange for facilities and supplies at the institution	
f) Train the evaluation team	Close to the evaluation
Conducting the evaluation	
Review the evaluation tasks	
a) Teaching institution and national level	A week before the start of the evaluation
b) Evaluation team	The day preceding the start of the evaluation
Conduct the evaluation	
a) Conduct interviews at national level	First day of the evaluation
b) Visit the teaching institution: <ul style="list-style-type: none"> • Collect information • Analyse data and summarize main findings 	Second to fourth day of the evaluation
c) Conduct the feedback meeting	Right at the end of the evaluation
d) Revise teaching plans	Soon after the feedback meeting

3.1 Plan for the evaluation

This section outlines the tasks involved in planning for the evaluation of IMCI pre-service education (Table 2).

Table 2. Tasks involved in planning for the evaluation

Task	When (timing)
Plan for the evaluation	
a) Identify the teaching institution	Beginning of the academic year
b) Select the coordinating team	
c) Define the objectives	
d) Assign the tasks	
e) Collect preliminary information	
f) Decide when to conduct the evaluation	
g) Select the evaluation team	
h) Plan for data entry, analysis and dissemination of findings	
i) Draft the schedule	
j) Contact the evaluation team	
k) Write to the teaching institution and partners	
l) Estimate and secure the budget	

a) Identify the teaching institution

At this preliminary planning stage, criteria can be set to identify the institution or institutions to be evaluated in order to select them. Among the criteria to be considered are the following.

- The teaching institution is interested in evaluating its teaching and supports the evaluation itself as needed; and
- IMCI-related teaching has been conducted throughout the teaching curriculum at the institution for at least two consecutive years or until the first batch of students exposed to it has reached graduation. This enables the institution to introduce useful changes and adaptations in teaching based on a minimum, initial experience before this is evaluated.

b) Select the coordinating team

A coordination mechanism for the evaluation, defining how to harmonize the management of evaluation-related tasks and activities (e.g. by meetings, telephone and video calls or conferences, visits, etc.), should be established from the beginning of the planning process, with one person designated as the evaluation coordinator. In addition to the evaluation coordinator, the coordinating team should include:

- a focal point at the ministry of health (preferably the national coordinator/focal point for IMCI and/or IMCI pre-service education and a member of the national pre-service education committee, where this exists);
- a focal point at the medical school concerned (preferably the IMCI pre-service education focal point); and
- WHO and other partners directly participating in the evaluation, as appropriate.

Members of the team should be familiar with IMCI and the teaching system in the country. In some countries, especially those in which a national committee on IMCI pre-service education has been established, a coordinating structure may be set up to oversee plans for the evaluation.⁴ The support of a person with evaluation experience in conducting reviews and qualitative and quantitative studies would be an added value to the group and is recommended.

The evaluation coordinator and the focal point at the institution concerned will be involved in all planning tasks described in detail in the following pages. On the other hand, the main tasks of the coordinating team include:

- defining the objectives of the evaluation (see item c. Define objectives);
- assigning tasks and responsibilities (see item d. Assign the tasks);
- identifying partners in IMCI pre-service education;
- agreeing on coordinating mechanisms at national and institutional level and coordinating:
 - the preparation of a brief on the milestones of the introduction of IMCI into the teaching programmes of teaching institutions in the country;
 - the collection of preliminary information at national level and from the institution concerned (see item e. Collect preliminary information);
 - the identification of national and international members of the evaluation team (see items g. Select the evaluation team; and j. Contact the evaluation team);
 - the development of a schedule for the evaluation to be conducted at the end of the students' rotation period in the concerned department, including interviews at national and institutional level and feedback meeting to present the results of the evaluation (see items f. Decide when to conduct the evaluation; and i. Draft the schedule);
 - planning for dissemination of findings (see item h. Plan for data entry, analysis and dissemination of findings);
 - the adaptation of forms for the assessment of student knowledge and skills (see item d. Adapt and reproduce forms, in section 3.2 Finalize the plans);
 - sending of a copy of the national IMCI chart booklet and background information on IMCI pre-service education and the teaching programme of the teaching institution concerned to all members of the evaluation team well in advance of the visit.
- formally contacting the concerned teaching institution/s and partners, informing them of the evaluation plans and specific tasks to be carried out (see item k. Write to the teaching institution and partners);
- ensuring that all planned tasks have been carried out and the necessary information has been collected.

c) Define the objectives

The main objectives of the evaluation are described earlier in section 1.2. Objective of the evaluation of IMCI pre-service education. They relate to the assessment of student competencies and, as a key determinant of them, of the teaching promoted by the introduction of IMCI into the teaching programme of the concerned institution. The coordinating team should review and finalize the objectives.

d) Assign the tasks

To facilitate and monitor its work, the coordinating team should develop a plan outlining all main planning tasks (see item b. Select the coordinating team). The plan should include a timeline and assignment of responsibilities to members of the team and relevant individuals outside the team as appropriate. Key planning tasks are described in detail (in item e) below.

⁴ If the terms of reference of the national committee on IMCI pre-service education already include evaluation, then the same committee may be responsible for this evaluation, without the need to establish a separate structure.

e) Collect preliminary information

The plan to collect information includes two steps: 1) before the evaluation; and 2) during the evaluation. The first step is described in this section; tasks related to step 2 are presented in item i. Draft the schedule.

The national evaluation coordinator, in close coordination with the IMCI pre-service education focal point at national level and the institution, should ensure that background information and documents on IMCI pre-service education activities conducted at national and institutional level are collected and summarized well in advance, including the completion of the tables of Form 1 in Annex 1: Evaluation tools. In this way, this information can be sent to the members of the evaluation team for their review 6 to 8 weeks before the evaluation. Such documentation includes:

At national level

- Milestones of introduction of IMCI into pre-service education in the country (prepared as background report);
- Formal endorsement of the national IMCI pre-service education initiative;
- Formal establishment of the IMCI pre-service education management or coordinating structure;
- National plan for IMCI pre-service education;
- Reports relevant to IMCI pre-service education (e.g. IMCI review report, IMCI pre-service education progress reports, reports on previous evaluations of IMCI pre-service education, reports on the adaptation of the IMCI guidelines and minutes of meetings on IMCI pre-service education, reports on the IMCI pre-service education planning and orientation workshops);
- List of main public and professional child health events in the past two years and related reports, if available.

At the institution

- Steps of introduction of IMCI into the concerned department/s;
- Document officially endorsing IMCI pre-service education;
- Composition and terms of reference of the IMCI pre-service education task force;
- Minutes of meetings of the IMCI pre-service education task force, including list of participants;
- Plan of action on IMCI pre-service education;
- Official teaching programme, schedule and objectives of the concerned department/s;
- Number of department teaching staff trained in IMCI and number of teaching units in the department, as applicable;
- Teaching and learning materials used;
- IMCI pre-service education progress reports;
- Reports on previous internal evaluations of IMCI pre-service education;
- Complete list of names of students enrolled in the rotation batch/es that will be evaluated (to review issues related to sampling);
- A sample of the last three student examinations, including both written and clinical tests, if available;
- A list of the names of the:
 - concerned department/s teaching IMCI
 - head/s of these department/s
 - IMCI focal point at those departments, if any.

If a cost analysis is planned, related information should also be collected at both national and institutional level (see Form 13, Annex 1: Evaluation tools).

Selected information could also be requested in advance from the partners to be interviewed at national level, so as to be complemented and validated by them as appropriate in time for the evaluation. The forms annexed to this guide can serve as a guide to the type of detailed information that should be collected from partners and institutions. This preparatory work facilitates the visit and provides more time for in-depth interviews and discussions during the evaluation.

It is essential to obtain the teaching programme from the concerned department/s of the teaching institution at the beginning of the academic year, to plan for the proper time for the evaluation (see item f. Decide when to conduct the evaluation) and organize all tasks efficiently, including interviews with teaching staff, observation of teaching, practical and clinical sessions, and evaluation of student knowledge, attitudes and skills (see also item i. Draft the schedule).

f) Decide when to conduct the evaluation

The evaluation is usually conducted at the end of student rotation in the concerned department. This makes it possible to assess students' knowledge and skills for all IMCI tasks and their attitudes and perceptions about IMCI after they have been fully exposed to it. When deciding the timing of the evaluation visit to the teaching institution, the availability of the head of the department/s, teachers and students need to be considered (see item i. Draft the schedule), together with the availability of the evaluation team members (see item j. Contact the evaluation team). For example, attention should be paid to the time students and their teachers are busy with examinations and away for term breaks or holidays, including national holidays. In some institutions, teaching lessons at the end of the year may focus on reviewing topics already covered during the rotation period. In these cases, the observation of a typical teaching session may be carried out at the beginning of the rotation period, when plans are made at national level for the evaluation. A member of the evaluation team can visit the institution to discuss the preparation for the evaluation and, at the same time, observe a teaching session.

g) Select the evaluation team

The evaluators should be selected among senior teaching staff who meet the following criteria.

All members of the evaluation team:

- have been involved in the IMCI strategy in the country, particularly IMCI in-service training;
- are very familiar with IMCI pre-service education;
- have experience in introducing IMCI into the teaching programme of teaching institutions;
- have good public health understanding;
- have been trained in the methodology to conduct this type of evaluation (see item f. Train evaluation team, in section 3.2 Finalize the plans); and
- preferably, have been involved in this evaluations at least once.

Some members of the evaluation team:

- have some familiarity in conducting focus group discussions.

At least one member of the team:

- is familiar with the evaluation methodology, data entry and analysis of the data on the assessment of student knowledge and skills.

The national IMCI coordinator and/or IMCI pre-service education focal point should preferably be members of the team. The evaluation team may consist of internal staff—from the same institution (internal evaluations)—and external staff—from outside the institution (external evaluations), depending on the objective of the evaluation itself.

h) Plan for data entry, analysis and dissemination of findings

Plans should be developed for data entry, analysis and presentation of findings well ahead of time. Details are given in Chapter 6. Analysis and presentation of findings, including indicators.

- *Data entry and cleaning.* It is important to plan for data entry well ahead of time because this time-consuming task influences the timeliness of presenting the findings at the end of the evaluation. Before entering the data, especially those on observation of case management (skill test), forms should be carefully checked one by one by a different member of the evaluation team from the member who filled in the form. Data should then be entered independently by two different operators on two different computers and then cross-checked to ensure that all the data which have been entered match 100% in the two datasets. All the entries of records found to have data that do not match should be re-checked individually one by one.
- *Analysis.* The main indicators to be measured at national and institutional level should be reviewed in line with the main objective of the evaluation. Detailed information on indicators is given in Chapter 6. Analysis and presentation of findings. These plans should be developed by the evaluation coordinator, discussed with the concerned department/s of the teaching institution and finalized by the evaluation team.
- *Dissemination of results.* It is useful at this stage also to develop a proposed plan to disseminate the results, including the feedback meeting, to be reviewed and finalized with the teaching institution concerned at the end of the evaluation feedback meeting. The plan may include presenting the findings at professional events at the local institution or in national symposia and partners' meetings, publishing of articles in local newsletters and web sites (teaching institution, ministry of health, partners, including WHO) or medical journals. Proper dissemination of findings can serve as an effective advocacy tool to elicit further interest and support to IMCI pre-service education and, more broadly, child health efforts in the country.

i) Draft the schedule

To prepare the schedule for the evaluation, specific information from the concerned teaching institution is needed. Therefore, the IMCI pre-service education focal point at that institution should:

- ensure that preliminary information has been collected (see item e. Collect preliminary information);
- prepare a list of staff teaching IMCI and not teaching IMCI available for the focus group discussions;
- share the teaching schedule with the national level to prepare the schedule of the evaluation visit to the institution, identify when IMCI-related teaching sessions—including practical and clinical sessions—are held and plan for their observation;
- consider the total number and availability of the members of the evaluation team (see item j. Contact the evaluation team).

A schedule for the evaluation can then be prepared. It is advisable to carry out the evaluation following a number of steps over a period of a week, if one teaching institution is involved, as shown in Table 3. Details are described in Chapter 4. Conducting the evaluation.

Table 3. Sample programme for the first evaluation of IMCI pre-service education in a country

Day	Venue	Activity
Day 0 (preceding the first day of the evaluation proper)	Ministry of Health or WHO	Preparation meeting
Day 1	Ministry of Health	Meeting with the Minister of Health and senior health officials. Interviews with national child health programme manager and IMCI pre-service education focal point, and partners involved in IMCI pre-service education
Day 2–4 (number of days depends on number of evaluation team members)	Teaching institution	Meeting with the dean and head of concerned department/s Process and outcome evaluation of IMCI-related teaching
Day 5	Teaching institution	Data analysis and preparation for feedback meeting

Evaluation activities at the teaching institution are carried out not only sequentially but also in parallel, to reduce the duration of the visit to a few days only. For this reason, while one group of randomly selected students should be involved in the knowledge assessment, skill assessment and, possibly, focus group discussions throughout the evaluation, other students may be involved in the observation of teaching, practical and clinical sessions as shown in Table 4. The duration of the visit to the institution depends on good planning, the total number of members of the evaluation team, the number of students to be assessed for clinical skills and the number of departments to be covered. During the visit to the teaching institution, the evaluation team is expected to perform the following tasks.

- Interview with the head of the concerned department (e.g. Paediatric Department, Family and Community Medicine Department) and IMCI focal point at the institution (approximate duration: 90–120 minutes);
- Focus group discussions with departmental staff teaching IMCI (and IMCI focal point) and not teaching IMCI, respectively (60 minutes each);
- Observation of outpatient practical and clinical teaching sessions (60–120 minutes each) and/or community teaching sessions, depending on the department/s involved;
- Assessment of student knowledge (by multiple-choice questions and case scenarios) (90 minutes);
- Assessment of student clinical and communication skills (by observation of the management of a sick child) (30–45 minutes per student, depending on whether the teaching programme has included only assessment and classification or also treatment and advice on home care; it is advisable to allocate more time for the first day of observation to become acquainted with the forms);
- Focus group discussions with students, following observation of case management (60 minutes per group per day). Time and arrangements permitting, discussions with students may also be conducted after the observation of teaching sessions (total time depends on actual duration of sessions and availability of students and evaluators for the discussion);

- Visit to the outpatient department (OPD) or outpatient teaching site to assess the facilities and supplies necessary for IMCI teaching (15 minutes);
- Visit to the library to review the availability of reference materials (15 minutes);
- Data entry (an average of 15–20 minutes per student, corresponding to a total of 7–10 hours for 25–30 students) and cleaning (an average of 5–6 minutes per student, corresponding to a total of 2–3 hours for 25–30 students);
- Preliminary analysis of data on student knowledge and skills (3–4 hours) and preparation of tables and presentation with main results (2–3 hours);
- Meetings of the evaluation team to review information and summarize the main findings (see Table 4).

The tasks which require most time are: 1) the assessment of student clinical skills, for which several evaluators assess several students each at the same time daily for three consecutive days; and 2) data entry, cleaning and analysis. In determining the sample size of students, practical aspects should be considered carefully, such as the number of evaluation team members (who should remain the same throughout the evaluation), the total duration of the evaluation and the time for data entry, as described in item c. Sample students, in section 3.2 Finalize the plans. If the teaching institution has decided to increase the sample size of students for the knowledge and skill assessment to improve the precision of the findings, then plans should include additional days for the skill component of the assessment. For each additional day, it may be estimated that one evaluator may be able to assess on average three more students. So, if three evaluators are available to work in parallel, some nine to ten more students can be assessed on each additional day.

Table 4 shows a sample schedule as an example of the sequence in which tasks can be performed by a four-member evaluation team in four days. The schedule needs to be adapted carefully according to the timing of the teaching sessions to be observed, the number of departments (e.g. paediatrics, family and community medicine) and the number of team members.

Table 4. Sample schedule of the visit to the paediatric department of a teaching institution by a four-member team

Time	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	
First day					
09.00–09.30	Courtesy call with the Dean (<i>clinical coordinator of the teaching institution</i> starts selection of sick children for case management)				
09.30–10.00	Transfer to the department				
10.00–10.30	Meeting with department head, evaluation focal point and clinical coordinator to review arrangements				
10.30–11.00	Interview with head of department and IMCI focal point	Assessment of student clinical skills: observation of case management (four students)	Assessment of student clinical skills: observation of case management (four students)	Review of completed case management forms and data entry	
11.00–11.30					
11.30–12.00					
12.00–12.30	Focus group discussions with teachers who teach IMCI	Focus group discussions with students	Observation of OPD clinical session (1)		
12.30–13.00					
13.00–13.30	(session may extend)				
14.00–15.00	Break				
15.00–16.30	Discussion and summary of findings of the first day				
Second day					
09.00–09.30	Checking arrangements for the day with the department evaluation focal point (<i>clinical coordinator of the teaching institution</i> starts selection of sick children for case management)			Assessment of student knowledge (MCQ and case scenarios - all students)	
09.30–10.00	Focus group discussions with teachers who do not teach IMCI				
10.00–10.30					
10.30–11.00	(session may extend)	Assessment of student clinical skills: observation of case management (four students)	Assessment of student clinical skills: observation of case management (four students)	Review of completed case management forms and data entry	
11.00–11.30	Assessment of student clinical skills: observation of case management (two students)				
11.30–12.00					
12.00–12.30					
12.30–13.00	Observation of practical session (and discussion with students)	Focus group discussions with students	Observation of OPD clinical session (2)		Review of completed MCQ and case scenarios forms and data entry
13.00–13.30					
13.30–14.00					
14.00–15.00	Break				
15.00–16.30	Discussion and summary of findings of the second day				
16.30–18.00				Data entry (cont.) and cleaning	

Table 4. Sample schedule of the visit to the paediatric department of a teaching institution by a four-member team (*cont.*)

Time	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4
Third day				
09.00–09.30	Checking arrangements for the day with the department evaluation focal point (<i>clinical coordinator of the teaching institution</i> starts selection of sick children for case management)			
09.30–10.00	Assessment of student clinical skills: observation of case management (three students)	Assessment of student clinical skills: observation of case management (three students)	Assessment of student clinical skills: observation of case management (three students)	Review of completed case management forms and data entry
10.00–10.30				
10.30–11.00				
11.00–11.30				
11.30–12.00				
12.00–12.30	Observation of OPD clinical session (three)	Visit to OPD and library	Focus group discussions with students	
12.30–13.00			(session may extend)	
13.00–13.30				
13.30–14.00		(session may extend)		
14.00–15.00	Break			
15.00–16.30	Discussion and summary of findings of the third day			
16.30–19.00				Preliminary data analysis and preparation of tables
Fourth day				
09.00–12.00	Discussion and preparation of presentation of findings and recommendations			Preparation of tables on results of outcome data analysis
12.00–12.30	Discussion of results of outcome data (student knowledge and skills)			
12.30–4.00	Feedback meeting with department head and staff			

j) Contact the evaluation team

Because of their high profile and busy schedule, potential candidates considered for the evaluation team (refer to item g. Select the evaluation team) should be contacted well ahead of time, at the beginning of the academic year, to confirm their interest and availability to participate in the evaluation and be trained in the methodology, if applicable. Being teaching staff, they have many other commitments, more so at the end of the academic year, when student examination time is approaching.

k) Write to the teaching institution and partners

The national evaluation coordinator, once the partners and institution have confirmed their interest in participating in the evaluation, should on behalf of the coordinating team send official letters to:

- the dean of the teaching institution with a copy to the head/s of the concerned department/s, providing information on the objectives of the visit, proposed dates and brief description of tasks to be accomplished during the visit (see Table 4);
- the head of the concerned department: 1) enclosing the proposed schedule, to facilitate any logistics arrangements that are required for the visit, so as to assign responsibilities within the institution to facilitate the process (see item i. Draft the schedule and Chapter 4. Conducting the evaluation); 2) requesting that relevant background information be prepared and sent to him/her (see Form 3 of Annex 1 and item e. Collect preliminary information); and 3) suggesting that a formal communication is sent from the head of the department to the teaching staff who are expected to participate in the focus group discussions, to brief them on the objectives and the methodology of the evaluation;
- the identified partners, to inform them of the evaluation plans (e.g. objectives of the evaluation, proposed dates for the interviews, teaching institution/s involved, feedback meeting).

l) Estimate and secure the budget

Financial resources required to support the evaluation should be estimated and secured when the activity is planned. This is usually the responsibility of the national IMCI coordinator or child health programme manager in consultation with the evaluation coordinator. The budget required is usually small for local activities but may entail additional costs for the participation of external consultants. It covers:

- activities to be undertaken locally, such as: planning meetings of the coordinating team at national level; travel expenses, honoraria and per diem for the local evaluation team members; reproduction of forms; feedback meeting; dissemination of findings;
- possible participation of one or two international staff or external consultants from outside the institution or the country (travel costs, honoraria and per diem).

3.2 Finalize the plans

This section outlines the tasks involved in finalizing the plans for the evaluation of IMCI pre-service education (Table 5).

Table 5. Tasks involved in finalizing the plans for the evaluation

Task	When (timing)
Finalize the plans	
a) Confirm availability of partners and evaluation team members	1 month before the date of the evaluation
b) Finalize schedule	
c) Sample students	
d) Adapt and reproduce forms	
e) Arrange for facilities and supplies at the institution	
f) Train the evaluation team	Close to the evaluation

a) Confirm availability of partners and evaluation team members

Tentative arrangements made earlier need to be confirmed with each concerned party to be involved in the evaluation four to eight weeks before the start of the evaluation. This includes partners, mostly for the interviews at national level, and national and international members of the evaluation team.

b) Finalize schedule

The schedule originally drafted should be reviewed by the coordinating team, two to four weeks before the start of the evaluation. In addition to the availability of partners and evaluation members, all the other arrangements should be reviewed and confirmed. The evaluation coordinator, in collaboration with the IMCI focal point/s at the teaching institution/s concerned, should:

At national level

- confirm the date and time of the evaluation team's courtesy calls with the minister of health or senior officials of the ministry of health and the dean;
- confirm the date and time of the evaluation team's interviews with partners;

At the teaching institution

- confirm the availability of the head of the department and teaching staff for the interviews and focus group discussions;
- confirm the timing of teaching sessions in relation to the evaluation schedule;
- identify a clinical coordinator at the institution for the selection of sick children for the assessment of clinical skills and brief him/her on his/her responsibilities during the evaluation. The clinical coordinator should be a member of the teaching staff in the department who is very familiar with IMCI, teaches IMCI and is fully available each morning during the clinical skill test;
- randomly select 25–30 students for the knowledge and skills assessment tests, as described in the next item (c. Sample students);
- inform the students of the date, time and venue for the knowledge and skills assessments and focus group discussions;
- confirm date, time and venue of the feedback meeting and names of participants to be invited.

c) Sample students

Ideally, it would be good if one were able to assess for knowledge and skills in the evaluation of IMCI pre-service education all the students who go through their rotation in paediatrics, family medicine or community medicine during the relevant academic year in which they are most exposed to IMCI. However, this number of students is usually large and would make this approach not practical, given also the difficulty in gathering all these students—no one excluded—for the assessment. A smaller number of students should then be selected (called "sample") to make estimates that would apply to all the students from whom this sample was taken. When selecting the students for the knowledge and skills assessment tests⁵ (a process called "sampling"), consideration should be given to the objective of the assessment and feasibility issues. Options and sampling, including sample size, are described below.

⁵ Multiple-choice questions and scenarios for the knowledge test and observation of case management for the skill test.

1. Options

Two main options are discussed here.

- 1) If the main objective is an overall evaluation of IMCI pre-service education and the assessment of students is carried out over three days as one of the evaluation activities described in this guide, then it would be reasonable to sample a small number of students who can be assessed during this short period of time; although small, this number would still provide useful information;
- 2) If the objective is to assess student knowledge and skills with more precision and the teaching institution has the resources to extend the evaluation over a longer period of time, then a larger number of students could be assessed.

When reviewing feasibility issues, a number of points should be considered if there are plans to increase the number of students to assess.

- *Knowledge versus skill assessment:* the same students who have undertaken the MCQs and case scenarios (knowledge assessment test) should be involved in skill assessment. While it is relatively easier to gather more students in one place for the knowledge test, the arrangements for skill assessment are much more demanding (see below). So, before increasing the number of students for the knowledge test, the implications of increasing the number also for the skills test should be taken into due consideration.
- *Duration of assessment:* for each additional day, three students per evaluator can be assessed for skills. So, if there are three evaluators available for this purpose daily, nine more students can be assessed each day.
- *Availability of evaluators:* the clinical coordinator and evaluators are often senior teaching staff and their availability should be checked carefully before deciding to have an evaluation that involves them for more than three days in a row. Evaluators should be the same persons throughout the test.
- *Data entry and cleaning:* if more students participate in the test, then more data need to be entered and checked and this requires more time. For every extra day with nine students assessed, 3–4 more hours should be added to the total time for data entry and cleaning for the knowledge and skill assessment tests, if one person checks and enters the data and another person enters the data independently on a different computer to validate data entry. Some of this work can be done during data collection, i.e. while evaluators observe students managing sick children.
- *Precision:* the larger the number of students involved, the better the precision of the results. On the other hand, evaluators' recording work during the observation of case management for skill assessment is tedious; the higher the number of students they assess, the higher the chances of evaluators' missing some information on the recording forms, making mistakes or checking the forms less carefully after filling them in.

2. Sampling steps

The three simple steps to guide the selection of the students for the assessment of knowledge and skills are to: determine the sample size; list and number all the students; and select the students.

1) Determine the sample size

Table 6 shows the number of students required for the assessment (sample size), assuming simple random sampling as the sampling method (see also 3. Select the students). To calculate the sample size and arrive at the figures shown in the table, a number of points have been considered. These include:

- a) the estimate of the rate to be measured;
 b) the level of precision required; and
 c) the confidence level.
- *Estimate of the rate to be measured.* The estimate of the rate refers to the main indicators on student performance to be measured in the assessment, e.g. the percentage of students expected to obtain the agreed minimum score in the knowledge test or in case management. To be on the safe side, the table assumes that half of the students obtain the agreed level of knowledge or skill performance, as this is the rate for these indicators which requires the largest sample size (i.e. 50%). Student performance rates which are higher or lower than this value would then require a smaller sample size.
 - *Level of precision required.* The table is based on a range of precision with upper and lower limits called "limits of precision". For example, if 50% of students in our sample obtain an acceptable score value in the knowledge test with limits of precision of $\pm 15\%$, this means that the true rate in the population of students from which we took the sample is likely to lie between 35% and 65% (i.e. $50\% \pm 15\%$). In fact, the results we find in the sample are only estimates of the true values, as we assessed only a sample of students rather than all of them. The limits of precision define how precise such estimates are: these estimates are not the actual rates but a range of values within which the true rates are likely to fall. The greater the precision (narrower range of values), the larger the sample required. It is important to find a balance between the theoretical desire for greater precision of the results and the practical limitations of selecting too many students for the assessment. For example, enrolling 400 students to have greater precision ($\pm 5\%$) would need a special, long study with substantial logistics arrangements and costs. Aiming at greater precision is therefore not advisable for this type of evaluation. Also, any increase in the sample size may adversely affect the quality of the data collected. It should be emphasized that even if the desired limits of precision may not be achieved, the results would still provide useful information for the evaluation as a whole and for teaching; in fact, this test is not meant to be like an examination to decide which students pass or fail.
 - *Confidence level.* The table assumes a 95% confidence level. This means that we are 95% confident that the true rate in the population of students from which we took the sample lies within the range of values that have been defined by the limits of precision. If we refer to the above example and assume a sample of 50 students to ensure limits of precision of $\pm 15\%$ at a 95% confidence level, we would conclude that we are 95% confident⁶ that the true rates in the population of students from which they were selected fall between 35% and 65% (i.e. $50\% \pm 15\%$).

Table 6. Sample size based on limits of precision at 95% confidence level (assuming random sampling)¹

	Limits of precision			
	$\pm 5\%$	$\pm 10\%$	$\pm 15\%$	$\pm 20\%$
No. of students needed	400	100	50	25

¹ The numbers reported in the table refer to the largest sample size required for each level of precision (estimated rate of the indicator to be measured = 50%). Other assumptions include student population homogenous and random sampling. See text for more details.

⁶ Being 95% confident means that we have a 95% chance that our estimates are within that range of values.

The calculations are also based on the assumptions that the student population on which the sample is drawn is homogenous and that we have used random sampling.

It should be noted that the size of the sample is basically not affected by the total size of the student population being assessed, whether this is the total number of students in a batch, all the students in the rotation in the concerned department during an academic year or all the students who are about to graduate or have just graduated.

If there are plans to compare the results of this batch of students with those of other batches in the future, the sample size would need to be increased substantially. This would be a major challenge in the context of these evaluations for the reasons explained above.

2) List and number all the students

- First, decide from where you wish to take your sample. The sample can be taken from:
 - a) all the students of the teaching units of the same rotation batch in the concerned department which have completed or are about to complete the paediatric—or community or family medicine—rotation. This approach is simpler and relatively easier to arrange than the other two approaches described below. It also provides prompt feedback to teaching staff during internal evaluations to adapt the teaching programme. On the other hand, it has its limitations. In fact, the results obtained by assessing a sample taken only from this batch of students are acceptable only if the teaching received by different batches of students within the same academic year is similar and the batches of students are comparable with each other. If teaching or student characteristics differ between batches, then this is an important limitation to consider, as the sample would not be representative of all students;
 - b) all the students of all the batches which have gone through the rotation in the paediatric—or community or family medicine—department during the academic year. This approach is much more demanding than the previous one, especially because of the substantial difficulty of gathering students who completed the paediatric rotation many months earlier and are no longer with the department concerned;
 - c) all the students previously exposed to IMCI teaching who are about to graduate or have just graduated, i.e. at the point at which they should be ready to apply their knowledge and skills. While this is ideally the preferred approach, it is probably the most challenging to be arranged because of the difficulty of contacting the students and the risk that many of them may be unable to participate in the assessment on the different days set for the knowledge and clinical tests. This approach could however be carried out jointly with the ministry of health before the new graduates receive further public health training before entering public service. In this case, new graduates taking up exclusively private practice would however be excluded from the sample.

Irrespective of the approach, the procedures to sample the students for the assessment are similar. Once selected, the same students will be assessed first for knowledge and then for skills.

- Second, list in alphabetic order all the students who have gone through the rotation and have received "IMCI teaching" in a given academic year. This list represents the "sampling frame" from which the sample will be selected.
- Third, assign a consecutive number to all the students who have been listed in alphabetic order.

3) Select the students

The method to select students described here ("sampling method") is "simple random sampling" (SRS). This method gives each student equal chances of being selected. To select each student, use random numbers. Random numbers can be easily generated through computer programs, which are available also on the Internet. Alternatively, a random number table or a currency note can be used, although the latter is very time-consuming and is rarely used.

Computer programs

Enter "random number" or "random number generator" or similar key words into an Internet search engine to see a list of web sites which provide facilities to generate random numbers. Random number generator programs usually request the user to enter the following data:

- how many random numbers you need: this corresponds to the number of students that you want to select;
- minimum value: this is "1", corresponding to the first student in the list; and
- maximum value: this is the total number of students included in the list from which you are going to select your sample.

Some programs request that you specify whether or not to allow duplicate entries. Choose "no", as you want each random number to be unique, different from each other.

Example: Let us assume that you want to select 30 students from a list of 150 students. You will have to enter the following information:

How many random numbers?	→ enter: 30
Minimum value	→ enter: 1
Maximum value	→ enter 150

Random number table⁷

- Select any starting number at random, for example, by touching the random number table with the tip of a pencil with your eyes closed. If there are 100 or more students in the sampling frame (list of students), use the three-digit numbers. If there are fewer than 100 students in the sampling frame, then use only the first two digits of the numbers. If the number you have selected at random is larger than the number of students in the sampling frame, go down the column to the next number in the random number table (Table 7).
- Identify and mark the selected student on the list.
- In the random number table, go down the column to the next number. Use this number to select the next student on the list.
- Identify and mark the second selected student on the list.
- Repeat the process until you have selected the number of the students to be sampled. When you have completed one column, go to the top of the next column and work down the column.

⁷ Slightly adapted from "Sample the health facilities to survey", in: *Health facility survey manual: diarrhoea case management*. Geneva, World Health Organization, 1994, p.27.

Table 7. Random numbers⁸

449	338	542	678	960	961	007	148	690	254	478	154
894	344	448	598	769	203	825	536	132	896	804	491
544	526	941	955	483	676	446	147	226	219	210	877
969	421	343	633	821	002	282	956	758	090	485	873
879	094	323	436	585	077	284	465	116	504	377	301
302	461	853	371	227	505	922	565	240	438	409	187
229	130	320	430	757	949	154	891	733	183	905	461
891	277	633	873	494	248	795	606	071	009	920	755
161	033	402	524	239	925	540	314	068	228	726	741
215	074	309	461	201	338	567	384	382	113	152	649
429	951	271	370	433	031	979	713	442	666	425	767
214	482	016	472	563	375	148	996	622	339	324	286
900	702	767	250	166	547	574	017	208	694	379	056
932	253	939	844	223	132	939	515	285	571	772	626
460	722	904	103	397	832	378	616	041	155	294	019
382	139	861	171	245	268	662	399	024	530	727	225
826	857	511	740	125	941	420	161	827	312	932	101
078	740	598	030	787	134	743	108	721	115	611	333
952	843	139	957	436	603	190	602	112	730	482	570
535	265	399	867	910	138	253	398	025	969	623	773
729	530	476	995	277	699	668	265	300	787	651	652
879	892	664	159	834	769	500	728	706	873	163	327
104	342	401	010	577	086	398	422	049	832	224	750
680	985	467	306	418	936	517	417	613	981	616	124
802	924	608	186	459	258	709	607	117	092	700	407
598	781	602	003	368	884	340	091	642	779	323	690
783	041	776	733	789	205	061	272	173	593	005	667
230	542	950	777	816	969	371	935	875	076	473	122

Banknote

- Take a local banknote. Each banknote has a unique serial number of many digits. Look at the first three digits of that number if there are 100 or more students in the sampling frame (list of students); look at the first two digits if there are fewer than 100 students in the sampling frame. If the number you obtain is larger than the number of students in the sampling frame, select a new number of same digits by moving to the right by one digit within the serial number.

Example: Let us assume that you take your sample from a batch of 150 students who have completed their paediatric rotation and the serial number of the banknote is 4118021. As the sampling frame is a three-digit number greater than 100 (150), select the first three digits of the serial number. These are 411

⁸ From "Sample the health facilities to survey", Table 4 (Random numbers), in: *Health facility survey manual: diarrhoea case management*. Geneva, World Health Organization, 1994, p.28.

(4118021). This number (411) is larger than the sampling frame (150), so it can not be used. Move to the right by one digit. The new number is 118 (4118021). This number is within the sampling frame and can now be used to select the first student of the sample (student no. 118).

- Identify and mark the selected student on the list.
- In the banknote, move again to the right by one digit to select the next random number.

In the example described above, this number is 180 (4118021). This number is larger than the sampling frame of 150 and so can not be used. If you move to the right by one more digit you obtain the number 021 (i.e. 21) which can be used as it is smaller than the sampling frame. So, the second student selected is student no. 21 in the list.

- Identify and mark the second selected student on the list.
- Pick up a new banknote and follow the process described above, until you obtain a valid number that you can use to select the next student on the list. Then repeat the process until you have selected the number of students to be sampled. This method is simple but less practical for relatively large samples. In fact, its disadvantage is that you would need many banknotes to generate sufficient numbers to select all the students of your sample.

d) Adapt and reproduce forms

The forms for the assessment of student knowledge and skills (Forms 14, 15 and 16 in Annex 1. Evaluation tools) include:

- a test with multiple-choice questions and case scenarios, for the knowledge component; and
- a form for the observation of the management of a sick child, for the clinical skills component.

The national evaluation coordinator, together with the teaching institution focal point, should review these forms and:

- carefully adapt them to ensure that they are consistent with:
 - the national IMCI guidelines, and
 - the teaching programme at the institution.
- translate and test them if needed;
- reproduce them in adequate copies;
- ensure that any changes are reflected in the data entry and analysis program.

Adaptation of forms 14, 15 and 16. For example, in countries in which there is no malaria, the emphasis may be on acute respiratory infections and diarrhoeal diseases, while in countries in which malaria is a problem malaria will need to feature prominently as appropriate in MCQs, case scenarios and the clinical management tasks of a child with fever. Also, some countries may have included the management of sore throat and other conditions in the IMCI guidelines and these may be taken into consideration.

The second aspect guiding the adaptation concerns the teaching programme, i.e. what the objectives of teaching are and what is actually taught to students during the rotation period in the department. In some institutions, only assessment and classification of sick children according to the IMCI guidelines may be taught, because of time constraints, while in other institutions the full scope of IMCI—thus including also treatment, counselling and follow-up visits—may be taught. In some cases, only the identification of the treatment plan may be included in the teaching programme, while in other cases doses and details of treatment may be included. If some aspects of case management are not taught (e.g. follow-up, counselling), the reasons for this should be included as one of the items of the focus group discussions with teaching staff at the time of the evaluation.

Table 8. Forms to be reproduced for the evaluation

Form	Copies required
For interviews at national level	
Form 1: Interview with the national IMCI committee or working group	<ul style="list-style-type: none"> • 1 copy for use as background before the evaluation • 1 copy to be completed by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 2: Interview with partners	<ul style="list-style-type: none"> • 1 copy for each partner to be interviewed, for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
For the evaluation at the teaching institution	
Form 3: General information about the department	<ul style="list-style-type: none"> • 1 copy for use before the evaluation • 1 copy for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 4: Introductory phase	
Form 5: Planning phase	
Form 6: Implementation phase	
Form 7: Teaching process	
Form 8: Student assessment	<ul style="list-style-type: none"> • 1 copy for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 9: Observation of practical session	<ul style="list-style-type: none"> • 2 copies for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 10: Observation of outpatient department teaching session	<ul style="list-style-type: none"> • 3 copies for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 11: Focus group discussion with teachers (a) teaching IMCI and (b) not teaching IMCI	<ul style="list-style-type: none"> • 2 copies for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 12: Focus group discussion with students	<ul style="list-style-type: none"> • 3 copies for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Form 13: Cost analysis	<ul style="list-style-type: none"> • 1 copy for use before the evaluation • 1 copy for use by the evaluation team • 1 copy for each member of the evaluation team as a reference
Forms 14a/b: Multiple-choice questions	<ul style="list-style-type: none"> • 1 copy for each student to be assessed • 1 copy for each member of the evaluation team as a reference
Forms 15a/b: Case scenarios	
Form 16a/b: Observation of case management	

Translation. Forms and tests may also need to be translated, especially those meant to be completed by the students, such as the MCQs and case scenarios. Adequate time should be provided for the translation: proper wording of the stem and options of an MCQ item is crucial. The translation should be coordinated and verified by the national IMCI coordinator. If major adaptations have been introduced and this is the first evaluation in the country, it may be appropriate to test the adapted instruments.

Reproduction. Once a decision is made on which specific adaptations should be made to the forms, the forms will need to be reproduced in adequate number (see Table 8). In addition to the number of copies required to be filled in during the evaluation, an additional copy should be made available to each member of the evaluation team.

Data entry and analysis. The adaptations will need to be reflected by the evaluation team in the data entry and analysis program well before the evaluation starts. The team will also need to review the scores assigned to MCQ correct and wrong options or tasks performed by the students and introduce changes in the data entry program as appropriate.

The following checklist helps to guide the adaptation process for the knowledge test.

- Decide which categories of questions to include in the test, based on what teaching has covered (e.g. "A. IMCI guidelines", "B. Assess and classify", "C. Assess feeding problems", "D. Identify treatment", etc.);
- Decide how many questions to include in the knowledge test for each category;
- Decide whether to use MCQ items with only *one* or *one or more* correct answer options;
- Select the MCQs and case scenarios and adapt them based on the national IMCI guidelines;
- Carefully review which options are correct ("keys") and which ones are wrong ("distracters"), based on the adaptations made and the national IMCI guidelines;
- Review the score assigned to each answer option and weigh scores based on difficulty of each item and total score per item (resulting from the total number of correct options per item);
- Order the MCQs by category and by level of difficulty within each category;
- Translate and test the full tests if needed; test items which are introduced for the first time in the knowledge test;
- Enter changes into the data entry program;
- Print, review and reproduce forms for the test (Table 8).

e) Arrange for facilities and supplies at the institution

The IMCI pre-service education focal point at the institution should make arrangements to ensure that the following items are available during the evaluation at the teaching institution, on different days, as per the final schedule (see Table 4 as a sample of the schedule).

Rooms

- A small room for the focus group discussions with teaching staff, capable of accommodating 8–10 people, to be available for 1–2 hours on 2 different days;
- A large room for the assessment of student knowledge (MCQ and case scenarios), capable of accommodating 25–30 students, with 30 chairs and tables (preferably) or support to write, to be available for 90–120 minutes only on 1 day;
- A small room for the focus group discussions with students, capable of accommodating 8–10 students daily, to be available for 60–90 minutes for 3 consecutive days (1 day for each group of students);
- A large room with adequate space where 2–3 students can assess 1 child each and the evaluators can observe them at the same time. If separate rooms are available, then that would be preferable.

- A small room for data analysis, capable of accommodating 5–8 persons, with a table and easy access to two functioning electric sockets, for 3–4 hours on 1 day;
- A small room for the evaluation team's meetings at the end of each day for 2–3 hours, daily, and for 4 hours on the last day;
- A large room for the feedback meeting, for 3 hours on 1 day at the end of the evaluation.

Supplies (Table 9)

- IMCI chart booklet (and mother's card if counselling is included in teaching): one copy for each student (total of 25–30 copies) available for consultation by each student on the day of the assessment of knowledge, and three copies available at the room for case management observation for consultation by students during skills assessment for 3 consecutive days. Students may be asked to bring their own copies.
- IMCI case recording form: a total of 175–210 forms for 25–30 students for the 3-day evaluation, as follows:
 - five copies for each student for the knowledge assessment test (one copy per case scenario)—optional (125–150 copies);
 - one form for each student to complete during case management (25–30 copies); and
 - one form for each evaluator for each sick child (25–30 copies).
- One enrolment card per sick child to record child's name, temperature and weight (total 25–30 cards for the 3-day evaluation);
- One pencil and eraser for each student for the knowledge and skills assessment (total of 25–30 pencils and erasers for the three-day evaluation) and a total of 3–5 clipboards for skills assessment (each student will pass the clipboard to the next student right after managing the child);
- Three timers for use by students during the skills assessment to count the respiratory rate if they have no watch available and ask for it;
- A thermometer and scale at the outpatient department;
- Jars with water, cups and spoons for use by students during the skills assessment;
- One tongue depressor for each student for skills assessment, if assessment of "sore throat" is included (total of 25–30 for the 3-day evaluation);
- Three torches for the 3-day evaluation, if the national IMCI guidelines include checking for a throat problem.

Equipment

- One computer;
- One data show projector (and screen, as appropriate) to be available for 3–4 hours on the days of data analysis and feedback meeting;
- Easy access to a printer as needed on the day of data analysis;
- Optional: tape recorder for focus group discussions (as done in qualitative studies) but written notes may be sufficient in most cases.

Table 9. References and supplies for assessment of student knowledge and skills

For each student	Total for 25–30 students
IMCI chart booklet	30–35
IMCI case recording form	175–210
Enrolment card	25–30
Pencil and eraser	25–30
Other supplies	Total for the test
Clipboards	3–5
Timers	3
Thermometer	1
Scale	1
Jars with water and cups	3
Spoons	25–30
Tongue depressors	25–30
Torches	3
Equipment	
Computer (with printer connected)	1
Data show projector	1

f) Train the evaluation team

All members of the evaluation team must have received training in the pre-service education evaluation at any time before participating in the evaluation itself. It is advisable to conduct the training of new evaluators close to the evaluation, so that the evaluation practice serves also to strengthen their evaluation skills right after training. In fact, training aims at providing evaluators with the skills to conduct this type of evaluations. It should be conducted by a person who has good experience with these evaluations. Preferably, capacity-building for conducting this type of training and training of potential evaluation team members should be carried out at national level. Details of this training are available separately from the WHO Regional Office for the Eastern Mediterranean, Child and Adolescent Health Unit.

Chapter 4. Conducting the evaluation

This section describes the main tasks related to the review of final arrangements a week prior to the evaluation and the actual conduct of the evaluation, including the feedback meeting and revision of teaching plans (Table 10).

Table 10. Tasks involved in conducting the evaluation

Task	When (timing)
Conducting the evaluation	
Review the evaluation tasks	
a) Teaching institution and national level	A week before the start of the evaluation
b) Evaluation team	The day preceding the start of the evaluation
Conduct the evaluation	
a) Conduct interviews at national level	First day of the evaluation
b) Visit the teaching institution: <ul style="list-style-type: none"> • Collect information • Analyse data and summarize main findings 	Second to fourth day of the evaluation
c) Conduct the feedback meeting	Right at the end of the evaluation
d) Revise teaching plans	Soon after the feedback meeting

4.1 Review the evaluation tasks

Task	When (timing)
a) Teaching institution and national level	A week before the start of the evaluation
b) Evaluation team	The day preceding the start of the evaluation

a) Teaching institution and national level

A week before the start of the evaluation, the IMCI focal point at the teaching institution should ensure that all the arrangements have been made and confirmed (see Table 11). The national evaluation coordinator should ensure that all the appointments for the interviews at national level scheduled for the next day are confirmed.

Table 11. Arrangements to be checked

1.	Availability of teaching staff involved and not involved in teaching IMCI in the department has been confirmed for the time set for the focus group discussions with them
2.	25–30 students, depending on the final schedule of the visit, have been randomly selected from the same department rotation batches and informed to come: a) on a given day for the assessment of knowledge; and b) in groups of 6–9 each over three consecutive days for the assessment of clinical skills, followed by focus group discussions
3.	A clinical coordinator from the department has been identified and duly briefed to select sick children at the outpatient department each morning for the assessment of student clinical skills
4.	The time of teaching, practical and clinical sessions corresponds to the time of their observation by the evaluation team as per the schedule of the visit
5.	Rooms have been reserved for the focus group discussions with teaching staff and students and the observation of case management
6.	Case recording forms, IMCI chart booklets and supply items are available in adequate number for the assessment of student knowledge and skills
7.	Arrangements for the feedback meeting have been made, including informing all those invited to participate and availability of the room and equipment for the meeting

b) Evaluation team

The day before the evaluation, the national evaluation coordinator and each member of the evaluation team should meet to agree upon the specific responsibilities of each individual during the evaluation and the procedures to be followed ("who does what, when and how"). The following should be reviewed, among others:

- background documentation on IMCI pre-service education in the country and teaching institution, summarizing the key points;
- final schedule and all logistics arrangements;
- evaluation procedures and team members' evaluation tasks;
- definitions used in the assessment of student skills; and
- selection of cases for clinical management.

All members of the evaluation team should have received training in this type of evaluation (see item f. Train the evaluation team in section 3.2 Finalize the plans).

4.2 Conduct the evaluation

Task	When (timing)
a) Conduct interviews at national level	First day of the evaluation
b) Visit the teaching institution <ul style="list-style-type: none"> • Collect information • Analyse data and summarize main findings 	Second to fourth day of the evaluation
c) Conduct the feedback meeting	Right at the end of the evaluation
d) Revise teaching plans	Soon after the feedback meeting

Note: All forms referred in this section can be found in Annex 1. The forms given in Annex 1 are preceded by explanatory notes on procedures and their use.

a) Conduct interviews at national level

This task helps review the introduction of IMCI into pre-service education and coordination mechanisms in the country. It is usually carried out by the whole evaluation team in one day, at the end of which the team travels to the site of the teaching institution, if located in a different city. The team is expected to have reviewed the background information the day before conducting the interviews. Key informants should have been identified previously by the national evaluation coordinator (see item b. Select the coordinating team, in section 3.1 Plan for the evaluation). For logistics reasons and to maximize the time available, it is advisable to conduct all the interviews in the same location, so that the team does not need to spend time travelling to different places and can focus efficiently on the interviews. Key informants usually include: the national IMCI coordinator and focal point; the national IMCI pre-service education focal point or committee—where it exists; main partners involved or interested in IMCI pre-service education (donors, international organizations, high council of universities, civil society, etc.); and some of the teaching institutions—other than the one to be visited—which have introduced IMCI into their teaching programmes. The national IMCI coordinator should be interviewed first (Form 1), before the partners (Form 2).

b) Visit the teaching institution

The activities to be conducted at the teaching institution are summarized in Table 4 under item i. Draft the schedule in section 3.1 Plan for the evaluation. As mentioned in that section and illustrated in the table, the evaluation team performs many tasks during the visit, using standard forms and validating information which has been collected earlier (see item e. Collect preliminary information, in section 3.1 Plan for the evaluation), namely:

- pays a courtesy call to the Dean and head/s of the department/s concerned, highlighting the objectives and activities of the evaluation;
- interviews the head/s of the department/s concerned and IMCI focal point at the institution to:
 - review all arrangements for the evaluation and availability of the head of the department/s;
 - review and validate general information about the department (Form 3);
 - obtain their views about the IMCI experience in their department/s, the process followed, facilitating factors, constraints, main issues identified and how they have been addressed and future sustainability. The length of this interview and degree of detail depends on whether the head of the department is able to join the focus group discussions with teachers (Form 11).
- interviews the IMCI pre-service education focal point to:
 - review and validate information on the process followed in the school to introduce, plan and implement teaching related to IMCI (Forms 4, 5 and 6);
 - review the IMCI teaching methodology (Form 7);
 - review information on IMCI student formative and summative assessments (Form 8);
- visits the OPD or outpatient teaching site and library to assess facilities and supplies needed for IMCI teaching and availability of reference materials (Form 7);
- observes an IMCI practical (Form 9) and clinical teaching session (Form 10), respectively, and/or community teaching sessions, depending on the department/s involved;
- facilitates focus group discussions with staff "teaching IMCI" and "not teaching IMCI" and students (Forms 11a, 11b and 12) to learn about their attitudes toward "IMCI teaching";
- assesses student knowledge and skills related to IMCI (Forms 14, 15 and 16), enters and analyses the data; and
- summarizes and presents the main findings and recommendations in a feedback meeting.

As shown in Table 4 (under item i. Draft the schedule, in section 3.1 Plan for the evaluation), each evaluator of the team is given specific assignments, which have been reviewed and confirmed the day before the evaluation. The assessment of student skills is carried out by three or more evaluators—depending on student sample size and availability of evaluators—at the same time. Thus, collection of information and data is carried out not only sequentially but also in parallel, to reduce the duration of data collection to three days, followed by an additional half-day to one day for data analysis and preparation of the presentation and another half-day for the feedback meeting.

Information on sampling students has been given in item c. Sample students, in section 3.2 Finalize the plans. Chapter 6 provides details on data entry and analysis, together with indicators and other information to be presented in the feedback meeting.

As mentioned above, even if the schedule of the visit is supposed to have been discussed and finalized before the visit, it is advisable to review it briefly with the head of the department and IMCI focal point at the institution once the team arrives there to ensure that all arrangements are in place (see section 4.1 Review the evaluation tasks).

c) Conduct the feedback meeting

Each country and teaching institution may develop different plans for a feedback meeting to provide some information on the results of the evaluation. The objective of the meeting and its audience may vary based on each particular situation. The feedback meeting should be conducted preferably right at the end of the evaluation. It may be useful to provide feedback at least to the teaching staff of the same department and invite the dean or vice-dean of the faculty to attend. The national coordination team for the evaluation and interested partners should also attend. The findings relate to a few thematic areas, namely supportive environment, management and coordination, planning, the approach followed to introduce IMCI, teaching quality, teaching staff attitudes and student competencies, namely attitudes, knowledge and skills (see Chapter 6). The meeting should end with conclusions and practical, feasible and action-oriented recommendations, with a view to strengthening and supporting current efforts and sustaining them over time. A final report should be prepared and sent to the national level and/or institution concerned by the evaluation team within a reasonable time after the evaluation, to serve as a reference and advocacy tool. The report should be shared with all the departments and persons concerned in the institution. Results of the evaluation can also be disseminated to a broader audience through various means—including leaflets, newsletters, scientific fora—as agreed during planning (see item h. Plan for data entry, analysis and dissemination of findings, in section 3.1 Plan for the evaluation).

d) Revise teaching plans

Plans for teaching in the institution/s concerned should be revised based on the findings of the evaluation, preferably soon after the feedback meeting, when interest in the issue is still high and decision-makers are available.

Chapter 5. Evaluation questions

This section helps to guide the analysis of the information collected during the evaluation.

5.1 Process

Information on the process can be obtained through guided interviews, using standard questionnaires and record review. Below is a series of questions to be addressed in the process evaluation, by level and topic area.

National level

a) Was a supportive environment created?

- Awareness-raising and advocacy activities
 - Were any activities carried out to raise awareness and sensitize teaching institutions and other targeted partners to the IMCI strategy and pre-service education?
 - What are these activities?
- Were key partners in pre-service education identified?
 - Who were they?
 - Why were they selected?
 - At which stage were partners involved in the IMCI strategy (orientation, planning, adaptation, implementation, evaluation and pre-service education)?
 - Which partners are still involved in IMCI implementation? In which way?
 - What were the main reasons for losing partners, if any?
- Was there any continuous active participation of decision-makers and influential teaching staff members, involved in pre-service education, in public child health key events (e.g. IMCI major orientation meetings, debriefing on IMCI health facility surveys, national and international child health days)?
 - Were there essential child health events since inception? What were they?
 - Which events involved decision-makers and influential staff? At which level?
 - What was the outcome of their involvement?
- Were influential IMCI Ministry of Health staff and partners involved in relevant child-related academic events (those events that convene a high number of concerned medical societies and with a child health-related topic, paediatric scientific fora, etc.)?
 - In which of those events did the influential IMCI staff and partners participate?
 - What type of participation was it?
 - What was the outcome of their participation?
- Was the IMCI pre-service approach endorsed at the national level?
 - By whom, when and how?

b) Was a management structure and/or a focal point for IMCI pre-service education established at national level? (Management structure is intended as having responsibilities for coordination, planning and tasks related to pre-service education activities.)

- How was it established? (e.g. by Ministry of Health directive, circular, minutes of a meeting, etc.)
- Who were the members and why were they selected?
- What were the terms of reference of this structure?
- What were the main activities in which the management structure was actively involved?

- Is there a coordination mechanism between the Ministry of Health, institutions and key partners for IMCI pre-service education? What form of coordination mechanism?
 - Were activities conducted to raise awareness and sensitize the teaching institutions and other targeted partners to the IMCI strategy and pre-service education? What were these activities?
- c) **Was a plan developed for IMCI pre-service education?**
- Did the plan include identification of targeted institutes, activities, responsibilities, resources, time frame, monitoring and evaluation?
- d) **What commitment was there to IMCI pre-service education at national level (based on previous answers on official endorsement, identification of a focal point or management structure for IMCI pre-service education, preparation of a plan of action, allocation of resources, etc.)?**

Institutional level

- a) **Identification of concerned departments**
- Were the concerned departments identified?
 - How were they identified?
 - Which departments were they?
- b) **General Information on the concerned department/s**
- How many teaching units are there in the concerned department/s?
 - How many teaching staff are there in the concerned department/s and per unit?
 - What is the duration of student rotation?
 - What is the number of undergraduate students per unit?
 - What is the ratio of students to teaching staff actively involved in teaching within the department?
 - What is the number of teaching hours?
- c) **Orientation workshop/s**
- Was an orientation workshop conducted?
 - Who organized the workshop?
 - What was the method used?
 - Which tool was used for the orientation?
 - Who were the participants?
 - What was the outcome of the workshop?
 - Was this workshop documented? How?
- d) **Official endorsement by institution and concerned departments**
- Was there any official endorsement for introducing IMCI into the teaching programme in the institution/concerned departments?
 - At what level was it made?
 - When was the endorsement obtained?
 - Which form of endorsement was it? (Provide the document if available.)
 - Was information on such endorsement shared with the national IMCI coordinator?
 - Was the endorsement translated into action (this will be based on the evaluators' conclusions on the answers to all the following items)?

e) Formulation of working group and nomination of a focal point

- Was a working group/task force formulated in the institution/concerned department?
- How was it formulated (criteria, officially)?
- Who were the members?
- Did the working group select a focal point?
- Were the terms of reference of the working group and the focal point agreed upon?
- Was this documented? (Provide the document.)
- How frequently did the working group meet?
 - Did it meet regularly?
 - Were the meetings based on the plan?
 - What were the outcomes of these meetings?
 - Were the meetings documented? (e.g. minutes)

f) Planning phase

- Was a planning workshop conducted?
- Who organized the workshop?
- Who attended the workshop?
- Was a plan of action developed with targets and indicators? (If available, provide a copy of the plan of action.)
- The components of the plan of action should be checked against the checklist.

g) Implementation of the plan

- Which activities were implemented (according to the plan of action)?
- What facilitated the implementation?
- What were the difficulties/constraints faced during the implementation?
- What were the reasons behind the lack of implementation of planned activities?
- Were the targets of the plan achieved? To what extent?

h) Teaching process

- General information
 - Were IMCI learning objectives identified? What are they?
 - Did teaching cover those learning objectives?
- IMCI training status among teaching staff
 - How many teaching staff have been trained in IMCI case management to date? What is their profile?
 - How many are still active in teaching IMCI?
 - What is currently the ratio of students to teaching staff trained in IMCI case management?
 - Do all the teaching units have staff trained in IMCI case management?
 - How many teaching staff have been trained in IMCI facilitation skills? (Problems in availability of trainers to conduct courses for teaching staff.)
 - How many of them are still active in teaching IMCI?
 - Are teaching staff kept informed about any technical updates of the IMCI clinical guidelines? How?
- IMCI teaching methodology
 - What are the IMCI learning objectives covered by this concerned department? (Provide a document that states those objectives.)
 - How many teaching units are teaching IMCI?
 - How many hours are allocated to IMCI-related teaching within the department teaching schedule per rotation?

- Methodology of classroom sessions
 - How many classroom sessions are assigned for IMCI teaching per rotation? How many hours per session?
 - What are the learning objectives of these sessions? (Provide a document that states the objectives.)
 - What is the student-to-teaching staff ratio?
 - What is the methodology used to conduct the IMCI classroom sessions (lecturing, presentation, photos, videos, demonstrations, etc.)?
 - What is the methodology used to teach IMCI?
 - Does IMCI teaching address the scientific rationale of the IMCI guidelines?
 - Does IMCI teaching link to classical teaching?
- Methodology of clinical sessions
 - How many clinical sessions are spent on IMCI-related teaching per rotation? How many hours per session?
 - What are the learning objectives? (Provide the document stating the objectives.)
 - What is the student-to-teaching staff ratio?
 - What is the methodology used to conduct the clinical sessions (clinical demonstration, clinical examination, case presentation, etc.)?
 - Describe those sessions (who does what, how, where).
- Does the teaching methodology stimulate students' active participation? How?
- Teaching materials
 - Are there any IMCI learning materials for students?
 - What are these learning materials?
 - Students' materials (e.g. student's manual)
 - Chart booklet
 - Recording forms
 - Mother card
 - Wall charts
 - CDs, video tapes
 - Are those materials consistent with the national IMCI guidelines?
 - Are they consistent with the content of the programme of the concerned department/s?
 - Are these IMCI teaching materials separate materials or are they incorporated into the department's reference book? Who provides them and who pays for them?
 - Does every student receive his/her own copy of these materials? Does he/she need to pay for them? Who provides them and who pays for them?
 - Are there any IMCI teaching materials for instructors? What are these teaching materials (e.g. teacher's guide which provides lessons plans and brief outlines of teaching sessions, other supportive materials such as lectures, presentations, photo booklet, wall charts, videos, slides, transparencies)? Who provides the materials and who pays for them?
 - Are the key students' references available in the library? If so, which ones and how many copies are available in the library? Who provides them and who pays for them (correlate the number of available copies to the number of students per rotation)?
 - Have any measures been taken to ensure sustainability of the regular supply and availability of those materials?
 - Do the teaching materials stimulate student self-learning? How?
- Training site
 - How is the training site for clinical teaching (describe location, space, audio visual

equipment, flow of patients, weighing scales, spoons, timers, nebulizers, thermometers, tables, chairs, etc.)?

- Which constraints does the teaching process face (e.g. lack of commitment, shortage of teaching staff, resources for teaching materials, lack of staff interest, high number of students, turnover of leadership, inadequate space for clinical teaching, lack of teaching materials and teaching aids)?
- Are the following items available?
 - Timers
 - Weighing scales
 - Thermometers
 - ORT utensils
 - Other items (tongue depressors, nebulizers or other items as per the adapted IMCI guidelines)

i) Monitoring and re-planning mechanism

- Was monitoring included in the plan?
- Were different levels of monitoring identified?
- Was a specific monitoring plan developed? (Provide a copy of the plan.)
- Who is responsible for monitoring?
- Was a monitoring tool developed for each level (if relevant)?
- Was regular monitoring conducted using the tool?
- Were the results documented? (Provide example.)
- Were the results of monitoring used for re-planning, corrective measures and other actions?

j) Students' assessment (check the last three exams)

- Are IMCI elements included in student assessment?
- Is there a mechanism to introduce changes in student assessment?
- Which mechanism is it? Did the IMCI introduction in teaching follow the same mechanism?
- When are students assessed in IMCI during the department teaching programme?
- What type of assessment is it (formative and/or summative)?
- Which methods are used for this assessment?
- What proportion of marks has been allocated to the IMCI component in relation to the total subject marks (paediatric/community medicine, others, if any)?
- What are the IMCI competencies (knowledge and skills) covered by the examination?
- Are the examination results used to strengthen teaching?

k) Costs

- Were there specific funds available for those activities? What was the source of those funds?
- Is the cost of activities considered in the plan?
- Which budget items were included in the plan?
- Were all planned funds received? What proportion of planned funds was actually received?
- What were the costs of IMCI pre-service education for the following items:
 - Management and coordination, including meetings, visits, special events and supervision;
 - Orientation and training of teaching staff;
 - Teaching space, equipment and learning materials.
- Are financial records available as a source of information?

l) Sustainability

- Has an official endorsement for introduction of IMCI into teaching been obtained?

- Has IMCI pre-service education received long-term support? What type of support?
- Is IMCI considered a time-limited project or an integral part of the teaching programme?
- Have funds been regularly available to implement the IMCI pre-service education plan?
 - Does the flow of funds match the original IMCI pre-service education plan and current needs?
 - Can funds and their source be secured on a long-term basis (i.e. five years)? How? Are there other options?
- Has logistic support been made available, as needed, according to plans?
- Is there any mechanism to ensure regular support of logistic needs in the long term? If so, what are the mechanisms to ensure availability of the following:
 - Students' materials (by cost recovery measures, library, etc.)
 - Teaching materials/aids
 - Maintenance of equipment
 - Training site (e.g. place, setting, etc.)
- Are teaching staff trained in IMCI available?
- Is there any mechanism (policy/resources) to train new staff and replace those who leave, in the long term?
- Is implementation of the plan and teaching programme regularly monitored (refer to item i)?
- Have decision-makers and influential teaching staff been actively participating in key events such as events that convene a large number of concerned medical and professional societies on a child health-related topic, paediatric scientific fora, national and international IMCI meetings, national child health days, international child health days, etc.?
 - Were any essential child health events held during the last two years? If so, what were they?
 - Which of those events involved decision-makers and influential staff? At which level?
 - What was the outcome of their involvement?
- Is IMCI part of students' assessment (refer to item i)?
- How do teaching institution leaders and staff believe that sustainability of IMCI pre-service education can be ensured and maintained over time?

5.2 Results

Following is a series of questions to be addressed in the evaluation of results, by level and topic area.

National level

- a) **What are the expected benefits of IMCI pre-service education to the MOH?**
- Are there any benefits relating to the extent to which the in-service training burden has been reduced, compared with before the introduction of IMCI into pre-service education, concerning:
 - Time (e.g. duration of IMCI in-service standard case management training courses, time required by facilitators to facilitate these training courses, time needed to create a pool of facilitators, duration of use of training sites for these courses, length and degree of interruption of delivery of health care and other services during the absence of trainees and facilitators for training)
 - Cost of training (e.g. daily allowance and logistics, including rent of training sites, materials, transportation, etc.)

- What is the effect of IMCI pre-service education on the quality of health services provided to children under-5 years of age?
- How has IMCI pre-service education eventually affected the attitude of health staff towards IMCI (acceptability, compliance, commitment)?

Institutional level

- a) What are the attitudes and levels of satisfaction of teaching staff towards IMCI teaching, with regard to the following?
- Staff who are not teaching IMCI:
 - Do department staff accept IMCI teaching?
 - How is their acceptance or non-acceptance manifested?
 - Do they believe that IMCI pre-service education has facilitated the dissemination of knowledge and transfer of some skills related to the IMCI standardized protocol? What specifically? What impact do they think this dissemination and transfer have had?
 - What is their perception of the IMCI teaching/learning process and students' assessment methodology?
 - Staff actively involved in IMCI teaching:
 - Do they accept IMCI teaching as an integral part of their work? Do they consider it an extra load? Why?
 - Do they think that IMCI teaching has an added value? Which one (e.g. it responds to public health needs, uses standardized protocols, employs a variety of teaching methodologies, improves teaching skills)?
 - Do they think IMCI teaching has contributed to their continued professional development? How? Have they gained new knowledge and skills (e.g. through participation in international courses, workshops, updates on technical issues, etc.)?
 - Has IMCI teaching helped establish more linkages with the MOH, other teaching departments and partners (e.g. other universities, international organizations) and strengthened relationships with students and other teaching staff? How? How useful is this?
 - Has IMCI pre-service education enhanced the reputation of the department/institution? How (e.g. criteria for accreditation and rewarding, invitation of faculty members to international events as resource persons or consultants, etc.)?
 - Did IMCI contribute to the improvement of logistics required for teaching? Were these new arrangements for supply and equipment actually used in teaching?
- b) What are the attitudes and satisfaction of students towards IMCI, as regards the following?
- Questions to be addressed to the teachers:
 - Do students appreciate the IMCI teaching? How (e.g. better attendance to classes and practice, increased demand for it, compliance with assignments, results of examinations, closer relationships with teaching staff)?
 - Questions to be addressed to the students:
 - Do students think that IMCI teaching is useful? Why?
 - Do they think it is an extra load to them?
 - Is there any difference between the IMCI teaching methodology and the teaching used for other subjects of the concerned academic programme? How? Do they feel it to be more or less effective for learning?
 - Do you think that the IMCI teaching/learning methodology and materials are useful? How?

- c) How good are students' competencies (assessment of knowledge and skills)?

Health care delivery level

- a) What are graduates' perceptions and attitudes towards IMCI?
- b) Did the IMCI teaching that they received before graduation assist them in managing children? How?
- c) What are graduates' knowledge and skills (assessment of knowledge and skills)?
- d) Are graduates applying the IMCI protocol in their place of work? Why? Are there any constraints (e.g. adds substantial work load)?



Chapter 6. Analysis and presentation of findings

The previous chapter helps to guide the analysis of the information collected during the evaluation. Findings can be analysed and presented in relation to the "process" followed and the "outcome" to which this process has led. They can be organized by the main thematic areas, related to the national and teaching institution level. The presentation should preferably be in bulleted form, short and concise, highlighting whether:

- at national and institutional level:
 - a supportive environment and effective partnerships in pre-service education have been established;
 - a functional management and coordination structure is in place;
 - plans for IMCI pre-service education have been developed and implemented;
- at the teaching institution level:
 - teaching is consistent (e.g. content on IMCI guidelines versus the whole paediatric teaching programme) and teaching quality (methodology and learning resources) is adequate;
 - teaching staff and student perceptions toward IMCI teaching approaches are favourable;
 - students are competent.

Table 12 shows in which forms to find the information collected according to the thematic areas listed above. Forms include at the end a short paragraph on main conclusions, which help summarize the results. Preferably, when presenting the findings, recommendations should follow the relevant finding, which provides the rationale for them. More details about the analysis and presentation of findings on student competency (knowledge and skills) are presented in section 6.2 Quantitative findings.

The recommendations should focus on key issues and be specific, practical and aim to sustain IMCI pre-service education over time, to serve as the basis to develop or revise the plan of action. Such a plan could cover a short period of 6 to 12 months and clearly identify a mechanism to monitor its implementation.

Table 12. Information source by thematic area

Thematic area	Level	Source of information
Supportive environment, including partners	National	Forms 1, 2
	Teaching institution	Forms 3, 4
Management and coordination	National	Form 1
	Teaching institution	Form 4
Planning and plan implementation	National	Form 1
	Teaching institution	Forms 4, 5, 6
Costs	National and teaching institution	Form 13
Teaching methodology	Teaching institution	Forms 3, 5, 7, 8, 9, 10
Teaching staff and student perceptions	Teaching institution	Forms 11a, 11b, 12
Student knowledge and skills	Teaching institution	Forms 14, 15, 16

6.1 Qualitative findings

To illustrate how to summarize findings, examples of qualitative findings and recommendations are given in: Table 13 on supportive environment at national and institutional level, Table 14 on planning, Table 15 on teaching methodology and Table 16 on student attitudes toward IMCI from focused group discussions. Analysis of findings on student knowledge and skills is presented in section 6.2 Quantitative findings.

Table 13. Example of main findings on supportive environment at national and institutional level

Findings	Issues	Recommendations
Thematic area: <i>Supportive environment at national and institution level</i> (from Forms 1, 2, 3 and 4)		
Strong partnership between medical schools, MOH and WHO	Irregular, ad hoc coordination between MOH and medical schools Limited sharing of IMCI technical updates with teaching institutions by MOH	Establish more regular coordination mechanisms (e.g. by regular annual meetings, telephone and e-mail contacts, etc.) Establish group e-mail system to disseminate IMCI technical updates electronically Distribute annual reports on IMCI implementation and major national activities to teaching institutions
Early involvement of teaching staff in IMCI in-service activities		
National IMCI pre-service education committee established and initially functional; it has not met for a long time after the first few meetings	Original plan very broad Some high profile teaching staff too busy to attend A few medical school teaching staff with a high reputation left out	Review the committee plan of action and members' commitment Consider high-profile, very busy academic staff as 'resource persons' to the committee rather than 'members' Update membership
Standardized process followed to introduce IMCI into pre-service teaching programmes	IMCI pre-service education not included in the national IMCI strategy plan	Ensure next national IMCI plan includes also IMCI pre-service education
IMCI teaching included as a requirement for accreditation of medical schools	Many private professionals unaware of IMCI	Include IMCI in continuing medical education
High level of commitment (dean of school, head of paediatric department)	Efforts based on external short-term assistance and personal initiative (issue of sustainability)	Plan for sustainability (institutionalization, training of teaching staff, availability of teaching and learning materials, etc.)
IMCI is included in the paediatric department teaching programme	IMCI is not included in the community medicine teaching programme	Coordinate between the two departments and revise teaching programmes

Table 14. Example of main findings on planning

Findings	Issues	Recommendations
Thematic area: <i>Planning</i> (from Forms 4, 5 and 6)		
Plans for teaching IMCI at the institution drafted	Plans never finalized	Finalize plans, with indicators and targets
	Lack of clear indicators and targets in the plan to monitor progress	Develop monitoring and documentation tool
	Lack of monitoring of department teaching programme	Establish monitoring and re-planning system for teaching programmes
Most teaching staff within the department oriented to IMCI	Some senior staff who did not attend not convinced about teaching IMCI outpatient approach	Orient these senior teaching staff through in-depth, practical orientation session
Focal point for IMCI teaching designated and active	Working group on IMCI not established	Review coordination mechanisms within and between departments

Table 15. Example of main findings on teaching methodology

Findings	Issues	Recommendations
Thematic area: <i>Teaching methodology</i> (from Forms 3, 5, 7, 8, 9, 10)		
Teaching staff trained in IMCI	<p>Training of teaching staff in IMCI fully dependent on MOH assistance</p> <p>Total number of teaching staff trained in IMCI inadequate to ensure good teacher-to-student ratio</p>	<p>Build capacity within the institution</p> <p>Provide on-the-job IMCI training for house officers and residents involved in teaching</p> <p>Assign more teaching staff trained in IMCI to students to have smaller groups</p>
IMCI included in teaching curriculum	<p>Learning objectives and lessons plans not fully developed</p> <p>IMCI teaching much dependent on individual interest and initiative</p> <p>IMCI teaching limited to:</p> <ul style="list-style-type: none"> • "assess and classify" and • child age group 2 months up to 5 years <p>No clinical outpatient teaching component in paediatric teaching programme</p> <p>IMCI-related teaching does not include clinical practice</p> <p>Very limited time allocated to IMCI teaching in department programme</p> <p>Some inconsistencies between some elements of traditional paediatric teaching and IMCI teaching</p>	<p>Develop teaching sessions and monitor teaching</p> <p>Include in IMCI-related teaching programme:</p> <ul style="list-style-type: none"> • identification of treatment and counselling and • young infant less than 2 months <p>Introduce outpatient component into paediatric teaching programme</p> <p>Include clinical practice with actual cases</p> <p>Review current teaching programme of relevant departments to distribute more hours to IMCI, especially clinical practice</p>
IMCI included in student assessment and log-book and student examinations	Major focus on the theoretical part of teaching	Include IMCI also in the clinical part of student examinations
IMCI student notes included in the local textbook of paediatrics		
IMCI chart booklet distributed for free to students	<p>IMCI chart booklets currently received for free by the ministry of health: issue of sustainability</p> <p>Only few copies of reference materials available in the library</p>	<p>IMCI chart booklet can be incorporated in the textbook of paediatrics</p> <p>Use a small revolving fund to ensure adequate copies of reference materials are yearly available in the library</p> <p>Add internet links—with list of references—in the library to WHO global and regional Child and Adolescent health (CAH) on-line documents</p>

Table 16. Example of main findings on student attitudes toward IMCI

Findings	Issues	Recommendations
Thematic area: <i>Student perceptions</i> (from Form 12)		
Feel positive about the overall IMCI experience	Feel IMCI taught in isolation from overall paediatrics	Integrate IMCI into teaching as an approach to outpatient management, rather than teaching it as a separate subject
Feel confident to deal with children by following the IMCI approach	Feel time allocated short, especially for practice	Consider redistributing teaching time in paediatrics to secure adequate time for IMCI, especially for skill practice sessions
Appreciate the variety of teaching methods used for IMCI and teaching approach (moving from theory through demonstration to clinical practice)	Lack technical basis to understand the rationale for the IMCI guidelines	Include technical rationale for IMCI guidelines and provide references
Find learning resources useful	Availability of such resources is limited	(see Table 15)
Wish all paediatric subjects were taught in a similar way		Consider trying the IMCI outpatient teaching approach also for other non-IMCI-related topics

6.2 Quantitative findings

This section deals with the findings on student knowledge and skills, which are derived from the knowledge test (MCQs and case scenarios) and the case management skill test. As a scoring approach is proposed for the analysis, this is described first.

Scoring answers and tasks

This guide recommends the use of scores for each correct answer option selected by a student in the knowledge tests (MCQs and case scenarios) and each correct task performed by the student in the skill test (case management). The scoring approach is described below.

Knowledge (MCQs and case scenarios)

In the MCQ and case scenarios, a positive score is pre-assigned to each correct answer option and a negative score to each incorrect option. According to this system, points are therefore deducted for incorrect answer options within the same MCQ item. However, in no case will this result in a total negative score for a given item: if the total of positive and negative scores for one item is negative, the total would be converted to "0", so that no negative score is carried over to the total score of the test. The reason for this approach—i.e. deducting marks for wrong answers—is mainly to discourage guessing and because if a participant ticks all or most of the answer options to one MCQ, s/he would by default get also the right one/s. For example, if a five-choice MCQ item has two correct options and three incorrect options and the student ticks all the five answer options, then the total for that item will automatically be adjusted to "0".

The score obtained by each student in the full test is then expressed as the percentage of the total score assigned to the test. This approach is preferred to scoring only MCQ items which have been answered fully correctly (i.e. all correct options and no incorrect options selected for each item), because it scores also partially correct answers ("partial knowledge"); thus, it provides still useful feedback to the pre-service education evaluation, which is the primary purpose of why these tests are conducted.

At the same time, one can keep track also of the total number of the items answered correctly fully, meaning all the MCQ items for which the student has selected all the correct and no incorrect options (e.g. fully correct answers given to 14 out of 25 MCQs). This combined approach gives the complete picture for the analysis: on the one hand the percentage score, and on the other hand the percentage of all fully correct answers.

Options of certain question items may be assigned scores with different weight, based on the difficulty of the MCQ and the different implications of the various incorrect options. This approach may be rather laborious and subjective and requires much preparation—including review by several experts very familiar with IMCI, although it makes the test more balanced. The data entry program made available with this guide gives full flexibility to assigning any desired score to each answer option and, thus, to each item.

Skills (case management)

The case management process followed by a student is important feedback to teaching, in addition to the final outcome of his/her assessment of the sick child. For this reason, the scoring approach used in the assessment of skills takes into account the various clinical steps carried out by the student, identifying deficiencies and accounting for them in the score.

Scores with different weights are assigned to the case management tasks based on their importance, whether they are carried out, whether they are performed correctly and whether the student's conclusion agrees with observer's (gold standard), as applicable. For example, the student may pinch the skin to assess the dehydration status of a child with diarrhoea (task done) but may pinch it using an incorrect technique (task performed but incorrectly) or may incorrectly conclude that the skin pinch goes back slowly in a child when in fact it goes back very slowly (incorrect conclusion). This may lead to misclassification of the child with implications for his/her management. The range of scores is wide so that if an important task is not carried out, then there is a loss of many points that would clearly be reflected in the total score (see examples below). In this way, the total score would more closely reflect the participant's overall clinical performance and keep track of all the steps of the process.

As for the knowledge test, the score results in the skill test are expressed as a percentage of the maximum score (percentage score), rather than absolute score values, as shown in the examples below. This approach allows to take into consideration the variability of cases assigned to students: typically, even when "standardizing" the selection of cases for this assessment, sick children present with a different number and types of conditions which require a different number and types of clinical tasks to be performed by each student.

Example 1: Child with history of diarrhoea

Skill: skin pinch

Score: 10 points distributed as follows:

- *Skin pinched:* score = points 2 if done (0 if not done)
- *Skin pinched correctly:* score = points 4 if done correctly (0 if done incorrectly)

– *Conclusion on skin pinch correct* (e.g. goes back very slowly): score = points 4 if conclusion correct (0 if incorrect)

Let us assume that the student pinches the skin (2 out of 2 points), but uses an incorrect technique (0 out of 4 points) and makes the wrong conclusion on the skin pinch (0 out of 4 points). Then, we would have the following percentage score:

TOTAL MAXIMUM SCORE AVAILABLE FOR SKIN PINCH: 10 points

SCORE OBTAINED BY STUDENT: 2 points

PERCENTAGE SCORE: $2/10 = 20\%$

This scoring approach takes into due consideration the fact that, even if the task was performed as in this case, it had some deficiencies with potential implications for the management of the child. As the assessment of a child with diarrhoea entails many other tasks, this method of scoring individual tasks will result in a more accurate overall score than if one had given just one score for a task done or not done, or had given the same score weight for a task done/not done and done correctly/not done correctly. It also removes the chances of giving a good score if there is a good guess (e.g. skin is pinched incorrectly but the student ‘correctly’ concludes that it goes back normally).

Example 2: Child with cough

Skill: Counting the respiratory rate

Score: 10 points distributed as follows:

- *Respiratory rate counted:* score = points 2 if done (0 if not done)
- *Child calm (before and during count):* score = points 2 if child calm (0 if child restless, crying etc.)
- *Respiratory rate counted for a full minute:* score = points 2 if 1-minute count (0 if not)
- *Conclusion agreeing with standard* (respiratory rate as counted by student leads to the same conclusion as the observing evaluator's, e.g. child has or does not have fast breathing): score = points 4 (0 if different conclusion).

Let us assume that the student counts the respiratory rate (2 out of 2 points) in a 3-year-old child, but counts it while the child is crying (0 out of 2 points), for 20 seconds—multiplying it by 3 to get a 60 minute value—(0 out of 2 points) and reports a high rate of 75/min while the evaluator will independently report a count of 28 min which is within normal values (0 out of 4 points). Then, we would have the following percentage score:

TOTAL MAXIMUM SCORE FOR RESPIRATORY RATE: 10 points

SCORE OBTAINED BY STUDENT: 2 points

PERCENTAGE SCORE: $2/10 = 20\%$

If the same student had instead concluded that the child count was 32/min (e.g., normal count, as assessed also by the evaluator independently) and received an additional 4 points for this, this student would have obtained the following percentage score:

TOTAL MAXIMUM SCORE FOR RESPIRATORY RATE: 10 points

SCORE OBTAINED BY STUDENT: 6 points

PERCENTAGE SCORE: $6/10 = 60\%$

Despite a correct conclusion of normal breathing, this score would still be less than a full score, thus clearly pointing to some important deficiencies to be corrected that in clinical practice might have implications for the management of the child. This is useful feedback to the teaching programme.

The proposed scoring approach also tries to find some balance in the distribution of the total score between assessment, classification, identification of treatment and advice on home care. For example, assessment usually includes several tasks for each condition, whether cough or difficult breathing, diarrhoea, fever, etc. Each child selected for this evaluation is supposed to have at least two conditions; so, points are assigned for the assessment tasks for each of these two conditions, in addition to the tasks which are to be performed in each child irrespective of the condition (checking for general danger signs, malnutrition and anaemia, checking the immunization and vitamin A supplementation status and for other problems). This would overall already give many points to just the assessment tasks. On the other hand, classifying a condition is only one task. So, a relatively high score is assigned to correct classification, to apply some weight to each step of the case management process and reflect in a more balanced way the importance of each step. If a student performs all assessment tasks well but selects a wrong classification (which would have implications for the treatment and overall management of the child), all the points assigned to correct classification will be lost in the total score of the overall management of the child. Again, as seen for assessment, this will highlight an important deficiency to be addressed in teaching.

Analysing and presenting results

1. Knowledge (MCQs and case scenarios)

The results of the MCQs and case scenario tests provide some information on student knowledge and on how students are able to apply that knowledge to given situations, respectively.

For IMCI pre-service education evaluations, one overall indicator on knowledge summarizes the results of MCQs and case scenarios. It can be broken down into two separate indicators, one specifically for MCQs and one for case scenarios. A more in-depth analysis of the results by student performance and by question can be carried out for a more detailed interpretation of the test results, to identify teaching areas requiring strengthening and revise the test based on item facility, discrimination and distractor analysis.

The indicator is called "*knowledge percentage score*". It is expressed as the proportion of students taking the test who passed the test obtaining the required minimum threshold score or more. This threshold is a percentage of the maximum score allotted to the test. For example, let us assume that the threshold value is a score of 85% of the maximum score and that 58% of students obtained this score or more in the test. The results will be presented as "58% of students obtained at least 85% score in the overall student knowledge test". The level of the cut-off percentage score should be agreed upon before the test based on the difficulty of the test itself. This indicator could be broken down into the MCQ student knowledge percentage score (e.g. "75% of students obtained at least 85% score in the MCQ test") and case scenario student knowledge percentage score (e.g. "60% of students obtained at least 85% score in the case scenario test"). The reason for having separate results is that case scenarios usually prove more difficult for students to answer than MCQs, as students have to apply their knowledge, and as answers to each question tend to build on the answers to previous questions as in real life (assessment → classification → treatment and advice).

MCQs and case scenarios

► Indicator:	Knowledge percentage score. Proportion of students who obtained at least the required minimum percentage score (e.g. "85%") in the MCQs and case scenarios.
Numerator:	Number of students who obtained at least the required minimum percentage score in the MCQ and case scenario test.
Denominator:	Number of students who took the MCQ and case scenario test.
<i>Example:</i>	58% of students obtained at least 85% score in the MCQ and case scenario test.

A user-friendly electronic program has been developed by the Regional Office and is provided on the companion CD-ROM together with a guide to its use. It can be used to:

- adapt or develop anew the MCQs and case scenarios for the test;
- enter student answers after the test; and
- generate analysis reports on the above indicators automatically and assist in their interpretation.

The findings can be summarized in tables for analysis and presented in graphs. An example follows.

Example on findings of student outcome

Assessment of student knowledge

Do the students know IMCI?

A total of 8 out of 30 students (26.7%) who took the test obtained at least 85% of the total score assigned to the knowledge test (including both MCQs and case scenarios). While most students did well in the MCQ test, the major difficulty was in students' applying their IMCI knowledge, as shown in the case scenario test. "Assessment and identification of feeding problems" and "identification of treatment" created some problems; however, it was learned that these areas, although included in the curriculum, were, in fact, not addressed in the teaching programme.

Overall test (MCQs and case scenarios)

Test	Percentage score level	Students <i>n</i> = 30	%	Remarks
MCQs	Percentage score of at least 85%	24	80.0	–
Case scenarios	Percentage score of at least 85%	4	13.3	Most had difficulty with the treatment plan and case scenario 4
Total for student knowledge	Percentage score of at least 85%	8	26.7	Overall score affected by case scenarios

Breakdown of results by test (MCQs and scenarios)

Results of multiple-choice questions

Do the students know the information contained in the IMCI chart booklet?

A total of 24 out of 30 students (80%) who took the test obtained at least 85% of the maximum total score assigned to the MCQ test. Several questions were answered correctly by all students. Below are the details of the test results by category of questions.

A. IMCI guidelines

Question no.	Subject	<i>n</i> = 30	%	Remarks
A1	Five main health problems	21	70.0	Ear problem listed by many students instead of measles
A2	IMCI approach is action-oriented, uses empirical treatment, provides standardized protocol	3	10.0	Only 11 students chose "action-oriented"; only 6 chose "using empirical treatment"; but almost all (28) chose "provides a standardized protocol"
A3	IMCI guidelines used at OPD and first level health facilities	23	76.7	
A4	Age group targeted by IMCI guidelines	28	93.3	

B. Assessment and classification

Question no.	Subject	n = 30	%	Remarks
Assessment and classification				
B1	General danger signs	28	93.3	
B2	Classify (10-month-old child with “Anaemia or Very low weight”)	28	93.3	
B3	Cut-off rate for fast breathing (12-month-old child)	27	90.0	
B4	Conditions checked in every child in IMCI	28	93.3	
B5	Questions to be asked to classify children with diarrhoea (duration and blood in stools)	29	96.7	
B6	Classify (3-year-old child with cough, fast breathing and chest indrawing)	29	96.7	
B7	Signs to classify as “Very Severe Febrile Disease” – Low malaria risk area	27	90.0	
B8	Classify (1-year-old child with cough, fast breathing and history of convulsions)	30	100	
B9	Classify (7-month-old child with fever) – High malaria risk area	30	100	
B10	Classify (4-year-old child with fever and stiff neck) – Low malaria risk area	30	100	
B11	Signs to classify the dehydration status of child with diarrhoea	28	93.3	
B12	Signs to classify a child with mastoiditis	30	100	
B13	Classify (2-year-old child with fever and pus coming from the ear for 5 days)	30	100	
B14	When to assess a child using the “fever box”	29	96.7	
B15	Which children to check for malnutrition and anaemia	30	100	
B16	True/false statements on contra-indications to immunization	11	36.7	15 students considered high fever a contraindication to immunization
B17	Criteria for good attachment to the breast	26	86.7	

C, D, E. Feeding problems, treatment and follow-up

Question no.	Subject	n = 30	%	Remarks
Feeding problems				
C1	Which children to assess for feeding problems	28	93.3	
C2	True/False statements on feeding	19	63.3	Nine students considered a very thin cereal gruel as nutritious complementary food
Treatment				
D1	Three home care rules for home treatment of diarrhoea	27	90.0	
Follow-up				
E1	When to follow up children with “Acute ear infection” and “Anaemia”	25	83.3	
25 MCQs: total	Percentage score of at least 85%	24	80.0	

*Results of “Case scenarios”***Can students apply their knowledge to a case study?**

A total of 4 out of 30 students (13.3%) who took the test obtained at least 85% of the total score assigned to the scenario test. Scenario 4 was rather challenging for many students as it included several conditions and adversely affected overall performance. Many students had difficulty in answering questions on the treatment plan but, as noted earlier, it was learned that this task had not been addressed in the teaching programme. Below are the details of the test results by case scenario.

Scenario 1

Scenario no.	Subject	n = 30	%	Issues
1. Fatima	<i>25-month-old child with general danger signs, severe dehydration, living in area with cholera</i>			
	All fully correct answers (score of 100%)	13	43.3	Elements of the treatment plan (S1.4)
	Percentage score of at least 85%	22	73.3	
S1.1	General danger signs	30	100	
S1.2	Classification	30	100	
S1.3	Which treatment plan for dehydration	30	100	
S1.4	What should be included in the treatment plan?	13	43.3	

Scenario 2

Scenario no.	Subject	n = 30	%	Issues
2. Ahmed	<i>18-month-old child with pneumonia</i>			
	All fully correct answers (score of 100%)	25	83.3	Elements of the treatment plan (S2.1)
	Percentage score of at least 85%	26	86.6	
S2.0	Classification	26	86.7	
S2.1	What should be included in the treatment plan?	25	83.3	

Scenario 3

Scenario no.	Subject	n = 30	%	Issues
3. Sumaia	<i>3-year-old child with diarrhoea, some dehydration, severe persistent diarrhoea and dysentery</i>			
	All fully correct answers (score of 100%)	16	53.3	Elements of the treatment plan (S3.1)
	Percentage score of at least 85%	21	70.0	
S3.0	Classification	25	83.3	Five chose "Persistent diarrhoea" rather than "Severe persistent diarrhoea"
S3.1	What should be included in the treatment plan (including follow-up)	17	56.7	

Scenario 4

Scenario no.	Subject	n = 30	%	Issues
4. Mohammed	<i>3-year-old very low weight child with pneumonia, malaria, measles, anaemia</i>			
	All fully correct answers (score of 100%)	1	3.3	Elements of the treatment plan (S4.4). The number of conditions present in this child may have been the reason leading many students to consider it a severe case requiring urgent referral to hospital
	Percentage score of at least 85%	5	16.6	
S4.0	General danger signs	6	20.0	24 confused about history of convulsions not related to this illness
S4.1	Classification for cough	9	30.0	21 chose a severe classification for cough rather than "pneumonia"
S4.2	Classification for fever	6	20.0	20 ticked a severe classification for fever
S4.3	Classification for nutritional status and anaemia	26	86.7	
S4.4	What should be included in the treatment plan?	1	3.3	Only 13 included an oral antibiotic; 22 chose "urgent referral to hospital" for this non-severe case

Scenario 5

Scenario no.	Subject	n = 30	%	Issues
5. Rania	<i>5-month-old very low weight child with a cold, acute ear infection, severe malnutrition and anaemia (and feeding problems)</i>			
	All fully correct answers (score of 100%)	2	6.7	Elements of the treatment plan (S5.3); identification of feeding problems (S5.4)
	Percentage score of at least 85%	16	53.3	
S5.0	Classification for cough	29	96.7	
S5.1	Classification for ear problem	27	90.0	
S5.2	Classification of nutritional status and anaemia	29	96.7	
S5.3	What should be included in the treatment plan	18	60.0	11 forgot paracetamol for pain
S5.4	Feeding problems	4	13.3	16 thought that other food should be given to this 5-month-old breastfed child receiving cow's milk; seven did not select "feeding by bottle" as a problem; using cow's milk in a child who could be exclusively breastfed was considered a problem only by seven students

Individual results by student, expressed as percentage score obtained by each student in each test (MCQs and case scenarios)

Student no.	MCQs	Case scenarios	Knowledge (MCQs and scenarios)
1	85.6	70.4	77.7
2	88.0	74.8	81.2
3	92.8	72.6	82.3
4	96.8	71.9	83.8
5	93.6	69.6	81.2
6	88.8	65.9	76.9
7	94.4	77.8	85.8
8	89.6	75.6	82.3
9	86.4	94.1	90.4
10	90.4	81.5	85.8
11	88.0	85.2	86.5
12	87.2	77.8	82.3
13	84.0	52.6	67.7
14	91.2	80.7	85.8
15	88.8	76.3	82.3
16	89.6	75.6	82.3
17	76.8	54.1	65.0
18	94.4	88.1	91.2
19	85.6	82.2	83.8
20	80.8	85.9	83.5
21	87.2	84.4	85.8
22	75.2	68.1	71.5
23	92.8	65.9	78.8
24	94.4	71.9	82.7
25	96.8	31.1	62.7
26	94.4	76.3	85.0
27	94.4	73.3	83.5
28	81.6	58.5	69.6
29	83.2	54.1	68.1
30	96.8	64.4	80.0

2. Skills (case management)

The observation of students' management of sick children provides valuable information on the clinical and communications skills that students have acquired as a result of practical and clinical teaching.

One overall indicator summarizes the results of student case management skills, namely the "**case management percentage score**". It is expressed as the proportion of students participating in the case management skill test who obtained the required minimum threshold score or more. This threshold is a certain percentage of the maximum total score allotted to the test. The level of the cut-off percentage score should be agreed upon before the test based on the complexity of the cases to be selected for the students. For example, "50% of students obtained at least 85% percentage score in the student case management skill test". The rationale for using this approach is described earlier in this section under "Scoring answers and tasks – Skills (case management)".

This indicator is the result of students correctly performing a number of tasks related to the assessment, classification and identification of treatment for the child, including advice on home care. The indicator can be broken down to answer questions such as "How did the students do (score) on assessment tasks?", "How did they do (score) on classification?", etc. which are an important feedback to teaching. The following indicators help understand the process followed by the student and his/her skills:

- **Correct assessment**
[Proportion of students who perform clinical assessment tasks on the sick child correctly]
- **Correct classification**
[Proportion of students who classify the sick child correctly]
- **Correct identification of treatment**
[Proportion of students who identify the correct treatment for the sick child]
- **Correct assessment of feeding practices and identification of feeding problems**
[Proportion of students who correctly assess feeding practices and identify feeding problems in the sick child]
- **Advice on fluids and feeding**
[Proportion of students who give advice on fluids and feeding]

Each of the above indicators is a compound indicator combining information from a sub-set of several indicators (sub-indicators). A list of the main indicators, sub-indicators and their definitions with examples is given below.

An electronic program has been developed by the Regional Office and is provided on the companion CD-ROM together with a guide to its use:

- to enter student performance data of the skill test; and
- to generate analysis reports on the main indicators automatically and assist in their interpretation.

The analysis helps to identify teaching areas which may require strengthening.

The indicators can be expressed as the proportion of students who correctly performed the task considered—so, "fully correctly"—or as percentage scores—so, "mostly correctly"—similarly to the student case management percentage score. The use of the percentage score method takes into consideration the whole process followed by the student, as each task is scored. For this reason, it is used for the overall indicator on case management and, for

consistency, for the five indicators it refers to provided in the examples below. The other method, by referring to the task correctly performed in full, focuses only on the result, although it is often more easily understood by teaching staff, who are interested in knowing the proportion of students who perform clinical tasks correctly. It is obvious that there is a close relationship between the two. If a student obtains a 100% percentage score for a given indicator (e.g. overall case management), this means that the student has performed all the related tasks correctly (has managed the sick child correctly). If a student obtains an 85% percentage score on overall case management, of which 100% on assessment, 100% on classification and 70% on identification of treatment, it means that the student assessed and classified the child correctly but made some mistakes in the identification of treatment. Below is an example about how definitions would differ if either type of indicators were used for the indicator of assessment of a sick child.

Indicator: "Correct assessment"

A) Expressed as percentage score:

Proportion of students who obtained at least the required minimum percentage score (e.g. 85%) in the assessment of a sick child, i.e. in performing all the expected clinical assessment tasks for the conditions present in the child and checking for general danger signs, anaemia, nutritional status, immunization and vitamin A supplementation status and other problems.

Example: 52% of students obtained at least an 85% percentage score in the assessment of the sick child.

B) Expressed as a percentage:

Proportion of students who correctly performed all the expected clinical assessment tasks for the conditions present in the child and correctly checked for general danger signs—anaemia, nutritional status, immunization and vitamin A supplementation status and other problems.

Example: 38% of students correctly assessed a sick child.

Observation of case management

► **Indicator:** **Case management percentage score.** Proportion of students who obtain at least the required minimum percentage score (e.g. 85%) in the case management skill test, including assessment, classification, identification of treatment of sick children and advice of caregivers on home care.

Numerator: Number of students who obtained at least the required minimum percentage score in the case management skill test, including assessment, classification, identification of treatment and advice on home care.

Denominator: Number of students who managed a sick child.

Example: 62% of students obtained at least an 85% percentage score in the case management skill test.

The tasks scored, related to assessment, classification, identification of treatment and advice on home care are listed below in detail. The definitions are based on the IMCI standards.

(1) ASSESSMENT

► **Indicator:** **Correct assessment.** Proportion of students who obtain at least the required minimum percentage score (e.g. 85%) in the assessment of a sick child.

Numerator: Number of students who obtained at least the required minimum percentage score when performing the expected, observed¹ clinical assessment tasks for the conditions present in the sick child and checking for general danger signs, nutritional status, anaemia, immunization and vitamin A supplementation status and other problems, and whose findings agree with the evaluator's.

Denominator: Number of students who managed a sick child.

Example: 53% of students obtained at least an 85% percentage score in the assessment of a sick child.

¹ These include only the tasks that an evaluator can judge reliably through observation. Tasks vary according to the conditions that the child managed by a student has.

The numerator of the above indicator on assessment more specifically includes performing the following tasks:

- **correctly checking for [general danger signs](#):** asking/checking correctly about ability to drink or breastfeed, vomiting everything, convulsions, and lethargy if child not awake;
- **asking about [cough or difficult breathing](#) and:** a) not entering the "cough box" for a child with no cough or difficult breathing; or b) if the child has cough or difficult breathing, counting the respiratory rate correctly (i.e. in a calm child and for a full minute) and with conclusions on breathing (normal/fast) and chest indrawing agreeing with evaluator's;
- **asking about [diarrhoea](#) and:** a) not entering the "diarrhoea box" for a child with no diarrhoea; or b) if the child has diarrhoea, asking about duration of diarrhoea and the presence of blood in the stools, offering something to drink to the child, pinching the skin correctly, and with findings on restlessness/irritability, thirst and skin pinch agreeing with evaluator's;
- **asking/checking about [fever](#) and:** a) not entering the "fever box" for a child with no fever; or b) if the child has fever, asking about duration of fever and looking/feeling for stiff neck correctly and with findings on the presence of stiff neck agreeing with evaluator's;
- **checking for [sore throat](#):** asking if the child has sore throat, checking for lymph nodes on the front of the neck and examining the child's throat;
- **asking about [ear problem](#) and:** a) not entering the "ear problem box" for a child with no ear problem, or b) if the child has an ear problem, asking about ear pain and ear discharge (and, if present, asking about its duration), and feeling for tender swelling behind the ear;
- **correctly checking for the [nutritional status](#):** checking for visible severe wasting and oedema of both feet, with findings agreeing with evaluator's, and checking weight against a growth chart;
- **correctly checking for [palmar pallor](#)** and with findings agreeing with evaluator's;
- **checking the child's [immunization status](#)** and with conclusions on the need for immunization agreeing with the evaluator's;

- checking the child's [vitamin A supplementation status](#) and with conclusions on the need for vitamin A supplementation agreeing with the evaluator's; and
- asking about [other problems](#).

Sub-indicators on assessment can be measured also for the performance of each set of clinical tasks as described below. Attention should be paid to the fact that in this case denominators may vary, as they may refer to either all students who manage a sick child in some cases or students who manage a child with a given condition in other cases. The sub-indicators are expressed as proportion of students who performed the required tasks correctly.

Sub-indicator: [Students who correctly check for general danger signs.](#)

Numerator: Number of students who ask/check correctly about ability to drink or breastfeed, vomiting everything, convulsions, and lethargy if child not awake.

Denominator: Number of students who manage a sick child.

Example: 91% of students who managed a sick child correctly checked for the presence of all the general danger signs as applicable.

Sub-indicator: [Students who correctly assess a child with cough or difficult breathing.](#)

Numerator: Number of students who ask about duration of cough, count the respiratory rate correctly (i.e. in a calm child and for a full minute) and whose conclusion on breathing (normal/fast) and chest indrawing agree with evaluator's.

Denominator: Number of students who manage a child with cough or difficult breathing.

Example: 68% of students who managed a child with cough or difficult breathing correctly performed all the observed clinical assessment tasks for cough or difficult breathing.

Sub-indicator: [Students who correctly assess a child with diarrhoea.](#)

Numerator: Number of students who ask about duration of diarrhoea and the presence of blood in the stools, offer something to drink to the child, pinch the skin correctly, and whose findings on restlessness/irritability, thirst and skin pinch agree with evaluator's.

Denominator: Number of students who manage a child with diarrhoea.

Example: 72% of students who managed a child with diarrhoea correctly performed all observed clinical assessment tasks for diarrhoea.

Sub-indicator: [Students who correctly assess a child with fever.](#)

Numerator: Number of students who ask/check about fever, ask about its duration, (request a blood film or perform a rapid diagnostic test for malaria, if relevant), correctly look or feel for stiff neck and whose findings on stiff neck agree with evaluator's.

Denominator: Number of students who manage a child with fever.

Example: 59% of students who managed a child with fever correctly performed all observed clinical assessment tasks for fever.

Sub-indicator: [Students who correctly check for sore throat.](#)

Numerator: Number of students who ask if the child has sore throat, check for lymph nodes on the front of the neck and examine the child's throat.

Denominator: Number of students who manage a sick child.

Example: 43% of students who managed a sick child correctly checked for sore throat.

- Sub-indicator: [Students who correctly assess a child with an ear problem.](#)
- Numerator:** Number of students who ask about ear pain and ear discharge (and, if present, ask about its duration), and feel for tender swelling behind the ear.
- Denominator:** Number of students who manage a child with an ear problem.
- Example:* 43% of students who managed a child with an ear problem correctly performed all observed clinical assessment tasks for ear problem.
- Sub-indicator: [Students who correctly check for nutritional status.](#)
- Numerator:** Number of students who correctly check for visible severe wasting and oedema of both feet, whose findings agree with evaluator's, and check weight against a growth chart.
- Denominator:** Number of students who manage a sick child.
- Example:* 43% of students who managed a sick child correctly checked the child's nutritional status.
- Sub-indicator: [Students who correctly check for anaemia.](#)
- Numerator:** Number of students who correctly check for palmar pallor and whose findings agree with evaluator's.
- Denominator:** Number of students who manage a sick child.
- Example:* 54% of students who managed a sick child correctly checked for anaemia.
- Sub-indicator: [Students who correctly check the child's immunization status.](#)
- Numerator:** Number of students who check the child's immunization status and whose conclusions on the need for immunization agree with the evaluator's.
- Denominator:** Number of students who manage a sick child.
- Example:* 89% of students who managed a sick child correctly checked the child's immunization status.
- Sub-indicator: [Students who correctly check the child's vitamin A supplementation status.](#)
- Numerator:** Number of students who check the child's vitamin A supplementation status and whose conclusions on the need for vitamin A supplementation agree with the evaluator's.
- Denominator:** Number of students who manage a sick child of the target age group.
- Example:* 86% of students who managed a sick child checked the child's vitamin A supplementation status.
- Sub-indicator: [Students who ask about other problems.](#)
- Numerator:** Number of students who ask about other problems.
- Denominator:** Number of students who manage a sick child.
- Example:* 41% of students who managed a sick child asked about other problems.
-

(2) CLASSIFICATION

► Indicator:	Correct classification. Proportion of students who obtain at least the required minimum percentage score (e.g. 85%) in the classification of a sick child.
Numerator:	Number of students who obtained at least the required minimum percentage score when classifying a sick child.
Denominator:	Number of students who managed a sick child.
<i>Example:</i>	53% of students obtained at least an 85% percentage score in the assessment of a sick child.

The numerator of the above indicator on classification more specifically includes correctly classifying children:

- for the presence or absence of [general danger signs](#);
- with [cough or difficult breathing](#);
- with [diarrhoea](#);
- with [fever](#);
- for [sore throat](#);
- with [ear problem](#);
- for their [nutritional status](#);
- for [anaemia](#).

Sub-indicators on classification can be measured also for each individual condition as described below. Attention should be paid to the fact that in this case denominators may vary, as they may refer to either all students who manage a sick child in some cases or students who manage a child with a given condition in other cases.

Sub-indicator: [Students who correctly classify children for the presence or absence of general danger signs.](#)

Numerator: Number of students whose classification on the presence or absence of general danger signs agrees with evaluator's.

Denominator: Number of students who manage a sick child.

Example: 91% of students who managed a sick child classified the child's conditions in relation to the presence or absence of general danger signs correctly.

Sub-indicator: [Students who correctly classify children with cough or difficult breathing.](#)

Numerator: Number of students whose classification of children with cough or difficult breathing agrees with evaluator's.

Denominator: Number of students who manage a child with cough or difficult breathing.

Example: 78% of students who managed a child with cough or difficult breathing classified the child correctly for this condition.

- Sub-indicator: [Students who correctly classify children with diarrhoea.](#)
- Numerator:** Number of students whose classification of children with diarrhoea agrees with evaluator's.
- Denominator:** Number of students who manage a child with diarrhoea.
- Example:* 78% of students who managed a child with diarrhoea classified the child correctly for this condition.
- Sub-indicator: [Students who correctly classify children with fever.](#)
- Numerator:** Number of students whose classification of children with fever agrees with evaluator's.
- Denominator:** Number of students who manage a child with fever.
- Example:* 82% of students who managed a child with fever classified the child correctly for this condition.
- Sub-indicator: [Students who correctly classify children's throat condition.](#)
- Numerator:** Number of students whose classification of children's throat condition agrees with evaluator's.
- Denominator:** Number of students who manage a sick child.
- Example:* 68% of students who managed a sick child classified the child's throat condition correctly.
- Sub-indicator: [Students who correctly classify children with an ear problem.](#)
- Numerator:** Number of students whose classification of children with an ear problem agrees with evaluator's.
- Denominator:** Number of students who manage a child with an ear problem.
- Example:* 82% of students who managed a child with an ear problem classified the child correctly for this condition.
- Sub-indicator: [Students who correctly classify children's nutritional status.](#)
- Numerator:** Number of students whose classification of children's nutritional status agrees with evaluator's.
- Denominator:** Number of students who manage a sick child.
- Example:* 73% of students who managed a sick child classified the child's nutritional status correctly.
- Sub-indicator: [Students who correctly classify children's anaemia.](#)
- Numerator:** Number of students whose classification of children's anaemia agrees with evaluator's.
- Denominator:** Number of students who manage a sick child.
- Example:* 84% of students who managed a sick child classified the child for anaemia correctly.
-

(3) FEEDING PROBLEMS

► **Indicator:** **Correct assessment of feeding practices and identification of feeding problems.** Proportion of students who obtain at least the required minimum percentage score (e.g. 85%) in the assessment of feeding practices and identification of feeding problems of a sick child.

Numerator: Number of students who obtained at least the required minimum percentage score when assessing feeding practices and identifying feeding problems in a sick child.

Denominator: Number of students who managed a child less than 2 years old without a severe classification.

Example: 39% of students who managed a sick child less than 2 years old without a severe classification obtained at least an 85% percentage score in the assessment of feeding practices and identification of feeding problems.

The numerator of the above indicator on feeding more specifically includes:

- asking whether the child is breastfed, and
 - a) if the child is breastfed, asking how many times the child is breastfed, whether s/he is breastfed at night and whether s/he takes any other food/fluids than breastmilk; OR
 - b) if the child is not breastfed or is breastfed but not exclusively, asking what food and fluids are usually given, how many times a day and what is used to feed the child; and
- in all cases, asking whether feeding changed during illness and with identification of feeding problems agreeing with evaluator's.

(4) IDENTIFICATION OF TREATMENT

► **Indicator:** **Correct identification of treatment for the sick child.** Proportion of students who obtain at least the required minimum percentage score (e.g. 85%) in the identification of the required treatment for the sick child, including advice on home care and follow-up.

Numerator: Number of students who obtained at least the required minimum percentage score when identifying the treatment for a sick child, including advice on home care and follow-up.

Denominator: Number of students who managed a sick child.

Example: 74% of students obtained at least an 85% percentage score in the identification of the correct treatment for the sick child.

The numerator of the above indicator on identification of treatment more specifically includes identifying whether a child needs:

- [pre-referral treatment](#) (prevention of low blood sugar, pre-referral drug);
- [referral](#);
- [antibiotics](#) (for pneumonia, dysentery, streptococcal sore throat, acute ear infection);
- [bronchodilator](#);
- [rehydration plan and zinc](#);
- [feeding advice and multivitamins/minerals for persistent diarrhoea](#);
- [paracetamol](#);
- [iron](#);
- [ear wicking and topical quinolone eardrops](#);
- [advice on home care and definite or conditional follow-up](#).

(5) ADVICE ON HOME CARE (fluids and feeding)

► **Indicator:** **Advice on fluids and feeding.** Proportion of students who obtain at least the required minimum percentage score (e.g. 85%) in the advice of child caregiver on home care (fluids and feeding).

Numerator: Number of students who obtained at least the required minimum percentage score when advising child caregiver on increased fluids and continued feeding.

Denominator: Number of students who managed non-severe children.

Example: 88% of students who managed a sick child with a non-severe condition obtained at least an 85% percentage score in the advice on increased fluids and continued feeding.

Example on findings on student outcome

Observation of case management

Sample characteristics of clinical exposures

All clinical exposures but two had two or more conditions and at least one of those conditions was either moderate or severe, providing a good opportunity for assessing students.

Sample characteristics: characteristics of 27 clinical exposures age 2 to 59 months old (based on observer's classification)

Sick child characteristics	<i>n</i> = 27	%
Age		
Less than 12 months old	15	56
≥ 12 months old	12	44
Conditions		
General danger signs	0	0
Acute respiratory infections:	21	78
<i>Severe pneumonia or very severe disease</i>	2	7
<i>Pneumonia</i>	4	15
<i>No pneumonia: cough or cold</i>	15	55
Diarrhoeal diseases	14	52
<i>With (some) dehydration</i>	2	7
<i>With no dehydration</i>	12	44
<i>With persistent diarrhoea</i>	0	0
<i>With dysentery</i>	0	0
Fever	24	89
<i>Malaria</i>	12	44
<i>Fever – Malaria unlikely</i>	12	44
Ear problem	2	7
<i>Acute ear infection</i>	2	7
Malnutrition/anaemia	12	44
<i>Severe malnutrition or severe anaemia</i>	1	4
<i>Anaemia or very low weight</i>	11	41
Severity		
Severe (red/pink row of IMCI chart)	3	11
Moderate (yellow row of IMCI chart)	18	67
Mild (green row of IMCI chart)	6	22
No. of conditions in the same child		
1 condition	2	7
2 conditions	11	41
3 conditions	9	33
4 conditions	4	15
5 conditions	1	4

Assessment of student skills

Are students able to manage a sick child?

Seven (26%) of the 27 students obtained at least an overall score of 85% in the case management skill test, based on the IMCI standard protocol as a gold standard. Weak areas affecting performance were "assessment and identification of feeding problems" and "identification of treatment"; however, it was learned that these areas, although included in the curriculum, were in fact not addressed in the teaching programme.

Results on observation of case management

Case management step	No. of students (%) who performed the step correctly ¹
Assessment	10/27 (37.0%)
Classification	9/27 (33.3%)
Identification of treatment	13/27 (48.1%)
Assessment and identification of feeding problems for non-severe cases	12/24 (50.0%)
Advice on fluids and feeding for non-severe cases	18/24 (75.0%)
Overall case management	7/27 (26.0%)

¹ Obtained at least an 85% percentage score.

Does the test suggest any areas which would require more emphasis in teaching based on the findings?

Among the assessment and classification steps, tasks that may require more emphasis in teaching were those under the assessment and classification of cases with diarrhoea and of nutritional status.

Clinical skills: details

Task	No. of students (%) who performed the task correctly
GENERAL DANGER SIGNS	
Checked for four general danger signs as applicable (ability to drink or breastfeed, vomiting everything, convulsions, and lethargy if child not awake)	21/27 (77.8%)
Correct classification of cases for the presence or absence of general danger signs	27/27 (100%)
COUGH OR DIFFICULT BREATHING (n = 21)	
Clinical tasks performed correctly (Asked about duration of cough, counted the respiratory rate correctly and findings on fast breathing and chest indrawing agreed with evaluator's)	19/21 (90.5%)
Entered cough box by mistake ¹	1/6 (16.7%)
Correct classification of cases with cough or difficult breathing	19/21 (90.5%)
DIARRHOEA (n = 14)	
Clinical tasks performed correctly (Asked about duration of diarrhoea and the presence of blood in the stools, offered something to drink, pinched the skin correctly, and findings on restlessness/irritability, thirst and skin pinch agreed with evaluator's)	10/14 (71.4%)
Entered diarrhoea box by mistake ¹	2/13 (15.4%)
Correct classification of diarrhoea cases (tendency to over-classify)	9/14 (64.3%)
FEVER (n = 24)	
Clinical tasks performed correctly (Asked/checked about fever and correctly looked/felt for stiff neck and findings on stiff neck agreed with evaluator's)	23/24 (95.8%)
Entered fever box by mistake ¹	0/3 (0%)
Correct classification of cases with fever	23/24 (95.8%)
EAR PROBLEM (n = 5)	
Clinical tasks performed correctly (asked about ear pain and ear discharge—and, if present, asked about its duration—and felt for tender swelling behind the ear)	4/5 (80.0%)
Entered ear problem box by mistake ¹	1/22 (4.5%)
Correct classification of cases with ear problem	4/5 (80.0%)
MALNUTRITION AND ANAEMIA	
Checked for malnutrition and anaemia (checked for visible severe wasting, oedema of both feet and palmar pallor, with findings which agreed with evaluator's, and checked weight against a growth chart)	16/27 (59.3%)
Correct classification of nutritional status, including anaemia	22/27 (81.5%)
CHECKED IMMUNIZATIONS STATUS (with conclusions agreeing with evaluator's)	27/27 (100%)
CHECKED VITAMIN A STATUS (with conclusions agreeing with evaluator's) ²	23/27 (85.2%)
OTHER PROBLEMS (Asked about other problems)	22/27 (81.5%)

¹ For children not showing the symptom/sign.

² Not applicable in four cases because of child's age.

Medical and allied health professional schools play a key role in preparing the future cadres of health providers who will be providing child health care services in a country, whether in the public or private sector. Medical schools in the WHO Eastern Mediterranean Region have been taking steps in recent years to introduce the Integrated Management of Child Health (IMCI) approach into their undergraduate teaching programmes, in collaboration with the Regional Office for the Eastern Mediterranean. This IMCI pre-service education package proposes a standard approach to each phase, to assist teaching institutions in introducing, implementing and assessing undergraduate teaching programmes including IMCI.

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Annex 1: Evaluation tools

Process

National level

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Explanatory notes on the forms and their use are provided in the following pages with each related form.

Form 1

Interview with the national IMCI committee or working group

Explanatory notes

This form is used for interviews with the national IMCI team and national IMCI pre-service education team or focal point, if these have been established. Interviews should be carried out also with the previous national IMCI coordinator and/or pre-service education focal point if new ones have been appointed since the introduction of IMCI into pre-service education.

Tables 1 to 5 can be sent in advance so that relevant information is collected and available for review before the interviews take place.

The evaluation team should formulate a major conclusion following the interviews using this form, namely:

- commitment and overall supportive environment to IMCI pre-service education at national level (advocacy, partners, official endorsement);
- mechanisms followed for coordination of IMCI pre-service education related activities: whether they are on an ad hoc basis, how institutionalized and effective they are;
- IMCI pre-service education plans and implementation; and
- issues related to the sustainability of IMCI pre-service education, how these have been or are being dealt with and other proposed realistic solutions.

Finally, the evaluation should offer some conclusions and a few practical recommendations to address the main issues identified.

Form 1

Interview with the national IMCI committee or working group (at least the IMCI coordinator and focal point)

Date: _____ / _____ / _____ Interviewer: _____

Interviewee (name, position): _____

Why has the ministry of health been interested in IMCI pre-service education?

I. SUPPORTIVE ENVIRONMENT FOR IMCI PRE-SERVICE EDUCATION

This section of the questionnaire aims to establish whether a supportive environment for IMCI pre-service education has been created. Ask the following questions and record the answers.

A. AWARENESS-RAISING AND ADVOCACY ACTIVITIES

Were any activities carried out to raise awareness and sensitize teaching institutions and other targeted partners to the IMCI strategy and pre-service education?

Yes [] No [] → If **NO**: *Why?* _____

(If no activities were conducted, now go to section B)

→ If **YES**: **What were these activities?**

(e.g. orientation meetings, conferences, scientific groups, dissemination of newsletters and publications, etc.)

B. PARTNERS

B.1 Do you have any partners in the IMCI pre-service education initiative?

(Partners refer to any institution, organization, influential persons, decision-makers and other active people. Find out whether any partners have been identified and become involved in the IMCI pre-service education initiative)

Yes [] No [] → If **NO**: *Why?* _____

(If no partners have been involved to date, now go to question B.3)

→ If **YES**: *if partners were identified and involved in the IMCI pre-service education initiative, list in Table 1 all the partners and provide the criteria for their selection or reasons for involvement and the stage in which they were involved in the introduction and implementation of the national IMCI strategy in the country and whether they are still involved and if so, in which way. Please note that this refers to the IMCI strategy in general, not specifically to the IMCI pre-service initiative.*

This information should be validated and complemented as appropriate with the partners identified by the national IMCI team.

In addition to the partners already involved, which other partners could potentially be involved at this stage, if any, and why?

Table 1. Involvement of IMCI pre-service education partners in the national IMCI strategy

Partner	Reason for selection / involvement	Stage of involvement in the IMCI strategy*	Still involved in IMCI strategy?	In which way? **	Outcome of their involvement***

* The stages of involvement are meant to refer to the following: (1) Orientation; (2) Planning; (3) Adaptation; (4) Implementation; (5) Evaluation; (6) Pre-service education. Refer to this list to fill in this column (write down the corresponding reference numbers).

** Possible ways of involvement: Partners may have played: A. an active role—e.g. involved in the planning or conduct of the event, or provided funding for the event; or B. a passive role—e.g. simply invited: (1) Resource persons to the national IMCI task force; (2) members of national IMCI task force; or involved in: (3) Training; (4) Follow up after training activities; (5) Routine supervision; (6) Research work; (7) Developmental work (development of tools and documents); (8) Evaluations such as reviews and surveys; (9) Teaching IMCI (pre-service education) (10) Active participation in organization and conduct of public child health events; (11) Attendance at national public child health events. Refer to this list to fill in this column (write down the corresponding numbers).

*** Outcome here refers to what their involvement in the different events lead to, e.g. consensus on technical guidelines and strategies, joint statement or declarations, strengthened partnerships, agreement on future activities and allocation of funds, etc.

B.2 Did any of the above identified partners (listed in table 1), participate actively in public key child health events?

Yes [] No []

→ If **YES**: *Which events?*

B.3 Were any of the senior MOH staff of the national IMCI team and/or partners other than IMCI pre-service education involved in events related to medical education, academic sector or professional associations concerning child health?

(Events may include paediatric conferences or fora, medical society meetings, etc.)

Yes [] No [] → If **NO**: *Why?*_____

(If no senior IMCI staff or partner has been involved to date, now go to section C)

→ If **YES**: *for each of them specify in Table 2 the academic event/s in which they were involved, what role they played in the event and what the outcome of their involvement was. They may have played an active role—e.g. involved in planning or made technical presentations, participated in round tables, inaugurated the event, provided funding for the event, etc.—or a passive one—e.g. simply invited. “Outcome” here refers to what their involvement in this event lead to—e.g., consensus on technical guidelines and strategies, joint statements, strengthened partnerships, agreement on future collaboration, etc.)*

This information should be validated and complemented, as appropriate, with the partners identified by the national IMCI team.

Table 2. IMCI team/ partners' participation in academic events

Senior IMCI staff/ partners	Event	What kind of participation	Outcome of involvement

C. ENDORSEMENT OF THE IMCI PRE-SERVICE EDUCATION INITIATIVE AT NATIONAL LEVEL

C.1 Was the IMCI pre-service education initiative officially endorsed at the national level?

(“Official endorsement” here refers to an official document, such as a directive, circular, written statement, national plan formally approved, which specifically mentions and supports the IMCI pre-service education initiative as an approach to child health in the country).

Yes []

No [] → If **NO: Why?** *If the initiative was not formally endorsed, check whether the endorsement was proposed but not approved, or whether no action was initiated for this purpose)*

(If the initiative was not formally endorsed, now go to section D)

→ If **YES:** *fill in the relevant information in Table 3 indicating type of endorsement, by whom and when it was made, also in relation to the three phases of IMCI—i.e. introduction, early implementation and expansion).*

Table 3. Endorsement of IMCI pre-service education

Type of endorsement*	Who made the endorsement? (Position and title)	Date of endorsement (and relation to IMCI strategy phases)

* If more than one endorsement (e.g. endorsements made at different levels), please, list them all.

D IMCI PRE-SERVICE EDUCATION MANAGEMENT STRUCTURE

D.1 Was a management structure and/or a focal point for IMCI pre-service education established at national level?

(Describe whether a “management” structure exists to coordinate activities related to IMCI pre-service education. “Management structure” here refers to a team or committee or task force or working group or focal point at national level tasked with the responsibility of coordinating, planning and carrying out activities related to “IMCI pre-service education”. Such a structure may be part of the national IMCI working group or separate task force for pre-service education or the designation of a focal point specifically for IMCI pre-service education activities.)

Yes [] No [] → **If NO: Why?** _____

(If no management structure or focal point was designated, now go to section E)

→ **If YES:** *provide the following details about the management structure or focal point for IMCI pre-service education:*

D.1.1 How was it established/appointed?

(Examples: through an MOH directive, circular, minutes of a meeting, etc.)

D.1.2 Who were the members and why were they selected? Who are the members now?

(Fill in the information in Table 4. If there is only a focal point, just specify his/her position. Describe for each member his/her position and the criteria or reasons for their selection)

D.1.3 What are the terms of reference of this structure/focal point? Have they changed since its establishment (if so, specify)?

D.1.4 Which main IMCI pre-service education activities have the members of the management structure/focal point been involved in?

(→ Complement this information as appropriate with the IMCI pre-service education management structure or focal point)

Table 4. IMCI management structure/focal point

Members (position)	Criteria for selection	Still a member?	New member?

E. COORDINATION MECHANISMS FOR IMCI PRE-SERVICE EDUCATION

E.1 Is there any mechanism for coordinating IMCI pre-service education-related activities between the MOH, teaching institutions and key partners?

Coordination mechanisms may refer to meetings, briefings, exchanging reports, etc.

Yes []

No [] → If **NO**: *Why?* _____

→ If **YES**: *describe in detail how the above institutions coordinate their activities related to IMCI pre-service education in the country.*

(→ *Complement this information as appropriate with the IMCI pre-service education management structure or focal point*)

II. IMCI PRE-SERVICE EDUCATION PLAN AND IMPLEMENTATION IN THE COUNTRY

1. Was a national plan developed for IMCI pre-service education?

Yes No → If **NO**: *Why?* _____

(If no plan was developed, now go to section III)

→ If **YES**: *check for the availability of the plan. Is the plan available?*

Yes No

If the plan is available, tick which of the following relevant items are included in the plan:

- Targets and indicators
- Identification of targeted teaching institutes
- Activities
- Responsibilities
- Time-frame
- Human resources
- Financial resources
- Monitoring of the plan
- Evaluation

(→ Complement this information as appropriate with the IMCI pre-service education management structure or focal point)

2. Which process was followed for the implementation of IMCI pre-service education? How did it help implementation?

3. How many teaching institutions of the same type are there in the country, by type?

Medical schools: No. _____

Allied health sciences institutes:

(specify type): _____ No. _____

(specify type): _____ No. _____

4. Which institutes are teaching IMCI in the country?

Fill in Table 5 listing names of institutes specifying whether it is a medical school or allied health sciences institute and which departments are involved in the IMCI pre-service education.

Table 5. Teaching institutes involved in IMCI pre-service education

Name of Institute	Type	Departments involved in IMCI pre-service education	Is there an IMCI pre-service focal point? (if so, please specify)

5. What are the major constraints faced in IMCI pre-service education, especially planning and implementation, and how have they been or are currently being addressed?

III. CONCLUSIONS ABOUT IMCI PRE-SERVICE EDUCATION AND ITS SUSTAINABILITY

Conclusions on the: a) commitment and overall supportive environment to IMCI pre-service education at national level (advocacy, partners, official endorsement), b) national IMCI pre-service education coordination structure and mechanisms, c) national plan and implementation and d) sustainability.

a) Make your conclusions on commitment and supportive environment based on the information provided on the IMCI pre-service education initiative concerning:

- Official endorsement
- Identification of a focal point or management structure for IMCI pre-service education
- Partnerships
- Preparation of a plan of action
- Allocation of resources
- Advocacy
- Others - specify: _____

b) *Conclusions on mechanisms followed for coordination of IMCI pre-service education-related activities: whether they are on an ad hoc basis, how institutionalized and effective they are:*

c) *Conclusions on IMCI pre-service education plans and implementation:*

d) *Conclusions on issues related to the sustainability of IMCI pre-service education, how these have been or are being dealt with and other proposed realistic solutions:*

Form 2

Interview with partners, including teaching institutions

Explanatory notes

This form is used for interviews with partners, including also teaching institutions which have introduced IMCI into their teaching programmes but which will not be evaluated at this time. Note that question # 5 is only for teaching institutions.

Interviews with partners should preferably be conducted after the interview with the national IMCI team, to have a good idea about the general context and be able to validate selected information provided during the previous interview.

Before proceeding with the interviews, it is important to review all relevant background information which has been collected before the evaluation, as this will be very helpful in guiding the interview.

The person interviewed should represent the partner/institution when answering the questions and providing information and therefore be very familiar with, and involved in, IMCI-related activities. This is why the partners/institutions must be contacted formally and well in advance about the interview and its objectives. “You” in the form therefore usually refers to the partner / teaching institution, except for a few questions which refer to the interviewee (e.g. #1, #2, #3, #5.1) or to both (e.g. #4, #7).

A separate form should be used for each partner/institution.

The evaluation team should make some conclusions on partnerships and recommendations as appropriate.

Form 2

Interview with partners, including teaching institutions

Date: _____ / _____ / _____ Interviewer: _____

Partner/teaching institution: _____

Interviewee (name, position): _____

1. How long have you been working with your organization/institution?

2. When did you hear about IMCI the first time?

3. How did you hear about IMCI the first time?

4. Did you participate in any IMCI-related events/activities?

Yes [] No []

→ If YES: *Which events/activities?*

5. N.B.: For teaching institutions only:

5.1 If you participated in any IMCI-related events, how useful was that experience in relation to the introduction of IMCI into the teaching programme of your institution?

5.2 How was IMCI introduced in your institution?

5.3 Why was a decision made to introduce IMCI in your institution?

6. Has your organization/institution contributed in any way to national child health efforts?

Yes [] No []

→ If YES: *How? What was the outcome of such contribution?*

7. Have you received or been informed of any technical update on IMCI?

Yes [] No []

→ If YES: *What kind of update? In which form (newsletter, web site, meeting, etc.)? How has it been disseminated to the end-users?*

8. How is the coordination between your organization/institution and the MOH on IMCI-related matters?

9. How do you think such coordination could be improved?

10. Which activities or initiatives do you think could support your organization / institution further in its IMCI efforts, especially pre-service education (e.g., conferences, etc.)?

Form 3

General information about the department (Interview with the head of department)

Explanatory notes

Form 3 is used by the national team to collect general information about the concerned department of the teaching institution to be visited, at least a month before the visit takes place.

During the visit to the institution, this information can be briefly reviewed with the head or senior representative of the department concerned.

The interview with the head of the department is a good opportunity to obtain his/her views about the IMCI experience in his/her department, the process followed, facilitating factors, constraints, main issues identified and how they have been addressed and future sustainability. These issues are also discussed during the focused group discussions with teachers, in which it would be highly recommended that the head of the department participate. Finally, at the end of this interview, his/her attendance to the feedback meeting should be confirmed.

The evaluation team should make some conclusions based on this interview, recommending practical actions to address the main issues identified.

Form 3

General information about the department

(Interview with the head of department)

1. Name of the teaching institution: _____

2. Department: _____

3. Degrees given by the department:

Undergraduate Diploma Master MD

4. Number of teaching units: _____

5. Number of teaching staff: total number: _____

Permanent (full-time) staff: _____ Part-time staff: _____

6. Average number of teaching staff per unit: _____ / unit

(range of teaching staff per unit: min.: _____ max.: _____)

7. Duration of student rotation in the concerned department: _____ weeks

8. Number of students per rotation: _____ / rotation

9. Number of students per unit: _____ / unit

10. Number of teaching hours: _____

11. Ratio of students to staff actively involved in teaching within the department: _____

12. Is there any established body to review the teaching curriculum?

Yes No

→ If YES: *Which body?* _____

Summarize below main conclusions, also on main facilitating factors, constraints and how issues have been addressed, including sustainability.

Forms 4, 5 and 6

Introductory, planning and implementation phases (Interview with IMCI pre-service education focal point)

Explanatory notes

Forms 4, 5 and 6 are used at the institution to collect information on the process followed to introduce IMCI. They are used to guide collection of information and for interviews with the IMCI pre-service education working group and/or focal point at the department in the teaching institution. The national IMCI pre-service education focal point can be another source of information.

The main objective of this part of the process evaluation is to comment on the type of endorsement of IMCI pre-service education at the teaching institution and the way this has been translated into action.

The information collected from the institution during the preparation for the evaluation, including reports, should be reviewed by the evaluation team before the visit to the institution.

In Form 5, targets and indicators should be checked as main elements of the plan.

Indicators refer to process and outcome data that can be used to measure the extent to which the programme is achieving its objectives and thus to help track progress and evaluate outcomes. *Targets* refer to the quantitative objectives which have been set for the indicators. They should be specific, measurable, attainable, relevant and time-bound (SMART).

The evaluation team should make some conclusions on the overall process of introduction of IMCI into teaching, planning and implementation followed in the department, recommending practical actions to address the main issues identified.

Form 4

Introductory phase

I. Orientation workshop

Was any IMCI orientation workshop conducted?

Yes No → **If NO:** go directly to section "II. Official endorsement"

1. When was/were these workshops conducted?

1st workshop: _____ 2nd workshop: _____

3rd workshop: _____

2. Who organized the workshop? (tick all that apply)

WHO MOH Department

Other: (specify) _____

3. Who conducted the workshop? (tick all that apply)

WHO MOH Department Other teaching institutions

Other: (specify) _____

4. What method was used in the orientation workshop? (tick all that apply)

Theoretical orientation Practical orientation

5. How many participants attended the workshop? _____**6. What was the level of the staff oriented in the workshop?** (tick all that apply)

Dean (or representative) Head of department

Professors: No. _____ Assistant professors: No. _____

Junior teaching staff: No. _____ Other (specify: _____)

7. Were all teaching units represented at the workshop?

Yes No → **If NO: Why?** _____

How many units were represented? _____

8. What was the outcome of the workshop? (tick all that apply)

Endorsement Working group formulated

Focal point nominated Plan of action developed

Other, specify _____

No outcome → ***If no outcome: Why?*** _____

9. Was the workshop documented?

Yes No → ***If NO: Why?*** _____

→ If **YES**: (*review the document on the workshop if available*):

- ***How was it documented?***

Report Minutes Video filming

Other: _____

- ***By whom?*** _____

II. Official endorsement

Was the introduction of IMCI into teaching officially endorsed?

Yes No → *If NO: Why?* _____

→ *Now go to section III "Formulation of management structure".*

→ *If YES:*

1. At which level? (tick all that apply)

Council of higher education University level (chancellor)

Faculty level (dean) Department

Other (specify: _____)

2. When was the endorsement made? _____ / _____ / _____

3. Which form of endorsement was it?

Circular Incorporated in the related teaching curriculum

Verbal Minutes of meetings (specify: _____)

Other (specify): _____

Obtain a copy of the written endorsement if available.

4. Was it shared with the national IMCI coordinator and/or other partners?

Yes No

→ *If YES: specify with which partners and how.* _____

III. Formulation of a management structure

“Management structure” here refers to a group of teaching staff at the institution responsible to coordinate planning and monitoring of the introduction and implementation of IMCI into the teaching programme within the department, with other relevant departments in the same institution, with the national IMCI team and/or IMCI pre-service education task force and with partners).

Was a working group/task force for the IMCI pre-service education formulated?

Yes No → If **NO: Who is the coordinator of IMCI pre-service education at the institution** (name, position and terms of reference)?

Name: _____

Position: _____

Terms of reference: _____

→ Now go to section IV “Planning Workshop”.

→ If **YES:**

1. How was it established?

Circular Minutes of meeting Verbal

Obtain any written document if available

2. At which level was it established?

National Institutional Department

3. Is more than one department involved in IMCI teaching?

Yes No → go to item 5

4. If more than one department is involved in IMCI teaching: Is there an IMCI separate management structure?

Yes No → If **NO: Was there a task distribution and complementarity ensured to cover all IMCI task force?**

Yes No

5. Who are the members of the current working group/task force?

Fill in Table 1 indicating the name, position and responsibility of the members within the task force and criteria for selection.

Table 1. IMCI management structure at the institutional level

Name	Position	Criteria for selection	Responsibility within the IMCI task force

6. Has the composition of the working group changed since it was established?

Yes No

→ If **YES**: *Why and how?*

7. Was a focal point nominated?

Yes No

→ If **YES**: *Who was the focal point (name and position)?*

Name: _____

Position: _____

8. Were the terms of reference of the working group clearly stated in a document?

Yes No

→ If **YES**: *obtain the document with the terms of reference and specify which type of document it was:*

Official circular Minutes of meeting

9. Has the working group ever met?

Yes No → If **NO**: *go to Form 5 "Planning phase"*

9.1 How often does it meet?

Regularly (how frequently: _____) Ad hoc

9.2. When was the last meeting? _____

9.3 Were the meetings of the working group documented?

Yes No

→ If **YES**: *How were they documented?*

Reports Minutes

(Obtain copies of reports or minutes)

9.4 What were the main outcomes of those meetings? _____

Conclusions on the process of introducing IMCI into the department teaching programme (orientation, endorsement, management and coordination)

Form 5

Planning phase

I. Planning workshop

1. Was an IMCI planning workshop conducted?

Yes No → If **NO**: go to II. Plan of action

1.1 Who organized the workshop?

WHO MOH The department

The department jointly with other departments : specify _____

1.2 When was this workshop conducted? _____/_____/_____

1.3 Who attended the workshop? Tick the relevant category indicating the number:

Dean Head of department Chairman of curriculum committee

Professors National IMCI coordinator in MOH

Other relevant senior staff of MOH WHO

Other key partners, specify Other universities

Others, specify: _____

II. Plan of action

1. Was a plan of action developed?

Yes (obtain a copy of the plan) No → If **NO**: mention how teaching of IMCI is conducted and then go directly to Form 6: _____

→ If **YES**: *Was this plan endorsed by the department?*

Yes [] No [] → *Go directly to 2 (checklist on components of plan of action)*

→ If **YES**: *When was the plan endorsed?* _____ / _____ / _____

Is this endorsement documented? Yes [] No []

→ If **YES**: *How is it documented?* (Obtain a copy of the available document)

[] Official circular [] Minutes of meeting

[] Verbal statements

2. Check the components of the plan of action of the teaching institution against the following 16 points and tick whether each component is included or absent from the plan:

2.1 Indicators and targets for introducing IMCI in the teaching curriculum

Stated [] Not stated []

→ If **stated**: *list targets and indicators:*

Indicator	Target

Specify if overall the indicators are (tick all that apply):

[] Specific [] Measurable [] Attainable [] Relevant [] Time bound

2.2 IMCI learning objectives for the department

Identified [] Not identified []

2.3 Placement of IMCI teaching

Stated [] Not stated []

→ **If *stated***: specify where IMCI teaching was placed: _____

2.4 Capacity-building of teaching staff in IMCI case management skills

Included [] Not included []

→ **If *included***: Does it reflect the need within the time frame given?

Yes [] No []

2.5 Capacity-building of teaching staff in IMCI facilitation skills

Included [] Not included []

→ **If *included***: Does it reflect the actual needs within the time frame given?

Yes [] No []

2.6 Training and reference materials development

Included [] Not included []

→ **If *included***: specify which materials: _____

2.7 Teaching methodology

Defined [] Not defined []

→ **If *defined***: describe: _____

2.8 IMCI teaching schedule

Included [] Not included []

2.9 Preparation of training sites

Included [] Not included []

→ **If included: How was the preparation of the training sites described?**

Broadly [] Specifically []

2.10 Students' assessment

Included [] Not included []

2.11 Schedule of IMCI pre-service task force meetings at the institution

Included [] Not included []

2.12 Preparation of progress reports

Included [] Not included []

2.13 Monitoring and re-planning

Included [] Not included []

→ **If included:**

2.13.1 Were different areas of monitoring identified?

Yes [] No []

→ **If YES: Which areas?** _____

2.13.2 Was a specific monitoring plan developed?

Yes [] (*Provide a copy of the plan*) No []

2.13.3 Who is responsible for monitoring? _____

2.13.4 Was a monitoring tool developed for each level (if relevant)?

Yes [] No []

2.14 Costing of the plan and source of funds

Included [] Not included []

→ If *included*:**2.14.1 Was a source of funds identified and an amount specified for each item of the plan?**

Yes [] No []

2.14.2 How much was the budget and what were the sources of funds?

2.15 Were the responsibilities for different activities specified in the plan?

Yes [] No []

2.16 Was a time frame specified for every activity?

Yes [] No []

Conclusions on the plan: Base your conclusions on the information collected but also on your judgement on the quality of the plan, e.g. feasibility, specificity, appropriateness, etc.:

Form 6

Implementation phase

1. According to the department's plan of action, were planned activities implemented?

Yes, all Yes, partially No → Mention the reasons and then go to Form 7:

→ If **YES partially**: list which activities have been implemented: _____

2. What were the factors facilitating implementation?

High level support Availability of resources (specify): _____

Commitment of teaching staff Commitment of partners

Others, (specify): _____

3. Were there any difficulties or constraints faced during implementation?

Yes No

→ If **YES**: *What were those difficulties or constraints?*

Lack of support

Lack of financial resources

Plan over-ambitious

Teaching staff not committed

Partners not committed

Turnover of influential staff

Turnover of IMCI-trained teaching staff Logistics support not available

Others (specify): _____

4. Was monitoring conducted?

Yes [] No [] → go to item 5

→ *If monitoring was conducted:*

4.1. Was it conducted regularly?

Yes [] No []

4.2. Was it conducted using a tool?

Yes [] No []

4.3. Were the results of monitoring documented?

Yes [] (*Provide reports*) No []

4.4. Were the results of monitoring used for re-planning, corrective measures and other actions?

Yes [] No []

→ **If YES:** *give examples of some of the major actions taken:* _____

5. Were the targets of the plan achieved?

Yes [] No [] Targets not stated in plan []

→ **If YES:** *Explain how far the targets were achieved* _____

**Conclusions on implementation versus plans
(implementation, constraints, monitoring, targets achieved)**

Form 7

IMCI teaching process

Explanatory notes

This form is to be used for an interview with the IMCI pre-service education management structure, IMCI pre-service education focal point and teaching staff at the institution.

Make sure you have with you a copy of the latest version of the national IMCI guidelines (IMCI chart booklet).

To facilitate tasks, it is advisable to see the head of department at the beginning of the visit and ask whether the following information or documents could be prepared, so that it would be easier and faster to review them during the interview with the department staff:

- Information on:
 - Number of teaching units in the department;
 - Total number of department teaching staff trained in IMCI (case management and facilitation skills);
- Samples of relevant documents for review, such as those stating the learning objectives, IMCI teaching schedule, IMCI teaching and learning materials—including the recommended reference book and teaching programme of the department;
- List of interviewees at the institution, i.e. the IMCI pre-service education management structure, IMCI pre-service education focal point and teaching staff;
- The places that you would like to visit, such as:
 - Sites where theoretical, practical and clinical sessions are held, to check if they are adequate for the specific teaching purpose/s and how they are supplied with teaching and clinical equipment;
 - The library, to see whether there are copies of IMCI reference materials for the students and if these can be consulted for free.

Learning objectives should cover the overall objectives and objectives of theoretical, practical and clinical sessions:

- Theoretical sessions are those which provide knowledge (through lectures, presentations, seminars, etc.) and are conducted in a classroom;
- Practical sessions refer to those in which students practise skills under supervision but not on real patients, such as video and photo exercises, written exercises, role plays, demonstrations, practice on mannequins;

- Clinical sessions refer to sessions where the students deal with real patients under supervision;
- Self-learning, for example through skill laboratory, e-learning, reading.

In order to check whether teaching is covering all planned and identified learning objectives:

- Compare the teaching programme against the plan of action;
- Observe teaching sessions;
- Look at students' assessment.

The evaluation team should formulate conclusions on the IMCI teaching process followed in the department, recommending practical actions to address the main issues identified.

Form 7

IMCI teaching process

I. General information

1. *If IMCI learning objectives were identified, obtain the documents on the learning objectives, if available, and answer the questions below. If not, go to "II. IMCI training status of teaching staff".*

1.1 What are the learning objectives?

1.2 Are the learning objectives specific?

Yes [] No []

1.3 Did the teaching cover those learning objectives?

Yes [] No [] → If **NO**: *Why?* _____

1.4 Did the learning objectives cover all the IMCI tasks relevant to the department?

Yes [] No [] → If **NO**: *Which objectives were not covered and why?*

2. Are all units in the department teaching IMCI?

Yes [] No [] → If **NO**:

2.1 *How many units are teaching IMCI?* _____

2.2 Why are not all the units teaching IMCI?

II. IMCI training status of teaching staff (the word "staff" below refers to teaching staff)

1. Total number of staff trained in IMCI case management: _____

Professors: No. ____ Assistant Professors: No. ____ Other staff: No. ____

2. What type of IMCI case management training?

Standard training [] → How many trained? _____

Others [] → specify type, whether it covers all IMCI tasks and how many trained:

3. Total number of staff trained in IMCI facilitation skills: _____

Professors: No. ____ Assistant Professors: No. ____ Other staff: No. ____

4. Do all the teaching units have staff trained in IMCI case management?

Yes [] No [] → **If NO: How many units do not have staff trained in IMCI?** _____

5. Are all the staff trained in IMCI actively involved in the IMCI teaching process?

Yes [] No [] → **If NO: What is the percentage of the staff trained in IMCI who are actively involved in IMCI teaching?** _____ %

6. What is the overall ratio of teaching staff to students?

Teaching staff to student: ____ : ____

IMCI-trained teaching staff to students: ____ : ____

7. Is this ratio applicable to each individual unit?

Yes [] No [] → **If NO: What is the range** (minimum to maximum)? _____

8. Who is conducting the training courses for the teaching staff?

WHO [] MOH [] Department [] Others [] (specify): _____

9. Are the IMCI-trained staff informed of any technical update on IMCI clinical guidelines?

Yes [] No []

→ If **YES**: *How?* _____

III. Teaching methodology

1. Is there an IMCI teaching schedule?

Yes [] No [] → **If NO**: go to question # 3

→ **If YES**: *Provide a copy of the schedule and fill in the following information:*

1.1 How is IMCI taught?

Theoretical [] Practical [] Clinical [] → *specify*: in-patient [] outpatient []

1.2 Total (IMCI) teaching hours: No. _____ hours

Lectures: No. _____ Each lecture lasting: _____ hours

Seminars: No. _____ Each seminar lasting: _____ hours

Practical sessions: No. _____ Each session lasting: _____ hours

Clinical sessions: No. _____ Each session lasting: _____ hours

1.3 How do these relate to the total number of teaching hours? _____ %

2. What is the staff-to-student ratio in the following:

Theoretical sessions: _____ Practical sessions: _____ Clinical Sessions: _____

3. What are the approaches used to teach IMCI?

[] Focusing only on the IMCI guidelines (chart boxes)

[] Covering other IMCI components (specify: _____)

[] Covering also the IMCI technical bases

[] Linking IMCI to general (classic) paediatrics teaching.

4. What is the methodology used in the theoretical sessions?

Lecturing Group discussions Seminars

Assignments (e.g. exercises, reading) Others, specify: _____

5. What is the methodology used in the practical sessions?

Skill laboratory Feedback Role plays

Drills Demonstration Others, (specify): _____

6. What is the methodology used in the clinical sessions?

Demonstration Hands-on training Case presentation

Group discussion Individual feedback Group feedback

7. Are the students given assignments?

Yes No

→ **If YES:** specify: Theoretical Practical Clinical

8. Is there a minimum number of cases required to be assessed by each student by the end of the rotation?

Yes No Not applicable (no clinical teaching)

→ **If YES:** specify the number of cases: _____

8.1 Is this number of cases adequate (minimum of five cases)?

Yes No

9. Do students manage cases individually or in group?

Individually In group → **If in group: how large is the group?** _____

IV. Teaching materials**1. Which of the following materials are available and used by the department?**

Teacher guide Students' manual Chart booklet Recording forms

Photo booklet Wall Charts Mother card Slides

Video tapes IMCI self-learning electronic materials Dolls

IMCI modules IMCI reference materials CDs (specify): _____

2. Are these materials consistent with the national IMCI guidelines? (*Compare the latest national IMCI guidelines with the materials used by the department.*)

Yes [] No [] → **If NO:** *specify the differences:* _____

3. Is the content of the IMCI guidelines consistent with the content of the teaching programme of the concerned department?

Yes [] No [] → **If NO:** *specify the differences:* _____

4. Is the content of those guidelines incorporated in the department's reference book?

Yes [] No [] Not applicable (no reference book) []

5. Do the materials fully cover the IMCI learning objectives?

Yes [] No [] → **If NO:** *list which learning objectives are not fully covered:*

6. Does every student receive his/ her own copy of the student materials?

Yes [] No []

→ **If YES:** Which material/s? _____

7. Are students' materials paid by the students?

Yes, fully [] Yes, partially [] No []

8. Are key IMCI student materials available in the library?

Yes [] No []

→ If **YES**: *specify which materials*: _____

8.1 How many copies are available in the library at this time? _____**9. Who is providing the student materials?**

Department [] MOH [] WHO [] Others []: _____

10. Are there any measures to ensure sustainability of provision of the materials?

Yes [] No []

→ If **YES**: *Which measures?* _____

V. Training sites**1. Clinical training site****1.1 Type of clinical training site:**

Health centre [] Hospital outpatient department []

Others [] (specify): _____

1.2 Is the clinical training site applying the IMCI protocol?Yes [] No [] → If **NO**: *Why?* _____

1.3 Is the space provided for the clinical sessions adequate for teaching the number of students enrolled per session?

Yes [] No []

1.4 How is the flow of patients?

Organized [] Not well organized []

Describe the flow: _____

1.5 What is the average daily case load of children under-5 years of age at the outpatient clinic? _____**1.6 Were all the signs and symptoms usually covered during the clinical sessions?**Yes [] No [] → If **NO**: *list which ones were not covered*: _____

1.7 Do the clinical training sites have the following supplies and equipment?

[] Audio visual aids [] Weighing scales [] Timers [] Torch

[] ORT supplies (cups, spoons, ORS, measuring containers, etc.)

[] Tongue depressors [] Nebulizer [] Thermometers

[] IMCI wall charts [] Flip chart [] Board

[] Tables [] Chairs [] Source of water [] Required medicines

2. Site for theoretical training**2.1 Do theoretical training sites have the following supplies and equipment?**

[] Audio visual aids [] Flip charts [] Board

[] Chairs [] IMCI wall charts

VI. Factors affecting the teaching process**1. Are there any constraints affecting the teaching process?**

Yes [] No []

→ If **YES**: *What are they?*

Lack of staff commitment

Shortage of teaching staff

Lack of teaching materials

Lack of teaching aids

Lack of student learning materials

Lack of resources for teaching materials

Large number of students

Turnover of leadership and IMCI trained staff

Inadequate space for clinical teaching

Others, specify _____

Conclusions (*formulate your conclusions on the IMCI teaching process based on the information collected*):

Form 8

IMCI student assessment

Explanatory notes

Ask for a sample of the last three written student examinations. Obtain also the results of the last three clinical examinations, if available.

Refer to the definitions given below for the following terms used in the form:

- *Matrix of the examination*: the representation of different areas within the examination, officially approved by the department.
- *Formative assessment*: assessment conducted during the course of studies which provides feedback to the students about their strengths and weaknesses. It also provides feedback to the teachers on the effectiveness of their teaching and gives an opportunity to reinforce learning by adjusting teaching.
- *Summative assessment (examination)*: assessment conducted at the end of the course of studies, sometimes after completion of the studies on a specific subject or at the end of an academic term. It has a major effect on students' future: fail or pass.
- *Objective structured clinical examination (OSCE)*: students rotate through a series of stations and undertake a wide variety of brief, clinically-related tasks.
- *Logbook*: supervisory tool, in which all training activities and tasks are recorded, including also overall teachers' impressions and students' attendance.

The evaluation team should formulate conclusions on the student assessment for IMCI followed in the department, recommending practical actions to address the main issues identified.

Form 8

IMCI student assessment

1. Is IMCI included in the student assessment?

Yes No → If **NO**: *Why?* _____

(If IMCI is not included in student assessment, now go to #11)

→ If **YES**: *Is student assessment part of the matrix of the department's exam?*

Yes No

2. What type of assessment is it?

Formative Summative Both

3. When do you assess students on IMCI?

Ongoing throughout the rotation By the end of rotation
 By mid term By the end of the year

4. Which methods do you use for IMCI student assessment?

↪ **Knowledge**

Multiple-choice questions Short answer questions Problem-solving
 Essay questions Oral examination Case study/scenario
 Logbook Other (specify) _____

↪ **Skills**

Short clinical case Long clinical case Clinical checklist
 Logbook Objective structured clinical examination (OSCE)
 Other (specify) _____

5. What proportion of the overall programme marks is allocated to the IMCI component?

Overall programme marks: _____ IMCI marks: _____ = _____ %

6. How are the marks for IMCI distributed?

↳ **For written tests:**

Overall programme marks: _____ IMCI marks: _____ = _____ %

↳ **For clinical tests:**

Overall programme marks: _____ IMCI marks: _____ = _____ %

7. Are the skills evaluated under direct observation?

Yes [] No []

→ **If YES**

7.1 Are a rating scale and checklist used for the IMCI assessment?

Yes [] No []

7.2 Do they take into consideration the importance, technique and interpretation of the results?

Yes [] No []

8. What are the IMCI competencies covered by the examination? (Check a few samples of the last three written examinations and then ask about the different clinical examinations. List the competencies in the space below).

9. Is there a mechanism to introduce changes in student assessment?

Yes [] No []

→ **If YES: Which mechanism is it? Did IMCI introduction in teaching follow the same mechanism?**

Conclusions (Formulate your conclusions on the IMCI teaching process based on the information collected; continue on the back of the page if necessary):

Form 9

Observation of the IMCI practical teaching session

Explanatory notes

This form is used for the observation of practical sessions. Practical sessions in this Guide refer to those sessions in which students practise skills under supervision but not on real patients. Examples include video and photo exercises, written exercises, role plays, demonstrations, practice on mannequins.

At the end of the observations, the evaluation team should offer some conclusions, identifying main issues and recommending practical actions to address them.

Form 9

Observation of IMCI practical teaching session

- **Observer's name:** _____ **Date:** _____
- **Type of practical teaching session observed (specify):** _____

- **Teacher conducting the session: Title:** _____
Position: _____ **IMCI training status:** _____

1. **Number of students enrolled in the session:** _____ students
2. **Total duration of the session:** _____ minutes
3. **Space:** Adequate [] Inadequate []

Explain why you think space is inadequate for the practical session:

4. **Availability of materials, supplies and equipment for the practical session:**
(tick all that apply)

- [] TV [] Video [] Video tapes [] Slide projector [] Slides
- [] Notebook and data show projector [] CD [] Screen
- [] Overhead projector [] Photo booklet [] Flip chart
- [] Models/mannequins

5. **Content of the session**5.1 **Session objectives**

Objectives stated [] Not stated []

→ If stated: ***Are session objectives stated...:***

Adequately [] Not adequately []

Explain why you think session objectives are stated inadequately:

5.2 Introduction of the teaching methods

Introduction done [] Not done []

→ If introduction done: ***Is the introduction...:***

Adequate [] Not adequate []

Explain why you think the introduction is inadequate:

5.3 Demonstration

Demonstration done [] Not done []

→ If demonstration done: ***Is the demonstration...:***

Adequate [] Not adequate []

Explain why you think the demonstration is adequate or inadequate:

6. Type of session and teaching methodology

6.1 Is there any active interaction with students?

Yes [] No [] → If ***NO: How was the session conducted?*** _____

6.2 What teaching methods are used? (tick all that apply)

Group discussion [] Role play [] Drills []

Exercises [] → specify: _____

Demonstration [] → specify: _____

Others [] → describe: __________
_____**6.3 What is the quality of the materials (e.g. audio-visual teaching aids) used in the session?**

Very good [] Good [] Fair [] Poor []

Any remarks by the observer: _____

6.4 How adequate is the time allocated to interaction with students?

Very little [] Little [] Just right [] Adequate []

6.5 Is the session wrapped up ('summarized')?

Yes [] No []

→ Is **YES**: *How is the session wrapped up?*

Other observations on the teaching session by the observer:

7. Discussion with the teaching staff

7.1 Which constraints has IMCI practical teaching been facing?

7.2 How have you addressed these constraints?

7.3 What suggestions do you have to overcome constraints and improve practical sessions?

Form 10

Observation of IMCI OPD teaching session

Explanatory notes

- Keep track of the total duration of the session.
- For item 6 on supplies and equipment, tick if these are available in the OPD or are easily accessible to it.
- Under item 7.4 on clinical practice, when practice is performed as a group, describe whether each student practises assessing signs or only observes another student doing it.
- Items under 7.4.5 are about feedback. It is useful to describe whether:
 - a. Each student presents a case or this is done by a representative of the group;
 - b. When presenting the case, students fully describe the findings of their assessment and classification or simply answer questions on the presence of certain signs;
 - c. Feedback is given during the clinical practice or only after case presentation;
 - d. Feedback focuses on showing the presence of signs, the flow of the IMCI algorithm or both;
 - e. Teaching staff focus attention on some students (if so, try to ask the teaching staff the reasons at the end of the session).
- Under item 8.3 on wrapping up the OPD teaching session, describe whether the conclusions are in relation to the stated objectives of the session and whether the main technical points are emphasized.
- Add your impressions and comments on the session. If time permits, have a brief discussion with the students on IMCI OPD sessions.

Note: A reasonable ratio of teaching staff to students for these sessions is 1:12 to 1:15.

Form 10
Observation of IMCI OPD teaching session

- **Observer's name:** _____ **Date:** _____
- **Record starting time of the teaching session:** _____
- **Teacher/s conducting the session: Title:** _____
Position: _____

1. **Number of students enrolled in the session :** _____ students
2. **Number of instructors:** _____ teaching staff
3. **Ratio instructor to student:** _____ : _____
4. **Are the instructors trained in IMCI?**
Yes [] No []
→ **If YES: *In what?*** Case management [] Facilitation skills []
→ **If trained in IMCI case management: *How long was the course?***
_____ days
5. **Space:** Adequate [] Inadequate [] → *Explain why you think space is inadequate for the practical session:*

6. Supplies and equipment at the OPD teaching site: (tick all that apply)

- [] IMCI Wall charts [] Thermometers [] Weighing scales
- [] Cups/glasses [] Spoons [] Other ORT supplies → specify: _____
- [] Tongue depressors [] Torch [] Nebulizer
- [] Timers [] Recording forms [] Mother cards
- [] Chart booklets for every student → If **NO:** *comment* _____

7. Content of the session

7.1 Session objectives

Objectives stated [] Not stated []

→ If stated: **Are session objectives stated...:**

Adequately []

Not adequately [] → *Explain why you think they have been stated inadequately:*

7.2 Introduction of the content of the session

Introduction done [] Not done []

→ If introduction done: **Is the introduction...:**

Adequate []

Not adequate [] → *Explain why you think the introduction is inadequate:*

7.3 Clinical demonstration

Demonstration done [] Not done []

→ If demonstration done: **Is the demonstration...:**

Adequate []

Not adequate [] → *Explain why you think the clinical demonstration is inadequate:*

7.4 Clinical practice

Clinical practice done Not done → go to “8. Type of session”

7.4.1 What is the student-to-case ratio? _____ : _____

7.4.2 Are all students practising the skills individually?

Yes No → If **NO: explain:** _____

7.4.3 How many exposures per student are provided during the session?

7.4.4 Is clinical practice supervised by the teaching staff?

Yes No

7.4.5 Do students present their case? Yes No

→ If **YES: Is feedback given to them?** Yes No

→ If **YES: How?** Group Individual

Describe how feedback is given: _____

8. Type of session and teaching methodology

8.1 What teaching methods are used? (tick all that apply)

Presentation of IMCI chart

Clinical demonstration

Clinical practice

Case presentation

Group discussion

Drills

Individual feedback

Others → describe: _____

8.2 Does the instructor link IMCI to “classical teaching”?

Yes [] No []

Additional comments on the teaching methodology: _____

8.3 Is the OPD teaching session wrapped up (‘summarized’)?

Yes [] No []

→ If **YES**: *How is the session wrapped up?* _____

8.4 How much time is spent on the following tasks?

Clinical demonstration: _____ min. Clinical practice: _____ min.

Individual feedback: _____ min.

Other observations on the OPD teaching session and teaching staff by the observer:

Record ending time of the teaching session: _____

Total duration of the session: _____ hours

9. Discussion with the teaching staff

9.1 Which constraints has OPD teaching been facing?

9.2 How have you addressed these constraints?

9.3 What suggestions do you have to overcome constraints and improve practical sessions?

Observer's impressions and comments: _____

Forms 11a, 11b and 12

Focus group discussion with teachers and students

Explanatory notes

Conduct separate focus group discussions with:

- a group of teachers involved in IMCI teaching (Form 11a);
- a group of teachers not involved in IMCI teaching (Form 11b); and
- three groups of students (Form 12).

For the teacher group, if possible, include the IMCI focal point at the institution, the head of the concerned department and heads of teaching units. Each group should be relatively small, consisting of 5–9 people, to allow full participation of everybody. Students may be chosen among those included in the evaluation of knowledge and skills or as a new group from the same rotation batch.

Introduce the objective of the visit (evaluation of IMCI teaching) and explain the purpose of the group discussion:

- To collect information on how they feel about IMCI and the way it is taught;
- To use the information to improve teaching, learning and assessment methods and materials used for IMCI.

Try to involve all teachers and students of the group in the discussion. When you ask a question to guide the discussion, avoid “Do” questions which imply a “Yes” or “No” answer. The questions in the form are meant only to guide the discussion and should be phrased as appropriate according to the flow of the discussion. A simple approach for those who are less experienced in facilitating focus group discussions is to ask the group first how they feel about one of the listed topics, next the reasons for their answer, and, finally, whether the situation could be improved and, if so, whether they have any practical suggestions about how improvements could be introduced.

Take notes during the discussion, but there is no need to record every answer or reach a consensus in the group. Obtain the prevailing views of the group based on responses from the majority of people and summarize them by question. If you feel that certain individual comments or suggestions are of interest or special value, record them separately. It is important that you try and involve each person in the group.

Create a friendly and relaxing atmosphere during the group discussion. Avoid behaving as an “examiner” or “evaluator”.

Summarize at the end of the form main conclusions, issues and recommendations.

Form 11a
Focus group discussion with teachers
involved in IMCI teaching

Date: ____ / ____ / ____ Group discussion facilitator: _____

No. of teachers in the group discussion: _____.

How do you feel about...:

SUPPORTIVE ENVIRONMENT

- a. How supportive the environment is to IMCI teaching
- b. Whether department teaching staff accept IMCI teaching
- c. How department teaching staff manifest their acceptance or rejection
- d. Whether IMCI teaching is perceived as an extra load
- e. How well teaching of IMCI is coordinated with other subjects
- f. Which major constraints, in your opinion, have adversely affected IMCI teaching
- g. How the situation could be improved.

(Note for the facilitator: examples of accepting IMCI teaching may include any type of support, endorsement, participation in meetings, willingness to learn, etc.; rejection may manifest by creating difficulties, etc.)

TEACHING

- h. The new *learning objectives* (based on IMCI)
 - How useful these objectives are in preparing students for their future work as health care providers (knowledge, attitudes and skills)
 - How relevant IMCI is to the selected academic programme
- i. The *methods* used for teaching
 - How appropriate they are (i.e. feasible and understandable)
 - How different teaching of IMCI is from other subjects
- j. The *materials* used for teaching
 - How clear, understandable and useful they are
 - How available they are
 - Which ones are most useful

k. How students are appreciating IMCI

MONITORING

l. The *methods* used to assess student performance

- How appropriate they are (i.e. valid, reliable, objective, feasible and understandable)

m. The *materials* used to assess student performance

- How clear and understandable they are

OVERALL

n. The new teaching (IMCI)

- How much it meets your expectations
- How useful you think it will be for your students in their future work
- How it could be improved
- How sustainable it is in your view.

o. How IMCI may have contributed to your professional development

- Which new knowledge and skills, if any, you have gained
- What added value IMCI has in your opinion

p. How IMCI has facilitated the establishment of stronger links with the ministry of health, other teaching departments and partners

q. How the reputation of the teaching institution has been affected as a result of the introduction of IMCI teaching

- How your relationship with students and other teaching staff has been influenced

(Note for the facilitator: examples include also accreditation criteria, rewards, invitations for faculty staff in international events as resource persons, consultants, etc.)

Summarize below main conclusions, issues and recommendations:

Form 11b
Focus group discussion with teachers
not teaching IMCI

.....
 Date: ____ / ____ / ____ Group discussion facilitator: _____

No. of teachers in the group discussion: _____

1. Have you been oriented or trained in IMCI?

No. of teachers in the group discussion trained in IMCI: _____

2. In your opinion, what is IMCI and what are its objectives?

(If teaching staff are not well aware of it, then ask them: **why do you think you have little information about it, given that IMCI is taught in your department?**)

(Note for the facilitator: teachers may not be fully aware of IMCI because they have not been trained in IMCI, have had no time to join relevant IMCI orientations or meetings in the department, may have some general prejudices about IMCI, etc.)

3. How do you feel about...:

RELEVANCE OF IMCI

- a. The relevance of IMCI to paediatric teaching (how convincing it is to department staff like you, who are not teaching IMCI)
- b. Outpatient teaching (ask if they are involved in outpatient teaching, how it is conducted and whether students manage cases themselves)
- c. The fact that students practise managing sick children themselves in IMCI outpatient teaching sessions (ask if they feel that this has any added value to current teaching)
- d. The usefulness of IMCI to future graduates' work

SUPPORTIVE ENVIRONMENT

- e. How the decision of introducing IMCI into teaching in your department was made
- f. Why you are not teaching IMCI

- g. The way department teaching staff accept or do not accept IMCI teaching
 - o Whether IMCI teaching is perceived as an extra load (large number of students, OPD space requirements, limited time of teaching programme with many subjects to teach)
 - o How well teaching of IMCI is coordinated with subjects such as those taught by you (if closely related to the IMCI guidelines)
 - o Given that IMCI is part of your department teaching programme, which major constraints, in your opinion, have adversely affected IMCI teaching and how the situation could be improved?

(Note for the facilitator: examples of accepting IMCI teaching may include any type of support, endorsement, participation in meetings, willingness to learn, etc.; rejection may manifest by creating difficulties, etc.)

OVERALL

- h. The new (IMCI) teaching and how keen you are in knowing more about and being more involved in IMCI
- i. How IMCI has contributed to your professional development (for those fully oriented or trained in IMCI)
 - o Which new knowledge and skills, if any, you have gained
 - o What added value IMCI has in your opinion

(Note for the facilitator: examples include also accreditation criteria, rewards, invitations for faculty staff in international events as resource persons, consultants, etc.)

- j. Including IMCI in the examinations.

4. How do you feel about the fact that such an evaluation is part of introducing IMCI into teaching?

Summarize below main conclusions, issues and recommendations:

Form 12

Focus group discussion with students

.....

Date: ____ / ____ / ____ Group discussion facilitator: _____

No. of students in the group discussion: _____

.....

1. *What is IMCI?*

2. *How do you feel about...:*

- a. IMCI
- b. How confident you are in applying the new knowledge and perform the clinical and communication skills and why?
- c. How appropriate the teaching methods are (i.e. feasible and understandable)
 - Which methods have been used more often
 - Which ones are more useful
 - How adequate the time allocated to the following is:
 - ▶ clinical practice;
 - ▶ treatment and follow-up of cases;
 - ▶ counselling; and
 - ▶ overall, IMCI teaching
- d. How much opportunity you have had to practise clinical and communication skills
 - How many patients you managed using IMCI
 - Whether you practised individually or as a group
 - How many students were supervised by a teacher during practice
 - How adequate this teacher-to-student ratio was in your opinion
- e. How available the learning materials are to you
 - How easy it is to obtain them
 - How expensive they are
 - How clear they are
 - Which ones are most useful

- f. How appropriate the methods used to assess your performance as students are (i.e. valid, reliable, objective, feasible, and understandable)
 - How teachers checked how you were learning
 - What feedback you received
 - How satisfied you are with that approach
 - g. How well the examinations assess your knowledge and skills in IMCI
 - h. How different teaching of IMCI is from other subjects
 - What is unclear to you about IMCI
 - What you like or do not like most about IMCI
 - i. How consistent IMCI teaching is with the other subjects in the department teaching programme
 - j. How relevant what you have learnt (in IMCI) is to your future work
 - Which aspects (of IMCI) are most useful and which ones are the least useful
 - Whether you have been explained the technical basis for the content of the IMCI guidelines (e.g. the reasons for inclusion of certain signs and symptoms)
- 3. Overall, how satisfied are you with IMCI teaching? Why? How could it be improved in the future?**

Summarize below main conclusions, issues and recommendations:

Form 13

Cost analysis

Explanatory notes

Collect detailed and accurate information on the cost of each activity originally planned and actually carried out at national and institutional level in relation to IMCI pre-service education. Refer to all activities mentioned under the section of “Process evaluation” for both the national and institutional levels. Make sure to avoid listing the same activity under both national and institutional level. Indicate also the source of funding.

A non-exhaustive list of items to consider is provided as an example (Tables 1 and 2). The final list (e.g. possibly including also coordination meetings, periodic revision of materials for teaching and learning, review of teaching, evaluations) will depend on activities specifically related to IMCI pre-service education which have been actually implemented and the related costs incurred. These are the costs, specific to IMCI pre-service education, that should be taken into consideration in the cost-analysis, as they add to the recurrent costs that the teaching institution had before introducing IMCI and will continue to have with or without IMCI. Costs for some IMCI activities may be “absorbed” as part of the running costs of the teaching institution and thus would be excluded here. For example, if the teaching institution reviews its teaching annually, the cost of this activity should not be included in this analysis if the review of IMCI teaching is part of the overall review of teaching and adds no extra expenses.

This component of the evaluation aims at answering the following questions:

- Were there any specific funds available for the IMCI teaching activities? What was the source of those funds?
- Is the cost of activities considered in the plan?
- Which budget items were included in the plan?
- Were all planned funds received? What proportion of planned funds was actually received?
- What were the costs of IMCI pre-service education for the following:
 - Management structures, including meetings, visits, special events and supervision;
 - Orientation and training of teaching staff;
 - Teaching, training site, equipment and learning materials.

The evaluation team should make conclusions based on this cost analysis, with recommendations as relevant.

Table 1. Cost analysis (national level)

Area/activity	Cost originally planned (in US\$)	Funds actually received (in US\$)	Source of funds	Remarks
I. IMCI pre-service management structure (meetings and related activities, including planning meetings)				
I.1				
I.2				
I.3				
II. Awareness-raising and advocacy activities for “IMCI pre-service education” (participation of MOH staff in the scientific fora, invitation of academe in public child health activities, orientation meetings, printed materials)				
II.1				
II.2				
II.3				
III. Capacity-building activities for teaching staff specific to “IMCI pre-service education”				
III.1				
III.2				
III.3				
IV. Provision of teaching materials and equipment to the teaching institutions				
IV.1				
IV.2				
IV.3				
TOTAL				

Table 2. Cost analysis (institutional level): School name and type: _____

Area/activity	Cost originally planned (in US\$)	Funds actually received (in US\$)	Source of funds	Remarks
I. Orientation workshops				
I.1				
I.2				
II. Planning workshops				
II.1				
II.2				
III. Capacity-building (if paid for by the institution)				
III.1				
III.2				
IV. Logistics: supply and equipment for classroom teaching and clinical practice and learning materials				
IV.1 Teaching equipment and supply for classroom sessions:				
a. TV set				
b. Video / CD / DVD player				
c. Slide projector				
d. Overhead projector				
e. Computer				
f. Data show projector				
g. Flip charts				
h. White board				
i. Markers				
j. Transparencies				
k. Baby doll				
IV.2 Supply for outpatient clinical settings				
1. IMCI wall charts				
2. Supplies for ORT preparation and administration				
3. Inhaler / space device				
4. Nebulizers				

Area/activity	Cost originally planned (in US\$)	Funds actually received (in US\$)	Source of funds	Remarks
5. Timers				
6. Tongue depressors / torch				
7. Weighing scales				
8. Thermometers				
IV.3 Other teaching aids and student materials ¹				
a. Patient recording form				
b. Student monitoring forms				
c. Logbook				
d. Student manual				
e. Chart booklet				
f. Wall charts				
g. Mother cards				
h. Case recording form				
i. Photo booklet				
j. CDs / DVDs				
k. Video tapes				
l. Reference materials				
TOTAL				

¹ Mention if there is any cost-recovery mechanism

Form 14 (Multiple-choice questions) and Form 15 (Case scenarios)

Explanatory notes

The test with multiple choice questions (MCQs) and case scenarios is given separately and is used to assess student knowledge. The same students involved in the MCQ and case scenario test will also be observed managing sick children (Form 16).

Information on sampling, scoring, data entry, analysis of MCQs and case scenarios and presentation of findings is given in “Analysis and presentation of findings” in this Guide.

Two samples of MCQs and case scenarios are enclosed ¹:

- The first sample (Form 14A and 15A) is based on a field-test in Egypt and is suitable, adapted as needed, for countries in which the IMCI guidelines include the classification box of “VERY SEVERE DISEASE” in a child with general danger signs, include throat problem, do not include malaria and have a separate classification for nutritional status and anaemia;
- The second sample (Form 14B and 15B) is based on a field-test in Sudan and is suitable, adapted as needed, for countries in which the IMCI guidelines include malaria.

A question bank of MCQs and case scenarios is available separately. It is a resource library from which MCQs and case scenarios can be taken and properly adapted according to the national IMCI guidelines before use.

The MCQs and scenarios should be adapted:

- based on the latest version of the national IMCI guidelines which was used in teaching for the batch of students which is currently being assessed; and
- to suit the particular needs of this assessment based on the specific teaching programme of the institution, i.e. including only topics actually taught.

True–False questions are avoided as much as possible, as the student has a 50% chance of guessing the answer (either true or false); they are therefore less reliable than MCQs.

¹ The samples are based on the version of the IMCI guidelines used in the two countries in which the field-tests were conducted at the time. Since then, the generic version of the WHO IMCI guidelines has been revised. For more information and examples, see the MCQ and case scenario bank.

Before the test:

- identify the room where the test will be administered. Make sure that the room:
 - can comfortably accommodate all the students who will be performing the test, so that there is some distance from student to student both in a row and between rows;
 - is a quiet place as much as possible, well lit and ventilated;
- check that all tests with MCQs and case scenarios are complete, pages are stapled in the right order and you have enough copies of them for all students.
- check that there are enough copies of the “IMCI case recording form” (child age 2 months up to 5 years) available for each case scenario for each student for each case (one copy for each case scenario multiplied by the total number of students). For example, if the test includes five case scenarios and 30 students sit in the test, then 150 copies of the case recording form will be needed.
- check that you have one copy of the IMCI chart booklet available for each student.

On the morning of the test:

- Explain that this is not an examination and that their answers will provide key feedback to guide decisions on the department teaching programme and future examinations;
- Tell them that they will have about 90 minutes available for this exercise;
- Assign an ID code to each student;
- Emphasize that they will have to write the same ID code on the MCQs and case scenarios test and use it also for case management;
- Reassure them that there is no need to write their names on the forms. The student ID code is used only to relate the findings from the same student during the analysis;
- Explain how to fill in the MCQs and case scenarios, selecting the correct answer options by circling the letter to the left corresponding to those options;
- Remind them to complete all MCQs and scenarios carefully and avoid any guessing, as marks may be deducted for wrong answers;

- Stress that there are two kinds of questions²:
 - one type for which there is only one correct answer: they should circle one and only one of the options given, as instructed at the end of the question (“circle only ONE option”);
 - the other type for which there is more than one correct answer: they should circle all the correct options in the list (“circle all the correct options”); in no case should they circle all the options listed;
- Emphasize that, for each question, “correct answer” refers exclusively to what is recommended in the IMCI guidelines;
- Clarify that if certain signs or symptoms are not specifically mentioned in the case scenarios, they should assume that those signs or symptoms are not present;
- Inform them that they may refer to the IMCI chart booklet and can use the “IMCI case recording form” to record information given in each case scenario to answer the related questions;
- Distribute the MCQs and case scenarios, together with the IMCI case recording forms, to students in the classroom;
- Distribute the IMCI chart booklet to those students who have not taken their own copy with themselves;
- Ask the students to hand over the completed test to you individually as they finish it.

During the test:

- stay in the room, ready to respond to any request for clarification;
- move around the students from time to time to monitor progress of the test in terms of time;
- collect the completed tests, as they are handed over to you by the students, and arrange them in order according to student IDs, immediately checking that all pages have been filled in;
- collect the IMCI chart booklet that you have distributed at the beginning of the session; and
- thank the students for participating in the test as they leave.

² In countries in which students are used to items which include only one correct option among those listed, the items of the question bank which have more than one correct option may be adapted so as to have only one option correct, if it is felt that this would avoid confusing the students.

If time allows, consider informing the students of the correct answers to MCQs and scenarios and providing them with any clarification they may request. As this feedback may take much time, this task may be carried out for the whole group of students by one of the teaching staff of the institution who teach, and is familiar with, IMCI but is not directly involved in the evaluation. If so, make sure that pre-arrangements have been made for this purpose.

Form 14a: Multiple-choice questions

To be completed by the supervisor: **Name of institution:** _____

Department: Paediatrics [1] Family medicine [2] Community medicine [3]

Student year: [4th] [5th] [6th]

To be completed by the student: **Student ID assigned for this evaluation:** |__|__|

Instructions: Circle the letter to the left of the answer/s that you choose. Please, note that for some questions there may be more than one correct answer, as advised at the end (“circle all the correct options”). If needed, you may refer to the IMCI chart Booklet and Mother’s card. All the questions relate to the national IMCI guidelines.

A. The IMCI guidelines

A1. Which of the following are among the five main causes of mortality in children under-5 years of age in the country? (circle all the correct options)

- a. Diarrhoeal diseases
- b. Pneumonia
- c. Road traffic injuries
- d. Tetanus
- e. AIDS

A2. For which of the following settings are the IMCI guidelines suitable for use? (circle all the correct options)

- a. Inpatient ward of a district hospital
- b. Outpatient department of a hospital
- c. First-level health facilities
- d. Inpatient ward of a specialized hospital

A3. Which of the following age groups do the IMCI clinical guidelines address?
(circle only ONE answer)

- a. Birth up to 5 years
- b. 2 months up to 2 years
- c. 1 week up to 5 years
- d. 2 months up to 6 years

Child age 2 months up to 5 years

B. Assessment and classification

B1. Which of the following signs are “general danger signs” that you should always check for in every sick child age 2 months up to 5 years, according to the IMCI guidelines? (circle all the correct options)

- a. Child is lethargic or unconscious
- b. Child is restless or irritable
- c. Child is not able to drink or breastfeed
- d. Child vomits frequently
- e. Child has cyanosis

B2. How do you classify a 10-month-old girl who weighs 6.5 kg and has some palmar pallor? (circle all the correct options)

- a. SEVERE MALNUTRITION
- b. LOW WEIGHT
- c. SEVERE ANAEMIA
- d. NO ANAEMIA
- e. ANAEMIA
- f. NOT LOW WEIGHT

B3. What is the cut-off rate for *fast breathing* in a child who is exactly 12 months old? (circle only ONE answer)

- a. 60 breaths per minute
- b. 50 breaths per minute
- c. 40 breaths per minute
- d. 30 breaths per minute

B4. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

- a. Cough
- b. Abdominal pain
- c. Fever
- d. Skin infection
- e. Diarrhoea

B5. According to the IMCI guidelines, which of the following key questions should be asked of the mother of every child with *diarrhoea*? (circle all the correct options)

- a. For how long has the child had diarrhoea?
- b. Does the child have mucus in the stools?
- c. What did the child eat before the diarrhoea started?
- d. Does the child have blood in the stools?
- e. Does the child have pus in the stools?

B6. How do you classify a 3-year-old child with a cough who has a respiratory rate of 55 breaths/minute and chest indrawing? (circle only ONE answer)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

B7. Which of the following signs are used to classify a child with fever or sore throat as having **STREPTOCOCCAL SORE THROAT? (circle all the correct options)**

- a. Severe pain in the throat
- b. Enlarged tender lymph node(s) on the front of the neck
- c. Not able to drink
- d. White or yellow exudate on the throat or tonsils
- e. Red (congested) throat

B8. How do you classify a 1-year-old child who has been coughing for 2 days, has a respiratory rate of 60 breaths/minute and whose mother says he had convulsions last night? (circle only ONE answer)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

B9. How do you classify a 14-month-old child who has had diarrhoea for 15 days, has sunken eyes and has no other signs? (circle all the correct options)

- a. SEVERE DEHYDRATION
- b. SOME DEHYDRATION
- c. NO DEHYDRATION
- d. SEVERE PERSISTENT DIARRHOEA
- e. PERSISTENT DIARRHOEA

B10. How do you classify a 4-year-old child who has an axillary temperature of 38.8°C and in whom there is resistance to bending when you try to bend his/her neck forward toward his/her chest? (circle only ONE answer)

- a. VERY SEVERE FEBRILE DISEASE
- b. FEVER-POSSIBLE BACTERIAL INFECTION
- c. FEVER-BACTERIAL INFECTION UNLIKELY

B11. Which of the following signs should you LOOK and FEEL for in an 8-month-old child with *diarrhoea* to classify his/her dehydration status? (circle all the correct options)

- a. Fever
- b. Skin turgor (skin pinch)
- c. Fast breathing
- d. Restless, irritable
- e. More than three watery stools

B12. Which of the following signs must a child have to be classified as having MASTOIDITIS? (circle only ONE answer)

- a. Redness behind the ear
- b. Swelling behind the ear
- c. Pus draining from one of the ears
- d. Pus draining from both of the ears
- e. Tender swelling behind the ear

B13. How do you classify a two-year-old child with an axillary temperature of 37.5°C, pus seen coming from the ear and no tender swelling behind the ear whose mother says that pus has been coming for 5 days? (circle only ONE answer)

- a. MASTOIDITIS
- b. ACUTE EAR INFECTION
- c. CHRONIC EAR INFECTION
- d. NO EAR INFECTION

B14. A child should be assessed for the main symptom of fever if the child: (circle all the correct options)

- a. has a history of fever
- b. does not feel well
- c. feels hot to the touch
- d. has axillary temperature of 37.0°C or above
- e. has axillary temperature of 37.5°C or above

B15. Which children brought to an outpatient clinic should be checked for *malnutrition and anaemia*? (circle only ONE answer)

- a. Only children with feeding problem(s)
- b. Only children who are less than 12 months of age
- c. All children from 2 months up to 5 years
- d. Only children who are not breastfed

B16. Which of the following statements are true?

- a. A child who has epilepsy should be given DPT vaccine
- b. A child who is immunocompromised should not be given BCG vaccine
- c. A child who has fever should not be immunized
- d. A child who is being referred for severe classification should be immunized before referral
- e. A child who is LOW WEIGHT should not be immunized

C. Assessment of feeding problems

C1. You should assess the feeding of children who are: (circle all the correct options)

- a. classified as having VERY SEVERE DISEASE
- b. less than 2 years old
- c. classified as having ANAEMIA OR LOW WEIGHT
- d. classified as having SEVERE PERSISTENT DIARRHOEA

D. Identification of treatment

D1. Which of the following are included in the rules of home treatment for diarrhoea? (circle all the correct options)

- a. Give extra fluids
- b. Stop feeding during illness
- c. Give zinc
- d. Reduce breastfeeding
- e. Continue feeding

E. Counselling: checking questions, feeding problems and when to return

E1. For which of the following signs should the mother of a 5-month-old child with a cough and no fever, no general danger signs, classified as “NO PNEUMONIA: COUGH OR COLD”, “NOT LOW WEIGHT” and “NO ANAEMIA” bring the child back immediately? (circle all the correct options)

- a. Develops a fever
- b. Unable to drink or breastfeed
- c. Drinking poorly
- d. Does not get better
- e. Fast breathing

E2. Which of the following questions are good checking questions when counselling a mother of an 8-month-old child on complementary feeding? (circle all the correct options)

- a. Would you tell me which foods you will give to your child?
- b. Will you give good food such as meat, chicken, fish or eggs to your child?
- c. How will you prepare food for your child?
- d. Is it good to give meat to your child?

E3. Which of the following questions are good checking questions to ensure that a mother has understood your treatment instructions well? (circle all the correct options)

- a. Do you know when to give the antibiotic to your child?
- b. Did you understand my instructions?
- c. Could you tell me when you will bring back your child to the health facility immediately?
- d. For how many days will you give the antibiotic to your child?
- e. Will you give the antibiotic to your child 3 times a day?

E4. Which of the following statements are true?

- a. Children should be given fewer feeds during illness
- b. A 3-month old child should be exclusively breastfed
- c. A very thin cereal gruel is a nutritious complementary food
- d. A 3-year old child needs 2 feeds each day of family foods
- e. A 5-month old child should be breastfed as often as he/she wants, day and night

E5. Which of the following statements are true?

- a. A 5-month-old child who has PNEUMONIA and has been given an antibiotic should come for follow up after 5 days.
- b. A 10-month-old child who has diarrhoea with SOME DEHYDRATION should come for follow up in 2 days.
- c. A 2-year-old child who has ACUTE EAR INFECTION and has been given an antibiotic should come for follow up after 5 days.
- d. An 18-month-old child who has ANAEMIA should come for follow up in 14 days.

Sick young infant age up to 2 months**F. Assess and classify****F1. Which of the following signs are used in the IMCI guidelines to classify a 2-week-old infant as having POSSIBLE SERIOUS BACTERIAL INFECTION and to refer him/her urgently to hospital? (circle *all the correct options*)**

- a. Respiratory rate of 60 breaths per minute or more
- b. Restless, irritable
- c. Skin pustules
- d. Not able to feed
- e. Axillary temperature of less than 35.5°C

F2. Which of the following classifications or signs in a sick young infant less than 2 months old require referral? (circle all the correct options)

- a. Blood in stools
- b. SIGNIFICANT JAUNDICE
- c. Diarrhoea lasting 14 days or more
- d. FEEDING PROBLEM OR LOW WEIGHT
- e. POSSIBLE SERIOUS BACTERIAL INFECTION

F3. Which of the following are criteria for good attachment to the breast? (circle all the correct options)

- a. Chin touching the breast
- b. Mouth wide open
- c. More areola is visible below than above the infant's mouth
- d. Lower lip turned in

Form 15a: Scenarios

To be completed by the student: **Student ID assigned for this evaluation:** |__|__|

Instructions: Circle the letter to the left of the answer/s that you choose. Please, note that for some questions there may be more than one correct answer (“circle all the correct options”). If needed, you may refer to the IMCI chart Booklet and Mother’s card.

Case scenario 1 (Fatima)

Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about 6 days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.0°C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima’s skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.

S.1.1 Which general danger signs does Fatima have? (circle all the correct options)

- a. Unable to drink or breastfeed
- b. Vomiting everything
- c. History of convulsion
- d. Convulsions now
- e. Lethargic or unconscious

S.1.2 What is your classification for dehydration? (circle only ONE option)

- a. SEVERE DEHYDRATION
- b. SOME DEHYDRATION
- c. NO DEHYDRATION

S.1.3 Which treatment plan is indicated for Fatima? (circle *only ONE* option)

- a. Plan A
- b. Plan B
- c. Plan C

Case scenario 2 (Ahmed)

Ahmed is an 18-month-old baby boy. His mother says that Ahmed has had a cough for 3 days. This is an initial visit for this problem. He weighs 8.5 kg and his axillary temperature is 37.0°C. Ahmed is awake and alert. When asked, Ahmed's mother says that he is able to drink, has not vomited, has had no convulsions, has no diarrhoea, no throat problem and no ear problem. He has no convulsions during your assessment either. You count 44 breaths per minute. You find no chest indrawing. You do not hear stridor or wheeze. He has no visible severe wasting or oedema of both feet. He has no palmar pallor. His immunizations are up to date. You complete your assessment and you find no other signs or other problems.

S.2.1 What is your classification for Ahmed's cough? (circle *only ONE* option)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

S.2.2 What is your classification for Ahmed's nutritional status? (circle *only ONE* option)

- a. SEVERE MALNUTRITION
- b. LOW WEIGHT
- c. NOT LOW WEIGHT

S.2.3 Which of the following should be included in the treatment plan for Ahmed? (circle *all* the correct options)

- a. Paracetamol
- b. Oral antibiotics for 5 days
- c. Bronchodilator
- d. Follow-up in 2 days
- e. Follow up in 5 days, if not improving

Case scenario 3 (Sumaia)

Sumaia is a 36-month-old baby girl. She has been brought to the clinic because she has been having diarrhoea for 18 days and has blood in the stools. This is an initial visit for this problem. She weighs 10 kg. Her axillary temperature is 37.0°C. Sumaia has no general danger signs, no cough or difficult breathing. She is irritable during the visit, her eyes are not sunken. When you offer her some water to drink, she is able to drink but is not thirsty. The skin pinch goes back slowly. There is no cholera in the area. Sumaia has no throat problem and no ear problem. She has no visible severe wasting or oedema of both feet. She has no palmar pallor. Her immunizations are up to date. You complete your assessment and you find no other signs or other problems.

S.3.1 How do you classify Sumaia's illness? (circle only ONE option)

- SEVERE DEHYDRATION, SEVERE PERSISTENT DIARRHOEA, DYSENTERY
- SOME DEHYDRATION, SEVERE PERSISTENT DIARRHOEA, DYSENTERY
- SOME DEHYDRATION, PERSISTENT DIARRHOEA, DYSENTERY
- SOME DEHYDRATION, DYSENTERY
- NO DEHYDRATION, SEVERE PERSISTENT DIARRHOEA, DYSENTERY

S.3.2 What is your classification for Sumaia's nutritional status? (circle only ONE option)

- SEVERE MALNUTRITION
- LOW WEIGHT
- NOT LOW WEIGHT

S.3.3 Which of the following should be included in the treatment plan for Sumaia? (circle all the correct options)

- Cotrimoxazole for 5 days
- Intravenous (IV) fluids
- ORS at the facility
- Referral to hospital
- Follow-up in 5 days

Case scenario 4 (Mohammed)

Mohammed is a 36-month-old baby boy. His mother says that he has been coughing for 3 days and felt hot to the touch during this period; he had an episode of convulsions a month ago. This is an initial visit for this problem. He weighs 9.4 kg. His axillary temperature is 38.1°C. Mohammed is not lethargic or unconscious; he has no convulsions during your assessment. When asked, his mother says that he is able to drink and has not vomited. You count 51 breaths per minute; you find no chest indrawing; you hear no stridor or wheezing. Mohammed has no diarrhoea, no throat problem and no ear problem; he has a runny nose. He has no stiff neck but has a generalized rash. There is no clouding of the cornea, no pus draining from the eyes or mouth ulcers. He has no visible severe wasting or oedema of both feet. He has some palmar pallor. You complete your assessment and find no other signs.

S.4.1 Which general danger signs, if any, does Mohammed have? (circle *only ONE option*)

- a. No general danger signs
- b. Unable to drink or breastfeed
- c. Vomiting everything
- d. History of convulsion
- e. Lethargic or unconscious

S.4.2 What is your classification for Mohammed's cough? (circle *only ONE option*)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

S.4.3 What is/are your classification/s for Mohammed's fever? (circle *all the correct options*)

- a. VERY SEVERE FEBRILE DISEASE
- b. MEASLES
- c. FEVER - POSSIBLE BACTERIAL INFECTION
- d. FEVER - BACTERIAL INFECTION UNLIKELY
- e. SEVERE COMPLICATED MEASLES

S.4.4 What are your classifications for Mohammed's nutritional status and anaemia? (circle all the correct options)

- a. ANAEMIA
- b. LOW WEIGHT
- c. NO ANEMIA
- d. SEVERE MALNUTRITION
- e. NOT LOW WEIGHT

S.4.5 Which of the following should be included in the treatment plan for Mohammed? (circle all the correct options)

- a. Oral antibiotic for 5 days
- b. Assess the child's feeding and counsel the mother on feeding
- c. Follow-up in 5 days, if no improvement
- d. Refer urgently to hospital
- e. Vitamin A

Case scenario 5 (Rania)

Rania is a 32-month-old baby girl. Rania is very irritable and her mother has taken her to the facility because she has been crying and rubbing her ears for 2 days. This is an initial visit for this problem. She weighs 7.9 kg. Her axillary temperature is 36.2°C. Rania coughs during the visit and her mother confirms that she has been having cough for 3 days. She has not had any fever. She had no convulsions during this illness and has no other general danger signs. When you assess Rania, you count her respiratory rate and find it is 37 breaths per minute. You find no chest indrawing, no stridor, no wheezing. She does not have diarrhoea or throat problem. She has no swelling behind the ears and you see no pus draining from the ear. She has visible severe wasting. You find no oedema on both feet. Her palms appear very pale, almost white. Rania received vitamin A supplementation when she was 23 months old.

S.5.1 What is your classification for Rania's cough? (circle only ONE option)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

S.5.2 What is your classification for Rania's ear problem? (circle only ONE option)

- a. MASTOIDITIS
- b. ACUTE EAR INFECTION
- c. CHRONIC EAR INFECTION
- d. NO EAR INFECTION

S.5.3 What is your classification for Rania's nutritional status and anaemia? (circle only ONE option)

- a. SEVERE MALNUTRITION
- b. LOW WEIGHT
- c. NOT LOW WEIGHT

S.5.4 What is your classification for Rania's anaemia? (circle *only ONE* option)

- a. SEVERE ANAEMIA
- b. ANAEMIA
- c. NO ANAEMIA

S.5.5 Which of the following should be included in the treatment plan for Rania? (circle *all* the correct options)

- a. Oral antibiotic for 5 days
- b. Ask mother to breastfeed Rania to prevent low blood sugar
- c. Paracetamol
- d. Vitamin A
- e. Urgent referral to hospital

It is also learnt from Rania's mother that she breastfeeds Rania 3 times in 24 hours, gives her diluted cow's milk by feeding bottle 2 times per day, gives no other food and her feeding has not changed during the illness.

S.5.6 Which of the following are Rania's feeding problems? (circle *all* the correct options)

- a. Infrequent breastfeeding
- b. Giving no other food
- c. Feeding by bottle
- d. Using cow's milk
- e. Giving no other fluids

Form 14b: Multiple-choice questions

To be completed by the supervisor: **Name of institution:** _____

Department: Paediatrics [1] Family medicine [2] Community medicine [3]

Student year: [4th] [5th] [6th] []

To be completed by the student: **Student ID assigned for this evaluation:** |__|__|

Instructions: Circle the letter to the left of the answer/s that you choose. Please, note that for some questions there may be more than one correct answer, as advised at the end (“circle all the correct options”). If needed, you may refer to the IMCI chart Booklet and Mother’s card. All the questions relate to the national IMCI guidelines.

A. The IMCI guidelines

A1. Which of the following are among the 5 main causes of mortality in children under-5 years of age in the country? (circle all the correct options)

- a. Diarrhoeal diseases
- b. Pneumonia
- c. Road traffic injuries
- d. Malnutrition
- e. AIDS

A2. For which of the following settings are the IMCI guidelines suitable for use? (circle all the correct options)

- a. Inpatient ward of a district hospital
- b. Outpatient department of a hospital
- c. First level health facilities
- d. Inpatient ward of a specialized hospital

A3. Which of the following age groups do the IMCI clinical guidelines address?
(circle only ONE answer)

- a. Birth up to 5 years
- b. 2 months up to 2 years
- c. 1 week up to 5 years
- d. 2 months up to 6 years

Child age 2 months up to 5 years

B. Assessment and classification

B1. Which of the following signs are “general danger signs” that you should always check for in every sick child age 2 months up to 5 years, according to the IMCI guidelines? (circle all the correct options)

- a. Child is lethargic or unconscious
- b. Child is restless or irritable
- c. Child is not able to drink or breastfeed
- d. Child vomits frequently
- e. Child has cyanosis

B2. How should you classify a 10-month-old girl who weighs 5.5 kg and has some palmar pallor? (circle only ONE answer)

- a. SEVERE MALNUTRITION OR SEVERE ANAEMIA
- b. ANAEMIA OR VERY LOW WEIGHT
- c. NO ANAEMIA AND NOT VERY LOW WEIGHT

B3. What is the cut-off rate for *fast breathing* in a child who is exactly 12 months old? (circle only ONE answer)

- a. 60 breaths per minute
- b. 50 breaths per minute
- c. 40 breaths per minute
- d. 30 breaths per minute

B4. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

- a. Cough
- b. Abdominal pain
- c. Fever
- d. Skin infection
- e. Diarrhoea

B5. According to the IMCI guidelines, which of the following key questions should be asked of the mother of every child with *diarrhoea*? (circle all the correct options)

- a. For how long has the child had diarrhoea?
- b. Does the child have mucous in the stools?
- c. What did the child eat before the diarrhoea started?
- d. Does the child have blood in the stools?
- e. Does the child have pus in the stools?

B6. How should you classify a 3-year-old child with a cough who has a respiratory rate of 55 breaths/minute and chest indrawing? (circle only ONE answer)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

B7. Which of the following signs are used to classify a 9-month-old child living in a low malaria risk area as having VERY SEVERE FEBRILE DISEASE? (circle all the correct options)

- a. Lethargic
- b. Positive thick blood film
- c. Axillary temperature of 39.0 °C
- d. Unconscious
- e. Vomiting frequently

B8. How should you classify a 1-year-old child who has been coughing for 2 days, has a respiratory rate of 60 breaths/minute and whose mother says he/she had convulsions last night? (circle only ONE answer)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

B9. How do you classify a 7-month-old child living in a high malaria risk area who has an axillary temperature of 38.0 °C and no other signs or symptoms? (circle only ONE answer)

- a. VERY SEVERE FEBRILE DISEASE
- b. MALARIA
- c. FEVER - MALARIA UNLIKELY

B10. How should you classify a 4-year-old child living in a low malaria risk area who has an axillary temperature of 38.0°C and in whom there is resistance to bending when you try to bend his/her neck forward toward his/her chest? (circle only ONE answer)

- a. VERY SEVERE FEBRILE DISEASE
- b. MALARIA
- c. FEVER – MALARIA UNLIKELY

B11. Which of the following signs should you LOOK and FEEL for in an 8-month-old child with *diarrhoea* to classify his/her dehydration status? (circle all the correct options)

- a. Fever
- b. Skin turgor (skin pinch)
- c. Fast breathing
- d. Restless, irritable
- e. More than three watery stools

B12. Which of the following signs must a child have to be classified as having MASTOIDITIS? (circle only ONE answer)

- a. Redness behind the ear
- b. Swelling behind the ear
- c. Pus draining from one of the ears
- d. Pus draining from both of the ears
- e. Tender swelling behind the ear

B13. How do you classify a two-year-old child with an axillary temperature of 37.5°C, pus seen coming from the ear and no tender swelling behind the ear whose mother says that pus has been coming for 5 days? (circle only ONE answer)

- a. MASTOIDITIS
- b. ACUTE EAR INFECTION
- c. CHRONIC EAR INFECTION
- d. NO EAR INFECTION

B14. A child should be assessed for the main symptom of fever if the child: (circle all the correct options)

- a. has a history of fever
- b. does not feel well
- c. feels hot to the touch
- d. has axillary temperature of 37.0°C or above
- e. has axillary temperature of 37.5°C or above

B15. Which children brought to the outpatient clinic should be checked for malnutrition and anaemia? (circle only ONE answer)

- a. Only children with feeding problem(s)
- b. Only children who are less than 12 months of age
- c. All children from 2 months up to 5 years
- d. Only children who are not breastfed

B16. Which of the following statements are true?

- a. A child who has epilepsy should be given DPT vaccine
- b. A child who is immunocompromised should not be given BCG vaccine
- c. A child who has fever should not be immunized
- d. A child who is being referred for severe classification should be immunized before referral
- e. A child who is VERY LOW WEIGHT should not be immunized

C. Assessment of feeding problems

C1. You should assess the feeding of children who are: (circle all the correct options)

- a. classified as having VERY SEVERE DISEASE
- b. less than 2 years old
- c. classified as having ANAEMIA OR VERY LOW WEIGHT
- d. classified as having SEVERE PERSISTENT DIARRHOEA

D. Identification of treatment

D1. Which of the following are included in the rules of home treatment for diarrhoea? (circle all the correct options)

- a. Give extra fluids
- b. Stop feeding during illness
- c. Give zinc
- d. Reduce breastfeeding
- e. Continue feeding

E. Counselling: checking questions, feeding problems and when to return

E1. For which of the following signs should the mother of a 5-month-old child with cough and no fever, no general danger signs, classified as “NO PNEUMONIA: COUGH OR COLD”, “NOT VERY LOW WEIGHT” and “NO ANAEMIA” bring the child back immediately? (circle all the correct options)

- a. Develops a fever
- b. Unable to drink or breastfeed
- c. Drinking poorly
- d. Does not get better
- e. Fast breathing

E2. Which of the following questions are good checking questions when counselling a mother of an 8-month-old child on complementary feeding? (circle all the correct options)

- a. Would you tell me which foods you will give to your child?
- b. Will you give good food such as meat, chicken, fish or eggs to your child?
- c. How will you prepare food for your child?
- d. Is it good to give meat to your child?

E3. Which of the following questions are good checking questions to ensure that a mother has understood your treatment instructions well? (circle all the correct options)

- a. Do you know when to give the antibiotic to your child?
- b. Did you understand my instructions?
- c. Could you tell me when you will bring back your child to the health facility immediately?
- d. For how many days will you give the antibiotic to your child?
- e. Will you give the antibiotic to your child three times a day?

E4. Which of the following statements are true?

- a. Children should be given fewer feeds during illness
- b. A 3-month old child should be exclusively breastfed
- c. A very thin cereal gruel is a nutritious complementary food
- d. A 3-year old child needs two feeds each day of family foods
- e. A 5-month old child should be breastfed as often as he/she wants, day and night

E5. Which of the following statements are true?

- a. A 5-month-old child who has PNEUMONIA and has been given an antibiotic should come for follow up after 5 days.
- b. A 10-month-old child who has diarrhoea with SOME DEHYDRATION should come for follow up in 2 days.
- c. A 2-year-old child who has ACUTE EAR INFECTION and has been given an antibiotic should come for follow up after 5 days.
- d. An 18-month-old child who has ANAEMIA should come for follow up in 14 days.

Sick young infant age up to 2 months**F. Assess and classify****F1. Which of the following signs are used in the IMCI guidelines to classify a 2-week-old infant as having POSSIBLE SERIOUS BACTERIAL INFECTION and to refer him/her urgently to hospital? (circle all the correct options)**

- a. Respiratory rate of 60 breaths per minute or more
- b. Restless, irritable
- c. Skin pustules
- d. Not able to feed
- e. Axillary temperature of less than 35.5°C

F2. Which of the following classifications or signs in a sick young infant less than 2 months old require referral? (circle all the correct options)

- a. Blood in stools
- b. LOCAL BACTERIAL INFECTION
- c. Diarrhoea lasting 14 days or more
- d. FEEDING PROBLEM OR LOW WEIGHT
- e. POSSIBLE SERIOUS BACTERIAL INFECTION

F3. Which of the following are criteria for good attachment to the breast? (circle all the correct options)

- a. Chin touching the breast
- b. Mouth wide open
- c. More areola is visible below than above the infant's mouth
- d. Lower lip turned in.

Form 15b: SCENARIOS

To be completed by the student: **Student ID assigned for this evaluation:** |__|__|

Instructions: Circle the letter to the left of the answer/s that you choose. Please, note that for some questions there may be more than one correct answer (“circle all the correct options”). If needed, you may refer to the IMCI chart Booklet and Mother’s card.

Case scenario 1 (Fatima)

Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about 6 days. There is no blood in the stools. Fatima lives in a high malaria risk area. She weighs 10.5 kg. Her axillary temperature is 37.0°C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima’s skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.

S.1.1 Which general danger signs does Fatima have? (circle all the correct options)

- a. Unable to drink or breastfeed
- b. Vomiting everything
- c. History of convulsion
- d. Convulsions now
- e. Lethargic or unconscious

S.1.2 What is your classification for dehydration? (circle only ONE option)

- a. SEVERE DEHYDRATION
- b. SOME DEHYDRATION
- c. NO DEHYDRATION

S.1.3 Which treatment plan is indicated for Fatima? (circle *only ONE* option)

- a. Plan A
- b. Plan B
- c. Plan C

Case scenario 2 (Ahmed)

Ahmed is an 18-month-old baby boy. His mother says that Ahmed has had a cough for 3 days. This is an initial visit for this problem. He weighs 8.5 kg and his axillary temperature is 37.0°C. Ahmed is awake and alert. When asked, Ahmed's mother says that he is able to drink, has not vomited, has had no convulsions, has no diarrhoea, no throat problem and no ear problem. He has no convulsions during your assessment either. You count 44 breaths per minute. You find no chest indrawing. You do not hear stridor or wheeze. He has no visible severe wasting or oedema of both feet. He has no palmar pallor. His immunizations are up to date. You complete your assessment and you find no other signs or other problems.

S.2.1 What is your classification for Ahmed's cough? (circle *only ONE* option)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

S.2.2 What is your classification for Ahmed's nutritional status? (circle *only ONE* option)

- a. SEVERE MALNUTRITION
- b. LOW WEIGHT
- c. NOT LOW WEIGHT

S.2.3 Which of the following should be included in the treatment plan for Ahmed? (circle *all the correct options*)

- a. Paracetamol
- b. Oral antibiotics for 5 days
- c. Bronchodilator
- d. Follow up in 2 days
- e. Follow up in 5 days, if not improving

Case scenario 3 (Sumaia)

Sumaia is a 36-month-old baby girl. She lives in a low malaria risk area. She has been brought to the clinic because she has been having diarrhoea for 18 days and has blood in the stools. This is an initial visit for this problem. She weighs 10 kg. Her axillary temperature is 37.0°C. Sumaia has no general danger signs, no cough or difficult breathing. She is irritable during the visit, her eyes are not sunken. When you offer her some water to drink, she is able to drink but is not thirsty. The skin pinch goes back slowly. There is no cholera in the area. Sumaia has no throat problem and no ear problem. She has no visible severe wasting or oedema of both feet. She has no palmar pallor. Her immunizations are up to date. You complete your assessment and you find no other signs or other problems.

S.3.1 How do you classify Sumaia's illness? (circle *only ONE* option)

- a. SEVERE DEHYDRATION, SEVERE PERSISTENT DIARRHOEA, DYSENTERY
- b. SOME DEHYDRATION, SEVERE PERSISTENT DIARRHOEA, DYSENTERY
- c. SOME DEHYDRATION, PERSISTENT DIARRHOEA, DYSENTERY
- d. SOME DEHYDRATION, DYSENTERY
- e. NO DEHYDRATION, SEVERE PERSISTENT DIARRHOEA, DYSENTERY

S.3.2 What is your classification for Sumaia's nutritional status? (circle *only ONE* option)

- a. SEVERE MALNUTRITION
- b. VERY LOW WEIGHT
- c. NOT VERY LOW WEIGHT

S.3.3 Which of the following should be included in the treatment plan for Sumaia? (circle *all* the correct options)

- a. Cotrimoxazole for 5 days
- b. Intravenous (IV) fluids
- c. ORS at the facility
- d. Referral to hospital
- e. Follow up in 5 days

Case scenario 4 (Mohammed)

Mohammed is a 36-month-old baby boy. He lives in a low malaria risk area. His mother says that he has been coughing for 3 days and felt hot to the touch during this period; he had an episode of convulsions a month ago. This is an initial visit for this problem. He weighs 9.4 kg. His axillary temperature is 38.1°C. Mohammed is not lethargic or unconscious; he has no convulsions during your assessment. When asked, his mother says that he is able to drink and has not vomited. You count 51 breaths per minute; you find no chest indrawing; you hear no stridor or wheezing. Mohammed has no diarrhoea, no throat problem and no ear problem; he has a runny nose. He has no stiff neck but has a generalized rash. There is no clouding of the cornea, no pus draining from the eyes or mouth ulcers. He has no visible severe wasting or oedema of both feet. He has some palmar pallor. You complete your assessment and find no other signs. The thick blood film performed at your facility is positive for malaria (*p. falciparum*).

S.4.1 Which general danger signs, if any, does Mohammed have? (circle *only ONE option*)

- a. No general danger signs
- b. Unable to drink or breastfeed
- c. Vomiting everything
- d. History of convulsion
- e. Lethargic or unconscious

S.4.2 What is your classification for Mohammed's cough? (circle *only ONE option*)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

S.4.3 What is/are your classification/s for Mohammed's fever? (circle *all the correct options*)

- a. VERY SEVERE FEBRILE DISEASE
- b. MEASLES
- c. FEVER- POSSIBLE BACTERIAL INFECTION
- d. FEVER- BACTERIAL INFECTION UNLIKELY
- e. SEVERE COMPLICATED MEASLES

S.4.4 What is your classification for Mohammed's nutritional status and anaemia?

(circle *only ONE* option)

- a. SEVERE MALNUTRITION OR SEVERE ANAEMIA
- b. ANAEMIA OR VERY LOW WEIGHT
- c. NO ANAEMIA AND NOT VERY LOW WEIGHT

S.4.5 Which of the following should be included in the treatment plan for Mohammed? (circle *all* the correct options)

- a. Oral antibiotic for 5 days
- b. Assess the child's feeding and counsel the mother on feeding
- c. Follow up in 5 days, if no improvement
- d. Refer urgently to hospital
- e. Vitamin A

Case scenario 5 (Rania)

Rania is a 32-month-old baby girl. She lives in a high malaria risk area. Rania is very irritable and her mother has taken her to the facility because she has been crying and rubbing her ears for 2 days. This is an initial visit for this problem. She weighs 7.9 kg. Her axillary temperature is 36.2°C. Rania coughs during the visit and her mother confirms that she has been having cough for 3 days. She has not had any fever. She had no convulsions during this illness and has no other general danger signs. When you assess Rania, you count her respiratory rate and find it is 37 breaths per minute. You find no chest indrawing, no stridor, no wheezing. She does not have diarrhoea; she has no swelling behind the ears and you see no pus draining from the ear. She has visible severe wasting. You find oedema on both feet. Her palms appear very pale, almost white. Rania received vitamin A supplementation when she was 23 months old.

S.5.1 What is your classification for Rania's cough? (circle only ONE option)

- a. SEVERE PNEUMONIA OR VERY SEVERE DISEASE
- b. PNEUMONIA
- c. NO PNEUMONIA: COUGH OR COLD

S.5.2 What is your classification for Rania's ear problem? (circle only ONE option)

- a. MASTOIDITIS
- b. ACUTE EAR INFECTION
- c. CHRONIC EAR INFECTION
- d. NO EAR INFECTION

S.5.3 What is your classification for Rania's nutritional status and anaemia? (circle only ONE option)

- a. SEVERE MALNUTRITION OR SEVERE ANAEMIA
- b. ANAEMIA OR VERY LOW WEIGHT
- c. NO ANAEMIA AND NOT VERY LOW WEIGHT

S.5.4 Which of the following should be included in the treatment plan for Rania?

(circle all the correct options)

- a. Oral antibiotic for 10 days
- b. Ask mother to breastfeed Rania to prevent low blood sugar
- c. Paracetamol
- d. Vitamin A
- e. Urgent referral to hospital

It is also learnt from Rania's mother that she breastfeeds Rania three times in 24 hours, gives her diluted cow's milk by feeding bottle two times per day, gives no other food and her feeding has not changed during the illness.

S.5.5 Which of the following are Rania's feeding problems? (circle all the correct options)

- a. Infrequent breastfeeding
- b. Giving no other food
- c. Feeding by bottle
- d. Using cow's milk
- e. Giving no other fluids

Form 16

Observation of case management

Explanatory notes

This assessment will preferably involve the same students as those who have performed the knowledge assessment test through MCQs and case scenarios (Form 14 and Form 15). It is usually carried out over 3 days, one day each for a group of about 8–10 students, for a total of 24–30 students. These students should be randomly selected from all the teaching units of the same rotation batch in the concerned department, which has completed or is about to complete the paediatric—or community and family medicine—rotation.

Each morning, as per the agreed evaluation schedule, the *clinical coordinator* at the outpatient department should:

- Select the sick children for case management observation among those presenting at the OPD age 2 to 59 months old (preferably not older than 23 months if assessment of feeding is included), after a quick assessment, as follows:
 - *Illness:*
 - All children should be new cases presenting on that day, i.e. this should be an initial visit for the concerned complaint/s;
 - As much as possible, children’s IMCI classification should not be a “green row” classification (i.e. requiring only home care);
 - No child with a general danger sign, as defined in IMCI, should be included, as these children require immediate care;
 - Children with a “red/pink row” IMCI classification may be included, provided that both the clinical coordinator and the evaluator ensure that there is no delay in the provision of care to the child;
 - In countries with *no malaria*: the sick children selected should preferably have at least diarrhoea and/or cough or difficult breathing with or without fever as a basic requirement;
 - In countries with *malaria*: the sick children selected should have at least fever with preferably diarrhoea or acute respiratory infection as a basic requirement.
 - *Number of children:*
 - Ideally, one different sick child should be assigned to each student. If fewer patients are available with the conditions described above and their caretakers are agreeable, then one child could be seen a second time by another student. In no case should a child with a “red/pink row” IMCI classification be seen by more than one student, to avoid any delay in care.
- Obtain caretaker’s consent;

- Assign a consecutive number to each of the children selected and record their name, temperature and weight on the enrolment card;
- Ensure that the sick child and his/her caretaker are accompanied to the room where the observation of case management will take place, as arranged earlier.

Two samples of forms for the observation of case management are enclosed:

- The first sample (Form 16A) is based on a field-test in Egypt and is suitable, adapted as needed, for countries in which the IMCI guidelines include the classification box of “VERY SEVERE DISEASE” in a child with general danger signs, include throat problem, do not include malaria and have a separate classification for nutritional status and anaemia;
- The second sample (Form 16B) is based on a field test in Sudan and is suitable, adapted as needed, for countries in which the IMCI guidelines include malaria.

The form should be adapted:

- based on the latest version of the national IMCI guidelines which was used in teaching for the batch of students who are currently being assessed; and
- to suit the particular needs of this assessment based on the specific teaching programme of the institution, i.e. including only tasks actually taught.

Instructions for the evaluator

The time assigned for case management is about 30 minutes, this depending on the number of tasks that a student is expected to perform based on what is covered in teaching (e.g., whether identification of treatment, assessment of feeding problems and counselling are also included). About 5–10 minutes are required for the evaluator to check each form carefully after completion before the sick child leaves.

- Ask each student his/her ID code (the same as the one assigned for the MCQs and case scenarios) and record it on Form 16 for the observation of case management;
- Ask the student to assess, classify and identify the treatment for that sick child. If counselling is taught to students, ask him/her also to counsel the caretaker as appropriate;
- Avoid interrupting the student while he/she is managing the case. Observe what he/she does, record it on Form 16 and complement any information with what the student records on the IMCI case-recording form.

As soon as the student has finished managing the child, assess any sign which requires validation and carefully complete and review Form 16 to ensure that you have filled in all its parts correctly. Then take it to the other member of the evaluation team responsible for reviewing and entering the data.

Notes on completion of Form 16

If a symptom is volunteered by the child's caretaker (e.g., child has cough), then consider as if the student had specifically asked about it (e.g. Q. A20).

ASSESSMENT

The following definitions can be used to decide whether a selected task has been performed correctly:

- **Child calm before and during the count?** Circle "Yes [1]" if the child was calm for at least 5 minutes before being examined and remained calm when the respiratory rate was counted;
- **Does the student pinch the skin correctly?** Circle "Yes [1]" if the student pinches the abdomen skin halfway between the umbilicus and the side of the abdomen holding the skin firmly for one second between the thumb and first finger (not the fingertips) in line up and down the child's body and not across it.
- **Does the student look for palmar pallor correctly?** Circle "Yes [1]" if the student takes the child's hand gently and looks at the palm.
- **Does the student look for visible severe wasting using the correct technique?** Circle "Yes [1]" if the student undresses the child and looks at the legs, arms, buttocks and trunk.
- **Does the student look for oedema of both feet correctly?** Circle "Yes [1]" if the student removes the child's shoes and socks of both feet and firmly presses the skin of the dorsal side of both feet to look for swelling.
- **Does the student check VITAMIN A status** (i.e. asks about it)? Circle "NA [8]" if the child is younger than the age provided in the IMCI guidelines for vitamin A supplementation.
- **Is your conclusion on which immunizations are due the same as the student's?** For example, if the student concludes that the child needs measles immunization and you come to the same conclusion, circle Yes [1]. If the student concludes the child needs OPV2 only but you conclude that the child needs OPV2 and DPT2, then circle No [2].

CLASSIFICATION

Fill in all classification boxes in the form, as applicable.

- If a child does not have a condition (e.g., cough or difficult breathing, fever, etc.), then circle "Not applicable [8]".

- Circle “Not classified [7]” if the student did not select any classification for a condition which is present in the child (e.g. child has cough and the student did not write any classification for cough).

IDENTIFICATION OF TREATMENT

To make recording faster, tick only the treatment items selected by the students (student column) and then those selected by you (evaluator’s column). If the student selects one item (e.g. “refer urgently to hospital”) but you do not select the same item, then for that item place a tick in the student’s column and leave blank the corresponding box of your (evaluator’s) column for the same item.

ASSESSMENT AND IDENTIFICATION OF FEEDING PROBLEMS

- **Do you agree with student conclusions on feeding problems?** For example, if the student identifies low frequency of breastfeeding as a feeding problem and you identify the same problem in the child, then tick “Yes [1]”. If the student finds out only that the mother is not exclusively breastfeeding her 4-month-old child and identifies this as a feeding problem, but you find out that, in addition to that problem, the child’s feeding changed during the illness (a problem not identified by the student), then tick “No [2]”, as the student has not identified all the feeding problems. If both the student and you identify no feeding problems, then tick “Yes [1]”.

Whenever in doubt about how to record your observations, write a comment on the form. At the end of the form, write any qualitative observations you may have on selected aspects of case management which would help interpret the quantitative data properly (e.g. the student may ask the child’s caretaker if the child has any other problems but then fail to check for them).

Finally, check the form:

- Is the enrolment card attached to the form? Do card and form refer to the same child?
- Have all items been completed (no items have been left blank by mistake)?
- Are skipping patterns correct?
- Is any response entered in the wrong place?
- Is any mark or recording on the form unclear?

Information on scoring, data entry and analysis and presentation of findings is available in this Guide under “Analysis and presentation of findings”.

**IMCI PRE-SERVICE TRAINING EVALUATION: STUDENT SKILLS
ENROLMENT CARD**

(give this card to the evaluator and keep it after the evaluation as a record)

Caretaker consent: YES [] NO [] → Stop here! ⊗

Child first name: _____

Child consecutive no.: |_|_|_| Student no.: |_|_|_|

Axillary temperature: |_|_|_|.|_| °C

Weight: |_|_|_|.|_|_|_|_| Kg



**IMCI PRE-SERVICE TRAINING EVALUATION: STUDENT SKILLS
ENROLMENT CARD**

(give this card to the evaluator and keep it after the evaluation as a record)

Caretaker consent: YES [] NO [] → Stop here! ⊗

Child first name: _____

Child consecutive no.: |_|_|_| Student no.: |_|_|_|

Axillary temperature: |_|_|_|.|_| °C

Weight: |_|_|_|.|_|_|_|_| Kg



**IMCI PRE-SERVICE TRAINING EVALUATION: STUDENT SKILLS
ENROLMENT CARD**

(give this card to the evaluator and keep it after the evaluation as a record)

Caretaker consent: YES [] NO [] → Stop here! ⊗

Child first name: _____

Child consecutive no.: |_|_|_| Student no.: |_|_|_|

Axillary temperature: |_|_|_|.|_| °C

Weight: |_|_|_|.|_|_|_|_| Kg

Form 16A. Observation—child (2 months - 5 years)

Date: ____/____/2010 Evaluator ID: |__|__| Student: ID: |__|__|
 day month

Child: ID: |__|__| Sex: M [1] F [2] Birth date: ____/____/____ Age (months) |__|__|
 Weight: |__|__|.____|__|__| Kg Axillary temperature: |__|__|.____| °C
 Problems: _____

Circle the code for the answer which applies

(e.g.: If the answer is YES, circle [1]: Yes **[1]** No [2]

ASSESSMENT

(Record first what you see or hear and then check also the case recording form filled in by the student)

➤ **DANGER SIGNS**

A1. Does the student ask whether the child is ABLE TO DRINK or breastfeed?

Yes [1] No [2] ➔ *Go to question # A4*
 (or Child breastfeeding now)

☞ **A2. Does the mother answer that the child is unable to drink or breastfeed?**

Yes [1] No [2] ➔ *Go to question # A4*

☞ **A3. 🚫 If YES, mother reports child is unable to drink: Does the student offer water to the child to check whether the child is able to drink?**

Yes [1] No [2]

A4. Does the student ask whether the child VOMITS EVERYTHING?

Yes [1] No [2] ➔ *Go to question # A7*

☞ **A5. Does the mother answer that the child vomits everything?**

Yes [1] No [2] ➔ *Go to question # A7*

☞ **A6. 🚫 If YES, mother reports child vomits everything: Does the student offer water to the child to check whether the child vomits everything?**

Yes [1] No [2]

A7. Does the student ask whether the child has CONVULSIONS (related to this episode of illness)?

Yes [1] No [2]
 [or Child convulsing now]















A8. Does the child look sleepy, lethargic or unconscious?

Yes [1] No [2] ➔ *Go to question # A20*

Student: ID: |__|__|

- ☞ **A9.** 🛑 *If YES, child looks sleepy.* **Does the student check for lethargy or unconsciousness (tries to wake up the child)?**
- Yes [1] No [2]
- A20.** **Does the student ask if the child has COUGH or DIFFICULT BREATHING?**
- Yes [1] No [2] (*Ask the mother at the end of the observation*)
- A21.** **Does the child have cough or difficult breathing?**
- Yes [1] → *Go to question # A23* No [2]
- ☞ **A22.** *If NO, child has no cough or difficult breathing:* **Does the student enter the “cough box” by mistake?**
- Yes [1] → *Go to question # A30* No [2] → *Go to question # A30*
- 🛑 *If child has cough or difficult breathing:*
- ☞ **A23.** **Does the student ask how long the child has been having a cough for?**
- Yes [1] No [2]
- ☞ **A24.** **Does the student count the respiratory rate?**
- Yes [1] No [2] → *Go to question # A25*
- 🛑 *If YES, rate is counted:*
- ☞ **A24a.** **Child calm before and during the count?**
- Yes [1] No [2]
- ☞ **A24b.** **Respiratory rate counted for full minute?**
- Yes [1] No [2]
- ☞ **A24c.** **Write the respiratory rate/min counted by the student:** |__|__|
- ☞ **A24d.** **Write the respiratory rate/min counted by you:** |__|__|
- ☞ **A25.** **Does the student record on the case recording form that the child has chest indrawing?**
- Yes [1] No [2]
- ☞ **A26.** **Does the child have chest indrawing based on your assessment?**
- Yes [1] No [2]
- A30.** **Does the student ask if the child has DIARRHOEA?**
- Yes [1] No [2]
- A31.** **Does the child have diarrhoea?**
- Yes [1] → *Go to question # A33* No [2]

Student: ID: |__|__|

-  **A32.** If NO, child has no diarrhoea: Does the student enter the “diarrhoea box” by mistake?
- Yes [1] → Go to question # A40 No [2] → Go to question # A40
-  If child has diarrhoea:
-  **A33.** Does the student ask how long the child has been having diarrhoea for?
- Yes [1] No [2]
-  **A34.** Does the student ask if there is blood in the stools?
- Yes [1] No [2]
-  **A35.** Does the student record on the case recording form that the child is restless, irritable?
- Yes [1] No [2]
-  **A36.** Is the child restless, irritable based on your assessment?
- Yes [1] No [2]
-  **A37.** Does the student offer the child something to drink?
- Yes [1] No [2] → Go to question # A38
-  **A37a.** Write student’s conclusion on child’s drinking:
- Drinking eagerly, thirsty [1] Drinking normally [2] Drinking poorly/unable to drink [3]
-  **A37b.** Write your conclusion on child’s drinking:
- Drinking eagerly, thirsty [1] Drinking normally [2] Drinking poorly/unable to drink [3]
-  **A38.** Does the student pinch the skin of the abdomen?
- Yes [1] No [2] → Go to question # A40
-  If YES, skin is pinched:
-  **A38a.** Does the student pinch the skin correctly?
- Yes [1] No [2]
-  **A38b.** Write student’s conclusion on skin pinch going back:
- Fast [1] Slowly [2] Very slowly [3]
-  **A38c.** Write your conclusion on skin pinch going back:
- Fast [1] Slowly [2] Very slowly [3]
- A40.** Does the student ask if the child has a **SORE THROAT?**
- Yes [1] No [2]
- A41.** Does the student check for lymph nodes on the front of the neck?
- Yes [1] No [2]

A42. Does the student examine the child's throat correctly?

Yes [1] No [2]

A50. Does the student ask if the child has an EAR PROBLEM?

Yes [1] No [2]

A51. Does the child have an ear problem?

Yes [1] → Go to question # A53 No [2]

☞ **A52.** If NO, child has no ear problem: **Does the student enter the “ear problem box” by mistake?**

Yes [1] → Go to question # A60 No [2] → Go to question # A60

🔔 If child has an ear problem:

☞ **A53. Does the student ask about agonizing ear pain?**

Yes [1] No [2]

☞ **A54. Does the student ask about ear discharge?**

Yes [1] No [2] → Go to question # A56

☞ **A54a. Does the mother say that the child has ear discharge?**

Yes [1] No [2] → Go to question # A56

☞ **A55.** 🔔 If YES, mother reports child has ear discharge: **Does the student ask for how long (ear discharge)?**

Yes [1] No [2]

☞ **A56. Does the student feel for tender swelling behind the ear?**

Yes [1] No [2]

A60. Does the student ask/feel for FEVER (or refer to temperature if taken previously)?

Yes [1] No [2]

A61. Does the child have fever (≥ 37.5 °C - axillary temperature) or history of fever?

Yes [1] → Go to question # A63 No [2]

☞ **A62.** If NO, child has no fever: **Does the student enter the “fever box” by mistake?**

Yes [1] → Go to question # A70 No [2] → Go to question # A70

🔔 If child has fever:

☞ **A63. Does the student ask how long the child has been having fever for?**














Yes [1] No [2]

▪ **A64. Looking or feeling for stiff neck.** If it is unclear whether the student looks or feels for stiff neck, wait until the end of the observation (#A90), then ask the student to show you how to look or feel for stiff neck and answer the questions below.

☞ **A64a. Does the student use the correct technique?**

Yes [1] No [2]

Student: ID: |__|__|

-  **A64b. Does the student record that the child has a stiff neck?**
Yes [1] No [2]
-  **A64c. Does the child have a stiff neck according to your assessment?**
Yes [1] No [2]
- A70. Does the student look for VISIBLE SEVERE WASTING?**
Yes [1] No [2] → Go to question # A71
-  **A70a.  If YES: Does the student look for visible severe wasting using the correct technique?**
Yes [1] No [2]
-  **A70b. Write student's conclusion on visible severe wasting: is it present?**
Yes [1] No [2]
-  **A70c. Write your conclusion on visible severe wasting: is it present?**
Yes [1] No [2]
- A71. Does the student look for OEDEMA of both feet?**
Yes [1] No [2] → Go to question # A72
-  **A71a.  If YES: Does the student look for oedema of both feet correctly?**
Yes [1] No [2]
-  **A71b. Write student's conclusion on oedema of both feet: is it present?**
Yes [1] No [2]
-  **A71c. Write your conclusion on oedema of both feet: is it present?**
Yes [1] No [2]
- A72. Does the student check child's WEIGHT against a growth chart?**
Yes [1] No [2]
- A73. Does the student look for PALMAR PALLOR?**
Yes [1] No [2] → Go to question # A81
-  **A73a.  If YES: Does the student look for palmar pallor correctly?**
Yes [1] No [2]
-  **A73b. Write student's conclusion on palmar pallor:**
No pallor [1] Some pallor [2] Severe pallor [3]

Student: ID: |__|__|

☞ **A73c. Write your conclusion on palmar pallor:**

No pallor [1] Some pallor [2] Severe pallor [3]

A81. Does the student check child's IMMUNIZATION status (asks or checks card)?

Yes [1] No [2] → Go to question # A82

☞ **A81a. ⚠ *If YES:* Does the student record that the child is due for any immunization?**

Yes [1] No [2]

☞ **A81b. Is the child due for any immunization according to your assessment?**

Yes [1] No [2]

☞ **A81c. Is your conclusion on which immunizations are due the same as the student's?**

Yes [1] No [2]

A82. Does the student check VITAMIN A status (asks)?

Yes [1] No [2] → Go to question # A83 NA [8] Child is less than 9 months old → Go to question# A83

☞ **A82a. Write student's conclusion on vitamin A: does the child need it?**

Yes [1] No [2]

☞ **A82b. Write your conclusion on vitamin A: does the child need it?**

Yes [1] No [2]

A83. Does the student ask whether the child has OTHER PROBLEMS?

Yes [1] No [2]

Student: ID: |__|__|

CLASSIFICATION

Circle **ONE** code for the classification given by the student and by you in each box below (If the student does not say or write anything spontaneously, probe by asking what his/her conclusions are about the child.)

GENERAL DANGER SIGNS**By student**

C1	Very severe disease.....	Yes [1]	No [2]
-----------	--------------------------	---------	--------

By evaluator

C2	<i>Very severe disease.....</i>	Yes [1]	No [2]
-----------	---------------------------------	---------	--------

COUGH OR DIFFICULT BREATHING

C10	Severe pneumonia/very sev. disease.....	[1]
	Pneumonia.....	[2]
	No pneumonia (cough or cold).....	[3]
	Not applicable.....	[8]
	Not classified.....	[7]

C11	<i>Severe pneumonia/very sev. disease.....</i>	[1]
	<i>Pneumonia.....</i>	[2]
	<i>No pneumonia (cough or ld).....</i>	[3]
	<i>Not applicable.....</i>	[8]

DIARRHOEA

C20	Child has diarrhoea.....	Yes [1]	No [2]
------------	--------------------------	---------	--------

C21	<i>Child has diarrhoea.....</i>	Yes [1]	No [2]
------------	---------------------------------	---------	--------

→  **If child has no diarrhoea, go to C40 (SORE THROAT)**

C22	Severe dehydration.....	[1]
	Some dehydration.....	[2]
	No dehydration.....	[3]
	Not classified.....	[7]

C23	<i>Severe dehydration.....</i>	[1]
	<i>Some dehydration.....</i>	[2]
	<i>No dehydration.....</i>	[3]

C24	Severe persistent diarrhoea.....	[1]
	Persistent diarrhoea.....	[2]
	Not applicable.....	[8]
	Not classified.....	[7]

C25	<i>Severe persistent diarrhoea.....</i>	[1]
	<i>Persistent diarrhoea.....</i>	[2]
	<i>Not applicable.....</i>	[8]

C26	Dysentery.....	[1]
	Not applicable.....	[8]
	Not classified.....	[7]

C27	<i>Dysentery.....</i>	[1]
	<i>Not applicable.....</i>	[8]

SORE THROAT

C40	Streptococcal sore throat.....	[1]
	Non-streptococcal sore throat.....	[2]
	No throat problem.....	[3]
	Not classified.....	[7]

C41	<i>Streptococcal sore throat.....</i>	[1]
	<i>Non-streptococcal sore throat.....</i>	[2]
	<i>No throat problem.....</i>	[3]

Student ID: |__|__|

EAR PROBLEM

C50	Mastoiditis	[1]
	Acute ear infection.....	[2]
	Chronic ear infection	[3]
	No ear infection	[4]
	Not applicable.....	[8]
	Not classified	[7]

C51	<i>Mastoiditis.....</i>	[1]
	<i>Acute ear infection.....</i>	[2]
	<i>Chronic ear infection.....</i>	[3]
	<i>No ear infection</i>	[4]
	<i>Not applicable.....</i>	[8]

FEVER

C60	Very severe febrile disease	[1]
	Fever-possible bacterial infection.....	[2]
	Fever-bacterial infection unlikely	[3]
	Not applicable	[8]
	Not classified	[7]

C61	<i>Very severe febrile disease.....</i>	[1]
	<i>Fever-possible bacterial infection.....</i>	[2]
	<i>Fever-bacterial infection unlikely.....</i>	[3]
	<i>Not applicable.....</i>	[8]

NUTRITIONAL STATUS

C70	Severe malnutrition	[1]
	Low weight	[2]
	Not low weight.....	[3]
	Not classified.....	[7]

C71	<i>Severe malnutrition</i>	[1]
	<i>Low weight.....</i>	[2]
	<i>Not low weight.....</i>	[3]

ANAEMIA

C80	Severe anaemia.....	[1]
	Anaemia.....	[2]
	No anaemia.....	[3]
	Not classified	[7]

C81	<i>Severe anaemia.....</i>	[1]
	<i>Anaemia.....</i>	[2]
	<i>No anaemia.....</i>	[3]

Student: ID: |__|__|

IDENTIFICATION OF TREATMENT

Treatment	By student		By evaluator	
	No.	Yes (tick)	No.	Yes (tick)
Give first dose of an appropriate antibiotic	sT0		eT0	
Treat the child to prevent low blood sugar	sT1		eT1	
Refer urgently to hospital	sT2		eT2	
Give an oral antibiotic for pneumonia for ___ days	sT3		eT3	
Treat wheezing if present	sT4		eT4	
Advise the mother when to return immediately	sT5		eT5	
Follow up in ___ days	sT6		eT6	
Follow up in ___ days <i>if not improving</i>	sT7		eT7	
Give fluid for severe dehydration (Plan C) / frequent ORS sips if referred	sT8		eT8	
Give fluid, zinc and food for some dehydration (Plan B)	sT9		eT9	
Give fluid, zinc and food to treat diarrhoea at home (Plan A)	sT10		eT10	
Advise the mother on feeding a child who has persistent diarrhoea	sT11		eT11	
Give multivitamins and minerals, including zinc, for 14 days	sT12		eT12	
Give an oral antibiotic recommended for dysentery for ___ days	sT13		eT13	
Give an appropriate antibiotic for streptococcal sore throat	sT14		eT14	
Give paracetamol for fever and/or pain	sT15		eT15	
If fever is present every day for more than ___ days, refer for assessment	sT16		eT16	
Give an oral antibiotic for acute ear infection for ___ days	sT17		eT17	
Treat with topical quinolone eardrops for 2 weeks	sT18		eT18	
Dry the ear by wicking	sT19		eT19	
Give iron	sT20		eT20	
Give vitamin A	sT21		eT21	

ASSESSMENT AND IDENTIFICATION OF FEEDING PROBLEMS

F1 Does the child have a severe classification?

Yes [1] → go to question # A90 No [2]

F2. Is child less than 2 years old?

Yes [1] No [2] → Go to question H1

If not severe classification and child less than 2 years old:

☞ **F3. Does the student ask whether the child is breastfed?**

Yes [1] No [2]

☞ **F4. Is the child breastfed?**

Yes [1] No [2] → Go to question # F6

If YES, the child is breastfed:

☞ **F5a. Does the student ask how many times the child is breastfed in the 24 hours?**

Yes [1] No [2]

☞ **F5b. Does the student ask if the child is breastfed at night?**

Yes [1] No [2]

☞ **F5c. Does the student ask whether any other food or fluids are given to the child?**

Yes [1] No [2]

☞ **F5d. Is the child exclusively breastfed?**

Yes [1] → *Go to question # F9* No [2]

If NO, the child is not breastfed or not exclusively breastfed:

F6. Does the student ask what food and fluids are given to the child?

Yes [1] No [2]

F7. Does the student ask how many times a day the child is given food?

Yes [1] No [2]

F8. Does the student ask what is used to feed the child?

Yes [1] No [2]

F9. Does the student ask whether feeding changed during illness?

Yes [1] No [2]

F10. Does the student identify any feeding problems?

Yes [1] No [2]

F11. Have you identified any feeding problems?

Yes [1] No [2]

F12. Do you agree with student conclusions on feeding problems?

Yes [1] No [2]

HOME CARE

H1. Does the student advise the caregiver to increase fluids and continue feeding during illness?

Yes [1] No [2]

A90. IF CHILD HAS FEVER and it is unclear whether the student has looked or felt for stiff neck, ask the student to show you now how to look or feel for stiff neck and then complete items A64a, A64b and A64c.

ⓘ NOW: CHECK THE FORM AND MAKE SURE IT IS COMPLETE!

END OF OBSERVATION - *The evaluator may need to: ask the child's caregiver some questions if the student missed to ask these questions, validate certain findings and ask the student about the classifications made and the treatment identified during the consultation, if they were not stated during the consultation. The evaluator must complete and review this form carefully before the next child observation.*

Form 16B. Observation—child (2 months - 5 years)

Date: ____/____/2010 Evaluator ID: [____] Student: ID: [____]
 day month

Child:ID: [____] Sex: M [1] F [2] Birth date: ____/____/____ Age (months) [____]

Weight: [____].[____] Kg Axillary temperature: [____].[____] °C

Problems: _____

Circle the code for the answer which applies

(e.g.: If the answer is YES, circle [1]: Yes **[1]** No [2])

ASSESSMENT

(Record first what you see or hear and then check also the case recording form filled in by the student)

➤ **DANGER SIGNS**

A1. Does the student ask whether the child is ABLE TO DRINK or breastfeed?

Yes [1] No [2] ➔ Go to question # A4
 (or Child breastfeeding now)

☞ **A2. Does the mother answer that the child is unable to drink or breastfeed?**

Yes [1] No [2] ➔ Go to question # A4

☞ **A3. ☹️ If YES, mother reports child is unable to drink: Does the student offer water to the child to check whether the child is able to drink?**

Yes [1] No [2]

A4. Does the student ask whether the child VOMITS EVERYTHING?

Yes [1] No [2] ➔ Go to question # A7

☞ **A5. Does the mother answer that the child vomits everything?**

Yes [1] No [2] ➔ Go to question # A7

☞ **A6. ☹️ If YES, mother reports child vomits everything: Does the student offer water to the child to check whether the child vomits everything?**

Yes [1] No [2]

A7. Does the student ask whether the child has CONVULSIONS (related to this episode of illness)?

Yes [1] No [2]
 [or Child convulsing now]

A8. Does the child look sleepy, lethargic or unconscious?

Yes [1] No [2] ➔ Go to question # A20

Student: ID: |__|__|

- ☞ **A9.** 🚫 *If YES, child looks sleepy: Does the student check for lethargy or unconsciousness (tries to wake up the child)?*
- Yes [1] No [2]
- A20.** Does the student ask if child has **COUGH or DIFFICULT BREATHING?**
- Yes [1] No [2] (*Ask the mother at the end of the observation*)
- A21.** Does the child have cough or difficult breathing?
- Yes [1] → *Go to question # A23* No [2]
- ☞ **A22.** *If NO, child has no cough or difficult breathing: Does the student enter the “cough box” by mistake?*
- Yes [1] → *Go to question # A30* No [2] → *Go to question # A30*
- 🚫 *If child has cough or difficult breathing:*
- ☞ **A23.** Does the student ask how long the child has been having a cough for?
- Yes [1] No [2]
- ☞ **A24.** Does the student count the respiratory rate?
- Yes [1] No [2] → *Go to question # A25*
- 🚫 *If YES, rate is counted:*
- ☞ **A24a.** Child calm before and during the count?
- Yes [1] No [2]
- ☞ **A24b.** Respiratory rate counted for full minute?
- Yes [1] No [2]
- ☞ **A24c.** Write the respiratory rate/min counted by the student: |__|__|
- ☞ **A24d.** Write the respiratory rate/min counted by you: |__|__|
- ☞ **A25.** Does the student record on the case recording form that the child has chest indrawing?
- Yes [1] No [2]
- ☞ **A26.** Does the child have chest indrawing based on your assessment?
- Yes [1] No [2]
- A30.** Does the student ask if the child has **DIARRHOEA?**
- Yes [1] No [2]
- A31.** Does the child have diarrhoea?
- Yes [1] → *Go to question # A33* No [2]

Student: ID: |__|__|

- ☞ **A32.** If **NO**, child has no diarrhoea: **Does the student enter the “diarrhoea box” by mistake?**
 Yes [1] → Go to question # A50 No [2] → Go to question # A50
 🔔 If child has diarrhoea:
- ☞ **A33.** **Does the student ask how long the child has been having diarrhoea for?**
 Yes [1] No [2]
- ☞ **A34.** **Does the student ask if there is blood in the stools?**
 Yes [1] No [2]
- ☞ **A35.** **Does the student record on the case recording form that the child is restless, irritable?**
 Yes [1] No [2]
- ☞ **A36.** **Is the child restless, irritable based on your assessment?**
 Yes [1] No [2]
- ☞ **A37.** **Does the student offer the child something to drink?**
 Yes [1] No [2] → Go to question # A38
- ☞ **A37a.** **Write student’s conclusion on child’s drinking:**
 Drinking eagerly, thirsty [1] Drinking normally [2] Drinking poorly/unable to drink [3]
- ☞ **A37b.** **Write your conclusion on child’s drinking:**
 Drinking eagerly, thirsty [1] Drinking normally [2] Drinking poorly/unable to drink [3]
- ☞ **A38.** **Does the student pinch the skin of the abdomen?**
 Yes [1] No [2] → Go to question # A50
 🔔 If YES, skin is pinched:
- ☞ **A38a.** **Does the student pinch the skin correctly?**
 Yes [1] No [2]
- ☞ **A38b.** **Write student’s conclusion on skin pinch going back:**
 Immediately [1] Slowly [2] Very slowly [3]
- ☞ **A38c.** **Write your conclusion on skin pinch going back:**
 Immediately [1] Slowly [2] Very slowly [3]
- A50.** **Does the student ask if the child has an **EAR PROBLEM?****
 Yes [1] No [2]
- A51.** **Does the child have an ear problem?**
 Yes [1] → Go to question # A53 No [2]

Student: ID: |__|__|

☞ **A52.** *If NO, child has no ear problem: Does the student enter the “ear problem box” by mistake?*

Yes [1] → Go to question # A60 No [2] → Go to question # A60

🔔 *If child has an ear problem:*

☞ **A53.** Does the student ask about ear pain?

Yes [1] No [2]

☞ **A54.** Does the student ask about ear discharge?

Yes [1] No [2] → Go to question # A56

☞ **54a.** Does the mother say child has ear discharge?

Yes [1] No [2] → Go to question # A56

☞ **A55.** 🔔 *If YES, mother reports child has ear discharge: Does the student ask for how long (ear discharge)?*

Yes [1] No [2]

☞ **A56.** Does the student feel for (tender) swelling behind the ear?

Yes [1] No [2]

A60. Does the student ask/feel for **FEVER** (or refer to temperature if taken previously)?

Yes [1] No [2]

A61. Does the child have fever (≥ 37.5 °C - axillary temperature) or history of fever?

Yes [1] → Go to question # A63 No [2]

☞ **A62.** *If NO, child has no fever: Does the student enter the “fever box” by mistake?*

Yes [1] → Go to question # A70 No [2] → Go to question # A70

🔔 *If child has fever:*

☞ **A63.** Does the student ask how long the child has been having fever for?

Yes [1] No [2]

▪ **A64.** **Looking or feeling for stiff neck.** *If it is unclear whether the student looks or feels for stiff neck, wait until the end of the observation (#A90), then ask the student to show you how to look or feel for stiff neck and answer the questions below.*

☞ **A64a.** Does the student use the correct technique?

Yes [1] No [2]

☞ **A64b.** Does the student record that the child has a stiff neck?

Yes [1] No [2]

Student: ID: |__|__|

☞ **A64c. Does the child have a stiff neck according to your assessment?**

Yes [1] No [2]

☞ **A65. Is microscopic examination of blood films carried out in this facility?**

Yes [1] No [2] → Go to question # A67

☞ 🔔 *If YES, malaria laboratory service available:* **A66. Does the student request a blood film?**
(complete at the end of the assessment)

Yes [1] No [2] NA [8] [child has a GDS or any severe classification]

☞ **A67. Does the student ask if the child has had measles within the last 3 months?**

Yes [1] No [2]

A70. Does the student look for VISIBLE SEVERE WASTING?

Yes [1] No [2] → Go to question # A71

☞ **A70a. 🔔 *If YES:* Does the student look for visible severe wasting using the correct technique?**

Yes [1] No [2]

☞ **A70b. Write student's conclusion on visible severe wasting: is it present?**

Yes [1] No [2]

☞ **A70c. Write your conclusion on visible severe wasting: is it present?**

Yes [1] No [2]

A71. Does the student look for OEDEMA of both feet?

Yes [1] No [2] → Go to question # A72

☞ **A71a. 🔔 *If YES:* Does the student look for oedema of both feet correctly?**

Yes [1] No [2]

☞ **A71b. Write student's conclusion on oedema of both feet: is it present?**

Yes [1] No [2]

☞ **A71c. Write your conclusion on oedema of both feet: is it present?**











Yes [1] No [2]

A72. Does the student check child's WEIGHT against a growth chart?

Yes [1] No [2]

A73. Does the student look for PALMAR PALLOR?

Yes [1] No [2] → Go to question # A81

-  **A73a.**  *If YES:* Does the student look for palmar pallor correctly?
Yes [1] No [2]
-  **A73b.** Write student's conclusion on palmar pallor:
No pallor [1] Some pallor [2] Severe pallor [3]
-  **A73c.** Write your conclusion on palmar pallor:
No pallor [1] Some pallor [2] Severe pallor [3]
- A81.** Does the student check child's **IMMUNIZATION** status (asks or checks card)?
Yes [1] No [2] → Go to question # A82
-  **A81a.**  *If YES:* Does the student record that the child is due for any immunization?
Yes [1] No [2]
-  **A81b.** Is the child due for any immunization according to your assessment?
Yes [1] No [2]
-  **A81c.** Is your conclusion on which immunizations are due the same as the student's?
Yes [1] No [2]
- A82.** Does the student check **VITAMIN A** status (asks)?
Yes [1] No [2] → Go to question # A83 NA [8] Child is less than 6 months old → Go to question # A83
-  **A82a.** Write student's conclusion on vitamin A: does the child need it?
Yes [1] No [2]
-  **A82b.** Write your conclusion on vitamin A: does the child need it?
Yes [1] No [2]
- A83.** Does the student ask whether the child has **OTHER PROBLEMS?**
Yes [1] No [2]

Student: ID: |__|__|

CLASSIFICATION

Circle **ONE** code for the classification given by the student and by you in each box below (If the student does not say or write anything spontaneously, probe by asking what his/her conclusions are about the child.)

GENERAL DANGER SIGNS**By student**

C1	Present	Yes [1]	No [2]
-----------	---------------	---------	--------

By evaluator

C2	<i>Present</i>	Yes [1]	No [2]
-----------	----------------------	---------	--------

COUGH OR DIFFICULT BREATHING

C10	Severe pneumonia/very sev. disease....	[1]
	Pneumonia	[2]
	No pneumonia (cough or cold)	[3]
	Not applicable	[8]
	Not classified	[7]

C11	<i>Severe pneumonia/very sev. disease....</i>	[1]
	<i>Pneumonia</i>	[2]
	<i>No pneumonia (cough or cold)</i>	[3]
	<i>Not applicable</i>	[8]

DIARRHOEA

C20	Child has diarrhoea.....	Yes [1]	No [2]
------------	--------------------------	---------	--------

C21	<i>Child has diarrhoea.....</i>	Yes [1]	No [2]
------------	---------------------------------	---------	--------

→  **If child has no diarrhoea, go to C50 (EAR PROBLEM)**

C22	Severe dehydration	[1]
	Some dehydration	[2]
	No dehydration	[3]
	Not classified	[7]

C23	<i>Severe dehydration</i>	[1]
	<i>Some dehydration</i>	[2]
	<i>No dehydration</i>	[3]

C24	Severe persistent diarrhoea	[1]
	Persistent diarrhoea	[2]
	Not applicable	[8]
	Not classified	[7]

C25	<i>Severe persistent diarrhoea</i>	[1]
	<i>Persistent diarrhoea</i>	[2]
	<i>Not applicable</i>	[8]

C26	Dysentery	[1]
	Not applicable	[8]
	Not classified	[7]

C27	<i>Dysentery</i>	[1]
	<i>Not applicable</i>	[8]

EAR PROBLEM

C50	Mastoiditis	[1]
	Acute ear infection	[2]
	Chronic ear infection	[3]
	No ear infection	[4]
	Not applicable	[8]
	Not classified	[7]

C51	<i>Mastoiditis</i>	[1]
	<i>Acute ear infection</i>	[2]
	<i>Chronic ear infection</i>	[3]
	<i>No ear infection</i>	[4]
	<i>Not applicable</i>	[8]

Student: ID: |__|__|

FEVER

C60	Very severe febrile disease.....	[1]
	Malaria.....	[2]
	Fever-malaria unlikely.....	[3]
	Not applicable.....	[8]
	Not classified.....	[7]

C61	<i>Very severe febrile disease.....</i>	[1]
	<i>Malaria.....</i>	[2]
	<i>Fever-malaria unlikely.....</i>	[3]
	<i>Not applicable.....</i>	[8]

NUTRITIONAL STATUS

C70	Severe malnutrition.....	[1]
	Very low weight.....	[2]
	Not very low weight.....	[3]
	Not classified.....	[7]

C71	<i>Severe malnutrition.....</i>	[1]
	<i>Very low weight.....</i>	[2]
	<i>Not very low weight.....</i>	[3]

ANAEMIA

C80	Severe anaemia.....	[1]
	Anaemia.....	[2]
	No anaemia.....	[3]
	Not classified.....	[7]

C81	<i>Severe anaemia.....</i>	[1]
	<i>Anaemia.....</i>	[2]
	<i>No anaemia.....</i>	[3]

Student: ID: |__|__|

IDENTIFICATION OF TREATMENT

Treatment	By student		By evaluator	
	No.	Yes (tick)	No.	Yes (tick)
Give first dose of an appropriate antibiotic	sT0		eT0	
Give first dose of quinine for severe malaria	sT0a		eT0a	
Treat the child to prevent low blood sugar	sT1		eT1	
Refer urgently to hospital	sT2		eT2	
Give an oral antibiotic for pneumonia for __ days	sT3		eT3	
Treat wheezing if present	sT4		eT4	
Advise the mother when to return immediately	sT5		eT5	
Follow up in __ days	sT6		eT6	
Follow up in __ days <i>if not improving</i>	sT7		eT7	
Give fluid for severe dehydration (Plan C) / frequent ORS sips if referred	sT8		eT8	
Give fluid, zinc and food for some dehydration (Plan B)	sT9		eT9	
Give fluid, zinc and food to treat diarrhoea at home (Plan A)	sT10		eT10	
Advise the mother on feeding a child who has persistent diarrhoea	sT11		eT11	
Give multivitamins and minerals, including zinc, for 14 days	sT12		eT12	
Give an oral antibiotic recommended for dysentery for __ days	sT13		eT13	
Give recommended antimalarial for non-severe malaria	sT14		eT14	
Give paracetamol for high fever and/or pain	sT15		eT15	
If fever is present every day for more than __ days, refer for assessment	sT16		eT16	
Give an oral antibiotic for acute ear infection for __ days	sT17		eT17	
Treat with topical quinolone eardrops for 2 weeks	sT18		eT18	
Dry the ear by wicking	sT19		eT19	
Give iron	sT20		eT20	
Give vitamin A	sT21		eT21	

ASSESSMENT AND IDENTIFICATION OF FEEDING PROBLEMS**F1 Does the child have a severe classification?**

Yes [1] → go to question # A90 No [2]

F2. Is child less than 2 years old?

Yes [1] No [2] → Go to question H1

If not severe classification and child less than 2 years old: **F3. Does the student ask whether the child is breastfed?**





Yes [1] No [2]

 **F4. Is the child breastfed?**

Yes [1] No [2] → Go to question # F6

If YES, the child is breastfed:

Student: ID: |__|__|

-  **F5a. Does the student ask how many times the child is breastfed in 24 hours?**
Yes [1] No [2]
-  **F5b. Does the student ask if the child is breastfed at night?**
Yes [1] No [2]
-  **F5c. Does the student ask whether any other food or fluids are given to the child?**
Yes [1] No [2]
-  **F5d. Is the child exclusively breastfed?**
Yes [1] → Go to question # F9 No [2]
If NO, the child is not breastfed or not exclusively breastfed:
- F6. Does the student ask what food and fluids are given to the child?**
Yes [1] No [2]
- F7. Does the student ask how many times a day the child is given food?**
Yes [1] No [2]
- F8. Does the student ask what is used to feed the child?**
Yes [1] No [2]
- F9. Does the student ask whether feeding changed during illness?**
Yes [1] No [2]
- F10. Does the student identify any feeding problems?**
Yes [1] No [2]
- F11. Have you identified any feeding problems?**
Yes [1] No [2]
- F12. Do you agree with student conclusions on feeding problems?**
Yes [1] No [2]

HOME CARE

- H1. Does the student advise the caregiver to increase fluids and continue feeding during illness?**
Yes [1] No [2]

A90. IF CHILD HAS FEVER and is unclear whether the student has looked or felt for stiff neck, ask the student to show you now how to look or feel for stiff neck and then complete items A64a, A64b and A64c.

NOW: CHECK THE FORM AND MAKE SURE IT IS COMPLETE!

END OF OBSERVATION - The evaluator may need to: ask the child's caregiver some questions if the student missed to ask these questions, validate certain findings and ask the student about the classifications made and the treatment identified during the consultation, if they were not stated during the consultation. The evaluator must complete and review this form carefully before the next child observation.

EVALUATION OF
IMCI
pre-service education

**USER GUIDE TO DATA ENTRY
AND ANALYSIS**

**Annex 2. Assessment of student knowledge and skills.
User guide to data entry and analysis**

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Introduction

This guide has been designed to provide instructions on the use of the data entry and analysis programs developed by the WHO Regional Office for the Eastern Mediterranean for the assessment of student knowledge and skills within the context of evaluations of IMCI pre-service education. The user may refer to the Evaluation guide for further information on the evaluation, data management, indicators and data analysis. A library of multiple-choice questions (MCQs) and case scenarios for the knowledge test is available in the Question bank of the IMCI pre-service education package.

This user guide provides examples and follows them through step by step with short instructions and many illustrations—screenshots of the programs—to help the user learn by practising.

The first section deals with data entry and analysis of the student knowledge test—consisting of MCQs and case scenarios—using a program based on Microsoft Office Access¹ and developed for this specific purpose. This program requires no pre-existing knowledge of Access, as all commands are presented in a simple, user-friendly menu. To be able to use this program, you need to have Microsoft Office Access installed on your computer. The program is compatible with both Microsoft Office Access 2007 and Access 2003.

The second section deals with the data entry and analysis of the student skill test—the observation of case management—using a program based on Epi Info^{™2}. This program can be run on any computer.

Program files and Epi Info[™] 6 are available in the enclosed CD-ROM.

¹ A relational database management system, Microsoft Corporation.

² A word processing, database and statistics program for epidemiology on microcomputers, Centers for Disease Control and Prevention, Atlanta, Georgia, U.S.A. and World Health Organization, Geneva, Switzerland.

Knowledge test

Copying files to your computer

For the knowledge test (MCQs and case scenarios), create a new folder on your computer and copy in this folder the following two files that are in the folder “**ACCESS practice**” of the enclosed CD ROM:

- **Practice develop MCQ_CS.mdb**
- **CAH_info.xls**

It is important that both files are in the same folder for the Excel file to work. The Excel file “**CAH_info.xls**” should not be modified in any way.

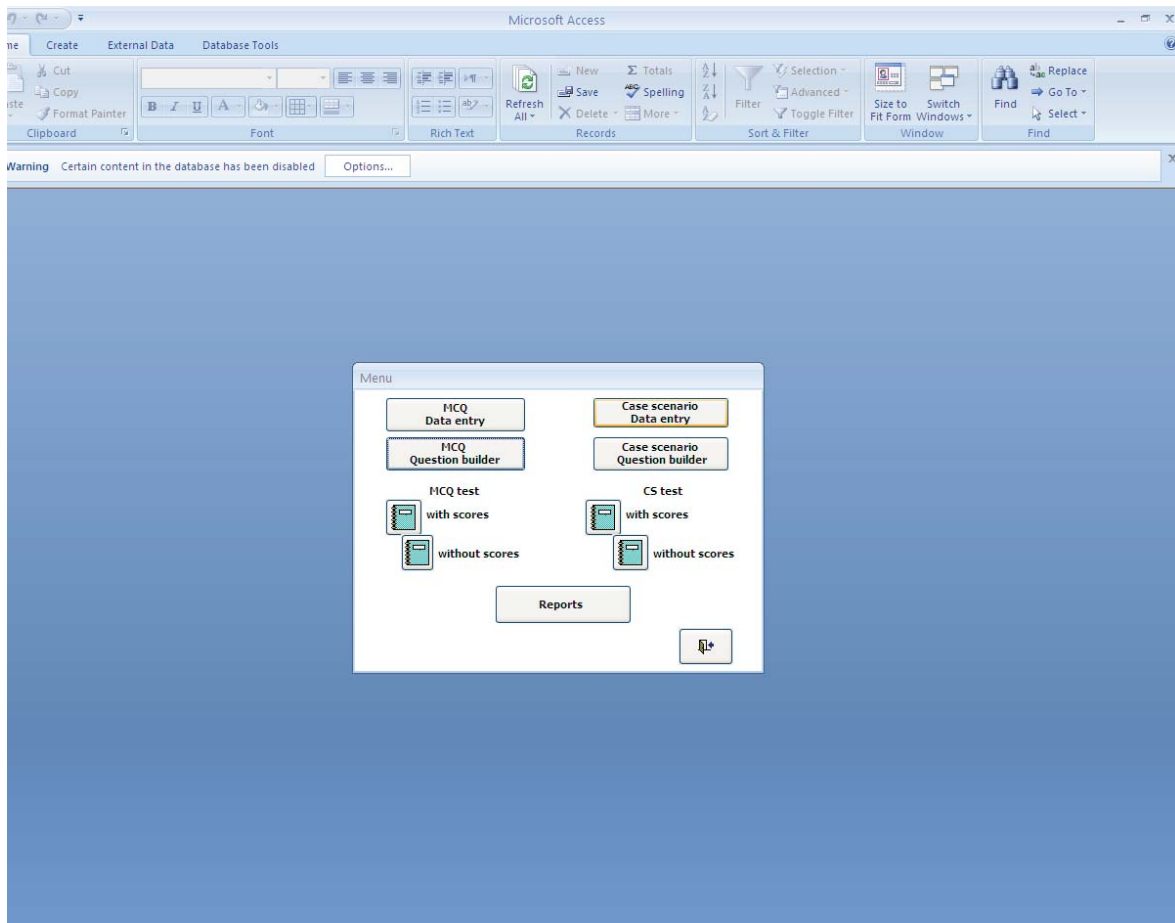
Instructions for users of Microsoft Office Access 2007

The instructions in this guide apply to both Microsoft Office Access 2007 and Access 2003.

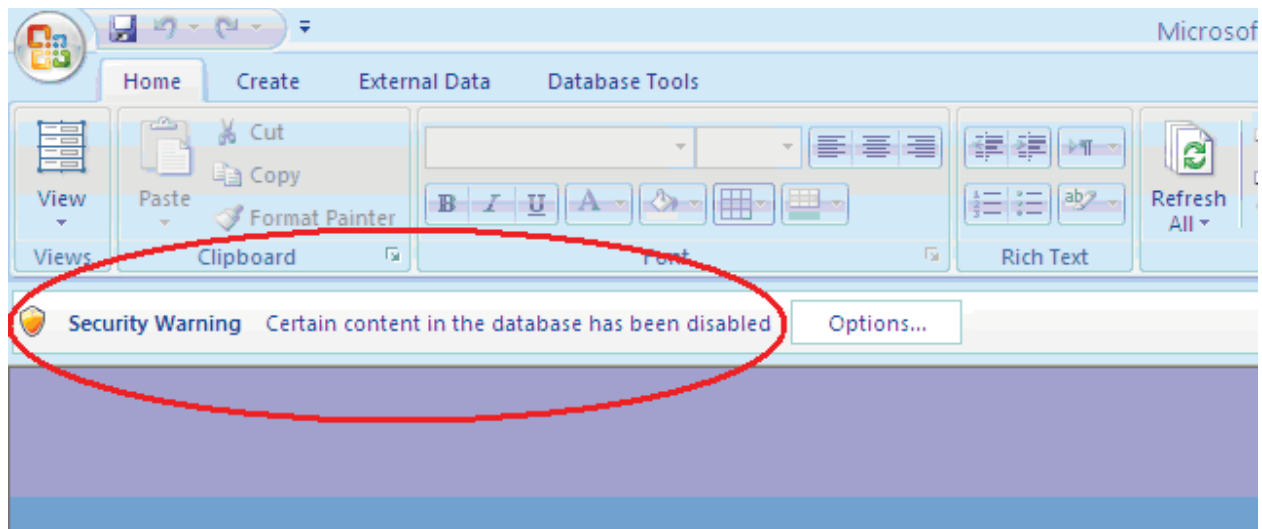
- If you have Access 2003 installed in your computer, then skip this section and read the next section, “Instructions for users of Access 2003”;
- If you have Microsoft Office Access 2007, read this section first and then go to section “Practising entering the MCQs and case scenario test”.

If you have Microsoft Office Access 2007 installed on your computer, when you double click on the Access file to open it, you need to enable its content first. To do so, follow these few simple steps:

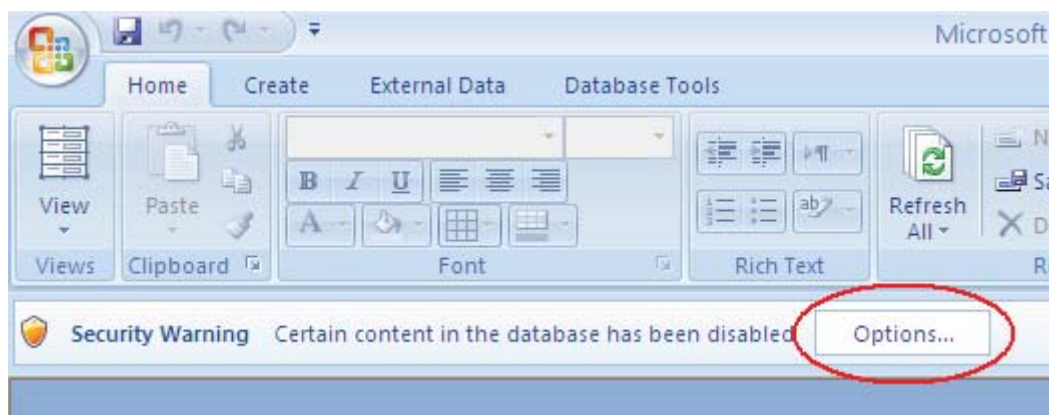
- Double click on the Access file; the following screen appears:



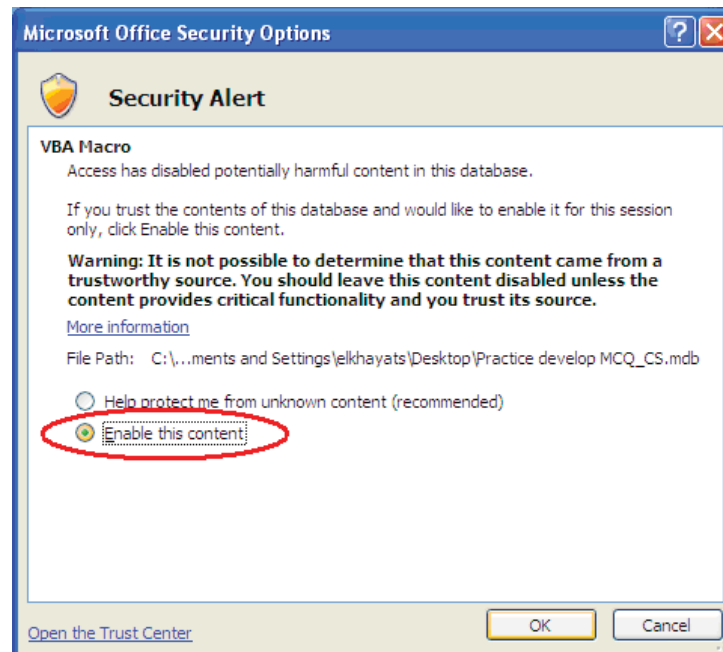
The screen displays a “**Security Warning**” message on top:



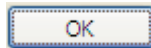
- To enable content, click on “**Options**”:



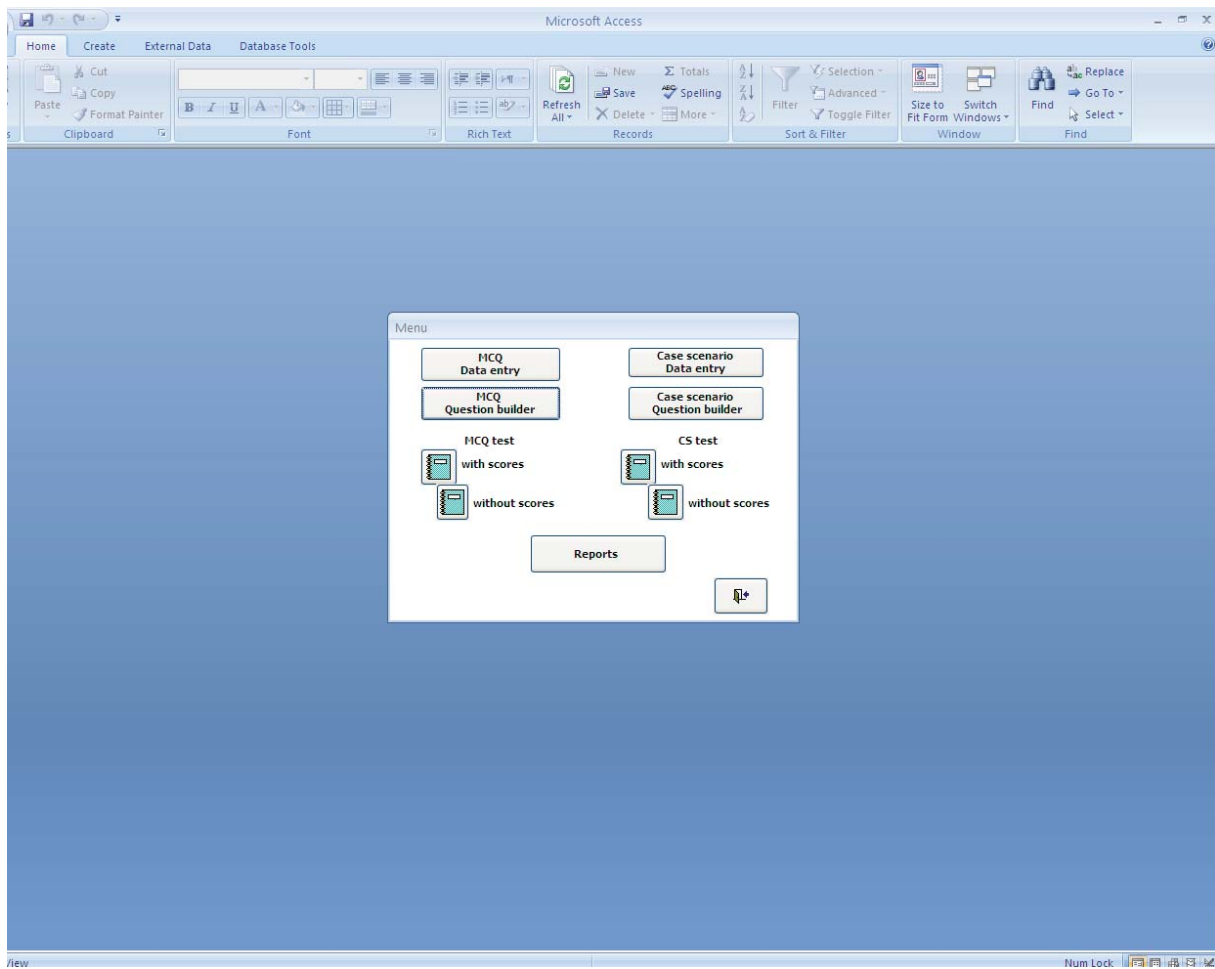
- The “**Security Alert**” window will be displayed. Click on the second option “**Enable this content**”, as shown below:



- Then, click on “**OK**”:



The screen will go back to the original one, no longer displaying the security warning on top, ready for you to use the program:



Irrespective of whether you have Access 2003 or Access 2007, the program will run smoothly and follow the same commands, as for data entry and analysis you will be using only the commands displayed in the program menu window rather than the Access menu.

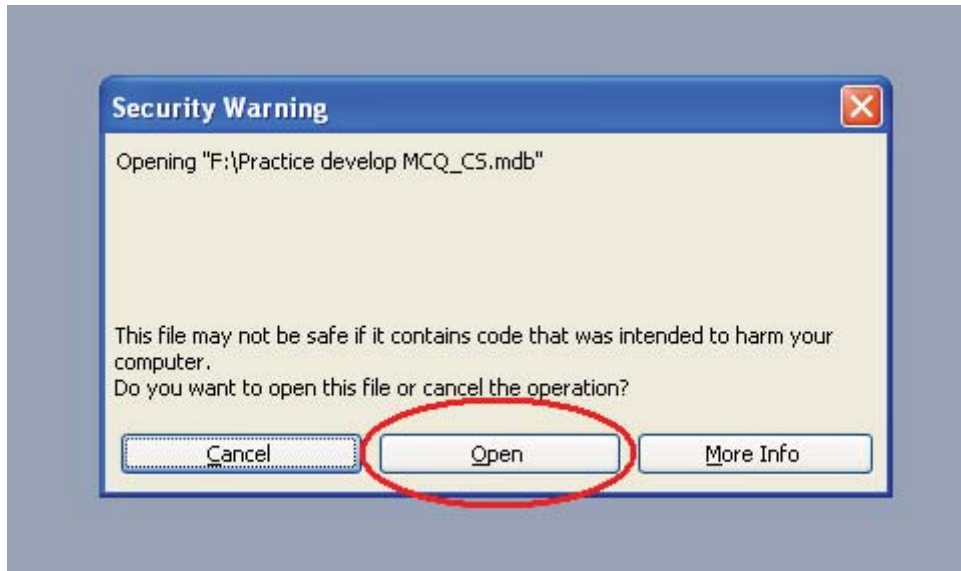
Now, you can go and read the section “Practising entering the MCQs and case scenario test”.

 **Reminder for users of Access 2007:**

Always enable content when opening the program Access file as described in this section, otherwise the menu will be inactive and not work.

Instructions for users of Access 2003

If you have Access 2003 installed in your computer, when you double click on the Access file to open it, the following security warning will be displayed:




As the Access file enclosed in the CD-ROM is safe, click on “**O**pen”.

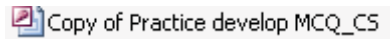
If, after this, a new warning message appears, click “**Y**es” to continue and open the file.

Practising entering the MCQ and Case scenario test

In this exercise, you will enter two MCQs and one case scenario with two questions in the ACCESS program for the knowledge test. The screenshots shown here are from the Access 2007 version and are very similar to those of the Access 2003 version. Menu windows look almost identical.

First, it is advisable to make a copy of the original ACCESS file with a different name, to safely back up your work in case something goes wrong:

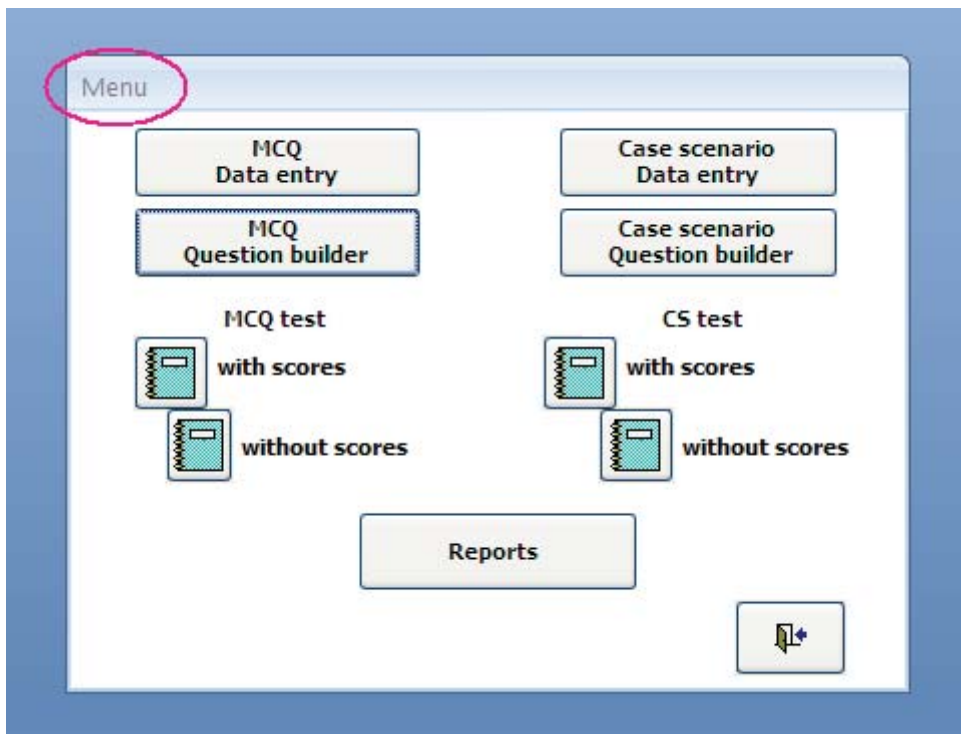
- right click on the file “**Practice develop MCQ_CS**”; 
- select “copy”;
- then right click the mouse again and select “Paste”.

The new file “**Copy of Practice develop MCQ_CS**” will appear: . Work on this file.

Let’s open the menu.

- Double click on this new file “**Copy of Practice develop MCQ_CS**”
- A security warning message appears. To open the file, deal with this message as explained in the previous sections depending on whether installed in your computer you have Microsoft Office Access 2007 (you need to enable content) or Access 2003 (you will choose to open the file).

The “**Menu**” window is displayed on the screen:



Now, let's enter the MCQs in the ACCESS program.

Below is the first of the two MCQs to be entered. Follow the instructions to go through all the steps carefully, so that you will then be able to enter the second MCQ.

MCQ 1

Under IMCI guidelines:

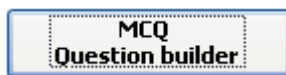
A1. Which of the following age groups do the IMCI clinical guidelines address?

(circle only ONE answer)

- a. Birth up to 5 years
- b. 2 months up to 2 years
- c. 1 week up to 5 years
- d. 2 months up to 6 years

- Click on the second button from the top on the left “**MCQ Question builder**” to create your MCQ

test:



The following screen appears:

The first item on top is “**Category**”.

- Click on the small arrow on the right to view the lookup dropdown list and select “**A. IMCI guidelines**”, as show below:

The screenshot shows the 'Question builder' window. On the left, there are three sections: 'Category', 'Question', and 'Options'. The 'Category' section has a dropdown menu that is open, showing a list of categories: 'A. IMCI guidelines', 'B. ASSESS AND CLASSIFY', 'C. ASSESS FEEDING PROBLEMS', 'D. IDENTIFY TREATMENT', 'E. COUNSEL', 'F. YOUNG INFANT ASSESS AND CLASSIFY', 'G. YOUNG INFANT IDENTIFY TREATMENT', and 'I. text'. The 'A. IMCI guidelines' option is highlighted. To the right of the dropdown is a button labeled 'Add new category'. Below the dropdown list is a search bar and a 'Record: 1 of 1' indicator. At the bottom, there are navigation buttons for back, forward, and search.

- Now, move to the next field “**Question**” and type the first question, as shown here:

The screenshot shows the 'Question builder' window. The 'Category' dropdown is now closed and shows 'A. IMCI guidelines'. The 'Question' field is now populated with the text: 'A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)'. The 'Options' field is empty. The 'Add new category' button is still visible. Below the question field is a search bar and a 'Record: 1 of 1' indicator. At the bottom, there are navigation buttons for back, forward, and search.

- Next, move the cursor into the “Options” field and enter the first option:

Question builder

Category: A. IMCI guidelines Add new category

Question: A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

Options

..	a. Birth up to 5 years	0
*		0

Record: 1 of 1 No Filter Search

Navigation: [Home] [Back] [Next] [Forward] [Print]

Record: 1 of 1 No Filter Search

Automatically, a new row appears, marked with an asterisk on the left.

- Click the TAB key on the keyboard to move to the next column (where a 0 shows) and enter the score. For more details on scores, refer to the Evaluation guide’s section on “Scoring tasks and answers” under Section 8. “Analysis and presentation of findings” –8.2 Quantitative findings”. If an option is correct, you will enter a positive score (e.g. 1); if the option is wrong, then you will enter a negative score (e.g. -1). Since this option is correct, enter 1:

Question builder

Category: A. IMCI guidelines Add new category

Question: A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

Options

..	a. Birth up to 5 years	1
*		0

Record: 1 of 1 No Filter Search

Navigation: [Home] [Back] [Next] [Forward] [Print]

Record: 1 of 1 No Filter Search

- Press the tab key again, to take you to the next option row. Enter “b. 2 months up to 2 years”.
- Press the tab key again and enter -1 as this is an incorrect option:

Question builder

Category: A. IMCI guidelines Add new category

Question: A1. Which of the following age groups do the IMCI clinical guidelines address?
(circle only ONE answer)

Options		
	a. Birth up to 5 years	1
	b. 2 months up to 2 years	-1
*		0

Record: 2 of 2 No Filter Search

Record: 1 of 1 No Filter Search

- Enter the remaining 2 options “c. 1 week up to 5 years” and “d. 2 months up to 6 years”, each with a negative score of -1 as they are both incorrect.

You have completed entering the first MCQ with four options. Your screen should look like this:

Question builder

Category: A. IMCI guidelines Add new category

Question: A1. Which of the following age groups do the IMCI clinical guidelines address?
(circle only ONE answer)

Options		
	a. Birth up to 5 years	1
	b. 2 months up to 2 years	-1
	c. 1 week up to 5 years	-1
	d. 2 months up to 6 years	-1
*		0

Record: 4 of 4 No Filter Search

Record: 1 of 1 No Filter Search

Note that the last row is empty and is marked with an asterisk on the left. This means that only the rows above will be displayed in the form and used for the calculations of the indicators.

Let's now enter the second MCQ.

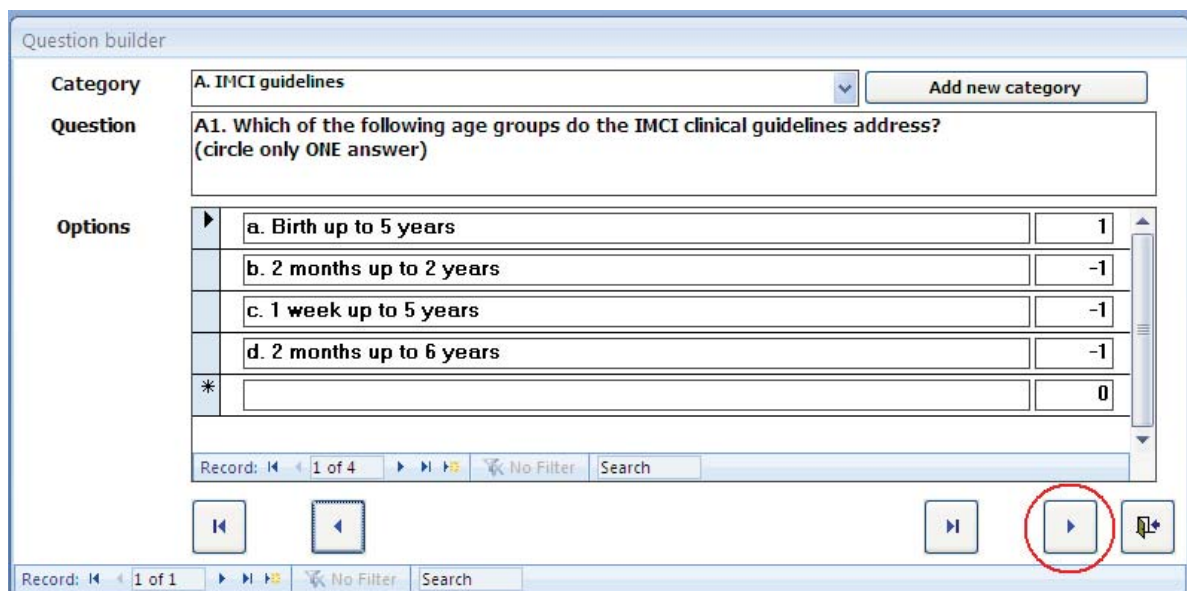
MCQ 2

Under “Assess and classify”:

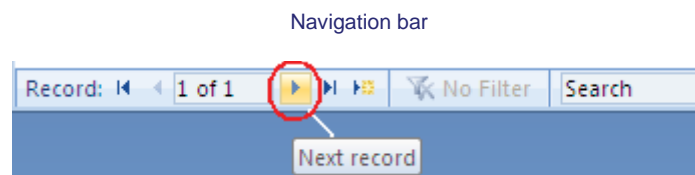
B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

- a. Cough
- b. Abdominal pain
- c. Fever
- d. Skin infection
- e. Diarrhoea

- To enter the second MCQ, click on the arrow pointing to the right at the bottom right of the window (see the arrow button circled in red):



You may also click on the small arrow pointing to the right in the Navigation bar at the bottom left of the window:



The new screen that appears is ready for you to enter next question.

The screenshot shows the 'Question builder' interface. It has three main sections: 'Category', 'Question', and 'Options'. The 'Category' section has a dropdown menu and an 'Add new category' button. The 'Question' section is a large text input field. The 'Options' section has a list of options, with a '0' in a small box next to it. At the bottom, there are navigation buttons and a status bar showing 'Record: 1 of 1' and 'No Filter'.

This time the “Category” to be selected is “**B. ASSESS AND CLASSIFY**”:

The screenshot shows the 'Question builder' interface with the 'Category' dropdown menu open. The menu lists several categories: A. IMCI guidelines, B. ASSESS AND CLASSIFY (highlighted), C. ASSESS FEEDING PROBLEMS, D. IDENTIFY TREATMENT, E. COUNSEL, F. YOUNG INFANT ASSESS AND CLASSIFY, G. YOUNG INFANT IDENTIFY TREATMENT, and I. text. The 'Category' label is circled in red. The 'Question' section is empty. The 'Options' section has a '0' in a small box next to it. At the bottom, there are navigation buttons and a status bar showing 'Record: 1 of 1' and 'No Filter'.

- Repeat all the steps followed for the first MCQ. Once you are finished, your screen should look like the following:

Question builder

Category: B. ASSESS AND CLASSIFY Add new category

Question: B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

Options:

a. Cough	1
b. Abdominal pain	-1
c. Fever	1
d. Skin infection	-1
e. Diarrhoea	1
*	0

Record: 5 of 5 No Filter Search

Record: 2 of 2 No Filter Search

As this is the last MCQ that we enter in this exercise, you need to close the form.

- To close the screen, press the icon at the bottom right showing an ajar door  :

Question builder

Category: B. ASSESS AND CLASSIFY Add new category


Question: B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

Options:

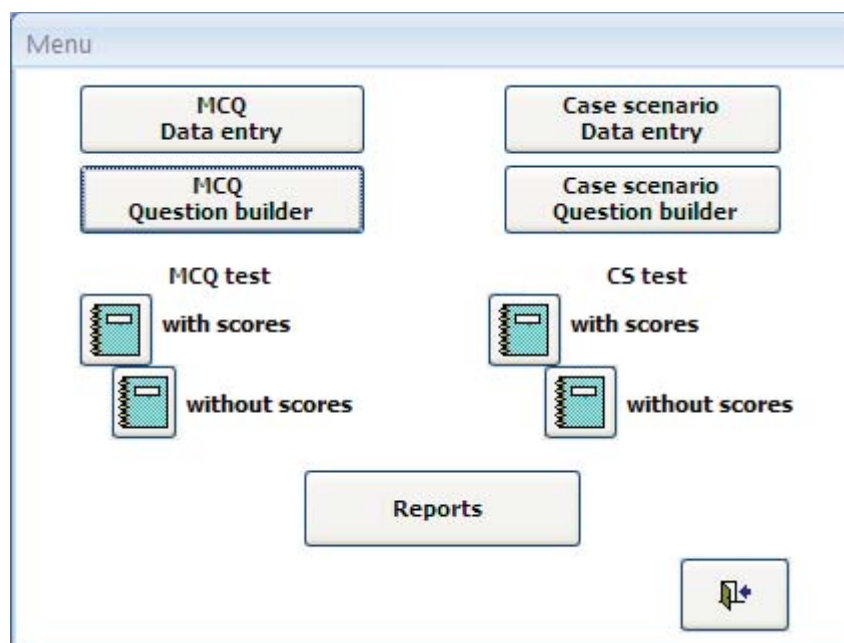
a. Cough	1
b. Abdominal pain	-1
c. Fever	1
d. Skin infection	-1
e. Diarrhoea	1
*	0

Record: 5 of 5 No Filter Search

Record: 2 of 2 No Filter Search



The menu screen will be displayed:



Now, let's enter the two questions of the case scenario.

Case scenario

- Click on the “Case scenario Question builder” button, second from the top to the right:



The following screen will appear:

You will enter the case scenario below with two questions, following the instructions given in the next few pages.

Case scenario 1 (Fatima)

Child age 2 months up to 5 years

Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.0 °C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima’s skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.

S.1.1 Which general danger signs does Fatima have? (circle all the correct options)

- Unable to drink or breastfeed
- Vomiting everything
- History of convulsion
- Convulsing now
- Lethargic or unconscious

S.1.2 What is your classification for dehydration? (circle only ONE option)

- SEVERE DEHYDRATION
- SOME DEHYDRATION
- NO DEHYDRATION

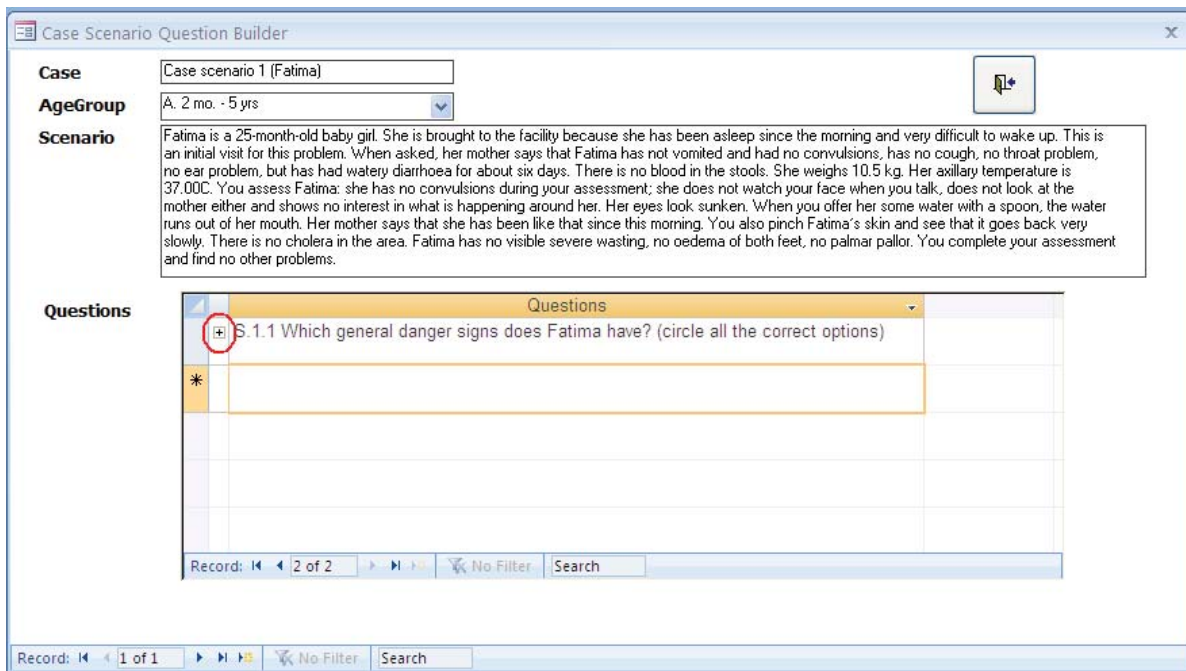
- Enter “Case”, “AgeGroup”, “Scenario” and first question as shown below:

The screenshot shows the 'Case Scenario Question Builder' window. It contains the following fields and content:

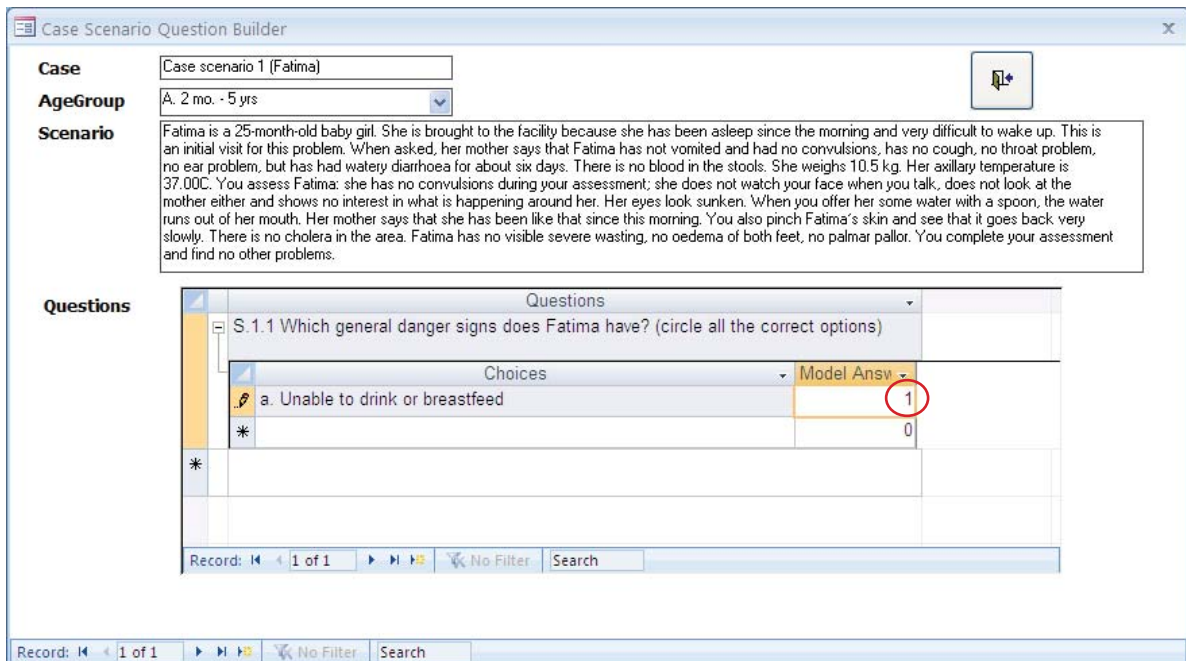
- Case:** Case scenario 1 (Fatima)
- AgeGroup:** A. 2 mo. - 5 yrs
- Scenario:** Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.
- Questions:** A table with one row containing the question: "S.1.1 Which general danger signs does Fatima have? (circle all the correct options)".

At the bottom of the window, there is a navigation bar with the text: Record: 1 of 1, No Filter, Search.

- Place the cursor in the row marked with the asterisk and click once. In the above row, where you have entered the first question, a small box with the sign **+** appears:



- Click on it to display the row where you can enter the options for this question.
- Place the cursor in the first row and enter the first option.
- Press the tab key and enter **1** as a score as this is a correct option:



- Enter the remaining four options. A correct option is “e” (enter score 1). Enter -1 for the other options (“b”, “c” and “d”):

The screenshot shows the 'Case Scenario Question Builder' window. The 'Case' field is 'Case scenario 1 (Fatima)' and the 'AgeGroup' is 'A. 2 mo. - 5 yrs'. The 'Scenario' text describes a 25-month-old baby girl with symptoms of watery diarrhoea and lethargy. The 'Questions' table is as follows:

Choices	Model Answ
a. Unable to drink or breastfeed	1
b. Vomiting everything	-1
c. History of convulsion	-1
d. Convulsing now	-1
e. Lethargic or unconscious	1

Record: 1 of 5

- To enter the second question for the same case scenario, click on the down arrow of the scroll bar on the right side of the screen:

This screenshot is identical to the previous one, but a red circle highlights the down arrow of the scroll bar on the right side of the 'Questions' table, indicating the next step in the process.

- Place the cursor in the row marked with the asterisk:

Case Scenario Question Builder

Case Case scenario 1 (Fatima)


AgeGroup A. 2 mo. - 5 yrs

Scenario Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.

Questions

Questions	
*	

Record: 1 of 1

- and enter the second question.
- Now, click on the plus sign  beside the question to enter the options:


Case Scenario Question Builder

Case Case scenario 1 (Fatima)

AgeGroup A. 2 mo. - 5 yrs

Scenario Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.

Questions

Questions	
	S. 1.2 What is your classification for dehydration? (circle only ONE option)
*	

Record: 1 of 1

- Option “a” is correct (score = 1), while options “b” and “c” are incorrect (-1):

The screenshot shows the 'Case Scenario Question Builder' window. The 'Case' field is 'Case scenario 1 (Fatima)' and the 'AgeGroup' is 'A. 2 mo. - 5 yrs'. The 'Scenario' text describes a 25-month-old baby girl with watery diarrhoea and signs of dehydration. The 'Questions' section contains a question: 'S. 1.2 What is your classification for dehydration? (circle only ONE option)'. Below the question is a table of choices with their corresponding model answers:

Choices	Model Answ
a. SEVERE DEHYDRATION	1
b. SOME DEHYDRATION	-1
c. NO DEHYDRATION	-1
*	0

At the bottom of the window, there is a 'Record: 1 of 1' indicator and a search bar.

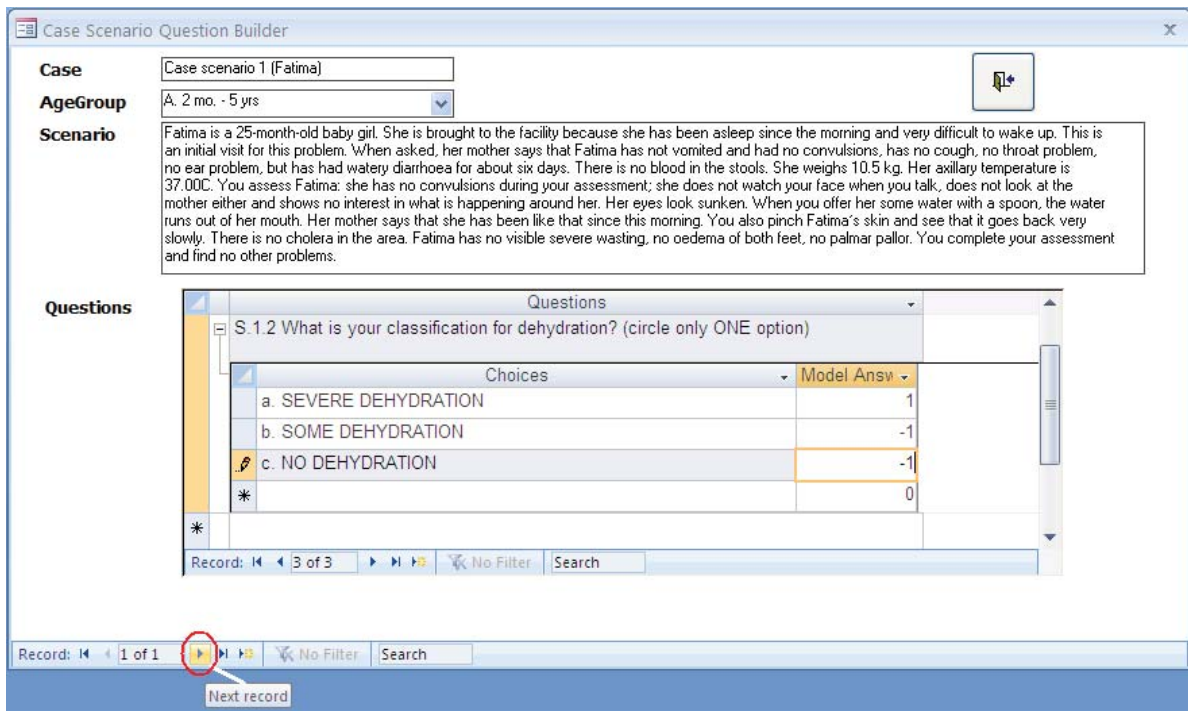
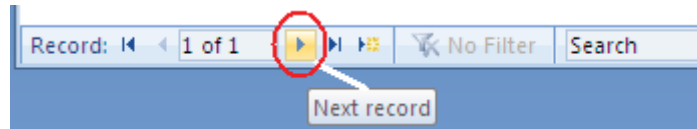
- As we are finished, click on the door ajar icon to leave the screen and return to the main menu:



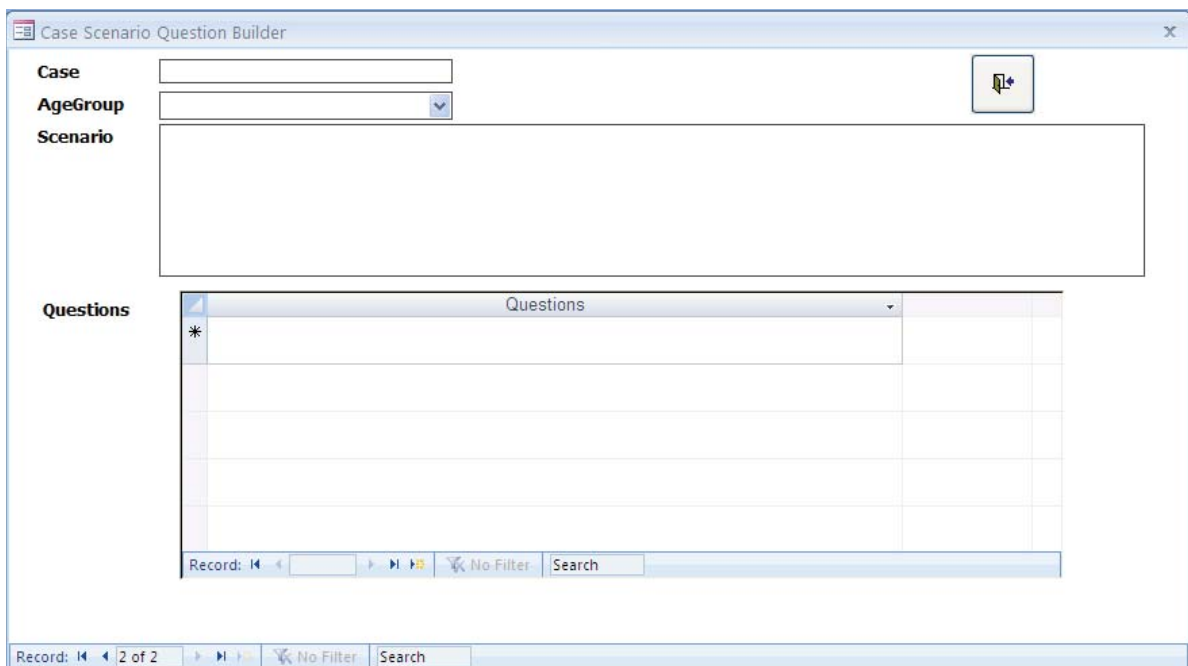
This screenshot is identical to the previous one, but the door ajar icon in the top right corner of the 'Case Scenario Question Builder' window is circled in red, indicating it is the button to click to exit the screen.

If we had wanted to enter a new case scenario (e.g., Case scenario 2), we would have used the Navigation bar, clicking on the arrow pointing to the right at the bottom of the screen:

Navigation bar

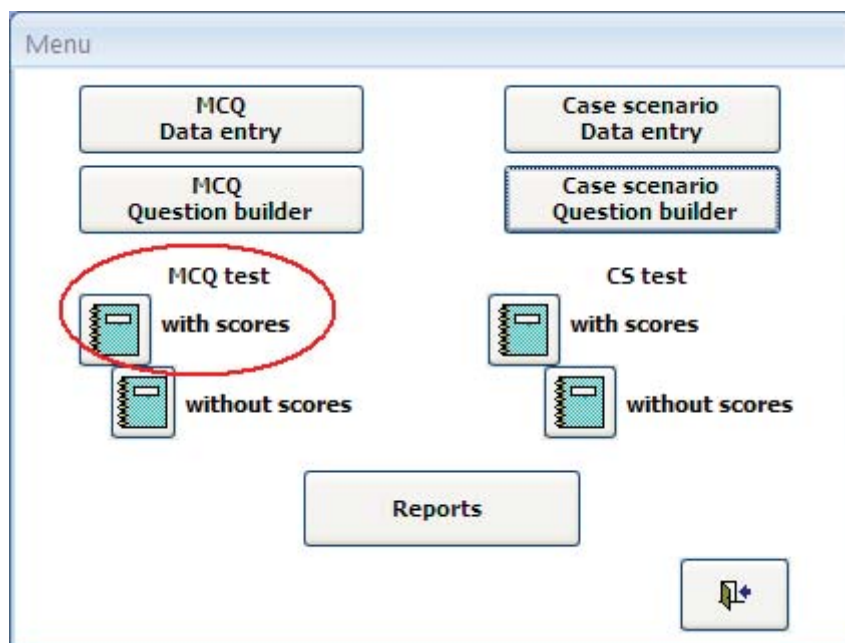
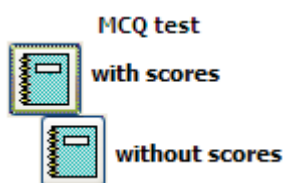


And we would have been ready to enter another case scenario:



- Let's exit and return to the menu.

To see the form we have just created, click under “**MCQ test**” the option “**with scores**” to see the score assigned to each option—or “**without scores**” to see the form without the scores:



- Magnify the window showing the form:



The screenshot shows a software interface with a magnified window titled "Categories". The magnified window displays an "MCQ test with scores" form. The form contains two sections:

A. IMCI guidelines
 A1. Which of the following age groups do the IMCI clinical guidelines address?
 (circle only ONE answer)

- a. Birth up to 5 years
- b. 2 months up to 2 years
- c. 1 week up to 5 years
- d. 2 months up to 5 years

B. ASSESS AND CLASSIFY
 B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

- a. Cough
- b. Abdominal pain
- c. Fever
- d. Skin infection
- e. Diarrhoea

At the bottom of the magnified window, it says "Page: 1" and "No Filter".

The background interface shows several buttons: "Case scenario Data entry", "Case scenario Question builder", "CS test with scores", "CS test without scores", and "Reports".

- Click once on the zoom lens to see the form that you have just created:

MCQ test with scores

A. IMCI guidelines

A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

a. Birth up to 5 years	1
b. 2 months up to 2 years	-1
c. 1 week up to 5 years	-1
d. 2 months up to 6 years	-1

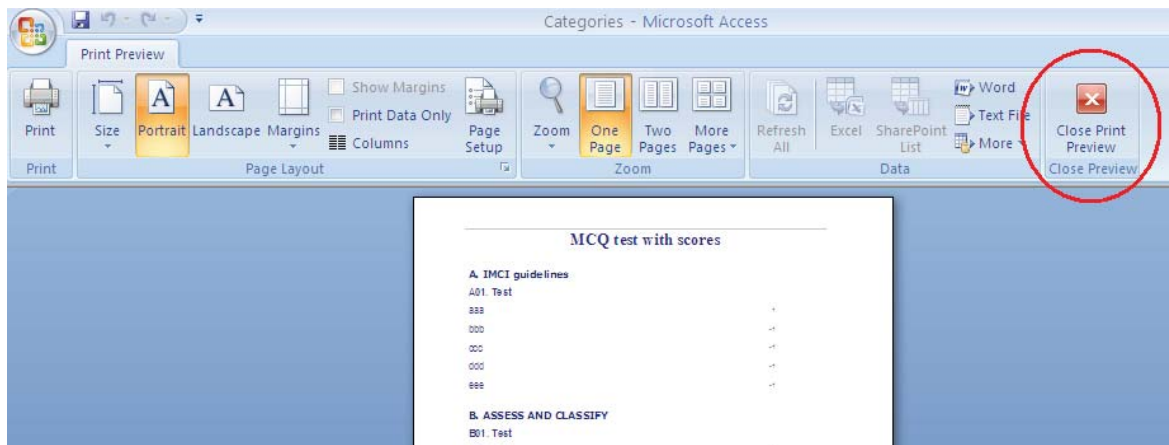
B. ASSESS AND CLASSIFY



B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

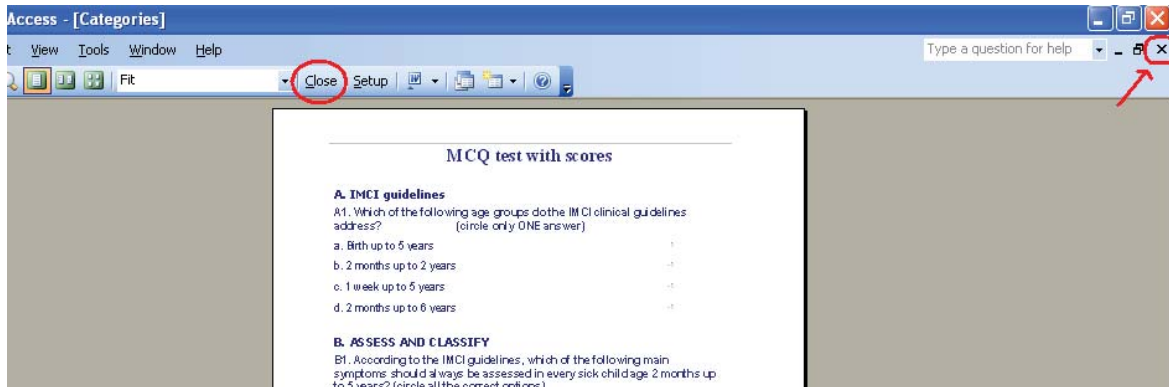
a. Cough	1
b. Abdominal pain	-1
c. Fever	1
d. Skin infection	-1
e. Diarrhoea	1

To close this window with the “MCQ test with scores” and return to the report menu:

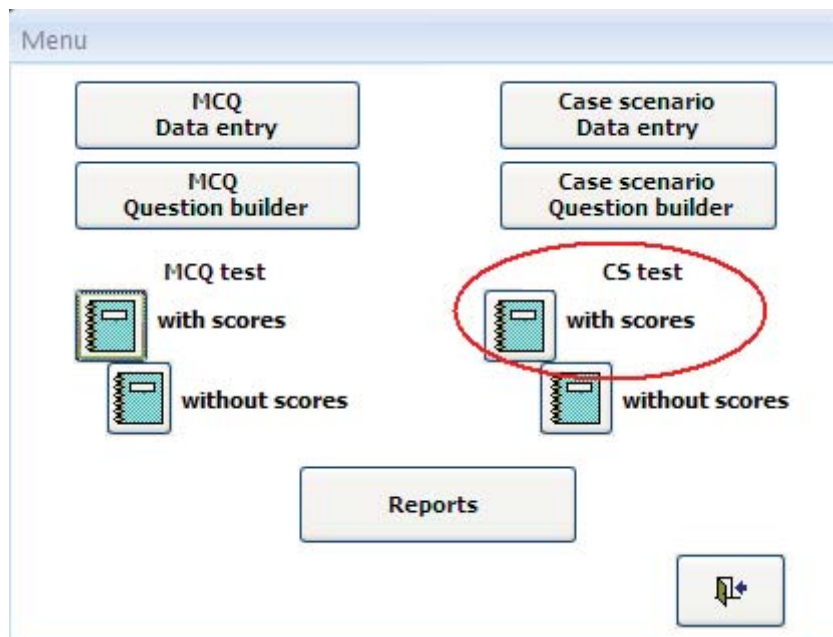
- In ACCESS 2007: click on the “Close Print Preview” icon on top:



- In ACCESS 2003, click on the small black  icon on the top right-hand corner of the inside window, placed under the bigger  red icon (which, if clicked, would close the whole program) or click on “Close”, as shown below:



If you want to see the case scenario form, then click under “CS test” the option “with scores” or “without scores”:



Case Scenarios Test with scores

Case scenario 1 (Fatima)

Age Group **A. 2 mo. - 5 yrs**

Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no visible severe wasting, no oedema of both feet, no palmar pallor. You complete your assessment and find no other problems.

S.1.1 Which general danger signs does Fatima have? (circle all the correct options)

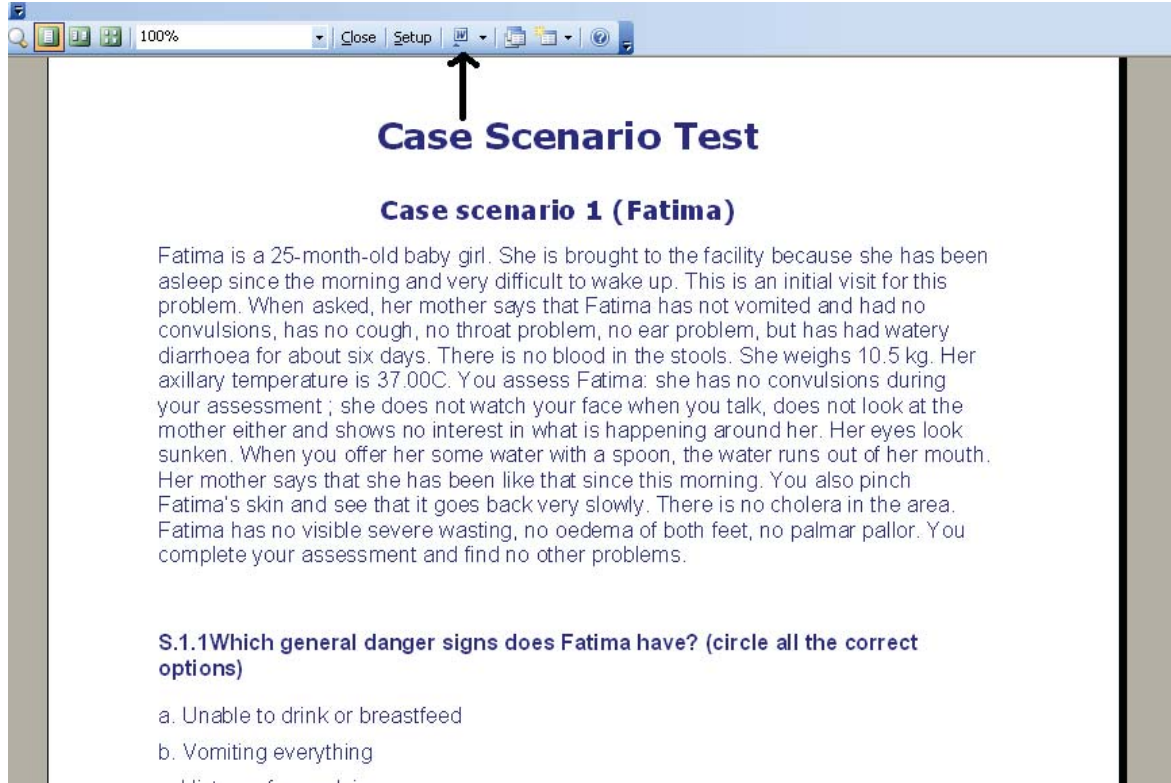
- | | |
|----------------------------------|----|
| a. Unable to drink or breastfeed | 1 |
| b. Vomiting everything | -1 |
| c. History of convulsion | -1 |
| d. Convulsing now | -1 |

Reminder:

Always back up your data files on an external drive (e.g. pen drive) at the end of each data entry session.

Don't wait to have entered all the data until the last day!

To improve the look of the form before printing it and distributing to students for the test, the form so created can be exported to Word, clicking the icon on top as shown here:



In Access 2007  Word :



Well done! You are now ready to enter the data!

Practising entering student answers to MCQs and case scenarios

In this exercise, you will enter answers of two students to the two MCQs and the case scenario that you have developed in the previous exercise.

MCQs

A1. Which of the following age groups do the IMCI clinical guidelines address?

Options	Student 01	Student 02
a. Birth up to 5 years	✓	-
b. 2 months up to 2 years	-	-
c. 1 week up to 5 years	-	✓
d. 2 months up to 6 years	-	-

B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years?

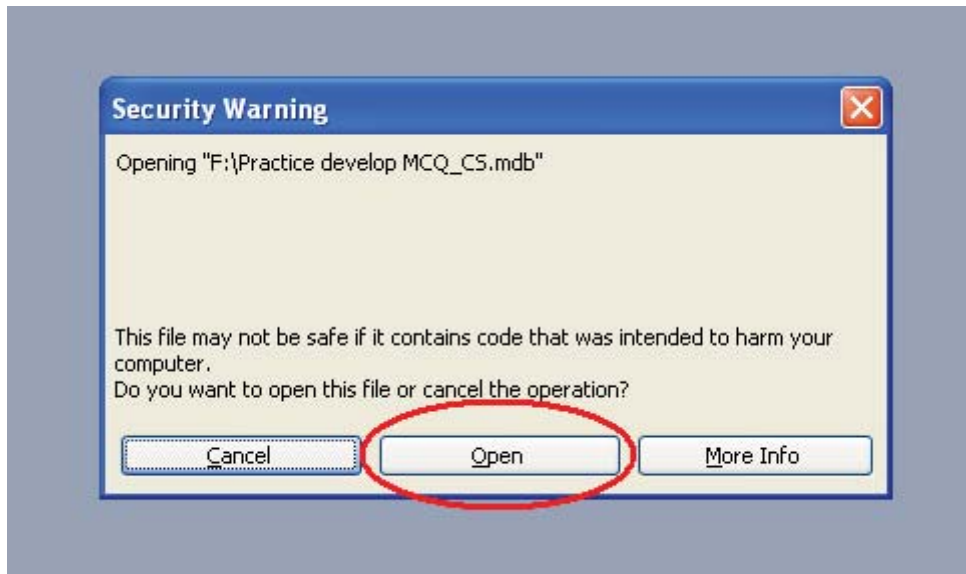
Options	Student 01	Student 02
a. Cough	✓	✓
b. Abdominal pain	-	✓
c. Fever	✓	✓
d. Skin infection	-	-
e. Diarrhoea	✓	✓

Now, let's see how to enter these results in the ACCESS program.

- Double click on the file "**Copy of Practice develop MCQ_CS**" that you created in the previous exercise, in which you entered the two MCQs and the case scenario with two questions:

 Copy of Practice develop MCQ_CS

- A security warning appears. As this file is safe:
 - In Access 2003: click on “**Open**”.



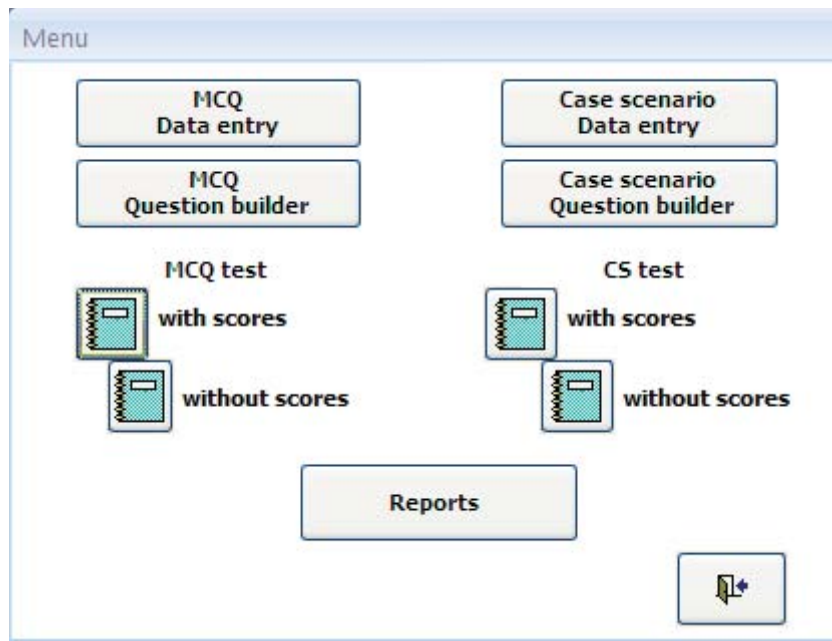
- In Microsoft Office Access 2007: enable content as described earlier³.

 **Reminder for users of Access 2007:**

Always enable content when opening the program Access file as described in the previous section, otherwise the menu will be inactive and not work.

³ Click on “**Options**” and then select “**Enable this content**” to be able to open the file, as described in the “Instructions for users of Microsoft Office Access 2007”.

The “**Menu**” is displayed on the screen:



- Click on the first button from the top on the left “**MCQ Data entry**” to enter your data,

i.e. student answers to the MCQ test:

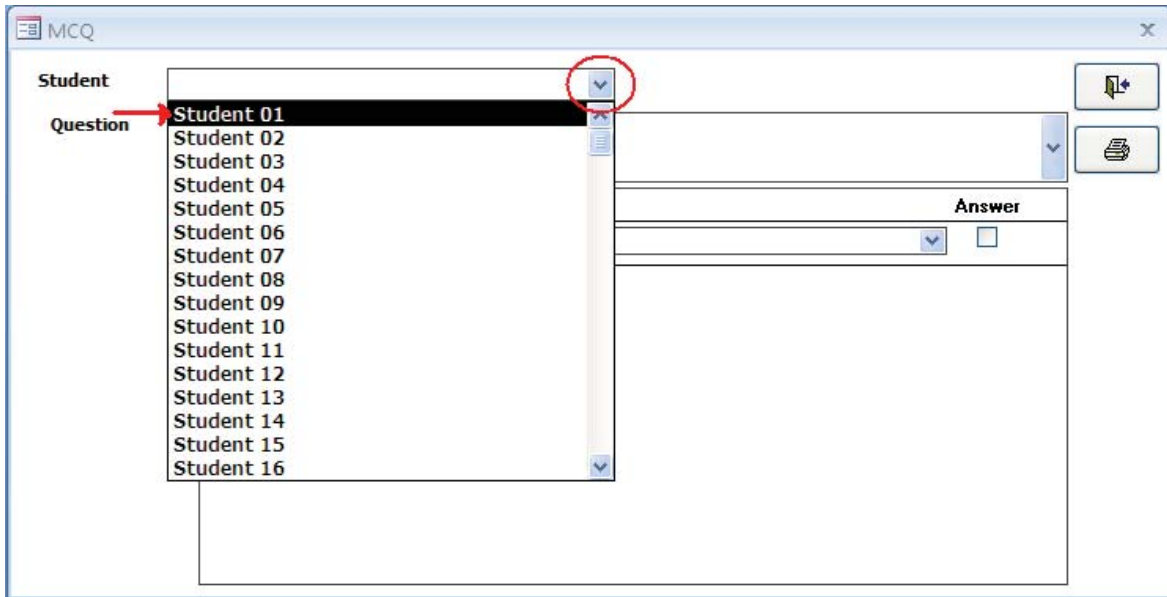


The following screen appears:

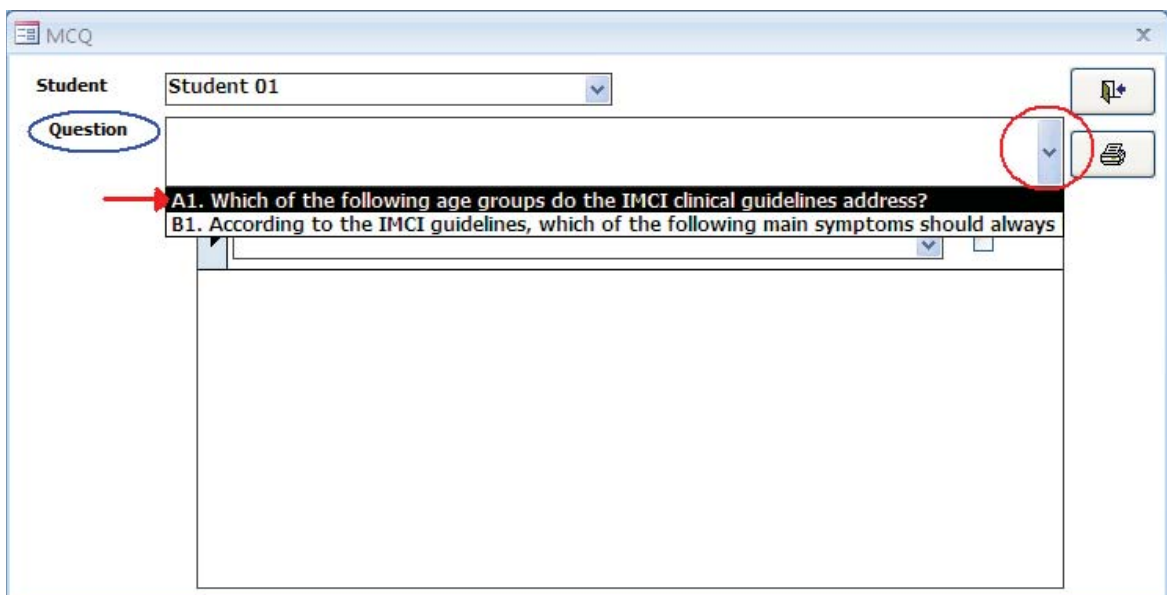
The 'MCQ' form includes the following fields and controls:

- Student:** A dropdown menu.
- Question:** A dropdown menu.
- Answer:** A dropdown menu with a checkbox to its right.
- Two icons on the right side: a speaker with a plus sign and a printer.

- Click on the small arrow on the right of the first item “Student” (circled in red in the picture below) to view the dropdown list and select Student 01:



- Now, move to the next field “Question”, click on the small arrow on the right of this item (see arrow circled in red below) to view the dropdown list and click on the first question (“A1. Which of the following...”), as shown here:



The answer box for that question, showing all the options, is automatically displayed on the screen, as shown below.

The screenshot shows a window titled "MCQ" with a student dropdown set to "Student 01". The question is "A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)". Below the question is a table with four options and an asterisk option. A red box highlights the entire table area.

	Answer
a. Birth up to 5 years	<input type="checkbox"/>
b. 2 months up to 2 years	<input type="checkbox"/>
c. 1 week up to 5 years	<input type="checkbox"/>
d. 2 months up to 6 years	<input type="checkbox"/>
* []	<input type="checkbox"/>

- Click on the "Answer" box by option "a" (see red circle below), as this is the option selected by the first student for this question. A tick appears in the box. If you wish to remove the tick, to place it in a different Answer box, simply click again where you placed the tick and the tick will disappear. This is how you can correct wrong entries. In fact, every action in ACCESS is automatically saved. You do not need to save. For the same reason, you can not "undo" actions.

The screenshot shows the same "MCQ" window. In this view, a tick mark is present in the "Answer" box for option "a", which is circled in red. The other options and the asterisk option remain unchanged.

	Answer
a. Birth up to 5 years	<input checked="" type="checkbox"/>
b. 2 months up to 2 years	<input type="checkbox"/>
c. 1 week up to 5 years	<input type="checkbox"/>
d. 2 months up to 6 years	<input type="checkbox"/>
* []	<input type="checkbox"/>

Next, you need to enter student 1's answer to question 2.

- Click on the small arrow to the right of the item “**Question**” as you did for the first question to view the dropdown list and click on the second question (“B1. According to the IMCI guidelines ...”):

MCQ

Student: Student 01

Question: A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

A1. Which of the following age groups do the IMCI clinical guidelines address?
 B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

a. Birth up to 5 years	<input checked="" type="checkbox"/>
b. 2 months up to 2 years	<input type="checkbox"/>
c. 1 week up to 5 years	<input type="checkbox"/>
d. 2 months up to 6 years	<input type="checkbox"/>
* []	<input type="checkbox"/>

The answer box for that question, displaying all the options, is automatically displayed.

- Select options “a”, “c” and “e” by clicking on the corresponding answer boxes as shown below (circled in red):

MCQ

Student: Student 01

Question: B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

	Answer
a. Cough	<input checked="" type="checkbox"/>
b. Abdominal pain	<input type="checkbox"/>
c. Fever	<input checked="" type="checkbox"/>
d. Skin infection	<input type="checkbox"/>
e. Diarrhoea	<input checked="" type="checkbox"/>
* []	<input type="checkbox"/>

You are finished with student 1, as there are only two MCQs. You’ll then start entering the answers of student 2 to the same questions.

- Click on the small arrow on the right of the first item **“Student”** to view the dropdown list and select Student 02 (see red arrow below):

The screenshot shows the MCQ data entry window. The 'Student' dropdown menu is open, displaying a list of students from Student 01 to Student 16. A red arrow points to the 'Question' dropdown menu, which is also open, showing a list of questions. The 'Answer' column is visible, with checkboxes for each student's response.

Student	Answer
Student 01	<input checked="" type="checkbox"/>
Student 02	<input type="checkbox"/>
Student 03	<input type="checkbox"/>
Student 04	<input type="checkbox"/>
Student 05	<input type="checkbox"/>
Student 06	<input type="checkbox"/>
Student 07	<input type="checkbox"/>
Student 08	<input type="checkbox"/>
Student 09	<input type="checkbox"/>
Student 10	<input checked="" type="checkbox"/>
Student 11	<input type="checkbox"/>
Student 12	<input type="checkbox"/>
Student 13	<input type="checkbox"/>
Student 14	<input checked="" type="checkbox"/>
Student 15	<input type="checkbox"/>
Student 16	<input type="checkbox"/>

- You'll notice that question B1 is still displayed, as this was the last question entered for student 1. So, click on the small arrow to the right of the item **“Question”**, as you did for the first student, to view the dropdown list and click on the first question (**“A1. Which of the following...”**) (see red arrow below):

The screenshot shows the MCQ data entry window for Student 02. The 'Question' dropdown menu is open, displaying a list of questions. A red arrow points to the first question, 'A1. Which of the following age groups do the IMCI clinical guidelines address?'. The 'Answer' column is visible, with checkboxes for each question's response.

Question	Answer
B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)	<input type="checkbox"/>
A1. Which of the following age groups do the IMCI clinical guidelines address?	<input type="checkbox"/>
B1. According to the IMCI guidelines, which of the following main symptoms should always	<input type="checkbox"/>

The answer box for that question, displaying all the options, is automatically displayed.

- Click on the answer box which corresponds to option “c”:

MCQ

Student: Student 02

Question: A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

	Answer
a. Birth up to 5 years	<input type="checkbox"/>
b. 2 months up to 2 years	<input type="checkbox"/>
c. 1 week up to 5 years	<input checked="" type="checkbox"/>
d. 2 months up to 6 years	<input type="checkbox"/>
* []	<input type="checkbox"/>

Next, you need to enter student 2's answer to question 2.

- Click on the small arrow on the right of the item “Question”, as you did earlier for the first question, to view the dropdown list and click on the second question (“B1. According to the IMCI guidelines ...”) (see red arrow below):

MCQ

Student: Student 02

Question: A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

B1. According to the IMCI guidelines, which of the following main symptoms should always

a. Birth up to 5 years	<input type="checkbox"/>
b. 2 months up to 2 years	<input type="checkbox"/>
c. 1 week up to 5 years	<input checked="" type="checkbox"/>
d. 2 months up to 6 years	<input type="checkbox"/>
* []	<input type="checkbox"/>

- Student 2 has selected options “a”, “b”, “c” and “e”. Tick on the corresponding answer boxes. Your screen should then look like this:

The screenshot shows a software window titled 'MCQ'. At the top, there is a 'Student' dropdown menu set to 'Student 02'. Below it is a 'Question' field containing the text: 'B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)'. To the right of the question are two icons: a back arrow and a printer icon. Below the question is a table with the following structure:

	Answer
a. Cough	<input checked="" type="checkbox"/>
b. Abdominal pain	<input checked="" type="checkbox"/>
c. Fever	<input checked="" type="checkbox"/>
d. Skin infection	<input type="checkbox"/>
e. Diarrhoea	<input checked="" type="checkbox"/>
* []	<input type="checkbox"/>

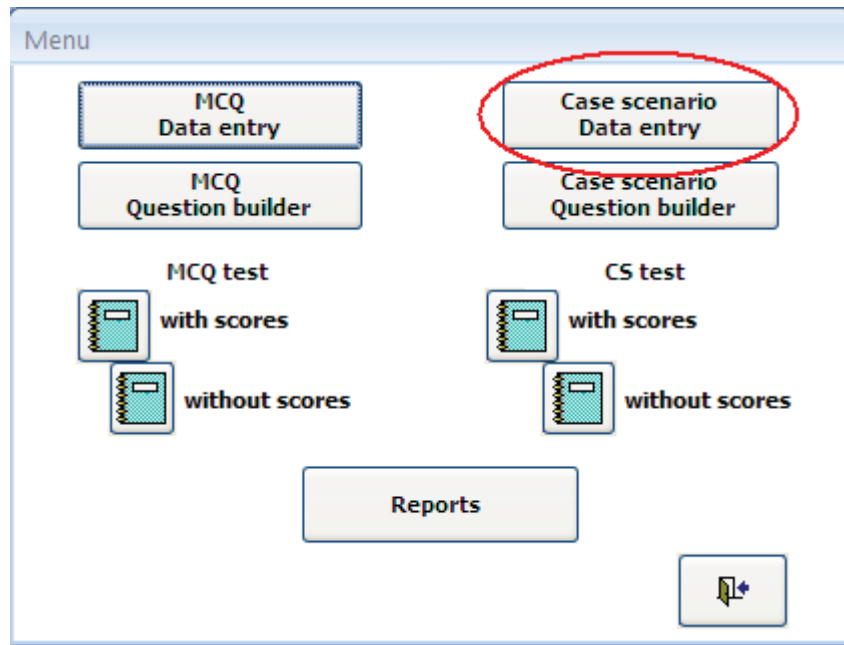
At this point, you have finished entering student answers to MCQs, as you had only two questions and two students to enter in this example.

- Leave this screen to go back to the main menu and be ready to enter the answers to the two questions of the case scenario. Click on the exit icon on the top right:



This screenshot is identical to the one above, but the exit icon (a back arrow) in the top right corner is circled in red to indicate it should be clicked to return to the main menu.

- This takes you back to the main menu. Click on the “**Case scenario Data entry**” button, first from the top right:



A new screen appears:

The screenshot shows the 'Case scenario' data entry screen. It has a title bar 'Case scenario' and a close button. The form contains the following fields and controls:

- Student:** A dropdown menu.
- Case:** A dropdown menu.
- Scenario:** A large text area with a scroll bar on the right.
- Question:** A dropdown menu.
- Options:** A dropdown menu and a checkbox.

There are also two small icons on the right side of the form: a refresh icon and a search icon.

Before entering the answers, let's see what the two students have answered in their test:

Case scenario 1 (Fatima)

S.1.1 Which general danger signs does Fatima have?

Options	Student 01	Student 02
a. Unable to drink or breastfeed	✓	✓
b. Vomiting everything	-	-
c. History of convulsions	-	-
d. Convulsing now	-	-
e. Lethargic or unconscious	✓	✓

S.1.2 What is your classification for dehydration?

Options	Student 01	Student 02
a. SEVERE DEHYDRATION	✓	-
b. SOME DEHYDRATION	-	✓
c. NO DEHYDRATION	-	-

Let's now enter the data.

- Under “**Student**”, click on the on the small arrow on the right to view the dropdown list and click on Student 01;
- Then, move to “**Case**”, click on the on the small arrow on the right to view the dropdown list and click on “Case scenario 1 (Fatima)”. Next item “**Scenario**” automatically displays the text of the scenario:

Case scenario

Student: Student 01

Case: Case scenario 1 (Fatima)

Scenario: Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no

Question:

Options:

- Go to “Question”, click on the small arrow on the right to view the dropdown list and click on the first question (“S.1.1 Which general danger signs...”). The option section is automatically displayed to enable you to enter the answers:

Case scenario

Student: Student 01

Case: Case scenario 1 (Fatima)

Scenario: Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no

Question S.1.1 Which general danger signs does Fatima have? (circle all the correct options)

Options

a. Unable to drink or breastfeed	<input type="checkbox"/>
b. Vomiting everything	<input type="checkbox"/>
c. History of convulsion	<input type="checkbox"/>
d. Convulsing now	<input type="checkbox"/>
e. Lethargic or unconscious	<input type="checkbox"/>
	<input type="checkbox"/>

- Enter options “a” and “e”:

Case scenario

Student: Student 01

Case: Case scenario 1 (Fatima)

Scenario: Fatima is a 25-month-old baby girl. She is brought to the facility because she has been asleep since the morning and very difficult to wake up. This is an initial visit for this problem. When asked, her mother says that Fatima has not vomited and had no convulsions, has no cough, no throat problem, no ear problem, but has had watery diarrhoea for about six days. There is no blood in the stools. She weighs 10.5 kg. Her axillary temperature is 37.00C. You assess Fatima: she has no convulsions during your assessment; she does not watch your face when you talk, does not look at the mother either and shows no interest in what is happening around her. Her eyes look sunken. When you offer her some water with a spoon, the water runs out of her mouth. Her mother says that she has been like that since this morning. You also pinch Fatima's skin and see that it goes back very slowly. There is no cholera in the area. Fatima has no

Question S.1.1 Which general danger signs does Fatima have? (circle all the correct options)

Options

a. Unable to drink or breastfeed	<input checked="" type="checkbox"/>
b. Vomiting everything	<input type="checkbox"/>
c. History of convulsion	<input type="checkbox"/>
d. Convulsing now	<input type="checkbox"/>
e. Lethargic or unconscious	<input checked="" type="checkbox"/>
	<input type="checkbox"/>

You need to enter student 1’s answers to the second question.

- Go to “Question”, click on the on the small arrow on the right to view the dropdown list and click on the second question (“S.1.2 What is your classification ...”):

The screenshot shows the 'Case scenario' window. At the top, 'Student' is set to 'Student 01' and 'Case' is 'Case scenario 1 (Fatima)'. The 'Scenario' text describes a 25-month-old baby girl with watery diarrhoea. Under the 'Question' section, two questions are listed: 'S.1.1 Which general danger signs does Fatima have? (circle all the correct options)' and 'S.1.2 What is your classification for dehydration? (circle only ONE option)'. A red arrow points to the second question. A small dropdown arrow on the right of the second question is circled in blue.

The option section is automatically displayed to enable you to enter the answers.

- Enter option “a”:

This screenshot shows the same 'Case scenario' window, but now the 'Options' section for question S.1.2 is visible. The options are: 'a. SEVERE DEHYDRATION', 'b. SOME DEHYDRATION', and 'c. NO DEHYDRATION'. Each option has a dropdown arrow and a checkbox. The checkbox for option 'a' is checked and circled in red.

You are now finished with data entry for student 1’s answers to the two questions of case scenario 1 and are ready to enter student 2’s answers.

- Go to “Student” on top of the screen, click on the on the small arrow on the right to view the dropdown list and click on Student 02.
- As the case scenario displayed is Case scenario 1, you do not need to make any changes under “Case” and “Scenario”.

- Go to “Question” click on the on the small arrow on the right to view the dropdown list and click on the first question (S.1.1) to open the option section.
- Click on the boxes corresponding to options “a” and “e”:

The screenshot shows the 'Case scenario' interface. The 'Student' is 'Student 02' and the 'Case' is 'Case scenario 1 (Fatima)'. The 'Scenario' text describes a 25-month-old baby girl with watery diarrhoea and lethargy. The 'Question' is 'S.1.1 Which general danger signs does Fatima have? (circle all the correct options)'. The 'Options' are:

a. Unable to drink or breastfeed	<input checked="" type="checkbox"/>
b. Vomiting everything	<input type="checkbox"/>
c. History of convulsion	<input type="checkbox"/>
d. Convulsing now	<input type="checkbox"/>
e. Lethargic or unconscious	<input checked="" type="checkbox"/>
	<input type="checkbox"/>

- Now, to enter the answer to the second question, go to “Question”, click on the small arrow on the right to view the dropdown list and click on the second question (S.1.2) to open the option section. Then, click on the box corresponding to answer “b”:

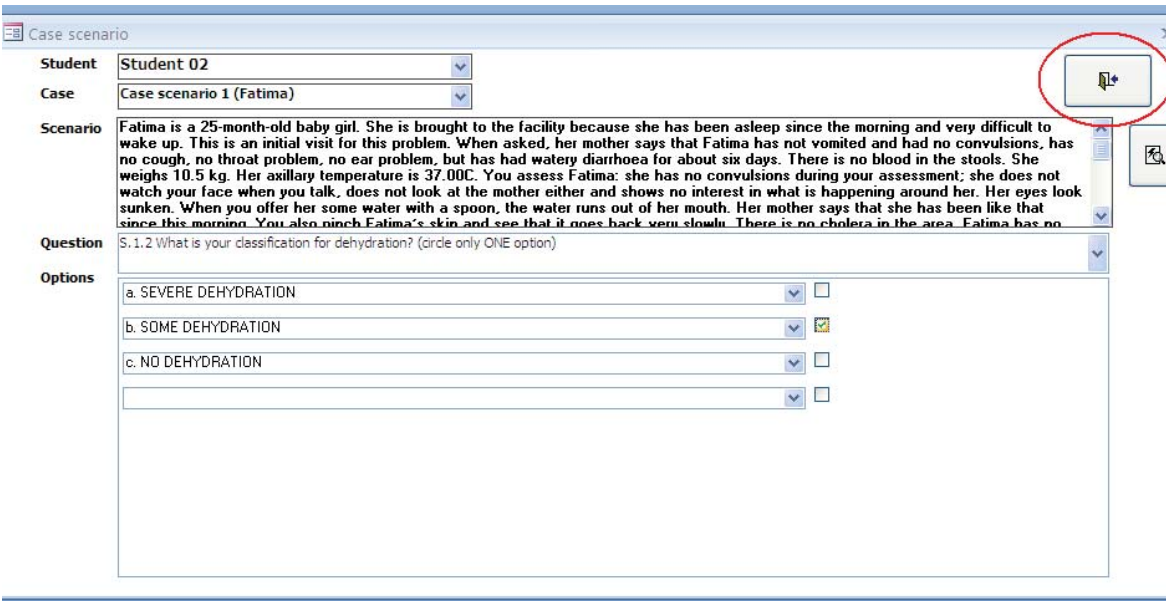
The screenshot shows the 'Case scenario' interface. The 'Student' is 'Student 02' and the 'Case' is 'Case scenario 1 (Fatima)'. The 'Scenario' text is the same as in the previous screenshot. The 'Question' is 'S.1.2 What is your classification for dehydration? (circle only ONE option)'. The 'Options' are:

a. SEVERE DEHYDRATION	<input type="checkbox"/>
b. SOME DEHYDRATION	<input checked="" type="checkbox"/>
c. NO DEHYDRATION	<input type="checkbox"/>
	<input type="checkbox"/>

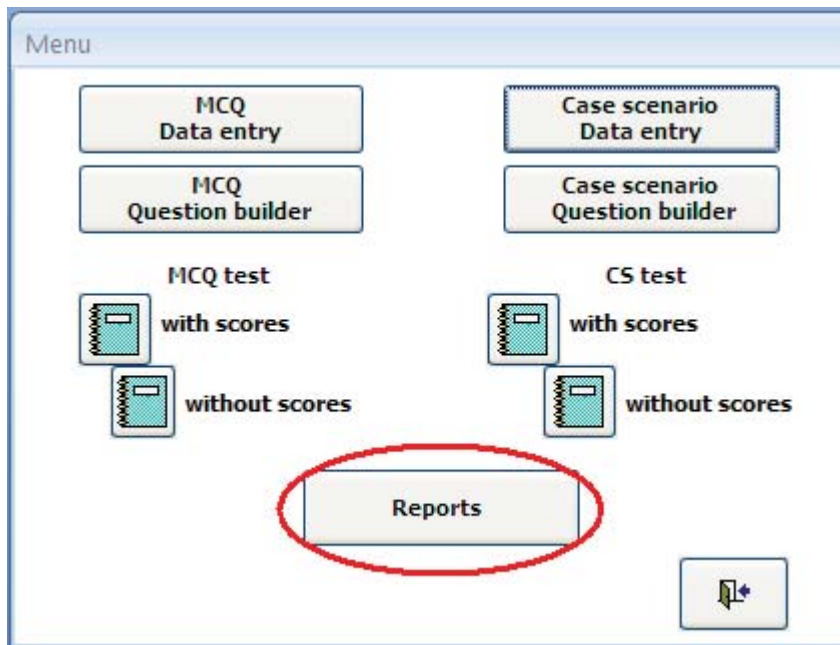
You have finished entering the two questions of Case scenario 1 for both students!

 **Remember: data are automatically saved each time you enter them.**

- Leave this screen to go back to the main menu. Click on the exit icon on the top right: 



Well done! You are now ready to check the data and view the reports which have been automatically generated for the analysis of the data that you have entered!



 **Remember:**

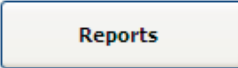
Always back up your data: each day, save on an external drive the data you have entered!

Validating the data entered

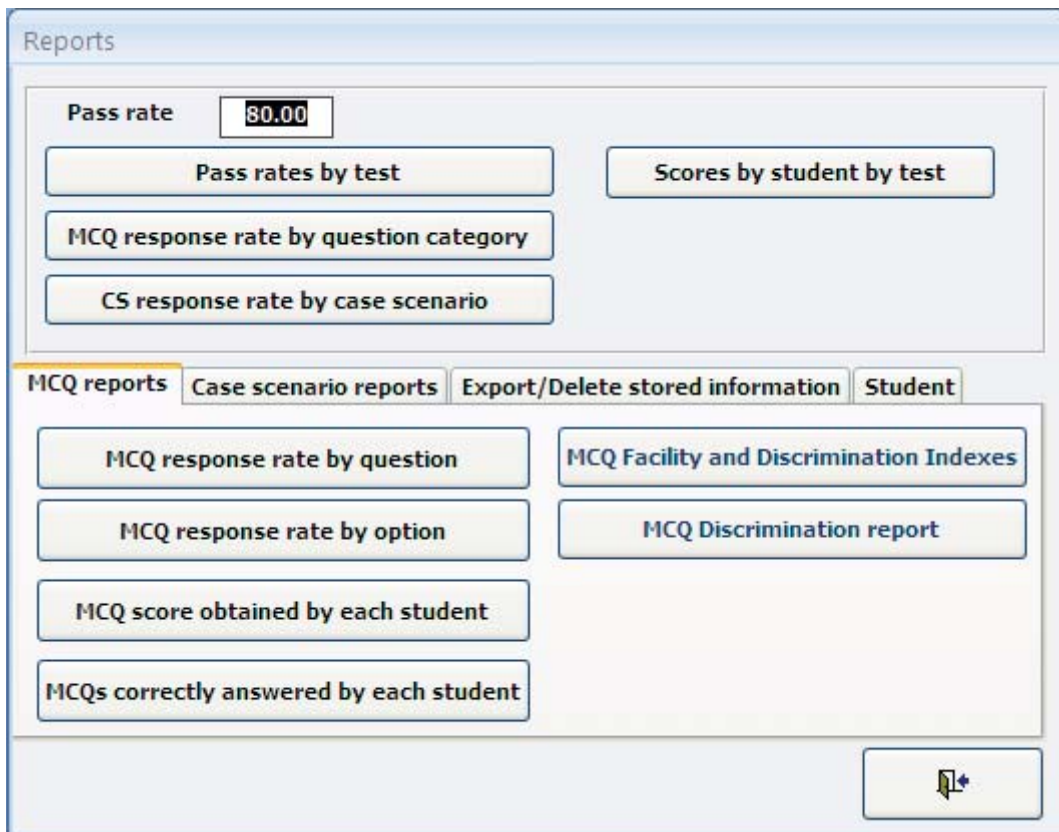
It is strongly recommended that data be entered by two different operators independently in two different computers, respectively, for data entry validation.

A fast way to check the data entered by the two operators is to look at the output tables.

- As in the previous section you had the menu window displayed, simply click on the button

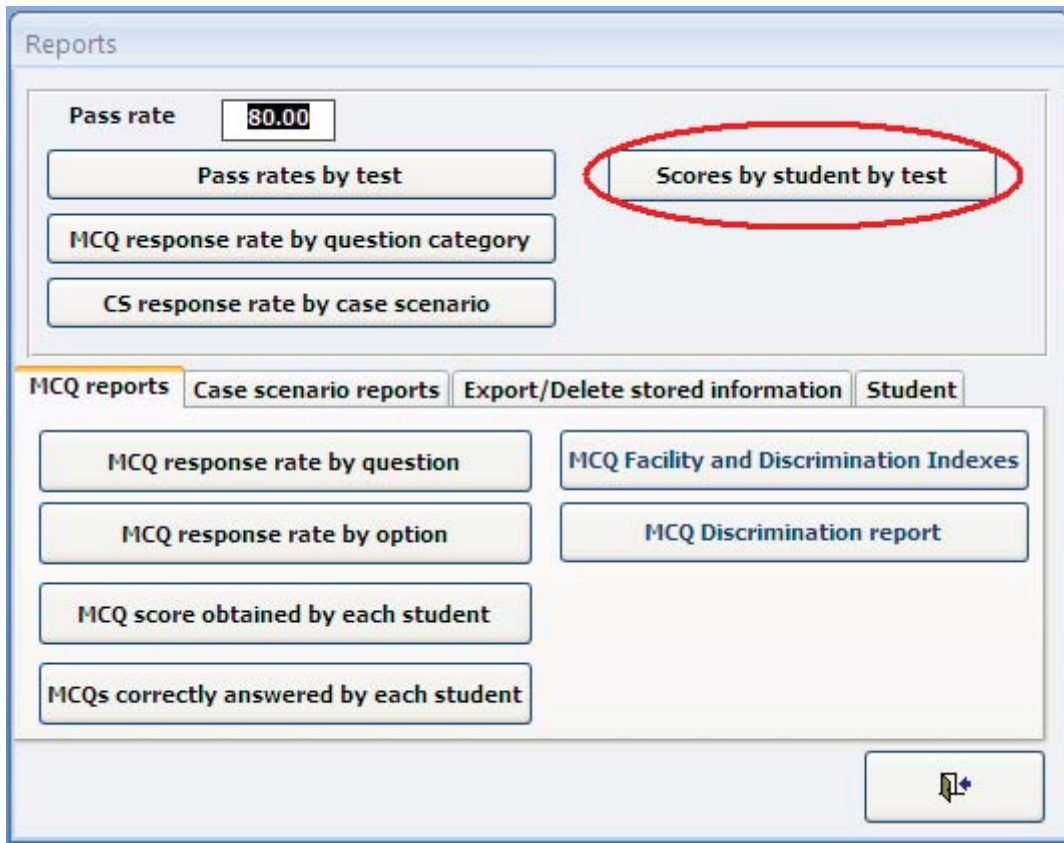
“Reports”: 

The following screen appears:

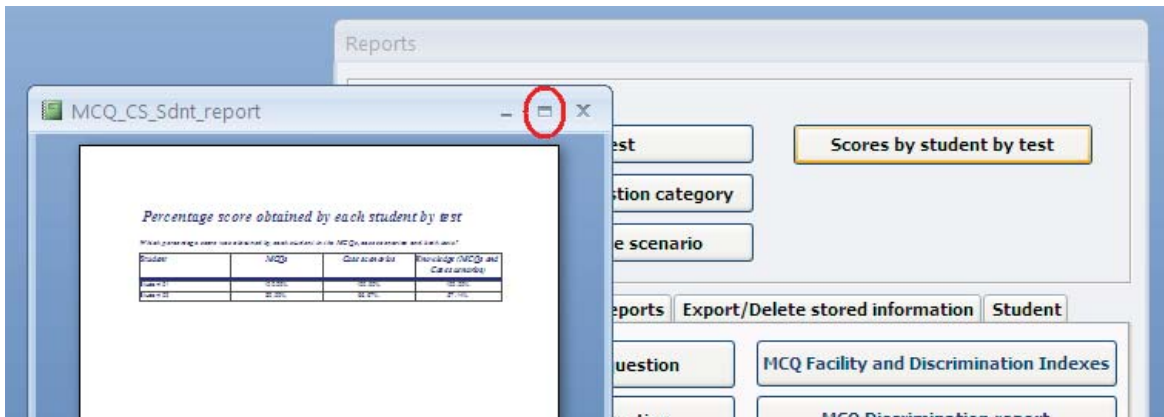


The screenshot shows a window titled "Reports" with a "Pass rate" field set to "80.00". Below this are several buttons: "Pass rates by test", "Scores by student by test", "MCQ response rate by question category", and "CS response rate by case scenario". A tabbed interface is visible with "MCQ reports" selected. Under this tab, there are buttons for "MCQ response rate by question", "MCQ Facility and Discrimination Indexes", "MCQ response rate by option", "MCQ Discrimination report", "MCQ score obtained by each student", and "MCQs correctly answered by each student". A "Student" tab is also visible. A small icon with a plus sign is located in the bottom right corner of the window.

- Click on the first button on the top to the right “Scores by student by test”:



- Maximize the new window, by clicking on  at the top right corner of the window:



- The mouse pointer turns to a lens with the + sign, to enable you to maximize the window. Click once with the mouse inside the window for a better view. It should look like this:

Percentage score obtained by each student by test

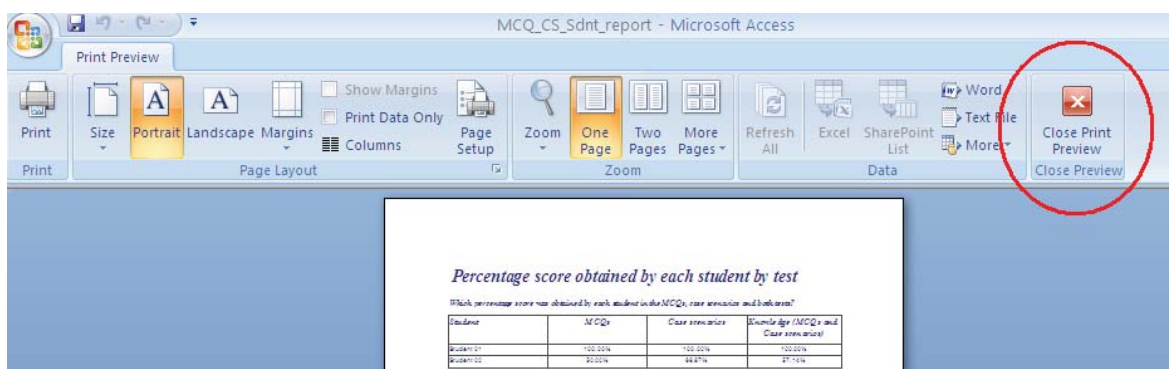
Which percentage score was obtained by each student in the MCQs, case scenarios and both tests?



<i>Student</i>	<i>MCQs</i>	<i>Case scenarios</i>	<i>Knowledge (MCQs and Case scenarios)</i>
Student 01	100.00%	100.00%	100.00%
Student 02	50.00%	66.67%	57.14%

- This report displays the percentage scores obtained by each student in the MCQ test, case scenario test and both (knowledge test). These scores result from the data which have been entered.
- Compare the two reports of the two computers: they should have the same values. For example, in this practice, you have entered data for two students. The row of student 01 should have “100%” under MCQs, “100%” under “Case scenarios” and “100%” in the last column under “Knowledge (MCQs and Case scenarios)”. The row of student 02 should have “50%” under MCQs, “66.67%” under “Case scenarios” and “57.14%” in the last column under “Knowledge (MCQs and case scenarios)”.
- As the percentage scores are based on the data you have entered, if you have any different value for the percentage scores (last column), this means that you have made a mistake in data entry. In this case, check which student no. the inconsistent data refer to. For example, if you had the value of “66.67%” under the “MCQs” column for student 01 instead of “100%”, you would need to check the data that you entered for this student. We will assume that there is this inconsistency between the two reports as an example to show how to correct it.


To close this window with the “Percentage score obtained by each student by test” and return to the report menu:

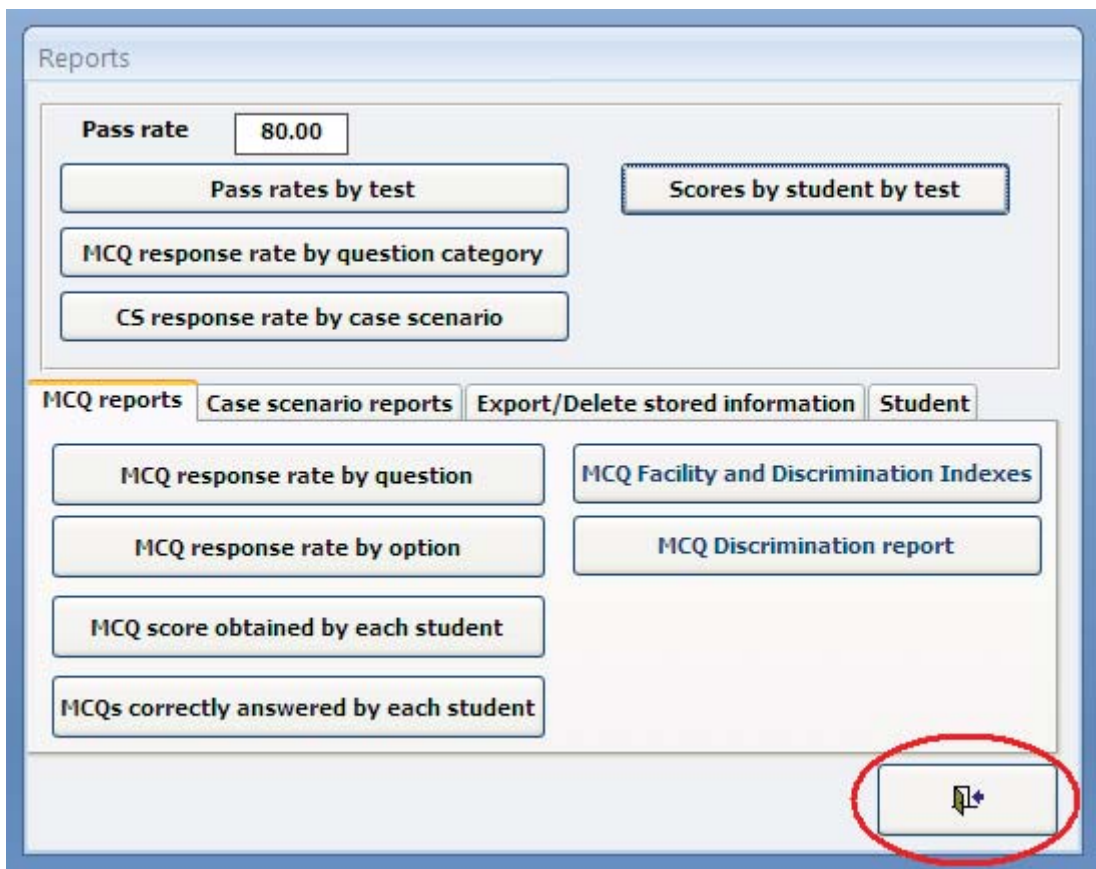
- In ACCESS 2007: click on the “Close Print Preview” icon on top:



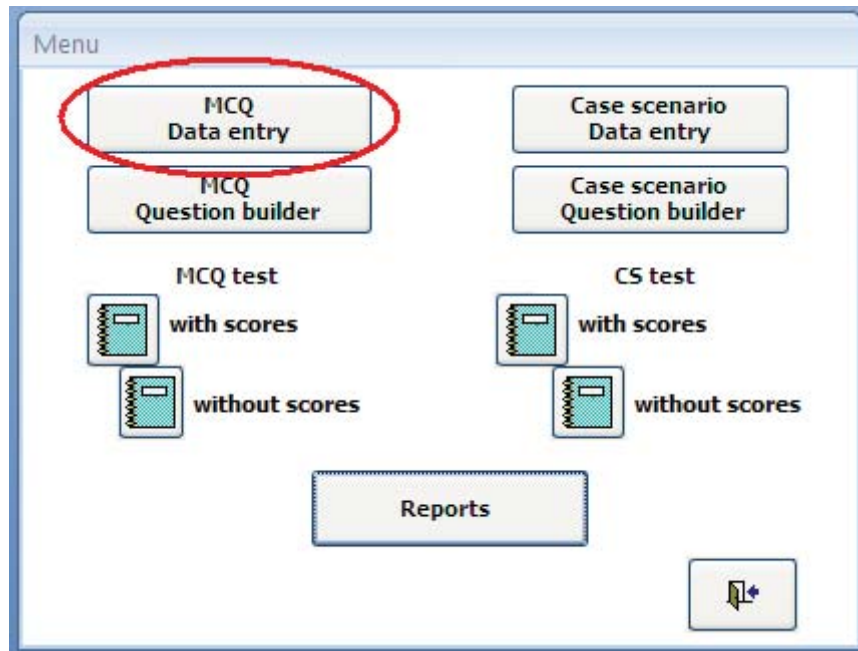
- In ACCESS 2003, click on the small black  icon on the top right-hand corner of the inside window, placed under the bigger  red icon (which, if clicked, would close the whole program) or click on “Close” in the menu, as shown below:



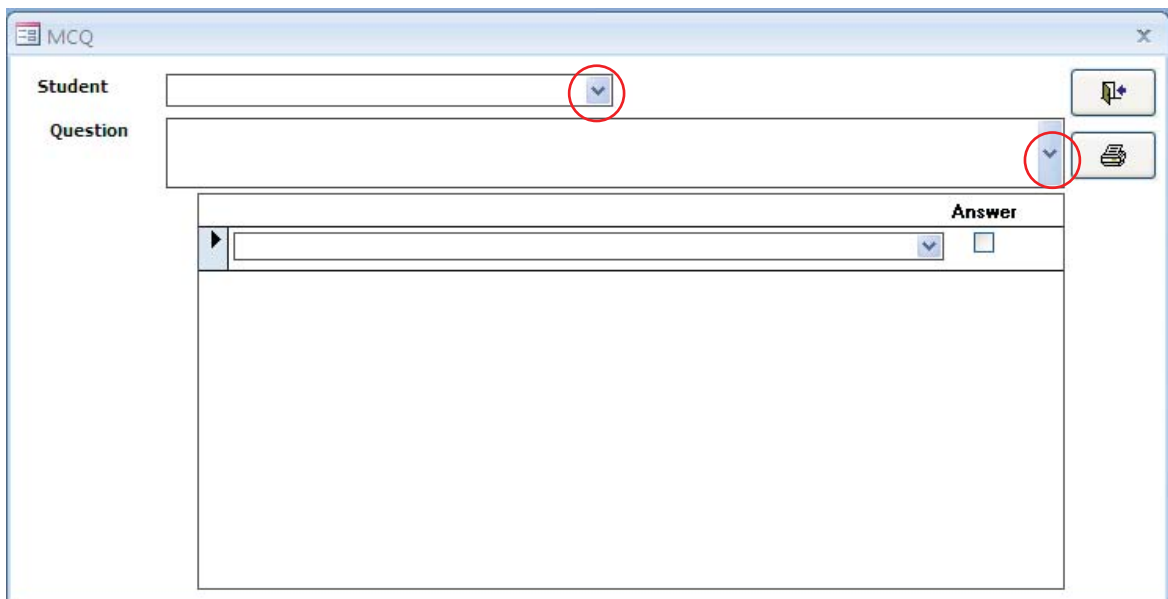
- Click on the exit icon at the bottom right-hand side of the window to exit the report menu, as shown here: 



- Click on “MCQ Data entry” button of the menu window:



- The data entry window is displayed:



- Click on the down arrow of the “Student” field and select “Student 01”, which in our example is the student for which you want to check the data entered because the report has showed a different value for the MCQ percentage score.
- Click on the down arrow of the “Question” field and select question “A01. Which of the following..”. The window populates right away with the answers that you have entered, shown as a tick:

- Check each item, one by one, to see whether any tick has been misplaced.

MCQ

Student: Student 01

Question: A1. Which of the following age groups do the IMCI clinical guidelines address? (circle only ONE answer)

	Answer
a. Birth up to 5 years	<input checked="" type="checkbox"/>
b. 2 months up to 2 years	<input type="checkbox"/>
c. 1 week up to 5 years	<input type="checkbox"/>
d. 2 months up to 6 years	<input type="checkbox"/>
* []	<input type="checkbox"/>

- Repeat the process for each question. In our example, there are only two questions, so click on the second question to see the data entered as answers to this question for the student 01:

MCQ

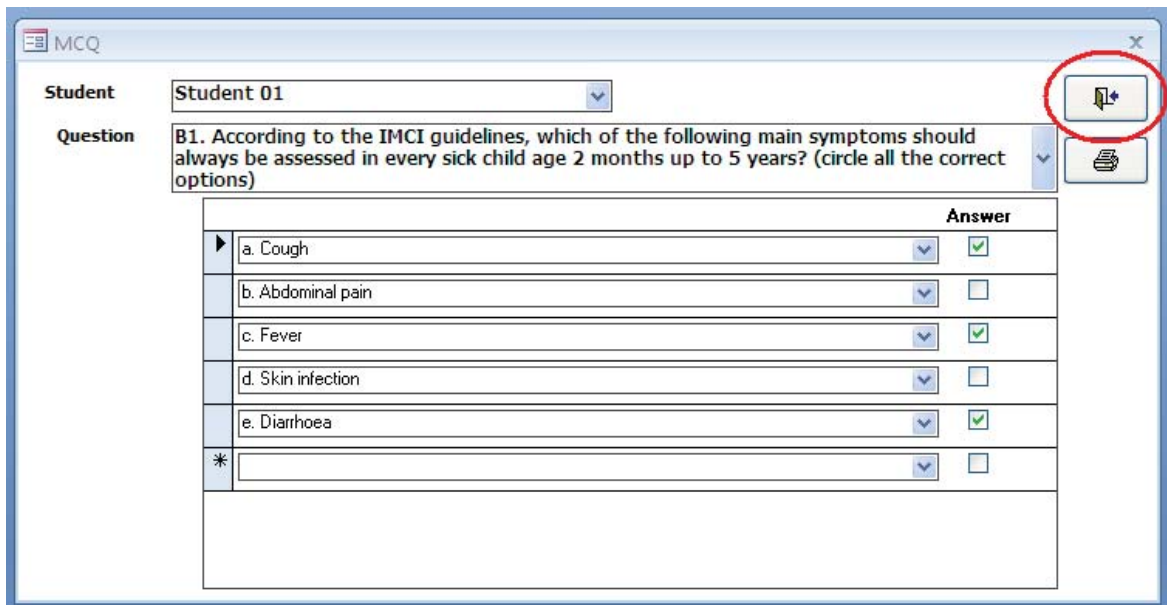
Student: Student 01

Question: B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

	Answer
a. Cough	<input checked="" type="checkbox"/>
b. Abdominal pain	<input type="checkbox"/>
c. Fever	<input checked="" type="checkbox"/>
d. Skin infection	<input type="checkbox"/>
e. Diarrhoea	<input checked="" type="checkbox"/>
* []	<input type="checkbox"/>

- If you need to make any correction, simply click on the ticked checkbox to remove the wrong “tick” or tick on an empty checkbox to place the “tick” on a different option.
- Data are automatically saved by the program.

- So, once you are finished, simply click on the exit icon, on the top right-hand side corner to go back to the menu window:



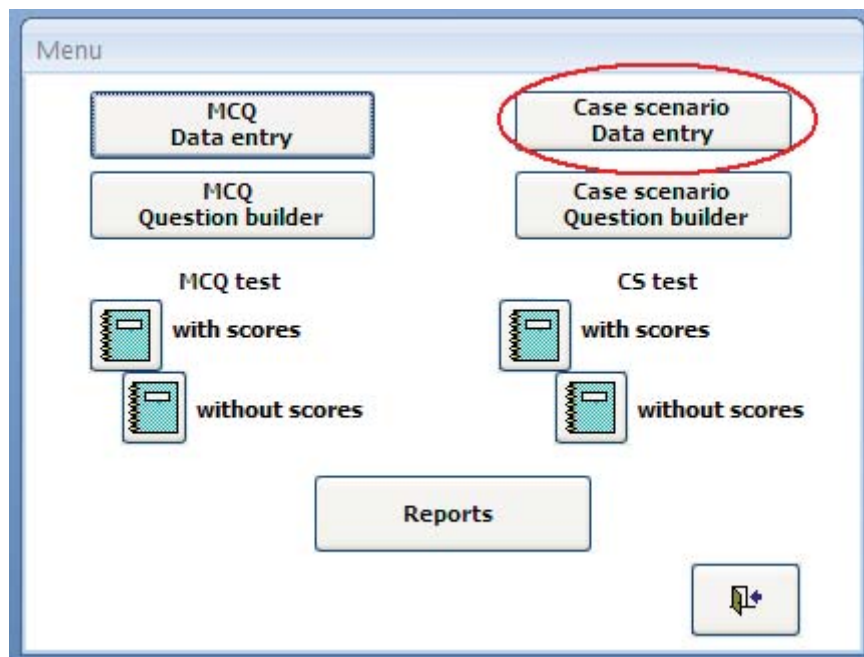
MCQ

Student: Student 01

Question: B1. According to the IMCI guidelines, which of the following main symptoms should always be assessed in every sick child age 2 months up to 5 years? (circle all the correct options)

	Answer
a. Cough	<input checked="" type="checkbox"/>
b. Abdominal pain	<input type="checkbox"/>
c. Fever	<input checked="" type="checkbox"/>
d. Skin infection	<input type="checkbox"/>
e. Diarrhoea	<input checked="" type="checkbox"/>
* []	<input type="checkbox"/>

- In the report menu window, click again on the “**Reports**” button to check the percentage scores for student 01 and see whether they now correspond with those of the other data entry operator. If they do and there are no other inconsistencies, you are finished with data validation and can proceed to view the reports on data analysis. If there are still unmatched percentage scores, check them as described for student 01. If there is any different percentage score for the case scenario, then go to the data entry area for case scenarios in the menu window and follow the steps described for the MCQs:



This process of data validation is essential to make sure that all entries are correct. The percentage scores given in the report of one data entry operator for each student for MCQs, Case scenarios and both (knowledge) must match those displayed in the report of the second data entry operator. Any mismatching value must be checked as explained above.

The knowledge test contains many MCQs and case scenarios, so data entry takes time but also checking for any mismatching values is rather time-consuming. Therefore, it is important to place much attention when the data are entered, so that data entry is performed correctly and there is no need to validate too many items. It is preferable to enter data more slowly but correctly than to spend time checking them afterwards if any of them has been entered incorrectly.

It is advisable that the two different data entry operators check the data entered every day at the end of each day. In fact, on the last day of data entry, data should be ready for the analysis on the same day and there would be very limited time to check possible inconsistencies for the whole dataset of knowledge assessment test.

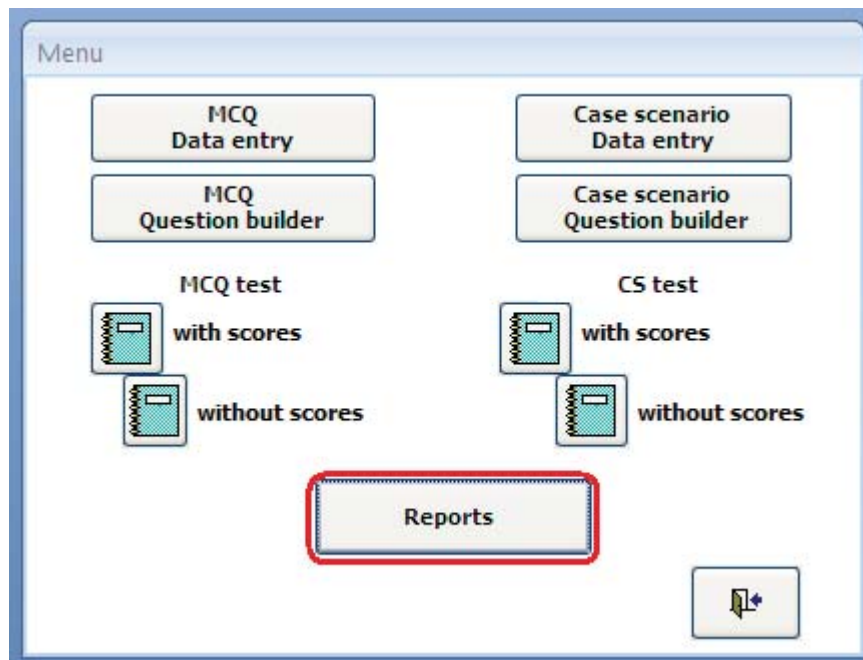
 **Reminder: Always validate your data!**

Data analysis: understanding the report indicators

The program automatically generates information on a number of indicators for data analysis. More information on the indicators and their definitions is given in the Evaluation Guide's section 8.2.2 Analysing and presenting results under 8. Analysis and presentation of findings.

To access the report section of the program, follow the steps described below. The example used here follows through the same example given earlier based on the data you have entered.

- To access the dataset, follow the instructions given in the previous sections: double click on the file "**Copy of Practice develop MCQ_CS**" that you created in the previous exercise—in which you entered the two MCQs and the case scenario with two questions—and then click "**Open**" in Access 2003 when the security warning appears ("enable content" under "Options" in Access 2007).
- The "**Menu**" is displayed on the screen; click on the button "**Reports**":



The following screen appears:

The screenshot shows a software interface titled "Reports". At the top, there is a "Pass rate" label followed by a text input field containing the value "80.00". Below this, there are four buttons: "Pass rates by test", "Scores by student by test", "MCQ response rate by question category", and "CS response rate by case scenario".

Below these buttons is a tabbed interface with four tabs: "MCQ reports" (which is selected and highlighted in yellow), "Case scenario reports", "Export/Delete stored information", and "Student".

Under the "MCQ reports" tab, there are seven buttons arranged in two columns:

- Left column: "MCQ response rate by question", "MCQ response rate by option", "MCQ score obtained by each student", and "MCQs correctly answered by each student".
- Right column: "MCQ Facility and Discrimination Indexes" and "MCQ Discrimination report".

At the bottom right of the interface, there is a button with a printer icon and a plus sign.

The key indicator of this analysis is the “**knowledge percentage score**”, which is the proportion of students taking the test who obtained the “passing score”, meaning the agreed percentage of the maximum score allotted to the test. So, if it was agreed that students should get at least 80% of the total score, “80%” is the passing score level.

The program allows the user to enter any passing score level, which depends on what has been agreed earlier based on the difficulty of the test. This cut-off value of percentage score needs to be entered manually.

- On top of the report window, there is a small window (“labelled as “**Pass rate**”), which displays the value “**80.00**” (that is “80%”) by default. Enter here the passing score level that has been agreed for your test. For example, type with the keyboard the value of **85** if the agreed value is 85%. Then, press “**Enter**”. The window will look like this:

The screenshot shows a software interface titled "Reports". At the top, there is a "Pass rate" label next to a text input field containing the value "85.00", which is circled in red. Below this are several buttons: "Pass rates by test", "Scores by student by test", "MCQ response rate by question category", and "CS response rate by case scenario". A tabbed interface below these buttons has four tabs: "MCQ reports" (which is selected), "Case scenario reports", "Export/Delete stored information", and "Student". Under the "MCQ reports" tab, there are several buttons: "MCQ response rate by question", "MCQ response rate by option", "MCQ score obtained by each student", "MCQs correctly answered by each student", "MCQ Facility and Discrimination Indexes", and "MCQ Discrimination report". A small icon with a plus sign is located in the bottom right corner of the window.

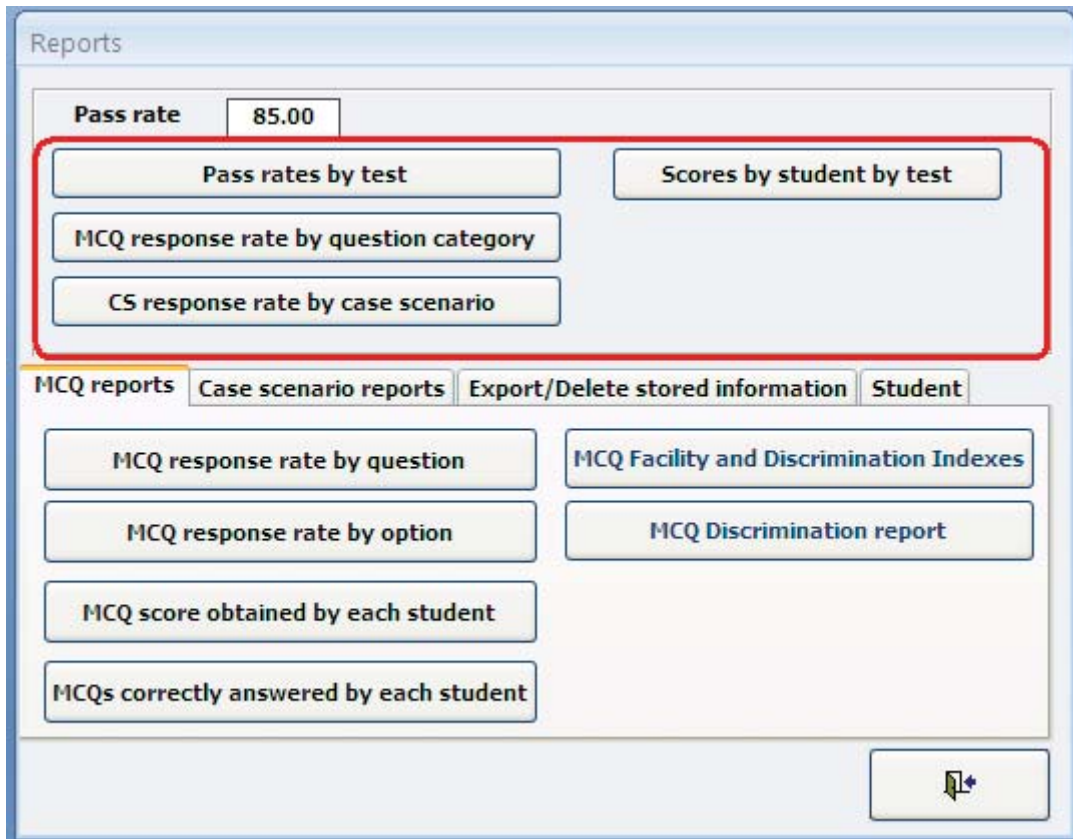
Below this little window where you have just entered “85”, in the upper left part of the report window, are three buttons related to indicators that are affected by the value of the passing score that you have just entered. This means that, depending on which value you enter in the little window of the “**Pass rate**”, the results will differ.

The screenshot shows a software interface titled "Reports". At the top left, there is a "Pass rate" label next to a text input field containing the value "85.00". Below this input field, three buttons are stacked vertically: "Pass rates by test", "MCQ response rate by question category", and "CS response rate by case scenario". These three buttons and the input field above them are enclosed in a red rectangular box. To the right of these buttons is another button labeled "Scores by student by test". Below the main report area, there are four tabs: "MCQ reports", "Case scenario reports", "Export/Delete stored information", and "Student". Under the "MCQ reports" tab, there are several more buttons: "MCQ response rate by question", "MCQ response rate by option", "MCQ score obtained by each student", and "MCQs correctly answered by each student". To the right of these buttons are two more buttons: "MCQ Facility and Discrimination Indexes" and "MCQ Discrimination report". At the bottom right of the window, there is a small button with a right-pointing arrow and a plus sign.

No other indicator in this report section is affected by such value: this is because all the other indicators refer to the percentage scores actually obtained by each student or the number of questions correctly answered by each student, which are irrespective of any passing score level, to enable further analysis of the test results.

The indicators are arranged in a hierarchical pattern (first overall results of the test, then results by each MCQ and finally by each option per MCQ) as follows:

- In the upper half of the window:



To the left:

- **“Pass rates by test”**: first is the percentage of students who passed the whole knowledge test—this is the overall indicator—with breakdown by test component, so the percentage of students who passed the MCQ component and the percentage of those who passed the Case scenario component of the test;
- **“MCQ response rate by question category”**: next, below, are the results for the MCQs presented by question category;
- **“CS response rate by case scenario”**: next, similarly, are the results for the case scenarios presented by each case scenario.

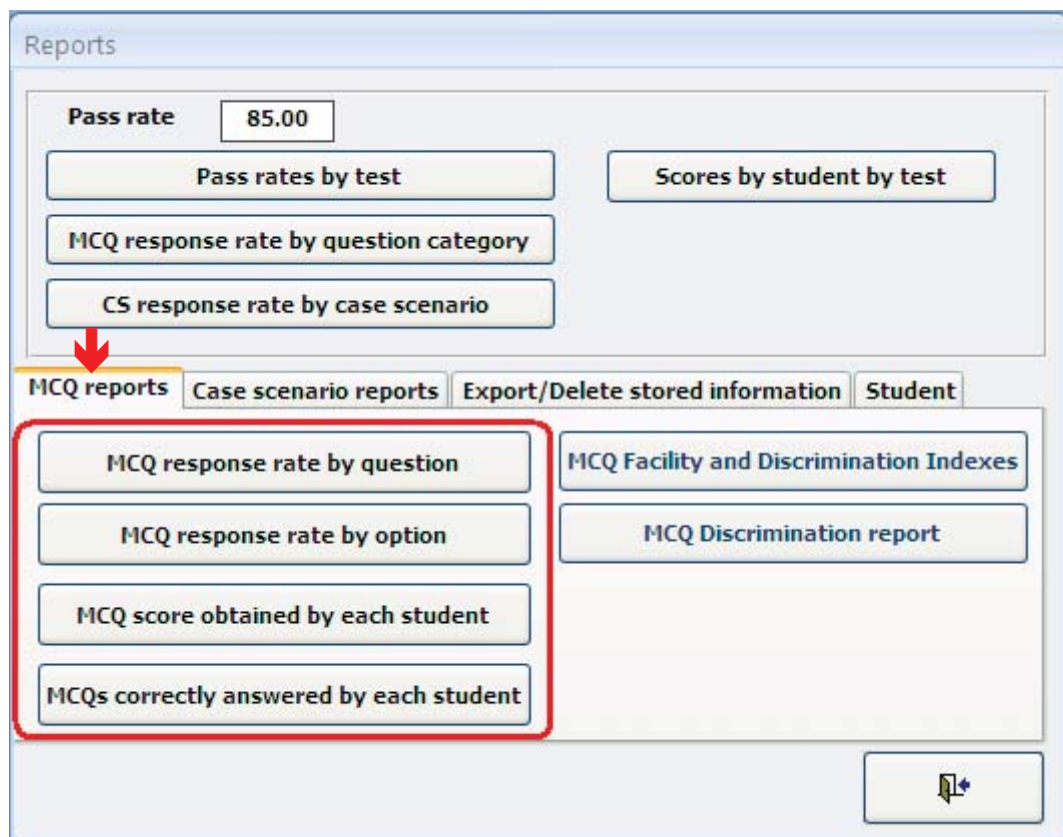
To the right:

- **“Scores by student by test”**: these are the results with the percentage scores obtained by each student by test.

- In the lower half of the window:

Under the tab “MCQ reports”

To the left:



- “MCQ response rate by question”: details of correct responses to each question;
- “MCQ response rate by option”: details of correct responses to each question by option;
- “MCQ score obtained by each student”: percentage scores obtained by each student in the MCQ test;
- “MCQs correctly answered by each student”: number of MCQs correctly answered by each student;

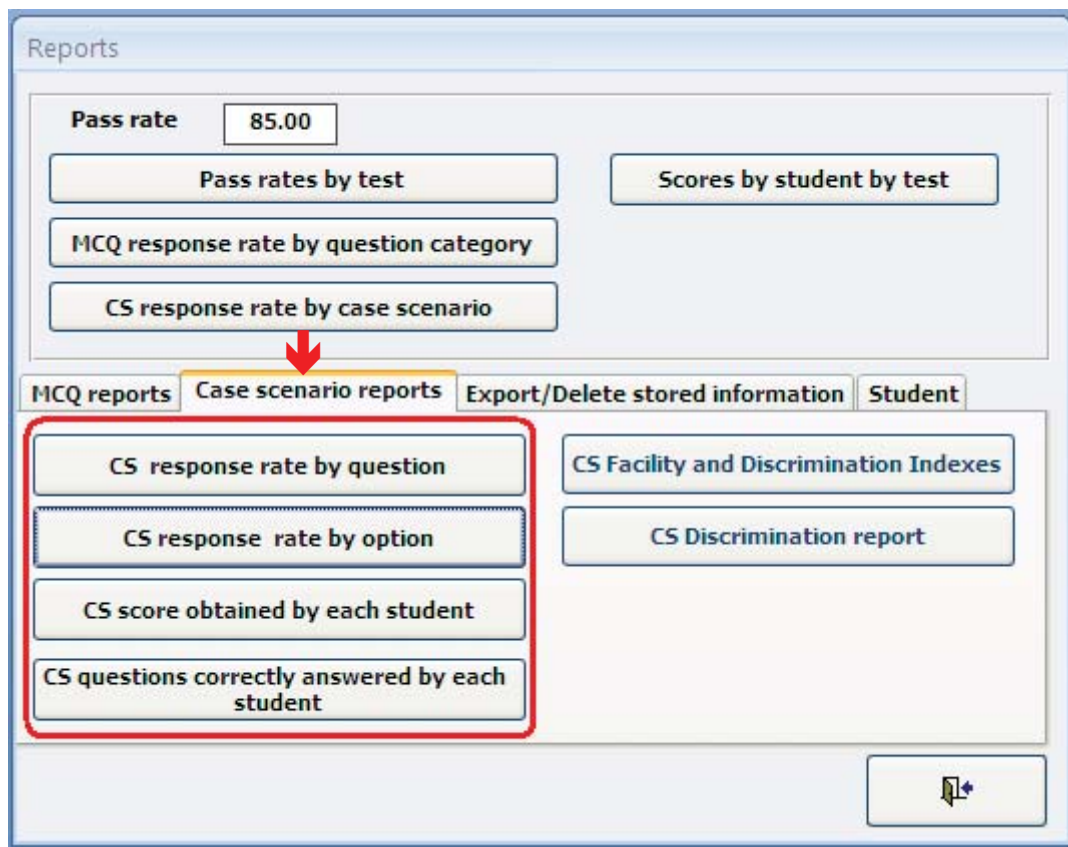
To the right:

The screenshot shows a 'Reports' window with a 'Pass rate' of 85.00. Below this, there are buttons for 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category', and 'CS response rate by case scenario'. A tabbed interface is visible with 'MCQ reports' selected. Under the 'MCQ reports' tab, there are several report options: 'MCQ response rate by question', 'MCQ response rate by option', 'MCQ score obtained by each student', and 'MCQs correctly answered by each student'. A red box highlights two additional options: 'MCQ Facility and Discrimination Indexes' and 'MCQ Discrimination report'. A 'Student' tab is also visible, and a small icon with a plus sign is located at the bottom right of the window.

- **“MCQ Facility and Discrimination Indexes”** and **“MCQ Discrimination report”**: report on the facility index (FI) and discrimination index (DI) of each MCQ as part of the knowledge test item analysis. These indexes are explained in the section on “Item analysis”.

Under the tab “Case scenario reports”

To the left:



- “**CS response rate by question**”: details of correct responses to each question by case scenario;
- “**CS response rate by option**”: details of correct responses to each question of case scenarios by option ;
- “**CS score obtained by each student**”: percentage scores obtained by each student in the case scenario test;
- “**CS questions correctly answered by each student**”: number of questions of case scenarios correctly answered by each student.

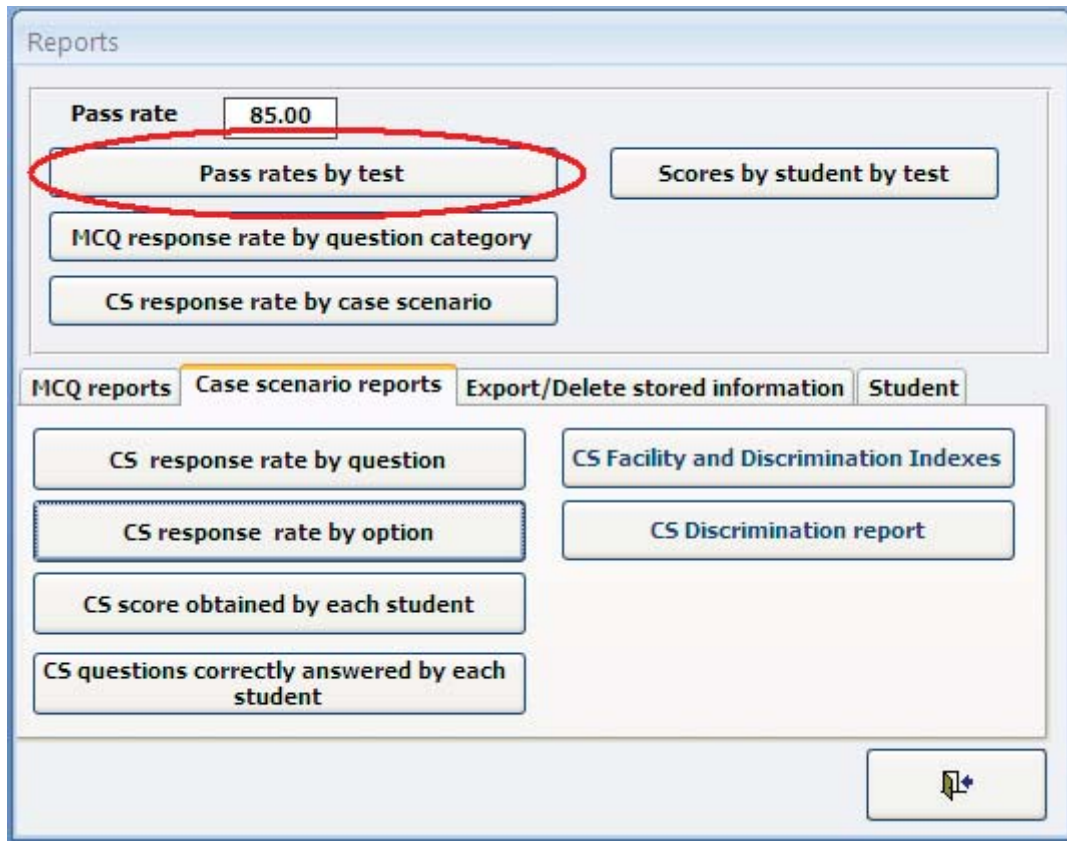
To the right:

- “**CS Facility and Discrimination Indexes**” and “**CS Discrimination report**”: report on the facility index (FI) and discrimination index (DI) of each question of the case scenarios as part of the knowledge test analysis. These indexes are explained in the section on “Item analysis”.

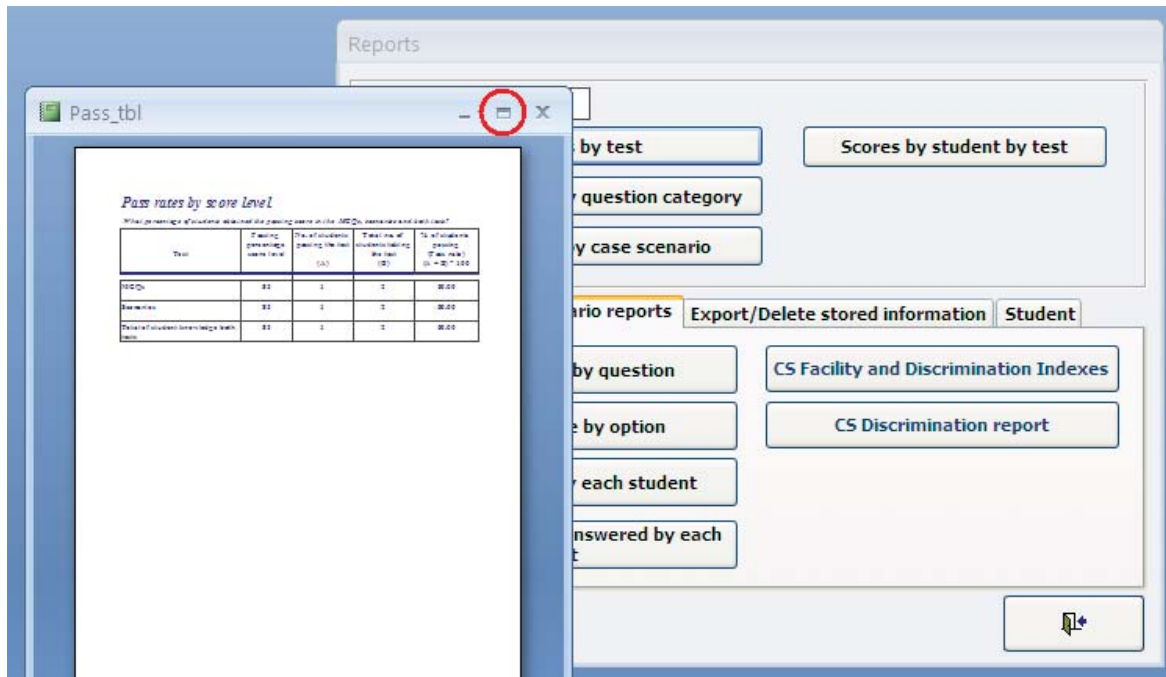
To view these reports, you only need to click on the respective buttons and maximize the view.

Remember that the first three reports listed in the upper left half of the window give the results based on the passing score value that you enter in the little window above each time. As we have entered “85%” in our example, the three reports will display the results of the percentage of students who obtained 85% or more of the total score allotted to the test. All the other reports are unaffected by this value, as explained earlier.

- Click on “Pass rates by test” to view the report on the overall indicator of the test:



- Maximize the new window, by clicking on  at the top right corner of the window:



- The mouse pointer turns to a lens with the + sign, to enable you to maximize the window. Click once with the mouse inside the window for a better view. The report display on the screen should now look like this:

Pass rates by score level

What percentage of students obtained the passing score in the MCQs, scenarios and both tests?

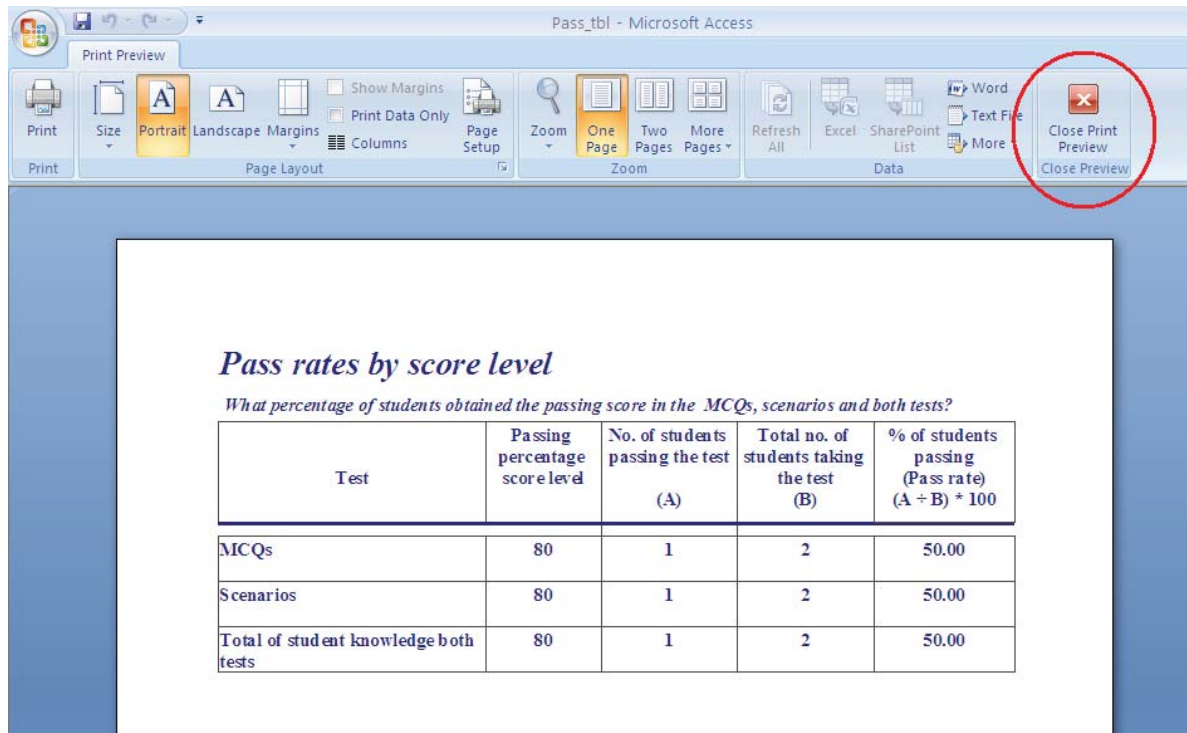
Test	Passing percentage score level	No. of students passing the test (A)	Total no. of students taking the test (B)	% of students passing (Pass rate) $(A \div B) * 100$
MCQs	85	1	2	50.00
Scenarios	85	1	2	50.00
Total of student knowledge both tests	85	1	2	50.00



This report, titled “**Pass rates by score level**” answers the question: “**What percentage of students obtained the passing score in the MCQs, scenarios and both tests?**” The report displays: the “passing percentage score level” that was set, “85%” in our example; the number of students passing the test based on that level (numerator); the number of students who took the test (denominator); and the rate, namely the percentage of students passing the test based on a passing score level of “85%”. In the example given, 1 out of 2 students (i.e. 50% of students taking the test) obtained a percentage score of at least 85%.

Had we entered a passing percentage score level of 100 (100%), the results displayed would then have referred to the percentage of students who answered all the MCQs, scenarios and both tests correctly.

To exit this report and return to the report menu:

- In ACCESS 2007: click on the “Close Print Preview” icon on top:



- In ACCESS 2003, click on the small black  icon on the top right-hand corner of the inside window, placed under the bigger  red icon (which, if clicked, would close the whole program) or click on “Close” in the menu, as shown below:



- To view the next report, click on the button “**MCQ response rate by question category**” and follow the same steps described above for the “Pass rates by test” report:

The screenshot shows a software interface for generating reports. At the top, there is a 'Pass rate' field set to '85.00'. Below this, there are four buttons: 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category' (which is circled in red), and 'CS response rate by case scenario'. Below these buttons are several tabs: 'MCQ reports', 'Case scenario reports', 'Export/Delete stored information', and 'Student'. Under the 'MCQ reports' tab, there are several report options: 'CS response rate by question', 'CS Facility and Discrimination Indexes', 'CS response rate by option', 'CS Discrimination report', 'CS score obtained by each student', and 'CS questions correctly answered by each student'. A small icon of a printer is visible in the bottom right corner of the interface.

MCQ correct response rate by question category (based on percentage score level)

What percentage of students obtained the passing score in each MCQ category?

Category	No. of students passing MCQs within the category (A)	Total no. of students taking the test (B)	% of students passing MCQs within the category $(A \div B) * 100$	Passing percentage score level
A. IMCI guidelines	1	2	50.00%	85
B. ASSESS AND CLASSIFY	1	2	50.00%	85

This report, titled “**MCQ correct response rate by question category**” answers the question: “**What percentage of students obtained the passing score in each MCQ category?**” In this example, the report shows the results for two categories of questions, namely “**A. IMCI guidelines**” and “**B. Assess and classify**”: the number of students passing each category of MCQs (numerator), the number of students who took the MCQ test (denominator) and the rate, namely the percentage of students passing MCQs within each category based on a passing score level of “85%”, shown in the last column. In the example given, one out of two students (i.e. 50% of students taking the test) obtained a percentage score of at least 85% in the category of MCQs related to the “IMCI guidelines” and the same percentage of students (50%) obtained a percentage score of at least 85% in the category of case scenarios related to “Assess and classify”.

This information helps analyse results by topics, to identify potential issues with a specific topic.

Exit this report as described earlier to return to the report menu.

- To view the next report, click on the button “**CS response rate by case scenario**” and follow the same steps described above for the “Pass rates by test”:

The screenshot shows a software interface titled 'Reports'. At the top, there is a 'Pass rate' field with the value '85.00'. Below this are several buttons: 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category', and 'CS response rate by case scenario'. The 'CS response rate by case scenario' button is circled in red. Below these buttons are tabs for 'MCQ reports', 'Case scenario reports', 'Export/Delete stored information', and 'Student'. Under the 'Case scenario reports' tab, there are several more buttons: 'CS response rate by question', 'CS Facility and Discrimination Indexes', 'CS response rate by option', 'CS Discrimination report', 'CS score obtained by each student', and 'CS questions correctly answered by each student'. A download icon is visible in the bottom right corner of the interface.

CS correct response rate by case scenario (based on percentage score level)

What percentage of students obtained the passing score in each case scenario?

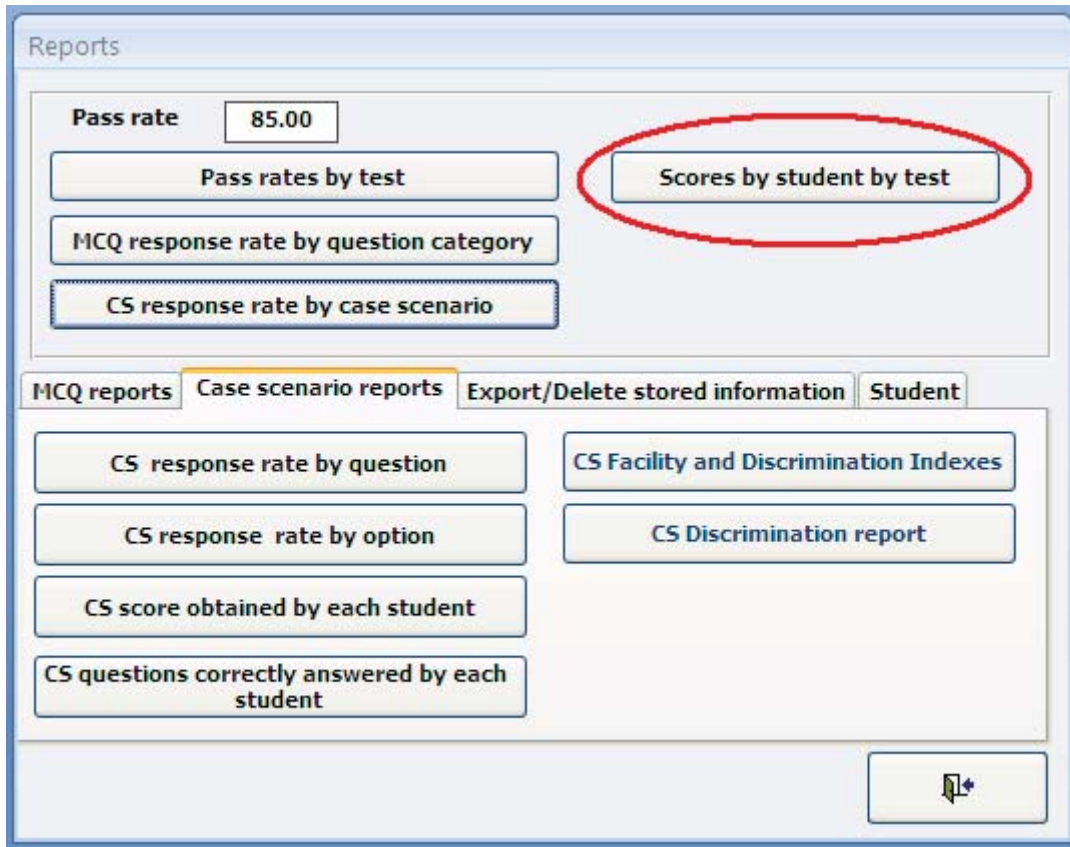
Case scenario	No. of students passing each case scenario (A)	Total no. of students taking the case scenario test (B)	% of students passing each case scenario $(A \div B) * 100$	Passing percentage score level
Case scenario 1 (Fatima)	1	2	50.00%	85

This report, titled “**CS correct response rate by case scenario**” answers the question: “***What percentage of students obtained the passing score in each case scenario?***” In this example, the report shows the results only for one case scenario (Fatima) as that was the only case scenario that was entered. However, if more than one case scenario is included in the test, the results will be presented by each case scenario, in the same way as those for MCQs are presented by each question category. The report shows the number of students passing each case scenario (numerator), the number of students who took the case scenario test (denominator) and the rate, namely the percentage of students passing each case scenario based on a

passing score level of “85%”, shown in the last column. In the example given, one out of two students (i.e. 50% of students taking the test) obtained a percentage score of at least 85% in case scenario 1.

This information helps analyse the results by case scenario to identify potential issues with a specific case scenario.

- To view the last report of the upper part of the report menu window, Click on the first button on the top to the right “Scores by student by test”:



Percentage score obtained by each student by test

Which percentage score was obtained by each student in the MCQs, case scenarios and both tests?

<i>Student</i>	<i>MCQs</i>	<i>Case scenarios</i>	<i>Knowledge (MCQs and Case scenarios)</i>
Student 01	100.00%	100.00%	100.00%
Student 02	50.00%	66.67%	57.14%

This report, titled “Percentage scores obtained by each student by test” answers the question: “*Which percentage score was obtained by each student in the MCQs, case scenario and both tests?*” In this example, the report shows the results obtained by each of the two students for whom we entered the data.

This information gives a useful overview of the test results.

The reports listed under the tabs “MCQ reports” and “Case scenario reports” provide further information for detailed analysis.

Item analysis

The program provides also useful information to analyse the items of the test and determine their effectiveness. This analysis helps place and present the results in the right context and revise items for future tests. The analysis becomes especially important if the test is used for summative assessments (examinations) when the *individual* student is tested rather than the *group* of students as is instead the case in evaluations of IMCI pre-service education. In the case of examinations, it is essential to measure the level of difficulty of each test item, how well it discriminates between the group of students with the highest performance in the overall test and those with the lowest performance and how well each item is constructed in terms of both stem and options.

The report generates information for the analysis of the following three items:

- the Facility Index (FI);
- the Discrimination Index (DI); and
- distractor options.

Results on FI and DI are also presented as graphs in the Excel file linked to the program (see “Exporting data to Excel and generating graphs”).

The “Facility Index” (FI) refers to how easy a question is: it is given by the proportion of students who answered correctly a specific item. It is also called “Difficulty Index”. This gives an idea about the level of difficulty not only of each MCQ but also of the whole test. An FI of “0.95” for a specific MCQ item means that that MCQ was answered correctly by 95% of students who took the test. An item is considered:

- “*easy*” if the FI is > 0.70 (i.e. the item has been answered correctly by more than 70% of students who took the test);
- of “*intermediate*” difficulty (average) if the FI is between 0.30 and 0.70 (i.e. the item has been answered correctly by 30% to 70% of students who took the test); and
- “*difficult*” if the FI is < 0.30 (i.e. the item has been answered correctly by more than 70% of students who took the test).

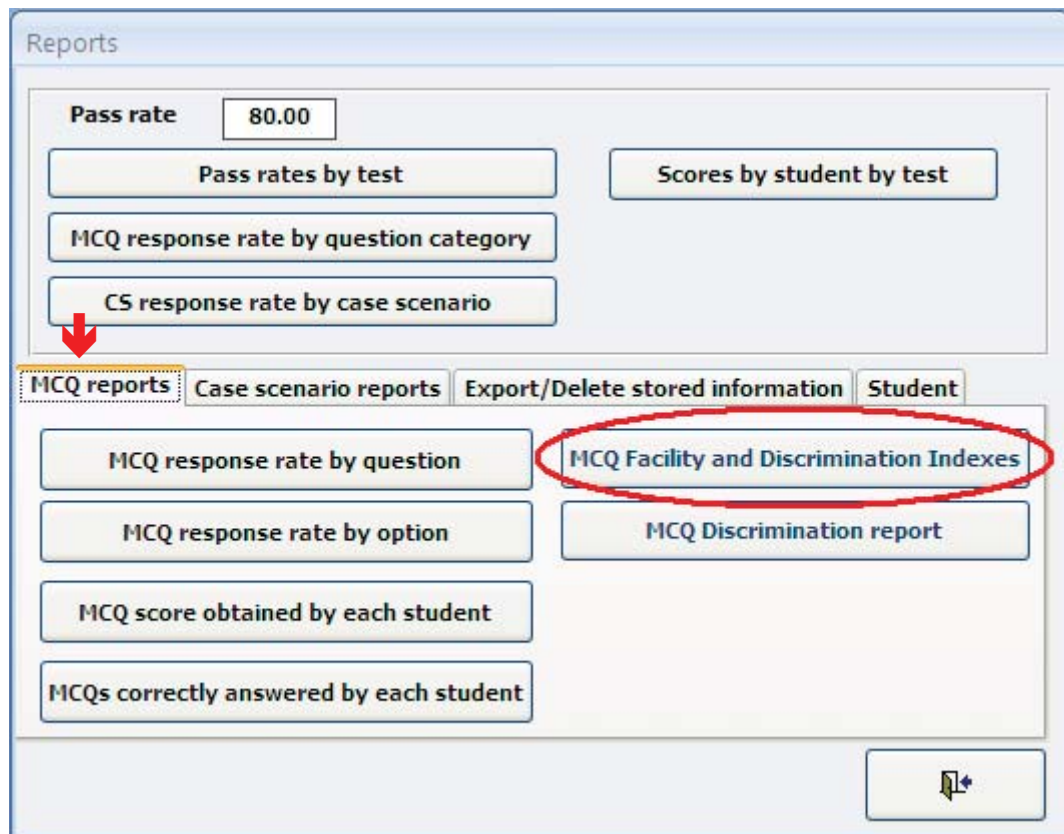
The “Discrimination Index” (DI) refers to how well an MCQ item “discriminates” (distinguishes, differentiates) between two groups of students: those who have had the highest performance in the overall test and those who have had the lowest.⁴ It is measured as the difference between the number of students in the higher performance group who answered that MCQ correctly and the number of students in the lower performance group who answered the same MCQ correctly over the total number of students in the first group. A DI < 0.30 is considered low—but may still be acceptable—while a DI < 0.15 is very low and inadequate to discriminate properly between the high and low performance groups. Finally, a negative value means that a higher proportion of students in the low performance group answered that item correctly than the high performance group: this suggests a problem with the construction of the item (options).

⁴ The percentages considered here are the 27% top and 27% bottom performers, respectively, of the students taking the test, based on the overall test results. Please, note that the program provided here to calculate the DI gives just an estimate of the DI and will not work reliably if the dataset includes a small number of students or if many students have obtained the same score, as it will be unable to separate the 27% high performance from the 27% low performance group in this case.

Finally, the distractor option analysis is useful to determine how well the “incorrect options” for each MCQ perform as “distractors”, i.e. how plausible they are, and identify areas which may confuse students. The report on the “**MCQ response rate by option**”, described earlier, enables to conduct such an analysis. If many students select an incorrect option, there may be a problem with the formulation of the MCQ item (the question itself or the options provided) or students may have some misunderstanding about that topic. This should be checked with the students and teachers as it is useful feedback for teaching.

The analysis should look at all the three indicators and interpret them together.

To see the FI and DI, the menu report item “**MCQ Facility and Discrimination Indexes**” is provided. Please, note that it may take a long time for the report to be generated and displayed on the screen (one or more minutes), depending on the total number of students for whom data have been entered, the total number of MCQs and your computer. In our case, however, as you have entered the results of only two students to practise, it is not possible to calculate these indexes: if you click at this stage, you may receive an *error message*. In fact, the results of a higher number of students need to be entered, for the index to be calculated by the program based on the top and low performance students.



Please, note that the program to calculate the DI gives just an estimate of the DI and will not work reliably if many students have obtained the same score. In this case, it will not be possible to separate the high performance from the low performance group and you should ignore the DI report.

As an example of the report, below is a sample of such a report obtained from a dataset of an evaluation.

MCQ FACILITY AND DISCRIMINATION			
Facility index: < 0.3 = difficult; 0.3 - 0.7 = intermediate; > 0.7 = easy - Discrimination index: < 0.3 = low and < 0.15 = very low			
Question	Facility index	Discrimination index	Discrimination level
A1. Which of the following is one of the 5 leading causes of mortality in under-five children in the country?	0.95	0.17	LOW
A2. Which of the following age groups do the IMCI clinical guidelines address?	0.56	0.42	GOOD
A3. Which of the following colour-coded classification rows for fever of the IMCI chart booklet would apply to a 5-month-old child with fever and convulsions?	1.00	0.00	LOW
B01. Which of the following signs is a "general danger sign" that you should always check for in every sick child age 2 months up to 5 years, according to the IMCI guidelines?	0.98	0.08	LOW
B02. Which of the following questions should you ask to check for "general danger signs" in a 4-month-old child with fever for 3 days?	0.71	0.50	GOOD

Let's have a look at some of the items of this report. The FI reported for the item A1 above is 0.95. This means that this question has been answered correctly by 95% of students taking the test. As the value of 0.95 is greater than 0.70, this MCQ is considered "easy". The DI for the same item is 0.17. A value less than 0.30 is considered to be "low" (as reported in the last column of the report under "Discrimination level"): this means that this item tends not to discriminate well between high and low performance students. Because of the combination of high 'facility' and low 'discrimination', this item would in principle not be very suitable for an examination.

The FI reported for next item, A2, is 0.56 (i.e. question answered correctly by 56% of students): as the value of 0.56 falls in the range between 0.30 and 0.70, this item has an "intermediate" difficulty. The DI for the same MCQ is 0.42. As this value is > 0.30, it has a good level of discrimination between high and low performance students. This item is suitable for an examination.


An interesting item above is B02. This item has an FI of 0.71 (just above the 0.70 cut-off level for easy items) and a DI of 0.50 (good discrimination level). Because of its good discrimination level, also this item would be suitable for an examination.

Another item in that test—B10, not shown above—has an FI of 0.98 (easy item) and a DI of -0.08 (poor discrimination level). The negative DI means that more students in the low performance group answered correctly this item than the high performance group. This is obviously anomalous. In this case, the analysis should look into the formulation of the incorrect options or distractors (distractor analysis), as some of them may have been misleading to students.

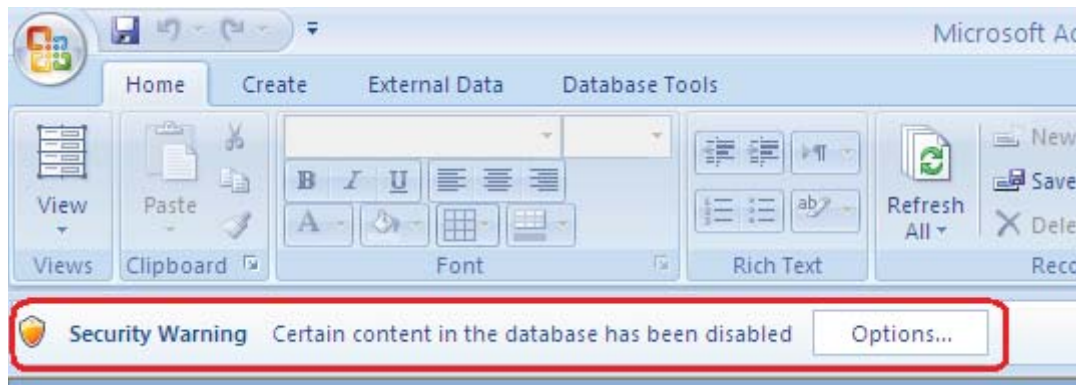
Exporting data to excel and generating graphs

The program allows you to export the dataset to an Excel file, for those wishing to carry out further analysis and also exporting it to other programs. It also automatically generates a number of graphs in the Excel file for immediate presentation of findings based on the data which have been entered.

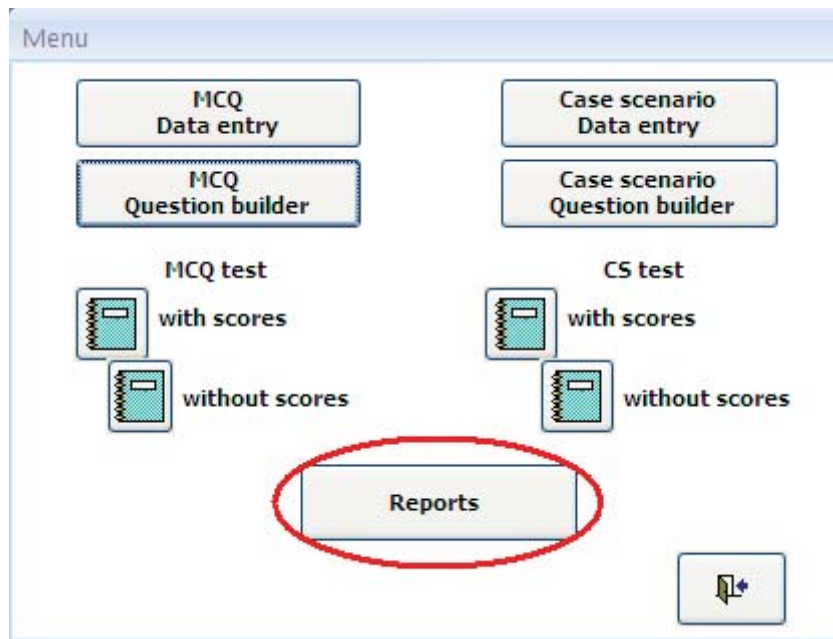
As you have entered data on only two students for two MCQs and one case scenario to practise with data entry, the CD-ROM contains another file for you to practise with this aspect of the program. The file contains data of many students already entered from an easy test of 30 MCQs and five case scenarios. In the folder “**ACCESS practice**” of the CD-ROM, double click on the Access file “**Assessment of student knowledge.mdb**”:

 Assessment of student knowledge.mdb 2,768 KB

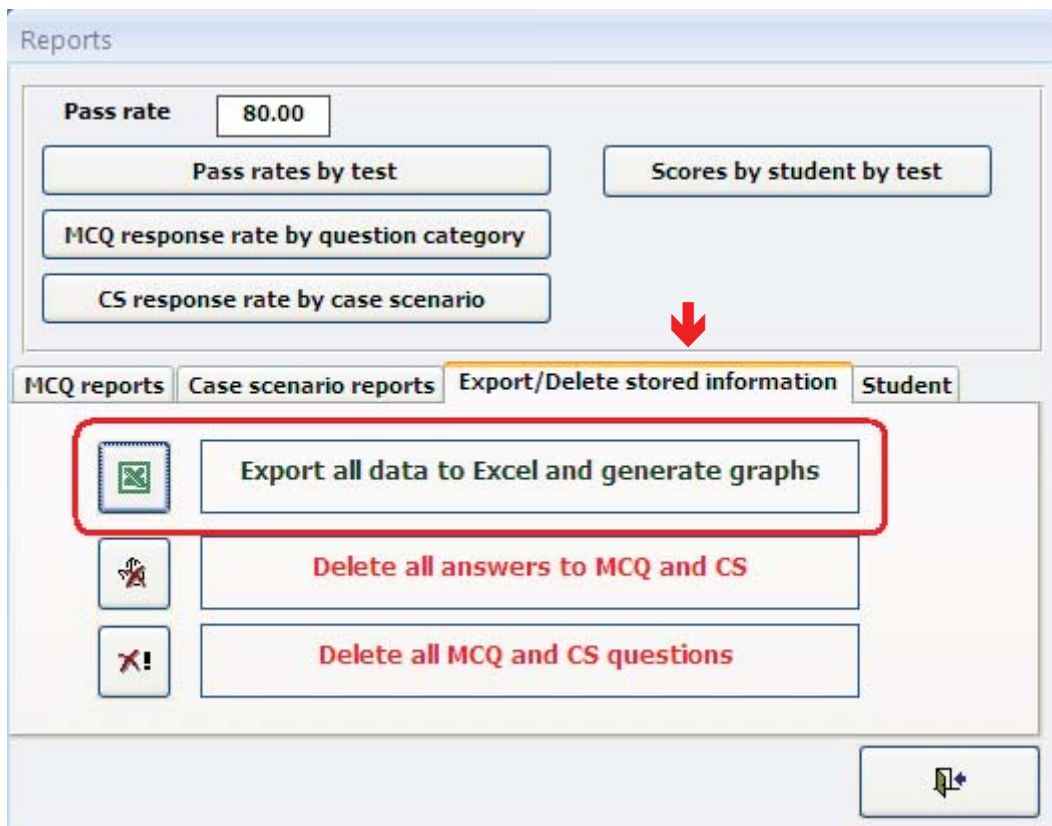
When the security warning appears, remember to enable content, as described in “Instructions for users of Microsoft Office Access 2007” or “Instructions for users of Access 2003”, depending on the version of Access you have.



In the menu, click on “**Reports**”:



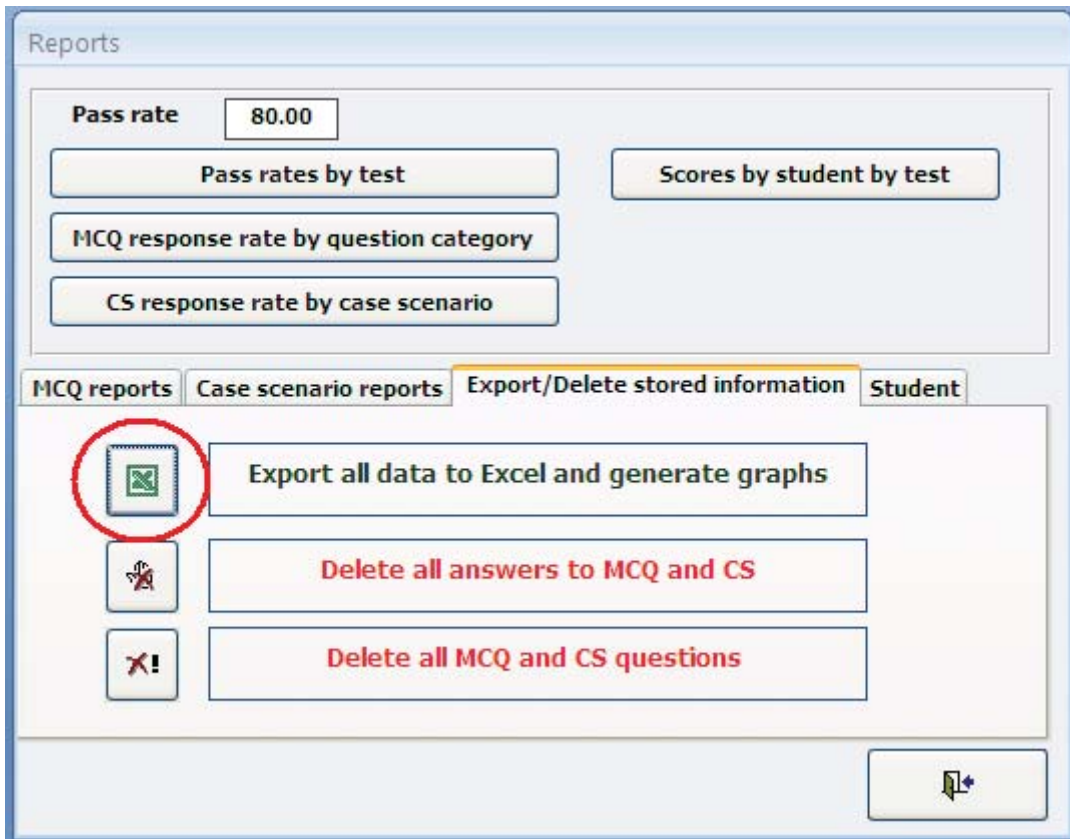
Next, click on the tab “**Export/Delete stored information**”. Three items are displayed under this tab. The first on top is “**Export all data to Excel and generate graphs**”.



 **Reminder**

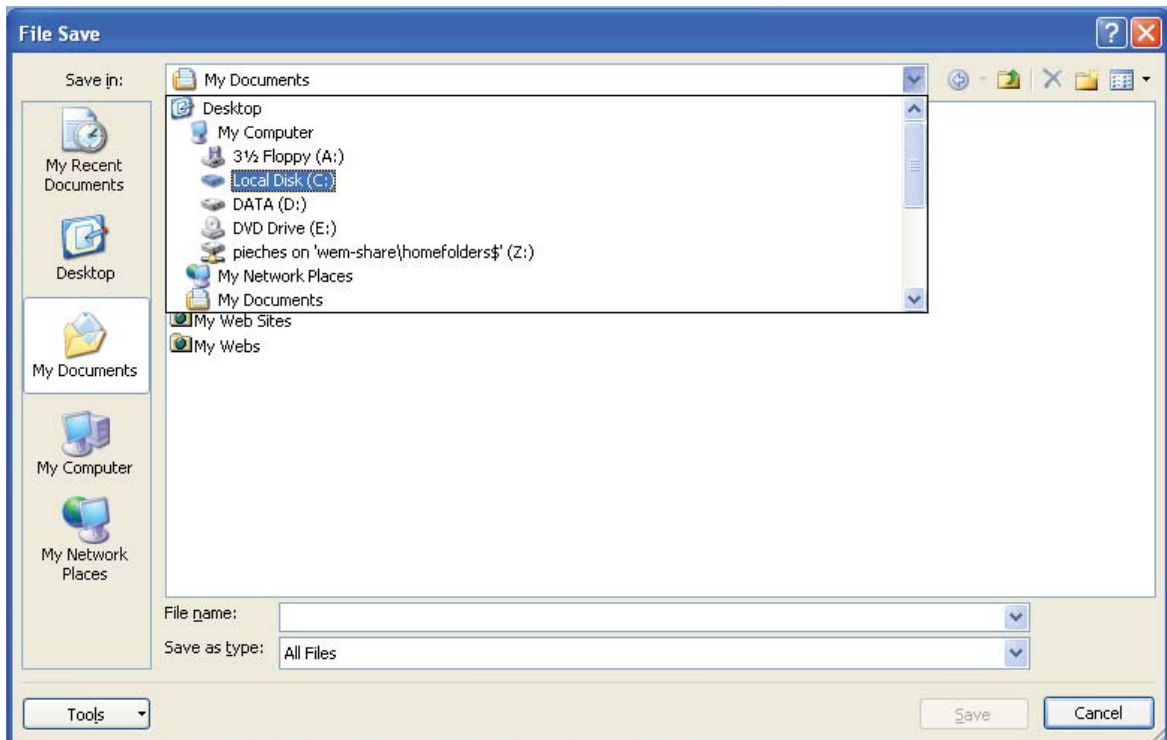
Always ensure that you have both the Access file containing your dataset and the Excel file "CAH_info" in the same folder, otherwise the export tool will not work.

- To export all the data to an Excel file and view the graphs which have been automatically generated, click on the Excel icon:

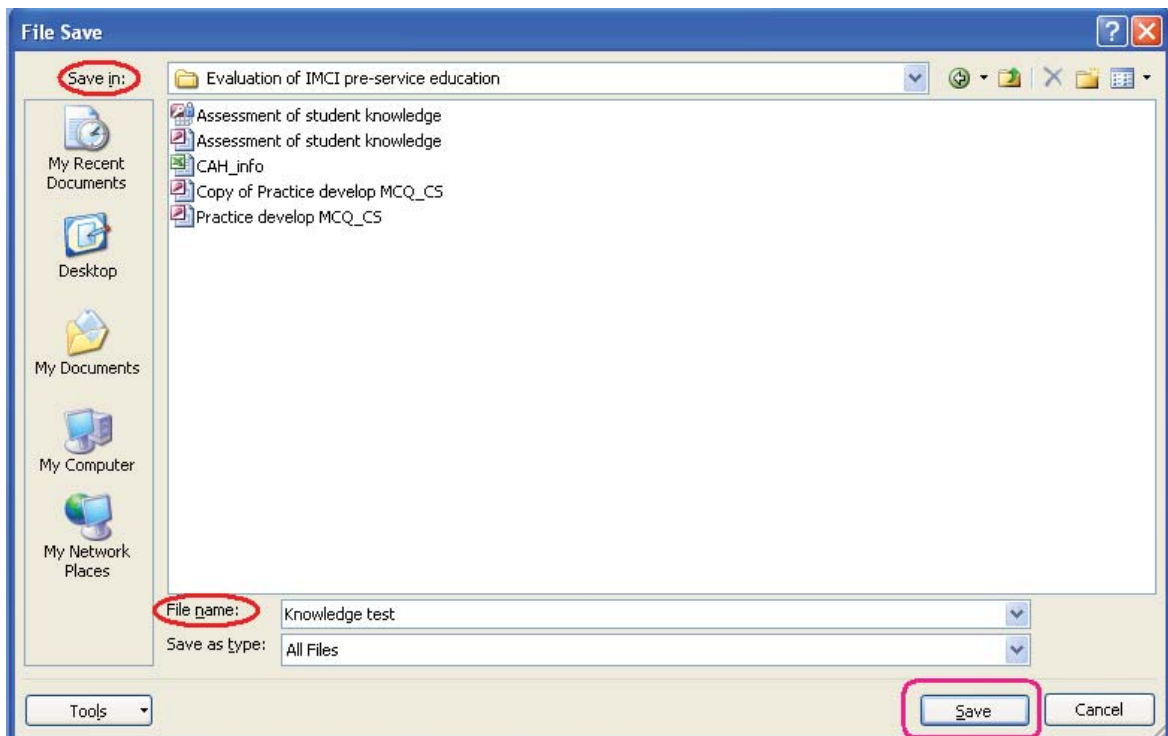


The screenshot shows a 'Reports' window with a 'Pass rate' of 80.00. Below this are buttons for 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category', and 'CS response rate by case scenario'. A tabbed interface at the bottom includes 'MCQ reports', 'Case scenario reports', 'Export/Delete stored information' (which is selected), and 'Student'. Under the selected tab, there are three buttons: 'Export all data to Excel and generate graphs' (with an Excel icon circled in red), 'Delete all answers to MCQ and CS' (with a trash icon), and 'Delete all MCQ and CS questions' (with a trash icon and an exclamation mark). A 'Print' icon is visible in the bottom right corner.

The following window will appear:

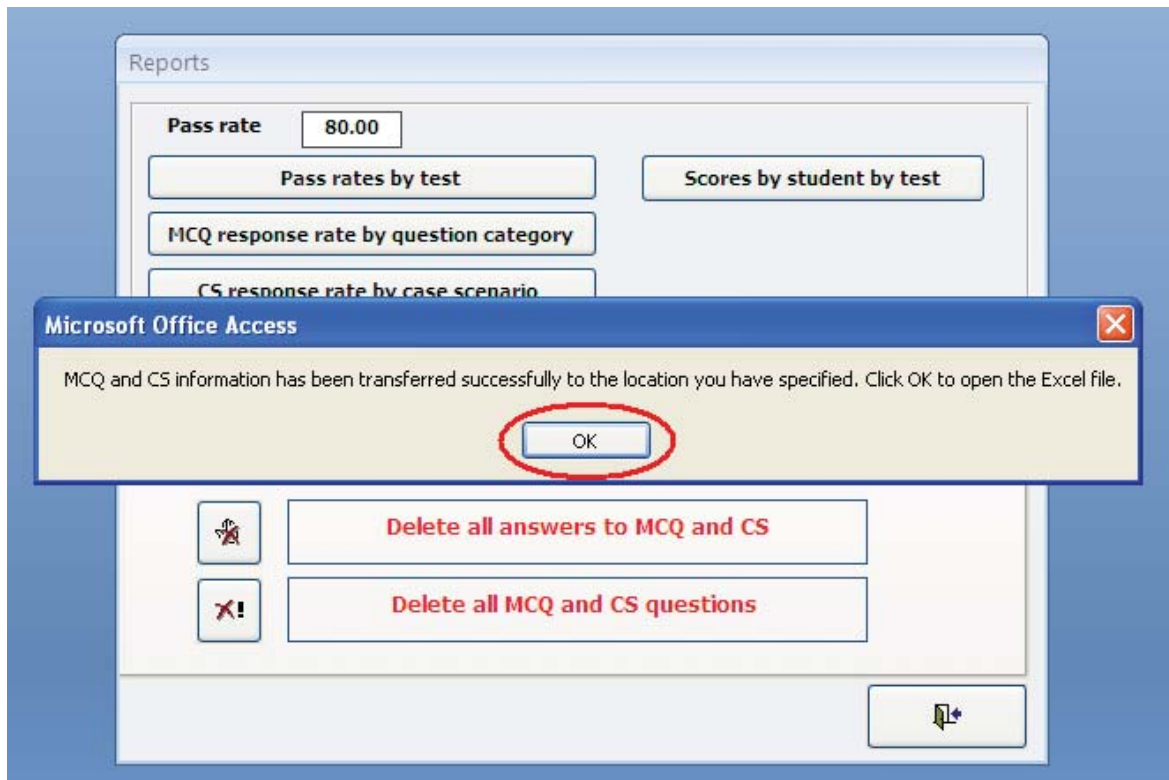


- Select in which folder you want to save your Excel file.
- Then, give a name to the Excel file to which you are exporting the data (e.g. **“Knowledge test”** as shown in the picture below):



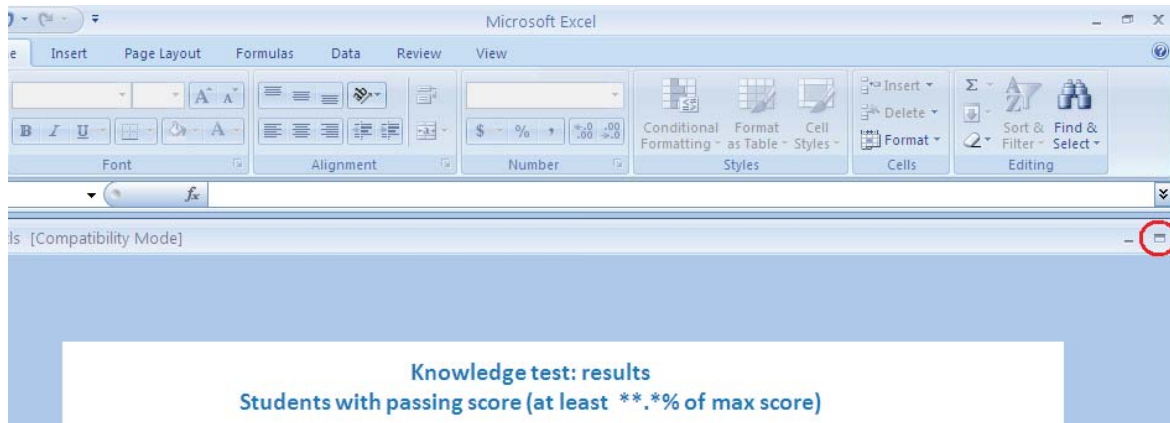
- Click on **“Save”**.

After a while, the following message will be displayed on the screen, indicating that the dataset has been transferred successfully:

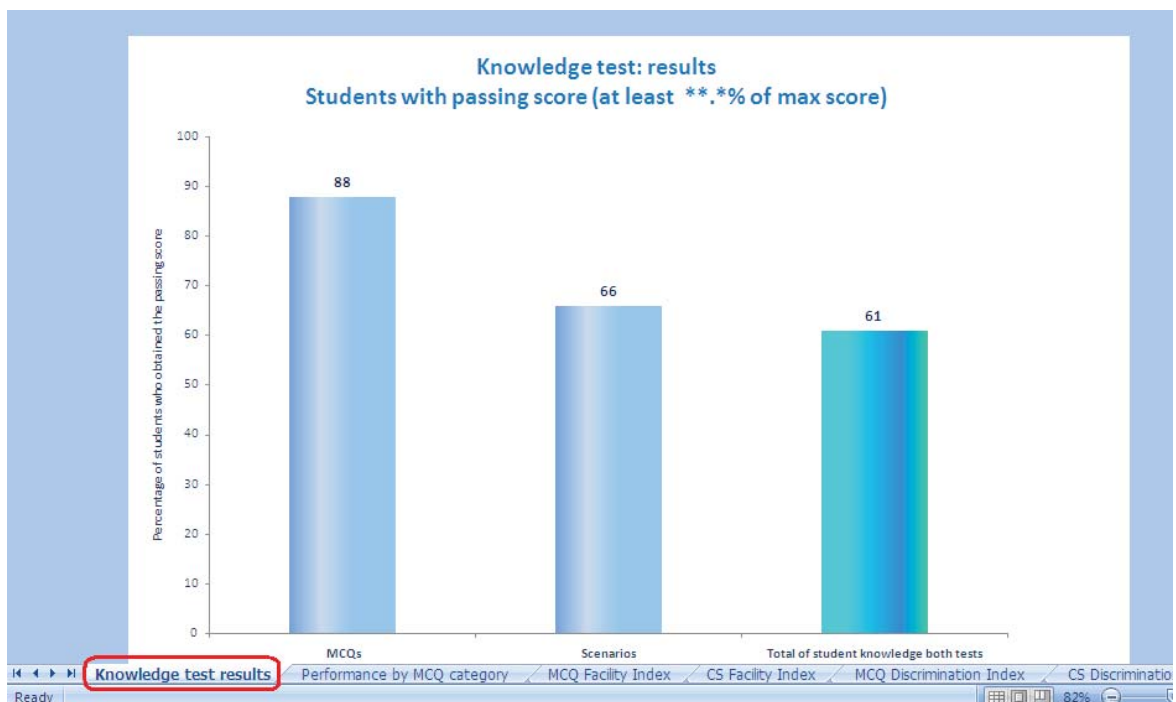


- Click on “**OK**”, to open the file right away. After a few seconds, the Excel file (which has been saved in the folder you have specified) will open automatically.

If you can not see the tabs at the bottom of the Excel file, maximize the inside window by clicking on the icon, as shown below (icon circled in red):



- Click on the tab “**Knowledge test results**” to see the first graph (a column chart):



To view the rest of the Excel file content, click on the other tabs at the bottom of the Excel window, one by one. These are, proceeding from left to right:

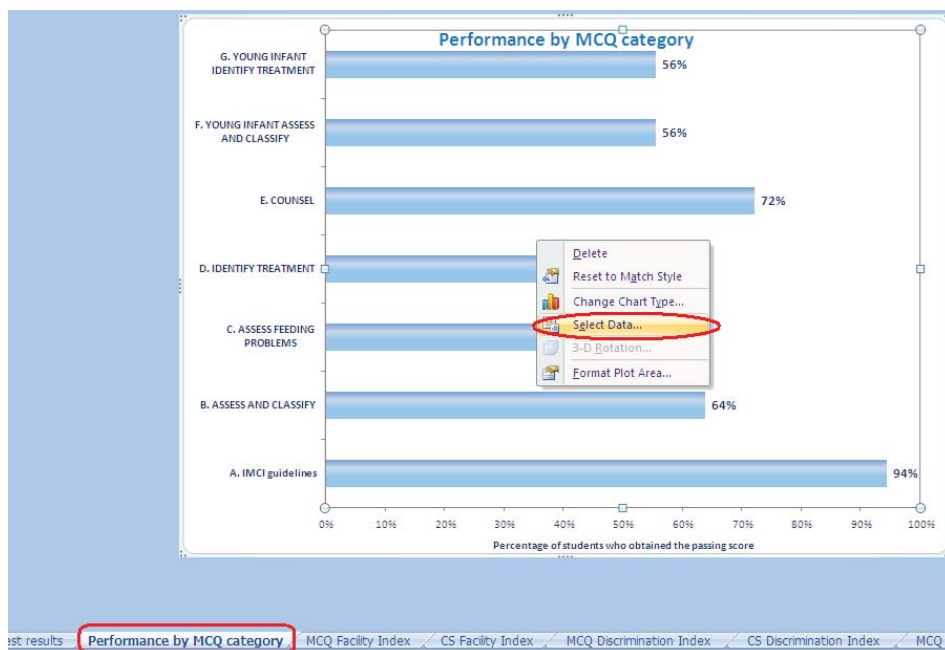
- “**Performance by MCQ category**”, with a graph showing the results of the MCQ test broken down by question categories (e.g. “IMCI guidelines”, “Assess and classify” etc.);
- “**MCQ Facility Index**”, with a graph showing the index for each MCQ;
- “**CS Facility Index**”, with a graph showing the index for each question of the Case scenarios;

- “**MCQ Discrimination Index**”, with a graph showing the index for each MCQ;
- “**CS Discrimination Index**”, with a graph showing the index for each question of the Case scenarios;
- “**MCQ Discrimination Level**”, with a pie chart showing the percentage of MCQs with a low and good discrimination index;
- “**CS Discrimination Level**”, with a pie chart showing the percentage of questions of the Case scenarios with a low and good discrimination index;
- “**MCQ_trans**” and “**CS_trans**”, containing the dataset.

The graphs can be modified, copied and pasted in a presentation to provide immediate feedback on the results of the student knowledge assessment⁵.

There may be a need to update the graphs, especially the first two graphs, namely “**Knowledge test results**” and “**Performance by MCQ category**”. To update the graphs in order to ensure that they are based on the actual dataset of the new evaluation, do as follows:

- open the graph, clicking the tab displaying the graph name (e.g. “**Performance by MCQ category**”);
- place the mouse in the middle of the graph and right click;

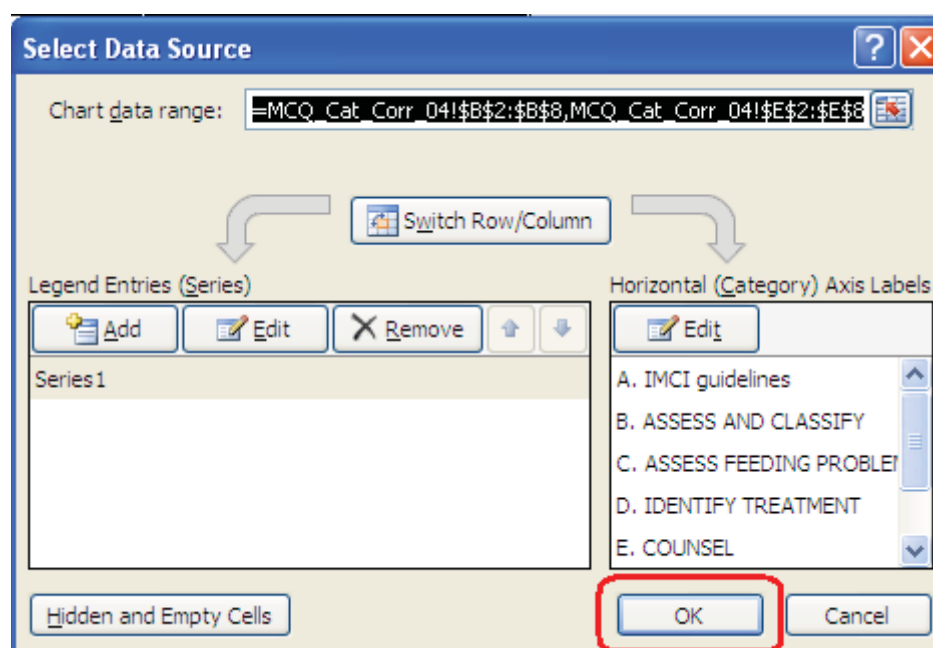


- In the new sheet which opens, i.e. “**MCQ_Cat_corr_04**”, select the reference data. For example, for “**Performance by MCQ category**”, select the columns under “**Category**”—which contains the categories—and “**PrcntSdnt**”—which contains the percentage values, respectively, using the “**Ctrl**” key to select the second column, as shown below (see the cells within the rectangle with black borders in the picture):

⁵ If the charts or axis categories are not displayed properly (e.g. “S.01” instead of “S.01.1”), ensure that the numbers of MCQs have been entered with no more than 3 digits (e.g., “A01”, “B13”) and the numbers of Case scenarios have been entered with six digits (e.g. “S.01.1”, “S.01.2”, “S.02.1”, etc.). The display can be edited at any time in the Excel file.

	A	B	C	D	E
1	CAT	Category	NoStndt	CountOfSt udent	PrcntSdnt
2	1	A. IMCI guidelines	34	36	0.944444
3	2	B. ASSESS AND CLASSIFY	23	36	0.638889
4	3	C. ASSESS FEEDING PROBLEMS	20	36	0.555556
5	4	D. IDENTIFY TREATMENT	16	36	0.444444
6	5	E. COUNSEL	26	36	0.722222
7	6	F. YOUNG INFANT ASSESS AND CLASSIFY	20	36	0.555556
8	7	G. YOUNG INFANT IDENTIFY TREATMENT	20	36	0.555556
9					

- Finally, click the “OK” button of the “Select Data Source” box:



The updated graph will be displayed on the screen automatically.

Deleting data: student answers and test questions

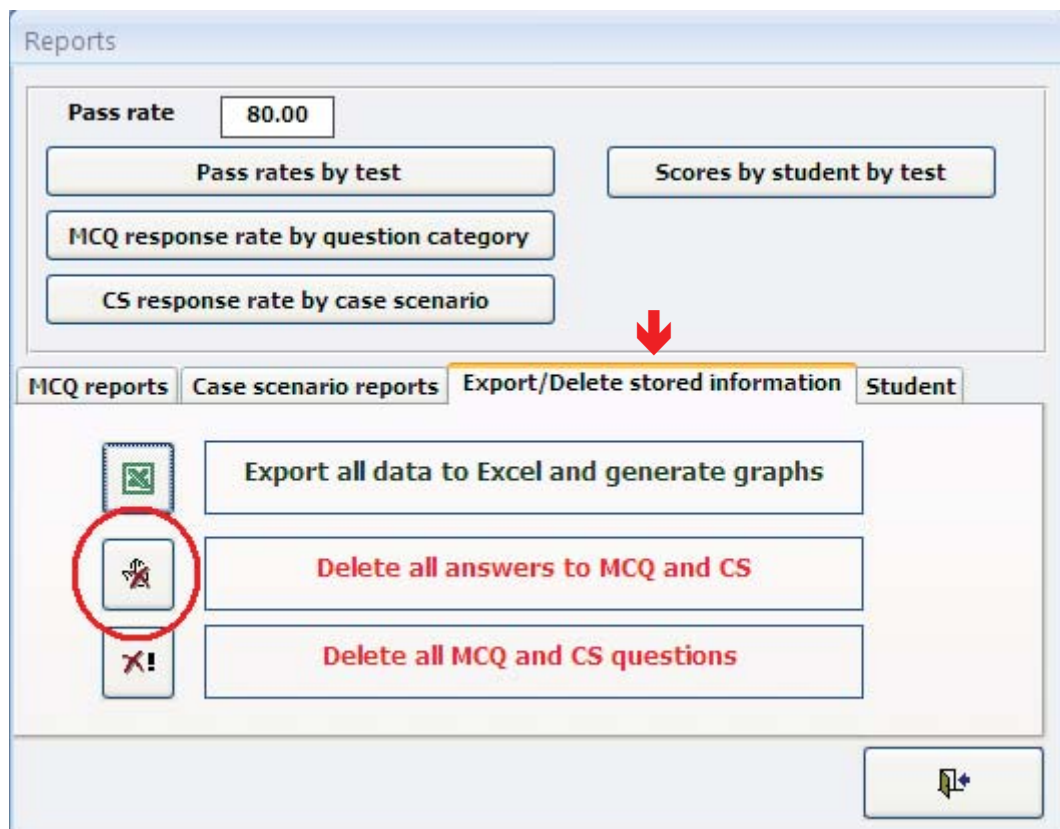
It is possible to delete all the student answers which have been entered for this assessment in order to obtain a clean file with the same MCQ and Case scenarios ready for adaptation and use for a new assessment. Before proceeding, it is strongly recommended that you save the data file (e.g. **Copy of Practice develop MCQ_CS.mdb**) first, on an external drive (e.g. pen drive) or on a different folder, so that you do not lose your data.

Remember:

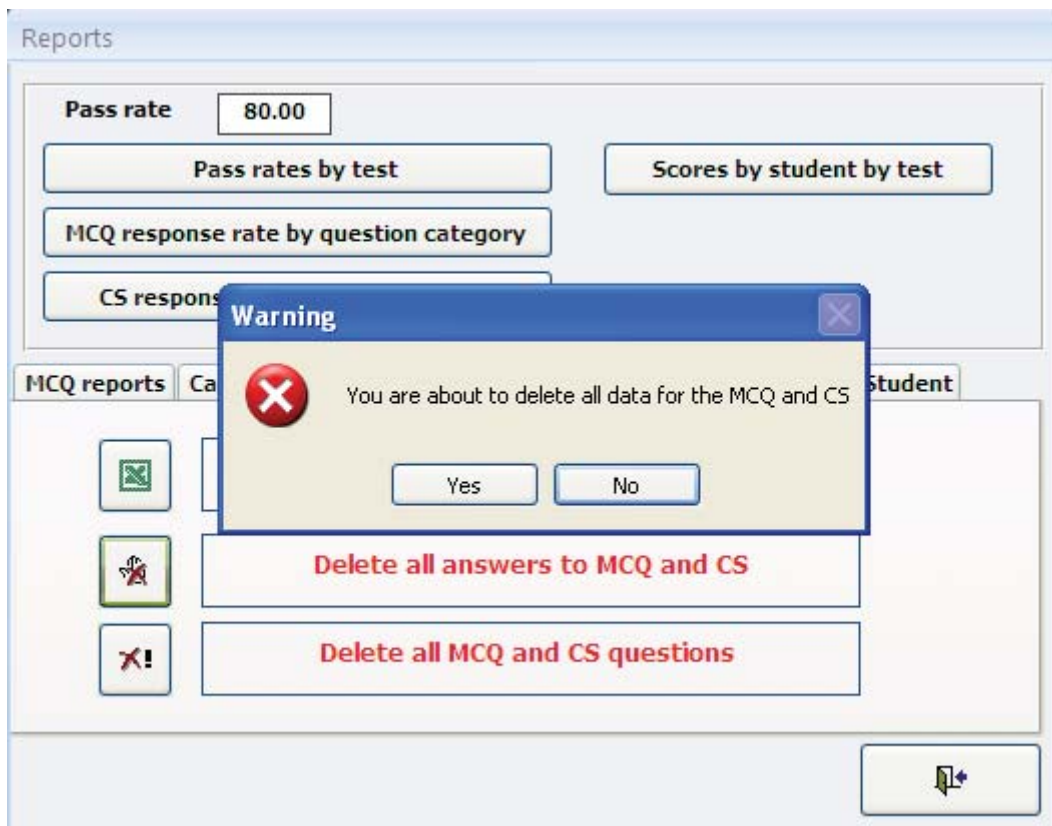
Always back up your data: each day, save on an external drive the data you have entered!

The tab “**Export/Delete stored information**” of the “Report” section of the menu includes the item “**Delete all answers to MCQ and CS**”. This command will delete all the data which have been entered while keeping the MCQs and Case scenarios. For this reason, it is marked in red.

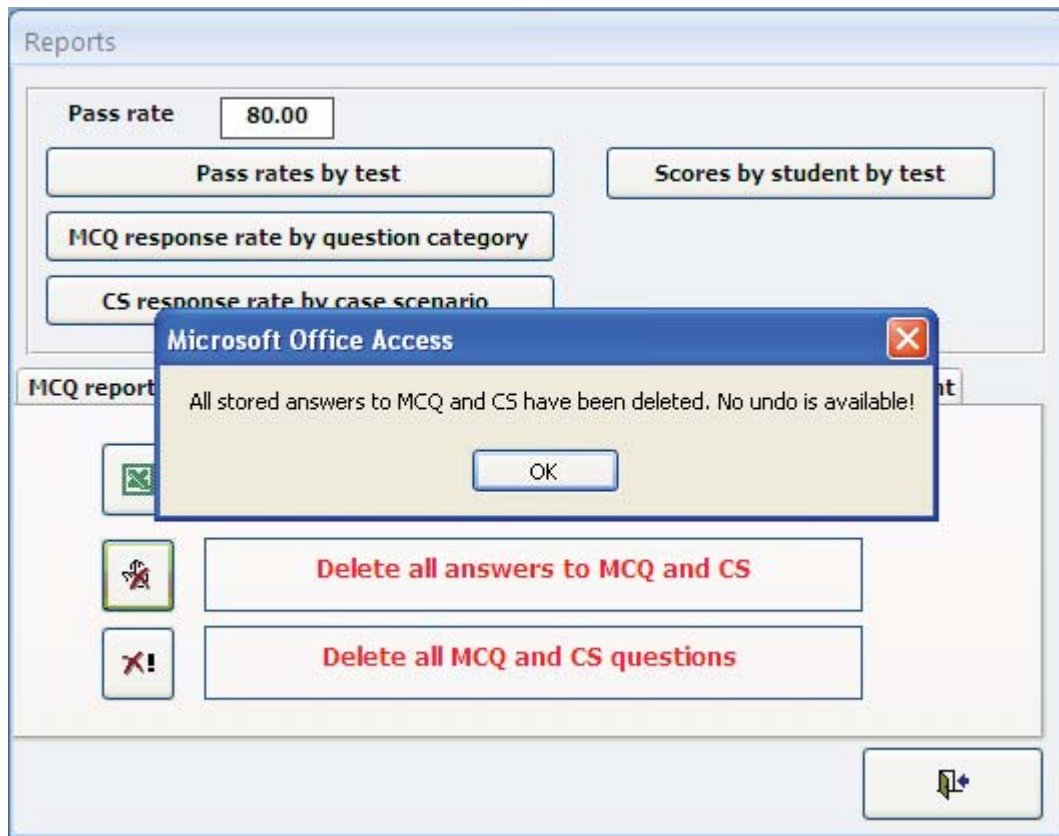
- Click on the corresponding icon (circled in red in the picture below):



The following message is displayed, warning that all the data entered are about to be deleted and asking for confirmation. If you want to continue and delete all the data, click “Yes”; if you want to cancel and keep the data, press “No”.



If you click “Yes”, all the data will be deleted and a message will appear confirming that the data have been deleted and can no longer be restored:



- Click “OK” to return to the menu reports.

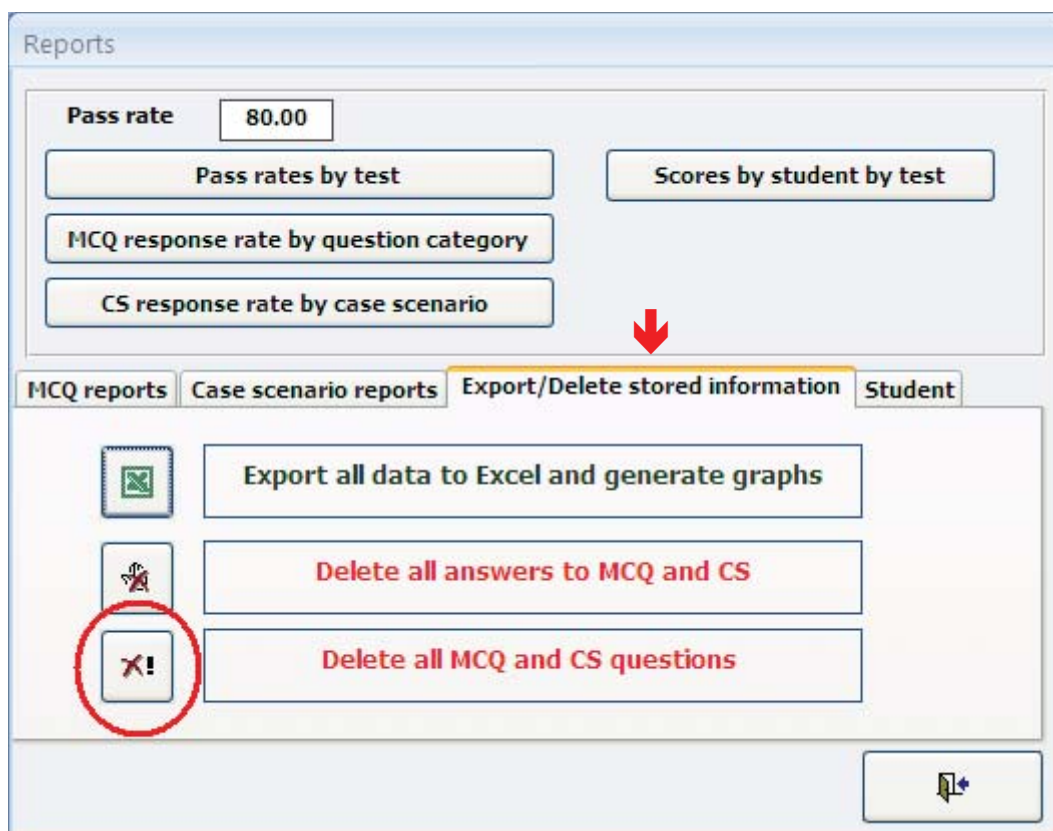
⚠ Warning!

Once you click to delete all answers, the data are deleted and it is not possible to restore them. Always make at least one backup copy of the original file after you have entered all the data, before the analysis, and store it in a different folder with another name to be safe.

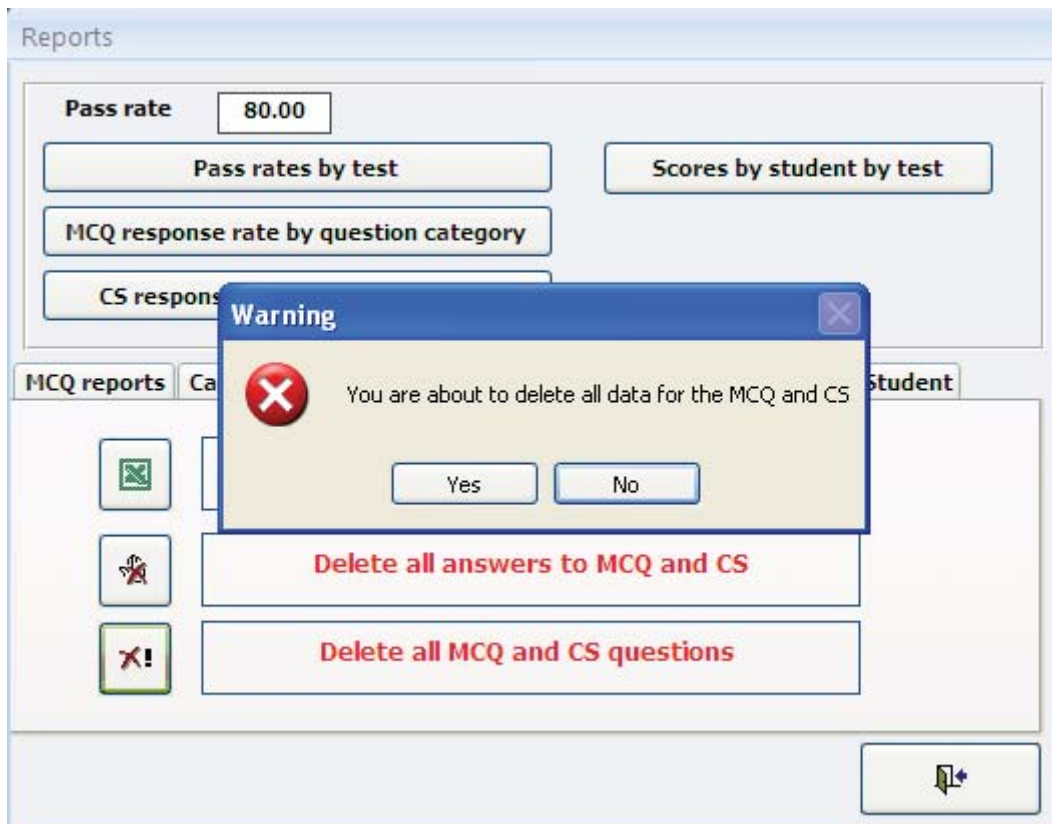
After deleting the data (student answers), it is possible to delete also the text of all the MCQs and Case scenarios, in order to obtain a clean file in which to enter new MCQs and Case scenarios for a new test. The new Access file will keep the original format and formulas to generate reports once data have been entered. Before proceeding, it is strongly recommended that you save the file first, as the action is irreversible.

The tab “**Export/Delete stored information**” of the “Report” section of the menu includes the item “**Delete all MCQs and CS questions**”. This command will delete all the test items.

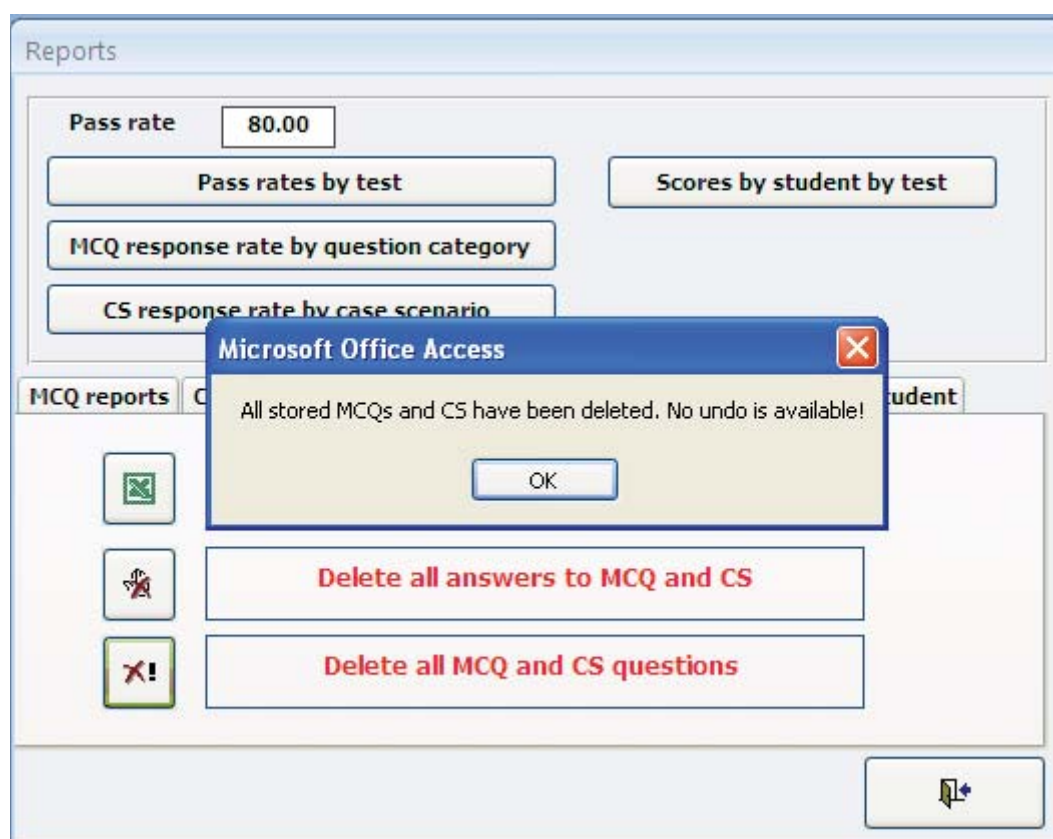
- Click on the corresponding icon (circled in red in the picture below):



The following message is displayed, warning that the text of all the test items (questions and options) of MCQs and Case scenarios is about to be deleted and asking for confirmation. If you want to continue and delete it, click “Yes”; if you want to cancel and keep it, press “No”.



The following message is displayed, confirming that all the data have been deleted and can not be restored:



⚠ Warning!

Once you click to delete all questions, the data are deleted and it is not possible to restore them. Always make at least one backup copy of the original file after you have entered the data, before the analysis, and store it in a different folder with another name to be safe.

- Click **“OK”** to return to the menu reports.

- Click on the door ajar icon to exit the report menu:

The screenshot shows a 'Reports' window with a 'Pass rate' of 80.00. It contains several report options: 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category', and 'CS response rate by case scenario'. Below these are tabs for 'MCQ reports', 'Case scenario reports', 'Export/Delete stored information' (which is highlighted), and 'Student'. Under the 'Export/Delete stored information' tab, there are three options: 'Export all data to Excel and generate graphs' (with a green checkmark icon), 'Delete all answers to MCQ and CS' (with a red hand icon), and 'Delete all MCQ and CS questions' (with a red X icon). A red circle highlights a door ajar icon in the bottom right corner of the menu.

Adding and deleting student records

The fourth and last tab of the report menu (“**Student**”) enables two more actions:

- “**Add more students to the student list**”, if your assessment includes a number of students greater than 60, which is the number pre-listed in the original Access file;
- “**Delete all MCQ and CS data entered for a student**”, if you have entered data for the wrong student by mistake (e.g. if you entered data for student 51 instead of student 41).

The screenshot shows the 'Reports' window with a 'Pass rate' of 80.00. Below this are several report buttons: 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category', and 'CS response rate by case scenario'. A red arrow points down to the 'Student' tab, which is highlighted in yellow. The 'Student' tab contains two main sections, both enclosed in a red box:

- The first section has a button labeled 'Add more students to the student list' and an 'Add' button.
- The second section has a button labeled 'Delete all MCQ and CS data entered for a student' in red text. Below it is a dropdown menu labeled 'Choose student to be deleted' and a 'Delete' button.

At the bottom right of the window is a refresh button.

To add more students:

- Click on “Add”:

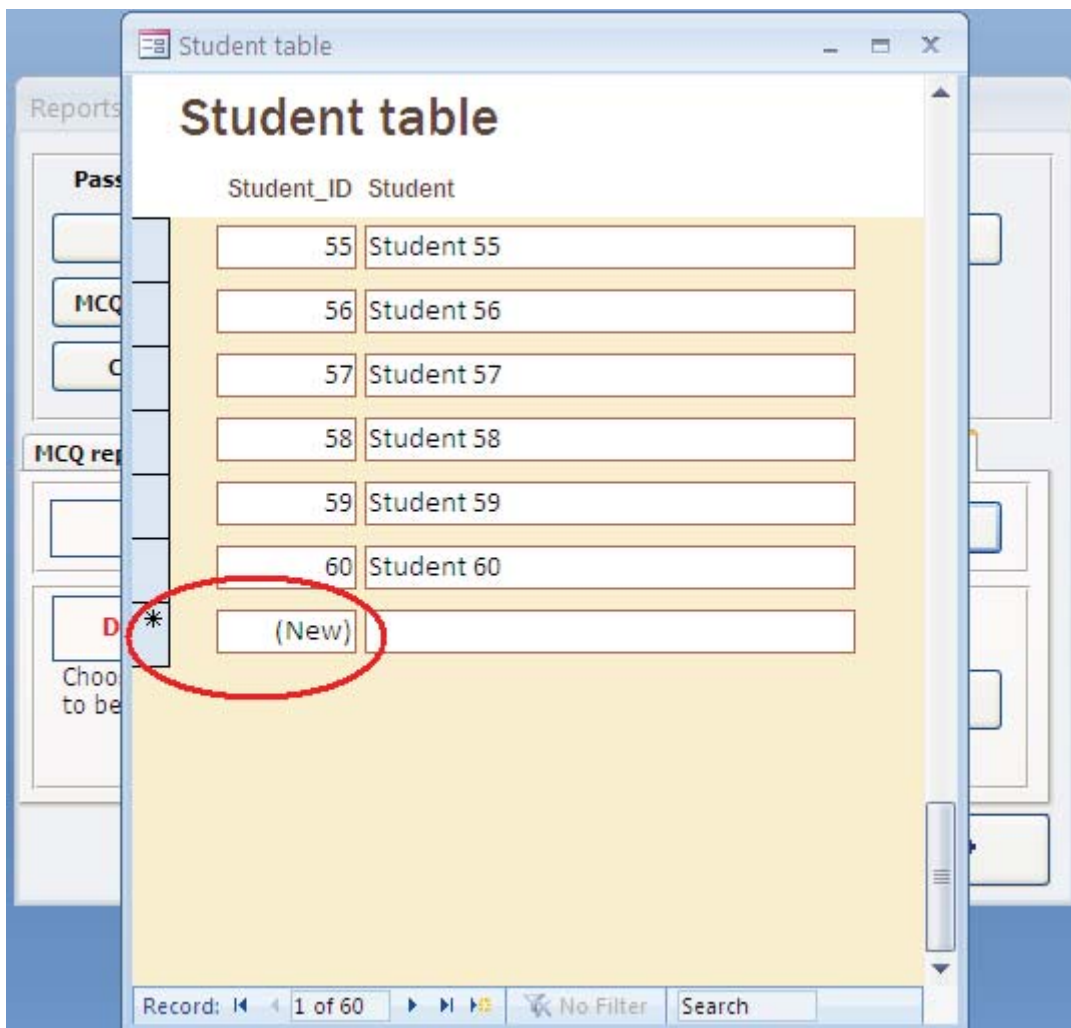
The screenshot shows a software interface titled "Reports". At the top, there is a "Pass rate" field with the value "80.00". Below this are four buttons: "Pass rates by test", "Scores by student by test", "MCQ response rate by question category", and "CS response rate by case scenario". A tabbed menu below these buttons includes "MCQ reports", "Case scenario reports", "Export/Delete stored information", and "Student". The "Student" tab is active and contains a button labeled "Add more students to the student list" and a button labeled "Add" which is circled in red. Below the "Add" button is a section titled "Delete all MCQ and CS data entered for a student" in red text. This section includes a dropdown menu labeled "Choose student to be deleted" and a "Delete" button. At the bottom right of the interface is a button with a refresh icon.

The following window appears:

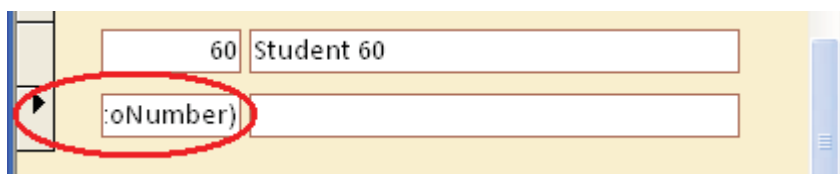
Student_ID	Student
1	Student 01
2	Student 02
3	Student 03
4	Student 04
5	Student 05
6	Student 06
7	Student 07
8	Student 08
9	Student 09
10	Student 10
11	Student 11
12	Student 12

Record: 1 of 60 | No Filter | Search

- Scroll it down to the row marked with an asterisk.
 - In Access 2007, “(New)” appears in the first column, the “Student_ID” column, while the next column (the “Student” column) is empty:



- In Access 2003, “(AutoNumber)” is shown instead of “(New)”:



- Manually enter “**Student 61**” in the last column, the “**Student**” column. You will see that the number “61” automatically replaces “(New)” and a new row marked with an asterisk appears below “61”:

The screenshot shows a window titled "Student table" with a table of student records. The table has two columns: "Student_ID" and "Student". The records are numbered 51 through 61, with the "Student" column containing the text "Student 51" through "Student 61". Below the last record, there is a new row with "(New)" in the "Student_ID" column and an empty "Student" column. The status bar at the bottom indicates "Record: 61 of 61".

Student_ID	Student
51	Student 51
52	Student 52
53	Student 53
54	Student 54
55	Student 55
56	Student 56
57	Student 57
58	Student 58
59	Student 59
60	Student 60
61	Student 61
(New)	

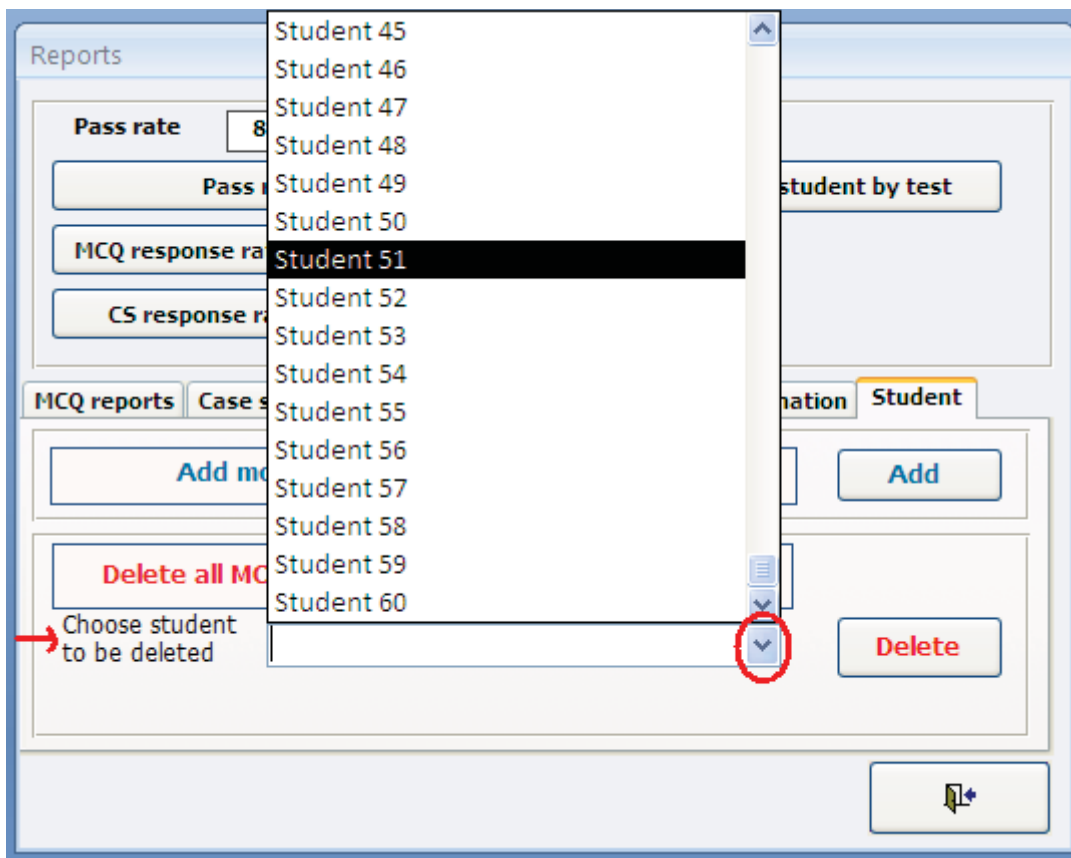
- Repeat the procedures for the number of students to be added. Then, close the window to return to the report menu:

The screenshot shows the same "Student table" window, but only the first two rows are visible: "51 Student 51" and "52 Student 52". The "X" button in the window title bar is circled in red, indicating the close action.

Student_ID	Student
51	Student 51
52	Student 52

If you want to delete a student record in which you entered data by mistake, proceed as follows:

- Below **“Delete all MCQ and CS data entered for a student”**, click on the drop down list of **“Choose student to be deleted”** to select the student number whose record should be deleted:



- Next, click on **“Delete”**:

The screenshot shows the 'Reports' window with a 'Pass rate' of 80.00. Below this are buttons for 'Pass rates by test', 'Scores by student by test', 'MCQ response rate by question category', and 'CS response rate by case scenario'. A tabbed interface at the bottom includes 'MCQ reports', 'Case scenario reports', 'Export/Delete stored information', and 'Student'. The 'Student' tab is active, showing a button to 'Add more students to the student list' and an 'Add' button. Below that, a red heading reads 'Delete all MCQ and CS data entered for a student'. A dropdown menu labeled 'Choose student to be deleted' is set to 'Student 51'. A red circle highlights the 'Delete' button. A small icon with a plus sign is visible at the bottom right.

- The following warning message appears; click **“Yes”** to permanently delete the record:

This screenshot is identical to the previous one, but with a 'Warning' dialog box overlaid in the center. The dialog box has a red 'X' icon and the text: 'You are about to delete all data for the selected student'. It contains two buttons: 'Yes' and 'No'. The background interface remains visible but slightly dimmed.

- Click on the door ajar to exit the report menu:

Reports

Pass rate

MCQ reports | Case scenario reports | Export/Delete stored information | **Student**

Delete all MCQ and CS data entered for a student

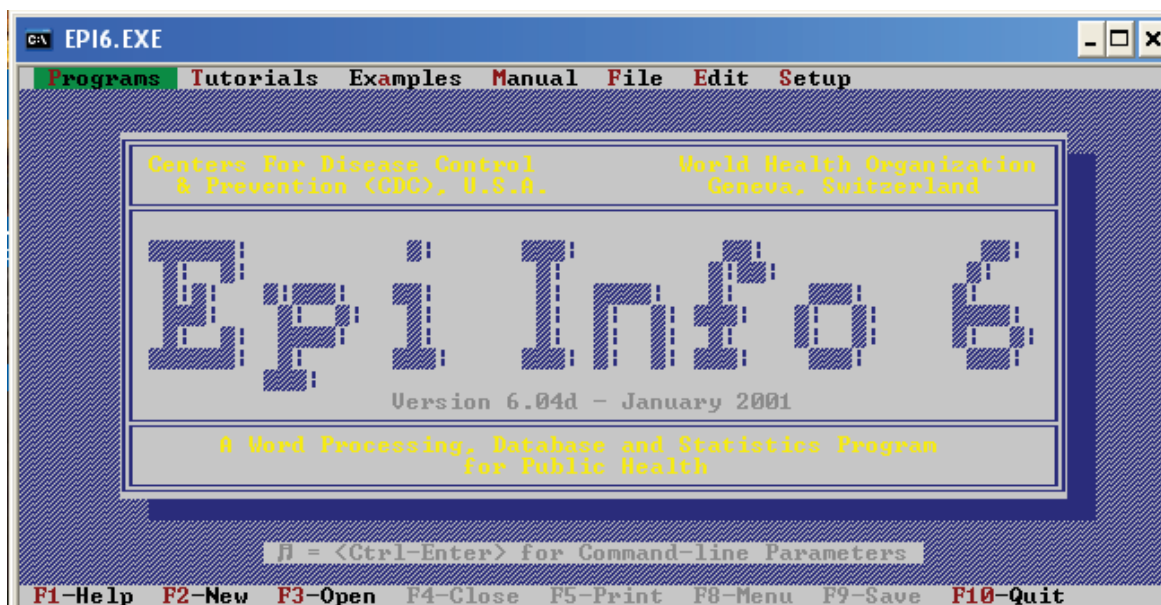
Choose student to be deleted

Skill test

Epi Info™ 6

Epi Info™ 6 (for DOS) has been used in the first evaluations of IMCI pre-service education to enter and analyse data on student skill assessment. Epi Info™ 6 (version 6.04d) is the last DOS version of a word processing, database and statistics program for epidemiology on microcomputers developed by the Centers for Disease Control and Prevention, Atlanta, Georgia, U.S.A., in collaboration with the World Health Organization (WHO), Geneva, Switzerland. Despite being a relatively old DOS version, the rationale for the choice of this software includes a number of advantages:

- no copyright: the program may be freely copied and distributed;
- wide distribution and use in many countries in the world for different public health programs;
- fast installation and very minimum hardware requirements;
- rapid development of data entry forms and setup of data files and many data management and analysis features;
- double entry verification;
- very small size of files;
- possibility of exporting files to other programs for further analysis.



Data files can be imported (“read”) for analysis also in the Epi Info™ version for Windows, which is another program that can be freely downloaded and distributed.

For more information on Epi Info™ 6 (for DOS) consult the CDC web site at:

<http://www.cdc.gov/epiinfo/epi6/ei6.htm> (accessed on 10 May 2010):

CDC Home Search Health Topics A-Z

Home | Capacity Building | Data Systems |
Public Health Surveillance | Contact Us

Epi Info™ 6

Epi Info™ 6
for DOS
Current Version
6.04d

Epi Map 2
for DOS
Current Version
2.01a

- Downloads
- How to Install
- Online Manual
- FAQs
- Do Epi Tutorials
- Translations

Epi Info™ 6 is a series of microcomputer programs for handling

For more information on Epi Info™ (for Windows) consult the CDC web site at:

<http://www.cdc.gov/epiinfo/> (accessed on 10 May 2010):

CDC Home Search Health Topics A-Z

[DISSS Home](#) | [Contact Us](#)

What Is Epi Info™?

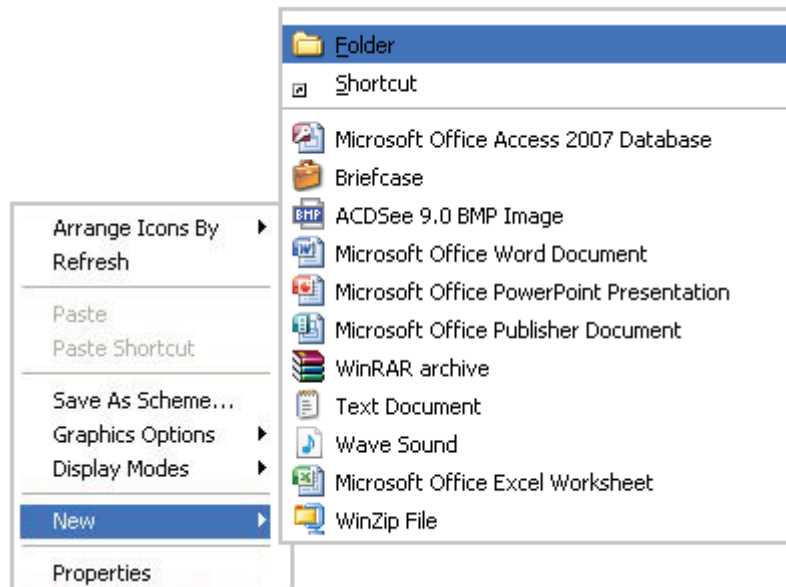
[Download](#)

Latest Version: Epi Info™ Version 3.5.1
Release Date: August 18, 2008

Installing Epi Info™ 6 on your computer

To install Epi Info™ 6 (**Epi6** in short) on your computer, follow these steps:

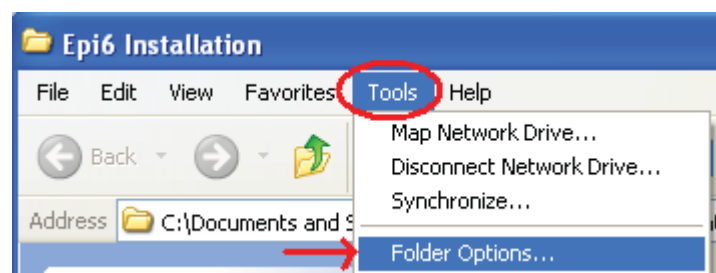
- Right click with your mouse on an empty space of the desktop, select “**New**” and then “**Folder**” to create on your C: drive a new folder:



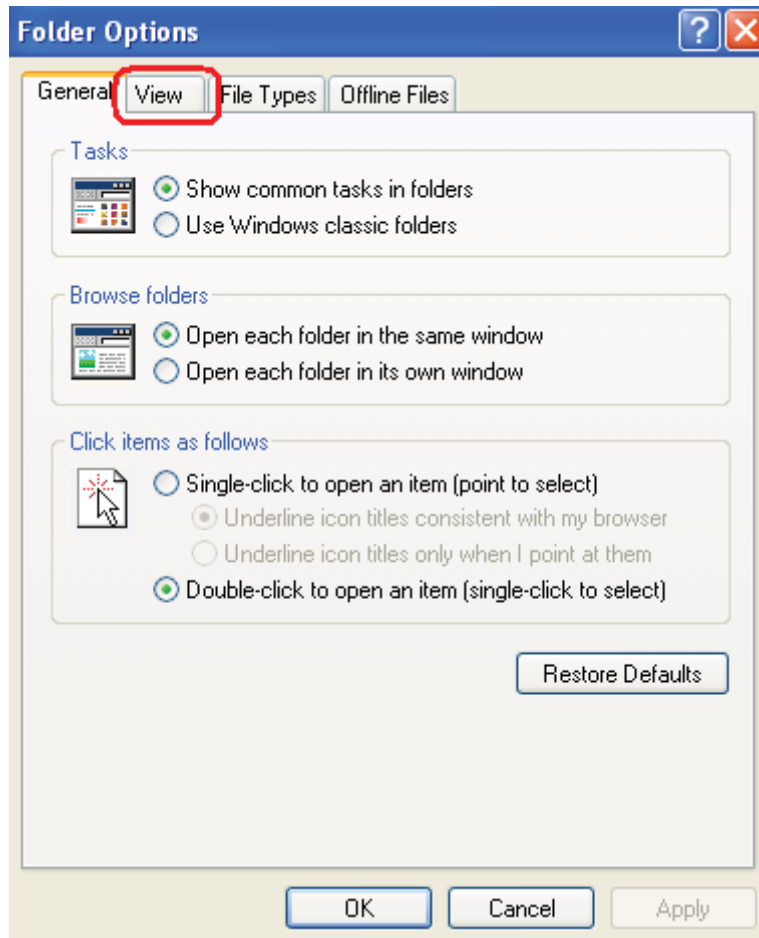
- Type the name of this new folder: “**Epi6 installation**”:



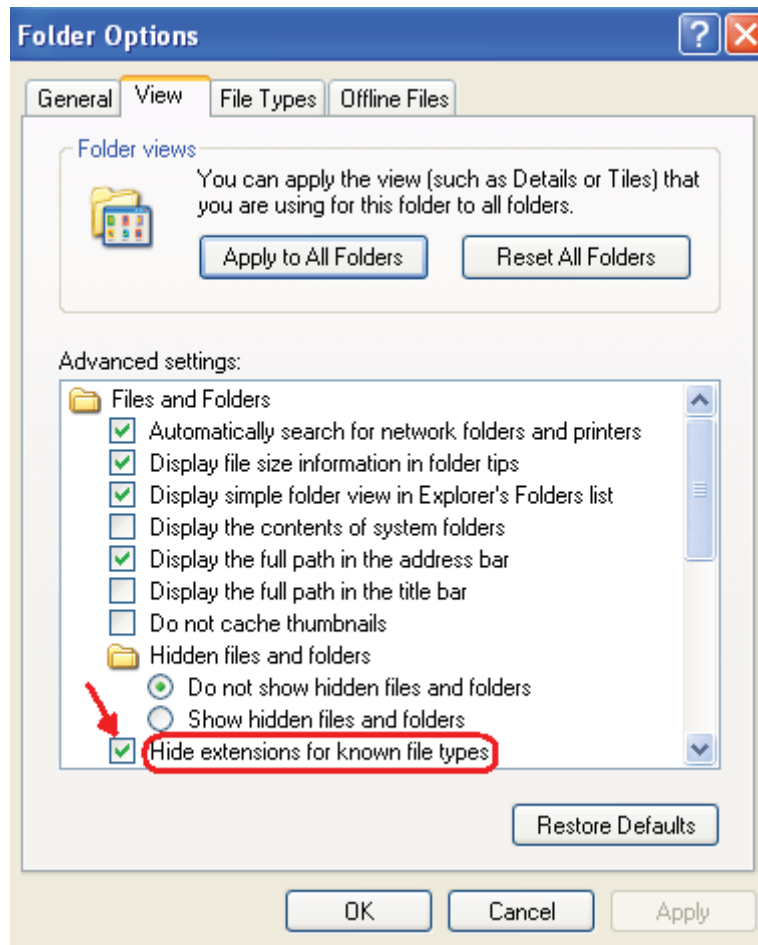
- Double click on the icon of this new folder;
- When the folder opens, on the top menu click on “**Tools**” and select “**Folder Options...**”:



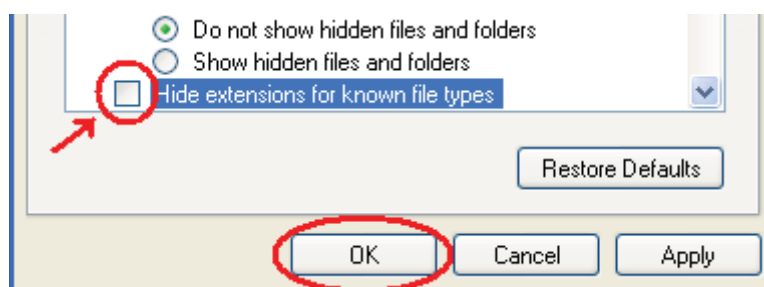
- In the “Folder option” window, click on the tab “**View**”:



- Next, uncheck the box of the item “**Hide extensions for known file types**” if it is checked by clicking on it once:



It should then look like this:



- Click the “**OK**” button and then close this window clicking on the close icon on the top right:

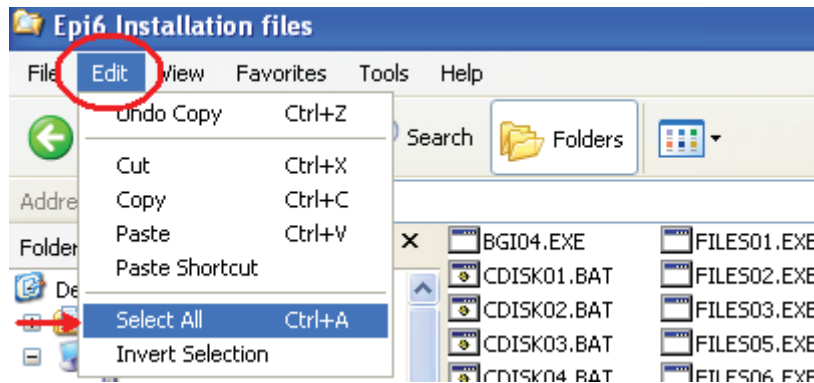


- Insert the CD-ROM enclosed in this guide into your CD-drive;

- Open the folder “**Epi6 Installation files**” on the CD-ROM:

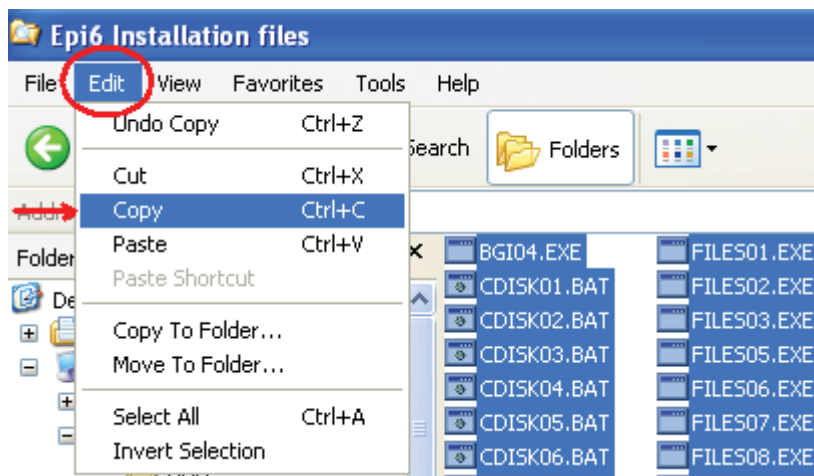


- On the top menu, click on “**Edit**” and then “**Select All**”, to select all the files contained in that folder:



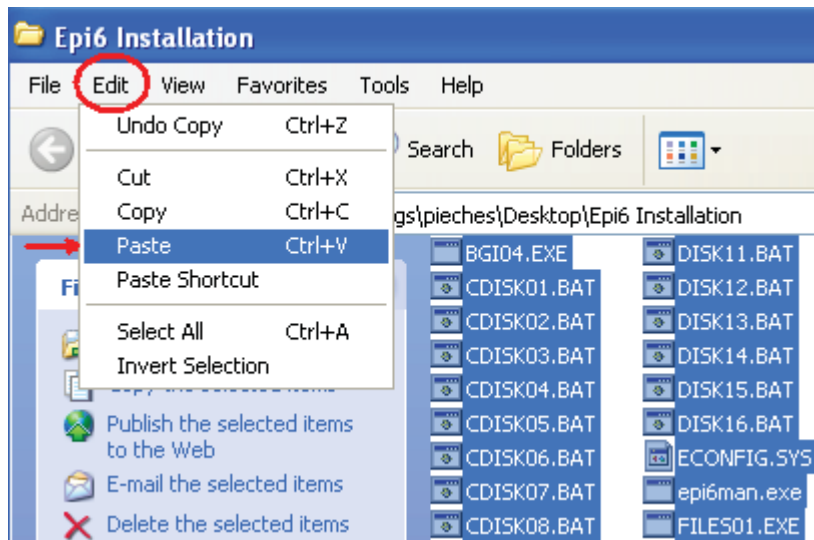
You will see that all the files have been highlighted.

- Next, on the top menu, click again on “**Edit**” and then “**Copy**”, to be able to copy all these files:



- Open the folder “**Epi6 installation**” that you have just created on the desktop of your computer;

- Click on the top menu on “**Edit**” and then “**Paste**”: all the files for the installation will be copied into this folder:

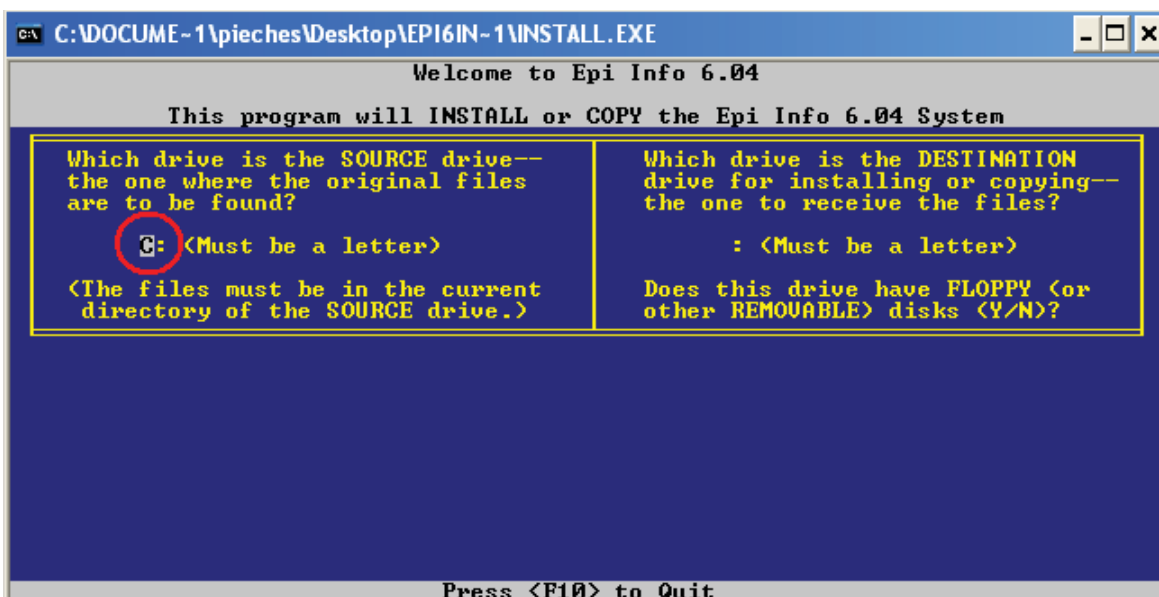


- In the same folder “**Epi6 installation**” where you have just copied all the files, double click on the file “**INSTALL.EXE**”:

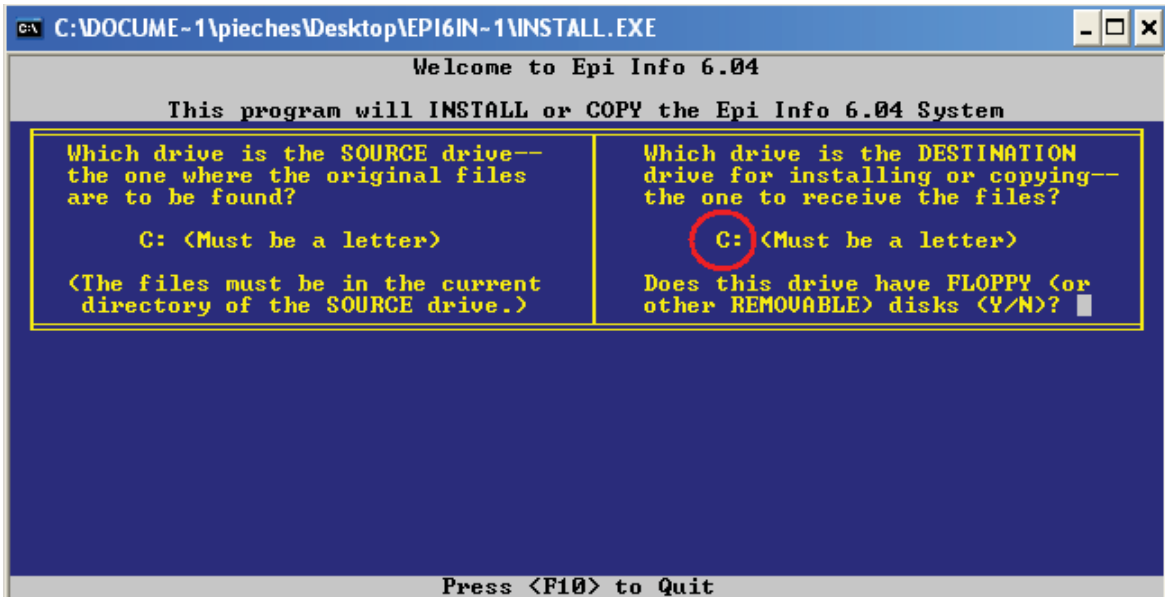
FILES15.EXE	274 KB	Application	30/01/2001 05:04
FILES16.EXE	215 KB	Application	30/01/2001 05:04
GROUPS.DAT	1 KB	DAT File	30/01/2001 05:04
INSTALL.EXE	77 KB	Application	30/01/2001 05:04
PRINTER.DAT	1 KB	DAT File	30/01/2001 05:04
README.604	70 KB	604 File	30/01/2001 05:04
readme_604.txt	70 KB	Text Document	05/02/2004 14:22

Follow the installation instructions as they appear on the screen.

- First, type on your keyboard the letter “**C**” as the source drive:

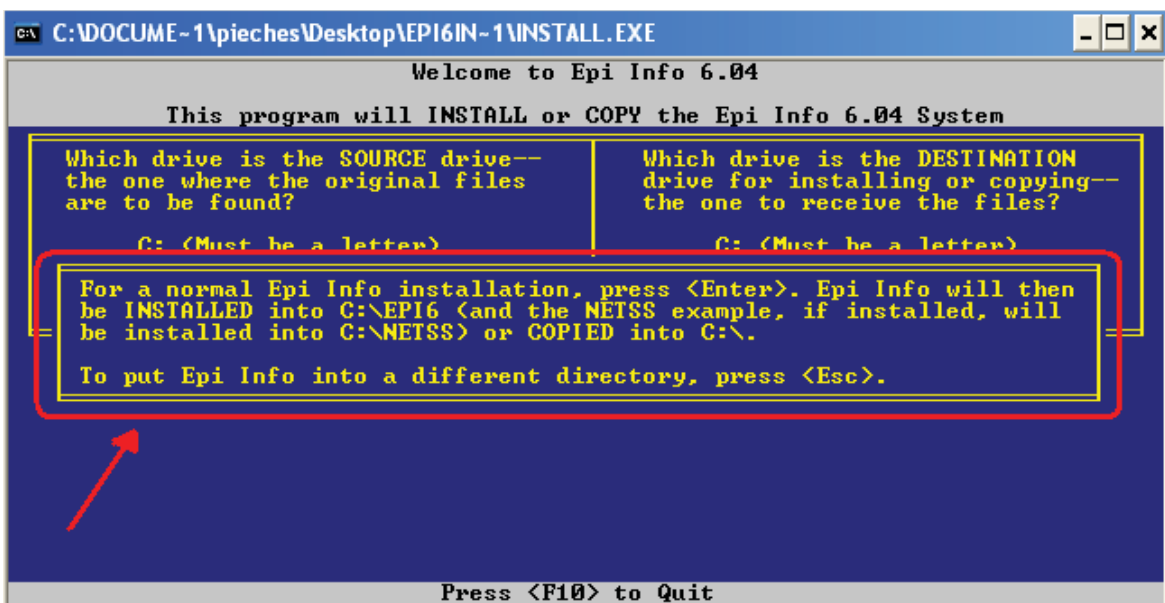


- The cursor moves to the right. Type again the letter “C” as the destination drive:



- The cursor moves to the next field in this window: type “N” [(No FLOPPY (or other REMOVABLE) disks)];

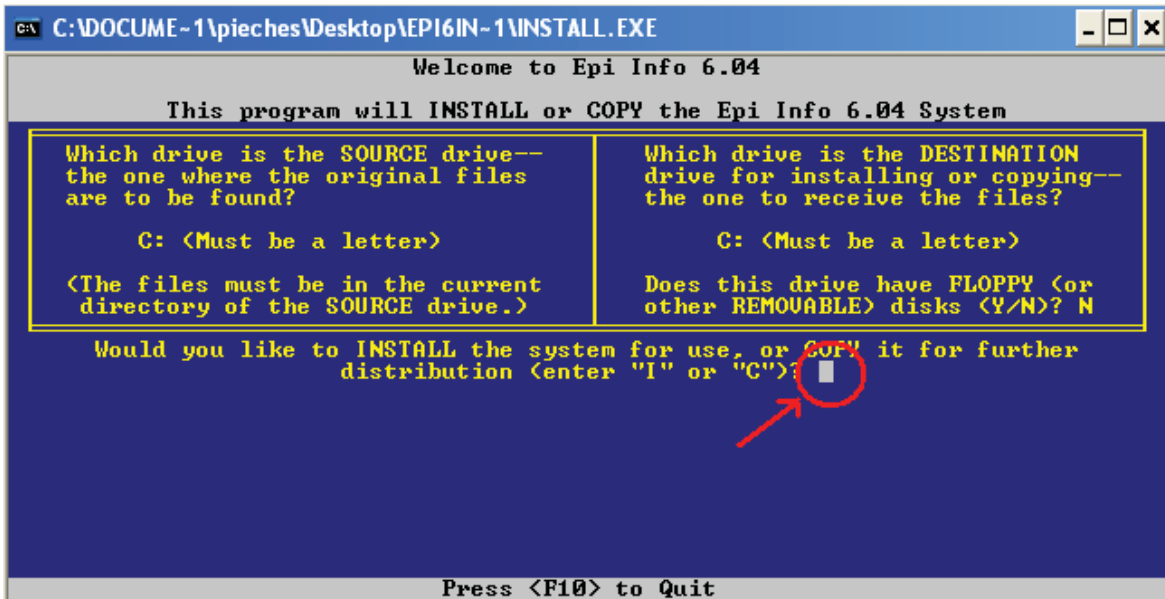
A new smaller window appears inside:



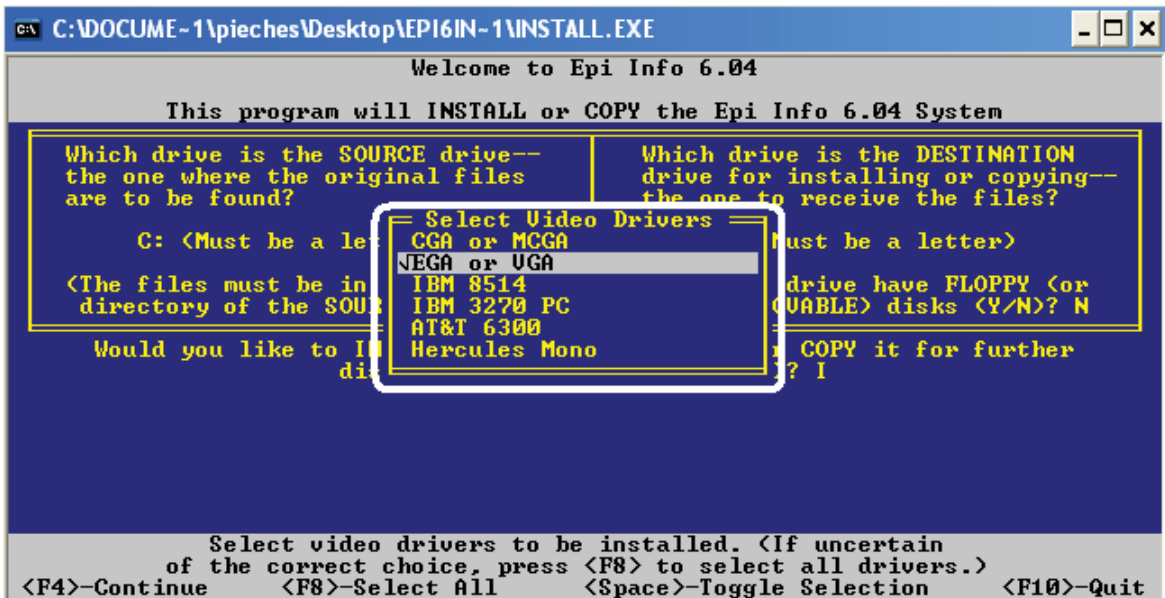
- Press “Enter” to install Epi6. The commands which follow will install Epi6 into the folder “C:\EPI6”.

The next command will then ask you to confirm whether you want to install or copy Epi6:

- Type "I" with the keyboard to confirm that you want to install it:

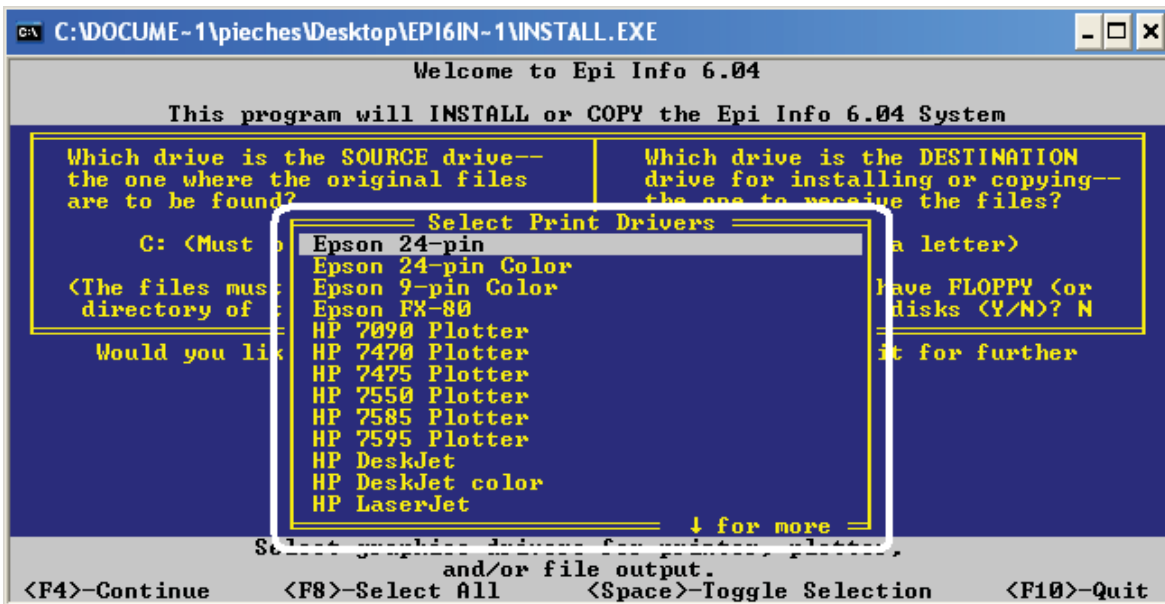


The following screen appears, with a list of video drivers:



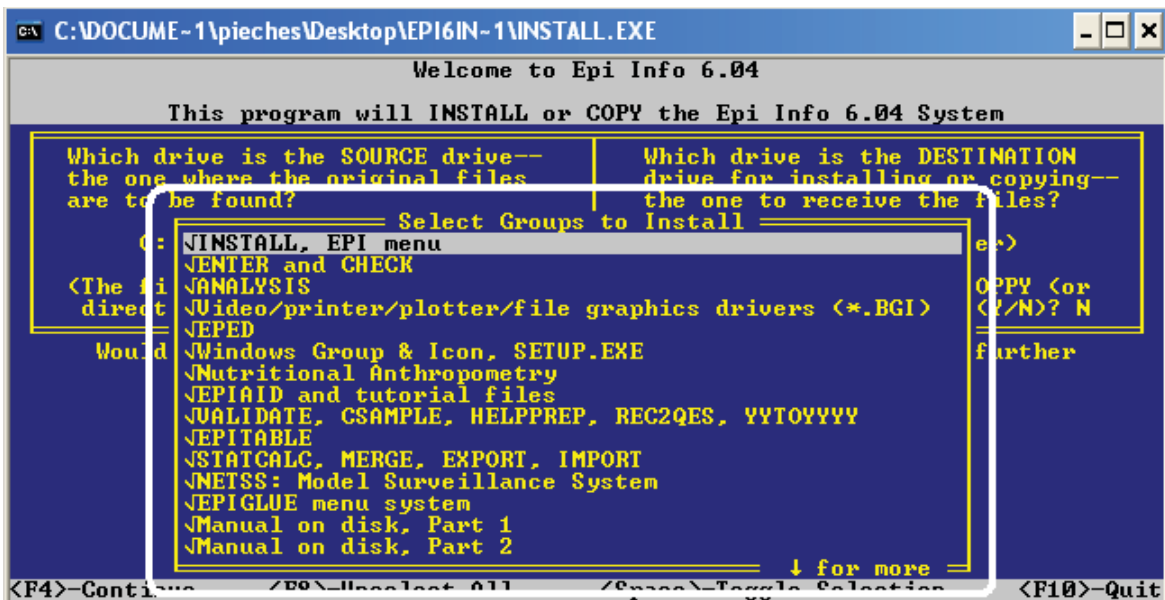
- On the keyboard, press the key “F8” to select all video drivers.
- Next, press the key “F4” to continue.

The next screen appears, with a list of printer drivers:



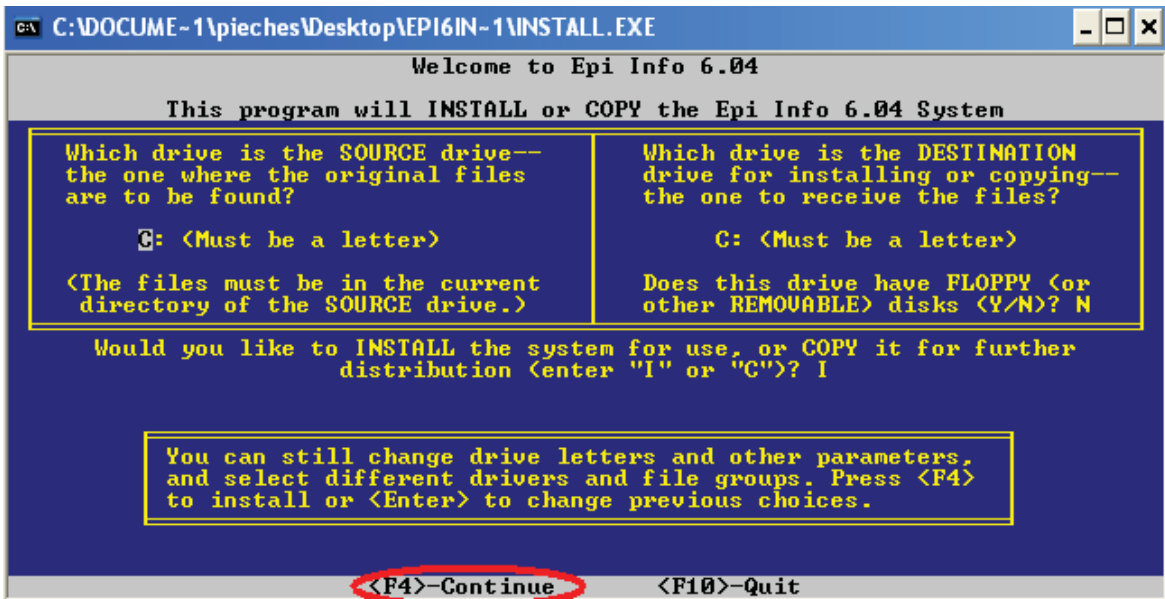
- Press the key “F8” to select all printer drivers.

The program is ready to install Epi6:



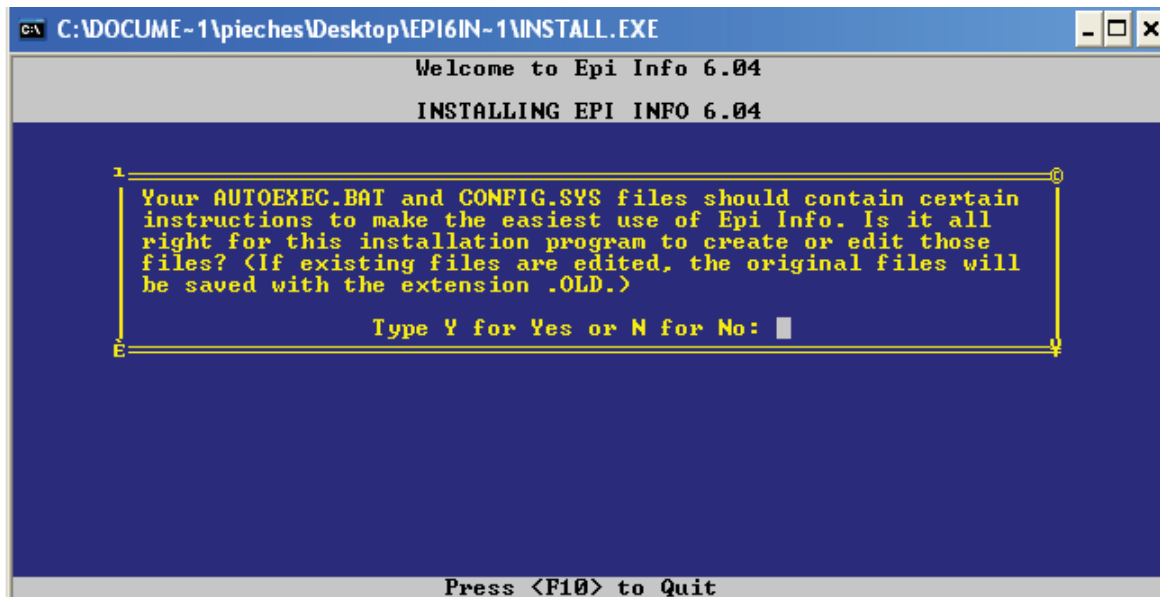
- Press “F4” two times to continue.

- Press “F4” again to confirm that you want to install Epi6 into drive “C”:



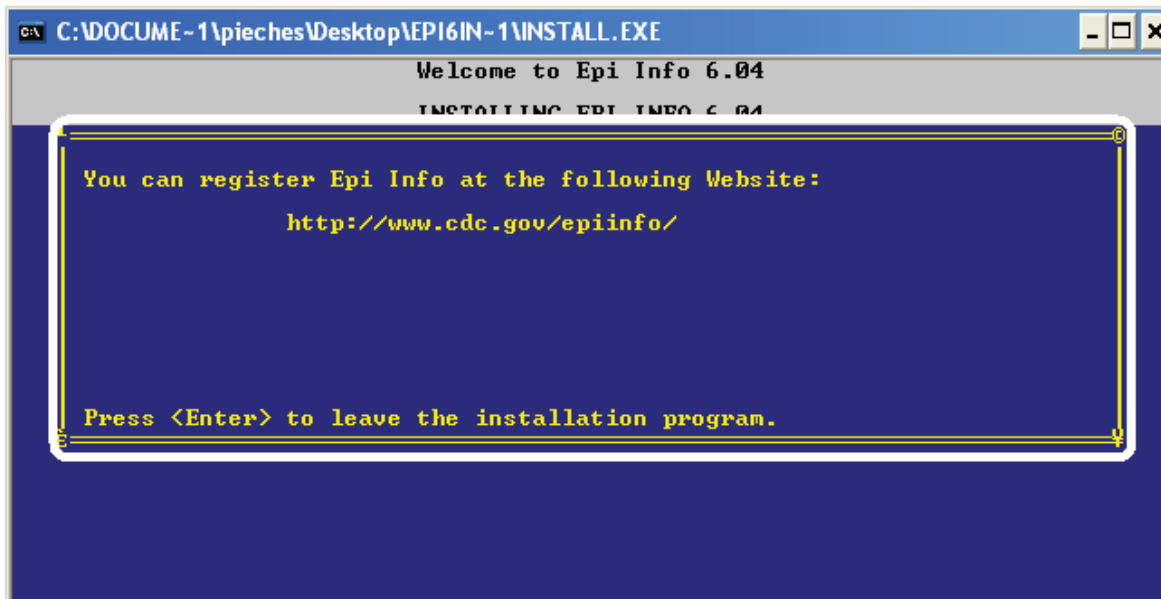
The installation program will start running and automatically install Epi6. This process is fast.

When it is completed, a “Welcome to Epi Info 6.04” screen is displayed:



- Type “Y” on your keyboard to complete the installation, to change **autoexec.bat** and **config.sys**. This usually does not affect the performance of other programs.

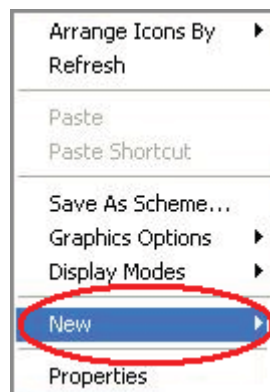
A new screen appears:



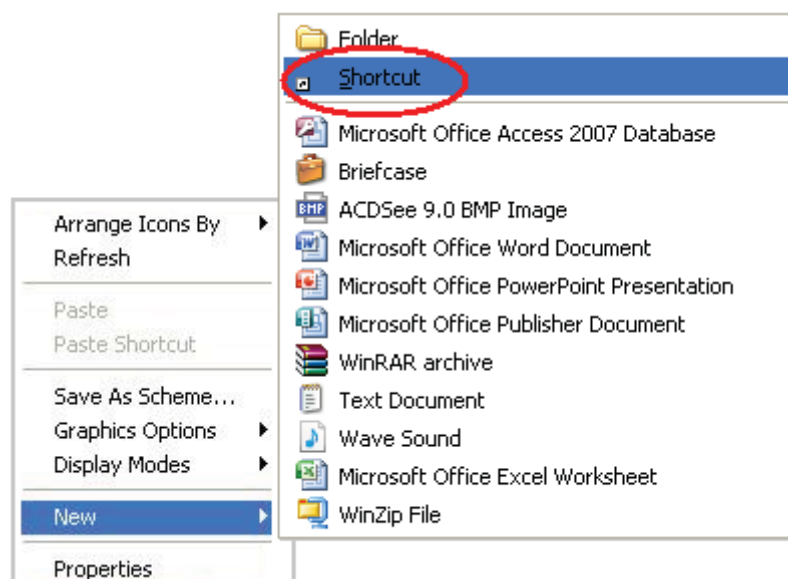
- Press “Enter” to leave the installation program. The screen automatically closes.

The installation is complete. You now need to create a short-cut of **Epi6** to the desktop (**EPI6.exe**) so that you can launch it also from there. Do as follows:

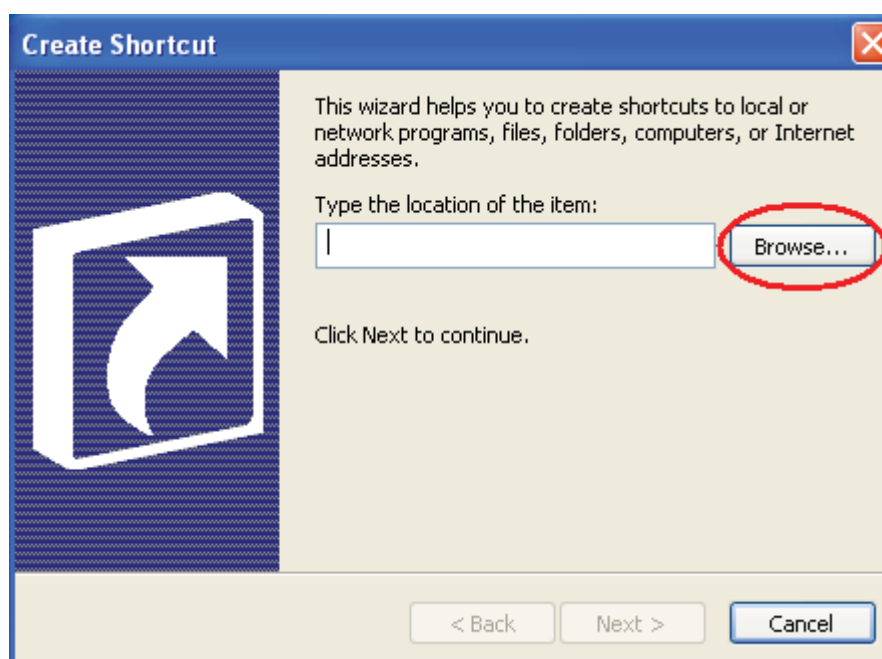
- right click with your mouse on any empty part of the desktop;
- select “New” in the window which opens:



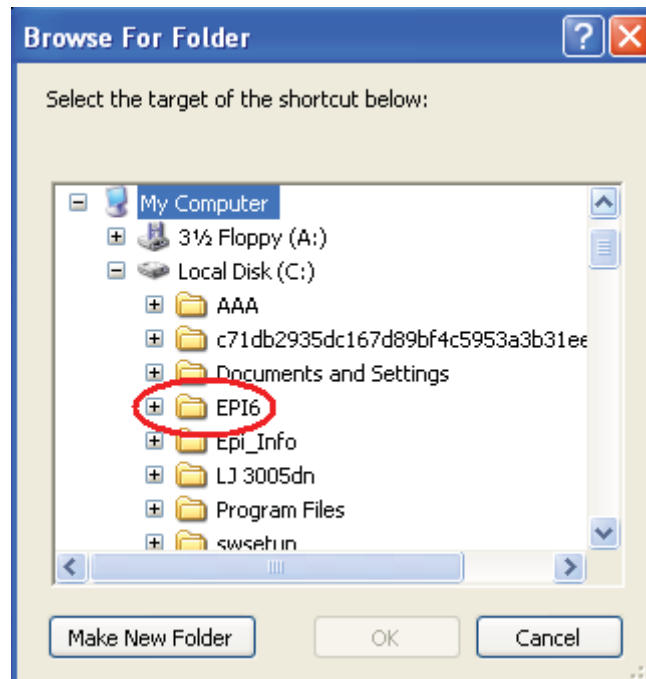
- o select **“Shortcut”**:



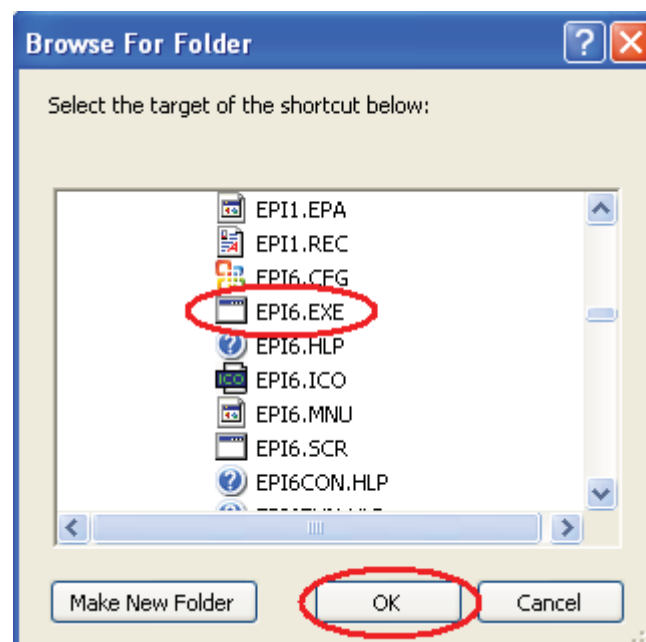
- o in the new window **“Create shortcut”**, click on **“Browse”** (circled in red in the picture below):



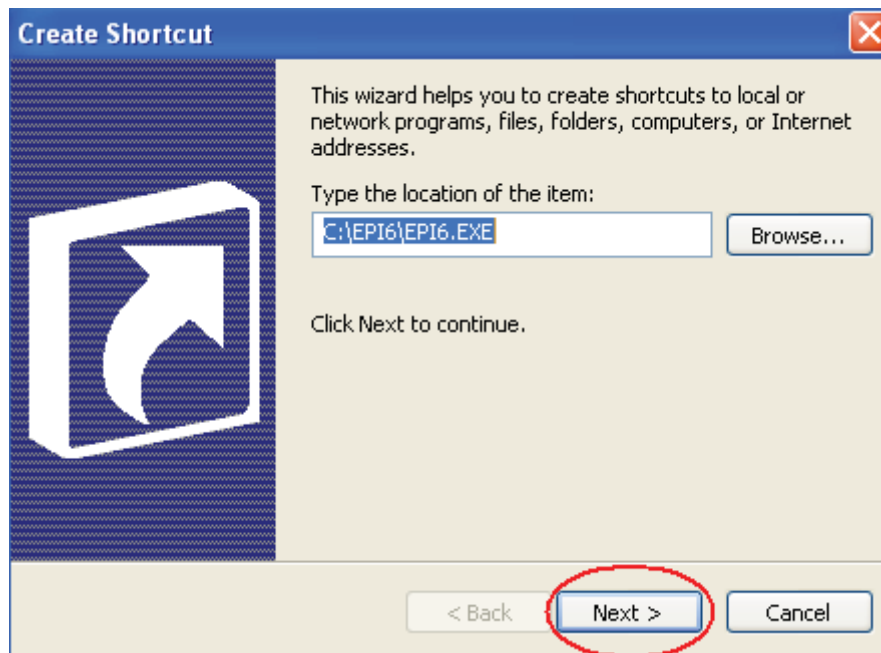
- o in the new window “Browse For Folder”, click on “My Computer”, then click on “Local Disk (C:)” and finally click on “EPI6” (in this folder, files are listed in alphabetical order):



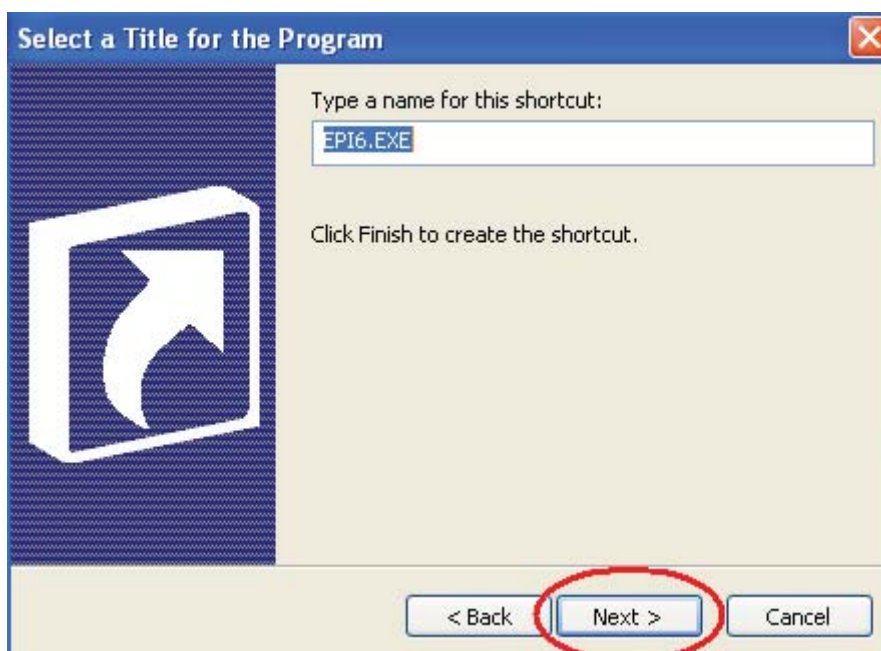
- o scroll down to look for the “EPI6.EXE” file as shown below, select it and click “OK”:



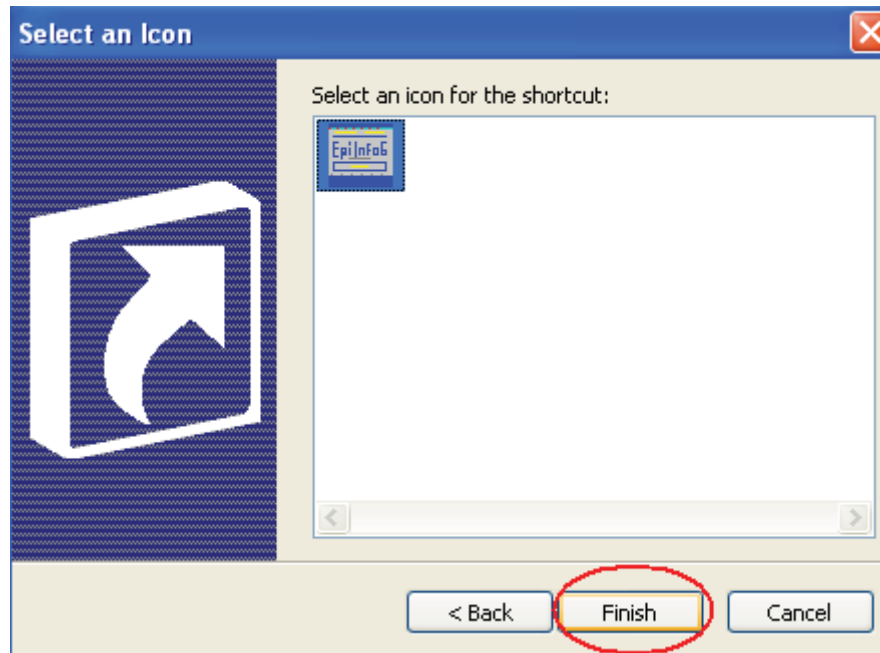
- o then, click on “**Next**” to select a title for the shortcut to the program:



- o Click on “**Next**” again to finish to create the shortcut on the desktop:



- o click on “**Finish**” to associate the **EPI6** icon with the shortcut:



Congratulations! The shortcut has been created and it is now displayed on your desktop!



Summary steps to install Epi6:

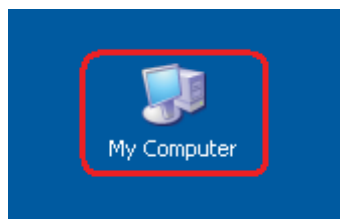
1. Create folder “**Epi6 installation**” on your computer C: drive;
2. Copy all Epi6 installation files from the CD-ROM to this folder that you have just created;
3. In the “**Epi6 installation**” folder on your computer, click on the file “**INSTALL.EXE**”;
4. When installation is complete, create a short-cut to **EPI6.EXE** on your desktop.

Copying data entry and analysis files to your computer

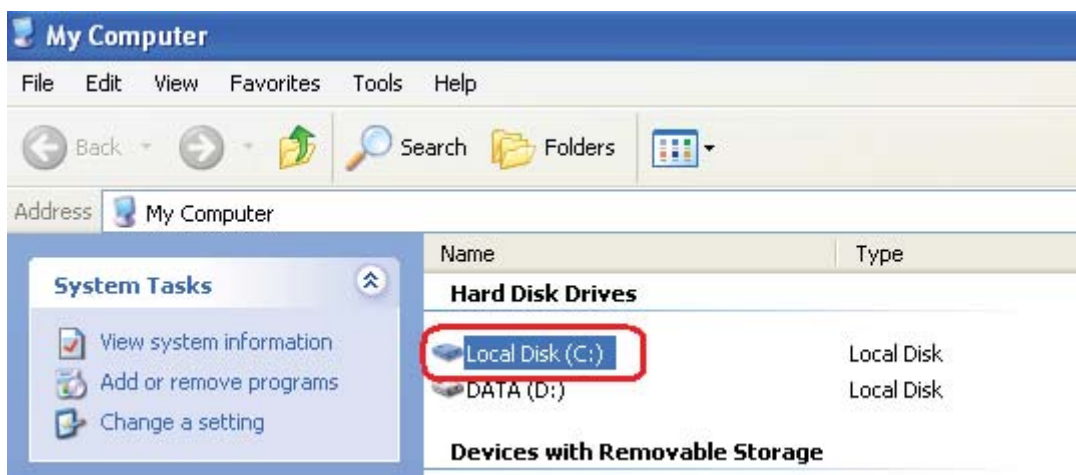
The following steps guide you in copying the Epi6 files which are required for data entry and analysis to your computer.

In the C: drive, you will first create a folder called “**AAA**”. Proceed as follows.

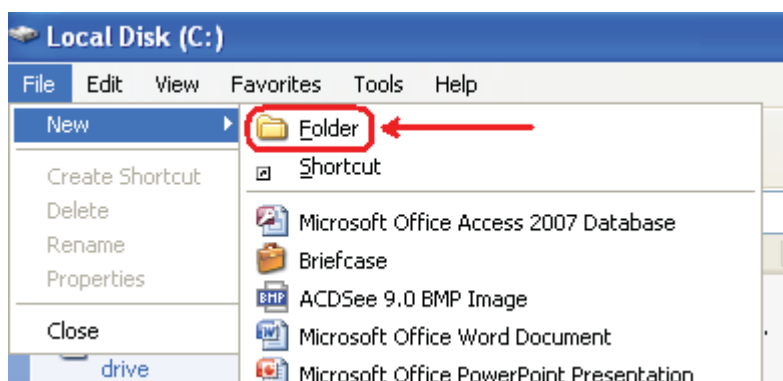
- Double click on the “**My computer**” icon on your desktop:



- In the next window, double click on “**Local Disk (C:)**”, which is listed under “**Hard Disk Drives**” :



- On the top menu, click on “**File**”, then on “**New**” and select the item “**Folder**”:



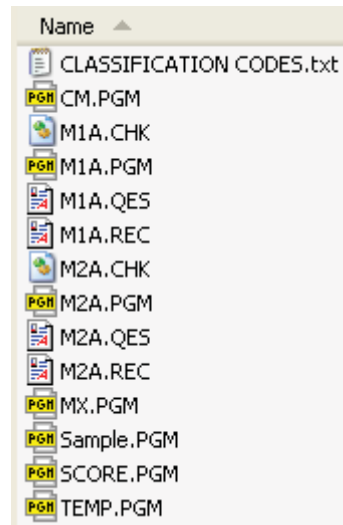
- The “**New Folder**” icon appears, waiting for you to type the name for this new folder:



- Type “**AAA**” as the folder name and press “**Enter**”:

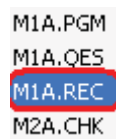


- Copy all the files placed in the folder “**AAA**” of the CD-ROM onto the folder “**AAA**” that you have just created under the **C:** drive of your computer (to copy and paste files see page 103.)



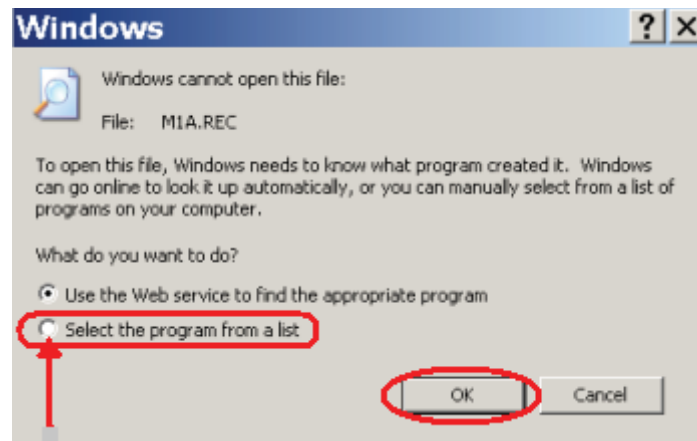
The next step is needed for your computer to recognize Epi6 files automatically as such, that is to associate Epi6 data files (*.REC) to Epi6 ANALYSIS:

- Among the files in the folder “**AAA**”, select file “**M1A.REC**” and double click on it:

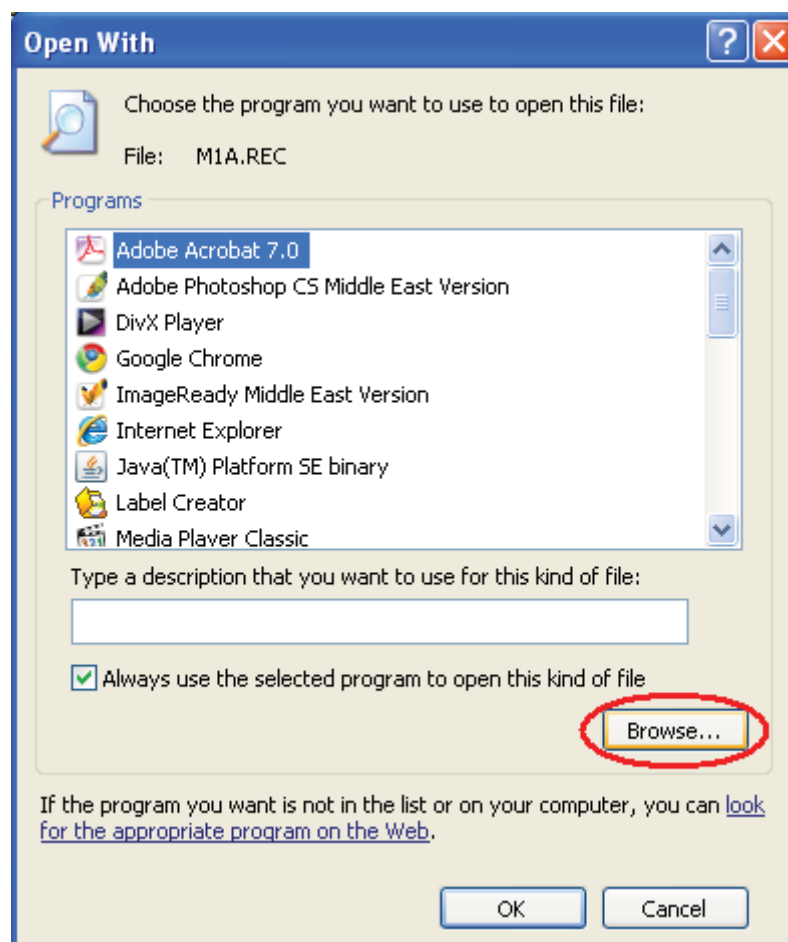


A new window is displayed, indicating that Windows cannot open the file, as it does not know yet which program to use to open it.

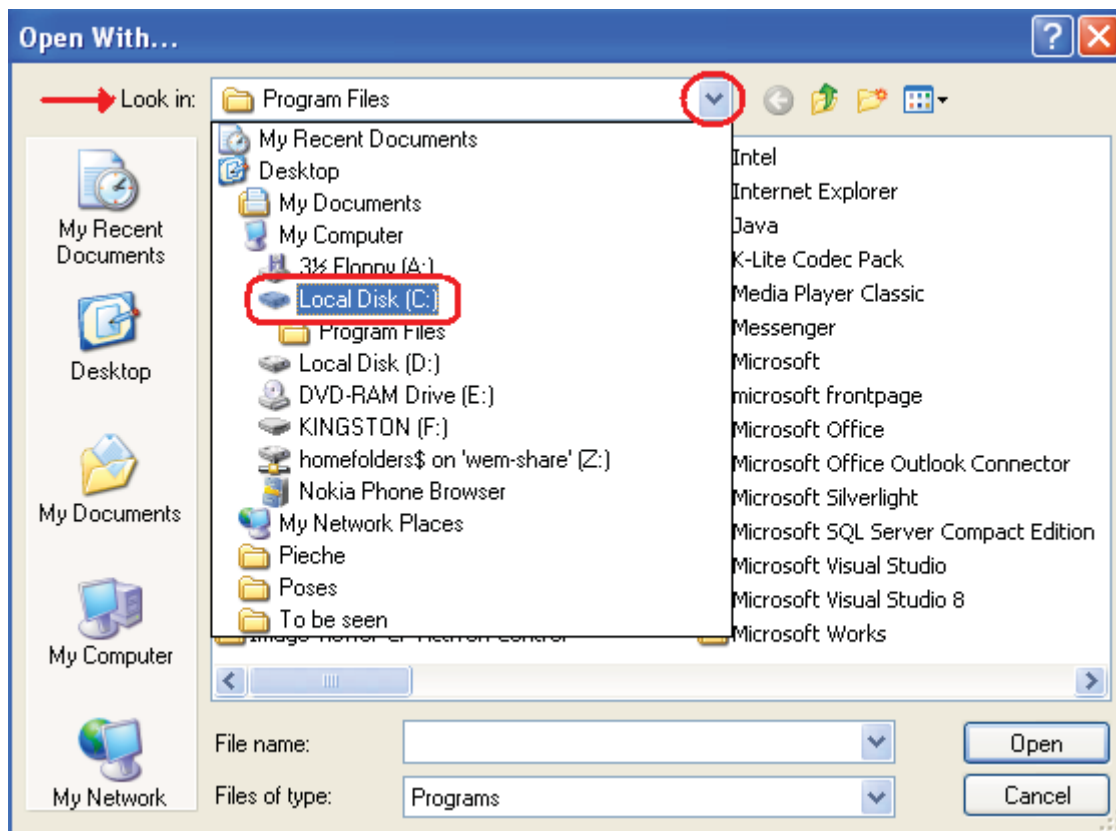
- Click the option **“Select the program from a list”** and then click on **“OK”**:



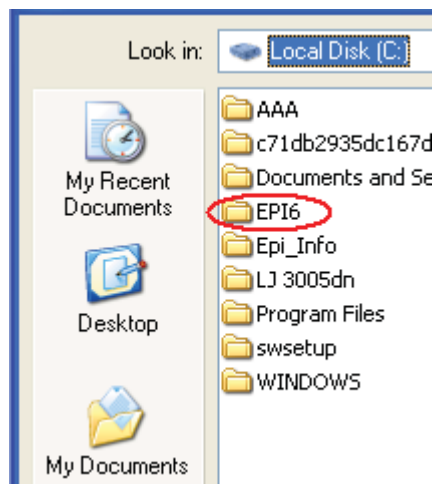
- In the new window **“Open With”**, click on the **“Browse”** button:



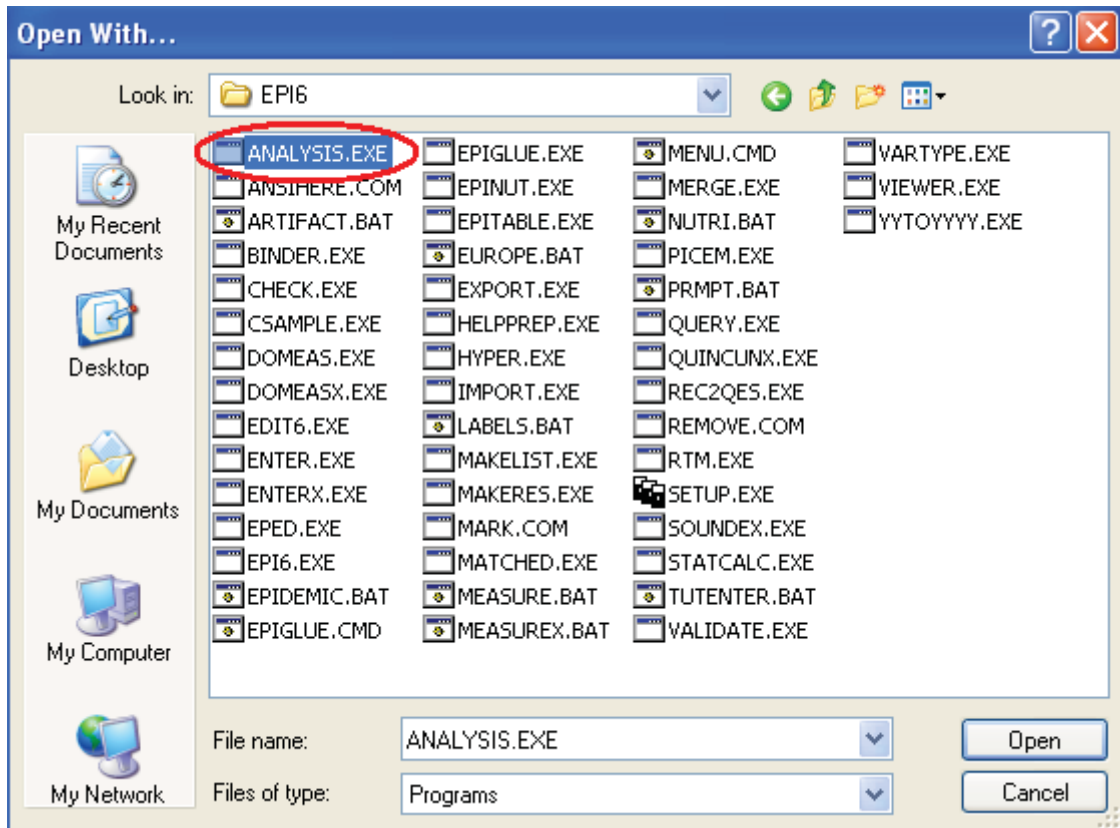
- In the next window, select “**Local Disk (C:)**” from the drop down list in “**Look in**”, as you have placed the Epi6 program files under this directory:



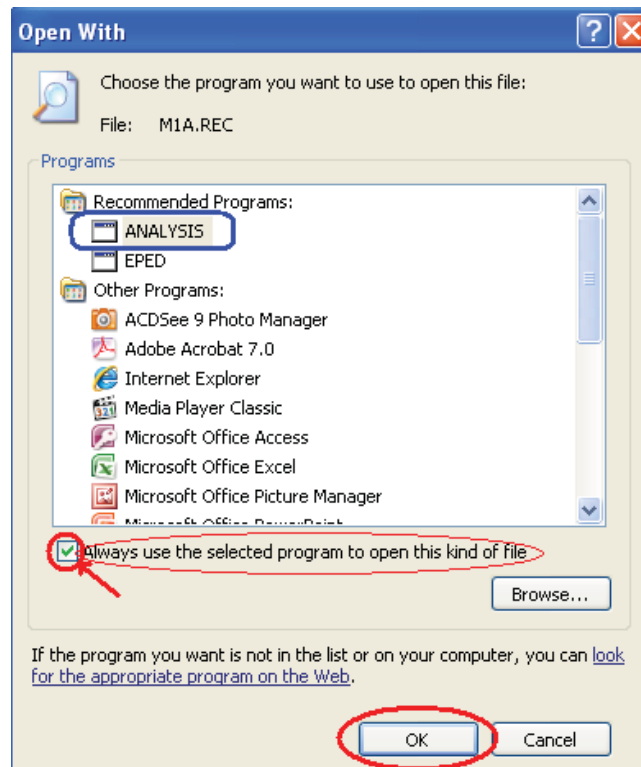
- Under “**Local Disk (C:)**” double click on “**Epi6**”:



- Next, double click on the file “**ANALYSIS.EXE**”:



- To complete the procedure, make sure that the box “**Always use the selected program to open this kind of file**” is ticked and then click on the “**OK**” button:



- The new screen appears: press the key “F10” to close it:

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\DOCUME~1\PIECHES\DESKTOP\EVALUA~1\CDIN' (36 recs) Free memory: 312K
Criteria: All records selected
Output - Screen
Only European dates found. Automatic SET EUROPEAN=ON performed.
EPI6>
F1-Help F2-Commands F3-Variables F4-Browse F5-Printer on F9-DOS F10-Quit

```

You will notice that the icon next to “M1A.REC” has changed and the file type now shows that this is recognized as a “REC File”:

M1A.QES	9 KB	QES File
M1A.REC	27 KB	REC File

This completes the process to copy data entry and analysis files to your computer. You are now ready to use Epi6 and the program to enter and analyse data on the assessment of student skills.

Summary steps to copy data entry and analysis files to your computer

1. In the C: drive in your computer, create folder “AAA”;
2. Copy in this last folder (“AAA”) the Epi6 program files for data entry and analysis;
3. In folder “AAA”, associate the M1A.REC file to ANALYSIS.EXE.

Learning by practising

The following sections will show how to enter data on the assessment of student skills (observation of case management) using the Epi6 program. These data have been collected using Form 16 of the Evaluation guide: the electronic Epi6 form has been designed based on it.

The files “**M1A.REC**” and “**M2A.REC**” in the folder “**AAA**”—that you have created in your computer—contain data from 36 student observations on the management of sick children which have already been entered. You will use these files to get familiar with data entry and practise running the analysis programs.

The CD-ROM has a folder called “**Epi6 practice**” which contains the file “**Student 45 Child Habiba.pdf**” with a filled-in Form 16 for your practice. You will use this form as the source of data to be entered in Epi6. For your convenience, you may wish to print it out, so that you have it on your desk in front of you when you follow the instructions to practise entering the data.

Once you are finished with the practice with data entry and analysis, if you wish, you can delete the “**M1A.REC**” and “**M2A.REC**” files, unless you want to keep them for further practice or to train data entry operators for your future evaluations. Blank data files (*.REC) are automatically created anew each time you enter a new set of data (see “Creating a new file to enter new data”).

In addition to the folder “**AAA**” containing the Epi6 files for your practice, the CD-ROM contains two folders with a clean and revised set of Epi6 files for your future use, to enter and analyse data for your own student skill assessments:

- a) “**Epi6 files no malaria**”, for settings with no malaria; and
- b) “**Epi6 files with malaria**”, adapted for settings with malaria.

To practise how to validate duplicate data entry, two files (**M1A.REC** and **M1B.REC**) are contained in the following folder of the CD-ROM: “**Epi6 validation**”.

Setting up the path for data entry files

In this practice, first you will launch the Epi6 program and next you will set the path for the data entry files.

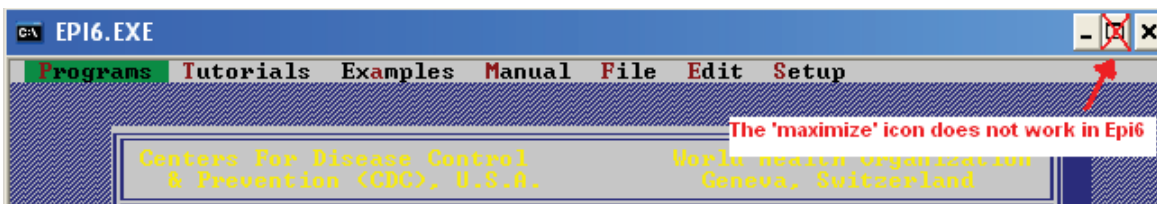
- To launch the Epi6 program, double click on the **Epi6** (EPI6.EXE) icon on the desktop:



The main Epi6 window appears, with the menu, as shown here:



- The window is small: to stretch it to occupy the whole monitor, press the key “**Alt**” and, while holding it down, press the “**Enter**” key. The window will expand to full screen, allowing you to enter data comfortably. Note that clicking on the maximize icon on the top right of the window will not work in Epi6.



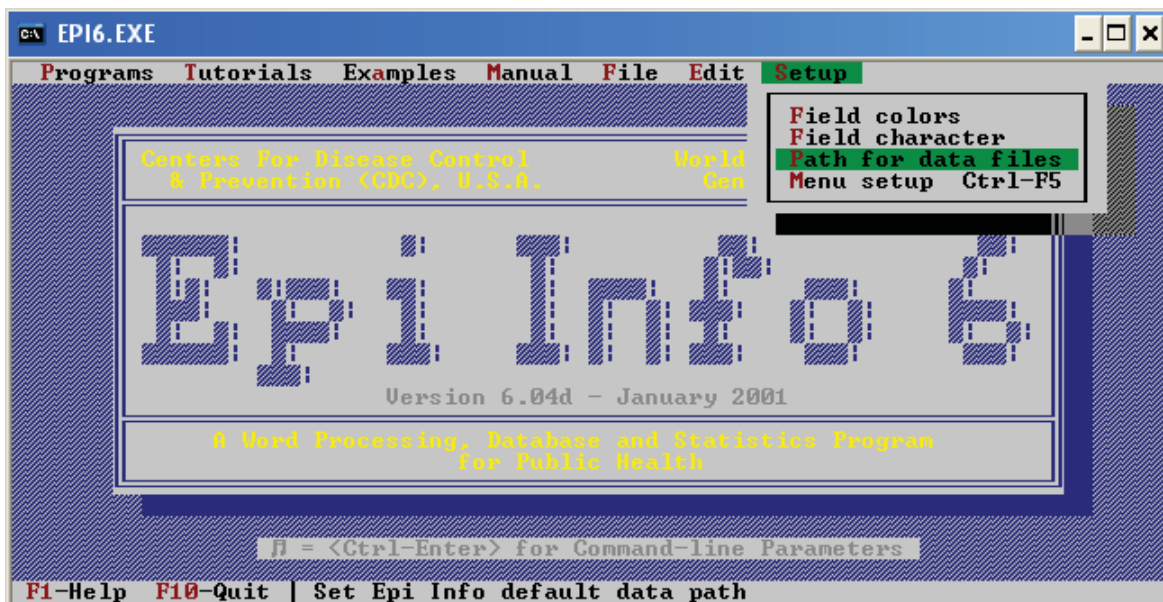
To select a menu item and display the sub-menu, you have several options. You can:

- click on it with the left mouse; or
- type on the key board the letter of the menu item highlighted in red (e.g., letter “P” for “Programs”, “T” for “Tutorials” etc.); or
- simply press the “Enter” key when a menu item is highlighted in green (e.g., “Programs” is highlighted in green in the above picture).

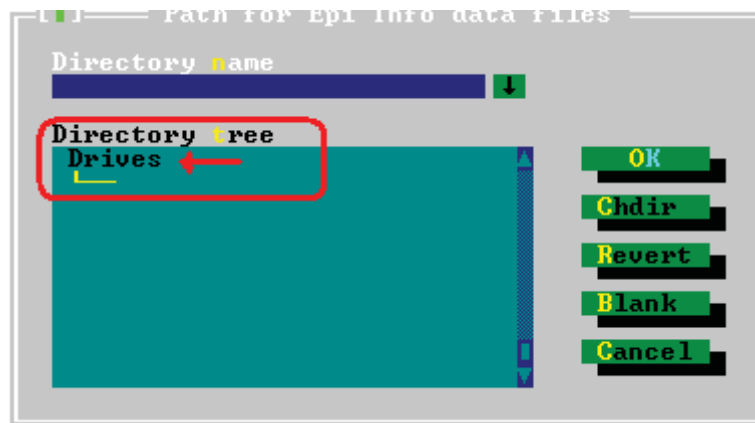
To move the cursor from one menu item to the next one, use either the left mouse or the left or right keys of the keyboard.

To access each time right away from Epi6 the data files with which you will be working, you can set-up the path. In this way, you are telling Epi6 where the files are, so that each time you open Epi6, the program will by default display the files in the selected folder. This saves time and is very convenient. As you placed the files in the folder “AAA” under “Local Disk (C:)”, follow these steps to set up the path to your files:

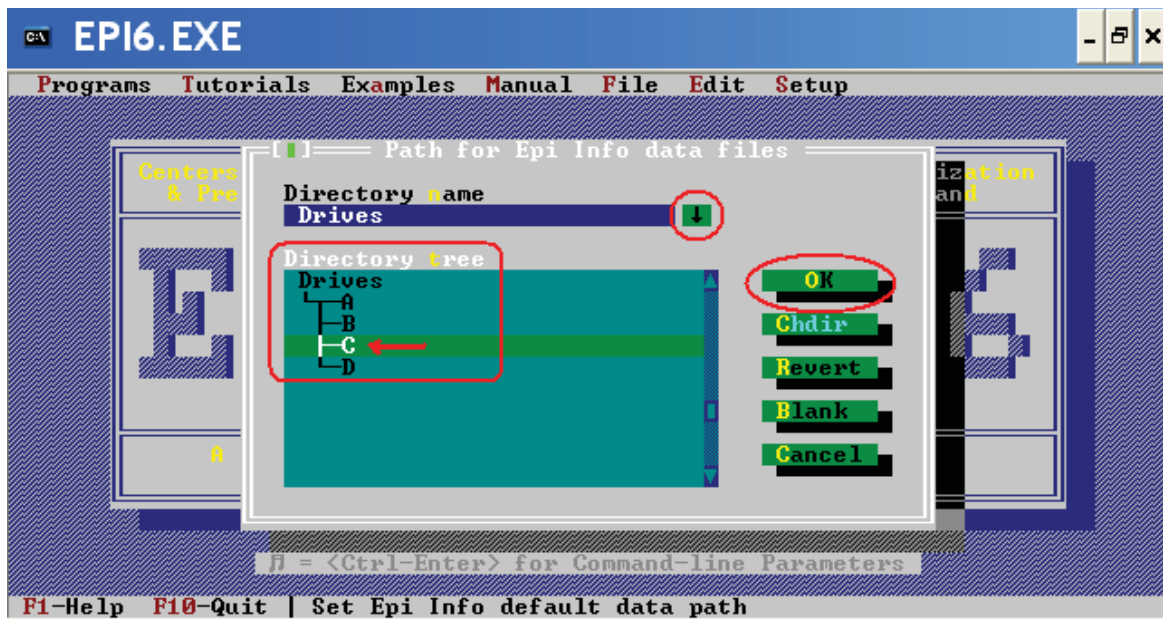
- Click “Setup” on the menu and select “Path for data files” as shown here:



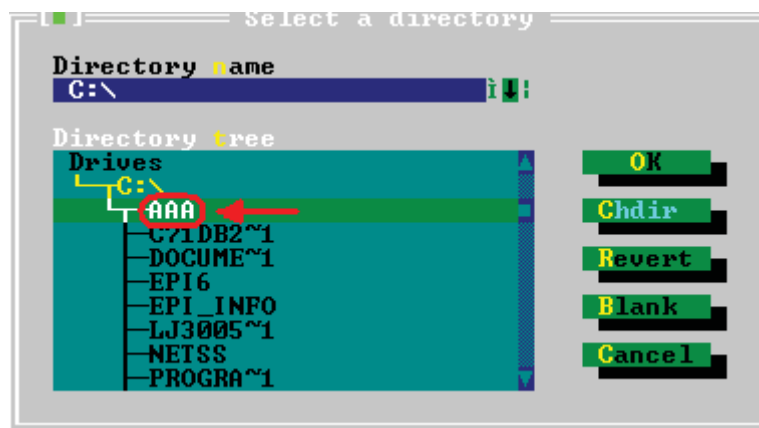
- In the next window, double click on “Drives” to display the list:



- Select drive “C”, double click on it and then click on “OK”:



- Select the folder “AAA” under drive “C”, which is the folder where your Epi6 working files are, and then double click on it:



- The path “C:\AAA” is now shown under “Directory name”; press “OK” to complete the procedure:



The display returns to the Epi6 main menu page. You have set up the path where Epi6 will look for your data files by default.

- To close Epi6, press the key “**F10**”.

Practising data entry

This section provides a guide with practice to data entry. Follow these steps to open the data entry program:

- Double click on the **Epi6** (EPI6.EXE) icon on the desktop to launch Epi6:



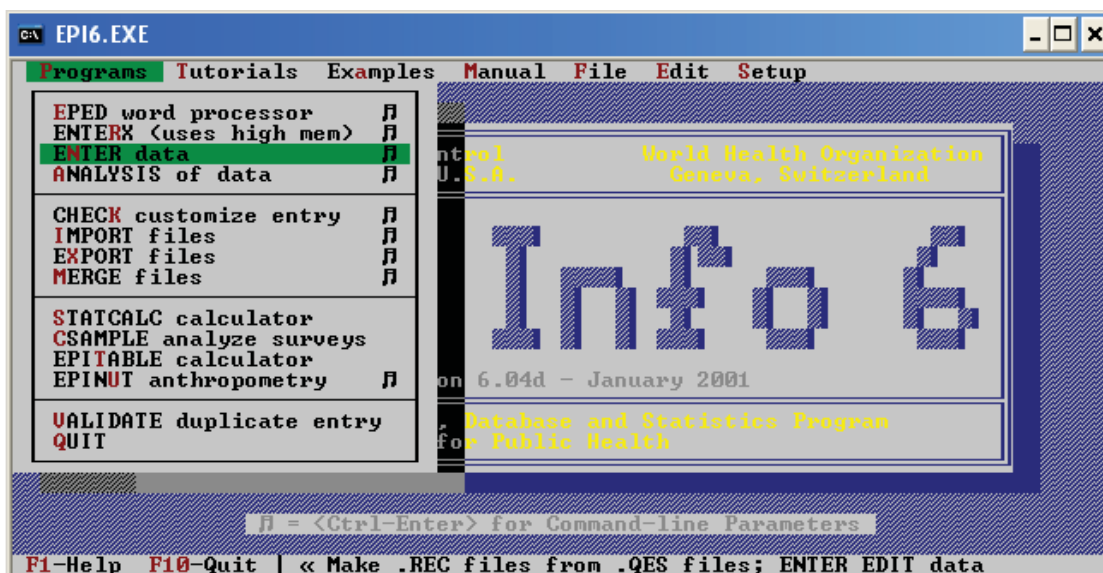
- Stretch the Epi6 window:



Reminder:

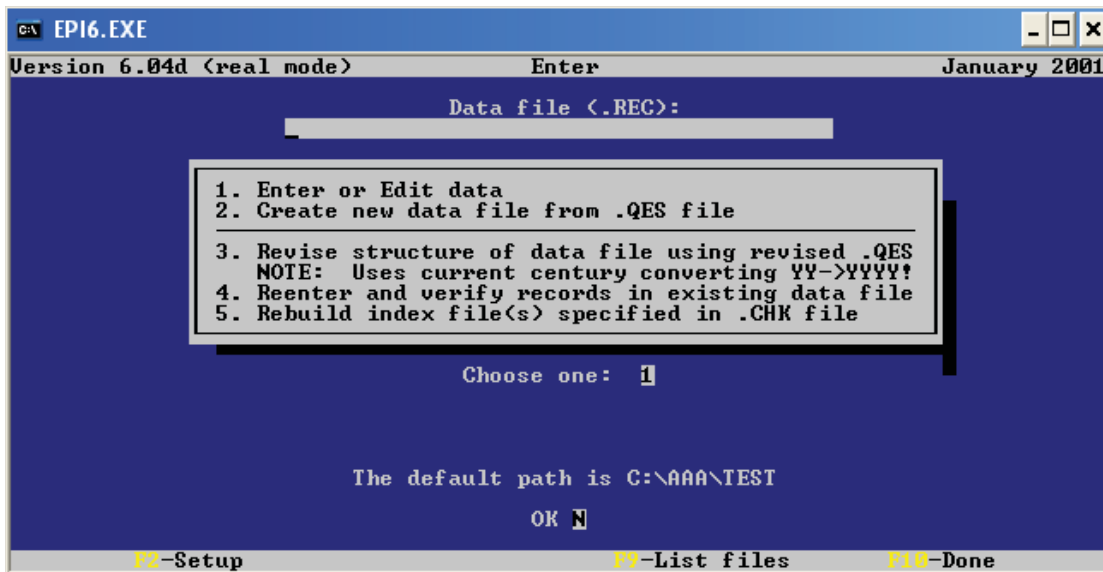
To stretch the Epi6 window, press the “Alt” key and, while holding it down, press the “Enter” key. Clicking on the maximize icon on the top right of the window does not work in Epi6.

- Click with the mouse on the menu item “**Programs**”.
- The following sub-menu is displayed; to open the data entry program, click on the sub-menu item “**ENTER data**”:

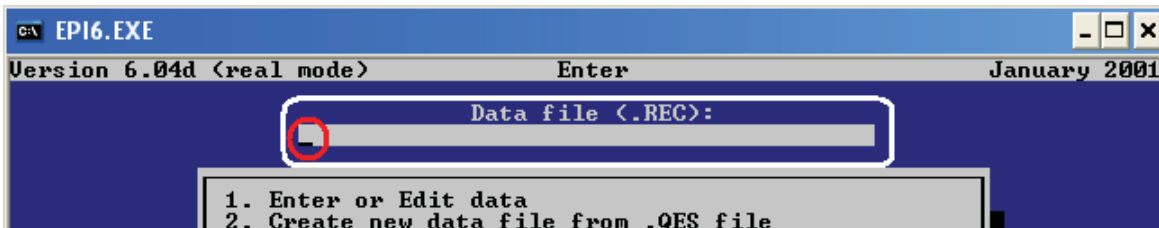


(you can also move to this item with the arrow keys of the keyboard and then press “Enter” when the item is highlighted in green; or you can press the letter “N”—highlighted in red in the menu item “ENTER data”—on the keyboard).

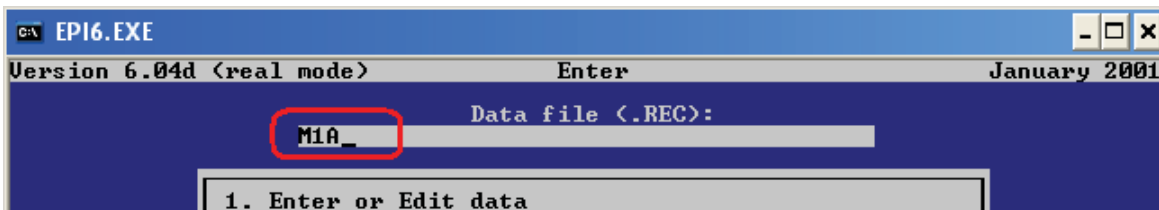
This new screen appears:



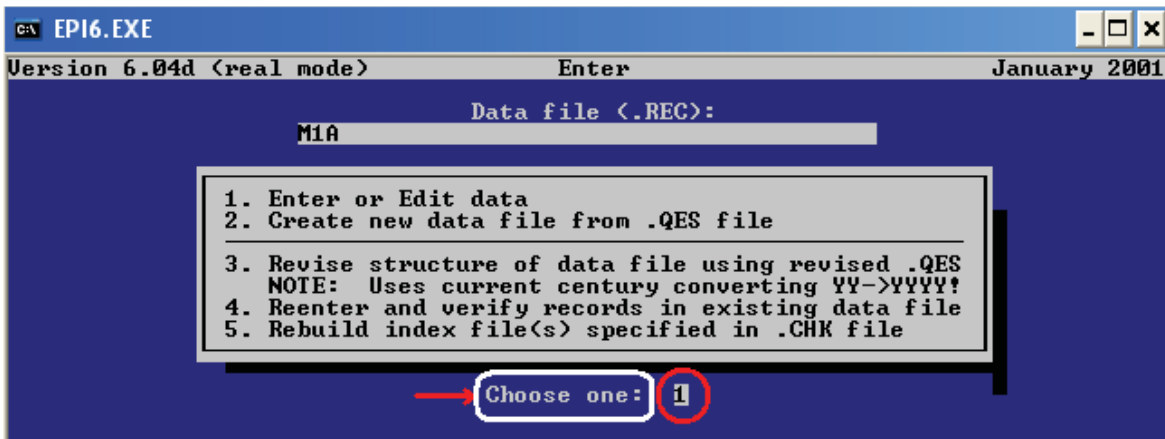
The cursor is automatically placed in the first white field, below the text “Data file <.REC>”:



- Type with the keyboard “M1A”, which is the name of the file which contains student records (data) related to the “Assessment and Classification” sections of the skill test. The field is not case sensitive: you can type either ‘M1A’ or ‘m1a’; it will automatically be converted to caps letters.

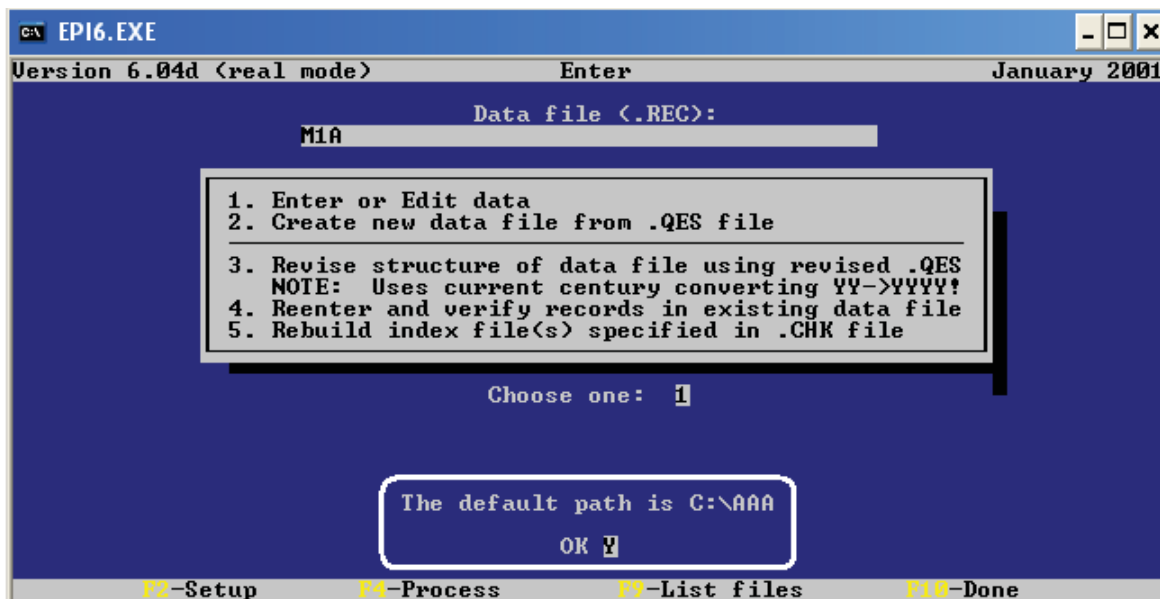


- Press “Enter” and the cursor will move to next field “Choose one”, where “1” is pre-entered.



This option (“1”) is used to open an existing data file (*REC) and enter data, while option “2” is chosen to create a new data file, as explained in “Creating a new file to enter new data”. As we are going to open existing data files (**M1A.REC** and **M2A.REC**) for practice, option “1” is the option which applies to our case now.

- Simply press “Enter” and the cursor will move to the next and last field on this screen: “The default path is C:\AAA\...” “OK”:



- The default path shown is the one you created where you placed the Epi6 working files (**C:\AAA**); so, press “Enter” again (**OK = Y**).

A new screen appears, the data entry screen. This screen is used to enter the data for one student at a time. The data of 36 students have already been entered for you. This is therefore the 37th record, as shown at the bottom right: “Rec = 37”.

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 10/06/2009      Evaluator ID:      Student ID code:
Child ID:             Sex      Birthdate:         Child Age in months:
Age group:           2-11 m. <1> 12-23 m. <2>
Weight Kg Wt:       Axillary temperature T:      C  Fever:
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
A.  ASSESSMENT
    Danger signs
dri  A1. Asks if child able to drink or breastfeed?
drmo A2. Mother says no?
drst A3. Student offers water?
vom  A4. Asks if child Vomits everything?
vommo A5. Mother says yes?
vomst A6. Student offers water?
con  A7. Asks if convulsions during this illness?
DATE: European dates allowed
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Mode: Multiuser
Rec = 37
  
```

Open the file “**Student 45 Child Habiba.pdf**” placed in the folder “**Epi6 practice**” of the CD-ROM. This file contains the filled-in Form 16 with data on student 45’s management of the child “Habiba”. For your convenience, you may wish to print it, so as to have it on you desk while you follow these instructions to enter the data.

The first field is “**Date**”. A date already appears in it: “10/06/2009”.

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 10/06/2009      Evaluator ID:      Student ID code:
Child ID:             Sex      Birthdate:         Child Age in months:
Age group:           2-11 m. <1> 12-23 m. <2>
Weight Kg Wt:       Axillary temperature T:      C  Fever:
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
A.  ASSESSMENT
    Danger signs
dri  A1. Asks if child able to drink or breastfeed?
drmo A2. Mother says no?
drst A3. Student offers water?
vom  A4. Asks if child Vomits everything?
vommo A5. Mother says yes?
vomst A6. Student offers water?
con  A7. Asks if convulsions during this illness?
DATE: European dates allowed
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Mode: Multiuser
Rec = 37
  
```

This is the date that we entered for the last student record. If you enter a new date, this new date will be displayed also next time you open a new record to enter the data for another student. The date is ‘repeated’ automatically to simplify data entry, as many students are observed on the same day. You can always modify it by entering a different date, as applies.

For this practice, follow the information provided on the management of child Habiba by student 45 on Form 16 stored in file “**Student 45 Child Habiba.pdf**”: skip the “Enrolment card” and go to next page, which is page 1 of the form (page numbers are at the bottom of each page, excluding the enrolment card).

In the Epi6 data entry screen, we need to modify the date and enter “07/06/2009”, as this is the date recorded on the form. To enter this date, simply enter the numbers without the “/”, which is automatically added by the program:

- “Date”: So, enter “07062009”. The cursor automatically moves to next field “Evaluator ID” (circled in red below):

- “Evaluator ID”: Enter “01”. The cursor moves to next field “Student ID code” (circled in red below):

While the student ID code is “45”, try first to enter “35” as if you were making a mistake in entering the code, to see what happens:

- “Student ID code”: Enter “35” by mistake.

A red, warning message appears, alerting you that the record for **student 35** already exists as it has already been entered. The number “35” entered turns red:

You’ll notice that all the fields on the screen have automatically been populated with data and the data that you had just entered have changed (date, evaluator ID, etc.). This is because all the data on the screen have temporarily reverted to those of the record of student 35, waiting for your decision. In fact, we have already entered the records of 36 students, including the student with ID code “35”. This alert is important, because it aims at preventing you from entering the same student record more than once. In this evaluation, we must enter one and only one record for each student: each student has been given a unique code for the test.

- Click “N” for NO: you do not want to edit the record of student 35 as you want to enter a new record, that for the student with ID code 45.

The screen changes again: the data that you have entered until now for student 45 reappear; nothing has been lost. The mouse moves to next field (**Child ID**).

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 35
Child ID: [ ]      Sex [ ]      Birthdate: [ ]      Child Age in months: [ ]
Age group: [ ]      2-11 m. <1> 12-23 m. <2>
Weight Kg Wt: [ ]      Axillary temperature T: [ ]      C      Fever: [ ]
=====
  
```

Use the Up arrow key to return to “**Student ID code**”, as it shows number “35”, that we typed by mistake, while we need to enter “45”:

- “**Student ID code**”: Enter “45”. This number is now accepted as there is no other student with that same code among those which have been entered previously. Note that the “**Student ID code**” is a “must-enter” field (see message encircled in white at the bottom left of the screen): this means that the cursor will not move from here until you have entered a value. You can not leave it blank. This is a key piece of information for the analysis as it identifies the student to which all the information entered relates. You can enter values from “1” to “99” only. After you enter “45”, the cursor moves to “**Child ID**” (circled in red below):

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 45
Child ID: [ ]      Sex [ ]      Birthdate: [ ]      Child Age in months: [ ]
Age group: [ ]      2-11 m. <1> 12-23 m. <2>
Weight Kg Wt: [ ]      Axillary temperature T: [ ]      C      Fever: [ ]
=====

CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9

A.  ASSESSMENT

    Danger signs
    -----
dri   A1. Asks if child able to drink or breastfeed? [ ]
drimo A2. Mother says no? [ ]
drist A3. Student offers water? [ ]
vom   A4. Asks if child Vomits everything? [ ]
vommo A5. Mother says yes? [ ]
vomst A6. Student offers water? [ ]
cop   A7. Asks if complications during this illness? [ ]

ID: <You must enter data> Valid values: 1 to 99
Mode: Multiuser
Rec= 37
  
```

- “**Child ID**”: Enter “02”.
- Press “Enter”.

The cursor moves to “Sex”:

OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years

Date: 07/06/2009 Evaluator ID: 1 Student ID code: 45
 Child ID: 2 Sex: Birthdate: / / Child Age in months:
 Age group: 2-11 m. (1) 12-23 m. (2)
 Weight Kg Wt: Axillary temperature T: C Fever:

To view which entries are allowed in that particular field, you can press the key **F9** of the keyboard.

- Press the **F9** key:

OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years

Date: 07/06/2009 Evaluator ID: 1 Student ID code: 45
 Child ID: 2 Sex: Birthdate: / / Child Age in months:
 Age group: 2-11 m. (1) 12-23 m. (2)
 Weight Kg Wt: Axillary temperature T: C Fever:

Legal values:
 1 MALE
 2 FEMALE

CODES: Yes/assessed=1, No not assessed=2, Not applicable=8, Missing=9

A. ASSESSMENT

Danger signs

dri A1. Asks if child able to drink or breastfeed?
 drimo A2. Mother says no?
 drist A3. Student offers water?
 vom A4. Asks if child Vomits everything?
 vommo A5. Mother says yes?
 vomst A6. Student offers water?
 conv A7. Asks if convulsions during this illness?

SEX: Valid values: 1, 2

Mode: Multiuser
 Ctrl-N New Ctrl-P Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

A small window appears close to the “Sex” field, showing that the values allowed for this field are “1” for “Male” and “2” for “Female”:

Legal values:
 1 MALE
 2 FEMALE

Note the message at bottom of the screen: “SEX: Valid values: 1, 2”. You can not enter any other value than 1 or 2. Try to enter “3” as if you were making a mistake and see what happens.

- As Habiba is a baby girl and code “2” is circled on the form, enter “2” (for “Female”) or click on “2 Female”.

The cursor is now in the next field: “**Birthdate**”.

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009   Evaluator ID: 1   Student ID code: 45
Child ID: 2   Sex: 2   Birthdate: / /   Child Age in months: 
Age group: 2-11 m. (1) 12-23 m. (2)
Weight Kg Wt:   Axillary temperature T:   C   Fever: 
=====
  
```

On the form, it is recorded that Habiba was born on “20/09/2008”.

- “**Birthdate**”: Enter “20092008” (the symbol “/” separating day, month and year is automatically added by the program).

The number “8” appears in the next field on “**Child age in months**”, automatically calculated by the program. At the same time, about in the middle of the screen, a small window with the message “**Press Enter 2 times**” is displayed:

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009   Evaluator ID: 1   Student ID code: 45
Child ID: 2   Sex: 2   Birthdate: 20/09/2008   Child Age in months: 8
Age group: 2-11 m. (1) 12-23 m. (2)
Weight Kg Wt:   Axillary temperature T:   C   Fever: 
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
A. ASSESSMENT
   Danger signs
   -----
dri  A1. Asks if child able to drink or breastfeed? 1
drimo A2. Mother says no? 
drist A3. Student offers water? |Press Enter 2 times|
vom  A4. Asks if child Vomits 
vommo A5. Mother says yes? 
vomst A6. Student offers water? 
  
```

Press Enter 2 times

- Press “**Enter**” two times, as instructed: “1” will be inserted automatically in the succeeding field “**Age group**”. It may happen that the birth date of the child is not reported and only the age is available on the form: in this case, press “**Enter**” in the “**Birthdate**” field, leaving it blank, and manually enter the age of the child in months in the next field (“**Child Age in months**”).

The cursor is now in the field “Weight Kg”:

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 45
Child ID: 2          Sex 2      Birthdate: 20/09/2008      Child Age in months: 8
Age group: 1        2-11 m. <1> 12-23 m. <2>
Weight Kg Wt: .      Axillary temperature T:      C      Fever:
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
  
```

- “Weight Kg”: Enter: 8.200 (Kg). The cursor moves to “Axillary temperature”:

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 45
Child ID: 2          Sex 2      Birthdate: 20/09/2008      Child Age in months: 8
Age group: 1        2-11 m. <1> 12-23 m. <2>
Weight Kg Wt: 8.200  Axillary temperature T: .      C      Fever:
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
  
```

On the form, it is recorded that the child has an axillary temperature of 38.2 °C:

- “Axillary temperature”: Enter: “38.2” (or simply 382, as the “.” after 38 is automatically inserted by the program). The message “Press Enter 2 times” appears again on the screen:

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 45
Child ID: 2          Sex 2      Birthdate: 20/09/2008      Child Age in months: 8
Age group: 1        2-11 m. <1> 12-23 m. <2>
Weight Kg Wt: 8.200  Axillary temperature T: 38.2  C      Fever:
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9

A.  ASSESSMENT

    Danger signs
    -----
dri  A1. Asks if child able to drink on breastfeed?
drim A2. Mother says no?
dris A3. Student offers water?
vom  A4. Asks if child Vomits
vommo A5. Mother says yes?

Press Enter 2 times
  
```

- Press “Enter” two times, as instructed. Next field (“Fever”) is automatically filled in based on the temperature value that you have entered. Code “1” means “yes”, this child has fever.

The cursor is now in the field of item “**A1. Asks if child able to drink or breastfeed?**” under “**A. ASSESSMENT – Danger signs**” (see field circled in red below):

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 45
Child ID: 2          Sex 2      Birthdate: 20/09/2008      Child Age in months: 8
Age group: 1        2-11 m. (1) 12-23 m. (2)
Weight Kg Wt: 8.200      Axillary temperature T: 38.2      C      Fever 1
=====

CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9

A.  ASSESSMENT
    Danger signs
    -----
dri  A1. Asks if child able to drink or breastfeed? 1
drim A2. Mother says no?
dris A3. Student offers water?
vom  A4. Asks if child vomits everything?
vommo A5. Mother says yes?
vomst A6. Student offers water?
con  A7. Asks if convulsions during this illness?
DRIMO: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37
  
```

You have seen how to enter data using the Epi6 data entry program. To become more familiar with it and skipping patterns, continue entering the rest of the data on assessment and classification of the child Habiba by student 45. Simply enter the codes shown on the form.

- “**A1. Asks if child able to drink or breastfeed?**”: enter “1”.

```

A.  ASSESSMENT
    Danger signs
    -----
dri  A1. Asks if child able to drink or breastfeed? 1
drim A2. Mother says no? 2
dris A3. Student offers water?
vom  A4. Asks if child vomits everything?
vommo A5. Mother says yes?
vomst A6. Student offers water?
con  A7. Asks if convulsions during this illness?
DRIMO: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37
  
```

- The cursor moves to “**A2. Mother says no?**”: enter “2” as shown in the form.

You will see that the cursor jumps to item “**A4. Asks if child vomits everything?**”, skipping “**A3. Students offers water**”, according to the skipping pattern of the form. In fact, the instructions on the form under item **A2** require that if the answer is “No”, one should “Go to question # A4”. Had the answer to **A2** been “Yes”, **A3** would have had an answer in the form (no skipping pattern), which you would have entered.

```

ASSESSMENT
    Danger signs
    -----
no  A1. Asks if child able to drink or breastfeed? 1
st  A2. Mother says no? 2
st  A3. Student offers water?
no  A4. Asks if child vomits everything?
st  A5. Mother says yes?
st  A6. Student offers water?
:  A7. Asks if convulsions during this illness?
Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37
  
```


- “A4. Asks if child vomits everything?”: enter “1”;
- “A5. Mother says yes?” enter “2”. The cursor will move to item A7, skipping A6, according to the skipping pattern of the form:

```

Danger signs
-----
dri    A1. Asks if child able to drink or breastfeed? 1
drimo  A2. Mother says no? 2
drist  A3. Student offers water? █
vom    A4. Asks if child Vomits everything? 1
vommo  A5. Mother says yes? 2
vomst  A6. Student offers water? █ ← A6 automatically skipped. Cursor moves to A7.
con    A7. Asks if convulsions during this illness? █
CON:  Valid values: 1, 2, 8, 9
Mode:  Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

Enter data slowly, as this is just practice, checking the screen after each entry to see what happens each time.

- “A7. Asks if convulsions during this illness?”: enter “1”
- “A8. Child sleepy, lethargic, unconscious?”: enter “2”. The cursor will move to item A20, skipping A9, according to the skipping pattern of the form:

```

C:\ EPI6.EXE
let    A8. Child sleepy, lethargic, unconscious? 2
letst  A9. Student tries to wake up child? █
DS █
DSMX █
Cursor automatically moves to A20
-----
Cough or difficult breathing
Cough  A20. Asks about cough or difficult breathing? █
coughmo A21. Child has cough or difficult breathing? █
      If no cough nor difficult breathing:
coughst A22. Student enters cough box by mistake? █

```

Note that there are two items before item A20: “DS” and “DSMX”, which are not included in the form. These items are bypassed during data entry as if they did not exist. They will be filled in automatically later when running the programs for the analysis. Ignore them now and keep entering the data of student 45 as in the form.

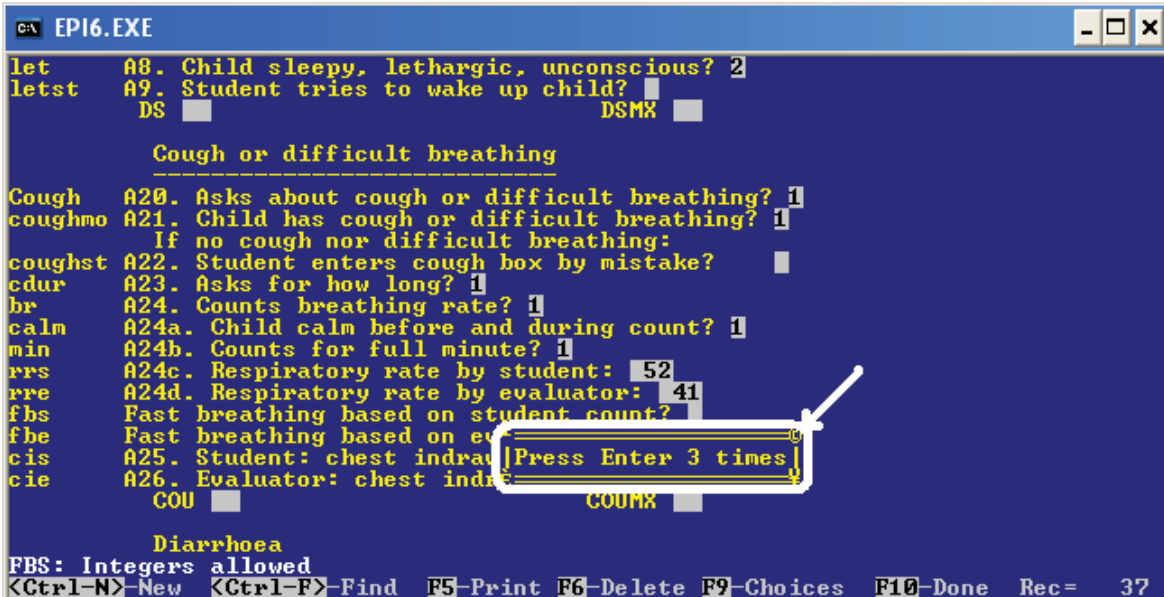
- “A20. Asks about cough or difficult breathing?”: enter “1”.
- “A21. Child has cough or difficult breathing?”: enter “1” and note that the cursor moves to A23, skipping A22, as in the form.
- “A23. Asks for how long?”: enter “1”.
- “A24. Counts breathing rate?”: enter “1”. If the answer to this question had been “No” (i.e., the student did not count the respiratory rate), the cursor would have jumped from here to item A25, skipping sub-items A24a, A24b, A24c and A24d which are related the count itself, exactly as shown on the form: if No → “Go to question # A25”).

```

Cough or difficult breathing
-----
Cough  A20. Asks about cough or difficult breathing? 1
coughmo A21. Child has cough or difficult breathing? 1
        If no cough nor difficult breathing:
coughst A22. Student enters cough box by mistake?
cdur    A23. Asks for how long? 1
br      A24. Counts breathing rate? 1
calm    A24a. Child calm before and during count?

```

- “A24a. Child calm before and during the count?”: enter “1”.
- “A24b. Counts for full minute?”: enter “1”.
- “A24c. Respiratory rate by student”: enter “52” and press “Enter”.
- “A24d. Respiratory rate by evaluator”: enter “41”. Press “Enter”. The message “Press Enter 3 times” appears on the screen:



```

c:\ EPI6.EXE
let      A8. Child sleepy, lethargic, unconscious? 2
letst    A9. Student tries to wake up child?
        DS
        DSMX
Cough or difficult breathing
-----
Cough  A20. Asks about cough or difficult breathing? 1
coughmo A21. Child has cough or difficult breathing? 1
        If no cough nor difficult breathing:
coughst A22. Student enters cough box by mistake?
cdur    A23. Asks for how long? 1
br      A24. Counts breathing rate? 1
calm    A24a. Child calm before and during count? 1
min     A24b. Counts for full minute? 1
rrs     A24c. Respiratory rate by student: 52
rre     A24d. Respiratory rate by evaluator: 41
fbs     Fast breathing based on student count?
fbe     Fast breathing based on evaluator count?
cis     A25. Student: chest indrawn?
cie     A26. Evaluator: chest indrawn?
        COU
        COUMX
Diarrhoea
FBS: Integers allowed
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

- Press “Enter” 3 times as instructed. You can see that two items have been filled in automatically: “Fast breathing based on student count?” with “1” and “Fast breathing based on evaluator count?” with “2”:

```

C:\> EPI6.EXE
let      A8. Child sleepy, lethargic, unconscious? 2
letst    A9. Student tries to wake up child? █
          DS █                               DSMX █

          Cough or difficult breathing
          -----
Cough    A20. Asks about cough or difficult breathing? 1
coughmo  A21. Child has cough or difficult breathing? 1
          If no cough nor difficult breathing:
coughst  A22. Student enters cough box by mistake? █
cdur     A23. Asks for how long? 1
br       A24. Counts breathing rate? 1
calm     A24a. Child calm before and during count? 1
min      A24b. Counts for full minute? 1
rrs      A24c. Respiratory rate by student: 52
rre      A24d. Respiratory rate by evaluator: 41
fbs      Fast breathing based on student count? 1
fbe      Fast breathing based on evaluator count? 2
cis      A25. Student: chest indrawing present? █
cie      A26. Evaluator: chest indrawing present? █
          COU █                               COUMX █

          Diarrhoea
CIS: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37
  
```

- “A25. Student: chest indrawing present?”: enter “2”.
- “A26. Evaluator: chest indrawing present?”: enter “1”.

```

fbs      Fast breathing based on student count? 1
fbe      Fast breathing based on evaluator count? 2
cis      A25. Student: chest indrawing present? 2
cie      A26. Evaluator: chest indrawing present? 1
          COU █                               COUMX █
  
```

After entering “1” in A26, you will see that the cursor jumps to A30 (on a new screen), automatically bypassing the fields “COU” and “COUMX”. These will be filled in later when running the programs for the analysis. Ignore them and keep entering the data of student 45 as shown on the form.

- “A30. Asks about diarrhoea?”: enter “1”.
- “A31. Child has diarrhoea?”: enter “2”.
- “A32. Student enters diarrhoea box by mistake?”: enter “2”.

```

C:\> EPI6.EXE
Diar     A30. Asks about diarrhoea? 1
diarmo   A31. Child has diarrhoea? 2
          If no diarrhoea:
diarst   A32. Student enters diarrhoea box by mistake? 2
ddur     A33. Asks for how long? █
blood    A34. Asks if blood in stool? █
ips      A35. Student: child is restless? █
  
```

You will see that, after you enter “2” in **A32**, the cursor will jump to item **A40**, as this child has no diarrhoea, exactly as in the form: if **No** → “Go to question # **A40**”.

```

C:\ EPI6.EXE
-----
Diar  A30. Asks about diarrhoea? 1
diarmo A31. Child has diarrhoea? 2
      If no diarrhoea:
diarst A32. Student enters diarrhoea box by mistake? 2
ddur   A33. Asks for how long?
blood  A34. Asks if blood in stool?
irs    A35. Student: child is restless?
ire    A36. Evaluator: child is restless?
thirst A37. Offers something to drink?
ths    A37a. Student: child is thirsty?
the    A37b. Evaluator: child is thirsty?
pinch  A38. Pinches abdomen skin?
pincht A38a. Pinch skin correctly?
pinchs A38b. Stud.: pinch goes back   Normal (1) Slowly (2) Very slowly (3)
pinche A38c. Eval.: pinch goes back   Normal (1) Slowly (2) Very slowly (3)
      DD
      DDMX

Throat problem
-----
throat A40. Ask about sore throat?
nod    A41. Checks front neck lymph nodes?
thr    A42. Examines throat correctly?
DIARST: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

As seen before for **DS**, **DSMX** (under “Danger signs”) and **COU**, **COUMX** (under “Cough or difficult breathing”), items **DD** and **DDMX** (under “Diarrhoea”) remain blank and will be filled in later when running the programs for the analysis.

These jumps have been programmed specifically for this data entry form in advance. This means that any changes which are introduced in the standard Epi6 data entry program must be reflected also in the file which controls data entry (file “**M1A.CHK**”, meaning the “check” file) and program files for the analysis. This requires some knowledge of Epi6. The Epi6 manual can be downloaded at the following link (many language versions are available, including English, Arabic and French): <http://www.cdc.gov/epiinfo/epi6/ei6manl.htm> (accessed on 31 August 2009).

Note

If you adapt the data entry form, make sure you reflect those changes in all the related Epi6 files

- Enter the three items under “**Throat problem**”: “1” in **A40**, “2” in **A41** and “1” in **A42**.

```

pincht A38a. Pinch skin correctly?
pinchs A38b. Stud.: pinch goes back   Normal (1) Slowly (2) Very slowly (3)
pinche A38c. Eval.: pinch goes back   Normal (1) Slowly (2) Very slowly (3)
      DD
      DDMX

Throat problem
-----
throat A40. Ask about sore throat? 1
nod    A41. Checks front neck lymph nodes? 2
thr    A42. Examines throat correctly? 1
DIAR: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

Items **ST** and **STMX** will be bypassed automatically, as seen before for **DS**, **DSMX** (under “Danger signs”), **COU**, **COUMX** (under “Cough or difficult breathing”) and **DD**, **DDMX** (under “Diarrhoea”). The cursor will move to item **A50**:

```

C:\ EPI6.EXE
      ST      STMX
      Ear problem
Ear    A50. Asks about ear problem? █
earmo  A51. Child has ear problem? █
earst  A52. Student enters ear problem box by mistake? █
pain   A53. Asks about ear pain? █

```

- Enter the next three items under “Ear problem”: “1” in **A50**, “2” in **A51** and “2” in **A52**.

```

      ST      STMX
      Ear problem
Ear    A50. Asks about ear problem? 1
earmo  A51. Child has ear problem? 2
earst  A52. Student enters ear problem box by mistake? 2
pain   A53. Asks about ear pain? █

```

The cursor will then jump to **A60**, under “Fever”, as shown in the form: if **No** → “Go to question # **A60**”, as this child has no ear problem. Items **EP** and **EMPX** will be automatically bypassed.

```

C:\ EPI6.EXE
      ST      STMX
      Ear problem
Ear    A50. Asks about ear problem? 1
earmo  A51. Child has ear problem? 2
earst  A52. Student enters ear problem box by mistake? 2
pain   A53. Asks about ear pain? █
dis    A54. Asks about ear discharge? █
dismo  A54a. Mother says child has discharge? █
dear   A55. Asks for how long discharge? █
swell  A56. Feels for tender swelling behind the ear? █
      EP      EMPX
      Fever
Fev    A60. Asks/checks about fever (or refer to temperature)? █
fevmo  A61. Child has fever? █
      If no fever:
fevst  A62. Student enters fever box by mistake? █
fdur   A63. Asks for how long? █
snt    A64a. Student uses correct technique for stiff neck? █
sns    A64b. Student: child has stiff neck? █
FEU: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

- Enter the next items under “Fever”: “1” in **A60**, “1” in **A61** (Item **A62** is automatically bypassed as per the skipping pattern of the form), “1” in **A63**, “2” in **A64a** and “2” in **A64b**.

```

Fever
-----
Fev      A60. Asks/checks about fever (or refer to temperature)? 1
fevmo    A61. Child has fever? 1
         If no fever:
fevst    A62. Student enters fever box by mistake? █
fdur     A63. Asks for how long? 1
snt      A64a. Student uses correct technique for stiff neck? 2
sns      A64b. Student: child has stiff neck? 2
SNE: Valid values: 1, 2, 8, 9                               Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

- Enter “2” in A64c. The cursor bypasses F and FMX and jumps to A70.

```

c:\ EPI6.EXE
sne      A64c. Evaluator: child has stiff neck? 2
         F █                               FMX █
-----
Malnutrition and anaemia
-----
vsw      A70. Student looks for visible severe wasting? █
vswt     A70a. Using the correct technique? █

```

- Enter the next items under “Malnutrition and anaemia”: “2” in A70 (the cursor then jumps to A71), “1” in A71, “1” in A71a, “2” in A71b, “2” in A71c, “1” in A72 (the cursor bypasses MAL, MALMX and jumps to A73); enter “1” in A73, “1” in A73a, “1” in A73b and “1” in A73c. The cursor bypasses AN and ANMX and jumps to A81.

```

c:\ EPI6.EXE
sne      A64c. Evaluator: child has stiff neck? 2
         F █                               FMX █
-----
Malnutrition and anaemia
-----
vsw      A70. Student looks for visible severe wasting? 2
vswt     A70a. Using the correct technique? █
vsus     A70b. Student: wasting present? █
vsve     A70c. Evaluator: wasting present? █
edema    A71. Looks for oedema of both feet? 1
edt      A71a. Looks for oedema correctly? 1
eds      A71b. Student: oedema present? 2
ede      A71c. Evaluator: oedema present? 2
WA       A72. Determines weight for age (against chart or plots on chart)? 1
         MAL █                               MALMX █
pallor   A73. Looks for palmar pallor? 1
pallort  A73a. Looks for pallor correctly? 1
palls    A73b. Stud.: palmar pallor... 1 None (1) some (2) severe (3)
palle    A73c. Eval.: palmar pallor... 1 None (1) some (2) severe (3)
         AN █                               ANMX █
-----
Immunization
SNE: Valid values: 1, 2, 8, 9                               Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

- Enter items under “**Immunization**” and “**Vitamin A**”: enter “2” in **A81** (the cursor will jump to **A82**), “8” in **A82** (the cursor will jump to **A83**) and “2” in **A83**.

```

C:\ EPI6.EXE
immun A81. Immunisation status checked (asks or checks card)? 2
imms  A81a. Student: child is due for immunization?
imme  A81b. Evaluator: child is due for immunization?
immco A81c. Conclusions on which immunizations are due are the same?
      IMM IMMXX
-----
vitamin A
vits  A82. Vitamin A status checked (by history)? 3
vite  A82a. Student: child needs vit.A?
      UIT UITMX
-----
Other problems
Prob  A83. Other problems (asked)? 2
      PROBL PROBLMX
-----
ASS1 ASSSMX1 ASS2 ASSSMX2
ASS ASSSMX ASSPER
-----
B. CLASSIFICATION
IMMUN: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

Items “**IMM**”, “**IMMXX**”, “**VIT**”, “**VITMX**”, “**PROBL**” and “**PROBLMX**” will be automatically filled in when running the programs for the analysis.

This takes you to items under “**B. Classification**”.

- Under “**General danger signs**”: enter “2” in **C1** and “2” in **C2**;
- Under “**Cough or difficult breathing**”: enter “2” in **C10** and “1” in **C11**;
- Under “**Diarrhoea**”: enter “2” in **C20** and “2” in **C21**.

```

C:\ EPI6.EXE
-----
General danger signs
sGDS C1. by student? 2 YES <1> NO <2>
eGDS C2. by evaluator? 2 YES <1> NO <2>
      CGDS CGDSMX
-----
Cough or difficult breathing
sCOU C10. by student: 2 Press F9 for entry codes
eCOU C11. by evaluator: 1 Press F9 for entry codes
      CCOU CCOUNX
-----
Diarrhoea
sD C20. by student: 2 YES <1> NO <2>
eD C21. by evaluator: 2 YES <1> NO <2>
-----
sDEH C22. Dehydration status by student: Press F9 for entry codes
eDEH C23. Dehydration status by evaluator: Press F9 for entry codes
      DEH DEHMX
-----
sPD C25. Persistent diarrhoea by student: Press F9 for entry codes
SGDS: Valid values: 1, 2, 8, 9
Mode: Multiuser
<Ctrl-N>-New <Ctrl-F>-Find F5-Print F6-Delete F9-Choices F10-Done Rec= 37

```

As the child has no diarrhoea, the cursor will jump to **C40**.

- Under “**Throat problem**”: enter “**3**” in **C40** and “**3**” in **C41**;
- Under “**Ear problem**”: enter “**8**” in **C50** and “**8**” in **C51**;

The screenshot shows the EPI6.EXE data entry interface. The 'Throat problem' section is highlighted with a white box, showing C40 (by student) and C41 (by evaluator) both set to 3. The 'Ear problem' section is also highlighted with a white box, showing C50 (by student) and C51 (by evaluator) both set to 8. The 'Fever' section is visible below, with C60 (by student) set to 7 and C61 (by evaluator) set to 2. The screen also displays various menu options and a status bar at the bottom.

- Under “**Fever**”: enter “**7**” in **C60** and “**2**” in **C61**;
- Under “**Nutritional status**”: enter “**3**” in **C70** and “**3**” in **C71**;
- Under “**Anaemia**”: enter “**3**” in **C80** and “**3**” in **C81**.

The screenshot shows the EPI6.EXE data entry interface. The 'Nutritional status' section is highlighted with a white box, showing C70 (by student) and C71 (by evaluator) both set to 3. The 'Anaemia' section is also highlighted with a white box, showing C80 (by student) and C81 (by evaluator) both set to 3. A red arrow points to a prompt at the bottom left: "Write data to disk <Y/N/<Esc>>?". The screen also displays various menu options and a status bar at the bottom.

After entering code “**3**” in “**C81**”, a message appears at the bottom left of the screen: “**Write data to disk <Y/N/<Esc>>?**” As this is just practice and we want to keep the original dataset for run the analysis program, we prefer not to save the data of this record that we have just entered. Enter “**N**” for NO: do not save. However, when you enter real data of form 16 after the student skill assessment, you will enter “**Y**”, for YES, save the data to disk.

- Press the key “F10”, to exit the record. At the bottom of the screen, the same message appears again: “Write data to disk <Y/N/<Esc>>?”

```

=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Date: 07/06/2009      Evaluator ID: 1      Student ID code: 45
Child ID: 2          Sex 2      Birthdate: 20/09/2008      Child Age in months: 8
Age group: 1        2-11 m. <1> 12-23 m. <2>
Weight Kg Wt: 8.200      Axillary temperature T: 38.2      C      Fever: 1
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
A.  ASSESSMENT
    Danger signs
-----
dri    A1. Asks if child able to drink or breastfeed? 1
drimo  A2. Mother says no? 2
drist  A3. Student offers water? 
vom    A4. Asks if child Vomits everything? 1
vommo  A5. Mother says yes? 2
vomst  A6. Student offers water? 
con    A7. Asks if convulsion during this illness? 1
Write data to disk <Y/N/<Esc>>?
<Ctrl-N> New <Ctrl-F> Find <F5> Print <F6> Delete <F9> Choices <F10> Done Rec= 37

```

This message is simply asking you whether you want to save the data of the last record that you have entered before leaving the program. All previous records have been saved; this message applies only to the last record that you have entered. If something goes wrong before you save, only the last record will be lost. The remaining records, previously entered, will remain unaffected in the database.

- As we decided not to save this last record, type “N” (for NO).

The screen closes, to show the Epi6 main menu page:

```

=====
EPI6
=====
Centers for Disease Control & Prevention (CDC), U.S.A.
World Health Organization
Geneva, Switzerland

EPI6
Version 6.04d - January 2001

A Word Processing, Database and Statistics Program
for Public Health

F = <Ctrl-Enter> for Command-line Parameters

F1-Help F2-New F3-Open F4-Close F5-Print F8-Menu F9-Save F10-Quit

```

If you wanted to close also this screen, you would press the key “F10” again. However, you are now ready to enter also the data on “Identification of treatment” and “Assessment and identification of feeding problems” of form 16 for student 45 to practise and so want to continue:

- click on “**Programs**” and then click on “**ENTER data**” .
- enter file name “**M2A**”.
- press “**Enter**” three times to open the screen for data entry (as you did earlier for M1A) for this second part of Form 16;
- start entering data.

You will have to enter again **Student ID**, **Child ID** and **Child Age**, before entering the rest of the data. ‘Dummy data’ for 36 students have been entered for you. You will practise entering the data for student “45”, which is now record 37 in **M2A.REC**. Enter:

- **Student ID code: 45**
- **Child ID: 2** (press “Enter”)
- **Child Age in months: 8** (press “Enter”).

```

C:\> EPI6.EXE
=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Student ID code ID: 45 Child ID: 2 Child Age in months: 8
=====

```

Enter the remaining data. For the “Treatment” table of form 16, enter “2” for any blank cell (no tick) and “1” for any cell with tick, as shown below. So, enter “2” for “sT0” (blank cell, no tick on the form) and “1” for “eT0” (cell with tick). This is done to help the evaluator fill in form 16 in a much faster way.

```

C:\> EPI6.EXE
=====
OBSERVATION OF CASE MANAGEMENT - Child age 2 months up to 2 years
=====
Student ID code ID: 45 Child ID: 2 Child Age in months: 8
=====
CODES: Yes/assessed=1, No/not assessed=2, Not applicable=8, Missing=9
C. TREATMENT
Enter 1 if ticked, 2 if not ticked

Give 1st dose of an appropriate antibiotic
Treat the child to prevent low blood sugar
Refer urgently to hospital
Oral antibiotic for pneumonia
Treat wheezing if present
Advise mother when to return immediately
Follow up
Follow up if not improving
Fluids for severe dehydration (Plan C)
Fluids, zinc, food for some dehydration (Plan B)
ID: (You must enter data) Valid values: 1 to 99

```

By Student		By Evaluator	
sT0	2	eT0	1
sT1	2	eT1	1
sT2	2	eT2	1
sT3	1	eT3	2
sT4	1	eT4	1
sT5	2	eT5	2
sT6	1	eT6	2
sT7	2	eT7	2
sT8	2	eT8	2
sT9	2	eT9	2

```

Ctrl-N New Ctrl-F Find F5 Print F6 Delete F9 Choices F10 Done Rec= 37

```

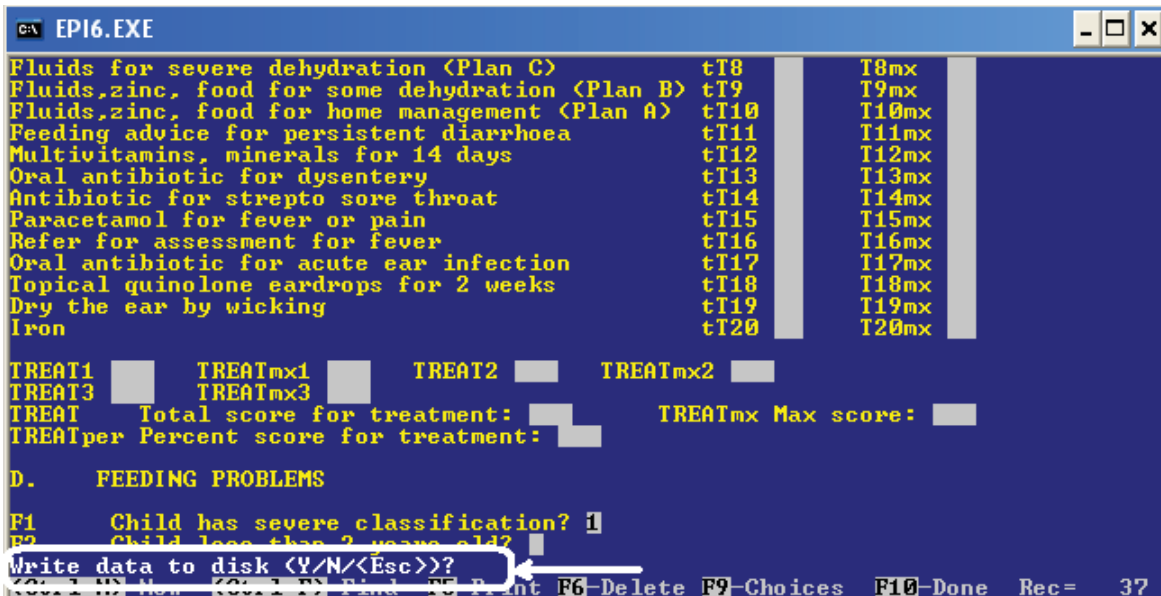
 **Reminder:**

As you enter data, always pay attention to the screen, to see where the cursor is and whether any message appears.

After you enter “2” in eT20, the cursor jumps to F1. The items that have been bypassed and remained blank in the Epi6 data entry screen under “Scores”, before F1, will be automatically filled in when the program for the analysis is run.

After entering “1” in “F1. Child has severe classification?”, the cursor bypasses the rest of items under “D. FEEDING PROBLEMS”, in line with the skipping pattern shown on the form: if Yes → “Go to question # A90”. This child has a severe classification according to the evaluator and the assessment of feeding problems has therefore been skipped.

After entering “1” in F1, you will be asked whether you wish to save (“Write data to disk <Y/N/<Esc>>?”):



- As this is just practice, enter “N” for No (do not save); if the message remains displayed, press “N” again;
- Press the key “F10”, to exit the record. At the bottom of the screen, the same message appears again: “Write data to disk <Y/N/<Esc>>?”
- As we decided not to save this last record, type “N” (for NO). The Epi6 data entry screen closes and the Epi6 main menu page is displayed: press F10 to exit Epi6.

Validating the data entered

Checking the data

It is recommended that two different operators enter the same data independently, so that the accuracy of data entry can be checked and the data validated.

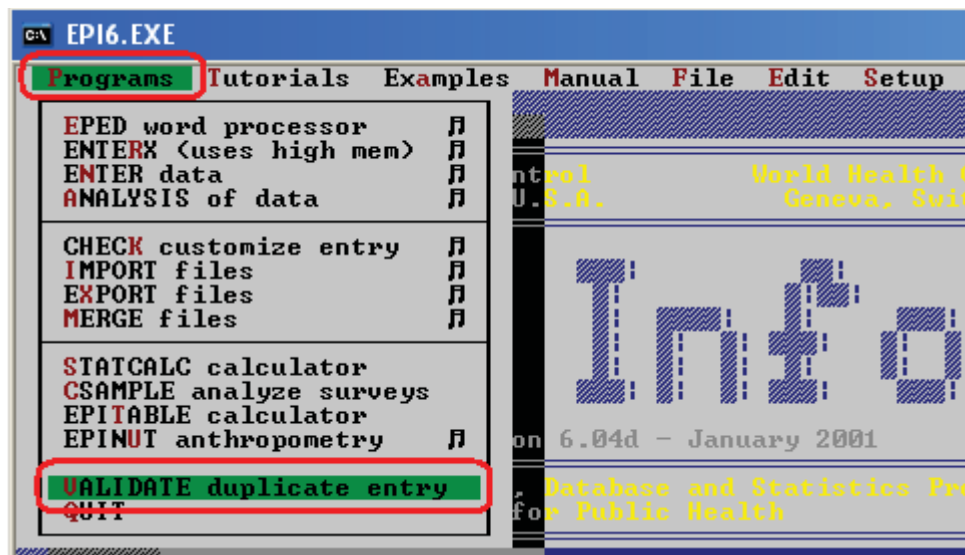
The folder “**Epi6 validation**” in the CD-ROM contains two files: **M1A.REC** and **M1B.REC**. File **M1A.REC** is the same one you have used with the 36 records already entered. File **M1B.REC** is the same file as **M1A.REC** but contains a few errors: these have been made intentionally in data entry to show you how to validate data.

To check and validate data, follow these steps.

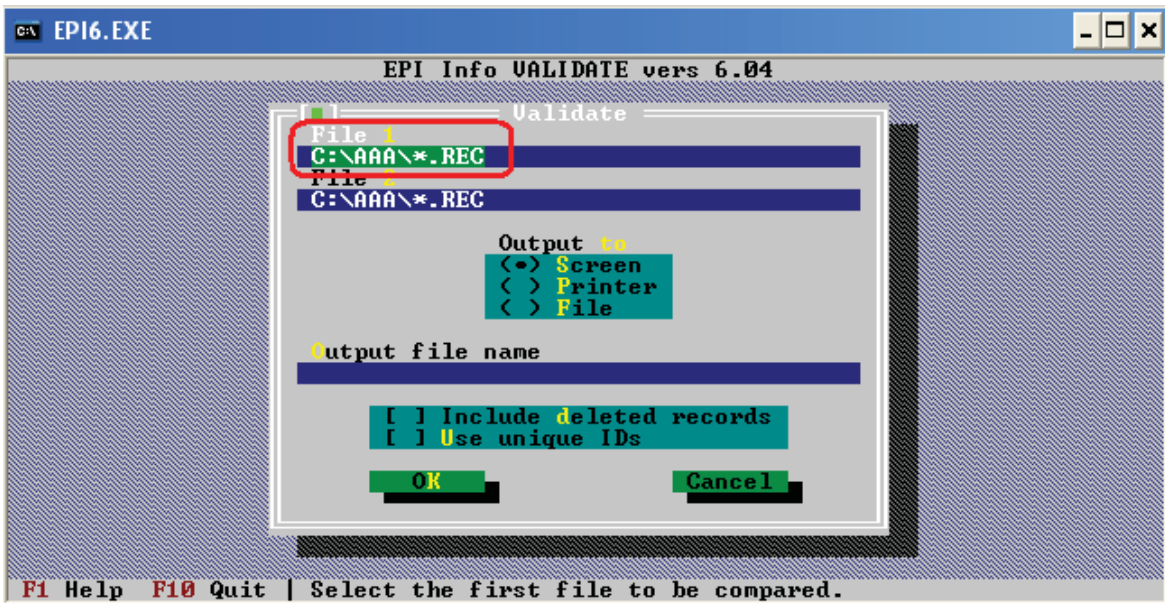
- Copy the file **M1B.REC** from the CD-ROM into folder “**C:\AAA**” on your computer where you have placed all the other files for practice. To copy files see page 105.
- Double click on the **Epi6** (EPI6.EXE) icon on the desktop to open the Epi6 main menu page:



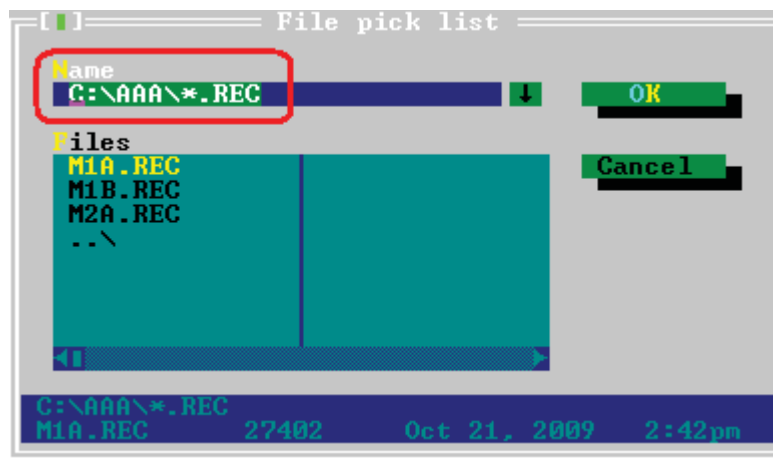
- On the main menu on top, select “**Programs**” and from the drop down menu click “**VALIDATE duplicate entry**”:



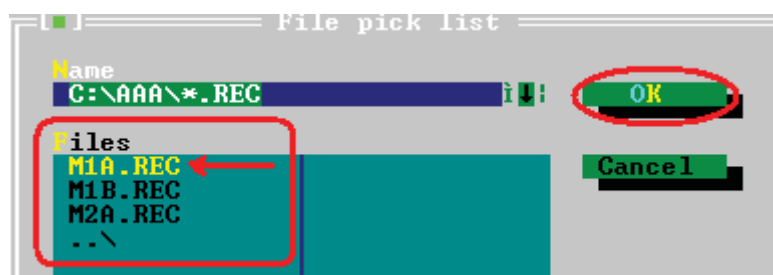
- A new window opens: double click inside the field under “File 1” to select the first file with the data:



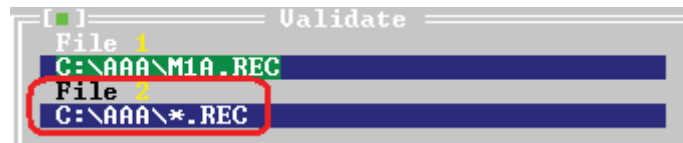
As we have set by default the path to the folder where we have put all our files, under “Name” the path “C:\AAA*.REC” will be displayed showing the folder holding the data files:



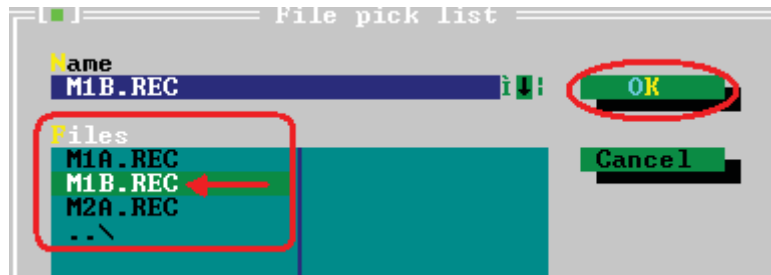
- Select, under “Files”, the file **M1A.REC** and click on “OK”:



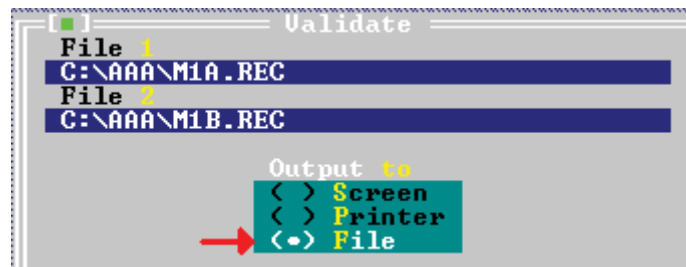
- In the new window which opens, double click inside the field under “File 2” to select the second file holding the data that you want to compare with the first file:



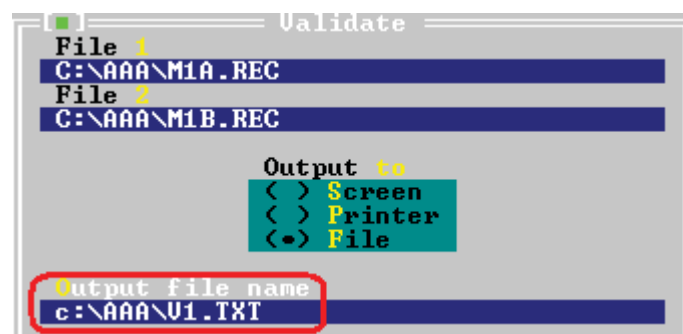
- Next, select the file **M1B.REC** from the list of files and click “OK”:



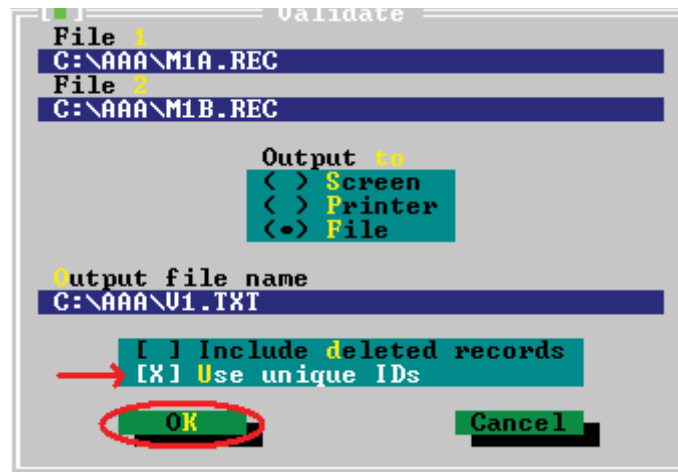
- You can see that the two files that you want to compare for validation (**M1A.REC** and **M1B.REC**) are listed under the fields “File 1” and “File 2”, respectively. In the middle of the window is an option on where to send the output of the validation process. Click “File” to have it saved as a text file:



- Type the path and output file name. For example, let’s call the output file “**V1.TXT**” and have it saved in the folder “**C:\AAA**” which already contains all our files. Let’s then type “**C:\AAA\ V1.TXT**”:



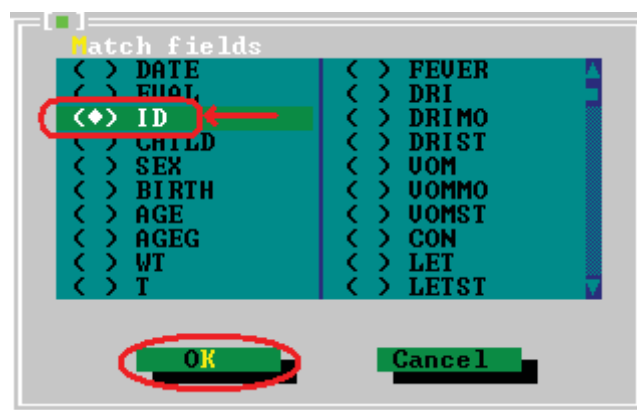
- Below it, choose “Use unique IDs”, as indicated by the red arrow here:



- Click on “OK”.

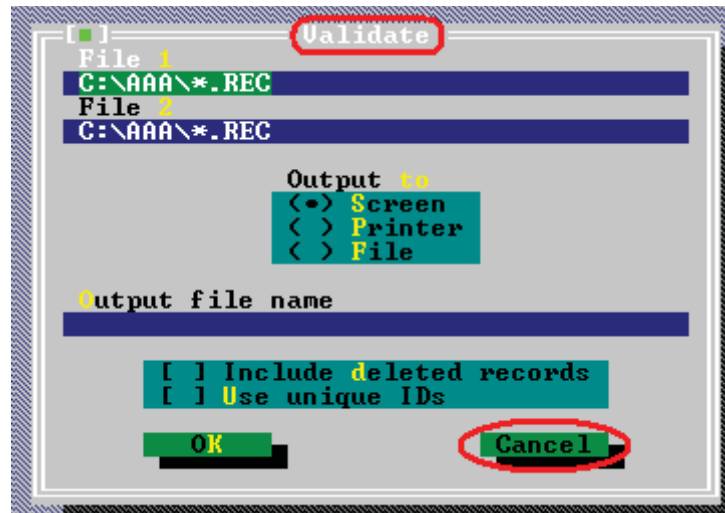
We are going to compare the two files **M1A.REC** and **M1B.REC**, record by record, according to the **student ID code**, which is the unique ID we have used to identify each record. In fact, records of each student may be entered by the two operators in a different order in the two files: we need to tell the program how to match the records in order to compare them.

- In the next window, click on “ID” (student ID code) and then “OK”:

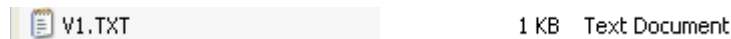


A horizontal bar will be displayed in the middle of the window very quickly, showing the progress of record matching. This will take only few seconds. Then the “Validate” window will appear again, in case you wish to match other files.

- Click “Cancel”:



- The Epi6 main menu page will be displayed. Press **F10** to close Epi6.
- Go to the folder “C:\AAA” to view the validation report that has just been generated. Double click on the file “**V1.TXT**”:

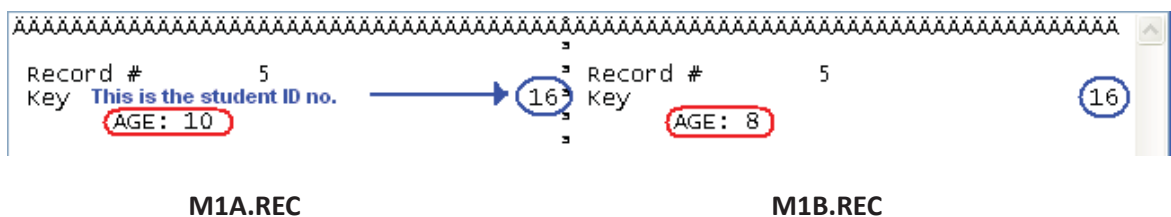


The lower part of the report shows the number of records which have been examined in each file (36 in our case; see blue arrows). This is important as the two files must have the same number of records. It also shows the number of records which differ: in this case, there are three records which have some different entries:



The top part of the report shows which records and which entries per record differ. The left column refers to the first file (**M1A.REC**), the right column to the second file (**M1B.REC**).

The first record with a mismatching entry is that of **student ID no. 16** (the “Key”, circled in blue in the picture below). In the field **AGE**, “10” has been entered in the first file (**M1A.REC**) while “8” has been entered in the second file (**M1B.REC**). Thus, one needs to go back to the paper form of student no. 16 to check what the correct age is and then amend the **M1A.REC** if the age is different from the value of “10” which has been entered.



The other two rows have the same structure. In the second row, the record for **student ID no. 2** has “37.0” entered for the temperature (T) in the first file (left column) and “36.5” in the second file (right column). Again, one needs to check the original form and then amend **M1A.REC** if needed.

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
3
Record #      13          2 Record #      13          2
Key          T: 37.0      2 Key          T: 36.5      2
  
```

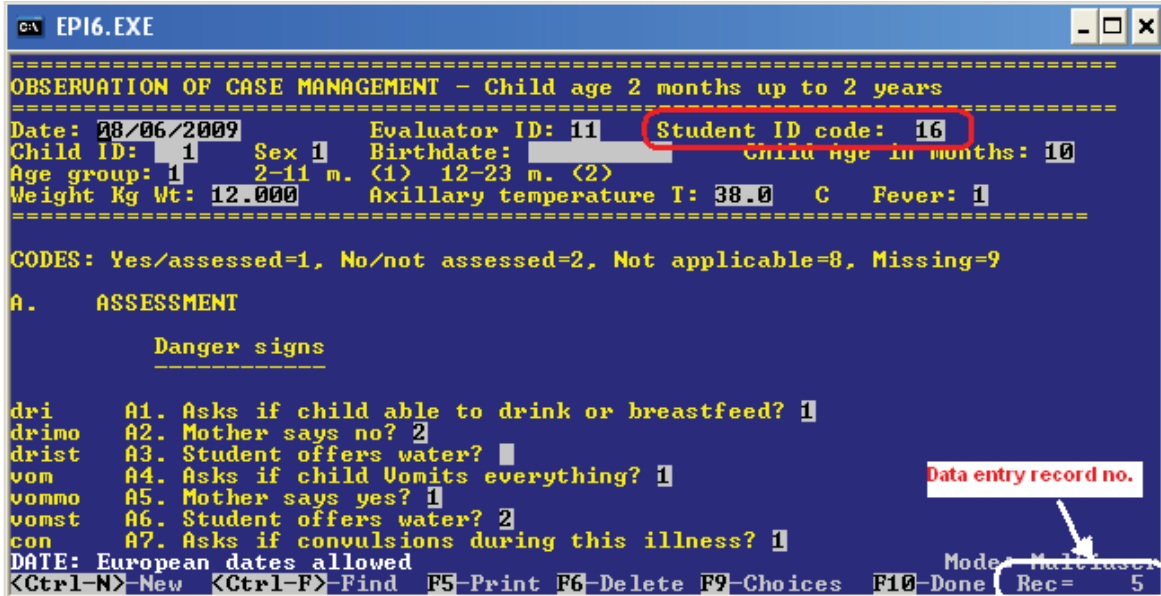
Finally, the third row refers to the record of **student ID no. 25**. In the field **SEX**, the first file shows “1” (male) while the second file shows “2” (female). As done for the previous data, checking the original paper form will tell which one is the correct entry.

```

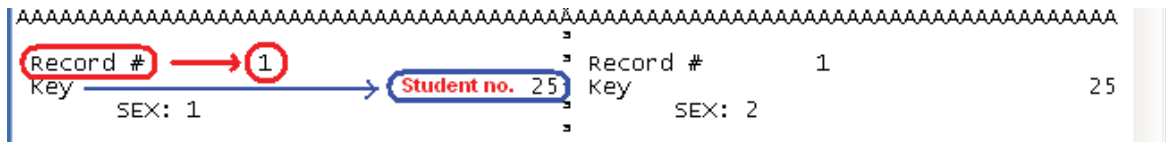
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
3
Record #      1          25 Record #      1          25
Key          SEX: 1      25 Key          SEX: 2      25
  
```

Correcting the data

To correct the data, just follow the same procedures as those to enter the data described earlier. When the data entry screen is open, press the key **F7** to move backwards, record by record, until you find the record no. which corresponds to the student whose data you want to amend. The record no. is shown at the bottom right of the Epi6 data entry screen:



In the validation report (**V1.TXT**), the record no. is shown as the first item. For example, the record no. which corresponds to student 25 is "1", as shown below. This means that student 25 has been the first record which has been entered in **M1A.REC**:

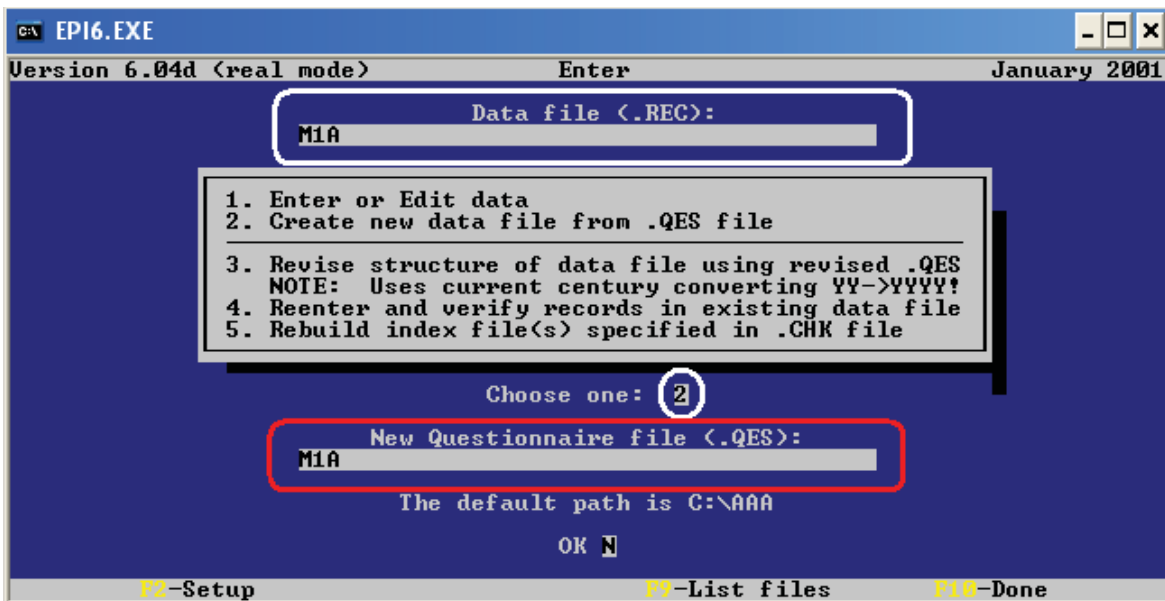


Make the necessary correction/s in the appropriate field/s, then press **F10** and enter "Y" to save data to disk. Finally, press **F10** again to exit Epi6.

Creating a new file to enter new data

To enter new data from the scratch, e.g. those related to your own student skill assessment in the future, you will need to create new, blank files “**M1A.REC**” and “**M2A.REC**”. Follow the steps described earlier in “Practising data entry”:

- Enter “**M1A**” in the field “**Data file <.REC>**”;
- Enter “**2**” in the field “**Choose one:**” and press “**Enter**”.
- As shown below (area circled in red), after pressing “**Enter**”, a new field appears, “**New Questionnaire file (.QES)**”: enter here the same file name “**M1A**” and press “**Enter**”.



- Finally, press “**Enter**” again in the last field “**The default path is C:\AAA\...**” “**OK: Y**”. A new file “**M1A.REC**” with 0 records will be generated, in which you will be able to enter new data.

The file “**M1A.CHK**” must be in the same folder as the file “**M1A.QES**” for you to create a new “**M1A.REC**” file. Repeat the same steps to create a blank file “**M2A.REC**”, entering “**M2A**” instead of “**M1A**”.

The enclosed CD contains three different sets of Epi6 program files: a) “**AAA**”: to practise data entry as described in this guide; b) “**Epi6 files no malaria**”: for countries with no malaria; and c) “**Epi6 files with malaria**”: for countries with malaria. Use either b. or c. for your assessment of student skills, depending on whether or not your IMCI guidelines include malaria. For your convenience, the blank files “**M1A.REC**” and “**M2A.REC**” with 0 records have already been created in the folders, ready for you to enter data.

Data analysis: generating and understanding analysis reports

To facilitate the analysis and be able to generate results on key indicators right after the last student record has been entered in Epi6, the following programs have been prepared:

- a) **M1A.PGM**
- b) **M2A.PGM**
- c) **SAMPLE.PGM**
- d) **CM.PGM**
- e) **MX.PGM**
- f) **TEMP.PGM**
- g) **SCORE.PGM**

These programs are run in the above order and you will practise with them in this section. Definitions and details about the indicators are provided in the Evaluation guide.

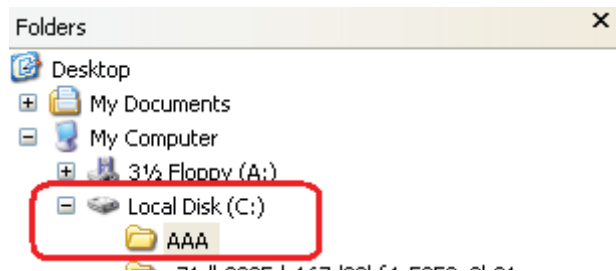
Scoring tasks and steps

To score individual tasks and IMCI case management steps performed by each student, you will use the first two programs. When you run **M1A.PGM** and **M2A.PGM**, these programs will automatically:

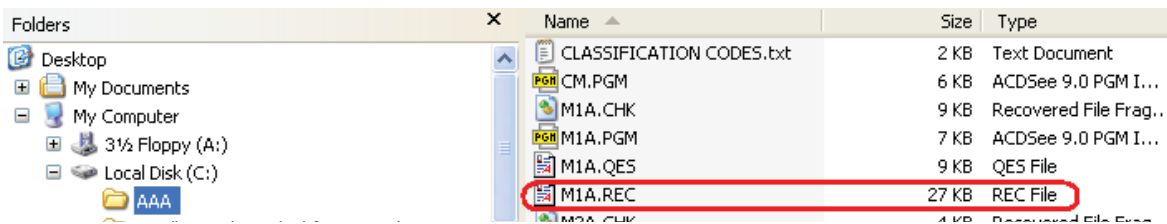
- assign a score to each task performed by a student based on the data which have been entered and stored in **M1A.REC** and **M2A.REC**;
- calculate the total score obtained by the student and the maximum total score that each student would obtain if s/he performed all tasks correctly;
- calculate scores for the IMCI case management steps such as “Assessment” and “Classification” (**M1A.PGM**) and “Identification of treatment”, “Assessment and identification of feeding problems” and “Advice on fluids and feeding” (**M2A.PGM**).

The **M1A.PGM** program is run on file **M1A.REC**; the **M2A.PGM** program is run on file **M2A.REC**. Follow these steps to run the first program and then repeat the same steps to run the second program.

- Go to the folder “AAA” in the C: drive, where you copied all the Epi6 files:

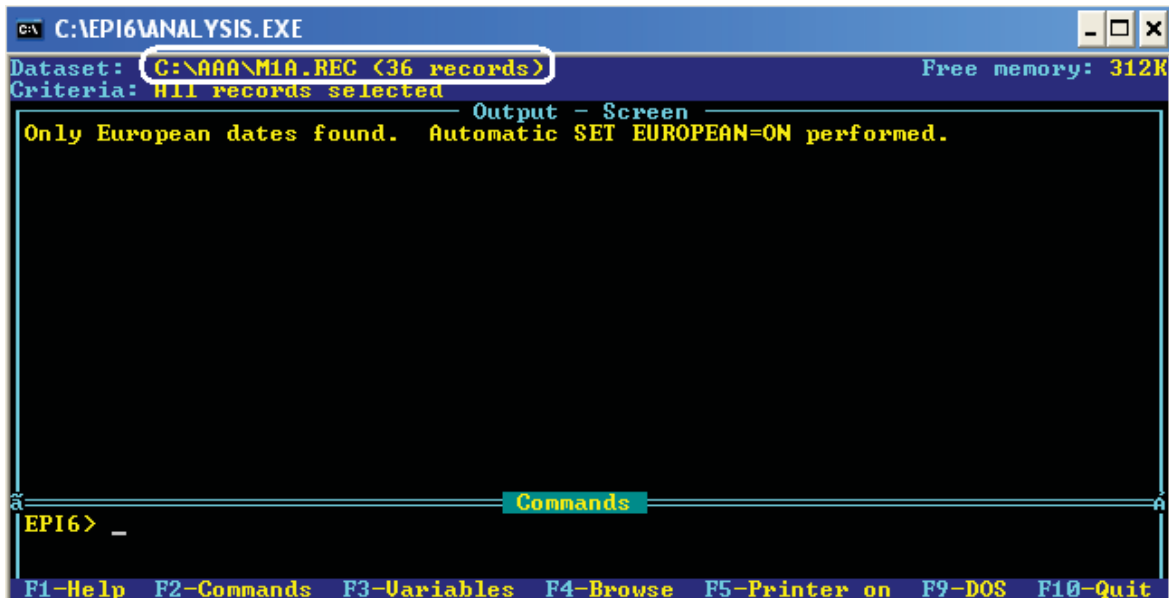


- Double click on the file **M1A.REC**:



A new window will appear and automatically stretch to full screen.

On the top of the screen, the following is displayed: “Dataset: C:\AAA\M1A.REC (36 records)”. This confirms that you have opened the file **M1A.REC** (located in “C:\AAA”) containing a total of 36 records.



This new window is divided in two main parts (circled in white in the picture below):

- the upper part (**Output – Screen**); and
- the lower part (**Commands**).

The screenshot shows a DOS-style window titled "C:\EPI6\ANALYSIS.EXE". The top status bar displays "Dataset: C:\AAA\M1A.REC (36 records)" and "Free memory: 312K". Below this, the text "Criteria: All records selected" is shown. The main area is split into two sections: "Output - Screen" (top) and "Commands" (bottom). The "Output - Screen" section contains the text "Only European dates found. Automatic SET EUROPEAN=ON performed." The "Commands" section shows the prompt "EPI6> _". A white box highlights the "Output - Screen" label, and another white box highlights the "Commands" label. At the bottom, a menu bar lists function keys: F1-Help, F2-Commands, F3-Variables, F4-Browse, F5-Printer on, F9-DOS, and F10-Quit.

The upper part will show the results ('output') of the execution of the commands that you will enter. As you type the command, this will be displayed in the lower part ("Commands"). The cursor is automatically placed in the "Commands" part, right after "EPI6>".

- Type "run", which is the command to run a program (you can use either case letters or caps):

This screenshot is similar to the previous one, but the "Commands" section now shows the prompt "EPI6> run" with a white box highlighting the word "run". The "Output - Screen" section remains the same, displaying "Only European dates found. Automatic SET EUROPEAN=ON performed." The rest of the window, including the status bar and menu bar, is identical to the previous screenshot.

- Press “Enter” to view the list of available program files;
- A small window opens inside the screen: move the cursor with the arrow keys to select the program file “M1A.PGM”:

```

C:\EPI6ANALYSIS.EXE
Dataset: C:\AAA\M1A.REC (36 records)      Free memory: 312K
Criteria: All records selected

Output - Screen
Only European dates found. Automatic SET EUROPEAN=ON performed.
.. \
cm.pgm
m1a.pgm
m2a.pgm
C:\AAA\*.PGM
mx.pgm
sample.pgm

Commands
EPI6> run
F1-Help F2-Commands F3-Variables F4-Browse F5-Printer on F9-DOS F10-Quit
  
```

- Press “Enter” to run the program.

The program runs very fast, taking a few seconds, and the message “**Program processing complete**” appears at the end of the process.

```

C:\EPI6.EXE
Dataset: C:\AAA\M1.REC (36 records)      Free memory: 146K
Criteria: All records selected           Time: 0.16 sec

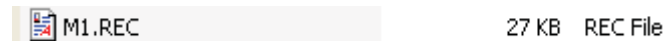
Output - Screen
3032 030140170 82.4254326 77.9!
10/06/2009 241 29201/06/200812210.00037.2212 12 12 121211 1111 41 421122282811
?
112212212113034112 4 6122      2 211 122212142      12221102411221616122110102
?
0102 010124166 74.72230302230301133303088 0 088 0 0303022202088 0 02230303330
?
30223030200200100.0324366 88.5!
10/06/2009 544 282      42218.00037.3212 12 12 121211 1111 37 342222282812
?
1      2 4112 4 611 212 1 6 811 122212142      1122212241112 816122110102
?
01011010104142 73.222303033303022      030      030      030 0 032 0204420203330303330
?
3032 030140190 73.7244332 73.5!
File closed. <Automatic ROUTE SCREEN>

Commands
EPI6> run
Program processing complete.
EPI6>
F1-Help F2-Commands F3-Variables F4-Browse F5-Printer on F9-DOS F10-Quit
  
```

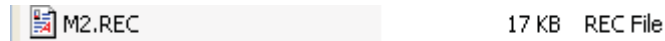
This program has assigned scores to clinical tasks and IMCI case management steps performed by each student for “Assessment” and “Classification” and generated the new, permanent file “M1.REC”. This new file contains these new data that can be used for the analysis.

- Press “**F10**” to close Epi6

The newly created data file **M1.REC** now appears in the folder “**AAA**”:



Repeat the same steps to calculate the scores for the IMCI case management steps of “Identification of treatment”, “Assessment and identification of feeding problems” and “Advice on fluids and feeding”. You will first double click on the file **M2A.REC** to open it and then run the program **M2A.PGM**. The newly created data file **M2.REC** will appear in the “**C:\AAA**” folder:

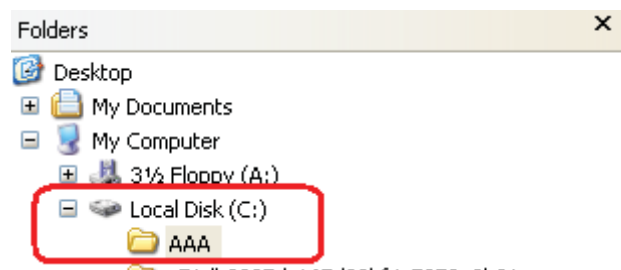


Describing the characteristics of the sample of sick children

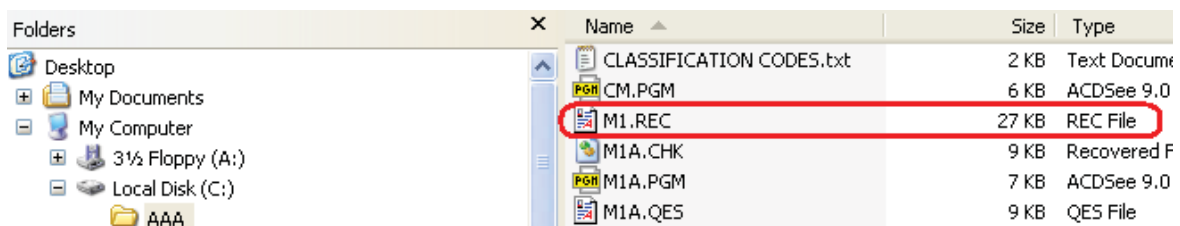
When presenting the findings, we would like to describe the characteristics of the sample of sick children who have been managed by the students, in terms of clinical conditions and their severity. This helps place the results in the right context. As the same child may sometimes be seen again by a different student to maximize the availability of conditions to which students are exposed on the day of the skill test, we will use here the term ‘exposures’ (or ‘cases’) instead of ‘children’. Information on the characteristics of the clinical ‘exposures’ helps give an idea of the difficulty of the skill test.

For this purpose, you will run the program “**SAMPLE.PGM**” on the new file “**M1.REC** as described here.

- Go to the folder “**AAA**” in the C: drive, where you have all the Epi6 files:



- Double click on the file **M1.REC** (that you have created by running the previous program “M1A.PGM”):



A new window will appear and automatically stretch to full screen.

On the top of the screen, the following is displayed: "**Dataset: C:\AAA\M1.REC (36 records)**". This confirms that you have opened the file **M1.REC** (located in "**C:\AAA**") containing a total of 36 records:

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)
Criteria: All records selected
Free memory: 313K
Output - Screen
  
```

- Type "**run**" with the keyboard, which is the Epi6 command to run a program (you can use either case letters or caps);

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)
Criteria: All records selected
Free memory: 313K
Output - Screen
Only European dates found. Automatic SET EUROPEAN=ON performed.

EPI6> run
  
```

Commands

F1-Help F2-Commands F3-Variables F4-Browse F5-Printer on F9-DOS F10-Quit

- You will need to locate the file "**SAMPLE.PGM**": press "**Enter**".

A small window opens inside the main screen, listing all the program files available.

- Move the cursor to select the program file "**SAMPLE.PGM**":

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)
Criteria: All records selected
Free memory: 313K
Output - Screen
Only European dates found. Automatic SET EUROPEAN=ON performed.

C:\AAA\*.PGM
.. \      m1a.pgm      my.pgm
cm.pgm    m2a.pgm      sample.pgm
  
```

- Press "**Enter**" to run the program "**SAMPLE.PGM**".

The program runs very fast and the message “**Program processing complete**” appears at the end of the process under the “**Commands**” section of the screen:

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)      Free memory: 264K
Criteria: All records selected
Output - SAMPLE.TXT

          CLASSIFICATION OF CASES WITH MALNUTRITION
No records SELECTed
Selection cleared.

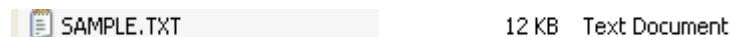
          CLASSIFICATION OF CASES WITH ANAEMIA
Current selection: DA<3
DA      | Freq  Percent  Cum.
-----|-----
2 ANAEMIA |    12  100.0%  100.0%
-----|-----
          Total |    12  100.0%
Selection cleared.

          Commands
EPI6> run
Program processing complete.
EPI6>
F1-Help  F2-Commands  F3-Variables  F4-Browse  F5-Printer on  F9-DOS  F10-Quit

```

- Press **F10** to exit Epi6.

The execution of this program has sent the output as a text file to the same folder which contains the other Epi6 files (**C:\AAA**) where you can now find the report file “**SAMPLE.TXT**”:



Being a text file, this file can be opened, viewed and printed with any computer.

Double click on the file name to open and view it.

The first item shown under the main title “**Characteristics of sample**” is “**AGE GROUPS**”:

CHARACTERISTICS OF SAMPLE

AGE GROUPS

BAGEG	Freq	Percent	Cum.
< 12 MONTHS	24	66.7%	66.7%
OLDER	12	33.3%	100.0%
Total	36	100.0%	

Frequency: no. of cases seen in each age group

The table, with the variable name “**BAGEG**”, shows two age groups: “**< 12 MONTHS**” with a count of 24 exposures (shown under the “**Freq**” column) and “**OLDER**” with a count of 12 exposures. This means that in this skill test, 24 students (66.7%) managed a child less than 12 months old and the remaining 12 students (33.3%) managed a child aged 12 months up to 5 years old. The percentage values are also shown in the table (under the “**Percent**” column) and refer to the total displayed in the last row (“**Total**”: 36)

The second item shown is “**CASES WITH GENERAL DANGER SIGNS**”.

CASES WITH GENERAL DANGER SIGNS

BGDS	Freq	Percent	Cum.
1 DANGER SIGNS	2	5.6%	5.6%
2 NO DANGER SIGNS	34	94.4%	100.0%
Total	36	100.0%	

This table shows that there were 2 cases (5.6%) with general danger signs (item “**1 DANGER SIGNS**”) and 34 (94.4%) with no general danger signs (item “**2 NO DANGER SIGNS**”).

Similarly, next table shows that the sample included 31 (86.1%) cases with cough and 5 (13.9%) with no cough:

CASES WITH COUGH

DCOU	Freq	Percent	Cum.
COUGH	31	86.1%	86.1%
NO COUGH	5	13.9%	100.0%
Total	36	100.0%	

Next table, on “**CLASSIFICATIONS OF COUGH**”, shows the distribution of the classifications in the sample in relation to cough or difficult breathing. So, out of 36 cases, 3 had a classification of “**SEVERE PNEUMONIA**”, 7 had “**PNEUMONIA**”, 21 “**NO PNEUMONIA**” (3+7+21=31 cases with cough or difficult breathing) and the remaining 5 did not have cough or difficult breathing (item “**4 NO COUGH**”):

CLASSIFICATIONS OF COUGH

FCOU	Freq	Percent	Cum.
1 SEVERE PNEUMONIA	3	8.3%	8.3%
2 PNEUMONIA	7	19.4%	27.8%
3 NO PNEUMONIA	21	58.3%	86.1%
4 NO COUGH	5	13.9%	100.0%
Total	36	100.0%	

The tables which follow in the file provide information on each main condition: e.g. the table on “**CASES WITH DIARRHOEA**” shows that there were 25 (69.4%) exposures with diarrhoea (with additional tables showing details for those with dehydration, persistent diarrhoea and dysentery), the table on “**CASES WITH THROAT PROBLEM**” shows that there were 17 (47.2%) exposures with a throat problem (with an additional table showing the distribution of classifications) and so on.

After those tables, the table on “**SEVERITY OF CONDITIONS**” shows that there were 4 cases (11.1%) with severe conditions (IMCI ‘pink row’ classification), 20 (55.6%) with moderate conditions (IMCI ‘yellow row’ classification) and 12 (33.3%) with mild conditions (IMCI ‘green row’ classification):

SEVERITY OF CONDITIONS

FRANK	Freq	Percent	Cum.
1 SEVERE	4	11.1%	11.1%
2 MODERATE	20	55.6%	66.7%
3 MILD	12	33.3%	100.0%
Total	36	100.0%	

Following that is the table reproduced below which shows that 3 of the 36 cases had only 1 condition, 4 had 2 conditions present in the same child, 15 had 3, 7 had 4 and finally 7 had five.

NUMBER OF CONDITIONS PRESENT IN THE CHILD WITH ONE SCORE FOR EACH CONDITION IRRESPECTIVE OF SEVERITY

MANY	Freq	Percent	Cum.
1	3	8.3%	8.3%
2	4	11.1%	19.4%
3	15	41.7%	61.1%
4	7	19.4%	80.6%
5	7	19.4%	100.0%
Total	36	100.0%	

The combination of the information on severity and number of conditions in this test suggests that this was a test of low moderate difficulty, given that one third of exposures were represented by mild conditions but two thirds had 3 or more conditions at the same time.

Under “**Additional details**”, further information is provided in the last set of tables for those interested in the classification of the cases by condition. For example, under ‘**CLASSIFICATION OF CASES WITH COUGH**’, the first of such tables, the report shows that 3 (9.7%) of the 31 cases with cough or difficult breathing had ‘**SEVERE PNEUMONIA**’, 7 (22.6%) had ‘**PNEUMONIA**’ and 21 (67.7%) had ‘**NO PNEUMONIA**’.

ADDITIONAL DETAILS

CLASSIFICATIONS OF CASES WITH COUGH

Current selection: ECOU<4

FCOU	Freq	Percent	Cum.
1 SEVERE PNEUMONIA	3	9.7%	9.7%
2 PNEUMONIA	7	22.6%	32.3%
3 NO PNEUMONIA	21	67.7%	100.0%
Total	31	100.0%	

This is similar to the table presented earlier, but while the previous table referred to all the cases managed by the students (36), this table provides the breakdown only for those who had the condition (31 cases with cough or difficult breathing). This is why the percentage values differ between the two tables.

The Evaluation guide shows how all these results can be presented in a table in the section “Analysis and presentation of findings – Quantitative findings”.

Percentage scores for assessment and classification

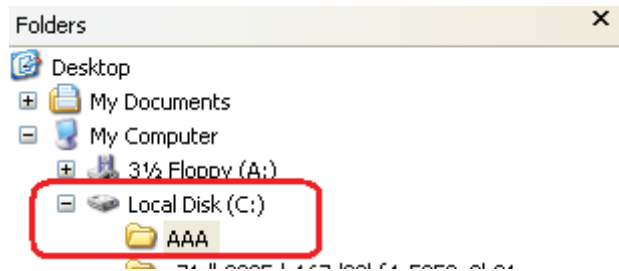
The key indicator of this analysis is the “**Case management percentage score**”, which is the proportion of students taking the test who obtained the “passing score” in case management, i.e. the agreed percentage of the maximum score allotted to the test. This is calculated in three steps, as described below:

1. First, you will calculate the percentage score for the steps of assessment and classification;
2. Next, you will calculate the percentage score for the steps of identification of treatment, assessment and identification of feeding problems and advice on fluids and feeding;
3. Finally, you will calculate the overall indicator of the percentage score for case management, based on 1 and 2 above.

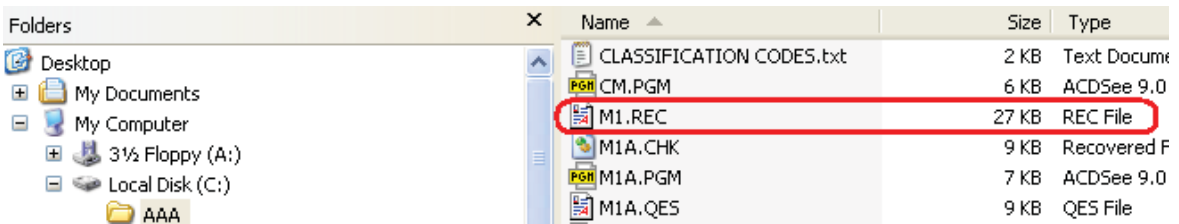
The first step is described in this section. To calculate the percentage scores for the assessment and classification steps of the IMCI case management process, you will run the program **CM.PGM** on the file **M1.REC**.

This is done similarly to what you have done to run the previous program “Sample.PGM” on the same file.

- Go to the folder “AAA” in the C: drive, where you have all the Epi6 files:



- Double click on the file **M1.REC**:

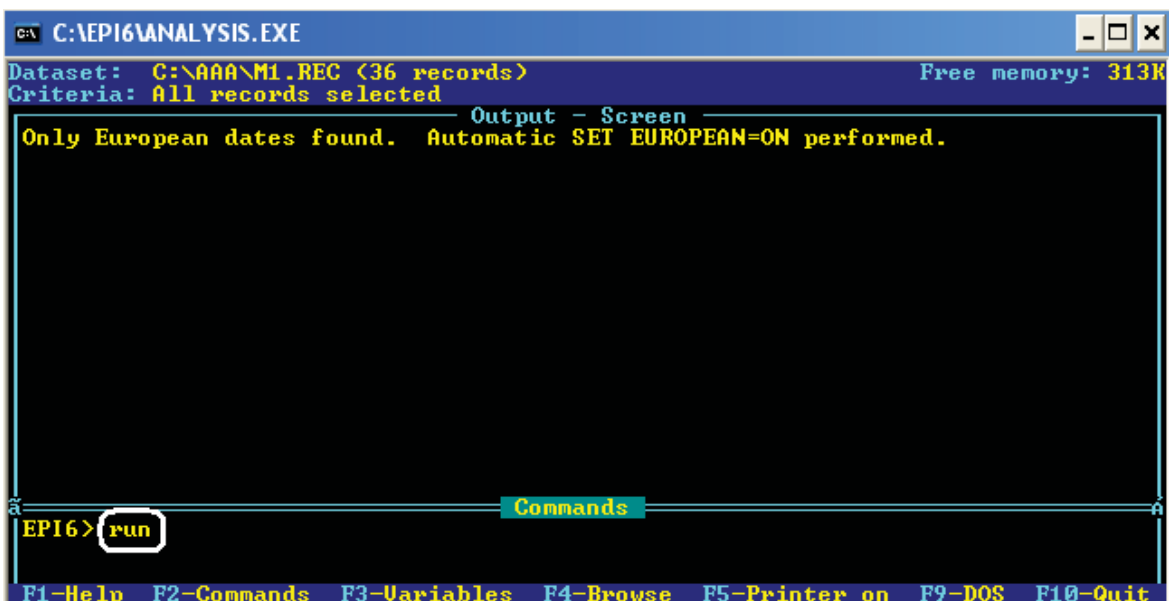


A new window will appear and automatically stretch to full screen.

On the top of the screen, the following is displayed: “Dataset: C:\AAA\M1.REC (36 records)”. This confirms that you have opened the file **M1.REC** (located in “C:\AAA”) containing a total of 36 records:



- Type “run” with the keyboard:



- Press “Enter” to open the list of all the available program files;
- Move the cursor to select the program file “CM.PGM”:

The screenshot shows the EPI6 program window with the following text:

```

C:\> C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)      Free memory: 313K
Criteria: All records selected
Output - Screen
Only European dates found. Automatic SET EUROPEAN=ON performed.
C:\AAA\*.PGM
m1a.pgm
m2a.pgm
cm.pgm
mx.pgm
sample.pgm
  
```

- Press “Enter” to run the program.

The program runs very fast and the message “Program processing complete” appears at the end of the process:

The screenshot shows the EPI6 program window with the following text:

```


C:\> C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)      Free memory: 273K
Criteria: All records selected           Time: 0.05 sec
Output - CM.TXT
Division by zero, result set to 0
Division by zero, result set to 0
Division by zero, result set to 0
Division by zero, result set to 0
Division by zero, result set to 0
Division by zero, result set to 0

AEARPER | Freq Percent Cum.
-----|-----|-----|-----
 0.0    |   13  36.1% 36.1%
 75.0   |    3   8.3% 44.4%
 81.8   |    1   2.8% 47.2%
100.0   |   19  52.8% 100.0%
-----|-----|-----|-----
 Total  |   36 100.0%

Commands
EPI6> run
Program processing complete.
EPI6>
F1-Help F2-Commands F3-Variables F4-Browse F5-Printer on F9-DOS F10-Quit
  
```

- Press **F10** to exit Epi6.

The execution of this program has sent the output as a text file to the same folder which contains the M1.REC file and all other Epi6 files (C:\AAA), where you can now find also this newly generated report file “CM.TXT”:

 CM.TXT 16 KB Text Document

Being a text file, this file can be opened, viewed and printed with any computer.

Double click on the file name to open and view it.

The first table shows the “PERCENTAGE SCORE FOR ASSESSMENT” obtained by the students, arranged from the lowest to the highest score.

PERCENTAGE SCORE FOR ASSESSMENT

Percentage scores obtained by students		ASSPER	Freq	Percent	Cum.
Lowest score ⇒	40.7		1	2.8%	2.8%
	48.5		1	2.8%	5.6%
	50.0		1	2.8%	8.3%
	52.1		1	2.8%	11.1%
	52.9		1	2.8%	13.9%
	55.7		1	2.8%	16.7%
	57.1		1	2.8%	19.4%
	60.3		1	2.8%	22.2%
	62.3		1	2.8%	25.0%
	62.7		1	2.8%	27.8%
	62.8		1	2.8%	30.6%
	63.9		1	2.8%	33.3%
	64.9		1	2.8%	36.1%
	66.3		1	2.8%	38.9%
	67.3		1	2.8%	41.7%
	67.6		1	2.8%	44.4%
	67.9		1	2.8%	47.2%
	70.2		1	2.8%	50.0%
	70.5		1	2.8%	52.8%
	73.1		1	2.8%	55.6%
	73.2		1	2.8%	58.3%
	73.5		1	2.8%	61.1%
	74.7		1	2.8%	63.9%
	75.8		1	2.8%	66.7%
	78.1		1	2.8%	69.4%
	80.6		1	2.8%	72.2%
	80.8		1	2.8%	75.0%
	81.0		1	2.8%	77.8%
	83.1		1	2.8%	80.6%
	84.6		1	2.8%	83.3%
	85.2		1	2.8%	86.1%
	86.4		1	2.8%	88.9%
	93.2		1	2.8%	91.7%
	96.3		1	2.8%	94.4%
Highest score ⇒	97.7		2	5.6%	100.0%
Total			36	100.0%	

Frequency: no. of students who obtained the percentage score shown to the left

85% cut-off level: 6 students with a score of 85% or more

For example, one of the 36 students obtained 40.7% of the total score, which is the lowest score obtained in this test. Another student obtained 48.5%, 1 student 50% and so on; 2 students obtained 97.7% (the highest score obtained in this test). No student obtained 100%, meaning no student performed all the required assessment tasks correctly. If we had set a cut-off level of 85% for student performance on assessment (see items in bold above), we would now state that 6 of the 36 students obtained a percentage score of 85% or more in performing assessment.

Similarly, the next table shows the percentage score obtained by the students for classification.

PERCENTAGE SCORE FOR CLASSIFICATION

CLAPER | Freq Percent Cum.

CLAPER	Freq	Percent	Cum.
35.3	4	11.1%	11.1%
35.7	1	2.8%	13.9%
42.1	1	2.8%	16.7%
47.1	2	5.6%	22.2%
52.9	1	2.8%	25.0%
55.0	1	2.8%	27.8%
57.9	1	2.8%	30.6%
68.8	2	5.6%	36.1%
70.0	3	8.3%	44.4%
70.6	2	5.6%	50.0%
73.7	1	2.8%	52.8%
82.4	3	8.3%	61.1%
85.0	1	2.8%	63.9%
86.4	1	2.8%	66.7%
90.9	1	2.8%	69.4%
100.0	11	30.6%	100.0%
Total	36	100.0%	

85% cut-off level: 14 students with a score of 85% or more

In this test, 11 out of the 36 students obtained a 100% score, meaning they classified the child correctly for all the conditions present. If we had set the cut-off level of 85% for student performance on classification, we would now state that 14 of the 36 students obtained a percentage score of 85% or more in classifying the child's conditions.

Finally, the third table shows the percentage score obtained by the students for both assessment and classification.

PERCENTAGE SCORE FOR ASSESSMENT AND CLASSIFICATION

ASSCLAPER	Freq	Percent	Cum.
41.5	1	2.8%	2.8%
42.2	1	2.8%	5.6%
43.0	1	2.8%	8.3%
43.1	1	2.8%	11.1%
48.6	1	2.8%	13.9%
50.2	1	2.8%	16.7%
58.9	1	2.8%	19.4%
59.5	1	2.8%	22.2%
60.7	1	2.8%	25.0%
60.8	1	2.8%	27.8%
61.4	1	2.8%	30.6%
63.3	1	2.8%	33.3%
66.0	1	2.8%	36.1%
66.7	1	2.8%	38.9%
68.4	1	2.8%	41.7%
72.8	1	2.8%	44.4%
73.5	1	2.8%	47.2%
74.1	1	2.8%	50.0%
74.7	1	2.8%	52.8%
76.0	1	2.8%	55.6%
76.3	1	2.8%	58.3%
76.6	1	2.8%	61.1%
77.9	1	2.8%	63.9%
78.4	1	2.8%	66.7%
79.7	1	2.8%	69.4%
84.7	1	2.8%	72.2%
86.5	1	2.8%	75.0%
88.0	1	2.8%	77.8%
88.5	1	2.8%	80.6%
91.4	1	2.8%	83.3%
92.3	1	2.8%	86.1%
92.6	1	2.8%	88.9%
94.6	1	2.8%	91.7%
98.2	1	2.8%	94.4%
99.0	2	5.6%	100.0%
Total	36	100.0%	

85% cut-off level: 10 students with a score of 85% or more

If we had set a cut-off level of 85% for student performance on assessment and classification, we would now state that 10 of the 36 students obtained a percentage score of 85% or more in assessing and classifying a sick child.

After the tables presenting the results on the overall indicators on assessment and classification, the next tables of the report show the details of the assessment of each condition. For example, under “**ASSESSMENT OF INDIVIDUAL CONDITIONS**”, the first table (“**Danger signs percentage score**”) shows the percentage scores obtained by students for the assessment of general danger signs. This task must be performed in all cases, so the denominator is all the 36 students observed. As stated in the title, a score of 100% means all general danger signs assessed correctly. “ADSPER” is the variable name given to this analysis item which refers to the percentage score for general danger signs.

ASSESSMENT OF INDIVIDUAL CONDITIONS

A SCORE OF 100% MEANS CONDITION
CORRECTLY ASSESSED

DANGER SIGNS PERCENTAGE SCORE (ADSPER)

ADSPER	Freq	Percent	Cum.
0.0	2	5.6%	5.6%
23.5	1	2.8%	8.3%
54.5	2	5.6%	13.9%
66.7	6	16.7%	30.6%
70.6	2	5.6%	36.1%
77.3	1	2.8%	38.9%
100.0	22	61.1%	100.0%
Total	36	100.0%	

So, 2 of the 36 students obtained 0% (i.e. did not assess the child for general danger signs at all), one obtained 23.5%, two obtained 54.5%, and so on. As 22 students obtained 100%, this means that 22 (61.1%) of the 36 students observed correctly assessed the child for all the general danger signs.

The next table refers only to those students who assessed a child with cough or difficult breathing. So, the denominator is the 31 students who assessed sick children with cough or difficult breathing in the test.

PERCENTAGE SCORE FOR THOSE WITH COUGH ONLY

Current selection: COUGHMO=1

ACOPER	Freq	Percent	Cum.
35.7	1	3.2%	3.2%
42.9	1	3.2%	6.5%
50.0	3	9.7%	16.1%
71.4	2	6.5%	22.6%
78.6	1	3.2%	25.8%
92.9	1	3.2%	29.0%
100.0	22	71.0%	100.0%
Total	31	100.0%	

The table shows that 22 (71%) of the 31 students who managed a child with cough or difficult breathing performed all the assessment tasks for children with this problem correctly.

The next table shows that 6 (24%) of the 25 students who managed a child with diarrhoea performed all the assessment tasks for diarrhoea correctly:

PERCENTAGE SCORE FOR THOSE WITH DIARRHOEA ONLY

Current selection: DIARMO=1

ADIAPER	Freq	Percent	Cum.
64.7	4	16.0%	16.0%
70.6	1	4.0%	20.0%
76.5	4	16.0%	36.0%
88.2	10	40.0%	76.0%
100.0	6	24.0%	100.0%
Total	25	100.0%	

The tables which follow in the report provide similar information on the assessment of children with throat problem, fever and ear problem, the assessment of all children for nutritional status and anaemia and immunization status, and the assessment of vitamin A status for those eligible.

The next part of the report provides similar information on the classification of individual conditions. So, the table below on “**Classification of general danger signs – Danger signs percentage score**” shows that 24 (66.7%) of the 36 students obtained a percentage score of 100% and, thus, classified the child correctly for general danger signs.

CLASSIFICATION OF INDIVIDUAL CONDITIONS

A SCORE OF 100% MEANS CONDITION
CORRECTLY CLASSIFIED

CLASSIFICATION OF GENERAL DANGER SIGNS

DANGER SIGNS PERCENTAGE SCORE (VDSPER)

Current selection: EGDS<3

VDSPER	Freq	Percent	Cum.
0.0	12	33.3%	33.3%
100.0	24	66.7%	100.0%
Total	36	100.0%	

The next table refers to the classification of children with cough or difficult breathing (“**Classification of cough – Cough percentage score**”): 23 (74.2%) of the 31 students who assessed a child with cough or difficult breathing classified the child correctly for this problem.

CLASSIFICATION OF COUGH**COUGH PERCENTAGE SCORE (VCOUPER)**

Current selection: ECOU<7

VCOUPER | Freq Percent Cum.

VCOUPER	Freq	Percent	Cum.
0.0	8	25.8%	25.8%
100.0	23	74.2%	100.0%
Total	31	100.0%	

The tables which follow in the report provide information on classification of children with diarrhoea—and, among them, of dehydration, persistent diarrhoea and dysentery—, throat problem, ear problem, fever, nutritional status and anaemia.

The last part of the report provides additional details for those interested in student performance in the assessment of each condition as relevant to the child assessed, whether the child had or did not have the condition. In fact, the IMCI guidelines require that the student ask about the presence of each of the main symptoms (cough or difficult breathing, diarrhoea, fever, sore throat, ear problem) in each child, so this task is relevant to each child; if the child has any of those symptoms, then the student should enter the related “box” and perform all the required tasks to further assess each condition present.

For example, the table below shows that 25 (69.4%) of the 36 students correctly performed the assessment tasks in relation to the main symptom of cough or difficult breathing (e.g. they asked about the presence of cough or difficult breathing and, if present, assessed the child for this main symptom). For more information about the indicators, their definitions and meaning refer to the Evaluation guide.

ADDITIONAL DETAILS

**PERFORMANCE RELATED TO ALL ASSESSMENT TASKS
IN ANY SICK CHILD
DENOMINATOR IS ALL STUDENTS**

**COUGH PERCENTAGE SCORE (ACOPER)
FOR ALL**

ACOPER | Freq Percent Cum.

ACOPER	Freq	Percent	Cum.
0.0	1	2.8%	2.8%
35.7	1	2.8%	5.6%
42.9	1	2.8%	8.3%
50.0	4	11.1%	19.4%
71.4	2	5.6%	25.0%
78.6	1	2.8%	27.8%
92.9	1	2.8%	30.6%
100.0	25	69.4%	100.0%
Total	36	100.0%	

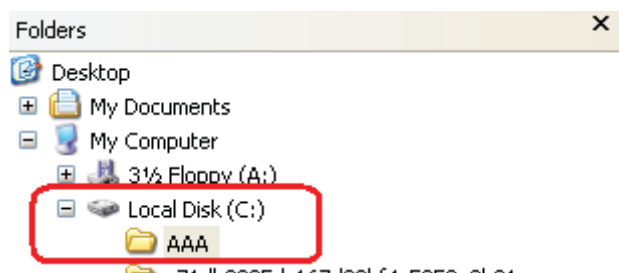
Analysis of individual assessment tasks

Another program produces information on student performance for each assessment task. This enables understanding about which tasks students had more problems with and, in this way, provides useful feedback information to teachers.

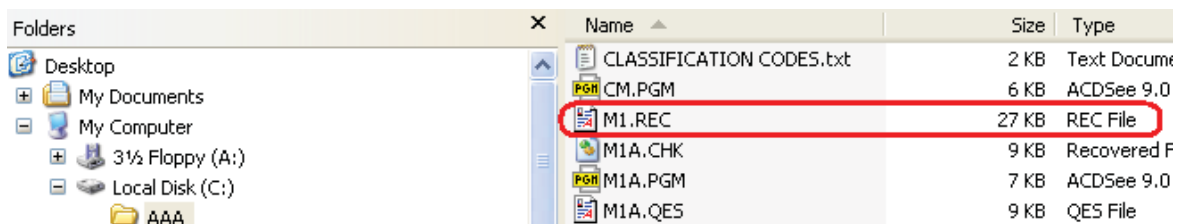
To produce this report, you will run the program “**MX.PGM**” on the file **M1.REC**.

This is done similarly to what you have done to run the previous programs, “**SAMPLE.PGM**” and “**CM.PGM**”, on the same file.

- Go to the folder “**AAA**” in the C: drive, where you have all the Epi6 files:



- Double click on the file **M1.REC**:



A new window will appear and automatically stretch to full screen.

On top of the screen, the following is displayed: “**Dataset: C:\AAA\M1.REC (36 records)**”. This confirms that you have opened the file **M1.REC** (located in “**C:\AAA**”) containing a total of 36 records:



- Type “run” with the keyboard:

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)      Free memory: 313K
Criteria: All records selected
Output - Screen
Only European dates found. Automatic SET EUROPEAN=ON performed.

EPI6> run
F1-Help  F2-Commands  F3-Variables  F4-Browse  F5-Printer on  F9-DOS  F10-Quit
  
```

- Press “Enter” to open the list of available programs;
- Move the cursor to select the program file “MX.PGM”:

```

C:\EPI6\ANALYSIS.EXE
Dataset: C:\AAA\M1.REC (36 records)      Free memory: 313K
Criteria: All records selected
Output - Screen
Getting input from C:\EPI6\CONFIG.EPI
N1 C:\AAA\*.PGM
N  ..\      m1a.pgm   mx.pgm   score.pgm
O  cm.pgm   m2a.pgm   sample.pgm temp.pgm
E
=====> run
  
```

- Press “Enter” to run the program.

The program runs very fast and the message **Program processing complete** appears at the end of the process:

The screenshot shows a DOS-style window titled "C:\EPI6\ANALYSIS.EXE". The window displays the following information:

- Dataset: C:\AAA\M1.REC (36 records)
- Criteria: All records selected
- Free memory: 252K
- Time: 0.00 sec
- Output: MX.TXT

A summary table is shown:

Total	4	7	11
	36.4%	63.6%	

Below the table, it says "Selection cleared." and "ASKS ABOUT OTHER PROBLEMS".

A second table is displayed:

PROB	Freq	Percent	Cum.
1	14	38.9%	38.9%
2	22	61.1%	100.0%
Total	36	100.0%	

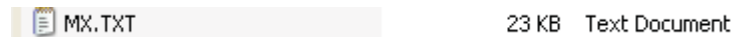
At the bottom, a "Commands" window shows the command prompt:

```
EPI6> run
Program processing complete.
EPI6>
```

Navigation keys are listed at the bottom: F1-Help, F2-Commands, F3-Variables, F4-Browse, F5-Printer on, F9-DOS, F10-Quit.

- Press **F10** to exit Epi6.

The execution of this program has sent the output as a text file to the same folder which contains the M1.REC file and all other Epi6 files (C:\AAA), where you can now see also this newly generated report file **"MX.txt"**:



Being a text file, this file can be opened, viewed and printed with any computer.

Double click on the file name to open and view it.

The first series of tables refers to students' checking each of the general danger signs properly ("**General danger signs checked properly**"), namely ability to drink, vomiting everything, history of convulsions or convulsing now and lethargy if child sleepy. At the end, there is a summary table for students' checking for all these signs.

DETAILS BY INDIVIDUAL ASSESSMENT TASK UNLESS OTHERWISE STATED 1=YES 2=NO 8=NOT APPLICABLE

GENERAL DANGER SIGNS CHECKED PROPERLY

ABLE TO DRINK (TDS0)

TDS0	Freq	Percent	Cum.
1	30	83.3%	83.3%
2	6	16.7%	100.0%
Total	36	100.0%	

So, 30 (83.3%) of the 36 students in the test checked for ability to drink correctly (code "1"=Yes).

VOMITING EVERYTHING (TDS1)

TDS1	Freq	Percent	Cum.
1	30	83.3%	83.3%
2	6	16.7%	100.0%
Total	36	100.0%	

The same number of students (30) checked whether the child had the general danger sign “vomiting everything”.

CONVULSIONS

CON	Freq	Percent	Cum.
1	28	77.8%	77.8%
2	8	22.2%	100.0%
Total	36	100.0%	

28 students (77.8%) checked whether the child had a history of convulsions related to this episode of illness or had convulsions at the time of the examination.

LETHARGY IF CHILD SLEEPY

TDS2	Freq	Percent	Cum.
1	2	5.6%	5.6%
2	2	5.6%	11.1%
8	32	88.9%	100.0%
Total	36	100.0%	

Two students checked whether a child who was sleepy was actually lethargic (code “1”=**Yes**). Two other students who saw a child who was sleepy at the time of the examination, did not check for the sign (code “2”=**No**). The third code in the table, code “8” (“**not applicable**”), refers to the 32 children who were awake at the time of the examination and in whom, therefore, lethargy did not need to be checked. So, 2 of the 4 students who assessed a child who was sleepy checked for lethargy.

ALL GDS CHECKED PROPERLY (TDS)

TDS	Freq	Percent	Cum.
1	22	61.1%	61.1%
2	14	38.9%	100.0%
Total	36	100.0%	

Overall, 22 (61.1%) of the 36 students checked for all the relevant general danger signs in the child they managed. This is the same number that was shown in the table on “**ASSESSMENT OF INDIVIDUAL CONDITIONS - DANGER SIGNS PERCENTAGE SCORE**” in the previous report (**CM.TXT**).

Similarly, the report in the “**MX.TXT**” file provides details about each other assessment task performed by the students.

**Case management percentage score
and percentage scores for identification of treatment, assessment and identification of
feeding problems, and advice on fluids and feeding**

If the teaching program includes only assessment and classification of a sick child, the evaluation will look only at these steps: the overall proxy indicator for student case management skills will in this case be the percentage score for assessment and classification, as described before (**CM.TXT**). All the data will have been entered and stored only in the data file “**M1A.rec**”. There will be no data file “**M2A.REC**”.

If the teaching program covers also the other steps of case management (i.e. “Identification of treatment”, “Identification of feeding problems” and “Advice on fluids and feeding”), the related data will have been entered and stored in file “**M2A.REC**” (as you practised earlier when entering the data for student 45) and you will have run the program “**M2A.PGM**” on the file “**M2A.REC**” to generate the file “**M2.REC**” (as described earlier under “Scoring tasks and steps”). You will need then to carry out a few more steps, as described below, to combine all the indicators into one overall “case management percentage score” indicator and generate the final report.

The following steps will generate an intermediate file containing the results on the percentage scores on treatment, feeding and advice on home care:

- double click on the file “**M2.REC**” that you have just obtained as described above;

- type **run** and press “Enter” to view the list of available programs:

```

Output - Screen
-----
C:\AAA\*.PGM
.. \      m1a.pgm      mx.pgm      score.pgm
cm.pgm    m2a.pgm      sample.pgm  temp.pgm
-----
EPI6> run
  
```

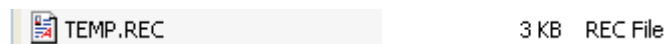
- select “**TEMP.PGM**” and press “Enter”. The program runs fast and, once finished, shows the message “**Programme processing complete**”:

```

Commands
-----
EPI6> run
Programme processing complete.
EPI6>
F1-Help  F2-Commands  F3-Variables  F4-Browse  F5-Printer on  F9-DOS  F10-Quit
  
```

- press **F10** to exit Epi6.

A new file has been generated, called “**TEMP.REC**” (which is located in the “**C:\AAA**” folder):



- Next, double click on the file “**M1.REC**”;
- Type **RELATE ID** and press “Enter” to view the list of available data files (*.REC):

```

Output - Screen
-----
Getting input from C:\EPI6\CONFIG.EPI
C:\AAA\*.REC
.. \      m1a.rec      m2a.rec
m1.rec    m2.rec      temp.rec
-----
=====> RELATE ID
-----
Program processing complete.
EPI6> RELATE ID
F1-Help  F2-Commands  F3-Variables  F4-Browse  F5-Printer on  F9-DOS  F10-Quit
  
```

- select the file “**TEMP.REC**” and press “**Enter**” to link the student records of file **M1.REC** to the same student records of file “**TEMP.REC**” through the student ID code into one merged working file;
- type **run** and press “**Enter**” to view the list of available programs (*.PGM):

```

Output - Screen
Getting input from C:\EPI6\CONFIG.EPI
C:\AAA\*.PGM
.. \      m1a.pgm      score.pgm
cm.pgm   m2a.pgm      mx.pgm
sample.pgm      temp.pgm

=====> RELATE ID
=====> RUN

Commands
EPI6> RELATE ID
EPI6> RUN
F1-Help  F2-Commands  F3-Variables  F4-Browse  F5-Printer on  F9-DOS  F10-Quit

```

- select “**SCORE.PGM**” and press “**Enter**” ”; the program runs fast and, once finished, shows the message “**Programme processing complete**”:


```

Commands
EPI6> run
Programme processing complete.
EPI6>
F1-Help  F2-Commands  F3-Variables  F4-Browse  F5-Printer on  F9-DOS  F10-Quit

```

- Press **F10** to exit Epi6.

A new report file has been generated, called “**SCORE.TXT**” (which is located in **C:\AAA** folder):

 SCORE.TXT 6 KB Text Document

Double click on this file to view the report. It will show the percentage scores obtained by the students for CASE MANAGEMENT, ASSESSMENT, CLASSIFICATION, TREATMENT, HOME CARE and FEEDING (the latter only for those students who have managed cases with no severe classification and less than 2 years old). The tables are read as explained earlier in relation to the tables of the report **CM.TXT** (assessment and classification percentage scores).

For example, here is the “Case management percentage score” table:

CASE MANAGEMENT PERCENTAGE SCORE

SCOREPER	Freq	Percent	Cum.
34.6	1	2.8%	2.8%
37.5	1	2.8%	5.6%
41.7	1	2.8%	8.3%
45.9	1	2.8%	11.1%
48.8	1	2.8%	13.9%
49.9	1	2.8%	16.7%
54.0	1	2.8%	19.4%
54.5	1	2.8%	22.2%
55.5	1	2.8%	25.0%
56.6	1	2.8%	27.8%
56.8	1	2.8%	30.6%
59.8	1	2.8%	33.3%
61.9	1	2.8%	36.1%
62.2	1	2.8%	38.9%
62.4	1	2.8%	41.7%
64.2	1	2.8%	44.4%
65.3	1	2.8%	47.2%
67.2	1	2.8%	50.0%
70.7	1	2.8%	52.8%
74.1	1	2.8%	55.6%
76.8	1	2.8%	58.3%
77.7	1	2.8%	61.1%
78.2	1	2.8%	63.9%
79.3	1	2.8%	66.7%
81.1	1	2.8%	69.4%
81.5	1	2.8%	72.2%
82.5	1	2.8%	75.0%
86.9	1	2.8%	77.8%
88.4	1	2.8%	80.6%
89.3	1	2.8%	83.3%
89.7	1	2.8%	86.1%
93.2	1	2.8%	88.9%
94.0	1	2.8%	91.7%
98.5	1	2.8%	94.4%
99.2	1	2.8%	97.2%
99.2	1	2.8%	100.0%
Total	36	100.0%	

If we had set a cut-off level of 85% for student performance on case management, we would now state that 9 of the 36 students obtained a percentage score of 85% or more in the management of a sick child.

Reading Epi6 data files in EPIINFO™ (for Windows)

The data files (*.rec) of Epi6 can be imported (“read”) in Epiinfo™ (for Windows) and saved in many other formats which make it easy to import them in other programs if those analysing the data are more familiar with them.

Epi Info™ (for Windows) can be downloaded from the CDC web site at:

<http://www.cdc.gov/epiinfo/downloads.htm> (accessed on 10 May 2010):

The web site provides clear instructions to download and install the program.

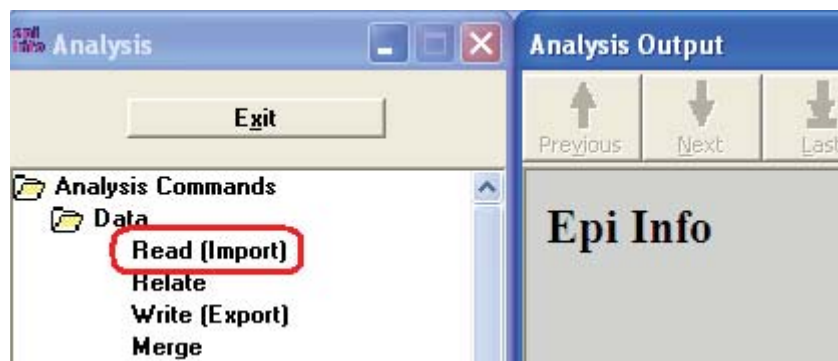
- After installation, double click on the program icon to launch it:



The menu page appears: click on “Analyze Data”:



- On the left menu, on top, click on “Read (Import)”:



- The following window is displayed:

READ

Current Project
C:\Epi_Info\Sample.mdb

Data Formats
Epi 2000

Data Source
C:\Epi_Info\Sample.mdb

Show
 Views All

Views
inetv_1
recgridRmeningitisImmunization
TMPLNK_1
viewADDFull
viewAgeWithCount
viewBabyBloodPressure
viewEpi1
viewEpi10

Change Project Save Only OK
Clear Help Cancel

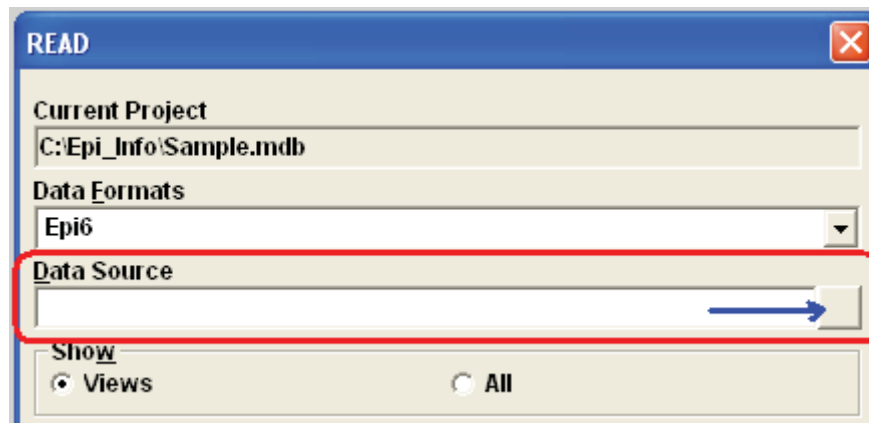
- In the section on “Data Formats” (circled in red above), click on the drop down list and select “Epi6”:

Data Formats

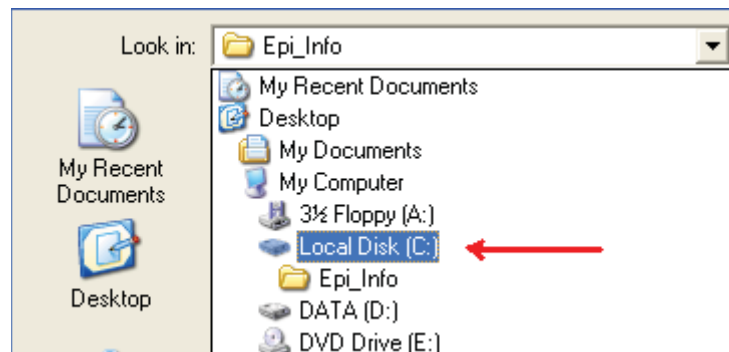
Epi 2000

Epi 2000
Epi6
Epi6 Direct Read
Excel 3.0
Excel 4.0
Excel 5.0
Excel 8.0
FoxPro 2.0
recgridRmeningitisImmunization

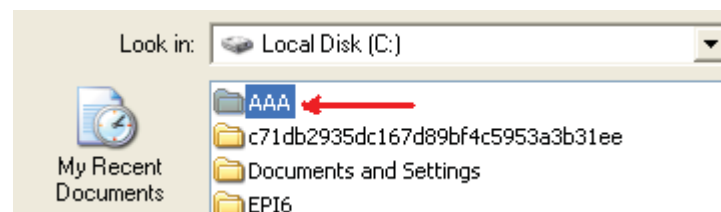
- Next, in the “**Data Source**” section, click on the small box to the right (see blue arrow in the picture below) to find the folder where the Epi6 files are. We placed them under “**C:\AAA**”:



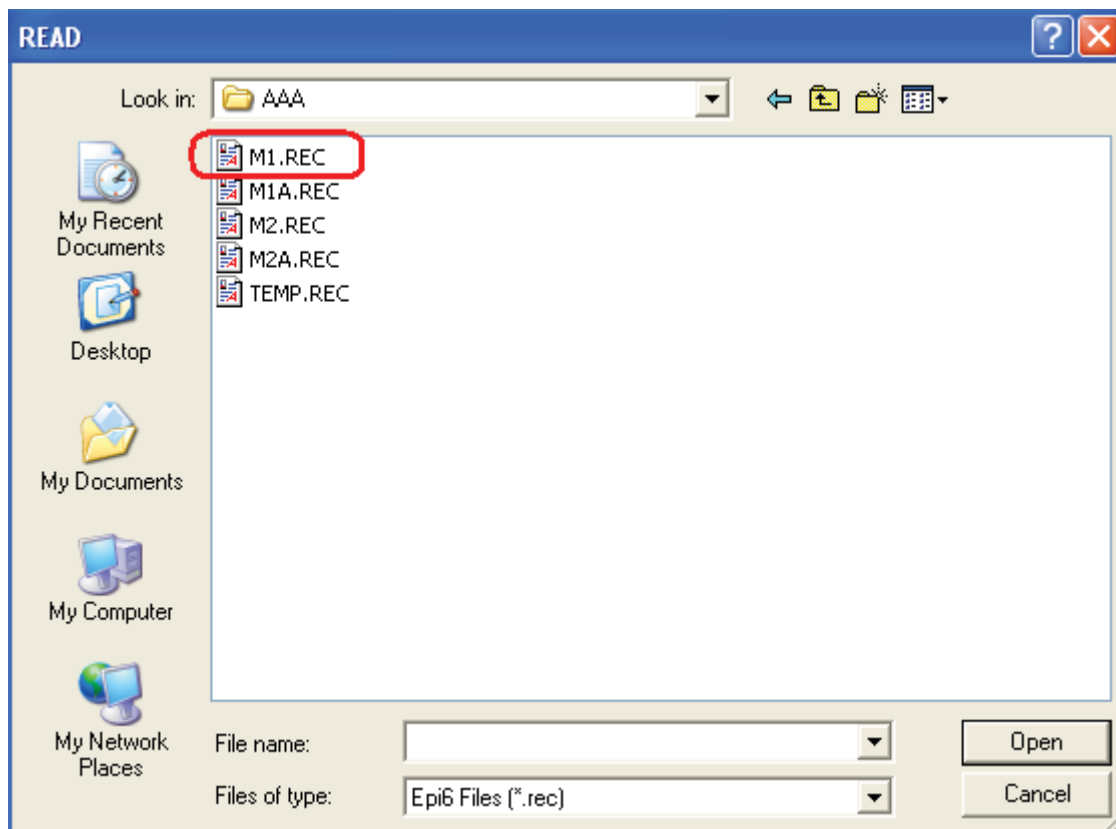
- In the new window which opens, select drive “**Local Disk (C:)**”



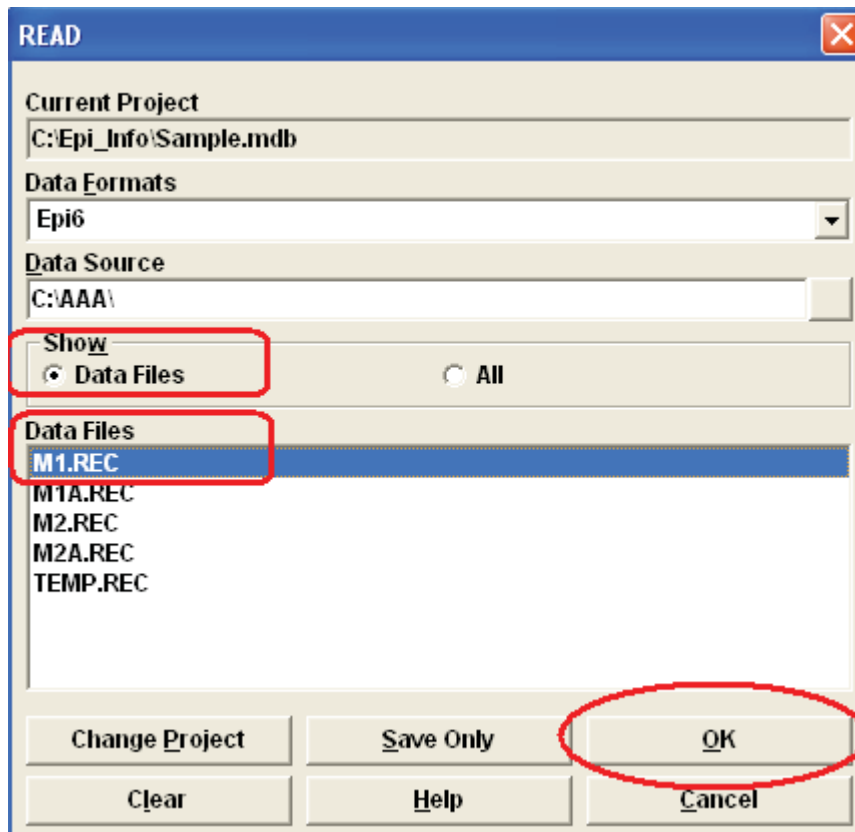
- Next, select and double click on the folder “**AAA**” where the Epi6 data files are:



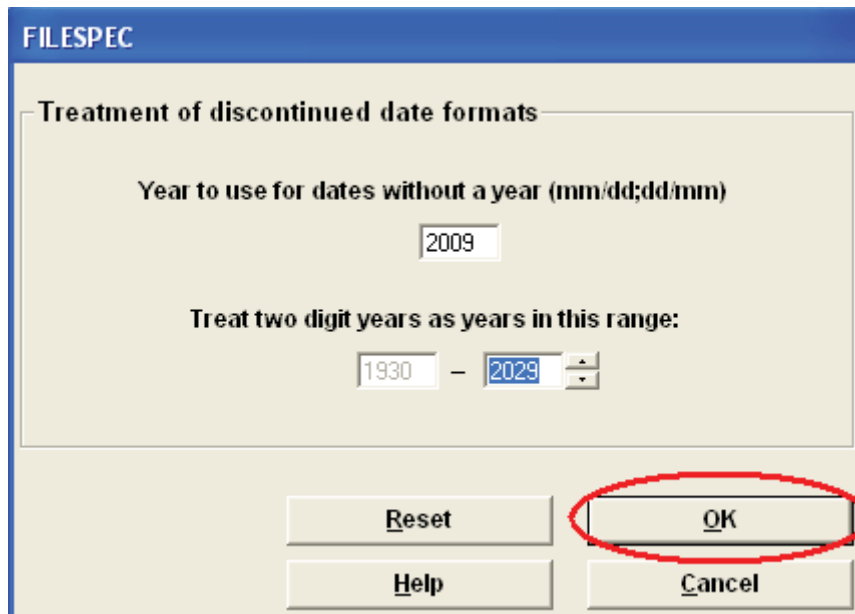
- The list of all the Epi6 data files (*.REC) in folder “AAA” is shown. Double click on the file “M1.REC”, which contains the data on student assessment and classification:



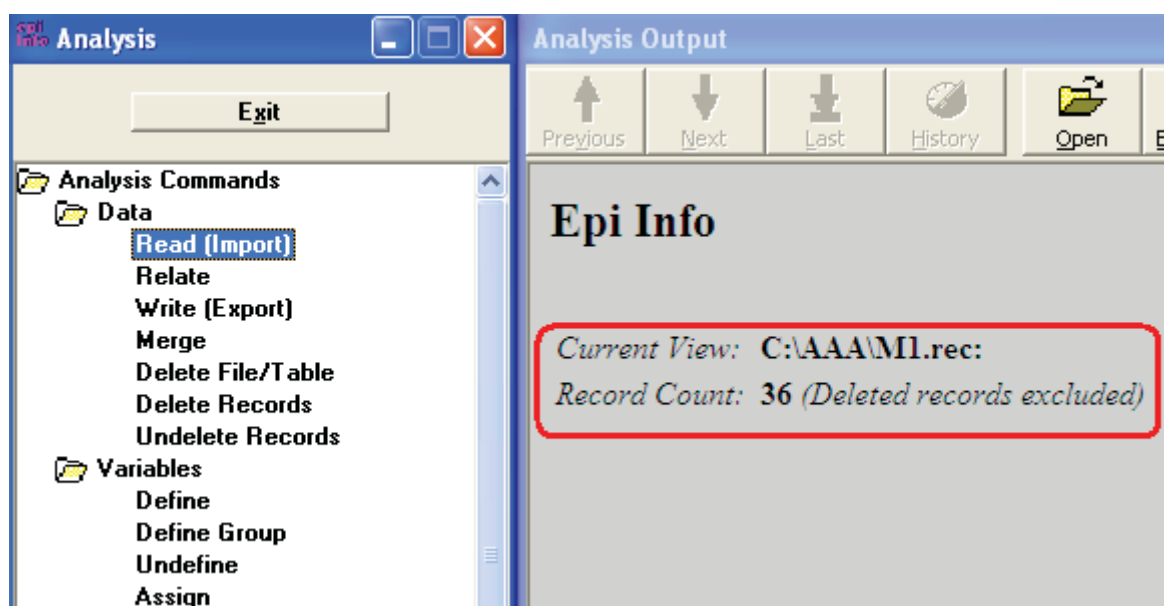
- Make sure that the “Data Files” option is checked under “Show” and the file “M1.REC” is highlighted under “Data Files”, as shown below (areas circled in red); then, click on “OK”:



Click “OK” in the new window which appears:



The “Analysis Output” area on top to the right now shows that the file M1.REC containing 36 records has been imported:

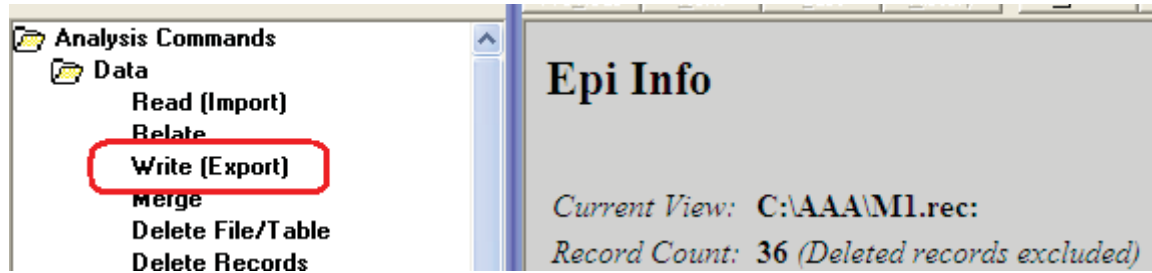


You are ready to carry out the analysis in Epi Info™ for Windows.

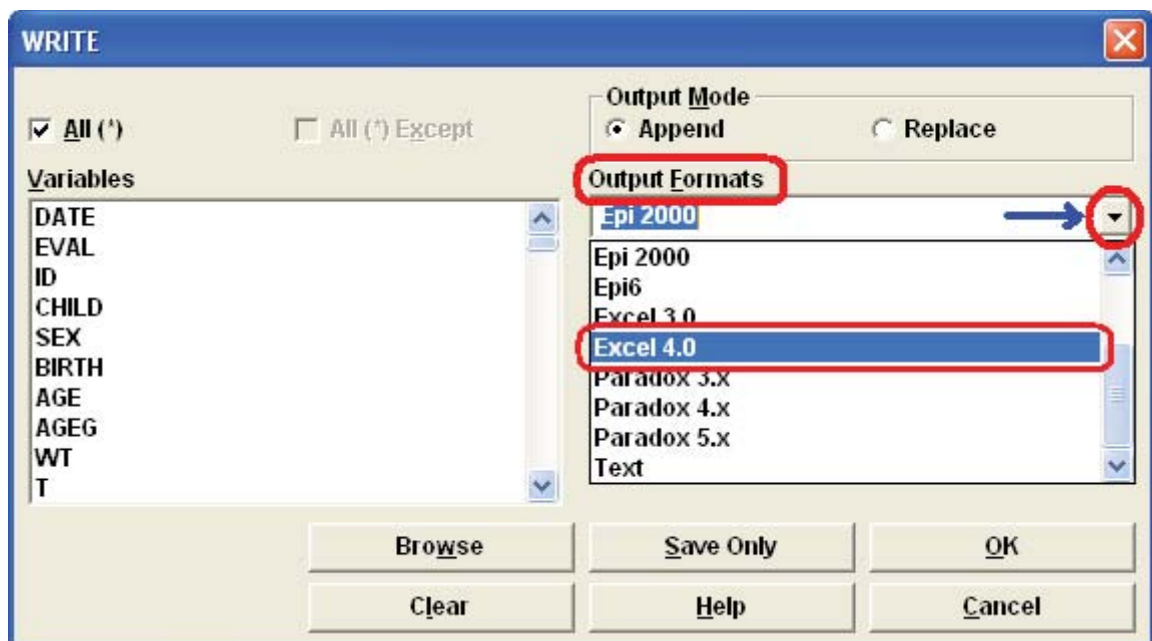
Exporting to another file format

You can save the file in this new format (Epi Info™ for Windows uses Access format) or export it as another file format as follows:

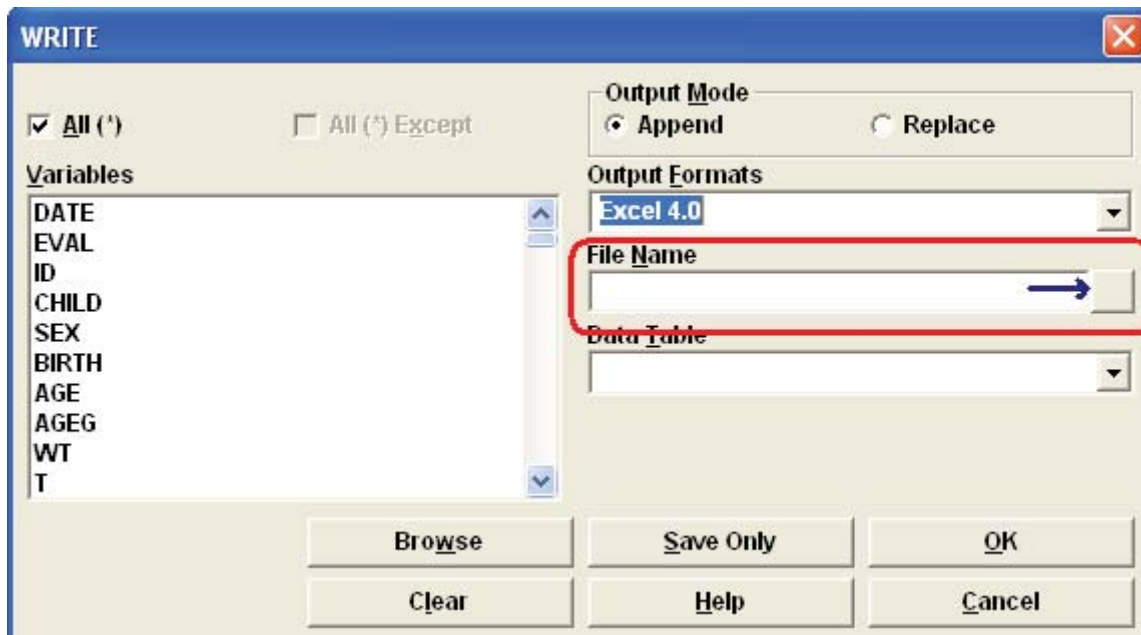
- On the top menu on the left click on “**Write (Export)**”:



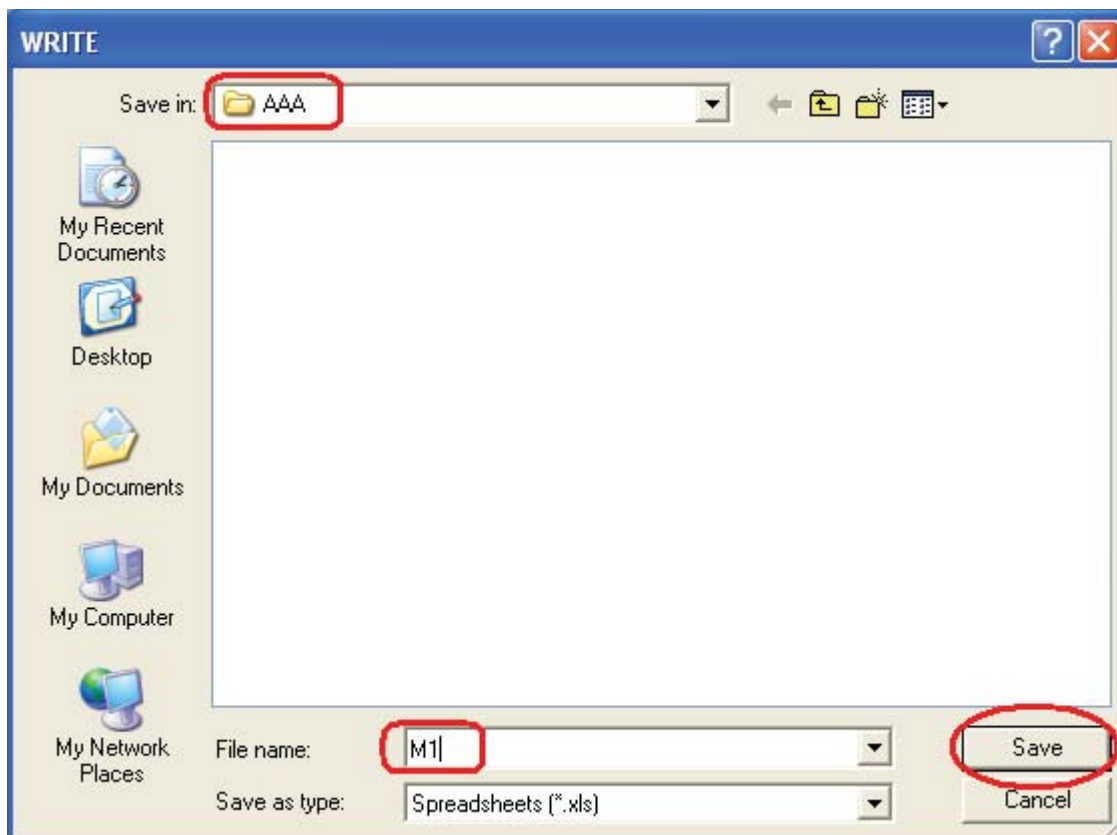
- In the window which appears, select the format of the new file, clicking on the down arrow of the “**Output Formats**” section and selecting from the drop down list. For example, choose the “Excel” format, as shown in the picture below:



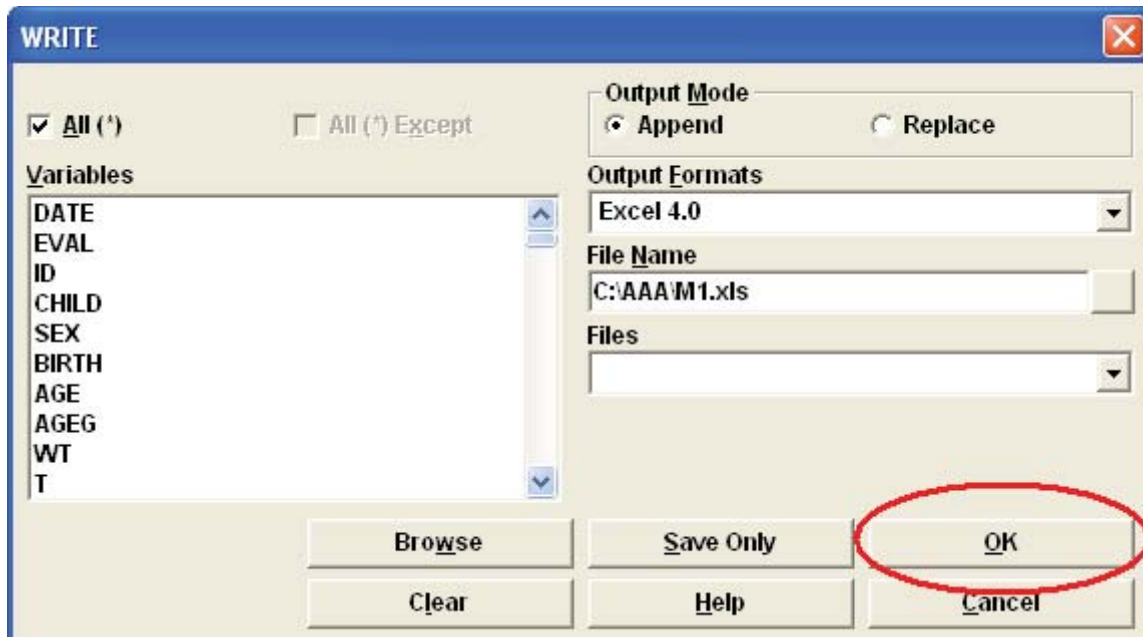
- Next, click on the small box to the right under “**File Name**”, to select where you want to place the new file:



- Let’s assume that you want to save it in the same folder “**AAA**” and give to the new Excel file the name “**M1**” (enter this name in the “**File name:**” area, as shown below); then, click on “**Save**”:



- Finally, click on “OK”:

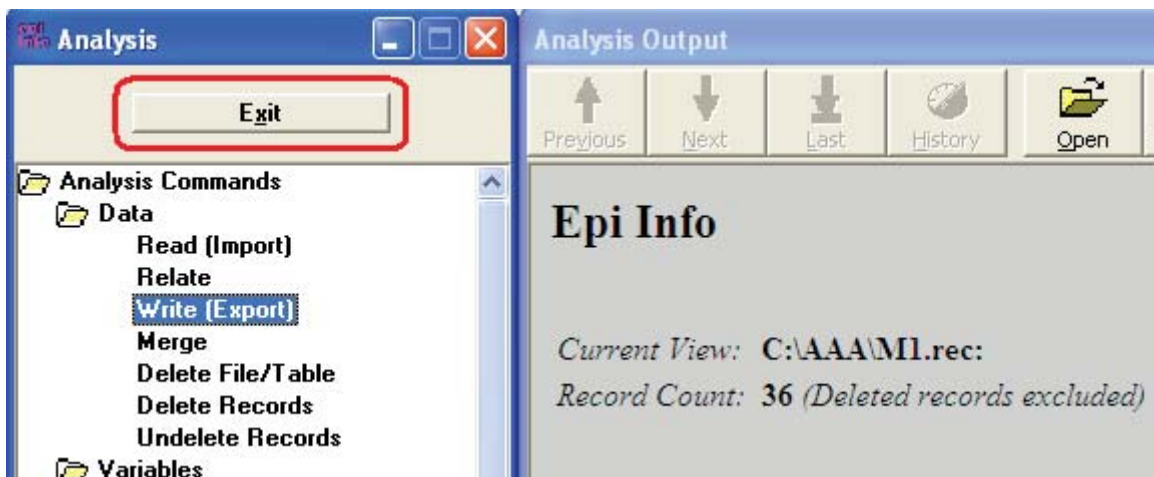


- Go to the folder “C:\AAA” and you will find the Excel file “M1.XLS”. Double click on it to view it:



You can repeat the same steps for the file **M2.REC**.

- To exit Epi Info, click on the “Exit” button on top to the left:



- Then, click again on the “Exit” button in the main window:



