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REPORT

OF THE

CONFERENCE ON TRACHOMA

Sponsored by the World Health Organization
Regional Offices for the Eastern Mediterranean
and for Europe in collaboration with the
Government of Tunisia

Tunis - 15.—24. October 1959

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ANNEXES

A group of participants in the Trachoma Conference

I. INTRODUCTION

The first Trachoma Conference to be convened by the World Health Organization in the Eastern Mediterranean Region was held in Tunis from 15 to 24 October 1959 The twenty-six participants came from twelve countries of the European and Eastern Mediterranean Regions of WHO, eleven organizations were represented by observers (Annex I)

This conference was the second of the series organized by WHO with the object of broadening the line of attack against trachoma and other communicable eye diseases It was planned on a zonal basis between groups of countries, in the majority of which environmental background, disease problems and resources were roughly comparable, and was organized jointly by the WHO Regional Offices for the Eastern Mediterranean and Europe with the generous cooperation of the Government of Tunisia

II. OBJECTIVES OF THE CONFERENCE

The main objectives of the Conference were·

1. to exchange and correlate existing information,
2 to plan individual and joint studies of factors as yet incompletely understood,
3 to facilitate exchange of information and practical experience,
4 to provide a basis for the development of control methods which would be effective, practicable, and within the resources of the country concerned

III. ORGANIZATION

The sessions of the Conference were held at the "Bourse du Travail" where office accommodation for the secretariat and separate rooms for participants and for committee meetings were available

A Chairman and two Vice-Chairmen were elected, as well as a group chairman and two rapporteurs for each of the seven working sessions

The subjects discussed were as follows

1 Ophthalmological aspects
2 Microbiological aspects
3 Epidemiology of trachoma and related infections of the conjunctiva
4 The present status of trachoma therapy
5 Environmental sanitation
6 Health education
7 Planning, execution and evaluation of control projects

A reference library of publications and other documents was placed at the disposal of participants Some participants and other distinguished workers in the field had provided background working documents (Annex IV) to form a basis for the discussions

IV. PROCEDURE

All sessions were held in plenary and on only two occasions were sub-committees appointed for the study of specific problems There was no individual reading or presentation of papers, and discussion of the items on the agenda was open to all Each subject for discussion was in turn sub-divided under various heading (See Annex V) to ensure adequate coverage and orderly discussion

The chairman, rapporteurs and members of WHO Secretariat prepared reports on the sessions and presented them to the conference for approval By the end of the conference the reports on all the sessions had been approved

V. REPORT ON THE SESSIONS

1. Inaugural session

Thursday, 15 October 1959

The Conference was opened by the Secrétaire d'Etat à la Santé publique et aux Affaires Sociales of Tunisia, Mr Ahmed Ben Salah After welcoming participants on behalf of the President of the Republic, he spoke of the importance of the problem of trachoma to the countries of the Region and particularly to Tunisia, and dwelt on the measures taken by his Government to combat communicable eye diseases These measures had the aim of facilitating the treatment of persons suffering from communicable eye diseases, and included

(a) An intense programme of health education,

(b) The training of para-medical personnel, particularly school nurses, in the diagnosis of trachoma,

(c) The provision of drugs free or at very low cost

The Minister also gave an account of the facilities for treating eye cases and the measures taken to help the blind He greatly appreciated the help and collaboration of WHO and UNICEF and especially was confident of further achievements as a result of such collaboration

Dr Taba, Director, WHO Eastern Mediterranean Region, also addressed the inaugural session, the text of his speech appears in Annex III

Dr Ahmed Ridha Farah, Chef du Service central de la Prévention et de l'Hygiène publique, Secrétariat d'Etat à la Santé publique et aux Affaires sociales, was unanimously elected Chairman, the Vice-Chairmen were unanimously elected as follows

Professor M A Attiah, Director, Ophthalmology Department,
Dean of the Faculty of Medicine, Cairo University, Cairo
Professor G Chams, Director, Ophthalmological Hospital,
University of Teheran, Teheran

The provisional agenda was adopted as presented (Annex II)

The group chairman and rapporteurs for each of the sessions were then elected as follows

	Chairman	Rapporteurs
Ophthalmology	Dr R Nataf	Prof M Shaffi Prof P Ferraris
Microbiology	Prof G Renoux	Dr A A Minou Dr M Huet
Epidemiology	Dr I Ahmed	Dr A Mohsenine Dr A Mourreby
Trachoma Therapy	Dr H Rais	Dr W I Jabaji Dr A G Zalzala
Environmental Sanitation	Dr A A Shawarby	Dr I Sulman Dr M Boutaleb
Health Education	Dr Ben Salem	Dr M Iliyas Dr R Saadé
Planning, Execution and Evaluation of Control Projects	Dr M A Shah	Dr J Ruff Mr A Tadessa

Dr V Tabone, WHO Consultant, was appointed to act as Conference Secretary

2 Ophthalmological Aspects

Session of Friday 16 October 1959

Chairman Dr R Nataf

Rapporteurs Prof M Shaffi, Prof P Ferraris

(a) *The Classification of Trachoma*

The Conference agreed that the "Geneva Classification of Trachoma"*, designed to amplify and make more precise the classification of MacCallan, had been widely adopted and had served a very useful purpose The Conference considered, however, that the classification had certain limitations and deficiencies, particularly in relation to trachoma stages I and IV

The Geneva definition of trachoma stage I did not coincide with MacCallan's stage I in that it anticipated the latter by including the pre-follicular stage of the disease The Conference considered that the Geneva definition of stage I was to be preferred, but recommended that it should be further clarified

The clinical appearance of the pre-follicular stage was not in itself specifically diagnostic of trachoma and must therefore be classed as "trachoma dubium" until additional evidence, such as the onset of characteristic limbal changes or the finding of inclusion bodies, warranted the firm diagnosis of *"trachoma stage I"*

According to the Geneva classification, the phase of trachoma between the first appearance of visible follicles and the onset of cicatrization constituted stage II The Conference agreed to this but recommended that stage II be subdivided, for the purpose of precise recording, into

Stage II (1) presence of early immature follicles (MacCallan stage I follicles)

Stage II (2) presence of well-developed, expressible follicles (MacCallan stage II follicles)

Stage III of the Geneva classification corresponded with MacCallan's stage III and covered the progress of the trachomatous process from the first appearance of sub-conjuctival cicatrization to the stage of clinical cure The Conference recommended that this connotation of stage III should be retained

Stage IV

There was a body of opinion within the Conferene which considered it an unjust procedure and one liable to misinterpretation in quarantine formalities, etc , to stigmatize healed, uncomplicated cases with the label "trachoma stage IV", and

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* World Health Organization Report of Expert Committee on Trachoma, Technical Report Series No 59 (1952)

some participants strongly recommended that an alternative and more appropriate term be found and adopted Others recognized, however, that disabling cicatricial complications and sequelae might continue after the active infective trachomatous process had come to an end It was also recognized that, in epidemiological studies, account must be taken of all healed as well as active cases of trachoma

It was therefore considered that the traditional term "Trachoma stage IV" should be retained but that it should be completed by the word "(Healed)"

The Conference recommended that the above considerations and proposal be submitted to the WHO Expert Committee on Trachoma at its next meeting

(b) *Differential Diagnosis*

It was agreed that the criteria of diagnosis laid down by the Second Committee of Experts on Trachoma had been found very useful and should still form the basis of diagnosis

The conditions which were more likely to give rise to confusion were.

1 Acute follicular conjuctivitis of viral origin,
2 Chronic follicular conjunctivitis,
3 Folliculosis,
4 Allergic conjunctivitis with follicles,
5 Spring catarrh

For the differential diagnosis between trachoma, bacterial conjunctivitis and other viral conjunctivitis (caused by the adenovirus), therapeutic tests based on a short course of antibiotics were proposed Such courses would clear bacterial conjunctivitis up in a few days and would leave unaffected conjunctivitis due to viruses Conjunctivitis caused by adenovirus, however, would substantially clear up in two or three weeks while trachoma would continue on a protracted course

The Conference recognized the value of colour photographs (diapositives) for teaching and for the standardization of clinical criteria and recommended that representative collections from different countries be assembled in order that a general atlas could be produced and published by organizations such as WHO

Onset of Trachoma

There was an interesting discussion on the mode of onset of trachoma The majority opinion was that in most cases trachoma started insidiously, experimentally induced trachoma on humans, however, presented a different picture The onset in such cases was usually acute, possibly because of the large amount of inoculum

Criteria of Cure

The Conference agreed that the criteria of cure recommended by the Second Committee of Experts on Trachoma for both individual cases and for application in mass campaigns had proved their worth and were still to be recommended Experience had shown that in some countries fine papillary hypertrophy of the conjunctiva, and the presence of corneal vessels in the absence of infiltration or other signs of inflammation were not to be considered as signs of active trachoma

In the opinion of the Conference, the criteria of clinical cure should be distinguished from the criteria of radical cure In this connection the interesting question was posed is radical cure dependent on the destruction of the infective agent or is it rather a state of balance between the virus on the one hand and the defences of the body on the other?

The Conference recommended that further research be devoted to provocative tests with a view to determining their reliability and their place in trachoma control

3 Microbiological Aspects of Trachoma

Session of Saturday 17 October 1959

Chairman Prof G Renoux

Rapporteurs Dr A A Minou, Dr M Huet

(a) *Viruses*

(1) Many laboratories in various parts of the world had reported the isolation of viruses with the following properties from clinically active trachoma cases

(i) Growth in the yolk sac of embryonated hen's eggs,

(ii) Size between 200 and 500 millimicroms,

(iii) Mauve coloration by the Giemsa method, red by Macchiavello's, and blue by Castaneda's,

(iv) Presence of a thermostable complement fixing antigen common to the viruses of the lymphogranuloma-psittacosis group,

(v) Lethal to chicken embryos when inoculated in massive doses,

(vi) Resistance to streptomycin

(2) Human volunteers were inoculated with success with some of these strains In fact, these viruses or virus strains could be considered the agent or agents of trachoma

Isolates from trachoma cases, fulfilling the criteria indicated above, even if not inoculated into man, could be presumed to be the same virus

(3) Other publications dealt with

(i) The presence of elementary bodies with properties similar to those described above in rodent lungs after inoculation with either human conjunctival specimens or with cultures obtained from embryonated eggs,

(ii) The probable existence of a specific antigen — i e not group antigen — revealed by micro-agglutination,

(iii) The presence of a specific allergy revealed by intradermal reaction

(4) These results were extremely promising and opened the way for a new approach to the trachoma problem Many points should be thoroughly studied in the near future, and in particular the relationship between these trachoma viruses and the agent of inclusion blenorrhea

(5) Various types of adenoviruses had been isolated from cases resembling trachoma in different parts of the world Available data suggested the possibility of variation of type predominance in different areas It had been reported that a pathologic picture at times resembling trachoma had been produced following adenovirus inoculation into man Further studies were necessary to determine the actual importance of adenoviruses in the clinical and in the epidemiological pattern of trachoma

(b) *Bacteria*

(1) The bacterial flora of the normal eye had not yet been sufficiently investigated research was needed towards a better knowledge of the rôle of bacteria as etiological agents of acute conjunctivitis and as agents influencing the transmission and/or the severity of trachoma

(2) Data pertaining to bacteria as responsible agents of acute conjunctivitis were frequently based only on direct microscopy of conjunctival smears

The relative prevalence of the main pathogenic bacteria of the eyes varied according to countries or regions It had been found also that the same bacteria might play a different rôle according to each country, either in acute conjunctivitis or in association with trachoma The importance of these problems was stressed and it was generally agreed that more complete identification criteria should be adopted The Conference emphasized the need for more accurate identification procedures for *Neisseria, Haemophilus* and *Streptococcus* species

(c) *Recommendations for future study*

Items recommended for further research on the viruses isolated from trachoma cases

1 Standardization of techniques for collection and examination of material and definition of the terms used in the laboratory study of trachoma (such as "presence of virus", "elementary bodies", virus "strains" and "types" etc)

2. Standardization of methods for virus isolation

3 Determination of the value of inclusion bodies in the diagnosis of trachoma and of the relationship between a possible evolutive cycle in the human conjunctiva and the development in the laboratory

4 Further characterization of viruses and selection of basic criteria for their identification

5 Pathogenicity of the viruses isolated from trachoma cases for animals and tissure cultures Although frequently of value, inoculation into human volunteers should be left to the discretion of the responsible investigator

6 Antigenic characterization of the virus strains isolated

7 Development of serological – or other immunological – techniques for the diagnosis of individual cases or for large scale applications

8 International exchange of material and strains for comparative studies was also advocated

(d) *Information on Trachoma Research*

The participants were reminded of WHO's new programme of intensified research and the importance attached to coordinated research on trachoma They were requested to send to the Division of Communicable Diseases, WHO Geneva, an outline of any relevant studies on which they were engaged

4 Epidemiology of Trachoma and Related Infections of the Conjunctiva

Session of Monday 19 October 1959

Chairman Dr I Ahmed

Rapporteurs Dr H Mohsenine, Dr A Mourreby

a *General Epidemiological Considerations*

The session opened with a review of various epidemiological aspects of trachoma The importance of environment in the agent-host relationship was stressed It was now generally accepted that trachoma was of relatively low contagiousness and that it became endemic in a population only in the presence of environmental factors particularly favourable to its transmission History had shown that trachoma disappeared from a community with improvements in standard of living and hygiene and, conversely, that if these standards were too low, treatment of cases (on any scale that was practicable) might have little effect in reducing the prevalence of the disease The environmental factors involved probably varied considerably from one area or community to another, but little was yet known about their exact nature or *modus operandi*

Apart from geographic variations in simple prevalence rates there were marked differences between one region and another, and sometimes between neighbouring districts, in the general level of severity of trachoma and in the type, incidence and age of onset of complications It was considered that such local differences in severity might depend more on environmental factors than on differences in viral strains and host susceptibility

Some of the most severe and protracted forms of trachoma, with little or no tendency to self-limitation, occurred in central and northern Europe where the disease was of moderate or low endemicity and usually uncomplicated by bacterial infections By comparison, in the Middle East and North Africa, where the majority of trachoma cases were associated with, and aggravated by, bacterial infections, the trachomatous element *in itself* appeared to be more benign, in that there was a marked tendency towards amelioration and even spontaneous cure following control of the bacterial infections. A tentative explanation offered was that, in areas of high endemicity and early age of onset, some partial immunity acquired from the mothers might be responsible for the relatively milder infections, as in the case of endemic poliomyelitis in some of those areas In areas of low trachoma endemicity and later age of onset, such acquired immunity — if in fact it existed — would be lost

The Conference agreed on the need for adopting a suitable and generally applicable index of the severity of trachoma Indices at present commonly employed

were the degree of cicatrization, and the incidence and age of onset of trichiasis It was considered, however, that as these sequelae usually occurred only in trachoma of long duration, there were risks in using them as indices in communities where, because of improving living conditions or other factors, the disease in general might become less severe In other words, one could not assume that all trachoma in stages I and II today would run the same course and end with the same proportion of complications as those of earlier generations It was recommended that in formulating a standard index of severity, account be taken of such factors as the type and degree of follicular involvement in the active stages of the disease This question should be further studied in all its implications

Certain occupations appeared to have a direct or indirect bearing on trachoma Women, in general, were more severely afflicted than men, probably because they were longer confined to insanitary home conditions and exposed to the smoke of cooking fires, etc In the case of cotton-ginners and others working in dusty atmospheres, trachoma ran a severe protracted course and, because of increased secretions, it was probably more contagious than milder forms Less easy to explain was the frequently reported fact that trachoma was much more prevalent and more severe in fishing communities than in neighbouring communities chiefly engaged in agriculture Nutritional factors might play some rôle in this.

In some, but not all, areas there appeared to be a striking relationship between water supply and trachoma, the prevalence of the disease being much lower in areas where water was plentiful and easily accessible than where it was scarce and had to be carried to the home There were, moreover, communities in which trachoma, once highly endemic, had virtually disappeared and in which the only apparent change in environment had been the introduction of a good water supply This was purely circumstantial evidence but it should be further investigated

In general, the higher the prevalence of trachoma the earlier the age of onset In areas of high endemicity, an analysis of the distribution of the evolutive stages (I, II, III, IV) by age and sex usually showed a very regular pattern of the disease within a community In areas of moderate or low endemicity there was much less constancy in the age of onset, and studies on a family basis were needed to determine the various patterns of the disease

There was widespread belief that the trachomatous mother was the usual source of infection for the children This might be so in some areas, but it was not universal In many areas, and particularly those in which trachoma was highly prevalent and associated with seasonal epidemic conjunctivitis, the evidence was that the principal source of infection in both diseases lay in the pre-school group

The microbiological aspects of trachoma and associated infections were dealt with at an earlier session The epidemiology of adenoviral infections in trachoma

endemic areas was still in an early stage of investigation Existing evidence suggested that while these agents had a wide distribution and might be on the increase, they were less prevalent than was earlier thought Their rôle in the epidemiology of trachoma was still uncertain

There was a more obvious relationship besween trachoma and bacterial infections The widespread and regularly recurring seasonal epidemic of acute conjunctivitis in North Africa and the Middle East aggravated the trachoma, aided its transmission and added to its complications There was a weight of circumstantial evidence that the virus of trachoma was frequently transmitted along with the infective secretions of bacterial conjunctivitis and that, in those areas, the common fly was one of the most important agents in spreading both diseases

(b) *Laboratory Aspects*

The laboratory methods available today for epidemiological studies were not considered to be sufficiently simple and accurate for providing an answer in all cases

The problems considered were, among others, the presence of infectious agents in the environment, their persistance in the host, and their mechanism of transmission Methods existed today for the isolation and the cultivation of bacterial agents, but these methods had distinct limitations in field work It had therefore been suggested that for mass screening of bacteria, direct microscopy be accepted as valid when no recourse could be made to cultures, but that the fact that no cultures had been made should be stated At the same time, no attempt at species identification should be made in the absence of cultural criteria

In the case of viruses, although methods were available for the isolation of the elementary body virus of trachoma and of other agents such as the adenoviruses, they were not yet applicable to large scale field studies As far as laboratory diagnosis was concerned, satisfactory serological and immunological techniques had not yet been developed for the trachoma virus Such techniques existed for the adenoviruses but the rôle of these latter agents in the epidemiology of trachoma was not clear

The diagnostic importance of inclusion bodies was again a subject of discussion It was considered advisable, in order to avoid confusion in terminology, to refer to the *virus* only in the case of the isolates, and to *inclusion bodies* only in the case of the elements detected by direct microscopy

The Conference considered that the various points raised in the discussion confirmed the need for intensified research in the study of the viruses and bacteria related to trachoma, and for the development of techniques applicable to laboratory diagnosis in individual cases and to epidemiological studies

The Conference, recognizing that the only available maps on the distribution of trachoma were incomplete or out of date, recommended that WHO assist in the collection of adequate fresh data for the preparation of an up-to-date revision In this respect, it was hoped that WHO would provide technical gudiance in the epidemiological principles and techniques concerned

The Conference recognized the value of prevalence surveys in indicating the distribution of trachoma, but such surveys did not show clearly and unambiguously a causal relationship betwen epidemiological factors and the disease

It was, therefore, recommended that, where possible, prevalence surveys be followed by well planned, longitudinal studies of small communities or cohorts, and by experimental trials with the object of obtaining conclusive evidence regarding possible associations of factors

A "mark sensing" individual record card was proposed for use in prevalence surveys where the appropriate mechanical facilities were within reach The use of this card would provide more uniformity in recording cases and greatly help to overcome difficulties in tabulating data in large surveys An example of the card appears in Annex VII

It was considered that any basic investigation of the epidemiology of trachoma should include a study of the pattern of local beliefs and customs These elements might have an important bearing on epidemiology, and a knowledge of them was essential in developing programmes of health educaton

5 The Present Status of Trachoma Therapy

Session of Tuesday 20 October 1959

Chairman Dr H Rais

Rapporteurs Dr W I Jabaji, Dr A G Zalzala

(a) *Methods of Treatment of Individual Cases of Trachoma*

Note was taken of the various practices and methods of treatment of trachoma but most of the discussion was devoted to modern methods of treatment Distinction was made between treatment suitable for individuals and treatment suitable for mass campaigns The conference considered that treatment methods involving the destruction of tissues should be abandoned, they had, in fact, fallen into disuse Practically all participants were of the opinion that the best method of treatment at the present time was the use of various antibiotics and sulphonamides either separately or in combination Particular interest was shown towards the antibiotics

of the tetracycline group and to the long acting sulphonamides (e g sulphamethoxy-pyridazine)

It was generally considered that certain antibiotics and sulphonamides acted not only on secondary bacterial infections, but also directly on the trachoma virus although the mode of action remained obscure

Recent laboratory findings had already shown that under certain conditions the cultivated trachoma virus was sensitive to the action of certain antibiotics currently used against trachoma It was possible that there were differences in the susceptibility of the various isolates to antibiotics

Several participants reported the use of additional procedures of treatment, ranging from slight massage to expression of degenerated follicles with a view to accelerating resolution

In cases showing hypersensitivity, sensitization or exceptional resistance to antibiotics and/or sulphonamides, other methods of treatment should be resorted to, in such cases some participants recommended the use of the diathermo-coagulation It was considered in this connexion that true resistance to antibiotics and sulphonamides was of rare occurrence, as in cases which showed an initial poor response a second course with the same or another antibiotic or sulphonamide drug would often bring about cure

It was stressed that the results of the treatment depended very much on the stage and severity of the disease (severe cases of Stage III were reported to be the most resistant) This is why treatment should reach patients at the earliest possible moment

Recommendations

It was recommended that further research be carried out on the sensitivity of the trachoma virus to existing antibiotics, sulphonamides and other substances

Various strains of trachoma virus should be included in the research study

(b) *Treatment Methods suitable for Mass Application*

It was pointed out that treatment applied to large numbers of the population could only be successful if carried out in the patient's own home

In mass campaign conditions the immediate aim was not to cure all cases at once, but to limit the spread of the disease by rendering it non-infectious, or by curing the highest possible number of trachomatous people with a rational course of treatment

Complete cure of every case was of course the final aim

In order to achieve satisfactory results the following considerations should influence the choice of the method

(a) The remedy must be effective against trachoma and secondary bacterial infections,

(b) The remedy must be harmless and without any side effects even in high doses,

(c) The method of treatment must bring about cure with the minimum degree of cicatrization, or without cicatrization at all,

(d) The method of treatment should appeal to the people,

(e) The number of doses required to achieve a cure must be low,

(f) The application of the treatment must be simple,

(g) The treatment must be cheap and easily obtainable,

(h) The treatment must be applicable under all possible field conditions

The final choice of the treatment to be applied in each particular mass control project should depend on previous experience in other countries under similar conditions and on the results of careful comparative trials carried out under local conditions The choice would also inevitably depend to some extent upon the technical, financial, administrative and other facilities available in each country

A report was made on the broad experience gained with locally applied intermittent aureomycin treatment in Morocco Careful and repeated trials showed that there was no significant difference in the results obtained from a continuous sixty-day local treatment with aureomycin and from an intermittent treatment schedule with the same drug This had been confirmed in numerous independent trials in various countries and the method had been introduced in many places as routine Some participants, however, reported that their experience was not so favourable to the intermittent schedule of treatment

This method deserved trial in other countries, it should be borne in mind that if applied in the right season, it also represented the best mass method of cutting down the seasonal incidence of epidemic conjunctivitis

Participants reported good results from the use on a large scale of low dosage and slow elimination sulphonamides (sulphamethoxy-pyridazine) Further trials with these drugs were recommended in order to determine their minimal effective dosage and the optimum schedules for mass application

(c) *Design and Evaluation of Therapeutic Trials*

Therapeutic field trials were considered essential in all well-planned mass campaigns They should aim not only at assessing the relative efficacy of different

treatment techniques, but should also aim at the proper evaluation of the other factors influencing treatments listed as above

Greater attention than in the past should be devoted to the planning and organization of such trials and the exact purpose of a trial should be defined from the very beginning Every effort should be made to avoid any possible bias in comparing two or more different types of treatment, it would be advisable, for instance, to have the same person or persons making the diagnosis in the different groups and it would also be necessary to select groups with similar characteristics and to apply treatment under similar conditions Furthermore, each comparative trial must provide for both evaluation of the effect of the particular treatment method studied and the means for establishing the exactness of such an evaluation

It was further considered that all trials should be carried out in field conditions similar to those in which the eventual treatment mass campaigns would be carried out

Evaluation of treatment methods should include a comparison between the findings, *before* and *after* treatment, of the absolute numbers and of percentages of cases in the different stages and degrees of severity

An evaluation of the overall effect of the treatment in the whole group or community should follow

Uniform methods of planning and evaluation should be applied in every trial The Conference recommended that WHO should continue to extend its technical guidance in this field

The Conference did not consider the treatment of complications of trachoma nor the rehabilitation of persons partially or totally blind from trachoma and other communicable eye diseases. While recognizing the importance of action in this direction from the medical, humanitarian and socio-economic points of view, it considered that treatment of trachoma should be considered separately from treatment of its complications and sequelae It was not within the scope of the Conference to consider the latter

6 Environmental Sanitation

Session of Wednesday 21 October 1959
Chairman Dr A Shawarby
Rapporteurs Dr I Sulıman, Dr M Boutaleb

The Conference discussed the influence of environmental sanitation conditions on communicable eye diseases, and considered them under two main categories

(1) The rôle of insect vectors and their control,
(2) The rôle of other environmental sanitary conditions and their control

There was general agreement that where trachoma was complicated by acute conjunctivitis occurring in regular seasonal epidemics, the influence of flies in the transmission of these communicable eye diseases was of great importance

Special stress was laid on the importance of *Musca sorbens* and examples were cited from Morocco showing that Koch Weeks conjunctivitis was commoner in the South where the prevalence of this fly was higher However, it was pointed out that the *Musca domestica* variety was also responsible for the transmission of conjunctivitis Evidence was at hand from Egypt that streptococci, staphylococci and *E coli* were found on flies collected from children's faces

There was no definite proof that flies transmitted pure trachoma, but there was a weight of circumstantial evidence that, in countries where trachoma was associated with seasonal epidemics of bacterial conjunctivitis, the two infections were frequently transmitted together and the fly was one of the most important agents concerned in the transmission of the bacterial component It was recommended that virologists and bacteriologists should undertake research in this respect

It was noted with interest that, in the course of the Morocco campaign, successful control of flies by chemical insecticides in a experimental area was followed by a statistically significant reduction of conjunctivitis, especially among children of the 0–2 and 2–8 years age-groups Nevertheless, the group recognized the fact that control of flies by chemical measures should be considered as only complementary to basic measures of sanitation, further study would be necessary on the critical level to which the fly population should be reduced It was suggested that research should be devoted to the possibility of a suitable non-irritant fly repellent being added to the antibiotic ointment used for treatment

As far as other environmental sanitation conditions were concerned, the Conference recognized that, here again, circumstantial evidence pointed to their importance in relation to transmission, course and severity of communicable eye diseases

Examples were given by several participants of the beneficial influence on the control of communicable eye diseases of improved water supply, housing, etc Additional factors such as low standards of personal hygiene, and to a lesser degree the prevalence of dust and smoke, had also a significant bearing on the transmission of communicable eye diseases

It was further recognized that improvement in environmental sanitation conditions should to some extent be associated with adequate health education The Conference at this stage did not elaborate on this subject, which was included as a specific item in the agenda for another session

In spite of the presumed influence of the above-mentioned environmental sanitation conditions on communicable eye diseases, there were no definite and indisputable data regarding the relative value of each of them taken separately or in specific groups

In the experience of participants it appeared that of all the factors of environmental sanitation, the supply and correct use of water was the most important single one

The improvement in environmental sanitation was often closely related to, and thus often confused with, changes in socio-economic conditions The Conference considered it important to avoid such confusion in appraising the rôle of environmental sanition conditions

The importance in other fields of public health, and in the development of the community in general, of the environmental sanitation factors already referred to was considered a good reason for carrying out improvements in environmental sanitation on the broadest possible front.

It was recognized that the control of environmental sanitation was a long-term activity and one difficult to promote

Further studies and research to assess the relative importance of the factors described above would be needed to facilitate effective action

Health education would also be valuable during the transitory period required for the improvement of environmental sanitation conditions This health instruction should aim at giving guidance in the use of simple ways and means of acquiring better hygienic habits and at getting the full understanding and cooperation of the population concerned

The Conference considered the need for coordination of programmes related to communicable eye diseases at three levels coordination within a department, coordination on a national level between different organizational units interested in improving environmental sanitation and, finally, coordination at international level

It is obvious that in present-day Ministries there were many departments with overlapping interests in the development of various basic aspects of environmental sanitation This was particularly true regarding the rapidly expanding programmes of community development, a proper emphasis given to environmental sanitation in these programmes should lead to the eventual control of communicable eye diseases

At the third level, i e the international level, the Conference considered that coordination between different international or bilateral agencies interested in the development of environmental sanitation would be useful and advisable, particularly in the field of assistance to governments

The Conference suggested that particular consideration should be given at the present stage to the following points

(1) Transmission of the virus of trachoma by flies

(2) The possibility of development of safe fly repellents which might be added to antibiotic ointments used for treatment

(3) The study of means and methods for the using and disposing of animal excreta and other wastes, particularly in rural areas, in order to reduce the breeding of flies

(4) The effect of the provision of safe, ample and readily available water supply

7 Health Education

Session of Thursday 22 October 1959

Chairman Dr Ben Salem

Rapporteurs Dr M Iliyas, Dr R Saadé

(a) *Influence of Health Education on Trachoma Control Programmes*

The Conference was of the opinion that health education was indispensable to medicine today, it was just as important as the provision of hospitals, clinics and drugs It was also the essential link between the doctor and the public The World Health Organization was taking an increasing interest in the subject and insisted on health education being a prominent feature in all its projects

The evaluation of health education programmes was often imperfect and incomplete It would be of interest to study both the effect of health education on trachoma control projects and the effect of such projects on health education of the public One important method of evaluation was by means of replies to questions put to mothers in areas which had been the object of health education programmes Questionnaires should include pointed and searching questions on a varitey of subjects This method had given interesting results in some areas Another method was that of gauging the response of patients to the treatment offered in connexion with a particular health education programme, this method was particularly interesting when it implied the purchase of drugs by patients with their own money Such a method was successfully employed in at least one country

Ascertaining the attitude of people towards current trachoma control measures was imprecise, but a sure way of assessing the effect of health education

Health education of the public acted by itself as a potent stimulus to public health authorities to maintain a high level of health services

(b) *Application of Health Education to Families, Schools and Communities*

The Conference stressed that all sections of the population should be reached through health education, and in this connexion the important rôle of the school and school teachers was acknowledged by all Health education should, in fact, be a compulsory subject in the training of teachers and in the curricula of schools A participant proposed that teachers should not be allowed to qualify before they had succesfully attended a course of health education Others proposed that special courses in health education be instituted and that a special certificate be granted to those qualifying

It was stated that the family unit was often reached through schools, children usually took a delight in telling their parents and other members of the family what they had learned at school, and health education would further be propagated through contact of children's families with schools Furthermore, school children were the heads of the families of tomorrow and health education in schools was therefore not only a short-term, but also a long-term investment

In planning health education programmes one should not lose sight of the fact that school teachers were in a particularly suitable position to understand the various health aspects of a community and were the persons most suited to propagate such knowledge

Mention was made of special holiday camps for trachomatous children which would serve the dual purpose of treatment and of imparting health education

The cooperation of teachers in health education might at times be difficult to obtain, but experience over several years had shown that the right kind of persuasion was very likely to succeed in overcoming this initial indifference In an effort to cover all sections of the population, health educators should not forget to interest influential people, administrative personnel as well as doctors and para-medical personnel

Health education could also be usefully disseminated through the medium of associations, organizations and clubs The paramount need of reaching the mother in health education was stressed by many participants

(c) *Health Education Methods*

Different methods useful in trachoma control projects were proposed The selection of particular methods would depend on the country concerned, on the type of control programme and on the means available It was obvious that the

methods employed should correspond to the type of campaign in progress It was stressed that health education was essentially a publicity campaign for the sale of health It was of the utmost importance not to urge people to obtain things beyond their reach or to carry out impossible procedures

Most speakers mentioned films as a very suitable method of health education and all were in agreement that, if films were to appeal to the persons to whom they were shown, they should be filmed in the area concerned and should contain local colour, they should, of course, be in the language of the people for whom they were intended and when difficulties in this connexion arose it was proposed that silent films should be used with local persons giving running commentaries Naturally the films should be interesting and every care should be taken to convey the basic principles intended It was proposed that, in order to maintain continued interest, short films might be shown in public cinemas before the main feature programme Filmstrips might at times be found to be of greater value in that they would allow a greater period of time for ideas to be absorbed

It was of great importance that films be correctly planned and adequately produced Some participants believed that the making of such films was within the the possibilities of many countries and that the assistance of organizations such as the World Health Organization was desirable to ensure high production levels

Other methods of health education mentioned included television, radio, press, repetition of suitable slogans and conveying health education principles during public gatherings In some countries great use of such public meetings was made in an effort to awaken and maintain interest in health matters, and some speakers proposed that it would be useful to have one theme a year for such gatherings

Health education would have a far greater chance of succeeding if it were accompanied by activities tending to improve public healt services

The Conference proposed that special research be carried out in different countries to determine the most effective methods of health education as well as the methods most likely to stimulate the interest of those sections of the population for whom they were intended

In addition, research should be carried out into methods of evaluation of health education programmes

8 Planning, execution and evaluation of control projects

Session of Friday 23 October 1959
Chairman Dr M A Shah
Rapporteurs Dr J Ruff, Mr A Tadessa

(a) *General*

It was recognized that because of regional differences in environmental background, disease patterns and national resources, there could not be any standard uniform method for the control of trachoma and associated infections Nevertheless, during the past seven years, in the course of several internationally assisted and coordinated projects, certain basic conceptions, principles and procedures had emerged

Objectives in communicable eye disease campaigns depended largely upon prevailing environmental conditions, and might be

(1) Eradication
(2) Substantial reduction in the prevalence and incidence of the disease, or diseases
(3) Prevention or control of disabling complications

The Conference agreed that in view of the environmental conditions prevailing throughout many of the participating countries, eradication of trachoma and associated conjunctivitis would be impossible without further improvements in the standards of living and hygiene, and these would take some time to achieve The objectives of control programmes in such areas would therefore be reduction in the prevalence and incidence of these diseases and prevention or control of complications

These objectives might be reached through collective treatment and programmes of health education and environmental sanitation

Successful prophylaxis however depended upon the identification and effective treatment of the age, sex, and occupational groups constituting the important sources of infection, and upon the control of factors involved in the transmission of the disease In many countries there was insufficient information available on these factors, and further studies were necessary

An effective programme for the control of complications depended upon a knowledge of their type, incidence, age at onset, etc In many cases the only available data were derived from hospital statistics

It was, therefore, necessary in many countries to carry out basic epidemiological investigations in order to define the various problems before the planning of a campaign might be started

Basic studies were usually best carried out in selected areas by small groups of experts Control methods so evolved might then be put into effect as routine operations, with only sample groups kept under observation for purposes of evaluation

(b) *The Pilot Project*

The purposes of a pilot project were considered to be

(1) To carry out epidemiological studies which would define the overall problem, give indications of the type of control measures to be introduced, and form a baseline for future comparisons and evaluation,

(2) To determine by systematic therapeutic trials the most effective treatment methods for the different types of infection involved,

(3) To indicate other appropriate control measures,

(4) To form a demonstration and training centre for national and visiting medical and auxiliary personnel

In the plan of operation for the pilot project the following should be stated

(1) The objectives of the project,

(2) Methods to be employed,

(3) Details of the plan of action, including a working time-table,

(4) Administrative and technical responsibilities, provisions made for personnel, supplies, equipment, transport, etc

It was considered desirable to ensure from the beginning the cooperation and assistance of all the Government departments concerned, and to set up an advisory body to advise the Government on all aspects of the project This body should include experts in Public Health Administration, Ophthalmology, Epidemiology, Environmental Sanitation, Health Education, Social Welfare, Statistics, and representatives of participating agencies

(c) *Mass Campaign*

Should the experience gained with the pilot project justify the establishment of a mass campaign covering the whole or a part of the country, the plan of action should be modified to meet the needs of a large-scale programme

The research activities of the pilot phase should not cease with the establishment of the mass campaign It would be desirable if, wherever possible, a research

and evaluation programme were continued as a parallel activity throughout the whole duration of the mass campaign Advantage must be taken of all relevant advances in microbiology, immunology, therapy, etc , and provision made to adapt and apply them to the programme It was recognized that not all trachoma endemic countries in which control projects were in operation or planned had facilities for extensive research but, despite regional differences, there were groups of countries in which disease problems and resources were fairly comparable, and control measures suitable to one of these countries might be applicable to others in the group

The Conference considered that funds expended on basic and applied research were a sound investment which would lead to a saving in the money spent on prevention and treatment The Conference therefore recommended that an adequate portion of the budgetary allocation for control projects should be devoted to microbiological, epidemiological and therapeutic research It was also considered important to establish or support research centres in areas where communicable eye diseases were prevalent, particularly in those where, at present, no adequate research facilities existed

The Conference considered that the coordination of environmental sanitation and health education activities within a mass campaign must be taken into consideration during the planning stage and during the pilot project phase These points were discussed at earlier sessions

It was recommended that special attention be given to the recruitment and training of personnel In this connexion the Conference recognized that relatively few ophthalmologists had sufficient training and experience in preventive medicine, epidemiology, statistics and public health administration, and therefore recommended that all key personnel be briefed on the afore mentioned subject, thus they would be better fitted for the training of other workers

In areas where there were seasonal variations in bacterial or viral infections, the individual control operations should be timed accordingly It was recommended that the various activities of the mass campaign should be taken over progressively by the general health services of the country as soon as feasible, an that the health services themselves should be modified if necessary to permit this integration

Some Governments might consider requesting assistance from WHO and UNICEF for the initiation and development of their trachoma control projects WHO usually gave assistance by providing consultants and other staff, by training technical personnel and by providing a limited amount of supplies for experimental and demonstration purposes UNICEF assistance was usually given during the first years of the campaign and could consist of drugs, transport, laboratory and diagnostic equipment, health education material and other supplies

(d) *Evaluation*

Clear and detailed planning and provision should be made from the beginning for continuous evaluation of the project This applied not only to the appraisal of the results of individual operations, but also to the results of the project as a whole

Evaluation should take into consideration the technical, administrative and budgetary aspects of the project In estimating the per capita cost due allowance should be made for the fact that certain experimental activities of the pilot phase might necessitate heavy but non-recurring expenses

The difficulties in carrying out comprehensive evaluation were fully recognized and it was noted that through the careful follow-up of selected and representative population groups, various methods had been evolved facilitating the provision of the necessary data

9 CLOSING SESSION

Saturday 24 October 1959

President Dr A R Farah

The report of the Session on Planning, Execution and Evaluation as well as the draft report on the Conference were approved as read

Dr Rais (Tunis) then proposed

(a) Compulsory notification of gonorrheal conjunctivitis

(b) Compulsory teaching of ophthalmology in schools

(c) That during mass campaigns the whole population be mobilized

A lively discussion took place on all these topics and the following points emerged

1 Compulsory notification of the disease was intended to alert the authorities and to enable them to take prompt and appropriate action Some participants feared that notification of a disease might lead to efforts to hide it on the part of patients in order to escape the effects of such notification People were usually reluctant to be officially labelled with any disease

Another point in connexion with notification was, of course, correct diagnosis and this was at times in doubt All speakers agreed, however, that notification might be desirable under certain circumstances

2 On the question of teaching of ophthalmology, it was opined by some that a conference such as this should not meddle with the curricula of universities, furthermore some medical schools were not in a position to give suitable training on those eye diseases for which they had no suitable teaching material There was general agreement that a good knowledge of ophthalmology was necessary for

doctors and para-medical personnel in all countries, particularly in those where communicable eye diseases were predominant, and that doctors intending to practise in countries where such diseases were prevalent should receive supplementary training in ophthalmology, if the subject were not suitably covered during their undergraduate training

Regarding the question of mobilizing the whole nation for the purpose of a mass campaign against communicable eye diseases, it was felt that such a general mobilization might not be possible or even desirable

The following recommendation was unanimously approved

> "The Conference recommends that the attention of Governments be drawn to the importance and dangers of epidemics of acute conjunctivitis, particularly of those due to *Neisseria,* and to the need for prompt action along sound epidemiological lines for the suppression of the epidemics at onset The Conference further considers that all medical undergraduates, practitioners, and auxiliaries should have adequate training in ophthalmology, and recommends that particular emphasis be placed on the epidemiology, diagnosis, treatment and prevention of communicable eye diseases "

Professor G Chams (Iran), Vice-President, thanked the Tunisian Government and WHO on behalf of participants for organizing the Conference which had proved so illuminating and helpful

The Conference Secretary expressed his thanks to the Government on behalf of the Secretariat, for making the conference possible and for placing at the disposal of organizers all facilities, personnel and equipment

The Chairman of the Conference, Dr Farah, after thanking the participants and the WHO staff, declared the Session closed

VI OTHER ACTIVITIES

1 Visit to the "Centre Ophtalmologique"

Saturday 17 October

This visit included a tour of the laboratory and the hospital Participants were shown around the well-equipped research laboratory by Dr. M Tarizzo, WHO Senior Adviser, who gave explanations on the work he was doing, particularly in connexion with the cultivation in the embryonated egg of three strains of viruses obtained from trachoma cases He also gave an account of his preliminary work in connexion with the sensitivity of these viruses towards antibiotics currently used in anti-trachoma therapy Participants were interested to learn that such prelimi-

nary trials were consistent with clinical experience Dr Tarizzo also presented slides wherein the elementary bodies could easily be seen Such material was obtained from the harvesting of inoculated eggs The two "Chefs de service", Dr R Nataf and Dr H Rais, then conducted the party through their hospital, visiting wards, clinics and operating theatres They kindly gave an account of the work done at the Centre

2 Visit to the "Institut Pasteur"

Wednesday 21 October

The Director, Professor Renoux, very kindly explained the various activities carried out at the Institute

Several sections were visited, and participants were shown by Dr Huet the technique of intranasal inoculation of mice with material obtained from trachoma cases

Sections of lungs showing elementary bodies were also shown to participants

3 Showing of Slides

During the Conference some beautiful slides showing the clinical appearance of trachoma, as well as inclusion bodies in epithelial cells stained by different methods, were presented Slides showing the appearance of the eye after inoculation with the virus of trachoma were also shown Two films on the prevention and cure of trachoma in the schools and among the population at large were presented

VII RECOMMENDATIONS BY THE CONFERENCE

The following recommendations were made by the Conference

1 Ophthalmology

(a) *Clarification of the Geneva classification of trachoma*

Tr I should denote the pre-follicular stage of trachoma That is to say, the stage of diffuse sub-epithelial infiltration with characteristic limbal changes Until the latter appear, the case should be labelled "trachoma dubium", even though inclusion bodies may be demonstrable

Tr II should denote that phase of the disease between the first appearance of visible follicles and the onset of cicatrization For the purpose of more precise recording, stage Tr II should be sub-divided into

Tr. II (1) – indicating the presence of early immature follicles (MacCallan Stage I follicles), and

Tr II (2) – indicating the presence of well-developed expressible follicles (MacCallan Stage II follicles)

Tr III and Tr IV should follow the MacCallan classification To Tr IV, however, should be added, in brackets, the word "healed" *Tr IV (Healed)*

(b) *Criteria of diagnosis and cure*

The criteria of diagnosis and cure as laid down by the Expert Committee on Trachoma should be retained In certain countries the presence of fine papillary hypertrophy and corneal vessels, in the absence of infiltration or other signs of inflammation, should not be considered as signs of active trachoma

(c) *Preparation of an Atlas*

WHO should help in the collection of colour photographs, diapositives, and other materials suitable for the production of a comprehensive atlas of the manifestations of trachoma for teaching purposes and for the international standardization of criteria of clinical trachoma

(d) *Provocative tests*

Further research should be undertaken on provocative tests and on their place in trachomatology

(e) *Sensitivity of virus to drugs*

Research on the sensitivity of the virus to drugs used in trachoma therapy, different strains of the virus should be used in this study

(f) *Research on treatment*

The treatment methods recommended by the WHO Expert Committee on Trachoma, both for individual cases and for mass campaigns, had proved their worth in extended trials Further research, however, was indicated, for example, on the intermittent schedules of antibiotic treatment and on the value of the long-acting repository sulphonamides It was expected that in the future systematic laboratory screening of these and other therapeutic agents would help in the selection of drugs to be put to trial in the field

(g) *Uniform methods*

The use of uniform methods in comparative trials and in the evaluation of projects was advisable WHO should continue to give technical guidance in this domain

2. Microbiology

The following were recommended

(a) Standardization of techniques used in the collection, isolation, examination and cultivation of viruses

(b) The definition of terms used in the laboratory study of trachoma

(c) The determination of the nature and diagnostic value of inclusion bodies

(d) Further study of morphological, serological and immunological characteristics of the virus

(e) Basic criteria for identification of trachoma virus

(f) Pathogenicity of viruses to animals and man

(g) Interchange of information and materials between laboratories, possibly through the agency of WHO

3 Epidemiology

Further work on the following lines was recommended

(a) Basic investigation on the epidemiology of trachoma in different countries, including the study of the pattern of local beliefs and customs

(b) Prevalence Surveys followed by well planned longitudinal studies of small communities and by experimental trials designed to obtain evidence of possible association of different factors

(c) WHO should help in the drawing up of an up-to-date map of the distribution of trachoma in the world

(d(Further attempts should be made to find a suitable and generally acceptable formula to denote the index of severity of trachoma

4 Environmental sanitation

The following were recommended

(a) Avoidance of confusion between the various factors acting on the raising of the standard of living in the evaluation of the rôle played by environmental sanitation

(b) Further study on the rôle of the fly in the transmission of trachoma

(c) Research on the possibility and advisability of adding a fly repellent to antibiotics used in treatment

(d) Improvement in the methods of fly control

(e) Extension of water supply to communities

5 Health education

(a) Health education should be made a compulsory subject in the training of teachers and in the curriculum of schools

(b) The use of associations, organizations and clubs in the spread of health education

(c) Films, film strips and posters should have the local touch and should be in the local language

(d) Further research should be undertaken on the best methods to employ in health education, and on the best methods of evaluating its effects

6 Planning, execution and evaluation of control projects

(a) Funds devoted to research, particulary in places where no facilities for research existed, were a good investment and in the long run saved money required on projects

(b) There should be coordination of activities particularly between the programmes of environmental sanitation, health education and trachoma control campaigns

(c) In countries with high prevalence of seasonal conjunctivitis treatment methods should be timed accordingly

(d) Evaluation of projects should take into account the technical, administrative and budgetary aspects

(e) Particular attention should be paid to the recruitment and training of personnel

7 General recommendations

(a) Governments should consider the advisability of including in the list of notifiable diseases, certain types of conjunctivitis

(b) There should be adequate teaching in ophthalmology at undergraduate and post-graduate level for medical and para-medical personnel

VIII Acknowledgements

The success of the Conference was due in no small measure to the close collaboration by the Government of Tunisia with WHO Special tribute must be paid to the Minister of Health for all the facilities placed at the disposal of the Conference

The simultaneous translation equipment was very satisfactory and allowed the translators to carry out their task in a very efficient manner

The touristic visits to Carthage and Kairouan were both pleasant and stimulating, and were very much appreciated by the participants

The "Union Nationale des Aveugles de Tunisie", the "Union des femmes de Tunisie", the President of the Ophthalmological Society and Dr R Nataf gave well attended and well appreciated receptions to participants

Individual ophthalmologists entertained individuals and groups of participants at various times Such social occasions, outside the hours reserved for work, provided an admirable setting for informal but fruitful discussions on various subjects They also helped all to build personal friendships between workers which should bear fruit in future collaboration

ANNEX I

LIST OF PARTICIPANTS

Governmental Participants

WHO — Eastern Mediterranean Region

ETHIOPIA

Dr *S Hadjimichaelis*, Menelik II Hospital, Ministry of Public Health, Addis Ababa

Mr *Asseja Tadessa*, Menelik II Hospital, Ministry of Public Health, Addis Ababa

IRAN

Professor *Gholi Chams*, Director, Ophthalmological Hospital, University of Teheran, Teheran.

Dr *A A Minou*, Associate Professor of Preventive Medicine, Medical School, Shiraz.

Dr *Hamid Mohsenine*, Chef de Service at the Faculty of Medicine, Institute of Parasitology and Malariology, Teheran University, Teheran

IRAQ

Dr *A G Zalzala*, Director, Ramhd Ophthalmological Hospital, Karkh, Baghdad

JORDAN

Dr *Wahby I Jabaji*, Director of Ophthalmic Department, Ministry of Health, Amman

LEBANON

Dr *Ahmed Mourreby*, Epidemiologist, Ministry of Public Health, Beirut

Dr *Robert Saadé*, Health Educator, Ministry of Public Health, Beirut

LIBYA

Professor *Pierfelice Ferraris*, Chief of Ophthalmological Department, Government Hospital, Ministry of Health, Tripoli

PAKISTAN

Dr *Mahmud Ali Shah*, Professor and Head of Department of Ophthalmology, Dow Medical College, Karachi

Dr *Mohamed Iliyas*, Senior Medical Officer, School Health Service, Karachi

Professor *Muhammad Shafii*, Professor of Ophthalmology, Nishtar Medical College, Multan

SUDAN

Dr *Ibrahim Suliman*, Provincial Medical Officer of Health, Darfur Province, El Fasher

TUNISIA

Dr *Ahmed Ridha Farah*, Chef du Service Central de la Prévention et de l'Hygiène Publique, Médecin-Inspecteur Régional, Secrétariat d'Etat à la Santé Publique et aux Affaires Sociales, Tunis

Dr *M T Daghfous*, Directeur de la Campagne Internationale contre les Maladies Oculaires, Chef de Service Ophtalmologique, Secrétariat d'Etat à la Santé Publique et aux Affaires Sociales

Dr *Ben Salem*, Médecin-Inspecteur Régional, Chef de Service de l'Education Sanitaire, Secrétariat d'Etat à la Santé Publique et aux Affaires Sociales

Dr *R Nataf*, Chef de Service au Centre Ophtalmologique, Tunis

Dr *H Rais*, Chef de Service au Centre Ophtalmologique, Tunis

Professor *G Renoux*, Directeur de l'Institut Pasteur, Tunis

UNITED ARAB REPUBLIC – Province of Egypt

Professor *M A Attiah*, Director, Ophthalmology Department, Dean of the Faculty of Medicine, Cairo University, Cairo

Dr *Ibrahim Ahmed Mohamed*, Acting Director, Giza Memorial Institute, Cairo

Dr *Abdel Aala Shawarby*, Director, Insect Control Section, Ministry of Public Health, Cairo

Province of Syria

Dr *Léon Asmar*, Médecin Chef de la Clinique Ophtalmologique, Ministry of Public Health, Aleppo

YEMEN

Represented by the U A R delegation

WHO — European Region

FRANCE (Algeria)

Dr *Jean Ruff*, Chef du Service de la Santé Scolaire et Universitaire, Direction Générale de l'Education Nationale, Alger

Dr *Charles Tardieux*, Médecin Ophtalmologiste, Direction Générale de l'Action Sociale, Alger

MOROCCO

Dr *Mohammed A Boutaleb*, Médecin Chef de la Préfecture de Casablanca, Ministère de la Santé Publique, Rabat

Observers

Arabian American Oil Company (ARAMCO)

Dr *Roger L Nichols*, Research Associate, Dhahran

Institut Pasteur

Dr *Chadli*, Sous-Directeur de l'Institut Pasteur

Dr *Maurice Huet*, Chef de Laboratoire

International Association for The Prevention of Blindness

Dr *R Nataf*

International Cooperation Administration

Dr *J S Prince*, Chief Public Health Adviser, USOM, Ethiopia

International Organization Against Trachoma

Dr *R Nataf*, Vice-President, Tunis

Societé Tunisienne d'Ophtalmologie

Dr *M Shafti*, Vice-President

Dr *Mabrouk*, Tunis

Societé Tunisienne de Prophylaxie de la Cecité

Dr *Ridha Mrad*, Ophtalmologiste

Union Nationale des Aveugles

Dr *R Besnainou*, Secrétaire Général, Relations internationale de l'UNAT

United Nations Relief and Works Agency for Palestine Refugees (UNRWA)

Dr *S Flache*, Deputy Chief Medical Officer, Beirut

Technical Assistance Board

Mr *Alexander Shaw*, Acting Resident Representative, Tunis

United States Naval Medical Research Unit no 3 (US NAMRU 3)

Dr *J R Schmidt*, Chief, Department of Virology, Cairo

WHO SECRETARIAT

Dr *A H Taba*	Director WHO, Eastern Mediterranean Region
Professor *P Guerra* WHO Temporary Adviser	Director Hailé Selassie Ophthalmological Centre Asmara
Dr *L A Kaprio*	Public Health Administrator (Planning), WHO EMRO
Dr *F Maxwell-Lyons*	Division of Communicable Disease Services, WHO Headquarters
Dr *R Pagès* WHO Temporary Adviser	Centre d'Ophtalmologie et de Trachomatologie Expérimentale de Salé, Maroc
Mr *G Ponghis*	Regional Adviser in Environmental Sanitation, WHO EMRO
Dr *J Reinhards*	Health Officer for Communicable Eye Diseases, WHO EURO
Dr *V Tabone* (SECRETARY OF THE CONFERENCE) WHO Consultant	Ophthalmic Surgeon Central Hospital Consultant Ophthalmologist Victoria Hospital, Malta
Dr *M L Tarizzo*	Senior WHO Adviser Ophthalmological Centre, Tunis
Mr *A A Weber*	Statistician WHO EURO
Mr *J Simon*	Public Information Officer WHO EMRO
Mr *J Schilling*	Administrative Services Officer WHO EMRO
Miss *M Gardiner*	Conference Officer WHO EMRO

ANNEX II

Agenda of The Trachoma Conference

THURSDAY 15 October

9 00—10 00	Registration Place Bourse du Travail
10 00—11 00	Inaugural Session Speeches M Ahmed Ben Salah, Secrétaire d'Etat à la Santé Publique et aux Affaires Sociales Dr A H Taba, Director, World Health Organization, Eastern Mediterranean Region Election of Officers (a) Chairman (b) Vice-Chairmen Announcements
11 00—11 30	Intermission
11 30—13 00	First Plenary Session Adoption of the Provisional Agenda (a) Procedure to be adopted (b) Division of programme into working sessions Ophthalmological aspects Microbiological aspects Epidemiology of trachoma and related infections of the conjunctiva Present status of trachoma therapy Environmental Sanitation Health Education Planning, Execution and Evaluation of control projects (c) Election of Officers for sessions Group Chairman for each session Rapporteurs for each session
13 00—15 00	Lunch Interval
15 00—16 00	Meeting of WHO Secretariat

FRIDAY 16 October

9 00—10 45	Plenary Session Subject *Ophthalmological Aspects* Introduction and Discussion
10 45—11 00	Break
11 00—12 15	Continuation of discussion in plenary session or in working groups
12 15—14 00	Lunch Interval
14 00—16 00	Continuation of discussion in plenary session
16 00—17 00	Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

SATURDAY 17 October

9 00— 9 15	Plenary Session Minutes of previous day's proceedings
9 15—11 00	Subject *Microbiological Aspects* Introduction and Discussion
11 00—11 15	Break
11 15—12 15	Continuation of discussion
12 15—14 00	Lunch Interval
14 00—	Visit to "Centre Ophtalmologique" Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

SUNDAY 18 October OPEN

MONDAY 19 October

9 00— 9 15	Plenary Session Minutes of Saturday's proceedings
9 15—11 00	Subject *Epidemiological Aspects* *Treatment methods* Introduction and Discussion
11 00—11 15	Break
11 15—12 15	Continuation of discussion in plenary session or in working groups
12 15—14 00	Lunch Interval
14 00—16 00	Continuation of discussion in plenary session
16 00—17 30	Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

TUESDAY 20 October

9 00— 9 15	Plenary Session Minutes of previous day's proceedings
9 15—11 00	Subject *Trachoma Therapy* Introduction and Discussion
11 00—11 15	Break
11 15—12 15	Continuation of discussion in plenary session or in working groups
12 15—14 00	Lunch Interval
14 00—16 00	Continuation of discussion in plenary session
16 00—17 30	Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

WEDNESDAY 21 October

9 00— 9 15	Plenary Session Minutes of previous day's proceedings
9 15—11 00	Subject *Environmental Sanitation* Introduction and Discussion
11 00—11 15	Break
11 15—12 15	Continuation of discussion

12 15—14 00	Lunch Interval
14 00—	Visit to Institut Pasteur
	Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

THURSDAY 22 October

9 00— 9 15	Plenary Session
	Minutes of previous day's proceedings
9 15—11 00	Subject *Health Education*
	Introduction and Discussion
11 00—11 15	Break
11 15—12 15	Continuation of discussion
12 15—14 00	Lunch Interval
14 00—	Field visit — Djebel Lahmar (Trachoma Campaign)
	Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

FRIDAY 23 October

9 00— 9 15	Plenary Session
	Minutes of previous day's proceedings
9 15—11 00	Subject *The Planning, Execution and Evaluation of Control Projects*
	Introduction and Discussion
11 00—11 15	Break
11 15—12 15	Continuation of discussion in plenary session or in working groups
12 15—14 00	Lunch Interval
14 00—16 00	Continuation of discussion in plenary session
16 00—17 30	Meeting of Rapporteurs with WHO Secretariat to prepare report on day's proceedings

SATURDAY 24 October

9 00— 9 30	Plenary Session
	Minutes of previous day's proceedings
9 30—11 00	Break
11 00—	Presentation by the Secretary of the Conference of draft Final Report for approval
	Closure of the Conference

ANNEX III

Speech by Dr A H Taba, Director, WHO Eastern Mediteranean Region, on the occassion of the Opening Meeting of the Trachoma Conference

Your Excellencies, Ladies and Gentlemen,

It gives me great pleasure on behalf of the World Health Organization to welcome you all to this opening meeting of the Trachoma Conference

We are indeed grateful to the Government of the Republic of Tunisia for their most generous invitation for the Conference to take place in its capital city, and we are particularly indebted to them for the use of this magnificent hall, which, in its splendour, should be greatly conducive to the success of our deliberations

The World Health Organization has, from its inception, recognized the importance of controlling trachoma throughout the world, and the successful employment of newer methods of therapy and their acceptance by the First Committe of Trachoma Experts of WHO opened the door of organized measures of control

The first pilot project in the field was launched with WHO assistance in Taiwan in 1952 and was followed closely, in 1953, by projects in Morocco and Tunisia

WHO activities in this field have since developed and increased in these and other countries Such activities include the setting up of a panel of experts, the convening of expert committees and study groups, arranging training courses, the provision of fellowships, the helping of research by assisting Governments in the launching of field trials, pilot projects and mass campaigns In addition, WHO helps to coordinate activities in various fields and in different countries by disseminating knowledge, by setting up standards, and by convening Conferences such as this

This is the second Conference on Trachoma planned on a zonal basis with participants from a group of countries in the majority of which disease patterns, and the environmental background and other problems, are roughly comparable

In order to obtain as complete a coverage as possible of the subject, it is being suggested to divide the subject under discussion under the different headings of Ophthalmology, Microbiology, Epidemiology, Environmental Sanitation, Health Education, and the all-important section of Planning, Execution and Evaluation of control projects

Recent sucessful attempts have confirmed the possibility of culturing the trachoma virus in the embryonated egg, and thereby a great stimulus has been given to further research on the subject and the door has been opened for interesting and important developments in the field of trachomatology

It is likely that we are on the road to a further increase in knowledge, not only on the factors that promote and inhibit the growth of the virus, but also on the sensitivity and resistance of the virus to various drugs and other therapeutic agents

Measures intended to control trachoma on a large scale should be planned on a broad front Health education and environmental sanitation, for instance, are just as important as specific methods of therapy

It is fortunate that this Conference is being held in a country which has witnessed the first efforts of WHO at assisting Governments in their organized public health measures of control In Tunisia, there has been a remarkable effort to control trachoma

and allied conjunctivitis by methods of collective treatment aimed at reaching both school children and the general population The Government has followed the earlier projects of trachoma control by national anti-ramad campaigns which, I am informed, have already given gratifying results

Recent information obtained from the countries participating in this Conference confirm the fact that trachoma is highly prevalent in most of them, especially in certain particular areas Again, in most of the same countries, it is a major cause of partial or complete blindness

There is, therefore, a compelling reason for getting together and for studying the most efficient and feasible measures of bringing this disease under control and possibly of eradicating it altogether

In conclusion, I should like to convey to you the greetings and best wishes of the Director-General, Dr Candau, and also those of the Director of the WHO European Region, Dr van de Calseyde, who was unfortunately prevented by his other commitments from being present in person here today. And, lastly, please accept my own warmest wishes to you all for a most successful and fruitful outcome of your discussions

ANNEX IV

List of Working Documents

EM/Trach Conf /1 & Rev 1	Provisional Agenda and Revision
EM/Trach Conf /2	Situation of communicable eye diseases in certain countries of the WHO Eastern Mediterranean Region and in some neighbouring countries
EM/Trach Conf /3	The role of associated infections in trachoma, by Dr R. Pages
EM/Trach Conf /4	(Document number withdrawn)
EM/Trach Conf /5	The organization of field trials in projects for the control of communicable eye diseases, by Mr A A Weber
EM/Trach Conf /6	Modern methods of mass treatment in trachoma, by Dr J Reinhards
EM/Trach Conf /7	Proposed Record Card for mass screening and communicable eye diseases prevalence surveys, by Dr J Reinhards, Mr A Weber and Dr A Tuyns
EM/Trach Conf /8	Observations on three virus strains isolated from trachoma by Dr M L Tarizzo, Mrs J Ladjimi and Dr B Nabli, with the technical assistance of Mr S El Fassy
EM/Trach Conf /9	Preliminary note on the sensitivity to antibiotics of virus strains isolated from trachoma cases, by Dr M L Tarizzo and Dr B Nabli
EM/Trach Conf /10	Studies on trachoma, by Drs E S Murray, S D Bell Jr, A T Hanna, R L Nichols and J C Snyder
EM/Trach Conf /11	Some aspects of health education of the public and communicable eye diseases, by Mr W A Darity
EM/Trach Conf /12	The cardinal signs and differential diagnosis of trachoma and other acute conjunctivitis, by Dr Ibrahim Ahmed Mohamed
EM/Trach Conf /13	The cardinal signs and differential diagnosis of trachoma, acute and chronic conjunctivitis, by Professor G Chams
EM/Trach Conf /14	Methods of treatment which may be used in a mass campaign, by Professor G Chams
EM/Trach Conf /15	Report of communicable eye diseases among Arab refugees in Jordan, by Dr A T G Johnston (UNRWA Representative)
EM/Trach Conf /16	Some epidemiological aspects of trachoma in Iran, by Dr H Mohsenine
EM/Trach Conf /17	Methods of treatment of trachoma, by Professor Mahmoud A H Attiah

EM/Trach.Conf /18	Recent etiologic studies of trachoma and adenovirus eye infections a review, by Dr J R Schmidt
EM/Trach Conf /19	Environmental sanitation in the control of communicable eye diseases, by Dr A A Shawarby
EM/Trach Conf /20	Communicable Eye Diseases Pilot Project (1958), Qalyub
EM/Trach Conf /21	Reconsideration of Trachoma I and IV and criteria of cure, by Dr Ibrahim Ahmed Mohamed.
EM/Trach Conf /22	The rôle of environmental sanitation in the epidemiology of trachoma and associated ocular infections, by Mr G Ponghis
EM/Trach Conf /23	Reconsideration of trachoma — Stages I and IV, by Dr R Nataf
EM/Trach Conf /24	Recent advances in virological research in trachoma, by Professor G Renoux
EM/Trach Conf /25	The Tunisian anti-rmad campaign undertaken within the control of purulent eye diseases and trachoma, by Dr H Rais
EM/Trach Conf /26	Final Report of the Trachoma Conference

ANNEX V

Items for Discussion in the Different Sessions

OPHTHALMOLOGICAL ASPECTS

Criteria of diagnosis — Review of stages of trachoma
Differential diagnosis
Criteria of cure
Recommendation for future research

MICROBIOLOGICAL ASPECTS

Viruses
    The virus of trachoma
    Other viruses with possible or presumed etiological relationship to trachoma
Bacteria in relation to trachoma
    The rôle of bacteria in the pathogenesis and pathology of trachoma
    (i) *Haemophilus (H aegyptius, H influenzae)*
    (ii) Other pathogenic bacteria of the eye
    Bacterial flora of the normal eye
Rôle of the laboratory in trachomatology
    Combined clinical — laboratory research
    (i) Pathogenesis of trachoma
    (ii) Epidemiology of trachoma
    (iii) Therapy of trachoma
    Diagnosis, other than cytological diagnosis
Suggestions for future research

EPIDEMIOLOGY OF TRACHOMA AND RELATED INFECTIONS OF THE CONJUNCTIVA

Agent, host and environmental factors
Community and family patterns of trachoma in different parts of the world
Local variations in severity and socio-economic importance of trachoma
The rôle of associated infections of the eye
Other factors possibly involved
The design of epidemiological studies
Recommendations for future research

THE PRESENT STATUS OF TRACHOMA THERAPY

Optimum treatment of the individual case
Treatment methods suitable for mass application
Design and evaluation of therapeutic trials

ENVIRONMENTAL SANITATION

Insect vectors in the transmission of trachoma and other communicable eye diseases their control

Other environmental and sanitary conditions having a bearing on the spread of trachoma and other communicable eye diseases their control

Coordination of programmes for communicable eye diseases control and for the improvement of environmental sanitation

Subjects for further research

HEALTH EDUCATION

Influence of health education on trachoma control programmes

Application of health education to the mass treatment of trachoma

Families

Schools

Communities

Health education methods to be used

Suggestions for future research

PLANNING, EXECUTION AND EVALUATION OF CONTROL PROJECTS

Planning

(i) Preliminary sample survey (assessment of the need for the initiation or continuation of trachoma control programmes,

(ii) Marshalling public support and funds for proposed campaigns,

(iii) Budget estimate

Execution

A The "Pilot Project"

Further study and research of treatment problems

Development and evaluation of appropriate control measures

Demonstration and training areas

B Mass campaigns

Coordination of the project with health education and environmental sanitation activities already covered in session on Health Education

Integration of the control programme in the general health services

Recruitment and training of personnel

Progressive coverage of the country

Administrative arrangements

— Transport

— Supplies and equipment

— Others

Evaluation

Technical

Administration

Parallel programme of research and evaluation

ANNEX VI

Situation of Communicable Eye Diseases in certain countries of the WHO Eastern Mediterranean Region and in some neighbouring countries

The information contained in the adjoined tables has been obtained, except where otherwise stated, from replies to questionnaires recently sent out to the countries participating in the Trachoma Conference

Analyses of some of the data therein contained shows the following interesting findings

I — PREVALENCE OF TRACHOMA

1 High prevalence throughout the country

Ethiopia	Libya
Iraq	West Pakistan

2 High prevalence in certain areas of the country only

Algeria	Morocco
Greece	Saudi Arabia
Iran	Sudan
Jordan	Tunisia
Lebanon	UAR (Egypt and Syria)

3 Moderate or low incidence

Aden	French Somaliland
Cyprus	Italian Somaliland

II — RELATIVE IMPORTANCE OF TRACHOMA IN RELATION TO "ECONOMIC BLINDNESS"

1 Very important in the following countries

Iran	Morocco (if associated with seasonal conjunctivitis)
Iraq	Saudi Arabia
Jordan	Sudan
Libya	UAR (Egypt)
	West Pakistan

2 Not important in

Aden	French Somaliland
Cyprus (except in old people)	Greece

3 No data from

Algeria	Lebanon
Ethiopia	Tunisia
Italian Somaliland	UAR (Syrian Province)

III — SEASONAL CONJUNCTIVITIS

1 Occurs as an epidemic disease in the following countries

Aden	Morocco
Ethiopia	West Pakistan
French Somaliland	Saudi Arabia
Iran	Sudan
Iraq	Tunisia
Jordan	UAR (Egyptian and Syrian Provinces)
Libya	

2 Is an important cause of blindness in the following countries

Ethiopia	Morocco
Iran	Saudi Arabia
Iraq	Tunisia
Jordan	UAR (Egyptian and Syrian Provinces)
Libya	West Pakistan

3 No replies have been received from

Algeria
Italian Somaliland

4 Common pathogens of seasonal conjunctivitis

(a) Koch Weeks B
(b) Pneumococcus
(c) Morax Axenfeld diplobacillus
(d) Streptococcus
(e) Staphylococcus
(f) Gonococcus

IV — Field projects are proceeding in the following countries

Algeria	Tunisia
Ethiopia	UAR (Egyptian Province)
Morocco	

V — School Inspection and Treatment are a regular feature of all the health programmes of most of the countries in the region

VI — Programmes of health education in connection with the control of communicable eye diseases in general, and of trachoma and conjunctivitis in particular, are also a regular feature of public health programmes in practically all the countries of the region

VII — COMMENTS

It is clear from the above that trachoma is a disease of considerable importance in the region, both because of its high incidence and because of its serious effects on vision Another important deduction that must be drawn from the replies to the questionnaires is the close association in the countries of this region between trachoma and seasonal epidemic conjunctivitis All control programmes, therefore, must take into account this association

In the region, the number of ophthalmological beds, the number of out-patient sessions held, the number of ophthalmologists and the laboratory facilities, vary widely from one country to another, both in the absolute sense and in relation to the population of each country

One should, however, keep in mind that the control of trachoma must be considered separately from the control of its complications Fortunately, the former is not dependent on hospital in-patient accommodation, nor on the number of ophthalmologists available in any one country Modern methods of treatment can be carried out by untrained persons and very often by the patients themselves

The most important consideration in all attempts at trachoma control is the question of planning and administrative control In fact, control of trachoma with modern methods of treatment is largely a problem of organization Lack of ophthalmologists should not be an obstacle for the proper conduct of control campaigns so long as there is availability of doctors and nurses who could be trained in the criteria of diagnosis, criteria of cure and methods of treatment of trachoma and other communicable eye diseases It is almost certain that with proper planning, proper supervision and adequate supply of drugs, control measures are within the possibilities of all the countries of the region

CONCLUSION

There seems to be ample evidence that where control projects exist, they should be extended until the relevant sectors of the population are adequately covered, and that in those countries where trachoma is prevalent and where no definite control programmes are in being, measures should be taken without delay to set them up International help in the form of technical advice from WHO and material help in equipment and supplies from organizations like UNICEF would go a long way towards making such control measures really effective

Status of Communicable Eye Diseases in the Eastern Mediterranean Region

COUNTRY & POPULATION	TRACHOMA			SEASONAL CONJUNCTIVITIS (»Acute Ophthalmia«)				OTHER COMMON EYE DISEASES
	Prevalence		Relative importance of Trachoma in relation to »economic blindness«	Does it occur in epidemic form?	Do epidemics occur regularly each year?	Is this conjunctivitis a frequent cause of blindness?	What are the common pathogens?	Other common eye diseases in order of importance
	Throughout the country	In certain localities						
* ADEN 138,441	High Mod. Low x Insgn		Not important	Yes	Yes	No	No data given	Acute conjunctivitis Cataract Glaucoma Phlyctenular kerato-conjunct Episcleritis
* ALGERIA 9,144,971	High Mod x Low Insgn	x	No data given				Koch Weeks Morax Axenfeld Pneumococcus Gonococcus	Follicular conjunctivitis
* CYPRUS 528,618	High Mod Low Insgn x	x	Not important to young Of some importance to old	No	No	No	Koch Weeks Pneumococcus Staphylococcus	Pterygium Cataract Angular conjunctivitis Corneal opacities Traumatic affections Glaucoma
ETHIOPIA 20,000,000	High x Mod Low Insgn	x	No data given	Yes	Yes	Yes	Koch Weeks Pneumococcus Morax Axenfeld	Acute conjunctivitis Cataract Manifestations of ocular syphilis Glaucoma Onchocerciasis Nutritional eye diseases

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

Mod = Moderate Insgn = Insignificant

COUNTRY & POPULATION	TRACHOMA			SEASONAL CONJUNCTIVITIS (»Acute Ophthalmia«)				OTHER COMMON EYE DISEASES
	Prevalence		Relative importance of Trachoma in relation to »economic blindness«	Does it occur in epidemic form?	Do epidemics occur regularly each year?	Is this conjunctivitis a frequent cause of blindness?	What are the common pathogens?	Other common eye diseases in order of importance
	Throughout the country	In certain localities						
FRENCH SOMALILAND 63,000	High Mod x Low Insgn		Not important	Yes	No	No	Koch Weeks	Cataract Pterygium
* GREECE 7,632,801	High Mod Low Insgn x	x	Practically insignificant	No	No	No	No data given	Glaucoma Cataract
* IRAN 18,944,821	High Mod Low Insgn.	x	Very important	Yes	Yes	Yes	Staphylococcus Streptococcus Koch Weeks Morax Axenfeld	Allergic conjunctivitis Uveitis Glaucoma Cataract Viral kerato-conjunctivitis Retinal diseases
* IRAQ 6,317,043	High x Mod Low Insgn		Very important	Yes	Yes	Yes	Pneumococcus Koch Weeks Staphylococcus Streptococcus	Corneal ulcers-keratitis Spring catarrh Glaucoma Cataract Uveitis Phlyctenular kerato-conj

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

Mod = Moderate Insgn = Insignificant

COUNTRY & POPULATION	TRACHOMA			SEASONAL CONJUNCTIVITIS (»Acute Ophthalmia«)				OTHER COMMON EYE DISEASES
	Prevalence		Relative importance of Trachoma in relation to »economic blindness«	Does it occur in epidemic form?	Do epidemics occur regularly each year?	Is this conjunctivitis a frequent cause of blindness?	What are the common pathogens?	Other common eye diseases in order of importance
	Throughout the country	In certain localities						
* JORDAN 1,329,174	High — Mod x Low — Insgn —	x — — —	Very important	Yes	Yes	Yes	Koch Weeks Pneumococcus Diphtheria B Morax Axenfeld	Keratomalacia Syphilitic neuritis Optic neuritis & O A Pterygium Spring catarrh Corneal ulcers
* ITALIAN SOMALILAND 1,021,572	High — Mod — Low — Insgn —	— — x —	NO DATA GIVEN					
LEBANON 1,389,000	High — Mod x Low — Insgn —	x — — —	Not stated	No	No	No	Streptococcus Staphylococcus Pneumococcus Koch Weeks	Acute conjunctivitis Spring catarrh Phlyctenular conjunctivitis Glaucoma Episcleritis Iritis
* LIBYA 1,091,830	High x Mod — Low — Insgn —	— — — —	Very important	Yes	Yes	Yes in part of country	Koch Weeks Morax Axenfeld Staphylococcus Streptococcus Gonococcus	Cataract Glaucoma Leucomas Irridocyclitis

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

Mod = Moderate Insgn = Insignificant

COUNTRY & POPULATION	TRACHOMA			SEASONAL CONJUNCTIVITIS (»Acute Ophthalmia«)				OTHER COMMON EYE DISEASES
	Prevalence		Relative importance of Trachoma in relation to »economic blindness«	Does it occur in epidemic form?	Do epidemics occur regularly each year?	Is this conjunctivitis a frequent cause of blindness?	What are the common pathogens?	Other common eye diseases in order of importance
	Throughout the country	In certain localities						
* MOROCCO 7,442,110	High x Mod Low Insgn	x	Not important if associated with seasonal conjunctivitis	Yes	Yes	Yes	Koch Weeks Morax Axenfeld Pneumococcus Gonococcus	Cataract Glaucoma Corneal ulcers Pterygium Strabismus Dacryocystitis
PAKISTAN (WEST) 80,167,000	High x Mod Low Insgn	x	Very important	Yes	Yes	Yes	Koch Weeks Pneumococcus Staphylococcus Streptococcus Virus infections Gonococcus	Cataract Glaucoma Phlyctenular conjunctivitis Corneal infections Irridocyclitis Xerophthalmia
* S ARABIA 6,036,000	High Mod x Low Insgn.	x	Very important	Yes	Yes	Yes	Gonococcus Koch Weeks Pneumococcus	Corneal ulcers Phlyctenular conjunctivitis Spring catarrh Cataracts Glaucoma Uveitis, Choroiditis Tumours
* SUDAN 10,262,536	High Mod x Low Insgn	x	Very important	Yes	Yes	Yes	Koch Weeks Diphtheroid Bacilli Morax Axenfeld Staphylococcus	Allergic ocular conditions Cataract Glaucoma Pterygium Tumours Retinal detachment

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

Mod = Moderate Insgn = Insignificant

COUNTRY & POPULATION	TRACHOMA			SEASONAL CONJUNCTIVITIS (»Acute Ophthalmia«)				OTHER COMMON EYE DISEASES
	Prevalence		Relative importance of Trachoma in relation to »economic blindness«	Does it occur in epidemic form?	Do epidemics occur regularly each year?	Is this conjunctivitis a frequent cause of blindness?	What are the common pathogens?	Other common eye diseases in order of importance
	Through out the country	In certain localities						
* TUNISIA 3,783,169	High — Mod x Low — Insgn —	x — — —	Not stated	Yes	Yes	Yes	Koch Weeks Morax Axenfeld Gonococcus Pneumococcus	Glaucoma Other types of conjunct Cataract Corneal conditions Ocular effects of vitaminosis Retinal detachment
* UAR (EGYPT) 19,021,840	High — Mod x Low — Insgn —	x — — —	Very important	Yes	Yes	Yes	Gonococcus Koch Weeks	Glaucoma Cataract Retinal detachment Uveitis Chorioretinitis Optic atrophy
UAR (SYRIA) 3,670,000	High — Mod x Low — Insgn —	x — — —	Not stated	Yes	Yes	Yes	Koch Weeks Morax Axenfeld	Gonococcal conjunctivitis

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

Mod = Moderate Insgn = Insignificant

COMMUNICABLE EYE DISEASES (1)

HEALTH SERVICES — RESEARCH — PERSONNEL

COUNTRY & POPULATION	Is there a special Eye Section in the Central Health Administration?	HOSPITAL AND DISPENSARY SERVICES															
		Ophthalmic Hospitals		Ophthalmic dept in general hospitals		No of ophthalm beds per 1000 population	Hospital out patients departments		Ophthalmic dispensaries		Other centres providing facilities for eye examin & treatment		Total number of ophthalmic out patients		Total number of new eye cases	
		No	No beds	No	No eye beds		Urban	Rural	Urban	Rural	Urban	Rural	1957	1958	1957	1958
*ADEN 138,441	No	—	—	1	14	0,10112	1	—	—	—	5	—	No figures available			
*ALGERIA 9,144 971	—	—	—	8	397	0,04341	—	—	3	—	—	101	864,843	558,827	83,987	114,153
*CYPRUS 528,618	No	—	—	6	20	0,03783	No data		6	—	—	6	19,067	18,550	13,672	10,802
ETHIOPIA 20,000,000	No	1	140	1	24	0,00828	2	—	—	—	2	—	65,500	70,500	17,063	18,309
FRENCH SOMALI-LAND 63,000	No	—	—	1	25	0,39682	—	—	—	—	—	—	1,988	2,655	1,635	2,125
*GREECE 7,632,801	Yes	1	60	19	No data given		19	—	16	33	3	—	565,045	564,327	62,562	70,349
*IRAN 18,944,821	Yes	2	300	38	960	0,06650	44	—	114	—	—	420	1,710,500	1,850,210	1,210,970	1,390,290
*IRAQ 6,317,043	No	4	247	—	—	0,03910	122	—	7	—	—	—	89,172	86,610	No figures available	
*JORDAN 1,329,174	Yes	2	82	—	—	0,06169	2	—	—	—	44	101	299,058	310,925	No figures available	
*ITALIAN SOMALI-LAND 1,021,572		No details available											No figures available			

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

COUNTRY & POPULATION	Is there a special Eye Section in the Central Health Administration?	HOSPITAL AND DISPENSARY SERVICES														
		Ophthalmic Hospitals		Ophthalmic dept in general hospitals		No of ophthalm beds per 1000 population	Hospital out patients departments		Ophthalmic dispensaries		Other centres providing facilities for eye examin & treatment		Total number of ophthalmic out-patients		Total number of new eye cases	
		No	No beds	No	No eye beds		Urban	Rural	Urban	Rural	Urban	Rural	1957	1958	1957	1958
LEBANON 1,389,000	—	—	—	10	300	0,21676	10	—	—	—	—	—	4,500	4,300	No figures available	
*LIBYA 1,091,830	No	—	—	4	182	0,16669	3	1	—	4	5	65	31,000	45,000	**3,600	No figures available
*MOROCCO 7,442,110	Yes	4	450	11	300	0,10077	—	—	23	3	—	95	3,087,000	No figures available	592,802	No figures available
PAKISTAN (WEST) 80,167,000	Yes	1	50	12	504	0,0069	10	6	—	—	No data	6	513,000	548,524	145,962	167,787
*S ARABIA 6,036,000	No	5	145	6	100	0,0600	11	—	—	1	26	57	—	168,763	—	—
*SUDAN 10,262,536	Yes	1	110	7	300	0,01364	—	—	1	1	—	—	142,634	No figures available	22,189	No figures available
*TUNISIA 3,783,169	Yes	1	130	11	220	0,09251	12	—	17	—	—	310	No figures available			
*UAR (EGYPT) 19,021,840	—	43	1369	69	1056	0,12745	No data given		—	—	—	—	5,576,995	5,850,442	2,281,535	2,504,385
UAR (SYRIA) 3,670,000	No	7	—	7	125	0,03405	7	—	7	—	—	—	No figures available		60,679	64,161

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

** (Tripolitania only)

COMMUNICABLE EYE DISEASES (2)

HEALTH SERVICES — RESEARCH — PERSONNEL

COUNTRY & POPULATION	LABORATORY SERVICES												PREVENTIVE OPHTHALMOLOGY				RESEARCH	PERSONEL AVAILABLE			
	Specialized ophthalmological laboratories				General labs at present undertaking ophthalmological work on studies				Existing labs with potential facilities in ophthalm work or studies				Field projects	School Inspect & treatment	Health Education	Other Activities		No of ophth in the country	How many of these are employed by Govt		No of microbiologists specialized or engaged in trachoma work or other eye diseases
	No	Bact	Vir	Path	No	Bact	Vir	Path	No	Bact	Vir	Path							Full Time	Part Time	
*ADEN 138,441	—	—	—	—	—	—	—	—	1	1	—	1	—	Yes	—	—	—	1	1	—	— —
*ALGERIA 9,144,971	1	1	1	1	—	—	—	—	—	—	—	—	Yes	Yes	Yes	Yes	No data given				
*CYPRUS 528,618	—	—	—	—	—	—	—	—	1	1	—	1	—	Yes	Yes	—	—	10	3	1	— —
ETHIOPIA 20,000,000	1	1	1	—	1	1	—	—	1	1	1	—	Yes	Yes	Yes	Yes	Yes	7	1	6	— —
FRENCH SOMALI-LAND 63,000	—	—	—	—	—	—	—	—	1	—	—	—	—	Yes	Yes	—	—	1	1	—	— —
*GREECE 7,632,801	—	—	—	—	—	—	—	—	—	—	—	—	—	Yes	Yes	Yes	No data given				
*IRAN 18,944,821	1	1	—	1	3	2	—	1	14	13	3	0	—	Yes	Yes	Yes	Yes	160	—	142	4 (54 potential)
*IRAQ 6,317,043	—	—	—	—	1	1	—	1	—	—	—	—	—	Yes	No data given			19	12	—	— —
*JORDAN 1,329,174	—	—	—	—	—	—	—	—	2	2	1	1	—	Yes	Yes	—	Yes	7	1	—	— —

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

COUNTRY & POPULATION	LABORATORY SERVICES												PREVENTIVE OPHTHALMOLOGY				RESEARCH	PERSONEL AVAILABLE			
	Specialized ophthalmological laboratories				General labs at present undertaking ophthalmological work on studies				Existing labs with potential facilities in ophthalm work or studies				Field projects	School Inspect & treatment	Heal h Education	Other Activities		No of ophth in the country	How many of these are employed by Govt		No of microbio logists specialized or engaged in trachoma work or other eye diseases
	No	Bact	Vir	Path	No	Bact	Vir	Path	No	Bact	Vir	Path							Full Time	Part Time	
*ITALIAN SOMALI-LAND 1,021,572	No data given								No data given				—	Yes	No data given						
LEBANON 1,389,000	—	—	—	—	—	—	—	—	—	—	—	—	—	Yes	Yes	—	—	30	—	6	— —
*LIBYA 1,091,830	—	—	—	—	1	1	—	1	1	—	—	—	—	Yes	—	—	Yes	No data given			
*MOROCCO 7,442,110	2	2	2	—	—	—	—	—	—	—	—	—	Yes	Yes	Yes	—	—	65	12	20	3
PAKISTAN (WEST) 80,167,000	—	—	—	—	10	10	—	6	10	6	8	10	—	Yes	—	—	Yes	25	20	—	— —
*SAUDI ARABIA 6,036,000	—	—	—	—	11	—	—	—	11	—	—	—	—	Yes	Yes	—	Yes	27	3	8	No data given
*SUDAN 10,262,536	—	—	—	—	—	—	—	—	—	—	—	—	—	Yes	—	—	No data given				
*TUNISIA 3,783,169	2	1	1	1	—	—	—	—	—	—	—	—	Yes	Yes	Yes	Yes	Yes	36	7	14	5
*UAR (EGYPT) 19,021,840	2	2	—	2	—	—	—	—	1	—	—	—	Yes	Yes	Yes	—	Yes	No data	400	20	3
UAR (SYRIA) 3,670,000	—	—	—	—	—	—	—	—	—	—	—		—	—	Yes	Yes	—	33	8	—	— —

Note Population figures marked (*) have been obtained from the U N Statistical Year Book 1958
The other figures are WHO estimates

ANNEX VII

PROPOSED RECORD CARD FOR MASS SCREENING AND COMMUNICABLE-EYE-DISEASES PREVALENCE SURVEYS

by

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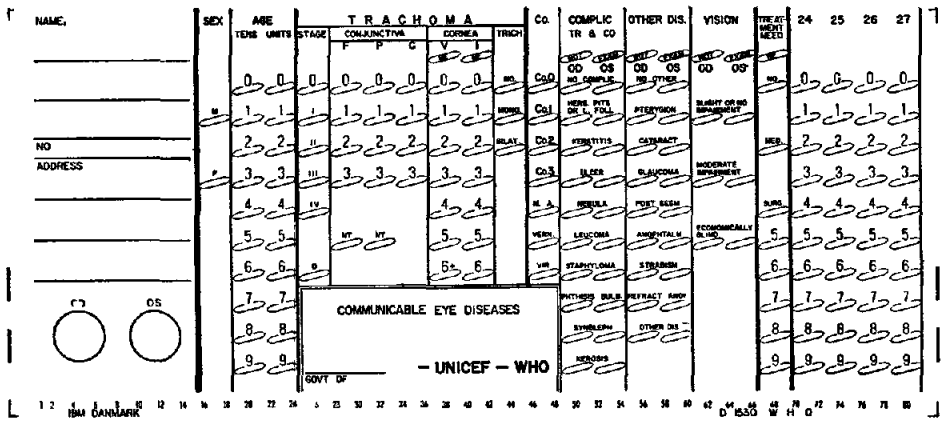

Proposed Record Card, ⅔ size

In many enquiries it is often cumbersome to extract an tabulante data from existing recording forms In fact, badly needed surveys are often abandoned merely for lack of a suitable recording card tabulating system The use of a mark sensing card, allowing for quick and fairly detailed analysis, is proposed

This card does not replace the individual WHO record card with marginal punch holes, which is mainly designed for longitudinal surveys and the follow-up of cases

The following would, in short, be the instructions for use of the mark sensing card

In all columns the appropriate ellipses must be filled in with a special pencil Each set of cards made out on the same occasion, coming from the same unit, must be accompanied by a group identification sheet, indicating what data are important and common to the whole set

Punching of the recorded data can usually be done by the IBM offices to be found in many countries The mark sensing data are mechanically punched on columns 46—67 The data from the group identification sheet are reproduced automatically in the columns 20 to 45

Instructions for the punching of the data should be laid down in a standard written text to enable tabulation of data originating from various sources

This card can be delivered in small quantities free of charge by the WHO Regional Office for Europe for those interested in studying its practicality A block could be provided for organizations wishing to print their own cards

A sample of the group identification sheet is attached

GROUP IDENTIFICATION SHEET
(to be attached to each set of cards)

Individual cards No *to No*	Indication of the coded columns in which data should be punched (Use these columns only for coding)
1 *Type of enquiry* 1 Prevalence survey of whole community*) ☐ 2 School screening ☐ 3 Prevalence survey of other groups ☐ 4 Others (specify) ☐	20
2 *Examination* Population group examined for the first time ☐ Population group examined previously ☐	21
3 *Community previously treated* No ☐ Yes ☐	22
4 *Date of examination* / / (date) (month) (year)	date month year 23 24 25 26 27
5 *Group examined* Group of population or school in (locality)	28 29 30 31 32 33
Other information Ethnic group, religion etc (as required)	
Information recorded in supplementary mark-sensing columns: Column 24 » 25 » 26 » 27	

* Fill in with an X

Name and signature of the examiner

STAGES OF TRACHOMA (after MacCallan)

I = Trachoma at onset
II = Progressive Trachoma
III = Cicatrizing Trachoma
IV = Cicatrized (healed) Trachoma

O = Free from Trachoma
Dt = Doubtful signs of Trachoma

CLINICAL TYPES OF CONJUNCTIVITIS

Co 0 = No clinical signs of bacterial conjunctivitis

Co 1 = Mild or doubtful conjunvtivitis (Hyperaemia and no more than a small bead of secretion in the conjunctival sac)

Co 2 = Subacute conjunctivitis (purulent or mucopurulent secretion without marked oedema of the tissue)

M-A Clin = Clinical signs of Morax Axenfeld 'angular' conjunctivitis

Vern = vernal conjunctivitis
Vir = viral conjunctivitis

Standard symbols to be used to indicate the nature, relative size and position of corneal and bulbar complications

Pannus-crassus | Simple ulcer | *Perforating* ulcer

Nebula | Simple leucoma

Staphyloma | Phthisis bulbi

CLINICAL FEATURES OF TRACHOMA

CONJUNCTIVA

F = *Follicles*
P = *Papillae*
} The relative intensity of the lesions in each case to be indicated by a *number*

C = *Cicatrices*
0 = Nil (= —)
1 = Slight (= +)
2 = Moderate (= ++)
3 = Severe (= +++)

If follicles, papillae or cicatrices of non-trachomatous origin are present, 'N-T' should be recorded

CORNEA

V = *Neovascularization* To be indicated in each case by a *number*, in terms of mms extension from the upper limbus

I = *Infiltration*

VISION

Visual Status in relation to complications of trachoma and/or associated infections should be recorded in the spaces provided These records will be based largely on objective examination, for example

— clear cornea = *"no impairment"*,
— faint central nebulae, residual fine pannus vessels over pupillary area, etc = *"moderate impairment"* (i.e able to perform rough work not requiring good vision),
— central leucoma, total pannus etc = *"economic blindness"* (i.e unable to perform any work for which vision is essential)

Adherent leucoma | Total leucoma

Anophtalmus | Pterygion