

Regulation of medical devices

A step-by-step guide



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**World Health
Organization**

Regional Office for the Eastern Mediterranean

WHO Library Cataloguing in Publication Data

World Health Organization. Regional Office for the Eastern Mediterranean
Regulation of medical devices: a step-by-step guide / World Health Organization. Regional Office for the Eastern Mediterranean

p. - (WHO Regional Publications, Eastern Mediterranean Series; 38)

ISBN: 978-92-9022-140-1

ISBN: 978-92-9022-141-8 (online)

ISSN: 1020-041X

I. Equipment and Supplies 2. Quality Control 3. Organization and Administration I. Title II. Regional Office for the Eastern Mediterranean III. Series

(NLM Classification:W 26)

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Design, layout and printing by WHO Regional Office for the Eastern Mediterranean, Cairo, Egypt

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Preface

In 2012, the World Health Organization (WHO) Regional Committee for the Eastern Mediterranean Region, at its 59th session, discussed the challenges, priorities and options for future action for strengthening health systems.¹ In a resolution, the Committee urged Member States to “improve quality, safety, efficacy and rational use of health technologies, including medicines, by strengthening national regulatory authorities”.²

The purpose of this guide is to improve access by countries to quality and safe medical devices by offering guidance on strengthening their regulatory controls. The current regional situation indicates that the performance of many national regulatory authorities is inadequate, with focus being placed mainly on the regulation of medicines and not of medical devices and blood products.

Many regulatory authorities are ineffective in quality management and in monitoring the domestic market to prevent unsafe and low quality medical products entering. The circulation and sale of counterfeit medical products, and the misuse and medical errors associated with medical products are major concerns in most countries. In addition, many of the relevant regulations are outdated, are not formally enforced or remain unimplemented. Market oversight on the private health care sector is often not included in enforcement and monitoring of approved medical products.

Since a high proportion of medical devices are imported (60%–90% in low and middle income countries)³, the focus of regulatory measures should therefore be

¹ Health systems strengthening in countries of the Eastern Mediterranean Region: challenges, priorities and options for future action. Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2013 (http://applications.emro.who.int/docs/RC_technical_papers_2012_Tech_Disc_1_14613_EN.pdf, accessed 28 February 2016).

² WHO Regional Committee for the Eastern Mediterranean resolution EM/RC59/R.3 on health systems strengthening in countries of the Eastern Mediterranean Region: challenges, priorities and options for future action. Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2012 (http://applications.emro.who.int/docs/RC_Resolutions_2012_3_14693_EN.pdf?ua=1, accessed 28 February 2016).

³ Medical devices in contemporary health care systems and services. Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2006 (<http://apps.who.int/medicinedocs/documents/s17667en/s17667en.pdf>, accessed 1 March 2016)

on import controls and oversight of distribution channels. Poor regulatory practices may result in poor procurement practice. This in turn can lead to the purchase of medical devices that may do harm and that do not perform according to their intended purpose. A common principle applies to the regulation of all medical products: the balance of benefit to risk. However, the manner in which this principle is applied differs between medical products.

This guide provides decision-makers with a roadmap for implementing regulatory systems in their national settings and a step-by-step approach towards the development of national programmes for the regulation of medical devices. It can be applied by any country seeking to develop its regulatory capacity.

Acknowledgements

Regulation of medical devices: a step-by-step guide was prepared by Alan Kent, WHO Consultant. Technical review was carried out by Adham Ismail, WHO Regional Office for the Eastern Mediterranean, with contributions from the following WHO headquarters staff: Lembit Rago, David Wood, Irena Prat, Claudia Alfonso, Mike Ward, Josée Hansen and Adriana Velazquez. Project oversight was provided by Marthe Everard, WHO Regional Office for the Eastern Mediterranean.

Integrated regulatory systems for medical products

Introduction

Medical products are different from other consumer goods or products. They play an important role in, and are an integral part of, health care delivery. Therefore, it is important to understand that – from a government perspective – it is not only accessibility but also safety and efficacy of medical products that counts. Beside these considerations, there are other challenges, such as cultural diversity (languages, literacy levels, and social and religious customs and traditions) and the attitude of the consumer and health care provider towards disease and medication. The regulation of medical products according to the principles of good governance and good regulatory practice (1) must also take into account national health plans, existing laws, available resources, and production and importation practices. Regulatory requirements for medical products vary around the world.

Manufacturers are usually successful in obtaining market approval for their products from regulatory authorities if their products meet the national regulatory requirements. However, the differences in regulatory requirements between jurisdictions mean that manufacturers' efforts to comply with registration requirements are complex and require additional resources. Furthermore, the lack of harmonized processes to assess the safety and efficacy or performance of medical products increases the costs associated with licensing and the time required for registration. This can be a barrier to timely access to medical products by the local market.

Good governance of medical products

Good governance should be an integral component of any national regulatory authority. Even for countries with limited regulatory activities, good governance is important for managing resources and protecting public health. The key characteristics of good governance include (2) accountability, transparency and responsiveness; the so-called “3 E concept”, namely efficiency, effectiveness and economy; the value approach which includes ethical values, code of conduct and promotion of leadership; and the

disciplinary approach which includes anti-corruption legislation, the encouragement of “whistle-blowing”, internal or external audits, and an integrity system.⁴

Conflict of interest is an important consideration in good governance and should be included in any code of conduct. According to the Good Governance for Medicines (GGM) model framework, “Conflicts of interest are also a motivating force generating unethical behaviour in many other steps of the medicines’ chain. A government official or expert serving on a government committee may put undue pressure or influence on the final decision to favour a particular company, instead of basing the decision on scientific evidence” (2). The framework describes conflict of interest as “a situation that can lead to a penal fault such as corrupt practice, misappropriation of corporate funds, ‘insider dealings’”.

A national regulatory authority should follow the fundamental principle that people and the organization are its “most important resources”. Supporting these principles, the authority should develop a code of conduct which is linked to human resources policies and appropriate behaviour towards stakeholders. All employees of the authority should be held accountable for creating and fostering a conducive work environment governed by ethical principles. Codes of conduct serve as a measure to prevent unethical behaviour by public servants in the performance of their duties. The following principles normally form the basis for such codes of conduct (2).

- Dignity and respect
 - Treat all employees and stakeholders with dignity and respect at all times
 - Encourage, permit and value creativity
 - Ensure that the work place is free of discrimination, prejudice, harassment and any other unacceptable behaviour.
- Fairness, equality and compassion
 - Demonstrate fairness, equality and compassion in dealing with all employees
- Diversity
 - Recognize, accept, respect and value diversity

⁴ More details on the WHO Good Governance for Medicines approach are available on the WHO website: <http://www.who.int/medicines/areas/policy/goodgovernance/en/>

- Respect differences, such as culture, beliefs, gender, customs, values and languages
- Encourage creating and using diverse work teams.
- Openness and honesty
 - Ensure open, honest, transparent and timely communication
- Integrity
 - Exercise responsibilities concerning policies, regulations and directives
 - Demonstrate trust and cooperation
 - Respect confidentiality.

Principles of good regulatory practice

The guiding principles of good regulatory practice for all medical products can be summarized as follows (3).

- Adopt at the political level broad programmes of regulatory reform that establish clear objectives and frameworks for implementation.
- Review regulations systematically to ensure that they continue to meet their intended objectives efficiently and effectively.
- Ensure that regulations and regulatory processes are transparent, non-discriminatory and efficiently applied.
- Review and strengthen where necessary the scope, effectiveness and enforcement of competition policy.
- Reform economic regulations in all sectors to stimulate competition, and eliminate them except where clear evidence demonstrates that they are the best way to serve broad public interest.
- Eliminate unnecessary regulatory barriers to trade and investment by enhancing implementation of international agreements and strengthening international principles.
- Identify important linkages with other policy objectives and develop policies (4) to achieve those objectives in ways that support reform.

Thorough evaluation of legislation should be performed by legal and scientific experts. The approaches to improving the legislation for medical products should be based on: 1) updating existing legislation: any inappropriate or outdated sections should be removed or replaced and additional sections should be added where required; and 2) replacing existing legislation by new legislation: a team of legal and scientific experts should be involved.

The experiences of many national regulatory authorities should be used to guide the drafting of new legislation. However, the new legislation should be sufficiently flexible to encourage harmonization and should be tailored to the particular needs of the country.

Design and implementation of national regulatory systems for medical devices

Introduction

The primary purpose of implementing regulatory systems for medical devices is to protect public health and ensure safety and performance. Experience shows that countries regulate medicines before they consider introducing similar controls for medical devices. However, the public is outraged if it believes its national regulatory authority has allowed unsafe medical devices to circulate in the market. To do so, not only must the safety and performance of each device be maintained throughout its life span but also the organizations established in the regulated jurisdiction – such as those responsible for manufacturing, importing, distributing, and representing overseas manufacturers and those using medical devices – must act in an effective and responsible manner.

A secondary benefit of introducing regulatory systems is that domestic manufacturers will not only be encouraged to develop and market alternatives to imported devices but will also have an opportunity to grow their business through exporting such products. This is only possible when medical device regulations have been harmonized with regulations already established in major overseas markets.

A less obvious benefit of introducing a regulatory system in the long-term is that the databases developed to track medical devices and to monitor their post-marketing performance may be used to improve national and local medical device procurement procedures. However, while these benefits are significant and desirable in all countries, the manner and speed with which they are achieved depend on factors such as:

- political priorities;
- agreement of a realistic, long-term implementation plan, actively supported and led by policy-makers;
- availability and development of specialist expertise in medical devices; and
- provision of sufficient funds.

Some countries may wish to adopt a “single-market” approach to medical devices under one regulatory regime and with mutual recognized regulatory controls across the region, similar to the European Union. The regulations would need to be adapted within each country’s context, with policy-makers determining the extent and complexity of the regulatory controls that would govern medical devices in their country. To regulate medical devices efficiently, regional and global collaboration and harmonization are key elements. Existing global harmonizing initiatives include the International Medical Device Regulators Forum (IMDRF), Asian Harmonization Working Party (AHWP), and the Pan-American Network of Regulators.

Why are regulatory controls for medical devices complicated?

There are many thousands of different medical devices available in the market. Some are of simple design and function (e.g. first-aid bandages, syringes, thermometers, walking frames), while others are electrically powered (e.g. heart rate monitors, baby incubators, infusion pumps), large and multi-functional (e.g. computed tomography (CT) and magnetic resonance imaging (MRI) scanners), implanted (e.g. replacement joints and pacemakers), or used for the analysis of human specimens (e.g. blood and urine testers).

The risks associated with each type of device type differ; all may be misused and none are absolutely safe. The opportunity for user, as well as manufacturer, error can be considerable. Many national regulatory authorities consider 3 to 4 different risk classes for medical devices. Those classified as “low risk” or “class I” are still capable of killing and injuring patients when misused (e.g. hospital beds and wheel chairs). Some devices, such as those incorporating software, are subject to continuous updates because features are upgraded, resulting in short commercial life cycles (on average 24 months).⁵ Table 1 depicts the 4-level risk classification of the Global Harmonization Task Force (GHTF) for different types of medical devices.

⁵ An industry trade group estimates that medical devices are replaced by improved versions every 18–24 months. See: The Advanced Medical Technology Association’s (AdvaMed) Comments on 21st century cures: a call to action, submitted to the House Energy and Commerce Committee, 113th Cong. (June 1, 2014) <http://advamed.org/res.download/725>

Table I. Risk classes for medical devices

Class	Risk level	Device examples
I	Low risk	Surgical instruments/tongue depressor
IIa	Low–moderate risk	Hypodermic needle/suction equipment
IIb	Moderate–high risk	Lung ventilator/orthopaedic implant / blood bag
III	High risk	Heart valve/implantable defibrillator / shunt

Given this wide range of medical devices, it is neither viable nor justifiable in terms of the financial burden it places on manufacturers, national regulatory authorities and thereby the public, to subject all medical devices to the highest levels of regulatory control. Therefore, countries with long-established medical device legislation have adopted controls whereby regulatory requirements increase in line with the risk presented by the class of medical device. The challenge for national regulatory authorities is to establish and maintain written procedures – normally incorporated within legislation – that provide clear guidance on how to set the requirements for the many different types of medical device.

It is widely accepted that a clear and coordinated system of regulatory controls is needed that safeguards public health throughout the life span of the medical device. To achieve this, there is great advantage in establishing regulations based on internationally harmonized practice, thereby drawing upon the experience of countries with long-established medical device legislation. This approach maximizes public health benefits, makes it possible to accept audit results and market authorization decisions from other regulatory authorities (i.e. global leverage of regulatory resources), and reduces the burden on the regulated industry.

Countries want to regulate medical products, more specifically medical devices, in order to ensure the availability of safe and effective medical devices for their populations. For this, an assessment has to be performed to establish the performance and quality of a medical device throughout its life span. This can be a costly and time-consuming process. To avoid duplication of effort in pre- and post-market evaluation of medical devices and to avoid spending money unnecessarily, reliance on other jurisdictions is an option.

Reliance has to be stated by law. It should state that the national regulatory authority may, at its discretion, rely upon regulatory evaluations (e.g. audits, certificates, assessment

reports) of national regulatory authorities or recognized conformity assessment bodies in other jurisdictions, in whole or in part, to reach a decision on whether to allow the sale of a medical device in their markets. Whether to grant, subsequently, local marketing rights for that medical device remains a national decision. The regulation would state that in reaching the decision to rely upon other jurisdictions, the national regulatory authority shall, as appropriate, take into account the following: quality management system certificates, Summary Technical Documentation (STED) evaluation reports, compliance statements of the manufacturer and responsibilities of manufacturers and importers. The national regulatory authority may also impose national requirements (such as instructions for use in the local language).

While relying on other jurisdictions, the national government can concentrate more on their national responsibilities, such as import controls, distribution channel control and vigilance, recall and market withdrawal. Reliance could be established between jurisdictions but can also be the result of regional collaboration, with work sharing (e.g. collaborative approval) between countries. Some examples of jurisdictions with unilateral or bilateral reliance practice in the area of medical devices are New Zealand, European Union–Switzerland, European Union–Australia, and Saudi Arabia–IMDRF founding members.

WHO's vision is that different national regulatory authorities work together, share experiences and collaborate with international entities to ensure safety and quality of medical products. This can only be achieved through active collaboration of different well functioning regulatory authorities.

Safety of medical devices

Medical device safety and risk management (3)

Safety can only be considered in relative terms. All devices carry a certain degree of risk and could cause problems in specific circumstances. Many such problems cannot be detected until extensive market experience is gained. For example, an implantable device may fail in a manner that was not predictable at the time of implantation; the failure may reflect conditions unique to certain patients. For other devices, component failure can also be unpredictable or random. The current approach to device safety

is to estimate the potential of a device becoming a hazard that could result in safety problems and harm. This estimate is often referred to as the risk assessment.

Safety and performance of medical devices

A device is clinically effective when it produces the effect intended by the manufacturer relative to the medical condition. Clinical effectiveness is a good indicator of device performance. Performance, however, may include technical functions in addition to clinical effectiveness. For example, an alarm feature may not directly contribute to clinical effectiveness but would serve other useful purposes. Furthermore, it is easier to measure objectively and quantify performance than clinical effectiveness. Performance is closely linked to safety. For example, a blood collection syringe with a blunt needle would perform badly for collecting blood and could inflict injury. A patient monitor that does not perform well could pose serious clinical safety problems to the patient; therefore, safety and performance of medical devices are normally considered together.

Phases in the life span of a medical device

Fig. 1 illustrates the major phases in the life span of a medical device, from conception and development to disposal. The activity phases are simplified to make it easier to understand the regulatory system. For example, the development phase includes development planning, design verification/validation, prototype testing and clinical trials. In practice, the phases outlined may overlap and interact.

Ensuring safety of medical devices

As shown in Fig. 2, the “Manufacturer” usually manages the first three phases of the medical device’s life span. The term “Establishment” includes importers, distributors, retailers and manufacturers who sell the medical device. The term “User” refers to a professional in a health care facility, but may also be the patient.



Fig. 1. Major phases in the life span of a medical device

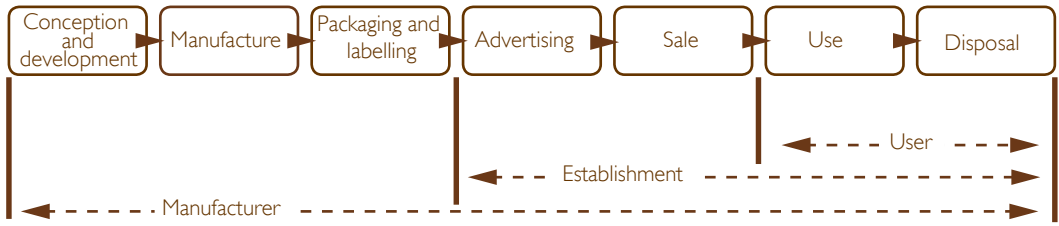


Fig. 2. Persons who directly manage the different phases of medical devices

Together, the manufacturer, establishments, user, public and national regulatory authority/government are the stakeholders. All five play critical roles in ensuring the safety of medical devices. The most important factor that ensures the cooperation of all these stakeholders is an informed and common understanding of the issues. Shared understanding and responsibility are achieved through communication and mutual education, which can be effectively achieved by having all stakeholders participate in establishing the process that ensures safety and performance of medical devices.

Stages of regulatory control

The activities that are commonly regulated can be summarized as shown in Table 2.

Table 2. Stages of regulatory control

Stage	Pre-market	Placing on-market	Post-market
Control/monitor	Product	Sale	After-sale/use
Person	Manufacturer	Establishment Manufacturer	User Establishment Manufacturer
Items or activities regulated	Device attributes <ul style="list-style-type: none"> • Safety and performance Manufacturing <ul style="list-style-type: none"> • Quality systems Labelling (representation) <ul style="list-style-type: none"> • Accurate description of product • Instruction for use 	Establishment registration <ul style="list-style-type: none"> • List of products available or in use • Requires establishment to fulfil after-sales obligation Advertising (representation) <ul style="list-style-type: none"> • Prohibits misleading or fraudulent advertisement 	Surveillance/Vigilance <ul style="list-style-type: none"> • After-sale obligations • Monitoring of device's clinical performance • Problem identification and alerts

Typical development phases of national regulatory authorities

As indicated by the GHTE, three stages are used to describe the process of development of regulatory frameworks. Each step builds further upon, and is more demanding than, its predecessor (see Fig. 3). Individual national regulatory authorities should examine at which level they operate and which model presents a “best fit” in the given circumstances in terms of national priorities, regulatory infrastructure, human and financial resources, legislative mandate, knowledge and expertise, and other demographic attributes.

Note 1: The development of any law and regulations should be undertaken in accordance with good regulatory practice. A guideline on good regulatory practice is currently being developed by WHO. The outcome of that activity will be integrated in the model regulatory framework.

Note 2: “Intermediate” and “Full” implementation level include controls in the preceding level(s).

The regulatory elements present in each of the three stages shown in Fig. 3 can be summarized as follows.

Note: The elements in *italic* are specific to the national regulatory authority concerned and cannot be implemented on the basis of reliance on decisions taken in other jurisdictions.

a) Basic level

- Establishment of essential principles of safety and performance
- Issuing guidance documents on regulatory requirements
- *Registration of manufacturers, importers and distributors*

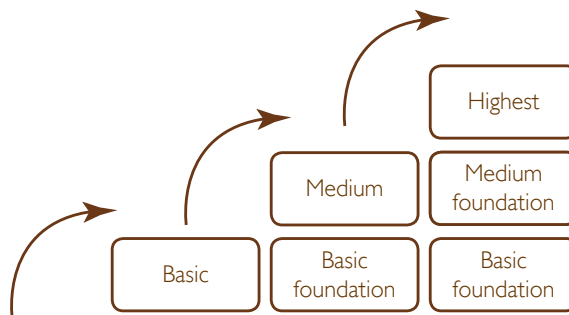


Fig. 3. Major phases in the life span of a medical device

- *Listing of medical devices placed on the market*
- *Import controls*
- *Market surveillance, supply chain control, traceability*
- Labelling and instruction for use controls
- Adverse event reporting within a vigilance system
- Recalls, field safety corrective actions (FSCA) or withdrawal from market in exchange with other national regulatory authorities
- Provision for exemptions from regulatory requirements (e.g. donations for fast track registration of humanitarian emergency assistance or disease programmes)
- *Enforce regulations*

b) Medium level

- Quality management system including good record-keeping requirements
- *Administrative controls for reliance*
- Recognition and adoption of international standards
- Control of advertising

c) Highest or full implementation level

- Premarket decision on compliance of medical device with essential principles (with reliance and/or review)
- *Notification of clinical investigations and/or serious deviations and/or adverse events*
- Quality management system auditing (by reliance and/or by auditing)
- Appoint and oversee conformity assessment body
- Establishment of a test laboratory function (national or regional or by reliance)
- *Mechanism for analyses and dissemination of alerts on medical devices (national, regional, international)*

Full implementation of all the elements in the “Basic” level creates a “Basic foundation” for progressing towards the “Medium” level. Only when the “Medium foundation” is complete can the national regulatory authority move towards the “Highest” regulatory implementation level. It is worth mentioning that the approach to evolve to the “Highest” model is based on the following three main principles.

a) Assessment and management of risk/benefit

- Adopt a free market strategy that ensures proper information available to the public.
- Promote education and community action by providing information.
- Facilitate and inform decision-making and regulations that include all forms of statutory actions e.g. Inspection, enforcement, compliance etc.
- Make appropriate and scientifically sound regulatory decisions according to the risk/benefit of each individual situation.

b) Implementation of an approach based on the “precautionary principle”

The “precautionary principle” is a risk management (5) approach that is exercised in a situation of scientific uncertainty or reflects a need for action in the case of a potentially serious risk without awaiting the results of the scientific research. It is based on European Union guidance. (6)

- Start with an objective risk assessment, by identifying at each stage the degree of scientific uncertainty.
- Involve all stakeholders in the study of the various management options.
- Make sure that regulatory measures are proportionate to the risk which is to be limited or eliminated.

c) Recognition of the principle of “shared responsibility”

- Involve health care professionals, researchers, the pharmaceutical industry and other stakeholders in the development and implementation of medical products
- Document and learn from best practices of other regulatory systems.

Assessment of a national regulatory authority

To begin a development trajectory for a national regulatory authority, a self-assessment is needed to: 1) review the current national regulatory system for medical products including medical devices; 2) identify gaps in all areas that need improvement; and 3) list regulations known to be problematic or obsolete. These internal discussions should involve all staff related to the regulation of medical devices. Key areas have to be examined by conducting a comprehensive assessment and analysis and by proposing

an institutional development plan to improve under-performing regulatory functions or activities.

The harmonized WHO national regulatory authority assessment tool (7) provides an overview of the existing legal framework and regulatory system for medical products in order to assess the national regulatory authority and its capacity. The analysis aims at identifying the main strengths and gaps in the pre- and post-market systems and providing recommendations to address the identified gaps. Following the assessment, an action plan for regulatory capacity building is developed in cooperation with the national regulatory authority. Specific regulatory functions that follow the typical life-cycle of any medical device are included in the integrated assessment tool. The life-cycle of any medical device is calculated from its design and development to manufacture and subsequent disposal (Fig. 4). It can be divided into three common stages: pre-market, placement on-market and post-market. Safety and performance of the device is required in each of these stages. Accordingly, the scope of the regulatory control should cover the entire life-cycle of the device. Legal provision and guidelines, process, monitoring, transparency, accountability and communication, and resources are the most common areas under each function that the WHO tool assesses. In addition, the tool provides a list of technical and financial recommendations to improve the regulatory practice of the authority assessed. WHO has identified seven common regulatory functions to describe and assess the regulatory capacity of a national regulatory authority with regard to medical devices (see Fig. 4):

- national regulatory system, including risk classification and quality management system,
- inspection and enforcement, including good manufacturing practices and clinical trial oversight
- vigilance
- licensing of premises and establishments
- product registration and marketing authorization
- post-marketing surveillance

In addition, many regulatory bodies (e.g. AHWP) have suggested adding two additional regulatory functions for specific devices: laboratory access and testing; and promotion, advertising and after-sales (8). Both functions are related to testing,

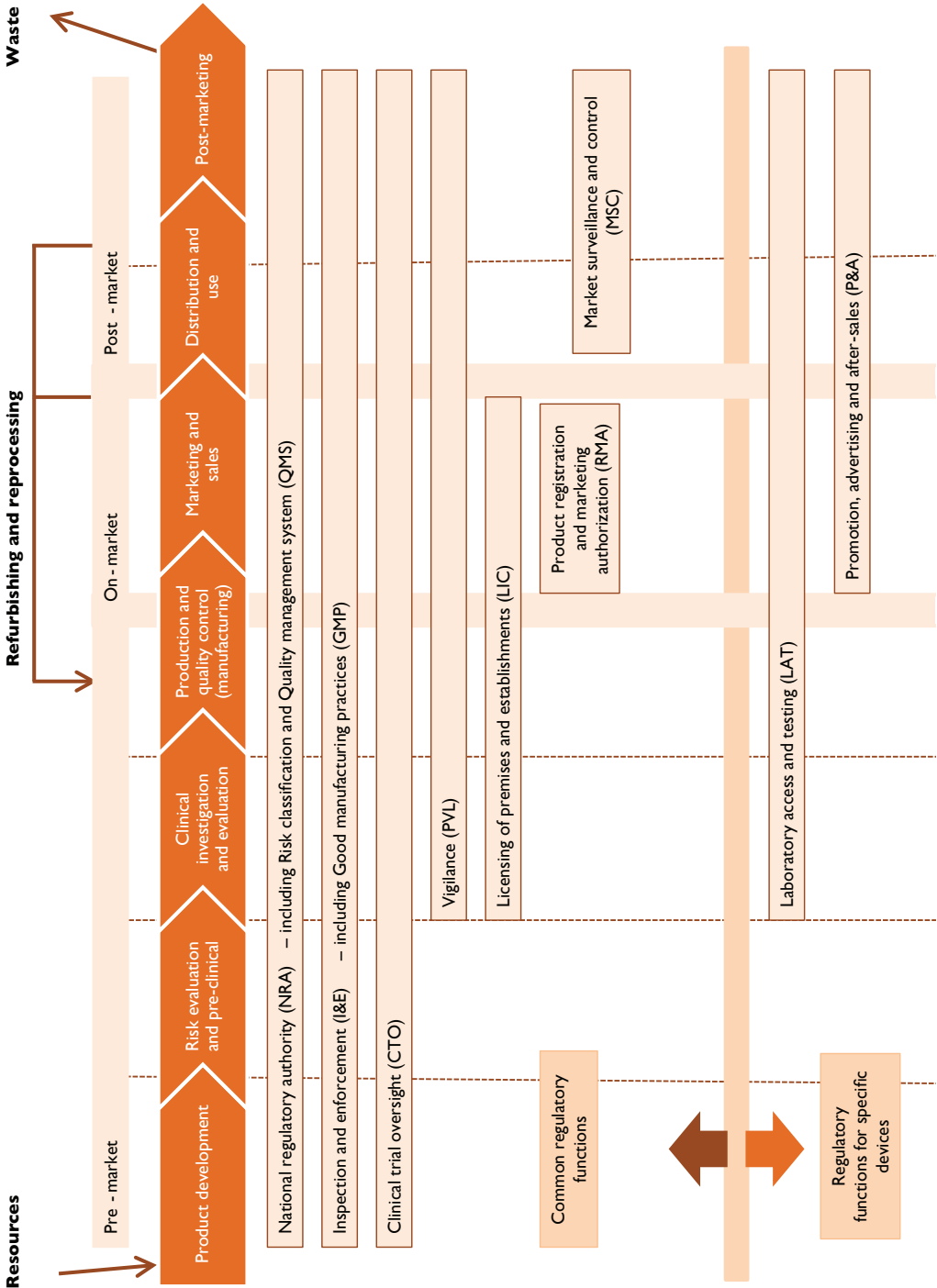


Fig. 4. Suggested regulatory functions based on a typical life span for medical devices

operation and use of certain devices (such as in vitro devices), which can fail even in the absence of inherent design or manufacturing defects. The lack of initial acceptance testing procedures, incorrect installation, poor maintenance/calibration, as well as misleading or fraudulent advertisements may jeopardize safety and performance of devices. Accordingly, the main objective of these two functions is to prevent unnecessary harms and complications arising from improper operation and use of certain categories of device.⁶

The re-use of disposable, refurbished and reprocessed devices not in accordance with the instructions, and without proper control or precautions for minimizing associated risks, can be detrimental. Clear regulatory measures and controls have to be in place for these types of devices. At the end of the product life, the disposal of certain types of devices should follow specific safety rules to prevent contamination and hazards to the public and environment.

Responsibilities of the medical devices section in a national regulatory authority

Based on Fig. 4, the following regulatory responsibilities are suggested for each function.

- a) National regulatory system – including quality management systems
 - Check statutory basis for establishment of regulatory system and enforcement power.
 - Check independence of the regulatory system in decision-making.
 - Check existence of criteria for appropriate selection and recruitment of regulatory staff.
 - Check transparency and public availability of information related to legislation, regulations, procedures and decision-making.
 - Adopt a national risk classification scheme for medical devices (e.g. GHTF classification) and clearly identify the conformity assessment associated with the risk class of the device.

⁶ Whether or not to include these additional functions in the WHO integrated assessment tool is still under discussion by expert committees as they only apply in certain jurisdictions.

- Investigate if quality systems (ISO or any other system) for national regulatory authority functions are in place.
 - Appoint and oversee conformity assessment bodies.
 - Draft and adopt legal provisions and procedures for market compliance and enforcement, import/export controls, and systems for recall and disposal of medical devices.
 - Develop institutional development plans and key performance indicators.
 - Establish and conduct quality management system requirements, standards and audits.
 - Interact with civil society, e.g. nongovernmental organizations, industry, patients and other stakeholders.
- b) Inspection and enforcement – including good manufacturing practices (GMP)
- Inspect licensed establishments.
 - Issue corrective action reports and monitor actions taken.
 - Take enforcement action and exact penalties, when required.
 - Investigate alleged counterfeit medical devices.
 - Establish and recover costs.
 - Maintain relevant databases.
 - Check existence of national GMP and quality standards (QS) codes
 - Ensure that procedures for accrediting third part auditors and auditing organizations are in place.
 - Check existence of national codes and guidelines for distribution channel facilities.
 - Issue certificates of compliance with GMP
 - Enforce GMP/QS in domestic production facilities.
 - Inspect procedures including existence of appropriate plan and adequate resources.
 - Review qualifications of inspectors and their independence from manufacturers.
 - Prepare relevant guidance documents.
- c) Clinical trial oversight
- Provide clinical advice to other departments, including laboratories.

- Review clinical investigation applications; approve where relevant and monitor progress.
 - Liaise with professional bodies (e.g. physicians, pharmacists, laboratory specialists, biomedical engineers and nurses) and health care facilities.
 - Establish and recover costs for clinical investigation.
 - Maintain relevant databases.
 - Prepare relevant guidance documents.
- d) Licensing of premises and establishments
- License national premises, manufacturing sites, establishments and retail outlets.
 - License importers, wholesalers and distributors.
 - Prepare relevant guidance documents.
 - Establish guidance on use and maintenance of relevant databases.
- e) Product registration and marketing authorization
- Develop and monitor product registration database.
 - Review of marketing authorization applications and approve where appropriate.
 - Allocate an identification number to authorized devices.
 - Appoint and monitor third-party, independent conformity assessment bodies.
 - Review documentation by importers to ensure compliance with regulatory controls.
 - Review and approve manufacturer's advertising.
 - Provide scientific expertise for all medical devices, including in vitro devices, supplemented by external experts, when required.
 - Provide quality and safety information to assist medical devices procurement.
 - Issue certificates of free sale, as required.
 - Work with the national standards organization to identify and publish technical standards for marketing authorization purposes.
 - Monitor the use and maintenance of relevant databases.
 - Prepare relevant guidance documents.

f) Post-marketing surveillance and vigilance

- Review adverse event reports and take appropriate action.
- Review manufacturers' field safety corrective actions and monitor progress.
- Monitor manufacturer's post-marketing activities.
- Liaise with overseas national regulatory authorities and international organizations regarding medical device adverse events and field safety corrective actions.
- Issue safety notices to health care facilities and take safeguard actions.
- Encourage health care facilities to report adverse events.
- Monitor the use and maintenance of relevant databases.
- Prepare relevant guidance documents.

g) Laboratory access and testing

- Establish a quality control laboratory to be involved in definition of specification and analytical methods during assessment of marketing authorization.
- Provide regulatory oversight and testing of certain types of devices (e.g. in vitro devices).
- Establish a mechanism to identify and contract external laboratories (if needed).
- Check existence of general laboratory safety programmes and reference standards and reagents.
- Monitor the use and maintenance of relevant databases.
- Prepare relevant guidance documents.

h) Promotion, advertising and after sales

- Check existence of legal provisions covering promotion and advertising of medical devices, manufacturers, importers/exporters, wholesalers/distributors, and retailers.
- Identify and monitor responsible authority for promotion, advertising and after-sales monitoring of services.
- Review pre-approval for advertisement and/or promotional activities.
- Monitor and prohibit advertisements prescribing medical products to the public.
- Provide guidance on advertisement of on-the-shelf devices.

- Establish communication with civil societies in surveillance of promotion and/or advertisement of medical products.
- Ensure commissioning records, manuals, logs, calibration and maintenance schedules, and validation protocols are in place.
- Ensure compliance of owners and users of specific types of devices with the requirements for personnel, safe handling, installation, maintenance/calibration and disposal.
- Follow-up and report on compliance with after-sales services and obligations.

Industry structure and supply chain

Another factor to be taken into account is the structure of the industry and its supply chain. There are relatively few large manufacturers (in terms of sales) of medical devices and a large number of small and medium enterprises compared with the medicines area. Most local manufacturers in the Eastern Mediterranean Region are in the “small” and “medium” sized category.

A large majority of medical devices in the Region will be imported. Therefore, distributors play a key role in their installation, maintenance, repair and user training. While the manufacturer will include recommendations on all these aspects in its documentation, it is usually the distributor that undertakes much of the work over the life span of the medical device.

Country experience in the Region shows that distributors tend to be short-lived organizations with considerable staff turnover and poor knowledge of the medical devices they sell. To offset these factors, national regulatory requirements should be set for all organizations in the supply chain. Furthermore, since most medical devices are used by clinicians, patient outcome is affected by both the device itself and by the skill and training of the user/clinician or the patient.

Conformity assessment

It is the manufacturer’s responsibility to assess whether its medical devices meet national regulatory requirements and, when satisfied, to issue a written “Declaration of conformity”. An assessment is undertaken in the context of the regulatory requirements established in the jurisdiction where the medical device is marketed.

The national regulatory authority will retain the right to challenge and/or confirm the manufacturer's claim. Even where it is relying upon the regulatory decisions of another jurisdiction (e.g. audits, certificates, assessment reports) or recognized conformity assessment bodies, the granting of local marketing rights for a medical device remains a national decision.

Harmonization of medical devices regulatory practices

The GHTF was formed in 1992 to promote worldwide harmonization of medical device regulatory practices. Membership of the voluntary partnership was initially limited to regulatory officials and industry representatives from five jurisdictions: Australia, Canada, European Union, Japan and United States of America. Later it was extended to include representatives from AHWP.

Over two decades, the GHTF developed and promoted a regulatory model for medical devices based on a series of interlinking guidance documents. The documents were written by five study groups, under the oversight of a Steering Committee. Each study group concentrated on a separate part of the regulatory model as follows:

- Study group 1: Premarket evaluation
- Study group 2: Post-market surveillance/vigilance
- Study group 3: Quality systems
- Study group 4: Auditing
- Study group 5: Clinical safety/performance

In February 2012, the study groups were disbanded and the GHTF was replaced by the International Medical Device Regulators Forum (IMDRF), although its purpose – discussion of future directions in medical device regulatory harmonization – remained the same. Unlike the GHTF, IMDRF participants are regulators with industry involvement, by invitation only (GHTF founding members plus Brazil, China and Russia were invited to join). However, the IMDRF has begun to publish guidance documents in its own right and has pledged to maintain the body of documents previously published by the GHTF. WHO is an official observer to IMDRF.

Funding the regulator

This section describes how to support regulatory activities through user fees which fall into two main categories: fees linked to one or more specific activity or supplementary fees.

Note: While post-marketing vigilance and associated consumer protection activities are a vital part of national regulatory authority activities, it is impractical to fund these through activity-based fees.

Activity-based fees

- Registering and licensing of organizations, e.g. importers, distributors, authorized representatives of overseas manufacturers, domestic manufacturers, including re-processors and assemblers of procedure packs, clinical investigation sponsors and testing centres.
- Annual inspection of licensed organizations
- Authorization and listing of types of medical device to be placed on the local market
- Approval of clinical investigation applications, if any
- Designation and annual inspection of conformity assessment bodies, if any.

Supplementary fees

- Funding through the annual budget of the ministry of health is sourced through general taxation and ring-fenced to be spent on regulatory activities for medical devices (Disadvantage: developing countries are unlikely to see this as feasible in the long-run).
- Flat-rate fees per domestic manufacturer (Disadvantage: will be a barrier to domestic manufacturers and will raise only limited funds when most medical devices are imported).
- Flat-rate fees per device type authorized to be placed on the market. Collected from both overseas and domestic manufacturers (Disadvantage: could be a barrier to market entry and may fail to know the number of medical devices sold by each manufacturer in the local market).
- Levy-based fees on actual sales of medical devices in the local market. Collected by a system based on either a declaration by the manufacturer/distributor of

sales made in the collection period or as an additional sales tax at ‘point of sale’ (Disadvantage: the government’s treasury department may object to an increase in sales tax on medical devices only).

Procurement fees

In the rare cases where procurement is seen as one of the national regulatory authority’s responsibilities on behalf of health care facilities, a mark-up on the procured medical devices is included.

Start-up funding

While the preceding paragraphs may be appropriate for funding the national regulatory authority in the longer term, there is also a need to source for “start-up funding” that will be used to identify and implement an appropriate strategy for regulating medical devices in a particular country. Two sources may be available: central funding from the government/ministry of health, and external grants.

A step-by-step approach to regulating medical devices

The introduction of comprehensive regulatory controls for medical devices to a market that previously has been open and unregulated will take many years of efforts and should not be taken lightly. In particular, it is not feasible to make the transition in a single step since it requires a significant increase in the size and knowledge of the national regulatory authority, a high political commitment and long-term financial support. This section describes a step-by-step approach to be taken by a country from a situation where its market for medical devices is completely open, to one where it has comprehensive regulation. The steps differ in some respects from those suggested by GHTF. However, they have proved to be effective in developing regulatory programmes for medical devices in several different countries, e.g. Saudi Arabia.

The steps are:

Step 1. Strategic goals and policy commitments

Step 2. Consumer protection

Step 3. Marketing authorization.

Each step contains options with an explanation of their advantages and disadvantages. Although recommendations are made, it is the responsibility of the country's Ministry of Health to prepare a regulatory impact analysis (using tools such as the harmonized WHO national regulatory authority assessment tool (7)) for the various options relevant to the country and to present it to policy-makers for a decision. The regulatory impact analysis should include the advantages and disadvantages of each option in the context of the national priorities. Also, constraints and consequences should be examined in terms of start-up and maintenance budgets, the availability or training needs of staff, and an implementation timeline. The endorsement and long-term commitment of policy-makers are both essential to a successful outcome.

The first priority for policy-makers is to implement the recommendations accompanied by either the term "First decision" or "Primary recommendation". The term "Highly recommended" indicates "Second priority decisions", and "Recommendation" indicates "Lower priority decisions". The same indicators apply to Steps 2 and 3

alike. As already noted, the regulation of medical devices should follow the principles of good governance and good regulatory practice. In addition, it requires specific knowledge and skills on the part of the regulators in order to be able to perform their tasks in a defined work setting.

Step 1: Strategic goals and policy commitments

The first step in building an efficient medical device regulatory function in any country usually involves political commitment and buy-in, and establishing on well defined strategic goals adequate structure, and clear scope and definitions of regulatory controls. The following actions are recommended.

1.1 Demonstrate commitment to the introduction of regulatory controls for medical devices.

Objective: Clarify the purpose of regulation of medical devices, the legal framework for control, and the department responsible for implementation and management of regulatory legal provisions.

Options	Discussion
1. Policy and decision-makers commit publically to the principle that the purpose of regulation of medical devices and of the organizations that manufacture, supply or use them, is the protection of public health.	This is the first decision to be made if the policy is to achieve its objectives. A successful outcome requires commitment, leadership and continuous support from policy-makers over an extended period of time.
2. Designate the national regulatory authority as a directorate within the Ministry of Health or establish a separate stand-alone agency responsible directly (rather than through the Ministry) to the Minister of Health.	<p>Many national regulatory authorities for medical devices are departments within the ministries of health but some have a degree of autonomy (e.g. Medicines and Healthcare Products Regulatory Agency, United Kingdom; Food and Drug Authorities of Jordan and Saudi Arabia; National Medicines and Poisons Board, Sudan).</p> <p>The structure should ensure the authority's decisions are independently made, evidence-based and not founded on unsubstantiated political or industry pressure.</p>

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Options	Discussion
<p>3. Include the national regulatory authority as part of an entity with similar responsibilities for medicines and/or for food, or make it an independent entity.</p>	<p>There are examples of regulators with responsibility for food, medicines and medical devices (e.g. United States Food and Drug Administration, Jordan Food and Drug Administration) and of regulators with responsibility for medicines and medical devices only (e.g. Medicines and Healthcare Products Regulatory Agency, United Kingdom, National Medicines and Poisons Board, Sudan, and Therapeutic Goods Administration, Australia).</p>
<p>4. Control the marketing of medical devices through the issuing of legislation or through development of a voluntary mechanism.</p>	<p>In a low-income country, it is likely that an organization with responsibility for medicines safety exists already and it is likely that the medical devices regulator will be incorporated within it.</p> <p>Whichever structure is chosen, it is important that staff and management responsible for regulating medical devices are seen as equal partners to those responsible for regulation of medicines and not subordinate to them. The regulation of medical devices requires specialist expertise distinct from that required for medicines.</p>
<p>5. Develop national legislation or adopt existing harmonized regulations.</p>	<p>Internationally, the trend is for countries to publish legislation specific to medical devices. However, this is effective only where the responsible staff at the national regulatory authority have received training specific to medical devices and are sufficient in number.</p> <p>Primary recommendation: First, introduce simple controls applying specifically to medical devices. These controls will establish fundamental principles and, to be credible, must be enforced meticulously. Such controls will apply to medical device procurement procedures. As the experience of the staff and resources increase, regulations should be amended to extend the controls. Provide an adequate number of staff to maintain the necessary regulatory procedures. Agree on a realistic timeline for implementation.</p>
	<p>Not recommended: to publish a comprehensive set of regulations on medical devices before the national regulatory authority has sufficient resources and expertise in place to regulate medical devices.</p>

1.2 Define the scope of regulatory controls.

Objective: Clarify the scope of the regulations and clearly differentiate medical devices from other products (e.g. medicines, vaccines, cosmetics, blood products etc.).

Note: The definitions referred to in this step are contained in the glossary.

Options	Discussion
1. Adopt the harmonized definitions of the GHTF for “Importer”, “Authorized Representative”, “Manufacturer”	Primary recommendation: Use the harmonized definitions adopted by GHTF. Note: This term identifies the “legal manufacturer” and is not necessarily the “maker” or “fabricator” of the medical device.
2. Adopt the harmonized definitions of the GHTF for “Medical device” and “In-Vitro Diagnostic”	Primary recommendation: Use the harmonized definition adopted by GHTF. Note: In-vitro medical devices, stand-alone software and implantable electrically powered devices (e.g. pace-makers) are included within this definition.
3. Include aids for persons with disabilities within the definition of “medical device”.	Highly recommended. Note: If included in the definition of “medical device” then incorporate text: “alleviation of or compensation for an injury”.
4. Include non-pharmaceutical contraceptives within the definition of “medical device”.	Highly recommended. Note: If included, then incorporate text “control of conception” in your main definition of “medical device”.
5. Include disinfection substances within the definition of “medical device”.	Highly recommended. Note: If included, then incorporate text “disinfection” in your main definition of “medical device”.
6. Include devices incorporating animal and/or human tissues within the definition of “medical device”.	Highly recommended. The alternative is to have separate legislation for such devices.
7. Include devices for in vitro fertilization or assisted reproduction technologies within the definition of “medical device”.	Highly recommended. The alternative is to have separate legislation for such devices.
8. Include other devices within the definition of “medical device”	Highly recommended The alternative is to have separate legislation for such devices.

1.3 Establish a procedure to regulate “borderline” or combination products.

Objective: Draft a procedure for making a decision about which regulation takes precedence as many products incorporate parts or substances that are regulated by legislation other than that for medical devices.

Primary recommendation: Form an internal committee within the Ministry of Health that includes experts from the relevant regulatory sectors to agree the primary and secondary purpose of the product and hence which regulation takes precedence.

1.4 Decide whether there are any products that are not medical devices but could be subject to the same regulation.

Objective: Identify any products outside the scope of regulations governing medical devices that are similar in design, quality, safety and performance characteristics to medical devices, and decide whether they will be subject to the same regulations.

Discussion: Items for inclusion may include e.g. lasers for cosmetic use, implants for body profile purposes, cosmetic skin fillers, among other things. The practice among experienced national regulatory authorities is to include such products in the regulation of medical devices. Nevertheless, this may complicate the text of the legislation.

Recommendation: Do not incorporate products of this type into the first set of regulations for medical devices.

1.5 Identify sources of external expertise for Step 1.

Recommendation: Consult with groups and networks whenever an opportunity presents itself

- Network with other national regulatory authorities within the region, including, where relevant, those of sub regions.
- Join different harmonization working parties and network with their members.
- Refer to WHO, GHTF and IMDRF guidance documents.
- Link to regional and international harmonization groups that are working on capacity-building and the development of a curriculum for regulators.

Note: Opportunities for temporary or short-term secondment of staff to other national regulatory authorities may be possible as a form of on-the-job training. Twinning with another regulatory agency may also be useful.

Step 2: Consumer protection

The second step involves consumer protection measures, and is mainly concerned with post-market surveillance, vigilance systems and monitoring of medical devices. The following actions are recommended.

2.1 Conduct post-market surveillance and monitor performance of medical devices.

Objective: Establish and maintain a system to record and investigate any adverse events related to a medical device reported to the national regulatory authority.

Discussion: Effective pre-market regulatory requirements are not sufficient in themselves to properly safeguard the health of patients and users. Extensive pre-market clinical investigation studies are impractical and do not reflect the day-to-day use of a medical device. Instead, the licensing for sale of medical devices must be accompanied by a post-marketing surveillance system, if public health is to be properly safeguarded. The trend in countries with mature medical devices regulations is towards stricter post-marketing controls. For the regulatory procedure to be successfully implemented, the national regulatory authority will have to explain to staff working in health care facilities – whether they work in the government, university, military or private sector – the benefit of reporting adverse events involving medical devices to the manufacturer. It will also have to train its own staff to analyse reported events across a wide range of devices and technologies, supported, where necessary, by clinical and technical experts from universities and other specialist organizations.

Options	Discussion
<p>1. Establish and maintain a system to record and disseminate any medical device-related adverse events reported to the national regulatory authority. Although post-marketing surveillance is the responsibility of the manufacturer or authorized representative, the national regulatory authority is responsible for oversight and for taking measures against a manufacturer that is not in compliance.</p>	<p>Primary recommendation: Follow the relevant guidance documents available from either international entities Or groups (such as WHO, GHTF and IMDRF), or specific directives from certain bodies (such as the European Union and the Saudi Food and Drug Authority) to establish a medical devices vigilance system. Appoint sufficient staff to investigate adverse event reports and manage any subsequent actions. The national regulatory authority should develop a system of reporting centres, with trained individuals and clinical engineers.</p> <p>Note: The investigator(s) must either have good knowledge of medical devices and the way they are used or have access to such expertise from a local user or manufacturer.</p>
<p>2. Require mandatory reporting by manufacturers and their local agents of all adverse events where a patient or user has died or been seriously injured.</p>	<p>Advantage: This is consistent with the practice in many countries and aligns with GHTF guidance. It acknowledges that the manufacturer has the primary responsibility for investigating adverse events and implementing corrective action where necessary. The national regulatory authority only oversees this activity for the purpose of ensuring that public health is safeguarded.</p> <p>Disadvantage: This relies completely on the manufacturer to make the decision on when reporting is required. The national regulatory authority should, in parallel, independently collect reports from health care facilities and users as a precautionary measure, to make sure that no incidents related to manufacturers' devices have been reported by users.</p> <p>Highly recommended: Ensure this approach is adopted by including mandatory reporting of adverse events in the legislation for regulation of medical devices.</p>

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Options	Discussion
3. Require mandatory reporting of all adverse events by manufacturers and their local agents, even where the event has not resulted in death or serious injury.	<p>Advantage: This involves the national regulatory authority to a greater extent in deciding which reports should be investigated. It provides more information on the performance of medical devices.</p> <p>Disadvantage: This relies completely on the manufacturer to make the decision on when reporting is required. The national regulatory authority should, in parallel, independently collect reports from health care facilities and users as a precautionary measure, to make sure that no incidents related to manufacturers' devices have been reported by users.</p> <p>Highly recommended: Ensure this approach is adopted by including mandatory reporting of adverse events in the legislation for regulation of medical devices.</p>
4. Establish and manage a procedure whereby the national regulatory authority alerts health care facilities (including those in the private sector) and device users of adverse events where a patient or user has died or been seriously injured.	<p>Primary recommendation: The national regulatory authority should establish and manage a procedure to warn device users of the implications of an adverse event report, by means of a safety notice, where the situation warrants such an action.</p>
5. Encourage health care professionals and other device users to report suspected adverse events to the national regulatory authority as well as the manufacturer or its local representative.	<p>Advantage: This provides the national regulatory authority with information independently of the manufacturer's reports. It encourages good practice within health care facilities and provides information on user error rather than defective devices. In addition, reporting by users is a crucial source of information on how a product behaves on the market.</p> <p>Disadvantage: In general, users must be encouraged to report. If users are not encouraged to report also, options 2 and 3 will result in an increase in workload for the national regulatory authority therefore the number of staff required.</p> <p>Highly recommended: Ensure this approach is adopted by including mandatory reporting of adverse events in the legislation for regulation of medical devices.</p>
6. Make reporting from health care facilities and other device users mandatory	<p>Not recommended: Device users are concerned with the product liability consequences of adverse event reporting. They cooperate better if reporting is voluntary and does not lead to punishment of the reporter.</p>

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Options	Discussion
7. Establish an online reporting process for easier accessibility by the reporter.	<p>Note: The reporting process should be as easy and efficient as possible to encourage reporting from users as well as manufacturers. A computerized database, easily accessible to the reporter via the internet will encourage reporting and assist the national regulatory authority to manage the procedure efficiently.</p> <p>Recommendation: If expertise in information technology and resources is available, establish an online reporting process to facilitate the reporting, recording, investigation and tracking of adverse events.</p> <p>If such expertise is unavailable, a paper-based procedure will be acceptable.</p>

2.2 Monitor manufacturers’ and authorized representatives’ field safety corrective actions.

Objective: Establish and maintain a procedure to record and monitor manufacturer’s Field Security Corrective Actions (FSCAs), and inform device users where necessary.

Discussion: FSCAs⁷ are post-marketing controls implemented by a manufacturer when a modification to a medical device already in service is required. An FSCA could be required after the investigation of an adverse event occurring either locally or in another country, or to improve the performance of the medical device (e.g. software update).

In some markets, manufacturers take advantage of weak regulatory oversight and fail to implement FSCAs. For this procedure to be successfully implemented, the national regulatory authority will have to ensure that domestic manufacturers or, where relevant, the local representatives of overseas manufacturers, report all relevant FSCAs to the authority. It will also have to train its own staff to record and monitor each FSCA.

Primary recommendation: Require manufacturers or their authorized representatives to report any relevant FSCA to the national regulatory authority, and subsequently to report progress towards its completion.

⁷ GHTE/SG2/N57R8:2006 Medical Devices post market surveillance: content of field safety notices (FSN)

The national regulatory authority should establish and maintain a procedure to record and subsequently monitor progress with FSCAs. The procedure should include a mechanism for the national regulatory authority to warn device users of the reason for an FSCA, by means of a safety notice issued to health care facilities and device users, where the situation warrants such an action.

2.3 Establish a procedure to withdraw medical devices from use as safeguard action.

Objective: Ensure that legal authority is given to the national regulatory authority to remove medical devices from the market where this is required to safeguard public health.

Discussion: Occasionally, medical devices that comply with the regulations and have been authorized to circulate on the market are found to be hazardous and have to be withdrawn. In these circumstances, a procedure is required to enable such action, and to issue a safety notice to health care facilities and device users.

Primary recommendation: Establish and implement a procedure to withdraw medical devices from the market where there is a risk to the health of patients, users or third parties; and to monitor the effectiveness of such “safeguard action”, when the legislation is first applied by regulating the competency to act by the national regulatory authority. It should apply equally to health care facilities operating in the private sector.

2.4 Fund one or more patient registries for specific implanted devices to monitor their post-implantation performance.

Objective: Establish long-term monitoring and analysis of post-implantation performance of specific medical devices.

Discussion: Some countries with mature regulations for medical devices and significant expertise, fund university hospital research departments to collect post-marketing performance data for certain implanted devices (e.g. pacemakers, orthopaedic implants). The national regulatory authority cannot do this itself since the registry collects individual patient information from medical records. These registries

allow long-term analysis of such devices for the purpose of offering comparative performance information to users and patients, as well as detecting negative trends early in the life-cycle of the medical device. These registries can be expensive to set up and to maintain and success may depend on the cooperation of hospitals dealing with such devices.

Not recommended: National regulatory authorities should not set up such registries until they have considerable experience of medical devices and their regulation. Instead, they should request access to international registries.

2.5 Identify sources of external expertise for Step 2.

Recommendation: Consult with groups and networks whenever an opportunity presents itself.

- Network with other national regulatory authorities within the region, including, where relevant, those of the sub regions.
- Join different harmonization working parties and network with their members.
- Refer to WHO, GHTF and IMDRF guidance documents.
- Explore training opportunities offered by other countries, preferably in the Region. Take advantage of any opportunity to seek the advice of national regulatory authorities in Australia, Canada, the European Union, Japan and the United States of America, all which have mature regulatory systems for medical devices.
- Where feasible, work with the device manufacturer to investigate adverse events.
- Use external expertise to set up an online reporting system for regulatory activities;
- After acquiring an appropriate level of competency, consider applying to join the report exchange programmes of other national authorities.

Step 3: Marketing authorization

The third step usually involves marketing authorization and conformity assessment measures which ensure proper on-the market regulatory controls for medical devices. This step also involves tightening of some of the measures related to the first two steps. The following actions are recommended.

3.1 Select and establish a procedure for authorizing medical devices to be placed on the local market

Objective: Identify possible procedures to permit medical devices to be marketed and select the one most suitable for the national regulatory authority to follow.

Discussion: In the absence of a mandatory procedure to allow only those medical devices authorized to circulate in the market by the national regulatory authority, the market is open to exploitation by manufacturers and their agents and offers minimal consumer protection. Various approaches to authorization are available. Selecting the most suitable for the local market depends on the maturity and effectiveness of any medical devices regulation in place, the experience of national regulatory authority staff, and the availability of third party experts to assist in the conformity assessment process. Specific attention is required to assure the private health care sector is included in enforcement and monitoring regarding approved medical products.

Options	Discussion
<p>1. Maintain an open market without specific marketing authorization procedures.</p>	<p>Not recommended: Maintaining an open market may leave it prone to exploitation, to the detriment of consumer safety.</p>
<p>2. Only authorize devices that already comply with the regulatory requirements of a GHTF founding member jurisdiction (i.e. Australia, Canada, European Union, Japan and USA) or any other jurisdiction. Medical devices that do not meet the requirements of the receiving country must be assessed by another means e.g. conformity assessment body. Use internal resources to review/assess documentation submitted by the manufacturer and to issue a marketing authorization certificate or equivalent. Internal capacity should be in place to perform this function.</p>	<p>Highly recommended: Define a transitional period for full compliance.</p>
<p>Documentation may include a certificate of free sale and/or a declaration of conformity.</p>	<p>Advantage: This option limits devices that may be marketed to those devices already meeting the regulatory requirements of a mature, regulated market. It transfers the obligation for assessing the quality, safety and effectiveness/performance of medical devices circulating in the market to a jurisdiction or conformity assessment body that meets the requirements of the receiving country. It also allows staff to gain experience of marketing authorization decision-making.</p>
	<p>Disadvantage: Identification of the evidence that manufacturers or their agents must submit to demonstrate the conformity they claim is complicated and subsequent assessment by the national regulatory authority may be time-consuming. Inspection of the submitted documentation by inexperienced regulators may not detect inconsistencies.</p>
	<p>Primary recommendation: Ensure this approach is adopted by including mandatory reporting of adverse events in the legislation for regulation of medical devices. The legislation should concentrate on regulating medical devices that pose the highest risk first.</p>

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Options	Discussion
<p>3. Only authorize devices that already comply with the regulatory requirements of one or more specific non-GHTF founding member jurisdictions. Medical devices that do not meet the requirements of the receiving country must be assessed by another means e.g. conformity assessment body.</p> <p>Use internal resources to verify documentation submitted by the manufacturer and to issue marketing authorization certificate or equivalent.</p> <p>Documentation may include a certificate of free sale and/or a declaration of conformity.</p>	<p>Advantage: Similar to option (2).</p> <p>Disadvantage: Similar to option (2), but open to possible challenge on trade restriction grounds.</p> <p>Not recommended: Although similar to option (2) it restricts the marketing authorization opportunities to a limited number of jurisdictions.</p>
<p>4. Only authorize devices that already comply with the regulatory requirements of jurisdictions that meet the requirements of the receiving country plus additional national provisions.</p>	<p>Advantage: Similar to option (2).</p> <p>Disadvantage: Similar to option (2), but open to possible challenge on trade restriction grounds.</p> <p>Recommendation: The national regulatory authority can adopt the marketing approval procedure recommended in option (2), together with some additional national provisions (see Step 3.2) which could also be applied elsewhere.</p>
<p>5. Only authorize devices that comply with the marketing authorization requirements of a comprehensive medical devices regulation specific to a particular country or region.</p>	<p>Advantage: The requirements will be independent of the regulations of other jurisdictions that meet the requirements of the receiving country, allowing the medical devices regulation to take account of local needs for medical devices requirements.</p> <p>This option can be exercised when the national regulatory authority becomes mature enough to make its own judgements on locally produced medical devices. Its decisions can then serve as regulations for other countries.</p> <p>Disadvantage: Progressing to this position, from that of being an open and unregulated market, will take many years. To reach this point, the national regulatory authority will need to be of an appropriate size and will require extensive knowledge of all medical devices. A large financial commitment and a long-term stable strategy will also be required.</p> <p>Recommendation: This action is only recommended after the country has successfully introduced the marketing authorization procedures described in option (2) and has developed extensive understanding of medical devices.</p>

3.2 Identify environmental conditions for manufacturers to take into account

Objective: Identify and require manufacturers to take account of environmental conditions that may not be encountered in jurisdictions that meet the requirements of the receiving country.

Discussion: For some medical devices, there are likely to be some environmental, technical, instruction- for-use and language requirements that are particular to the local market in some countries or regions and will be outside those encountered in jurisdictions that meet the requirements of the receiving country. If these could affect the quality, performance or safety of such devices, the manufacturer must take them into account during the design and manufacture phases.

Recommendation: Identify environmental, instruction-for-use and language requirements that are particular to the local (or regional) market and specify them as additional marketing authorization requirements that the manufacturer must take into account during the design, development and manufacture of the device. Note that each national specific requirement may become an impediment to availability. Aspects such as users' skills, stability and labelling should be considered based on national reality.

3.3 Establish marketing authorization requirements for domestic manufacturers

Objective: Adopt a marketing authorization policy for domestic manufacturers.

Discussion: While there may be few domestic manufacturers of medical devices in any particular region that compete with imported devices, there are many workshops that serve the domestic market by manufacturing optical devices (e.g. spectacles), custom-made devices (e.g. dentures), and assembling procedure packs used in surgery and elsewhere. If option (2) has been adopted from the options in Step 3.1, the domestic manufacturer will have to apply for and obtain marketing authorization in one of the jurisdictions that meet the requirements of the receiving country before it can supply locally. This can sometimes be unaffordable for small manufacturers which only target the local market; a transitional period can help solve the problem

Advantage: For exporting manufacturers, adopting a marketing authorization policy can improve the quality, safety and performance of locally manufactured devices thereby opening up opportunities for domestic manufacturers to export globally.

Disadvantage: Obtaining the marketing authorization can be a burden on domestic manufacturers, most of whom will be small businesses supplying low-risk products to local customers.

Recommendation: Domestic manufacturers for medical devices competing with imported devices will follow whichever marketing authorization option is adopted from those listed in Step 3.1.

3.4 Rely on conformity assessment bodies during marketing authorization process.

Objective: If marketing authorization option (2) or (3) has been adopted from the options in Step 3.1, the manufacturer or its authorized representative will provide documentary evidence that a particular device meets the marketing authorization of a jurisdiction that meets the requirements of the receiving country. A country should first define their own regulatory requirements, including the identification and acceptance of other national regulatory authorities. Once this is done, recognition of equivalent assessments can take place. The national regulatory authority can ask for certificates, attestations, etc. to prove compliance with other national regulatory authorities, and not just accept the manufacturer's claim. For example, if the national regulatory authority does not have sufficient knowledge of the medical devices regulation concerned to confirm that the documentary evidence is valid, it may use a conformity assessment body to review and analyse the documentary evidence submitted. The conformity assessment body will confirm to the national regulatory authority whether the documentary evidence supports the manufacturer's claim.

Disadvantage: The medical devices regulations of some jurisdictions are complicated and the evidence of compliance depends on the risk classification of the medical device and the conformity assessment associated with the risk class of the medical device.⁸ Therefore, an inexperienced national regulatory authority must

⁸ For more detailed information on different risk classes and classification of medical devices, refer to GHTF Principles of medical devices classification GHTF/SG1/N77:2012.

either accept the manufacturer's claim that a particular device meets the marketing authorization requirements of an experienced jurisdiction or it must critically examine the documentary evidence provided to it in support of such a claim. If the national regulatory authority adopts this second approach, it should use a conformity assessment body with a widespread international presence to assist in the task but will have to use its own staff to appoint and monitor the governance and performance of such bodies.

Advantage: Relying on conformity assessment bodies can be more effective in preventing fraudulent applications. Looking into other national regulatory authority assessments, certificates, etc. allows staff to gain experience of marketing authorization and decision-making.

Disadvantage: The smaller the medical devices market, the more difficult it will be to find conformity assessment bodies to undertake the task. The cost of hiring such bodies will have to be recovered from the applicant organization. The national regulatory authority will have to oversee the appointment and performance of the conformity assessment bodies. Whether or not a conformity assessment body has a local office, oversight can be an administrative complication. Auditing reports of manufacturers can be shared between national regulatory authorities, under the condition of confidentiality. IMDRF has established the Medical Devices Single Audit Programs (MDSAP) working group where participating members can exchange audit reports.⁹

Not recommended: Where the national regulatory authority is inexperienced or poorly resourced, it should not accept the manufacturer's claim that a particular device meets the marketing authorization requirements of a jurisdiction that meets the requirements of the receiving country

Recommended: Where the national regulatory authority is sufficiently resourced and the local market is substantial, it is recommended to designate one or more conformity assessment bodies to review submitted documentary evidence and to advise whether it confirms the manufacturer's claim.

⁹ Medical Device Single Audit Program (MDSAP) Assessment and decision process for the recognition of an auditing organization. IMDRF/MDSAP WG/N11 FINAL:2014

3.5 Use marketing authorization as an aid to efficient procurement of medical devices

Objective: Improve the procurement of medical devices in respect of the procedures used to control the safety, quality and performance of medical devices.

Discussion: In jurisdictions with mature medical devices regulations only devices that have been authorized to be marketed in that country may be procured. The entire procurement process and associated decisions are not taken by the national regulatory authority but by either the individual health care facility itself or, for some high volume devices, by a centralized procurement body or other organization. The decision may be influenced by the county's reimbursement procedures, budget needs and technical evaluation of specifications. In some cases, health technology assessment considerations are required, especially for expensive and innovative technologies. The national regulatory authority should issue documented proof (certificate, attestation, etc.) of compliance with national regulations as evidence to be used in bidding.

Recommendation: Ensure medical devices being considered for purchase comply with existing legislation. It is also recommended that the procurement process involve thorough search of the national regulatory authority database for any adverse events, FSCAs, and/or safeguard actions relevant to the device being considered for procurement. Usage of marketing authorization procedures, revision of the Certificate of Free Sale issued by the exporting country, as well as confirmation that the device complies with any relevant national requirements are issues to be considered as well. Finally, if the device considered for procurement is manufactured locally, it should comply with any special controls and marketing authorization procedures developed specifically for locally manufactured products.

3.6 Decide on the need to test medical devices prior to granting marketing authorization

Objective: Guarantee that the medical devices conform to the quality and safety standards set for these devices.

Discussion: Are there any circumstances when the national regulatory authority should test a sample of medical devices that are subject to a marketing authorization application prior to reaching an authorization decision? The regulations of jurisdictions

that meet the requirements of the receiving country might rely primarily upon manufacturers controlling the design, development and manufacture of their products through quality management systems, audited by either the national regulatory authority itself or by a third party organization appointed to undertake the task. Experience shows that this is an effective but demanding procedure. Further testing by the national regulatory authority is unnecessary and reflects its distrust of the manufacturer's quality management system. Testing often makes the medical device unsuitable for further use.

Not recommended: Testing of medical devices is a costly procedure and is generally not recommended. Instead of undertaking local testing prior to authorization, the national regulatory authority should adopt one of the marketing authorization procedures described in Step 3.1 (2) to (4). Testing may be appropriate for in vitro devices.

3.7 Establish an online system for establishments to apply for marketing authorization

Objective: To minimize the burden of submitting an application for marketing authorization.

Discussion: The volume of marketing authorization applications will be substantial and a well designed online procedure will ease the burden on applicants and the national regulatory authority concerned.

Advantage: An online application procedure will clarify the documentation to be submitted by the manufacturer or authorized representative and is of benefit to both the applicant and the national regulatory authority.

Disadvantage: An external company will have to be contracted to develop and commission the online system. Internal staff will be required to use and maintain it. Initially, this would be a high-cost project needing close management and dedicated internal resources. There could be security issues since the documentation is confidential in nature. The computer system and infrastructure must be stable, reliable, sufficiently secured and robust.

Recommendation: If the national regulatory authority has expertise in developing online systems, the use of an online procedure will facilitate marketing authorization applications. If such expertise is not available, a paper-based procedure is preferable.

3.8 Identify sources of external expertise for Step 3

Recommendation: Consult with groups and networks whenever an opportunity presents itself.

- Network with other national regulatory authorities within the Region, including, where relevant, those of subregions.
- Join different harmonization working parties and network with their members.
- Refer to WHO, GHTF and IMDRF guidance documents.
- Explore training opportunities offered by other countries, preferably within the same region. Take advantage of any opportunity to seek the advice of national regulatory authorities in Australia, Canada, the European Union, Japan and the United States of America, all which have mature regulatory systems for medical devices.
- Use external expertise to set up an online system to apply for marketing authorization.

Additional considerations

- Political willingness and long-term commitment are fundamental to the establishment of an effective regulatory programme and the regulatory system (national regulatory authority) that is responsible for it. An implementation strategy with timelines should be agreed and published.
- The national regulatory authority must be independent in its decision-making and decisions must be evidence-based and not founded on unsubstantiated political or industry pressure.
- It is feasible to have the two divisions responsible for the regulation of medical products and of medical devices to be incorporated within one single organization with a common corporate structure. However, while acknowledging their different responsibilities, the management and staff of the separate divisions must be given equal status. In some countries, the national regulatory authority will also include a division responsible for food quality and safety.
- The national regulatory authority should have an effective organizational structure with unambiguous functional linkages, including those to other agencies and regulators, where relevant. It should operate on the principles of good governance and accountability and should have in place a code of conduct, procedures to avoid conflict of interest, and programmes for continuing capacity development.
- The regulations pertaining to medical devices should:
 - embody the concepts of sound governance and adherence to international ethical standards for both public and private sectors;
 - take into account the level of risk presented by the medical product or device under consideration so as to avoid placing an unnecessary burden on manufacturers;
 - serve to ensure the safety, performance and quality of medical devices and medical products placed on the market;
 - control and monitor the performance of manufacturers and entities in the public and private supply chains;
 - specify requirements for obtaining marketing authorization for a medical product or medical device;

- specify requirements for post-marketing vigilance and market control, including withdrawal of products from the market and/or issuing safety alerts to users;
 - specify requirements for compliance, enforcement and post-marketing surveillance;
 - be responsive to innovation and scientific advancement rather than inhibit it;
 - wherever possible avoid legal jargon;
 - include a mechanism for appeals and conflict resolution.
- Each country should introduce its specific regulation on a step-by-step basis to a timeline that matches the steady increase in the size, experience, resources and maturity of the individual national regulatory authority and the market it controls.
 - Industry associations and all other stakeholders shall be provided with opportunities to comment on the regulatory policy, the proposed regulation/s, and the guidance documents, before the legislation is published. Holding countrywide workshops and consultative meetings will reduce the potential for problems when the regulation is implemented. Application dates should be published with realistic transition periods to allow stakeholders to adapt to the new requirements.
 - The national regulatory authority should seek to raise public awareness of the importance of safety, performance and quality of medical products and medical devices and explain its part in safeguarding public health.
 - The national regulatory authority should publish guidance that allows each stakeholder to interpret unambiguously the legal requirements that apply to it. The inclusion of step-by-step flow charts describing the regulatory process could be helpful. The objective is to work towards the common objective of assisting industry to produce high quality medical products and medical devices at a price that the government, health insurance or consumers can afford.
 - The regulatory programme should include a realistic fee system to ensure the financial sustainability of the national regulatory authority and the services it offers. It should have a size, structure and expertise that allows it to fully implement the controls/regulation it has in place. In return, it should be held to account for attaining published performance targets.

- The national regulatory authority should have access to an independent committee of scientific, pharmaceutical and clinical experts that can advise it as necessary and keep it abreast of scientific advancement.
- Regional collaboration on medical devices regulation should be encouraged. This can be achieved through the following considerations:
 - Procedures that work effectively in a particular country should be identified with a view to adopting them widely within the region.
 - The opportunity of establishing one or more central databases within a region should be explored and implemented where appropriate. The feasibility of developing a database for notification and surveillance of counterfeit medical products should also be explored.
 - Opportunities for regional and/or international cooperation, as well as information sharing through regional networks, should be encouraged.

Glossary

Note: Unless otherwise stated, these definitions are those of the Global Harmonization Task Force (GHTF) and the International Medical Device Regulators Forum (IMDRF) (see list of references for further information).

Authorized representative	Any natural or legal person established within the jurisdiction who has received a written mandate from the overseas manufacturer to act on his behalf for specified tasks, including the obligation to represent the manufacturer in its dealings with the national regulatory authority.
Clinical investigation plan	A document that states the rationale, objectives, design and proposed analysis, methodology, monitoring, conduct and record-keeping of the clinical investigation.
Conformity assessment	The systematic examination of evidence generated, and procedures undertaken, by the manufacturer, under requirements established in the Medical Devices Regulation, to determine that a medical device complies with all relevant requirements.
Conformity assessment body (CAB)	An independent body designated and monitored by the national regulatory authority to undertake specified conformity assessment activities to determine whether a manufacturer fulfils the relevant requirements of the medical devices regulation.
Custom-made device¹⁰	Any medical device specifically made in accordance with a professionally qualified person's written prescription which gives, under his responsibility, specific design characteristics and is intended for the sole use of a particular patient.
Distributor	Any natural or legal person in the supply chain who, on his own behalf, furthers the availability of a medical device to the end user.

¹⁰The "Council of The European Communities" Directive 93/42/EEC of concerning medical devices. European Commission, June 1993.

Field safety corrective action (FSCA)	An action taken by a manufacturer to reduce or remove a risk of death or serious deterioration in the state of health associated with the use of a medical device that is already placed on the market.
Global Harmonization Task Force (GHTF)	Founding members are Australia, Canada, European Union, Japan and the United States of America.
Harm¹¹	Physical injury or damage to the health of people or damage to property or the environment.
Hazard¹²	Potential source of harm.
Health technologies¹³	The application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives.
International Medical Device Regulators Forum (IMDRF)	A voluntary group of medical device regulators from around the world who have come together to build on the strong foundational work of the GHTF and aims to accelerate international medical device regulatory harmonization and convergence. It was established in in October 2011 at a meeting of representatives from the medical device regulatory authorities of Australia, Brazil, Canada, China, European Union, Japan and the United States, as well as the World Health Organization (WHO) in Ottawa.
Importer	Any natural or legal person in the supply chain who is the first to make a medical device, manufactured in another country, available in this jurisdiction.

¹¹ International Association of Oil & Gas Producers (OGP) report 6.40/217 1994.

¹² International Association of Oil & Gas Producers (OGP) report 6.40/217, 1994.

¹³ World Health Organization. World Health Assembly resolution WHA60.29, May 2007.

In vitro diagnostic (IVD) medical device

A medical device, whether used alone or in combination, intended by the manufacturer for the in vitro examination of specimens derived from the human body solely or principally to provide information for diagnostic, monitoring or compatibility purposes.

Note 1: IVD devices include reagents, calibrators, control materials, specimen receptacles, software, and related instruments or apparatus or other articles and are used, for example, for the following test purposes: diagnosis, aid to diagnosis, screening, monitoring, predisposition, prognosis, prediction, determination of physiological status.

Note 2: In some jurisdictions, certain IVD medical devices may be covered by other regulations.

Instructions for use

Information provided by the manufacturer to inform the device user of the medical device's intended purpose and proper use and of any precautions to be taken.

Intended use/purpose

The objective intent of the manufacturer regarding the use of a medical device, process or service as reflected in the specifications, instructions for use and information provided by the manufacturer.

Jurisdiction¹⁴

The power, right, or authority to interpret and apply regulatory laws.

Labelling

The label, instructions for use, and any other information that is related to identification, technical description, intended purpose and proper use of the medical device, but excluding shipping documents.

¹⁴ Condé HV. A handbook of international human rights terminology, second edition. Lincoln NE: University of Nebraska Press; 2004.

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- Licensing** The process whereby the national regulatory authority issues a licence to a party which permits the party to undertake one of the following activities:
- importing a medical device subject to the provisions of the medical devices regulation;
 - distributing a medical device subject to the provisions of the Medical Devices Regulation;
 - acting on behalf of the manufacturer within the jurisdiction.
- Local manufacturer** A manufacturer established within the country.
- Manufacturer** Any natural or legal person with responsibility for design and/or manufacture of a medical device with the intention of making the device available for use, under his name; whether or not such a device is designed and/or manufactured by that person himself or on his behalf by another person(s).
- Medical devices** Any instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings, for one or more of the specific medical purpose(s) of:
- diagnosis, prevention, monitoring, treatment or alleviation of disease;
 - diagnosis, monitoring, treatment, alleviation of or compensation for an injury;
 - investigation, replacement, modification, or support of the anatomy or of a physiological process;
 - supporting or sustaining life;
 - control of conception;
 - disinfection of medical devices;

- providing information by means of in vitro examination of specimens derived from the human body; and which does not achieve its primary intended action by pharmacological, immunological or metabolic means, in or on the human body, but which may be assisted in its intended function by such means.

Note: Products which may be considered to be medical devices in some jurisdictions but not in others include disinfection substances, aids for persons with disabilities, devices incorporating animal and/or human tissues, and devices for in vitro fertilization or assisted reproduction technologies.

Medical products¹⁵

Medicines, vaccines, diagnostics, medical devices (WHA 67.20).

Pre-market control¹⁶

All activities that are performed on the device by manufacturer (Local or overseas) to comply with regulatory requirements to ensure safety and effectiveness of medical devices.

Placing on the market control

All activities that performed by local establishment (Importer/distributor /Authorized Representative, etc.) to comply with regulatory requirements to ensure safety and effectiveness of medical devices.

Post-market control

All activities that performed by all parties (either manufacturers or local establishments) to comply with regulatory requirements to ensure continued safety and effectiveness of medical devices during their use.

Putting into service¹⁷

The stage at which an individual medical device has been made available to the final user as being ready for use for the first time in the jurisdiction for its intended purpose.

¹⁵ World Health Organization. World Health Assembly resolution WHA60.29, May 2007.

¹⁶ The medical devices interim regulation. Saudi Arabia Food & Drug Authority, 2003.

¹⁷ ASEAN Medical Device Directive, Version 11, Draft for National Consultation, Dated 08 May 2012

Quality management system (QMS) ¹⁸	The organizational structure, responsibilities, procedures, processes and resources for implementing quality management, including both the establishment and maintenance of the system.
Risk ¹⁹	The combination of the probability of occurrence of harm and the severity of that harm.
STED	Global Harmonization Task Force Summary technical documentation (STED) for demonstrating conformity to the essential principles of safety and performance of in vitro diagnostic medical devices.
Supply chain ²⁰	Different elements of the distribution activities of a medical device occurring between it being available for importation into the jurisdiction and it being put into service.
User	The person, either professional, lay or a patient, who uses a medical device.

¹⁸ ISO 13485:2003. Medical devices -- Quality management systems -- Requirements for regulatory purposes

¹⁹ International Association of Oil & Gas Producers (OGP) report 6.40/217 1994

²⁰ Saudi Food & Drug Authority. Implementing rule on marketing authorization. MDS-IR6, version 3, 2009.

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Further resources

The following documents can be downloaded from the International Medical Device Regulators Forum (www.imdrf.org)

Global Harmonization Task Force (GHTF) – Study Group 1

- SG1/N11: Summary technical documentation for demonstrating conformity to the essential principles of safety and performance of medical devices (STED)
- SG1/N15: Principles of medical devices classification
- SG1/N29: Information document concerning the definition of the term “medical device”
- SG1/N40: Principles of conformity assessment for medical devices
- SG1/N41: Essential principles of safety and performance of medical devices
- SG1/N43: Labelling for medical devices
- SG1/N44: Role of standards in the assessment of medical devices
- SG1/N45: Principles of in-vitro diagnostic (IVD) medical devices classification
- SG1/N46: Principles of conformity assessment for in-vitro diagnostic (IVD) medical devices
- SG1/N55: Definitions of the terms Manufacturer, Authorised Representative, Distributor, and Importer
- SG1/N65: Registration of manufacturers and other parties and listing of medical devices.

Global Harmonization Task Force (GHTF) – Study Group 2

- SG2/N8: Guidance on how to handle information concerning vigilance reporting related to medical devices
- SG2/N38: Application requirements for participation in the GHTF national competent authority report exchange programme
- SG2/N47: Review of current requirements on post-marketing surveillance

SG2/N54: Medical devices post-marketing surveillance: global guidance for adverse event reporting for medical devices

SG2/N57: Medical devices post-marketing surveillance: content of field safety notices

SG2/N79: Medical devices: post-market surveillance: national competent authority report exchange criteria and report form

Global Harmonization Task Force (GHTF) – Study Group 3

SG3/N15: Implementation of risk management principles and activities within a quality management system

SG3/N17: Quality management system – Medical devices – Guidance on the control of products and services obtained from suppliers

SG3/N18: Quality management system - Medical devices – Guidance on corrective action and preventive action and related QMS processes

SG3/N99: Quality management system - Process validation guidance

Global Harmonization Task Force (GHTF) – Study Group 4

SG4/N28: Guidelines for regulatory auditing of quality systems of medical device manufacturers - Part 1: General requirements

SG4/N30: Guidelines for regulatory auditing of quality management systems of medical device manufacturers – Part 2: Regulatory auditing strategy

SG4/N33: Guidelines for regulatory auditing of quality management systems of medical device manufacturers – Part 3: Regulatory audit reports

SG4 (00) 3: Training requirements for auditors (guidelines for regulatory auditing of quality systems of medical device manufacturers – Part 1: General requirements – supplement 2)

SG4/N83: Guidelines for regulatory auditing of quality management systems of medical device manufacturers

SG4/N84: Guidelines for regulatory auditing of quality management systems of medical device manufacturers

Global Harmonization Task Force (GHTF) – Study Group 5

- SG5/N1: Clinical evidence – key definitions and concepts
- SG5/N2: Clinical evaluation
- SG5/N3: Clinical investigations
- SG5/N4: Post-market clinical follow-up studies

ISO Standards

The following documents can be obtained (usually for a fee) from the International Organization for Standardization (<http://www.iso.org/>)

- ISO 13485: Quality Management Systems (QMS)
- ISO 14971: Medical devices – Application of risk management to medical devices
- ISO 16142: Medical devices – Guidance on the selection of standards in support of recognized essential principles of safety and performance of medical devices
- ISO 14630: Non-active surgical implants – General requirements
- ISO 11137: Sterilization of Health Care Products
- ISO 14155: Clinical investigation of medical devices for human subjects – Good clinical practice
- ISO 17664: Sterilization of medical devices – Information to be provided by the manufacturer for the processing of re-sterilisable medical devices

The purpose of *Regulation of medical devices: a step-by-step guide* is to improve access by countries to quality and safe medical devices by offering guidance on strengthening their regulatory controls. It provides decision-makers with a roadmap for implementing regulatory systems in their national settings and a step-by-step approach towards the development of national programmes for the regulation of medical devices. It can be applied by any country seeking to develop its regulatory capacity.

