BUSINESS PLAN

ISO/TC 194
Biological evaluation of medical devices

EXECUTIVE SUMMARY

The focus of ISO/TC 194 is the biological evaluation and the clinical investigation of medical devices and materials, i.e. ISO/TC 194 develops standards for the evaluation and testing of medical and dental devices that come into contact with the human body. The standards developed by ISO/TC 194 are horizontal standards which can be suitable for all medical devices and materials.

The key benefits expected are contributions to:
- Improvements in the quality of medical and dental devices available to everybody
- Development of the global market economy, facilitation increased prosperity for the countries involved.

The main priority is to ensure as far as possible the protection of the patient, the provision of appropriate and adequate basis for testing and certification of medical and dental devices and materials.
1 INTRODUCTION

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 140 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2 BUSINESS ENVIRONMENT OF THE ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:
The market for medical devices is a global market and is changing constantly due to the vast number of medical devices and the continuous development of new products and new materials, e.g. polymers. The focus of ISO/TC 194 is the biocompatibility and the clinical investigation of medical devices, i.e. ISO/TC 194 develops standards for the approach of and tests for evaluation of medical and dental devices and materials that come into contact with the human body. The standards developed by ISO/TC 194 are horizontal standards which can be suitable for all medical devices and materials.

Interested parties per type of material or device may vary but they include, in general, regulatory authorities, manufacturers of medical devices (both multinational and SME’s) and their trade associations, patients, test houses and scientific research institutes. The economic value of the standards developed by ISO/TC 194 cannot be directly related to the economic value of the production and trade of the medical devices involved, but is rather more related to the risks and related costs of failure of biocompatibility in the use of devices and materials.

Risks and problems related to biological safety of medical devices for humans in contact with such devices and materials are relevant worldwide. The aim of ISO/TC 194 is to have optimal alignment with all interested member bodies.

The feasibility of worldwide alignment is dependent on aspects such as legislation and political factors that differ over the world (e.g. responsibilities of governmental bodies versus manufacturers).

The environment in which the ISO 10993 and 14155 series of standards and related standards and technical reports are used is characterized by the legislation and by market aspects. These two items differ in various regulatory jurisdictions. Mutual agreements between governments on legislation are under development.

### 2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

There is a market for medical and dental devices in every country. This market is divided into two categories:

- Medical and dental practitioners for medical materials, medical instruments, medical equipment and medical implants – the professional market.
- Consumers in general for personal or home use medical devices such as consumer medical devices.

Manufacturers and suppliers are a mix of large multinational corporations, large, mid-size and small manufacturers, the majority of which are located in North America, Western Europe and Japan.

Everybody needs medical care at some stage of their life, so the ultimate customer, either directly or indirectly is all of us.

The market environment in which ISO/TC 194 operates is the result of the value now attaching to medical devices throughout the world. This has led to an increasing demand for medical devices.

The interest in the technology of medical devices is great and in many countries still growing. The development of the standardisation work is simulated by the growing international trade of medical devices.

The development of the work is simulated by global harmonisation agreements of regulatory bodies for medical devices from Australia, Canada, Europe, Japan and USA and the fact the European Committee for Standardisation (CEN) has the need for standards for biological testing and clinical evaluation according to European Council Directives.
ISO/TC 194 standards cover the biological testing and evaluation of products supplied direct to customers, but also to professional customers, including physicians. In many countries, the immediate customers are not only the clinical professionals themselves, but also intermediaries such as hospitals or publicly funded health services.

3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

The key benefits expected are contributions to:

- Improvements in the quality of medical and dental devices available to everybody
- Development of the global market economy, facilitation increased prosperity for the countries involved.

Ethical benefit is provided by ISO/TC 194/WG 3 in specifying animal protection requirements, e.g. by specifying minimum requirements for the use of animals in biological testing, the establishment of guidelines for respecting life in general, reducing the number of animal experiments and the number of animals used, and for minimizing suffering.

Different national test requirements before a medical device can be placed on the market are very cost-intensive and a barrier to international trade.

Unnecessary repetition of animal tests in different nations are disregarding the value of animal life.

Focus on new and innovative directions in medical device regulations, biomaterial development, medical device design. Biological evaluation includes:

- Biocompatibility testing
- Materials, additives and leachable substances
- Design and application of the right tests and their interpretation
- Bioactive materials and tissue response
- Assessment of bioactivity and associated risk
- Toxicity testing.

There is a growing public demand for standardised test methods for biological testing and evaluation of medical devices especially for the thousands of new and innovative medical devices and materials entering the healthcare field every year.

Major regulatory requirements which must be considered and reflected in the standards include:

a) Essential requirements of the EC Council Directives 90 and 93/42/EC.

b) Requirements of the FDA;

c) Requirements of the Japanese Guidelines;

d) Requirements of the Therapeutic Goods Administration (Australia).

e) Requirements of Health Canada and other participating countries around the world

Major factors which may have an impact on the development of markets include:

- Concentration of industry into larger units
- Demographic changes, particularly in the developed nations of the western world. A continuing trend is for the proportion of the elderly in the population to increase, thereby increasing the demand for medical devices worldwide.
- The establishment in 1994 of the World Trade Organisation, which supports, as the basis for international trade, the development of international standards.

- The issue common to all healthcare categories, of constantly rising patient expectations, with only the best available solution being acceptable.

- Mutual Recognition Agreements (MRA’s) concerning medical devices were signed in 1998 and 1999 between the European Union and 7 non-EU countries, with negotiation under way with a further 5 non-EU countries. The application basis of MRA’s is often the existence of international standards.

- Litigation following patient injury is rapidly increasing in some parts of the world, and the adequacy or otherwise ‘standardised’ devices is increasingly being used to support arguments in courts of law.

4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 Countries/ISO members bodies that are P and O members of the ISO committee

4.2 Analysis of the participation

Active participants in TC 194 include clinicians, manufacturers, test house and certification body staff and government and regulatory staff. The majority of active Member Bodies are from the developed regions of the world, but the TC is aware of the needs of less well-developed areas in which the infrastructure necessary for correct operation and maintenance of sophisticated equipment may be unreliable or absent. This is being partly addressed by liaisons with the Organisation of Economic Co-Operation and Development (OECD), the World Health Organization (WHO) and other bodies.

5 OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

5.1 Defined objectives of the ISO/TC

The main objective of ISO/TC 194 is to draft suitable standards for biological evaluation and clinical investigation that are applicable internationally; they should prevent overtesting (see workprogramme).

Therefore TC 194 will contribute indirectly to public health and well-being by developing standards for medical devices, conformity with which by manufacturers will ensure their products do not compromise the biological and clinical safety of patients through:

- Protection of the health and safety of the patient and user
- Elimination of trade barriers through global harmonisation
- Uniformity of test methods
- Uniformity of reference materials
- Uniformity of terminology and definitions
- Quality products used in medical devices
- Effective and efficient use of health care resources
- Effective and efficient use of resources in standards development

A) Coordination of revisions
The objective of ISO/TC 194 is to investigate the feasibility and necessity of adoption of published standards to the most recent views in development of biological safety evaluation and clinical investigation.

B) Implementation of criteria for the acceptance of New Work Items (NWI’s)

The objective of ISO/TC 194 is to implement criteria for the acceptance of NWI’s. There are various factors to be considered before a NWI can be accepted and placed on the work programme of ISO/TC 194, for example health risks related to the product and material under consideration, assessment of the market need to standardise a specific subject, feasibility (in term of expertise, availability of experts, valid test methods etc), availability and adequacy of other standards (including ISO 10993-1, product standards containing specific requirements for specific application areas, monographs).

C) (Re-)activation liaisons

In the time period that the set of standards on biological evaluation have been prepared, other (vertical) standards have been developed containing aspects on biological evaluation. In this area the objective of ISO/TC 194 is to advise other technical committees of ISO on aspects concerning biological safety and biological evaluation when relevant and to gear requirements in horizontal standards to those in vertical standards on biological evaluation. The objective is to ensure an optimal use of ISO 10993 and related standards by other technical committees and to minimize the necessity for additional requirements.

5.2 Identified strategies to achieve the ISO/TC’s defined objectives

ISO/TC 194 consists of fifteen working groups and one technical subcommittee with three more working groups under it. Every year a meeting of nearly all working groups is held during a meeting period of three to four five days with the Pleanry meeting at the end of the meeting period.

The current set of standards and standards in preparation are based on one part (ISO 10993-1) for the biological evaluation and on one part for the clinical investigation (ISO 14155-1).

ISO 10993-1 describes a procedure to generate a systematic approach to the biological evaluation, including the minimum requirements for an evaluation. It also specifies the rationale behind the tests and selection of tests. The other parts provide tests (in vitro and in vivo methods), or other provisions necessary for the application of the tests (such as sample preparations and reference materials, toxicokinetic studies and animal welfare requirements). Overstandardisation resulting in extra testing shall be prevented.

The strategies adopted to reach the above objectives include the following:

- Maintain, and where necessary add to, the current liaisons, which include ISO/TC’s 76, 84, 106, 121, 150, 157, 168, 172, 173, 198 and 210.
- Continue to work in close co-operation with CEN/TC 206, CEN/TC 258 and CEN/TC 316, and make maximum use of the Vienna agreement processes to develop common documents with CEN.
- Continue with current structure, as long as it is justified by the work programme, of 14 working group developing standards for discrete areas of biological testing and clinical evaluation, and one overall management group responsible for recommending a strategy for the development of standardisation (WG 15).
- Plenary meetings held annually. Working group business to be transacted as far as practicable by email/fax/telephone, with meetings held only when needed and justified.
- Ensure that new work item proposals are properly justified in terms of market need, and support the agreed TC objectives.
- Critically review existing standards, and rationalise or withdraw where justified.

6 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME

The whole work programme of ISO/TC 194, including already published items, is clearly one package. In fact it even is one standard, in many parts. It is a challenge to keep this whole package internationally consistent and up to date. This is particularly so because ISO/TC 194 is focused on an area of rapid scientific development. Early revision of already published standards has therefore been called for on several occasions already to keep the whole package aligned. Because of the interrelation between all the parts, target dates are often reviewed to enable mutual inclusion of a new development in interlinked Parts of the standard.

Critical success factor in meeting the above challenges is the continued motivation of all parties concerned to achieve the common goals.

For the ‘second phase’ standards writing, commitment to the programme including development of availability of resources, will be the critical success factor.

7 STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

This section gives an overview of the ISO/TC’s structure, scopes of the ISO/TCs and any existing subcommittees and information on existing and planned standardization projects, publication of the ISO/TC and its subcommittees.

7.1 Structure of the ISO committee

7.2 Current projects of the ISO technical committee and its subcommittees

7.3 Publications of the ISO technical committee and its subcommittees

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO’s technical work