



Global Harmonization Task Force

Working Towards Harmonization in Medical Device Regulation

Training Seminar on Risk Management

**Integration of Risk Management System in the
Quality Management System**

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Lübeck, 24. 06. 2005



- Requirements for manufacturers in the medical devices sector to have a quality management system in place

Directive 93/42/EEC concerning medical devices

ANNEX II on EC DECLARATION OF CONFORMITY (Full quality assurance system)

1. The manufacturer must ensure application of the quality system approved for the design, manufacture and final inspection of the products concerned,”

Also in other annexes, in other regulations



As well as processes for addressing device related risks

DIRECTIVE 93/42/EEC - ANNEX I on ESSENTIAL REQUIREMENTS

1. The devices must be designed and manufactured in such a way that, when used under the conditions and for the purposes intended, they will not compromise the clinical condition or the safety of patients, or the safety and health of users or, where applicable, other persons, provided that any risks which may be associated with their use constitute acceptable risks when weighed against the benefits to the patient and are compatible with a high level of protection of health and safety.

DIRECTIVE 93/42/EEC - ANNEX I on ESSENTIAL REQUIREMENTS

2. The solutions adopted by the manufacturer for the design and construction of the devices must conform to safety principles, taking account of the generally acknowledged state of the art.

In selecting the most appropriate solutions, the manufacturer must apply the following principles in the following order:

- eliminate or reduce risks as far as possible (inherently safe design and construction),
- where appropriate take adequate protection measures including alarms if necessary, in relation to risks that cannot be eliminated,
- inform users of the residual risks due to any shortcomings of the protection measures adopted.



- EN ISO 13485 Medical devices - Quality management systems - Requirements for regulatory purposes

Chapter 7 Product realization - 7.1 Planning of product realization

The organization shall establish documented requirements for risk management throughout product realization.

Records arising from risk management shall be maintained (see 4.2.4).

- EN ISO 14971 Medical devices – Application of risk management to medical devices

1. Scope

This International Standard does not require that the manufacturer has a formal quality system in place.

However, risk management can be an integral part of a quality system.

- **Table G.1 - Quality management elements that may be related to the element of risk management**

Overview of the risk management process		Subclauses of ISO 13485:1996 ^a																				
		4.1	4.2 (see note 1)	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11	4.12	4.13	4.14	4.15	4.16 (see note 2)	4.17	4.18	4.19	4.20	
General requirements																						
Risk analysis	Scope definition																					
	Hazard identification																					
	Risk estimation																					
Risk evaluation																						
Risk control	Analysis of options																					
	Decision making																					
	Implementation																					
Post-production information																						

NOTE 1—Risk management can be part of a quality management system.

NOTE 2—The risk management file can include quality records.

^a Shaded areas indicate the parts of the risk management process which might be related to this International Standard.



Preliminary conclusion

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Manufacturers have to choose between two options :

- To maintain these two management systems separately
- To integrate them to a more effective management system

GHTF proposition is for integration of a risk management system or risk management principles and activities into the existing quality management system



- Determination of levels of risk that would be acceptable in the device

to determine risk acceptability criteria / manufacturer's own experience with similar medical devices or accepted risk levels by regulators, users, or patients, given the benefits derived from diagnosis or treatment with the device

Risk acceptability criteria should reflect the state-of-the-art

- Risk analysis

Based on Intended use / purpose identification

Identify hazards that may occur due to characteristics or properties of the device during normal use or foreseeable misuse.

Risks are estimated for each of the identified hazards



- Risk evaluation

Estimated risks are compared to the risk acceptability criteria.
Determine an appropriate level of risk reduction, if necessary.

Risk analysis + Risk evaluation = Risk assessment

- Risk control activities.

Establish actions, i.e. risk control measures, intended to eliminate or reduce each risk to meet the previously determined risk acceptability criteria.

Within the limits of feasibility, one or more risk control measures may be incorporated in order to achieve this aim.

- Post production information

To monitor whether the risks continue to remain acceptable and whether any new hazards or risks have been discovered



Integration process

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- The scope of the manufacturer's quality management system will define the applicability and the extent of the implementation of risk management
- Risk management principles should be applied throughout the life cycle of medical devices



Documentation

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- Documents or records resulting from risk management activities such as risk management procedures, reports, etc.
 - may be maintained in either a risk management file or other appropriate files
 - or may be integrated directly into the quality management system procedures, documents and records.

But a risk management file should contain references or an index of where the risk management requirements are satisfied.

- Document controls, including document change controls, for risk management system documentation should be the same as the controls for quality management system



Management Responsibilities

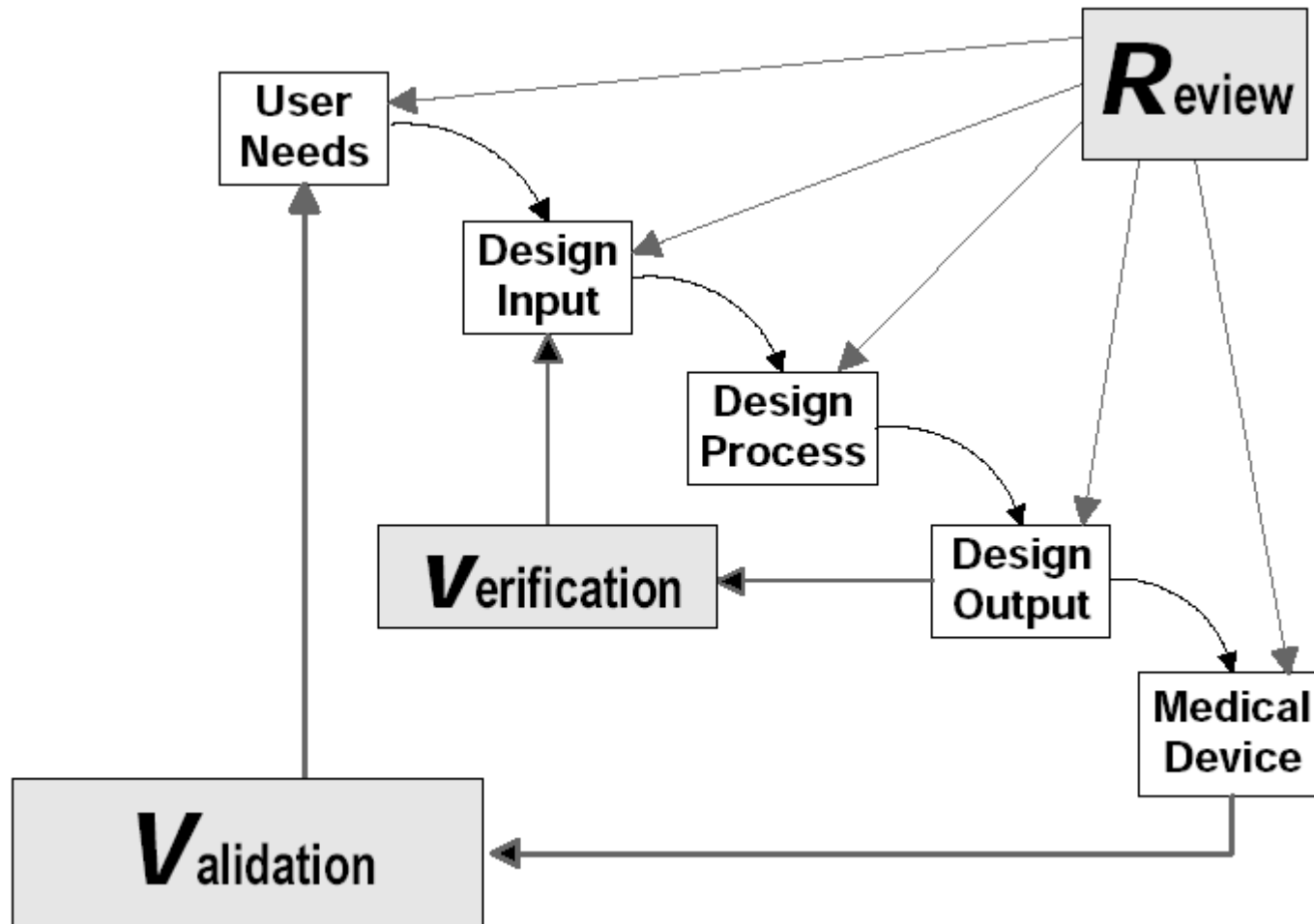
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- To incorporate risk management into the organization
- To establish risk management policies
- To provide sufficient resources to carry out risk management activities
- To define the responsibilities and authorities for risk management activities
- To assign these activities to qualified personnel
- To plan and perform internal quality audits to verify whether risk management activities and related results comply with the planned and established procedures
- Management reviews of the quality management system should include information from risk management activities and related results



A separate risk management plan may not be necessary

if risk management activities are adequately addressed within the quality management system planning activities



- **Design and development planning**

- To ensure that coordination of risk management activities is conducted during design and development
- To ensure inter-relationship(s) between appropriate risk management activities and design and development activities
- To affect adequate resources, including appropriate expertise required to ensure sufficient coverage of potential safety concerns



- **Design and development input**

- Design and development inputs include adequate consideration of intended use and functional, performance, safety and regulatory requirements
- Hazard identification starts with consideration of the medical device's intended use, its characteristics and its environment
- If the device is intended to be used in combination with, or installed with, or connected to another medical device or equipment, then hazards and risk control measures should be evaluated for each device individually as well as the system or combination as a whole
- When risk control measures are determined to be necessary and are initially defined, these become an output from risk management activities

- **Design and development outputs**
 - Risk control measures identified during the input phase must be designed and incorporated into the design and development output
 - Risk control measures may fall into three categories
 - specification of the characteristics of the medical device, as well as those essential for its safe and proper use.
 - requirements for purchasing, production, handling, distribution and servicing.
 - medical device acceptance criteria.

- **Design and development reviews**

- Design review procedures should define risk review tasks that should be performed at appropriate stages of design and development
- Design and development reviews should determine if any individual residual risks as well as any overall residual risk are adequately communicated to appropriate individuals including users.
- determine the validity of risk/benefit decisions related to the acceptance of the overall residual risk

- **Design and development verification**

- To generate objective evidence that identified risks were addressed
- To ensure that risk control measures were implemented as necessary
- To ensure that risk control measures were verified to be effective
- To ensure that the end result meets the defined acceptability criteria.

Need for traceability between identified hazards, risk control measures, medical device design and development requirements

- **Design and development validation**

- To confirm that the medical device meets user needs, intended uses, and the overall residual risk meets the overall acceptability criteria
- To ensure risk control measures are adequately addressed in the validation plan

Sufficient numbers of all anticipated user population(s) and all intended uses to give confidence that the overall residual risk determination is consistent with the expectations.

Any simulated use testing should be designed to provide similar levels of confidence



- **Control of design and development changes**

“History has repeatedly demonstrated that seemingly trivial changes may have unforeseen and sometimes catastrophic consequences”

Proposed changes to the medical device and/or its manufacturing processes should be evaluated for their effect(s) on the safety of the device.



- **Design and development transfer**
 - During design transfer the manufacturer should ensure the implementation and effectiveness of defined risk control measures
 - The manufacturer should ensure that existing or newly identified risk-related issues are resolved prior to the release of the design to production



Purchasing Controls and Acceptance Activities

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- **Purchasing Controls**

- Risk management roles and responsibilities of the manufacturer and supplier should be defined as part of the purchasing requirements
- Prescribed risk control measures derived from the risk management process during product realization should be included in the purchasing requirements as part of the purchasing information
- Established criteria for selection, evaluation and re-evaluation of suppliers of purchased products and services should also be based upon the risk associated with identified hazards

- **Acceptance Activities**

- Results of risk management activities should be considered in developing the acceptance criteria for purchased product and services



- Manufacturing process as a source of hazards
 - Already identified during the design and development or
 - Discovered during production or post-production
- The risk control measures necessary to address these hazards need to be included in documented production and process control
- The outcome of risk management activities may provide input to the development of appropriate methods for measuring and monitoring manufacturing processes
- Production information such as the rate of nonconformities, the rate of rework, scrap, yield, and other sources of quality data should confirm the adequacy and completeness of risk controls



- Manufacturing, Measuring and Monitoring Equipment
 - Suitability of equipment, frequency of cleaning, maintenance and calibration should be considered with reference to the risks associated with the process
 - Work instructions should also be reviewed and updated to reflect any appropriate risk control measures.
- Work Environment and Personnel
 - Where determined to result in risk for the products or process
 - then risk control measures should be defined
- Process Validation and revalidation
 - may be influenced by the results of risk management activities
 - may identify the need for additional risk control measures



Servicing

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- If servicing is a specified requirement, information from risk management activities should be considered
- Periodic servicing and maintenance as a means to ensure safe functioning of a device can be a method of risk control

- Production and post-production information on the manufacturer's own devices need to be continuously monitored and analyzed in performing
 - new risk assessments and
 - revising current risk assessments

in order to maintain an effective risk management process

- The analysis of data should demonstrate that the decisions and risk control measures determined within the risk management process are appropriate



Corrective and Preventive Actions (CAPA)

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- The results of CAPA reviews should
 - confirm the effectiveness of risk control measures.
 - reveal any previously unrecognized risks
- These information should also be utilized to determine the effectiveness of the risk management activities
- and determine required actions to be taken to correct the identified issues and prevent reoccurrence