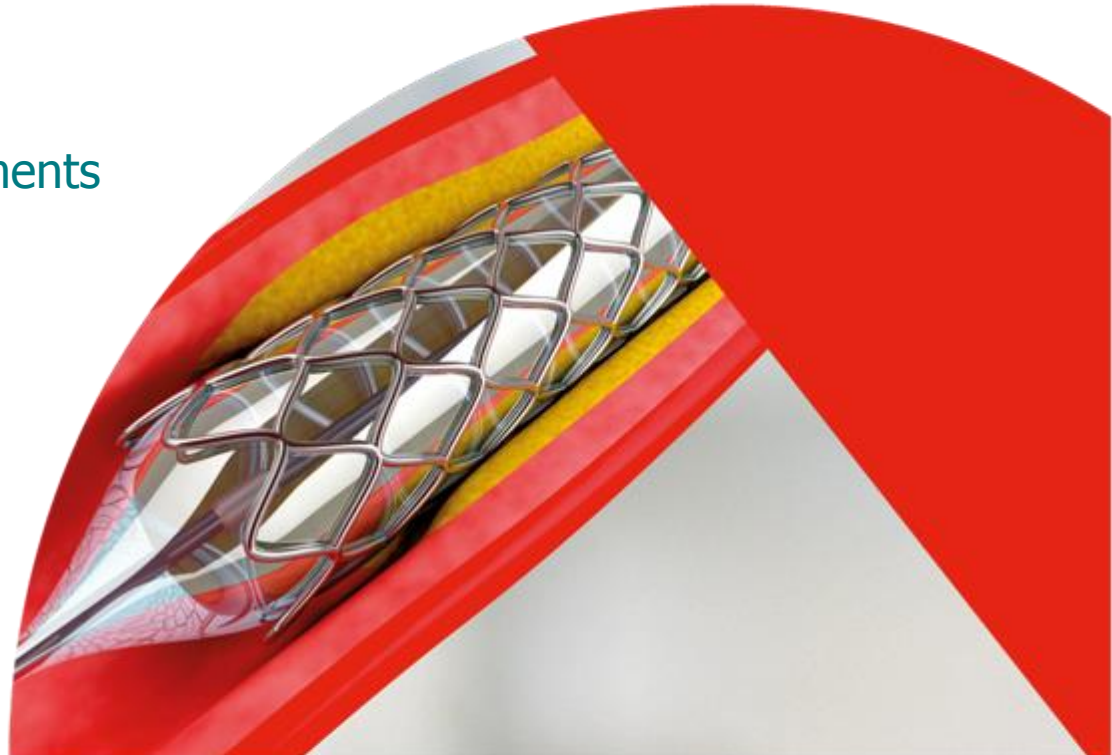
MDR

- Device Classification
- Conformity Assessment
- Safety & Performance Requirements
- Technical Documentation

Suzanne Halliday, D.Phil.
Jaishankar Kutty, Ph.D.
Ronald Rakos, Ph.D

BSI Roadshow, October 2017



Agenda

- Classification rules – Annex VIII
- Conformity Assessment – Annex IX to Annex XI
- General Safety and Performance – Annex I
- Technical File Documentation – Annex II
- PMS and PMS Technical Documentation – Annex III

MDR Classification

Annex VIII

MDR - Definitions

Term	MDR	MDD	Delta
Surgically Invasive Device	an invasive device which penetrates inside the body through the surface of the body, including through mucous membranes of body orifices with the aid or in the context of a surgical operation; (Annex VIII)	An invasive device which penetrates inside the body through the surface of the body, with the aid or in the context of a surgical operation.	clarification that surgically invasive also includes penetration through mucous membranes of body orifices
Injured skin or mucous membrane	means an area of skin or a mucous membrane presenting a pathological change or change following disease or a wound.	n/a	introduced definition for injured skin or mucous membrane
Active device	Covered under Article 2 'active device' means any device, the operation of which depends on a source of energy other than that generated by the human body for that purpose, or by gravity, and which acts by changing the density of or converting that energy. Devices intended to transmit energy, substances or other elements between an active device and the patient, without any significant change, shall not be deemed to be active devices. Software shall also be deemed to be an active device;	Any medical device operation of which depends on a source of electrical energy or any source of power other than that directly generated by the human body or gravity and which acts by converting this energy. Medical devices intended to transmit energy, substances or other elements between an active medical device and the patient, without any significant change, are not considered to be active medical devices. Stand alone software is considered to be an active medical device.	Device which acts by changing the density of energy are also considered active devices. This is considered a clarification only
Reusable surgical instrument	Instrument intended for surgical use in cutting, drilling, sawing, scratching, scraping, clamping, retracting, clipping or similar procedures, without a connection to an active device and which is intended by the manufacturer to be reused after appropriate procedures such as cleaning, disinfection and sterilisation have been carried out.	Instrument intended for surgical use by cutting, drilling, sawing, scratching, scraping, clamping, retracting, clipping or similar procedures, without connection to any active medical device and which can be reused after appropriate procedures have been carried out.	devices which can be re-used vs intended by the manufacturer to be reused; mostly a clarification

MDR – Definitions & Implementing Rules

Term	MDR	MDD	Delta
Continuous use	(a) the entire duration of use of the same device without regard to temporary interruption of use during a procedure or temporary removal for purposes such as cleaning or disinfection of the device. Whether the interruption of use or the removal is temporary shall be established in relation to the duration of the use prior to and after the period when the use is interrupted or the device removed; and (b) the accumulated use of a device that is intended by the manufacturer to be replaced immediately with another of the same type.	means 'an uninterrupted actual use of the device for the intended purpose'. However where usage of a device is discontinued in order for the device to be replaced immediately by the same or an identical device this shall be considered an extension of the continuous use of the device	concept of continuous use extended to include devices that may be temporarily removed to be cleaned or disinfected and then re-used; However this is still considered a clarification since such use would be treated as 'continuous use' under the Directive as well
Direct diagnosis	A device is considered to allow direct diagnosis when it provides the diagnosis of the disease or condition in question by itself or when it provides decisive information for the diagnosis.	n/a	new definition
Implantable device	Covered under Article 2.5 'implantable device' means any device, including those that are partially or wholly absorbed, which is intended: — to be totally introduced into the human body, or — to replace an epithelial surface or the surface of the eye, by clinical intervention and which is intended to remain in place after the procedure. Any device intended to be partially introduced into the human body by clinical intervention and intended to remain in place after the procedure for at least 30 days shall also be deemed to be an implantable device;	Any device which is intended: — to be totally introduced into the human body or, — to replace an epithelial surface or the surface of the eye, by surgical intervention which is intended to remain in place after the procedure. Any device intended to be partially introduced into the human body through surgical intervention and intended to remain in place after the procedure for at least 30 days is also considered an implantable device.	Devices that are partially or wholly absorbed are considered implantable; 'Clinical' intervention vs 'surgical' intervention

Classification Rules – MDR, Annex VIII

MDR	MDD
Rules 1 – 4: Non-invasive devices	Rules 1 – 4 : Non-invasive devices
Rules 5 – 8 : Invasive devices	Rules 5 – 8 : Invasive devices
Rules 9 – 13 : Active Devices	Rules 9 – 12 : Active devices
Rules 14 – 22 : Special rules	Rules 13 – 18 : Special rules

Rules 1 - 4: Non-invasive devices (in comparison with MDD)

Rule 1

- No change

Rule 2

- Addition of "cells and tissues" to the existing language
- Blood bags moved to MDR Rule 2 from Rule 18 of MDD

Rule 3

- Addition of human tissues and cells to blood, body liquids and other liquids
- Intended for implantation or administration vs Intended for infusion in MDD
- Inclusion of organ storage solutions, IVF media into the rule which are class III

Rule 4

- Addition of injured mucous membrane to injured skin
- Replacement of 'wounds' with injuries to skin
- Also covers invasive devices that come into contact with injured mucous membrane

Rules 5 – 8: Invasive devices (in comparison with MDD/AIMD)

Rule 5

- No change – clarifications only

Rule 6

- All devices intended specifically for direct contact with heart or central circulatory system now class III similar to devices in contact with central nervous system

Rule 7

- All devices intended specifically for direct contact with heart or central circulatory system now class III similar to devices in contact with central nervous system

Rule 8

- AIMD devices and accessories are class III
- Breast implants and surgical meshes are class III
- Total and partial joint replacements are class III
- Spinal disc replacement implants or implantable devices that come into contact with spinal column are class III with some exceptions (screws, wedges, plates and instruments)

bsi.

Rules 9 – 13: Active Devices (in comparison with MDD/AIMD)

Rule 9

- Addition of active devices intended to emit ionizing radiation for therapeutic purposes, including devices which control or monitor such devices, or which directly influence their performance, are classified as class IIb.
- Addition of active devices that are intended for controlling, monitoring or directly influencing the performance of active implantable devices are classified as class III.

Rule 10

- Addition of 'monitoring' to diagnosis;
- Active devices intended for diagnosis in clinical situations where the patient is in immediate danger as class IIb

Rule 11

- New rule on software
- Classifications range from class III – class I

Rule 12

- Rule 11 in MDD
- No change

Rule 13

- Rule 12 in MDD
- No change

Rules 14 – 18: Special rules

Rule 14 (Devices with medicinal substances)	Rule 15 (Contraceptive devices, Devices for prevention of transmission of STDs)	Rule 16 (Disinfectants, sterilizers)	Rule 17 (Devices for recording x-ray diagnostic images)	Rule 18 (Devices utilizing human or animal derivatives)
• Rule 13 in MDD • Clarification that medicinal product can be derived from human blood or plasma • "Liable to act" taken out	• Rule 14 in MDD • No change	• Rule 15 in MDD • Addition of sterilisers to disinfectants • Disinfectants or sterilisers become IIb only if they are used for invasive devices and as the end point of processing	• Rule 16 in MDD • No change – language clarified	• Rule 17 in MDD • Addition of cells (to tissues) • Addition of human origin cells and tissues or derivatives • The exception about contact with intact skin only, applies only to animal tissue and does not apply to human tissues or cells

Rules 19 – 22: Special rules

Rule 19 (Devices incorporating or consisting of nanomaterials)	Rule 20 (Body-orifice invasive devices intended to administer medicines by inhalation)	Rule 21 (Devices consisting of substances and introduced into the body via body orifice or skin and that are absorbed by or locally dispersed)	Rule 22 (Active therapeutic device with an integrated or incorporated diagnostic function)
• New rule • Classifications from III to IIa based on potential for internal exposure	• New rule • Classification IIa or IIb • IIb if they impact the safety and performance of the medicine or intended to treat life-threatening conditions	• New rule • Classification from IIa to III based on where they are used and whether they or their products of metabolism are absorbed	• New rule • Class III • Only applies if such devices significantly determine the patient management • Closed loop systems or automated external defibrillators

Conformity Assessment Procedures

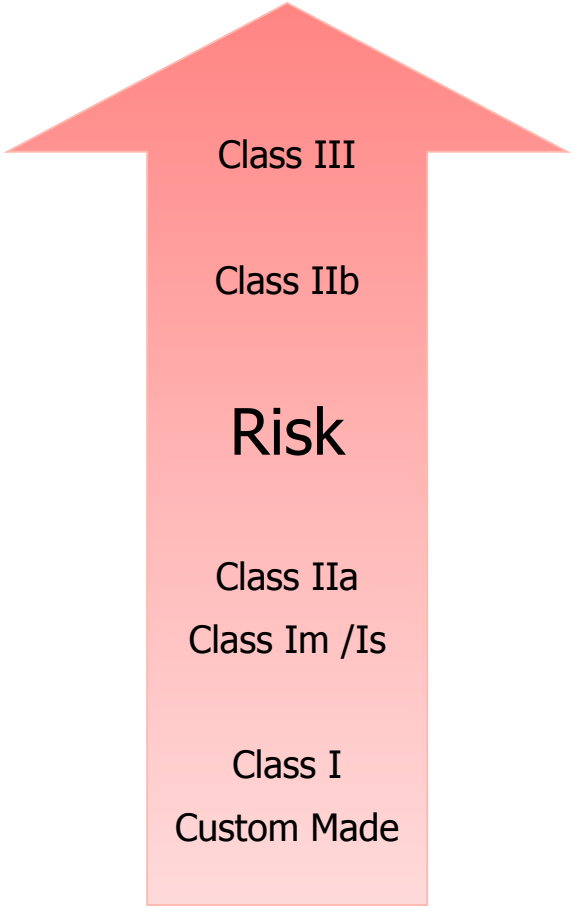
Annex IX, X, XI

Classification & Conformity Assessment – MDD

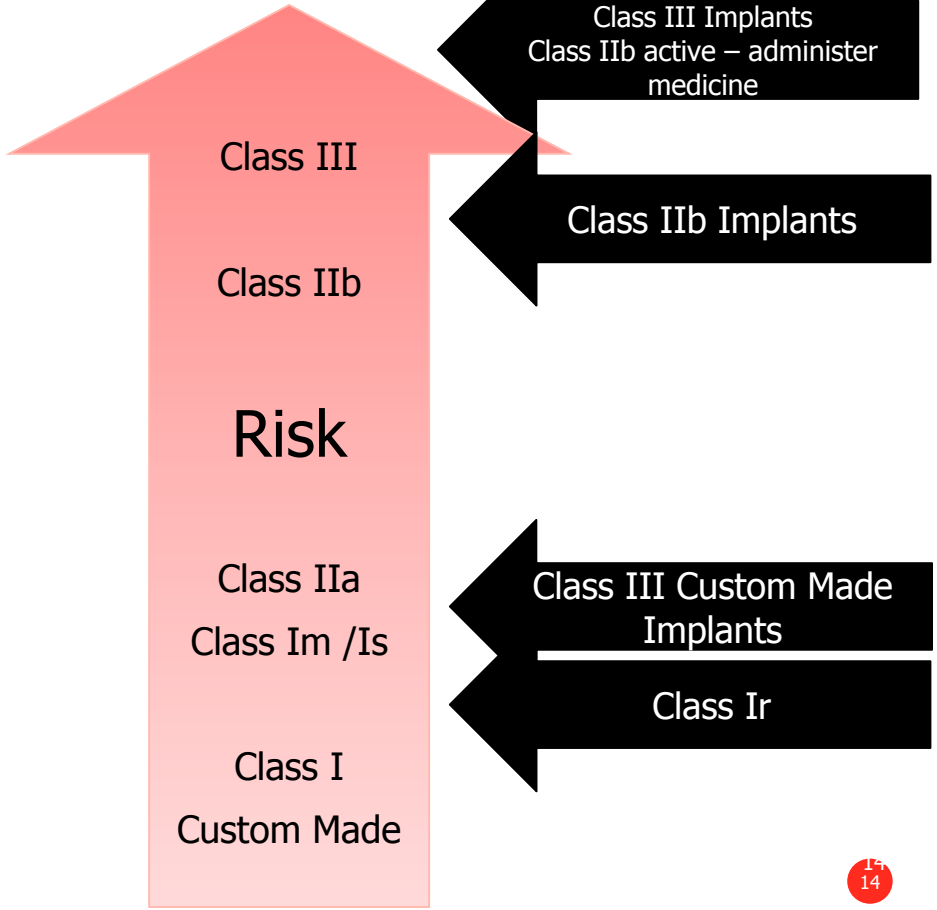
Competent Authority Assessment

Notified Body Conformity Assessment

Self-Certification



Classification & Conformity Assessment – MDR



Regulation EU 2017/745 – Conformity Assessment

	Quality Management System	Microbiology	Technical Documentation	Unannounced Audit	Clinical Evaluation Consultation Procedure (CECP) (Article 54)	2001/83/EC EC/726/2004 2004/23/EC EU 722/2012	PSUR (Article 86) (*Annual)	SSCP (Article 32)
Class III Implants	✓	✓	✓	✓ 5 years	✓	✓	✓*	✓
Class III	✓	✓	✓	✓ 5 years		✓	✓*	✓
Class IIb Active intended to administer and/or remove medicines from the body	✓	✓	✓ sample per group	✓ 5 years	✓		✓* not submitted to NB	
Class IIb Implants	✓	✓	✓	✓ 5 years			✓*	✓
Sutures, staples, dental fillings, dental braces, tooth crowns, screws, wedges, plates, wires, pins clips connectors	✓	✓	✓ sample per group	✓ 5 years			✓	✓
Class IIb	✓	✓	✓ sample per group	✓ 5 years			✓* not submitted to NB	
Class IIa	✓	✓	✓ sample per category	✓ 5 years			✓ not submitted to NB	

bsi.

Regulation EU 2017/745 – Conformity Assessment

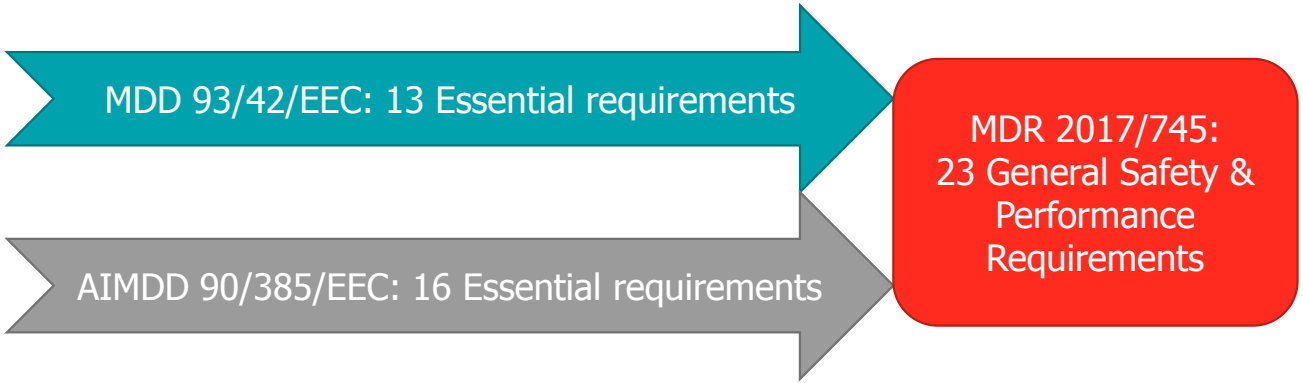
	Quality Management System	Microbiology	Technical Documentation	Unannounced Audit	Clinical Evaluation Consultation Procedure (CECP) (Article 54)	2001/83/EC EC/726/2004 2004/23/EC EU 722/2012	PSUR (Article 86) (*Annual)	SSCP (Article 32)
Class I								
Class Is, Im, Ir	✓	✓						
Class III Custom Made Implants	✓	✓		✓ 5 years			✓* not submitted to NB	
Custom Made								
Procedure Packs (Article 22)		✓		✓ 5 years				
Suppliers, Subcontractors	✓ *depends on certification held	✓ *depends on certification held		✓ 5 years				
EU Authorised Representatives, Importers, Distributors (Article 16)	✓*impact sterile barrier, translate, repackage	✓*impact sterile barrier, translate, repackage		✓ 5 years				

bsi.

General Safety & Performance Requirements

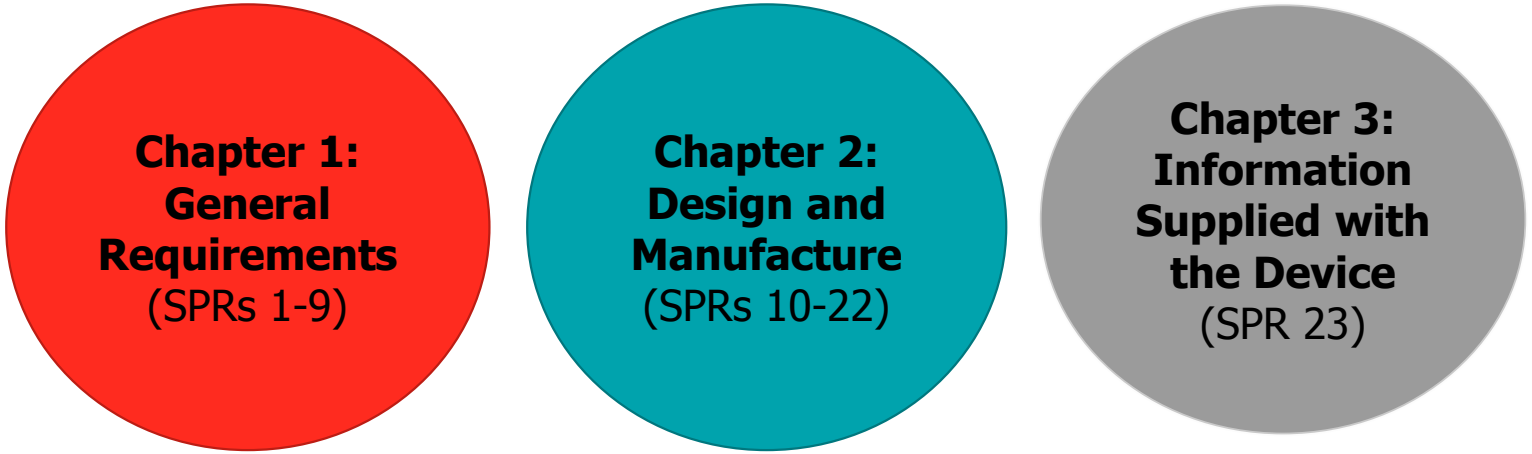
Annex I

General Safety & Performance Requirements (Annex I)



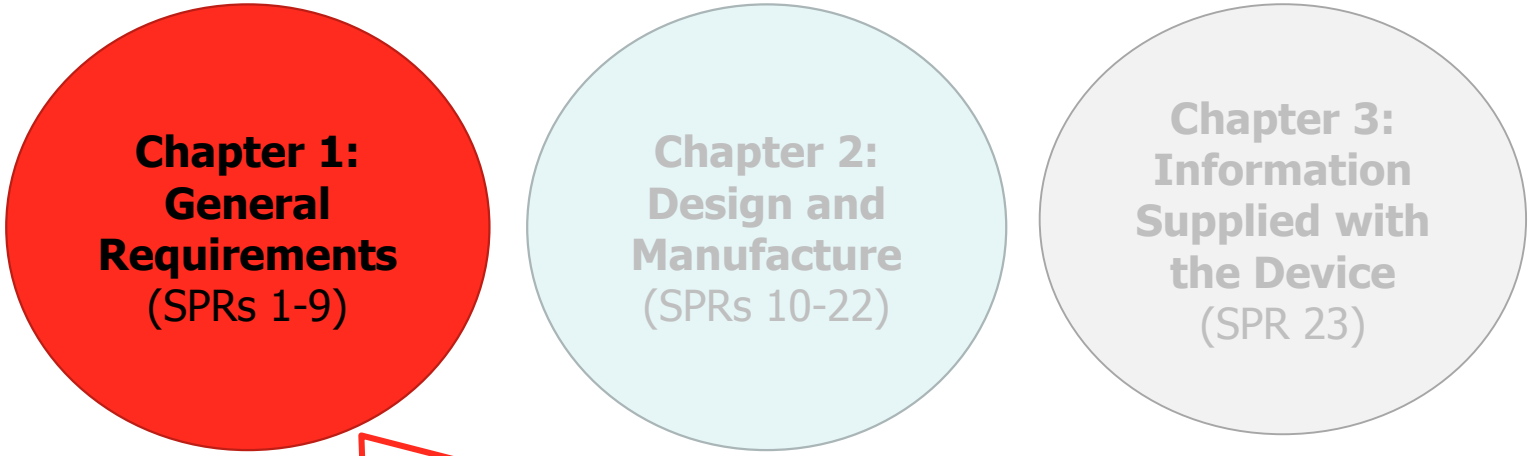
- Similar to "Essential Requirements" in Directives.
  - Similar content and topics
  - Some numbering and organizational changes
  - Expanded requirements (Labeling, Risk)
  - New areas of emphasis (from standards and guidances, etc.)
  - Some additional requirements because of merging of MDD with AIMDD
  - Some topics move out of the SPR list into Articles/Annexes (Clinical, medicinal consultation)
  - Some new topics introduced (devices without medical purpose, lay person use, etc.)

Annex I: Safety and Performance Requirements



bsi.

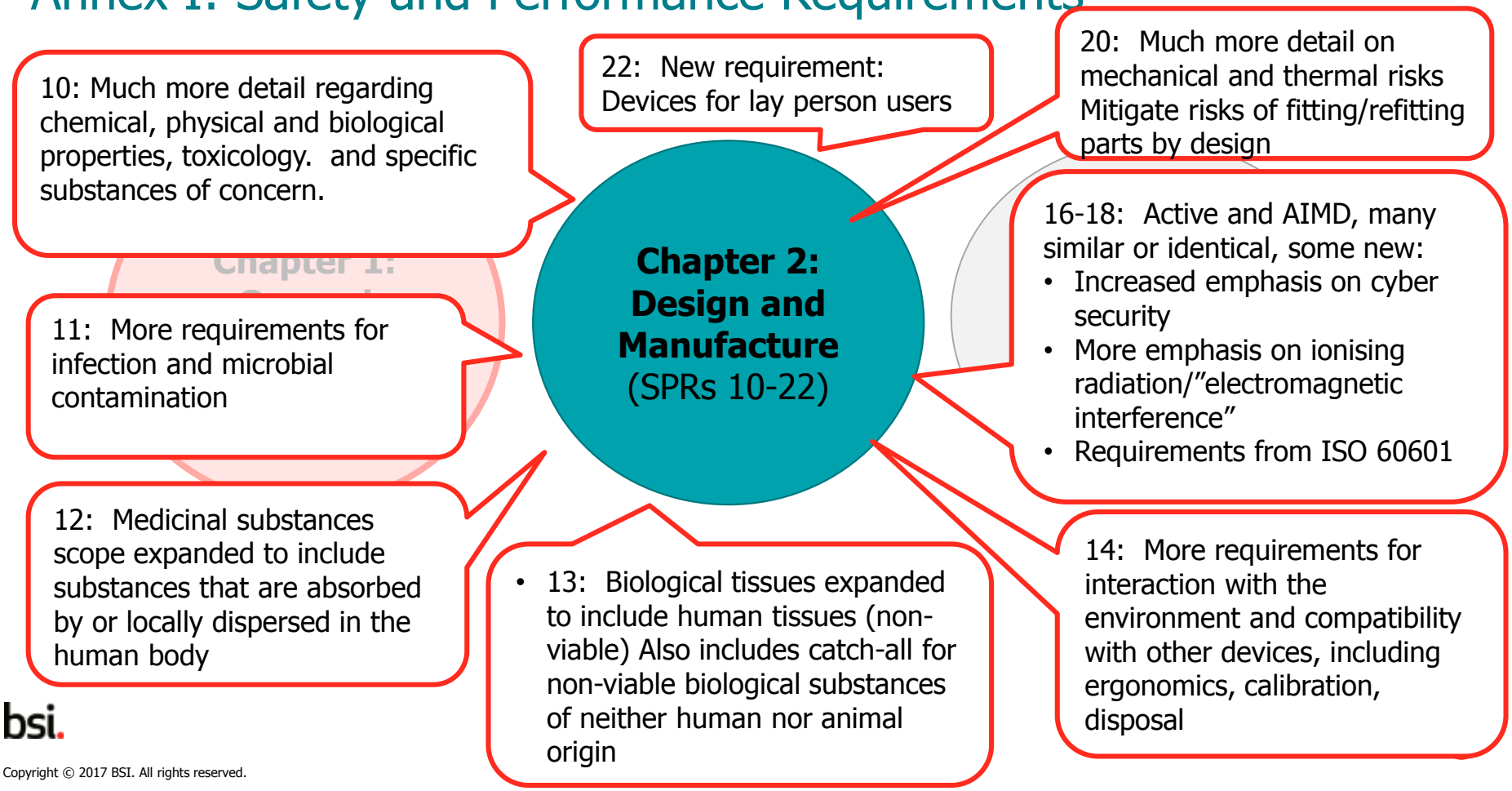
Annex I: Safety and Performance Requirements



- 1:Similar to ER 1 with additional emphasis on risk/benefit and "state-of-the-art"
- 2-5: Much greater emphasis on risk management
- 9: New requirement for devices without a medical purpose
- Remainder similar to Directive

bsi.

Annex I: Safety and Performance Requirements



bsi.

Annex I: Safety and Performance Requirements

- Many clarifications on labelling requirements.
- 23.2: Additional requirements for UDI, devices incorporating human or animal tissues, medicines, absorbable devices, "is it a MD" & others
- 23.3: Specific requirements for labelling on sterile packaging
- Indication if carcinogenic/mutagenic/toxic (CMR) substances

23.1: More "general" requirements (e.g. format, readability, "understood", availability, eIFU, lay person etc.), "residual risks"

Chapter 3: Information Supplied with the Device
(SPR 23)

23.4: Many new IFU requirements and cross-referencing to articles, including (*among others):*

- Installation verification, PM, calibration, identification of consumable components and how to replace (23.4k)
- Many more specific warning requirements (EMC, medicinal substances, human or animal tissues, CMR and endocrine disruptors) (23.4s)
- Absorbable/dispersible materials (23.4t)
- Information on materials for implants (23.4u)
- Information security measures (23.4ab)

Labeling requirements have changed and expanded significantly

Technical Documentation

Annex II

Annex II

Technical Documentation

"The technical documentation and, if applicable, the summary thereof to be drawn up by the manufacturer shall be presented in a clear, organised, readily searchable and unambiguous manner….."

Key Change: The MDR is very prescriptive regarding the Technical Documentation content and formatting.

Annex II Technical Documentation

Technical Documentation requirements are subdivided into the following 6 sections:

1. Device description and specification, including variants and accessories
2. Information to be supplied by the manufacturer
3. Design and manufacturing information
4. General safety and performance requirements
5. Benefit-risk analysis and risk management
6. Product verification and validation

Annex II 1. Device description and specification, including variants and accessories

- Product name, description, intended purpose, intended users
- Basic UDI-DI or other unambiguous reference (product code, catalogue number etc.)
- Intended population, indications, contraindications, warnings
- Principle of operation of the device and mode of action; scientifically demonstrated…
- Rationale for considering the product a medical device
- Device classification, applicable rules & rationale
- Explanation of any novel features
- Description of accessories provided with or without the device
- Description of all the relevant variants of the device… sizes, shapes, material thicknesses, etc.
- Device pictures, relevant drawings
- Description of all the relevant raw materials along with a risk assessment from biological safety perspective
- Technical specifications, dimensions & performance attributes
- Reference & overview of previous and similar generations of the subject device and device market history
- Discussion of medicinal therapies used in conjunction with procedure

Annex II 2. Information to be supplied by the manufacturer (SPR 23)

A complete set of:

- the label or labels on the device and on its packaging and the instructions for use in the languages accepted in the Member States where the device is to be sold
- Promotional materials (Article 20)
- Implant Card (Article 18, SPR 23.4 aa)
- Summary of safety and clinical performance (SSCP, Article 32)

Annex II 3. Design and manufacturing information

- Information to allow the design stages applied to the device to be understood
- Complete information and specifications, including the manufacturing processes and their validation, their adjuvants, the continuous monitoring and the final product testing. Data shall be fully included in the technical documentation

  Note: ISO 13485:2016 requires design validation to be conducted on representative product (e.g., sterile finished devices).
- Identification of all sites including suppliers and subcontractors; where design and manufacturing activities are performed

Annex II 4. General safety and performance requirements

- Documentation shall contain information to demonstrate conformity to general safety and performance requirements (GSPR or SPRs) that are applicable (Annex I) taking into account its intended purpose and shall include methods used to demonstrate conformity (justification, validation and verification).

SPR	Applicability	Standard or CS	Demonstration/ testing (justification, validation and verification)	Location (Precise identity)
X				
Y				
Z				

Have to clearly show/demonstrate how each SPR is met/satisfied.

Annex II 5. Benefit-risk analysis and risk management

The documentation shall contain information on:

- The benefit-risk analysis (Annex I, Section 1 and 8)
- The solutions adopted and the results of the risk management referred to in Section 3 of Annex I (SPR 3)

SPR 3 is essentially a summary of the requirements of EN ISO 14971:2012

Annex II 6. Product verification and validation

The documentation shall contain the results and critical analyses of all verifications and validation tests and/or studies undertaken to demonstrate conformity with the requirements of the MDR and in particular the applicable SPRs

Pre-Clinical and Clinical data

- *In Vitro* & *In Vivo* test outcomes, simulated use testing, evaluation of the published literature and overall discussion of preclinical safety in combination with conformance with specifications
- Detailed discussion of test design, test protocols and reports with data analysis and conclusions in particular for the following:
    - biocompatibility (Annex I, SPR 10)
    - physical, chemical and microbiological characterization (Annex I, SPR 10 and 11)
    - electrical safety and electromagnetic compatibility (Annex I, SPR 18, AIMD: SPR 19)
    - software verification and validation (Annex I, SPR 17)
    - stability, including shelf life (Annex I, SPR 7)
    - performance and safety (Annex I, SPR 1 and 6)

  Where applicable conformity to Directive 2004/10/EC (GLP Directive) must be demonstrated (for devices containing medicinal substances)

  Where no new testing has been conducted the documentation shall incorporate a rationale for that decision
- Very prescriptive requirements with links to SPRs and CER; evaluation of the published literature with respect to pre-clinical testing
    - Clinical evaluation plan and report (along with updates) per Article 61(12) [CER] and Part A of Annex XIV (detailed description of CER)

Annex II 6. Product verification and validation

Additional information for specific cases:

- Medicinal substances requirements per Directive 2001/83/EC (Annex I, SPR 12)
- Requirements for devices utilizing tissues or cells of human or animal origin or their derivatives (Annex I, SPR 13)
- Devices composed of substances or combinations thereof intended to be introduced into the human body that are absorbed by or locally dispersed (Annex I, SPR 12)
- Carcinogenic, mutagenic or toxic to reproduction (CMR) and endocrine-disrupting substances (Annex I, SPR 10.4)
- Sterility and microbiological condition (Annex I, SPR 11)
- Measuring Function (Annex I, SPR 15)
- Devices connected to other devices, description and compliance with SPR (Annex I, SPR 14)

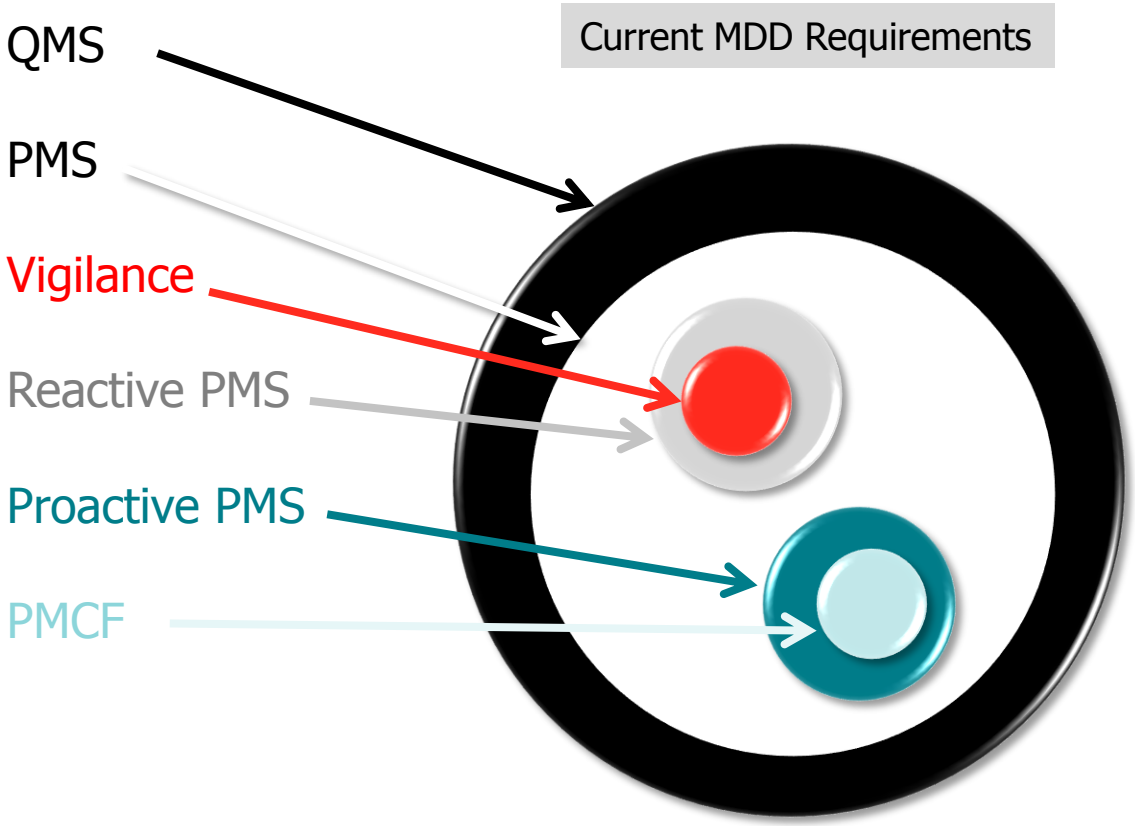
Technical Documentation on Post-Market Surveillance

Annex III
and overview of MDR PMS requirements

Article 2, Definition 61

‘Post-Market Surveillance’

all activities carried out by the manufacturer in cooperation with other economic operators to institute and keep up to date a systematic procedure to proactively collect and review experience gained from their devices placed on the market, made available on the market or put into service for the purpose of identifying any need to immediately apply any necessary corrective or preventive actions;



Post Market Surveillance (PMS)

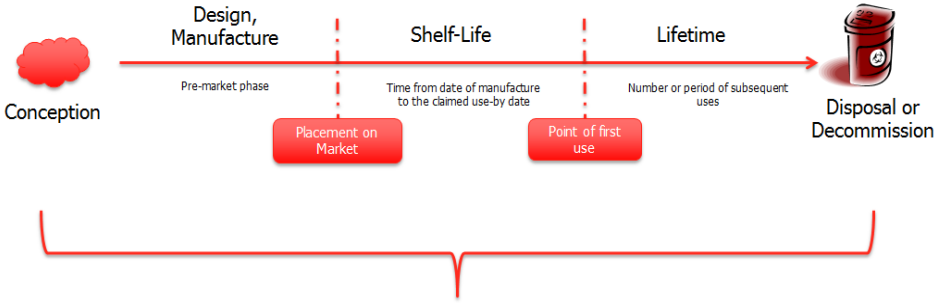
Specific Requirements in the MDR

1. PMS system of the manufacturer (Article 83)
2. PMS plan (Article 84)
3. PMS report (Article 85)
4. Post Market clinical follow-up (PMCF) report (Article 61, 11 and Annex XIV, Part B)
    - For Class III devices and implantables devices the PMCF evaluation report and if indicated the Summary of Safety and Clinical Performance (SSCP, Article 32) shall be updated at least annually
5. Periodic safety update report (PSUR, Article 86)
6. Summary of Safety and Clinical Performance (SSCP, Article 32)

Chapter VII: PMS, vigilance and market surveillance

Article 83 – PMS system of the manufacturer

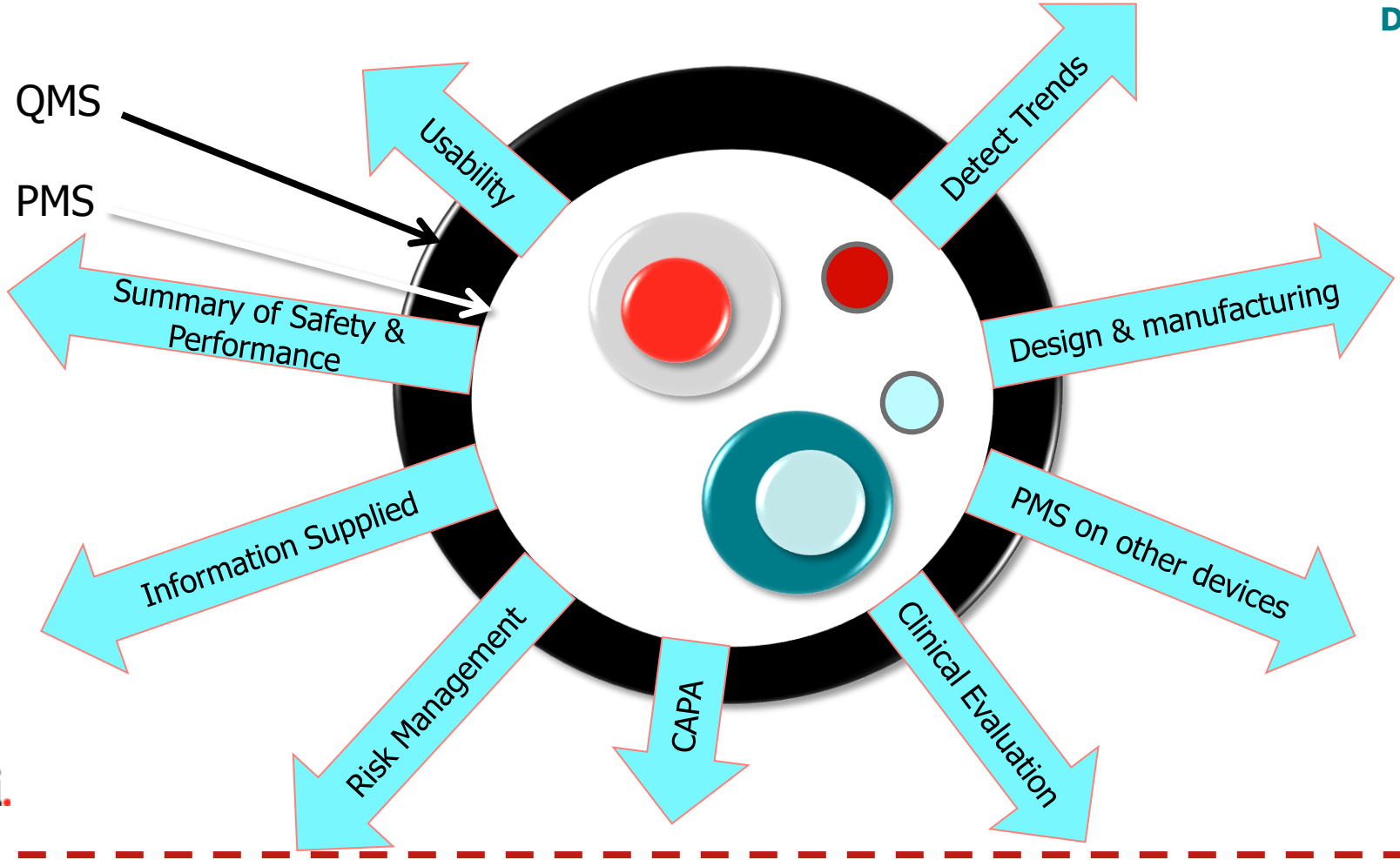
- For each device, manufacturers shall plan, establish, document, implement, maintain and update a PMS system in a manner that is proportionate to the risk class and appropriate for the type of device.
- The PMS plan shall be an integral part of the manufacturer's QMS referred to in Article 10(9).



ISO 14971: All phases in the life of a medical device, from the initial conception to final decommissioning and disposal

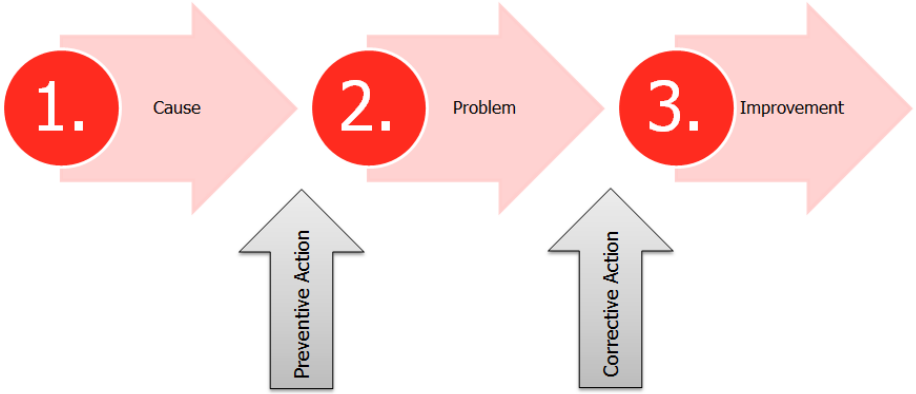
- The PMS system shall be suited to actively and systematically gathering, recording and analysing relevant data on the quality, performance and safety of a device throughout its entire lifetime, and to drawing the necessary conclusions and to determining, implementing and monitoring any preventive and corrective actions.

PMS system of the manufacturer shall be used for (Article 83):



PMS – Article 83, 87

- If, in the course of the post-market surveillance, a need for preventive or corrective action or both is identified, the manufacturer shall implement the appropriate measures and inform the competent authorities concerned and, where applicable, the notified body.



'serious incident' means any incident that directly or indirectly led, might have led or might lead to any of the following:
a) the death of a patient, user or other person,
b) the temporary or permanent serious impairment of the patient's, user's or other person's state of health,
c) a serious public health threat;

'field safety corrective action' means corrective action taken by a manufacturer for technical or medical reasons to prevent or reduce the risk of a serious incident in relation to a device made available on the market;

- Where a serious incident is identified or a field safety corrective action is implemented, it shall be reported in accordance with Article 87.

PMS – Article 84, 85, 86

Article 84 – PMS plan

- The post-market surveillance system referred to in Article 83 shall be based on a post-market surveillance plan, the requirements for which are set out in Section 1.1 of Annex III.
- For devices other than custom-made devices, the post-market surveillance plan shall be part of the technical documentation specified in Annex II.

Article 85 – PMS Report

- Manufacturers of Class I devices
- Summary of results and conclusions from analysis of PMS data gathered as according to PMS plan
- Include description and rationale for any preventive and corrective action taken
- Updated when necessary
- Made available to NB and CA on request

Article 86 - PSUR

Manufacturers of class IIa, IIb and III devices shall prepare a PSUR for each device and for each category/group of devices summarizing the PMS data per the PMS plan (Article 83).

Throughout the lifetime of the device, the PSUR shall include:

- Conclusions of benefit-risk determination;
- Main findings of PMCF
- Sales volume, estimate of size and characteristics of population and frequency of usage

Annex III – Technical Documentation on PMS

The technical documentation on post-market surveillance to be drawn up by the manufacturer in accordance with Articles 83 to 86 shall be presented in a clear, organised, readily searchable and unambiguous manner and shall include in particular the elements described in this Annex.

1.1 a: The post-market surveillance plan shall address the collection and utilization of available information, in particular:

information concerning serious incidents, including information from PSURs, and field safety corrective actions

records referring to non-serious incidents and data on any undesirable side effects

information from trend reporting (Article 88)

relevant specialist or technical literature, databases and/or registers

information, including feedbacks and complaints, provided by users, distributors and importers

publicly available information about similar medical devices

Annex III

1.1 b: PMS plan

Shall cover at least:

- proactive and systematic process to collect the information referred to in previous slide (EN ISO 13485:2016, 8.2.1)
    - Comparison between device and similar products on the market
- effective methods to assess the collected data (including complaints, market-related experience, trend reporting, recognise significant data)
- suitable indicators and threshold values that shall be used in the continuous reassessment of the benefit-risk analysis and risk management (Annex I, SPR 3)
- complaint investigation and analysis (EN ISO 13485:2016, 8.2.2)
- methods/protocols to manage events subject to the trend reporting regarding any statistically significate increase in the frequency or severity of incidents (Article 88)

Annex III

1.1 b: PMS plan

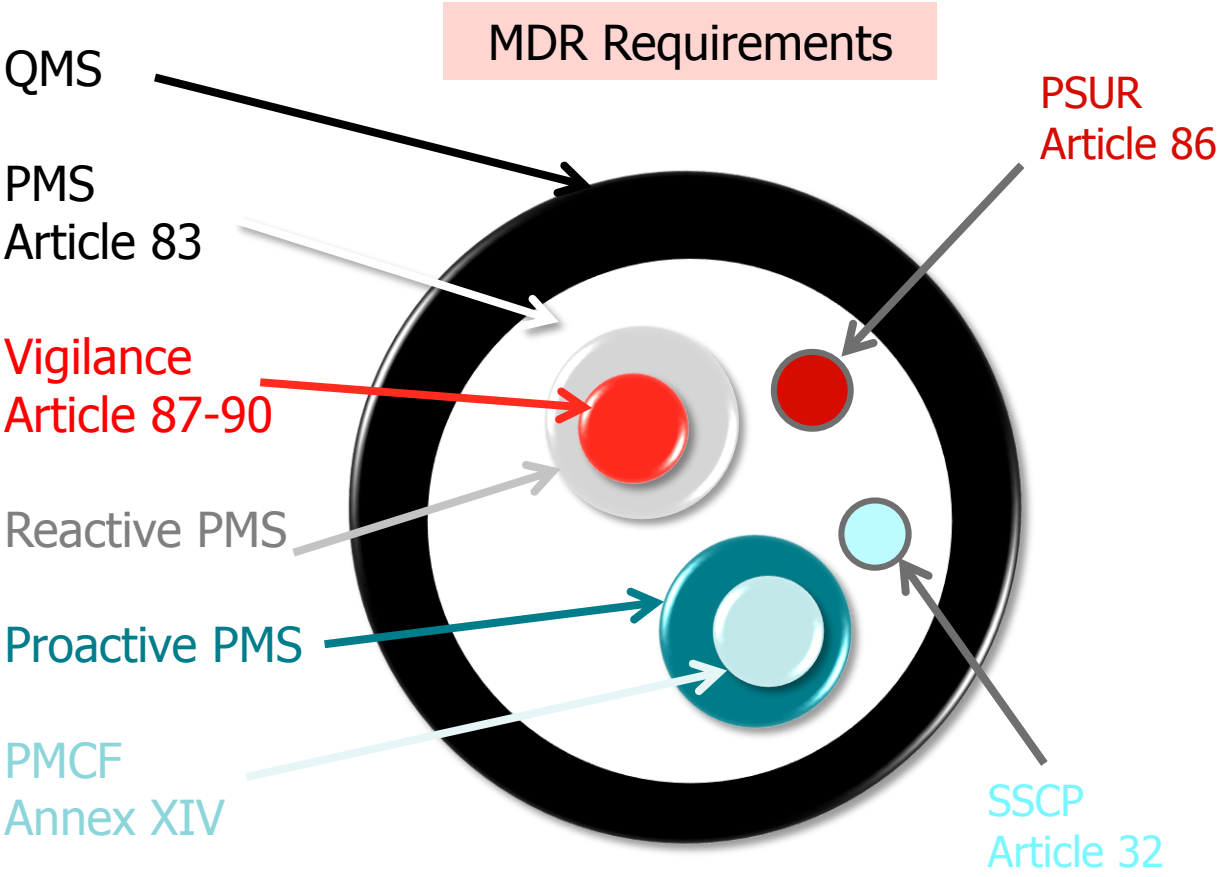
Shall cover at least:

- methods to communicate effectively with NB, CA, economic operators and users (EN ISO 13485:2016, 8.2.3)
- reference to procedures to fulfil the manufacturers obligations (PMS)
- procedures to identify and initiate appropriate corrective measures/corrective actions
- effective tools to trace and identify affected devices
- PMCF plan (Annex XIV, Part B) or justification as to why one is not applicable

1.2

The PSUR referred to in Article 86 and the post-market surveillance report referred to in Article 85.

PMS in the MDR



Conclusion

- Classification rules – Annex VIII — *Added clarifications & new rules*
- Conformity Assessment – Annex IX to Annex XI — *CECP - Class III implantable, certain Class IIb*
- General Safety and Performance – Annex I — *Increased from 13 to 23*
- Technical File Documentation – Annex II — *Prescriptive requirements*
- PMS and PMS Technical Documentation – Annex III — *More specifics around PMS requirements*

bsi.

Where can I find full details of the changes?

bsigroup.com/MDR-revision

bsigroup.com/IVDR-revision

Webinars: bsigroup.com/webinars

Whitepapers: bsigroup.com/whitepapers

Please ask if you want any extra information from BSI.