Understanding Europe's New Medical Devices Regulation (MDR 2017/745)

New requirements, key changes, and transition strategies for device companies

Evangeline Loh, Ph.D., RAC (US, EU)
Global Manager, Regulatory Affairs
evangeline.loh@ul.com

EMERGO
by UL

April 2024

Executive summary: the consequences of the MDR

The Medical Devices Regulation (MDR) is a complex piece of legislation and detailed interpretation is required. The following points are the essential takeaways:

1. Time is of the essence. The transition started in May 2017 and the Date of Application (DoA) was May 2021. Manufacturers of legacy medical devices now potentially have until the end of 2027 and 2028 (Regulation 2023/607), though must meet the engagement requirements with notified bodies designated to the MDR.
2. Emergo estimates that placing a device on the European market and keeping it there will require two to four times more working hours by your staff. You will need additional budgets for staff, outsourcing and training. You should also start looking for software tools that enable your staff to do their work more efficiently. This has also been reflected in the time required to secure a MDR CE marking certificate issued by a Notified Body.
3. Consider the availability of the suppliers you currently use for outsourcing regulatory, clinical, or certification activities. All resources (including Notified Bodies and consultants), Competent Authorities, and the European Commission continue to be stretched beyond their limits. Add additional time to any plan you make.
4. The compliance of all devices should be continually assessed, this time against the current requirements (and the current standards). Some devices rely on past data that has not been sufficiently updated and may no longer be compliant or fully available. Missing data, especially clinical data, can prevent a device from being certified. Therefore, you should have the availability and quality of all data for your devices reviewed as soon as possible.
5. Users can now claim compensation for damage caused by defective devices. Manufacturers must have measures in place to compensate for that. In case of non-European manufacturers, the Authorized Representative will be held liable jointly with the manufacturer. Expect the Authorized Representative, if they are not part of your organization, to review their agreements considerably and to exercise more due diligence on who they accept as clients.
6. These additional requirements and challenges will also be faced by your competitor. Companies that anticipate adequately will create a better position for themselves. So, start acting now.
7. The most challenging documentation aspect of compliance to the regulation is clinical evidence, Article 61 and Annex XIV, as well as the Clinical Evaluation Plan and Clinical Evaluation Report.
8. Last but not least, consider the turnover depending on CE marked devices. Not only the European Union — the largest single market, with a wealthy, aging population — uses the CE marking. The CE marking can also be leveraged to other markets. This probably helps set priorities when considering budgets for the MDR transition.

Disclaimer
This white paper reflects the information available to Emergo in January 2024. This information is subject to changes and readers should not base their regulatory policies on this document alone.

The Medical Devices Regulation (MDR) (EU) 2017/745

The European Single Market comprises 27 Member States of the European Union, the European Economic Area (Iceland, Liechtenstein, and Norway) and, through bilateral treaty, Turkey. It is the largest single market with a wealthy, aging population of over 500 million consumers.

Free movement of goods is one of the cornerstones of the European Single Market. To enable this free movement concept, a product allowed on the market in one member state will also be allowed on the markets of other member states. The 2022 version of the Blue Guide on the implementation of EU products lists three conditions that must be met for goods to move freely:

1. Essential requirements (ER) for the products involved must be defined.
2. Methods must be established to describe how product compliance with the requirements is addressed.
3. Mechanisms to supervise and control the actions of all Economic Operators and others involved in the manufacturing and distribution of the products must be created.

The predecessors of the Medical Devices Regulation (MDR) (EU) 2017/745 — the Active Implantable Medical Devices Directive (AIMDD) 90/385/EEC, and the Medical Devices Directive (MDD) 93/42/EEC - do just that. These directives defined ERs and introduced harmonized standards, helping to demonstrate conformity to the ERs. The directives also defined conformity assessment procedures and organized market surveillance functions by Competent Authorities (CAs) and Notified Bodies (NBs). These directives, introduced in early 1992, have worked well and helped create the single market for medical devices in Europe.

However, the directives had some inherent weaknesses and the changes in technology and medical science demanded changes in legislation. These shortcomings challenged national member states and the interpretation of the directives was not consistent across all national governments. Directive 2007/47/EC modified the MDD and AIMDD in an attempt to address these concerns but this amendment did not achieve all goals. The scandal involving defective breast implants manufactured by Poly Implant Prosthesis (PIP) in France demonstrated additional structural weaknesses in the system.

The regulations were formally published in the *Official Journal of the European Union* (OJEU) in May 2017, ushering in the official transitional period to implementation in May 2020. The MDR Date of Application (DoA) was changed to May 2021.

Legacy devices

Devices which were placed on the market compliant to the MDD/AIMDD before the MDR DoA are considered as legacy devices, provided the manufacturer is compliant with the relevant provisions of the MDR. This includes the requirement that there be “no significant change in design or intended purpose” (Article 120(3)) to the device.

The corrections and amendments to the MDR

Since publication of the MDR in May 2017, there have been a number of corrections and amending legislation. There were two corrections in 2019, the most significant of which was the Corrigendum of 27 December 2019, which extended the concept of legacy devices to include medical devices which were Class I self-certified to the MDD, and upclassified by the MDR. This was a tremendous benefit particularly to manufacturers of reusable surgical instruments which are MDD Class I self-certified and upclassified to Class I reusable surgical instruments in the MDR.

On April 23, 2020, about a month from the DoA of the MDR, Regulation (EU) 2020/561 amending the MDR was released. This amendment postponed the DoA by one year to 26 May 2021.

In the summer of 2022, it became apparent that progress made for compliance to the MDR was glacial, the designation of NBs was also slow, manufacturer’s applications to the MDR were often incomplete, and the time for review by the NB was tremendous.

Regulation (EU) 2023/607 was promulgated in March 2023 to extend the transition time for legacy devices based on classification as well “no significant changes in design and intended purpose”. In addition, manufacturers have to have an application to a NB designated to the MDR by 26 May 2024 for the device or substitute device and an agreement with the NB by 26 September 2024. If the legacy device was compliant to the conditions, including a NB MDD/AIMDD CE marking certiifcate that was valid after 20 March 2023 or MDD Class I self-certified upclassified by the MDR, the legacy device could continue to be placed on the market until the following dates:

- 31 December 2027, for all class III devices, class IIb implantable devices except sutures, staples, dental fillings, dental braces, tooth crowns, screws, wedges, plates, wires, pins, clips and connectors.
- 31 December 2028, for class IIb devices (non-implantable), class IIa devices, and class I Sterile/Measurement/Reusable surgical instruments.

Main themes of the Regulation

Compared to the MDD, the MDR promotes a shift from the pre-approval stage (i.e., the path to CE marking) to a life-cycle approach. This approach is similar to the life-cycle view advocated by the U.S. Food and Drug Administration (FDA) and advanced by many international standards.

The life-cycle approach is illustrated by the incorporation of European guidance (MEDDEVs) into the Regulation. Guidance on authorized representation, clinical evaluation, vigilance, and post-market clinical follow-up (PMCF) have been integrated into the MDR. As the MEDDEVs are not legally binding, this change reduces the flexibility in interpretation by the industry as well as the authorities and NBs. In addition, there has been a tremendous number of guidance documents as well as Medical Device Coordinating Group (MDCG) guidance.

NBs are placed under a strict regimen of supervision. The qualification requirements for auditing and reviewing NB staff have steeply increased. As the process to designate NBs was protracted, at the end of 2022, EC Delegated Regulation (EU) 2023/502 increased the frequency of complete reassessment of the NB the first time from three years to four years, and then after that from four years to five years (Article 44(4)).

Much greater emphasis will be placed on clinical data and clinical evaluations. Equivalence, currently commonly used to justify references to studies or peer-reviewed scientific literature done with other devices, will be more rigorously interpreted. This will be a far more challenging way to demonstrate clinical safety or performance for medical devices.

For implantable Class III devices, clinical investigations will be expected since NBs will effectively no longer accept the equivalence approach (Article 61(5)), unless there is a “contract in place.” Clinical investigation requirements will not always be applicable for devices lawfully placed on the European market in accordance with the AIMDD and MDD. These devices demonstrate conformance based on sufficient clinical data and applicable Common Specifications (CS) or are of a specific family per Article 61(6).

The MDR attempts to make the time frames for review by various parties for different activities more transparent. In general, the regulations provide greater details and codify information from guidance and standards. Finally, the MDR concentrates the harmonization efforts between European member states by means of the new regulatory body, MDCG. The objective of the MDCG is to foster cooperation between the member states while increasing the Commission’s power to act as needed in acute cases. There are multiple MDCG sub-groups consisting of various stakeholders. This will closely resemble the current Medical Device Experts Group (MDEG) structure.

The main concepts introduced in the MDR described in more detail are:

1. The complete overhaul of EUDAMED. Introducing UDI and international nomenclature on medical devices as well as on incidents (Chapter 3 and Annex VI).
2. The inclusion into the scope of products without a medical purpose (Annex XVI).
3. Supply chain regulation that obliges each entity in the supply chain to check compliance of the previous supplier. See Chapter II.
4. The introduction of a special procedure for NBs for certain high-risk devices. See Article 54.
5. The introduction of manufacturers' liability specific to medical devices and in line with the Liability Directive 85/374/EEC. Authorized Representatives will be jointly and severally liable for the devices they represent. See Articles 10(16) and 11(5) respectively.
6. Substances that are carcinogenic or that have other potential high-risk effects on the human body can only be used together with a strictly defined justification (Annex I, Section 10.4).
7. The introduction of strict rules for clinical investigations and alignment to the Clinical Trials Regulation. See Chapter VI, Articles 62-82.
8. The introduction of detailed rules for the execution and the results of Post-Market Surveillance (PMS) and PMCF.
9. Reprocessing of single-use devices is only allowed under specific conditions — permission by the member state is one of them. See Article 17.
10. Rules for devices produced in hospitals to be used exclusively for its own patients have been added. See Article 5(5).
11. The rules for designation of NBs have tightened. These are provided in Chapter IV, Annex VII and Annexes IX to XII. Procedures for vigilance and post-market surveillance are described in more detail, and the fact that they have to be used for ongoing conformity assessment of the device are given in detail. See Chapter VII.

Organization of the Regulation

The MDR combines legislation for medical devices and active implantable medical devices into one document. The regulation commences with an explanatory memorandum and with recitals that are explanatory in nature and not legally binding. One recital of particular interest, Recital 4, acknowledges the guidance of the Global Harmonization Task Force (GHTF) and its successor organization, the International Medical Device Regulators Forum (IMDRF). The recital emphasizes the importance of global convergence of regulations and Unique Device Identification (UDI) as well as other areas that would benefit from global regulatory harmonization.

The official version of the regulation consists of 92 pages plus 83 pages of annexes. The highest article number is 123, with 101 Recitals. Note that the consolidated version of the MDR no longer includes the Recitals. The regulation is further organized into ten chapters that address important concepts and identify weaknesses. The articles reference an additional 17 annexes. There have also been subsequent corrigendums and amending regulations.

Definitions and scope of the legislation

Article 1, regarding the scope of the MDR, brings products without an intended medical purpose that are listed in Annex XVI within its scope. The article also states that medical devices, their accessories, and the products listed in Annex XVI will be referred to as devices. In the definition of accessories, no exception is made for products without a medical purpose that will be considered medical devices and therefore their accessories will also fall within the scope of the MDR.

Another significant expansion of the MDR, compared to the MDD, can be found in the definition of a medical device. Devices for cleaning, disinfection, or the sterilization of devices will themselves be considered medical devices. Previously, these products were considered accessories to medical devices. This placed them within the scope of the Directive. However, accessories to these accessories were not considered devices. Under the MDR, accessories to this new group of medical devices will also be within its scope.

Products that fall within the scope of the MDR, together with other directives or regulations, are brought within the MDR. In addition, depending on their function and mode of action, they are placed within the other legislation while the relevant safety and performance requirements for the device remain applicable. This means that a product that is implanted to control fertility by slow release of hormones will be considered a medicinal product, but the implant itself must meet requirements applicable for medical devices, including the requirements for risk management, biocompatibility, and user information. This requirement may be new to some pharmaceutical companies.

Article 2 contains a total of 71 definitions. This section is significantly expanded as the MDD only contained 14 definitions.

As stated above, the definition of medical devices is extended to include products for cleaning, disinfection, and/or sterilization. The article also covers In Vitro Diagnostics (IVD) in order to align the MDR and the In Vitro Diagnostic Device Regulation (IVDR).

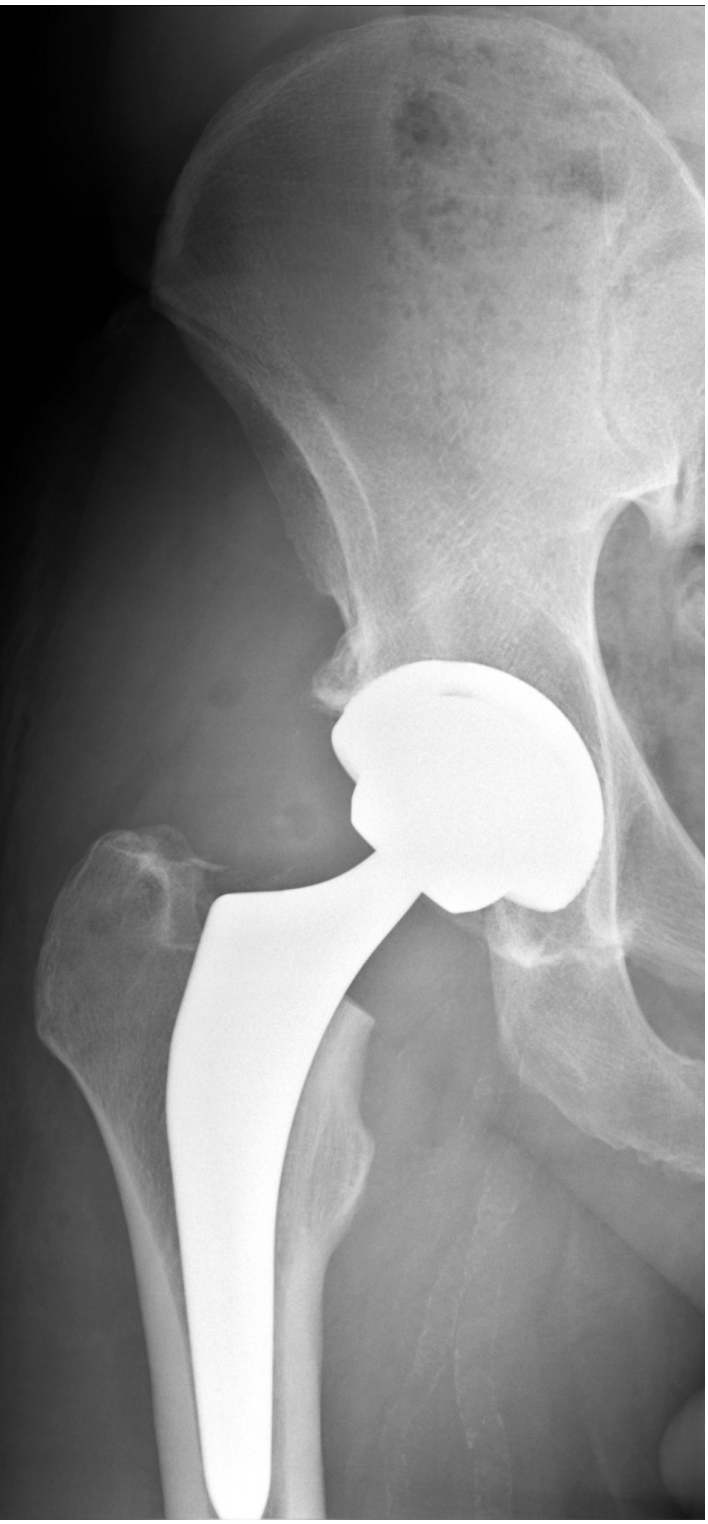
The definition of accessory is expanded to assist and enable a device to be used for its intended clinical use. The understanding of products that could be classified as accessories to medical devices is broadened. The term label is defined by Article 2(13) as the physical label on the device or package. Risk is now defined as in the EN ISO 14971:2019 standard. The consequence is that risk can be limited by controlling the occurrence or severity of a harm. The term Common Technical Specifications (CTS) was introduced in the EU Commission draft. The EU Council draft deleted the word Technical and simply refers to CS. This term is borrowed from the In Vitro Diagnostic Devices Directive (IVDD) 98/79/EC and prescribes technical specifications as a way to augment standards. Many definitions currently found in the MEDDEVs have been added to the regulation, such as those concerning clinical evaluation and vigilance.

There is no mention of stand-alone software as a separate regulatory concept. Recall that this was an amendment in the MDD to Annex IX based on Directive 2007/47/EC. Software, whether embedded or not, may have a medical purpose, in which case it falls within the scope of the MDR. Annex VIII. Classification Rules now refers to “software that drives a device or influences the use of a device” versus software that is “independent of any other device.”

Chapter I provides substantial definitions and responsibilities of the respective economic operators (EOs). This chapter delineates a demarcation between the responsibilities of the Authorized Representative (AR), the distributor, and the importer. The current MEDDEV on ARs is essentially incorporated into the Regulation, which highlights the complementary but incompatible roles of the AR and the two other EOs (distributor and importer). There is an article that describes the process to change an AR. There is MDCG guidance available. “Distance sales” are regulated in such a way that devices sold to European citizens through the internet must also comply with the Regulations. It is not clear how this will be controlled.

Chapter II also introduces the person responsible for regulatory compliance (PRRC). This role should be filled by a highly educated and experienced person and is intended to safeguard regulatory compliance within the manufacturer or AR where he/she works. Measures to ensure an injured patient can claim damage for defective products have also been introduced. There is a MDCG guidance on PRRCs.

Article 10(8) of Chapter II requires the manufacturer to supply CAs with all information necessary to demonstrate conformity, as well as to share that information with patients or their representatives claiming compensation. These requirements will obviously have an impact on manufacturers’ technical documentation.



The AR is made jointly and severally liable for defective devices with the manufacturer. The importer also shares liability according to Product Liability Directive 85/374/EEC. Liability requirements may put further pressure on the willingness of manufacturers, ARs, and importers to share information with CAs. The responsibilities of the importer and distributor are laid out, but there are no indications regarding who would be liable in cases of non-compliance. It can be foreseen that the AR in such cases may not agree to be held fully liable.

Article 17 of Chapter II addresses the reprocessing of single-use devices. Reprocessing may only take place where permitted by national law and under strict conditions. Full product liability is placed on the re-processor while the original manufacturer will no longer be mentioned on the label even though they will continue to be on the IFU.

Note: The requirements for conformity assessment and the technical documentation that needs to be available will effectively eliminate the position of the Own Brand Label manufacturer. This will have a significant impact on companies.

The MDR retains Article 3 of the MDD as Article 5(2) where medical devices must be compliant to relevant Annex I, General Safety and Performance requirements (GSPR). Similarly, Article 5(1) of the MDD exists as Article 8(1) to comply with EN harmonized standards published in the OJEU with presumed compliance to Annex I. Furthermore, Article 18 requires that patients with implantable medical devices be provided implant cards. Distance sales and internet services are addressed in Article 6, which states that a device not placed on the market, but used for a diagnostic or therapeutic service to a person established in Europe, must also comply with the MDR. This also means that manufacturers of such devices not based in Europe must appoint ARs.

Companies that sterilize procedure packs or systems must either comply with the requirements in Annex IX (Quality System) or Annex XI (Product Verification) and allow NB involvement regarding sterility (Article 22(3)).

General safety and performance requirements (Annex I)

Annex 1 resembles the ERs of the current MDD. This annex is now referred to as GSPR. Chapter 1, Section 1 remains identical except for the important insertion of "taking into account the generally acknowledged state of the art." Of course, the use of current standards and published literature facilitates addressing this requirement.

For non-medical products that are treated as medical devices and products for which there are no sufficient standards, the CS will be applied. Reduction of risk as far as possible is explained as reducing risk "without adversely affecting the risk benefit ratio." Also, the manufacturer must use a risk management system per Section 1a. The number of ERs and the level of detail have increased. An initial count indicates that the new GSPR Checklist would have more than 220 items to review. Manufacturers using certificates issued under the current MDD should be aware that they must demonstrate state of the art under the new MDR. They should monitor competitors whose products, including devices, suddenly outdate their medical devices by introducing new technologies.

Chapter 2 retains many of the ERs from the MDD, Requirements regarding design and manufacture, and adds the following sections:

- Devices incorporating a medicinal product and devices composed of substances or combinations of substances intended to be absorbed or locally dispersed in the human body
- Devices incorporating materials of biological origin
- Construction of devices and interactions with their environment
- Software in devices and software that are devices in and of themselves
- Particular requirements for active implantable devices
- Risks concerning medical devices for lay persons

Devices that contain more than 0.1% in weight of a carcinogenic, mutagenic, toxic substance, or substances having endocrine-disrupting properties need to have a justification for their presence.

Chapter 3, requirements regarding the information supplied with the device, covers labeling and instructions for use. Another addition by the Council, Section 23.2 (q), states that there should be an indication on the label that the product is a medical device, similar to the current identification of an IVD. This may lead to the introduction of a new 'MD' symbol.

The challenge of how to keep track of devices placed on Europe's borderless yet fiercely sovereign markets is addressed by a combination of mandatory inputs by NBs, EOs, and member states into EUDAMED. EUDAMED consists of six modules that function together. Part of EUDAMED will be publicly accessible. The European Commission is responsible for EUDAMED, but users will all be responsible for their own content. There will be an extensive amount of information collected and transmitted electronically as well as a mandate to use UDI.

Class III and implantable medical device manufacturers must generate a summary of safety and clinical performance (SSCP) in language that can be understood by the intended patient in Article 32. The SSCP will be assessed by the NB that uploads it into EUDAMED. There, it will be publicly accessible. It must be clear in EUDAMED who the manufacturer, AR, if relevant, and importer are, where they are based, and their relationship with each other in terms of who supplied what to whom. Distributors and importers must work together with the manufacturer or AR regarding traceability of devices. This will limit, if not eradicate, parallel imports into the EU and all these details will be registered.

Note: Mandatory Unique Device Identification (UDI) was introduced with the intention to facilitate the traceability of devices. Devices will be allocated a device identifier (DI) and production series or batches will be identified with a production identifier (PI). The Basic UDI-DI must also be referenced in the Declaration of Conformity (DoC). Various databases for clinical investigations, product registration, and vigilance are introduced under the aegis of the EU Commission. Member States will have to issue a Single Registration Number to each EUDAMED entity.

The regulation attempts to professionalize the implementation of compliance by mandating a PRRC similar to the requirement placed on manufacturers under the Medicinal Products Directive.

Note: EUDAMED will be part of a system of several databases, closely interacting with each other:

1. Actors
2. Devices/UDI
3. Certificates (issued, suspended, withdrawn etc.)
4. Clinical Investigations
5. Vigilance (incident reports and Field Safety Corrective Actions, but also Periodic Safety Update Reports)
6. Market Surveillance

Closely linked to EUDAMED are the databases with nomenclature for medical devices and for incident reporting. Lastly, the database with NB information, NANDO, will be related to EUDAMED although it will remain independent and controlled by the European Commission.

Apart from the general public, EUDAMED will be accessible for EOs, NBs, CAs, and Commission. These stakeholders will also upload their information directly into EUDAMED. They will each have different levels of access to information. For EUDAMED to properly function, access to international medical devices nomenclature will be provided free of charge. In January 2022, the nomenclature for devices in EUDAMED was announced as the European Medical Device Nomenclature (EMDN) based on the Italian CND. The nomenclature for incidents will be based on the terms proposed by **IMDRF**.

By far the greatest change brought by the MDR is the metamorphosis of the role of NBs from an industry partner into a police-like extension of the CAs' market surveillance apparatus.

On legal grounds, the formal designation and assessment of NBs is left to member states in practice. However, the power to notify, manage the scope and notification, and prescribe corrective measures is transferred from the CAs to peer-reviews by multi-national Joint Assessment Teams. NBs are monitored to ensure they are competent and ethical.

For Class III implantable devices, as well as Class IIb devices intended to administer and/or remove a medicinal product, the NB will be obliged to send its clinical evaluation assessment report to the relevant expert panel through the EU Commission per Annex IX, Chapter II, Section 5.1. The expert panel may decide to issue an opinion on the application, in which case the panel will do so within 60 days. After that, or after the expert panel has declined providing an opinion, the NB can certify the device. These expert panels (Article 106) will be appointed by the Commission as considered necessary in relevant fields of expertise or specific risks.

Costs related to these expert panels may be covered by fees paid to the Commission by the manufacturer. The size of the manufacturer will be considered when setting the fee.

Under the proposed conditions, a major challenge for most NBs will be to gain and retain highly qualified staff with the education and experience mandated in Annex VII. Both Chapter IV and Annex VII describe the demise of NBs and how to monitor the competence of the remaining ones.

NBs are required to take out liability insurance to cover cases where they may be obliged to withdraw, restrict, or suspend certificates as stated in Annex VII, section 1.4. NBs will also have to make public a list of standard fees for their conformity assessment activities.

NBs will be accredited by the authority responsible for NBs (which may be the national CA) in the member state where they are based. This authority will do a review of such a request and pass their conclusions on to the Commission, which then transmits the decision to the MDCG. The MDCG will assign joint assessment teams consisting of at least three experts, who will review the application documentation. This joint assessment team, together with the national authority responsible for NBs, will perform an on-site assessment, including sites in other member states or outside the Union. The process entails strict timelines, but there are no consequences for the authority responsible for NBs or the MDCG if they do not meet these timelines.

Note: As NBs are required to have similarly competent staff for Technical File/Design Dossier reviews and audits, it is easy to foresee a shortage in the availability of qualified personnel. This may lead to significant delays and higher costs for manufacturers.

Classification remains essentially the same under the MDR, but it is recommended to do a thorough assessment of all devices and not to rely on current classification schemes. The definitions and basic principles have some minor changes.

There are 22 classification rules in Annex VIII, some of which are new and some have changed. Rule 3 now places substances in contact with cells, tissues or organs before administering in the body into Class III. Rule 4 also applies to invasive devices that come into contact with injured mucous membranes. Rule 6 keeps the reusable surgical instruments in Class I, but at the same time these devices get a similar status as sterile or measuring devices, and NB involvement is required. A new classification, Class Ir, applies to these devices as well.

Additional classification changes under the MDR include the following:

- The MDR considers surgical meshes Class III
- Rule 11 — A new rule for classification of software. Software can fall under any risk class, with Class I now being the exception
- Rule 18 states that non-viable tissue of human or animal cells will be considered Class III
- Rule 19 classifies nano-materials depending on their potential for internal exposure
- Rule 20 places devices intended for inhalation of medicinal substances in risk Classes IIa or IIb
- Rule 21 places devices composed of substances absorbed or dispersed in different classes based on their level of internal exposure
- Rule 22 places active therapeutic devices with an integrated diagnostic function, which provides data on patient management in Class III (e.g., closed loop systems or automated external defibrillators)

The MDCG is expected to provide expeditious judgments of difficult classification cases (Article 51). The choice of conformity assessment route has been simplified by conformity assessment Annexes IX through XI, with many instances for mandatory Quality Management Systems (QMS). There is better correlation between risk and data requirements.

The technical documentation elements specified in Annex II are largely based upon the GHTF STED guidance. (The STED document can be found on the **IMDRF** website.) Annex III describes the technical documentation on PMS. This consists of the post-market surveillance plan, the PMCF plan, and the PMS Report or Periodic Safety Update Report (PSUR) . Annex IV describes the Declaration of Conformity (DoC).

Class I self-certified medical devices must set up a quality system “in the most effective manner and in a manner that is proportionate to the risk class,” according to Article 10(9). They must then compile the technical documentation according to Annexes II and III and sign the DoC.

Annex IX, conformity full quality assurance and assessment of technical documentation

This is the equivalent of MDD, Annex II, Section 3.3 Audits, and Section 4, Examination of the design of the product.

Section 3.3 states that NB audits and assessments of QMS and PMS processes should occur at least yearly. Section 3.4 adds that the NB is to perform unannounced inspections of the manufacturer and of the manufacturer's suppliers or subcontractors at least once every five years. The NB will be mandated to test samples from the production or manufacturing process. NBs are also encouraged to analyze samples from the market. Nevertheless, it is unclear who will pay for testing of these samples.

As expected, the roles of clinical evaluation and clinical investigation become far more prominent under the MDR.

Inclusion of MEDDEV 2.7/1 and parts of ISO 14155 into the MDR is to be applauded. Informed consent and the protection of incapacitated subjects get special attention.

To avoid having to perform clinical investigations on devices that are currently considered compliant and that have been used for years without major incidents, an exception is made for implantable and Class III devices currently placed on the market. These devices must comply with the current requirements for clinical data and with possible future CS. Data concerning clinical investigations needs to be entered into EUDAMED, as well. The electronic system must also be used for PMCF studies. The design, execution, and requirements for documentation of a PMCF study have to meet many requirements applicable to clinical investigations.

Note: New and tighter criteria are introduced for demonstrating equivalence. As a result, more clinical data must be obtained from clinical investigations of the device. Implantable and Class III devices generally require clinical investigations, unless a rationale can be provided for why this should not be the case. Manufacturers of implantable and Class III devices may consult an expert panel on a voluntary basis prior to the clinical evaluation. A manufacturer may rely on clinical data of another device if the new device is a modification of the old device, if the NB has confirmed this is only a modification, and if the manufacturer has full access to the technical documentation of the other device.

Article 83

PMS is explicitly intended for gathering and analyzing information with the aim of deciding about preventive and corrective actions. This implies that information must be collected and analyzed about incidents and adverse events, trend reporting, relevant literature, information from users and publicly available information about similar devices.

Also, the manufacturer's PSUR and Field Safety Corrective Actions (FSCA) are sources of information. The PMS system may result in preventive or corrective actions, changes in the Clinical Evaluation Report (CER), changes in the PSUR, reports for the NB and/or the CA and alterations in EUDAMED. The SSCP, required for implantable and Class III devices and written in language for lay users, may also have to be updated as a result of PMS. PSURs of Class III and implantable devices must be uploaded to EUDAMED for review by the NB and then be available to the CAs together with the comments made by the NB.

Manufacturers are required to report a serious incident or FSCA, to the relevant CAs by using EUDAMED within 15 days. In case of death or unanticipated serious health deterioration, the maximum time allowed is 10 days. In case of a serious public health threat, this timeframe is limited to two days per Article 87.

Based on Article 92, the EU database will be used to share these vigilance reports to the following member state where the incident occurred, member state(s) where the FSCA is undertaken, the Member State where the manufacturer or their AR is based, and for all vigilance reports to the NB. It is expected that FSCAs and Field Safety Notices (FSNs) will be made publicly available and this may also apply to reports on serious incidents. It is anticipated that other authorities or international organizations will also have access to this database.

The draft FSN needs to be submitted for review "except in case of urgency (Article 89(8))." In practice, our experience has been that currently all manufacturers treat the release of the FSN as urgent and have not shared the draft for review.

Confidentiality

Article 109 ensures confidentiality of certain information, but patients seeking compensation will likely get access to detailed information about the device through Article 10(14). For non-European manufacturers, their ARs will have to supply this information. Also, Article 1(16) ensures freedom of information for the press as dealt within any individual member state. It is currently not clear how this potential conflict of interest and possible misuse may be resolved. Confidentiality of information provided to any database as part of this regulation is respected as far as this concerns personal data or commercially confidential information, unless disclosure is in the public interest. This disclaimer appears to be in slight conflict with the intention to safeguard confidentiality in order to promote effective implementation of this Regulation, as the results of inspections, investigations, and/or audits may be considered to be of public interest.

Article 103-106

The MDCG seems intended to replace the proliferating member state-only bodies (CMC, COEN, MSOG) and the structures that are trying to coordinate the CAs. Apart from the fact that it has proven impossible to find even a 75% consensus in all but a few MDEG meetings, the difficulty to find truly independent experts — as witnessed by the FDA in its expert panels and the lack of sanctions for exceeding the review periods — does not bode well. In any case, an appeal procedure is sorely missing. The MDCG may be assisted by expert panels and expert laboratories. These experts have to be independent from NBs or manufacturers when providing their scientific opinion. Expert panels must take into account relevant information from stakeholders. The CAMD will provide guidance and harmonization between Member States.

Standards

The role of standards is maintained. Articles 8(1) and 9(2) state that if there are standards and CS, and the manufacturer complies with them, the manufacturer is presumed to be compliant to the relevant aspects of the Regulation. The MDCG will play an important role in developing CS and scientific guidelines. However, it should be noted that this will introduce a system where the MDCG is empowered with significant responsibilities, without the necessary accountability for their actions to anyone. However, Member States do not currently agree on the scope of the harmonization mandate in relation to the MDR. Some Member States only want to see a few horizontal standards, whereas others would like to see many vertical, device group-related standards.

Penalties

Article 113 defines the need for penalties but not against whom, nor does it define the penalty for member states if they transgress their powers or violate their obligations. This would be a good addition because several steps in placing devices on the market depend on actions done by CAs. If they do not have the resources to perform these processes, the manufacturer may suffer damage. Or worse, patients may not receive the treatment they need.

Important dates	
May 2017	• MDR published, the three-year transition period begins
November 2017	• Notified Bodies can apply for designation • MDCG installed
April 2018	• First Joint Assessment Audits for Notified Body designation performed
January 2019	• MDSAP certification of the QMS for manufacturers of Class II, III, and IV medical devices required for Canada[1]
March 2019	• Transition deadline for ISO 13485:2016 in Europe
May 2021	• MDR becomes applicable and enforceable: - All Class I, self-certified devices must be compliant to the MDR - All new devices must be compliant to the MDR - Legacy medical devices have until prescribed - All PMS and PMCF requirements of the MDR apply, unless exempted by article 123
May 2021	• UDI must be placed on the label of Class III devices that are MDR certified
May 2023	• UDI must be placed on the label of Class IIa and Class IIb devices that are MDR certified
May 2024	• In order to continue to place legacy devices on the market, manufacturers must have an application with a NB designated to the MDR for the legacy device, or a substitute device
September 2024	• In order to continue to place legacy devices on the market, manufacturers must have an agreement with a NB designated to the MDR for the legacy device, or a substitute device
May 2025	• UDI must be placed on the label of Class I devices
End of December 2027	• Deadline for Class III and Class IIb implantable legacy devices to be compliant to the MDR
End of December 2028	• Deadline for all other legacy devices, including MDD Class I self-certified upclassified by the MDR, to be compliant to the MDR.

1. Health Canada announced (18-104451-938, April 2018) some accepted delays for MDSAP.

Choosing your transition strategy

Timing the switch to the MDR depends on a company's strategy, product mix, the current state of certification, the availability of harmonized standards and/or CS and clinical data, and the policy and accreditation of the firm's NB. There are no simple answers to what would be best. An early analysis, possibly with your NB, is necessary.

This conundrum has been thrown at the industry by regulators that may not fully understand the complexity of placing devices on the European market. However, companies that manage to solve this riddle are more likely to be the strong players in the next decade. The game is on in this new playing field.

It is evident that this Regulation is vastly more legal in nature than its predecessor, which took more of a goodwill approach in many ways. This will have consequences for staffing at CAs, NBs, and EOs.

Although the Regulation may have many similarities with the MDD, the devil is in the details. The Regulation will change the European regulatory environment as more stringent clinical data requirements, extended data management, more complex conformity assessment procedures (particularly for high-risk medical devices), and product liability and penalties will be introduced. NBs are already signaling they will not be able to process all this extra work, which may lead to compliant devices losing access to the European market. As such, manufacturers should begin planning their transition strategy as soon as possible.

Learn more

Need help with transitioning to the EU MDR? Emergo by UL helps medical device companies with regulatory compliance and market access in Europe and other markets worldwide. Here's how we help:

- Technical File and CER compilation and review
- European Authorized Representation
- MDR gap audits and transition consulting
- Support compliance with implementing an ISO 13485:2016 certified QMS and performing internal audits

Learn more about how we can help you with European medical device compliance at **EmergobyUL.com**.

About the author

Evangeline Loh, Ph.D., RAC (US, EU) holds one of the most senior positions in the Emergo by UL consulting group and has over 15 years of global regulatory experience. Her background includes compiling European Technical Files and Design Dossiers; European Technical File reviews and gap assessments; borderline classifications; and 100+ peer reviews of Technical Files, including Clinical Evaluation Report reviews and responding to Notified Body findings. She specializes in borderline classification assessments, global vigilance, and global regulatory strategy. As the Global Regulatory Manager, Evangeline manages Emergo by UL's in-country representation services, including EU Authorized Representative, US Agent, and Australian Sponsor, and oversees global vigilance activities for these clients. She also supervises a team of international consultants and reviews dozens of device submissions and clinical evaluation reports each year. Prior to Emergo by UL, she held positions at Cook Incorporated and The Association of American Medical Colleges. Evangeline holds a PhD in pharmacology from The University of Texas Health Science Center at San Antonio and studied microbiology at Cornell University. She joined Emergo by UL in 2007.

EMERGO

by UL

RLC24CS1420000