



The European Parliament building in Brussels, Belgium

The proposed EU regulations for medical and in vitro diagnostic devices

An overview of the likely outcomes
and the consequences for the market

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Introduction

As the trilogue process starting shortly is indicative of the last key step towards the reform on the EU legislation on medical devices, the earlier version of this paper, published in March 2014, has now been updated and reflects the position as of 5 October 2015. This directly follows the EU Council's endorsement of its negotiating position on the two draft regulations aimed at ensuring that medical devices and in vitro diagnostic medical devices are safe and of high quality. This decision allows the Luxembourg presidency to start talks with the European Parliament (EP) with a view to reaching an agreement as early as possible.

The proposals for the new Medical Devices Regulations (MDR) and In Vitro Diagnostic Devices Regulations (IVDR) will provide a new regulatory framework for medical devices in the EU for the coming decades. The proposals were revised following a political move for more centralized and pre-market controls on higher risk medical devices.

The proposals for the new MDR and IVDR started out as a modest mid-life update to the existing directives. However, they were significantly amended following an additional impact assessment related to several highly publicized issues with medical devices in the EU market that sparked a political wish for more centralized and pre-market controls on higher risk medical devices.

This white paper discusses the most important items in this revision as per the state of the legislative proposals in early October 2015.¹ Although crucial elements of the regulations remain subject to political debate in the three-way negotiations between the Commission, Council and Parliament, the so-called trilogue, one thing is clear: the regulations will cause important changes for all companies in the field. Companies need to prepare to deal with these changes in a proactive and timely manner to avoid having certifications becoming invalid and market access interrupted because they were unable to comply with the new legislation in time.

The scope of the MDR

The MDR proposal will feature a significantly extended scope. The Commission sought to remedy procedural issues with borderline classifications by providing a centralized classification mechanism and a flexible list of devices (the Annex XV list) that may not have a medical intended purpose, but will be regulated as medical devices nonetheless. The list currently includes contact lenses, cosmetic implants and invasive laser equipment. The Commission also proposed to include products manufactured utilizing non-viable human tissues or cells, or their derivatives, closing a long-standing regulatory gap. Finally, the MDR absorbs the current Active Implantable Medical Devices Directive (AIMD), bringing active implantable devices into its scope. The only remainder of the old AIMD will be that its accessories, in contrast with other medical devices, will be in the highest risk class by default.

As a consequence of Parliament proposed changes in the IVDR proposal, the definition of medical device may be expanded to include devices with 'indirect medical purpose' and devices for the purpose of 'prediction' of disease. The extension of the scope to include devices with indirect medical purpose is expected to create a lot of borderline problems with devices that are intended for general health (as opposed to medical) purposes. The European Court of Justice recently cautioned against a too wide interpretation of the concept of 'medical', as this would have the unintended effect of bringing a large number of health-related devices under the Medical Devices Directive.² It is expected that the new definition would have a significant impact on (self-) quantification products and services in the field of health-related parameters, turning many of these into medical devices.

The definition of accessory will change to incorporate devices that 'assist' a medical device. The EP and the European Council proposed that an accessory should only assist the medical intended use of the device, not its functioning as intended in general.

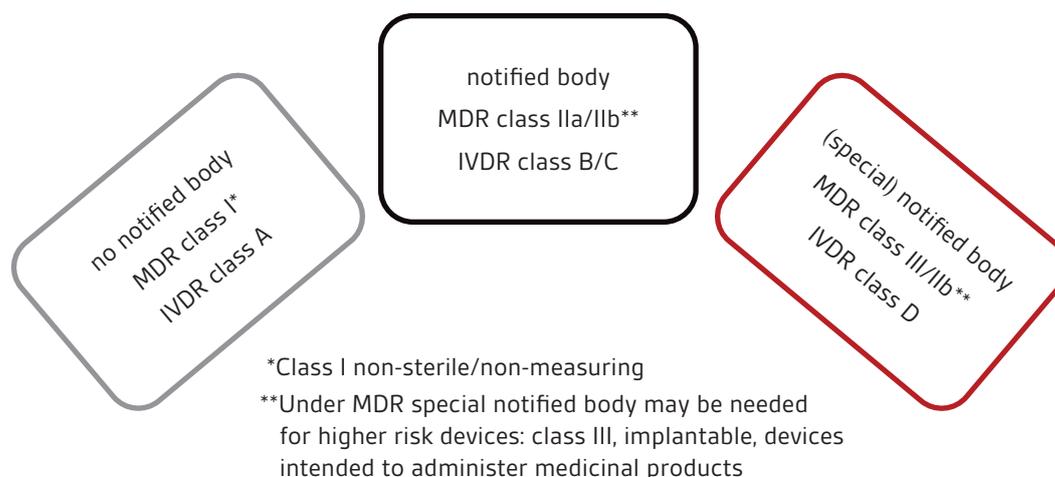
The changing role of notified bodies

Notified bodies are expected to partly reinvent themselves under the new regulations. Not only will they need to employ much more expertise directly as opposed to contracting it in, they will also play a role in enforcement by

¹ The previous version of this White Paper discusses the state of play to March 2014.

² See case C-219/11 Brain Products vs. BioSemi; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62011CJ0219:en:HTML>

Figure 1 — Notified body competences



means of conducting unannounced inspections of manufacturing processes and taking on a supporting role in vigilance follow up.

The regulations propose new accreditation requirements that only a minority of notified bodies are currently able to meet. Some notified bodies have already decided to cease activities or allow themselves to be acquired by others as a result of the member states' increased accreditation requirements under the European Commission's Joint Immediate Action Plan.³

The proposals of the different EU institutions differ in their approach to notified bodies. For example, the Parliament proposed that a category of special notified bodies will be created and only notified bodies in this category will be allowed to certify high risk devices. Special notified bodies were not proposed by the Commission and the Council did not indicate their agreement with the proposal, so it remains to be seen if such a new category of notified bodies will be created in the end.

As a result of the changes, manufacturers may well be confronted with a forced change of notified body when the regulations enter into force, either because their notified body ceases activities, because it is not re-designated for the same scope or because it is not designated as a special notified body. But already now in the period leading up to the debate, manufacturers are facing problems due to decline in numbers of notified bodies as well as decisions from many remaining notified bodies to not, or only selectively, issue quotes for new clients, or even for new work under existing contracts.

As of January 2014, notified bodies are required to conduct unannounced production audits at least once every three years and more often for high-risk devices, frequently non-compliant devices or in case of suspected non-conformities.⁴ The unannounced audit involves a check of a recently produced adequate product sample for its conformity with the technical documentation and with legal requirements as well as a file review. This includes verification of the traceability of all critical components and materials and of the manufacturer's traceability system.

Manufacturers must be able to accommodate an unannounced audit, as should their critical subcontractors or crucial suppliers. This means that the manufacturer must ensure they know when its critical subcontractors or crucial suppliers are producing for them; subsequently the manufacturer must communicate this to the notified body. That means that many manufacturers will need to amend their contracts with their subcontractors and suppliers.

³ http://europa.eu/rapid/press-release_IP-13-854_en.htm

⁴ See COMMISSION RECOMMENDATION 2013/473/EU of 24 September 2013 on the audits and assessments performed by notified bodies in the field of medical devices, which triggers application of the unannounced audits chapter in the Notified Bodies Code version 3.0; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:253:0027:0035:EN:PDF>



Metal-on-metal hip implant

What effect will this have on the market access mechanism and design requirements?

The market access mechanism is the most hotly debated item in the proposals. Industry fears a slow and costly 'pharma-like' mechanism and is afraid of losing the short time-to-market provided under the current system. The Commission initially proposed a so-called scrutiny mechanism under which a new EU committee (the MDCG) will evaluate notified body conformity assessments for the highest risk devices. The EP, and even more so its Environment, Public Health and Food Safety (ENVI) committee, have been advocating the strictest possible procedure for 'innovative' products via the European Medicines Agency (EMA), regardless of the fact that breast implants and metal-on-metal hip implants that caused the political concern⁵ were not particularly innovative devices at all. This has resulted in a very polarized debate about the right choices that do justice to both patient safety and innovation.

However, the European Medicines Agency (EMA), United States Food and Drug Administration (FDA) and other medicine approval bodies have in the meantime begun to question the benefits of the 'frontloaded' approval process for medicinal products.⁶ The EMA will explore making its approval process less frontloaded by shifting emphasis to the post-market phase, as currently already happens with medical devices under the supervision of notified bodies and competent authorities. In the European Council meeting on 10 December 2013, member states argued that a more frontloaded approval process will not remedy the problems of deliberate fraud (PIP breast implants) nor those of problems that only come to light after significant years of use of a device in large populations (metal-on-metal hip implants), which are precisely the two issues that are used by politicians to argue that a 'stricter' pre-market approval process is necessary. Both of these issues are already addressed in the Commission proposals with increased market surveillance and increased (clinical) post-market requirements for devices. Also, member states have requested that their notified bodies pay closer attention to products in the post-market phase. When its partial

5 European Parliament Committee on the Environment, Public Health and Food Safety Press Release, 'PIP Breast Implants: Learn the Lessons of This Fraud', 25 April 2012; <http://www.europarl.europa.eu/news/en/news-room/content/20120423IPR43732/html/PIP-breast-implants-learn-the-lessons-of-this-fraud>

6 Eichler HG, Oye K, Baird LG, Abadie E, Brown J, Drum CL, Ferguson J, Garner S, Honig P, Hukkelhoven M, Lim JC, Lim R, Lumpkin MM, Neil G, O'Rourke B, Pezalla E, Shoda D, Seyfert-Margolis V, Sigal EV, Sobotka J, Tan D, Unger TF, Hirsch G, 'Adaptivelicensing: taking the next step in the evolution of drug approval', 91(3) ClinPharmacolTher. (2012), pp. 426 etsq

general approach finally came out in the Summer of 2015, the Council surprised many by proposing that the system stays essentially the same, except that there is an option for companies to request non-binding scientific advice from an EU committee about the clinical evidence to be produced for all classes of medical devices. This procedure will be mandatory for implantable devices classified as class III. It will remain to be seen what final compromise will be reached in the trilogue between the Commission, Parliament and Council in the Autumn of 2015. Six trilogue meetings have been scheduled so far, three in October, two in November and a last one in December 2015.

The impact on own brand labelling

The new regulations are expected to impact the own brand labelling industry severely, because each manufacturer will be obliged to have a full technical file available for the authorities. The current legislation only requires an abbreviated technical file that refers to the technical file of the underlying original device to be available for the authorities. The Council proposes to exempt cases where a distributor or importer enters into an agreement with a manufacturer whereby the manufacturer is identified as such on the label and is responsible for meeting the requirements placed on manufacturers.

Reprocessing

The Commission proposal considered companies reprocessing of single-use devices as manufacture of new devices so that the 'reprocessors' must satisfy the obligations incumbent on manufacturers. The Commission proposed that reprocessing of single-use devices for critical use (e.g. devices for surgically invasive procedures) should, as a general rule, be prohibited. Member states think very differently about reprocessing, which was clear again in the 10 December 2013 Council meeting on the MDR proposal. Given these concerns of member states, the Commission proposed that they retain their right to maintain or impose a general ban on this practice in their country. The EP is much more in favour of reprocessing, and proposed a system that presumes all devices are reprocessable unless they are placed on a list maintained by the Commission. The Council proposes in its partial general approach that reprocessing may only take place when permitted by national law and under certain additional EU conditions to be determined, with an exemption under certain conditions for single-use devices that are reprocessed and used within a health institution (and the option for each member state to determine if that includes devices reprocessed by a third party at the request of that health institution). The Council also proposed that there will be a Commission list of single-use devices that cannot be reprocessed safely and may not be reprocessed.

It is clear that there is still considerable political disagreement about what an EU regime for reprocessing should look like. Consequently, it is very difficult to predict the outcome. It is likely that reprocessing in one form or another will be permitted because otherwise member states that already allow it and have had a good experience of it (as Germany says it has⁷) would need to prohibit it. Given the resistance of other member states, it is also very likely that national prohibitions or additional requirements may be imposed.

Where does this leave the clinical and regulatory environment?

The MDR aims to elaborate on the current clinical investigation requirements in Article 15 MDD and Annex X, and align the MDR with the clinical trials regime for medicinal products. The system proposed for clinical investigations is therefore similar to the current system for medicinal products under the Clinical Trials Directive (Directive 2001/20/EC), including notification in a centralized database as is currently the case in EudraCT, the European Clinical Trials Database. While the Commission initially proposed member state authority assessment of clinical investigations, the EP proposes to have this done by ethics committees.

The MDR proposal will make Post-market Clinical Follow-up (PMCF) mandatory as part of the clinical evaluation cycle for the device concerned, essentially implementing the PMCF MEDDEV.⁸

⁷ German representative in the EPSCO Council Meeting of 10 December 2013

⁸ MEDDEV 2.12/2 rev. 2 Post-market Clinical Follow-up studies, January 2012;
http://ec.europa.eu/health/medical-devices/files/meddev/2_12_2_ol_en.pdf

The MDR clinical investigation regime has been a hotly debated issue throughout its legislative history, with the ENVI Committee and EP taking the position that medical devices clinical investigations should be similar to medicinal products clinical trials. This has provoked criticism from industry that the medicinal products trial design is mostly inappropriate for medical devices.

In the legislative process important concepts have been introduced that are inconsistent with the current Good Clinical Practice standard for medical devices, the MDD harmonized EN ISO 14155:2011.⁹ For example, the proposed definition of 'sponsor' under the MDR is far wider than under EN ISO 14155:2011. It is not clear at this moment if and how the EU legislation will reconcile the proposal with the International Standard. From a perspective of international harmonization and innovation, inconsistencies between the International Standard and the MDR would be undesirable as it would make the EU a less attractive place for clinical investigation.

At this point it is safe to say that requirements for clinical evidence will increase substantially and will require significantly higher investment from companies. Companies will also need to invest in employing staff who are knowledgeable in regulatory affairs, Good Clinical Practice (GCP) and clinical investigation design in order to work with and interpret clinical studies, but also to communicate with authorities and notified bodies and to meet the requirement of having a person responsible for regulatory compliance.

The proposals are going back and forth on the concept of mandatory insurance for various forms of damage caused by medical devices. For example, the Parliament proposed that manufacturers must have mandatory product liability insurance, while the Council proposed that there shall be a system for compensating for damage resulting from clinical trials, but the details will be entirely up to each member state's discretion.

With a view to increasing the level of regulatory awareness in companies, the proposals oblige companies to permanently and continuously have at the disposal of their organization at least one 'person in charge for regulatory compliance activities'. This requirement will apply to all companies and authorized representatives, no matter what their size; the only exception made is for manufacturers of custom-made devices who are micro-enterprises.¹⁰ This 'responsible person' must meet the qualification requirements set out in the regulations and is among other things responsible for management of technical files and Declaration of Conformity and for reporting obligations. The regulation is not explicit about whether the person must be employed or can be a consultant, nor is the regulation specific about whether the person must be available full-time. Companies will need to start identifying persons in their organization or external services providers that could fulfil this role.



Major changes to IVD classification will turn the IVD world upside down

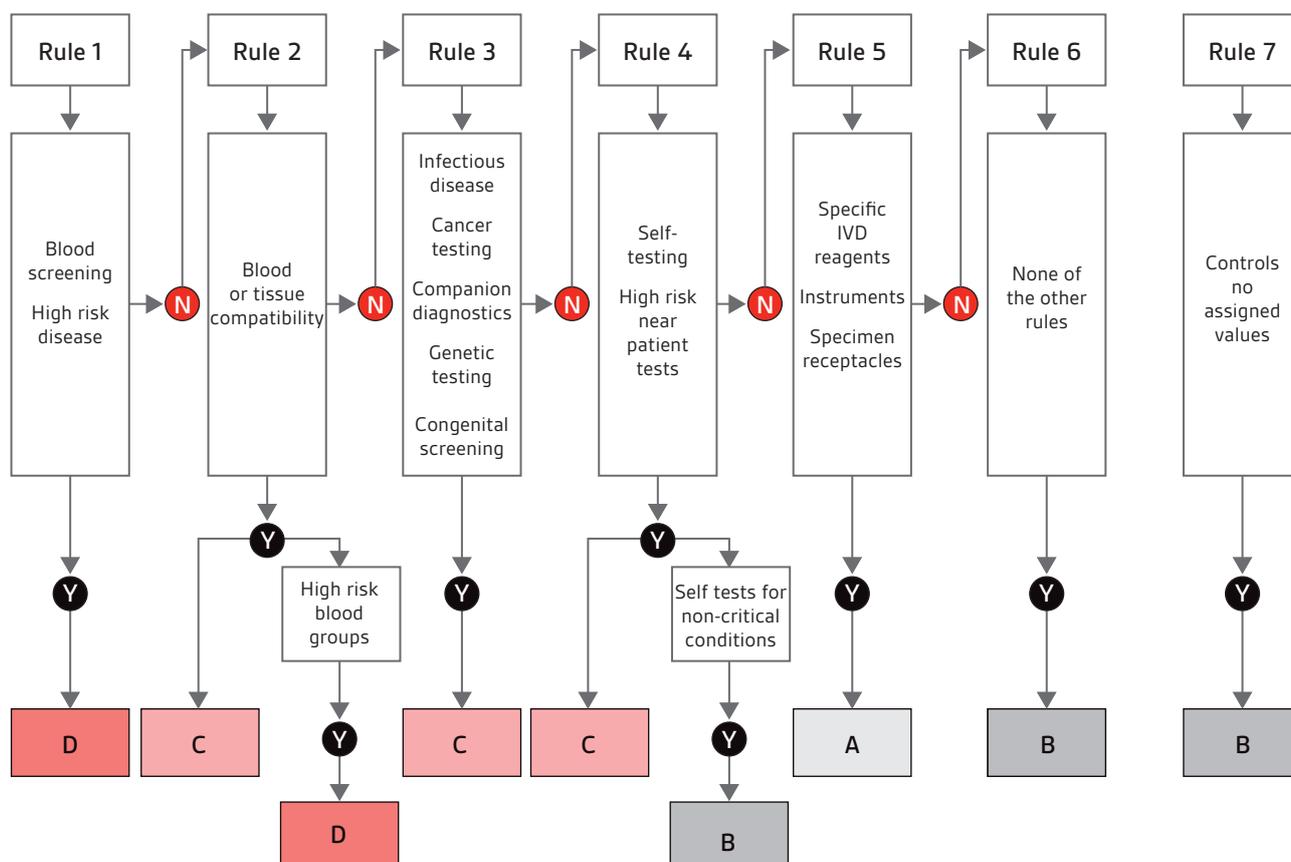
9 EN ISO 14155:2011 *Clinical investigation of medical devices for human subjects – Good clinical practice*

The new regulations concerning in vitro diagnostics

The IVDR shares the majority of its new features with the MDR proposal. There is so much overlap that the Commission considered integrating the proposals into one text, but decided against it because of the different nature of the devices concerned. Apart from the new elements shared with the MDR proposal, like the new supply chain regime and a central database EUDAMED, there are four major developments in the IVD field:

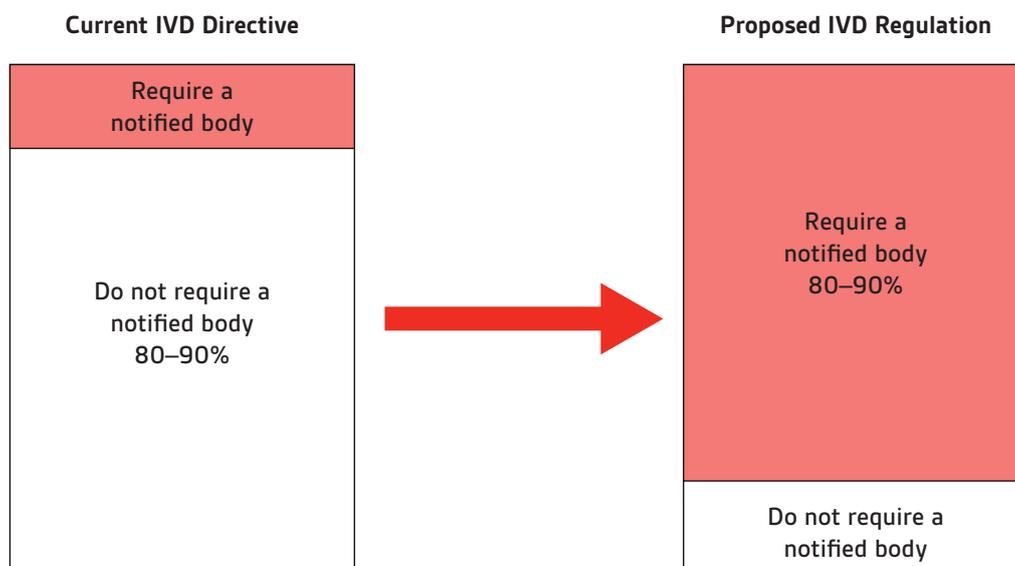
1. It is likely that the scope of the concept of in vitro diagnostic devices will be extended considerably to cover 'lifestyle tests' by including the elements of 'indirect medical purpose' and 'prediction' in the definition. This is a direct consequence of seeking to include 'nutrigenetic tests and lifestyle tests', which are not covered by the current IVD Directive. According to the EP's explanation, these 'may have at least indirectly very severe consequences to people's health' because they can pose a 'severe health threat if the test is not really of high quality and does not deliver the results it claims'.¹¹ However, the very imprecise criterion of 'indirect medical purpose' is expected to cause significant borderline problems with general health related tests.
2. IVDs will no longer be subject to the list-based system currently in the IVD Directive but to the risk classes developed by the Global Harmonization Task Force (GHTF), dividing the landscape of IVDs into risk classes A (low risk) to D (high public and high patient risk) with seven classification rules (see Figure 2).
3. Connected with the introduction of the risk classification, there is the adaptation to the conformity assessment route for IVDs that do not fit any of the other classification rules. Under the IVD Directives such IVDs fall into the category that can be self-certified, but under the IVD Regulation these IVDs will need to be certified by a notified body because they end up in class B rather than A (see Figure 2 – Risk classification). Combined with the new risk

Figure 2 – Risk classification



¹⁰ The concept of micro-enterprises is defined by Commission Recommendation 2003/361/EC, OJ 2003 L 124/36; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF>

Figure 3 – Quantum leap of IVDs needing notified body certification



classification methodology this will lead to a quantum leap increase of IVDs that require notified body certification compared to the current situation (see Figure 3).

4. Clinical performance studies will be required: IVD manufacturers will be required to produce significantly more clinical evidence for their IVDs. The IVD Regulation will provide for a regime regulating the conduct of interventional clinical performance studies and other clinical performance studies where the conduct of the study, including specimen collection, involves invasive procedures or other risks for the subjects of the studies. The regulation of clinical performance studies largely overlaps with the clinical studies regime in the MDR proposal.

With a view to generating the clinical evidence, manufacturers of IVDs currently on the market have to plan well, as the transitional period of five years for IVDs already on the market proposed by the Commission may well be shortened to three years following an EP proposal. In these three years, the manufacturer needs to complete the required clinical studies and conformity assessment by their notified body.

Manufacturers with IVDs on the market should assess what clinical evidence will likely be required, how long it will take to generate this and plan ahead for notified body slots for conformity assessment.

The increasing requirement for vigilance and market surveillance

As a prelude to the regulations and prompted by the European Commission's Joint Immediate Action Plan to deal with shortcomings in market supervision,¹² competent authorities have already started to increase their market surveillance activities. The proposals will introduce the following:

1. Incorporation of the vigilance system as described in MEDDEV 2.12 Rev. 8 in regulations, including definitions such as 'incident', but will also introduce new concepts such as 'serious incident' and 'withdrawal'. The proposals contain very prescriptive rules for the manufacturer's post market surveillance system, periodic safety update reports and trend reporting.
2. Vigilance reporting of serious incidents and corrective actions in an EU portal that is part of the overall European Databank on Medical Devices (Eudamed) system. The portal will automatically forward the information to the national authorities concerned. The EP would like to give the public and healthcare professionals a degree of access to the vigilance and market surveillance activities logged in the database, for example to compare vigilance

11 Report on the proposal for a regulation of the European Parliament and of the Council on in vitro diagnostic medical devices, A7-0327/2013, (COM(2012)0541 – C7-0317/2012 – 2012/0267(COD)), p. 195;
<http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A7-2013-0327&language=EN>

data on different devices. Also, the EP has proposed that manufacturers must report any incident, which will be a lot of extra work for manufacturers. Also, the authorities must evaluate all these reported incidents, and, if the EP proposal is adopted, involve patients' and healthcare professionals' stakeholder groups. The member states will need to dedicate significantly more resources than they currently do for evaluation of reported incidents. The question is whether the member states will be able to free up the resources for this.

3. Under the partial general approach reached by the Council, the manufacturer shall prepare a periodic safety update report (PSUR) per device and where relevant per category or group of devices, summarizing the results and conclusions of the analyses of the gathered post-market surveillance data together with a rationale and description of any preventive and corrective actions taken. These PSURs will be under surveillance by the notified body for the relevant products covered by their certificates, as well as by authorities in their market surveillance activities.
4. A coordinating authority will evaluate the same or similar incidents that have occurred, or where a corrective action has to be taken, in more than one member state. Under the current MEDDEV, a manufacturer may request this, but in practice member states are reluctant to cooperate under the supervision of a coordinating authority.
5. Member states will be obliged to coordinate their enforcement activities and draw up 'strategic surveillance plans' covering their planned surveillance activities to be integrated in the European Market Surveillance Plan; the Commission may recommend changes to the plans. The member states will cooperate using the electronic system on market surveillance provided by the Commission.
6. A binding procedure will be set up for dealing with non-compliant and compliant devices, both in national and cross-border situations. The Commission will function as an arbitrator between member states with respect to provisional measures taken.

The provisions on market surveillance certainly have the advantage that there will be EU-established binding standard procedures. On the other hand, it is expected that many member states will not be able to commit the resources that the implementation of the vigilance and market surveillance procedures will require. These provisions will only work if medical devices market surveillance becomes more of a (political) priority at member state level. Companies will need to review their internal vigilance and post-market surveillance processes to prepare to scale for the increased reporting requirements.

Supply chain regulation

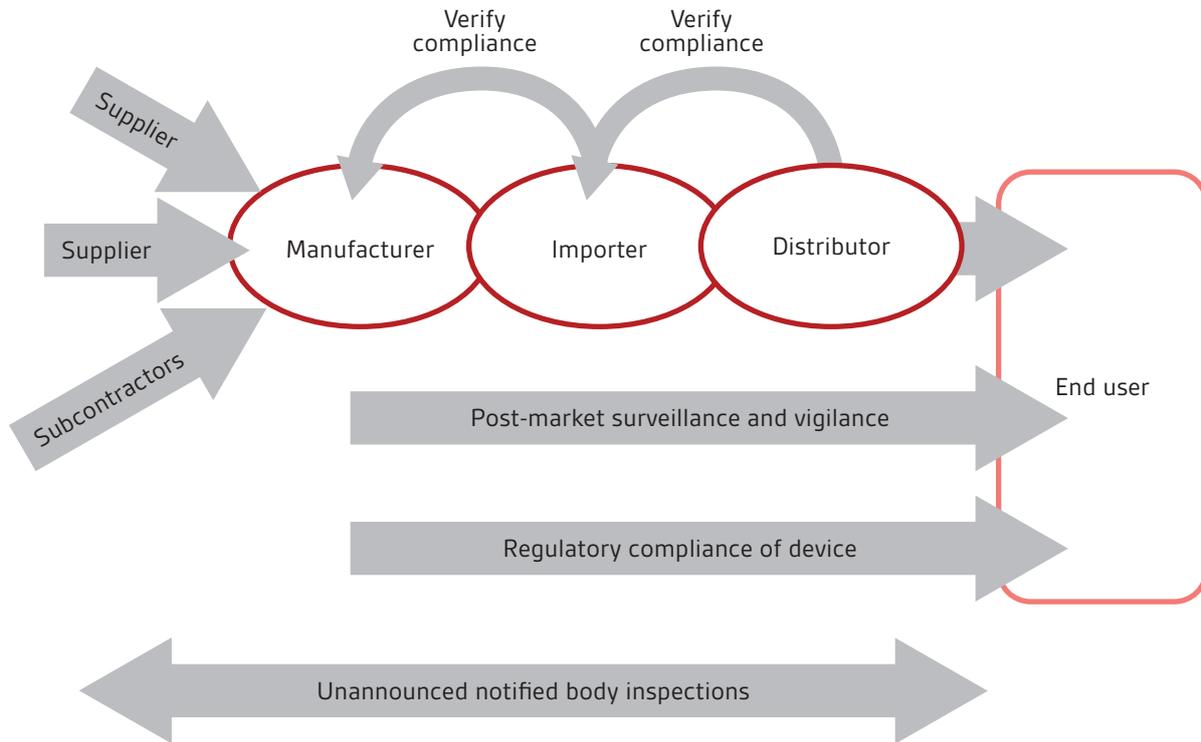
The MDR and IVDR will feature a new supply chain control regime according to the method set out in EU decision 768/2008 regarding New Approach regulation and follows several product areas that were already updated to this method. This new method introduces the following important changes compared to the current situation, which requires companies to amend supply and distribution related Standard Operating Procedures (SOPs) and contracts:

1. Each actor in the supply chain downstream from the manufacturer must independently verify compliance of the previous actor.
2. Each actor becomes responsible for implementing vigilance, notifying authorities of non-compliant devices and taking corrective action if required (see Figure 4). As a result, the current responsibilities in the supply chain for medical devices will change considerably, and companies will need to reflect this in their distribution contracts.
3. Manufacturer contracts need to be amended to account for the possibility of an unannounced audit at critical subcontractors and crucial suppliers.¹³
4. All economic operators must be able to identify as a matter of traceability (a) to whom they have supplied a device; (b) any economic operator who has supplied them with a device; (c) any health institution or healthcare professional to whom they have supplied a device. They must have this information available for a period of at least five years after the last device covered by the Declaration of Conformity has been placed on the market.

Unique device identifier (UDI) will be introduced and the importer will be responsible for ensuring that the device is assigned a UDI by the manufacturer. Currently the MDR and IVDR do not contain much more than placeholders that allow the Commission to set up an entity that will operate assignment of UDIs in accordance with yet to be defined

¹² http://europa.eu/rapid/press-release_IP-13-854_en.htm

Figure 4 – Supply chain compliance dependencies



standards and adopt delegated acts to regulate details of the system. The system will be phased in gradually, highest risk devices first. In the Council's proposal additional emphasis is placed on ensuring that the EU system under development will be compatible with other UDI systems that are being developed, such as the FDA's and those of several EU member states. Three specific systems have been mentioned specifically. UDI as a topic has been covered in another BSI white paper, *What you need to know about the FDA's UDI system final rule*, which can be found here: <http://www.bsigroup.com/en-GB/our-services/medical-device-services/BSI-Medical-Devices-Whitepapers/>.

A look at the future

If the MDR will be in force for approximately 25 years plus, like its current predecessors, future-proofing is an important issue. Just look at the rapid development of medical devices during the life span of the current rules since 1990! In our view, the MDR proposal is too much focused on regulating 'traditional' medical devices and not well enough equipped to deal with new technological developments. While the MDR and IVDR proposals address 'devices as service' provided via the internet succinctly, software related issues such as compatibility, interfacing standards and security are not addressed in any detail.

Rapid developments in 3D printing make it possible to print custom-made devices such as orthopaedic implants and artificial veins; yet, the MDR proposal's explanation states that while

'manufacturers of medical devices for an individual patient, so called 'custom-made devices', must ensure that their devices are safe and perform as intended, [...] their regulatory burden remains low.'¹⁴

The EU legislator still seems to regard custom-made devices as a low-risk business. Or, possibly, the expectation is that for any device, design related risks are automatically controlled by the fact that the device is made in accordance with the specifications in the prescription.

¹³ These requirements are set out in the Recommendation on unannounced audits, Annex III (Commission Recommendation of 24 September 2013 on the audits and assessments performed by notified bodies in the field of medical devices, OJ 2014 L253/27); <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0473&qid=1396003043182&from=EN>

not allow grandfathering, and therefore all devices currently on the market will need to be re-evaluated and certified under the new regulations when the existing certificate under the current directives expires. Certificates issued after the entry into force of the new regulation will be valid until two years after the date of entry into force. This means that manufacturers will need to carefully plan ahead for the transitioning of their devices to new certificates. Where this involves their notified body, they should discuss and plan notified body capacity well ahead in order to avoid certificates expiring and having to take devices off the market until a new certificate can be obtained.

The trilogue debates might focus on the grandfathering as well as the 3 versus 5 year transition phase for MDR and IVDR respectively, so some reduction in burden might still be introduced in a last phase.

What needs to be done and when?

What will companies need to do, and when? All companies must plan and prepare for the new rules because EU law does not allow grandfathering of devices, so every device must have been certified under the new rules in the transitional time frames provided. This means that companies must:

1. Invest in qualified persons to function as 'person responsible for regulatory compliance', or appoint qualified persons already in their organization, who may need additional training for the tasks required of that person.
2. Plan and budget for the changes. This will not only involve internal analysis of technical documentation, quality system, SOPs and amendment of contracts, but also making a gap analysis and drawing up of a transition plan for all devices on the market. Companies will need to take into account that notified body slots for conformity assessment will be scarce during the transitional period. Not having obtained a certificate under the new rules before the end of the transitional period will mean taking the product off the market until a certificate is obtained.
3. Identify what (additional) clinical data will be required for their medical device or IVD and start to generate that data. Waiting until the transitional period starts may well put the manufacturer in a squeeze if the clinical evidence is not available in time for conformity assessment by the notified body, and they may need to take the device off the market until a new certificate has been granted.

BSI is grateful for the help of the following people in the development of the white paper series.

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Leo's firm specializes in helping clients through product safety, international regulatory and quality system processes. Leo is a Notified Body Auditor for NEMKO (previously for NSAI & TÜV PS). Leo is the convener of IEC SC62D JWG9 (IEC/ISO80601-2-58) and a committee member of US TAG for TC62, SC62A and SC62D. Leo is a registered professional engineer in safety and has 28 years' experience in product safety. Leo is a member of RAPS, AAMI, ASQ, and IEEE. He is manager of the LinkedIn discussion group IEC 60601 Series – Medical Electrical Equipment.

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As a clinical trials coordinator for the UK's North West Thames Health Authority, a researcher for the Medical Research Council and independent consultant and lecturer, Duncan has been guiding medical device companies and their products through the clinical trial process and on to subsequent reimbursement approval in the major European markets for almost 20 years. He has written two reports on conducting medical device clinical trials for PJB Publications, and two courses for Informa Healthcare.

Navin Nauth-Misir, Regulatory Affairs Professional

Navin is Director of RA and QA for an IVD company in Wiltshire. He has 30 years' experience with medical devices and IVDs starting in the NHS. Navin worked for the UK Competent Authority investigating incidents involving critical care devices and IVDs and also as a compliance inspector. He moved to a global medical devices manufacturer where he was responsible for Quality Assurance, Regulatory Affairs and international product registration. Navin is a member of the Regulatory Affairs Professional Society (RAPS) and is also involved in the development of national and international standards. He has considerable experience working with national and European trade associations.

Mike Schmidt, Principal Consultant and Owner of Strategic Device Compliance Services (www.devicecompliance.com)

Mike is a Visiting Lecturer/Honorary Academic for the Medical Device Design Master's Degree Program at the University of Auckland, New Zealand, has held the position of Secretary for IEC Subcommittee 62D since 1997 and has been a technical expert and working group convenor in the IEC since 1992. Mr Schmidt is currently the Co-Chair of the AAMI Electrical Safety Committee.

Amie Smirthwaite, Scheme Manager and Product Technical Specialist, BSI Healthcare

Amie is a Product Technical Specialist and Scheme Manager with BSI Healthcare. She has been a notified body technical reviewer for 10 years, and has previously worked in both new product development and blue skies research related to orthopaedic and cardiovascular devices, and tissue engineering. She is involved in a number of medical device standards and regulatory committees, covering mechanical testing, clinical data requirements and post-market surveillance. She also delivers medical devices training for BSI, and has developed and co-authored courses in Clinical Evaluation, Risk Management (ISO 14971), Technical File Documentation, and Post-market Surveillance and Vigilance.

Published white papers

Generating Clinical Evaluation Reports – A Guide to Effectively Analysing Medical Device Safety and Performance, Hassan Achakri, Peter Fennema and Itofo Udofia

Effective Post-market Surveillance – Understanding and Conducting Vigilance and Post-market Clinical Follow-up, Ibim Tariah and Rebecca Pine

What You Need to Know About the FDA's UDI System Final Rule, Jay Crowley and Amy Fowler

Engaging Stakeholders in the Home Medical Device Market: Delivering Personalized and Integrated Care, Kristin Bayer, Laura Mitchell, Sharmila Gardner and Rebecca Pine

Negotiating the Innovation and Regulatory Conundrum, Mike Schmidt and Jon Sherman

The Growing Role of Human Factors and Usability Engineering for Medical Devices: What's Required in the New Regulatory Landscape? Bob North

ISO 13485: The Proposed Changes and What they Mean For You, Bill Enos and Mark Swanson

Forthcoming papers (working titles)

The Differences between ISO 9001 and ISO 13485

Sterilization Practices in Response to Device Innovation

How to Best Prepare for and Implement the Upcoming MDR/IVDR – Dos and Don'ts

Getting your Clinical Data: Away from Clinical Equivalence in Europe

The Future of Standards in Europe – Harmonization and other Recognitions of Standards

Global Regulatory Requirements

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BSI is keen to hear your views on this paper, or for further information please contact us here: julia.helmsley@bsigroup.com

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