British Orthopaedic Association

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Registered Charity No. 1066994
Company Registration No.3482958

BOA Position statement on Medical Device Regulation from 2020

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Executive Summary

On 26th May 2017, the Medical Devices Regulation (MDR 2017/745) was published, with the aim of replacing the current Medical Devices Directive (MDD 93/43/EC). Following a transition period of 3 years, this regulation will be applied in full from 26th May 2020.

This position statement from the BOA is;

(a) written with the intention that regulators consider it while developing MDR implementing/delegating acts.

(b) designed for Notified Bodies' clinicians and/or Expert Panels consideration when reviewing manufacturers' Technical Documentation.

The BOA recognises the ongoing necessity for the increased rigour in pre-market evaluation, certification and post-market surveillance of new devices, and welcomes the reduction in risk to patients that the MDR should bring. We also highlight potential problems with the implementation of the new regulation, and make recommendations for the handling of some of the issues that could arise.

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1) What will change under the MDR?

Many of those reading this document will be aware of the background to the MDR and we do not cover this in great detail as information is widely available online; instead we simply provide a high level overview for the benefit of those not familiar with the background.

Among the many changes, the MDR is intended to harmonise a number of clinical investigation regimens, add rigour to the certification process for both existing and new medical devices and create a more robust Post-Marketing Surveillance environment.

For the first time it will be mandated that device specific information be given to patients at the time of implantation. This will be through physical 'Patient Cards' and 'Information for Patients' (IFP), as well as additional supporting online documentation. This will be provided by manufacturers alongside their existing 'Instructions for Use' (IFU), but must be disseminated by hospitals (Appendix 1).

As with the MDD, the MDR will aim to ensure that products are fully evaluated from a safety and performance perspective through independent review of specific Technical Documentation. Review of the Technical Documentation will include data on safety, performance, and clinical claims and whether the IFUs are appropriate and current. Where the MDR differs from MDD is that requirements for Technical Documentation are more stringent in their requirements for clinical evidence. These requirements will apply to all existing devices as well as those which are newly introduced.

2) The BOA Position

The BOA welcomes the drive to improve the rigour and regulation of novel devices and procedures for the benefit of patients, whilst also seeing that this must be finely balanced in order to support and not unduly stifle innovation. The BOA has collaborated with the MHRA to monitor the performance of implants creating the Orthopaedic Data Evaluation Panel (ODEP), on the

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recommendation of NICE, in 2002 and Beyond Compliance in 2014. ODEP evaluates data on hip replacements (from 2002), knee replacements (from 2015), shoulder replacements (from 2017) and now spinal prostheses. Beyond Compliance monitors the early performance of new or modified implants and allows for a stepwise introduction of implantable medical devices.

However, there is a vast difference in the situation with historical procedures and implants that have shown their efficacy time and again in many patients. We are concerned that the application of the same rigour in gathering an evidence base, mandated by MDR, with existing or 'legacy' devices that many patients have benefitted from, would not be commercially viable. As such these legacy devices will struggle to demonstrate compliance with the new requirements. Introducing higher requirements than currently exist for legacy devices could potentially have serious implications for creating patient harm either through removal of well-established devices, or significant cost implication for their continued use.

In this document, we start by outlining our particular concerns (section a) and follow this with a set of principles and recommendations (section b), with some additional information available as an appendix.

a. BOA Concerns

We have grouped our concerns under several headings: 'legacy devices' (the most significant issue we have identified), along with some broader comments about 'Regulation of different types of device', 'Value of registry data in evaluating devices' and 'Long term monitoring'.

i. Legacy devices

We have four specific areas of concern regarding legacy devices as follows:

1. The necessity to generate new clinical data, either through investigation or evaluation, for existing legacy devices. For well-established devices, this could be a costly and futile

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exercise. Additional studies that have no clear benefit for patients would be ethically questionable.

2. The removal of legacy devices from the market either permanently or for a period while the clinical evidence is addressed has the potential to restrict patients from receiving medical devices that would benefit them. There is a risk where highly effective devices are removed from the market that there may either be no, or less effective, alternatives.

3. There is a commercial reality that companies are likely to prioritise establishing appropriate technical and clinical data for the new devices rather than for existing devices, in order to recoup their investment in them. Such prioritisation will also be driven by the implementation process in which newer devices are being regulated first, with longer timescales for the legacy devices.

4. The increased investment in the newer devices could mean that costs of those devices become greater. Purchasers of implants, such as the NHS, may in due course find not only that existing legacy products are no longer available but that newer alternatives are much more expensive. It is also possible that additional investment by companies in legacy devices could also increase their cost.

ODEP produces ratings on legacy primary hip, knee, and shoulder prostheses and may provide sufficient evidence to allow companies to comply with the MDR, if they wish.

ii. Regulation of different types of device

The clinical need for devices makes their regulation different depending on their purpose. Some devices are intended to function permanently, throughout the patients' lifetime. Some are temporary allowing the body to heal and take over the function of the device completely. The character of these devices will be different. As a consequence, their regulation needs to take that reality into account.

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Trauma and Orthopaedic implants and procedures fall into a number of groups that must be considered separately with regards to the MDR legislation. Supporting information for these can be found in Appendix 2.

- Bespoke procedures, eg paediatric and limb reconstruction, complex revision arthroplasty
- Utility implants (well established technology/ procedures), eg K wires, generic plates, screws, etc.
- Current state-of-the-art procedures that may not be cost-effective or ethical to study, eg revision with primary implant
- New devices

We are concerned that failure to recognise these differing needs has the potential of removing important and clinically relevant indications from implants "Instructions for Use'. This is likely to have significant consequences for the orthopaedic surgeon, who if they use them will be using these 'state-of-the-art' devices 'off-label'. Thus the MDR, by potentially forcing the surgeon to use less efficacious/ higher risk surgical options, will result in an inadvertent increased risk to these patients.

iii. Value of registry data in evaluating devices

The orthopaedic community has long recognised the value of prospective registry data as a valuable source of evidence of safety and performance on a large scale. This level of real-world data and evidence is equivalent to high level research once large volume, complete data sets are available such as those seen in the National Joint Registry (NJR) and the National Hip Fracture Database (NHFD). This evidence supports the use of many devices and procedures such as the hemi-arthroplasty in hip fractures (Appendix 2).

The International Society of Arthroplasty Registries has suggested that large volume comprehensive data exists in support of many legacy devices. The ODEP process has allowed submission of data from ISAR recognised registers to create the rating for implants at 3,5,7, 10 and 13 years. We would

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recommend recognition of this evidence in the assessment of such devices, at an early stage. Development of implant specific tracking as proposed will further aid this data quality.

The NJR and NHFD are both major datasets in the UK, and there are several other emerging registries in this country, including the British Spine Registry and the Bone and Joint Infection Registry among others.

iv. Long-term monitoring

Consistency and reliability of devices must be monitored long-term. Changes in manufacturing and supply of existing devices leads to potential issues of quality assurance, and this cannot be monitored by the clinical teams.

Many orthopaedic devices, eg fixation plates, (see Appendix 2) are generic and have uses across multiple pathologies and the need for post market surveillance studies of equivalent rigour and timescales as a joint registry does not seem to be under consideration.

The BOA believes there is a need for independent scrutiny of quality prior to implantation rather than a reactive response to identified failures. It is proposed that this be undertaken by the existing MHRA in the UK, but this would require significant additional resource.

b. BOA Principles and Recommendations

1. Regulators should recognise the possibility that implant companies responsible for legacy devices that are known to be highly effective could choose not to undertake the process of providing additional evidence in order to be compliant (eg for cost reasons). There should also be recognition of the risk that highly effective devices may be removed from market simply on the basis that 'no-one has got around to looking at the data' and the potential for delays in these devices achieving the new standards.

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2. We recommend that there should be a rapid identification of clinicians of genuine expertise to be involved and facilitate the process of review, particularly for such historical devices.
3. A method should be identified to monitor post-market surveillance of non-arthroplasty devices as there are no current registries for the majority of these devices
4. The BOA would like to highlight a number of clinical statements, and to make recommendations on those procedures using legacy devices, which are considered 'state-of-the-art', rendering the provision of new evidence through clinical studies unnecessary and potentially harmful (see Appendix 2). It is understood and supported by the BOA, however, that clinical studies must be designed to provide scientifically and ethically relevant data [1,2].
5. It should also be recognised that conducting clinical investigations which do not generate relevant clinical data may not be in the interests of patients, and alternatives should be carefully considered by all stakeholders.
6. With respect to legacy devices, in particular non-arthroplasty devices, there is an urgent need to establish the present gold standard legacy device that new devices should be measured against. Obtaining very specific expert clinical opinion on this matter should be a priority for regulators.
7. Although the MDR will inevitably lead to an increase in the number of clinical studies to substantiate clinical evidence, in the BOA's opinion, the initiation of clinical studies that lack sufficient scientific relevance needs to be challenged from an ethical standpoint.
8. The majority of Randomised Control Trials (RCT) have by necessity short-term outcome measures. Due to the long-term nature of many orthopaedic procedures, and the age demographic treated, the loss of follow up patients to death by other causes can exceed the measured difference between treatment groups. For patients' safety and benefit, it is therefore highly recommended that Regulators and Notified Bodies proactively seek advice

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from clinicians and healthcare professionals in order to align the regulatory requirements to the specific clinical conditions in question.

9. The BOA is very concerned that the MDR could result in forcing the surgeon to use less efficacious/ higher risk surgical options, and that this will result in an inadvertent increased risk to these patients. The BOA is keen to be able to highlight these instances to the regulators, Notified Bodies', clinicians and/or Expert Panels reviewing manufacturers' Technical Documentation in order that patients are not put at any additional risk because of the MDR.
10. The need for ongoing post market surveillance is paramount and needs to be in place for all types of device, not just those where registries exist such as the National Joint Registry. This process must become proactive, rather than reactive to emerging risk with the potential for already damaged patients.

Overall the BOA is keen to ensure that the well-intended attempt to protect patients from risk generated by newer implants does not lead to increased risk through the loss of legacy devices or the simple lack of any regulated devices to deliver well established procedures where the implants are generic but are mechanically and biologically known to be sound.

We welcome the opportunity to work with regulatory bodies and other stakeholders on these important issues.

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References

1. World Medical Association (2013) WMA Declaration of Helsinki. Ethical principles for medical research involving human subjects. 64th WMA General Assembly, . Fortaleza, Brazil

2. European Committee for Standardization (2011) Clinical investigation of medical devices for human subjects — Good clinical practice (ISO 14155:2011).

3. ODEP – www.odep.org.uk

4. BC www.beyondcompliance.org.uk

Appendices

Appendix 1

Patient Cards & Information for Patients (IFP) Documents

The EU MDR contains a requirement for manufacturers to provide information directly to patients concerning the implants they receive. There are some exceptions listed in the EU MDR but all other devices, including partial and total joint replacements, will need to comply with this requirement. The current list of exempted implantable devices is contained in Article 52.4 of the EU MDR and includes:

- Sutures
- Staples
- Dental fillings
- Dental braces
- Tooth crowns
- Screws
- Wedges
- Plates
- Wires

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- Pins
- Clips
- Connectors

The requirement has two elements – a physical card provided to the patient by the hospital or other medical setting, and additional information for the patient, which manufacturers will provide electronically via the eLabeling system.

First, manufacturers need to provide a physical card with the device itself. This is also a two part process. Manufacturers will have a pre-printed card containing all of the static information that will be distributed directly to the hospitals though their distribution network. The boxes of these cards will also contain an instruction document for the hospital explaining how to apply the label mentioned below and fill in the other required information. Secondly, there will be an additional label included in applicable devices that contains the implant specific information that will be applied to the static card and given to the patient in the hospital. Each card will be designed to accommodate up to 3 labels.

Static information on the pre-printed Card:

- Manufactures Name
- Manufacturers Address
- Manufacturers Website
- URL for further information (as noted below)

Variable information to be contained on the Patient Card Label:

- Device name

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- Serial or Lot number
- UDI number
- Device Model

It is the responsibility of the hospital, as noted in the EU MDR, to supply this card to the patient at the time of service.

Additional information will be provided directly to the patient through "Information for Patient" (IFP) documents, which will be compiled, managed and controlled utilising systems for IFU creation and management. These IFP documents must be written in layman terms, and will include the rest of the information laid out in Article 18. They are intended to be provided to the patient though a patient facing portal on the eLabeling website as noted above.

Information to be included in the IFP includes:

- Any Warnings, precautions or measures to be taken by the patient or a healthcare professional with regard to reciprocal interference with reasonably foreseeable external influences, medical examination or environmental conditions.
- The expected lifetime of the device and necessary follow-up.
- Information to ensure safe use of the device by the patient – including the overall qualitative and quantitative information on the materials and substances to which patients can be exposed.

Appendix 2

Current state-of-the-art procedures

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Within Orthopaedics there are multiple examples of well-established 'state-of-the-art' uses of implants and devices for non-original indications. This appendix lays out examples of these but is not designed to be a fully comprehensive list.

Trauma and reconstructive surgery

The use of many implants in trauma and reconstructive surgery can be very different to the situation in orthopaedic arthroplasty surgery. Where the injury or reconstructive procedure may 'heal', the patient may have a limited period of dependence upon the implant, such as in the case of a fracture fixation plate or the fusion of joints in the foot. Here the patient is no longer dependent on the implant once the bone has united. This is not the case with a joint arthroplasty which must function in perpetuity. As a consequence, implants used for trauma or reconstruction surgery have a relatively short functional or therapeutic period, followed by a much longer indwelling but non-therapeutic period and should reasonably be assessed in this way. This is clearly also very different from devices outside orthopaedics such cardiac pacemakers.

The use of legacy devices such as K wires, generic plates and screws is widespread in trauma and reconstructive surgery. They are used in a diverse range of procedures, making it potentially meaningless as well as cost ineffective to gather data on such legacy implants. Moreover, the immediacy and variability of trauma means that to complete a procedure it is often necessary to modify intra-operative technique and equipment. To some extent this also applies to reconstructive planned surgery where the variations of local pathology may require a number of different implants. This flexibility of technique and hardware is difficult to test but important in managing the individual patient.

In arthroplasty for trauma the situation may well be different than in the elective setting and consideration as to the objectives of implant evaluation should be born in mind.

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Hip Hemiarthroplasty is a well-established state-of-the-art surgical procedure in which only a hip stem and ball head are implanted. In elderly patients with femoral neck fracture, hemiarthroplasty is an optional treatment modality that takes less operative time, less blood loss peri-operatively and fewer complications post-operatively. The procedure is typically performed in elderly, frail and vulnerable patients – the good evidence of the efficacy of an intervention in this group is taken to be mortality at 30 days and one year and functional outcome at 4 months. Consistency, reliability and cost-effectiveness for the whole patient group being more important than the 10-year survival of a prosthesis. This population is difficult to follow-up over a longer period of time, as the life expectancy in this patient group is usually limited by advanced age and the high prevalence of concomitant co-morbidities. In such cases, it is legitimate to question whether it is necessary to expose a vulnerable population to the burden of long-term clinical studies, or whether inferences on the performance of the devices (hip stem and ball head) in this patient population can be generalized from other indications (primary total hip arthroplasty).

Other examples of 'state-of-the-art-use' of arthroplasty implants include the use of shoulder hemiarthroplasty and "reverse" replacements for complex humeral head fractures. Whilst evidence is available as to the value of their use in these scenarios, it is not the primary indication, and large-scale trials are difficult due to the impact of large variations of the trauma experienced. With regard to proximal humeral fractures there are sufficient numbers to test the concept of hemiarthroplasty and reverse replacements but not specific implants. Similar examples but with even smaller numbers are the use of elbow replacement for non-reconstructable distal humeral injuries, proximal femoral replacement and modular hinged knee replacements for distal femoral fractures. In these instances, it has not even been possible to test the concept in properly powered studies, but there is little clinical doubt that that individual patients benefit from the extension of techniques proven in the elective setting to that of trauma.

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Specific Arthroplasty Issues Usage of primary implants in revision surgery*:* it is within accepted standard practice that primary implants may be used in revision surgery if the clinical scenario is not dissimilar to a primary setting (for example, good bone stock and good bone quality). In these circumstances it is reasonable to expect that clinical outcomes will be similar to those in a primary setting. Hence, the clinical data of one indication (primary) can be assumed to apply to the other one (ie early revision that is "primary-like" clinical condition).

Isolated liner exchange in revision surgery (ie THA, TKA): the isolated exchange of acetabular or tibial liners for hip/knee revision arthroplasty when the acetabular/tibial component is well fixed are well-practiced surgical procedures. In most clinical conditions, revising a well-fixed acetabular/tibial component is neither beneficial to the patient nor cost-effective. In such a situation, it is highly questionable whether clinical data for the revision indication of acetabular/tibial liners should be collected within the framework of a clinical study (when already available in the primary indication). Performing studies for which the answer to the research question (liner wear and performance) is already known lacks scientific relevance and is therefore questionable from an ethical point of view.