EXPLANATORY STATEMENT

Therapeutic Goods Act 1989
Therapeutic Goods (Charges) Act 1989

Therapeutic Goods Legislation Amendment (2019 Measures No.1) Regulations 2019

The object of the *Therapeutic Goods Act 1989* (the Act) is to establish and maintain a national system of controls for the quality, safety, efficacy and timely availability of therapeutic goods used in Australia or exported from Australia. The *Therapeutic Goods (Charges) Act 1989* (the Charges Act) imposes annual charges on the registration, listing and inclusion of therapeutic goods in the Australian Register of Therapeutic Goods, and on the licensing of therapeutic goods manufacturers. The Therapeutic Goods Administration (TGA), which is part of the Department of Health, is responsible for administering the Act.

Subsection 63(1) of the Act provides that the Governor-General may make regulations, not inconsistent with the Act, prescribing matters required or permitted to be prescribed by the Act or necessary or convenient to be prescribed for carrying out or giving effect to the Act. Amongst other matters, the regulations may prescribe fees in respect of matters under the Act or regulations made under it, and provide for the refund, reduction or waiving of such fees. Subsection 5(1) of the Charges Act provides that the Governor-General may make regulations not inconsistent with the Charges Act, prescribing the amounts of charges.

The principal purpose of the *Therapeutic Goods Legislation Amendment (2019 Measures No.1) Regulations 2019* (the Regulations) is to amend the *Therapeutic Goods (Medical Devices) Regulations 2002* (the MD Regulations) to support the implementation of recommendation 20 of the Expert Panel Review of Medicines and Medical Devices Regulation (the Review). Recommendation 20, agreed to by the Government as part of its Response to the Review, proposed the harmonisation, where possible, of the regulation of medical devices in Australia with that of the European Union (the EU).

The Regulations are designed to do this by reclassifying certain kinds of medical devices (e.g. spinal implantable medical devices like spinal disc replacements), to ensure that the level of pre-market scrutiny applied to applications for marketing approval for such products is commensurate with the risk they may pose to users, consistent with the EU.

The Regulations also make a number of other amendments, to the MD Regulations, and the *Therapeutic Goods Regulations 1990* (the TG Regulations), to:

- better address new and emerging technologies in medical devices that are or that utilise software, and personalised medical devices such as custom-made devices, to ensure such products are subjected to appropriate scrutiny and manufacturing standards;
- introduce a new, tailored regulatory framework for in vitro diagnostic medical devices that are companion diagnostics (these are principally pathology tests for identifying the presence or absence of biological features such as genes in order to determine whether a person is likely to benefit, or be at risk from, a particular medicine or biological);
- introduce a new, tailored regulatory framework for faecal microbiota transplant products (these are biologicals that comprise, contain or are derived from, human stool, and are used to repopulate a person's bowel with benevolent microorganisms, e.g. after use of antibiotics has affected such bacteria);

- introduce a new, more user-friendly format for consumer medicine information documents, to assist consumers to be aware of and understand important information about the safe use of prescription and registered over the counter medicines;
- encourage sponsors of prescription opioids to support their safe use, e.g. by introducing smaller pack sizes and reducing the class of persons for whom such products are suitable;
- a number of minor measures, including for example to exempt certain nappy rash products from the requirement to be entered in the Register.

Details of the Regulations are set out in Attachment A.

The Act specifies no conditions that need to be satisfied before the power to make the Regulations may be exercised. The Regulations are a legislative instrument for the purposes of the *Legislation Act 2003*.

The Regulations commence on various dates – the reclassification of medical devices, personalised devices and software commence on 25 August 2020, with most other measures commencing on 1 January 2020 or the day after registration.

Consultation

The TGA undertook extensive public and targeted consultation on the above significant measures. In particular, public consultation was held between January and March 2019 on active medical devices for therapy, spinal implantable medical devices and devices that are or that utilise software, and between March and April 2019 on personalised medical devices and the other reclassification matters.

In relation to the reclassification of medical devices, 48 submissions were received, including from industry representative bodies (e.g. the Medical Technology Association of Australia (MTAA) and AusBiotech Ltd), consumer advocacy bodies (e.g. the Consumers Health Forum of Australia (CHF) and Pain Australia) and healthcare professionals (e.g. the Australian Dental Industry Association), with a strong consensus in favour of the proposed alignment. Targeted consultations were held in June 2019 on spinal implantable medical devices and accessories to active implantable medical devices, and feedback incorporated into the proposed Regulations. In relation to software, 41 submissions were received, including from industry representative bodies (e.g. MTAA and the Medical Software Industry Association), sponsors and manufacturers (e.g. ResMed and Medtronic Australasia), CHF and healthcare professionals (e.g. the Australian Medical Association), with a strong consensus in support. Webinars, and two workshops, were held between June and September 2019, and feedback incorporated into the proposed Regulations. In relation to personalised medical devices, 25 submissions were received, with again a strong consensus for the proposed changes.

22 submissions were received between January and March 2019 on the new framework for human faecal microbiota transplant products, with the majority in favour of regulating these products as biologicals. Feedback was incorporated into the proposed Regulations, e.g. to only require higher risk products to be covered by a manufacturing licence. 23 submissions were received between October and December 2018 on the new framework for *in vitro* diagnostic medical devices that are companion diagnostics, with strong support for the proposed changes. 98 submissions were received between January and March 2018 on prescription opioids, with consistent support for the proposed reforms.

A regulation impact statement (RIS) was also prepared in respect of the amendments in the Regulations relating to personalised medical devices, and this RIS is set out at Attachment B.

Authority: Subsection 63(1) of the *Therapeutic Goods Act 1989*
Section 5 of the *Therapeutic Goods (Charges) Act 1989*

ATTACHMENT A

Details of the *Therapeutic Goods Legislation Amendment (2019 Measures No.1) Regulations 2019*

Section 1 – Name
This section provides for the Regulations to be referred to as the *Therapeutic Goods Legislation Amendment (2019 Measures No.1) Regulations 2019* (the Regulations).

Section 2 – Commencement
This section provides for the commencement of the Regulations on a number of different dates.

In particular, sections 1-4, Schedules 8 (fee waivers for certain requests relating to prescription opioids) and 10 (application, savings and transitional provisions) and Part 4 of Schedule 9 of the Regulations (other minor measures) commence the day after the Regulations are registered.

Schedules 1-3 (reclassification of medical devices, programmed and programmable medical devices or software that is a medical device and personalised medical devices) commence on 25 August 2020, and Schedule 4 (in vitro diagnostic medical devices that are companion diagnostics) commence on 1 February 2020.

Schedules 5 (faecal microbiota transplant products) and 7 (handling and testing of samples), and Parts 1-3 of Schedule 9 (fee waiver for requests to vary product information for medicine so that it complies with the approved form, clinical trials and nappy rash products) would commence on 1 January 2020, and Schedule 6 (consumer medicine information documents) commence on 1 January 2021.

Section 3 – Authority
This section provides that the Regulations are made under the *Therapeutic Goods Act 1989* (the Act) and under the *Therapeutic Goods (Charges) Act 1989*.

Section 4 – Schedules
This section provides that each instrument that is specified in a Schedule to this instrument is amended or repealed as set out in the applicable items in the Schedule concerned, and any other item in a Schedule to the Regulations has effect according to its terms.

Schedule 1 – Reclassification of medical devices

Introduction
Section 41DB of the Act provides that the regulations may specify classifications, to be known as medical device classifications, applying to medical devices or kinds of medical devices, and matters in relation to such classifications.

Medical device classifications, which are specified in the table in subregulation 3.1(1) of the MD Regulations and determined in accordance with Schedules 2 and 2A to the MD Regulations, signify the risk a device may pose to a user, and are relevant to a number of important elements of the regulatory scheme, e.g. the level of pre-market scrutiny required for an application for marketing approval and minimum procedures (such as implementing a quality management system or implementing design control in an existing quality management system) that must be followed by a manufacturer as part of demonstrating that the device they manufacture conform with the essential principles (these are minimum standards for safety, quality and performance for devices).

The measures in Schedule 1 support the implementation of recommendation 20 of the Review by reclassifying a number of kinds of devices to better align with their classification in the EU under Chapter III of Annex VIII of Regulation (EU) 2017/745 of the European Parliament and Council of Europe of 5 April 2017 (EU Regulation 2017/745) (this EU regulation is available for free at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R0745#d1e32-140-1).

This provides greater consistency in relation to the regulation of these devices with a key international market, and ensure the level of pre-market scrutiny applied to applications for marketing approval for such products is commensurate with the risk they may pose to users.

Part 1 – Spinal implantable medical devices

Therapeutic Goods (Medical Devices) Regulations 2002

Item 1– After paragraph 5.3(1)(b)
Regulation 5.3 of the *Therapeutic Goods (Medical Devices) Regulations 2002* (the MD Regulations) identifies a range of kinds of higher risk medical devices for the purposes of paragraph 41FH(1)(a) of the Act. The effect of inclusion in regulation 5.3 for a kind of device is that the Secretary must select for audit any application for marketing approval involving such a product.

This item amends regulation 5.3 to include a reference to a medical device that is a spinal fusion implantable device.

Examples of spinal fusion implantable devices are screws, cages, plates, hooks or rods that are intended to be used during spinal fusion surgical procedures.

Spinal fusion implantable devices are to be excluded from the scope of the new classification rule to be introduced by item 5 below, which classifies medical devices that are motion-preserving devices for the spine or devices that come into contact with a person's spinal column as Class III.

This means that spinal fusion implantable devices will continue to be classified as Class IIb, under the current classification rule in subclause 3.4(2) of Schedule 2 to the MD Regulations (for devices described in paragraph 3.4(1)(b) of Schedule 2).

However, although the classification of such products is not proposed to change, they are still important devices and are used during spinal fusion surgical procedures.

As such, and in order to ensure consistency, this item amends regulation 5.3 to ensure that the Secretary is required to select applications for the inclusion of spinal fusion implantable devices in the Register for audit.

The medical devices that will be the subject of the new classification rule to be introduced by item 5 below will also be required to be selected for audit, on the basis of the existing requirement in paragraph 5.3(1)(i) which refers, principally, to Class III devices.

This item, taken together with the changes that would be introduced by item 5, ensure that all applications for inclusion in the Australian Register of Therapeutic Goods (the Register) for spinal implantable medical devices will be subjected to such an audit.

These measures are to support the risk classification of such products by ensuring that the level of pre-market scrutiny applied to them is commensurate with the risk that they may pose to persons in whom they are implanted.

Items 2, 3 and 4 – Regulation 5.12 (heading and subregulation 5.12(1))
Regulation 5.12 of the MD Regulations provides that it is a condition of the inclusion of certain kinds of medical devices in the Register that the person in relation to whom the kind of device is included must give the Secretary a written notice if the person intends to import, supply or export such a kind of device but the entry in the Register for the kind of device does not include the product name of the device or information about the manufacturer's intended purpose of the device.

Item 2 makes a minor change to the heading for regulation 5.12, to reflect the amendment that would be introduced by item 3.

Item 3 amends regulation 5.12 of the MD Regulations to include a reference to spinal fusion implantable devices, in order to ensure that this condition would also apply to sponsors of such products.

Item 4 includes a note in regulation 5.12 to highlight that examples of spinal fusion implantable devices include screws, cages, plates, hooks or rods that are intended to be used during spinal fusion surgical procedures.

In practice, the condition in regulation 5.12 will only apply if the information in the entry in the Register for such a product is incomplete (this is because paragraph 5.12(2)(b) makes it clear that it only applies when the product name of a device to which regulation 5.12 applies, or information about the manufacturer's intended purpose for such a device, is not already in the Register).

Item 5 – Subclause 3.4(2) of Schedule 2
This item makes a minor amendment to subclause 3.4(2) of Schedule 2 to the MD Regulations, to reflect the amendment to be introduced by item 5 below.

Item 6 – After subclause 3.4(4A) of Schedule 2
Schedule 2 to the MD Regulations sets out the classification rules for medical devices other than in vitro diagnostic ("IVD") medical devices, for the purposes of subregulation 3.2(1) of the MD Regulations.

Schedule 2 to the MD Regulations does not currently contain a specific classification rule for medical devices that are intended by their manufacturer either to be a motion-preserving device in relation to the spine, or to come into contact with a person's spinal column.

Such products are principally currently covered by clause 3.4 of Schedule 2, which applies to surgically invasive medical devices that are intended for long-term use and implantable medical devices, with the classification of most such products being Class IIb. An example of such a device would be a spinal disc replacement.

Under rule 8 of Chapter III of Annex VIII of EU Regulation 2017/745, in Europe these kinds of medical devices are classified as Class III, if they are spinal disc replacement implants or are implantable devices that come into contact with the spinal column (with the exception of components such as screws, wedges, plates and instruments).

To align with this approach and to better ensure that the requirements under the regulatory scheme for such products are attuned to the risks they may pose, this item amends clause 3.4 of Schedule 2 to introduce a new classification rule for medical devices (other than spinal fusion implantable devices such as screws, cages, plates, hooks or wedges) that are intended by their manufacturer either to be a motion-preserving device in relation to the spine, or to come into contact with a person's spinal column.

Under the new rule, such devices will be classified as Class III medical devices.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register as Class IIb medical devices, or that are the subject of an application for marketing approval as a Class IIb device that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Part 2 – Active implantable medical devices

Therapeutic Goods (Medical Devices) Regulations 2002

Items 7 and 8, 13-18 and 20-32
These items make consequential amendments to regulations 1.6, 1.7, 3.6, 5.3, 5.10, 5.11, 8.1, clauses 1.1, 1.6, 1.9, 3.5, 3.6, 4.7 and 4.8 of Schedule 3, item 1.1 of Schedule 4, item 1.5 of Schedule 5 and a small number of definitions in the Dictionary, of the MD Regulations, to reflect the amendment to be made by items 8 and 18 below.

Item 9 – Subregulation 3.1(1) (table)
Under the table in subregulation 3.1(1) of the MD Regulations, the medical device classifications for medical devices other than IVD medical devices are Class I, Class IIa, Class IIb, Class III and Class AIMD.

This item replaces the current table in subregulation 3.1(1) with a new table that, principally, omits the classification of AIMD.

This measure, taken together with the amendment that would be introduced by item 17 below, is designed to better align the classification of medical devices (and in particular of active implantable medical devices, to which the classification of AIMD relates) in Australia with the approach in the EU under EU Regulation 2017/745.

Under EU Regulation 2017/745, medical devices are classified as Class I, Class IIa, Class IIb or Class III, with no Class AIMD.

Items 10-12 – Paragraphs 3.1(2)(a)-(c)
These items make minor amendments to paragraphs 3.1(2)(a) and (b) to reflect the introduction of a new table of medical device classifications by item 8 above, and repeal paragraph 3.1(2)(c) to reflect that the new table (as amended) would only contain 5 columns, not 7 as currently.

Item 19 – Subclause 5.7(1) of Schedule 2
Currently under subclause 5.7(1) of Schedule 2 to the MD Regulations, an active implantable medical device is classified as Class AIMD.

Active implantable medical devices are higher risk devices defined in the Dictionary to the MD Regulations as an active medical device (other than an implantable medical device) that is intended by its manufacturer to either be introduced wholly or partly into the body of a human being by surgical or medical intervention, or to be introduced into a natural orifice of a human being by medical intervention and to remain in place after the procedure.

Examples of such products include implantable cardiac pacemakers that are intended to restore or establish a normal heart beat when the heart beats too fast, too slow or at an irregular rhythm, and cochlear implants that are designed to stimulate the cochlear nerve.

As outlined above, under EU Regulation 2017/745 the EU does not have an AIMD medical device classification, and under rule 8 in Chapter III of Annex VIII of the EU regulation these kinds of medical devices are classified as Class III.

To align with this approach and to better ensure that the requirements under the regulatory scheme for such products are attuned to the risks they may pose, this item amends subclause 5.7(1) of Schedule 2, to make it clear that the classification of active implantable medical devices is Class III, rather than Class AIMD.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register as Class AIMD medical devices, or that are the subject of an application for marketing approval as a Class AIMD device that has not been finally determined, when these amendments commence, will have the benefit of a

transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Part 3 – Medical devices that administer medicines or biologicals by inhalation

Therapeutic Goods (Medical Devices) Regulations 2002

Item 33 – At the end of subclause 3.1(2) of Schedule 2

Schedule 2 to the MD Regulations does not currently contain a specific classification rule for medical devices that administer medicines or biologicals by inhalation.

Such products are principally currently covered by clause 3.1 of Schedule 2, which applies to invasive medical devices (other than surgically invasive medical devices) intended to be used to penetrate a body orifice of a person, with classifications varying from Class I to Class IIb.

Examples of such products include spacers that are intended to be attached to a metered dose inhaler to facilitate a better delivery of the medicine contained in the spacer, and nasal oxygen cannulas that deliver supplemental oxygen or increased airflow to a person.

Under rule 20 of Chapter III of Annex VIII of EU Regulation 2017/745, in Europe these kinds of medical devices are classified as Class IIa, unless their mode of action has an essential impact on the efficacy and safety of the administered medicinal product or they are intended to treat life-threatening conditions, in which case they are classified as Class IIb.

To align with this approach and to better ensure that the requirements under the regulatory scheme for such products are attuned to the risks they may pose, this item amends subclause 3.1 of Schedule 2, to introduce a new, specific classification rule for invasive medical devices (other than surgically invasive medical devices) that are intended to be used to penetrate a body orifice of a person and to administer medicines or biologicals by inhalation.

Under this new rule, a device of this kind will be classified as Class IIb if its mode of action has an essential impact on the efficacy and safety of the medicine or biological it administers, or if it is intended to treat a life-threatening condition, and as Class IIa in any other case.

It is important to note that the new classification rule for such products is a separate rule from, and is independent of, the classification rules in existing subclauses 3.1(2) and (3) of Schedule 2 to the MD Regulations, and will apply whether or not a device of the kind covered by the new rule is connected to an active medical device.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register with a different classification to that which would apply under the new rule (e.g. as a Class I medical device), or that are the subject of such an application for marketing approval that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Part 4 – Medical devices that are substances for introduction into the body

Therapeutic Goods (Medical Devices) Regulations 2002

Items 34, 35 and 38 – Clause 2.4 of Schedule 2, and Dictionary
Item 34 makes a minor change to the heading of clause 2.4 of Schedule 2 to the MD Regulations, to reflect the change that would be introduced by item 34.

Clause 2.4 of Schedule 2 to the MD Regulations applies to a non-invasive medical device that is intended by its manufacturer to be used in contact with injured skin, and sets out the classifications of such devices in subclauses 2.4(2)-(4).

Under Chapter I of Annex VIII of EU Regulation 2017/745, in Europe injured skin and injured mucous membrane are covered by a single defined term, which relates to an area of skin or mucous membrane that presents a pathological change or a change following a disease or wound.

Item 35 makes a minor change to subclause 2.4(1) to include a reference to mucous membrane alongside the existing reference to injured skin in subclause 2.4(1), for greater consistency with the EU approach.

Item 38 amends the Dictionary to the MD Regulations, to include a definition of 'injured skin or mucous membrane' that is intended to be consistent with the definition in Chapter I of Annex VIII of EU Regulation 2017/745.

Item 36 – Subparagraph 3.1(2)(c)(ii) of Schedule 2
Subclause 3.1 of Schedule 2 to the MD Regulations applies to an invasive medical device (other than a surgically invasive medical device) that is intended by its manufacturer to be used to penetrate a body orifice of a person.

Under subparagraph 3.1(2)(c)(ii) of Schedule 2, the classification of such a medical device is Class IIa if the device is intended to be used in oral cavity as far as the pharynx or in an ear canal up to the ear drum, or if it is intended to be used in a nasal cavity and is not liable to be absorbed by the mucous membrane.

This item makes a minor change to subparagraph 3.1(2)(c)(ii) to include a reference to skin alongside the existing reference to mucous membrane, for greater consistency with the EU approach.

Item 37 – At the end of clause 3.1 of Schedule 2
Schedule 2 to the MD Regulations does not currently contain a specific classification rule for medical devices that are composed of substances or combinations of substances that are intended by their manufacturer to be introduced into the human body through an orifice or applied to the skin, and absorbed by, or locally dispersed, in the human body after introduction or application.

Such products are principally currently covered by clause 3.1 of Schedule 2, which applies to invasive medical devices (other than surgically invasive medical devices) intended to be used to penetrate a body orifice of a person, with classifications varying from Class I to Class IIb.

Examples of such products include saline nasal solution sprays that are intended to penetrate, clean, clear and sometimes hydrate nasal passages and the sinus cavity, and orally administered weight loss capsules that are intended to facilitate weight loss and treat obesity through appetite control by forming a viscous gel in the stomach or small intestine to increase distention and create the sensation of fullness.

Under rule 21 of Chapter III of Annex VIII of EU Regulation 2017/745, in Europe these kinds of medical devices are classified as:

- Class III if, principally, they or their products of metabolism are systemically absorbed by the human body in order to achieve their intended purpose, or if they achieve their intended their purpose in the stomach or lower gastrointestinal tract and are systemically absorbed by the human body; or
- Class IIa if they are applied to the skin, in the nasal cavity or in the oral cavity as far as the pharynx; or
- Class IIb in any other case.

To align with this approach and to better ensure that the requirements under the regulatory scheme for such products are attuned to the risks they may pose, this item amends clause 3.1 of Schedule 2 to introduce a new, specific classification rule for devices composed of substances, or combinations of substances, that are intended to be introduced into the human body through an orifice or applied to the skin, and to be absorbed by, or locally dispersed, in the human body after introduction or application.

Under this new rule, a device of this kind will be classified as either Class III, Class IIa or Class IIb, consistent with rule 21 of Chapter III of Annex VIII of EU Regulation 2017/745, as outlined above.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register with a different classification to that which would apply under the new rule (e.g. as a Class I medical device), or that are the subject of such an application for marketing approval that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Part 5 – Active medical devices for therapy

Therapeutic Goods (Medical Devices) Regulations 2002

Item 39 – At the end of clause 4.2 of Schedule 2

Schedule 2 to the MD Regulations does not currently contain a specific classification rule for active medical devices for therapy that are intended by their manufacturer to have an integrated or incorporated diagnostic function that significantly determines patient management.

Such products are principally currently covered by clauses 4.2 and 4.3 of Schedule 2, which apply to active medical devices for therapy and active medical devices for diagnosis, with classifications of Class IIa or Class IIb depending on circumstances specified in those clauses.

Examples of such products include closed loop systems that are used to continuously monitor a person's biological conditions in real time and adjust a therapy in order to maintain or achieve a particular physiological state, and automated external defibrillators with an integrated diagnostic function. In such products this function is designed to analyse a person's cardiac arrhythmias and automatically or semi-automatically treat the patient by administering a controlled electric shock (defibrillation) to the person in order to re-establish a normal cardiac rhythm.

Under rule 22 of Chapter III of Annex VIII of EU Regulation 2017/745, in Europe these kinds of medical devices are classified as Class III medical devices.

To align with this approach and to better ensure that the requirements under the regulatory scheme for such products are attuned to the risks they may pose, this item amends clause 4.2 to introduce a new, specific classification rule for active medical devices for therapy that include a diagnostic function the purpose of which is to significantly determine patient management by the device.

Under this new rule, these kinds of devices will be classified as Class III.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register with a Class IIa or Class IIb classification, or that are the subject of such an application for marketing approval that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Part 6 – Medical devices in direct contact with the heart etc.

Therapeutic Goods (Medical Devices) Regulations 2002

Item 40 – Clause 1.1 of Schedule 2
This item makes a minor change to clause 1.1 of Schedule 2 to the MD Regulations, to reflect the change that would be introduced by item 40 below.

Item 41 – At the end of clause 1.1 of Schedule 2
Clause 1.1 of Schedule 2 to the MD Regulations sets out what is meant by a number of specified phrases relating to the length of use of a medical device that appear in Schedule 2.

For example, paragraph 1.1(a) explains that a medical device is intended to be "transient use" if its manufacturer intends the device to be used continuously for less than 60 seconds.

Each of these interpretations uses the term "used continuously", though this term is not defined or explained in the MD Regulations.

This item amends clause 1.1 of Schedule 2 to provide some clarity in this regard by explaining that, for the purposes of determining whether a medical device is intended to be used continuously, any temporary interruption or removal is to be disregarded.

This includes, for example, a temporary interruption or removal in order to clean or disinfect a device or ensure its safe or effective use, or for reasons relating to a person operating a device.

This is designed to ensure greater consistency in relation to the interpretation of this term under paragraph 3.6 of Chapter II of EU Regulation 2017/745, which principally provides for the meaning of that term without regard to such periods.

Item 42 – After subclause 3.2(3) of Schedule 2
Under subclauses 3.2(3) of Schedule 2 to the MD Regulations, surgically invasive medical devices that are intended by their manufacturer to be for transient use to diagnose, monitor, control or correct a defect of the heart or the central circulatory system through direct contact with those parts of the body, are classified as Class III.

However, under rule 6 of Chapter III of Annex VIII of EU Regulation 2017/745, in Europe a somewhat broader range of these kinds of medical devices are classified as Class III devices than in Australia.

In particular, surgically invasive medical devices that are intended for transient use and that are intended specifically for use in direct contact with the heart or central circulatory system or central nervous system (as distinct from such devices that are intended to be used to diagnose, monitor, control or correct a defect in such parts of the body through direct contact with them) would not appear to be classified as Class III under subclauses 3.2 of Schedule 2, though they would be under rule 6 of the EU Regulation 2017/745.

The effect of this is that under subclause 3.2(2) of Schedule 2, such devices are currently classified as Class IIa in Australia.

To align with the approach under the EU Regulation 2017/745 and to better ensure that the requirements under the regulatory scheme for such products are attuned to the risks they may pose, this item amends clause 3.2 of Schedule 2 to introduce a new classification rule for surgically invasive medical devices for transient use that are intended by the manufacturer to be used in direct contact with the heart, circulatory system or central nervous system.

Under this new rule, these devices will be classified as Class III.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register with a Class IIa classification, or that are the subject of such an application for marketing approval that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Item 43 – Paragraph 3.3(4)(b) of Schedule 2
This item substitutes a new paragraph 3.3(4)(b) of Schedule 2 to the MD Regulations, with the effect of making it clear that a surgically invasive medical device that is intended for short term use and to be used in direct contact with the heart, central circulatory system or central nervous system of a person, is classified as Class III.

The current paragraph 3.3(4)(b) only identifies such devices as being Class III if they are intended to be used in direct contact with the central nervous system of a person, i.e. it does not make provision for such devices where they are intended specifically for use in direct contact with the heart or central circulatory system.

The effect of this is that under subclause 3.3(2) of Schedule 2, such devices are currently classified as Class IIa.

The application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register with a Class IIa classification, or that are the subject of such an application for marketing approval that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Part 7 – Amendments relating to charges

Therapeutic Goods (Charges) Regulations 2018

Items 44 and 45 – Paragraph 7(4)(d) and at the end of the instrument
This Part sets out a small number of changes to the *Therapeutic Goods (Charges) Regulations 2018* (the Charges Regulations), in relation to active implantable medical devices, in relation to the reclassification of such products from Class AIMD to Class III.

Item 43 removes the reference to the annual charge for a Class AIMD medical device in paragraph 7(4)(d) in the Charges Regulations.

In order to ensure that such products are not subject to 2 sets of annual charges in the same financial year as a result of the amendments, item 44 introduces a new Division and new regulation 10 to the Charges Regulations.

This new regulation 10 makes it clear that if, at any time during a charge year, the same device is included in the Register as a Class AIMD and a Class III medical device, the charge in respect of the inclusion of the device in the Register as a Class III device for the charge year is nil.

Schedule 2 – Programmed or programmable medical device or software that is a medical device

Introduction

While some medical device software existed in 2002 when the Act was amended to introduce a specific framework for the regulation of medical devices (Chapter 4 refers) and the MD Regulations were made, in recent years rapid advances in computing technology and software production have led to significant increases, in particular in the number of medical devices that consist of software that operate on their own (i.e. rather than being accessories to, or incorporated into, physical devices), and to changes in the risk profiles for such products.

Some examples of such products include smart phone apps that detect skin cancer, X-ray image processing software that can screen for various conditions, software that interacts with a patient to deliver behaviour-based therapy and software that uses information about a person to make a diagnosis. Any or all of these types of products may include artificial intelligence features in their data processing algorithms.

The current regulatory framework considers harm that can directly be caused by a physical interaction with a medical device; however, it does not adequately address the risk of patient harm where information is the source of harm., Software that processes data to provide information to be used in treating a person, for example - a diagnosis of a disease, or the specification of a therapy to be delivered, can cause harm when the information is incorrect. Most medical devices that consist of software are currently classified as Class I medical devices, the lowest risk classification of device (under the classification rule in clause 4.1 of Part 4 of Schedule 2), while devices that can cause harm through physical interaction are classified at higher levels according to the harm they may cause.

In addition, the International Medical Device Regulators Forum (IMDRF), of which Australia is a founding member, has developed guidance for the regulation of software to address such concerns, and the EU has recently moved to reform its regulation of software devices in harmony with the IMDRF guidance.

The amendments in this Schedule are designed to update important elements of the regulatory scheme for programmed or programmable medical devices and software that is a medical device, to better address the range of emerging technologies in this field, and to align with the IMDRF and EU approach (this means these measures also support the implementation of Review recommendation 20).

Part 1 – Classification rules

Therapeutic Goods (Medical Devices) Regulations 2002

Item 1 – Schedule 2 (note to Schedule heading)

Schedule 2 to the MD Regulations sets out the classification rules for medical devices other than IVD medical devices.

The wording in parenthesis below the heading for Schedule 2 refers to regulation 2 of the MD Regulations, to signpost that Schedule 2 does so for the purposes of regulation 3.2 of the MD Regulations.

This item replaces the wording in parenthesis with a new note that makes that clearer, and that also signposts that regulation 3.3 of the MD Regulations sets out principles for applying the classification rules in Schedule 2. This is designed to aid understanding of the classification rules and principles, for industry and consumers.

Item 2 – At the end of Part 4 of Schedule 2
This item amends Part 4 of Schedule 2 to the MD Regulations, to introduce a number of new classification rules (4.5–4.8) that have been specifically designed for programmed or programmable medical devices or software that is a medical device).

The phrase 'programmed or programmable medical devices' is intended to capture hardware medical devices incorporating software or any other form of software-type instruction set (such as field programmable gate arrays) that have the same sort of function as software. These types of medical devices may include software functions for either or both of enabling the functionality of a hardware medical device, or of providing information to be used for a therapeutic purpose. The rules for programmed or programmable medical devices including software that is a medical device, are relevant for hardware programmed or programmable medical devices, when they include the latter function.

Note that the new medical device classification rules for programmed, programmable, and software medical devices include reference to 'public health risk'. In this context, the term 'risk' should take the everyday meaning, such as the one defined in the Macquarie Dictionary:

> *Exposure to the chance of injury or loss; a hazard or dangerous chance.*

The term 'risk' in this context *should not* be taken to be that as currently defined in many international standards, i.e., that risk is severity of harm combined with the likelihood of occurrence.

4.5 – Programmed or programmable medical device or software that is a medical device for use in relation to diagnosing or screening for a disease or condition
New classification rule 4.5(1) applies to a programmed or programmable medical device, or software that is a medical device, intended by its manufacturer to be used to process data or information in order to provide a diagnosis of a disease or condition or to screen for a disease or condition.

The information provided by the medical device, in the form of a diagnosis or a screening result, is provided to a 'user' which could include but is not limited to: a lay-person, a care-giver, a patient, a healthcare professional. A key point is that the diagnosis is provided *directly* to a user without any intermediate oversight by, or involvement of, a relevant health professional (which is the case for 4.5(2)). The 4.5(1) rule could also apply to a relevant health professional as a user but the difference is that the diagnosis or screening decision is actually being undertaken by the device—not the relevant health professional based on information being provided to the health professional by the device (which is the case for 4.5(2)).

If such products are intended to provide a diagnosis of, or to screen for, a disease or condition that may lead to the death of a person or to a severe deterioration of a person's health without

urgent treatment, or that may pose a high risk to public health, they are classified as Class III under new paragraph 4.5(1)(c).

If such products are intended to provide a diagnosis of, or to screen for, a serious disease or serious condition or a disease or condition which may pose a moderate risk to public health (and where paragraph 4.5(1)(c) does not apply), they are classified as Class IIb under new paragraph 4.5(1)(d).

Such products in any other case are classified as Class IIa under new subclause 4.5(1).

New classification rule 4.5(2) applies to a programmed or programmable medical device, or software that is a medical device, intended by its manufacturer to be used to provide information to a relevant health professional for the purposes of assisting or enabling the health professional to make a diagnosis of a disease or condition.

The inclusion of the term 'relevant' to describe the health professional is intended to emphasise the role of the health professional in making the diagnosis with the provided information; that is, the information provided by a medical device under this classification rule is not to be solely relied upon for the diagnosis. For example, a relevant health professional for diagnosing certain forms of cancer would be an oncologist, whereas a general practitioner would not be considered to be a relevant health professional in that case. However, a general practitioner could be a relevant health professional for diagnosing other sorts of diseases and conditions.

If such products are intended to provide information to a relevant healthcare professional in relation to a disease or condition that may lead to the death of a person or to a severe deterioration of a person's health without urgent treatment, or that may pose a high risk to public health, they are classified as Class IIb under new paragraph 4.5(2)(a).

If such products are intended to do so in relation to a serious disease or condition or a disease or condition which may pose a moderate risk to public health (and where paragraph 4.5(2)(a) would not apply), they are classified as Class IIa under new paragraph 4.5(2)(b).

Such products in any other case are classified as Class I under new paragraph 4.5(2)(c).

The lower risk classifications under subclause 4.5(2) compared with subclause 4.5(1) principally reflects the involvement of a relevant health professional in the process of diagnosing a disease or condition, with this mitigating to an extent the risk that such products may pose in comparison with the situations covered by subclause 4.5(1).

4.6 – Programmed or programmable medical device or software that is a medical device for use for monitoring the state or progression of a disease or condition

New classification rule 4.6 applies to a programmed or programmable medical device, or software that is a medical device, intended by its manufacturer to be used to provide information that is to be used to monitor the state or progression of a disease or condition of a person, or to monitor parameters in relation to a person.

Medical devices covered under this rule process data in order to provide an output in the form of information about the state of a disease or condition, or about patient parameters. The data

that are used as an input to such a device may include multiple or single sources and could consist of, for example, data provided by physiologic sensors such as heart rate monitors, data from environmental sensors such as those that measure radiation absorbed by a person in a given environment, data from other medical devices such as those used in an intensive care unit, periodic data manually input by a patient such as dietary intake, or data mined from a patient's medical records such as symptoms or test results.

The output of these devices is information as to the state or progression of a disease or condition that has already been diagnosed, or information in relation to the state of patient parameters. The form of the output information is not limited and may include text-based or graphic-based information, or may include other visual or audio formats such as alarms.

If such products are intended to provide information for this purpose in relation to a person and the information could indicate that the person, or another person, may be in immediate danger or that there may be a high risk to public health, they are classified as Class IIb under new paragraph 4.6(a).

If such products are intended to provide information for this purpose in relation to a person and the information could indicate that the person, or another person, may be in another form of danger (i.e. in danger but not immediate danger) or that there may be a moderate risk to public health, they are classified as Class IIa under new paragraph 4.6(b).

Such products in any other case are classified as Class I under new paragraph 4.6(c).

4.7 – Programmed or programmable medical device or software that is a medical device for use in specifying or recommending a treatment or intervention
New classification rule 4.7(1) applies to a programmed or programmable medical device, or software that is a medical device, intended by its manufacturer to be used to process data or information in order to specify or recommend a treatment or intervention.

The information provided by the medical device, in the form of a specified treatment or intervention, is provided to a 'user' which could include but is not limited to: a lay-person, a care-giver, a patient, a healthcare professional. A key point is that the treatment or intervention is specified *directly* to a user without any intermediate oversight by, or involvement of, a relevant health professional (which is the case for 4.7(2)). The 4.7(1) rule could also apply to a relevant health professional as a user but the difference is that the decision regarding therapy or intervention is actually being undertaken by the device—not the relevant health professional based on information being provided to the health professional by the device (which is the case for 4.7(2)).

If such products are intended to specify or recommend a treatment or intervention in circumstances where the absence of the treatment or intervention (e.g. a failure to apply it), or where the treatment or intervention itself, may lead to the death of a person or to a severe deterioration of a person's health or may pose a high risk to public health, they are classified as Class III under new paragraph 4.7(1)(a).

If such products are intended to specify or recommend a treatment or intervention in circumstances where the absence of the treatment or intervention (e.g. a failure to apply it), or where the treatment or intervention itself, may otherwise be harmful to a person or may pose

a moderate risk to public health, they are classified as Class IIb under new paragraph 4.7(1)(b).

Such products in any other case are classified as Class IIa under new paragraph 4.7(1)(c).

New classification rule 4.7(2) applies to a programmed or programmable medical device, or software that is a medical device, intended by its manufacturers to be used to recommend a treatment or intervention to a relevant health professional for the purposes of assisting or enabling the health professional to make a decision about the treatment or intervention.

The inclusion of the term 'relevant' to describe the health professional is intended to emphasise the role of the health professional in making a decision, about the treatment or intervention to be applied, with the provided information; that is, the information provided by a medical device under this classification rule is not to be solely relied upon for specifying a treatment or intervention. For example, a relevant health professional for treating certain forms of glaucoma would be an ophthalmologist, whereas a general practitioner would not be considered to be a relevant health professional in that case. However, a general practitioner could be a relevant health professional for treating other sorts of diseases and conditions.

If such products are intended to recommend a treatment or intervention to a relevant health professional in circumstances where the absence of the treatment or intervention (e.g. a failure to apply it), or where the treatment or intervention itself, may lead to the death of a person or to a severe deterioration of a person's health or may pose a high risk to public health, they are classified as Class IIb under new paragraph 4.7(2)(a).

If such products are intended to recommend a treatment or intervention in circumstances where the absence of the treatment or intervention (e.g. a failure to apply it), or where the treatment or intervention itself, may otherwise be harmful to a person or may pose a moderate risk to public health, they are classified as Class IIa under new paragraph 4.7(2)(b).

Such products in any other case are classified as Class I under new paragraph 4.7(2)(c).

The lower risk classifications under subclause 4.7(2) compared with subclause 4.7(1) principally reflects the involvement of a relevant health professional in the use of software to which subclause 4.5(2) relates and the process of diagnosing a disease or condition, with this mitigating to an extent the risk that such products may pose in comparison with the situations covered by subclause 4.7(1).

4.8 – Programmed or programmable medical device or software that is a medical device that is to provide therapy to a person through the provision of information

New classification rule 4.8 applies to a programmed or programmable medical device, or software that is a medical device, intended by its manufacturer to provide therapy to a person, through the provision of information to the person. The provision of information to a person may take the form of instructions to the person, for example, instructions for performing physical movements or mental exercises; and there may be an exchange of information with the person, for example, the person may be asked for information about their symptoms.

If such products are intended to provide therapy to a person in relation to therapy that may result in the death or a severe deterioration of a person's health, they are classified as Class III under new paragraph 4.8(1)(a).

If such products are intended to do so in relation to therapy that may cause serious harm to the person and where paragraph 4.8(1)(a) does not apply, they are classified as Class IIb under new paragraph 4.8(1)(b).

If such products are intended to do so in relation to therapy that may still cause harm to the person but in circumstances where neither paragraph 4.8(1)(a) or (b) apply, they are classified as Class IIa under new paragraph 4.8(1)(c).

In any other case such products are classified as Class I under new paragraph 4.8(1)(d).

As most existing medical devices that would be covered by the new classification rules, and that are already included in the Register are currently classified as Class I devices (under clause 4.1 of Part 4 of Schedule 2 to the MD Regulations), the application provisions in Schedule 10 of the Regulations are designed to ensure that such devices that are already included in the Register with a Class I classification, or that are the subject of such an application for marketing approval that has not been finally determined, when these amendments commence, will have the benefit of a transitional period (principally, until 1 November 2024) before the new rule begins to apply to them.

Item 3 – Schedule 2A (note to Schedule heading)
This item amends Schedule 2A to the MD Regulations, which sets out the classification rules for IVD medical devices, to introduce clearer notes about regulations 3.2 and 3.3 of the MD Regulations, consistent with item 1A above.

Item 4 – Dictionary (at the end of the definition of 'active medical device')
This item amends one existing definition in the Dictionary to the MD Regulations, and introduce two new defined terms to the Dictionary.

Amendment to definition of "Active medical device'
An 'active medical device' is defined in the Dictionary to the MD Regulations as, principally, a medical device that is intended by its manufacturer to depend for its operation on a source of electrical energy or other source of energy (other than a source of energy generated directly by a human being or gravity), and to act by converting this energy.

This item amends this definition to make it clear that software that is a medical device is an active medical device. This reflects and clarifies that such products have long been regarded as active medical devices in Australia, and would also align with the EU approach in relation to such products.

'Inclusion day'
This item also introduces 2 definitions that are common to both existing transitional arrangements that are already included in the MD Regulations, and to the transitional arrangements to be introduced by the Regulations.

'Inclusion day' is defined, for an entry of a kind of medical device in the Register, as meaning the day on which the inclusion of that kind of device in the Register commences.

'Finally determined'

'finally determined' is defined, for an application, as the first time both of the following conditions are met:

- a decision has been made as to whether or not to grant the application; and
- there is no longer any possibility of a change in the outcome of the decision.

Part 2 – Essential Principles

Therapeutic Goods (Medical Devices) Regulations 2002

Item 5 – Clause 12.1 of Schedule 1

The essential principles, which are set out in Schedule 1 to the MD Regulations, represent minimum benchmarks of safety, quality and performance of medical devices.

Clause 12 of Schedule 1 is designed for medical devices that are connected to or equipped with an energy source, and current clause 12.1 provides that where such a medical device incorporates an electronic programmable system (in particular, this covers both medical devices that consist of software and those that consist of a physical device that is driven by or that includes software) it must be designed and produced in a way that ensures that the performance, reliability and repeatability of the system are appropriate for the intended purpose of the device, and that any consequent risks associated with a single fault condition in the system are minimised.

This represents a very broad set of requirements, without providing clarity in relation to all of the elements of what would be involved in complying with these overarching requirements.

To provide greater clarity in this regard, and to better identify these elements for sponsors and manufacturers of such medical devices (in particular, software), this item replaces the current subclause 12.1 with a more detailed and up to date list of requirements.

The updated list of safety and performance requirements relevant to software was informed by the new EU Medical Device Regulation and recently published guidance from the IMDRF. The updated 12.1 includes six subclauses of which each broadly covers a particular area of concern. Subclause (1) covers design and production considerations, Subclause (2) reinforces the idea that for these kinds of devices the state of the art (as referred to in Schedule 1 Clause 2) should be applied, Subclause (3) refers to considerations for computing platforms and external factors, Subclause (4) refers to requirements for operation, Subclause (5) includes considerations for cyber security and Subclause (6) was added to address concerns regarding the use of data and is of particular importance for devices that include artificial intelligence features.

These new requirements include, for example, that a programmed or programmable medical device, or software that is a medical device, that is intended to make use of data or information be designed and produced in a way that ensures the matters listed in new paragraphs 12.1(1)(a)-(g). These include, for example, the safety, performance, reliability, accuracy, precision, useability, security and repeatability of the device are appropriate given its intended purpose, and that any consequent risks or impairment of performance associated with one or more fault conditions of the device are eliminated or appropriately reduced. Also for example, new subclause 12.1(2) requires that such products must be developed, produced and maintained having regard to the generally acknowledged state of the art

(including for design, development life cycle, development environment, version control, quality and risk management, security, verification and validation, change and configuration management and problem resolution), and new subclause 12.1(3) requires that if such products are intended to be used in combination with computing platforms, they must be designed and developed in such a manner that takes into account the capability, resources and configuration of those platforms and the external factors (including information technology environment) related to the use of the platforms.

Item 6 – Subclause 13.2(3) of Schedule 1

Clause 13.2 of Schedule 1 to the MD Regulations sets out essential principles that relate to the location of information that is required under clause 13 of Schedule 1 to be provided with a medical device (e.g. information identifying the manufacturer of a device).

Subclauses 13.2(1) and (2) require that, principally, such information must be provided on the device itself or, if this is not practicable, on the packaging of the device or (where devices are packaged together) on the outer packaging used for such devices.

Current subclause 13.2(3) of Schedule 1 provides that if it is not practicable to comply with subclause 13.2(1) or (2) in relation specifically to the information identified in subregulation 10.2(1) of the MD Regulations or in clause 13.3 of Schedule 1, the information must be provided on a leaflet supplied with the device.

The information concerned relates to the name and address of the sponsor of the device (subregulation 10.2(1)) and a range of information about the safe use of a medical device including, for example, sufficient information to enable a user to identify the device and any warnings, restrictions or precautions that should be taken in relation to the device's use.

This item replaces the current subclause 13.2(3) of Schedule 1 to the MD Regulations with a new subclause 13.2(3), with the main effect of making it clear that for a medical device that is software, this information may be provided electronically as an alternative to providing it on a leaflet. This is in order to reflect the way in which many users obtain and access software.

Item 7 – After clause 13A.4 of Schedule 1

This item introduces a new clause 13B to Schedule 1 to the MD Regulations, which requires that for a medical device that is software, the current version number and current build number of the software must be accessible by, and identifiable to, users of the software, and must be in English (though they may also be in any other language).

The current version and build number is important information for users of software to be aware of, so that they are able to verify that they are using the most up to date version and build of the software, particularly if updates have been made to the version and build of software to eliminate bugs or other problems that may affect its performance.

This information is also important from a post-market monitoring perspective and in ensuring that adverse events and threats to cybersecurity involving such products are able to be identified and responded to in a timely fashion.

Schedule 3 – Personalised medical devices

Introduction

Over the past two decades, rapid advances in materials science and computing technology have driven exponential change in medical imaging technology, manufacturing technology and (as a result) medical device technology.

Advances in areas such as 3D printing have allowed more complex and, in some cases, higher risk, medical devices to be manufactured, including devices that are designed for the use of individual patients, such as custom-made medical devices.

The current requirements in the MD Regulations for custom-made medical devices were developed when such products principally comprised low-risk products such as glass eyes, prosthetic limbs and prescription lenses.

The amendments in this Schedule are designed to amend the requirements in the MD Regulations to better address the evolution of these kinds of medical devices, principally in relation to the scope of the current exemption for custom-made medical devices from the requirement to be included in the Register, but also importantly in relation to the applicable conformity assessment procedures and reporting requirements for such products.

Part 1 – Definitions

Therapeutic Goods (Medical Devices) Regulations 2002

Item 1 – At the end of Part 1

This item introduces a new item 1.8 to the MD Regulations that, for the purposes of subsection 41BG(4) of the Act, makes it clear that the class of persons described in new item 1.8 are not manufacturers of a medical device.

Subsection 41BG(4) of the Act provides that a person is not the manufacturer of a medical device if the person is included in a class of persons prescribed by the regulations for the purposes of that subsection.

The class of persons who are identified by new item 1.8 for this purpose as not being manufacturers of medical devices are health professionals, or suitably qualified persons within a healthcare facility, who produce a medical device using a medical device production system that is included in the Register.

An example of this is a dentist who uses such a medical device production system to produce crowns or other dental products that are medical devices for the dentist's patients. The effect of new item 1.8 is that the dentist would not be the manufacturer of the crowns or other dental products produced by the system.

Items 2-4 – Dictionary

These items introduce a number of new definitions to the Dictionary to the MD Regulations, and would replace the current definition of 'custom made medical device' with a new definition for that term.

Custom-made medical device
Custom-made medical devices are currently defined in the Dictionary to the MD Regulations as, principally, medical devices that are made in accordance with a request by a health professional specifying the design characteristics or construction of the device, and that are intended to be used only in relation to a particular individual or by a health professional to meet special needs arising in the course of the health professional's practice.

Item 2 replaces this definition with a more up to date definition of such products, that in particular emphasises that this term relates to medical devices:

- that are intended by the manufacturer to be for the sole use of a particular patient or particular health professional;
- that are manufactured in accordance with a written request from, and particular design characteristics specified by, a health professional (even if the design is developed in consultation with the manufacturer); and
- in circumstances where those design characteristics are intended to address either or both of the anatomical or physiological features, or pathological condition of the intended recipient patient or health professional.

The new definition also makes it clear that the meaning of custom-made medical device does not include a patient-matched device, and does not include a mass-produced device such as an adaptable medical device.

These are new terms for which definitions are also introduced by these items.

Examples of custom-made medical devices include:

- an artificial cervical disc replacement, requested by a spinal surgeon, for the reconstruction of a person's cervical disc following cervical discectomy to treat cervical radiculopathy, where the dimensions of the person's cervical spine are such that conventional artificial cervical discs would not address the person's needs; and
- an endoscope with a modified steering mechanism requested by a gastroenterologist to address a loss in the gastroenterologist's manual dexterity as a result of a disability that they suffer, where either the gastroenterologist themselves, or their health professional, requests the endoscope manufacturer to produce a modified product designed specifically to overcome the gastroenterologist's loss of dexterity.

Adaptable medical device
Item 1 introduces a definition of 'adaptable medical device', with that term covering in particular a mass-produced medical device that is intended by the manufacturer to be able to be assembled or adapted after it has been supplied for the purpose of addressing an individual's anatomical or physiological features or pathological condition, or to otherwise perform as intended by the manufacturer.

So adaptable medical devices are one example of a mass-produced medical device, and while an adaptable medical device may be assembled or adapted by an individual in order to suit their particular needs, the manufacturer of such a product will have manufactured the device in order to ensure that the device is able to be so assembled or adapted, but will not have designed it for the individual's actual needs.

An example of an adaptable medical device is a mass-produced polymer surgical implant for cranial reconstruction that is supplied in a sterile state and that is intended to be thermoformed during the cranial reconstruction surgical procedure, where the manufacturer's instructions provide details for the surgeons on how to heat and shape the polymer to suit the patient's anatomy.

It should be noted that an adaptable medical device is one type of personalised medical device; however, personalising a medical device is not the only reason that a medical device might be adaptable. There are already medical devices in common use that are required to be adapted according to the manufacturers' instructions, such as through assembly or adjustment, prior to their use. This is often, though not necessarily, related to their installation.

Mass-produced medical device
Item 3 defines a mass-produced medical device as a device that is manufactured according to standardised dimensions or designs, is not designed for a particular individual and that is manufactured in a continuous production process or in a homogenous batch.

Patient-matched medical device
Item 3 also defines a patient-matched device (noting in particular that the new definition of custom-made medical device identifies that such products are not within the meaning of the new definition for that term).

A patient-matched medical device is defined as a medical device that, in particular, is manufactured within a specified design envelope, to match an individual's anatomical or physiological features or pathological condition, is designed by the manufacturer (even if the design is developed in consultation with a health professional) and is manufactured using production processes that are able to be validated or verified, and reproduced.

Specified design envelope
'Specified design envelope' is also defined for the purposes of the reference to that term in the new definition of patient-matched medical device, as minimum and maximum dimensions, performance limits or other relevant factors that characterise a medical device's design for production purposes. These may be based on a standard device template.

Performance limits could include (but not be limited to) such things as power, torque, speed, energy output, or computational power.

'Other relevant factors' could include (but not be limited to) such things as allowable environmental limits for operation; specifications for materials and their properties; or other factors that determine limits or boundaries of design for transfer to production.

An example of such patient-matched medical devices is an externally worn orthosis (helmet) to shape the skull of an infant to prevent plagiocephaly (flat head syndrome), based on 3D images of the infant's head, provided by a prosthetist to the manufacturer, where the manufacturer produces the orthosis within validated parameters.

Medical device production system
It is important to note that item 3 also introduces a definition for a medical device production system. Principally, these are systems that consist of raw materials and main production

equipment that are intended by their manufacturer to be used together by a health professional or other suitably qualified person within a healthcare facility, to produce a particular medical device for the use of a patient of the health professional or healthcare facility (i.e. at the point of care).

In some instances, the use of such systems may require or involve the use of ancillary equipment, such as common tools, or inputs such as patient image data, but these would not form part of the system itself.

An example of such a system would be a 3D printer, together with the raw materials to be used by the printer, to generate a medical device, such as dentures or a crown for a tooth, using patient image files loaded into the system by a dentist.

Part 2 – Reports

Therapeutic Goods (Medical Devices) Regulations 2002

Item 5 – After regulation 10.3

Under subregulation 10.3(1) of the MD Regulations, the manufacturer of a custom-made medical device that is manufactured in Australia must, within 2 months after the device is first manufactured in Australia, inform the Secretary of the manufacturer's name and business address and provide a description of the kinds of such devices they are manufacturing.

Under subregulation 10.3(2) of the MD Regulations, a sponsor who imports custom-made medical devices must comply with equivalent requirements within 2 months of first importing such a device.

In each instance, a failure to do so is an offence, and may result in a maximum penalty of 10 penalty units.

As custom-made medical devices are exempt from inclusion in the Register, these requirements are designed to support post-market monitoring of such products to ensure their safety and performance, by alerting the TGA to their manufacture and importation.

However, these reports only relate to the first instance of manufacture or importation of such products, and do not provide a complete picture of how many such products are being made or imported, or of where the same such devices are manufactured or imported.

To better support post-market monitoring and the development of an informed understanding of trends involved for such products across the TGA, industry, health professionals and consumers, this item augments these existing requirements by introducing new regulation 10.3A.

New subregulation 10.3A(1) requires Australian manufacturers of custom-made medical devices to provide a written report to the Secretary (using the form approved by the Secretary for that purpose under new subregulation 10.3A(3) of all of the custom-made medical devices they have manufactured in a financial year, by 1 October in the following financial year (e.g. by 1 October 2022 for financial year 2021-22).

New subregulation 10.3A(2) sets out similar requirements for sponsors, in relation to the details of custom-made medical devices that they have imported for a financial year.

In each instance, a failure to do so would be an offence, that may result in a maximum penalty of 10 penalty units.

The proposed new offences do not involve any possible imprisonment, would not be offences of strict or absolute liability and would reflect a maximum penalty level consistent with the similar existing offences in regulation 10.3 (consistent with the *Guide to Framing Commonwealth Offences, Infringement Notices and Enforcement Powers*, September 2011, published by the Attorney-General's Department and available on www.ag.gov.au).

Part 3 – Conformity assessment procedures

Therapeutic Goods (Medical Devices) Regulations 2002

Item 6 – Paragraph 7.1(a) of Schedule 3
Schedule 3 to the MD Regulations sets out the conformity assessment procedures (these are requirements for manufacturers of medical devices) that must be applied to medical devices used for a special purpose, for the purposes of subregulation 3.10(2) of the MD Regulations.

Under subregulation 3.10(1) of the MD Regulations, the description "medical devices used for a special purpose includes exempt devices – i.e. devices which are set out in Schedule 4 to the MD Regulations as being exempt from the requirement to be included in the Register - such as custom-made medical devices.

This item makes a minor amendment to clause 7.1 of Schedule 3, to reflect the changes to be introduced by item 18 below.

Item 7 – Subclause 7.2(1) of Schedule 3 (note)
This item makes a minor amendment to subclause 7.2(1) of Schedule 3 to the MD Regulations to repeal the note under that subclause. This note relates to the first 2 years after the commencement of the MD Regulations in 2002, and is no longer needed.

Items 8-10 – Paragraphs 7.2(2)(c), (e) and (f) of Schedule 3
Clause 7.2 of Schedule 3 to the MD Regulations sets out conformity assessment procedures that apply specifically to custom-made medical devices.

Subclause 7.2(2) of Schedule 3 requires a manufacturer of such a product to prepare a written statement that includes the elements set out in paragraphs 7.2(2)(a)-(g).

These items make minor amendments to paragraphs 7.2(2)(c), (e) and (f) of Schedule 3, to ensure that those paragraphs are consistent with the proposed new definition of a custom-made medical device to be introduced by item 2 above.

Item 11 – After subclause 7.2(3) of Schedule 3
Under the current clause 7.2 of Schedule 3 to the MD Regulations, the written statement that is required to be prepared by a manufacturer of a custom-made medical device under

subclause 7.2(2) must be signed by a person authorised by the manufacturer to do so and must set out the name and position of that person and when the person signed the statement.

However, clause 7.2 does not require the manufacturer to provide a copy of the statement with such a device.

This item therefore amends clause 7.2 to introduce a new subclause 7.2(3A) which would require a manufacturer to do so.

This measure is designed to assist health professionals and patients to be better informed about their custom-made medical device, and about its safe use – for example, the information set out in subclause 7.2(2) includes sufficient information to enable the user to identify the device, and a statement explaining that the device complies with the essential principles or, if it does not, a statement explaining which provisions of the essential principles that it does not comply with and the reasons why.

Item 12 – Subclause 7.6(2) of Schedule 3
Clause 7.6 of Schedule 3 to the MD Regulations requires a manufacturer to which clauses 7.2 or 7.5 of Schedule apply to keep the statement and documentation required under those clauses.

Subclause 7.6(2) requires such a manufacturer to keep the statement and documentation for at least 5 years after the manufacture of the last medical device to which the statement and documentation relates.

This item substitutes a new subclause 7.6(2), which would preserve this requirement but would make it clear that if the device in question is an implantable medical device, the manufacturer must keep the required statement and documentation for at least 15 years after the manufacture of the medical device to which the statement and documentation relates.

Part 4 - Exemptions

Therapeutic Goods (Medical Devices) Regulations 2002

Items 13 and 16-22
These items make minor amendments to regulation 1.6 and paragraphs 4.3F(e) and 4A.31(h) of the MD Regulations, and to subparagraphs 1.8(2)(c)(i), 3.5(2)(c)(i), 5.7(2)(c)(i), 6.6(2)(c)(i) and 6B(2)(c)(i) of Schedule 3 to the MD Regulations, to reflect the introduction of a definition of ‘unique product identifier’ by item 32 below.

Item 14 – Paragraph 3.11(2)(a)
This item makes a minor amendment to regulation 3.11 of the MD Regulations, to reflect the change to be introduced by item 29B below.

Item 15 – At the end of regulation 3.11
Subregulation 3.11(1) of the MD Regulations has the effect that in addition to the conformity assessment procedures that apply to medical devices used for a special purpose (including custom-made medical devices) under subregulation 3.10(2) of the MD Regulations, the clinical evaluation procedures in Part 8 of Schedule 3 to the MD Regulations must also be

applied to such devices, for the purpose of demonstrating that they comply with the applicable provisions of the essential principles (in particular, clauses 1, 3 and 6 of Schedule 1 to the MD Regulations).

This item makes a minor, consequential change to regulation 3.11 to reflect the change to be introduced by items 29B and 30 below, and to make it clearer that custom-made medical devices are subject to subregulation 3.11(1), and are not covered by the description of certain devices used for a special purpose that are exempted from subregulation 3.11(1) by subregulation 3.11(2).

Item 23 – Part 1 of Schedule 4 (table item 1.5)
Item 1.5 of Part 1 of Schedule 4 to the MD Regulations exempts custom-made medical devices from the requirement to be included in the Register.

This item repeals item 1.5 from Part 1 of Schedule 4, to reflect the proposed introduction of a new exemption for custom-made medical devices in Part 2 of Schedule 4, by item 24 below.

Item 24 – At the end of Part 2 of Schedule 4
This item amends Part 2 of Schedule 4 to the MD Regulations, to introduce new exemptions from the requirement to be included in the Register for custom-made medical devices, and a specified exemption from this requirement for patient-matched medical devices.

Exemptions for Custom-made medical devices
Item 24 moves the current exemption for custom-made medical devices that is in Part 1 of Schedule 4 to the MD Regulations, to Part 2 of Schedule 4. This item adds two new items to this Schedule: item 2.12 in relation to custom-made medical devices that are manufactured in Australia, and item 2.13 in relation to custom-made devices that are manufactured outside Australia.

These principally reflect the need to include conditions applying to the exemptions, in order to support the safety and quality of these devices.

The conditions that apply to the exemption of custom-made medical devices manufactured in Australia under the new item 2.12 in Part 2 of Schedule 4 are similar to the conditions of exemption that apply to Class 1 – 3 in-house IVD medical devices, in item 2.10 of Part 2 of Schedule 4.

In particular, the proposed conditions require the manufacturer of such a device to:
- have available at all times evidence to substantiate the application of the conformity assessment procedures to their devices;
- allow an authorised person to enter, at any reasonable time, any premises (including premises outside Australia) where the manufacturer or any other person deals with the device (this includes, for example premises where the device is designed or manufactured) and to undertake a number of specified actions including, for example, to inspect those premises and any thing on those premises that relates to the device and to examine, take measures of, conduct tests on, require tests to be conducted or take samples of any such thing; and
- if asked to do so by an authorised person, product to the authorised person any documents relating to the device that the authorised person requires, and allow the authorised person to copy those documents.

These conditions are designed to ensure that appropriate post-market monitoring powers are in place to allow the TGA to verify the safety of the manufacturing process for these products.

New item 2.13 in Part 2 of Schedule 4 also requires the sponsor of a custom-made medical device that is manufactured outside Australia to comply with equivalent conditions.

Exemption for Patient-matched medical devices
It is important to note that this item also amends Part 2 of Schedule 4 to introduce a new, specific exemption for patient-matched medical devices.

This is designed to minimise the impact of the introduction of the new definition of custom-made medical device on those devices that meet the current definition of that term in the Dictionary to the MD Regulations but that will be patient-matched medical devices rather than custom-made devices under the new definitions to be introduced by items 2 and 3 above.

The new exemption (item 2.14 of Part 2 of Schedule 4) includes a small number of conditions that would, principally, require the sponsor of such a device to, before 25 February 2021, notify the Secretary in writing of each kind of such device that they intend to supply in Australia on or after 1 November 2024, providing the unique product identifier given to each device of that kind as well as a small amount of other information, such as the name and address of the sponsor and manufacturer of such devices.

The application provisions in Schedule 10 to the Regulations (subregulation 11.51(3)) make it clear that this exemption only applies in relation to a patient-matched medical device that is manufactured on or after 25 August 2020 and before 1 November 2024. This is intended to reflect that this exemption is principally designed to minimise the impact of the introduction of the new definition of custom-made medical devices for these products and to provide a transitional period to prepare to apply to include such products in the Register.

Item 25 - Dictionary
This item amends the Dictionary to the MD Regulations to include a definition for ‘unique product identifier’, a term used in these amendments and in a number of existing parts of the MD Regulations.

The definition does not introduce any new elements of the meaning of that term as reflected in the existing references to it in the MD Regulations, but rather brings those elements together in a single definition. This definition makes it clear that this term means the unique product identifier (for example, the product name or model number) given to a medical device by its manufacturer to identify the device and any variants.

Part 5 – Classification rules

Therapeutic Goods (Medical Devices) Regulations 2002

Item 26 – After subregulation 3.3(5)
Regulation 3.3 of the MD Regulations sets out a number of important principles in relation to applying the classification rules that are set out in Schedule 2 to the MD Regulations for medical devices other than IVD medical devices, and in Schedule 2A to the MD Regulations for medical devices that are IVD medical devices.

This item amends regulation 3.3 to introduce a new principle for applying the classification rules, in relation to medical device production systems (these are systems that consist of main production equipment and raw materials that are manufactured by a manufacturer for health professionals to use to produce medical devices, such as crowns or dentures).

The new principle (new subregulation 3.3(5A)) makes it clear that a medical device production system has the same classification as the medical device the system is intended to produce. For example, if such a system is intended by its manufacturer to produce dental products that are Class I medical devices, under the new principle the system itself will also be classified as a Class I device.

Item 27 – Clause 5.4 of Schedule 2 Clause 5.4 of Schedule 2 to the MD Regulations currently provides that a non-active medical device that is intended by its manufacturer to be used to record X-ray diagnostic images is classified as Class IIa.

This item substitutes a new clause 5.4 for this rule, principally in order to update it to better address the range of emerging technologies other than just X-rays that may now be used to generate diagnostic images, and to address anatomical models (including physical anatomical models that may be made for example by 3D printers, and virtual anatomical models that for example a surgeon may use to explore a person's anatomy before a surgical procedure) that are used for diagnostic or other purposes.

Under new subclause 5.4(1), a medical device that is intended by the manufacturer to be used to record patient images will be classified as Class IIa if the images are to be used for either or both of the diagnosis or monitoring of a disease, injury or disability or the investigation of a physiological process, and if the images are acquired through a method that relies on energy outside the visible spectrum (for example, ultrasounds and magnetic resonance imaging are examples of methods that rely on energy that is outside the visible spectrum).

Under new subclause 5.4(2), a medical device that is an anatomical model (whether physical or virtual) that intended by the manufacturer to be used for either or both of the diagnosis or monitoring of a disease, injury or disability or the investigation of a physiological process, will also be Class IIa.

Under new subclause 5.4(3), a programmed or programmable medical device, or software that is a medical device, that is intended by the manufacturer to be used to generate a virtual anatomical model that is to be used for either or both of the diagnosis or monitoring of a disease, injury or disability or the investigation of a physiological process, will also be Class IIa.

Part 6 – Essential principles

Therapeutic Goods (Medical Devices) Regulations 2002

28 – Subclause 13.4(3) of Schedule 1 (at the end of the table)

Clause 13.4 of Schedule 1 to the MD Regulations sets out requirements for instructions for use for medical devices.

Under subclause 13.4(3) of Schedule 1, instructions for the use of a medical device must include information mentioned in the table under subclause 13.4(3) that is applicable to the device.

These include, for example, the intended purpose of the device, the intended user of the device and the kind of patient on whom the device is intended to be used.

This item amends this table to add the following additional information that will be required to be included in instructions for use for medical devices that are, respectively, adaptable medical devices or medical device production systems:

- for an adaptable medical device – instructions for assembling or adapting the device which, if followed, will ensure that the device continues to comply with the applicable provisions of the essential principles; and
- for a medical device production system – instructions for the process to be followed in producing the medical device the system is intended to produce which, if followed, will ensure that the device so produced will comply with the applicable provisions of the essential principles.

Schedule 4 – IVD companion diagnostics

Therapeutic Goods (Medical Devices) Regulations 2002

Introduction
IVD companion diagnostics are IVD medical devices that are pathology tests designed to identify the presence or absence of specific biomarkers (principally, these are features such as molecules, genes or other characteristics that can be used to identify or measure a pathological or physiological processes such as a disease) in a person.

The purpose of detecting the presence or absence of the biomarker through the use of an IVD companion diagnostic is to identify whether a person is likely to benefit from the use of a particular medicine or biological, or also whether they may be at particular risk from such a product.

As such, both the medicine or biological, and the IVD companion diagnostic, are designed to be used together for this purpose.

IVD companion diagnostics are particularly important in relation to the safe use of precision medicines that are intended to be based on unique patient health and disease information, including cell-based therapies, immunotherapies and targeted therapies.

As such, the reliability of IVD companion diagnostics, and the need for a set of appropriate, tailored regulatory requirements to ensure their safety, quality and performance, is very important.

Regulators in the United States and the EU have moved to bring in such specific regulatory requirements for IVD companion diagnostics, and this Schedule accordingly amends the MD Regulations to introduce similar requirements for Australia.

Item 1 – At the end of regulation 1.6
Section 41BE of the Act provides that a medical device is taken to be of the same kind as another medical device if they have the same sponsor, same manufacturer, same device nomenclature code and if they are the same in relation to any other characteristics prescribed in the regulations.

Regulation 1.6 of the MD Regulations identifies that the unique product identifier of a medical device (as defined by item 32 of Schedule 3 above) is such a characteristic for the purposes of section 41BE, for the medical devices identified in regulation 1.6 (e.g. Class III medical devices).

This item amends regulation 1.6, with the effect that unique product identifier will also be such a characteristic for a medical device that is an IVD companion diagnostic.

Item 2 – Paragraphs 4.3F(e) and 4A.31(h)
This item makes minor amendments to each of paragraphs 4.3F(e) and 4A.31(h) of the MD Regulations, to reflect the changes to be introduced by item 1 above.

Item 3 – At the end of paragraph 5.3(1)(j)
Paragraph 5.3(1)(j) of the MD Regulations identifies IVD medical devices for which the Secretary must select an application for marketing approval for audit – e.g. an IVD medical devices that is intended for self-testing.

This item amends paragraph 5.3(1)(j) to add new subparagraph 5.3(1)(j)(x) for IVD companion diagnostics. This is designed to ensure that applications for marketing approval for such products will be subjected to an application audit, in order to ensure that the level of pre-market scrutiny applied to such products is commensurate with the level of risk they may pose if they do not function as intended.

Item 4 – After paragraph 1.3(f) of Schedule 2A
Schedule 2A to the MD Regulations set out classification rules for medical devices that are IVD medical devices.

Under current paragraph 1.3(f)(i) of Schedule 2A to the MD Regulations, an IVD medical device is classified as a Class 3 IVD medical device or a Class 3 in-house IVD medical device if it is intended to be for use in the selection of patients for selective therapy or management.

This classification rule is intended to include IVD companion diagnostics. However, there has been some confusion as to whether it does so, and this has led in some instances to some sponsors of IVD companion diagnostics applying to include their products in the Register with a lower classification, as a Class 2 IVD.

To clarify the applicable medical device classification for IVD companion diagnostics, this item amends clause 1.3 of Schedule 2A to introduce a new paragraph 1.3(fa) that would make it clear that an IVD medical device or an IVD in-house IVD medical device that is intended by its manufacturer to be used as an IVD companion diagnostic is classified as a Class 3 IVD medical device or Class 3 in-house IVD medical device.

Item 5 – Clause 1.3 of Schedule 2A (note)
The note at the end of clause 1.3 of Schedule 2A provides that for paragraph (f) of clause 1.3, an IVD medical device would fall into Class 2 under clause 1.7 if a therapy decision would usually be made only after further investigation, or if the device is used for monitoring.

This item amends this note to make it clear that it does not apply to an IVD companion diagnostic.

Item 6 - Dictionary
This item amends the Dictionary to the MD Regulations to introduce a definition of IVD companion diagnostic.

The proposed new definition makes it clear that an IVD companion diagnostic is an IVD medical device that is intended by its manufacturer to be used for the examination of a specimen from the body of an individual, to:

- identify whether the individual would be likely to benefit from the use of a particular medicine or biological; or
- identify whether the individual is likely to be at a particular risk from the use of a particular medicine or biological; or

- monitor the individual's response to the use of a particular medicine or biological.

Importantly, the definition also requires that to be an IVD companion diagnostic, the IVD medical device must be mentioned in product information for the medicine or biological as being essential for the medicine's or biological's safe and effective use.

Paragraph (c) of the proposed new definition highlights that if the medicine or biological concerned comprises blood, a blood component, cells, tissues or an organ from a (human) donor other than the individual, and the IVD medical device is intended by the manufacturer to be used for the examination of the specimen merely to determine whether the medicine or biological is compatible with the individual, then the IVD is not an IVD companion diagnostic.

Schedule 5 – Faecal microbiota transplant products

Therapeutic Goods Regulations 1990

Introduction

Faecal microbiota transplant (FMT) products are principally donated faecal matter, and therapeutic materials produced through the processing of such matter. FMT products may include in particular fresh or banked human faecal matter that may be introduced to a recipient's bowel by a range of methods including for example a colonoscopy or a rectal enema, or through oral ingestion of such matter that has been filtered, centrifuged, cultured and encapsulated or otherwise prepared appropriately to allow for oral ingestion.

In particular, FMT products may be effective in repopulating healthy bacteria in a recipient's bowel with benevolent microorganisms, in particular to treat recurrent Clostridioides difficile infection (a bacterial infection) and ulcerative colitis (a chronic, relapsing-remitting mucosal inflammatory bowel disease).

When used and presented as being for use in relation to the prevention, curing or alleviating of such diseases, FMT products are considered to be therapeutic goods for the purposes of the Act, and FMT products that contain human cells (colonocytes) – even where the presence of these cells is incidental to the mechanism of action of the product in treating the relevant disease or condition - are considered to be biologicals for the purposes of section 32A of the Act and to therefore be subject to regulation as biologicals under Part 3-2A of the Act.

However, as FMT products are a very new and emerging spectrum of products they have not, until now, been regulated under the therapeutic goods regulatory scheme.

The amendments in this Schedule are therefore designed to amend the *Therapeutic Goods Regulations 1990* ("the TG Regulations") to do so by providing a regulatory framework that has been tailored specifically for FMT products, in order to ensure the safety, quality and efficacy of such products for Australian patients.

These measures will also be enhanced with the commencement of a standard, to be made by the Minister under section 10 of the Act, which will set out important requirements relating to, in particular, the screening and testing of such products before they are used in a recipient.

Item 1 – Regulation 2

This item amends regulation 2 of the TG Regulations to introduce a definition of 'faecal microbiota transplant product'. This definition defines such products as a thing that comprises, contains or is derived from human stool, and that is for introduction into a person for a therapeutic use.

Item 2 – Before clause 1 of Schedule 16

As part of the new regulatory framework for FMT products, it is intended that where such products are principally manufactured, tested and provided to a patient in a hospital setting under the supervision or direction of a medical practitioner, such products will be Class 1 biologicals.

In particular, identifying such FMT products as Class 1 biologicals means that hospitals will not be required to obtain a manufacturing licence under Part 3-3 of the Act for the

manufacture of such products, as Class 1 biologicals are exempt from the operation of Part 3-3 under section 33B of the Act.

This measure is part of ensuring that the new framework for FMT products strikes the correct balance between appropriate regulation and ensuring access for Australian patients and avoiding constraints that may inhibit innovation without meaningfully enhancing safety.

Class 1 biologicals are defined in regulation 2 of the TG Regulations as those biologicals identified as being Class biologicals in Schedule 16 to the TG Regulations.

This item amends Schedule 16 to the TG Regulations to provide that for the purposes of the definition in regulation 2, a biological will be a Class 1 biological if it is an FMT product that meets specified criteria, including in particular that it:

- is not advertised to consumers;
- is to be collected under the supervision or direction, or in accordance with the requirements, of a registered medical practitioner;
- in circumstances where each later step in the manufacture of such products is to be carried out in a hospital by, or under the supervision or direction of, the practitioner (unless the step relates to the storage or testing of the biological, in which case it may instead be carried out by a person under a contract with the hospital in a State or internal Territory); and
- is for use in a recipient who is a patient of the hospital and under the clinical care of the practitioner.

Schedule 6 – Consumer medicine information documents

Therapeutic Goods Regulations 1990

Introduction

There are several thousand prescription and over the counter medicines supplied in Australia that are required to be accompanied with a patient information document (perhaps better known as consumer medicine information documents (CMI)).

Concerns have arisen about the complexity and readability of these documents, and the TGA has been consulting with consumer, health professional and industry representatives to develop improved templates for CMI documents.

The new templates (one for prescription medicines, and one for over the counter medicines) have been designed with such concerns in mind, and developed in conjunction with medicine sponsors, health practitioner groups, consumers and other stakeholders to better provide consumers with reliable and easy to understand information about the safe and effective use of such products (including through the use of a summary at the start of the templates).

The amendments in this Schedule will complement this work by requiring such medicines to be supplied with CMI documents that are in line with the new templates, while also providing transitional arrangements for medicines that are being supplied in Australia when the new measures commence.

Item 1 – Subregulations 9A(1) and (1A)

Subregulation 9A(1) of the TG Regulations makes it clear that the sponsor of therapeutic goods that are specified in Part 1 of Schedule 10 to the TG Regulations (principally, these are prescription medicines) must not supply the goods if the sponsor does not also supply with the goods written information about them that meets the requirements for a patient information document set out in Schedule 12 to the TG Regulations (in practice, a sponsor may do so by ensuring that such information is available or accessible for patients).

It is an offence for a sponsor to not comply with this requirement, with a maximum penalty level of 10 penalty units.

Subregulation 9(1A) of the TG Regulations sets out an equivalent offence in relation to over the counter medicines, in respect of the requirements for a patient information document for such products set out in Schedule 13 to the TG Regulations.

This item makes a minor amendment to each of subregulations 9A(1) and (1A) of the TG Regulations, to replace the reference to "patient information document" with a reference to "consumer medicine information document", to improve clarity and reflect the broader use and better understanding of "consumer medicine information document".

Item 2 – Paragraph 9B(3)(a)

This item makes a consequential amendment to paragraph 9B(3)(a) of the TG Regulations, to also replace a reference to "patient information document" with "consumer medicine information document".

Item 3 – Schedule 12
As part of measures to improve the clarity and usefulness of CMI, this item would repeal this schedule and introduce a new Schedule 12.

The new Schedule 12 continues to require, as the current Schedule 12 does, that such documents be written in English, be clearly legible, written in language that will be easily understood by patients and be consistent with the relevant product information.

In addition, the new Schedule 12 also requires that CMI documents for prescription medicines must set out all the information required by the "TGA Consumer Medicine Information (Prescription Medicine) Template", published by the TGA (for free) on its website (www.tga.gov.au) ("the Prescription Medicine Template"), and must do so in the same order as the template. Further, if a consumer information document is supplied electronically, it must be in the form of a PDF or HTML file.

It is important to note that the intention is to adopt the template as it is at the commencement of this Schedule, and not to purport to adopt it as in force from time to time.

It is also important to note that, under heading 2 of the new Schedule 12, if the CMI document for a prescription medicine is enclosed within, or set out on or affixed to a surface of, the packaging for such a medicine, it would not be required to be in the same order as the Prescription Medicine Template, or to include the summary that forms part of that template.

This reflects that in such circumstances the CMI document is less flexible and less able to accommodate the summary component of the Prescription Medicine Template.

Item 4 – Schedule 13
This item sets out equivalent amendments to Schedule 13 to the TG Regulations, in relation to over the counter medicines and the TGA's new TGA Consumer Medicine Information (Non-prescription Medicine) Template ("the Non-prescription Medicine Template") (also available for free from the TGA's website www.tga.gov.au), to those that are introduced for prescription medicines by item 3 above.

The main difference for over the counter medicines, in comparison with prescription medicines, in relation to CMI documents, is that under the Non-prescription Medicine Template the use of the summary component of that document will be optional, whereas the use of the summary is a required component of the Prescription Medicine Template.

This principally reflects that such documents would generally contain less information for over the counter medicines in comparison with prescription medicines, as over the counter medicines are more likely to be associated with a longer history of established safe use.

Schedule 7 – Handling and testing of samples

Introduction
Part 5 of the TG Regulations sets out requirements and arrangements relating to the handling and testing of samples of therapeutic goods by analysts at the TGA, including in particular samples of therapeutic goods that are provided by sponsors in compliance with statutory conditions of the entry of their goods in the Register to make such samples available.

These requirements and arrangements are principally designed to ensure the integrity of test results of samples tested by the TGA for the purpose of identifying whether the goods are safe for use and are complying with important elements of the regulatory scheme, such as applicable standards.

The provisions of Part 5 have not been updated for quite some time, and there is now a need to update them, in particular to improve clarity and remove duplication and inconsistencies.

Item 1 – Regulation 2 (definition of *official analyst*)
This item makes a minor amendment to regulation 2 of the TG Regulations, to reflect the change that is introduced by item 2 below.

Item 2 – Subregulation 23(1)
This item amends subregulation 23(1) of the TG Regulations to introduce a small number of new definitions for the purposes of Part 5 of the TG Regulations – for 'analyst', 'appropriately fastened and sealed' and 'official analyst'.

The definition of 'official analyst' is to be moved from regulation 2 to subregulation 23(1) by items 1 and 2, taken together.

The introduction of a definition of 'analyst' reflects that as part of the modernisation and streamlining of Part 5, the Secretary will have the power to appoint persons with appropriate qualifications and experience as analysts or official analysts to test samples of therapeutic goods.

Item 3 – Subregulation 23(1) (definition of *relevant test*)
This item amends subregulation 23(1) of the TG Regulations to repeal the definition of 'relevant test' from that subregulation, as this term would not be needed as a result of the amendments proposed to improve the clarity of regulation 28 below.

Item 4 – Subregulation 23(1) (definition of *responsible analyst*)
This item amends subregulation 23(1) of the TG Regulations to make it clear that the definition of 'responsible analyst' in that subregulation means an analyst or an official analyst who is nominated as a responsible analyst under paragraph 25(3)(c) of the TG Regulations.

Item 5 – Subregulation 25(2)
Subregulation 25(2) of the TG Regulations currently provides that, for Part 5 of the TG Regulations, a sample of therapeutic goods is appropriately fastened and sealed if it is fastened and sealed in a vessel or package that is marked with the name and address of the sponsor of the goods or the person from whom it was taken, and in such a manner as to prevent the opening of the vessel or package or the removal of the name and address without breaking the seal.

Some of this terminology is outdated, particularly the reference to "vessel" and the requirement for the name and address of the sponsor or person from whom the sample was taken to, in all instances, be identified.

This item therefore repeals and substitute a new subregulation 25(2) to update these requirements.

The new subregulation 25(2) makes it clear that a sample of therapeutic goods is appropriately fastened and sealed if it is fastened and sealed in a container or package that is marked with a unique identification number, or with the name and address of the sponsor or the person from whom the sample was taken, and in such a manner as to prevent the opening of the container or package or the removal of the unique identification number or name and address without breaking the seal.

This will allow authorised officers, when taking samples, or sponsors when providing samples of their goods to the Secretary in accordance with paragraphs 28(5)(h) or 41FN(2) of the Act, to mark such samples with a unique identification number rather than with relevant name and address details.

The new subregulation 25(2) also reflects that 'container' is a defined term in the Act.

Item 6 – Regulation 25 (heading)
This item makes a minor change to introduce a broader heading for regulation 25, to reflect the amendments that are made by items 7 and 9 below.

Item 7 – Subregulation 25(1)
Subregulation 25(1) of the TG Regulations currently provides that the Secretary may, in writing, appoint a person who has appropriate qualifications and experience to be an official analyst for the purposes of the TG Regulations.

To improve the efficiency of the TGA's handling and testing of samples of therapeutic goods, this item would amend subregulation 25(1) of the TG Regulations, to allow the Secretary to appoint a person with the appropriate qualifications and experience to be an official analyst or an analyst for the purposes of the TG Regulations.

This will allow a greater number of persons with the appropriate qualifications and experience to be available to examine and test samples of therapeutic goods, and in so doing would support the TGA's post-market monitoring of the safety and quality or performance of therapeutic goods.

Item 8 – Subregulation 25(2)
Currently under subregulation 25(2) of the TG Regulations, the Secretary is to maintain a register of the names of official analysts, and is to cause those names to be published in the *Gazette* or on the Department's website from time to time.

However, this register is not considered necessary, and the requirement has led to concerns about the risk of inappropriate contacting or cyber-bullying of APS employees whose details may be included in such a register. The publication of the register could also lead to an increased risk of the generation of fraudulent certificates, using the names of published analysts.

As such, this item amends regulation 25 to repeal subregulation 25(2), as part of appropriate measures to protect the health and safety of employees.

Item 9 – Paragraph 25(3)(c)
Currently under paragraph 25(3)(c) of the TG Regulations, an official analyst may nominate another official analyst to be the responsible analyst for a sample of therapeutic goods (i.e. to be responsible for the examination and testing of the sample).

To improve the efficiency of the TGA's handling and testing of samples of therapeutic goods, this item would, taken together with the changes to be introduced by item 8 above, allow an official analyst to nominate an analyst (i.e. a person with the appropriate qualifications and experience to analyse therapeutic goods, but who is not an official analyst) to be the responsible analyst for a sample of therapeutic goods.

This will allow a greater number of persons with appropriate qualifications and experience to undertake the examination and testing of samples of therapeutic goods, and in so doing would support the TGA's post-market monitoring of the safety and quality or performance of therapeutic goods.

Item 10 – At the end of regulation 25
Under paragraph 25(3)(b) of the TG Regulations, an official analyst may determine the tests that are to be performed on a sample of therapeutic goods taken by an authorised officer or provided by a sponsor in compliance with their conditions of entry in the Register.

This item amends regulation 25 to introduce new subregulations 25(4) and (5) to the TG Regulations, to make clearer the relationship between the official analyst's power in paragraph 25(3)(b) and the tests identified in regulation 28 of the TG Regulations.

New subregulation 25(4) makes it clear that if an official analyst determines a test under paragraph 25(3)(b) for the purpose of identifying whether particular goods comply with an applicable standard (for goods other than medical devices) or comply with the essential principles (for medical devices), the test must be a test covered by regulation 28.

New subregulation 25(5) also makes it clear that if an official analyst determines a test under paragraph 25(3)(b) for another purpose, the test is to be a test that the official analyst considers appropriate.

Item 11 – Paragraph 26(2)(a)
Currently under paragraph 26(2)(a) of the TG Regulations, an authorised officer who takes a sample of therapeutic goods must ensure that the sample is appropriately packaged, fastened and sealed.

To ensure greater consistency across Part 5 of the TG Regulations in relation to the handling requirements for samples of therapeutic goods, this item amends paragraph 26(2)(a) to remove the reference to "packaged", so that the requirement in that paragraph will mirror the terms of new subregulation 23(2) (item 5 above refers).

Items 12 - 14 – Paragraph 26A(1)(a), subparagraphs 26A(1)(b)(i) and (ii) and paragraphs 27(1)(a) and (b)
These items make equivalent amendments to paragraph 26A(1)(a), subparagraphs 26A(1)(b)(i) and (ii) and paragraphs 27(1)(a) and (b) of the TG Regulations, to remove the current reference in those paragraphs and subparagraphs to "packaged".

Item 15 – Paragraph 27(2)(a)
Regulation 27 of the TG Regulations sets out obligations for samples officers who receive samples of therapeutic goods from authorised officers or sponsors, and obligations for responsible analysts (i.e. analysts or official analysts nominated under paragraph 25(3)(c)) who collect such samples from the samples officer.

Paragraph 27(2)(a) of the TG Regulations currently requires that the responsible analyst must, as soon as practicable, collect the sample from the samples officer and arrange for an analysis of the sample by relevant tests to the extent the responsible analyst considers necessary to establish the matters mentioned in subparagraphs 27(2)(a)(i) and (ii).

To improve clarity, and to avoid confusion over whose responsibility it is to determine the tests that are to be performed on a sample, this item replaces the reference to "relevant tests to the extent the [responsible] analyst considers necessary" in paragraph 27(2)(a) with a clearer reference that identifies that the tests to which this requirement relates are the tests determined by the official analyst under paragraph 25(3)(b) of the TG Regulations to be the tests that are to be performed on the sample.

Item 16 – At the end of paragraph 27(2)(a)
This item introduces a new subparagraph 27(2)(a)(iii) to the TG Regulations, with the effect that one of the matters that the responsible analyst must arrange for the testing of a sample to establish is whether, for a listed or assessed listed medicine, the medicine contains an ingredient that is not permitted for use in such a medicine under paragraph 26BB(1)(a) of the Act, or whether a requirement relating to the use of such an ingredient under paragraph 26BB(1)(b) of the Act has been contravened.

Item 17 – Regulation 28 (heading)
This item introduces a new heading for regulation 28 of the TG Regulations, to make it clearer that the purpose of regulation 28 is to set out the tests that an official analyst may determine to be performed on a sample of therapeutic goods in order to identify whether the goods comply with an applicable standard (for goods other than medical devices) or the essential principles (for medical devices).

Item 18 – Subregulation 28(1)
This item makes a minor amendment to subregulation 28(1) of the TG Regulations to remove the reference to "relevant" tests in that subregulation, as part of improving the clarity of the provisions in Part 5.

Item 19 – Paragraph 28(1)(b)
Currently under paragraph 28(1)(b) of the TG Regulations, one of the tests that may be determined by an official analyst for the purpose of identifying whether a sample of therapeutic goods (other than a medical device) complies with an applicable standard is a test specified in a monograph in the British Pharmacopeia.

This item amends paragraph 28(1)(b) of the TG Regulations to also include a test specified in a monograph in the European Pharmacopoeia or the United States Pharmacopeia-National Formulary.

This reflects that these pharmacopoeias are also standards under the definition of that term in subsection 3(1) of the Act.

Item 20 – Paragraph 28(1)(c)
Paragraph 28(1)(c) of the TG Regulations has the effect that one of the tests that may be determined by an official analyst for the purpose of identifying whether a sample of therapeutic goods (other than a medical device) complies with an applicable standard is a test specified in a monograph in the British Pharmacopoeia (Veterinary) in relation to that standard if, principally, the goods are for veterinary use.

This item repeals paragraph 28(1)(c), to reflect that the Act no longer provides for the regulation of goods that are for veterinary use.

Item 21 – Subregulation 28(2)
This item makes a minor amendment to subregulation 28(2) of the TG Regulations to remove the reference to "relevant" tests in that subregulation, to improve clarity (consistent with changes that are introduced by items 15 and 18 above).

Item 22 – Regulation 29 (heading)
This item introduces a new heading for regulation 29, to better reflect that, under regulation 29, it is the responsible analyst who must send copies of the certificate setting out the results of the testing of a sample of therapeutic goods.

Item 23 – Subregulation 29(1)
Subregulation 29(1) of the TG Regulations currently requires the responsible analyst to send a signed certificate to the sponsor of the goods that the responsible analyst has arranged for the testing of, setting out the results of the examination and analysis.

This item amends subregulation 29(1), principally to update this regulation by removing the requirement for the certificate to be signed and to make it clearer that it is the responsible analyst that must issue the certificate.

Item 24 – Subregulations 29(2) and (3)
Subregulation 29(2) of the TG Regulations currently requires the responsible analyst to send a copy of the certificate setting out the results of the examination and analysis of a sample of therapeutic goods to the Secretary and (if the sample was taken under subregulation 25(3)) the person from whom the sample was taken, if that person was not the sponsor.

Subregulation 29(3) of the TG Regulations currently requires the responsible analyst to do so (and to send the certificate to the sponsor under subregulation 29(1)) within a reasonable time after completing the testing.

In particular, the requirement for the responsible analyst to send a copy of the certificate to the Secretary is unnecessary, as the responsible analyst would be a person with appropriate qualifications and experience within the TGA.

This item repeals subregulations 29(2) and (3) and introduces a new subregulation 29(2) to replace those subregulations, principally to remove this unnecessary requirement.

Item 25 – Subregulation 29(4)
This item makes a minor amendment to subregulation 29(4) of the TG Regulations, to reflect the changes to be introduced by item 24 above.

Item 26 – Paragraph 29(4A)(a)
This item makes a minor amendment to subregulation 29(4A) of the TG Regulations, to reflect the changes to be introduced by item 24 above.

Items 27 - 30 – Subregulations 29(5) and (6)
These items make minor amendments to subregulations 29(5) and paragraph 29(6)(a) of the TG Regulations, principally to reflect the changes to be introduced by item 23 above.

Item 31 – Regulation 30 (heading)
This item introduces a new heading for regulation 30 of the TG Regulations, to make it clearer that regulation 30 sets out the arrangements in relation to where a person asks for a review of the results of the analysis undertaken in relation to their goods.

Items 32 and 33 – Paragraph 30(1)(a) and subregulation 30(2)
These items make minor amendments to introduce a new paragraph 30(1)(a) and to amend subregulation 30(2) of the TG Regulations, to reflect the changes to be introduced by item 24 above.

Items 34 and 35 – Subregulation 30(4)
Subregulation 30(4) of the TG Regulations currently provides that a person is not to be regarded as having sent the Secretary evidence establishing that their goods comply with a particular standard or requirement or the essential principles unless the person has sent the Secretary a certificate of an analyst with appropriate qualifications and experience that sets out that the analyst has tested a part of the same sample of the goods as that tested by the responsible analyst and the results of that analysis and the tests used in the analysis.

These items amends subregulation 30(4) to make it clearer that the analyst referred to in subregulation 30(4) is a third party – i.e. is an analyst from outside the TGA, whose analysis is arranged by the sponsor or other person from whom the sample was taken.

Item 36 – Subregulation 30(5)
This item makes a minor amendment to subregulation 30(5) of the TG Regulations, to reflect the changes to be introduced by items 7 and 9 above.

Items 37 – 41 – Subregulation 30(6)
These items make a number of minor amendments to improve the clarity of subregulation 30(6) of the TG Regulations.

Under subregulation 30(5) of the TG Regulations, subregulation 30(6) applies where a sponsor or other person from whom a sample of therapeutic goods is taken has asked for a review of the results of the analysis of their goods and has sent the Secretary evidence that their goods do comply with the relevant applicable standard or other requirement or essential

principles, based on an analysis by a third party analyst (arranged by the sponsor or person) of a part of the same sample of the goods as tested by the responsible analyst.

In such circumstances, subregulation 30(6) requires the Secretary, at the request of the sponsor, to direct that the steps set out in paragraphs 30(6)(a) or (b) of the TG Regulations be taken, in order to verify the results of the third party analyst.

The only exception to this is where the results of the third party analyst shows a lack of homogeneity in the sample.

The steps in paragraphs 30(6)(a) or (b) involve directing the official analyst to send so much of the sample as remains unimpaired or (if no part of the sample remains unimpaired) a new sample to be taken from the same batch as the original sample, to an analyst agreed upon by the sponsor or person or (in the absence of such an agreement) an analyst nominated by the Secretary (in practice in most instances this would involve agreeing upon an independent analyst unrelated to the TGA or the sponsor or person).

Item 37 amends subregulation 30(6) to remove the reference to "at the request of the sponsor" in relation to the requirement for the Secretary to direct that the steps in (a) or (b) be undertaken, to make it clear that the Secretary must take such action in order to verify the results obtained by the sponsor or person, and that the sponsor's request is not a condition precedent for such action.

Item 38 amends subregulation 30(6) to both reflect the changes to be introduced by items 7 and 9 above, and to make it clear that the Secretary could direct any official analyst to take the step mentioned in paragraph 30(6)(a), and that this would not be limited to the official analyst who determined the tests to be performed on the sample under paragraph 30(5)(b) of the TG Regulations.

Items 39 and 41 make minor amendments to subregulation 30(6), principally to reflect the changes to be introduced by items 7 and 9 above and to avoid confusion by using "person" rather than "analyst" to describe the person whom the Secretary must direct that a part of a sample or new sample must be sent under subregulation 30(6).

Item 40 makes a minor amendment to subregulation 30(6) to reflect the changes to be introduced by item 36 above.

Items 42 - 45 – Subregulation 30(7)
Items 42, 44 and 45 make minor amendments to improve the clarity of subregulation 30(7) of the TG Regulations, by making it clearer that subregulation 30(7) applies if a sample of therapeutic goods is sent to a person (in most instances, an independent analyst) mentioned in subregulation 30(6).

Item 43 makes a minor amendment to paragraph 30(7)(a) of the TG Regulations, to reflect the changes to be introduced by items 7 and 9 above.

Items 46 and 47 – Subregulation 30(9)
These items make minor amendments to subregulation 30(9) of the TG Regulations, principally to reflect that it is the responsible analyst, rather than the official analyst, whose findings would be reflected in a certificate issued under subregulation 29(1).

Items 48 - 51 – Subregulations 30(10) and (11)
These items make minor amendments to improve the clarity and readability of subregulations 30(10) and (11) of the TG Regulations and to reflect the changes to be introduced to subregulation 30(6) of the TG Regulations by item 39 above.

Schedule 8 – Fee waivers for certain requests relating to prescription opioids

Therapeutic Goods Regulations 1990

Introduction
Concerns have arisen in recent years over the safe use of prescription medicines that are pharmaceutical opioids.

These products are now responsible for more deaths and poisoning hospitalisations in Australia than illegal opioids such as heroin. Every day in Australia nearly 150 hospitalisations and 14 emergency department admissions involve opioid harm, and 3 people die from drug-induced deaths involving opioid use.

These figures are too high, and the Australian Government has asked the TGA to play a role in tackling the problem. To help reduce the harm, the TGA conducted a public consultation on prescription opioids in 2018, for which a total of 98 submissions were received, with feedback indicating strong and consistent support from all stakeholders for a regulatory response.

Following that consultation, the TGA established the Opioid Regulatory Advisory Group (ORAG), which included representatives from a range of health professional and consumer organisations, to provide independent, expert advice on this issue.

Through the above consultation and the support of ORAG, a number of actions have been identified to help address the problems associated with prescription opioids.

These include the use of smaller pack sizes for the treatment of acute pain following injury or surgery to avoid or reduce the risk of addiction and reduce the number of unused opioids that may be circulating in the community, and the use of relevant warning statements, including a boxed warning at the start of the Product Information (PI) and CMI for such products, alerting consumers and health professionals to the potential for harmful and hazardous use of these products.

The amendments t introduced by this Schedule support such measures, principally by providing that where sponsors of prescription opioids request that the Secretary vary the entry for their goods in the Register to introduce a smaller pack size or to add a boxed warning and other warning or precaution statements about the goods to the PI and CMI, the Secretary must waive the fee that would otherwise apply in relation to such requests.

Item 1 – After subregulation 45(6)
Regulation 45 of the TG Regulations provides for the waiver or reduction of fees in Schedules 9 or 9A to the TG Regulations in a range of specified circumstances.

This item introduces new subregulations 45(7) – (9) to introduce a fee waiver mechanism for certain kinds of requests by sponsors to vary the entry in the Register for their prescription opioid medicines.

New subregulation 45(7) makes it clear that the Secretary must waive a fee prescribed in Schedule 9 in relation to a request by a sponsor of a prescription opioid under subsections 9D(2) or (3) of the Act to vary the entry in the Register for their medicine if:

- the request is made in the period beginning on the commencement of new subregulation 45(7) (on the day after the registration of the Regulations) and ending at the end of 31 December 2020; and
- the request is made solely for an opioid reform purpose, as described in proposed new subregulation 45(8), or for an opioid reform purpose and an associated variation of product information purpose as described in proposed new subregulation 45(9).

New subregulation 45(8) sets out that a request for a variation to an entry in the Register for a prescription opioid will be for an opioid reform purpose if it is made:
- under subsection 9D(2) of the Act, to either add a warning or precaution in relation to the goods that does not include any comparison of the goods with any other therapeutic goods by reference to qualify, safety or efficacy, or to reduce the class of persons for whom the goods are suitable; or
- under subsection 9D(3) of the Act, to introduce a smaller pack size in relation to the goods.

New subregulation 45(9) sets out that an opioid reform request will be for an associated variation of product information request if it is made:
- under subsection 9D(3) of the Act; and
- paragraphs 9D(3)(b)-(c) are satisfied in relation to the request; and
- the request is made for the purpose of varying product information in relation to the prescription opioid, so that the product information is in the form approved under section 7D of the Act in relation to that product.

These measures are designed to encourage sponsors of prescription opioids to submit requests to vary the entries the Register for their products to introduce smaller pack sizes or to add appropriate warning statements or reduce the class of persons for whom their products are suitable, and to do so in a timely manner before the end of 2020.

In so doing, it is intended that these measures will contribute to the safer and more effective use of these high risk medicines.

Schedule 9 – Other amendments

Introduction

This Schedule contains a small number of more minor amendments to the TG Regulations, including in relation to fee waiver for certain requests to vary an entry in the Register for a registered medicine to update product information and to provide for a power for authorised officers to inspect the premises of certain kinds clinical trials.

Part 1 – Fee waiver for requests to vary product information for medicine

Therapeutic Goods Regulations 1990

Item 1 – At the end of regulation 45

Prescription medicines, and some registered over the counter medicines, have product information – defined in subsection 3(1) of the Act as information relating to the safe and effective use of therapeutic goods, including information regarding the usefulness and limitations of the goods.

Under section 7D of the Act, the Secretary may approve a form of product information in relation to medicine (and may approve different forms for different medicines or different classes of medicine).

In 2018, the approved form for product information for prescription medicines was updated, under section 7D.

As part of this update, sponsors of prescription medicine are to be provided with a period of time (1 January – 31 December 2020) in which requests to vary the entry in the Register for their medicine to update their product information so that it complies with the new approved form will not attract a fee.

This is designed to assist any sponsors who have not already sought a variation to their entry in the Register to update their product information to do so by the end of 2020.

Accordingly, this item amends regulation 45 of the TG Regulations to require the Secretary to waive a fee prescribed in Schedule 9 for requests to vary an entry in the Register for a registered medicine, if:

- the requirements of paragraphs 9D(3)(b)-(c) of the Act are satisfied in relation to the request; and
- the request is made solely for the purpose of varying the product information for the medicine so that it is in the form approved under section 7D of the Act in relation to the medicine; and
- the request is made in the period beginning on 1 January 2020 and ending at the end of 31 December 2020.

Part 2 – Clinical trials

Therapeutic Goods Regulations 1990

Item 2 – Regulation 2
This item introduces a definition of 'Practice Guideline' to regulation 2 of the TG Regulations, which makes it clear that this term has the meaning given by paragraph 12AB(2)(a) of the TG Regulations.

Item 3 – Regulation 2 (Definition of Practice Guidelines)
This item repeals the current definition of 'Practice Guidelines' in regulation 2 of the TG Regulations, as this definition is no longer be needed in light of the introduction of a definition for 'Practice Guideline' by item 2 above.

Items 4 and 5 – Paragraph 12AB(2)(a)
This item makes minor amendments to paragraph 12AB(2)(a) of the TG Regulations, to reflect that the correct title of the document mentioned in that paragraph is the "Guideline for Good Clinical Practice", rather than the "Guidelines for Good Clinical Practice", and to correct the name of the organisation responsible for the publication of that document.

Item 6 – Subregulation 12AC(1)
Regulation 12AC of the TG Regulations set out the powers of an authorised officer in relation to a clinical trial mentioned in regulation 12AB of the TG Regulations (these are clinical trials approved by the Secretary under subsections 19(1)(b) of the Act (for medicines) or 32CK(1)(e) of the Act (for biologicals).

This item amends subregulation 12AC(1) of the TG Regulations, to make it clear that authorised officers also have the powers set out in paragraphs 12AC(1)(a) – (f) of the TG Regulations in relation to a clinical trial mentioned in item 3 of Schedule 5A to the TG Regulations.

Item 7 – Paragraph 12AD(a)
This item makes a minor amendment to paragraph 12AD(a) of the TG Regulations, to reflect the changes to be introduced by items 2 and 4 above.

Item 8 – Schedule 5A (at the end of the cell at table item 3, column 3)
Under item 3 of Schedule 5A to the TG Regulations, therapeutic goods used solely for experimental purposes in humans (i.e. clinical trials) are exempt from the requirement to be included in the Register (under section 18 of the Act and subregulations 12(2) and (3) of the TG Regulations), subject to the conditions set out in column 3 for that item.

These conditions include, for example, that before starting to use the goods the sponsor of the goods must notify the Secretary (using the approved form) that the sponsor intends to sponsor the trial.

This item amends item 3 to introduce 3 new such conditions. Principally, these new conditions make it clear that:

- the sponsor must comply with requests by an authorised officer, whether made before or after the start of the trial, to provide information about the conduct of the trial (whether

the sponsor is themselves conducting the trial or another body or organisation is doing so for the sponsor);

- if a body or organisation is conducting the trial for the sponsor, the body or organisation must comply with requests by an authorised officer, whether before or after the start of the trial, to provide information about the trial; and
- the sponsor (if the sponsor is conducting the trial themselves) or the body or organisation conducting the trail for the sponsor must allow an authorised officer to do the things mentioned in regulation 12AC (these include, for example, entering the site of a clinical trial and inspecting, examining, taking measurements of or conducting tests on any thing on the site that relates to the trial).

This measure is designed to address concerns that arisen in recent years that, while there are powers for authorised officers to enter and inspect the site of a clinical trial approved by the Secretary under the Act, there is currently no equivalent power for clinical trials that are authorised by item 3 of Schedule 5A.

These amendments will therefore place both kinds of clinical trials on an equal footing in this regard, and support the safe use of therapeutic goods in the latter kind of trial. This is an important safety initiative for clinical trial participants in particular.

Part 3 – Nappy rash products

Therapeutic Goods Regulations 1990

Item 9 – Schedule 5 (after table item 8A)
This item amends Schedule 5 to the TG Regulations, to introduce a new exemption from the requirement to be included in the Register for certain nappy rash products.

The products that are the subject of the new exemption are unmedicated preparations for topical use for protecting against, or providing relief from, nappy rash symptoms by acting only as a barrier for the skin (whether or not the preparations also have a moisturising action).

It is important to note that this exemption only applies for topical products that are for protecting against or providing relief from nappy rash in the manner noted above, and is exclusive of products that are intended to protect against or provide relief from any other skin condition (including where such products are also for protecting against, or providing relief from, nappy rash).

Item 10 – Schedule 7 (after table item 11)
Schedule 7 to the TG Regulations lists therapeutic goods that are exempt from the requirement to be covered by a manufacturing licence issued under Part 3-3 of the Act.

This item amends Schedule 7 to exempt the same nappy rash products identified in item 9 above from the requirement to be covered by a manufacturing licence (raising the same matter in relation to the scope of this exemption as noted above for the exemption introduced by item 9).

Part 4 – Other amendments

Therapeutic Goods Regulations 1990

Item 11 – Regulation 2 (note 2 to the definition of *Australian Approved Names List*)
This item makes a minor amendment to note 2 under the definition of 'Australian Approved Names List' in regulation 2 of the TG Regulations, to reflect a recent change to the name of the TGA document referred to in that note.

Items 12 and 13 – Subparagraphs 16M(1)(b)(i) and (ii)
These items make very minor amendments to each of subparagraphs 16M(1)(b)(i) and (ii) of the TG Regulations to correct inadvertent typographical errors in those subparagraphs.

Schedule 10 – Application, saving and transitional provisions

Therapeutic Goods (Medical Devices) Regulations 2002

Item 1 – in the appropriate position in Part 11
This item introduces a new Division 11.10 to the MD Regulations, which sets out application and transitional provisions relating to the following measures in the Regulations:

- the reclassification of medical devices (Subdivision B of the new Division);
- programmed or programmable medical devices or software that is a medical device (Subdivision C of the new Division);
- personalised medical devices (Subdivision D of the new Division); and
- IVD companion diagnostics (Subdivision E of the new Division.

Subdivision A – Definitions

Regulation 11.38 - Definitions
This regulation sets out definitions for a small number of terms that are common to all of the application, saving and transitional provisions in new Division 11.10, for:

- 'amending regulations' – meaning these Regulations;
- 'finally determined' – meaning, for an application, the first time both of the following conditions are met:
    - a decision has been made as to whether or not to grant the application; and
    - there is no longer any possibility of a change in the outcome of the decision;
- 'unique product identifier' – meaning, in relation to a medical device, the unique product identifier given to the device by its manufacturer to identify the device and any variants.

Subdivision B – Reclassification of medical devices

Regulation 11.39 - Definitions
This regulation sets out definitions for a small number of terms that are common to only the measures in Subdivision B of new Division 11.10, in relation to the reclassification of medical devices, for:

- 'inclusion day' – meaning, for an entry of a kind of transitional medical device in the Register, the day on which the inclusion of that kind of device in the Register commences;
- 'pre-commencement entry' – meaning an entry of a kind of transitional medical device in the Register if that kind of medical device is included in the Register because of an application made before 25 August 2020 (whether the inclusion day for the entry occurred before, on or after 25 August 2020);
- 'transitional AIMD device' – meaning a transitional medical device of a kind mentioned in column 1 of item 2 of the table in the definition of 'transitional medical device'; and
- 'transitional medical device' – meaning a medical device of a kind mentioned in column 1 of an item in the table under this definition if the medical device is, immediately before 25 August 2020, included in the Register with the classification mentioned in column 2 of that table or if, on 25 August 2020, the device was the subject of an application for inclusion in the Register with the classification mentioned in column 2 and the application had not been finally determined.

This table identifies the current classification levels for all of the kinds of devices which would be reclassified as a result of the amendments in Parts 1-6 of Schedule 1 to the Regulations.

Regulation 11.40 – Transitional medical devices – application of amendments
Parts 1-6 of Schedule 1 of the Regulations amends the MD Regulations to reclassify (and in most instances up-classify) the kinds of medical devices to which those Parts relate.

Under paragraph 41GN(1)(f) of the Act, a kind of medical device may be cancelled from the Register if the Secretary is satisfied that a certification made by the device sponsor when applying for inclusion in the Register is (relevantly) no longer correct – including the certification that would have been made by the sponsor under paragraph 41FD(c) of the Act about the correct classification for their device.

For new applications for inclusion in the Register made on or after 25 August 2020, subregulation 11.40(1) makes it clear that the new classification rules introduced by Parts 1-6 of Schedule 1 would apply from that date.

However, to avoid transitional medical devices being liable to be cancelled following the commencement of Schedule 1 on 25 August 2020, and to allow sponsors and manufacturers of transitional medical devices time to prepare for the new requirements, new regulation 11.40 in this Part sets out transitional arrangements for affected products.

The transitional provisions in subregulations 11.40(2)-(5) apply if, immediately before the commencement of Parts 1-6 on 25 August 2020, an affected kind of device is a transitional medical device (as defined by regulation 11.39).

The transitional provisions provide a period of time – principally, until 1 November 2024 – for sponsors of transitional devices to re-apply for marketing approval for their kind of device under the new classification, and to prepare for the new requirements.

If they do so before then, the new rules would not apply to their kind of device until that application is finally determined or it lapses under section 41FK of the Act or is withdrawn.

However, it is important to note that this is dependent on sponsors of transitional devices providing the Secretary with the notification required under new regulation 11.41, to be introduced by this Subdivision.

Regulation 11.41 – Transitional medical devices – Secretary must be notified of unique product identifiers of devices supplied under pre-commencement entries
New regulation 11.41 introduces, for the purposes of subsection 41FN(5A) of the Act, a statutory condition applying to the inclusion of a transitional device in the Register, under which a sponsor of such a product must notify the Secretary, before the later of 25 February 2021 and the day 2 months after the kind of device is included in the Register, of:

- the unique device number assigned to that kind of device by the Secretary under section 41FL of the Act; and
- the unique product identifier given to each such device by its manufacturer, that the sponsor is supplying in Australia.

If a sponsor of a transitional device does not provide the required notification, then the new rules will apply to their kind of device on and after the later of 25 February 2021 and the day 2 months after the kind of device is included in the Register.

Regulations 11.42 and 11.43 – Transitional medical devices – selecting applications for auditing, and waiver of certain application fees

Separately, new regulations 11.42 and 11.43 respectively ensure that any transitional medical devices that are active implantable medical devices that have been re-classified from Class AIMD to Class III devices by the amendments in Part 2 will not be subject to an application audit under regulation 5.3 of the MD Regulations, and that the Secretary must waive the application fee for such an application that would otherwise apply under paragraph (b) of item 1.5 of Schedule 5 to the MD Regulations (this waiver requirement would apply until 24 August 2021).

This reflects that these products have, or will have, previously been subject to such an audit as part of their application for inclusion in the Register under the current AIMD medical device classification and will, in relation to the fee waiver mechanism, provide an incentive for sponsors to apply early in the transitional period to apply to include their products in the Register as Class III devices.

Subdivision C – Programmed or programmable medical device or software that is a medical device

Regulation 11.44 - Definitions

New regulation 11.44 sets out definitions for a small number of terms that are common to only the measures in Subdivision C of new Division 11.10, in relation to programmed or programmable medical devices, or software that is a medical device, for:

- 'inclusion day' – meaning, for an entry of a kind of medical device in the Register, the day on which the inclusion of that kind of device in the Register commences;
- 'transitional kind of medical device' – meaning a kind of medical device included in the Register because of an application made before 25 August 2020 (whether the inclusion day for the entry of that kind of medical device occurred before, on or after that day).

Regulation 11.45 Programmed or programmable medical device or software that is a medical device – classification rules

Part 1 of this Schedule introduces amendments that reclassify (and in most instances up-classify) the medical device classification of a range of medical devices that are programmed or programmable medical devices, or software that is a medical device.

Under paragraph 41GN(1)(f) of the Act, a kind of medical device may be cancelled from the Register if the Secretary is satisfied that a certification made by the device sponsor when applying for inclusion in the Register is (relevantly) no longer correct – including the certification that would have been made by the sponsor under paragraph 41FD(c) of the Act about the correct classification for their device.

For new applications for inclusion in the Register made on or after 25 August 2020, new subregulation 11.45(1) makes it clear that the new classification rules would apply from that date.

However, to avoid transitional kinds of medical devices being liable to be cancelled when the changes to device classifications for such products commence on 25 August 2020, and to

allow sponsors and manufacturers of transitional kinds of medical devices time to prepare for the new requirements, new regulation 11.45 sets out transitional arrangements for affected products.

The transitional provisions in new subregulations 11.45(2)-(5) apply if, immediately before the commencement of Parts 1-6 on 25 August 2020, an affected software device is a transitional kind of medical device (as defined in regulation 11.44).

The transitional provisions provide a period of time – principally, until 1 November 2024 – for sponsors of transitional devices to re-apply for marketing approval for their kind of device under the new classification, and to prepare for the new requirements.

If they do so before then, the new rules will not apply to their device until that application is finally determined or it lapses under section 41FK of the Act or is withdrawn.

However, it is important to note that this is dependent on sponsors of transitional devices providing the Secretary with the notification required under new regulation 11.46, to be introduced by this Subdivision.

Regulation 11.46 – Secretary must be notified in relation to a transitional kind of medical device

New regulation 11.46 introduces, for the purposes of subsection 41FN(5A) of the Act, a statutory condition applying to the inclusion of a transitional kind of medical device in the Register that is a programmed or programmable medical device or software that is a medical device.

Under this condition, a sponsor of such a product must notify the Secretary, before the later of 25 February 2021 and the day 2 months after the kind of device is included in the Register, of:

- the unique device number assigned to that kind of device by the Secretary under section 41FL of the Act; and
- the unique product identifier given to each such device by its manufacturer, that the sponsor is supplying in Australia.

If a sponsor of a transitional kind of medical device does not provide the required notification, then the new rules will apply to their kind of device on and after the later of 25 February 2021 and the day 2 months after the kind of device is included in the Register.

Regulation 11.47 – Programmed or programmable medical device, or software that is a medical device – essential principles

Subregulation 11.47(1) makes it clear that new clause 13B of Schedule 1 to the MD Regulations, as introduced by Schedule 2 of these Regulations (in relation to requiring the current version number and current build number of software to be accessible and identifiable for users), applies on and after 25 August 2020 for new devices for which inclusion in the Register is sought from that date.

Subregulation 11.47(2) makes it clear that for software that is a transitional kind of medical device (as defined in regulation 11.44), new clause 13B will apply on and after 1 November 2024.

Subdivision D – Personalised medical devices

Regulation 11.48 – Definitions
New regulation sets out definitions for a small number of terms that are common to only the measures in Subdivision D of new Division 11.10, in relation to personalised medical devices, for:

- 'inclusion day' – meaning, for an entry of a kind of medical device in the Register, means the day on which the inclusion of that kind of device in the Register commences; and
- 'transitional kind of medical device' – meaning a kind of medical device included in the Register because of an application made before 25 August 2020 (whether the inclusion day for the entry of that kind of medical device occurred before, on or after that day).

Regulation 11.49 – Personalised medical devices – reports
New regulation 11.49 makes it clear that new subregulation 10.3A(1) and (2) would only apply to custom-made medical devices that are, respectively, manufactured in, or imported into, Australia, on or after 25 August 2020.

Regulation 11.50 – Personalised medical devices – conformity assessment procedures
New regulation 11.50 makes it clear that the amendments of clause 7.2, and the repeal and substitution of subclause 7.6(2), of Schedule 3 to the MD Regulations made by Schedule 3 to these Regulations applies in relation to a medical device that is manufactured on or after 25 August 2020.

Regulation 11.51 – Personalised medical devices - exemptions
New regulation 11.51 sets out saving and application provisions in relation to the amendments that would be made in relation to the exemption of custom-made medical devices and patient-matched medical devices in Part 4 of Schedule 3 of the Regulations.

Subregulation 11.51(1) saves the current exemption for custom-made medical devices – in item 1.5 of Part 1 of Schedule 4 to the MD Regulations - by providing that it continues to apply to a custom-made medical device (within the meaning of that term immediately before the commencement of these amendments on 25 August 2020) that is manufactured before that day, or that is manufactured on or after that day if the request from the health professional to manufacture it was made before that day.

Subregulation 11.51(2) makes it clear that the new exemption for custom-made medical devices – new item 2.12 of Part 2 of Schedule 4 – applies in relation to a custom-made medical device that is manufactured on or after 25 August 2020, where the request from the health professional for its manufacture is made on or after that day.

Subregulation 11.51(3) makes it clear that the new exemption for patient-matched medical devices – new item 2.13 of Part 2 of Schedule 4 – applies in relation to a patient-matched medical device if:

- it is manufactured on or after 25 August 2020 and before 1 November 2024; and
- before 25 August 2020, information about the device is given to the Secretary in accordance with regulation 10.3 of the MD Regulations (principally, regulation 10.3 requires a manufacturer or sponsor of a custom-made medical device to notify the Secretary of the manufacturer's or sponsor's name and address, and description of such devices being custom-made by the manufacturer).

Regulation 11.52 – Personalised medical devices – classification rules
New regulation 11.52 sets out transitional arrangements in relation to the amendments that are to be made in relation to the classification of personalised medical devices by Part 5 of Schedule 3 to the Regulations.

Most of the medical devices that are not covered by the current clause 5.4 classification rule but that are covered by the new clause 5.4 (e.g. anatomical models) are currently classified as Class I medical devices, principally under the classification rule in clause 2.1 of Schedule 2 to the MD Regulations (which provides that a non-invasive medical device is classified as Class I, unless the device is classified at a higher level under another clause in Parts 2, 4 or 5 of Schedule 2).

Under paragraph 41GN(1)(f) of the Act, a kind of medical device may be cancelled from the Register if the Secretary is satisfied that a certification made by the device sponsor when applying for inclusion in the Register is (relevantly) no longer correct – including the certification that would have been made by the sponsor under paragraph 41FD(c) of the Act about the correct classification for their device.

Subregulation 11.52(1) makes it clear that the new clause 5.4, as substituted by Schedule 3 of the Regulations, would apply on and after 25 August 2020 in relation to an application for a kind of medical device to be included in the Register that is made on or after 25 August 2020, and to a kind of medical device that is included in the Register as a result of such an application.

However, to avoid transitional kinds of medical devices being liable to be cancelled when the changes to device classifications commence on 25 August 2020, new regulation 11.52 sets out transitional arrangements for affected products.

The transitional provisions in subregulations 11.52(2)-(5) apply if, immediately before the commencement of new clause 5.4 on 25 August 2020, an affected kind of device is a transitional kind of medical device (as defined in new regulation 11.48).

The transitional provisions provide a period of time – principally, until 1 November 2024 – for sponsors of transitional kinds of medical devices to re-apply for marketing approval for their kind of device under the new classification, and to prepare for the new requirements.

If they do so before then, the new rules would not apply to their device until that application is finally determined or it lapses under section 41FK of the Act or is withdrawn.

However, it is important to note that this is dependent on sponsors of transitional devices providing the Secretary with the notification required under new regulation 11.53, to be introduced by this Part.

Regulation 11.53 – Secretary must be notified in relation to a transitional kind of medical device
New regulation 11.53 introduces for the purposes of subsection 41FN(5A) of the Act, a statutory condition applying to the inclusion of a transitional kind of medical device in the

Register that is a personalised medical device of a kind that would be covered by the classification rules in Part 5 of Schedule 3 (e.g. anatomical models).

Under this condition, a sponsor of such a product must notify the Secretary, before the later of 25 February 2021 and the day 2 months after the kind of device is included in the Register, of:

- the unique device number assigned to that kind of device by the Secretary under section 41FL of the Act; and
- the unique product identifier given to each such device by its manufacturer, that the sponsor is supplying in Australia.

If a sponsor of a transitional kind of medical device does not provide the required notification, then the new rules will apply to their kind of device on and after the later of 25 February 2021 and the day 2 months after the kind of device is included in the Register.

Subdivision E – IVD Companion diagnostics

Regulation 11.54 – IVD companion diagnostics

New subregulation 11.54(1) makes it clear that the amendment of paragraph 5.3(1)(j) by Schedule 4 of the Regulations (in relation to the selection of applications for inclusion in the Register for audit involving IVD companion diagnostics) applies to applications for inclusion in the Register that are made on or after 1 February 2020.

New subregulations 11.54(2)-(5) have the effect that the amendments made by Schedule 4 of the Regulations in relation to the classification of IVD companion diagnostics, and the circumstances in which a medical device is taken to be of the same kind as another, will not apply until 1 July 2022 for an IVD companion diagnostic that, immediately before 1 February 2020:

- was either a Class 4 in-house IVD medical device or an IVD medical device other than an in-house IVD medical device that was included in the Register or was the subject of an application for inclusion in the Register that had not been finally determined; or
- was either a Class 4 in-house IVD medical device or an IVD medical device other than an in-house IVD medical device that was not included in the Register but was covered by a conformity assessment certificate (issued by the Secretary under section 41EC of the Act) that was in effect, or was proposed to be covered by a conformity assessment certificate for which an application had been made that had not been finally determined; or
- was a Class 1, Class 2 or Class 3 in-house IVD medical device (under item 2.10 of Schedule 4 to the MD Regulations, these IVD medical devices are exempt from the requirement to be included in the Register).

New subregulation 11.54(6) makes it clear that these provisions do not preclude a person from applying to include an IVD companion diagnostic in the Register in accordance with the MD Regulations - as amended by Schedule 4 of the Regulations - before 1 July 2022 if they wish to do so.

Importantly also, subregulation 11.54(7) has the effect that the application fee in paragraph (h) of item 1.5 of Schedule 5 to the MD Regulations for applications to include an IVD medical device in the Register, will not apply to such applications made on and after 1 February 2020 and before 1 July 2022.

This is designed to encourage sponsors of such products to apply for marketing approval and to engage with the proposed new requirements at an early stage, and in order to support the availability of these important products for Australian consumers.

Therapeutic Goods Regulations 1990

Item 2 – In the appropriate position in Part 9
This item introduce a new Division 12 to the TG Regulations, which sets out application and transitional provisions relating to the following measures in the Regulations:

- faecal microbiota transplant products (Subdivision B of the new Division);
- consumer information documents (Subdivision C of the new Division);
- handling and testing of samples (Subdivision D of the new Division);
- fee waivers and refunds for certain requests relating to prescription opioids (Subdivision E of the new Division); and
- clinical trials (Subdivision F of the new Division).

Subdivision A - Definitions

Regulation 69 - Definitions
This regulation set outs definitions for 2 terms that are common to all of the application, saving and transitional provisions in new Division 12, for:

- 'amending regulations' – meaning these Regulations; and
- 'finally determined' - meaning, for an application, the first time both of the following conditions are met:
    - a decision has been made as to whether or not to grant the application; and
    - there is no longer any possibility of a change in the outcome of the decision.

Subdivision B – Faecal microbiota transplant products

Regulation 70 – Faecal microbiota transplant products – Division 4 of Part 3-2A of the Act
New regulation 70 principally exempts FMT products from the requirement to be included in the Register until 1 January 2021.

If a person applies by 31 December 2020 to include an FMT product in the Register, the exemption will continue in place on and after 1 January 2021, until the application is finally determined, lapses or is withdrawn.

This measure is designed to provide a period of time for sponsors of FMT products to transition to full regulation under the therapeutic goods regulatory scheme, and in particular to prepare applications to include their products in the Register.

It is important to note that the exemption is subject to the condition that if a sponsor of an FMT product knows of information relating to an event or occurrence that indicates that the product may have an unintended harmful effect, the sponsor must provide that information to the Secretary within the period specified in regulation 16AB of the TG Regulations.

Regulation 71 - Faecal microbiota transplant products – Part 3-3 of the Act

New regulation 71 exempts FMT products that are biologicals (other than those that are Class 1 biologicals) from the requirement to be covered by a manufacturing licence issued under Part 3-3 of the Act, until 1 January 2021.

If a manufacturer of such a product applies for a licence by 31 December 2020, the exemption will continue in place until the application is finally determined or withdrawn.

This measure is also intended to assist manufacturers of these higher risk biologicals to transition to full registration under the therapeutic goods regulatory scheme.

The exemption does not cover FMT products that are Class 1 biologicals because, under section 33B of the Act, Part 3-3 of the Act (and in particular the requirement for a manufacturing licence) does not apply to a Class 1 biological.

Subdivision C – Consumer medicine information documents

Regulation 72 – Consumer medicine information documents
New subregulation 72(1) provides that, subject to the rest of regulation 72, the amendments made to regulations 9A and 9B of, and Schedules 12 and 13 to, the TG Regulations by Schedule 6 of the Regulations, will apply to prescription or over the counter medicines that are supplied in Australia on and after the commencement of Schedule 6 on 1 January 2021.

However, under subregulations 72(2) and (3), these amendments will not apply to prescription or over the counter medicines until 1 January 2026 for medicines that, immediately before 1 January 2021 are registered in the Register or covered by one of the pathways for the lawful supply of unapproved therapeutic goods.

These pathways are that the goods were an exempt good under sections 18 or 18A of the Act, or the that they were the subject of an approval or authority under section 19 of the Act or the subject of an approval under section 19A of the Act.

Subregulations 72(4) and (5) also sets out transitional arrangements for prescription and over the counter medicines that, immediately before 1 January 2021, are the subject of an application for registration in the Register that has not been finally determined.

Under these arrangements, if a medicine is included in the Register as a result of such an application then, principally, the amendments made to regulations 9A and 9B of, and Schedules 12 and 13 to, the TG Regulations, will not apply to them until 1 January 2026.

Subdivision D – Handling and test of samples

Regulation 73 – Handling and testing of samples
New regulation 73 makes it clear that the repeal and substitution of subregulation 23(2) of the TG Regulations by Schedule 7 to the Regulations, the amendment of paragraph 25(3)(c) by that Schedule, subregulations 25(4) and (5) as added by that Schedule and the amendments of paragraph 27(2)(a) and regulations 28, 29 and 30 by that Schedule, will apply in relation to samples of therapeutic goods that are taken or delivered on or after 1 January 2020.

Subdivision E – Fee waivers and refunds for certain requests relating to prescription opioids

Regulation 74 – Fee waivers and refunds for certain requests relating to prescription opioids

New subregulation 74(1) provides that the introduction of subregulations 45(7) – (9) to the TG Regulations by Schedule 8 of the Regulations applies in relation to requests to vary an entry in the Register that are made on or after the commencement of those subregulations (on the day after the registration of the Regulations).

However, new subregulation 74(2) makes it clear that if, on or after 31 August 2019 and before the commencement of Schedule 8, a person makes such a request in relation to a prescription opioid and the request is solely for an opioid reform purpose or an opioid reform purpose and an associated variation of product information purpose (as outlined above), and the person paid the applicable fee for the request, the Secretary must refund the fee to the person.

This is designed to particularly encourage the timely making of these kinds of requests by prescription opioid sponsors, so that smaller pack sizes and appropriate warnings are able to be put in place as soon as possible to help combat the risks associated with these products.

Subdivision F – Clinical trials

Regulation 75 – Clinical trials

New subregulation (1) makes it clear that the amendments in Part 2 of Schedule 9 to these Regulations in relation to clinical trials have effect as if a written assurance given before 1 January 2020 under paragraph 12AB(2)(a) of the TG Regulations that a clinical trial would be conducted in accordance with the Practice Guidelines were, on and after 1 January 2020, a written assurance that the trial would be conducted in accordance with the Practice Guideline.

New subregulations 75(2) and (3) make it clear that the amendments to subregulation 12AC(1) and paragraph 12AD(a) of the TG Regulations by Part 2 of Schedule 9 apply in relation to things done on or after, or uses on or after, 1 January 2020 in relation to a clinical trial that began before, on or after 1 January 2020.

Subregulation 75(4) makes it clear that the amendment of Schedule 5A to the TG Regulations by Part 2 of Schedule 9 applies in relation to requests made on or after 1 January 2020 to provide information acquired before, on or after that date, and to things mentioned in regulation 12AC of the TG Regulations done on or after 1 January 2020, in relation to a clinical trial that began before, on or after 1 January 2020.

Statement of Compatibility with Human Rights

Prepared in accordance with Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*

Therapeutic Goods Legislation Amendment (2019 Measures No.1) Regulations 2019

The *Therapeutic Goods Legislation Amendment (2019 Measures No.1) Regulations 2019* (the Regulations) are compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the Legislative Instrument
The Regulations are made under subsection 63(1) of the *Therapeutic Goods Act 1989* (the Act) and subsection 5(1) of the *Therapeutic Goods (Charges) Act 1989*.

The principal purpose of the Regulations is to amend the *Therapeutic Goods (Medical Devices) Regulations 2002* (the MD Regulations) to support the implementation of recommendation 20 of the Expert Panel Review of Medicines and Medical Devices Regulation (the Review). Recommendation 20, agreed to by the Government as part of its Response to the Review, proposed the harmonisation, where possible, of the regulation of medical devices in Australia with that of the European Union (the EU).

The Regulations are designed to do this by reclassifying certain kinds of medical devices (e.g. spinal implantable medical devices like spinal disc replacements), to ensure that the level of pre-market scrutiny applied to applications for marketing approval for such products is commensurate with the risk they may pose to users, consistent with the EU.

The Regulations also make a number of other amendments, to the MD Regulations, and the *Therapeutic Goods Regulations 1990* (the TG Regulations), to:

- better address new and emerging technologies in medical devices that are or that utilise software, and personalised medical devices such as custom-made devices, to ensure such products are subjected to appropriate scrutiny and manufacturing standards;
- introduce a new, tailored regulatory framework for in vitro diagnostic medical devices that are companion diagnostics (these are principally pathology tests for identifying the presence or absence of biological features such as genes in order to determine whether a person is likely to benefit, or be at risk from, a particular medicine or biological);
- introduce a new, tailored regulatory framework for faecal microbiota transplant products (these are biologicals that comprise, contain or are derived from, human stool, and are used to repopulate a person's bowel with benevolent microorganisms, e.g. after use of antibiotics has affected such bacteria);
- introduce a new, more user-friendly format for consumer medicine information documents, to assist consumers to be aware of and understand important information about the safe use of prescription and registered over the counter medicines;
- encourage sponsors of prescription opioids to support their safe use, e.g. by introducing smaller pack sizes and reducing the class of persons for whom such products are suitable;
- a number of minor measures, including for example to exempt certain nappy rash products from the requirement to be entered in the Register.

Human rights implications
The Regulations engage the right to health in Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR).

Article 12 of the ICESCR promotes the right of all individuals to enjoy the highest attainable standards of physical and mental health. In General Comment No.14: The Right to the Highest Attainable Standard of Health (Art.12) (2000), the United Nations Committee on Economic, Social and Cultural Rights states that health is a 'fundamental human right indispensable for the exercise of other human rights', and that the right to health is not be understood as the right to be healthy, but includes the right to a system of health protection which provides equal opportunity for people to enjoy the highest attainable level of health.

The Regulations take positive steps to promote the right to health by ensuring that the applicable regulatory requirements for medical devices that are or that utilise software, and for personalised medical devices such as custom-made devices, adequately reflect the risks that such products may pose to users, and by introducing appropriate regulatory oversight of faecal microbiota transplant products and a tailored regime of regulatory requirements that addresses the risks that may be posed to users of IVD companion diagnostics.

The Regulations also take positive steps to promote the right to health by supporting reforms to improve the safe use of prescription opioids, and by introducing the use of improved consumer medicine information documents for prescription and over the counter medicines.

Conclusion
The Regulations are compatible with human rights because they maintain and support the right to health in Article 12 of the ICESCR as outlined above, and do not raise any other human rights issues.

Greg Hunt, Minister for Health

Attachment B

Australian Government
Department of Health
Therapeutic Goods Administration

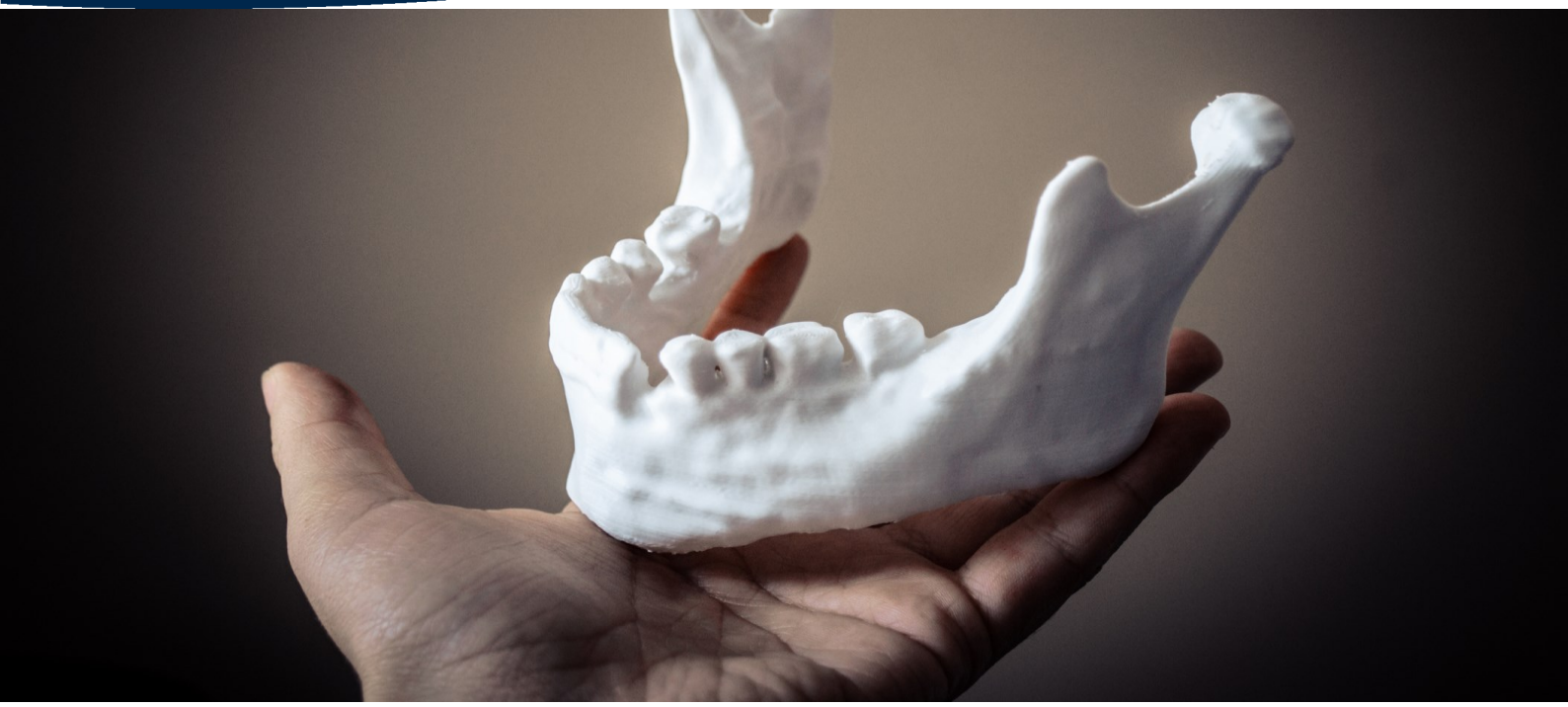
Regulation Impact Statement

Proposed regulatory scheme for personalised medical devices, including 3D-printed devices

Office of Best Practice Regulation (OBPR) ID number: 24680

December 2019

TGA Health Safety Regulation



Contents

Introduction

Technology changes have the potential to deliver significant benefits and opportunities to Australians. Recent advances are both disrupting and changing the health sector, where there is rapid change in the availability and type of medical devices intended to be personalised for individuals.

Sometimes, the treatment requirements of a particular patient cannot be met with commercially available mass-produced medical devices. In these cases, healthcare providers make, or provide specifications to a manufacturer to make, personalised devices to meet the patients' needs.

However, medical devices are not without risk, and there is increasing recognition globally of the patient safety issues that can arise with medical devices. Recent high-profile cases have brought into question the effectiveness of the existing medical device regulatory frameworks; as a consequence, regulators around the world are increasing their scrutiny of the manufacture of medical devices.

In Australia, there has recently been a review of the medicines and medical device regulation,[1] as well as a number of Senate inquiries on medical device regulation in recent years. In order to continue to provide a high level of stringent oversight, the regulation of personalised medical devices is one such area that requires increased focus.

This Regulatory Impact Statement is intended to support the decision on whether or not to introduce regulatory reforms for medical devices that are manufactured for particular patients (personalised medical devices). These are devices that are captured in the current regulatory framework under:

- the custom-made medical device definition, and its corresponding exemption (explained in more detail below);
- medical devices that are referred to in the definition of manufacturer under Section 41BG of the *Therapeutic Goods Act 1989* (the Act) as devices already supplied but intended to be assembled or adapted to suit an individual; and
- medical devices incorporating human-origin materials that are currently regulated as biologicals under the Act.

Current regulation of custom-made medical devices

The *Therapeutic Goods (Medical Devices) Regulations 2002* (MD Regulation) define a custom-made medical device as:

- made specifically in accordance with a request by a health professional specifying the design characteristics or construction of the medical device; and
- intended to be used only in relation to a particular individual, or to be used by the health professional to meet special needs arising in the course of his or her practice.

To import, export or supply a medical device in Australia, it must be included on the Australian Register of Therapeutic Goods (ARTG), unless an exemption applies. This is the approval required to market medical devices in Australia.

[1] Information on the Review of Medicines and Medical Devices Regulation is available at: https://www.tga.gov.au/hubs/mmdr

The safety, quality and performance of medical devices is established through conformity assessment. Conformity assessment is the systematic and ongoing examination by the manufacturer of evidence and procedures to determine that the safety of a medical device is acceptable and that the device performs as intended and, therefore, conforms to the essential principles (which set out the fundamental design and performance requirements for medical devices[2]).

An applicant must be able to demonstrate that the appropriate conformity assessment procedure has been applied to their device in order to apply for inclusion of the medical device in the ARTG. This is generally demonstrated by providing certification or documentation issued to the manufacturer by an appropriate assessment body (e.g., the TGA or a comparable overseas regulator). This follows third-party (independent) assessment of the manufacturer's facilities and processes and, for higher-classed medical devices, an additional in-depth design examination (evaluation) of the medial device.

There are four significant differences in the way custom-made medical devices are regulated in comparison to other medical devices: the conformity assessment procedure for custom-made medical devices, compliance with the essential principles, exemption from inclusion in the ARTG, and record keeping and reporting.

Conformity assessment procedure

In Australia, medical devices are stratified in a regulatory classification ruleset from Class I at the low end of the spectrum, to Class III at the highest. Regulatory oversight is commensurate with this classification. Manufacturers of medical devices higher than Class I, that have a measuring function, or that are supplied sterile, must be certified by the regulator (or a specified third-party representing the regulator) to ensure the manufacturer's systems provide sufficient assurance of the devices' safety and performance prior to their supply on the Australian market.

For custom-made medical devices, third-party assessment is not required. Manufacturers of custom-made medical devices may instead make use of an exemption pathway, which largely only requires the manufacturer to:

- advise the TGA that they are supplying particular kinds of custom-made medical device[3]; and
- keep written records for each custom-made device supplied and notify the TGA of any adverse events or recalls related to the custom-made medical device (retained for at least 5 years)[4]

There is little or no monitoring of compliance with these requirements. At the time the regulations came into place in 2002, custom-made medical devices were generally bespoke devices or devices modified for a specific patient. Typical examples were dentures and dental crowns, or prescription spectacles. At that time it was considered that as custom-made devices were generally quite low risk products produced as 'one-off' items, third-party review of the manufacturer's facilities and processes, and in-depth examination of the devices design, for each custom–made device supplied would have been too onerous and would have affected supply of custom made devices given that most were low risk products.

[2] The essential principles are prescribed in the MD Regulations, Schedule 1.
[3] Notification of manufacture or importation of custom-made medical devices is required under Regulation 10.3 of the MD Regulations
[4] The MD Regulations prescribe procedures for medical devices used for a special purpose at Schedule 3, Part 7. Clause 7.2 deals with custom-made medical devices.

Essential principles

The essential principles set out the fundamental safety and performance principles for medical devices. There are six general essential principles that apply to all devices (relating to health and safety, including long-term safety, with benefits outweighing the risks), a principle that covers information that must be provided with a medical device, another principle that covers clinical evidence requirements, and a further seven essential principles about design and construction that apply to devices on a case-by-case basis. This principles-based regulatory framework caters for technological advances and changes in the development of new medical devices, and provides flexibility for manufacturers. It does not mandate the means by which a manufacturer must prove that they have met the essential principles.

Custom-made medical devices, unlike other medical devices, are not required to fully comply with all of the essential principles. The written records required for custom-made medical devices must include a statement that the device complies with the applicable provisions of the essential principles or, if the device does not comply with all applicable provisions of the essential principles, an explanation of which essential principles the device does not comply with and the reasons for the non-compliance.

This relates to the 'one-off' nature of custom-made medical devices. For example, requirements for information supplied with a non-custom-made device are quite extensive, but this may be less extensive for a one-off' custom-made medical device.[5] Normal requirements for clinical evidence can also be impossible to meet for 'one-off' custom-made medical devices, as approaches such as clinical trials and tracking of devices in use are not always possible with one-off custom-made medical devices.[6]

Exemption from inclusion

Custom-made medical devices are exempt from the requirement for medical devices to be included on the ARTG and, as a result, are also not subject to third-party assessment and approval of the medical device prior to supply.

Inclusion on the ARTG brings with it a range of obligations and responsibilities, which do not apply for custom-made medical devices. For example, manufacturers of implantable medical devices are required to report to the TGA annually for the first three years they are included on the ARTG, and this does not apply for custom-made implantable medical devices.

There is also a range of enforcement mechanisms and sanctions linked to ARTG inclusion that cannot be applied to custom-made medical devices. For example, suspension or cancellation of an ARTG entry, such as where there are safety or compliance concerns, effectively removes a kind of medical device from the Australian market; this does not apply to custom-made medical devices not included on the ARTG. Further, most criminal and civil sanctions available under the Act relate to inclusion in the ARTG or other approvals by TGA, and thus cannot be applied to custom-made medical devices or their manufacturers or suppliers.

Record keeping and reporting

As noted above, the manufacturer of a custom-made medical device is required to advise the TGA that they are supplying a kind of custom-made medical device, and keep written records for each custom-made device supplied (to be retained for at least 5 years).

[5] Essential principle 13 prescribes the information to be provided with medical device
[6] Essential principle 14 requires clinical evidence appropriate to the use and risk classification for all medical devices

Record-keeping and reporting requirements applying to devices other than custom-made medical devices are considerably more extensive. These requirements are conditions on the inclusion of a medical device on the ARTG, and non-compliance can result in the loss of marketing approval for the device (which is not applicable for custom-made medical devices, as these are not approved for supply, so the approval cannot be withdrawn). Further, records for high class and implantable (non-custom-made) medical devices are required to be kept for longer than 5 years, reflecting the long expected lifetime for these devices. Manufacturers of higher class devices are additionally required to make annual reports to the TGA during the first few years they are supplied.

Current regulation of diagnostic imaging and anatomical models

The accuracy of images and anatomical models is very important in ensuring correct diagnosis, or effective investigation, of anatomy, physiology, or pathology (disease) of a person.

Classification rule 5.4[1] specifies that non-active (non-energy using) medical devices used to record X-ray diagnostic images (such as X-ray film) are classified as Class IIa medical devices. Under another classification rule, 4.3, diagnostic scanning equipment—the X-ray machine, MRI, PET or CT scanner are also Class IIa (or higher). The Class IIa classification means that manufacturers must implement a formal system of quality control (termed a quality management system) and they must also be certified and inspected by a suitable third party (such as the TGA or an European Union notified body).

However, the diagnostic and interpretative image-recording software for use with X-ray, magnetic resonance imaging (MRI), positron emission tomography (PET), and computed tomography (CT) scans is usually classified at the lowest regulatory classification—Class I—rather than Class IIa like X-ray film and diagnostic image-scanning equipment, despite such software having the same importance when it comes to required diagnostic accuracy.

This is largely a product of the time the regulations were developed rather than the risk profile of these image-recording technologies.

Similarly, anatomical models used for diagnosis or investigation of the anatomy, or used to plan surgical procedures, are also usually Class I even though their accuracy is critical in planning surgery.

The rationale for classifying X-ray film at Class IIa also holds for other diagnostic image-recording and anatomical modelling technologies that perform a similar function to that of the X-ray film.

Current regulation of medical devices with human-origin components

At present, a subset of combination products (medical devices that include materials of non-viable animal, microbial, or recombinant origin) are regulated as Class III medical devices (the highest regulatory class), and are included on the ARTG as a medical device. These devices undergo a high level of regulatory assessment by the TGA. Both the medical device components and the other therapeutic materials are assessed together as part of a design examination assessment prior to inclusion on the ARTG.

However, medical devices that include human-origin materials (for example, an artificial mechanical kidney that uses another person's stem cells) are not regulated as medical devices but instead are regulated as Biologicals under the Biologicals regulatory framework under the

[1] MD Regulations, Schedule 2, Classification Rule 5.4

Act and the *Therapeutic Goods Regulations 1990*; this is at odds with how comparable overseas regulators regulate these products.

The growth of 'personalised medical devices'

Personalised medical device is a broad term used to describe all of the various types of medical devices that are intended to address the particular needs of an individual. As outlined above, these may be currently regulated as custom-made medical devices, medical devices assembled or adapted to suit an individual, and/or medical devices incorporating human-origin materials. Personalised medical devices range dramatically in type and form—from prosthetics and implants to devices made using emerging technologies and advanced manufacturing methods, for example, bones, ears, exoskeletons, windpipes, jaw bones, tissues, and organs, many of which have been described in a number of recent publications.[7]

Over the past two decades, advances in technology and materials science have delivered significant benefits to the health sector, including the application of emerging technologies to medical devices.

These technologies mean it is now possible to manufacture medical devices personalised to the individual, using modern manufacturing systems, including design software, and additive manufacturing such as 3D printing, etc. This contrasts to the traditional bespoke production methods for custom-made medical devices, such as a dental laboratory technician or dentist individually fashioning a tooth crown by hand. The advanced technologies have (or will) enable an expansion in the types of custom-made medical devices available and accessibility of custom-made medical devices, a reduction in the cost of custom-made medical devices, and an increase in the percentage number of custom-made medical devices which can be supplied to the market.

Rapid advances made in technology and materials science in the last two decades have delivered great benefits to the health sector but medical device regulatory frameworks have not kept pace.

Two areas that have had a particular impact on personalised devices are medical-imaging technology and manufacturing technology. One example is 3-Dimensional (3D) printing, where it is now possible for a healthcare professional to custom-make implantable medical devices (such as a replacement hip), designed exactly to a patient's specifications, using 3D-printing technology. Such a custom-made medical device, when produced by more traditional methods, would previously have been difficult to make, very expensive, and a rarely used option.

International response

The regulators of ten global medical device jurisdictions, including Australia, together form the International Medical Device Regulators Forum (IMDRF)[8]—an organisation established, as the successor to the Global Harmonisation Taskforce (GHTF). This group's goal is to develop a harmonised regulatory model that will be adopted by all member jurisdictions to ensure patients have access to medical devices that meet appropriate safety and performance standards, and to facilitate global supply. The ten jurisdictions already have regulatory requirements which are similar to one another, and are based on the work of the GHTF, of which Australia was also a founding member.

[7] For example, *Medical Applications for 3D Printing: Current and Projected Uses* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4189697/, accessed on 15 November 2019

[8] www.imdrf.org

In 2018, the IMDRF established a personalised medical devices working group to develop guidance that establishes definitions and regulatory pathways for regulatory authorities to consider in the regulation of medical devices that are intended for individuals. The goal was to promote global harmonisation in the terminology and premarket requirements for such devices. Australia chairs the working group, and has made significant contributions to the work in the space of the regulation of personalised medical devices.

The IMDRF describes personalised medical devices in one of three ways—*custom-made*, *patient-matched*, and *adaptable*. The IMDRF definitions and associated examples are provided in *Appendix 1*.

These different types of personalised medical devices are introduced below, together with some examples of each.

Comparison and examples of the different types of medical device proposed

	Personalised medical devices			
	Custom-made	Patient-matched	Adaptable	Non-adaptable mass-produced
Comment			A type of mass-produced medical device.	
Intended to be:	manufactured specifically to address one or more of the recipient's anatomical features physiological features a pathological condition	manufactured specifically to match a particular individual's anatomical features physiological features a pathological condition	adapted after supply to address a particular individual's anatomical features physiological features a pathological condition or adapted in order to be properly installed	used by individuals or healthcare institution where the standard sizes and designs are suitable for the individual or institution's needs.
Intended recipient	An individual patient or a healthcare professional, such as a surgeon	A particular individual	A particular individual or a healthcare institution	An individual or a healthcare institution (Note: not intended for any particular individual)
When manufactured	On demand, following request from a healthcare provider	On demand, following request of an individual (usually a healthcare provider but may also be a lay person depending on the device)	When the manufacturer predicts/estimates there will be a market for the device.	When the manufacturer predicts/estimates there will be a market for the device.
Overall responsibility for the device	Authorising healthcare professional	Manufacturer	Manufacturer	Manufacturer

	Personalised medical devices			
Reason specific type of personalised device required	The health professional has determined that there is no other suitable device on the market in Australia (i.e., on ARTG) that meets the needs of the intended recipient	There is no suitable adaptable medical device available for the individual's needs. The individual's needs can be met with a device that can be manufactured within the design envelope of an existing design.	There are no non-adaptable mass-produced medical devices available that can meet the needs of the individual or healthcare institution. The designed adaptability of the adaptable medical device is sufficient to meet the needs of the individual or healthcare institution.	Not applicable. Not a personalised medical device.
Specifications	Design characteristics specified and provided by an authorised professional to the manufacturer. Manufacturer takes into account the specified design characteristics when manufacturing the device.	Design and design envelope determined by the manufacturer. Specifications relating to the individual (e.g., length of arm) provided to the manufacturer. Device manufactured according to those specifications so long as they are within the previously validated design envelope.	Dimensions and design determined by the manufacturer. Intended to be adapted or assembled after supply (by a surgeon, for example) in accordance with the manufacturer's validated instructions. Adaptations and modifications may be made to specifications determined by the intended recipient so long as they are within the allowable parameters specified by the manufacturer in its instructions for use.	Dimensions and design determined by the manufacturer.
Typical number produced	One-off	Small to large volumes	Mass-produced	Mass-produced

	Personalised medical devices			
Production process	Intended to be a one-off. It may or may not be possible to validate or verify certain elements of the design and production. Is not intended to be reproduced.	Capable of being validated, verified, and reproduced (within the constraints of the design envelope).	Capable of being validated, verified, and reproduced.	Capable of being validated, verified, and reproduced. Continuous production process or homogeneous batch.
Example	Example 1—Addressing the needs of a patient Following a car accident, a patient requires a new neck (cervical) disc. The surgeon undertakes diagnosis and assessment of the size of disc required. On reviewing the options available, the surgeon finds that the required disc is not available so the surgeon contacts a manufacturer and requests that a disc be produced according to specifications that will accord with the patient's anatomy. Example 2—Addressing the needs of a healthcare professional A surgeon has unusually long fingers and finds that conventional surgical tools	A hip joint that is manufactured to be the necessary length, thickness, and angle for an individual patient, where the manufacturer is using a template and has made sure that joints are made within the minimum and maximum dimensions that the manufacturer has previously validated as being safe and performing as intended.	Adjustable-length crutches. A mass-produced plastic (polymer) surgical implant for skull (cranial) reconstruction that is supplied to surgeons who then shape the device during surgery specifically to suit the patient's anatomy. The manufacturer provides instructions on how to shape the device.	Portable infusion pump

	Personalised medical devices			
	available on the market do not meet his/her needs. The surgeon designs the specifications and asks a manufacturer to make a set of surgical clamps			

Problem

The widespread application of emerging technologies to medical devices was not envisioned in the early 1990s when the GHTF began documenting[9] the principles that underpin device regulation in Australia and other comparable jurisdictions (such as the European Union (EU) and Canada).

Australia adopted the GHTF model as the basis for its medical devices regulatory framework in 2002. Changes since this time—rapid developments in advanced manufacturing and digital technologies, the expansion in the types of devices being produced in this way, and the increased availability of the technology—have meant that existing regulatory frameworks are not adequate to address these emerging technologies. This is not limited to personalised medical devices, and the TGA is also examining other emerging technology issues, such as software that is a medical device in its own right (including apps) and cyber security of medical devices.

The 2002 medical devices regulatory framework in Australia has not kept pace with how changes in technology and materials science has led to new types of personalised medical devices being made available.

Australia, and other jurisdictions, are now reviewing their legislative frameworks to ensure that the risks to patients associated with the emerging technologies and the personalisation of medical devices are appropriately mitigated, while still supporting the level of innovation and development that provides benefits to patients, the healthcare sector, industry, and the broader community.

Limitations with the framework in Australia

The TGA has undertaken a comprehensive review of the Australian medical devices framework as it applies to personalised medical devices and has identified a number of limitations:

- devices which fall within the current definition of 'custom-made medical device' are *not* subject to regulation. This means that there is presently a large (and growing) proportion of the types of medical devices that are eligible for the custom-made exemption from regulation. This is far beyond the original intent which was, for largely lower class medical devices, to primarily shift to medical practitioners the burden of risk management of the quality, safety and performance of such devices.
- insufficient mechanisms for the Australian Government to have effective oversight and visibility of the personalised medical device sector. In addition to the risk to patient health safety this presents, the effect is an inconsistent regulatory burden on devices falling outside the 'custom-made' exemption. Given the rate of growth in these kinds of devices, the significance of this problem is predicted to also grow.
- there are insufficient mechanisms for investigation or regulatory action following adverse events involving personalised (custom-made) medical devices. This is a result of the limited record-keeping requirements that currently exist.
- the current personalised medical devices framework is misaligned with the regulatory schemes in other countries for material of human-origin, medical device combination products. This means that a global industry is currently subject to different regulatory

[9] GHTF documents can be accessed at http://www.imdrf.org/ghtf/ghtf-archives.asp

regimes in Australia versus other countries resulting in unnecessary regulatory burden for industry.

These limitations are three dimensions (Figure 1) of a single problem.

Figure 1—The three dimensions of the problem

Dimension 1. Misalignment of regulatory oversight with level of risk

As outlined above, any device that is made for a particular patient at the request of a health professional is considered to be a custom-made medical device. The device is therefore exempt both from the requirement of being included in the ARTG and the range of conformity assessment requirements that applies to other medical devices, such as inspections of manufacturers' premises and the requirement for third-party certification.

This contrasts sharply with the regulatory requirements for non-custom-made medical devices, where strict controls are imposed on manufacturers, and also separately on Australian sponsors (importers, exporters and suppliers) to ensure that the devices do not pose unnecessary risks to patients or other users, and that they will perform the clinical functions for which they are intended. Sponsors (official suppliers) of non-custom-made medical devices also have a range of post-market monitoring requirements, while their inclusion on the ARTG enables a number of compliance and enforcement mechanisms to be used by the TGA, including cessation of supply if compliance or safety issues arise.

There are no limits in the Australian framework on the types of devices that can be supplied under the custom-made exemption pathway. The full spectrum of risk categories of medical devices are supplied this way, ranging from simple non-invasive devices such as orthotics for shoes to treat foot abnormalities, which are typically Class I devices, all the way to hip implants for treating bone loss due to cancer, which are Class III—the highest classification.

At the time of development of the current regulatory framework for medical devices in Australia (1990–2002), the state of technology relating to personalised medical devices was significantly less advanced, and the regulatory exemption put in place for custom-made medical devices was premised on a number of assumptions, many of which no longer hold true:

- that the healthcare provider was taking on responsibility for the devices' performance, in the context of their clinical care for the patient;
- that affected devices would largely comprise low-risk products such as glass eyes, prosthetic limbs, prescription lenses, or an occasional high-risk product; and
- that the benefit of a patient being provided with a custom-made device rather than an inadequate mass-produced device, or not being provided with treatment at all, would outweigh the risk of no third-party oversight of the manufacturer of the device.

Present custom-made devices regulations only require a manufacturer to:

- notify the TGA of the specific kind of custom-made device they are supplying.
    - This is a one-time notification for the category of the device, not an individual notification every time one is supplied.
- complete a written statement about the device, including whether or not it complies with the essential principles.[10]
    - The information is not provided to the patient, which means that the patient may have no information about the device (unlike in the EU, where the manufacturer or authorised representative must also provide this information to the patient).

There is currently no requirement for any third-party assessment of custom-made devices or of their manufacture in Australia. The TGA may request information about the devices; however, the legislation does not provide the TGA with the power to enter and inspect manufacturing sites. Additionally, the manufacturer is only required to keep documentation about a custom-made device for five (5) years after supplying the device. This is considered to be an inadequate period of time for implantable devices due to their long expected lifetimes. Other jurisdictions, such as the EU, require that this documentation be kept for a period of fifteen (15) years.

Data limitations

The systemic risks presently presented by the *uniform* exemption of devices which meet the definition of 'custom-made medical device' from being regulated are clearly set out in this section.

The costs that changing this exemption to better manage patient safety risks are not possibly to quantify accurately. There is almost no data on the numbers of personalised devices that are proposed to be captured by any reform option such as manufacturing volumes and numbers of adverse events. That vacuum arises from the nature of the problem sought to be addressed by the proposed reforms – the exemption of custom-made medical devices from inclusion in the ARTG and third-party conformity assessment requirements.

TGA's power to request information is linked to ARTG inclusion or applications for such inclusion or conformity assessment certification (which do not cover custom-made medical devices). As a result, the TGA holds only very limited notification information on currently available custom-made manufacturers. It is also thought to be incomplete.

Other possible data sources were also investigated, but it was evident that none of the potential sources had information on types, volumes or costs of custom-made devices:

- Inclusion on the Prostheses List, which prescribes reimbursement

[10] The Essential Principles set out the safety and performance requirements for medical devices and are given in Schedule 1 of the Therapeutic Goods (Medical Devices) Regulations 2002

requirements of private health insurers for implantable prostheses (such as joint replacements, cardiac devices etc.). As listing on the Prostheses List requires inclusion of the device on the ARTG, there is no information on custom-made medical devices on this list.

- The Medicare Benefits Schedule (MBS) is a list of health professional services subsidised by the Australian Government, but reporting on the MBS largely does not capture information on the medical devices used in those services.
- Private and public hospitals hold information on procedures performed, but related medical device information, to the extent it is captured at all, is largely on individual patient records. Procurement systems also do not systematically collect information on custom-made medical devices procured
- Healthcare sectors outside of hospitals may also use custom-made medical devices extensively, but data is unavailable on general use of medical devices, let alone custom-made medical devices. Dental, prosthetics, and orthotics health professionals are big users of custom-made medical devices, but other allied health sectors may also use custom-made medical devices, including physiotherapy and rehabilitation services, etc.
- Custom-made medical devices also cover a broad scope of devices—some are used for individual patients (and where implanted may be detailed in the patient files) but some are individual healthcare practitioners, such as custom-made instruments and equipment, which are unlikely to be captured by existing reporting mechanisms.

Classification framework

Under the Australian regulatory framework, devices are categorised in a regulatory classification framework that applies increasing levels of regulatory requirements and oversight as the Class increases. Examples of medical devices and how they are categorised into regulatory class (from highest risk to lowest risk) are provided in the table below.

Currently, regardless of a device's safety and intended performance, each is eligible for the custom made medical device exemption (see the column 'potentially exempt'). In addition to the obvious risk of absence oversight otherwise applicable to such devices, it creates a serious gap in regulation between regulation of other medical devices of the same kind. Some regulation of personalised medical devices will address risks without unnecessarily increasing regulatory burden. The present landscape may create a perverse incentive for manufacturers and sponsors to fall within the terms of the exemption.

Regulatory class/level	Example devices	Potentially exempt?
Class AIMD	Pacemakers Artificial hearts	Y
Class III	Prosthetic heart valves Absorbable surgical sutures	Y
Class IIb	Surgical lasers Diagnostic X-ray	Y

Regulatory class/level	Example devices	Potentially exempt?
Class IIa Class I(s) Class I(m)	Dental drills or ultrasound machines Sterile surgical gloves Clinical thermometer measuring body temperature	Y
Class I	Crutches Hospital beds	Y

Therefore, the existing requirements for custom-made medical devices do not distinguish between the quality, safety and intended performance of the devices, they are noticeably lighter than the requirements placed on manufacturers for medium and higher class mass-produced devices. Their application takes no account of the quality, safety and intended performance of the relevant device.

Regulatory requirement	Mass-produced	Custom-made
Current regulatory requirements for custom-made devices	N/A	Notify the TGA of the specific kind of device being supplied (one-time notification for the category of device) Create and retain (internal) a written statement about the device including whether it complies with each of the TGA's Essential Principles TGA may request information about the devices
Routine inspection of manufacturing sites	Yes	No
TGA inspection of manufacturing sites	Yes	Limited - only where there is an immediate public health risk and within Australia only
Information provided to patient	Yes	None

Regulatory requirement	Mass-produced	Custom-made
Nominated individual/organisation that is legally responsible under the Act for ensuring devices do not pose unnecessary risks to patients or other users, and that they will perform the clinical functions for which they are intended	Yes	No
Device must meet specific criteria related to its level of risk and be included on the ARTG before it can be supplied in the Australian market	Yes	No
Marketing approval of non-compliant devices can be removed from the market (suspended or cancelled from the ARTG)	Yes	No
Criminal and civil penalties can apply for non-compliance	Yes	No

Dimension 2. Misalignment with international norms

Australia, and its system of regulation of medical devices, does not operate in isolation. With just two percent of the world medical devices market, it is important for Australia to harmonise with international regulators, as it facilitates a viable domestic manufacturing base including for supply to international markets. It also makes Australia a more attractive market into which overseas manufacturers may supply their devices. The latter is critical for ensuring that the most appropriate medical devices are available to Australian patients.

Globally harmonised approaches to address the regulatory challenges associated with emerging technologies assist the delivery of standards and regulatory practices related to the safety, performance, and quality of medical devices, promote innovation, facilitate international trade, and reduce regulatory burden. Failure to so align creates a regulatory disjunct for Australia leaving both the domestic medical device market and Australians disadvantaged in the likely reduced pool of devices to which they may have access.

There exists an opportunity for Australia to adopt a strategic long-term regulatory position on personalised medical devices, by aligning its regulatory framework to that of the best-practice model advocated internationally by the IMDRF personalised medical devices working group. The beneficiaries are domestic medical device manufacturers and Australian patients.

Dimension 3. Need to balance risk with regulatory burden

The government's approach to regulating therapeutic goods is designed to ensure that regulation is only used where absolutely needed and, then, only to the extent needed to protect and advance public health. In practice, this means that the level of regulation—and the TGA's regulation and compliance efforts—is (in general) commensurate with the risks posed by particular therapeutic goods or types of technology, process, or material.

Personalised medical devices offer significant benefits to patients, the health system, and industry, but, as ever, there is a need to balance the benefits against the risks.

The Australian medical devices regulatory framework currently provides for the regulation of custom-made devices, which are devices intended to address an individual's needs where no other suitable device is available on the market. Oversight of custom-made medical devices for the most part lies with healthcare professionals who commission their manufacture. In this way, the risk associated with the custom-made device is managed, at least in part, by the health professional in exercising their clinical judgement. In comparison, manufacturers of mass-produced medical devices are the primary parties responsible for meeting safety, performance, and quality requirements when designing and manufacturing their medical devices.

In the context of the increasing technological complexity of, and higher risks of many custom-made medical devices, it is not appropriate that medical practitioners bear the primary risk of managing the quality, safety and performance of the device itself. This does not absolve the practitioner of responsibility for delivery of a high standard of care including to choose the medical device most suitable to meet the patient's needs. It is not, however, appropriate risk management, for example, for a medical practitioner to assume responsibility for assessment of the design and manufacture of a high-risk custom-made joint replacement made in a specialist and remote manufacturing facility, or a custom-made tooth crown made by a dental technician in a dental laboratory associated with their practice.

Implications for patients and management of the health system

Devices not performing as intended

No device is risk free, and complications and adverse events relating to failures in design or manufacturing can have significant implications both for individuals and for the health sector more broadly. This applies equally to personalised medical devices.

There has been a number of recent well-publicised issues with medical devices in recent years, with Senate Inquiries on ASR metal on metal hip replacement implants,[11] PIP breast implants[12] and vaginal mesh implants.[13] These relate to mass-produced medical devices, but exemplify the potential harms associated with devices that do not perform as they should. The experiences of individuals can vary greatly, and can be life altering, or life ending. For example:

- Chapter 3 of the Senate Inquiry report on the ASR metal on metal hip replacements notes that in addition to the failure and need for revision of the hip replacement, complications included severe pain, loss of mobility and a complex of physical and psychological effects due to shedding of cobalt and chromium ions from the implanted device.
- Chapter 4 of the Senate Inquiry report on the PIP breast implants notes not only the physical complications experienced by patients who received these implants, but also the impacts of the associated anxiety and mental stress.
- Chapter 2 of the Senate Inquiry report on vaginal mesh implants also details the severely adverse outcomes those women who have experienced complications following their surgery, and a list of urogynaecological (vaginal) surgical mesh complications was also published on the TGA's website. Complications include ongoing pelvic soft tissue trauma and infection, acute and/or chronic pain, extensive scarring, and in many of these cases the initial complaint (such as stress urinary incontinence or pelvic organ prolapse) has also recurred.

[11] Senate Standing Committee on Community Affairs, Inquiry - The regulatory standards for the approval of medical devices in Australia (2010-11)
[12] Senate Standing Committee on Community Affairs, Inquiry – The role of the Government and the Therapeutic Goods Administration (TGA) regarding medical devices, particularly Poly Implant Prothese (PIP) breast implants (2012)
[13] Senate Standing Committee on Community Affairs, Inquiry - Number of women in Australia who have had transvaginal mesh implants and related matters (2017-18)

While the numbers of patients affected by failures of mass-produced devices will, at present, be higher than that for custom-made medical devices, the potential adverse effects resulting from personalised medical devices can be just as significant and costly on an individual basis. With increasing personalisation, the occurrence of these issues where personalised medical devices are involved will increase over time.

There can be significant individual harm and costs to the healthcare system when there is a failure of a medical device, including:

- the need for) additional surgeries that may include explanting the device, followed by other surgery to address both the original problem and any problems caused by the faulty device;
- the cost of associated psychological impact of the failure of a device and steps required to remediate the failure
- increased hospital stays, which puts additional strain on health systems and divert resources from other patients;
- inability to return to the previous employment, affecting potential future income and impacting the employer; and
- cost of litigation.

In addition to protecting patients from medical devices not performing as intended, a robust regulatory framework also assists the devices sector to manage risks.

Assurance of regulatory oversight

Regulatory oversight provides evidence-based assurance around the safety, quality and performance of medical devices. In addition to the fundamental role in ensuring devices perform as intended, this assurance is also relied upon across the health sector and by the broader community.

As outlined above, for custom-made devices, the clinical judgement exercised by the prescribing health professional is a key factor in managing the risks associated with the medical device. However, the increasing complexity and technology involved in producing these devices is changing the balance around the role for health professionals in this context. While health professionals continue to be best placed to identify the specific requirements for their individual patients, it is inappropriate risk management to require them to assume responsibility for ensuring the device is designed and manufactured appropriately. This is particularly so as the technological complexity of both the manufacturing process and the devices themselves becomes increasingly specialised.

The broader health sector also relies on the assurance provided by the medical device regulatory framework. While no medical device is without risk, approval of medical devices is relied upon as assurance of the safety, quality and performance of the device.

There are also broad effects at a more systemic level, such as for procurement (e.g., hospitals sourcing medical devices) and reimbursement (e.g., inclusion of a medical device on the ARTG is a requirement for all listings on the Prostheses List described above). While custom-made devices are currently prevalent in some sectors (such as dentistry), as the number of increasingly complex custom-made medical devices grows and becomes widely available in different specialities, health sector concerns about the regulation of custom-made medical devices is expected to grow.

Compliance with a robust regulatory framework also provides assurance to the medical device industry that they are appropriately managing their obligations to patients, medical practitioners, the health sector, and the community. It also provides a framework for internal assurance, including for governance (such as for company boards and shareholders).

Scale and scope of the problem

The following figures help to provide as much insight as is available into the potential scale and scope:

- the size of the 3D printing market; and
- the number of health practitioners/businesses in the market likely to already be using personalised medical devices

3-D printing in healthcare

In 2017, the global 3D printing in healthcare market was valued at $797.7 million, and is estimated to grow at 18.3% compound annual growth rate from 2018–2023.[14] North America is the leading market in the 3D-printing in healthcare market with 39.7% of the total share followed by Europe. 3D-printing in the healthcare market in the Asia Pacific region (APAC) is growing at a significant pace and the share of Europe and the APAC[15] combined was 37% of the global market.

Some sources predict that between 2019–2024, the compound annual growth rate for the 3D-printing market will grow 12.8% and that the APAC region will be the fastest growing market.[16]

While 3D-printing technology is not the only manufacturing technique for custom-made medical devices, the emergence of this technology is instrumental in a shift from bespoke custom-made medical devices to mass-production of personalised devices. 3D-printing has the potential to shift some types of medical interventions from custom-made medical devices being an exception, to personalised medical devices being routine. Detailed analysis of medical device sectors utilising 3D (and 4D[17]) printing technologies shows:[18]

- ***Medical devices:*** 3D printing of medical devices is at different stages of development, with the technology quite mature for prototyping (which has been in use for several decades by some manufacturers) and is being actively embraced by some non-implantable sectors where personalisation is the norm (external prosthetics, hearing aids and dental implants). It is early mainstream use for low volume medical devices, and in 'adolescent' development for custom-made medical devices and pre-surgical planning. It is estimated that there is around five (5) percent to twenty (20) percent market penetration for medical devices which might utilise 3D printing technology.
- ***Surgical implants:*** While still largely in the domain of top clinical research institutions (with an estimated 1% market penetration) the use of 3D technologies in this sector is expected to be among the faster paced adoptions of medical technology. This is due to the potential impact on quality of life for patients given precision 3D printed implants and related items (such as personalised anatomical models, instruments and surgical

[14] https://www.industryarc.com/Report/1268/3D-printing-in-healthcare-market-analysis.html. accessed on 15 November 2019
[15] In the referenced paper, this included the following countries: China, Japan, Australia, South Korea, India, Taiwan, Malaysia, and Hong Kong
[16] https://www.mordorintelligence.com/industry-reports/global-3d-printing-market-in-healthcare-industry-industry accessed on 15 November 2019
[17] 4D printing uses the same techniques of 3D printing through computer-programmed deposition of material in successive layers to create a three-dimensional object, but adds the dimension of transformation over time. For example, the printed product reacts with its environment (humidity, temperature, etc.,) and changes its form (size, shape, structure).
[18] Gartner, Hype Cycle for 3D printing

plans), and the large market for surgical implants (e.g. there were 122,500 joint replacement procedure in Australian in 2018[19]).

- ***Dental devices:*** Dental devices (from more straight-forward caps, crowns, braces, and implants, to reconstructive implants) are ideally suited to 3D printing as these are personalised, unique items which cannot be mass-produced (and likely to already be produced as custom-made medical devices). 3D printing has been used to create dental appliances for several years, primarily by laboratories that serve dentists. A transition is beginning to shift the technology directly into dentists' offices, but this is slow given the high investment costs and design and technological skills needed to master the technology. Current use of 3D technology is estimated at around 5% to 20%, and expected to continue to grow steadily.

Healthcare practitioners

The TGA employed an independent firm—Noetic[20]—to undertake its regulatory costings in support of this RIS. In terms of the scale of businesses potentially using personalised medical devices (now or in the future), Noetic estimated that there are currently approximately 8,503 business, including:

- 7,500 dental practices
- 600 prosthetists/laboratories
- 116 orthotic/prosthetic practices
- 287 private hospitals

Each of these sectors already makes extensive use of custom-made medical devices. Although (as discussed above) data on the full range and number supplied is not available, custom-made medical devices in common use in these sectors include:

- dental practices: custom-made crowns, dentures, braces, implants
- prosthetists/laboratories: custom made prosthetics such as limbs
- orthotic/prosthetic practices: generally custom-made orthotics
- private hospitals: may make quite bespoke custom-made medical devices in in-hospital engineering labs, or source custom-made medical devices (including high-risk devices) from the device sector, including endovascular grafts, maxillofacial implants (for reconstruction of the face, skull, jaw, etc,) and patient-matched joint replacements.

[19] Australian Orthopaedic Association National Joint Replacement Registry, *2019 Annual Report: Hip, Knee & Shoulder Arthroplasty - September 1999 to December 2018*, https://aoanjrr.sahmri.com/

[20] See Appendix 2.

Need for government action

There are three key reasons that government action is required on this issue:

- the rapid emergence of new technologies and rapid uptake of personalised medical devices
- the continued need for international alignment
- no other suitable mechanisms to manage issues with personalised medical devices

Emerging technology

The rapid development in the technological complexity of personalised medical devices, expansion well beyond the manufacturing techniques envisaged by the authors of the existing custom-made regulatory framework, and expected massive growth in the number of such personalised medical devices over the coming years, mean that changes are required in the way these devices are regulated to provide sufficient oversight to safeguard patient safety.

The world is seeing a shift towards more personalised medicine. Personalised medicine has the potential to deliver improved health outcomes for patients, and to lower consequential burden on the healthcare sector. Use of autologous (the individual's own) cells and tissues can result in improved outcomes for patients, and reduced adverse events, complications, or difficulties that stem from rejection of foreign material.

However, as outlined above, the shift towards the use of personalised medical devices brings with it significant challenges, including in how to best to regulate these new types of devices and associated technologies.

International alignment

The Australian medical device market is only a small fraction (around two percent) of the global market[21] (4.3 billion US$ out of approximately 400 billion US$ globally) and the vast majority of medical devices supplied in Australia, even many custom-made devices, are increasingly manufactured by overseas entities and imported here. The regulatory framework for medical devices in Australia is necessarily aligned with the frameworks of other larger jurisdictions to ensure ease of importation, which allows access to the greatest number of safe medical devices for Australian patients. Regulatory marketing approvals gained in the EU, the USA, Canada and Japan can be used to support market authorisation in Australia.

Due to their unique nature, it can be difficult for manufacturers of personalised medical devices to validate their design, perform sufficient testing, and maintain the quality of manufactured parts. IMDRF member regulators have recognised the problems relating to the design and manufacture of personalised medical devices and are in agreement that action is needed.

Internationally aligned regulation of medical devices also facilitates access to medical devices, especially in Australia. Harmonisation of regulatory frameworks minimises duplication of regulatory oversight (such as reassessing the same device in multiple jurisdictions), while still assessing the safety, quality, and performance of medical devices. This can also apply for personalised medical devices.

[21] https://www.export.gov/article?id=Australia-Medical-Devices

In 2017, Australia proposed a new work item to address the specific challenges with personalised medical devices, resulting in the formation of the IMDRF Personalized Medical Devices working group. The working group consulted internationally and then published definitions for personalised medical devices in 2018[22]. It has recently consulted internationally on a draft document that proposes regulatory pathways for each category of personalised medical device[23].

International regulators, through the IMDRF, have recognised the problems relating to the design and manufacture of personalised medical devices and have agreed that action is needed.

There is now an opportunity for Australia to implement regulatory reforms that are commensurate with the foreseen risks while ensuring minimal regulatory burden but also timely availability of personalised medical devices to individuals who need them. As the regulation of medical devices for supply into or out of Australia is undertaken at the federal level, changes to the medical device regulatory framework necessarily lies with the Australian Government[24].

[22] http://imdrf.org/docs/imdrf/final/technical/imdrf-tech-181018-pmd-definitions-n49.pdf
[23] http://imdrf.org/consultations/cons-pmd-rp.asp
[24] The majority of the states and territories in Australia have invested the Australian Government with the power to regulate medical devices on their behalf within their respective jurisdictions

Options

Criteria for assessment options

Some of the criteria used in assessing the various options included:

- the degree by which the option would likely address the three dimensions of the identified problem
- the overall regulatory burden (for example, a delayed implementation of an exemption would introduce unintended regulatory burden on the exempted group)
- equitable and proportionate regulation of 'main stream' and personalised medical devices to safeguard the health and wellbeing of the Australian public, while also providing access to emerging technologies and increased equivalence of regulatory burden on the device manufacturers and sponsors
- the potential for partial implementation to introduce unintended loopholes and gaps (which could possibly then be exploited)
- the additional benefits to be attained through early implementation of globally harmonised regulations
- the ability to address the recommendations in the Medicines and Medical Devices Review (specifically Recommendation 20, harmonisation with the EU)
- the TGA's capacity to effectively absorb any changes and still provide agreed service levels
- the complexity for stakeholders and the TGA in implementing these changes in a piecemeal fashion and timeframe

Options considered

A number of approaches and options for addressing the problem were considered, based on consultation over several years.

Three key options explored in this RIS

The three options explored in detail in this RIS are:

Option 1—Maintain the status quo (no change)

Option 2—Introducing a comprehensive package of regulatory reforms

Option 3—Regulate custom-made medical devices in line with other medical devices

Alternative approaches also considered

In addition to the three options listed above, a number of alternative approaches were also considered but then discounted. They included: an exploration and preliminary analysis of alternative tools as education campaigns; introduction of voluntary codes of conduct; and alternative regulatory framework mechanisms (that is, beyond the current Act, such as Consumer Law). However, it became apparent that these alternatives not be able to address the limitations with the current regulatory framework. None of them adequately deals with the problem – the current uniform exemption of all devices falling within the terms of 'custom-made

medical device' from both regulatory *requirements* and *oversight* applicable to devices with the same 'risk profile'. Education campaigns will not require reporting to the TGA of the devices supplied by the manufacturer or sponsor, it will not allow inspection of premises at which the devices are made and would do nothing to ensure that each patient is assured of receipt of information about that device.

In the face of an existing robust regulation framework for medical devices which can easily be adapted to appropriately regulate personalised medical devices without unnecessarily increasing regulatory burden there is no compelling reason to allow for a voluntary code of conduct to apply to a subsection only of medical devices. Precisely who would promote such a conduct and settle on its terms is unclear.

Option 1—Status Quo

Under the status quo, as previously described, personalised medical devices are captured by the definition of custom-made medical device. This means that subsets of the custom-made category, i.e., those which are more like standard commercial devices than bespoke custom-made devices, are not regulated in the same way as commercial devices supplied in differing sizes. All custom-made devices, regardless of potential to cause harm to a patient, are exempt from the requirement to undergo third-party scrutiny of their associated evidence of safety and performance; and their manufacturers cannot be inspected by the TGA under the powers of the existing Act and associated regulations. The TGA would continue to have limited visibility of custom-made manufacturing and supply in Australia based on the current notification requirement under the existing regulations, with a limited ability to undertake compliance enforcement actions against unsafe devices.

In addition, there is no mechanism, under this option, to recognise the emerging point-of-care manufacturing systems that are being marketed to healthcare providers, and that are intended to allow healthcare providers to produce medical devices for treating their patients.

New methods for using personalised anatomical models for investigating the anatomy and planning surgeries would not be required to undergo third-party scrutiny, in contrast to the requirement applied to now out-of-date analogue methods for achieving the same aim, such as X-ray film.

Medical devices that include a human-origin material component, but that have a primary physical or mechanical function as a medical device, would still be required to be regulated under the Australian biologicals framework instead of the medical devices framework. The medical devices framework already allows medical devices to have medicine components or animal-origin components, which are assessed by the relevant areas of the TGA, while the business process for certification follows the medical device pathway. This would not be expanded to allow the same consideration for medical devices that include human-origin material as is the case in other jurisdictions. Australia would remain out-of-step with other comparable international regulatory frameworks.

Ultimately, under the status quo, patients will continue to face an unmitigated potential for harm from an increasing number of medical devices that have insufficient regulatory oversight.

Impacts under Option 1

Under this option, industry and certain healthcare providers using personalised medical devices, including those using 3D-printed medical devices, would continue to operate as they currently do. Given the trajectory of technological development, the number of devices falling within the

existing regulatory framework for custom-made medical device would expand rapidly over the next decade and beyond.

The current regulation would continue to apply, and appropriate regulations would not be available to provide regulatory oversight to custom-made devices and other personalised medical devices produced through new technology. Additionally, responsibilities of persons who choose to use medical devices in an off-label manner would remain unclear.

Under Option 1, there is no immediate change in direct compliance costs for industry. Over time, as some medical devices shift into the custom-made medical device space, administrative costs for those sponsors and manufacturers in respect of those products would drop, as third-party conformity assessment and inclusion on the ARTG would no longer be required (detailed in costs below). As the sponsors and manufacturers of custom-made medical devices would still be required to largely conform to the essential principles, their internal design, production, and oversight procedures should not diminish (although they would change as they shift to personalised versions of the medical devices being produced).

Unlike for devices included on the ARTG, there would be no independent assessment of this continued compliance with the essential principles. This may result in safety concerns emerging for some patients, as the existing risk-management strategy for custom–made medical devices (clinical judgement and oversight by the prescribing health professional) is likely to become less effective as custom-made medical devices of higher risk and increasingly greater technical complexity enter the market.

Costs and potential flow on effects

Administrative savings to industry

The rapid expansion in the use of personalised medical devices is expected to change the balance in mass produced and custom-made medical devices over time.

It is not possible to accurately estimate the number of custom-made medical devices which might emerge over coming years, or to know which of these would replace medical devices which are currently or would in the future be included in the ARTG.

Where a custom-made medical device would have otherwise have been developed, a mainstream medical device would need to be included in the ARTG; under this option, the costs associated with regulatory compliance (seeking third-party certification of conformity assessment procedures, applying for inclusion in the ARTG, and maintaining that entry over time) would be saved.

On average, each ARTG entry not required (shifting product lines from mainstream to custom-made) would save industry administrative effort costing around:

- $52,000 for conformity assessment application and assessment
    - This would apply to around eight percent of ARTG entries, where they seek TGA conformity assessment certification (the remainder reuse overseas certification to support their Australian application, which is not a cost incurred for Australian regulatory requirements)
- $4,500 for each ARTG entry application and assessment, and a further $1,000 to $1,600 if the application is subject to audit (mandatory for high class medical devices relying on overseas certification)
- $2,400 per annum in ongoing compliance costs for ARTG entries, and a further $6,200 to maintain TGA conformity assessment certification.

These costs are based on the time required to comply with application requirements (completing application forms, gather the evidence to support applications etc.) and complying with ongoing requirements (such as adverse event reporting, annual reporting, maintaining required records, etc. for ARTG entries, and annual surveillance of manufacturers holding TGA conformity assessment).

While there is no way to estimate how many devices might shift from mainstream medical devices to custom-made medical devices over the coming years should the status quo be maintained. However, the administrative cost of maintaining each ARTG entry and the related conformity assessment certification is significant.

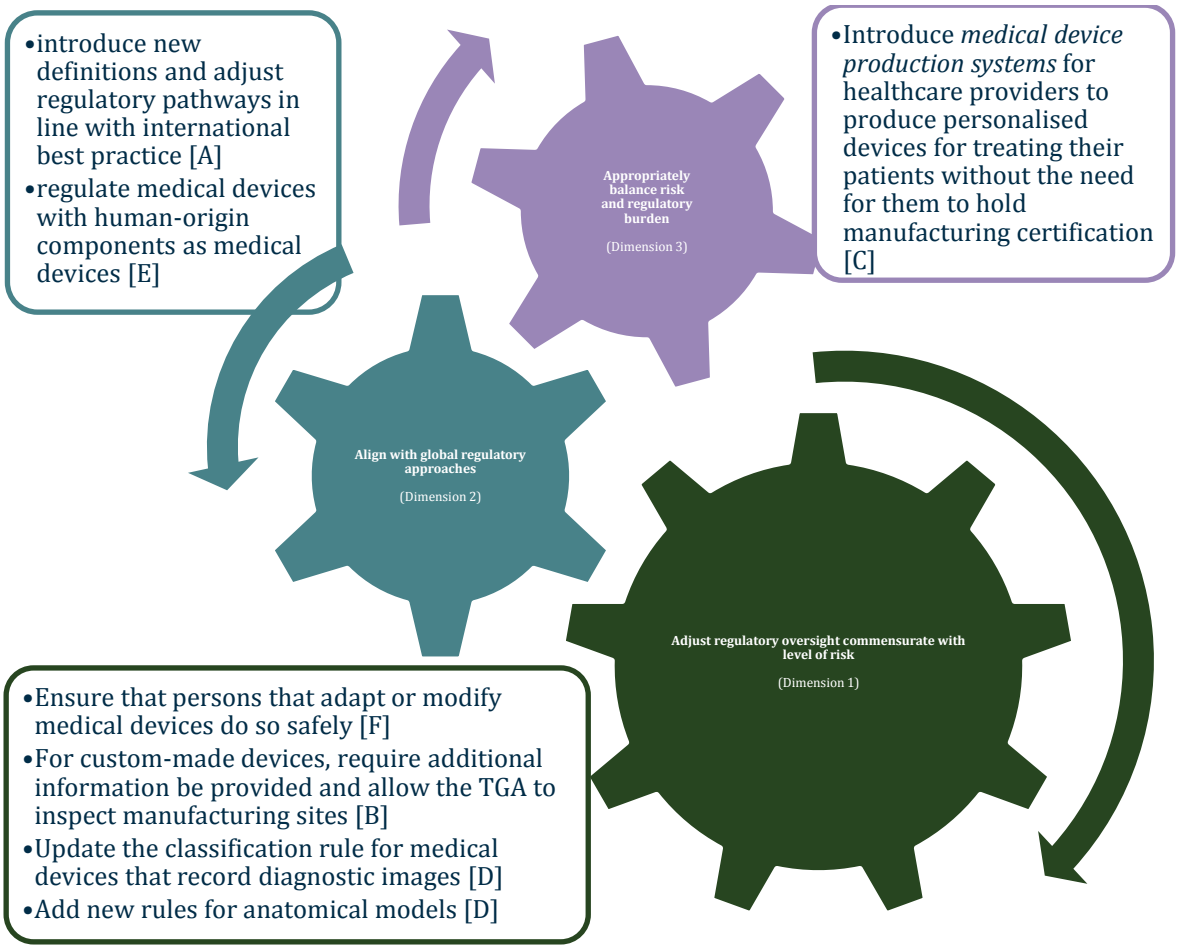
These figures cover the average time by manufacturers and sponsors to establish and maintain their ARTG entry, and do not include the regulatory fees and charges they would also incur (which are not included in Regulatory Burden Estimate).

As outlined above, in addition to the incentives to develop personalised medical devices in terms of patient outcomes and market share, there are significant cost incentives for such devices to be regulated as custom-made, to decrease regulatory oversight and associated costs.

Option 2—Comprehensive package of regulatory reforms

Option 2 involves introducing a comprehensive package of reforms to the Australian medical device regulatory framework to address the three dimensions of the problem outlined above, whilst endeavouring to balance the benefits, risks, and regulatory burden. The proposed elements of the reform package are summarised in *Figure 2* below.

Figure 2—Addressing the three dimensions of the problem



The changes, supported by a change management plan including education on the changes to impacted industry, comprise the following six elements:

A. Introduction of new definitions for personalised medical devices;

B. A change to the requirements for supplying custom-made medical devices in Australia, so that additional information must be provided to the TGA and to patients and, to allow the TGA to inspect manufacturing sites;

C. Introduction of a framework for regulating a medical device production system that would allow healthcare providers to produce personalised devices for treating their patients, without the need for manufacturing certification;

D. An update to the classification rule for medical devices that record diagnostic images so that it includes any device for this purpose and not just X-rays, for example, 3D-printed models of patient anatomy;

E. A change to the regulation of medical devices with a human-origin component such that they are regulated as *medical devices with a biological component* rather than as pure *biologicals* (for example, a 3D-printed implant incorporating cells from a patient); and

F. Clarification that any modifications or adaptations to personalise a medical device that has already been supplied must have been intended by the original manufacturer of the device.

These changes have been consulted publically with relevant stakeholders over a twenty four month period through various mechanisms[25] and have received strong stakeholder support. In addition, they represent harmonisation with global best practice.

Details of proposed changes

A. New definitions for personalised medical devices

What would change?

This change would involve adopting new definitions for personalised medical devices (custom-made, patient matched, and adaptable), aligned with those of the IMDRF.

What would this mean?

Adopting new definitions, aligned with the IMDRF definitions, would result in personalised medical devices being grouped into three categories:

- custom-made medical devices
- patient-matched medical devices
- adaptable medical devices

Custom-made medical device:

The revised definition to be included in the MD Regulations (aligned to the IMDRF definition[26]) is more detailed than the existing custom-made definition:

> ***custom-made medical device*** means a medical device that:
>
> (a) is intended by the manufacturer to be for:
>
> (i) the sole use of a particular patient (the ***intended recipient***); or
>
> (ii) the sole use of a particular health professional (the ***intended recipient***) in the course of the health professional's practice; and
>
> (b) is manufactured by the manufacturer in accordance with a written request of a health professional (the ***requesting health professional***) and with particular design characteristics specified by that health professional in the request (even if the design is developed in consultation with the manufacturer), where those design characteristics are intended to address:
>
> (i) either or both of anatomical and physiological features of the intended recipient; or
>
> (ii) a pathological condition of the intended recipient; and
>
> (c) the requesting health professional has determined is necessary to address the matters covered by paragraph (b) because there is no kind of medical device included in the Register to address those matters or to address those matters to an appropriate level.

Medical devices that fit the custom-made definition would still be eligible for exemption from being included on the ARTG (and associated third party assessment, fees and charges), and there would remain limited regulatory oversight applied to their manufacture as compared with non-exempt medical devices. However, the scale and scope of the devices that meet the new definition would be considerably reduced as compared to the current definition of 'custom

[25] Consultation has occurred through workshops, meetings, formal publications and has included healthcare professionals, hospitals, manufacturers, researchers, consumers and industry

[26] IMDRF Document - Definitions for Personalized Medical Devices – definition 4.2

made' – primarily as patient-matched medical devices will no longer fall within the scope of the custom-made exemption (more detail below).

The new custom-made definition would make it much clearer that the responsibility for the device lies more strongly with the healthcare professional than is the case with the current definition, and the package of reforms additionally includes the introduction of new requirements on manufacturers and sponsors of custom-made medical devices (detailed in Element B below).

Retaining the current exemption from inclusion on the ARTG is important for ensuring that individuals retain the option of accessing truly bespoke devices that would not otherwise be available. This approach balances access to these devices against the risks of reduced regulatory oversight by:

- reducing the scope of the custom-made medical device definition,
- re-balancing the responsibility closer to the healthcare professional (who is best placed to understand the specifics of the individual's case)
- increasing the requirements (outlined in element B below) place on manufacturers and sponsors of custom-made medical devices making use of the exemption pathway.

Patient-matched medical device:

A new definition of 'patient-matched medical device' (aligned with the IMDRF definition[27]) would be included in the MD Regulations:

> ***patient-matched medical device*** means a medical device that:
>
> (a) is manufactured by the manufacturer, within a specified design envelope, to match:
>
> (i) either or both of anatomical and physiological features of a particular individual; or
>
> (ii) a pathological condition of a particular individual; and
>
> (b) is designed by the manufacturer (even if the design is developed in consultation with a health professional); and
>
> (c) is manufactured using production processes that are capable of being:
>
> (i) either or both validated and verified; and
>
> (ii) reproduced.

The patient-matched category of devices, which currently falls under the custom-made definition in Australia, would no longer be eligible for this exemption[28], and instead would require third-party regulatory oversight according to the device risk classification.

Manufacturers of medical devices that meet the new definition for patient-matched medical devices would be required to apply standard conformity assessment procedures (not the special procedure for custom-made devices) according to the classification of their medical devices. This means that for devices that are classified above Class I, conformity assessment evidence from a recognised third-party (such as the TGA or a notified body) would be required. The manufacturer would be required to apply for this evidence and, once received, maintain its currency through complying with post-market requirements such as annual inspections by the issuing agency. These requirements are the same as those for mass-produced medical devices.

Australian manufacturers of or sponsors importing patient-matched medical devices would also be required to include their medical devices in the ARTG and to comply with the requirements for maintaining the inclusion, including compliance with the essential principles.

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[27] IMDRF Document - Definitions for Personalized Medical Devices – definition 4.3

[28] *Therapeutic Goods (Medical Devices) Regulations 2002,* Schedule 4, Item 1.5

Adaptable medical devices

The regulation of adaptable medical devices would not change. A new definition of adaptable medical device (aligned with the IMDRF definition[29])would be included in the MD Regulations:

> ***adaptable medical device*** means a mass-produced medical device that is intended by the manufacturer to be assembled or adapted after it has been supplied, in accordance with the manufacturer's instructions, to:
>
> (a) address either or both of anatomical and physiological features of a particular individual; or
>
> (b) address a pathological condition of a particular individual; or
>
> (c) otherwise perform as intended by the manufacturer.

An adaptable medical device is, by definition, a subset of a mass-produced medical device (albeit one that the manufacturer has designed and produced to be modified after supply) and is not eligible for exemption from inclusion on the ARTG.

Manufacturers of medical devices that meet the new definition for adaptable medical devices already apply the standard conformity assessment procedures (not the special procedure for custom-made medical devices) according to the classification of their medical devices because these types of devices are not eligible for the current custom-made device exemption. This means, that for devices that are classified above Class I, they already hold appropriate conformity assessment evidence.

The new requirements would specify that manufacturers of adaptable medical devices should supply validated instructions for their devices to be adapted, assembled or adjusted to suit a particular individual. This should already be the case and so the new requirements would be an express confirmation of the existing arrangements.

Australian manufacturers of, or sponsors importing, adaptable medical devices would also be required to include their medical devices in the ARTG and to comply with the requirements for maintaining the inclusion. Again, this should already be the case. Accordingly, the requirements should not represent a change for this group of stakeholders. There are already many examples of adaptable medical devices included in the ARTG.

Appendix 2—Regulatory Burden Costings provides further assessment of this change element from page 16 (Change 1).

B. Additional requirements for custom-made medical devices

What would change?

This element would involve changing the requirements for supplying custom-made medical devices in Australia, so that additional information must be provided to the TGA and to patients and, to allow the TGA to inspect manufacturing sites

The proposed changes would require that:

- the manufacturer's statement about a custom-made medical device is provided to the patient receiving the device;
- the TGA be allowed to enter and inspect custom-made medical device manufacturing sites, in accordance with the authority it has to inspect all other medical device manufacturers;

[29] IMDRF Document - Definitions for Personalized Medical Devices – definition 4.4

- a manufacturer in Australia, or a sponsor of an overseas-manufactured custom-made medical device, provides an annual report to the TGA of the custom-made devices it has supplied; and
- documentation about an implantable custom-made medical device is retained for a minimum period of fifteen (15) years.

Note: It is envisioned that such inspections would not be routinely held but would be risk-based according to the implications for health and safety.

These additional requirements for custom-made medical devices aim to address current issues with oversight of these devices:

- ***Notification of supply:*** Current custom-made medical device regulations only require a manufacturer in Australia, or a sponsor of a manufacturer overseas, to notify the TGA of the specific kind of custom-made device they are supplying. This is a one-time notification for the category of the device, not an individual notification every time one is supplied.
- ***Information for patients:*** A written statement about the device, including whether or not it complies with the essential principles, must also be prepared and kept. The information is not provided to the patient, unlike in the EU, where the manufacturer or authorised representative must also provide this information to the patient.
- ***Entry and inspection powers:*** There is currently no requirement for any third-party assessment of custom-made devices or of their manufacture in Australia. The TGA may request information about the devices; however, the legislation does not provide the TGA with the power to enter and inspect manufacturing sites for custom-made devices.
- ***Record keeping:*** The manufacturer is only required to keep documentation about a custom-made device for five (5) years after supplying the device. The TGA considers this to be an inadequate period of time for an implantable device due to its long expected lifetime. Problems with implantable devices may not surface until after they have been implanted for more than five (5) years. It is important to have access to manufacturing records when something goes wrong with a medical device in order to investigate potential causes of the problem, which will inform decisions about how to manage the patient. Other jurisdictions, such as the EU, require the documentation to be kept for a period of fifteen (15) years.
- These changes would give more transparency to patients receiving custom-made medical devices. Making the manufacturer's statement about the device available to a patient would assist with ensuring that the patient understands the custom-made nature of the device and may also improve the informed consent process. The other changes would provide the TGA with more information about the manufacture and supply of custom-made medical devices in Australia, thereby improving its ability to monitor the quality, safety and performance of these devices.

Appendix 2—Regulatory Burden Costings provides further assessment of this change element from page 16 (Change 2).

C. Production systems for healthcare professionals

This element would involve introducing a framework for regulating medical device production systems that would allow healthcare providers to produce personalised medical devices for treating their patients without the need for them to hold manufacturing certification.

A *medical device production system* (MDPS) is a collection of the raw materials and main production equipment specifically intended to be used together and by a healthcare provider, or healthcare facility, to produce a specific type of medical device, for treating his, her or its patients. An MDPS includes the medical device it is intended to produce.

The MDPS may require the use of ancillary equipment or other specified input, however, all components must be validated as a production process to consistently produce the intended medical device with the use of the supplied instructions.

What would change?

MDPSs, like other systems, would be considered to be medical devices and would need to be included in the ARTG. They would be classified and assessed according to the device they are intended to produce. The production equipment and consumable raw materials used in an MDPS would not be considered to be medical devices on their own, unless they fit the definition of a medical device in their own right.

What would this mean?

Healthcare providers or healthcare facilities that use MDPSs to produce medical devices for treating their patients would not be manufacturers under the regulatory framework in relation to those systems. This means that healthcare providers would not need conformity assessment certification for manufacturing medical devices when they make use of an MDPS.

Appendix 2—Regulatory Burden Costings provides further assessment of this change element from page 30 (Change 3).

D. New classification rules for diagnostic imaging and anatomical models

The key diagnostic technology that was in place when the medical devices regulatory framework was first introduced was the X-ray. At the time the framework was introduced the following specific classification rule[30] for X-ray film was included to address the potential harm that could result from inaccurate diagnostic X-ray images:

> **5.4 Non active medical devices intended to record X-ray diagnostic images**
> A non-active medical device that is intended by the manufacturer to be used to record X-ray diagnostic images is classified as Class IIa.

Recent advances in technology in both digital (virtual) imagery (both 2D and 3D) as well as in advanced manufacturing (such as in 3D printing) have led to new methods of providing information to healthcare professionals for use in diagnosis and for the investigation of anatomy for the purpose of planning surgeries.

The accuracy of images and anatomical models then becomes very important in ensuring correct diagnoses and for the safe planning of surgeries. For instance, an anatomical model that misrepresented the location of a nerve to a surgeon could result in significant harm to a patient were that nerve inadvertently severed during surgery, which could be due to an inaccuracy in the anatomical model.

This change would involve:

- updating the current classification rule for medical devices that record non-visible light diagnostic images so that it includes any device for this purpose and not just X-rays.
- introducing new classification rules for anatomical models used for diagnosis or investigation (for example, for surgical planning)

[30] Schedule 2, Item 5.4.

What would change?

TGA is proposing that the same degree of regulatory oversight as that currently applied to X-ray film be applied to the newer technologies that are used to represent the equivalent information today—namely, software that records patient diagnostic images (in the non-visible spectrum), and virtual and physical anatomical models used for diagnostic or investigative purposes. The software used to generate the virtual models would also be the same class.

There have been significant increases in medical devices (both patient-matched and mass produced) relying on diagnostic imaging. Anatomical models for surgical planning have also increased, in support of increasingly ambitious surgical procedures. Consequently, newer methods of diagnostic imaging and the increase in use of anatomical models, are of critical importance.

What would this mean?

Manufacturers of anatomical models would be required to hold appropriate conformity assessment evidence for a Class IIa device. This requirement would apply only to manufacturers whose models are intended to be used for diagnosis or investigation of the anatomy. It would not apply to manufacturers of models that are intended purely for training or education purposes, as these are not considered to be medical devices. The requirement would not apply to hospitals or healthcare practitioners if they used a medical device production system (under element C) to produce the anatomical models for treating their patients, and the medical device production system was included in the ARTG.

Manufacturers of software that is intended to be used to record patient imaging for diagnosis or investigation of the anatomy would be required to hold appropriate conformity assessment evidence for a Class IIa device.

Appendix 2—Regulatory Burden Costings provides further assessment of this change element from page 42 (Change 4).

E. Regulation of medical devices with human-origin components as medical devices rather than as biologicals

This change would involve medical devices with a human-origin component, for example, a 3D-printed implant incorporating cells from the patient, being regulated as medical devices with a biological component rather than as pure biologicals. This change is included in this package to clarify arrangements and ensure such devices are regulated consistently. These medical devices may be patient-matched or more mainstream medical devices, and may be 3D printed or not.

3D 'bioprinting,' or printing of patient-specific implants that incorporate human-origin material, is increasing. Some jurisdictions, including Canada, the EU and the USA, regulate medical devices with human-origin material as medical devices. In contrast, the Act specifies that any product that comprises, contains, or that is derived from human cells or human tissues is a *biological* and is thus regulated through the biologicals framework.

This arrangement is not ideal for 3D-printed implantable scaffolds with human materials, as they are analogous, from a design, engineering, production, and assessment perspective, to current implantable scaffolds with incorporated medicine, or animal-origin material, both of which are regulated as medical devices under the Act. The current regulatory arrangements in Australia means they are likely to be subject to different regulatory pathways in other jurisdictions. This can be confusing and costly for manufacturers facing different requirements on their regulatory submissions, for different regulators.

What would change?

Medical devices that contain as a component, but that are not wholly comprised of, human-origin material would not be regulated as biologicals; rather, they would be classified as Class III medical devices with a biological component. This change would mean that a medical device incorporating materials of human origin would be regulated as a medical device and not as a biological, more closely aligning the Australian framework with those of other jurisdictions.

This change would allow for the possibility of abridged assessment of the device components in accordance with current procedures. It is proposed that this change would apply to both viable and non-viable human-origin components because the TGA has the in-house expertise to evaluate both as a component of a medical device.

What would this mean?

Conformity assessment certification by the TGA would be required for medical devices that contain a biological (human origin) component, in line with the requirements for other combination products, including medical devices that contain medicinal, recombinant DNA, microbial, or animal-origin materials. Accordingly, the biological component would be required to meet all applicable regulatory requirements and a fee for the assessment of the biological component during the design-examination process would be applied.

Manufacturers would also need to comply with relevant regulatory requirements for the biological components of their devices relating to biological materials, such as therapeutic goods orders for controlling infectious-disease transmission. Note that manufacturers are already required to meet these requirements under the current biologicals framework.

At this stage, approximately 30 ARTG entries exist for biologicals with human-origin materials, none of which include a medical device component (so no changes will be needed for existing human-origin therapeutic goods). Following this change any medical devices with human-origin material would need to seek inclusion in the ARTG as medical devices.

Appendix 2—Regulatory Burden Costings provides further assessment of this change element from page 45 (Change 5).

F. Ensure that adaptions and modifications to medical devices are done so safely

This change clarifies requirements for the newly defined 'adaptable medical device', making it clear that any modifications or adaptations to personalise a medical device that has already been supplied must have been intended by the original manufacturer of the device.

Under the current definition of manufacturer in section 41BG(2) of the Act, a person is not considered the manufacturer of a medical device if:

- the person assembles or adapts the device for an individual patient
- the device has already been supplied by another person, and,
- the assembly or adaptation does not change the purpose intended for the device

An example where this exclusion is currently applied is in dental resins for treating patients in the repair of teeth, where the resin material is included in the ARTG. The TGA considers that the dentist will, in accordance with the manufacturer's intention and instructions for mixing, forming, curing, etc. the resin, assemble and/or adapt the resin material for an individual patient. In this scenario, the dentist does not require conformity assessment certification for manufacturing a dental restoration. The regulatory obligations apply to the manufacturer and the sponsor of the resin material.

The assurance that the final assembled or adapted device will perform as intended comes from the validated instructions provided by the original manufacturer. This means that the manufacturer will have tested the performance of samples of its device, when adapted or assembled according to its instructions. In the dental resin example, the original manufacturer makes certain specifications for the use of its product, such as the mixing constituents, the mixing ratio, the type and size of defect to which the resin should be applied, and how long it needs to cure.

When the dentist follows these instructions, it is expected that the dental restoration will perform as intended by the manufacturer of the resin. A person who does not follow the original manufacturer's instructions will be considered a manufacturer and would assume all of the responsibilities of a manufacturer. This includes applying the appropriate conformity assessment procedure and meeting the appropriate compliance and enforcement regime. Regulations for noncompliance with the manufacturer's obligations will also apply because any modifications or adaptations outside of what has been specified by the original manufacturer may affect the device's compliance with the essential principles and might add risk to the health and safety of a patient.

Clarifying this issue in the context of 3D-printed devices is important because healthcare providers now have the option of 3D-printing medical devices, such as dental crowns. It is not considered appropriate that the same approach that is currently being applied to dental-resin material in the ARTG ought to be applied to raw materials for 3D printing, in that, we do not believe regulating the raw material for a 3D-printer is sufficient in ensuring that the final device will comply with the essential principles. This is because 3D-printing involves more than assembling or adapting a device for a particular patient. It is a complex multifactorial process that has an impact on the finished device's compliance with the essential principles. Moreover, a 3D-printing raw material, as with any other manufacturing raw material, is not a medical device, as it is not directly used for treating or diagnosing a patient. Some additional clarification around these issues is therefore required.

What would change?

Additional text would be added to the Act and/or MD Regulations to make clear that a person would not be considered a manufacturer where a medical device has been assembled or adapted for an individual patient and the assembly or adaptation is in accordance with validated instructions provided by the manufacturer of the relevant device. However, if an individual modifies or adapts a device which has already been placed on the market or put into service in such a way that compliance with the essential principles may be affected, that person shall be considered to be a manufacturer and shall assume the obligations incumbent on manufacturers. The person would be subject to the compliance and enforcement regime on that basis.

The need for the provision of validated instructions by the original manufacturer would also be reinforced.

What would this mean?

The effect of these changes would be to clarify the circumstances in which an entity holds responsibilities as a medical device manufacturer. It will also highlight the fact that changes made to a medical device, that are not intended by its original manufacturer, may impact the safety and performance of the device.

Appendix 2—Regulatory Burden Costings provides further assessment of this change element from page 46 (Change 6).

Impacts of the proposed reforms under Option 2

Modelling and quantification of the regulatory impact of the proposed changes to the regulation of personalised medical devices is presented in Appendix 2, TGA Regulatory Burden Costings – Personalised Medical Devices.

The average annual costs, resulting from the analysis of the impact of the proposed changes, are difficult to estimate for a number of reasons. These costs are primarily driven by the effort associated with hospitals in the private sector seeking certification for manufacturing activities and including their patient-matched medical devices in the ARTG. Hospitals have traditionally manufactured custom-made medical devices and the proposed reforms do not change this activity; that is, this can continue without the need for manufacturing certification under the proposed reforms. However, certification will be required under the proposed reforms if hospitals intend to undertake manufacture of the new proposed category of patient-matched medical devices.

The concept of a patient-matched medical device has recently emerged and, therefore, there is no empirical data on which to base any assumptions regarding sponsor/manufacturer behaviour in this area. That is to say, it is difficult to predict whether hospitals would seek certification for manufacturing patient-matched devices, or whether they would choose to purchase commercially produced patient-matched devices, or whether they would choose to limit their own production of patient-matched medical devices to those made with a regulated Medical Device Production System (the latter two options negating the need for certification).

Given that hospitals would have three options for proceeding with the use of patient-matched medical devices in their facilities, it is likely that only a percentage of hospitals who currently undertake manufacturing activities for custom-made devices would seek certification. The TGA sought comment from representatives from the private hospital sector on their strategies for patient-matched medical devices. While acknowledging that their strategies were still developing, the private hospital sector provided feedback to inform the regulatory burden estimate. Based on this, the regulatory burden of hospitals in the private sector seeking certification was modelled on 33% and 10% of the population with 1, 3 and 5 ARTG entries per hospital. The median result was then used. The outcome is reflected in the following Regulatory Burden Estimate Table.

Regulatory Burden Estimate Table

Average annual regulatory costs (from business as usual)				
Change in costs ($ million)	Business	Community organisations	Individuals	Total change in costs
Total, by sector	$1.261	$	$0.005	$1.266

These costing are summarised in more detail in Tables 12 and 13 (p 48 to 49) at *Appendix 2 - Regulatory Burden Costings.* Note that the public sector is specifically excluded from the Regulatory Burden Framework. This includes the exclusion of TGA fees and charges from these costings.

Potential flow-on effects

As this is a globally emerging area in healthcare, at this early stage it is difficult to define or quantify the potential flow-on effects of implementation. While it is possible to identify what they might be, these are hypotheses only, and it is difficult to obtain or identify any supporting evidence.

The TGA has engaged with a number of stakeholders in order to try to analyse and assess potential flow-on effects across the broader health sector and community, including the potential for increased demand for medical devices and associated services. The potential areas considered were:

- increased pressure on point of care facilities, including hospitals;
- increased pressure on the health insurance sector;
- incentives for members of the health workforce to focus on the provision of personalised medical devices to the detriment of other important health functions;
- an increase in trailing obligations for medical practitioners associated with longer-term care of patients fitted with personalised medical devices;
- pressure on the health system from overseas consumers attracted to Australia by a more rigorous regulatory regime for devices ("medical tourism"); and
- increased costs for government, especially where there are Commonwealth/State implications.

The majority of the stakeholders engaged indicated either they believed there would not be any impact, or were unclear as to whether there would or wouldn't be an impact. Some indicated they have yet to conduct any research on the impact of newer technologies on the health care system. A number indicated that it is a topic that they can see value in exploring further.

An experienced medical devices industry expert indicated that growth in the medical tourism industry in Australia is unlikely to be driven by personalised medical device regulation. Personalised medical devices are not peculiar to Australia, and some other challenges that might impede that growth include paperwork, approval processes and that the hospital system is not currently geared for medical tourism.

Some private hospitals indicated that they are likely to outsource personalised medical devices, including aids to implement surgery, to third-party organisations that are already performing this function.

In addition, a number of mechanisms to deal with changes already exist. For example, pathways for reimbursement of prosthesis already exist (where the device is on the Prosthesis List and included in the ARTG). If the number of prosthesis that meet this criterion were to increase, that might place additional pressure on the health insurance sector. The Department of Health Medical Services Advisory Committee pathway exists for managing changes, including changes to surgeon operation times.

Option 3—Regulate custom-made medical devices in line with other medical devices

Under this option the exemption from inclusion on the ARTG for custom-made medical devices would be removed. This would mean manufacturers of custom-made medical devices would need to seek certification of their conformity assessment procedures, including demonstrating full compliance with the essential principles, to support the inclusion of these medical devices on the ARTG. Compliance with all the requirements of ARTG inclusion would also apply.

This would address the growing risks associated with the 'light touch' regulation of custom-made medical devices, including:

- ***Improved visibility:*** Inclusion on the ARTG would mean much greater TGA oversight of custom-made medical devices being supplied in Australia.
- ***Improved oversight:*** The requirement for conformity assessment certification would result in third party scrutiny of the conformity assessment procedure for all manufacturers of custom-made medical devices. These devices would also be required to

comply with the essential principles (rather than the current requirement to document where they do not comply).

- ***Responsibilities associated with ARTG inclusion:*** Reporting of adverse events and annual reporting for high risk and implantable, record keeping requirements, powers of entry to manufacturer's premises and the compliance enforcement pathways (suspension or cancellation of an ARTG entry – which ceases the authority to supply the medical devices, and criminal and civil penalties under the Act) would all apply to these medical devices in full.

This option addresses ***Dimension 1—Misalignment of regulatory oversight with level of risk*** quite well, in that regulatory oversight would be aligned with the risk of the medical device as it is for all 'mass produced' medical devices. The existing classification rules effectively and efficiency class devices according to risk, and existing conformity assessment requirements provide oversight in proposition to that risk. While there is always room for improvement, TGA proactively reviews and amends elements of the framework to ensure continued relevance and appropriateness.

However, this option does not effectively address the other two dimensions:

- ***Dimension 2—Misalignment with international norms:*** The definitions and IMDRF definitions and examples (Appendix 1) is the emerging regulatory framework for personalised medical devices. In addition to being out of step with international regulatory norms, Australia represents only a small proportion of the global medical devices market (around 2 per cent). The Australian framework relies heavily on certification or approvals from comparable overseas regulators to facilitate access to medical devices, as eliminating duplicate assessment across jurisdictions reduces assessment costs significantly. Where Australian requirements vary significantly, even where manufacturers and sponsors could meet the Australian requirements, the cost of assessment to Australian specific requirements may be prohibitive.
- ***Dimension 3—Need to balance risk with regulatory burden:*** In practice while patient-matched medical device may seek inclusion in the ARTG, many 'bespoke' custom-made medical devices would not be included on the ARTG due to associated costs. Instead these would cease to be supplied, or alternative supply pathways (explained below) would be used. This is not an appropriate balance of risk with regulatory burden. Personalised medical devices offer significant benefits to patients, the health system, and industry as this option would compromise access to many very promising emerging technologies.

Conformity assessment seeks assurance of safety, quality and performance of devices through systematic assessment of the manufacturing procedures, so manufacturers of bespoke custom-made medical devices may find this difficult or impossible to meet given their relative lack of systematic manufacturing processes.

Some larger manufacturers of patient-matched medical devices may meet manufacturing requirements. A number of existing patient-matched medical device manufacturers already have ISO13485 certification (on which conformity assessment requirements are based) however they may struggle with some of the additional requirements for conformity assessment, especially in relation to clinical evidence requirements (depending on the technology, it can be difficult or impossible to undertake clinical trials for 'one-off' medical devices). For more specialised and low volume medical devices, compliance would become increasingly difficult.

Without the proposed *medical device production system* (MDPS) no mechanism exists to recognise the emerging point-of-care manufacturing systems that are being marketed to healthcare providers, and that are intended to allow healthcare providers to produce medical devices for treating their patients.

Some personalised medical devices may be supplied under Special Access Scheme (SAS[31]) or Authorised Prescriber (AP) arrangements. SAS and AP allow health practitioners to access therapeutic goods that are not on the ARTG and are not otherwise exempt from being in the ARTG. Supply of custom-made medical devices through this pathway would result in more limited oversight than existing custom-made requirements, as these arrangements are intended for exceptional clinical circumstances and tend to be *ad hoc* in nature.

Option 3 also does not address some of the deficiencies of the current custom-made medical device regulation framework, including:

- Providing for personalised anatomical models for investigating the anatomy and planning surgeries currently being required to undergo third-party scrutiny, unlike the requirements applied to now out-of-date analogue methods for achieving the same aim, such as X-ray film (Option 2D above)
- Clarifying requirements for medical devices that include a human-origin material component (Option 2E above). The existing biological framework for medical devices with human origin is confusing and costly. In addition, a number of devices aspects (engineering, production, device assessment) are not adequately covered where such medical devices are regulated as biologicals.

Potential flow on effects

This option has significant limitations as outlined above, particularly in forcing many personalised medical devices from the Australian market. It does not satisfactory address the problem as outlined above, or deliver against two of the three dimensions on which these options are being assessed.

In addition to the impacts on manufacturers and suppliers of existing and future products, the lack of access to emerging personalised medical device technologies would have a profound impact for patients, health care professionals, the health sector and community. This impact would on grow over time, as emerging technologies continued to be developed but would remain largely inaccessible in Australia.

[31] Further information on SAS is available on the TGA website at https://www.tga.gov.au/form/special-access-scheme

Benefits

Option 1—Status quo

The benefits of maintaining the status quo are limited. It will save the costs associated with changes where medical devices shift from mainstream (requiring ARTG inclusion) to custom-made (which are exempt). Option 1 also does not address any of the limitations of the current regulatory approach:

- Current custom-made medical device definition allows for a large (and growing) proportion of the types/categories of medical devices that are eligible for custom-made exemption—far beyond the original intent
- insufficient mechanisms for the Australian Government to have effective oversight and visibility of the personalised medical device sector, which is predicted to become more significant over time as the market moves further towards personalised medicine
- insufficient mechanisms for investigation following adverse events relating to or involving personalised (custom-made) medical devices, as a result of limited record-keeping requirements (particularly around record-retention timeframes)
- insufficient compliance and enforcement mechanisms for dealing with unsafe devices or manufacturers
- misalignment with international norms for human-origin material – medical device combination products, which results in unnecessary regulatory burden for industry

Option 2—Comprehensive package of regulatory reforms

Under Option 2, the proposed regulatory changes are intended to address the three dimensions of the stated problem, and additionally align with the objectives for regulating medical devices in general, which are:

- minimising public health and safety risks
- maintaining consumer confidence in the safety and performance of medical devices
- aligning, as far as possible, with international best practice
- minimising unnecessary regulatory burden

The proposed changes are expected to provide benefits to patients being treated with personalised medical devices and to healthcare providers who use personalised medical devices in their practices, primarily improved clinical outcomes for patients. The strengthening of regulation for personalised medical devices would ensure that an appropriate and consistent level of third-party oversight is in place, which would minimise the risk of harm to patients. This would also give healthcare providers more assurance that the medical devices will perform as intended.

Additionally, the proposed changes are expected to provide benefits to the regulated industry sector. Some devices currently covered under the Australian custom-made exemption would require third-party assessment to make them eligible for inclusion in the ARTG. This facilitates reimbursement processes for some devices and also provides a degree of public confidence in the products. The changes would also level the playing field for manufacturers by making the device categories and requirements clearer and more consistent. Manufacturers, particularly of patient-matched devices, who are already ensuring their devices comply with the essential

principles for safety and performance, would not be unfairly competing against manufacturers who are not subject to the same degree of regulatory oversight.

Most of these proposed changes would move the regulation of personalised medical devices in the direction of international alignment. For example, regulatory oversight or approval of patient-matched medical devices is already required in multiple jurisdictions including the USA and Canada. Australian manufacturers who are currently using the custom-made exemption for their patient-matched medical devices may find that complying with the new arrangements opens up additional international markets for their products.

Finally, changing the Australian regulatory pathway for medical devices with human-origin material, such as 3D-bioprinted devices, would better align with other jurisdictions. This is expected to benefit manufacturers because it would reduce confusion about and the regulatory burden of complying with the requirements of multiple jurisdictions.

One of the key benefits for custom-made devices is the ability to custom-make a device to meet the specific needs of an individual patient, and the ability to provide a device where a mass-produced device is not available or would provide a less than optimal solution. The ability to create anatomically-correct models of a patient prior to surgery enables diagnosis, and also allows the surgical team to train and plan for surgeries, which may potentially reduce the risk of errors, reduce surgery time, make surgery possible at all, and reduce post-operative complications.

Option 2 offers potential benefits patients, health professionals, health care systems and the medical devices industry.[32]

Benefits for patients

- Solution for an otherwise un-solvable problem (for example, patients of uncommon size or shape, or with a unique anatomical condition)
- Precise implant shapes
- Reduced surgery and recovery times (generally speaking the shorter the surgery duration to lower the risk to the patient (from infection and anaesthesia)
- Better aesthetic results
- Reduced post-operative complications.

Benefits for healthcare systems and health professionals

Healthcare systems include various facilities such as hospitals and dental surgeries, and the health care professionals who work within them.

- Visualisation and planning of procedures using anatomically correct models which may have the following benefits:
    - Better selection of devices and other surgical tools
    - Decreased surgical risk and increased accuracy (of incisions for example) and potentially resulting in less surgical errors and faster post-operative recovery

[32] Many of these come from a study by Martelli et al Advantages and disadvantages of 3 dimensional printing in surgery: A systematic Review. Surgery, June 2017

  - Better anticipation of difficulties that can potentially arise during surgery/procedures

- Other benefits potentially include:
  - Reduced post-operative complications
  - Decreased risk of soft tissue trauma
  - Decreased duration of surgical procedure time (less anaesthetic) due to reduced need, for example, to reshape a mass-produced implant
  - Less misplacements and errors during the procedure
  - Decreased radiological exposure during the procedure.

Industry

- Increased demand should continue to drive innovation and growth in the industry
- The ability to meet the medical needs associated with the increasing geriatric population and an increasingly sedentary lifestyle will increase demand for certain orthopaedic and dental devices which will continue to drive the market

Option 3—Regulate custom-made medical devices in line with other medical devices

Regulating custom-made medical devices in line with other medical devices has the benefit of increasing visibility and oversight of these medical devices. It shifts these medical devices into an established and proactively managed regulatory framework with clearly outlined responsibilities and accountabilities for manufacturers and sponsors, and provides a range of compliance and enforcement mechanisms for the regulator not currently applicable to custom-made medical devices.

However, the significant limitations of this option, including forcing most personalised medical devices from forecast supply into the Australian market, mean this option is not realistically viable. The impact on patients, healthcare systems, health professionals and the medical devices industry could not be supported, and this option also does not address numerous aspects of the problems associated with the development and growth of personalised medical device technologies.

Consultation

Formal engagement for reforms to the personalised medical devices regulatory framework began in August 2017 at a targeted workshop for fifty invited participants including representatives from the medical device industry (both large and small organisations), hospitals, surgeons, researchers, patients, and government. There was consensus at the workshop on the need to reform the medical device regulatory frameworks for custom-made devices, especially high-risk (permanently implantable) devices, enabled by 3D-printing.

In November 2017 the TGA released a consultation paper—*Proposed regulatory changes related to personalised and 3D printed medical devices*.[33] The consultation was available through the TGA website for a six-week period and closed on 22 December 2017.

The paper included proposed ways to address the increasing trend for personalised medical devices. While the regulatory changes were not limited to 3D-printed medical devices, 3D-printing was one of the main themes, as this technology enables personalisation of medical devices in a fast and potentially up-scalable manner.

Results of 2017 consultation

The responses to the consultation paper[34] showed broad stakeholder support for the proposed reforms and a strong awareness of the need for improvements to the regulation of personalised medical devices. Twenty-four submissions were received, from industry and industry representatives, healthcare practitioners and organisations, government, universities and consumer representatives.

The submissions indicated that there was still need for greater clarity, in particular, regarding the proposed definitions. The need for clarification was especially evident regarding the boundary between the proposed 'custom-made' and the proposed 'patient-specific' definitions and there were multiple requests for explanatory examples. There were also several submissions indicating uncertainty, and requesting further explanation of what exactly would be seen as a medical device production system.

2019 consultation

In order to obtain additional feedback from affected stakeholders, the TGA publicly released another consultation paper on 11 February 2019, seeking submissions until 31 March 2019.[35] The document included an invitation to comment on the proposed options, specifically, seeking feedback on the suitability and potential impact that any proposed changes to the regulations might have.

The 2019 consultation included a proposal to align the new definitions for personalised medical devices in Australia with the IMDRF definitions that were published in November 2018. These definitions provided additional clarity when compared with those consulted on in Australia in 2017. The IMDRF definitions paper included examples for each of the different categories.

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[33] 2017 consultation paper available on TGA website: https://www.tga.gov.au/consultation/consultation-proposed-regulatory-changes-related-personalised-and-3d-printed-medical-devices

[34] A summary and copies of responses to the 2017 consultation are available on the TGA website at: https://www.tga.gov.au/submissions-received-proposed-regulatory-changes-related-personalised-and-3d-printed-medical-devices

[35] 2019 consultation paper available on TGA website: https://www.tga.gov.au/consultation/consultation-proposed-regulatory-scheme-personalised-medical-devices-including-3d-printed-devices

Twenty-four submissions were received. Overall, there was a strong consensus across all stakeholder groups, with a majority of respondents supporting the proposed changes to the regulatory framework for personalised medical devices. A number of submissions were complementary of the leading role that Australia was playing as Chair of the International Medical Device Regulators Forum personalised medical devices working group.

Submissions also focussed on ensuring a level playing field for manufacturers and hospitals that are manufacturing more than custom-made medical devices, international alignment, cost of compliance, and the need for clear guidance and education from the TGA. Some specific issues were identified through the consultation:

- A number of submissions were concerned about the proposed new medical device production system (MDPS), but it was clear that much of the feedback stemmed from a misunderstanding of how the regulations would apply both to these devices and to other types of manufacturing systems. Clarification on this misunderstanding was provided in the outcomes summary for the consultation.
- There were a number of responses from members of the low-risk assistive technologies sector who were concerned about increased regulatory burden. They mistakenly believe that their Class I products would require third-party certification if the proposals are implemented. They also believe that each and every device that is supplied would need an ARTG entry. In reality, there would not be any additional regulatory requirements in this sector. Many of the products in this sector are not medical devices and a current consultation on options to exclude f certain products used for and by people with disabilities from regulation should alleviate these concerns.
- Some smaller Australian manufacturers who have been engaged in custom-made implantable medical devices also appear to have limited understanding of the medical devices regulatory framework. Stakeholder education for this cohort will be a priority for the TGA.
- Hospital respondents want the freedom to manufacture more than custom-made medical devices but have concerns about meeting the cost of regulatory compliance.

Stakeholders responding to the consultation were:

- Manufacturers (8), Industry Associations / Organisations (6), Healthcare Representative Bodies (3), Healthcare Providers (3), Consumer Organisations (2), Not for Profit (1), University (1)

No respondents strongly opposed the proposed reforms. The small number of submissions that opposed one or some of the proposals also supported others and there was a misunderstanding of current regulatory requirements as noted above.

Some respondents opposed some parts of the proposals for application to all categories of devices, most notably there were several submissions that suggested potentially increased reporting requirements for custom-made medical devices should be limited to higher-risk devices.

International (IMDRF) consultations

In addition to the consultation conducted in Australia, the IMDRF personalised medical devices working group has conducted two formal international consultations. The first was to establish definitions for personalised medical devices, which were published in 2018 [36] (see *Appendix 1*), and the second was undertaken in 2019 to establish regulatory pathways for each category of

[36] 2018 consultation paper available on the IMDRF website at http://www.imdrf.org/consultations/cons-definitions-personalized-md-n49-180524.asp

personalised medical device.[37] These international consultations received broad support and the proposed changes for Australia are aligned with the IMDRF approach.

Consultations with selected stakeholders

In additional to the consultation processes outlined above, bilateral consultations have been undertaken on particular aspects of the proposed changes with a range of stakeholders, including member of key consultative forums (the RegTech Forum and the Advisory Committee on Medical Devices), and discussions with a number of respondents to the TGA consultations on personalised medical devices and members of the healthcare sector, including public and private hospital peak bodies.

[37] 2019 consultation paper available on the IMDRF website at: http://www.imdrf.org/consultations/cons-rrar-cabc-mdrr.asp

Preferred option

Option 2—Changes to better regulate personalised medical devices

The proposed changes to the regulatory framework under this option aligns with the approach of other regulators and the recommendations of the IMDRF working group for personalised medical devices. The proposed regulatory controls, based on the internationally harmonised approach, involves the introduction of three categories (*custom made*, *patient matched*, and *adaptable*) of personalised medical device, with associated regulatory controls applied commensurate with the risks and nature of the three categories. The risk of harm to patients would be minimised, and healthcare providers would have greater assurance that the medical devices they use would perform as intended.

The introduction of the medical device production system (MDPS) would ensure ongoing safety of the production of medical devices, usually at the point of care, by healthcare professionals who would otherwise be required to obtain manufacturer certification. The introduction of this new approach would provide improved outcomes from systems that are currently not regulated in Australia, together with reducing the regulatory burden on those healthcare professionals who would otherwise be considered to be manufacturers under the Act. It would also align Australia with the internationally recognised best-practice (IMDRF) model for such systems.

The updates to the classification rules relating to anatomical models would result in the application of appropriate regulatory oversight of manufacturers who make models for the investigation of the anatomy and for the planning of surgeries. The new rules would ensure that the regulatory framework is updated so that oversight of new digital technologies is in line with the equivalent analogue technologies of the past (i.e., X-ray film).

The changes relating to the way medical devices with human-origin components are regulated would mean that the framework would be aligned with international norms, and would ensure that the human-origin components of combination medical device products are subject to appropriate regulatory scrutiny in the same way that other combination products are subject (such as medical devices with animal-origin material).

The new definition of 'adaptable medical device' and additional information on the boundaries associated with the adaption of medical devices will improve clarity for the sector, and highlight the impact on the safety and performance of the device when adapting medical devices outside of the manufacturer's instructions.

There are additional benefits relating to Option 2 as follows:

- a levelling of the playing field for manufacturers which will narrow the scope of devices captured by custom-made definition, and ensure comparable patient matched and mass produced medical devices are regulated in a comparable way
- improving TGA's visibility of the custom-made medical devices industry in Australia, so the size and scope of the sector can be monitored and any trends or emerging issues for individual devices or personalised medical devices more broadly, and addressed.
- opening up international markets to domestic manufacturers (who would be required to meet internationally harmonised requirements)
- facilitating sponsor access to reimbursement pathways (such as the inclusion of patient-matched medical devices on the Prostheses List, as discussed above)
- improving public confidence in the regulatory framework that applies to personalised medical devices
- ensuring that patients are better informed about the custom-made medical devices they have been provided with

- improved post market monitoring and compliance and enforcement mechanisms.

Option 2 is a comprehensive package of interrelated reforms that provides for an alignment of the requirements for personalised medical devices with the objectives for regulating medical devices in general, namely the:

- minimisation of public health and safety risks
- maintenance of consumer confidence in the safety and performance of medical devices
- alignment, as far as possible, with international best practice
- minimisation of unnecessary regulatory burden.

Implementation and evaluation

Implementation

The implementation of the proposed reforms would require a significant education effort from the TGA. This would include engaging with all affected stakeholders in a range of fora, and developing guidance materials targeted for the different groups. The consultation period for this work, which commenced in 2017, has already resulted in increased understanding of affected stakeholders.

The proposed implementation trajectory begins with the proposed reforms coming into effect on 25 August 2020. Medical devices that are being supplied in Australia prior to this commencement date, and that would be affected by the proposed reforms, would have the benefit of a transition period as described below.

When designing the implementation and considering the transition approach, the TGA took the following considerations into account:

- The need to implement the changes as quickly as reasonable, whilst keeping in mind any additional regulatory burden the changes will impose
- Wherever possible aligning new reporting requirements with existing time frames (so for example, manufacturers of custom-made medical devices are required to notify TGA within two (2) months of commencing supply, and annual reporting timeframes might be aligned to this initial notification date)
- Allowing reasonable time for those manufacturers that are required to obtain full registration and compliance for their devices

Currently included medical devices

All medical devices that are included in the ARTG prior to 25 August 2020 and that are subject to re-classification under the proposed reforms would be considered to be transitional devices. The current ARTG entry would allow continued supply until 1 November 2024 if the following requirement for notification to the Secretary is followed:

The sponsor of a transitional medical device notifies the Secretary prior to 25 February 2021 of:

- the ARTG number
- the unique product identifier of all medical devices supplied under that number
- which devices would require new ARTG inclusions at the end of the transition period

The manufacturers and sponsors of these medical devices would have until November 2024 to seek the appropriate certification for their devices and to apply for new ARTG inclusions at the re-classified level.

Custom-made medical devices

The proposed requirements for custom-made medical device manufacturers to provide the manufacturer's statement with a custom-made device, and to retain records for implantable devices for a longer period, would apply to custom-made medical devices manufactured on or after 25 August 2020.

The proposed annual reporting requirements would apply to custom-made medical devices manufactured in Australia, or imported into Australia, on or after 25 August 2020. This means

that the first annual reports, for custom-made medical devices manufactured in the preceding year, would be due on 1 October 2021.

The proposed ability for the TGA to inspect custom-made medical device manufacturing sites would apply on or after 25 August 2020.

Patient-matched medical devices

Patient-matched medical devices are currently captured by the custom-made medical device definition. The exemption from the requirement to be included in the ARTG for patient-matched devices that are currently considered to be custom-made devices, and are notified to the TGA in the custom-made data repository by 25 August 2020, would remain in force until 1 November 2024 for those devices that meet the following condition:

The sponsor or Australian manufacturer of a patient-matched medical device that has been notified to the TGA as a custom-made medical device prior to 25 August 2020, notifies the Secretary in writing of the following before 25 February 2021:

(a) the name and address of the sponsor;

(b) the name and address of the manufacturer;

(c) the device nomenclature system code for the device;

(d) the medical device classification of the device; and

(e) the unique product identifier of the device.

Such devices would need to be included in the ARTG before 1 November 2024.

Adaptable medical devices

The new definition and clarification of requirements for not alter existing regulatory requirements. Advice to relevant stakeholders will be required under transitional arrangements (such as amended guidance).

Evaluation

The purpose of the evaluation will be to assess the impact of the regulatory changes, whether the benefits have been realised, the impact on key stakeholders, and patient safety. The evaluation approach, questions and data requirements will be defined and agreed prior to implementation in order to ensure that appropriate data is captured to facilitate the evaluation and communicate the approach to key stakeholders. In addition, lessons learnt from other regulatory changes will be incorporated into the implementation and evaluation processes.

Methods

Methods used for data gathering are likely to include:

- formal and informal engagement with stakeholders through consultation and bi-lateral discussions
- analysis of data held on ARTG
- analysis of calls to the TGA Information Line

Stakeholders

Stakeholders that will be consulted as part of the evaluation will include:

- other regulators (including IMDRF)
- industry associations and peak bodies
- industry—manufacturers and sponsors
- hospitals
- health insurers
- patients and consumers
- surgeons
- researchers
- other governments, the Department of Health, states and territories

Potential Questions

Questions that the evaluation may consider or address include:

- Did the increase in regulatory scope encompass all of the anticipated devices/scenarios?
- Which stakeholders and stakeholder groups did the TGA expect to be impacted by the changes, and did this align with the actual results? For example, did the organisations that now are regulated conform to the regulatory requirements?
- How effective were the communication and education methods that were employed prior to, and during the implementation?
- How many devices are now included in the ARTG as a result of the changes?
- How many hospitals registered medical device production systems (MDPS)?
- What was the number of adverse events or recalls involving devices that are now registered on the Australian Therapeutic Goods Register (ARTG)?
- Did all of the manufacturers/sponsors that indicated they would seek registration complete the registration process?
- Were there any unintended consequences for patients or the hospital system? If so, what were they?
- Were there any unintended consequences for manufacturers or sponsors? If so what were they?
- Did the regulatory burden align with the estimates? If not, where did they differ?
- Was there a perceived change in consumer confidence in the safety and performance of medical devices as a result of the changes?
- How many inspections did the TGA carry out? What were the overall results of those inspections?
- What have the impacts been on the broader community – for example has this promoted the growth of Australian manufacturers and innovation in this area?
- What were the impacts on the manufacturing of medical devices that include human-origin material?

Timeframe

While many aspects of the evaluation will be conducted on an ongoing basis (for example, through the forums and regular stakeholder meetings the TGA conducts and participates in), the TGA anticipates two key formal evaluation timeframes.

The first will be around the initial implementation, and likely to follow the first date for annual reporting which is 1 October 2021. The results of the evaluation would therefore be likely to be released in Q1 2022.

The second would be as a follow up to assess the inclusion of patient-matched devices in ARTG. The current proposed implementation deadline for inclusion is 1 November 2024 which means the evaluation results are likely to be released in early 2025.

Appendix 1—IMDRF Definitions (and examples) for personalised medical devices

The following is taken from IMDRF Final Document: Definitions for Personalized Medical Devices *(IMDRF PMD WG/N49 FINAL: 2018)*[38]

Definitions

Personalised medical device

A generic term to describe any of the types of medical devices that are intended for a particular individual, which could be either a custom-made, patient-matched, or adaptable medical device.

Custom-made medical device

A medical device that, at a minimum, meets the following requirements:

- it is intended for the sole use of a particular individual (which could be a patient or healthcare professional); and
- it is specifically made in accordance with a written request of an authorized professional, which gives, under their responsibility, specific design characteristics; even though the design may be developed in consultation with a manufacturer; and
- it is intended to address the specific anatomo-physiological features or pathological condition of the individual for whom it is intended.

Note 1: Medical devices that are patient-matched, adaptable or mass-produced shall not be considered to be custom-made.

Note 2: A custom made device is intended for a case where an individual's specific needs cannot be met, or cannot be met at the appropriate level of performance, by an alternative device available on the market.

Patient-matched medical device

A medical device that meets the following requirements:

- it is matched to a patient's anatomy within a specified design envelope using techniques such as scaling of the device based on anatomic references, or by using the full anatomic features from patient imaging; and
- it is typically produced in a batch through a process that is capable of being validated and reproduced; and
- it is designed and produced under the responsibility of a manufacturer even though the design may be developed in consultation with an authorized healthcare professional.

Note 1: A written request from an authorized healthcare professional may be present; but is not mandatory.

Note 2: The number and type of design inputs in consultation with a healthcare professional may vary depending on the medical devices to be manufactured.

[38] http://imdrf.org/docs/imdrf/final/technical/imdrf-tech-181018-pmd-definitions-n49.pdf

Note 3: The design must remain within the validated parameters of the specified design envelope.

Adaptable medical device

A medical device that meets the following requirements:

- it is mass-produced; and
- it is adapted, adjusted, assembled or shaped at the point of care, in accordance with the manufacturer's validated instructions, to suit an individual patient's specific anatomo-physiologic features prior to use.

Batch

One or more components or finished devices that are produced using the same lot of raw material, the same method of manufacture, having the same probability of chemical or microbial contamination, and that are intended to have uniform characteristics and quality within specified limits.

DICOM files

Patient imaging files, typically produced by computed tomography (CT) or magnetic resonance (MR), that are saved in the Digital Imaging and Communications in Medicine format.

Homogenous batch

A production group of equivalent parts or materials manufactured and/or tested in the same manner, without interruption, typically on the same day or in the same time period, and produced by the same person, or with the same machine/equipment set-up and fulfil the same specifications [Ref MEDDEV 2.5/6 Rev. 1 http://ec.europa.eu/DocsRoom/documents/10287/attachments/1/translations].

Mass-produced medical device

A medical device that is:

- based on standardized dimensions/designs;
- not designed for a particular individual; and
- typically produced in a continuous production run or homogenous batch.

Specific design characteristics

Unique design specifications, necessary to produce custom-made devices, that are based on an individual's specific anatomo-physiological features and/or pathological condition; and that cannot be proposed by a manufacturer without the involvement of a healthcare professional.

For example, transmitting only dimensions/geometric parameters (such as DICOM files from CT scans) to a manufacturer prior to the production of a medical device, is not sufficient to be considered as giving specific design characteristics. Additional information, such as the thickness and trajectory of a plate, the number, type and positions of fixation screws, would also need to be provided.

Specified design envelope

Minimum and maximum dimensions, mechanical performance limits, and other relevant factors, that characterize a medical device for production purposes, which may be based on a standard device template model.

Examples

Custom-made medical devices

- Artificial cervical disc replacement, requested by a spinal surgeon, for reconstruction of the cervical disc following cervical discectomy to treat cervical radiculopathy in a 7'2" male patient. In this example, the osseous dimensions of this patient's cervical spine exceed those which an available artificial cervical disc would accommodate; therefore the individual's specific needs cannot be met by an alternative device available on the market. The surgeon has provided, under his/her responsibility, unique design specifications that are based on the individual's specific anatomo-physiological features and pathological condition to the manufacturer.
- An acetabular cup implant requested by an orthopaedist who, in addition to DICOM-compliant scan images, sends to a 3D printing implant manufacturer specific requirements for acetabulum reconstruction by bridging the areas of acetabular bone loss. These include the thickness and trajectory of the cup mounting flange, and the number, type and positions of fixation screws. In this example these requirements are outside of the manufacturer's validated design envelope for this type of device. The required dimensions for bridging exceed those that have been validated under worst case parameters; and the number and location of screw holes are also beyond the limits modelled and/or tested.
- An endoscope with a modified steering mechanism requested by a gastroenterologist to address a loss in manual dexterity caused by a disability. In this example the individual's specific needs cannot be met by an alternative device available on the market. The relevant healthcare professional for the gastroenterologist provides under his/her responsibility shape and force design requirements to the endoscope manufacturer that address the special requirements related to the disability.

Patient-specific medical devices

- Acetabular guide designed to assist a surgeon with pre-operatively planned placement of the acetabular cup component of a total hip replacement. The guide is based upon CT images of a patient's specific anatomy and pre-operatively planned placement of the acetabular cup. The device manufacturing processes, as well as the pre-operative planning process upon which the design of the patient-specific guide is based, are validated within a certain range of anatomical parameters. In this example the guide is produced under the responsibility of the manufacturer in consultation with, and input from, the surgeon.
- Mandibular implants produced by a 3D printing manufacturer, from a template model and DICOM files. In this example the manufacturer provides software to the healthcare professional for the development of the 3D print file of the implant (based on the DICOM file from patient CT scans). The surgeon has received training from the manufacturer to use the software to tailor the 3D model for the patient within validated parameters. The manufacturer uses the 3D print file to produce, under its responsibility, the implant.
- An externally worn orthosis to shape the skull of an infant to prevent plagiocephaly, based on 3D external images of the patient's head. In this example the images are produced by a prosthetist and sent to a manufacturer. The manufacturer produces, under its responsibility, a patient specific helmet within validated parameters.

Adaptable medical devices

- Thoracolumbar pedicle screw system, which consists of multiple mass-produced components from a single manufacturer, that allows the surgeon to build an implant system, at the point of care, to fit the patient's anatomical and physiological requirements in accordance with validated instructions provided by the manufacturer. In this example the surgeon assembles a combination of hooks, screws, longitudinal members (e.g., plates, rods, plate/rod combinations), transverse or cross connectors, and interconnection mechanisms (e.g., rod-to-rod connectors, offset connectors). Additionally, longitudinal members require intraoperative contouring, in accordance with the manufacturer's validated instructions, in order to fit the individual patient's spinal curvature.
- Mass-produced polymer surgical implants for cranial reconstruction that are supplied sterile and are intended to be thermoformed during the surgical procedure. The manufacturer's validated instructions provide details for heating and shaping the implant to suit a patient's particular anatomy.
- Mandibular advancement orthosis for the treatment of sleep apnoea, which is adapted to the dentition through thermoforming, and is adjusted by the patient in accordance with the manufacturer's validated instructions.

Noetic GROUP

Appendix 2–TGA Regulatory Burden Costings–Personalised Medical Devices

REGULATORY BURDEN COSTINGS

Proposed Regulatory Framework for Personalised Medical Devices

Therapeutic Goods Administration

Final Report

1 November 2019

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EXECUTIVE SUMMARY

BACKGROUND

Rapid advances in computing technology and additive materials manufacturing have driven exponential change in medical imaging and manufacturing technology and consequently medical devices technology. The current regulatory framework for custom-made medical devices was based on a historical premise that these devices would largely comprise low-risk products such as glass eyes, prosthetic limbs, prescription lenses etc. More recently, custom-made devices encompassed a small number of high-risk devices where there were no other options to treat a patient.

The scale of production of custom-made medical devices (including at point of care) and increasing number of uses has resulted in recognition by the Therapeutic Goods Administration (TGA) and industry that the current regulatory requirements for personalised medical devices were too broad and no longer fit-for-purpose. Furthermore, the current regulations can result in significant risks for patients receiving high risk custom-made devices, such as permanent implants, as they do not have the same level of regulatory oversight as similar conventionally-manufactured devices. Specifically, manufacturers and sponsors of custom-made medical devices are currently exempt from rigorous pre- and post-market regulatory oversight, including inspections of manufacturers' premises and the requirement for third-party certification of the device's safety and performance.

Consequently, a review (incorporating public consultation) was undertaken into the efficacy of the current regulatory oversight of custom-made medical devices. This review resulted in a number of proposed changes to the existing regulatory framework for medical devices to introduce appropriate regulatory controls for the emerging field of personalised medical devices.

SUMMARY OF PROPOSED REGULATORY CHANGES

Below are the proposed changes for the regulation of personalised medical devices:

1) introduce new definitions for personalised medical devices;

2) change the requirements for supplying custom-made medical devices in Australia, so that additional information must be provided to the TGA and to patients and to allow the TGA to inspect manufacturing sites;

3) introduce a framework for regulating a medical device production system which will allow healthcare providers to produce lower risk personalised devices for treating their patients, without the need for manufacturing certification;

4) update the classification rule for medical devices that record diagnostic images so that it includes any device for this purpose and not just X-rays, for example 3D-printed models of patient anatomy;

5) regulate medical devices with a human origin component, for example a 3D-printed implant incorporating cells from the patient, as medical devices with a biological component rather than as pure biologicals; and

6) clarify that any modifications or adaptations to personalise a medical device that has already been supplied must have been intended by the original manufacturer of the device.

PURPOSE OF THIS REPORT

The purpose of this report is to provide a quantification of the regulatory impact of the proposed changes to the regulation of personalised medical devices to inform a Regulation Impact Statement (RIS) prepared by the Department of Health (the Department).

APPROACH

The modelling detailed in this report was conducted in accordance with the Office of Best Practice Regulation (OBPR) guidance for the calculation of regulatory costs and the approach was briefed and agreed in principle by the OBPR. The Noetic Group (Noetic) did not engage directly with industry in determining the time taken to undertake the activities associated with the implementation of the proposed regulatory changes. Rather, Noetic relied on advice provided by the Department and previous regulatory costings for the quantification of existing regulatory activities (albeit applied to a new population of sponsors and manufacturers).

CONCLUSION

As per OBPR guidance, regulatory costs are projected over a 10-year period and then averaged to arrive at an average annual regulatory cost. The table below provides the average estimated regulatory compliance costs.

Table ES1: Summary of estimated regulatory compliance costs

Average annual regulatory costs (from business as usual) ($million)				
Change in costs	Business$	Community Organisation$	Individual$	**Total change in costs**
Option A				
Status quo: Current Regulatory framework is appropriate - no change is required				
Option B				
Amended the regulatory framework for personalised medical devices in accordance with the 6 proposed regulatory changes	$1.261		$0.005	**$1.266**

GENERAL

BACKGROUND

Need for regulatory changes for personalised medical devices

Rapid advances in computing technology and additive materials manufacturing have driven exponential change in medical imaging technology, manufacturing technology and consequently medical devices technology. The current regulatory framework for custom-made medical devices was based on the premise that these devices would largely comprise low-risk products such as glass eyes, prosthetic limbs, prescription lenses etc. More recently, custom-made devices encompassed a small number of high-risk devices where there were no other options to treat a patient.

However, the scale of production of custom-made medical devices (including at point of care) and increasing number of uses has resulted in a recognition by the Therapeutic Goods Administration (TGA) and industry that the current regulatory requirements for personalised medical devices were too broad and no longer fit-for-purpose under the current provisions for custom-made devices. Furthermore, the current regulations can result in some significant risks for patients receiving high risk custom-made devices such as permanent implants, as they do not have the same level of regulatory oversight as similar, conventionally-manufactured devices.[39] Specifically, manufacturers and sponsors of custom-made medical devices are exempt from rigorous pre and post-market regulatory oversight, including inspections of manufacturers premises and the requirement for third-party certifications of their devices' safety and performance.

Consequently, a review (incorporating public consultation) was undertaken into the efficacy of the current regulatory oversight of custom-made medical devices. This review resulted in a number of proposed changes to the existing regulatory framework for medical devices to introduce appropriate regulatory controls for the emerging fields of personalised medical devices.

Summary of proposed regulatory changes

Below are the proposed changes for the regulation of personalised medical devices:

1) introduce new definitions for personalised medical devices;

2) change the requirements for supplying custom-made medical devices in Australia, so that additional information must be provided to the TGA and to patients and to allow the TGA to inspect manufacturing sites;

3) introduce a framework for regulating a medical device production system which will allow healthcare providers to produce lower risk personalised devices for treating their patients, without the need for manufacturing certification;

4) update the classification rule for medical devices that record diagnostic images so that it includes any device for this purpose and not just X-rays, for example 3D-printed models of patient anatomy;

5) regulate medical devices with a human origin component, for example a 3D-printed implant incorporating cells from the patient, as medical devices with a biological component rather than as pure biologicals; and

6) clarify that any modifications or adaptations to personalise a medical device that has already been supplied must have been intended by the original manufacturer of the device.

[39] 3D-printed mass-produced medical devices do not meet the current definition of custom-made medical devices and therefore are not considered 'exempted' products under the medical devices regulatory framework.

International regulatory harmonisation

Custom-made medical devices are currently defined in the *Therapeutic Goods (Medical Devices) Regulations 2002* (the Regulations) as medical devices that:

- are made specifically in accordance with a request by a health professional specifying the design characteristics or construction of the medical device; and
- are intended:
    - to be used only in relation to a particular individual; or
    - to be used by a health professional to meet special needs arising in the course of his or her practice.[40]

TGA is proposing to introduce new definitions to harmonise with those published by the International Medical Device Regulators Forum (IMDRF) at the end of 2018.[41]

Personalized medical device

A generic term to describe any of the types of medical devices that are intended for a particular individual, which could be either a *custom-made*, *patient-matched*, or *adaptable medical device*.

Custom-made medical device[42]

A medical device that, at a minimum, meets the following requirements:

- it is intended for the sole use of a particular individual (which could be a patient or healthcare professional);
- it is specifically made in accordance with a written request of an authorized professional, which gives, under their responsibility, specific design characteristics; even though the design may be developed in consultation with a manufacturer; and
- it is intended to address the specific anatomo-physiological features or pathological condition of the individual for whom it is intended.

Patient-matched medical device[43]

A medical device that meets the following requirements:

- it is matched to a patient's anatomy within a specified design envelope using techniques such as scaling of the device based on anatomic references, or by using the full anatomic features from patient imaging;
- it is typically produced in a batch through a process that is capable of being validated and reproduced; and

[40] *Therapeutic Goods (Medical Devices) Regulations 2002,* Regulation 1.3 (Dictionary).
[41] IMDRF PMD WG/N49 FINAL: 2018.
[42] Notes: Medical devices that are patient-matched, adaptable or mass-produced shall not be considered to be custom-made. A custom-made device is intended for a case where an individual's specific needs cannot be met, or cannot be met at the appropriate level of performance, by an alternative device available on the market.
[43] Notes: A written request from an authorised healthcare professional may be present; but is not mandatory. The number and type of design inputs in consultation with a healthcare professional may vary depending on the medical device to be manufactured. The design must remain within the validated parameters of the specified design envelope.

- it is designed and produced under the responsibility of a manufacturer even though the design may be developed in consultation with an authorized healthcare professional.

Adaptable medical device

A medical device that meets the following requirements:

- it is mass-produced; and
- it is adapted, adjusted, assembled or shaped at the point of care, in accordance with the manufacturer's validated instructions, to suit an individual patient's specific anatomo-physiologic features prior to use.

Transition period

TGA has advised that the transition period for the proposed changes to the regulatory framework of personalised medical devices will commence on 24 August 2020 and continue until 30 November 2024.

PURPOSE OF THIS REPORT

The purpose of this report is to provide a quantification of the regulatory impact of the proposed changes to the regulation of personalised medical devices to inform a Regulation Impact Statement prepared by the Department.

APPROACH

The modelling detailed in this report was conducted in accordance with the OBPR guidance for the calculation of regulatory costs and the approach was briefed and agreed in principle by the OBPR. Noetic Group did not engage directly with industry in determining the time taken to undertake the activities associated with the implementation of the proposed regulatory changes. Rather, Noetic relied on advice provided by the Department and previous regulatory costings for the quantification of existing regulatory activities (albeit applied to a new population of sponsors and manufacturers).

Specifically, Noetic has provided this in the form of regulatory costings for each of the options listed below:

- Option A (Status Quo Option): No change to the Therapeutic Goods (Medical Devices) Regulations 2002 is required; the current TGA medical devices regulatory framework is appropriate.
- Option B (Information Option): Amended the regulatory framework for personalised medical devices in accordance with the 6 proposed regulatory changes.

The requirement for an 'appropriate' level of consultation is clearly articulated in the OBPR guidance. Noetic and the Department collaborated to achieve the required level of consultation, including the following activities:

- The Department undertook public consultations and conducted public forums in 2017 and 2018 to understand the impact that the proposed regulatory changes will have on the medical devices industry, healthcare professionals and patients. A further public consultation was undertaken from February to March 2019. Noetic reviewed all publicly released submissions to the consultation papers.
- Regular engagement (including a number of workshops) occurred with Department staff in the Medical Devices Branch to discuss and obtain feedback on progress; seek

advice or direction regarding assumptions, qualifications and inputs; and communicate and resolve challenges.

- One meeting with the OBPR (attended by both Noetic and the Department) to confirm the proposed approach and seek advice or direction regarding assumptions, qualifications and inputs.

THE REGULATORY COSTING

COSTING MODEL

Overview

The development of the regulatory costing model was undertaken in accordance with the OBPR Guidance Note: 'Regulatory Burden Measurement Framework', dated February 2016. Costs were estimated for administrative compliance costs only. No substantive costs were identified, as it was considered that regulated entities would already have the necessary record management systems. Delay costs (application and approval delays) were determined to be out-of-scope.

The labour cost formula was used to determine these administrative compliance costs: price x quantity (or in its more expanded version: (Time required × Labour cost) × (Times performed × Number of businesses or community organisations × Number of staff)).

As detailed earlier in this report, workshops were held with Department staff to assist with the determination of the impacted population and the touch points arising from the proposed regulatory changes.

The options being considered by the Department

Table 1 details the regulatory options being considered by the Department.

Table 1. Regulatory options for personalised medical devices

Option A (Status Quo)	No change to the Therapeutic Goods (Medical Devices) Regulations 2002 is required; the current TGA medical devices regulatory framework is appropriate.
Option B	Amend the regulatory framework for personalised medical devices in accordance with the 6 proposed regulatory changes

Option A: Is the status quo and provides the cost base from which to calculate the change in regulatory burden for Option B.

Option B: The change in regulatory burden will mainly be realised by Manufacturers/Sponsors of custom-made devices, manufacturers and sponsors of medical device production systems, and manufacturers and sponsor of medical devices and associated software used to record diagnostic images. There will also be a slight increase in the regulatory burden of patients and healthcare providers associated with the need to provide patients the manufacturer's statement for custom-made medical devices.

Given the inter-related nature of the individual reform measures within the package of reforms, and which by their very nature relate directly to proposed actions to be undertaken by regulated bodies, a single regulatory option (Option B) has been costed.

Transition arrangements

The proposed reforms will come into effect on 25 August 2020, subject to the following transitions.

- **Currently included medical devices.** All medical devices that are included in the ARTG prior to 25 August 2020 and that are subject to re-classification under the proposed reforms are considered to be transitional devices. The current ARTG entry will allow continued supply until 1 November 2024 if the following requirement for notification to the Secretary is followed.

The sponsor of a transitional medical device must notify the Secretary prior to 25 February 2021 of:

- the ARTG number;
- the unique product identifier of all medical devices supplied under that number; and
- which devices will require new ARTG inclusions at the end of the transition period.

Custom-made medical devices. Provision of the manufacturer's statement with the device and record retention requirements apply to custom-made medical devices manufactured on or after 25 August 2020. Annual Reporting requirements apply to custom-made medical devices manufactured in Australia, or imported into Australia, on or after 25 August 2020. First annual reports will be due 1 October 2021. Ability for TGA to inspect custom-made manufacturing sites applies on or after 25 August 2020.

Patient-matched medical devices. The exemption from the requirement to be included in the ARTG for patient-matched devices that are currently considered to be custom-made devices, and are notified to the TGA in the custom-made data repository by 25 August 2020, will remain in force until 1 November 2024 for those devices that meet the following condition:

The sponsor or Australian manufacturer must, before the notification date of 25 February 2021, notify the Secretary in writing of the following:

- the name and address of the sponsor;
- the name and address of the manufacturer;
- the device nomenclature system code for the device;
- the medical device classification of the device; and
- the unique product identifier of the device.

Such devices will need to be included in the ARTG before 1 November 2024.

For the purposes of quantifying changes in the regulated population, the regulatory costing has been undertaken over the period FY 2020/21 to FY 2030/31. Where population changes have been able to be determined, Noetic has factored this into the regulatory costing.

Labour cost

The Australian Bureau of Statistics (ABS) publishes 'Average Weekly Earnings' semi-annually. As at 26 August 2019, the latest dataset is May 2019.[44] Given that sponsors or manufacturers could be based in any state/territory, the national dataset was used. The relevant table of the data is Table 10H ('Average Weekly Earnings, Industry, Australia (Dollars) - Original - Persons, Full Time Adult Total Earnings' (includes overtime)). Two Australian and New Zealand Standard Industrial Classification (ANZSIC) divisions were considered by Noetic as being relevant to the particular activities being costed:

1 Professional, Scientific and Technical Services (ANZSIC Division M).

Industry subdivisions are: Professional, Scientific and Technical Services (Except Computer System Design and Related Services), and; Computer System Design and Related Services.

For May 2019, the figure for weekly earning is $1958.10.

[44] Australian Bureau of Statistics, 6302.0 - Average Weekly Earnings, Australia, May 2019, viewed 26 August 2019, <https://www.abs.gov.au/ausstats/abs@.nsf/0/7F76D15354BB25D5CA2575BC001D5866?Opendocument >.

2 Health Care and Social Assistance (ANZSIC Division Q).

Industry subdivisions are: Hospitals; Medical and Other Health Care Services; Residential Care Services, and; Social Assistance Services.

For May 2019, the figure for weekly earning is $1626.40.

It was assessed by Noetic that the Professional, Scientific and Technical Services was the more appropriate industry division because it is the industry division most likely to include the regulatory staff who would undertake the sponsor/manufacturer activities being costed.

For May 2019, the figure for weekly earnings is therefore $1958.10. To determine the average hourly cost, this figure is divided by the average number of total hours worked (includes overtime) for full-time, non-managerial employees (the 'All Industries' category has been used)
(39.40 hours).[45] In accordance with OBPR guidance, a multiplier of 1.75 was used to account for the non-wage labour on-costs and overhead costs. The arising calculation is shown below.

($1958.10/39.40)*1.75 = $86.97[46]

An individual's (patient's) time, while not in paid employment (such as during leisure time), has been costed at $32.00 per hour, as per OBPR guidance. In accordance with OBPR guidance a multiplier is not applied to this figure.

OVERVIEW OF CHANGES

Changes 1 and 2 – New definitions for personalised medical devices and changed requirements for supply custom-made devices

Proposed changes

Manufacturers and sponsors of medical devices that fit the harmonised definition of custom-made, which is more restrictive than the current Australian status, will still be exempt[47] from being included in the Australian Register of Therapeutic Goods (ARTG). Custom-made medical devices will still be subject to limited regulatory oversight, though there will be an increase of regulatory requirements from the status quo, as detailed in the following table.

[45] Australian Bureau of Statistics, 6306.0 - Employee Earnings and Hours, Australia, May 2018, viewed 26 August 2019,<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6306.0May%202018?OpenDocument >.

[46] By way of comparison, the suggested hourly labour rate by OBPR is $73.05 as compared to a value of $86.97 as calculated above.

[47] In accordance with Schedule 4 of the Regulations.

Table 2. Proposed changes to the regulatory framework for custom-made medical devices

Current Regulatory Requirements	Proposed Regulatory Requirements	Likely Regulatory Impact

Current Regulatory Requirements	Proposed Regulatory Requirements	Likely Regulatory Impact
The manufacturer of a custom-made medical device that is manufactured in Australia must, within 2 months after the medical device is first manufactured in Australia, give the following information about the device to the Secretary: • the manufacturer's name and business address; and • a description of the kinds of medical devices being custom-made by the manufacturer (including the device nomenclature system code for any such devices).[48] The sponsor of a custom-made medical device that is imported into Australia must, within 2 months after the medical device is first imported into Australia, give the following information about the device to the Secretary: • the sponsor's name and address; • the manufacturer's name and business address; and • a description of the kinds of medical devices being custom-made by the manufacturer (including the device nomenclature system code for any such devices).[49] This notification is undertaken via an online notification form. Note that a separate form is required for each Global Medical Device Nomenclature (GMDN) code/classification.	That a manufacturer in Australia, or a sponsor of an overseas manufactured custom-made device, provides an annual report to the TGA regarding the custom-made devices they have supplied in the preceding year.	Each manufacturer or sponsor would need to provide an annual report. The exact data fields of this report are still to be determined but it is likely to replicate a number of fields that are currently provided on the online notification form. The Department has advised that patient information will not be sought but that it is possible that the name and business address of the health professional who provided the specification for the higher-risk (Class IIb and Class III) custom-made device may be required. The necessary steps would include the capture of the information over the course of the year, the consolidation of the information for reporting purposes, the checking of the information prior to submission, and the actual submission. It should be noted that requirement to provide the TGA with the initial notification of the manufacture of a custom-made devices remains and is addition to the annual report. There is currently a civil penalty (e.g. penalty units) for not notifying the TGA of the manufacture of custom-made medical devices. Although many custom-made manufacturers have not provided this notification, this is an existing regulatory requirements and therefore is excluded from this regulatory costing.

[48] Regulation 10.3(1).
[49] Regulation 10.3(2).

Current Regulatory Requirements	Proposed Regulatory Requirements	Likely Regulatory Impact
The manufacturer of the device must prepare a written statement in relation to each custom-made medical device including the following: • the name and business address of the manufacturer; • sufficient information to enable the user to identify the device or, if relevant, the contents of packaging; • a statement to the effect that the device is intended by the manufacturer to be used only in relation to a particular individual or health professional; • the name of the individual in relation to whom the device is intended to be used; • the name and business address of the health professional who provided the specification for the device; • the particular design characteristics or construction of the device as specified by the health professional who provided the specification for the device; and • a statement to the effect that the device complies with the applicable provisions of the essential principles or, if the device does not comply with all applicable provisions of the essential principles, a statement explaining which provisions of the essential principles the device does not comply with and the reasons for the non-compliance.[50] The manufacturer must prepare, and keep up-to-date, documentation in relation to the device, including information in relation to the design, production and intended performance of the device.[51] Unlike in Europe, the regulations require that the manufacturer only keeps this statement and are not required to provide this information to the patient.	The manufacturer's statement about a custom-made device is to be provided to the patient receiving the device. This change would result in greater transparency for patients receiving custom-made medical devices. Making the manufacturer's statement about the device available to a patient would assist with ensuring that the patient understood the custom-made nature of the device and may also contribute to the informed consent process.	It should be noted that there is an existing requirement to prepare a written statement in relation to each custom-made medical device. This is an existing regulatory requirements and therefore is excluded from this regulatory costing. A small number of custom-made device manufacturers may already have contextualised this statement to make it suitable to be provided to a patient; however, this number was assumed to be not material to the calculation of the regulatory costing. It has been assumed that most patients will read the manufacturer's statement.
The manufacturer must notify the Secretary as soon as practicable after becoming aware of: • information relating to: o any malfunction or deterioration in the characteristics or performance of the device; or o any inadequacy in the design, production, labelling or instructions for use of the device; or o any use in accordance with, or contrary to, the use intended by the manufacturer of the device; that might lead, or might have led, to the death of a patient or a user of the device, or to a serious deterioration in his or her state of health; or • information relating to any technical or medical reason for a malfunction or deterioration of a kind mentioned in	No change	Nil

[50] Schedule 3, s. 7.2(2).
[51] Schedule 3, s. 7.2(4).

Current Regulatory Requirements	Proposed Regulatory Requirements	Likely Regulatory Impact
paragraph (a) that has led the manufacturer to take steps to recall a device that has been distributed.[52]		
In relation to records: • The manufacturer must keep the statement and documentation required under the relevant clause of this Schedule in relation to a medical device to which the conformity assessment procedures in this Part have been applied. • The manufacturer must keep the statement and documentation for at least 5 years after the manufacture of the last medical device to which the statement and documentation relates. [The Department considers this an inadequate period of time for an implantable device due to its long-expected lifetime – in Europe manufacturers of custom-made medical devices are required to keep the documentation for 15 years]. • On request from the Secretary, the manufacturer must make the statement and documentation available to the Secretary.[53] (Note the legislation does not provide the Department with the power to enter and inspect manufacturing sites for custom-made devices]. There is currently no requirement for any third-party assessment of custom-made devices or of their manufacturer.	That the TGA be allowed to enter and inspect custom-made device manufacturing sites, in accordance with the authority it has to inspect all other medical device manufacturers. This change would provide greater transparency to the TGA about the manufacture and supply of custom-made medical devices in Australia, improving the Department's ability to monitor quality, safety and performance of these devices. It is envisaged that such inspections will not be routinely held but will be risk-based according to the implications for health and safety. That documentation about an implantable custom-made device is retained for a minimum period of fifteen (15) years; as the current specification of a five (5)-year retention period is considered inadequate.	The Department has advised Noetic that the regulatory power to enter and inspect the premises of custom-made device manufacturing sites will be rarely used, with the key selection criteria being the reporting of adverse events or experimental custom-made medical devices (either type of device or manufacturing process). It is estimated that there will be no more than 5 inspections conducted per year. It is envisaged that the regulatory impact of inspections would be to receive notification of the inspection, prepare documentation of the inspection, undergo inspection, and respond to any follow-up matters arising from the inspection. As it is considered that most records will be maintained electronically rather than hard copy, the requirement to retain records for an additional 10 years will require some minor changes to a manufacturer's document management system as well as an annual check by staff to ensure the archival processes are being followed.

The patient-matched category of devices, which currently falls under the custom-made definition in Australia, will no longer be eligible for the existing exemption, and instead will require third party regulatory oversight according to the device risk classification. This will level the playing field for manufacturers as all will now be required to ensure that their devices comply with the essential principles for safety and performance rather than this being a voluntary requirement.

The listing of patient-matched medical devices on the ARTG[54] will provide a simplified pathway for inclusion on the Prostheses List. Inclusion on the list provides reimbursement for patients with private health insurance who receive the medical device, which is generally assumed to lead to increased usage of the device.[55] The likely candidate section of the Prostheses List is Part A (excludes prosthesis that include human tissue (Part B), and insulin infusion pumps and a number of cardiac prosthesis (Part C)). However, in addition to having to be entered on the ARTG, other legislative criteria for Part A include being provided to a

[52] Schedule 3, s. 7.2(6).
[53] Schedule 3, s. 7.6.
[54] Criterion 1 for listing in Part A of the Prostheses List is that 'The product must be entered and current on the Australian Register of Therapeutic Goods' (refer to Department of Health, 'Prostheses List: Guide to listing and setting benefits for prostheses', February 2019 (updated 13 June 2019), p.14).
[55] It is also noted that the listing on the ARTG facilitates procurement of the medical device by the public health sector, again leading to an expected increase in sales.

person as part of an episode of hospital treatment or hospital-substitute treatment and a Medicare Benefit must be payable in respect of the professional service associated with the provision of the product (or the provision of the product is associated with podiatric treatment by an accredited podiatrist). When viewed as a whole, the inclusion criteria would likely restrict the number of patient-matched medical devices that make their way onto the Prosthesis List due to eligibility criteria.[56] In addition, the decision to submit an application to be included on the Prosthesis List is entirely at the discretion of the sponsor (i.e. it is not a regulatory requirement). Therefore, this will be a business decision, cognisant of the anticipated uplift in sales arising from inclusion in the list as well as taking into account the arising fees ($600 application and $400 per year ongoing listing fee) as well as the administrative burden in completing the application and providing the supporting evidence. While it is possible that some sponsors of patient-matched medical devices will apply for inclusion on the Prosthesis List, many and perhaps even the majority of sponsors will not. For the reasons listed above, the administrative burden associated with an application for inclusion on the Prosthesis List has not been included in the overall regulatory costing (noting also that activities by the public sector organisations are specifically excluded from a regulatory costing).

The regulation of adaptable medical devices will not change. Rather the definitional change is focussed on providing clarity as to which devices are in this category and by extension, which are not (e.g. a patient-matched medical device).

Regulatory impact

Currently, the authoritative data set for sponsors and manufacturers of custom-made medical devices is contained within the Custom-made Device Repository (a database which contains the data entered via the online Custom-made medical devices notification form). Following data cleansing activities[57], there was approximately 245 unique records contained within the repository. It is noted that of these 245 records, 83 or approximately 1/3 could be identified as dentists or in related fields.[58] Other specialist fields that could be determined from the dataset included providers of prosthetics (limb and ocular) and orthotics.

The Department has advised Noetic that the number of practices represented in the repository is most likely a severe underrepresentation of the number of healthcare providers currently supplying custom-made medical devices to patients. For example, it is understood by Noetic that most dental practices would undertake activities that fall within the current regulatory definition of manufacturing a custom-made medical device. The latest statistical reporting by the Dental Board of Australia[59] details that there are 23,060 practising general and specialist

[56] For example, Medicare doesn't cover most dental care, dental procedures, or supplies, like cleanings, fillings, tooth extractions, dentures, dental plates, or other dental devices

[57] Data cleansing activities included removing rows that contained incomplete information and consolidating the 'Name' field (which may pertain to either a Sponsor or a Manufacturer) to account for spelling errors and variations of a company name (for example, listed with or without 'Pty Ltd').

[58] This was determined by searching for 'dent' (for denture, dental, dentist etc.) in the sponsor/manufacture name. It is acknowledged that this is likely an understatement of the number of dentists or related specialist represented in this list as sponsor names may be of specific individuals or broader medical supply companies and therefore will not contain 'dent' in their provided sponsor name.

[59] Dental Board of Australia: Registrant Data, Reporting Period: 1 April 2019 to 30 June 2019, < https://www.dentalboard.gov.au/About-the-Board/Statistics.aspx>.

dentists.[60] Noting custom-made medical devices regulatory requirements relate to a practice rather than an individual, the Australian Dental Association has advised the Department that there are approximately 7500 dental practices in Australia[61], which equates to approximately three dentists per practice. In addition, there are approximately 1264 dental prosthetists[62], whose peak body is the Australian Dental Prosthetists Association (some of these prosthetists will be part of a wider dental team though many are likely to work in separate practices). A separate group of specialists (dental technicians as well as dental prosthetists) are represented by the Oral Health Professionals Association, the peak body for dental laboratories. If we assume an average of two dental prosthetists per practice, this equates to approximately 600 separate practices (which equates to approximately 1 dental prosthetists/dental laboratory per 12 dental practices).

In relation to orthotic/prosthetic providers, the peak professional body (The Australian Orthotic Prosthetic Association) states on their webpage that they have 480 certified practitioners as members, and this represents 80% of the profession nationally[63] (therefore 600 practitioners). Furthermore, the association publishes a listing of Australian Orthotic/Prosthetic Practices in Australia. The latest edition (2019)[64], details 93 practices which, assuming the same ratio of practitioners to practices for non-members becomes 116 practices across the entire population of 600 practitioners.

Noting that the public sector is specifically excluded from the Regulatory Burden Measurement Framework, the remaining category of custom medical device providers includes private sector hospital biomedical engineering laboratories, who wish to maintain the flexibility of producing custom-made medical devices rather than using a Medical Device Production System – detailed under Change 3. The Department of Health maintains a list of declared hospitals, as required under the provisions of the *Private Health Insurance Act 2007*. The current list[65] details 1317 declared hospitals of which 638 are in the private sector and 679 in the public sector. Noting that government-to-government regulation is specifically excluded from the Regulatory Burden Measurement Framework[66], then the number of private hospitals that currently produce custom-made medical devices that will be impacted by these changes will be a sub-set of the 638 private hospitals. The Department has completed a line-by-line analysis of a large sample (over 85%) of each of the listed declared private hospitals. The Department's analysis reveals that approximately 45% of hospitals are likely to fall under the category of a custom-made medical device. manufacturer. When this figure is extrapolated over the entire population (638) then this gives a figure of 287.

In relation to the growth of the regulated population, the Australian Dental association advised the Department that there is anticipated growth in the number of registered dentists of approximately 1000 per year. Noting there is approximately 18,000 existing active dentists in

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[60] Refer to Table 6.2 Dental practitioners – registration type by age group (figure represents sum of 'General', 'General and Specialist' and 'Specialist' columns) – note this figure includes dental prosthetists (currently 1264 are registered).
[61] Department advice to Noetic on 17 October 2019.
[62] Dental technicians are not registered by the Dental Board of Australia.
[63] The Australian Orthotic Prosthetic Association, 'About Us', viewed 26 August 2019, < https://www.aopa.org.au/about-us/about-us>.
[64] https://www.aopa.org.au/documents/item/726.
[65] See < https://www1.health.gov.au/internet/main/publishing.nsf/Content/hospitals2.htm>, viewed 21 October 2019.
[66] Department of the Prime Minister and Cabinet, Office of Best Practice Regulation, 'Guidance Note: Regulatory Burden Measurement Framework', February 2016, p.5.

Australia (as per Dental Board of Australia reporting), this represents a growth factor of approximately 5%. In the absence of growth data for the number of dental prosthetists/dental laboratories and orthotic/prosthetic providers, Noetic has applied the same growth factor. The latest Australian Institute of Health and Welfare (AIHW) report on hospitals ('Hospitals at a glance 2017-2018') details a 2.3% (so 2%) increase in the number of private hospitals over the period 2012-13 to 2016-17.

The projected growth in the number of custom-made medical devices practices is detailed in the table below.

Table 3. Growth in number of custom-made medical devices practices over the period 2019/20 to 2030/31

Transition	Year	Dental Practices	Prosthetists/ Laboratories	Orthotic/ Prosthetic Practices	Private Hospitals
Yearly Growth Factor		1.05	1.05	1.05	1.02
Data Year	19/20	7,500	600	116	287
Data Year + 1	20/21	7,875	630	122	293
Year 1	20/21	8,269	662	128	299
Year 2	21/22	8,682	695	134	305
Year 3	22/23	9,116	729	141	311
Year 4	23/24	9,572	766	148	317
Year 5	24/25	10,051	804	155	323
Year 6	25/26	10,553	844	163	330
Year 7	26/27	11,081	886	171	336
Year 8	27/28	11,635	931	180	343
Year 9	28/29	12,217	977	189	350
Year 10	30/31	12,828	1,026	198	357
Total growth	(Year 10 – Year 1)	4,559	365	71	58
				Total	**5052**

Number of surgical procedures involving custom-made medical devices

Noetic has assumed that the number of in-scope surgical procedures equates to the number of occasions that a patient will be impacted by the regulatory change relating to the provision of the manufacturer's statement for a custom-made medical device.

The AIHW is the definitive source of information on healthcare facility activities in Australia, such as the number of surgical procedures conducted in public and private hospitals each year.

Of particular relevance to this regulatory costing are the AIHW's hospitals statistics. Noetic assessed that, within this collection of statistical data, the AIHW report 'Admitted patient care 2017-18' would be the most relevant. Chapter 6 of this report contains data on the number of procedures by Australian Classification of Health Interventions (ACHI) (as well as the total number of separations). This data incorporates emergency and elective surgery for both public and private hospitals and is broken down into 20 high-level Procedure Chapters based on the procedure type (see the table below). In this instance, as the regulatory burden being calculated relates to an individual rather than a public sector employee, the Government-to-Government exclusion to the Regulatory Burden Measurement Framework does not apply.

Table 4. Number of interventions and total separations 2017-18

ACHI chapter		Public hospitals	Private hospitals	Total
1–86	Procedures on nervous system	117,641	328,085	445,726
110–129	Procedures on endocrine system	10,986	11,815	22,801
160–256	Procedures on eye and adnexa	224,640	555,568	780,208
300–333	Procedures on ear and mastoid process	34,274	48,233	82,507
370–422	Procedures on nose, mouth and pharynx	110,087	206,927	317,014
450–490	Dental services	96,230	288,201	384,431
520–572	Procedures on respiratory system	199,124	60,557	259,681
600–777	Procedures on cardiovascular system	320,885	294,912	615,797
800–817	Procedures on blood and blood-forming organs	47,539	32,730	80,269
850–1011	Procedures on digestive system	783,841	1,385,135	2,168,976
1040–1129	Procedures on urinary system	1,465,656	556,394	2,022,050
1160–1203	Procedures on male genital organs	48,557	85,331	133,888
1240–1299	Gynaecological procedures	240,530	390,960	631,490
1330–1347	Obstetric procedures	604,255	170,698	774,953
1360–1580	Procedures on musculoskeletal system	411,851	604,477	1,016,328
1600–1718	Dermatological and plastic procedures	401,461	492,437	893,898
1740–1759	Procedures on breast	26,921	69,158	96,079
1786–1800	Radiation oncology procedures	15,399	7,623	23,022
1820–1923	Interventions, n.e.c.	6,889,753	5,969,476	12,859,229
1940–2016	Imaging services	68,655	51,792	120,447
	Interventions reported	**12,118,359**	**11,610,511**	**23,728,870**
	No intervention or not reported[(b)]	1,638,395	213,460	1,851,855
Total separations		**6,726,775**	**4,526,500**	**11,253,275**

Source: AIHW, Admitted patient care 2017-18: Australian hospital statistics, Table 6.1 titled 'Number of interventions, by ACHI chapter, public and private hospitals, 2017-18, p.102.

An additional publication supports the interpretation of this data: the AIHW data cube Procedures and healthcare interventions (ACHI 10th edition), Australia, 2017-18 (referred to throughout as the data cube). The most recently published version of the data cube (2017-18) was accessed by Noetic via the AIHW website as it provides the most granular detail of Procedure Chapters, whereby they are broken down into Subchapters, then Blocks, then by the actual Procedures (see the table below - using a subset of 'Chapter 6: Dental Services' as an example).

Table 5. Categorisation schema for procedures utilised by AIHW

Row Labels	Sum of Procedures
⊞ 01 Procedures on nervous system	445726
⊞ 02 Procedures on endocrine system	22801
⊞ 03 Procedures on eye and adnexa	780208
⊞ 04 Procedures on ear and mastoid process	82507
⊞ 05 Procedures on nose, mouth and pharynx	317014
⊟ 06 Dental services	384431
⊞ 0450-0452 Diagnostic Dental Services	7130
⊞ 0453-0455 Preventative Dental Services	62505
⊞ 0456 Periodontic Interventions	5512
⊞ 0457-0461 Oral Surgery	192604
⊞ 0462-0464 Endodontics	9389
⊞ 0465-0469 Restorative Dental Services	97107
⊟ 0470-0477 Prosthodontics	8055
⊟ 0470 Crown	5152
97613-00 Full crown, nonmetallic, indirect	340
97615-00 Full crown, veneered, indirect	106
97618-00 Full crown, metallic, indirect	14
97627-00 Preliminary restoration for crown, direct	3436
n.p.	1256
⊟ 0471 Bridge	112
97632-00 Provisional bridge, per pontic	21
97633-00 Provisional implant abutment, per abutment	41

Source: AIHW, National Hospital Morbidity Database, Procedures and healthcare interventions (ACHI 10th edition), Australia, 2017-18 < https://www.aihw.gov.au/reports/hospitals/procedures-data-cubes/contents/data-cubes >.

The Department has provided Noetic with the following analysis of in-scope procedures (at the Procedure Sub-Chapter). This was determined by the Department undertaking key word searches of procedure codes. The Department has advised Noetic that approximately 0.5% of the total of in-scope procedures (therefore 290,801 * 0.005 = 1454) will likely involve a custom-made medical device.

Table 6. In-scope medical procedures for custom-made medical devices

Procedure Sub-Chapter	Sum of Procedures 2017-18
0001-0028 Skull, Meninges and Brain	2676
0029-0059 Spinal Canal and Spinal Cord Structures	1901
0160-0165 Eyeball	100
0241-0250 Ocular Adnexa - Lacrimal System	1740
0307-0316 Eardrum and Middle Ear	5383
0321-0328 Mastoid and Temporal Bone	1093
0370-0381 Nose	29815
0416-0422 Pharynx	20
0450-0452 Diagnostic Dental Services	165
0456 Periodontic Interventions	139
0470-0477 Prosthodontics	40
0520-0531 Larynx	536
0532-0542 Trachea	42
0559-0567 Chest Wall, Mediastinum and Diaphragm	204
0621-0624 Heart - Aortic Valve	6506
0625-0630 Heart - Mitral Valve	3176
0631-0635 Heart - Tricuspid Valve	774
0636-0638 Heart - Pulmonary Valve	126

Procedure Sub-Chapter	Sum of Procedures 2017-18
0667-0681 Coronary Arteries	45943
0694-0720 Arteries	2476
0721-0739 Veins	106
0740-0777 Other vascular sites	13452
0850-0869 Oesophagus	991
0891-0903 Small Intestine	543
0904-0925 Large Intestine	347
0928-0942 Rectum, Anus	96
0957-0973 Gall Bladder and Biliary Tract	9256
0974-0982 Pancreas	1099
0983-1004 Abdomen, Peritoneum and Omentum	15490
1040-1064 Kidney	1271
1065-1088 Ureter	51489
1112-1125 Urethra	467
1160-1170 Prostate and Seminal Vesicle	10
1171-1176 Scrotum and Tunica Vaginalis	206
1381-1393 Spine (Vertebral Column)	8
1408-1419 Humerus and Elbow	65
1439-1474 Hand, Wrist	127
1476-1493 Pelvis, Hip	14
1495-1524 Knee Joint, Leg	40415
1526-1548 Ankle, Foot	83
1600-1660 Skin and Subcutaneous Tissue	1301
1740-1759 Breast	10679
1786-1800 Radiation Oncology Procedures	23022
1867-1908 Therapeutic Interventions	5061
1923 Interventions Not Elsewhere Classified	12348
Total	**290,801**

Regulatory impact of changes in separations over the ten-year period

The AIHW reported in *Admitted patient care 2017-18: Australian hospital statistics* that the average growth rate in the number of hospital separations between 2013-14 and 2017-18 was 3.8% (see table below). Assuming that the growth in the number of separations involving the use of a custom-made medical device is growing at the same rate as the total number of separations, this figure has been used to estimate growth over the ten-year period.

Table 7. Growth in number of separations (2013-14 to 2017-18)

						Change (%)	
	2013–14	2014–15	2015–16	2016–17	2017–18	Average since 2013–14	Since 2016–17
Public hospitals[(b)]							
Public acute hospitals	5,702,106	5,967,265	6,256,986	6,570,727	6,709,418	4.2	2.1
Public psychiatric hospitals	12,764	13,073	15,495	16,621	17,357	8.0	4.4
Total public hospitals	*5,714,870*	*5,980,338*	*6,272,481*	*6,587,348*	*6,726,775*	*4.2*	*2.1*
Private hospitals							
Private free-standing day hospital facilities	875,529	940,703	959,743	939,950	975,943	2.8	3.8
Other private hospitals	3,106,376	3,229,326	3,367,544	3,486,517	3,550,557	3.4	1.8
Total private hospitals	*3,981,905*	*4,170,029*	*4,327,287*	*4,426,467*	*4,526,500*	*3.3*	*2.3*
All hospitals	**9,696,775**	**10,150,367**	**10,599,768**	**11,013,815**	**11,253,275**	**3.8**	**2.2**

Source: AIHW, Admitted patient care 2017-18: Australian hospital statistics, Table 2.1: Separations, public and private hospital, 2013-14 to 2017-18, p.10.

As the data for the number of procedures (as provided by the Department) was for 2017-18 and the start year for the calculation is 2020/21, there is a need to compound this figure by the annual growth for two years (see table below).

Table 8. Projected growth in number of in-scope surgical procedures

Transition	Year	Number of Procedures
Yearly Growth Factor		1.038
Data Year	17/18	1,454
Data Year + 1	18/19	1,509
Data Year + 2	19/20	1,567
Year 1	20/21	1,626
Year 2	21/22	1,688
Year 3	22/23	1,752
Year 4	23/24	1,819
Year 5	24/25	1,888
Year 6	25/26	1,959
Year 7	26/27	2,034
Year 8	27/28	2,111
Year 9	28/29	2,191
Year 10	29/30	2,275
Total over 10-year period		**19,343**

Regulatory costing

Annual Report on custom-made medical devices

Key assumptions

- The majority of the information required for the compilation of the annual report to the Department (submitted via a web-form) is captured as part of usual business practices (e.g. the name and the business address of the health professional who requested the custom-made medical device). The increase in regulatory burden is therefore limited to the need to consolidate this information in a report, to check the

report, and then submit to the Department. The time required to complete this process over the course of a year is estimated to be 1 hour.

- All existing custom-made devices manufacturers will likely continue to be custom-made devices manufacturers (noting that some may also become patient-matched medical devices manufacturers).
- The time taken to be aware of the regulatory changes is an additional regulatory burden for the current population only, after which it is considered to form part of the general regulatory requirements that new sponsors/manufacturers will need to be aware of.

Inputs

- Number of businesses: 7500 dental practices, 600 prosthetists/laboratories, 116 orthotic/prosthetic practices, and 287 private hospitals = 8503
- Number of businesses adjusted for growth factor to Year 1 = 9357
- Number of new business over the ten-year period of the regulatory costing = 5052
- Time taken to compile and submit annual report to the TGA = 60 minutes
- Time required to become aware of regulatory changes = 5 minutes
- Total time= 65 minutes

Current population

Step 1. Calculate total time in minutes to fulfil regulatory requirement: 9357 x 65 = 608,205 minutes

Step 2. Calculate total time in hours to fulfil regulatory requirement: 608,205 x 60 = 10,137 hours

Step 3. Apply the hourly rate to determine overall regulatory compliance cost): 10,137 x 86.97 = **$881,593.15**

Future population (over the ten-year regulatory costing period)

Step 1. Calculate total time in minutes to fulfil regulatory requirement: 5052 x 60 = 303,120 minutes

Step 2. Calculate total time in hours to fulfil regulatory requirement: 303,120/60 = 5052 hours

Step 3. Apply the hourly rate to determine overall regulatory compliance cost): 5052 x 86.97 = **$439,372.44**

Manufacturers Statement provided to patient

Key assumptions

- Due to the nature of custom-made devices, the manufacturer (albeit this may be the healthcare provider) will likely deal directly with the patient (rather than through a third-party healthcare provider). It is likely that they will just hand over the manufacturers' statement without providing a detailed explanation of its purpose to the patient. Therefore no additional regulatory burden has been factored in for the healthcare provider.

Inputs

- Number of patients who will receive the manufacturers' statement over the ten-year period of the regulatory costing = 19,343
- Time taken by patients to read the manufacturer's statement: 5 minutes

Population over the ten-year period (averaged over ten-years)

Step 1. Calculate total time in minutes to fulfil regulatory requirement: 19,343 x 5 = 96,715 minutes

Step 2. Calculate total time in hours to fulfil regulatory requirement: 96,715/60 = 1612 hours

Step 3. Apply the hourly rate to determine overall regulatory compliance cost): 1612 x 32.00 = **$51,581.33**

Step 4. Divide by 10 to determine average annual cost = **$5,158.13**

Annual inspection

Key assumptions

- No more than 5 inspections will be conducted each year. As the amount of inspections to be conducted per year is not affected by population growth, then the average figure is the same as the Year 1 figure for a regulatory costing.

Inputs

- Number of inspections per year = 5
- Time required to prepare for inspection = 120 minutes
- Time taken to support the conduct of an inspection (accompanying the inspector(s)) = 900 minutes (2 days at 7.5 hours per day)
- Total time per inspection (preparation and conduct) = 1020 minutes

Current population (same for each year)

Step 1. Calculate total time in minutes to fulfil regulatory requirement: 5 x 1020 = 5100 minutes

Step 2. Calculate total time in hours to fulfil regulatory requirement: 5100/60 = 85 hours

Step 3. Apply the hourly rate to determine overall regulatory compliance cost): 85 x 86.97 = **$7,392.45.**

Change 3– Medical Device Production Systems (MDPS)

Proposed change

A subset of medical devices currently classified as custom-made medical devices will now meet the new definition for patient-matched medical devices and will be required to apply the standard conformity assessment procedures (not the special procedures for custom-made devices) according to the classification of the medical devices (low risk medical devices only up to Class IIa). Therefore, for devices classified above Class I (including Class 1M and Class 1S), conformity assessment evidence from a recognised third party (such as the TGA or a notified body) will be required. The manufacturer will be required to apply for this evidence and, once received, maintain its currency through complying with post-market requirements, such as annual inspections by the issuing agency. Essentially, they will need to meet the regulatory requirements of mass-produced medical devices. Australian manufacturers of patient-matched medical devices (or the sponsor for imported medical devices) will also be required to include their medical devices in the ARTG and to comply with the requirements for maintaining the inclusion.

A key definitional element of a patient-matched medical device is that it is ‘typically produced in a batch through a process that is capable of being validated and reproduced’. A new regulatory concept proposed by the TGA is regulating medical devices at the level of a medical device production system (MDPS). The MDPS is a collection of the raw materials and main production equipment (such as a 3D dental printer), as well as potentially ancillary equipment, intended to be used by a healthcare provider to produce a specific type of medical device at the point of care. All components must be validated as a production process to consistently produce the intended medical device by reference to the validated instructions of

the original manufacturer. This will also provide healthcare providers with greater assurance that the medical devices will perform as intended.

MDPSs would be regulated as medical devices and hence included in the ARTG (as well as complying with the requirements for maintaining the inclusion) – the listing is either the responsibility of the Australian manufacturer or the sponsor for imported devices. A MDPS would be classified according to the highest classification of the final device its manufacturer intends it to produce (see figure below). The production equipment and consumable raw materials used in a MDPS would not be considered to be medical devices on their own, unless they fit the definition of medical device in their own right.

Healthcare providers that use MDPSs to produce medical devices for treating their patients would not be considered as manufacturers under the proposed regulatory framework in relation to those systems. This means healthcare providers would not need conformity assessment certification for producing medical devices using a MDPS.

Regulatory impact

It is envisaged that, given the large regulatory burden (over $50,000 (see table below) to obtain a listing on the ARTG) that will be associated with the manufacturing of patient-matched medical devices not using a MDPS, most healthcare providers will seek to produce these devices using a MDPS. However, the expectation is that healthcare providers who have previously been producing custom-made medical devices will now need to inform themselves of the changes in the regulatory framework. Although some investigation of potential MDPS manufacturers is likely, this remains a business decision and is not dictated by the regulatory framework and is therefore not included in the regulatory costing. It is also possible, particularly in relation to dental (general and specialist) practices, that they are already using MDPS in the manner specified in the changes to the regulatory framework and would need to contact the respective manufacturer during the regulatory transition period to encourage the manufacturer to list the system on the ARTG (and hence avoid taking on the regulatory responsibilities of a manufacturer themselves).

It is considered most MDPS, given the advanced manufacturing techniques and capital requirements for market entry, coupled with the size of the Australian domestic market, will be imported. It is also considered that any likely sponsor for the MDPS would have already registered for TGA Business Services and is familiar with the regulatory requirements for an ARTG listing. However, as Australia is pioneering the regulation of MDPS, a conformity assessment is not likely to have been performed on the MDPS by a European notified body and hence a truncated regulatory pathway (i.e. via an application audit) will not be open to the manufacturer/sponsor. The tables below provide a breakdown of the regulatory activities and associated time to complete the Market Authorisation and Post-Market regulatory processes. The figures in these tables have previously been validated by TGA via consultation with industry.[67]

[67] Excel workbook titled '[D17-655509] Regulatory compliance – industry timeframes' provided on 7 August 2017 for a previous regulatory costing activity.

Table 7. Regulatory activities (and associated cost) for listing on the ARTG

Task	Subtask	Application (A) Ongoing (O) Both (B)	Subtask – Time (minutes)	Remarks
Create eBS Account	Become familiar with EBS Manual	A	0	As existing sponsor already have an eBS Account
	Client Details Form	A	0	
	eBS Access Form	A	0	
	Wait for account creation	A	0	
Determine - Class of device	Review classification rules	A	240	
	Review Device	A	60	
	Delegate Approval	A	60	
Decide procedures to demonstrate Essential Principles	Review Essential Principles	B	240	
	Review Device and operations	A	120	
	Obtain documentation	A	60	
	File/manage documentation	B	60	
Gain Conformity Assessment Certification	See alternate process for detail (Table 8)	A	0	
Declaration of Conformity	Review Requirements	A	120	
	Complete Essential Principles checklist	A	240	
	Locate supporting information	A	240	
	Prepare declaration	A	60	
	Delegate approval	A	60	
Manufacturer Evidence	Form relationship with Manufacturer	A	60	
	Request information from Manufacturer	A	30	
	Review information	A	240	
	Upload information to eBS	A	60	
	Update changes	O	60	
	Review/correct	B	30	
Application for inclusion	Review instructions	A	120	
	Complete form	A	240	
	Checked/approved by delegate	A	60	
Application selected for Audit	See alternate process for detail	A	0	Not applicable
Fees	Receive invoice	A	5	
	Check invoice	A	20	
	Process invoice	A	5	
ARTG Issued	Log-in/download certificate	A	10	
	Review certificate	A	30	
	Delegate review	A	60	
	File/distribute certificate	A	30	
Ongoing Monitoring	Maintain relationship with manufacturer	O	30	
	Allow entry	O	30	

Task	Subtask	Application (A) Ongoing (O) Both (B)	Subtask – Time (minutes)	Remarks
	Deliver samples on request	O	30	
	Ensure information is available	O	30	
	Meet labelling/advertising requirements	O	30	
	Report incidents	O	30	
	Assist in investigations	O	30	
	Take corrective action	O	30	
	Maintain distribution records	O	520	
	Adhere to conditions of inclusion	O	30	
	Post market surveillance	O	120	
	3 consecutive annual reports	O	360	
Total (minutes) for application (full process)			2560	
Total (hours) for application (full process)			42.67	
Cost application (full process)			$3,706.45	
Total (minutes) for ongoing (full process)			1660	
Total (hours) for ongoing (full process)			27.67	
Cost ongoing (full process)			$2,403.40	
Total (minutes) (full process)			4220	
Total (hours) (full process)			70.33	
Cost (full process)			$3,776.79	

Table 8. Regulatory activities (and associated cost) for undertaking a conformity assessment

Task	Sub-task	Application (A) Ongoing (O) Both (B)	Subtask – Time (minutes)	Remarks
Determine - is a medical device	Review Regulations	A	240	
	Review Product	A	60	
Determine - requires conformity assessment	Review Regulations	A	240	
	Review Product	A	60	
	Delegate Approval	A	60	
Pre-meeting with TGA	Negotiate/manage diaries	A	30	
	Travel	A	180	
	Meet	A	60	
Create eBS Account	Client Details Form	A	0	Assumed existing sponsor
	eBS Access Form	A	0	
	Wait for account creation	A	0	
Compliance with Essential Principles	Review 15 principles, consider relevance	A	480	
	product(tion) changes / ongoing relevance	O	480	
Part 1 - Full quality assurance procedure	Review Regulations	A	300	
	Consider that QMS meets requirements	A	480	

Task	Sub-task	Application (A) Ongoing (O) Both (B)	Subtask – Time (minutes)	Remarks
	Maintain QMS	O	960	
	Document QMS	A	480	
	Surveillance audits	B	480	
	Consider that Post market surveillance system meets requirements	A	480	
	Maintain Post market surveillance system	O	960	
	Document Post market surveillance system	A	480	
	Develop summary technical documentation	A	1440	
	Consider that summary technical documentation meets requirements	A	480	
	Delegate approval of Summary technical documentation	A	480	
	Maintain Summary technical documentation	O	480	
Clause 1.6 Examination of Design	Develop Design Dossier - Device Design	A	11250	
	Develop Design Dossier - Clinical	A	11250	
	Format/edit document to TGA requirements	A	2500	
	Delegate Approval	A	2500	
	Maintain Design Dossier	O	240	
Application form	Review Instructions	B	120	
	1. General Details	B	30	
	2. Application Scope - New	A	40	
	2. Application Scope - Change	O	40	
	2. Application Scope - Recertification	O	20	
	3. Manufacturers Details	B	40	
	4. Critical Supplier Details	B	40	
	5. Device Details	B	60	
	A1. New Certificate Checklist	A	960	
	A2. Substantial Change checklist	B	60	
	A3. Recertification Checklist	O	60	
	Checked/approved by delegate	B	60	
	Print and post	B	60	
Application/recertification fee	Receive invoice	B	5	
	Check invoice	B	20	
	Process invoice	B	5	
41JAA Additional Information	Retrieve and Provide Design Dossier	A	60	
	Retrieve and Provide QMS information	A	60	
	Retrieve and Provide Clinical Data	A	60	
	Retrieve and Provide Post market system documentation	A	60	
	Print and post	A	60	
Pre-assessment	Review Pre-assessment information	A	60	
	Receive invoice	A	5	
	Check invoice	A	20	

Task	Sub-task	Application (A) Ongoing (O) Both (B)	Subtask – Time (minutes)	Remarks
	Process invoice	A	5	
Certification	Receive	A	30	
	Check	A	30	
	Delegate Acceptance	A	60	
	File	A	20	
	Ongoing management / Recall	O	60	
Total (minutes) for application (full process)			**36,040**	
Total (hours) for application (full process)			**600.67**	
Cost application (full process)			**$52,179.91**	
Total (minutes) for ongoing (full process)			**4,280**	
Total (hours) for ongoing (full process)			**71.33**	
Cost ongoing (full process)			**$6,196.73**	
Total (minutes) (full process)			**40,320**	
Total (hours) (full process)			**672**	
Cost (full process)			**$58,376.64**	

While the proposed regulatory framework for MDPS will not introduce any new regulatory processes, the regulatory impact of this change principally arises from the fact that it is applying existing regulatory requirement to patient-matched medical devices. In the absence of this regulatory change, such medical devices would have fallen under the custom-made medical device exclusion and hence a much lighter regulatory touch.

As this is a new regulatory requirement focussed on emerging technology (such 3D dental printers) not previously captured in the ARTG, we need to look elsewhere than the current ARTG to inform population estimates.

A desktop analysis of current worldwide manufacturers of 3D dental printers revealed that the majority of manufacturers are concentrated in the United States (39%) and Europe (29%), though 43% of the examined companies have an Australia distributor/reseller and one company (Asiga) is based in Australia.

If we assume 50% of worldwide dental printer manufacturers would seek to list a MDPS on the ARTG (likely via an Australian sponsor), this equates to 14 listings.

Table 9. Analysis of 3D dental printer manufacturers (worldwide)

Country/Region	No. of 3D dental printer manufacturers	No. of Australian distributors/resellers
Australia	1	
China	2	2
Europe	8	2
Japan	2	2
Korea	1	1
Singapore	1	
United States	11	4
Canada	2	1
Total	**28**	**12**

In the course of its research into 3D dental printers, Noetic also came across some companies that marketed 3D printers for the making of prosthetics and implants using non-human origin material and one company using a 3D printer to make ophthalmic lens. The technological pathway seems to be moving towards bioprinting for implants (though this will be some years off), though orthotics and prosthetics will likely continue to be produced using non-human origin materials. Given that the number of certified Australian orthotic/prosthetic practices is much smaller than the number of Australian dental practices, we have taken a figure of 5 listings (approximately a third of the projected MDPS ARTG listings for 3D dental printers).

It has been noted that 3D dental printers (as well as orthotic/prosthetic/ophthalmic 3D printers) will likely be Class IIa (based on the initial TGA assessment of the application of this regulatory change).

Private sector hospitals (noting the impact of regulatory changes on the public sector is specifically excluded from a regulatory costing) have traditionally manufactured custom-made medical devices and this activity can continue without the need for manufacturing certification under the proposed reforms. However, certification will be required under the proposed reforms if hospitals intend to undertake manufacture of the new proposed category of patient-matched medical devices. It is assumed that some private hospital biomedical engineering labs will wish to maintain the design flexibility of creating patient-matched medical devices without using a MDPS. Such a decision might arise due to an affiliation with a university so as to provide manufacturing options for research purposes.

As the concept of a patient-matched medical device has recently emerged, there is very little empirical data on which to base any assumptions regarding sponsor/manufacturer behaviour in this area. Noetic notes that the Department has reached out to the sector for comment but their commercial and regulatory strategies are still evolving in this area. It is therefore difficult to predict whether private sector hospitals would seek certification for manufacturing patient-matched devices, or whether they would choose to purchase commercially produced patient-matched devices, or whether they would choose to limit their own production of patient-matched medical devices to those made with a regulated MDPS (the latter two options negating the need for certification). For those private hospitals that choose to go down the certification rather than MDPS regulatory pathway, they could also seek to leverage the effort in achieving certification by having more than one ARTG entry (therefore being able to manufacture a range of medical devices).

Given that hospitals would have three options for proceeding with the use of patient-matched medical devices in their facilities, it is likely that only a percentage of hospitals who currently undertake manufacturing activities for custom-made devices would seek certification.

Regulatory costing

Key assumptions

- Given the degree of uncertainty around the population calculation (number of private hospitals who will seek certification and the number of ARTG entries per hospital), Noetic has modelled six scenarios incorporating 33% and 10% of all in-scope private hospitals (299) for Year 1 (2020-21) choosing to pursue certification and each hospital having 1, 3 or 5 ARTG listings.
- The majority of dental and orthotic/prosthetic practices will likely not seek certification to manufacture patient-matched medical devices (noting they can still produce custom-made medical devices without certification).
- The current population for 3D printers (dental and other) represents the total population over the ten-year regulatory period and not the population for Year 1.
- The number of hospital biomedical engineering labs in private sector hospitals will grow at the rate detailed earlier in the report (i.e. 2%).

Inputs

- Number of businesses (current): (14 - 3D dental printer manufacturers + 5 other 3D printer manufacturers + 99 private hospital biomedical engineering labs (33% scenario) = 118
- Number of businesses (current): (14 - 3D dental printer manufacturers + 5 other 3D printer manufacturers + 30 private hospital biomedical engineering labs (10% scenario) = 49
- Number of businesses (future – 33% scenario): private hospital biomedical engineering labs = 19
- Number of businesses (future – 10% scenario): private hospital biomedical engineering labs = 6
- Time required to complete Market Authorisation activities: 2,560 + 36,040 minutes = 38,600

Given the complexity of the calculation, a model was built in Excel. An example calculation output is provided below:

Table 10. Extract from Excel model to calculate regulatory costs for certification pathway

Scenario A - 33% of in scope Private Hospital Population - Current (1 ARTG listing)		
Field Description	*Field*	*Value*
Input	Time ARTG listings plus conformity assessment	38,600
Input	Population 3D Dental Printers Manufacturers	14
Input	Population Non-Dental 3D Printers Manufacturers	5
Input	In scope Private Hospitals Scenario A	99
Input	Number of ARTG for Private Hospitals	1
Calculation	Adjusted pop for Private Hospitals	99
Calculation	Population	118
Calculation	Time Minutes	4,554,800
Calculation	Time in hours	75,913
Input	Hourly rate	$86.97
Calculation	**Total regulatory burden**	**$6,602,182.60**

Scenario A - 33% of in scope Private Hospital Population - Future (1 ARTG listing)		
Field Description	*Field*	*Value*
Input	Time ARTG listings plus conformity assessment	38,600
Input	In scope Private Hospitals Scenario A	19
Input	Number of ARTG for Private Hospitals	1
Calculation	Adjusted pop for Private Hospitals	19
Calculation	Time Minutes	733,400
Calculation	Time in hours	12223
Input	Hourly rate	$86.97
Calculation	**Total regulatory burden**	**$1,063,063.30**

Total (Current and future)	**$7,665,245.90**
Average over 10 years	**$766,524.59**

The results from the six scenarios are shown in the table below:

Table 11. Results from scenario modelling

	Average over ten years		
Scenario	**1 ARTG**	**3 ARTG**	**5 ARTG**
Scenario A 33%	**$766,524.59**	**$2,086,961.11**	**$3,407,397.63**
Scenario B 10%	**$307,728.85**	**$710,573.89**	**$1,113,418.93**

The average (mean) of the six scenarios was $1,398,768 with the median being $939,972. Note this figure is for both existing and future populations averaged over ten years. The median was assessed to be the more appropriate measure of central tendency and was taken forward into the overall regulatory costing.

Change 4 – Update the Classification Rule for Medical Devices that Record Diagnostic Images

Need for regulatory change

Currently, there is a special classification rule that states: 'A non-active medical device that is intended by the manufacturer to be used to record X-ray diagnostic images is classified as Class IIa.'[68] Recent technological changes for patient imaging, including the advent of 3D printing of patient-specific anatomical models for consideration by a specialist in diagnosing a condition or planning a surgery, have increased the range of diagnostic images. Software that records patient diagnostic images, either for on-screen diagnosis or for production of 3D printed anatomical models, is another factor to be considered when assessing the consistency of the current regulatory framework across a range of medical devices.

[68] Schedule 2, Item 5.4.

The TGA commented in its 2019 consultation paper for proposed change to the regulatory scheme for personalised medical devices that: 'It is reasonable to think that these anatomical models should require the same regulatory oversight as X-rays, to mitigate the risk of inaccuracy and to ensure they are a true representation of the patient's anatomy of sufficient quality for their diagnostic purpose. Software that records patient diagnostic images should also be captured by this rule.'[69]

Proposed change

The existing rule classifying X-ray film as Class IIa should be changed to the following:

5.4 Medical devices intended to record diagnostic images A medical device that is intended by the manufacturer to be used to record diagnostic images is classified as Class IIa. This includes software and anatomical models intended for diagnosis or investigation of the anatomy.

Regulatory impact

Manufacturers of anatomical models used for diagnosis or investigation of the anatomy for the purpose of planning surgery and/or treatment (but not intended purely for training or education purposes), would be required to hold appropriate conformity assessment evidence for a Class IIa medical device. The requirement for conformity assessment evidence would not apply to healthcare providers if they used a MDPS included in the ARTG to produce the anatomical models.

Manufacturers of software that is intended to be used to record patient imaging for diagnosis or investigation of the anatomy will be required to hold appropriate conformity assessment evidence for a Class IIa device. Australian manufacturers of medical devices intended to record diagnostic images (and sponsors for imported devices) will also be required to include their medical devices in the ARTG (if not already included) and to comply with the requirements for maintaining the inclusion.

There is a degree of cross-over between the regulatory requirement to undergo a conformity assessment for patient-matched medical devices, the regulatory requirements for manufacturers of MDPS and this requirement (diagnostic images) as the same type of medical device (i.e. a bioprinter) may be used.

A search of the ARTG revealed the following:

- searching on 'anatomical models' returned 1 record (Class IIa) relating to software to provide computer-aided manufacturing of patient-specific custom-made devices (e.g. orthopaedic implants) - hence is already classified at the correct level; and
- searching on PACS (picture archiving and communication system) and DICOM (Digital Imaging and Communications in Medicine – international standard related to the exchange, storage and communication of digital medical images and other related medical data) returned 29 Class IIa and 11 Class IIb records (therefore at the required class or higher – noting some of these records relate to the imaging system not just the software). Of greater interest is that it returned 46 Class I (many of which are software

[69] Therapeutic Goods Administration, 'Consultation: Proposed regulatory scheme for personalised medical devices, included 3D-printed devices', February 2019, p.9.

programs) and 6 Class Im records (mostly software programs/picture archiving system). These will need to undergo a Class IIa conformity assessment.

The Department undertook a line-by-line analysis[70] of ARTG inclusions with 'software' and 'image' in the title to determine each manufacturer and whether they were likely to have previously obtained conformity assessment certification via a European notified body (to accord to EU medical devices requirements). This analysis revealed that for approximately 1/3 of in-scope ARTG entries they are already likely to have undergone a conformity assessment by a third party and therefore are required to complete only the inclusion on the ARTG regulatory process. In addition, Class Im medical devices (unlike Class I medical devices which are self-certified) require a third-party conformity assessment and therefore will not undergo the full conformity assessment though they may be selected for a non-mandatory audit (note this has not been factored into the regulatory costing due to the small number of ARTG entries involved).

In relation to the growth in the population of in-scope ARTG entries over the ten-year period of the regulatory costing, the requirement to undertake an ARTG application is an existing regulatory burden and therefore excluded from this regulatory costing. It has been assessed that the majority, if not all, new Medical Devices that Record Diagnostic Images will already have undergone a third-party conformity assessment (likely in the EU) and therefore be required to only complete the ARTG application process which, as noted above, is an existing regulatory requirement.

Regulatory costing

Key assumption

The current population who need to modify their existing ARTG entry represents the total population impacted by this regulatory change over the ten-year period of the regulatory costing.

Inputs

- Number of ARTG listings for Class I = 46
- Number of Class I ARTG entries adjusted for existing third-party conformity assessment = 31
- Number of Class I ARTG entries who complete ARTG listing only = 15
- Number of ARTG entries for Class Im = 6
- Time required to complete full Market Authorisation activities: 2,560 + 36,040 minutes = 38,600 (this applies to the 31 Class I ARTG entries only that do not have an existing third-party conformity assessment)
- Time required to complete ARTG listing only: 2,560 minutes = (this applies to the 15 Class I ARTG entries do have an existing third-party conformity assessment as well as the 6 Class Im ARTG entries – therefore 21)

Current population (note no future population in-scope for regulatory costing)

Step 1. Calculate total time in minutes to fulfil regulatory requirement: 31 x 38,600 = 1,196,600 minutes + 21 x 2,560 = 53,760 so in total = 1,250,360 minutes

Step 2. Calculate total time in hours to fulfil regulatory requirement: 1,250,360/60 = 20,839 hours

[70] Excel workbook titled 'Software entries in the ARTG 2019-02-04 (002) – Software manufacturers already 3rd-party certified', provided to Noetic on 21 October 2019.

Step 3. Apply the hourly rate to determine overall regulatory compliance cost): 20,839 x 86.97 = **$1,812,396.82**

Change 5 – Regulate medical devices with a human origin component

Need for regulatory change

Some comparator overseas regulators, including those of Canada, Europe and the USA, regulate medical devices with human origin material as medical devices. In contrast, the *Therapeutic Goods Act 1989* specifies that any product that comprises, contains or is derived from human cells or human tissues is a biological[71] and is thus regulated through the biologicals framework. TGA noted in its 2019 consultation paper for proposed change to the regulatory scheme for personalised medical devices that this regulatory arrangement is not ideal for 3D-printed implantable scaffolds with human materials, as they are analogous, from a design, engineering, production and assessment perspective, to current implantable scaffolds with incorporated medicine, or animal origin material and, which are regulated as medical devices.[72] This jurisdictional divergence in regulatory approaches potentially creates confusion and additional regulatory burden for manufacturers with a multi-national client base.

Proposed change

TGA has proposed that medical devices that contain as a component, but that are not wholly comprised of, human origin material would not be regulated solely as biologicals; rather, they would be Class III medical devices with a biological component (thereby more closely aligning the Australia regulatory framework with those of comparator overseas regulators). The biological component would continue to be regulated in accordance with the existing regulatory framework. The intersection between the two regulatory frameworks is the assessment of the biological component during the design examination step of the conformity assessment.

Regulatory impact

There are no proposed changes to the regulation of the human origin component of medical devices, which will be regulated in accordance with the existing framework, including Therapeutic Goods Orders for controlling infectious disease transmission. Rather, the overall medical device would proceed down the relatively simpler regulatory pathway for medical devices.

Regulatory costing

There are anticipated to be some regulatory simplifications arising from the harmonisation of the regulatory treatment of medical devices with a human origin component by the TGA with the treatment of such devices by comparable overseas regulators. However, the reduction in the existing regulatory burden from this proposed measure is difficult to quantify and unlikely to be material to the overall regulatory costing for the proposed changes to regulation of personalised medical devices.

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[71] Therapeutic Goods Act 1989, s.32A.

[72] Therapeutic Goods Administration, 'Consultation: Proposed regulatory scheme for personalised medical devices, included 3D-printed devices', February 2019, p.10.

Change 6 – Clarify regulatory arrangements for any changes to a personalised medical device

Need for regulatory change

Under the current definition of 'manufacturer', a person is not the manufacturer of a medical device if the person *assembles* or *adapts* the device for an individual patient[73]; the device has already been supplied by another person; and, the assembly or adaptation does not change the purpose intended for the device. The assurance that the final assembled or adapted device will perform as intended comes from the validated instructions provided by the original manufacturer. This means the manufacturer will have tested the performance of samples of its device when adapted or assembled according to its instructions. Any modifications or adaptations outside of what has been specified by the original manufacturer, however, may impact on the device's compliance with the essential principles, therefore increasing patient risk. Projected increases in the use of 3D-printed medical devices increases the need to clarify this matter because 3D printing involves more than assembling or adapting a device for a particular patient; it is a complex multifactorial process that has an impact on the finished device's compliance with the essential principles. The complexity of the process magnifies the importance of complying with each element of the original manufacturer's validated instruction to ensure compliance with the essential principles.

Proposed change

Additional text will be added to the regulatory framework to make clear that a person will *not* be considered a manufacturer in circumstances where a medical device has been assembled or adapted for an individual patient in accordance with validated instructions provided by the original manufacturer of the relevant device. However, if a heath care provider or another party modifies or adapts a medical device in such a way that compliance with the essential principles may be affected, that person shall be considered the manufacturer from a regulatory framework perspective. As the manufacturer, they assume the obligations incumbent on manufacturers and will be subject to the compliance and enforcement regime on that basis. The need for the provision of validated instructions by the original manufacturer will also be reinforced by the proposed change.

The practical effect of these changes will be to clarify the circumstances in which an entity holds responsibilities as a medical device manufacturer. The proposed definition for an 'adaptable medical device' is relevant here. The new definition is:

> A medical device that meets the following requirements:
>
> it is mass-produced; and
>
> it is adapted, adjusted, assembled or shaped at the point of care, in accordance with the manufacturer's validated instructions, to suit an individual patient's specific anatomo-physiologic features prior to use.[74]

Manufacturers of medical devices that meet the new definition for adaptable medical devices already apply the standard conformity assessment procedures (not the special procedure for

[73] Therapeutic Goods Act 1989, s.41BG(3)(a).
[74] IMDRF PMD WG/N49 FINAL: 2018.

custom-made) according to the classification of their medical devices because these types of devices are mass-produced.

Regulatory impact

The sought regulatory impact from this change will be to reinforce to healthcare providers/manufacturers who supply and/or fit patient-matched medical devices (produced using an MDPS) and adaptable medical devices the regulatory risk of variating from the original manufacturer's validated instructions. Healthcare providers and other parties who chose to depart from these instructions should do so with the full knowledge of the regulatory requirements that such an action would impose (such as submitting the device for the appropriate conformity assessment procedure).

Noting the expected increased reliance on MDPS for the manufacturing of patient-matched medical devices, few healthcare providers will likely take on and fulfil the regulatory burden of a conformity assessment for an ARTG listing (and being subject to the related ongoing compliance and enforcement regime) by varying medical devices in such a way that compliance with the essential principles may be affected.

The new requirements will specify that manufacturers of adaptable medical devices should supply validated instructions for their devices to be adapted, assembled or adjusted to suit a particular individual. This should already be the case and so the new requirements will be an express confirmation of the existing arrangements and therefore will not produce any new regulatory requirements. Australian manufacturers of adaptable medical devices (and sponsors of imported adaptable medical devices) will also be required to include their medical devices in the ARTG and to comply with the requirements for maintaining the inclusion. Again, this should already be the case.

The regulatory burden of this proposed change will therefore be limited to:

- the time taken by sponsors/manufacturers to become aware of definition changes – as changes are minimal and the key message is that nothing much has changed, so no regulatory impact has been costed; and
- the time take by healthcare providers involved with the supply and fitting of patient-matched medical devices and adaptable medical devices to become aware of the changes to the regulatory framework to clarify the 'tipping' point as to when they are considered a 'manufacturer' from a regulatory viewpoint (and therefore need to fulfil the associated regulatory requirements). Note this awareness of the changes has been rolled into the regulatory costing for Changes 1 and 2.

CONCLUSION

The table below consolidates the regulatory costing for each of the specific regulatory changes.

Table 12. Summary of regulatory costing

		Column 1	Column 2	Column 3
Row	**Summary Sheet**	**Cost for Current Population**	**Cost for Future Population**	**Average cost over 10-year period**
A	*Changes 1 and 2 (Custom-made Medical Devices)*			
B	Annual Report on custom-made medical devices	**$881,593.15**	**$439,372.44**	
C	Manufacturers Statement provided to patient			**$5,158.13**
D	Annual inspection			**$7,392.45**
E	*Change 3 (Medical Device Production Systems)*			**$939,971.76**
F	*Change 4 (Medical Devices that Record Diagnostic Images)*	**$1,812,396.82**	No additional regulatory burden	
G	*Change 5 (Medical Devices with Human Origin Component)*	No additional regulatory burden		
H	*Change 6 (Clarify regulatory changes)*	Costed under Changes 1 and 2		
I	*Total cost for current and future populations*	**$2,693,989.97**	**$439,372.44**	
J	*Total combined cost for current and future populations (Columns 1 and 2)*	$3,133,362.41		
K	*Average over ten years of combined cost for current and future populations*	$313,336.24		
L	*Total cost for average cost over the ten-year period (Column 3)*			$952,522.34
M	**Total cost (rows K + L)**	**$1,265,858.58**		

As per OBPR guidance, regulatory costs are projected over a 10-year period and then averaged to arrive at an average annual regulatory cost. The table below provides the average estimated savings in regulatory compliance costs.

Table 13: Summary of estimated regulatory compliance costs

Average annual regulatory costs (from business as usual) ($million)				
Change in costs	Business$	Community Organisation$	Individual$	**Total change in costs**
Option A				
Status quo: Current Regulatory framework is appropriate - no change is required				
Option B				
Amended the regulatory framework for personalised medical devices in accordance with the 6 proposed regulatory changes	$1.261		$0.005	**$1.266**

ANNEX A – ACRONYMS AND ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACHI	Australian Classification of Health Interventions
AIHW	Australian Institute of Health and Welfare
ANZSIC	Australian and New Zealand Standard Industrial Classification
ARTG	Australian Register of Therapeutic Goods
DICOM	Digital Imaging and Communications in Medicine
GMDN	Global Medical Device Nomenclature
IMDRF	International Medical Device Regulators Forum
MDPS	Medical Device Production System
OBPR	Office of Best Practice Regulation
PACS	Picture Archiving and Communication System
RIS	Regulation Impact Statement
TGA	Therapeutic Goods Administration

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