ICMRA 2023 Summit
Melbourne, Australia, Tuesday 14 November 2023

Summit opening Remarks

The host, Professor Anthony Lawler (TGA), welcomed participants to Melbourne and thanked representatives for travelling from around the globe to attend the Summit in person and contribute to engaging discussions. Participants were challenged to turn their attention to addressing some of the important questions faced by regulators in the evolving landscape of medicines regulation. The Summit's scientific program was designed to support both academic and regulatory perspectives, and invited participant perspective on how to keep pace with- and even get ahead of- the emerging science and innovative advancements in healthcare and therapeutic goods.

Session 1: Use of artificial intelligence (AI) and machine learning (ML) in the regulation of medicines

Co-Chairs: Australia (TGA) and European Union (EMA)

The Chair opened by describing the rapid development of innovative and exciting AI and ML tools, seeing them being used more broadly in the development and regulation of medicines. This has increased the challenges for regulators to develop updated guidance for stakeholders and developing legislative frameworks to support sponsor applications for market authorisation. AI and ML also provide opportunities to better analyse healthcare data, mine knowledge from information held by regulators, and automate business processes. AI and ML are already being applied in various phases of the product lifecycle.

Capstone speaker

Professor Matthias Kretzler (University of Michigan, USA) presented on how to transform data into knowledge using the example of mining the global kidney disease knowledge network for molecular targeted therapy development.

Panel presentations

Sweden's Medical Products Agency (MPA) presented a European perspective on the opportunities and challenges associated with using AI for medicines regulation. Discussion included how to build AI competence and capacity, and determining how we regulate the use of AI in the medicinal product lifecycle. This prompted discussions on the development, deployment and sharing of AI/ML systems, along with how to use AI at an agency-wide level for more effective medicines regulation.

Switzerland's Swissmedic presented on their Large Language Models (LLM) Taskforce, an initiative established to promote shared best practice and strengthen interagency collaboration. The LLM Taskforce focused on the transformative power of LLM models in different areas of regulatory science. It comprises representatives from multiple agencies including Swissmedic and the United States Food and Drug Administration (FDA), with aims to understand potential hazards and risks, as well as developing best practice across agencies in areas such as clinical drug development and pharmacovigilance.

ICMRA 2023 Summit
Melbourne, Australia, Tuesday 14 November 2023

US FDA highlighted current trends in the AI and ML landscape, and presented the results of a study looking at different uses of AI across incoming applications. There was discussion of the need to adapt policies to support and encourage new innovation, including engagement with researchers and academics. The COVID-19 pandemic was a catalyst for these changes and highlighted the need to consider innovation and how to best capitalise on this momentum going forward.

Germany's Federal Institute for Drugs and Medical Devices (BfArM) presented on the use of AI for supply chain management and shortages identification. BfArM has operated a supply chain database since 2013, with work underway to build a new system incorporating AI to combine big data, which includes information from manufacturers and manufacturing sites (new active substances and finished products). This data can be used to develop an early warning system for potential supply chain disruptions, and in turn provide more lead time to develop mitigation strategies for upcoming shortages. It is important to share information about such tools, along with the challenges and lessons learned, with other regulators through forums such as this ICMRA Summit.

Main panel discussion themes

The 'human factor' is important to translate data and knowledge into something of real-world significance. Insightful discussion focused on how AI has the potential to 'equalise' the global and equitable provision of health service if not left solely in the hands of commercial organisations.

An important consideration in AI is determining how to 'bridge the divide' and incorporate data science and scientists into more traditional regulatory processes and regulatory science. It is also critical to understand the practical future value of AI for patients.

Key considerations for ICMRA

Through discussion, there was significant interest in how we can regulate AI and the need for a combination of data science and regulatory science to ensure success in this area. There are certainly challenges in building teams, particularly in determining the skills and capabilities we need for the future workforce. With the likely need for more data scientists, there is currently a gap in determining how to best bridge the divide between the data engineers and the regulatory specialists needed for therapeutic goods regulation.

In addition, there are challenges associated with sharing advances in AI and ML technology with regulators at differing levels of maturity and workforce capability. There are significant costs associated with AI tools and we need to determine methods to share knowledge and experience and consider interactions with global industry and other stakeholders. For example, medicines shortages data processed by AI will need to be shared worldwide to ensure adequate supplies are available in all corners of the globe. There needs to be some democratisation of this field to allow equitable access to the technology. The role for ICMRA may be determining how to best work together to utilise current developments and systems.

ICMRA 2023 Summit
Melbourne, Australia, Tuesday 14 November 2023

Session 2: Evolution of clinical trials

Co-Chairs: Canada (Health Canada) and Ireland (HPRA)

This session discussed the evolution of clinical trials, with a focus on trial complexity (e.g., diverse populations, accelerated methodologies, innovative designs), the impact of innovation, and what solutions regulators may be considering in addressing these challenges.

Panel presentations

The Danish Medicines Agency discussed how regulators can set directions and be proactive rather than reactive in the promotion of trial design that focuses on patient involvement. There are three key factors for innovative clinical trials- evolution of technology, personalised medicines, and cost.

The Republic of Korea's Ministry of Food and Drug Safety (MFDS) described the introduction and policy of the Central Institutional Review Board (IRB) and Decentralised Clinical Trial (DCT). Real-world examples included home-based treatments and monitoring of results using medical devices.

The World Health Organization (WHO) spoke to the need for best practices and other measures to strengthen the global clinical trial ecosystem for clinical trials, particularly in Low- or Middle-Income Countries (LMICs).

The Brazilian Health Regulatory Agency (ANVISA) presented on the need for greater transparency and data sharing globally among regulators, specifically from the perspective of countries that are not typical locations for Phase 1 and Phase 2 clinical trials.

Main panel discussion themes

There was rich discussion regarding the potential for a future regulatory forum on patient-centric platform clinical trials that could be beneficial for ICMRA members. Using Real World Evidence (RWE) will be essential, once current ethical issues are addressed.

During the COVID-19 pandemic immense bodies of healthcare data were collected that are yet to be properly analysed, which may represent a missed opportunity. A future ICMRA workshop on engagement and outreach with academia could be beneficial, along with work on how to engage patients.

There is also the growing notion of physically taking clinical trials to where a disease outbreak occurs, which would be challenging but highly valuable. The opportunities for ICMRA to engage with LMICs also needs continual attention. ICMRA has an important role in supporting the resolution of clinical trials, global benchmarking, and ethical tools.

Key considerations for ICMRA

There is a need to identify future focus areas for ICMRA, including the work of decentralised clinical trials and the desire for a future regulatory forum on this topic.

ICMRA 2023 Summit
Melbourne, Australia, Tuesday 14 November 2023

During the COVID-19 pandemic ICMRA convened a working group on clinical trials with a focus on the development of guidance, with a particular focus on platform clinical trials, that would assist sponsors in the context of a public health emergency (PHE). With the reflection paper for PHE due to be finalised, the ICMRA Executive could review ongoing requirements for this clinical trials working group to be maintained and perhaps determine a renewed focus for this group.

ICMRA Executive could also consider the value of a workshop with industry and clinical trial sponsors, both commercial and non-commercial. Similar workshops, such as occurred within the PQKM project, have demonstrated huge benefit from these joint discussions with key stakeholders to advance strategic thinking in this space, including with respect to data sharing, patient involvement, and the role of AI.

ICMRA may consider, in the context of clinical trials that involve a medicine and a medical device or IVD component, how to ensure that regulatory burden on sponsors is proportionate, and that applicable regulatory requirements can be navigated successfully. Sponsors are currently required to navigate two separate pathways- does ICMRA have an opportunity to collaborate with IMDRF in a collective reflection on our joint regulatory oversight in this area?

Session 3: Advanced medical products

Co-Chairs: UK (MHRA) and Japan (PMDA)

What have we learnt from the regulatory journey so far, and where are we going?

Capstone speaker

Professor Melissa Little (Murdoch Children's Research Institute, Australia) spoke to the preclinical focus of stem cell technology and described the regulatory challenges from a non-regulatory perspective.

Panel Presentations

The TGA spoke to the challenges of cell therapies in the regulatory context, using CAR (Chimeric Antigen Receptor) T-cells as a discussion example.

The UK's Medicines and Healthcare products Regulatory Agency (MHRA) focused on product quality for advanced medical products and discussed the measures required to ensure quality is assured and monitored for these products. This needs to be done in a consistent and repeatable manner, which is an ongoing issue when using such a non-homogenous technology when compared to the manufacture of chemical entities. This included discussion about the manufacturing of products that sit outside standard manufacturing models including point of care, home based monitoring and mobile technology. There is an opportunity to develop internationally harmonised guidelines from the inception of these advanced products.

ICMRA 2023 Summit
Melbourne, Australia, Tuesday 14 November 2023

Japan's Pharmaceuticals and Medical Devices Agency (PMDA) described the regulatory decision making, real-world evidence utilization and post-marketing data collection for these products, including balancing risks and future proposals for advanced therapies.

The Saudi Food and Drug Authority (SFDA) discussed the role of real-world evidence and observational studies, including data sharing and advanced therapies registry development, potentially in the form of an international repository.

Nigeria's National Agency for Food and Drug Administration and Control (NAFDAC) discussed the promise and the challenges of advanced/gene therapies for LMICs, using sickle cell disease management as a case example.

Main Panel Discussion Themes

There was clear messaging following Professor Little's presentation that there is a strong need for global clarity and consistency. Different answers from different regulators only cause confusion among stakeholders, and excessive regulatory requirements could serve to impair, rather than facilitate, the development of new products. Misaligned definitions can have a significant impact and add to confusion- achieving a global consensus on definitions in this area of advanced medical products will be key.

It was also noted that regulators do not always have all the answers and need to learn together with academia.

Key considerations for ICMRA

There needs to be ongoing dialogue and co-design between academia and regulators, complemented by further engagement with patients.

Significant work has been already done in this space. Through experience we understand how gaps and barriers can lead to inequitable access. ICMRA may focus efforts on determining where the gaps still exist and collaborate to understand where it can add value. Is there a role, for example, for ICMRA to analyse national legislation and guidelines to determine the gaps?

Summit closing remarks

The host thanked all Session chairs, panel speakers, and invited Capstone academic speakers who provided new perspectives and shared key insights into the challenges faced in the evolution of medicines regulation. Although all three scientific sessions were very different in content, the overall message linking the sessions was the need for greater collaboration between regulators, academia and industry. There is also a strong argument to consider the interface between medicines regulation and technology.

ICMRA 2023 Summit

Melbourne, Australia, Tuesday 14 November 2023

Regulators need to work to actively maintain the trust of politicians, policy makers and the public during uncertain times where information comes from a variety of sources, including many that are not evidence-based. We cannot work in a vacuum, and must work alongside industry, legislators, and consumers. Regulators are stronger together – we may look to ICMRA for the answers, but sometimes, when there are no clear answers, the solution comes from greater collaboration between academia and medicines regulation.

There are clear challenges that regulators face in effectively evaluating emerging medical products that implement advanced technologies such as genes and cells, AI and ML, while clinical trials are becoming increasingly sophisticated to facilitate faster access to patients and consumers. As regulators, we acknowledge the need to keep pace with the evolving science and to adjust our regulatory frameworks accordingly.

There are certainly exciting times ahead with evolving technology and the emerging science, as well as a need to embrace change, all driven by a strong desire to facilitate better patient access to safe, effective therapeutic goods.