

Australia's surgical research: from the laboratory to health systems

While representing less than 5% (6513 out of 138127) of the registered Australian medical practitioners (<https://www.medicalboard.gov.au/news/statistics.aspx>), surgeons are involved in the care of 2.8 million (out of approximately 11.6 million) hospitalisations yearly (<https://www.aihw.gov.au/reports-data/myhospitals/intersection/activity/apc>). Surgeons and surgical care teams are intimately involved in how our health care system operates, from what type of care we receive, to how the public and private sectors interact (or are at odds at times) (doi: [10.5694/mja2.51844](https://doi.org/10.5694/mja2.51844)). Additionally, they are often at the forefront of innovations. Their cautiously optimistic approach to the introduction of new devices, techniques, and of late, artificial technology enabled tools, is important to ensure safety in care.



The critical roles of surgeons and surgical teams in our health systems and technological development and assessment have meant that surgical research has expanded outside traditional laboratories and small scale clinical studies. Their wheelhouse now includes research areas with broad population level clinical and policy implications, including health services, comparative effectiveness, and health technology evaluation. In this issue of the *MJA*, we have curated high quality national surgical research, focusing on topics of critical national (eg, surgery in rural areas, national health technology assessment) and international (eg, artificial intelligence, evidence-based care) significance. The issue was developed to highlight surgery research that can influence our health system and discuss challenges encountered by the discipline today.

The contemporary narrative review by Paynter and colleagues discusses the role of surgeons in rural Australia where 29% of the general population, but only 20% of general surgeons, live (doi: [10.5694/mja2.52232](https://doi.org/10.5694/mja2.52232)). The authors expertly describe the rural surgical workforce, heterogeneity in care models, and workforce and training challenges. They argue that despite these challenges, several Australian studies have found rural general surgery outcomes are comparable to metropolitan centres. Another unique challenge nationally is raised in Ryan's thought-provoking piece on TAVI procedures and their access (doi: [10.5694/mja2.52226](https://doi.org/10.5694/mja2.52226)). This article looks at the evidence base for technology implementation and recommends a coordinated

national approach rather than the current federal *v* state (or public *v* private) approach, which can lead to inequity of service access.

Research articles in this issue call attention to the increasing utilisation of implantable cardiac defibrillators (ICDs) in New South Wales, and the potential impact of upscaling a program that could prevent hip fractures, and therefore reducing emergency surgeries. In their study on ICDs, Zhu and colleagues suggest that the increases in ICD use seen in our most populous state are likely due to primary prevention (people at high risk of sudden cardiac death) and call for better guidance regarding their use (doi: [10.5694/mja2.52246](https://doi.org/10.5694/mja2.52246)). Discussing hip fractures, Jones and colleagues describe the potential fracture reduction benefits of scaling up the 29 fracture liaison services in place nationally since 2018 using a novel system dynamics modelling approach (doi: [10.5694/mja2.52241](https://doi.org/10.5694/mja2.52241)). With promising but modest results, the authors call for alternatives for secondary fracture prevention to continue to be explored.

Finally, a perspective on the use of artificial intelligence in surgery and an invited editorial are evidence of surgeons' balanced approach to the adoption of new technology. Kooroor and colleagues support the ethical introduction of artificial intelligence in practice, and optimistically suggest Australia can be a leader in its safe introduction (doi: [10.5694/mja2.52225](https://doi.org/10.5694/mja2.52225)). [Correction added on 27 March 2024, after first online publication: "Kooroor" has been changed to "Kooroor".] However, introduction of these tools in practice also requires an infrastructure for their ongoing monitoring and evaluation. This point is confirmed by the editorial by Darval and Richards (doi: [10.5694/mja2.52239](https://doi.org/10.5694/mja2.52239)), which while calling for more evidence-driven surgery to address national waiting lists, also reminds us that rigorous studies and frameworks for ongoing evaluations can change the course of surgery, including demand, adoption, and outcomes. ■

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