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Funding research translation: how we got here and what to do next

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In 2019, avoidable patient harm cost Australian public hospitals more than AU\$4.1 billion – that’s nearly 9% of the total yearly healthcare expenditure in Australia.¹ This occurred despite the extensive evidence base that is designed to support improved patient care, which is growing every day.² Poor adherence to best practice guidelines and delays in translating new evidence into clinical practice and health policy, and the improvement challenge that is a wicked problem,³ mean that these harms are likely to continue.⁴

The alarming reality of research translation is that it takes approximately 17 years for only 14% of medical research evidence to affect clinical practice.⁵ Moreover, it has been estimated that nearly 85% of medical research evidence never enters clinical practice,⁶ and fewer than 50% of clinical innovations are ever integrated into clinical practice.⁷ The 17/14%/85%/50% equation needs attention.

Ensuring societal and economic returns on medical research – making sure research guides practice and improves patient treatments, population outcomes and health system cost-effectiveness – has as a consequence become an international priority.⁸ However, attempts made to shift the status quo have generally resulted in more of the same. In Australia, the UK and the US, the proportion of clinical care delivered in line with best practice guidelines remains at approximately 60%; care that is of little or no value to the patient (waste) accounts for 30%; and 10% of care results in harm.⁹ These numbers have remained stuck for the past 30 years,⁹ while increasing proportions of national budgets have been spent on healthcare.¹⁰ It has been postulated that to shift this 60–30–10 ‘status quo’ we need to

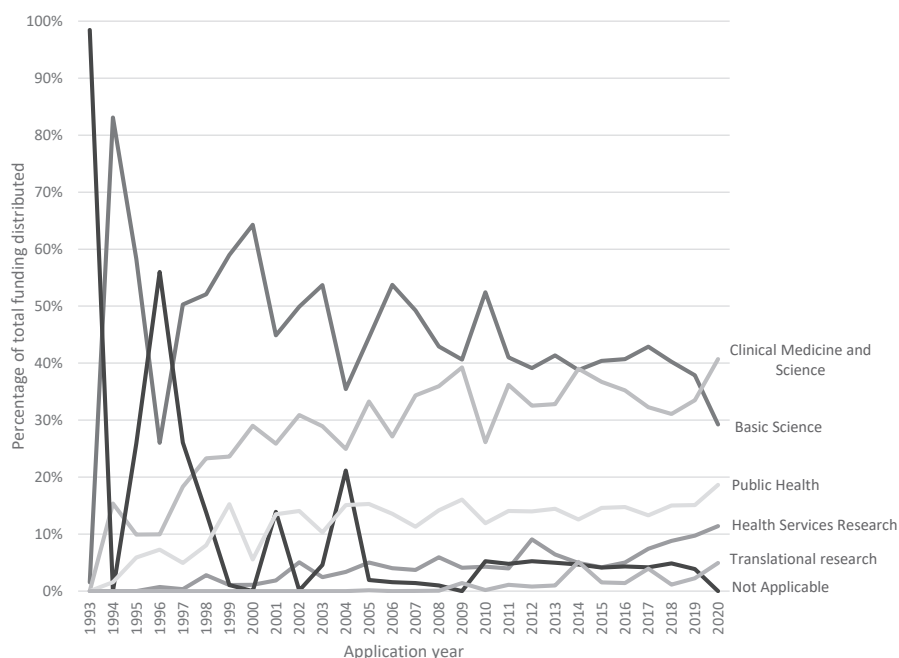
ramp up translational pathways by making research relevant and useable to those implementing new knowledge in the health system.⁹ This is easier said than done.

Despite initiatives to boost translational research, most medical research funding continues to be spent on basic research rather than on health services and public health research, where much of the translation needs to be embedded to effect change. This imbalance has been apparent for at least a quarter of a century in Australia (Figure 1).

Many groups would argue that frontline research translation is not their role – each

do their bit; basic researchers and biomedical researchers, for example, have a major task of discovery. We argue that research translation needs many actors working in concert rather than individually: researchers of all types, consumers, clinicians, health managers, policy makers, healthcare delivery networks (hospitals, community health networks, primary care organisations) and research funding bodies need to work concertedly to make change happen. Above all, research funders are uniquely positioned to incentivise change while engaging with the healthcare delivery system and with consumers. The recent focus on bringing new medical technologies and products to market looks to improve return on research investment and is often neatly summarised in dollar-for-dollar returns.¹¹ However, the ultimate aim of medical and public health research is to improve the health and wellbeing of populations – and these societal-level benefits are seldom measured and quantified. To achieve societal returns on medical and public health research we must fund research that supports translational pathways that will ultimately change practice to improve health

Figure 1: Distribution of NHMRC funding by research type (1993–2020).*



Notes:

*Statistics for Figure 1 were retrieved from: <https://www.nhmrc.gov.au/funding/data-research/outcomes-funding-rounds>.

The NHMRC, Australia’s flagship medical and funding agency, categorises research into five broad fields: basic science, health services research, public health, clinical medicine and science, and not applicable (often relates to equipment funding). The displayed data is as categorised by the NHMRC. The frequency of translational research was calculated according to the five keywords on all NHMRC grants. If translational research was a keyword, it was considered a grant for translational research. This categorisation is separate from the five broad funding areas and is another representation of total funding distribution.

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outcomes and experiences. If we continue on our present course, we will not likely solve the 17/14%/85%/50% equation.

Funding allocations today

We reviewed National Health and Medical Research Council (NHMRC) funding data over the period 1993–2020, uncovering that only 5.5% of cumulative NHMRC funding since 1993 has been spent on health services research and 13.9% has been spent on public health research. Staggeringly, across all broad research fields, only 1.3% of funding was spent on research that focused directly on translation (Figure 1). The NHMRC requires applicants for funding to demonstrate how the translation of the proposed research will occur and recognises four specific types of research impact (knowledge, health, economic and social).¹² However, reporting of outcomes focuses either on case studies¹³ or on publications and citation metrics.¹⁴ This is good, so far as it goes, but the extent to which the often aspirational translation plans laid out in proposals are realised at the end of projects and beyond is currently uncertain. Overall, only 14% of Australian research organisations consider the estimated cost-effectiveness of proposed research projects in their decisions to allocate funds.¹⁵

The need for developing research translation capacity in Australia has been a stated policy objective for almost a decade, largely as a result of the McKeon report (2013), which called for significant reforms to fundamentally embed research practices into routine care.¹⁶ In 2015, the Medical Research Future Fund (MRFF) was established, with a core aim to improve translation of research to practice and health outcomes impact. The MRFF fulfils several recommendations originally made in the McKeon report, including the need to redirect research funding toward translation.¹⁷ However, the availability of data on funding allocations by research type is not as transparent for the MRFF as it is for the NHMRC. Furthermore, the relatively early stage of implementation of the MRFF funding rounds means that it is not yet clear whether the focus on translation and assumed higher distribution of funding towards translational research has resulted in demonstrated and sustained translation of evidence into practice or policy. The establishment and significant investment (AU\$218 million from the MRFF over a 10-year period)¹⁸ including for Advanced Health Research and Translation Centres (AHRTCs) and Centres for Innovation

in Regional Health (CIRHs) creates important collaborative infrastructure for translational research in Australia.¹⁹ The 10 currently accredited and funded centres hold much promise with many projects initiated since 2016.¹⁹ The return on investment, not only dollar-for-dollar returns but health outcomes, better-value healthcare practices and broader societal benefits, are anticipated – but not yet demonstrated.

[Correction added on 5 October 2021, after first online publication: "...in Advanced Health Research..." has been amended to "...including for Advanced Health Research..." in the preceding paragraph.]

Few funding bodies internationally report their outcomes in terms of better-value care, health outcomes or societal returns on research investment. This is not surprising, as appropriate, agreed metrics are thin on the ground. Frameworks and guidelines for evaluating capacity or likelihood for research projects to translate into positive societal outcomes have been developed.^{20–22} These consider projects against established implementation and translation factors, including the robustness of supporting evidence for proposed projects;²¹ social and political climate conducive to uptake and adoption;^{20,22} workforce capacity and organisational culture;^{20,22} stakeholder and researcher beliefs and characteristics (including positive societal outcomes as expressed by vulnerable populations, e.g. Aboriginal and Torres Strait Islander people, other culturally and linguistically diverse populations and people living with adversity and disadvantage);^{20,23} and proposed implementation strategies.²¹ Combining successful elements from multiple frameworks according to funder goals may help sharpen efforts. Funding bodies could modify and field test relevant frameworks to determine their potential feasibility for the assessment of project value.

Simplicity of translation models

Discussion of research transferability and simple representations of translation 'pipelines' depicting how research findings will be applied to clinical settings and deliver returns are frequently required in large research grant applications.²⁴ Yet in our experience, realistic consideration of system complexities that real-world implementations inevitably come up against are rarely taken into account during funding allocation processes, even if idealised pipeline models

are included in applications. Real-world pipelines regularly experience blockages or fractures when efforts to apply evidence are unacknowledged by clinicians and are not feasible due to ongoing system transformations or when evidence produced is perceived as irrelevant to practice.²⁵

Funders need to recognise the role of complexity in take-up, scaling and adapting innovations to local contexts, and implementation science. Things rarely go to plan and learning from our successes is just as important as learning from our failings. In addition, to even reach the point of success or failure in translation, we first need flexible long-term timelines and measurable goals in funding schemes.²⁶

A publish or perish culture

Researchers and their careers live and die by the 'publish or perish' standard. Interesting research that attracts citations and can be produced rapidly is, career-wise, more valuable than carrying out time-consuming, hard-to-achieve, and unpredictable implementation studies.²

This culture is perpetuated by funders who also do not recognise genuine translation as integral to research, even if they do acknowledge the importance of translation generally.¹² Project significance is still often largely determined using direct measures, such as author publications, citations and grants already received.²⁷ More nuanced funding criteria are now being used by health funding organisations that evaluate project impact and risk for failure (for example, see *2019 Frontier Health and Medical Research (Stage One) Grant Opportunity Guidelines*),²⁸ although how funders evaluate and determine a project's likely impact is not published for consideration by researchers.

In future, greater transparency in funding decisions could hold funders accountable for the allocation of funds. This may increase funding to projects based on the potential for translation, alignment to social need and merits other than being led by the most prolific authors.

Incentivising research translation

Current funding processes largely assume a relatively passive diffusion of evidence from researchers to clinicians and policy makers. In practice, the parties must do significant leg work to work with and communicate with others and are often not reimbursed for their

efforts. Predictably, recent qualitative studies indicate neither academics nor clinicians consider it their job, or possess the required skills, to translate new research into clinical practice.^{29,30}

Yet, getting more evidence into clinical settings is critical and requires partnerships between policy makers, researchers and clinicians,^{31,32} and middle- and top-level managers as enablers.^{33,34} Practitioners and managers working in the health system will need to be enlisted, incentivised and enabled to affect changes in practice.^{6,8} The inclusion of consumers and patients in research development can also enhance the potential for impact, and sharpen the relevance of research to practice.^{32,35} The Collaboration for Leadership in Applied Health Research and Care in the UK³⁶ serves as an example of embedding researchers in public health units to support greater collaborative partnerships between the health system and researchers.

However, all clinicians, managers, policy makers and consumers need skills and capacity to undertake translational research and to embed changes into practice at the frontlines of care. This is currently hard to achieve in our overstretched health system where the system struggles to deliver high-quality and safe care. We need to develop supportive cultures that embed research evidence into practice through productive collaborations among researchers, practitioners, consumers, managers and policy makers. Strong leadership and capacity-building are needed to make this approach a sustainable norm rather than constantly relying on time-limited project funding. Our understanding of the sustainability of healthcare and public health innovations is currently a 'black box' – we have limited knowledge of what is left behind once research or innovation funding stops.³⁷

The recently published Australian Medical Research and Innovation Priorities 2020–2022 explicitly include priorities for consumer-driven research, public health interventions research and primary care research.³⁸ These priorities and aligned funding rounds may not incentivise translational research.³⁸ However, as we have seen, translational outcomes and impacts on policy and practice often take years to materialise and are notoriously hard to measure. Nevertheless, funding bodies such as the NHMRC and MRFF are increasingly requiring statements of demonstrated research impact rather than just research outputs from applicants seeking

funding. Although this is a great step forward, it may disadvantage early career researchers for whom impacts may not yet have been realised.

Conclusion

Medical evidence discovered in controlled research environments has historically been difficult to translate to clinical practice.⁵ Research funding agencies in Australia are uniquely positioned to incentivise the translation of research into practice. While there have been promising developments in recent years, many schemes have yet to realise their intended potential. More earnest consideration needs to be given to how clinicians, consumers and researchers might be funded and how capacity can be increased to translate and implement research findings into health systems for the benefit of society. Funders can support research translation by seeking a better balance of funding allocations that recognises the importance of translational research in health services and public health by: embedding robust translation plans into research grant schemes; rewarding partnerships and collaborations that support translation; enhancing transparency in funding allocations; and monitoring the impacts of research investment on practice, health outcomes and policy in the long term.

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