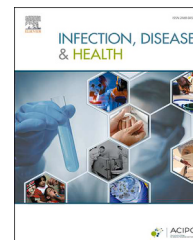


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Research paper

Government funding for healthcare infection prevention research: A scoping review of the past decade

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KEYWORDS

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Abstract *Background:* Healthcare infection prevention and control (IPC) programs are recognised globally as a system-wide strategy to support patient and staff safety. Research evidence is essential to underpin these programs, however it is unclear the level of national research funding invested into healthcare IPC in the past decade.

Methods: Scoping review using Arksey and O'Malley's framework. A systematic search of national category 1 grants awarded between 2014 and 2023 on healthcare IPC was undertaken. Grants were eligible if they were focused on healthcare IPC, we excluded preclinical studies and vaccine development studies. Two independent reviewers screened and extracted data, result were summarised narratively.

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Research funding

Results: We identified 10,394 grants, amounting to \$19.7B, awarded between 2014 and 2023. A total of \$37.11M was provided for 23 IPC research projects/programs (median per grant \$1.10M, interquartile range 335k to 2.44M). Accounted for approximately 0.19 % of the total government health research funding in Australia from 2014 to 2023. No healthcare IPC related grants were awarded in 2020, the peak of the pandemic.

Conclusion: IPC research funding in Australia remains disproportionately low relative to infection health and economic burden.

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Highlights

- IPC secured 0.2% of Australia's \$20B health research funding (2014–2023).
- No healthcare IPC grants awarded in 2020, highlighting support gaps amid COVID-19.
- Australian IPC research funding is low relative to HAI health and economic impacts.
- Dedicated IPC funding is needed to build workforce, improve evidence, and health readiness.

Introduction

Preventing healthcare-associated infections (HAIs) and antimicrobial resistance is a recognised global health priority [1]. Infection prevention and control (IPC), while distinct from clinical infectious diseases – the medical practice of treating patients who are unwell due to infections, serves a complementary function in health systems, by focusing on the reduced transmission and prevention of infections within healthcare settings. IPC programs typically rely on system-wide prevention strategies to support patient and staff safety and consequently are often regarded as the hospital's frontline defence during pandemics and communicable disease emergencies.

The critical role of IPC in ensuring patient safety is underscored by its inclusion in the Australian National Safety and Quality Health Service (NSQHS) Standards. IPC programs typically encompass surveillance, education, policy development, and outbreak management [2,3]. However, the evidence base underpinning IPC remains limited. Recent reviews reveal that up to 40 % of IPC guideline recommendations are supported by low-quality evidence [4,5]. Despite being Australia's largest investor in health and medical research, the extent of national government investment in IPC research, relative to the burden of disease [6,7] (at any time 1 in 10 hospitalised patients will have a healthcare-associated infection) [8] remains unclear. This review aimed to describe patterns of national investment in IPC research over the past decade, including during the COVID-19 pandemic.

Methods

Scoping review using Arksey and O'Malley's framework [9]. Healthcare IPC was defined in line with The World Health

Organization (WHO) as a practical, evidence-based approach that protects patients, health workers and visitors to health care facilities by preventing avoidable infections, acquired during the provision of health care services [10].

Review objectives were:

1. To determine total funding allocated to healthcare IPC research in the past decade.
2. To describe the characteristics of successful IPC funding bids including research area, administering institution, and chief investigator A.
3. To describe the impact of the COVID-19 pandemic on IPC grant funding rates.

Search strategy

A systematic search of government grants awarded between 1st Jan 2014 and 31st Dec 2023 was performed. Eligible data sources (grant schemes) were identified and selected using the Australian Competitive Grants Register (ACGR; see [Supplementary material 1](#)).

Screening strategy

We included grants ([Supplementary material 1](#)) awarded between 2014 and 2023 on a topic within the scope of the WHO definition of healthcare IPC [10]. For example infection control topics, including but not limited to: hand hygiene, environmental cleaning, HAIs, infection control workforce, standard precautions, surgical site infections, environmental surveillance, antimicrobial resistance projects with significant infection control component and/or transmission-based precautions. Grants involving prophylactic antimicrobial interventions (e.g., surgical antimicrobial prophylaxis) were included only if the primary study outcome was prevention of HAIs, consistent with the WHO's

definition of healthcare IPC. These were distinguished from broader antimicrobial resistance or pharmacological studies where infection prevention was not the central aim. Engineering research with surrogate measures of prevention instead of clinical infections (e.g. reduction of aerosols vs reduction of HAI) were reviewed on a case-by-case basis and inclusion based on consensus of 3 or more reviewers.

We excluded grants which did not meet the inclusion criteria including vaccine development studies and basic laboratory research unrelated to clinical IPC. Where eligibility uncertainty persisted, we contacted granting bodies or chief investigators for additional information.

Data extraction and analysis

Two reviewers independently screened and extracted data (ASm, JS) using a standardised data extraction form. Extracted data elements included: application reference, date, chief investigator name, grant type, title, administering institution, state, funding awarded, field of research, key words, sector, plain description, and/or project summary. We sourced additional information from organisational sites, university grant administration teams and via email/phone contact with government agencies (e.g., Medical Research Future Fund (MRFF)) or chief investigators.

Conflicts were resolved through author group discussion, with a majority decision determining the final decision. Descriptive statistics were used to summarise funding distribution, investigator institution characteristics and temporal funding trends (i.e., pre-post-COVID-19). A narrative summary is provided.

Results

National research investment

We screened 10,394 government grants, amounting to \$19.7B awarded between 2014 and 2023. [Supplementary material 2](#) outlines grant inclusion per Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [11].

Awarded competitive funding for healthcare IPC research projects/programs

A total of \$37.11M was provided for 23 IPC research projects/programs (median per grant \$1.10M, interquartile range 335k to 2.44M; [Table 1](#)). This accounted for approximately 0.19 % of the total government health research funding in Australia from 2014 to 2023. Grants were

awarded by the National Health and Medical Research Council ([NHMRC], 15/23; \$20.65M), Medical Research Future Fund ([MRFF; est. 2017], 6/23; \$16.20M) and Hospitals Contribution Fund of Australia ([HCF], 2/21; \$250K). We identified no eligible grants from Cancer Australia or the Australian Research Council (ARC). Funding was awarded via fellowships (9/23; 39 %), project/program grants (12/23; 52 %) including an International Clinical Trial Collaboration and a Centre for Research Excellence (4.5 %), and a National Critical Research Infrastructure grant (4.5 %).

Funding distribution, allocated by the location of the Chief Investigator's institution or administering institution, revealed Victoria received \$18.68M (50 %; 9 projects), followed by New South Wales (NSW) with \$12.62M (34 % of total funding; 9 projects), and Queensland with \$5.81M (23 %; 5 projects). Of the 21 grants awarded, 56 % of the lead chief investigators (CIA) were female. Chief investigators were physicians (n = 13; 57 %), nurses (n = 8; 35 %) and public health professionals (n = 2; 9 %).

Funding across the decade from 2014 to 2023

Government funding allocated to healthcare IPC research fluctuated across the decade (2014–2023; [Fig. 1](#)), ranging from \$0 in 2020 to \$14.9M in 2021. Between 2014 and 2019 (5-years), 13 IPC grants were awarded (average 2.6 grants p.a.), compared with 10 grants during and post the COVID-19 pandemic (2020–2023, 3 years; average 3.3 grants p.a.). No healthcare IPC related grants were awarded in 2020, the peak of the pandemic.

Discussion

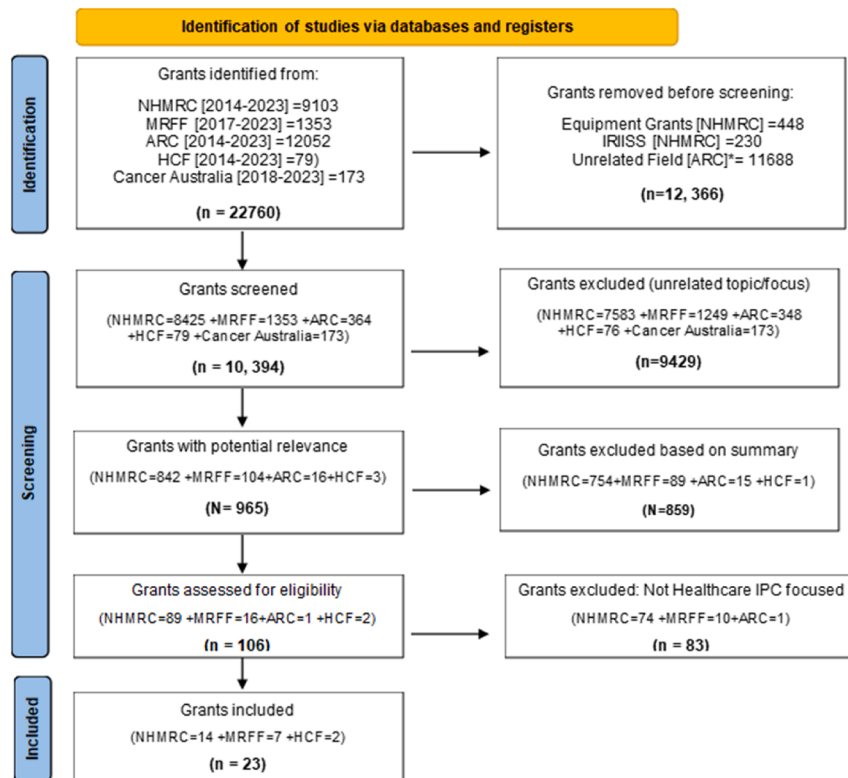
Despite its importance to patient safety and health system resilience, Australia's investment in healthcare IPC research remains disproportionately low. From 2014 to 2023, only 0.2 % of the \$ national health and medical research budget (20 billion) was allocated to healthcare IPC research (23 grants, \$37M). By comparison, over the same period, cardiovascular disease received more than \$1 billion in research funding (2603 % more), musculoskeletal disease \$494 million (1235 % more), and diabetes \$26 million in the past four years alone, including a targeted \$10 million MRFF scheme. Relative to the health and economic burden (\$1B per annum) HAIs pose ^{6 7} the level of investment in IPC research may be insufficient to meet the growing burden and cost of AMR and HAIs.

Of the \$37M awarded, 40 % was awarded to two researchers (totaling \$15.3M), with an overall project-to-fellowship ratio of 4:3. Funding was geographically concentrated in metropolitan-based institutions, although

Table 1 Total funding available, awarded IPC funding as amount and percentage of total funding available from 2014 to 2023.

Funding	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cat 1 funding	1.81B	1.45B	1.41B	1.79B	1.63B	2.29B	2.60B	2.43B	2.03B	2.22B
IPC funding	3.95M	1.10M	3.6M	3.1M	412K	782K	0	14.9M	8.33M	802K
% of funding	0.21 %	0.07 %	0.26 %	0.17 %	0.02 %	0.03 %	0	0.57 %	0.40 %	0.03 %

IPC = Infection Prevention and Control; Cat 1 = Category 1 funding including NHMRC, ARC, MRFF, HCF and Cancer Australia; B = Billion; M = Million; K = Thousand.



*Excluded all ARC fields except Public Health and Health Services, Immunology and Microbiology.

NHMRC: National Health and Medical Research Council, MRFF: Medical Research Futures Fund (Department of Health and Aged Care), ARC: Australian Research Council, Cancer Australia: Australian Government, HCF: Hospitals Contribution Fund

Fig. 1 Prisma flow of included grants.

Avondale and Monash University maintained campuses in MM3 regions, classified as large rural towns under the Modified Monash Model. No grants were awarded in 2020, the first year of the COVID-19 pandemic, which likely reflects reduced applications from IPC clinician researchers due to increased clinical demands, healthcare worker infections and reduced system capacity [12]. Globally, COVID-19 placed significant burden on IPC clinicians including role expansion, workforce shortages, and heightened psychological stress [13]. These systemic pressures, alongside the pragmatic redirection of funding to acute pandemic response (e.g., vaccine development), likely contributed to the absence of IPC specific grant awards in 2020. We did observe COVID-19 to elevate the profile of IPC, as reflected in an increase in fellowship grants during subsequent years, however, whether this increased focus translates into sustained investment in IPC over the coming years remains unclear.

A decade of underinvestment in IPC research and researcher training may have influenced workforce development, leadership capacity and generation of high quality research evidence. A 2020 Australian review found 40 % of IPC guideline recommendations are based on low- or very low-quality evidence [4, 5], while international reviews of IPC guidelines during the pandemic found 'too little' evidence and limited high quality research to inform practice recommendations [14]. This review identified that, despite

its central role in health system performance and community wellbeing, IPC has received limited targeted research funding. While underinvestment is a broader challenge across the research sector, comparable fields such as dementia have successfully leveraged targeted funding calls to increase knowledge generation. Dedicated funding streams, such as targeted healthcare IPC schemes and clinician researcher fellowships, and international collaboration may help address the current shortfall in IPC research investment and priorities. Further exemplars such as the Dementia, Ageing and Aged Care Mission from MRFF (total investment \$185M over 10 years) could inform similar grant calls in IPC, with the potential for a joint infectious disease and IPC collaborative mission to reduce infection burden. Encouragingly, we observed a promising upward trajectory among IPC researchers, with repeatedly successful applicants progressing from postdoctoral roles to professorial positions, indicating the potential strength of the emerging research pipeline.

Limitations

We captured federally funded IPC research from 2014 to 2023 but acknowledge smaller funding schemes, not included in this review also support the conduct of IPC research and capacity building. Grants may have been

missed if IPC was not explicitly referenced in the title or summary. Additionally, our focus on healthcare IPC may have inadvertently excluded research exploring the biology or aetiology of infections (e.g., role of microbiome in HAI susceptibility), which could have downstream relevance for clinical IPC practice and future funding. Results should be interpreted in the context of this limitation. Finally, while our primary focus was applied IPC research, we included a small number of studies involving antimicrobial prophylaxis where the primary end point was prevention of HAIs in clinical settings. This pragmatic decision led to a modest increase in IPC funding awarded.

Conclusion

IPC research funding in Australia remains disproportionately low relative to other fields and to its health and economic burden. Prioritising adequate investment in IPC research will ensure Australia has effective strategies to reduce HAIs and strengthen healthcare resilience, an imperative as we prepare for future infectious threats.

Ethics

There were no ethical requirements for this scoping review.

Authorship statement

Authorship statement, in accordance with the International Committee on Medical Journal Editors highlighting JS drafted and revised the short report. AS, SH, BM, PR, AJS, and CR contributed to the review and revision of the paper. All authors approved the final submission.

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Provenance and peer review

Not commissioned; externally peer reviewed.

Declaration of competing interest

Two authors have an editorial affiliation with the journal. Authors played no role in the peer review process or decisions relating to this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.idh.2025.05.003>.

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