

Implementing health system improvement: resources and strategies for interprofessional teams

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ABSTRACT

Health system improvement (HSI) is focused on systematic changes to organisational processes and practices to improve the efficient delivery of safe care and quality outcomes. Guidelines that specify how interprofessional teams conduct HSI and knowledge translation are needed. We address this urgent requirement providing health professional teams with resources and strategies to investigate, analyse and implement system-level improvements. HSI encompasses similar, yet different, inter-related activities across a continuum. The continuum spans three categories of activities, such as quality improvement, health management research and translational health management research. A HSI decision making guide and checklist, comprising six-steps, is presented that can be used to select and plan projects. This resource comprises six interconnected steps including, defining the activity, project outcome, aim, use of evidence, appropriate methodology and implementation plan. Each step has been developed focusing on an objective, actions and resources. HSI activities provide a foundation for interprofessional collaboration, allowing multiple professions to create, share and disseminate knowledge for improved healthcare. When planned and executed well, HSI projects assist clinical and corporate staff to make evidence-informed decisions and directions for the benefit of the service, organisation and sector.

INTRODUCTION

Health system improvement (HSI) in an organisation requires attention to the quadruple aim; that is, the cost of care balanced with enhanced positive patient care experience and staff experience of delivering care, and beneficial health outcomes.¹ The use of evidence to make system-based decisions achieves HSI, bridges the gap between theory and practice, and leads to improvement in interprofessional practices, management and organisational performance.² Consequently, evidence-based healthcare, or evidenced-informed decision making, is increasingly promoted as a strategy to assist clinicians and managers overcome system complexities.³ For clinical and corporate leaders aiming to conduct evidence-informed decision making, the first task is knowing where to begin.

Understanding how information is accessed, and knowledge can be compiled, is essential to the process of translating evidence into practice. In healthcare organisations, an interprofessional approach to HSI requires representation from clinical, including medical, nursing and allied health disciplines, and corporate professionals, including executive, management and administration staff. Collaboration across professions, positions and levels ensures that clinical and operational aspects of improvement activities are simultaneously incorporated in their design, implementation and evaluation phases.^{4,5}

Some health professionals hold the concern that the report of quality improvement (QI) initiatives can be very inward focused, without adequately revealing the contextual and process factors that enabled the improvement.⁶ Conversely, some research projects are experienced by health professionals as problematic. Rapport *et al* state that they are not sufficiently grounded in implementation science theory with a shared understanding of terms and their meaning, leading to results that are not translatable into practice.⁷ Finding ways of converting the insights from improvement initiatives into tangible, implementable solutions, with local, organisational and broad industry application, is critical for efficacy. When planned and executed well, HSI assists clinicians and managers to make evidence-informed decisions and directions for the benefit of the service, organisation and sector. HSI activities provide a foundation for interprofessional collaboration, allowing multiple professions to create, share and disseminate knowledge for improved healthcare.⁸ By providing a common platform, siloed approaches to health issues may be overcome through 'intentional collaboration across the domains of research, clinical practice, community and policy'.¹⁹

While there are models, theories and frameworks for translating health management



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research (HMR), such as the health belief model,^{10 11} social cognitive theory^{12 13} and the Consolidated Framework for Implementation Research,^{14 15} advice or directions for using them in practice is lacking. Additionally, there is a dearth of information on how they can be applied to organisation and system-level translation.¹⁶ Guidelines that specify how interprofessional teams can conduct system-level translation are needed to meet this gap. Addressing this need is one contribution towards providing health professional teams with resources and strategies to investigate, analyse and implement HSI. We do so by explaining the HSI continuum, the constituent parts, and then detailing a six-step process to operationalise projects.

The HSI continuum

To develop and refine the HSI continuum the research team adapted the Delphi group discussion process defined by Nasa *et al*; the purpose being to ‘increase the qualitative strength of recommendations or consensus’. (p118)¹⁷ The panel (team) size and discussion process was tailored to suit the complexity of the problem, the homogeneity of the panel, and project resources.¹⁷ The team was composed of six members with clinical/ managerial, teaching and research experience and expertise in the health improvement and management fields. The team collectively has 45 and 89 years of clinical/managerial and educational experience, respectively; additionally, they have undertaken 450 HSI research projects. Following the advice of Nasa *et al*, consensus was achieved through an iterative process involving eight face-to-face discussion rounds across a 12-month period, allowing for debate, reconsideration and consultation with other colleagues, and then controlled feedback/discussion leading to agreement.¹⁷

HSI is focused on systematic changes to organisational processes and practices to improve the efficient delivery of safety and quality outcomes. HSI is an approach that encompasses similar, yet different, inter-related activities across a continuum. The continuum spans three overlapping categories of activities—QI, (HMR and translational HMR (THMR) (table 1). The distinct differences across the activities are the application and evaluation of ‘applied practices’ in QI projects, to ‘evidence-based practices’ of HMR and then the ‘translational’ emphasis of THMR studies.¹⁸ Analysis and explanation of the similarities and differences between QI, HMR and THMR can be used to determine the appropriate focus for a new project. Although health professionals services might be limited in their choice between QI, HMR and THMR, understanding the differences and similarities between the three activities will help them take appropriate approach for HSI. The three activities should be also lived as a continuum, with the understanding that there is a shared foundation of implementing and evaluating changes for system improvement.

Healthcare QI

Healthcare QI is defined as an activity that is implemented in a service that evaluates the effectiveness,

impact or success of an intervention, aiming to change how care is routinely delivered or structured.¹⁹ Typically, a QI project: aims to assess the ‘lessons learnt from changes in practices’; does not necessitate ethical approval; reviews limited, if any, academic literature to ground the work; has a short time frame; and, results in an immediate understanding of improvements to patient outcomes for a particular setting and population.²⁰

HMR and THMR

HMR and THMR projects: require ethical review—to assess the investigation benefits against any risk to patient safety or staff well-being; review academic literature and industry reports, to identify the proposed contribution to the evidence base; are complex studies using multiple methods, over extended time periods and can test hypothesis or a framework; and, result in outcomes generalisable within similar contexts or populations.²¹ HMR and THMR projects are often multidisciplinary research studies designed to examine strategic and operational planning, team functioning and decision-making processes, and organisational effectiveness. These complex, interprofessional projects investigate multiple parts of an organisation, across both corporate and clinical service areas. Investigations address system-level topics such as value-based healthcare,^{22 23} accreditation,²⁴ policy²⁵ and more recently, pandemic management.²⁶

THMR extends HMR though explicitly adding a ‘translation’ dimension to the research activity. Knowledge translation, as defined by leaders in Canada and used by WHO, is ‘a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the healthcare system’. (p165)²⁷ THMR explicitly promotes further interprofessional collaboration through organisational and academic-researcher representatives working together in all phases of a study.^{7 28} Undertaking THMR leads to integrated, well conceptualised and carefully implemented projects that use complementary skills and knowledge of researchers, managers and clinicians.²⁸ Successful knowledge translation is dependent on situation, context and the expertise²⁹ of those attempting to ‘translate’ the knowledge. Projects typically evaluate the uptake of the implemented intervention, including determining which interventions were successful, in which setting, for whom and why. Collaborative interprofessional research with knowledge users increases the likelihood that the research evidence generated will be applied,³⁰ assisting in improved decision making for care delivery and health system sustainability.³¹

Interprofessional collaboration for QI, HMR and THMR

Interprofessional projects can be conceptualised and implemented for a topic across each activity on the HSI continuum (table 2). Demonstrating this idea, four significant topics in the health management field are developed as either QI, HMR or THMR activities (rows); conversely,

Table 1 Health system improvement continuum

Activity characteristics	Health system improvement activities		
	Quality improvement (QI) project	Health management research	Translational health management research
Purpose	<ul style="list-style-type: none"> ▶ To assess or promptly improve a process, programme, or system; or improve performance as judged by an accepted set of standards. ▶ Apply known solutions to a problem or process, typically related to quality, safety, cost or productivity.³⁸ 	<ul style="list-style-type: none"> ▶ Test concepts, theories or frameworks²⁸; establish clinical practice standards where none are accepted. 	<ul style="list-style-type: none"> ▶ Investigate issues important to organisations through stakeholder involvement.²⁸ ▶ Develop and apply evidence for ongoing improved practice.⁷ ▶ Contribute to the evidence base through academic outputs.
Design	<ul style="list-style-type: none"> ▶ Uses established QI methodology, such as a Plan–Do–Study–Act model of change implementation.³⁸ ▶ Single method research, applied in a single setting or context.³⁸ 	<ul style="list-style-type: none"> ▶ Researcher driven using a systematic process of data collection, analysis and reporting to improve evidence base. ▶ Single, multi or mixed methods research in single or multiple settings.³⁸ 	<ul style="list-style-type: none"> ▶ Health organisation and university representatives' partner in research topic selection, design and implementation processes.^{21 28} ▶ Systematic process of data collection and analysis. Single, multi or mixed methods research in single or multiple settings. ▶ Dissemination of findings includes a plan for translation of findings into practice and academic outputs.⁷
Ethical review	<ul style="list-style-type: none"> ▶ Ethical review and informed consent are not typically required.³⁸ ▶ May be required if consumers participate, or if staff act outside their usual scope of practice. ▶ Review conducted by organisation where project is conducted, specific to the setting. 	<ul style="list-style-type: none"> ▶ Required as may place subjects at negligible, low or high-level risk. 	<ul style="list-style-type: none"> ▶ Required as may place subjects at negligible, low or high-level risk.
Benefits and outcomes	<ul style="list-style-type: none"> ▶ Designed to directly benefit the participating organisation, service or team. Normally, focused on improving patient care. ▶ Findings are not easily translatable to other settings.³⁸ ▶ Promptly improve an organisation's programme, process or system linked to patient care. 	<ul style="list-style-type: none"> ▶ Designed to benefit organisation, service or team participating. ▶ Informs the broader research community and health sector. ▶ Findings may be applicable to improving other contexts or organisations. ▶ Research questions or hypotheses are addressed. 	<ul style="list-style-type: none"> ▶ Strategically designed to enable the organisation, service or team to make changes in an informed and systematic way.^{7 28} ▶ Findings contribute to research literature and organisational/health management practice and inform policy.⁴⁰ ▶ Research questions are addressed. ▶ Translation/implementation is conducted and evaluated.^{7 28}
Dissemination plan	<ul style="list-style-type: none"> ▶ Reporting to organisation, via internal forums or processes. ▶ Potential publication in QI-focused journal. 	<ul style="list-style-type: none"> ▶ May report to organisation, via internal forums or processes. ▶ Dissemination through peer-reviewed research platforms. 	<ul style="list-style-type: none"> ▶ Reporting to organisation, via internal forums or processes. ▶ Dissemination through peer-reviewed research platforms, including publishing recommendations and implementation evaluation.

Table 2 Exemplar health management projects across the Health system improvement (HSI) continuum

Topic	HSI activities		
	Quality improvement activity	Health management research	Translational health management research
Communication practices	Improve communication practices between doctors, nurses and allied health in the Emergency Department (ED). ⁴¹	Evaluating the effectiveness for improved communication framework between doctors, nurses and allied health in the ED. ⁴²	Develop a framework for improved communication between doctors, nurses and allied health in the ED. ⁴³
Service utilisation	Improve the current usage of diabetes services in the organisation. ⁴⁴	Effectiveness of diabetes services utilisation following an implementation of a programme. ⁴⁵	Examine how current diabetes service usage may predict future diabetes service usage in the organisation. ⁴⁶
Leadership development	Evaluate the leadership framework to understand if the framework has been effective. ⁴⁷	Effectiveness leadership in primary healthcare systems. ⁴⁸	Identify barriers and enablers to the effective use of the leadership framework. ²
Patient centred care	Establish the current level of staff and patient satisfaction around patient centred care initiatives within the organisation. ⁴⁹	Evaluate patient centred care initiatives and the impact on patient and staff satisfaction. ⁵⁰	Interdisciplinary executive rounding is helpful for improving inpatient experience, with staff perceived to work together as a team. ⁵

depending on the project aim, the appropriate HSI activity can be applied to any topic to drive improvement (columns). Whichever combination of topic-activity for a interprofessional project, the result is improved patient care outcomes through increased efficiency in health services delivery.³² The exemplar topics are derived from key issues in the literature³³ and align with the panel/team and key industry partners research projects.

Interprofessional collaboration, including professionals from clinical and corporate domains as well different disciplines within each, is highly effectual in investigating the breadth and complexity issues, as well as planning, developing and implementing solutions.⁴ Nevertheless, studies of clinical and corporate roles in implementing organisation or system-wide initiatives are less frequently conducted, compared with those examining clinical³⁴ or corporate roles² alone. For example, issues such as infection control are relevant to all staff in healthcare organisations, with clear responsibilities for administrators as well as clinical professionals.³⁵ While interprofessional HMR and THMR have been less evident in the past, this may change with a growing focus on clinical and corporate collaboration for pandemic management.^{26 36 37}

Aligning outcomes to HSI activities

To determine which HSI activity to undertake, it is first necessary to decide the outcome sought, recognising that each activity presents opportunities for interprofessional collaboration. Attention is directed to finding the gap between current practice and what is required—the new state. If the goal is to improve a service or organisational issue at a local level, then *QI* is a suitable, practical option. If the focus is understanding a local management issue through a theoretical lens, the additional benefits of HMR advocate its use. However, if the outcome necessary is investigating a local organisational priority that has implications across professions, services and organisations, the focus and approach of THMR is more appropriate.

The HSI decision making (HSI-DM) guide and checklist, comprising six steps, can be used as a tool to select and plan a project (table 3). These six interconnected steps include defining the activity, project outcome, aim, use of evidence, appropriate methodology and implementation plan. Each step focuses on an objective, actions and resources. The ‘progress’ column enables the project team to use the guide as a checklist to review, monitor and evaluate actions and implementation outcomes.

Step 1: define the HSI activity

To ensure alignment with health organisational strategic directions, academic researchers, clinicians, managers and executives collaboratively define their local improvement issues and desired outcomes, along with how those can be extrapolated for lessons to the broader health system, if necessary. A decision about which type of HSI activity—*QI*, HMR and THMR—to undertake is required. The HSI continuum (table 1) can be used to assist in determining

which of the activities is most appropriate for the intended outcomes. Additionally, finding examples related to the field of knowledge and contextual components (table 2) can help guide the decision of HSI activity.

Step 2: decide the outcome of the proposed activity

HSI activities can be designed to allow multiple outcomes for the benefit of an organisation, as well provide lessons for external stakeholders. A needs assessment should be undertaken to align the identified problem with team, service and organisational priorities. HSI success is dependent on continuous, cyclical, collaboration between diverse interprofessional stakeholders such as researchers and practitioners.²⁹ Reviewing internal documents as well as outward priorities found in external resources, including the academic literature, industry reports and government policy documents, can ground a HSI activity for the benefit of the local audience and beyond.

Step 3: define a clear aim

For an effective HSI project to occur, a specific project aim clearly aligned with healthcare organisation’s strategic priorities is required. When aligning activity, aim and outcome sought, review together with the organisation’s strategic vision, priorities and values, and the needs of the community that use the service. Reference to organisational plans assists with specifying and operationalising the intended HSI activity aims. Improvement efforts are embedded at the local organisational level, considering practices of the relevant individuals, teams, services, departments and the organisation overall. The HSI activity is geared towards making clear improvement to the way healthcare services are safely delivered and improve outcomes.

Step 4. ground the activity in evidence

A rigorous review of industry and academic evidence sets a solid foundation for the HSI agenda. The process of grounding an improvement activity within an evidence framework provides the platform to integrate information from multiple stakeholders. Industry reports and government policy documents provide evidence to explain the significance of the HSI activity for the organisation and wider health system. A review of peer-reviewed literature, conducted in a systematic manner, manifests the knowledge base of the identified problem. This combination of evidence sources uncovers and validates the gaps between the knowledge and practice and determines a theoretically sound and pragmatic method to implement the findings. Throughout this process, the objective is to conceptualise an evidence-based implementation plan that is fitting for the HSI issue under investigation.³⁸

Step 5; determine methodology

HSI activity success is contingent on the systematic planning of how the improvement will occur. Components of the plan include obtaining resources required, identifying stakeholders, study data collection and analysis methods, and setting a realistic timeline for actions. Dedicated and suitable in-kind, financial and staffing

Table 3 HSI decision making (HSI-DM) guide and checklist

Step	Objective	Actions	Resources	Progress
1. Define the HSI activity: QI, HMR, or THMR?	Local, national or international issue identified as an organisational priority.	Refer to table 1 Health system improvement continuum and table 2 Exemplar health management projects across the HSI continuum.	NA	
2. Decide the outcome of the proposed activity	Contribution to local industry and or academic knowledge.	Review organisational material to identify priority issue.	Board minutes, strategic plans, policies and procedures, media releases, social media.	
		Assess government resources to align with identified priority issue.	Annual reports, issues papers, proposal documents, websites.	
		Establish a network with key stakeholders to create the research team.	Discussions with credible, knowledgeable persons within and associated with the organisation.	
3. Define a clear aim	Activity aims or questions clearly defined.	Ensure link to organisation strategic vision, values and priorities.	Strategic, corporate and operational plans.	
4. Ground the study in evidence	Combination of academic, organisational and industry evidence	Source peer reviewed evidence from multidisciplinary health and business databases to establish the academic base.	Databases including Scopus, Google Scholar, ProQuest, PubMed, Business Elite, Cochrane, CINAHL.	
		Explore grey literature to ascertain emerging practice.	Think tanks, international bodies for example, WHO, international sources for grey literature including WorldCat, Bielefeld Academic Search Engine (BASE) and Open Grey.	
5. Determine methodology	Plan how the improvement activity will occur, identify relevant stakeholders, resources required and anticipated timeline.	Design an achievable project with identifiable and accessible evidence.	Organisational data collection points, publicly available comparative data sources, validated data collection tools, QI or ethics processes.	
		Engage appropriate stakeholders and steps to implement the activity and solutions.	Relevant staff, patients, consumer groups and external agencies in the planning, executing and reporting of the activity.	
		Dedicate sufficient resources.	In kind and external resources to achieve the desired outcomes, within a mapped time frame.	
6. Scope dissemination plan	Implementation strategies for improvement.	Disseminate the implications of findings across the various levels and stakeholders in the health system.	Determine the level of engagement with various stakeholders and ascertain appropriate communications methods.	

HMR, health management research; HSI, health system improvement; QI, quality improvement; THMR, translational health management research.

resources are required to ensure improvement success. Additionally, there is a need to convene a diverse inter-professional, multiskilled team from across clinical and corporate settings. A well-designed HSI activity uses accessible, current evidence originating from pre-existing or new organisational data points. There is also consideration of the use of comparable data that is available nationally and internationally via credible sources such as WHO, industry research bodies (eg, the King's Fund and Health Foundation; the Institute for Healthcare Improvement; the Australian Institute of Health and Welfare; and the Canadian Institutes of Health Research). Analysis tasks must match data collection strategies, the study team skills set and deliver on the study aim. Finally, a well-formulated study plan is required including milestones for meetings, data collection and analysis, and reporting activities.

Step 6: scope dissemination plan

For research findings to be used by practitioners for service and QI, they must be communicated in a timely manner which is congruent with the contextual needs of practitioners. This requires consideration of the discourse used by clinical and corporate health professionals, the time constrains under which those professionals operate and their learning preferences. An awareness of these factors assists with framing the research findings in a contextually relevant manner, making them applicable for staff to implement. Ongoing collaboration between academics, health executives and managers can inform strategies to effectively diffuse research findings for service and QI. Specifically, dissemination tools, including the 'REACH and Diffusion of health iMprovement Evidence' checklist and 'Strategic Translation and Engagement Planning'

tool,³⁹ assists with selecting suitable communication methods for the targeted professional group(s) that the research would benefit.

CONCLUSION

The HSI continuum, the constituent parts and six-step process to operationalise projects have been discussed and detailed. The HSI continuum of activities, including QI, HMR and THMR, is to be used to drive the design, implementation and evaluation of projects according to the specific contextual characteristics. This approach recognises that the same topic can be examined using different HSI activities and specifying the long-term purpose is the key task to commencing and success. The HSI-DM guide and checklist, provides clear steps, actions and resources to implement projects. This item can be used by both novice and experienced individuals and interprofessional teams. Each HSI activity presents opportunity for interprofessional teamwork, by providing a platform where siloed approaches to healthcare can be overcome through intentional collaboration. Planned and executed appropriately, HSI projects enable clinical and managerial professionals to make evidence-informed decisions that benefit their services, organisation and sector.

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REFERENCES

- Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Ann Fam Med* 2014;12:573–6.
- Janati A, Hasanpoor E, Hajebrahimi S, et al. Evidence-based management – healthcare manager viewpoints. *Int J Health Care Qual Assur* 2018;31:436–48.
- Daouk-Oyry L, Sahakian T, Vijver F. Evidence-based management competency model for managers in hospital settings. *Brit J Manage* 2021;32:1384–403.
- Gould DJ, Moralejo D, Drey N, et al. Interventions to improve hand hygiene compliance in patient care. *Cochrane Database Syst Rev* 2017;9:CD005186.
- Kline M, McNett M. The impact of daily executive rounding on patient satisfaction scores. *Nurse Leader* 2019;17:440–4.
- Zamoni K, Baker U, Tyagi M, et al. How and under what circumstances do quality improvement collaboratives lead to better outcomes? A systematic review. *Implement Sci* 2020;15:27.
- Rapport F, Clay-Williams R, Churrua K, et al. The struggle of translating science into action: foundational concepts of implementation science. *J Eval Clin Pract* 2018;24:117–26.
- Rak KJ, Kahn JM, Linstrum K, et al. Enhancing implementation of complex critical care interventions through interprofessional education. *ATS Sch* 2021;2:370–85.
- Troffholz A, Shanafelt A, Adamek M, et al. Integration as a tool for interprofessional work: a synthesis of the literature regarding how to use integrative strategies to address complex public health problems. *J Interprof Educ Pract* 2020;21:100383.
- Rabin C, Dutra S. Predicting engagement in behaviors to reduce the spread of COVID-19: the roles of the health belief model and political party affiliation. *Psychol Health Med* 2022;27:379–88.
- Rosenstock IM. Historical origins of the health belief model. *Health Education Monographs* 1974;2:328–35.
- Bandura A. *Social foundations of thought and action*. New York: Prentice Hall, 1986.
- Zhou J, Fan T. Understanding the factors influencing patient e-health literacy in online health communities (ohcs): a social cognitive theory perspective. *Int J Environ Res Public Health* 2019;16:2455.
- Allen JD, Torres MI, Tom LS, et al. Enhancing organizational capacity to provide cancer control programs among latino churches: design and baseline findings of the CRUZA study. *BMC Health Serv Res* 2015;15:147.
- Damschroder LJ, Aron DC, Keith RE, et al. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implement Sci* 2009;4:50.
- Striffler L, Cardoso R, McGowan J, et al. Scoping review identifies significant number of knowledge translation theories, models, and frameworks with limited use. *J Clin Epidemiol* 2018;100:92–102.
- Nasa P, Jain R, Juneja D. Delphi methodology in healthcare research: how to decide its appropriateness. *World J Methodol* 2021;11:116–29.
- Black AT, Balneaves LG, Garossino C, et al. Promoting evidence-based practice through a research training program for point-of-care clinicians. *J Nurs Adm* 2015;45:14–20.
- McCalman J, Bailie R, Bainbridge R, et al. Continuous quality improvement and comprehensive primary health care: a systems framework to improve service quality and health outcomes. *Front Public Health* 2018;6:76.
- Balbale SN, Locatelli SM, LaVela SL. Through their eyes: lessons learned using participatory methods in health care quality improvement projects. *Qual Health Res* 2016;26:1382–92.
- Graham ID, Kothari A, McCutcheon C, et al. Moving knowledge into action for more effective practice, programmes and policy: protocol for a research programme on integrated knowledge translation. *Implement Sci* 2018;13:22.
- van der Nat PB. The new strategic agenda for value transformation. *Health Serv Manage Res* 2022;35:189–93.
- Yap S-J, Forero R, Greenfield D, et al. Implementing value-based health care at scale: the NSW experience. *Med J Aust* 2020;213:285.
- Greenfield D, Lawrence SA, Kellner A, et al. Health service accreditation stimulating change in clinical care and human resource management processes: a study of 311 Australian hospitals. *Health Policy* 2019;123:661–5.
- Ricci A, Barzan E, Longo F. How to identify the drivers of patient inter-regional mobility in beveridgean systems? Critical review and assessment matrix for policy design & managerial interventions. *Health Serv Manage Res* 2021;34:258–68.
- Abdi Z, Lega F, Ebeid N, et al. Role of hospital leadership in combating the COVID-19 pandemic. *Health Serv Manage Res* 2022;35:2–6.
- Straus SE, Tetroe J, Graham I. Defining knowledge translation. *CMAJ* 2009;181:165–8.
- Wensing M, Grol R. Knowledge translation in health: how implementation science could contribute more. *BMC Med* 2019;17:88.
- Azimi A, Fattahi R, Asadi-Lari M. Knowledge translation status and barriers. *J Med Libr Assoc* 2015;103:96–9.
- Nguyen T, Graham ID, Mrklas KJ, et al. How does integrated knowledge translation (IKT) compare to other collaborative research approaches to generating and translating knowledge? Learning from experts in the field. *Health Res Policy Syst* 2020;18:35.
- Jull J, Giles A, Graham ID. Community-based participatory research and integrated knowledge translation: advancing the co-creation of knowledge. *Implement Sci* 2017;12:150.
- Shirey MR, Hauck SL, Embree JL, et al. Showcasing differences between quality improvement, evidence-based practice, and research. *J Contin Educ Nurs* 2011;42:57–68.

- 33 Kakemam E, Liang Z, Janati A, *et al.* Leadership and management competencies for hospital managers: a systematic review and best-fit framework synthesis. *J Healthc Leadersh* 2020;12:59–68.
- 34 Wand T, Collett G, Cutten A, *et al.* Evaluating an emergency department-based mental health liaison nurse service: a multi-site translational research project. *Emerg Med Australas* 2021;33:74–81.
- 35 World Health Organization. WHO guidelines on hand hygiene in health care. Geneva World Health Organization; 2009.
- 36 Fadaak R, Davies JM, Blaak MJ, *et al.* Rapid conversion of an in-patient hospital unit to accommodate COVID-19: an interdisciplinary human factors, ethnography, and infection prevention and control approach. *PLOS One* 2021;16:e0245212.
- 37 Król Z, Szymański P, Bochnia A, *et al.* Transformation of a large multi-speciality hospital into a dedicated COVID-19 centre during the coronavirus pandemic. *Ann Agric Environ Med* 2020;27:201–6.
- 38 Gregory KE. Differentiating between research and quality improvement. *J Perinat Neonatal Nurs* 2015;29:100–2.
- 39 Eljiz K, Greenfield D, Hogden A, *et al.* Improving knowledge translation for increased engagement and impact in healthcare. *BMJ Open Qual* 2020;9:e000983.
- 40 Sarkies MN, Bowles K-A, Skinner EH, *et al.* The effectiveness of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare: a systematic review. *Implement Sci* 2017;12:132.
- 41 Haley WE, Beckrich AL, Sayre J, *et al.* Improving care coordination between nephrology and primary care: a quality improvement initiative using the renal physicians association toolkit. *Am J Kidney Dis* 2015;65:67–79.
- 42 Sheehan J, Laver K, Bhojti A, *et al.* Methods and effectiveness of communication between hospital allied health and primary care practitioners: a systematic narrative review. *J Multidiscip Healthc* 2021;14:493–511.
- 43 Obenrader C, Broome ME, Yap TL, *et al.* Changing team member perceptions by implementing teamstepps in an emergency department. *J Emerg Nurs* 2019;45:31–7.
- 44 Brumm S, Theisen K, Falciglia M. Diabetes transition care from an inpatient to outpatient setting in a veteran population: quality improvement pilot study. *Diabetes Educ* 2016;42:346–53.
- 45 Cassimatis M. *Development and evaluation of the ontrack diabetes program: an automated, web-based type 2 diabetes self-management and dysphoria intervention [doctor of philosophy]*. Queensland University of Technology, 2014.
- 46 Vita P, Cardona-Morrell M, Bauman A, *et al.* Type 2 diabetes prevention in the community: 12-month outcomes from the sydney diabetes prevention program. *Diabetes Res Clin Pract* 2016;112:13–9.
- 47 Donaghy G, McKeever K, Flanagan C, *et al.* Helping doctors in training to step-up: a leadership and quality improvement programme in the Belfast health and social care trust. *Ulster Med J* 2018;87:112–6.
- 48 Abrams KJ. *Leadership and health information management in canada [doctor of philosophy]*. University of Regina, 2016.
- 49 Fix GM, VanDeusen Lukas C, Bolton RE, *et al.* Patient-centred care is a way of doing things: how healthcare employees conceptualize patient-centred care. *Health Expect* 2018;21:300–7.
- 50 Smith C. *Patients' perceptions of patient-centered care and the hospital experience pre-and post-discharge [electronic theses and dissertations]*. East Tennessee State University, 2018.