Asia Pacific Journal of Health Management

Volume 19 Issue 3 2024

The Journal of ACHSM & SHAPE

Congress Papers

ACHSM Asia-Pacific Health Leadership 2024

ACHSM ASIA-PACIFIC HEALTH LEADERSHIP CONGRESS 2024

BRISBANE 23–25 OCTOBER 2024

achsm.org.au/congress

ACHSM

ASIA-PACIFIC HEALTH LEADERSHIP CONGRESS

BRISBANE 23–25 OCTOBER 2024

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

SUPPORTING NURSES' COMMITMENT TOWARDS VOLUNTARY ERROR REPORTING: A DISCURSIVE PAPER OF CURRENT POLICIES AND RECOMMENDATIONS

Ming Wei Jeffrey Woo[*1,2], *Mark J Avery*[3]

1. Curtin School of Nursing, Curtin University, Perth, Western Australia, Australia
2. Curtin University (Singapore Campus), Singapore, Singapore
3. School of Applied Psychology, Griffith University, Brisbane, Australia

Correspondence: jeffrey.woo@curtin.edu.au

ABSTRACT

Medical error is a serious public health concern and undermines healthcare organizations' commitment to drive safe, high-quality patient care. Voluntary error reporting (VER) is one key solution to address this concern because it is through conducting root cause analysis that constructive retrospective learning can take place to improve future practice. Nurses form the largest health workforce and are key stakeholders contributing to the institutional error management culture. While the significance of VER and nurses' role in driving this initiative cannot be further emphasized, studies revealed that nurses failed to engage in VER due to less positive experiences towards VER. Nurses' negative attitude towards VER can be attributed to unsupportive organizational responses to their act of VER, underpinned by the endorsement of blame, shame, and punitive culture consistent with the human approach to error management. This induces fear of speaking up for error among nurses, creating a culture of silence. This paper examines and discusses current policies underpinning the error management system and identifies the contemporary factors that challenge these policies, followed by proposing recommendations to support these policies to drive nurses' commitment to VER and improve the overall error management system.

KEYWORDS

Voluntary error reporting, error management culture, patient safety, safety culture, nurse

INTRODUCTION

Medical error is a serious public health concern and poses a significant challenge to healthcare organization's efforts to promote safe, high-quality patient care. The increased concern about medical errors was first triggered in 1999 by the Institute of Medicine (IOM) report: To Err is Human: Building a Safer Health System which revealed an exponential rate of inpatient morbidity and mortality caused by medical errors of which most of them are preventable [1]. According to the World Health Organization, medical error is defined as an adverse event resulting from medical care that deviates from standard practice and, as such, leads to patients experiencing harm or injury [2]. In the case of nursing, this deviation occurs in the context of either commission or omission of action(s) of a negligible nurse that falls below reasonable standards. Medical error is at odds with the principle of beneficence (first, do good to the patient) and even more so with non-

maleficence, which is, above all, do no harm to the patient ('primum non nocere') [3, 4]. This is in view that the effect of medical error can be deleterious, with the severity of the cause ranging from permanent incapacitation to death [5]. From the organization's perspective, medical errors continue to frustrate their efforts to drive patient safety and commitment towards continuous quality improvement. Managing medical errors entails several financial implications. It was identified that due to medical error, healthcare organizations had to allocate more than 15% of their budget to deal with extra hospitalization costs associated with longer lengths of patient stay, liabilities for torts litigation and managing other consequences [6]. Notwithstanding this fact, however, studies have reported that most cases of medical errors are preventable [7], of which one viable solution to this issue lies with retrospective learning of the mistakes through a thorough analysis of the process, which can be achieved only through voluntary error reporting [8].

To set the context of this study, voluntary error reporting (VER) delineates an individual's willingness and intention to disclose and report a medical error openly [1]. As the largest health workforce and have a significant role in direct patient care, nurses are key stakeholders in supporting VER and the overall error management system. Engaging in VER is important because it affirms the commitment and integrity of a nurse to be accountable for their action and offers them valuable opportunities to learn from their mistake [4, 9]. Healthcare organizations must continue to prioritize efforts to drive improvement of the error management system where all nurses can pledge allegiance to patient safety by allowing them to comfortably and openly report errors in a way consistent with a supportive and learning culture. The ability to act upon VER to improve patient safety is inherent to the principle of sound risk management and a responsible clinical governance system. Nonetheless, the notion of VER and nursing staff's actual intention to proactively speak up for errors is also dependable upon their experiences and how they perceive this action in the context of the safety culture that exists within the organization [10].

This discussion paper seeks to examine and discuss the current policies underpinning the error management system and identify the contemporary factors that challenge these policies, followed by proposing recommendations to support these policies in place to drive nurses' commitment to VER and improvement to the overall error management system.

CURRENT POLICIES

The importance for nurses to commit to error reporting cannot be further emphasized because it is through comprehensive investigation and root cause analysis of preventable errors and erroneous processes that only can learning be effectively taken place to drive improvement to prospective clinical practices [4]. In the quest to pursue and improve healthcare quality and safety, an organization must establish and maintain a safety culture that fosters and advocates reporting and disclosure among stakeholders [11]. Developing a positive safety culture in the context of responsible error-reporting behaviour entails a significant cultural change. Such cultural change delineates the need for several policies to facilitate an effective and robust error management system. In line with the recommendations of the literature, these proposed policies that organizations need to enforce will be discussed individually in each section.

1. PROMOTING A MANDATORY REPORTING SYSTEM

One year after 'To err is Human, Building a Safer Health System' report was released by IOM in 2000, the Chief Medical Officer of the United Kingdom (UK) Sir Liam Donaldson had followed up with his report 'An Organisation with a Memory' [12]. In his report, while Donaldson drives the creation of a new national health system to support the reporting and analysing of adverse events for healthcare professionals, he also proposed the idea of compulsory reporting of all medical errors so that key lessons can be derived and learned [9, 12]. Since then, the mandatory error reporting policy underpins the UK's national standard. Mandatory error reporting intends to make the involved healthcare organization accountable for the error, given errors usually occur in the existence of the system weakness rather than the flaw of an individual (refer to system approach to error management in next section) and that nurses are employees of the organization which underpins the contract of service clause [9, 13]. Encouraging nurses to embrace the policy of mandatory error reporting is important for two reasons. First, it serves as a teaching moment where it helps nurses to learn by identifying the hazards and the areas that need improvement, assess the effectiveness of current safety measures undertaken by the organization and, through such learning, facilitate the development of strategies to improve the institutional safety protocol [14, 15]. Second, embracing mandatory reporting affirms the integrity and honesty of a nurse, which conforms to the ethical and moral standards required of them as a regulated health

professional [16]. Nonetheless, to drive successful mandatory error reporting requires the organization to manage errors more objectively, which underpins the need for them to embrace the system approach to error management and a just and open culture, which were discussed in detail.

2. SYSTEM APPROACH TO ERROR MANAGEMENT

Given that humans are fallible, medical errors are highly likely to exist within the complexity of the healthcare system. The human approach to error management focuses on attributing errors entirely to individual responsibility (human fallibilities), which usually represents one component of the overall error trail [4, 17]. However, the Swiss Cheese Model, developed by James Reason, is a well-illustrated model in the context of patient safety that explains that the system approach to error management acknowledges that most errors are not isolated incidents concerning specific individuals but rather take place within a wider complex health system where several situations or factors arises simultaneously to allow an error to happen [18]. The system approach to error management requires healthcare organizations to embrace a safe and reliable culture that views error reporting as an opportunity for learning from mistakes to drive future improvement [19]. Emphasizing on the system approach to error management does not imply that nurses should be removed from their professional accountabilities, nor should it absolve them of negligence claims for causing the error. Rather, it permits scanning and root cause analysis of the entire erroneous process and gains insights into the bigger picture of the weaknesses and flaws entrenched within the complexity of the health systems responsible for the errors to elicit effective learning among nurses to improve their future practices [4].

3. PROMOTING A JUST AND OPEN CULTURE

Promoting a just and open culture in the context of patient safety culture entails a supportive culture endorsed by organizations that advocate open communication and transparency of error reporting without subjecting nurses to any fear of retaliatory actions [20]. A just and open culture shifts the organization's focus from assigning blame and punishment on an individual for unintentionally causing the error to cultivate a learning culture where it is about openly sharing the root cause of the problem following an investigation to facilitate learning and understanding on where things (processes) had gone wrong to prevent future occurrences [21, 22]. A just and open culture, however, does not exist in the absence of a system approach to error management because blame, shame and punitive culture are highly likely to undermine the efforts and commitments of nurses towards VER with such a toxic environment impedes constructive learning and reflection [23]. Promoting a just and open culture that prioritizes continuous learning for quality improvement and fostering a psychologically safe environment for nurses to speak up is critical to fostering nurses' continuous commitment to VER and patient safety.

ANALYSIS OF PROBLEM

Woo and Avery conducted an integrative review and revealed how nurses' experiences towards VER were being represented by three main themes: "Nurses' beliefs, behaviour, and sentiments towards VER", "Nurses' perceived enabling factors of VER", and "Nurses' perceived inhibiting factors of VER" [4]. Using the Theory of Planned Behaviour (TPB) by Ajzen and Fishbein [24], Woo and Avery explained how nurses' eventual decisions to engage in VER were determined by whether they had intended to commit to this behaviour [4]. Three areas of consideration further influence this intention: (1) how nurses perceived their attitude towards the behaviour of VER and how they would perceive the consequences behind their action of error reporting (behavioural beliefs); (2) how nurses would perceive the responses and social pressure they received from their supervisor and colleagues towards their behaviour of VER (normative beliefs) and; (3) how nurses perceived their ability to perform the behaviour of VER (perceived behavioural control) [24]. Despite the existence of the three policies, as discussed in the earlier section, that underpin responsible patient safety principles, this review observes how nurses, despite holding a positive perception towards the need to engage in VER, their idealistic view did not translate into actual action of error reporting, hence had concluded that nurses' experiences towards VER are less than ideal [4]. Such experiences stemmed from various factors underpinned by three areas of consideration of TPB in addressing the challenges that undermine the effectiveness of the three policies, which this paper seeks to explore further.

1. NURSES' ATTITUDE AND PERCEIVED LIMITATIONS TOWARDS ERROR REPORTING

Woo and Avery observed how nurses' commitment towards VER is significantly challenged by their attitude and perceived consequences of their VER actions (behavioural beliefs) [4]. First, studies of this review revealed how the complexity of the error reporting systems (hardcopy and

electronic version) had made nurses perceive the process of lodging formal error reporting in writing to be tedious [25, 26, 27]. This is likely to influence nurses' attitudes negatively and undermine their commitment towards VER despite the mandatory error reporting policy. Second, nurses' attitude towards VER is also determined by their perceived seriousness (consequences) of the error, where they are likely to report only serious errors [28, 29]. Third, nurses' attitudes towards VER were undermined by their perceived importance of error reporting in relation to other duties [27, 30]. Nurses often have substantial workloads, so they must prioritize time and task management to maximize efficiency [31]. Such expectation was further compounded by the imbalance between the supply and demand placed on nurses in the context of the workforce crunch. Therefore, the need to engage in error reporting is seen as subservient to other assigned clinical duties, influencing nurses' attitudes towards VER.

A low commitment of nurses towards VER is likely to be augmented by the increased sophisticated error management process and system, as well as a working environment that shows an unappreciation of their effort to commit to VER. While both tediousness and unsupportive culture challenge nurses' efforts towards patient safety, which aligns with TPB's control beliefs [24], this calls for nurse leaders to look into streamlining the process and support nurses' efforts and commitment towards VER. Additionally, it is plausible that displaying poor attitude and knowledge entails that nurses generally have a poor understanding of the dynamics and rationales behind error reporting and see this initiative to drive corrective action rather than to foster preventive measures to improve patient safety. This is evidenced by nurses reporting the lack of provision of constructive feedback in the aftermath of error reporting, which also negatively influences their attitude towards VER [30, 32]. It is imperative to educate nurses on the significance of VER and their role in committing to this initiative to improve their perception of VER and overall error management culture.

2. PREVALENT OF HUMAN APPROACH TO ERROR MANAGEMENT

The included studies of the review conducted by Woo & Avery [4] revealed that fear of facing censure and repercussions are the main reasons for nurses' reluctance to commit to VER as confirmed by various studies [32, 33, 34, 35]. Despite many healthcare organizations claiming that they had endorsed a system approach to the management of errors, such evidence is a clear sign affirming the continual existence of blame and punitive culture that points to an entrenched human approach to error management that focuses on attributing the causes of the error to individual weakness such as carelessness and incapability [17]. Additionally, a review of the contemporary literature further suggested that hierarchical reporting is still an ongoing practice in contemporary healthcare systems, as evidenced by nurses having to approach their immediate supervisor for approval and to informally vet and endorse their report prior to formal lodging of error [35, 36], and further subject them to receiving abrasive and hostile responses from their supervisors that delineates disapproval of their action of causing the error [32, 33]. In the context of TPB, this clearly illustrates negative normative beliefs that would challenge nurses' commitment towards VER [24]. Such resulting consequences could contribute to nurses having to perceive errors as indicators of their failure and deserving of punishment, and therefore, are less likely to commit to VER to avoid facing any penalties. Such explanations echoed the behavioural beliefs of TPB [24]. This provides an unreliable view of the error management process in the health care system.

Indeed, the human approach to error management is motivated by Lucian Leape's perfectibility model. Leape offered insights into this phenomenon by explaining how health professionals (nurses) during their training were being inculcated with the belief that "good nurses do not make mistakes", which this notion calls for the need to deliver flawless care with the occurrence of error becomes unacceptable [37, 38]. However, harbouring such expectations can be unrealistic. Focusing on fault finding and blame when an error occurs does not assist in investigating its root causes, leading to more likely recurrences [39, 40]. Nurse leaders need to realize that managing medical errors in the context of human failure rather than system failure is more likely to be counter-productive and have diminished value in improving the healthcare systems' safety [41]. This calls for nurse leaders to play a proactive role in improving the organizational safety culture that drives zero tolerance to incivility and destructive workplace behaviour in a way consistent with the system approach to error management.

3. DOMINANCE OF THE CULTURE OF SILENCE

Despite acknowledging the presence of the three policies in places, as discussed earlier, that underpin responsible patient safety management, Woo and Avery offered insights into how nurses had expressed their reluctancy to

speak up and report errors in the context of their rational behaviour presented in three trajectories: (1) the need to conceal errors, (2) practising of selective reporting, and, (3) not wanting to whistle blow [4]. These three trajectories represent different facets of an organizational culture of silence, which exists in blame, shame and punitive culture secondary to the human approach to error management [42]. While a just and open culture, as discussed earlier, prioritizes open communication and active learning from mistakes, which require nurses to be vocal and openly speak up for and admit any errors caused by self or others, this is opposed to the culture of silence, which could produce two deleterious effects. First, at a personal level, where nurses had believed that they are being deprived of the opportunity to speak up, this could potentially manifest in feelings of diminished motivation, dissonance, and undervaluation, hence undermining their intention to commit and contribute to improving patient safety and the safety culture [43]. Second, at the organizational level, a culture of silence may lead to deliberately concealing existing problematic safety issues, impeding possible opportunities to make changes and drive improvement in patient safety [4, 19]. Both consequences impede an organization's commitment to drive quality improvement.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Despite having proposed several recommended policies that underpin a responsible error management system, as outlined earlier, the analysis of management issues further presents various challenges that undermine its materialization. This suggests that developing a culture of safety is still a 'work in progress' for many healthcare organizations, hence entails several implications for nursing management. This paper seeks to propose some recommendations to support this 'work in progress' by addressing the issues and to support the policies in place, as discussed earlier, that are consistent with the consideration of TPB.

1. ADVOCATING FOR PATIENT SAFETY EDUCATION AND TRAINING

Driving the initiative of ongoing patient safety education and training to nurses underscore the first and crucial step to improving their commitment towards VER and the overall organizational error management process. This entails advocating for patient safety education and training at three nursing levels: nursing students, practising nurses and nurse leaders (middle and senior management). Studies have recommended that cultivating nurses' attitudes and behaviour towards error reporting should predominantly occur earlier, ideally at the stage where they pursue their pre-registration nursing education program to set the right standard of patient safety behaviour [44, 45]. Patient safety needs to be incorporated and adequately taught in both theoretical and clinical education of the pre-registration nursing education programs [45, 46]. Additionally, studies observed how frequent training, such as workshops and in-service talks, makes nurses more blatant towards disclosing and reporting errors [4, 47]. This allows nurses to better understand the institutional standpoint, which clears nurses' doubts about the error management culture to promote VER. As such, patient safety education and training could incorporate various pedagogical approaches such as problem-based learning and simulated role-play [45] to deliver content such as how to objectively report errors, highlighting the importance and benefit of error reporting to cultivate responsible patient safety behaviour and how they as nurses can contribute to shaping the safety culture. Doing so would equip them with the necessary knowledge and skills (control beliefs) to apply theories to practice and helps to shape their attitude in patient safety (behavioural beliefs) to drive their commitment to VER.

Lastly, educating nurse leaders is critical to shaping the error management culture, given their significant roles. First, this entails the need for nurse leaders to attend patient safety courses (executive level) for them to learn about the importance of their role in endorsing a just and non-punitive patient safety protocol and in managing their emotions and responses during the occurrence of errors that are aligned with these supportive policies and consistent with the system approach to error management. Second, this entails sending them for patient safety leadership training [48, 49]. Leadership training should focus on exposing nurse leaders to various supportive leadership styles and expected behaviours to guide their managerial actions to motivate and encourage their staff to commit to responsible error reporting behaviour.

2. DRIVING A MORE SUPPORTIVE ENVIRONMENT TO PROMOTE ERROR REPORTING

The earlier analysis revealed several challenges towards nurses' commitment to VER. Healthcare organizations must rally nurses' efforts to actively participate in error reporting by providing a supportive environment through various initiatives. First, given that fear of managerial consequences (blame, shame and punishment) is

identified as the main barrier that challenges nurses' intention (normative beliefs) [4, 32, 33, 34, 35], nurse leaders can leverage opportunities by holding regular roadshows and discussion forums and posting online bulletins to openly share successful stories of how they recognize, appreciate and reward nursing staffs' effort towards VER. They may share examples of how past VER initiatives had contributed to ideas and implementation of successful quality improvement projects that led to clinical improvement to show nurses how their effort of error reporting was being recognized and put into use to foster a learning culture [50]. Likewise, dialogue sessions can be organized between nurse leaders (senior and middle management) and frontline nurses to explore possible barriers nurses encountered that are likely to challenge their intention towards VER and their proposed solutions to address these barriers [51]. These interventions will give nurses a positive impression that a learning and non-punitive culture was exhibited, further strengthening their commitment. Second, to address issues of cumbersome reporting, this entails nurse leaders to work closely with other stakeholders, such as hospital administrators, hospital information technology (IT) staffs and frontline nurses, to streamline error reporting process by:

1. assessing the current reporting system to simplify complex reporting process and omit unnecessary documentation steps to reduce administrative burden for reporting [27],
2. driving simplified user interface in designing electronic incident reporting software to promote simplicity and accessibility of the system so that error reporting can be seen as less time-consuming and can be done efficiently.
3. organizing open dialogue sessions or anonymous staff suggestion schemes to solicit stakeholder's ideas and suggestions to revise the existing error management system to ensure they are more user-friendly and tailored to their needs [51].

Third, nurse leaders should drive a bottom-up approach to error management culture by:

1. organizing regular dialogue sessions and meetings at both departmental and institutional levels to allow nurses to share their experiences.
2. actively listening to nursing staff's constraints, barriers and motivators towards VER.
3. Avoid being defensive to feedback and being open to constructive suggestions.

Lastly, nurse leaders could consider offering incentives that support the nursing staff's VER effort. This involves offering them protected time during their working hours to fully devote to administrative work such as incident reporting [4]. This helps to relieve their administrative burden and enhance their commitment to VER. However, if not possible, compensate them with remuneration (overtime pay) or time off in lieu (TOIL) and consider integrating nurses' proactive error reporting initiatives into their work performance through appraisal to reward them for their dedication towards patient safety and assisting in root cause analysis.

3. NURSE LEADER AS ROLE MODEL

Nurse leaders play a significant role in cultivating a positive organizational safety climate by creating conditions emphasizing patient safety [52]. As a role model, a nurse leader is vital to establish the organizational tones, social fabric and behavioural norms that set the expectation of a culture, which determines the shared beliefs and practices of the staff within their department or organization. In the context of the safety culture, it implies that when a medical error occurs, the attitude, response and practice of nurse leaders towards this incident can influence nurses' attitude, beliefs and their decision to commit towards VER (normative beliefs of TPB) [24, 32]. This entails nurse leaders being role models to undertake the necessary actions. First, promote a just and open culture by initiating a blame- and punitive-free response when being informed of the occurrence of the error. This will inhibit nurses' fear, enhance their trust in management, and drive a positive perception towards VER [53]. Second, foster a learning culture by providing prompt and constructive feedback (not destructive) to the affected nurse(s) about deriving salient learning points and lessons from this error. This enables nurses to reflect and retrospectively learn from erroneous practices to enhance future practices [4, 53].

Given that every mistake entails further room for improvement, nurse leaders can leverage on error occurrence as teaching moment to encourage nurses to participate in quality improvement projects, which empowers them to proactively contribute to improving the erroneous process. Doing so would generate effective learning and enhance their commitment to continuously improve patient safety [54]. Third, nurse leaders should openly communicate their expectations regarding the safety culture to all nurses. The expectation of mandatory reporting made formally through writing, zero tolerance for non-reporting behaviour, and the non-punitive

consequence of error reporting should be openly communicated to all nursing staff during staff orientation programs, nursing retreats, and patient safety workshops, as well as in writing through institutional nursing policies [4]. Lastly, it is also imperative for nurse leaders to advocate for policies and support mechanisms such as counselling and employee support groups to support their emotions and well-being in the aftermath of error reporting. This builds their trust and enhance their commitment to VER.

4. LEADERSHIP AS CATALYST TO DRIVE CLINICAL GOVERNANCE STEWARDSHIP

While the previous three recommendations to be undertaken by nurse leaders are important to drive nurses' commitment towards error reporting, as discussed, they are dependable upon their leadership skills to advocate a healthy working environment in the context of a just and open culture to support these initiatives. Studies revealed that leadership style is the blueprint influencing staff's learning from error and driving an optimal error management culture [48, 49, 55]. Studies found that nurse leaders who adopt a toxic leadership style that is consistent with the blame, shame and punitive culture in the context of human approach to error management drive fear, distrust and insecurity among nurses [56], which in turn manifest into the vicious cycle of poor nursing performance and greater propensity for error occurrence [49].

Conversely, a review of the health management literature over the past decade observed how a positive error management culture that contributes to nurses' positive attitude and receptivity towards VER was underpinned by the adoption of several leadership styles by nurse leaders such as transformational leadership, authentic leadership and more recently ethical leadership [48, 49, 57, 58, 59; 60). It is beyond the scope of this paper to explain individual leadership styles in detail. In summary, however, they do share one common similarity, that is, they are follower-centric and relational leadership styles [60] that focus on acknowledging the emotion, participation and contribution of nursing staff in error management and recognise the active role of the nurse leaders in modelling and influencing their followers' (nurses') attitude and decision to commit towards VER. This notion drives nurse leaders to adopt approaches such as open and non-destructive communication, encouragement, motivation and commitment consistent with a supportive organizational culture to drive nurses' commitment to VER and contribution towards patient safety [49].

To drive these approaches into practical use to support error reporting initiatives, this entails nurse leaders going beyond identifying errors, but rather adopt cutting-edge strategies towards error management. They should lead by example to offer visible managerial commitment by:

1. fostering open communication in discussing errors with their followers (nurses),
2. encouraging and empowering them to speak up openly and to truthfully admit their mistake when error occurs and
3. staying true to their conviction of blame-, shame- and punitive-free culture by not inflicting disciplinary actions against erring nurses.

Adopting these approaches through exhibiting these relational leadership styles by nurse leaders is critical to facilitate effective role modelling and materialize other initiatives, as discussed, is needed to drive a just and open safety culture that encourages more committed and responsible error reporting behaviour among nurses.

CONCLUSION

Error reporting is important as it enables the detection of errors and, through root cause analysis, enables learning of the flaw processes within the system vulnerabilities. Despite the presence of various policies in place that underpin the principle of responsible error management, it is futile if they remain relevant theoretically but are not able to materialize and put them into practice to promote patient safety. VER requires a significant commitment from the nursing staff, which is centred upon their attitude and beliefs (behavioural beliefs), perception towards social norms (normative beliefs), and ability to contribute (control beliefs) towards error reporting. It is imperative that driving strategies and interventions consistent with the recommendations proposed by this paper are required to foster a supportive environment in the context of a just and open culture. Doing so helps to drive the feasibility and practicality of these policies to achieve the desired effects of driving nursing staff's commitment towards VER, contributing to a more robust and effective error management system.

ACKNOWLEDGMENT

This paper is a revised version of the first author's (MWJW) thesis /dissertation, which he completed as part of the requirement leading to the completion of the degree of Master of Health Services Management at the School of

Medicine, Griffith University. Both authors thank the School of Medicine, Griffith University, for supporting this study.

DECLARATION OF CONFLICTING INTERESTS

Both authors would like to declare that there are no potential conflicts of interest related to this paper's research, authorship, and/or publication.

AUTHOR'S CONTRIBUTION

MWJW and MJA contribute to the study's conceptualization and manuscript development; MWJW synthesizes material and primarily writes the paper; MJA reviews and contributes to the writing of this paper; MWJW is responsible for revising the manuscript. MWJW finalized the manuscript.

References

1. Kohn LT, Corrigan JM, Donaldson MS. To err is human: building a safer health system. Washington: National Academy Press; 2000.
2. World Health Organization. World alliance for patient safety: WHO draft guidelines for adverse event reporting and learning systems: from information to action. World Health Organization; 2005. http://www.who.int/patientsafety/events/05/Reporting_Guidelines.pdf Accessed 2009-08-20.
3. Potylycki MJ, Kimmel SR, Ritter M, Capuano T, Gross L, Riegel-Gross K, et al. Nonpunitive medication error reporting: 3-year findings from one hospital's Primum Non Nocere initiative. J Nurs Adm. 2006;36(7-8):370-6.
4. Woo MWJ, Avery MJ. Nurses' experiences in voluntary error reporting: An integrative literature review. Int J Nurs Sci. 2021 Oct 10;8(4):453-69.
5. Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: The National Academies Press; 2001.
6. Donaldson LJ, Kelley ET, Dhingra-Kumar N, Kieny MP, Sheikh A. Medication Without Harm: WHO's Third Global Patient Safety Challenge. Lancet. 2017 Apr 29;389(10080):1680-1.
7. Vincent C, Neale G, Woloshynowych M. Adverse events in British hospitals: preliminary retrospective record review. BMJ 2001;322(7285):517e9.
8. Chen LC, Wang LH, Redley B, Hsieh YH, Chu TL, Han CY. A study on the reporting intention of medical incidents: a nursing perspective. Clin Nurs Res 2018;27(5):560e78.
9. Eadie A. Medical error reporting should it be mandatory in Scotland. J Forensic Leg Med. 2012 Oct;19(7):437-41.
10. Lee SE, Dahinten VS. Psychological Safety as a Mediator of the Relationship Between Inclusive Leadership and Nurse Voice Behaviors and Error Reporting. J Nurs Scholarsh. 2021 Nov;53(6):737-45.
11. Henry LL. Disclosure of medical errors: ethical considerations for the development of a facility policy and organizational culture change. Policy Polit Nurs Pract. 2005 May;6(2):127-34.
12. Department of Health. An organisation with a memory. London: The Stationary Office; 2000.
13. Howie WO. Mandatory reporting of medical errors: crafting policy and integrating it into practice. Journal for nurse practitioners. 2009;5(9):649–54.
14. Pronovost PJ, Morlock LL, J Bryan Sexton, Miller MR, Holzmueller CG, Thompson DA, et al. Improving the Value of Patient Safety Reporting Systems [Internet]. Nih.gov. Agency for Healthcare Research and Quality; 2008.
15. Rishoej RM, Almarsdóttir AB, Christesen HT, Hallas J, Kjeldsen LJ. Medication errors in pediatric inpatients: a study based on a national mandatory reporting system. Eur J Pediatr. 2017 Dec;176(12):1697-705.
16. Braiki R, Douville F, Gagnon MP. Factors influencing the reporting of medication errors and near misses among nurses: A systematic mixed methods review. Int J Nurs Pract. [published online: September 03, 2024]
17. Anderson DJ, Webster CS. A systems approach to the reduction of medication error on the hospital ward. J Adv Nurs. 2001 Jul;35(1):34-41.
18. Wiegmann DA, Wood LJ, Cohen TN, Shappell SA. Understanding the "Swiss Cheese Model" and Its Application to Patient Safety. J Patient Saf. 2022 Mar 1;18(2):119-23.
19. Munn LT, Lynn MR, Knafl GJ, Willis TS, Jones CB. A study of error reporting by nurses: the significant impact of nursing team dynamics. J Res Nurs. 2023 Aug;28(5):354-64.
20. Malik RF, Buljac-Samardžić M, Amajjar I, Hilders CGJM, Scheele F. Open organisational culture: what does it entail? Healthcare stakeholders reaching consensus by means of a Delphi technique. BMJ Open. 2021 Sep 14;11(9):e045515.
21. Rogers E, Griffin E, Carnie W, Melucci J, Weber RJ. A Just Culture Approach to Managing Medication Errors. Hosp Pharm. 2017 Apr;52(4):308-15.
22. Shaw R. Patient safety: the need for an open and fair culture. Clin Med (Lond). 2004;4(2):128-31.
23. Wise J. Survey of UK doctors highlights blame culture within the NHS. BMJ. 2018 Sep 20;362:k4001.

24. Ajzen I, Fishbein MA. Understanding attitudes and predicting social behavior. Prentice-Hall; 1980.
25. Hammoudi BM, Ismaile S, Abu Yahya O. Factors associated with medication administration errors and why nurses fail to report them. Scand J Caring Sci 2018;32(3):1038e46.
26. Haw C, Stubbs J, Dickens GL. Barriers to the reporting of medication administration errors and near misses: an interview study of nurses at a psychiatric hospital. J Psychiatr Ment Health Nurs 2014;21(9):797e805.
27. Lederman R, Dreyfus S, Matchan J, Knott JC, Milton SK. Electronic error reporting systems: a case study into the impact on nurse reporting of medical errors. Nurs Outlook 2013;61(6):417e26.
28. Qin C, Xie J, Jiang J, Zhen F, Ding S. Reporting among nurses and its correlation with hospital safety culture. J Nurs Care Qual 2015;30(1):77e83
29. Farag A, Blegen M, Gedney-Lose A, Lose D, Perkhounkova Y. Voluntary medication error reporting by ED nurses: examining the association with work environment and social capital. J Emerg Nurs 2017;43(3):246e54
30. Lee W, Kim SY, Lee SI, Lee SG, Kim HC, Kim I. Barriers to reporting of patient safety incidents in tertiary hospitals: a qualitative study of nurses and resident physicians in South Korea. Int J Health Plann Manag 2018;33(4):1178e88
31. Farrell GA. From tall poppies to squashed weeds*: why don't nurses pull together more. J Adv Nurs. 2001 Jul;35(1):26-33.
32. Soydemir D, Seren Intepeler S, Mert H. Barriers to Medical Error Reporting for Physicians and Nurses. West J Nurs Res. 2017 Oct;39(10):1348-63.
33. Koehn AR, Ebright PR, Draucker CB. Nurses' experiences with errors in nursing. Nurs Outlook 2016;64(6):566e74
34. Rashed A, Hamdan M. Physicians' and Nurses' Perceptions of and Attitudes Toward Incident Reporting in Palestinian Hospitals. J Patient Saf. 2019 Sep;15(3):212-7.
35. Yung HP, Yu S, Chu C, Hou IC, Tang FI. Nurses' attitudes and perceived barriers to the reporting of medication administration errors. J Nurs Manag. 2016 Jul;24(5):580-8.
36. Yang R, Pepper GA, Wang H, Liu T, Wu D, Jiang Y. The mediating role of power distance and face-saving on nurses' fear of medication error reporting: a crosssectional survey. Int J Nurs Stud 2020;105:103494
37. Leape L. Lucian Leape on patient safety in U.S. hospitals. Interview by Peter I Buerhaus. J Nurs Scholarsh. 2004;36(4):366-70.
38. Vincent C. Patient safety. 2nd ed. Chichester, West Sussex, UK ; Wiley-Blackwell; 2010.
39. Ottewill M. The current approach to human error and blame in the NHS. Br J Nurs. 2003 Aug 14-Sep 10;12(15):919-24.
40. Stump LS. Re-engineering the medication error-reporting process: removing the blame and improving the system. Am J Health Syst Pharm. 2000 Dec 15;57 Suppl 4:S10-7.
41. Cohen H, Robinson ES, Mandrack M. Getting to the root of medication errors: Survey results. Nursing. 2003 Sep;33(9):36-45.
42. Lee SE, Dahinten VS, Seo JK, Park I, Lee MY, Han HS. Patient Safety Culture and Speaking Up Among Health Care Workers. Asian Nurs Res (Korean Soc Nurs Sci). 2023 Feb;17(1):30-6.
43. Morrison EW, Milliken FJ. Organizational Silence: A Barrier to Change and Development in a Pluralistic World. The Academy of Management review. 2000;25(4):706–25.
44. Taskiran G, Eskin Bacaksiz F, Harmanci Seren AK. Psychometric testing of the Turkish version of the Health Professional Education in Patient Safety Survey: H-PEPSSTR. Nurse Educ Pract. 2020 Jan;42:102640.
45. Woo MWJ, Cui J. Nursing Students' Experiences and Perceived Learning Effectiveness of Patient Safety and Its Influencing Factors: An Integrative Literature Review. J Adv Nurs. [published online: October 18, 2024].
46. Kim CH, Jeong SY, Kwon MS. Effects of hazard perception training (HPT) on nursing students' risk sensitivity to patient safety and developing safety control confidence. Appl Nurs Res. 2018 Feb;39:160-6.
47. Armutlu M, Foley M, Surette J, Belzile E, McCusker J. Survey of nursing perceptions of medication administration practices, perceived sources of errors and reporting behaviours. Healthc Q. 2008;11(3 Spec No.):58-65.
48. Barkhordari-Sharifabad M, Mirjalili NS. Ethical leadership, nursing error and error reporting from the nurses' perspective. Nurs Ethics. 2020 Mar;27(2):609-20
49. Moraca E, Zaghini F, Fiorini J, Sili A. Nursing leadership style and error management culture: a scoping review. Leadersh Health Serv (Bradf Engl). 2024 Sep 30;37(4):526-47.
50. Manzi A, Hirschhorn LR, Sherr K, Chirwa C, Baynes C, Awoonor-Williams JK, et al. Mentorship and coaching to support strengthening healthcare systems: lessons learned across the five Population Health Implementation and Training partnership projects in

sub-Saharan Africa. BMC Health Serv Res. 2017 Dec 21;17(Suppl 3):831.
51. Moureaud C, Hertig JB, Weber RJ. Guidelines for Leading a Safe Medication Error Reporting Culture. Hosp Pharm. 2021 Oct;56(5):604-9.
52. Vogus TJ, Sutcliffe KM, Weick KE. Doing No Harm: Enabling, Enacting, and Elaborating a Culture of Safety in Health Care. Academy of Management perspectives. 2010;24(4):60–77.
53. van Baarle E, Hartman L, Rooijakkers S, Wallenburg I, Weenink JW, Bal R, et al. Fostering a just culture in healthcare organizations: experiences in practice. BMC Health Serv Res. 2022 Aug 13;22(1):1035.
54. Muething SE, Goudie A, Schoettker PJ, Donnelly LF, Goodfriend MA, Bracke TM, et al. Quality improvement initiative to reduce serious safety events and improve patient safety culture. Pediatrics. 2012 Aug;130(2):e423-31.
55. Labrague LJ, Al Sabei SD, AbuAlRub RF, Burney IA, Al Rawajfah O. Authentic leadership, nurse-assessed adverse patient events and quality of care: The mediating role of nurses' safety actions. J Nurs Manag. 2021 Oct;29(7):2152-62.
56. Labrague LJ. Influence of nurse managers' toxic leadership behaviours on nurse-reported adverse events and quality of care. J Nurs Manag. 2021 May;29(4):855-63.
57. Dirik HF, Seren Intepeler S. The influence of authentic leadership on safety climate in nursing. J Nurs Manag. 2017 Jul;25(5):392-401.
58. Lappalainen M, Härkänen M, Kvist T. The relationship between nurse manager's transformational leadership style and medication safety. Scand J Caring Sci. 2020 Jun;34(2):357-69.
59. Mrayyan MT, Al-Atiyyat N, Al-Rawashdeh S, Algunmeeyn A, Abunab HY. Nurses' authentic leadership and their perceptions of safety climate: differences across areas of work and hospitals. Leadersh Health Serv (Bradf Engl). 2022 Mar 14 ;ahead-of-print(ahead-of-print)
60. Wong CA, Spence Laschinger HK, Cummings GG. Authentic leadership and nurses' voice behaviour and perceptions of care quality. J Nurs Manag. 2010 Nov;18(8):889-900.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

INTERNATIONAL MEDICAL GRADUATE INTEGRATION INTO THE SUNSHINE COAST HOSPITAL AND HEALTH SERVICE (SCHHS): A PRACTICE NOTE

Thi Aung

Sunshine Coast University Hospital, Queensland, Australia

Correspondence: thi.aung@health.qld.gov.au

ABSTRACT

Australia's healthcare workforce shortage demands innovative solutions to ensure the delivery of high-quality healthcare. International Medical Graduates (IMGs), particularly those on the standard pathway—doctors whose primary medical qualifications are obtained in noncomparable healthcare systems such as those outside the UK, USA, Canada, Ireland, or New Zealand—play a crucial role in bridging workforce gaps. However, transitioning into the Australian healthcare system presents significant challenges for these IMGs, including adapting to clinical practices, communication styles, and cultural norms [1].

This practice note outlines the Sunshine Coast Hospital and Health Service's (SCHHS) comprehensive IMG integration program, specifically designed to address the unique needs of standard pathway IMGs. The program, structured into three phases—robust selection, structured orientation and onboarding, and ongoing mentorship—has demonstrated high retention rates, enhanced IMG confidence, and positive feedback from both participants and supervisors.

Key findings from the SCHHS initiative underscore the importance of early, structured support in mitigating the difficulties faced by IMGs during their transition. This model provides a scalable approach to improving IMG integration, enhancing patient safety, and addressing critical healthcare workforce shortages across Australia.

KEYWORDS

healthcare workforce, innovative solutions, integration program

INTRODUCTION

THE AUSTRALIAN HEALTHCARE WORKFORCE CRISIS AND THE ROLE OF IMGS:

Australia is confronting a severe healthcare workforce crisis, with an anticipated 301,000 (15.8%) increase in health and social assistance sector employment needed by November 2026 [2]. Despite having over 850,000 registered health practitioners as of mid-2022, demand continues to outpace supply, particularly in specialized areas like general practice and emergency medicine [3]. In Queensland, regional vacancy rates have reached alarming levels of up to 30%, threatening access to quality healthcare services [4,5].

International Medical Graduates (IMGs) are a vital part of the solution, filling critical workforce gaps in both urban and regional settings [6]. However, their integration into the Australian healthcare system is fraught with challenges. They face hurdles in adapting to workplace dynamics, understanding cultural nuances, and coping with the personal and professional stresses of relocation [7]. These challenges are particularly pronounced for IMGs on the standard pathway.

To address these issues, structured and comprehensive integration programs are essential [8,9]. This paper examines the Sunshine Coast Hospital and Health Service's (SCHHS) innovative IMG integration program, which has successfully mitigated these challenges through targeted support, structured onboarding, and continuous mentorship. The program serves as a model for enabling IMGs to transition smoothly and contribute effectively to Australia's healthcare system.

THE SCHHS IMG INTEGRATION PROGRAM:

Substantial increase in standard pathway IMG recruitment within Queensland Health Hospitals and Health Services over five years reflects a direct response to workforce shortages. This growth significantly impacted the Sunshine Coast HHS (SCHHS), prompting a collaborative initiative between the SCHHS Medical Workforce and Medical Education Unit. A structured recruitment and onboarding strategy, for the standard pathway IMG, was implemented to address the shortage of locally trained medical officers. This partnership emphasizes the importance of IMGs in ensuring adequate healthcare service delivery. The program comprises three phases:

PHASE 1: ROBUST SELECTION:

A criteria-based selection process was used to identify candidates from Queensland RMO campaign. Selected candidates (13 in 2023, 12 in 2024) underwent objective structured clinical examinations (OSCEs) assessing patient-centeredness, clinical judgment, communication skills, and readiness for the electronic medical record (ieMR) system. Six candidates were successful in 2023 and five in 2024.

PHASE 2: COMPREHENSIVE ORIENTATION AND ONBOARDING:

The program included a two-week extended orientation and five weeks of integrated clinical shadowing across medicine, surgery, emergency medicine, and mental health before they commenced their clinical duties in the same unit with ongoing support throughout the term. The program covered but not exclusively,

- National Safety and Quality Health Service (NSQHS) standards [10] and SCHHS values
- The Australian healthcare system
- Medical law and risk mitigation
- Aboriginal and Torres Strait Islander cultural practices
- Clinical documentation and handover and other important topics such as ward call scenarios.
- Five simulation sessions focused on daily ward round-based practices.
- Four workshops covering key clinical topics such as plastering and suturing.
- Four procedural skills sessions (IV cannulation, nasogastric tube insertion, etc.)

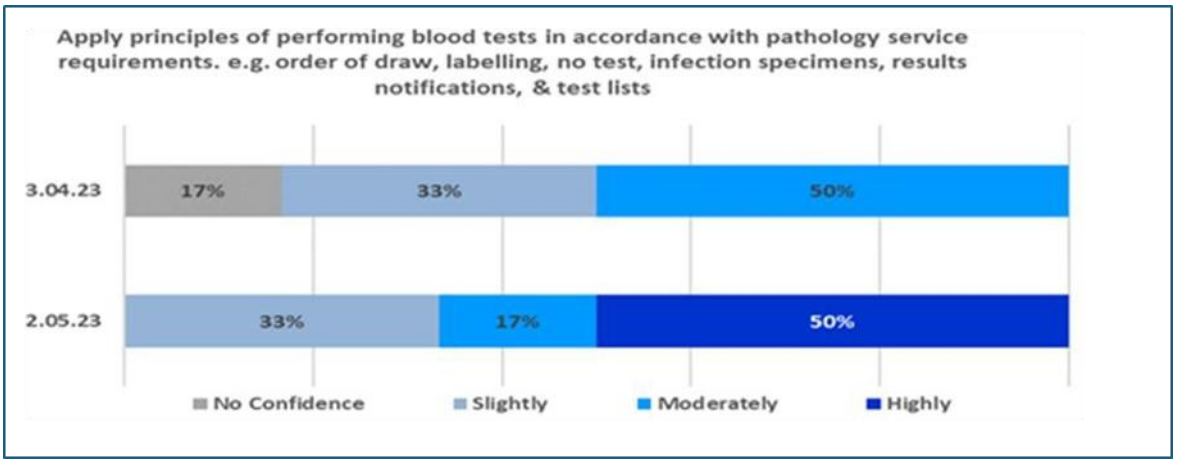
PHASE 3: ONGOING SUPPORT AND MENTORSHIP:

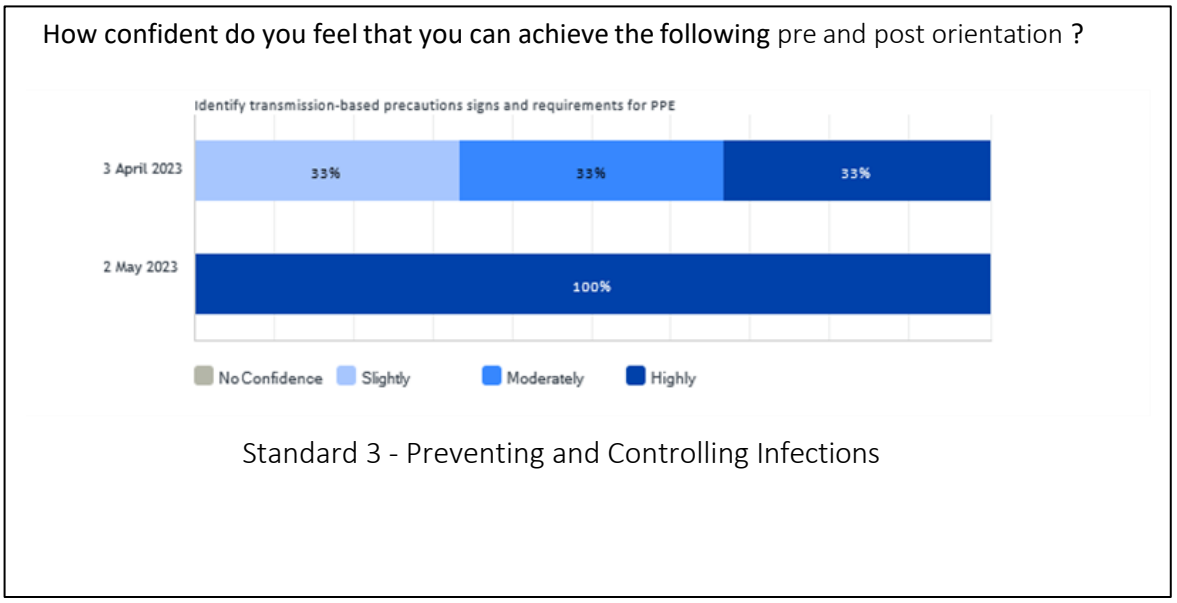
Continuous support and mentorship were provided throughout the initial terms. Mentors provided regular feedback, guidance, and access to resources. Extended clinical shadowing, prior to commencing clinical duties in the same allocated unit, provided continuity, and allowed senior clinicians to tailor supervision and training. Personalized support plans were developed for each IMG, ensuring appropriate goal setting and clinical placement aligned with their prior experience.

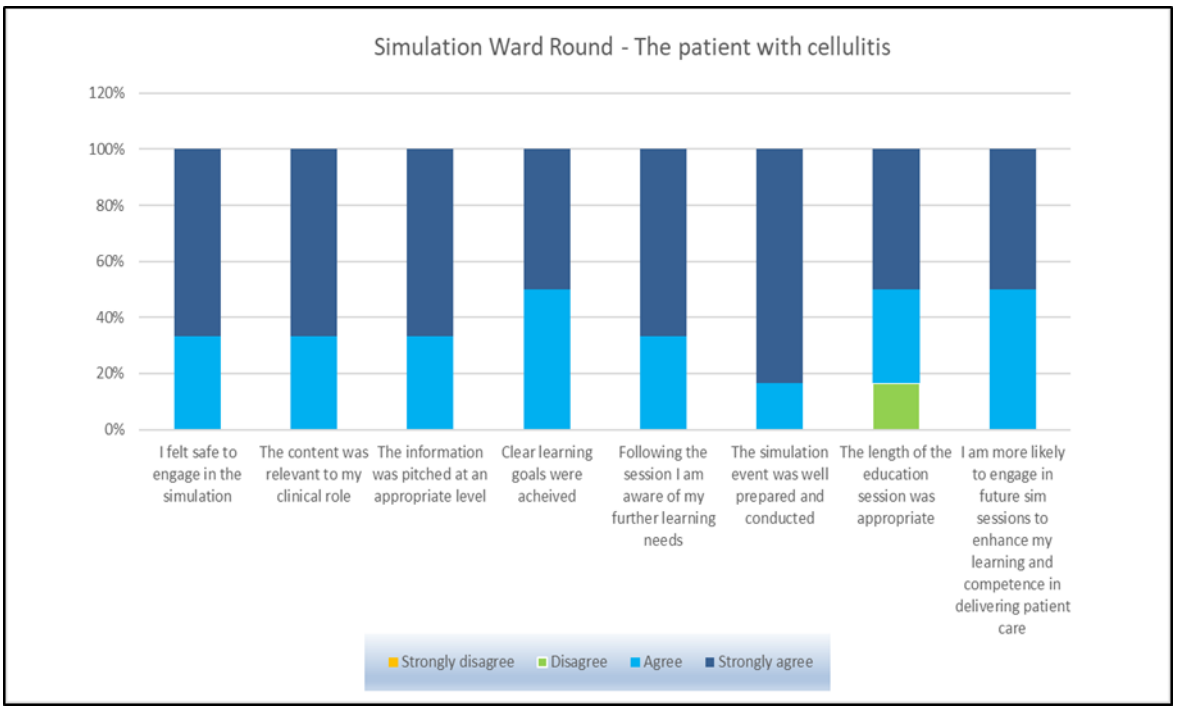
The Medical Education Officer (MEO) closely monitored all IMG, promptly implementing Individualized Improving Performance Action Plans (IPAPs) as needed. The Medical Education Unit (MEU) collaborated closely with medical workforce to ensure appropriate rostering and supervision levels.

PROGRAM OUTCOMES AND IMPACT:

The SCHHS program demonstrates considerable success. Pre- and post-program confidence ratings for National Safety and Quality Health Service (NSQHS) standards show significant improvement across all standards. These are a few examples of pre and post confident ratings and feedback from orientation program.


Apply principles of performing blood tests in accordance with pathology service requirements. e.g. order of draw, labelling, no test, infection specimens, results notifications, & test lists
3.04.23
17%
33%
50%
2.05.23
33%
17%
50%
No Confidence
Slightly
Moderately
Highly


How confident do you feel that you can achieve the following pre and post orientation ?
Identify transmission-based precautions signs and requirements for PPE
3 April 2023
33%
33%
33%
2 May 2023
100%
No Confidence
Slightly
Moderately
Highly
Standard 3 - Preventing and Controlling Infections


Simulation Ward Round - The patient with cellulitis
120%
100%
80%
60%
40%
20%
0%
I felt safe to engage in the simulation
The content was relevant to my clinical role
The information was pitched at an appropriate level
Clear learning goals were acheived
Following the session I am aware of my further learning needs
The simulation event was well prepared and conducted
The length of the education session was appropriate
I am more likely to engage in future sim sessions to enhance my learning and competence in delivering patient care
Strongly disagree
Disagree
Agree
Strongly agree

Qualitative feedback from IMGs reflects overwhelmingly positive experiences:

- "The graded exposure was very helpful. The supportive environment and understanding of our needs were instrumental to my successful integration."
- "This extensive orientation program is highly recommended. The team's consistent support was invaluable."
- "The program significantly boosted my confidence. The shadowing provided invaluable hands-on experience."
- In 2023 and 2024, 100% of participating IMGs successfully completed their terms, with many securing Principal House Officer (PHO) positions. Feedback from supervisors indicates reduced workload and improved patient safety.

SUSTAINABILITY AND SCALABILITY:

The program is funded by the SCHHS Medical Workforce and Medical Education Unit and will continue using this structure for future IMG recruitment. Cost-effectiveness will be closely monitored, with plans for expansion contingent upon sustained positive outcomes.

CONCLUSION AND RECOMMENDATIONS:

The SCHHS IMG integration program effectively address integration challenge by offering early support, reducing supervisory demands, and improving patient safety. High retention rates and overwhelmingly positive feedback support its effectiveness. Further research should explore long-term impacts and the potential for wider implementation.

References:

1. Hollett A, Hann S, Bradbury C. A qualitative study of the international medical graduate and the orientation process. Canadian journal of rural medicine. 2008 Oct 1;13(4):163.
2. AO RK. Independent review of Australia's regulatory settings relating to overseas health practitioners.
3. AIHW (Australian Institute of Health and Welfare) (2018) Survey of health care: selected findings for rural and remote Australians, AIHW, Australian Government, accessed 11 November 2023/
4. Malau-Aduli BS, Smith AM, Young L, Sen Gupta T, Hays R. To stay or go? Unpacking the decision-making process and coping strategies of International Medical Graduates practising in rural, remote, and regional Queensland, Australia. PloS one. 2020 Jun 16;15(6):e0234620.
5. Ostini R, McGrail MR, Kondalsamy-Chennakesavan S, Hill P, O'Sullivan B, Selvey LA, Eley DS, Adegbija O, Boyle FM, Dettrick Z, Jennaway M. Building a sustainable rural physician workforce. Medical Journal of Australia. 2021 Jul;215:S5-33.
6. Noya F, Carr S, Freeman K, Thompson S, Clifford R, Playford D. Strategies to facilitate improved recruitment, development, and retention of the rural and remote medical workforce: a scoping review. International Journal of Health Policy and Management. 2022 Oct;11(10).
7. Terry D, Hoang H, Peck B, Lê Q. The historic to contemporary challenges among international medical graduates seeking to practise in Australia. Health and History. 2021 Jan 1;23(1):61-78
8. Wu A, Choi E, Diderich M, Shamim A, Rahhal Z, Mitchell M, Leask B, DeWit H. Internationalization of medical education—motivations and formats of current practices. Medical science educator. 2022 Jun;32(3):733-45.
9. Dorgan KA, Lang F, Floyd M, Kemp E. International medical graduate–patient communication: a qualitative analysis of perceived barriers. Academic Medicine. 2009 Nov 1;84(11):1567-75.
10. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards. 2nd ed. – version 2. Sydney: ACSQHC; 2021.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

BUILDING THE NURSING WORKFORCE OF THE FUTURE

Karen Cook, Samantha Lavender, Frances Rice*

Australian Government, Department of Health and Aged Care

Correspondence: samantha.lavender@health.gov.au

ABSTRACT

The supply, retention and distribution of a quality nursing workforce is critical to ensure Australians have access to health and aged care, when and where they need it. The nursing supply and demand study projects the supply and demand of Australia's nurses until 2035 across all sectors and geographical levels. The results of the study predict an undersupply of nurses over the next 12 years, which indicates Australia may not have the number of nurses required to keep pace with the demand for nursing services in the community overall.

KEYWORDS

Nursing workforce, planning, Australia

PROBLEM/ISSUES

Nursing is the largest single health profession in Australia.[1] Even though recent workforce data shows growth in the nursing workforce, with an ageing population and higher incidences of chronic diseases, the Australian community requires more nurses. [1, 3]

The geographical distribution of nurses across the country poses an ongoing challenge, impacting on communities in rural, regional and remote areas. The main principle underlying Australia's health system is that no individual or community group is to be disadvantaged when accessing health care services. [1]

By looking at trends and changes in Australia's population, it is possible to forecast how many nurses are needed in the future and to consider where those nurses are most needed based on location of the population and health outcomes. [1]

The first supply and demand study for nurses in Australia was completed by Health Workforce Australia (HWA) in 2012 which predicted a shortfall of around 109,000 nurses by 2025. The study was updated in 2014, the revised 2014 study forecast a shortfall of 85,000 nurses by 2025. [4] The current nursing workforce exceeded the numbers predicted by Health Workforce Australia HWA for 2025 however a supply and demand study for nursing has not been undertaken since this time.

INTERVENTION/APPROACHES

Identifying potential workforce gaps through workforce planning projections such as the nursing supply and demand study provides governments, professional bodies, employers, regulatory bodies, and higher education and training providers the opportunity to develop and implement plans to minimise any gaps.[1]

Asia Pacific Journal of Health Management 2024; 19(3):i4179. doi: 10.24083/apjhm.v19i3.4179

The nursing supply and demand model is a complex workforce model that projects the supply and demand of Australia's nurses, Nurse Practitioners, Registered Nurses and Enrolled Nurses, until 2035 across all sectors including public and private, at various geographical levels, including national, state/territory and Monash Modified Model (MMM). [1,2] The model commences from a point of balance in 2022 and divides the nursing workforce into five sectors: aged care nurses, acute care nurses, primary healthcare nurses, mental health nurses and nurses working in other settings. [1]

The study uses data from several sources collected between 2014 and 2022 and a microsimulation approach was used to model the nursing workforce. [1,5] The Microsimulation modelling technique was used for simulating data at an individual level. [1]

Supply for the model followed a "bottom-up" simulation approach where entries and exits to the nursing workforce are distinctly modelled in detail and projected separately. The modelling begins by identifying the current stock of nurses and analysing their demographic profile and historically observed work patterns. Inflows and outflows are simulated in accordance with a set of predefined modelling parameters and historical sampled data. [1, 5] Baseline demand was projected by assuming the supply of nurses meets the demand in the base year. The demand model follows a "top-down" approach where the ratio of nurse to service volumes in each sector, and the ratio of services to the population are used to forecast the expected demand for nurses. [1] Future demand for nurses was estimated using the Lifetime Transition and Estimation (LiTE) population projections. [5]

LEARNING

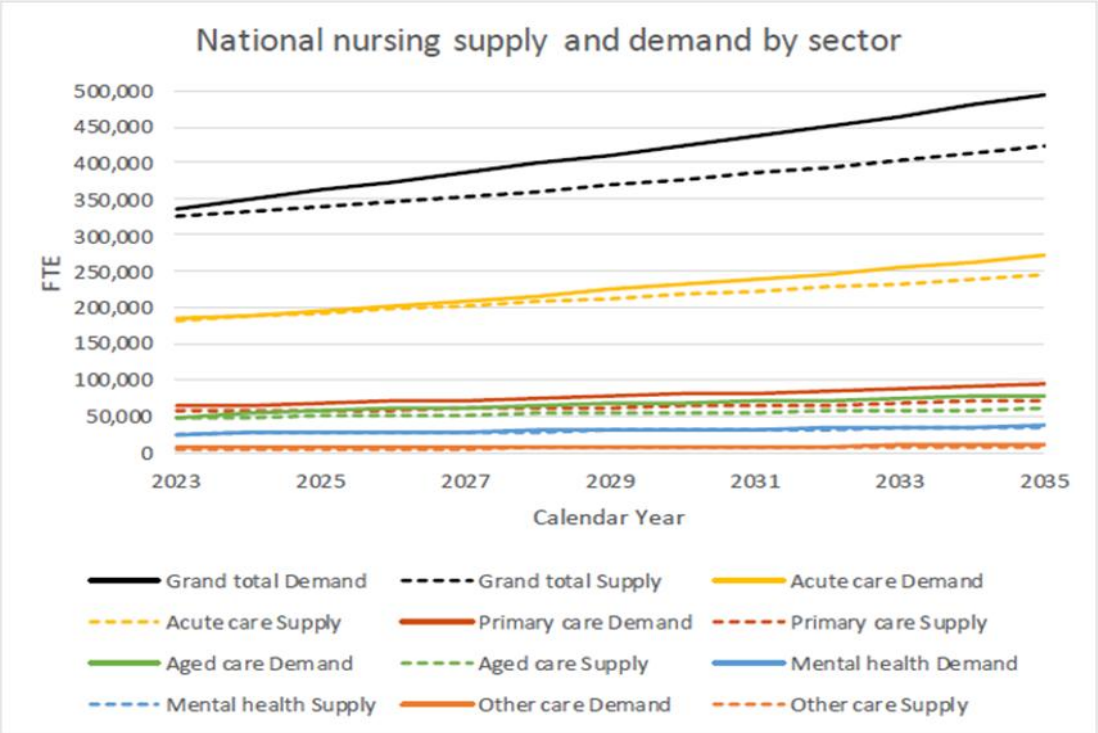
While both supply and demand of the nursing workforce are estimated to increase during the projection period, supply is not expected to keep pace with demand. This indicates that Australia may not have the number of nurses required to keep pace with the demand for nursing services in the community overall. [1]

The nursing supply and demand model projections at national level show that baseline projections across all sectors show an undersupply of 70,707 Full Time Equivalent (FTE) by 2035 with around 79,473 nurses needed to fill the gap.

Undersupply for each sector in 2035 is:

- Acute care sector - 26,665 FTE.
- Primary health care sector - 21,765 FTE.
- Aged care sector - 17,551 FTE.
- Mental health sector - 1,918 FTE.
- Other sectors - 2,808 FTE.

FIGURE 1: NURSING FTE – NATIONAL SUPPLY AND DEMAND BY SECTOR [1]



Asia Pacific Journal of Health Management 2024; 19(3):i4179. doi: 10.24083/apjhm.v19i3.4179

IMPACT FOR PRACTICE

The study predicts outcomes to demonstrate what could happen if nothing was done to address supply of and demand for the nursing workforce. With an updated supply and demand study, stakeholders can use the available data in innovative ways to support effective workforce planning and evidence-based future health workforce decisions. The supply and demand study forms part of the evidence required for improved policy interventions and workforce planning, which will better support the nursing workforce and the community's access to it. [1] Importantly, no single policy solution or stakeholder is able to address the projected undersupply of nurses.

The nursing model will be incorporated into the Health Demand and Supply Utilisation Patterns Planning (HeaDS UPP) Tool. [1] HeaDS UPP is a single, integrated, quality source of health workforce and services data that informs workforce planning and analysis. [1] The HeaDS UPP Tool includes data from a range of sources to demonstrate how the community uses and accesses health services and the health workforce. [1, 6]

References

1. Department of Health and Aged Care. Nursing supply and demand study 2023-2035. [Internet]. Australian Government. 2024. Available from: https://hwd.health.gov.au/resources/primary/nursing-supply-and-demand-study-2023-2035.pdf
2. Department of Health and Aged Care. Modified Monash Model. Australian Government; [Updated 2024]. Available from: https://www.health.gov.au/topics/rural-health-workforce/classifications/mmm
3. Australian Government. Nurses and midwives dashboard; [Updated 2024]. Available from: https://hwd.health.gov.au/nrmw-dashboards/index.html
4. Australian Government. Australia's future health workforce: nurses. Detailed report. [Internet]. 2014. Available from: https://www.health.gov.au/sites/default/files/documents/2021/03/nurses-australia-s-future-health-workforce-reports-detailed-report.pdf
5. Department of Health and Aged Care. Nursing supply and demand model. Methodology paper. [Internet]. Australian Government. 2024. Available from: https://hwd.health.gov.au/resources/primary/nursing-supply-and-demand-study-2023-2035.pdf
6. Department of Health and Aged Care. HeaDS UPP. Australian Government. Available from: https://hwd.health.gov.au/headsupp/

ACHSM Asia-Pacific Journal of Health Management

ACHSM COGRESS 2024

PRACTICE BRIEF: ACADEMIC RESEARCH SUPPORTS TRANSLATION PATHWAYS FOR CLINICAL IMPACT IN STRUCTURED JOURNAL CLUBS

Sharon Mickan[1], *Rachel Wenke*[2]

1. Mosaic Health Consulting, Queensland, Australia
2. Allied Health and Rehabilitation Services, Gold Coast Health, Queensland, Australia

Correspondence: sharon.mickan@mosaichealthconsulting.com.au

INTRODUCTION

Academic research plays a pivotal role in creating and sustaining pathways for clinical impact. Over nine years, a series of collaborative research projects informed the translation pathway for structured journal clubs within a tertiary health service. This pathway included conceptualisation, implementation, sustainability and spread of research evidence into practice within the innovative journal club initiative. This brief identifies four key stages of the pathway, summarising the contribution of research to support ongoing practice transformation.

1. CONCEPTUALISATION: THE JOURNAL CLUB PROBLEM

The translation pathway began by identifying a knowledge-practice gap in journal club effectiveness. Discussions with a group of evidence-based practice (EBP) champions revealed significant variability in perceived impact of their journal clubs across a range of disciplines.

Research evidence was crucial to confirm the gap between research knowledge and current practice. A synthesis of two systematic reviews identified 11 key components of an effective journal club, of which only two were consistently practiced [1, 2]. Therefore, research was vital to establishing an evidence-based standard for evaluating current practice and informing future implementation plans.

2. IMPLEMENTATION: 'TREAT' STRUCTURED JOURNAL CLUB

As is often the case, the research evidence for effective journal clubs did not provide a clear implementation framework. To address this, the research evidence was shared with key stakeholders who were likely to be impacted by this change. From multiple conversations, individuals' barriers and enablers to change were analysed and the organisational readiness for change evaluated. Together, clinicians and researchers collaborated to integrate the 11 components into a practical, structured TREAT (Tailoring Research Evidence and Theory) journal club format [3].

A cluster randomised controlled trial was designed, with a nested focus group, to evaluate the effectiveness and feasibility of the TREAT format. After only 6 months, clinicians were more satisfied with using the TREAT format, however, they did not demonstrate significant improvement in their EBP skills, attitudes, knowledge or practice, when compared to the standard format [3]. This research study confirmed the feasibility of the structured format, but its effectiveness was still not clear.

3. SUSTAINABLE IMPLEMENTATION

A qualitative research project was designed to monitor and progressively improve the structured TREAT format. This allowed implementation strategies to be monitored across different contexts, given that the different interacting components and relationships of journals clubs are difficult

Asia Pacific Journal of Health Management 2024; 19(3):i4149. doi: 10.24083/apjhm.v19i3.4149

to predict or control. The study identified sustaining factors, reported by 19 clinicians from five different journal clubs who had maintained their journal clubs six months beyond the formal trial [4]. Participants distinguished and justified components of the TREAT format that were easy and more difficult to sustain. They also made suggestions of future implementation strategies [4].

These insights were crucial for the next study, a hybrid implementation-effectiveness study designed to further evaluate long term effectiveness, fidelity and impact on practice. Further, implementation strategies that had been identified in the previous study, were tailored to new and different organisational contexts, to determine if their perceived benefits were realised in different settings [5]. The study found structured journal clubs were shown to be effective in improving clinicians' EBP skills and confidence and in informing clinical practice changes. Further, specific implementation strategies were able to address local enablers and barriers across a range of different contexts.

While these research projects confirmed the fidelity of the structured TREAT format and identified important implementation strategies for the ongoing sustainability of this practice change, there were multiple requests from other health services to spread the format.

4. SPREAD OF THE TREAT JOURNAL CLUB

In order to spread beyond the same, albeit changing, health service, there was a need to evaluate the fidelity and effectiveness of this format in new contexts. Indeed, requests were being made across and outside the health service to implement the format. For example, during the COVID-19 pandemic, the TREAT format was adapted for hospital-wide use to address emerging trial data, and directly influence clinical decision-making. Regular journal clubs emerged as a key mechanism for enabling clinical teams to change practice as soon as evidence had been appraised [6].

Further, a collaborative research grant has enabled the development of a web-based portal available at www.treatjournalclubs.com, which has facilitated global dissemination and enabled the development of a community of practice. This community is engaging in a global implementation study, which is evaluating the transferability of implementation strategies identified.

LEARNING

This practice brief illustrates the critical role academic research plays in advancing clinical practice through structured journal clubs. Over nine years, research provided key insights at every stage of the translation pathway.

Beginning with identifying a knowledge-practice gap, research highlighted the discrepancy between current and best practice and provided a benchmark for evaluating and improving clinical practice. In planning implementation, the research evidence provided the basis for the collaborative co-design of an implementation plan, by clinicians and researchers.

Sustaining practice change requires more than initial implementation. In complex systems, continuous adaptation is required, and an iterative process of research can refine and adapt interventions and identify actionable implementation strategies. Spreading the TREAT format required further research to evaluate its fidelity and adaptability in diverse environments. (see Figure 1)

FIGURE 1: TRANSLATION PATHWAY FOR CLINICAL IMPACT

This practice brief highlights the iterative nature of practice transformation, where clinicians and researchers used and designed research to create an ongoing cycle of implementation, monitoring and improvement.

IMPACT FOR PRACTICE

This initiative emphasises the critical role of academic research in clinical practice, in creating and sustaining pathways for clinical impact. The TREAT journal club initiative demonstrated that research collaborations between academics and clinicians can be a powerful driver of clinical practice improvement, fostering a culture of evidence-based decision-making and enhanced healthcare delivery. The iterative and collaborative approach demonstrated in this pathway serves as a model for integrating academic research with clinical practice. It highlights the dynamic interplay between generating evidence, adapting interventions, and embedding changes into complex healthcare systems.

References

1. Deenadayalan Y, Grimmer-Somers K, Prior M, Kumar S. How to run an effective journal club: a systematic review. J Eval Clin Pract. 2008;14(5):898–911.
2. Harris J, Kearley K, Heneghan C, Meats E, Roberts N, Perera R, et al. Are journal clubs effective in supporting evidence-based decision making? A systematic review. BEME Guide No. 16. Med Teach. 2011 Jan 1;33(1):9–23.
3. Wenke RJ, Thomas R, Hughes I, Mickan S. The effectiveness and feasibility of TREAT (Tailoring Research Evidence and Theory) journal clubs in allied health: a randomised controlled trial. BMC Med Educ. 2018 May 9;18(1):104.
4. Wenke R, O'Shea K, Hilder J, Thomas R, Mickan S. Factors that influence the sustainability of structured allied health journal clubs: a qualitative study. BMC Med Educ. 2019 Jan 3;19(1):6.
5. Wenke R, Wiseman J, Brandenburg C, Stehlik P, Hughes I, Richards K, et al. Long term tailored implementation of structured "TREAT" journal clubs in allied health: a hybrid effectiveness-implementation study. BMC Med Educ. 2022 Apr 22;22(1):307.
6. Wenke R, Stehlik P, Gerrard J, Mickan S, Henry D. Using a journal club to navigate a maze of COVID-19 papers in a front-line hospital service. BMJ Evid-Based Med. 2023 Jun 1;28(3):210–1.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

IMPLEMENTING THE 'MY PREHAB PROGRAM': HOW DIGITAL TECHNOLOGY HELPED TO BRIDGE THE HOSPITAL-COMMUNITY GAP AND STREAMLINE HOSPITAL PROCESSES

Eleanor R Bills[*1], Anastasia D Westin[1], Professor Jane M Andrews[1,2]*

1. Surgery Program, Central Adelaide Local Heath Network, Adelaide, Australia
2. School of Medicine, Faculty of Health and Medical Sciences, The University of Adelaide, SA, Australia

Correspondence: ellie.bills@sa.gov.au

PROBLEM

Surgery is a key component of healthcare systems, however, a patient's journey to surgery can be long and complicated. Public patients awaiting non-urgent surgery, frequently experience significant periods on 'hidden' outpatient and surgical waitlists [1]. Post-operative complications are also common, affecting 20% of procedures, placing a substantial burden on both patients and the healthcare system. These complications are associated with worse psychosocial outcomes, delayed function recovery, financial costs and reduced patient flow [2-4]. With increasingly constrained resources, an ageing population and growing burden of chronic disease, there are challenges in providing accessible, affordable, and safe elective surgery. Prehabilitation (prehab) is any intervention prior to surgery aimed at improving health and wellbeing and developing physiological reserve to cope with the stress of surgery [5]. With a clear need for earlier health optimisation, the challenge was supporting patients to prepare well for surgery without dedicated funding to support on-site, in-person prehab.

APPROACH

A multidisciplinary team of primary healthcare clinicians, hospital-based staff and consumers co-designed the My PreHab Program (MPP). MPP was designed to bridge hospital and community settings and turn the traditionally 'passive' wait time into a proactive period, where patients had autonomy over their health outcomes. It aimed to support those awaiting elective surgery through health screening and provision of quality evidence-based information at the beginning of the surgical journey. To achieve this at scale and without allocated on-site resourcing, digital technology was leveraged, with the development of an open-access website (www.calhn-prehab.sa.gov.au) and hospital-specific digital pathways created with Personify Care. Utilising digital technology provided the opportunity for rapid dissemination, uptake and upscaling with minimal additional expense. Medical and allied health content experts assisted with developing health information, with existing evidence-based resources and community programs identified. The hospital-specific pathway core components included a comprehensive health screen, summary report, tailored prehab information and resources and automated 'check-ins'.

To support the successful implementation of this novel prehab initiative, a grant from The Hospital Research Foundation Group enabled the employment of a project administrative officer and a clinical manager for a three-year period. MPP was integrated into existing workflows through comprehensive process mapping, ensuring efficient resource utilisation and sustainability. Implementation was iterative, incorporating patient and clinician feedback for continuous improvement. Clinical cohorts with high referral volumes, identified as most likely to benefit from the intervention, were prioritised. Unit champions were identified and where possible, essential workflows were digitised to incentivise provision and sustainability of MPP.

LEARNING

Incorporating a co-design approach, facilitated the development of a holistic program by integrating lived experience and expertise with professional experience. The website and digital pathway content and structure then met consumer needs while aligning with both health service and primary care priorities. For example, consumers identified a need for information on equipment and community services, which are not typically part of standard prehab interventions.

A comprehensive implementation strategy, with a dedicated implementation team (clinical manager and project administrative officer), promoted integration and localised ownership of MPP digital pathways. Effective strategies included thorough process mapping, integration of the new model of care with existing processes, identification of local champions, audits and feedback, and tailoring prehab content to the needs of the clinical cohort. Although similar, no workflows across sites, units or clinical cohorts were the same, and successful implementation and subsequent integration required a flexible approach and adaptable digital software.

An iterative approach to implementation led to continuous improvement of the content and hospital-specific pathway design, resulting in improved patient and surgical unit adoption. Feedback was received via regular, scheduled patient quantitative and qualitative feedback questionnaires, phone calls to participants and open communication channels with surgical units as well as scheduled meetings. Additionally, the hospital-specific digital pathways and open-access website were monitored with regular audit of user metrics and review of information accessed.

IMPACT FOR PRACTICE

From 01/07/2022 to 30/11/2024, MPP's hospital-specific digital pathways were implemented across two major hospitals in a broad variety of clinical cohorts. This included non-urgent joint replacement, complex hernia repairs, bariatric management, all non-urgent spinal procedures, body contouring and breast reduction surgery as well as cancer cohorts that received neoadjuvant therapy prior to surgery (colorectal, upper gastrointestinal and hepatobiliary cancer). During this period, just over 2000 patients participated in MPP, with a registration rate of 79%. These pathways are now owned and managed by the respective units, with no ongoing requirement for additional staff. As a result, most patients from these clinical cohorts now receive timely, targeted health information on maximising conservative management options, care navigation to local community health services (including their GP) and education about the public health surgical journey. The open-access website had 6,073 site sessions, with 3,674 unique visitors from across Australia and around the world. From a population health perspective, the benefits include improved health literacy, chronic disease management and potential surgery avoidance.

Surgical outcomes from the joint replacement cohort (n=560) show that MPP participants' average length of stay was 23 hours shorter than those who didn't receive the program and had surgery during the same two-year period (MPP: n=108, non-MPP: n=452, p=0.015). Fewer hospital acquired complications were also observed for MPP participants (MPP=3.9%, non-MPP=7.4%, p=0.224). This suggests that the statistically significant reduction in length of stay may not solely be attributable to fewer medical events but also influenced by expectation-setting regarding discharge readiness.

By undertaking comprehensive process mapping, tailoring pathways to existing workflows, responding to feedback, and incorporating a flexible implementation approach, unexpected efficiencies were observed. In many cases, existing unit workflows were streamlined through digitising existing processes or maximising the scope of the digital technology. For example, some units utilised the early health screening to support triage decision making and the identification of surgical risk (e.g., body mass index). Others digitised existing paper questionnaires, significantly reducing questionnaire response windows from up to three months to the day of registration. Patient reported outcome measures were embedded into digital pathways, ensuring timely provision and improved access to cohort data, and cohort specific handouts and outpatient appointment reminders were included.

FUNDING

This work was supported by The Hospital Research Foundation Group [2021/57-QA25315]

ETHICS CLEARANCE AND ORGANISATION APPROVALS

From July 1, 2022, the project was regarded by CALHN HREC as an evaluation of a quality improvement initiative and have provided publication approval (approval #18901).

References

1. McIntyre D, Chow CK. Waiting Time as an Indicator for Health Services Under Strain: A Narrative Review. Inquiry. 2020;57:46958020910305.
2. Ludbrook GL. The Hidden Pandemic: the Cost of Postoperative Complications. Curr Anesthesiol Rep. 2022;12(1):1-9.
3. Story DA, Leslie K, Myles PS, Fink M, Poustie SJ, Forbes A, et al. Complications and mortality in older surgical patients in Australia and New Zealand (the REASON study): a multicentre, prospective, observational study. Anaesthesia. 2010;65(10):1022-30.
4. Pinto A, Faiz O, Davis R, Almoudaris A, Vincent C. Surgical complications and their impact on patients' psychosocial well-being: a systematic review and meta-analysis. BMJ Open. 2016;6(2):e007224.
5. Durrand J, Singh SJ, Danjoux G. Prehabilitation. Clinical Medicine. 2019;19(6):458-64.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

ENHANCING WELLBEING IN EMERGENCY DEPARTMENT ALLIED HEALTH CARE COORDINATORS: A MULTIFACETED INTERVENTION APPROACH – A PRACTICE NOTE

Oscar Lee

Physiotherapy Department, Monash Health, Victoria, Australia

Correspondence: oscarleex105b@gmail.com

ABSTRACT

This practice note outlines a structured, team-based intervention to address clinician burnout within a metropolitan Care Coordination team within one health organisation. This twelve-month project (April 2023–2024) was implemented in collaboration with Safer Care Victoria (SCV), utilising the Institute of Healthcare Improvement's (IHI) Joy in Work (JIW) framework aiming to improve clinician wellbeing and burnout. [1,2]

Strategies included a wellbeing survey [3,4] adapted from the Mini Z survey, What Matters to You (WMTY) [5] clinician interviews, and the impact-effort matrix [6] prioritisation tool. This approach targeted burnout drivers and established a sustainable framework for employee support by emphasising feedback, high-impact interventions, and resilience through collaboration.

Targeted interventions like reviewing orientation documents, team learning sessions, and updating clinical resources led to a decrease in the team's mean Mini Z [4] scores of perceived burnout. Challenges during implementation highlighted the need for a toolkit to support this project in other settings where knowledge of quality improvement methodology may be limited. The initiative established a potential replicable model for addressing burnout, though its broader effectiveness remains under evaluation.

KEYWORDS

emergency department, allied health, team-based intervention, wellbeing

PROBLEM/ISSUES

Burnout among ED employees has been identified as a global issue, with prevalence estimates ranging from 49.3% to 58%. [7,8] Addressing clinician burnout is essential for building a sustainable workforce for an aging population. [9] The Monash Health ED Care Coordination team functions as an interdisciplinary Allied Health team, with shared physiotherapy, occupational therapy, and social work competencies to deliver comprehensive discharge planning for patients with complex clinical and social needs presenting to one of three EDs within the healthcare organisation. The team consists of up to 22 employees. Baseline data from the first six surveys averaged 2.1 indicating moderate stress without burnout symptoms. The mean score from the first six Mini Z [4] surveys completed by staff was 2.1 indicating "moderate stress without burnout symptoms". Anecdotally, initial attempts to adopt existing

well-being initiatives such as team dinners and quarterly newsletters yielded little perceived impact. Consequently, the team collaborated with SCV to develop a measurable approach to identifying burnout drivers and delivering targeted interventions. [2,10]

INTERVENTION/APPROACHES

The JIW1 framework describes nine predictors of burnout: real-time measurement, physical and psychological safety, meaning and purpose, choice and autonomy, recognition and rewards, participative management, camaraderie and teamwork, daily improvement, and wellness and resilience. [1] The approach combines qualitative and quantitative data collection with an action prioritisation tool to deliver targeted interventions. Fortnightly surveys are conducted during implementation to assess each initiative's effectiveness, enabling real-time adjustments.

For this project, the validated Mini Z survey, [3,4] adapted by SCV, was an anonymous quantitative tool deployed fortnightly to monitor burnout levels. The survey consisted of fourteen items assessing nine JIW [1] framework components. In this project, the initial six surveys established a baseline to identify team concerns, with later iterations narrowing to nine items to focus on emerging trends. The survey served as a feedback loop to adapt interventions. However, overlapping projects contributed to survey fatigue, resulting in a three-month participation gap partway through the project. The average participation rate for the year was 36.6%.

WHAT MATTERS TO YOU CONVERSATIONS

WMTY [5] conversations were one-on-one sessions facilitated by the project lead, conducted during the first and sixth months to collect anonymised qualitative data categorised under the nine JIW [1] predictors, deepening the understanding of clinician experiences. Four standardised, open-ended questions invited employees to share their views:

1. What matters to you at work currently?
2. What would make your shift easier/more enjoyable?
3. What would make work less stressful?
4. Do you have any other thoughts?

The impact-effort matrix [6] enabled clinicians to collaboratively rank potential solutions by impact and effort after collecting WMTY responses. [1]

In this project, high-impact, low-effort solutions, such as weekly team updates communicated via email, were implemented immediately to generate quick wins and boost morale. Concurrently, high-impact, high-effort initiatives, like a revised onboarding protocol for new and supervising employees and updated clinical resource tools, were prioritised for phased implementation.

After the 12-month project, the mean Care Coordination team Mini Z [4] Score was 1.57 indicating staff perceived burnout was "little to no stress with no burnout symptoms"

This approach addressed immediate concerns while laying the groundwork for sustainable improvements.

Given the project's success within the Care Coordination team, a toolkit was developed to replicate the initiative in other allied health settings across the organisation to equip employees with varying quality improvement experience. Challenges such as survey fatigue were addressed by recommending monthly surveys integrated into team meetings, reducing workload. The toolkit's effectiveness is currently being trialed and evaluated.

LEARNING

To guide similar wellbeing projects in healthcare environments.

- **Employee Engagement is Essential:** Engaging employees in problem identification and solution-building processes proved to be a motivator and source of innovation. Clinicians appreciated having their voices heard and involved in shaping solutions, which increased their commitment to the interventions.
- **Holistic Data Collection Enhances Insights:** Combining the quantitative data from the Mini Z [4] survey with qualitative insights from WMTY [5] conversations offered a comprehensive understanding of burnout. While the survey quantified burnout, conversations revealed deeper personal factors driving it. Using the impact-effort matrix [6] further enabled the team to prioritise actions. This approach supported decision-making and stakeholder engagement, ensuring interventions were targeted and effective.

- **Continuous Feedback Loops Foster Resilience**: Establishing regular feedback mechanisms with leadership sustained the momentum of the wellbeing initiatives. Routine discussions enabled timely adjustments, ensuring strategies remained responsive to evolving needs. These feedback loops also reinforced a culture of trust, collaboration, and adaptability within the team.

IMPACT FOR PRACTICE

This structured, team-based approach to addressing burnout demonstrated benefits for the Care Coordination team and provided a potential replicable model for broader application. The integration of the JIW [1] framework, adapted Mini Z [4] survey, WMTY [5] conversations, and the impact-effort matrix6 fostered a comprehensive understanding of burnout while enabling targeted, high-impact interventions. Continuous feedback loops and collaborative decision- making in enhancing employee engagement and resilience.

The toolkit highlighted the initiative's potential scalability, offering a resource for allied health teams to adapt to their unique contexts. This approach aligns with the goals of promoting clinician wellbeing, optimising patient care, and supporting a sustainable workforce.

FUNDING:

This work was supported and funded by Monash Health. Joy In Work project was completed in collaboration with Safer Care Victoria

References

1. Perlo J, Balik B, Swensen S, Kabcenell A, Landsman J, Feeley D. IHI Framework for Improving Joy in Work. IHI White Paper. Cambridge (MA): Institute for Healthcare Improvement; 2017. Available from: https://www.ihi.org/resources/white-papers/ihi-framework-improving-joy-work
2. Safer Care Victoria. Wellbeing for healthcare workers initiative [Internet]. Melbourne (AU): Safer Care Victoria; 2023 [cited 2024 Nov 16]. Available from: https://www.safercare.vic.gov.au/best-practice-improvement/healthcare-worker-wellbeing-centre/wellbeing-healthcare-workers-initiative
3. Khanna N, Montgomery R, Klyushnenkova E. Joy in Work for Clinicians and Staff: Identifying Remedial Predictors of Burnout from the Mini Z Survey. Journal of the American Board of Family Medicine. 2020;33(3):357-367. doi:10.3122/jabfm.2020.03.190458
4. Institute for Professional Worklife. Mini Z survey [Internet]. 2020 [cited 2024 Nov 29].Available from: https://www.professionalworklife.com/mini-z-survey#:~:text=The%20Mini%20Z%20survey%20is,temperature%20of%20your%20work%20environment .
5. 'What matters to you?' Conversation guide for improving joy in work (2024) Institute for Healthcare Improvement. Available at: https://www.ihi.org/resources/tools/what-matters- you-conversation-guide-improving-joy-work (Accessed: 02 December 2024).
6. ASQ. Impact effort matrix [Internet]. Milwaukee (WI): American Society for Quality; [cited 2024 Nov 16]. Available from: https://asq.org/quality-resources/impact-effort-matrix?srsltid=AfmBOoqcbmg55JeOHCzqoHbg3YVeoqmuENjVPZRxFrCz1t8MOTxuYPdX
7. Gualano MR, Sinigaglia T, Lo Moro G, et al. The Burden of Burnout among Healthcare Professionals of Intensive Care Units and Emergency Departments during the COVID-19 Pandemic: A Systematic Review. International journal of environmental research and public health. 2021;18(15):8172. doi:10.3390/ijerph18158172
8. World Health Organization. Burn-out an 'occupational phenomenon': International classification of diseases [Internet]. Geneva (CH): WHO; 2019 [cited 2024 Nov 16]. Available from: https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases
9. Australian Institute of Health and Welfare. Older Australians: demographic profile [Internet]. Canberra (AU): AIHW; 2024 [cited 2024 Nov 16]. Available from: https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile
10. Scheepers RA, Boerebach BC, Arah OA, Heineman MJ, Lombarts KM. A Systematic Review of the Impact of Physicians' Occupational Well-Being on the Quality of Patient Care. Int J Behav Med. 2015 Dec;22(6):683-98. doi: 10.1007/s12529-015-9473-3. PMID: 25733349; PMCID: PMC4642595.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

KEY DISSEMINATION LEARNINGS FROM AN INNOVATIVE, VALUE-BASED EMERGENCY DEPARTMENT PREVENTION PROGRAM

Rohie Marshall

Brisbane North Primary Health Network, Metro North Health, Queensland, Australia

Correspondence: rohie.marshall@brisbanenorthphn.org.au

PROBLEM

The Caboolture and Redcliffe regions of North Brisbane have experienced rapid population growth in recent years, with high levels of emergency department (ED) use, an ageing population, and a high proportion of complex health and psychosocial needs.

INTERVENTION/APPROACH:

An innovative intervention was co-designed to reduce unnecessary emergency department (ED) presentations by those with chronic complex conditions in the selected regions (Caboolture and Redcliffe). Local general practices (GPs) were approached to participate in the program, now titled the 'Care Collective,' and provided with a funding package to build the capacity of the practice to employ an existing practice nurse or utilise a contracted nurse to upskill in a coordination role. The nurses, titled Complex Care Coordinators (CCCs), connect eligible clients with existing services in the community, aiming to improve patient quality of life, health literacy, and ability to self-manage their condition; in turn reducing unnecessary ED presentations and hospital admissions. The program has been funded by the Department of Health and Aged Care Primary Pilots Program.

CCCS SPEND SIGNIFICANT TIME:

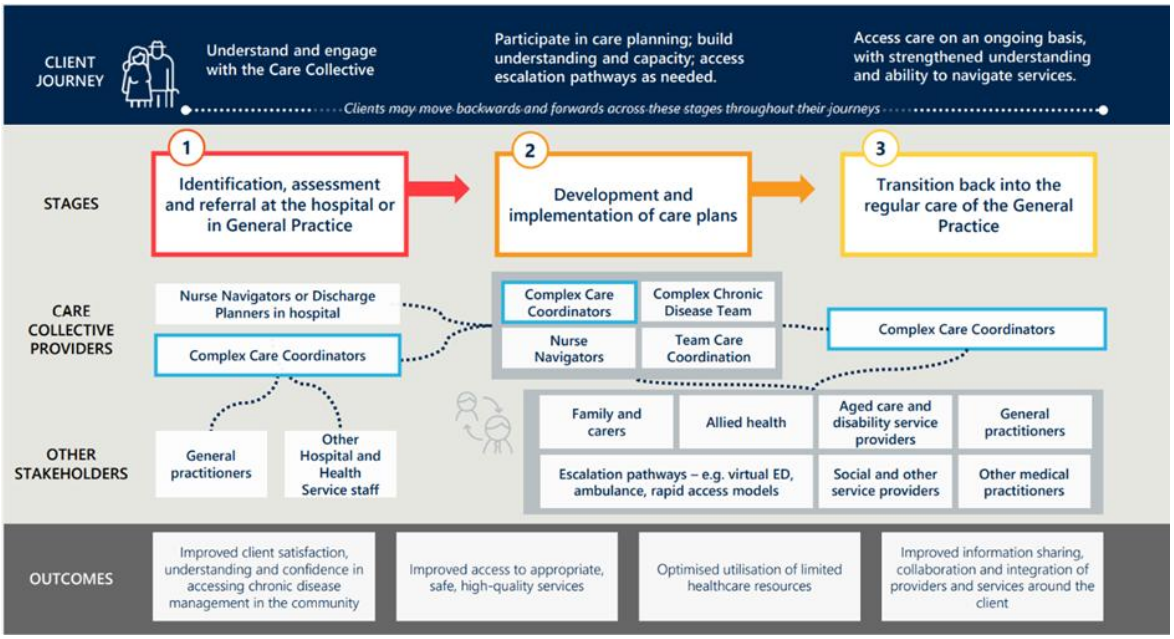
- Increasing clients' health literacy and understanding of their chronic conditions.
- Ensuring community-based services pick up all outgoing referrals.
- Regularly communicating with clients to avoid missed opportunities.

This comprehensive support helps clients set health goals and move towards self-managing their chronic conditions. The program dissemination was implemented in two distinct phases – a pilot phase, implemented in Caboolture and a second phase, implemented in both Caboolture and Redcliffe regions (North of Brisbane, Queensland), and aligned with Rogers Theory of Diffusion of Innovations [1]. In line with the well-known challenge of converting effective, patient benefitting innovations into widely implemented programs (Dixon-Woods et al, [2] and Horton et al, [3]), we aimed to share key learnings accumulated over 24 months of implementation[1] to support potential further diffusion of the intervention in a context-specific manner. Consent to collect and share deidentified data was gained from all practices and clients involved in the program.

[1] Implementation is used throughout to mean "the constellation of processes intended to get an intervention into use within an organization" as in Rabin et al (4).

Asia Pacific Journal of Health Management 2024; 19(3):i4151. doi: 10.24083/apjhm.v19i3.4151

FIGURE 1: THE CO-DESIGNED MODEL OF CARE IMPLEMENTED IN BOTH REGIONS.



LEARNINGS

Throughout implementation of the program, several key learning opportunities emerged.

THESE INCLUDED:

Data sharing

- During the pilot phase of the program, activity data was collected by each CCC. Due to funding constraints allowing only a small number of practices to participate, the decision was made to collect only baseline deidentified data using a simplistic data collection method. An existing data-sharing agreement between Brisbane North PHN and Metro North Hospital and Health Service allowed the secure data sharing of some patient information, for evaluation of the pilot.
- In the second phase of the program, data collection was enhanced and a Statistical Linkage Key introduced (SLK-581 [5]) to enable the 'matching' of deidentified data from CCCs and ED data from Redcliffe and Caboolture hospitals. This created a robust set of integrated data, allowing for the tracking of clients through the health system and an understanding of the efficacy of the program.
- Future studies may wish to consider longitudinal impacts of the intervention, as these were not considered in program evaluations to date.

Introduction of a new role

- Developing a strong value proposition for practices was key to identifying the program's benefits to clients, the workforce, and the wider system. Financial incentives supported initial registration but had less impact on sustaining ongoing change management.
- Practices most likely to adopt the initiative were classified as Innovators or Early Adopters [1], who understood the program's relative advantage and often became Change Agents within their organisations. Tailoring communication strategies to these groups facilitated effective implementation.

Funding Structure

- The program's funding structure represents a significant shift toward value-based healthcare, signalling a transformative change for general practice. However, the financial return on investment is currently most evident at the tertiary level. Therefore, convincing general practices to engage with the program can be challenging, particularly given their focus on financial sustainability in a demanding economic environment and their preference for the predictability of existing systems.

Identifying prospective clients

- Initially it seemed logical to identify frequent ED presenters within the ED itself and then refer them to the program through the relevant general practice (GP). This was the original implementation method.

- However, it soon became apparent that the program's limited scope—both in terms of targeted conditions and participating GP practices—posed significant challenges for ED staff. As a result, they continued to refer patients to an existing service, Team Care Coordination (TCC), which was part of the Care Collective program, due to established referral processes from an earlier pilot phase. The lack of a dedicated staff member or allocated time in the ED for managing referrals meant that both retrospective data analysis and real-time referrals were not effectively implemented throughout the program's duration.
- General practices focused on proactively identifying eligible clients. Although the ED referral pathway directly to GPs was ineffective, the Care Coordination Centres (CCCs) continued to proactively enrol clients and coordinate with TCC for mutual clients referred via the hospital. It remains unclear whether the shift from clients who had already made multiple unnecessary presentations to those at risk of making such presentations significantly impacted the program's outcomes. Future implementations should prioritise fidelity to program aims rather than adhering to a prescribed model.

Digital Capability

- Interoperability remains a goal in the Australian healthcare system. While The Health Provider Portal ('The Viewer') is integrated into tertiary care, there is limited understanding of the varying access levels for external providers, such as GPs and CCCs. Efforts are needed to align understandings of the different information visible to providers.

Communication and Collaboration

- The program design prioritised enhancing communication and collaboration between providers, as identified by stakeholders during the co-design phase. However, disrupting the status quo proved challenging in practice. Stakeholder interviews highlighted various reasons for this – including mismatched availability, clinical documentation requirements, and difficulty in maintaining current contact details.
- Sending information via the Health Provider Portal proved to require a change in process for many providers, with post and faxes still being utilised for sharing of patient information.
- Providers generally preferred sending written referrals, which could be tracked within their clinical software, over making direct contact with another clinician and documenting the conversation. These preferences act as a limiting factor in the shared care approach.

IMPACT FOR PRACTICE:

Value based healthcare – The Care Collective program continues, and early evaluations indicate high levels of client and provider satisfaction, as well as high return on investment and lowered unnecessary presentations to EDs in the North Brisbane region. As the Australian healthcare funding landscape shifts towards value-based and away from activity based, innovative programs such as the Care Collective will be seen more frequently. Program teams should be cognisant of the outlined learnings and how they may apply across the sector.

FUNDING:

The Care Collective program has been funded by the Department of Health and Aged Care Primary Pilots Program.

References:

1. Rogers EM. Diffusion of Innovations. 5th Ed. New York: Free Press; 2003
2. Dixon-Woods M, Leslie M, Tarrant C, Bion J. Explaining Matching Michigan: an ethnographic study of a patient safety program. Implement Sci. [Internet] 2013 [cited 2024 Nov 25];8:70. Available from https://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-8-70 doi: https://doi.org/10.1186/1748-5908-8-70
3. Horton TJ, Illingworth JH, Warburton WH. Overcoming challenges in codifying and replicating complex health care interventions. Health Affairs. [Internet] 2018 Feb 1 [cited 2024 Nov 25] ;37(2):191-7. Available from https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2017.1161
4. Rabin BA, Brownson RC, Haire-Joshu D, Kreuter MW, Weaver NL. A glossary for dissemination and implementation research in health. J Public Health Manag Pract. [Internet] 2008 [cited 2024 Nov 20];14: 117-123. Available from https://journals.lww.com/jphmp/abstract/2008/03000/a_glossary_for_dissemination_and_implementation.7.aspx doi: 10.1097/01.PHH.0000311888.06252.bb
5. Australian Institute of Health and Welfare. Metadata Online Registry (METEOR) [Internet]. Canberra: AIHW; 2024 [cited 2024 Nov 25]. Available from https://meteor.aihw.gov.au/content/686241

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

HARNESSING THE POWER OF CO-DESIGN: INSIGHTS FROM BARWON HEALTH, VICTORIA, AUSTRALIA

*Dr Rachel Tindall** [1,2], *Anna Sowden* [1], *Professor Steven Moylan* [1,2]

1. Mental Health Drug and Alcohol Service, Barwon Health, Geelong, Australia
2. School of Medicine, Faculty of Health, Deakin University, Victoria, Australia

Correspondence: Rachel.tindall@barwonhealth.org.au

ABSTRACT

This report describes how Barwon Health, a regional public health service in Geelong, Victoria, has incorporated co-design methodologies and mindsets into creating and implementing new mental health programs and services. It outlines challenges, processes, learnings, and impacts and offers practical insights for other health services aiming to implement co-design. By involving diverse perspectives at every step, from problem definition to solution implementation, Barwon Health has become a leader in creating person-centred mental health services that begin to address known systemic challenges.

KEYWORDS

regional public health service, person-centred, mental health

PROBLEM/ISSUES

Recent reviews highlight the challenges faced by mental health service systems [1,2]. Increasing community expectations and the growing complexity of needs, evident in rising rates and the diverse nature of mental health challenges, are driven by factors such as social isolation, economic inequity, and the lingering effects of COVID-19 [3]. These pressures are straining traditional care delivery systems, which are sometimes perceived as unhelpful and even harmful [4]. New service design approaches are urgently needed to respond to these current and future challenges appropriately [5].

In summary, three key challenges are:

- Changing demand dynamics: rising rates and diversity of mental ill health and distress, alongside changing community expectations, are not being adequately addressed by traditional care models.
- A disconnect between theory and practice: service design often fails to capture the complexities frontline providers and service users face.
- Potential for harm in traditional approaches: without inclusive and considered planning, some mental health interventions may unintentionally worsen patient outcomes.

INTERVENTION/APPROACHES

Following the release of the Royal Commission into Victoria's Mental Health System report [1], the Victorian Government invested significantly in mental health service expansion and reform. To ensure maximal value was extracted from this investment, Barwon Health formally

Asia Pacific Journal of Health Management 2024; 19(3):i4155. doi: 10.24083/apjhm.v19i3.4155

implemented co-design as a fundamental component of their service reform. Each new project was assessed against a formalised co-design suitability matrix, with all new, major projects that had infrastructure components or changes to models of care developed through a formal co-design methodology [6]. Smaller projects considered available resources and the feasibility of facilitating co-design, noting that good consultation could, at times, have better outcomes than poorly resourced co-design approaches [5,6,7].

Each co-design project team consisted of a paid group of consumers, caregivers, clinical staff, and, where possible, a neutral facilitator. The team collaborated with broader networks (e.g., consumer networks, clinicians, and community groups) to gather a range of insights, striving to ensure that the design of mental health services and programs reflected the diversity of experience, cultures, and demographics across the region [6].

Key steps in the approach were:

1) Formation of the core team: a small, stable team was established, comprising individuals who held key perspectives relevant to the new service.
2) Facilitating broader consultation: team members established connections with larger networks and gathered feedback, insights, stories and experiences from these connections.
3) Establishing a safe and equitable dialogue: the co-design group cultivated a space that encouraged open expression and mutual respect, essential for addressing emotionally charged topics in a psychologically safe way.
4) Maintaining focus on iterative, solution-focused innovation: through hearing the experiences of all present within the room and sharing stories, problems were able to be deeply understood, and innovative, practical outcomes were identified.

LEARNINGS

Through the co-design process, Barwon Health gained valuable insights, uncovering key practices to enhance collaboration within co-design:

1. **Respecting diverse values and experiences.**
   Fostering empathy and collaboration required acknowledging each team member's unique background, knowledge, experience and privilege. Unpacking this early in team formation deepened connections, supported authenticity, and clarified roles and responsibilities, ultimately leading to more effective teamwork.
2. **Prioritising safety and equity**
   The co-design team cultivated a safe space for open dialogue, enabling participants to engage in sensitive conversations with confidence. Meeting diverse needs and ensuring full participation required deliberate effort from all members of the group, especially during challenging discussions on emotionally charged topics.
3. **Building skills for effective participation**
   Training co-designers to articulate experiences rather than focusing solely on outcomes enriched discussions and encouraged innovation. Emphasising lived experiences and their impact created room to explore values and generate creative solutions.
4. **Forming small, focused co-design teams**
   Small teams effectively represented key perspectives and facilitated continuity, collaboration, and psychological safety.
5. **Engaging inclusive consultation networks**
   Reaching out to a broad range of stakeholders ensured diverse insights and subsequently enhanced design outcomes.
6. **Providing continuous training and reflective supervision**
   Ongoing skill development and individual supervision empowered co-designers to communicate effectively and engage with empathy, strengthening overall collaboration and enriching the co-design process.

These learnings underscored the importance of flexibility, openness, and equity in co-design. The process enabled team members to navigate emotional topics thoughtfully, generating designs and ideas that better reflected the community's needs.

IMPACTS ON PRACTICE

The co-design methodology at Barwon Health showcases several impactful practices that other public health systems could adopt, especially when working within resource constraints. The approach has been used to design and implement new acute inpatient facilities, a mental health hospital in the home service, a youth sub-acute facility and a mental health and wellbeing service offering primary and

secondary mental health care (Mental Health and Wellbeing Locals [8]).

Although it is too early to fully assess the impact of the co-design process on outcomes drawn from these new services, anecdotal evidence suggests that the services have been very well-received by both frontline workers and service users. Further research is recommended to evaluate the effectiveness of co-designed services, particularly in terms of their ability to address the complexities faced by clinicians and service users and their potential to improve patient outcomes. Such research would provide a clearer understanding of the practical benefits and impacts of co-design in mental health services and programs.

CONCLUSION

Barwon Health's co-design project demonstrates the power of inclusive planning in public mental health service development. The insights from this initiative provide a valuable model for health systems seeking to integrate co-design in practice.

References

1. State of Victoria. Royal Commission into Victoria's Mental Health System, Final Report, Summary and Recommendations. Parl Paper No. 202, Session 2018–21. 2021.
2. Productivity Commission. Mental Health, Inquiry Report No. 95. Canberra: Commonwealth of Australia; 2020
3. World Health Organization. The impact of COVID-19 on mental health: early evidence of the pandemic's impact. Geneva, Switzerland: World Health Organization; 2022.
4. Katterl S. Preventing and responding to harm: Restorative and responsive mental health regulation in Victoria. Australian Journal of Social Issues. 2023 Jun;58(2):441-55.
5. Blomkamp E. The promise of co-design for public policy. Aust J Public Adm. 2018;77(4):729–43.
6. Tindall RM, Ferris M, Townsend M, Boschert G, Moylan S. A first-hand experience of co-design in mental health service design: Opportunities, challenges, and lessons. Int J Ment Health Nurs. 2021;30(6):1696–704.
7. McKercher K. Beyond sticky notes: co-design for social impact. Sydney, Australia: Beyond Sticky Notes; 2022.
8. Department of Health, Victoria State Government. Mental health and wellbeing locals [Internet]. Melbourne: Victoria State Government; 2023 [cited 2024 Nov 4]. Available from: https://www.health.vic.gov.au/mental-health-services/mental-health-and-wellbeing-locals

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

HUNTER NEW ENGLAND AND CENTRAL COAST PRIMARY HEALTH NETWORK (THE PHN) JOURNEY TO EMPLOYER OF CHOICE: A BRIEF NOTE

Kirby Wall

Hunter New England and Central Coach Primary Health Network, HNECC Limited, NSW, Australia

Correspondence: kwall@thephn.om.au

ABSTRACT

In 2019, the PHN initiated a three-year People and Culture (P&C) Strategy (2020-2023) aimed at enhancing organisational culture and achieving the Australian Business Awards Employer of Choice [EOC®]. This recognition was awarded to the PHN in 2023, the first Primary Health Network to receive the honour. The Strategy focused on four key pillars of the EOC Framework: Culture, Leadership, and Strategy; Education, Training, and Development; Performance, Recognition, and Remuneration; and Health, Safety, and Satisfaction.[1] These brief outlines the PHN's journey to achieve this goal and provides an overview of the PHN's new three-year PHN EOC Strategy to continue building exceptional capability, culture, and delivery.

KEYWORDS

primary health network, employer of choice, training, education

PROBLEMS ADDRESSED

The first step was clarifying the vision to become an EOC and creating an internal business case. The business case covered many areas including highlighting the links between attracting and retaining top talent with high performance. A global survey from McKinsey suggests that high performers are 50% more productive than average ones and in highly complex occupations such as the work of managers and software developers, high performers are astounding 800% more productive. [2] Working directly with PHN leadership on the original vision to obtain buy in, enabled this to be lead from the top.

Next was to explore becoming an EOC and there are many avenues. [3] Rather than just claiming a title, the PHN adopted an evidence-based approach to strengthen its P&C Strategy, enhancing retention, performance, and attraction. The Australian Business Awards EOC Framework offered a structured, criteria-based model for assessment, enabling benchmarking and learning among participating organisations.

APPROACH

The PHN approached this vision by consulting PHN leadership and employees to develop a P&C Strategy underpinned by the key attributes of the EOC Framework that outline the characteristics of well-managed, high-performing, industry-leading organisations that provide a stimulating and supportive workplace. [4] This initial strategy was set out over three years to support achievement against the four pillars of the framework.

CULTURE, LEADERSHIP, AND STRATEGY

The first pillar fosters a workplace culture aligned with the PHN's purpose and values while driving outcomes. To achieve this, the PHN enhanced internal communication to align employees with organisational goals. Key interventions included:

- Strategy and Communication: the PHN organisational strategy development involved wide consultation, regular team briefings and monthly one-on-one meetings. All-staff gatherings were implemented to maintain clear and consistent communication. Off-site sessions with each portfolio further reinforced the strategic direction and encouraged cross-functional cohesion.
- Leadership Development: the PHN invested significantly in developing leadership capabilities. Managers engaged in foundational training programs and group leadership workshops, complemented by a structured talent management initiative to nurture a pipeline of internal talent.
- Technology and Flexibility: to support a hybrid workforce across a vast region, the PHN invested in technology and adopted flexible work arrangements with a minimum office attendance of 40%. This reduced location silos.

EDUCATION, TRAINING, AND DEVELOPMENT

In 2023, the PHN significantly expanded learning and development initiatives to build internal capacity. Through a comprehensive learning program, 25% of employees advanced to higher roles, and 30% were promoted or seconded. The key components of this program included:

- Continuous Professional Development: individual and group training sessions focused on skills relevant to strategic priorities and a PHN Learning Hub landing page, fostering a culture of continuous learning.

PERFORMANCE, RECOGNITION, AND REMUNERATION

The PHN recognises Daniel Pinks' theory that people are motivated though autonomy, mastery and purpose, and has designed systems, training, policies and tools to achieve its key ambitions. [6]

To align performance management with PHN values and capabilities, P&C re-introduced the Individual Accountability Planning (IAP) process. This process connects individual performance reviews with organisational objectives, encouraging accountability and recognising contributions. Key elements included the PHN Thumb's Up' Recognition Program to acknowledge employee achievements, strengthening motivation and aligning personal contributions with organisational goals.

In 2023, the PHN embedded talent management into its performance and potential framework. An Internal Talent Management process commenced with executives in 2023 and middle managers in 2024 where a process for high potential identification, calibration, and action planning was built into existing frameworks.

HEALTH, SAFETY, AND SATISFACTION

The PHN and its employees recognise that supporting the health and wellbeing of employees is fundamental to the development of a positive and productive organisational culture, and the successful achievement of the inspirational vision of 'Healthy People and Healthy Communities.'

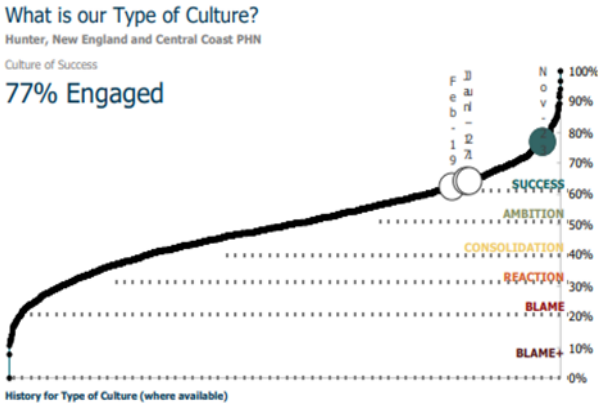
The P&C team developed an employee wellbeing strategy informed by Curtin University's Thrive at Work framework. [7] The result is a comprehensive plan that provides the PHN with a clear set of evidence-based strategies to address the full spectrum of mental health. [5] Some programs implemented over the period included Dr Darren Morton's "Lift project", "The Resilience Project TM", safe driver training, First Nations Protocols Guidelines, financial wellness and working well training, LinkedIn learning platform and family and domestic violence training.

The PHN also worked with internal stakeholders to develop and deliver its first Diversity Inclusion and Belonging strategy and supports internal working groups such as a "Staff Wellbeing and Engagement Team" – SWEET, "First Nations Collective" and "LGBTQIA+ Collaborative" to meet and develop initiatives and provide advice to leadership on improving inclusivity in the workplace. Next for the PHN is an "Innovate" Reconciliation Action Plan.

LEARNING AND IMPACT

This focused strategy and intentional work led to the PHN being recognised as an Australian Business Employer of Choice in August 2023 and 2024 and named the Business NSW Employer of Choice in the Hunter 2024.

The P&C Strategy not only earned the PHN the award, but it also led to a 13% increase in employee engagement, low voluntary turnover of 8.5% in 2023 and 94% of employees stating that the PHN is a "truly great" place to work. [9]



To maintain the PHN's position as an EOC, the P&C team has implemented a 2024 -2026 PHN Employer of Choice Strategy that maintains a commitment to curiously develop, grow, and evolve the workforce to reach its full potential. Over this period, the PHN has built and strengthened its capability to deliver, at the same time putting people first. These plans will set the PHN up to build on the achievement of being an EOC winner in 2023 and 2024.

2023 & 2024 Australian Business Employer of Choice and 2024 Hunter Business Employer of Choice winner.

References

1. Awardbase. EOC Framework [Framework]. Australia: Australian Business Awards 2024 Entry Guidelines; 2024 [cited 2024 Nov 24].7-9p. Available from: by request https://employerofchoiceawards.com.au/
2. McKinsey & Company. Attracting and retaining the right talent [Internet].[Updated 2017 Nov 24; cited 2024 Nov 24] Available from: https://www.mckinsey.com/business-functions/organization/our-insights/attracting-and-retaining-the-right-talent
3. Green Door Co. Employer of Choice Awards [Internet]. Sydney: Green Door Co.; 2024 [updated 2024 Nov 12; cited 2024 Nov 12]. Available from: https://greendoorco.com/employer-of-choice-awards
4. Employer of Choice Awards. Employer of Choice Awards [Internet]. Australia: Employer of Choice Awards; [cited 2024 Nov 19]. Available from: https://employerofchoiceawards.com.au/
5. Awardbase. EOC Framework [Image]. Australia: Australian Business Awards; 2024. EOC Framework graphic; p. 7. Available from: https://employerofchoiceawards.com.au/
6. Pink DH. Drive: The Surprising Truth About What Motivates Us [Book]. Motivation framework: autonomy, mastery, and purpose. New York: Riverhead Books; 2009.
7. Curtin University. Thrive at Work Framework [Internet]. Perth: Curtin University; 2023 Feb [cited 2024 Nov 14]. Available from: https://www.thriveatwork.org.au/framework/
8. Alexander D. 2023 Pride in Health + Wellbeing Awards Recipients. ACON [Internet]. 2023 [cited 2024 Nov 19]. Available from: https://www.acon.org.au/about-acon/latest-news/page/3/#awards-recognise-outstanding-achievements-in-lgbtq-inclusion-in-health-and-wellbeing-sectors
9. BPA Analytics. At a Glance 2023 PHN Benchmarking Study. 2024;January [cited 2024, Nov 19];page 1. Available from: Internal benchmarking report cohort #42518 URL: bpanz.com
10. BPA Analytics. At a Glance 2023 PHN Benchmarking Study. 2024;January [cited 2024, Nov 19];page 1. Available from: Internal benchmarking report cohort #42518 URL: bpanz.com

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

CREATING CONDITIONS FOR INNOVATION IN A COMPLEX HEALTH SYSTEM: A MANAGEMENT PRACTICE ANALYSIS

Sharon Mickan

Mosaic Health Consulting, Australia

Correspondence: sharon.mickan@mosaichealthconsulting.com.au

INTRODUCTION

As extended lifespans, rapid technological evolution and rising public expectations are increasing the complexity of our healthcare systems, health leaders need to innovate to gain sustainable improvements [1]. However, the aspiration of innovation is very different from its actual implementation. Traditionally, health systems prioritise operational efficiency and standardised practices to ensure patient safety. While essential, these priorities can inadvertently limit the flexibility required for innovation [2]. Leaders are therefore challenged to balance these operational needs with the desire to explore new ideas and solutions [3].

This Management Practice Analysis will summarise insights from the business literature and demonstrate how health leaders can create conditions for innovation, using a leadership case study from current practice.

LEADING INNOVATION

At its core, innovation describes the process around the application of new or different ideas that address an important problem and generate valuable outcomes. Most commonly, in healthcare, innovation refers to introducing products and/or adapting processes [3].

Innovation is often described by business researchers as the appropriate leadership response to increasing complexity [4]. Professor Mary Uhl-Bien describes innovation emerging from the way people interact within unpredictable and interconnected systems. When leaders encourage collaboration among people with different ways of thinking, professional backgrounds, and expertise, this helps everyone better understand the problem and come up with a wider range of potential solutions. As leaders recognise and balance the tensions between stability and change, they encourage experimentation within a structured framework. Innovation therefore develops in an adaptive space in organisations, between operational and entrepreneurial domains [5].

Professor Linda Hill argues that leading innovation is about harnessing collective genius through collaborative problem-solving, rather than crafting a vision and inspiring others to follow it. In this way, the group defines the important problem, and leaders facilitate the process of releasing creative agility to test and refine possible solutions. In these situations, leading innovation can be challenging as leaders don't have all the answers, but they need to create a safe environment that balances constructive disagreement with mutual support. Specifically, leaders can foster innovation, through cultivating a shared purpose, explicitly communicating values, and establishing clear rules of engagement. These elements create an atmosphere where individuals feel motivated and supported to contribute their unique talents, or 'personal genius' [6].

THE PROBLEM OF ENGAGING CLINICIANS IN RESEARCH

An opportunity to lead innovation emerged when I was tasked with supporting clinicians' interest and engagement in research, as I moved into an inaugural research leadership position for a large regional health service. I

Asia Pacific Journal of Health Management 2024; 19(3):i4159. doi: 10.24083/apjhm.v19i3.4159

discussed the extant research evidence that engaging clinicians and organisations in research could improve organisational performance, patient outcomes and staff satisfaction, with allied health leaders and health service executives (7,8). There was agreement that limited engagement of allied health clinicians in research activities was an important problem. Therefore, I set out to clarify the extent of allied health clinicians' engagement in research, while also considering valuable outcomes for clinicians, their patients and the organisation [9].

CASE STUDY - LEADING INNOVATION

This case study summarises the way in which I approached this 'important problem'. I have explained my actions in relation to six key principles, that have been informed by the previous two business researchers [5, 6].

1. CLARIFY SHARED PURPOSE AND VALUES

I facilitated discussion within a multidisciplinary group of embedded allied health researchers and research interested clinicians to understand how to support clinician peers to understand and use research to enhance their clinical practice. We quickly agreed on a shared purpose of promoting evidence-based healthcare throughout the healthcare organisation. Everyone was aware of the potential benefits to patients and the organisation of using high quality research evidence. This shared purpose was also consistent with organisational priorities and expectations of my role.

However, there was robust discussion about how to do this. There was no clear best way forward. The research evidence was limited and within the group, there were different perspectives about things we could and should do. I recognised that we were experiencing the uncertainty and ambiguity of a complex health system and that my leadership needed to reflect this.

2. CREATE A COMMUNITY WHERE INDIVIDUALS ARE WILLING AND ABLE TO INNOVATE

Rather than creating a vision, and inspiring others to execute it, I focussed on creating a psychologically safe space with clear rules of engagement. I aimed to create a culture that could support innovation, by ensuring we were all willing and able to innovate. Individuals must feel safe to share ideas, take risks, challenge conventional thinking and learn from failures.

I recognised that researchers and clinicians had limited and inconsistent experience of being expected or encouraged to solve problems and innovate. Most of them did not see innovation as a part of their job. I knew it would take time to build trust and respect to do this. Therefore, I encouraged safe spaces for sharing diverse expertise and differing points of view and allowed time for experimentation and progressive learning.

To complement the safe and supportive culture, I also created an adaptive space, that was distinct from operational workspaces. I created a hub of hot desks and established formal and informal communication schedules to discuss new ideas and explore different ways of working together. We created our own meetings and work schedules and reported progress regularly to clinician and management peers. This structured environment reinforced the innovative culture, where people felt safe to experiment and try new things.

3. PROVIDE CLEAR RULES OF ENGAGEMENT

Building on the shared purpose and safe environment for discussion, I needed to provide clear rules of engagement, that allowed both time and resources to engage in innovation projects. Total freedom to discuss and debate would never generate the valuable outcomes that were expected of successful innovations.

Within the multidisciplinary group of embedded researchers, we utilised, and role modelled our research skills to co-design an implementation study where embedded 'research fellows' would support interested clinicians to participate in local research projects. We utilised the emerging evidence for knowledge brokering skills to inform the support options provided by research fellows. We developed a logic model to describe how we would operationalise our activities [9].

Therefore, the research design, which we all contributed to, provided clear rules for research fellows to engage with and support allied health clinicians. We incorporated our shared purpose and values in designing these practical ways of working.

4. ENSURE SUFFICIENT TIME AND RESOURCES TO ENGAGE IN INNOVATION PROJECTS

It is often very difficult in busy and hierarchical organisations to safeguard time and resources for interested individuals to engage in innovation projects. Like research activities, innovation cannot be sustainably implemented in

clinicians' own time. This is where a key challenge presents itself, for leaders to explore creative ways to work within current budgets to enable innovation projects.

I was able to use the research study to safeguard an innovation project. This implementation research was funded to provide research fellows and interested clinicians time and resources to work together. I enabled open and honest discussion, and we developed clear processes to document and record this work. Regular meetings and discussion supported careful formal and informal monitoring.

5. EXPERIMENT WITH BEST SOLUTIONS

While research fellows were allocated to work with interested clinicians, they had autonomy to develop individualised meeting schedules and research goals with each clinician. They generated new and different ideas through critical and constructive conversations with each clinician. There were many competing priorities for busy clinicians, and it was important for research fellows to listen to and respect different perspectives about participating in research.

My role was to facilitate the creativity between research fellows and clinicians, while maintaining compliance to the structured framework of the research study. Over time, research fellows experimented with different strategies to encourage research participation. Together, we discussed what worked well and not so well and everyone learned from these experiences.

Within the time frame of the research study, research fellows described making adaptations to keep each clinician participating in their local research project, within their unique work context and expectations. Through regular reflection and discussion, I role modelled and supported creative decision making, in order to navigate these challenges.

6. IMPLEMENT INTEGRATED OUTCOMES

Implementation science theories and strategies were used within this project to determine effective outcomes and processes that enabled clinicians to participate in local research projects. I ensured that all clinicians were able to demonstrate positive impact for their peers and their patients. I also ensured that research fellows documented the way they progressively utilised a range of successful knowledge brokering strategies to engage clinicians in research. Together we closed the loop on publishing our results, so that future clinicians and researchers can be better informed (10).

DISCUSSION

This Management Practice Analysis highlights that creating conditions for innovation in complex health systems is not only possible, but essential for addressing important problems in a sustainable and responsive manner. Leaders can play a pivotal role in defining a clear purpose and shared values, fostering safe and adaptive spaces, and balancing operational needs with experimentation.

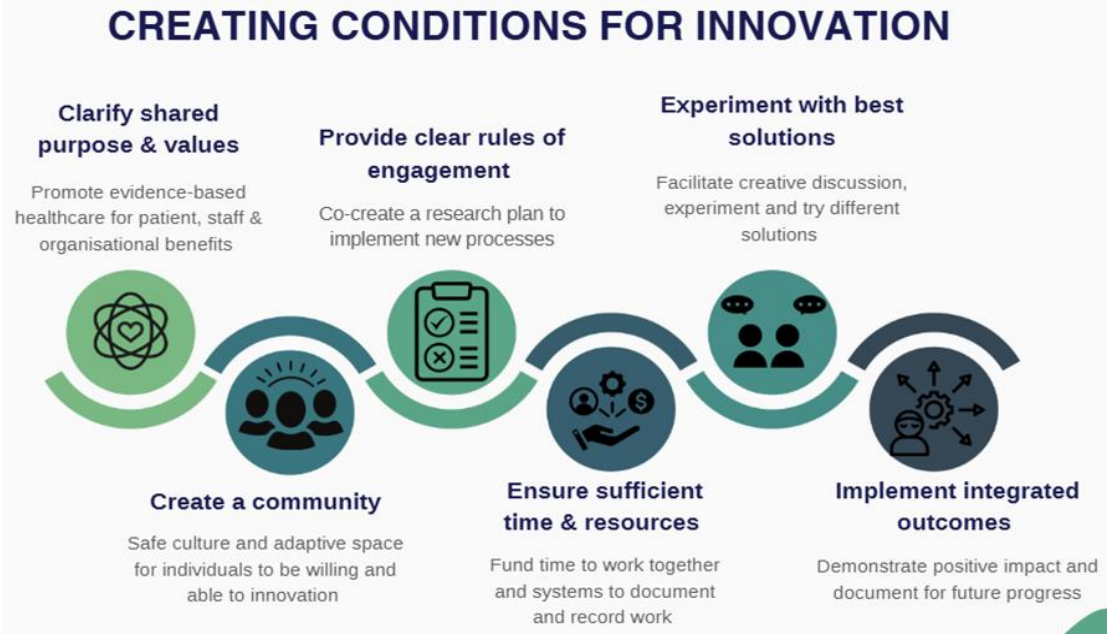
This contemporary case study has demonstrated that insights from the business literature can guide health leaders and their teams to participate and engage in the process of innovation, as they adapt to complex and dynamic situations. An opportunity to lead innovation emerged when there was no clear solution to the important problem of engaging clinicians in research. The following six key principles were synthesised from the business literature and applied in practice.

1. Clarify shared purpose and values
2. Create a community where individuals are willing and able to innovate
3. Provide clear rules of engagement
4. Ensure sufficient time and resources to engage in innovation projects
5. Experiment with best solutions
6. Implement integrated outcomes (see Figure 1)

In practice, health leaders who cultivate adaptive spaces and adopt complexity principles position their organisations for continuous learning and growth through innovation. By applying business strategies, leaders can encourage the constructive resolution of tensions across multiple stakeholder perspectives and ultimately enhance healthcare services and patient outcomes.

Future research and application are needed to develop health specific strategies for implementing adaptive spaces within complex healthcare systems. Additionally, investing in leadership development will be critical to ensure leaders and their teams have the attitudes and capabilities to lead and support innovation within their busy organisations.

FIGURE 1. CREATING CONDITIONS FOR INNOVATION



CONCLUSION

Creating conditions for innovation in complex health systems requires a different leadership approach. Importantly, health leaders can create conditions for critical and constructive conversations, with all stakeholders, and support creative agility and experimentation to creatively address important problems and generate valuable outcomes.

Establishing adaptive spaces between entrepreneurial and operational systems where experimentation can occur can transform how health leaders approach innovation. This structured roadmap balances the practical needs of healthcare operations, and the creative processes required for transformative change. As leaders create conditions for and actively lead innovation, they can inspire and implement meaningful change, making health systems more resilient, responsive and patient centred.

References

1. Flessa S, Huebner C. Innovations in Health Care—A Conceptual Framework. Int J Environ Res Public Health. 2021 Jan;18(19):10026.
2. On the barriers to significant innovation in and reform of healthcare - Gorman - 2015 - Internal Medicine Journal - Wiley Online Library [Internet]. [cited 2024 Nov 30]. Available from: https://onlinelibrary.wiley.com/doi/10.1111/imj.12775
3. DeWolf L. Understanding Innovation in Healthcare. J Healthc Qual JHQ. 2009 Feb;31(1):3.
4. Herzlinger R. Why innovation in health care is so hard. Harv Bus Rev [Internet]. 2006 May 1 [cited 2024 Nov 30]; Available from: https://www.semanticscholar.org/paper/Why-innovation-in-health-care-is-so-hard.-Herzlinger/b46cd50777921be1dfe28a4c780cf0c6ecea2557?utm_source=consensus
5. Uhl-Bien M. Complexity Leadership and Followership: Changed Leadership in a Changed World. J Change Manag. 2021 Apr 3;21(2):144–62.
6. Hill LA, Brandeau G, Truelove E, Lineback K. No longer casting themselves as solo visionaries, smart leaders are rewriting the rules of innovation.
7. Jonker L, Fisher SJ, Dagnan D. Patients admitted to more research-active hospitals have more confidence in staff and are better informed about their condition and medication: Results from a retrospective cross-sectional study. J Eval Clin Pract. 2020;26(1):203–8.
8. Harding K, Lynch L, Porter J, Taylor NF. Organisational benefits of a strong research culture in a health service: a systematic review. Aust Health Rev. 2016 Apr 14;41(1):45–53.
9. Mickan S, Wenke R, Weir K, Bialocerkowski A, Noble C. Strategies for research engagement of clinicians in allied health (STRETCH): a mixed methods research protocol. BMJ Open. 2017 Sep 1;7(9): e014876.

10. Mickan S, Wenke R, Weir K, Bialocerkowski A, Noble C. Using knowledge brokering activities to promote allied health clinicians' engagement in research: a qualitative exploration. BMJ Open. 2022 Apr 1;12(4): e060456.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

FROM CLINICIAN TO COMMISSIONER

Catherine Turner

Hunter New England and Central Coast Primary Health Network. NSW, Australia

Correspondence: cturner@thephn.com.au

EXECUTIVE SUMMARY

The need to develop a workforce who can deliver on the purpose of enhancing equity of access to primary care has been identified by one of the 31 Primary Health Networks (PHN) established by the Australian Government in 2015.

Over almost a decade, Hunter New England and Central Coast PHN has been undertaking assessments of its organisational capability to commission primary care services for the local community. The outcome of these assessments and of a training needs analysis for team members engaged in commissioning has lead to the development of a training program which is growing in sophistication.

This has lead to the development of a Primary Care Commissioning Development Centre, which coordinates education and training for PHN teams, service providers and primary care clinicians in many aspects of the commissioning of primary care.

KEYWORDS

Workforce, training, commissioning.

The Australian Government instituted the Primary Health Network (PHN) program in 2015 and the development of roles critical to Commissioning has been an iterative journey. [1] The purpose of Hunter New England and Central Coast Primary Health Network (HNECC) is to increase equity of access to primary care services. [2] There are 31 PHNS across Australia who are tasked with enhanced integration between aspects of the health system to enhance patient experience, demonstrate value for money and improved population health outcomes. To date, there have been limited formal opportunities to address the learning needs related to primary care commissioning.

As stated by Briggs et al [3] PHNS are complex organisations who are tasked with identifying local health needs and working with a range of stakeholders including General Practitioners, Local Health Districts, other primary health professionals and community stakeholders to identify innovative, cost effective and evidence-based initiatives. The PHNS then procure services on behalf of the funders, including the Federal and State Governments from service providers who deliver the care. Much of the provider facing work is delivered by Commissioning Coordinators, who are responsible for programs of work. These individuals may have clinical qualifications and experience, may have worked in health care or in business and identifying their learning needs and designing a program to ensure that they are equipped for the work has been developed over the last nine years.

While subject matter expertise is valued in the work, the other skills related to planning, design, delivery, monitoring and evaluation, and financial management are found in varying degrees amongst Commissioning Coordinators at HNECC. While some experienced clinicians bring monitoring and evaluation skills, others facilitation and design, others data analysis, and others contract management, no individuals operate at an expert level across all competencies.

In 2024, HNECC completed the third review of the Commissioning Competency of the organisation with a view to further clarifying the skills needed and the education programs required to prepare people for this work4. Needs identified in a recent training needs analysis included facilitation skills, codesign, managing difficult conversations and assuming leadership, often without clear authority.

As the PHN is committed to delivering value for money for the community in the services that it commissions, additional work has been undertaken to assist the commissioning team in understanding the cost of services. This has enabled us to develop contracts for programs which can be delivered sustainably but are also competitively priced with similar services. The PHN also undertakes talent identification work with all managers, to determine future leaders and to work with their teams on achieving their full potential.

While there remains a reliance on external consultants for some aspects of the work, including service design and production and formal evaluation, the PHN is committed to knowledge transfer wherever possible and provides opportunities for the team to work closely with the experts to develop their own capability. The program includes Procurement and Contract Management training, Stakeholder Engagement development, mentoring, and shadowing opportunities. Resources that support the role are included in a Commissioners Toolkit which the team continue to enhance.

Opportunities for leadership development include regular design and facilitation of seminar type events for the broader team. These events are also valuable occasions for the PHN team to connect with service partners from around the region where on occasion, the commissioners and the service partners learn together.

In 2024, HNECC has brought many of these initiatives together under the banner of the HNECC Primary Care Commissioning Development Centre. The Centre brings together both the resources and training for the HNECC team and those which are designed for service partners. These include programs that address Tender and Grant Submissions, Cyber Security risks and management, Business Coaching and Mentoring and soon to be introduced scholarships and traineeships. The Centre is in talks with a number of Tertiary Education providers to design and deliver programs which can be tailored for this growing workforce.

By taking a systematic approach to the complex issue of establishing a commissioning organisation, HNECC has been able to enhance its capability in all aspects of commissioning. The steps that are being taken currently will enable HNECC to continue to prepare its own team and those working in local services and teams from other PHNs to be able to stay abreast of the various aspects of health reform, commissioning services that meet local needs and providing purposeful career development experiences into the future.

References

1. Australian Institute of Health and Welfare. (2016). Primary health care in Australia. Retrieved from https://www.aihw.gov.au/reports/primary-health-care/primary-health-care-in-australia
2. Booth, M., Hill, G., Moore, M. J., Dalla, D., Moore, M. G., & Messenger, A. The new Australian Primary Health Networks: how will they integrate public health and primary care? Public Health Research & Practice, 2016. 26(1), e2611603. doi: 10.17061/phrp2611603
3. Briggs DS, Nankervis R, Baillie J, Turner C, Rigby K, Livingstone L Innovation to improve patient care in Australian Primary Health Network: an insider's perspective. Public Administration and Policy: An Asia Pacific Journal. 2019 22(2), 111-124. DOI:10.1108/PAP-09-2019-0017
4. Hunter New England and Central Coast Primary Health Network, (2024), Commissioning Competency Review. Retrieved from. Commissioning Competency Review - Primary Health Network

ACHSM Asia-Pacific Journal of Health Management

ACHSM COGRESS 2024

HOW TO ATTRACT, RETAIN AND GROW THE ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH WORKFORCE IN AUSTRALIA: A SELF-DETERMINED APPROACH

Jayde Fuller[1], Melissa Browning[1], Jacinta Evans[2], Nikola Balvin[2]*

1. Aboriginal and Torres Strait Islander Health Strategy Unit, Australian Health Practitioner Regulation Agency. VIC. Australia
2. Research Evaluation and Insights Team, Australian Health Practitioner Regulation Agency, VIC. Australia

Correspondence: jayde.fuller@ahpra.gov.au

ABSTRACT

Racism in the healthcare system results in harm experienced by Aboriginal and Torres Strait Islander Peoples. Countering racism and achieving culturally safe healthcare will not be possible without self-determination, meaning Aboriginal and Torres Strait Islander voices must drive the design and delivery of services and policy. The Australian Health Practitioner Regulation Agency (Ahpra) facilitated a webinar series that brought together Indigenous health sector leaders to discuss factors affecting the Aboriginal and Torres Strait Islander health workforce and identify policy actions needed to support positive change. Four key areas – Accept, Educate, Support, and Invest – were identified through the series, providing a roadmap for both Indigenous and non-Indigenous health system stakeholders to grow an accessible and sustainable Aboriginal and Torres Strait Islander health workforce.

KEYWORDS

Aboriginal and Torres Strait Islander, Indigenous, health workforce, self-determination, workforce retention

INTRODUCTION

Racism within the Australian health system is pervasive, with destructive consequences for the health, wellbeing and livelihood of Aboriginal and Torres Strait Islander Peoples. Racism can manifest systemically, institutionally, and interpersonally, which collectively contributes to unacceptable harm and death experienced by Aboriginal and Torres Strait Islander health practitioners and patients [1-4]. The costs of this harm to systems and people, and the implications for quality of care in Australia, are substantial [2, 5].

Addressing these issues requires a multifaceted approach grounded in self-determination. Self-determination is a fundamental right of Aboriginal and Torres Strait Islander Peoples and recognized as essential for social, cultural, and economic development [6, 7]. In the context of healthcare, self-determination means that Aboriginal and Torres Strait Islander Peoples must have control over the design and delivery of health services and policy, leading to culturally safe and effective care [8]. Self-determination rightly empowers Indigenous communities and helps to dismantle the systemic barriers that perpetuate health inequities.

Important work is underway within the health sector to develop and activate policy that incorporates and centres Aboriginal and Torres Strait Islander ways of knowing, being,

and doing. In 2022, the Australian Government released a national health workforce plan co-designed with Aboriginal and Torres Strait Islander Peoples, the first of its kind [9].

The Australian Health Practitioner Regulation Agency (Ahpra), together with Accreditation Authorities and the National Boards, regulates Australian practitioners in sixteen regulated professions. Conscious of the pressing need for anti-racist policy, Ahpra released the National Scheme Aboriginal and Torres Strait Islander health strategy statement of intent in 2018 [10]. The statement aims for health equity by 2031 and was developed in close partnership with Aboriginal and Torres Strait Islander organisations and experts. This was complemented by the National Scheme Aboriginal and Torres Strait Islander Health and Cultural Safety Strategy 2020-2025 (the Strategy), which aims to make cultural safety the norm for Aboriginal and Torres Strait Islander patients [11]. These policies are critical for creating a health system that is not only inclusive but also capable of delivering equitable health outcomes for Aboriginal and Torres Strait Islander Peoples. The Strategy has built a strong foundation for change however, there is much more work to be done, and Indigenous voices must be privileged in this work.

This paper documents the process and findings of a workforce series facilitated by Ahpra that brought together key stakeholders to discuss factors affecting the Aboriginal and Torres Strait Islander health workforce, and identify actions needed to best support them.

DEFINITIONS

Terminology used throughout this paper is defined in Table 1.

TABLE 1: KEY DEFINITIONS

Term	Definition
Aboriginal and Torres Strait Islander Peoples	The first peoples of Australia, comprising hundreds of groups with their own distinct languages, cultural traditions and histories [1]. A widely used definition by the Australian government defines an Aboriginal and Torres Strait Islander person as someone of "Aboriginal and Torres Strait Islander descent who identifies as Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives" [2].
Aboriginal and Torres Strait Islander Health Practitioner/s	The capitalised title refers to registered practitioners of the Aboriginal and Torres Strait Islander Health Practice profession [12].
Aboriginal and Torres Strait Islander health practitioners	The uncapitalised title refers to Indigenous practitioners working in any of the other fifteen registered health professions regulated by National Scheme [12].
Cultural safety	According to the Strategy, cultural safety is "determined by Aboriginal and Torres Strait Islander individuals, families and communities. Culturally safe practice is the ongoing critical reflection of health practitioner knowledge, skills, attitudes, practising behaviours and power differentials in delivering safe, accessible and responsive healthcare free of racism" [1]).

ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH WORKFORCE SERIES

One of the actions of the Strategy [11] was to work on an Aboriginal and Torres Strait Islander workforce summit. For numerous reasons, including accessibility during the Covid-19 pandemic, this action morphed into three webinars facilitated by Indigenous health sector leaders in August and September 2022, attended by approximately 300 participants. Key stakeholders discussed important factors affecting the Aboriginal and Torres Strait Islander health workforce and identified actions needed to empower and support Indigenous practitioners. Creating a safe space for Indigenous practitioners to share their experiences and critically reflect on their own practices, the webinars identified four overarching actions to attract, retain and

grow the Aboriginal and Torres Strait Islander health workforce and improve their support structures, outlined in Table 2.

TABLE 2: STRATEGIC AND POLICY RELATED ACTIONS IDENTIFIED BY ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH SECTOR LEADERS DURING AN AHPRA HEALTH WORKFORCE WEBINAR SERIES

Action	Content
Accept	Racism exists and kills Indigenous Peoples need to lead educational cultural safety programs and conduct assessments
Educate	Address own biases Understand and value the role of Aboriginal and Torres Strait Islander Health Practitioners, workers and services
Support	Listen and empower those experiencing racism Address scope of practice "turf wars" and gate keeping Share power with Indigenous practitioners Accommodate the cultural needs of Indigenous practitioners
Invest	Understand representation is important Create safe spaces for Indigenous colleagues and step back Engage with Indigenous leadership and embed self-determined decision-making at every level Invest in and trust Indigenous leadership 'Grow your own' Indigenous health workforces Build accountability in the system

ACTIONS AND POLICY RECOMMENDATIONS

ACCEPT

The action of 'accept' emphasised that racism is prevalent in the Australian health system and kills Aboriginal and Torres Strait Islander Peoples through direct and indirect means. Sector leaders underscored that practitioners, administrators and other working in the system needed to accept the systemic presence of racism as a first step to addressing it. Examples of racism discussed included those experienced on a daily basis where Indigenous practitioners are gaslighted, unfairly targeted, and positioned as 'the problem' should they call out injustice. Practitioners often feel that they are being pushed out of the profession, leading to decreased social and emotional wellbeing, extended workplace absences or leaving the profession altogether. These experiences can have negative implications for patient safety and grave consequences for the livelihoods of individual practitioners, their families and communities. The panellists also discussed examples of preventable, direct death as a result of racist attitudes and neglect at the hands of non-Indigenous practitioners, such as Aboriginal and Torres Strait Islander deaths in custody.

To reduce racism Aboriginal and Torres Strait Islander Peoples need to lead educational culturally safe programs and conduct related assessments, especially in accreditation. Health regulators play a critical role in delivering culturally safe healthcare and this self-determining approach is upheld in the National Scheme's definition of cultural safety (11).

EDUCATE

Continuing on from the first action, under 'educate' panellists discussed the importance of non-Indigenous people addressing their biases through education and critical self-reflection. Clinical and education settings are full of biases and stereotypes that influence the way Aboriginal and Torres Strait Islander practitioners are treated, limiting their autonomy and opportunities for advancement.

Regulators, educators, clinical supervisors, administrators and others working in the health system must actively challenge their own biases to ensure they are giving

equitable opportunity to Indigenous practitioners and not inadvertently limiting their input and growth.

The second action point under this theme related to the importance of understanding and valuing the role of Aboriginal and Torres Strait Islander Health Practitioners, health workers and services. Aboriginal and Torres Strait Islander Health Practice is a profession with a protected title, which can only be delivered by Aboriginal and Torres Strait Islander Peoples. It is the only racially defined health profession in the world and plays an important role in the provision of culturally safe healthcare in primary and tertiary practice settings to Australian Indigenous populations. Its practitioners often work in their communities, bringing a wealth of community knowledge and strong relationships built on trust into the therapeutic treatment interface, reducing the likelihood of early discharge from service.

Similarly, having practitioners who identify as Aboriginal and Torres Strait Islander working in all other health professions and services is critical for the health and wellbeing of Aboriginal and Torres Strait Islander Peoples and communities. Their presence and knowledge must be valued by others in the health system to increase self-determined, culturally safe practice and address the gross inequities in health and wellbeing experienced by Indigenous communities in Australia.

SUPPORT

The third action involves several key components. The first of these is to listen to and empower people who are experiencing racism. The panel heard that creating a space where speaking up against racism is supported is critically important for the psychological safety of employees, and can prevent attrition due to a lack of that safety. For an Indigenous employee, lodging a complaint about racism in the workplace is a serious step that involves trusting a non-Indigenous institution's complaints process, which can be lengthy, traumatising and unsatisfactory.

Health practitioners often work with other practitioners who have a similar scope of practice. The series confirmed that for Aboriginal and Torres Strait Islander Health Practitioners, working alongside similarly trained health professionals could bring tension or give rise to 'turf wars' with reports of a lack of clarity, and gatekeeping of knowledge and access in healthcare settings. Addressing these issues through education, including embedding cultural safety in education and continuing professional development, is a priority.

To truly support Aboriginal and Torres Strait Islander health practitioners, power must be shared and cultural needs must be accommodated. Acknowledging the hierarchy of healthcare, the inherent power held by decision makers, and that bestowed by existing structures, is the first step to recognise and subsequently share that power. Similarly, support involves the recognition that Indigenous practitioners' cultural needs are essential to maintain their wellbeing in the workplace. Many workplaces across the country operate under legislation that compels employers to ensure psychosocial hazards are mitigated and addressed: accommodating cultural needs can meet both the practitioner's needs as well as the organisational requirements.

INVEST

Organisations must invest in the time, resources, and actions needed to meaningfully attract, retain, and grow the Aboriginal and Torres Strait Islander health workforce. Representation is important: the panel heard examples of the challenges faced by Indigenous workers in environments where being part of a minority can be isolating and burdensome, with an unfair responsibility or 'colonial load' [12] placed on them by institutions to provide cultural advice or expectations beyond their role description.

Representation can be improved through employment strategies, mentorship programs, and dedicated culturally safe spaces. Safe spaces for Aboriginal and Torres Strait Islander colleagues should be created across institutions, with the series confirming that such spaces function as effective support mechanisms. However, initial investment in these spaces can be provided and the reins handed to community - the need for non-Indigenous people to understand that they do not need to occupy Indigenous spaces resonated strongly with panel members.

Investing in workforce models that grow Indigenous health practitioners in their communities is essential. A key barrier to participation discussed during the series was moving Indigenous Peoples off country to train and practice. Panellists agreed that organisations should work to accommodate training people in their communities, and for them to stay and practice in the communities they belong to, wherever possible.

In addition to specific strategies or models, increasing the workforce participation of Indigenous Peoples requires investment in building accountability at an individual and systems level. Panellists identified if expectations are not backed up by mechanisms and strategy to drive accountability, results are unlikely to follow.

Investment involves engaging with Indigenous leadership and communities and embedding Aboriginal and Torres Strait Islander led decision-making at every level. Panellists agreed that Indigenous leaders both in community and within the organisation should be recognised as critical partners to working successfully and respectfully with Aboriginal and Torres Strait Islander Peoples, and that this investment is necessary for a successful and sustainable policy, program or service. Contributors to the series shared that their leadership approaches were frequently questioned for not mirroring those of non-Indigenous leaders positioned as the norm. Trusting Indigenous leadership approaches and accepting that while they may look different, they are not wrong, reflects that Indigenous Peoples have been engaging, working and caring for those within their communities for eons.

CONCLUSION

The webinar series highlighted the importance of cultural safety and self-determination, and the need for them to be enshrined in organisational policies to make the health system a safer place for Aboriginal and Torres Strait Islander Peoples.

The calls to action for non-Indigenous parties working in the health system – whether practitioners, regulators, administrators or others – were loud and clear. Non-Indigenous stakeholders need to acknowledge the persistent existence and harm caused by racism in healthcare, address their own biases, support their Indigenous colleagues and invest in self-determined Indigenous representation and leadership, safe spaces and an accountable system to grow the Aboriginal and Torres Strait Islander health workforce.

Sharing power and doing things differently may not always be comfortable for non-Indigenous peoples but are integral to strengthening Indigenous leadership and successfully and respectfully working with Aboriginal and Torres Strait Islander Peoples. Only then can policies, programs and services be enacted that are accessible, sustainable and free of the systemic barriers that perpetuate health inequities.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the contributions of the panellists who generously offered their time and expertise to the Aboriginal and Torres Strait Islander health workforce event series, including Dr Ali Drummond, Tanya McGregor, Donna Murray, Warren Locke, Dr Karen Nicholls, Sam Paxton, Prof Kris Rallah-Baker, Jade Renouf-Robertson and Kevin Yow Yeh. We acknowledge the lived and living experience of Aboriginal and Torres Strait Islander Peoples as knowledge holders and pay our deepest respect to their continued connection and care to land, sea, culture and community.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest. This manuscript was written in the course of their duties as Ahpra employees. The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

References

1. Thurber KA, Brinckley M-M, Jones R, Evans O, Nichols K, Priest N, et al. Population-level contribution of interpersonal discrimination to psychological distress among Australian Aboriginal and Torres Strait Islander adults, and to Indigenous–non-Indigenous inequities: cross-sectional analysis of a community-controlled First Nations cohort study. The Lancet. 2022;400(10368):2084-94.
2. Elias A, Paradies Y. The Costs of Institutional Racism and its Ethical Implications for Healthcare. Journal of Bioethical Inquiry. 2021;18(1):45-58.
3. Kairuz CA, Casanelia LM, Bennett-Brook K, Coombes J, Yadav UN. Impact of racism and discrimination on physical and mental health among Aboriginal and Torres Strait islander peoples living in Australia: a systematic scoping review. BMC Public Health. 2021;21(1):1302.
4. Larson A, Gillies M, Howard PJ, Coffin J. It's enough to make you sick: the impact of racism on the health of Aboriginal Australians. Australian and New Zealand Journal of Public Health. 2007;31(4):322-9.
5. Bourke CJ, Marrie H, Marrie A. Transforming institutional racism at an Australian hospital. Australian Health Review. 2019;43(6):611-8.

6. Verbunt E, Luke J, Paradies Y, Bamblett M, Salamone C, Jones A, et al. Cultural determinants of health for Aboriginal and Torres Strait Islander people – a narrative overview of reviews. International Journal for Equity in Health. 2021;20(1):181.
7. United Nations Declaration on the Rights of Indigenous Peoples, GA Res 61/295, UN GAOR (2007).
8. Allen L, Hatala A, Ijaz S, Courchene ED, Bushie EB. Indigenous-led health care partnerships in Canada. Canadian Medical Association Journal. 2020;192(9):E208-E16.
9. Australian Government. National Aboriginal and Torres Strait Islander Health Workforce Strategic Framework and Implementation Plan 2021–2031. Department of Health (AU). 2022.
10. Australian Health Practitioner Regulation Agency. Aboriginal and Torres Strait Islander Health Strategy Statement of Intent. 2018.
11. Australian Health Practitioner Regulation Agency. The National Scheme's Aboriginal and Torres Strait Islander Health and Cultural Safety Strategy 2020-2025. 2020.
12. Weenthunga Health Network. Reframing "cultural load". Our Voice. 2024.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

EXPLORING CLINICIAN BARRIERS AND ENABLERS IN REFERRING PATIENTS TO A VIRTUAL HOSPITAL FOR ACUTE CARE

Emily Kirkpatrick

1. EKology Health
2. Australian Institute for Machine Learning, Adelaide, South Australia, Australia

Correspondence: Emily.kirkpatrick@adelaide.edu.au

ABSTRACT

BACKGROUND:

Virtual hospitals offer a promising solution to alleviate pressures on traditional healthcare systems by providing acute care in patients' homes. Despite the implementation of a virtual hospital model in South Australia, referral rates remain below expectations.

AIM:

To explore clinician attitudes, beliefs, barriers, and enablers influencing referrals to a virtual hospital for acute care.

METHODS:

A qualitative exploratory study was conducted using semi-structured interviews with nine clinicians who had experience referring patients to the virtual hospital. Data were analysed thematically using a grounded theory approach.

RESULTS:

Four key themes emerged: (1) Complexity of the healthcare ecosystem leading to duplication and navigation challenges; (2) Ambiguity in patient selection criteria causing uncertainty in referrals; (3) Higher social complexity and non-medical care needs acting as barriers; (4) Interoperability issues and the need for effective change management.

CONCLUSIONS:

Addressing the identified barriers through refining referral pathways, clarifying eligibility criteria, enhancing support for patients with complex needs, and improving system interoperability could increase referral rates to the virtual hospital. Engaging clinicians in the co-design of virtual care models is essential for successful implementation.

KEYWORDS

virtual hospital, acute care, barriers

INTRODUCTION

Healthcare systems worldwide are grappling with increasing demand for acute care services, exacerbated by capacity constraints and workforce shortages [1,2]. Traditional hospital models are under pressure, leading to the exploration of alternative care delivery methods. Virtual hospitals have emerged as a promising solution, utilising technology to provide acute care in patients' homes, thereby potentially reducing hospital admissions and alleviating bed shortages [3,4].

South Australia has pioneered the implementation of a virtual hospital model, delivered under public private partnership for SA Health, and accredited under the National Safety and Quality Health Service Standards [5]. Despite the theoretical capacity to serve at least 10% of acute patients, the virtual hospital is currently operating below this potential, accommodating only 5% of acute care public patients [6].

Understanding the factors influencing clinician referrals to the virtual hospital is crucial for optimising its utilisation. Previous studies have highlighted various barriers to adopting virtual care, including technological challenges, funding issues, and regulatory concerns [7-9]. However, there is limited research specifically exploring clinician perspectives on referring patients to virtual hospitals for acute care.

This study aims to explore clinician attitudes and beliefs regarding referrals to a virtual hospital for acute care in South Australia, focusing on identifying barriers and enablers that impact referral decisions.

OBJECTIVES

- To explore the barriers and enablers influencing clinicians' decisions to refer patients to the virtual hospital.
- To understand the impact of trust, accountability, and the service delivery model on referral volumes.
- To identify actionable strategies to enhance referrals to the virtual hospital.

METHODS

A qualitative exploratory study design was employed to gain in-depth insights into clinicians' perspectives. Semi-structured interviews were conducted to allow flexibility in exploring participants' experiences and opinions. Participants were purposively sampled from clinicians who had referred patients to the virtual hospital within the past three months. Inclusion criteria encompassed doctors, nurses, and allied health professionals across various healthcare settings, including hospitals, community health services, general practice, and residential aged care facilities. Clinicians directly working within the virtual hospital were excluded to minimise potential bias.

An invitation email was sent to approximately 480 clinicians identified as recent referrers to the virtual hospital. The email outlined the study's purpose and participation requirements. Fifteen clinicians responded and consented to participate.

Interviews were conducted virtually via Zoom, with each interview lasting approximately thirty minutes and was guided by a semi-structured interview protocol. Interviews were audio-recorded and transcribed verbatim using secure, password-protected cloud storage provided by the University of Adelaide. Ethical approval was obtained from the University of Adelaide Human Research Ethics Committee (approval number H-2021-020). Participants provided informed consent electronically before the interviews. Confidentiality was assured, and data were de-identified during transcription and analysis.

Data was analysed using thematic analysis in real-time, following Braun and Clarke's six-step framework [10]. Transcripts were read multiple times to ensure familiarisation. Initial codes were generated and organised into potential themes. Themes were reviewed and refined to accurately reflect the data. NVivo software (version 12) was used to facilitate coding and organisation of data. A total of nine interviews were conducted, and no further interviews were conducted due to theoretical saturation.

RESULTS

The nine participants included a mix of doctors (n=5), nurses (n=3), and allied health professionals (n=1). They represented various healthcare settings, including hospitals (n=4), general practice (n=3), and community health services (n=2).

EMERGENT THEMES

Four key themes emerged from the data analysis:

1. Complex Health Ecosystem and Duplication

Participants highlighted the complexity and fragmentation of the healthcare system, leading to challenges in navigating referral pathways. The existence of multiple services with overlapping functions created confusion.

"*We are underdone in the health navigation space. It's always challenging to know which service is the right one for the patient.*" (Participant 1)

Clinicians expressed concerns about transferring clinical responsibility without clear communication channels.

"*You're always worried about where they end up, and whether all the dots are joined. You've transferred clinical responsibility, but is the patient getting the care they need?*" (Participant 5)

2. Ambiguity in Patient Selection Criteria

Unclear eligibility criteria for virtual hospital admission were a significant barrier. Clinicians found it difficult to determine which patients were appropriate for referral, particularly in the absence of clear guidelines.

"*I think we need a really good triage system to decide whether a person needs a bed in a hospital or can be managed virtually. That would be pivotal.*" (Participant 6)
Junior clinicians were hesitant to make referral decisions without senior input, especially during weekends when senior staff availability was limited.

"*On weekends, there are less senior decision-makers, and junior doctors aren't brave enough to make the call on disposition without that senior support.*" (Participant 7)

3. Higher Social Complexity and Non-Medical Care Needs

Patients with complex social situations or non-medical care needs posed challenges for virtual hospital referrals. Clinicians were concerned about the suitability of patients' home environments and support systems.

"*If a patient's home isn't appropriate for care—due to overcrowding or lack of understanding of medical needs—it becomes dangerous to manage them virtually.*" (Participant 4)

However, virtual care was seen as beneficial for certain populations, such as paediatric patients with disabilities who might fare better in familiar surroundings.

"*For children with disabilities, being in their home environment can be a key part of their recovery.*" (Participant 8)

4. Interoperability and Change Management

The lack of seamless integration between different healthcare systems hindered effective communication and tracking of patient outcomes.

"*As a clinician, I want to look at the info about a patient in general practice, the state public health system, and their Medicare information all in one place.*" (Participant 9)

Clinicians emphasized the importance of effective change management to facilitate adoption of new care models.

"*So much of this comes down to change management. The ideas are there, but implementing them is the hard part, and we [doctors] are not taught change management.*" (Participant 2)

DISCUSSION

This study illuminates the multifaceted barriers and enablers influencing clinician referrals to a virtual hospital for acute care. The findings reveal systemic, procedural, and individual factors that collectively impact referral decisions.

COMPLEX HEALTH ECOSYSTEM

The fragmentation and complexity of the healthcare ecosystem emerged as a significant barrier. Clinicians faced difficulties in navigating multiple services with overlapping roles, leading to uncertainty and potential duplication of efforts. This aligns with previous research indicating that complexity in healthcare systems can impede efficient service delivery and clinician engagement [11]. Simplifying the referral pathways and enhancing health navigation support could mitigate these challenges. By providing clear information about available services and their specific functions, clinicians can make more informed referral decisions.

AMBIGUITY IN PATIENT SELECTION

Unclear eligibility criteria created hesitation among clinicians, particularly junior staff. Clear, accessible referral guidelines are essential to empower clinicians to make informed decisions confidently. Studies have shown that well-defined referral pathways enhance the utilisation of alternative care models [12]. Developing standardised

triage tools and eligibility checklists could assist clinicians in identifying suitable patients for virtual hospital care. Additionally, ensuring that senior decision-makers are accessible for consultation can support junior clinicians in making referral decisions.

SOCIAL COMPLEXITY AND NON-MEDICAL NEEDS

The management of patients with complex social circumstances was a notable challenge. Addressing non-medical needs is crucial for the success of virtual care models. Integrating social support services and ensuring adequate home environments can facilitate the broader inclusion of patients in virtual hospital care [13]. Collaboration with community services and social care providers can help address the non-medical needs of patients. Tailoring virtual hospital services to accommodate patients with diverse social backgrounds may enhance accessibility and equity. However, funding models of such an approach would be a challenge, noting the combined Commonwealth and state-funded models of care.

INTEROPERABILITY AND CHANGE MANAGEMENT

Interoperability issues hindered effective communication and continuity of care. Clinicians expressed a need for integrated systems that allow seamless access to patient information across different care settings. Implementing interoperable electronic health records (EHRs) and enhancing data-sharing protocols are critical steps [14]. Effective change management strategies are necessary to facilitate the adoption of virtual care models. Engaging clinicians in the co-design process and providing education on new workflows can enhance acceptance and integration into practice [15].

LIMITATIONS

The study's limitations include a small sample size and potential selection bias, as participants had already referred patients to the virtual hospital. To gain a broader perspective, future research should include clinicians who have not engaged with the virtual hospital. Additionally, the findings are based on self-reported data, which may be subject to recall bias.

CONCLUSION

Virtual hospitals offer a valuable alternative to traditional acute care delivery, with the potential to alleviate pressures on hospital systems. However, maximising their utilisation requires addressing identified barriers. Recommendations include:

- **Simplifying Referral Pathways**: Streamlining the healthcare ecosystem to reduce complexity and duplication.
- **Clarifying Eligibility Criteria**: Developing and disseminating clear patient selection guidelines.
- **Enhancing Support for Complex Needs**: Integrating social support services and considering non-medical care needs, with co-commissioned Commonwealth and state models.
- **Improving System Interoperability**: Investing in interoperable EHRs and enhancing communication channels.
- **Engaging in Change Management**: Providing education and involving clinicians in the co-design of future virtual care models.

Implementing these strategies can enhance clinician confidence, increase referral rates, and optimise the benefits of virtual hospital care.

References

1. Mohta NS, Prewitt E, Gordon L, Lee TH. Delivering the Right Care at the Right Time and Place. NEJM Catalyst Innovations in Care Delivery. 2023;4(3). doi:10.1056/CAT.23.0050
2. Legislative Council - Portfolio Committee No. 2 - Health. Impact of ambulance ramping and access block on the operation of hospital emergency departments in New South Wales. Parliament NSW; 2022.
3. Boldt-Christmas O, Kannourakis R, Maud M, Ungerman D. Virtual hospitals could offer respite to overwhelmed health systems. McKinsey & Company. 2023 May 11.
4. Patel K, Shokouhi B, Bosonnet E, Savundra E, Kabatas H. The Virtual Hospital. Future Healthcare Journal. 2019;6(Suppl 1):83. doi:10.7861/futurehosp.6-1-s83
5. Sitammagari K, Murphy S, Kowalkowski M, et al. Insights from rapid deployment of a "virtual hospital" as standard care during the COVID-19 pandemic. Ann Intern Med. 2021;174(2):192-199. doi:10.7326/M20-4076
6. Babaei N, Zamanzadeh V, Valizadeh L, et al. A scoping review of virtual care in the health system: infrastructures, barriers, and facilitators. Home Health Care Serv Q. 2023;42(2):69-97. doi:10.1080/01621424.2023.2166888
7. Patel M, Berlin H, Rajkumar A, et al. Barriers to Telemedicine Use: Qualitative Analysis of Provider Perspectives During the COVID-19 Pandemic. JMIR Hum Factors. 2023;10 . doi:10.2196/39249

8. Almathami HKY, Than Win K, Vlahu-Gjorgievska E. Barriers and Facilitators That Influence Telemedicine-Based, Real-Time, Online Consultation at Patients' Homes: Systematic Literature Review. J Med Internet Res. 2020;22(2) . doi:10.2196/16407
9. Moore G, Du Toit A, Jameson B, Liu A, Harris M. The effectiveness of "virtual hospital" models of care: a Rapid Evidence Scan. Sax Institute; 2020.
10. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77-101. doi:10.1191/1478088706qp063oa
11. Greenhalgh T, Papoutsi C. Studying complexity in health services research: desperately seeking an overdue paradigm shift. BMC Med. 2018;16(1):95. doi:10.1186/s12916-018-1089-4
12. Kruse CS, Krowski N, Rodriguez B, et al. Telehealth and patient satisfaction: a systematic review and narrative analysis. BMJ Open. 2017;7(8) . doi:10.1136/bmjopen-2017-016242
13. Montalto M. The 500-bed hospital that isn't there: the Victorian Department of Health review of the Hospital in the Home program. Med J Aust. 2010;193(10):598-601. doi:10.5694/j.1326-5377.2010.tb04081.x
14. Vest JR, Gamm LD. Health information exchange: persistent challenges and new strategies. J Am Med Inform Assoc. 2010;17(3):288-294. doi:10.1136/jamia.2010.003673
15. Kotter JP. Leading change: why transformation efforts fail. Harv Bus Rev. 1995;73(2):59-67.
16. Jakobsen AS, Laursen LC, Rydahl-Hansen S, et al. Home-based telehealth hospitalization for exacerbation of chronic obstructive pulmonary disease: findings from "the virtual hospital" trial. Telemed J E Health. 2015;21(5):364-373. doi:10.1089/tmj.2014.0098
17. Kruse CS, Williams K, Bohls J, Shamsi W. Telemedicine and health policy: A systematic review. Health Policy Technol. 2021;10(1):209-219. doi:10.1016/j.hlpt.2020.10.006
18. Carter HE, Wallis S, McGowan K, et al. Economic evaluation of an integrated virtual care programme for people with chronic illness who are frequent users of health services in Australia. BMJ Open. 2023;13(4) . doi:10.1136/bmjopen-2022-066016
19. Bradley T. Virtual Care Is Transforming The Future Of Healthcare. Forbes. 2022 Nov 7.
20. Boell SK, Cecez-Kecmanovic D. A Hermeneutic Approach for Conducting Literature Reviews and Literature Searches. Commun Assoc Inf Syst. 2014;34:12.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

LEVERAGING PARTNERSHIPS FOR MICROCREDENTIAL DESIGN IN DIGITAL HEALTH: KEY SUCCESS FACTORS

Sheree Lloyd[*1], *Mark Upton*[2], *Joel Scanlan*[1]

1. University of Tasmania, Australia
2. Victoria/ Tasmania State Branch, Australasian College of Health Service Management.

Correspondence: Sheree.lloyd@utas.edu.au

ABSTRACT

AIM

This paper describes the collaborative approaches used to design microcredentials in digital health and cybersecurity. The project was initiated to design and deliver educational products to address specific skills shortages and align outcomes with Australian and International skills and professional competency frameworks.

APPROACH

The co-design process was guided by a proven model for educational design, involving interdisciplinary teams and emphasising rapid prototyping to ensure industry relevance and on time delivery. Partnerships with industry and professional associations were built to develop and deploy the microcredentials within a six-month timeframe.

MAIN FINDINGS AND CONCLUSION

Key success factors included trust, mutual respect, and effective communication among partners. The co-design process highlighted the benefits of collaboration, the importance of alignment with competency frameworks, and the lessons learned in creating educational products that satisfy learner, academic and industry needs. The paper concludes that co-designing microcredentials with industry and professional associations is an effective approach to delivering educational products that address workforce skills and professional knowledge gaps.

KEYWORDS

Partnership, Microcredential, Digital Health, Cybersecurity, Education.

INTRODUCTION

The importance of a skilled and knowledgeable workforce to support Australia's progress towards a consumer centric, digitally enabled health and social care system is documented in numerous competency frameworks and strategy documents. Workforce skills deficits in health information management, clinical informatics, cybersecurity, and digital health are well documented [1-4]. There is a recognised need for educational offerings to support current and future workforces to gain, update or expand essential qualifications and to support lifelong learning [5, 6].

The education system in Australia and globally is experiencing disruption characterised by a changing educational landscape, demand for flexibility and alternative delivery options, the funding impacts of reduced international students and new government policy initiatives [7-10]. The demand for flexibility has led to shorter learning products that are flexible and accessible, can be adapted to industry and the needs of the job market, cost effective, support lifelong learning for individuals wanting to learn at their own pace and time [7-10]. Microcredentials have been piloted in Australia, United Kingdom and Europe to test the relevance of the product and to support the education sector to align them with degree qualifications for those wanting to continue learning [5, 6, 11-13]. In Australia, a program called the Microcredential Pilot in Higher Education provided funding to assist higher education providers to design and deliver microcredentials in defined areas of skill shortage [14, 15]. Priority areas were identified by the government to address the skills needs of industry and increase access to life-long learning funding [14, 15]. Higher education providers were granted funding [14, 15] to deliver agreed microcredentials within a defined timeframe. The funding agreements stipulated that the microcredentials designed must be assessable for credit by the higher education provider, have clearly defined pathways to further study, and deliver immediate, valuable learning outcomes for both learners and industry [14]. Grant conditions specified that industry involvement in course design, delivery, and endorsement was imperative, and providers should issue digital badges based on skill descriptors, in this case, the Australian Skills Classification [14]. Further, the Commonwealth stated that microcredentials were to involve 3 to 6 months of learning and deliver employability outcomes equivalent to those of a higher education student [14]. For grant recipients, a co-design development process was central to meeting the requirements and to ensure learner needs were met.

The University of Tasmania received two small grants to co-design and develop microcredentials in digital health and cybersecurity. The two microcredentials focused on areas of identified skills shortages and a demand for flexible education products to address education and training as a barrier to adopting digital technologies in the workplace [1, 16].

Successful co-design of learning content requires strong partnerships with industry and professional associations. The effectiveness of these partnerships is shaped by a variety of factors. Rosendo-Ríos highlights the role of trust, commitment, and integration in university-industry collaborations [17]. Other authors stress the significance of relationship-building and collaboration, with the latter also noting the need for a change in the relative importance of these factors over time [18, 19]. Yee [20] emphasises the need for mutual trust, commitment, and open communication. Successful co-design of microcredentials in higher education is also influenced by several key factors with Heggart [21] and Salmon [22] highlighting the need for flexibility, linkage to employability, and industry relevance in the design of microcredentials.

Digital health and cybersecurity are dynamic ecosystems and subject to rapid advancement. Artificial intelligence and the rollout of the foundational electronic medical record systems are enabling the integration of digital solutions to provide new models of care and support innovative ways of working to deliver services. The involvement of industry views on skills shortages, format and type of learning provided the context for the co-design project. This paper will describe the approaches used by an Australian University to design a set of microcredentials in digital health and cybersecurity. The paper outlines the ways that the design team worked together in partnership with diverse representation from peak professional bodies, aged and primary care, state health department, rural and aged care industry experts. This paper details the design framework applied to develop and evaluate the microcredentials and outline the benefits of co-design and partnership to address workforce skills and professional knowledge gaps. The alignment of the micro-learning to the ACHSM Competency Framework, Skills for the Information Age (SFIA), the Australian Skills Classification and University credit requirements will be charted. Finally, we will reflect on key lessons learned about co-designing microcredentials, the evaluation of learning and achievement of skills and knowledge acquisition, and the effectiveness of internal and external partnerships.

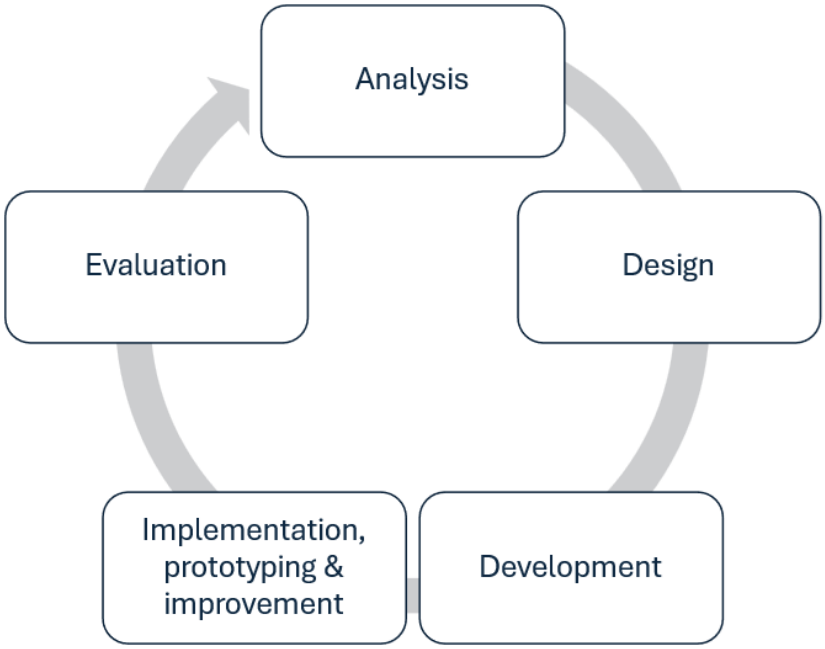
CO-DESIGN

The formulation of the design team was vital to ensure we had the appropriate expertise, had input from employers that required digital health and cyber security skills and members who understood both the academic and industry constraints. An interdisciplinary team was established and comprised of nursing, health information, information technology (IT), informatics and allied health professionals. The team also included representation from National

professional associations that have embedded digital management into competency frameworks. The formulation of the design team ensured that we had cross sectoral representation from aged care, primary care and indigenous led health services collaborating with us to design industry relevant microcredentials. Academics teaching digital health, University leadership from the Short Courses team and representatives from the educational technology team were also key members of the design team.

To structure the co-design process, the ADDIE model was utilised for its simplicity and logic and because it is a generic approach used by instructional designers and educators to design learning [23]. The model includes five phases—Analysis, Design, Development, Implementation, and Evaluation. To this structure one improvement was incorporated, the use of rapid prototyping. Prototyping in the development of educational products for higher education offers several benefits. It enhances skills in development, project management, and effort estimation, stimulates critical thinking and innovation [24] and promotes user engagement [25]. Prototyping is valuable to enable partner ideas to be captured and reflected in the course design, and facilitate the demonstration of the look and feel of learning modules, receiving feedback while instructional materials are being created [26]. The five stages of the ADDIE model involved the following steps shown in Figure 1.

FIGURE 1 MODIFIED ADDIE MODEL DIAGRAM ADAPTED FROM (19, 22)



These steps involved the following broad actions:

- Start up and engage: formulate with industry/professional partners the team (Expert Advisory Group) who will work with the University on design and delivery.
- Gather data and requirements: build understanding of the requirements for the microcredential based on industry partner and academic experience.
- Understand and create solutions: analyse and understand requirements and create learning material and activities in prototype format. Test learning activities with industry/professional body learners.
- Implement and improve: Seek feedback from pilot and adapt; implement and evaluate.

GOVERNANCE

The design, delivery, and deployment of the microcredentials were approached as a project with clear roles, responsibilities, scope, deliverables, and timelines articulated in a short plan. At the outset, a simple but clear approach to governance for the project was established. The first briefing meeting with the design team outlined what was involved, the rapid timeframes for design required to meet contractual requirements, what was expected from each party, overview of the tasks, respective roles and broadly discussed how we could work

together on the project. Meetings were chaired by an academic, agendas prepared, and slide decks were provided for all meetings. Regular meeting times and dates were agreed with partners at the outset.

ANALYSIS AND DESIGN

It was decided to conduct four design specific meetings for the project due to the specified timeline for the pilot. Three meetings were held online using a videoconferencing tool and a face-to-face meeting held on site at the University. Design meetings were used to.

- Gather the requirements from industry and professional representatives.
- Define learning outcomes
- Document the skills and knowledge to be developed
- Align and map to Skills for the Information Age (SFIA), ACHSM and Australian Skills Classification (ASC)
- Describe what the learning content and activities would look like
- Share ideas about learning activities to engage learners. The output of the analysis and design phase was a report that outlined the learning outcomes, skills to be attained, mapping to competencies and structure for the learning [27, 28].

TRUST AND TEAM BUILDING

Bringing together a team who both lived and worked across a broad geographical spread whilst holding the necessary expertise to inform the microcredentials was necessary to ensure diversity. Most team members were not known to one another. Trust, mutual respect, and openness was essential [29-31].

To build trust and mutual respect, the University provided the team with regular updates, promoted open dialogue and clear communication and information sharing and ensured all partners were focused on the same outcomes. Delivering on agreed actions and being accountable for actions demonstrated reliability that further strengthened trust and reinforced the partnership. Involving all partners in the decision-making process fostered a sense of ownership and mutual respect, enhancing team cohesion. Recognition and appreciation through acknowledging the contributions of all team members sustained attention and reinforced the value of each team member and their expertise and experience. Regular virtual meetings, shared meals and the in-person design session consolidated the team and built cohesion and mutual understanding. There was also recognition of a peer network that developed among team members, and this helped forge an appreciation of shared respect and understanding aligned to sector requirements. Collectively, these actions created a strong foundation for an authentic and effective partnership.

The definition of learning outcomes for the microcredential and alignment with competency and skills frameworks was an important initial first step for this project.

MAPPING

Following the ADDIE (Assess, Design, Develop, Implement and Evaluate) process, the co-design team analysed objectives and needs, then proceeded to design content, activities, and assessments, and finally determined the optimal delivery of course content. A range of approaches and tools were applied to engage with the design team, gather information and support the rapid co-design process and shown in Table 1.

TABLE 1 TOOLS AND THEIR APPLICATION IN CODESIGN

Tools	Application
Microsoft Forms	Data collection (requirements, validation of learning outcomes)
Microsoft Teams	Communication (meetings)
PowerPoint	Communication (visualisation of microcredential design)
Microsoft Outlook	Communication and organisation of meetings
Microsoft Word	Documentation of requirements Production of design report
Padlet	Data collection in design phase in person meeting
Adobe	Communication (information packs, sharing of design report)

DEVELOPMENT

Development was informed by the design report, an output of design. Content experts then produced the learning materials. Partners identified that a range of learning opportunities should be embedded in the microcredentials such as short videos from industry experts, videos and podcasts from reputable sources, quizzes, reflections, and other self-testing exercises. These elements were designed into the microcredentials and deployed using H5P and other tools (e.g., YouTube). H5P is an open-source content collaboration framework that allows users to create, share, and reuse interactive HTML5 content in learning management systems and other platforms such as web pages [32].

IMPLEMENTATION AND IMPROVEMENT

Once modules were drafted, they were demonstrated to the co-design team and feedback sought. This kind of prototyping of the learning materials, including demonstrations of the look and feel of the learning management system (Shorthand) allowed partners to value-add suggestions and identify missing content or desirable features. Where realistic and able to be adopted the suggestions were incorporated. Prototyping allows for early testing and validation of ideas, reducing risks and improving the final product's quality [24-26].

Courses in the microcredentials can be bundled and unbundled with the option of a credit towards a higher education post graduate certificate. Table 2 shows the microcredential, the modules covered, total hours of study and the award unit for which credit is available. Credit is attained through the completion of all modules in the microcredential and passing quizzes, testing learning outcomes.

TABLE 2 MICROCREDENTIAL, MODULES, HOURS OF STUDY AND CREDIT

Microcredential name	Modules	Total hours of study	Credit
Discovering the Potential of Digital Health	Digital Health Foundations	60	BAA632 Digital Health
	Frameworks for successful digital health implementation	65	
	Good practice in digital health management	40	BAA735 Health Information Analysis and Improvement
	Making sense of digital health data	45	
	Health information and data governance	40	
Cyber Fundamentals for Health	Introduction to Cybersecurity in Health	10	BAA548 Digital Health Privacy and Security Issues
	Healthcare Cyber Risks and Vulnerable Groups	25	
	Cyber Risk Management in Health Care	30	
	Securing Health Systems	20	
	Health Information and Data Governance	40	
	Digital Health Foundations	60	BAA632 Digital Health
	Frameworks for successful digital health implementation	65	

EVALUATION

We evaluated elements of the partnership and adapted a Partnership Pulse Check tool adapted from the Commission on Excellence and Innovation in Health, South Australia [33].

The survey was deployed using Microsoft Forms and all external partners invited to respond. One hundred percent, all 9 external partners responded to the survey. The results of the survey organised by dimensions are shown in Figures 2-4 with high levels of agreement as shown.

FIGURE 2 SURVEY RESULTS EXAMINING THE GOVERNANCE, TRANSPARENCY, AND MUTUAL RESPECT SECTIONS WITHIN THE EVALUATION TOOL!

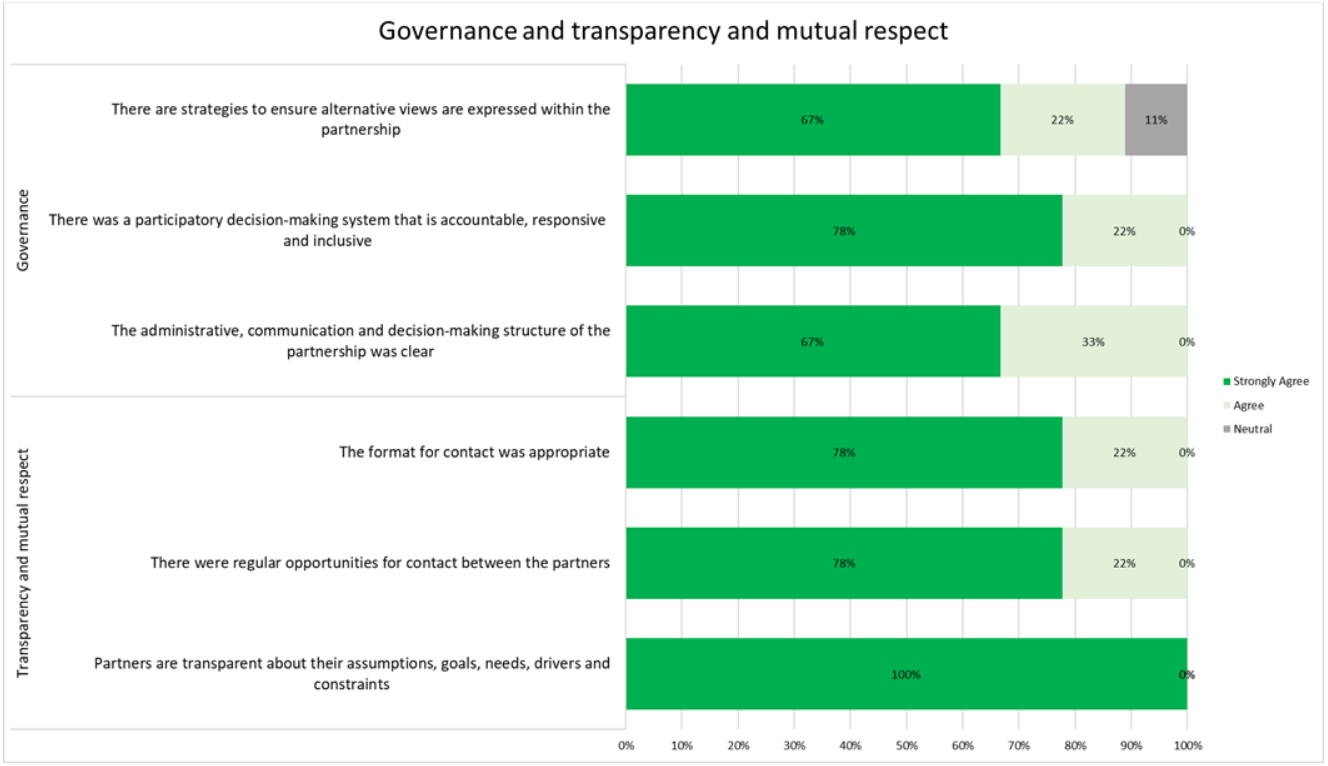


FIGURE 3 SURVEY RESULTS EXAMINING THE CONTEXT, VISION, AND PURPOSE WITHIN THE EVALUATION TOOL!

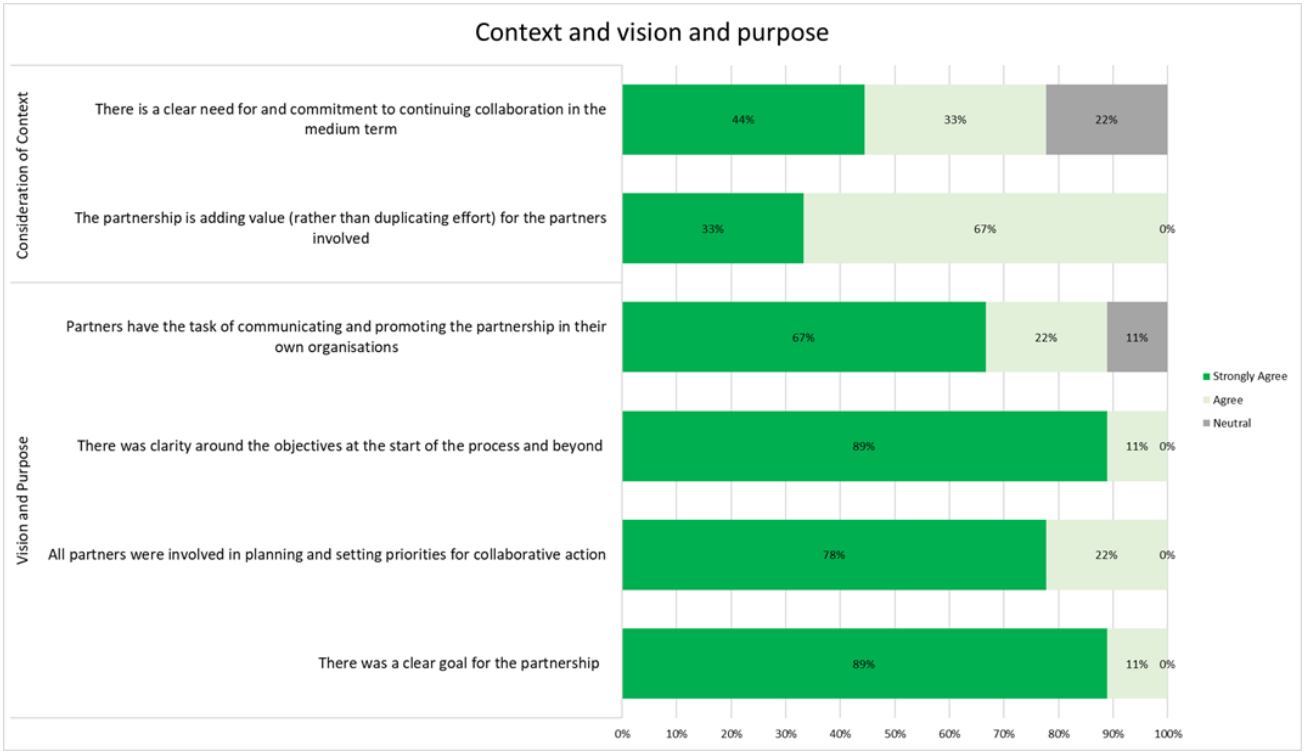
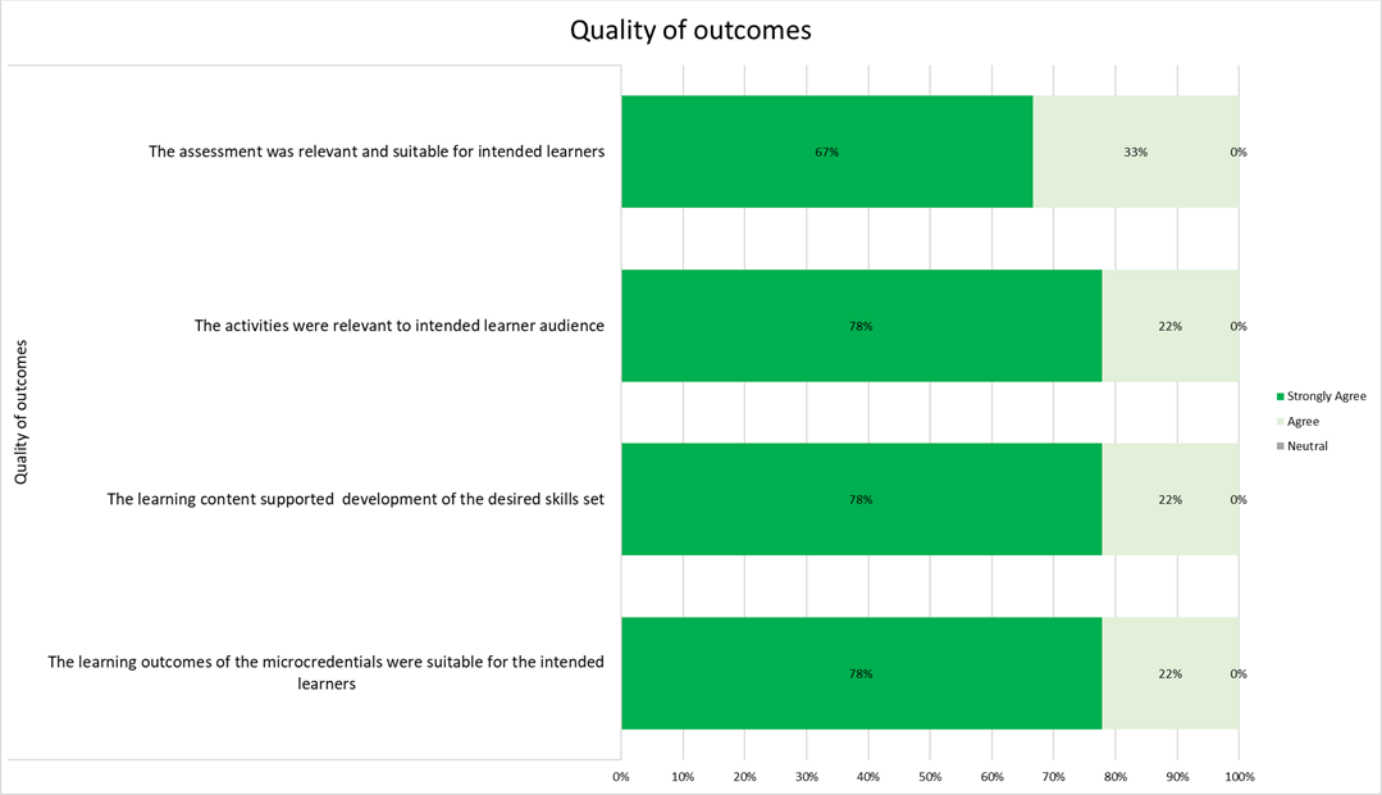


FIGURE 4 SURVEY RESULTS EXAMINING QUALITY OF OUTCOMES WITHIN THE EVALUATION TOOL!



IMPLICATIONS FOR MANAGEMENT PRACTICE, LEARNINGS, AND CONCLUSIONS

This section summarises the key learnings from the co-design project and affirms the benefits of co-design to develop microcredentials. Key learnings to share with others interested in the co-design of educational products are that it is important for the partnership to have clear administrative, communication, and decision-making structures. The project employed a participatory decision-making system that was accountable, responsive, and inclusive. There was a clear goal and timeline for the partnership, with all partners sharing an understanding and commitment to this goal. Partner organisations gained value from their involvement, and the partnership was able to successfully demonstrate and document its collective outcomes. Design meetings were concise and focused, utilising the ADDIE model for instructional design. Building trust and authenticity in co-design and partnership takes time, with a clear understanding of roles essential. Industry experts provided insights into workforce requirements, while academics aligned theory with industry practice. Respecting the time of busy health professionals was crucial, ensuring effective and efficient use of their time.

We involved a diverse range of knowledge and experience from various sectors, including an Aboriginal-controlled health care service. Technology supported rapid, agile, and progressive co-design, using Microsoft™ tools, shared information packs, and iterative processes. Essential methods and skills such as project management, communication, and stakeholder management were key to optimal delivery. Engaging with industry in co-design was a positive experience, and we plan to evaluate the partnership. Sustained engagement requires mutual respect, delivering on agreements, and active listening.

To work with speed and agility, and to collaborate effectively with the University's digital technologist team, access to appropriate tools was crucial. We provided pathways for formal credit and aligned with existing units, including learning outcomes and assessment. Iterative design and prototyping supported rapid development, critical thinking, innovation and user engagement. Communication and transparency were vital for on-time, quality delivery. Modest resources were allocated for planning and documenting the design of the microcredentials, with educational technologist support ensuring the best application for tools like H5P. Reuse of microcredential materials will be key to sustainability, and digital tools like Microsoft Forms, Teams, and PowerPoint demonstrated their appropriateness for collecting data to inform design.

The table below summarises key learnings.

Heading	Details
Respect	Building trust and authenticity in co-design and partnership takes time, with a clear understanding of roles. Respecting the time of busy health professionals was crucial, ensuring effective and efficient use of their time.
Delivering What Has Been Agreed	Project management skills and application of techniques is crucial. Communication and transparency between team members (academics, instructional designers, and partners) is key to on-time, quality delivery. Modest amounts of resourcing are required for time to think, plan, and document the design. Instructional design support and input into design to assure look and feel, best applications for h5P, videos, quizzes are vital. Reuse of the materials in existing higher degree units is key to sustainability and relevance of microcredential content. The ability to update learning material in one place particularly in digital and cyber is key.
Collaboration	It is important to work at speed, agility, and for all team members to be able to work the 'top of license' and collaboratively, for example Academics and Instructional Designers, to achieve the best quality outcomes. Provide pathways for formal credit and align microcredentials to existing units, i.e., learning outcomes and assessment. Iterative design and prototyping. Prototyping in the development of educational products for higher education offers several benefits and enhances skills in development, project management, and effort estimation; stimulates critical thinking and innovation; promotes user engagement; and enhances communication. Microsoft Forms, Teams, PowerPoint, and other digital tools can collect data to inform design. Design meetings were concise and focused, utilising recognised models, such as ADDIE for instructional design. Clear roles for collaboration with industry experts providing insights into workforce requirements, while academics aligned theory with industry practice.

GOING FORWARD

It is important that changes can be made to the microcredential content with ease and agility. Partnering to produce education products can be a strategic approach to leverage complementary strengths, resources, and expertise. Key success factors for such partnerships typically include ensuring that partners have similar objectives and vision for the education product. Team selection is critical and ensuring that members bring unique and complementary skills to the table. Open and transparent communication is vital for successful university/industry/professional partnership as is mutual trust and respect. As a result of building and maintaining trust with industry further opportunities to work together have arisen. Education landscapes can change rapidly due to technological advancements, pedagogical shifts, professional body, and industry skills requirements. Learning content must be easy to update and regularly reviewed. The results and outcomes from developing microcredentials in digital health and cybersecurity demonstrates that Universities have the capability to produce suitable learning products in partnership with industry and professional associations to meet the educational needs of Australia.

References

1. Australian Digital Health Agency. Workforce Education and Roadmap, 2020.
2. Australasian Institute of Digital Health. Australian Digital Health Workforce Insights, 2023.
3. Australasian College of Health Service Management [Internet]. c2022 [cited 6/12/24]. Available from: https://www.achsm.org.au/competency-framework/.

4. Australasian Instutute of Digital Health [Internet]. 2023 Available from: https://digitalhealthworkforce.org.au/standards-frameworks/.
5. Education AGDo. Microcredentials Pilot in Higher Education Factsheet, 2023.
6. Australian Government Department of Education. Microcredentials Pilot in Higher Education FAQ, 2024.
7. Littleton E. At the Crossroads: What is the post-COVID future of Australia's Public Universities? 2022, The Centre for Future Work at the Australia Institute.
8. Australian Government. Forward impact of COVID-19 on Australian higher education, 2021.
9. Gov.UK. Short university courses to provide flexible training, 2024.
10. European Commission. Final Report: A European Approach to Microcredentials, 2020.
11. Littleton E. At the Crossroads: What is the post-COVID future of Australia's Public universities? Centre for the Future of Work The Australian Institute, Editor. 2022.
12. European Union. A European Approach To Micro-credentials Output of the Micro-credentials in Higher Education Consultation Group, 2020.
13. Gov.uk. Short university courses to provide flexible training, 2021.
14. Australian Government [Internet]. c2022 [cited 24/10/24].
15. Government. A [Internet]. c2023 [cited 30/10/2024]. Available from: https://www.education.gov.au/microcredentials-pilot-higher-education.
16. RMIT Online with Deloitte Access Economics. Fast track growth with digital skills, RMIT Online, Editor. 2022.
17. Rosendo-Rios V, Ghauri PN, Zhang Y. Empirical analysis of the key factors that can contribute to university-industry cooperational success from a relationship marketing approach. European Journal of International Management 2016;10:647-77.
18. Omilion-Hodges LM, Ptacek JK. Fitting into the Workgroup: Relationships Within the Team. In: Omilion-Hodges LM, Ptacek JK, editors. Leader-Member Exchange and Organizational Communication: Facilitating a Healthy Work Environment. Cham: Springer International Publishing; 2021:71-95.
19. Spence M, Ehrlichman D, Sawyer D. Cutting Through the Complexity: A Roadmap for Effective Collaboration. 2018.
20. Yee ASV, Chong AL, Kendall G. Managing university-industry collaborations in Malaysia by examining its critical success factors: A dyadic approach. World Review of Business Research 2015;5:213-30.
21. Heggart K. Responsive Online Course Design: Microcredentials and Non-Linear Pathways in Higher Education. In: Dennen V, et al., editors. Global Perspectives on Educational Innovations for Emergency Situations. Cham: Springer International Publishing; 2022:295-303.
22. Salmon M. Drivers of the global push for microcredentials in higher education: flexibility and employability in contemporary university systems. Perspectives: Policy and Practice in Higher Education 2023;27:179-87.
23. Byrne M. The 6P4C model: An instructional design conceptual model for delivery of e-learning. Journal of Professional Nursing 2023;45:1-7.
24. Swist T, Gulson KN, Thompson G. Education Prototyping: a Methodological Device for Technical Democracy. Postdigital Science and Education 2024;6:342-59.
25. Kucuksayrac E. Digital prototyping, open design, and sustainability in industrial design education: a case study. Digital Creativity 2023;34:22-36.
26. Senior A, Starchuk C, Gaudet-Amigo G, Green J, Patterson S, Perez A. A novel model for curriculum design: Preparation, planning, prototyping, and piloting. European Journal of Dental Education 2024;28:770-78.
27. Lloyd S. Microcredential Pilot in Higher Education Design Report for Digital Management in Health and Social Care Discovering the Potential of Digital Health, 2024, University of Tasmania.
28. Scanlan J. Microcredential Pilot in Higher Education Design Report for Cyber Fundamentals for Health, 2024, University of Tasmania.
29. The Kings Fund. NHS and life sciences industry partnerships Collaborating to improve care, 2024.
30. Zwisler G, Sauer CM, Shoultz D. Vital lessons from struggling partnerships and potential partnerships: an international study with leaders across the health sector. BMC Health Services Research 2024;24:1470.

31. Theobald KA, Fox R, Burridge C, Thomson B, Fox A. Leveraging university-industry partnerships to optimise postgraduate nursing education. BMC Nursing 2023;22:256.
32. Jacob T, Centofanti S. Effectiveness of H5P in improving student learning outcomes in an online tertiary education setting. Journal of Computing in Higher Education 2024;36:469-85.
33. Commission on Excellence and Innovation in Health South Australia. Partnership Pulse Check, 2021.

ACHSM Asia-Pacific Journal of Health Management

ACHSM CONGRESS 2024

USING MACHINE LEARNING APPROACHES TO ENHANCE HEATWAVE MEASUREMENT FOR VULNERABILITY ASSESSMENT AND TIMELY MANAGEMENT OF HEAT-RELATED HEALTH SERVICES

Le Jian[1,2], *Dimpal Patel*[1], *Jing Guo*[1], *Jianguo Xiao*[1], *Janis Jansz*[2], *Grace Yun*[1], *Ting Lin*[1], *Laura Kirkland*[1], *Tim Landrigan*[1] *and Andrew Robertson*[1]

1. Public and Aboriginal Health Division, Department of Health, Western Australia
2. School of Population Health, Health Science Division, Curtin University

Correspondence: le.jian@health.wa.gov.au

KEYWORDS

Vulnerability assessment, heatwave measurement, machine learning

ISSUES:

Climate change is one of the most critical challenges facing Australia and the global community today. Data from the Australian Bureau of Meteorology (BoM) indicates that Australia has been experiencing rising temperatures, particularly since the late 20th century. The frequency, duration, and intensity of heatwaves are projected to continue increasing [1-4]. Since national records began in 1910, Australia has warmed by an average of 1.47°C (±0.24°C), with the highest official temperature recorded at 50.7 degrees Celsius in Onslow, Western Australia (WA), on January 13, 2022. Furthermore, a recent unprecedented high temperature of +41.6°C was recorded during winter on August 26, 2024, in Yampi Sound, WA. Among all natural disasters in Australia, heatwave (HW) represents a leading silent killer and pose a significant public health threat [4, 5]. However, innovative methods for assessing vulnerability for HW-related health services remain limited.

Machine Learning (ML), a branch of artificial intelligence within computer science, employs data and algorithms to replicate human cognitive functions and enhance accuracy. Its application has surged across various scientific disciplines; ML research publications indexed in Web of Science have increased over 110 times in the past two decades alone. It is noteworthy that most studies utilising ML methodologies originate from engineering or computer science fields; only approximately 0.2% pertain specifically to health policy services.

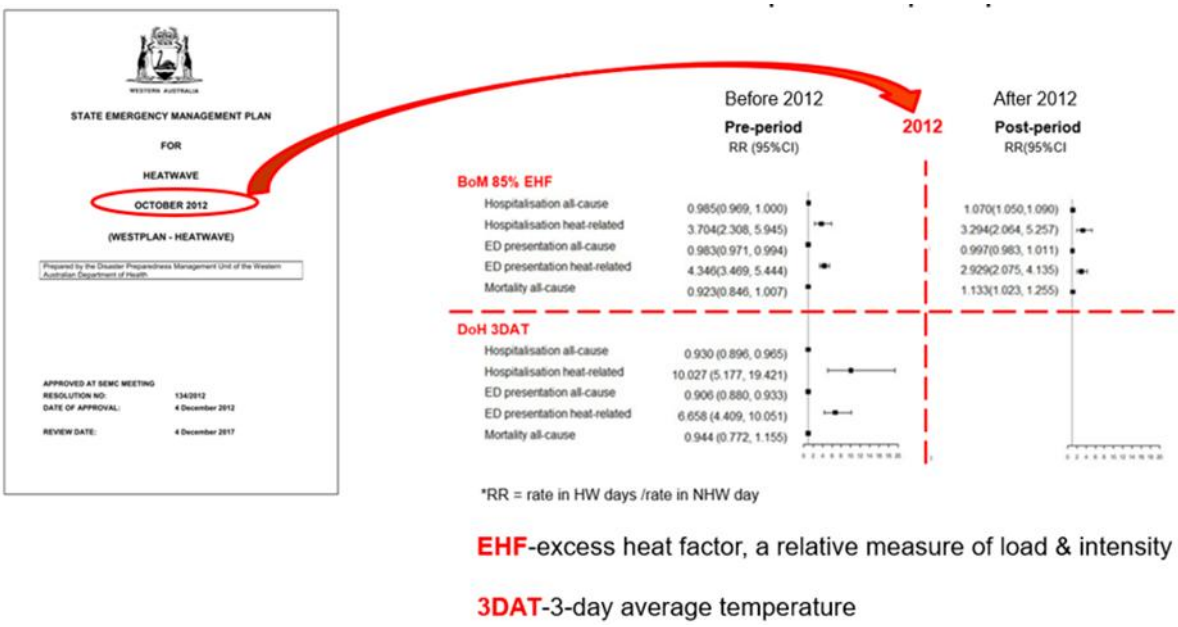
APPROACHES AND KEY FINDINGS:

A research study was conducted in WA aimed to develop innovative methods for assessing vulnerability to facilitate timely management of heat-related health service demands through mixed-methodologies incorporating ML techniques.

Comprehensive daily data spanning ten years were collected on health indicators such as emergency department (ED) presentations, hospitalizations, and mortality alongside environmental factors (temperature, air pollutants PM2.5, PM10, CO, SO2, NO2, and O3, and fire events) from various official sources. Appropriate sensitive measures for assessing vulnerability were identified, which included assessing optimal HW exposure indicators (Excess Heat Factor (EHF) [6] vs. 3-day average temperature (3DAT)) [7] along with other environmental factors, sociodemographic factors (socioeconomic status (SES), age, ethnic groups, and geographic locations), and health indicators related to sensitivity and adaptive capacity.

Since 2012, WA Health has implemented a state-wide HW management policy [7]. Within this policy framework, the HW exposure indicator of 3-day average temperature (3DAT) was assessed in comparison to EHF, a relative measure of HW load and intensity, introduced by BoM in 2013. Quasi-experimental analyses compared health indicators during pre-implementation and post-implementation periods. Results presented in Figure 1 demonstrate that BoM's EHF is more effective at identifying health service utilisations associated with HWs than 3DAT across both periods; thus, indicating that EHF is a more sensitive HW exposure indicator than 3DAT.

FIGURE 1. HEALTH EFFECTS DURING HW DAYS COMPARED WITH NON-HW DAYS BY BOM'S 85TH PERCENTILE EHF AND WA HEALTH'S 3DAT IN THE PRE- AND POST-PERIODS.



Sensitivity analysis utilising various EHF cut-offs (70th to 95th percentiles) revealed that EHF could detect increased health service utilisations—including ED presentations and hospitalisations—even during mild HW events. Conversely, severe and extreme events (>80% EHF) correlated significantly with increased mortality rates.

Subsequently, predictive models were developed with their goodness-of-fit evaluated using ML approaches. The Random Forest (RF) algorithm integrates predictions from multiple decision trees (DT) into a single model while effectively managing large datasets and minimising overfitting; this makes it one of the most accurate machine learning algorithms available.

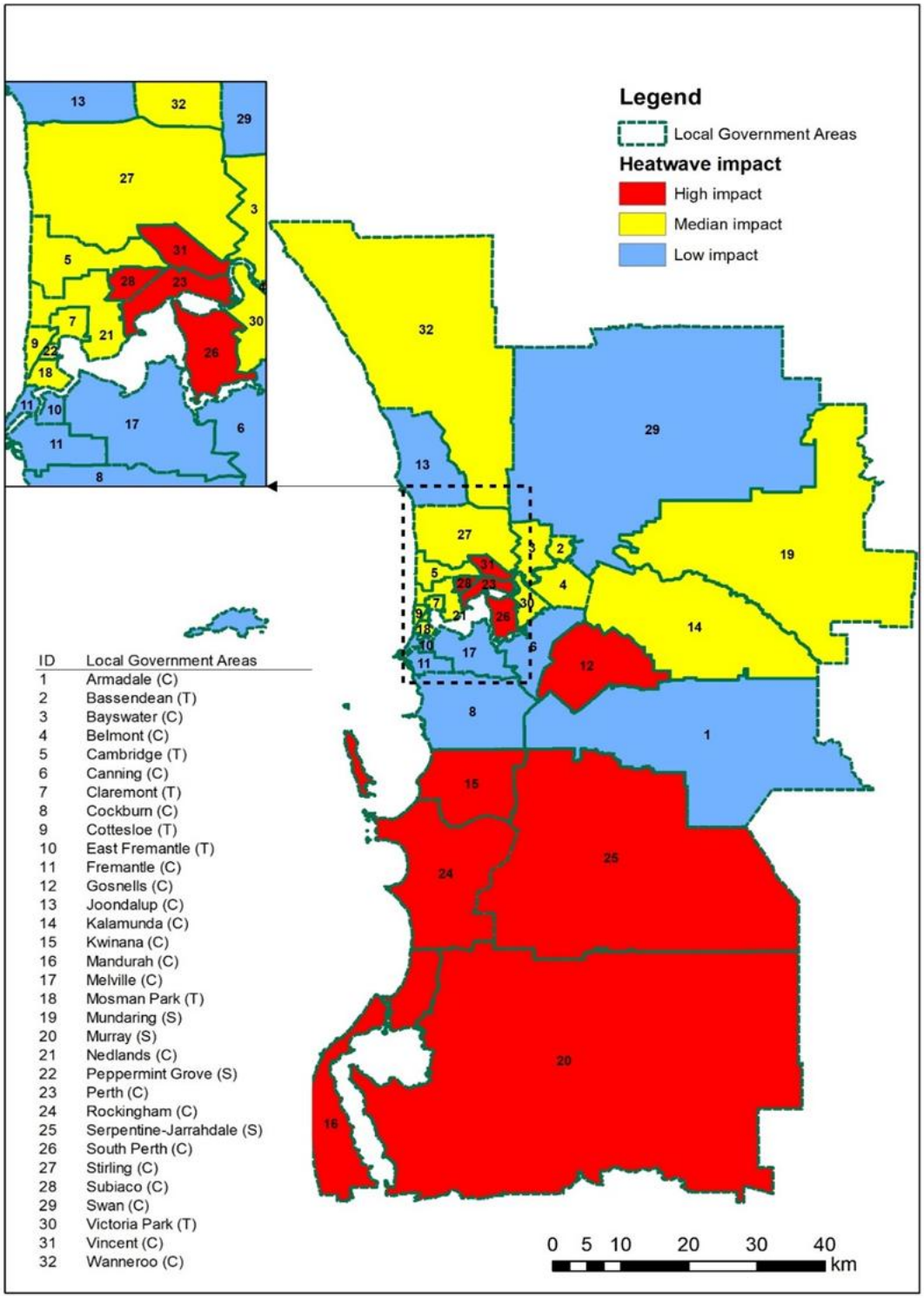
In our study, 500 decision tree models were employed to construct the RF model. The RF outperformed four other models due to its lowest error rates making it the optimal method for our analysis. In addition to cross-validation conducted during RF model development, construct validation was performed by comparing actual ED presentations against predicted numbers generated by the RF model. The R2 reached 0.953 indicates strong agreement between observed data and predictions made by the model.

Geographic Random Forrest (GRF) is an extension of RF that specifically addresses spatial heterogeneity. Both RF and GRF models demonstrated excellent goodness-of-fit results. During the development of the RF model, a percentage increase in mean squared error was generated, serving as an informative accuracy metric across all predictive models; higher values indicate greater predictor importance. The results indicated that age and socioeconomic status (SES) ranked as the two most important predictors for increased ED presentations on HW days. In contrast, the importance ranking for predictors in GRF models revealed that SES and HWs were prioritised among all predictors, followed by air quality indicators across all three child age groups (0-4, 5-9, and 10-14 years). Vulnerable populations at heightened risk from HWs include children under five years old, adults over sixty years old, males, Aboriginal people, and residents in disadvantaged or coastal areas.

Air quality during HW days was generally poor. Significant dose-response relationships between ED presentations and air quality indicators such as O3 and PM2.5 were demonstrated. A significant interaction between HWs and PM2.5 was also observed (P<0.05).

The identification of vulnerable hotspots for heat-related ED presentations among children under 15 years old—primarily concentrated in southern Perth metropolitan area including Mandurah, Kwinana, and Serpentine-Jarrahdale—is illustrated in Figure 2.

FIGURE 2. SPATIAL VARIATIONS OF THE IMPACT OF HWS ON CHILDREN 0–14 YEARS IN PERTH METROPOLITAN AREA



Asia Pacific Journal of Health Management 2024; 19(3):i4195. doi: 10.24083/apjhm.v19i3.4195

IMPACT FOR PRACTICE

A departmental report published in 2022 [8] informed policy decisions and received endorsement from the Assistant Director General, Public and Aboriginal Health.

Currently the Disaster Preparation and Management Directorate is using EHF with its 85% trigger to activate the new HW management plan in WA.

As a pioneering study of its kind, this research demonstrates how machine learning can enhance our understanding of environmental health impacts from HWs and air quality while supporting evidence-based policymaking.

This study provides evidence-based support for preparing initiatives aimed at protecting vulnerable populations and locations affected by HW-related health issues in Perth with potential applicability across WA.

The findings and recommendations from the study can help develop cost-effective strategies for allocating limited resources to mitigate adverse health effects of heatwaves, aligning with the WA Health's climate change adaptation priorities.

DECLARATION

This work was supported by the Telethon-Perth Children's Hospital Research Fund 2016 (Round 5), Western Australia, Australia. Ethics approval for this research has been received from the Western Australia Department of Health Human Research Ethics Committee (NO:2015/44). The reciprocal ethics approval was received from the Curtin University Ethics Committee (HRE2016-0079-05). All the health data was obtained from de-identified administrative databases. The research findings were only presented using aggregated data so that the confidentiality of the data was kept.

The authors declare they have no actual or potential conflict of interests that could have appeared to influence the work reported in this paper.

References

1. IPCC. Climate Change 2021 – The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Changing State of the Climate System. Cambridge, United Kingdom and New York, NY, USA; 2021. Report No.: 9781009157896.
2. National Oceanic and Atmospheric Administration. The planet just had its warmest October on record-So far, 2023 is a record-warm year for the globe. In: Commerce USDo, editor. 2023.
3. CSIRO. State of the Climate: Commonwealth of Australia, 2022. Available from: http://www.bom.gov.au/state-of-the-climate/2022/documents/2022-state-of-the-climate-web.pdf
4. Australia equals highest ever recorded temperature [Internet]. 2022. Available from: https://www.weatherzone.com.au/news/australia-equals-highest-ever-recorded-temperature/535931
5. Coates L, editor An overview of fatalities from some natural hazards in Australia1996: Barton, A.C.T.: Institution of Engineers, Australia.
6. Nairn JR, Fawcett RG, Day KA. Defining heatwaves: heatwave defined as a heat-impact event servicing all community and business sectors in Australia. Melbourne: Centre for Australian Weather and Climate Research; 2013.
7. DPMU Western Australian Department of Health. State Emergency Management Plan for Heatwave. In: The Western Australian Department of Health, editor. Perth: Western Australian Department of Health; 2012.
8. Epidemiology Directorate. Evaluation of the Heatwave Measurement used in the State Hazard Plan – Heatwave, and Related Health Effects. Perth, Western Australia: Department of Health, Western Australia; 2022.