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Title page

Title: Integrating the sciences of improvement, implementation and managing change in nursing practice.

Short running title: The sciences of improving nursing practice.

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MANUSCRIPT

Integrating the sciences of improvement, implementation and managing change in nursing practice.

Introduction

Creating and integrating change is central to health care practice that is responsive to advancements in technology, best practice evidence and shifting societal needs. Comprising over half the healthcare workforce and accounting for approximately 90% of all patient contacts, nurses and midwives have a substantial presence at every level of health services, systems and their governance. Making change happen is therefore often contingent on a nursing workforce that is willing and able to adapt their practice and support others to do so. Change predominantly involves: a) local-level level changes to improve service and team function, b) changes to facilitate the translation of evidence into practice, and c) changes to achieve strategic service- or system-level goals. Evidence-based approaches: Improvement Science, Implementation Science and Strategic Change Management, can support these broad types of change and with a central role in developing and implementing healthcare change, nurses are increasingly required to have requisite knowledge of these approaches. Despite featuring to varying extents in nursing curricula and research, understanding of how they may inform one another and interface in clinical practice is limited. This paper summarises the current integration of quality improvement, implementation and managing change in nursing curricula, and outlines strategies for addressing this to enable nurses to better lead and support change for healthcare improvement.

Approaches to change for improvement in nursing

Figure 1 broadly defines Improvement Science, Implementation Science, and Strategic Change Management Methodologies. Despite arising from different philosophical perspectives, these complementary disciplines share similar aims in bringing about positive

change to improve care. Each involves a systematic approach, which can be replicated, measured and tested by collecting evidence to demonstrate if and/or how improvement has occurred. Their widespread integration is uncommon, despite the value of this being recognised (Ogrinc et al, 2021).

Each approach features in nursing curricula to varying extents, but not always explicitly. Change Management, a long established element of nursing curricula worldwide, traditionally focuses on developing nurses' knowledge of and ability to apply change management theories and frameworks in practice. This includes how to manage change and apply basic project management skills. However, contemporary curricula increasing emphasise developing nurses' leadership and system change capability, in recognition of the importance of leading as well as managing complex, practice-based change.

Improvement Science has featured in nursing curricula for over two decades, in response to landmark publications driving healthcare quality and safety improvement and workforce policy responses. In the UK, this included introducing improvement capability as an explicit element of the NHS Knowledge and Skills Framework and Standards of Proficiency for Registered Nurses, and as an implicit requirement in nurses' Professional Code. Improvement Science draws knowledge from non-healthcare, often process-based, industries. Its application in nursing commonly focuses on using the Model for Improvement to support practitioner-led

continuous quality improvement, but despite being central to nursing practice, Improvement Science is not universally and systematically embedded in curricula and sustained improvement in healthcare quality and safety remains elusive, prompting calls for greater recognition of the potential for improvement activity to cause harm as well as good (Lawton and Thomas, 2022).

Developed in response to the poor record of translating research evidence into practice, Implementation Science arises from behavioural science. Unlike Improvement Science, which often starts with a problem in practice to address, Implementation Science begins with an evidence based practice to propagate. Westerlund et al (2019), among others, argue Implementation Science is not taught in healthcare practitioners' initial registration programmes and rarely features in continuing professional education. Nurses are schooled in associated topics, including clinical audit; formative, summative and process evaluation, but not explicitly as elements of Improvement Science, which limits their awareness of these as core components of this discipline. Similarly, most nurses are familiar with evidence-based practice but do not readily associate this with Implementation Science.

Opportunities for enhancing change efforts using an integrative approach

There is untapped potential for synergistically using the sciences of improvement, implementation, and change management, to enhance healthcare quality by: a) developing ready for adoption change ideas and b) promoting uptake of new approaches and behaviours.

Using improvement science to develop change ideas that are ready for adoption

Change failure, or not achieving the desired outcomes and/or process, is ubiquitous in healthcare. Whilst many factors may contribute to success in generating or sustaining improvement, common features of the change process are acknowledged as critical. Preparing for change is a fundamental stage in all major change methodologies. Supported by recent evidence, they commonly champion engaging stakeholders in decision-making, the

generation of shared values or goals, and the change process itself. Yet our recent systematic review of the application of change management methodologies in practice demonstrates little investment in stakeholder engagement and preparation in nursing practice internationally (Harrison et al, 2021). As a ground-up, stakeholder-led approach, leveraging Improvement Science through local quality improvement activities to identify target problems through stakeholder engagement may help address this gap.

Where a need for change is identified, with no clear evidence-based solution, Improvement Science may support the development of an intervention by using local knowledge to design changes that are predicted to result in improvement; testing, evaluating and refining these to offer a context-specific, sustainable solution. A strength of Improvement Science is its proximity to care delivery, by drawing upon the knowledge of clinical staff and local health populations on the issues they consider significant. Thus, Improvement Science may more effectively generate stakeholder buy-in about the need for change, perceived value of the changes proposed, and the feasibility of making changes in practice. Improvement Science can therefore add value in the early stages of conceptualising and testing change ideas that are more likely to succeed. Improvement Science, and the education of nurses in this discipline, has primarily focused on the practice of continuous quality improvement, often involving small-scale, isolated, iterative projects. While together small changes can lead to broader service transformation, evidence of effectiveness is mixed, leading to calls for a more strategic and evidence-based approach with a focus on replication rather than innovation if the necessary system change is to be achieved (Dixon-Woods, 2019).

Using implementation science to promote the adoption new approaches and behaviours.

Most change management methodologies move from planning for change into making change happen. Plans for action are often created and implemented, but barriers to action emerge.

Evidence produced using Implementation Science provides an expansive collection of frameworks and methods for assessing barriers to translating evidence into healthcare practice, along with strategies to address challenges that arise at an individual, group or system/service level; establishing the use of surgical safety checklists in modern healthcare is one example of this. Nurses with responsibility for implementing change may benefit from applying Implementation Science frameworks to guide them through the process of supporting others to adopt new practices or processes. Such frameworks can support the identification of skills or resourcing gaps, incompatible processes or policies, or other systemic barriers.

Embedding an integrative approach in curricula and practice

Addressing the current lack of integration of evidence-based approaches to improvement, implementation and change management in nursing is a priority if the step-change required to secure the delivery of high quality healthcare for the future is to be achieved. Whilst change management methodologies provide a useful set of broad principles to guide change within a complex system like healthcare, they are best used in conjunction with improvement and implementation methodologies and tools to create targeted approaches (Harrison et al 2021). Nurses need to understand the commonalities and differences between these disciplines to appropriately apply each to effectively enhance practice. For example, where there is a clear evidence base for change in practice with limited contextual dependency, Implementation Science may be the most appropriate approach for determining how best this change can be introduced, sustained and replicated elsewhere. However, where a need for change is identified but no clear evidence based solution apparent, an Improvement Science approach may be more relevant. We argue that adopting an integrated approach to teaching and using these disciplines in practice would appropriately exploit their commonalities, helping to address crowded nursing curricula and enhance practice outcomes.

In conclusion

Change is a core characteristic of modern healthcare practice as health systems seek to maximise population health within a context of societal and technological change. Comprising a large proportion of the healthcare workforce, nurses play a key role in enabling change to ensure the development and delivery of high quality, evidence informed healthcare; but they must be effectively prepared and enabled to meet this challenge. This paper identifies three established and complimentary, change-enabling disciplines, namely Improvement Science, Implementation Science, and Strategic Change Management along with how each can be most appropriately used to support change in healthcare. However, they can be confusing and difficult for nurses to align without explicit integration in their teaching and use in practice. Addressing this challenge could enable their use by nurses in complementary ways and to maximum effect for enabling effective, sustainable change for better population health and high quality care delivery.

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Figure 1: Evidence-based approaches to creating change in healthcare