BMJ Open

Developing and testing a matrix to achieve Ready-Everyday Nursing Standards (RENS): An observational study protocol

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2019-031499
Article Type:	Protocol
Date Submitted by the Author:	07-May-2019
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Keywords:	healthcare accreditation, nursing standards, measuring nursing standards

Developing and testing a matrix to achieve *Ready-Everyday Nursing Standards* (RENS): An observational study protocol

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Word Count: 4912 including all tables and references

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ABSTRACT

Introduction

The Australian Council on Healthcare Standards (ACHS) set standards for the delivery of healthcare services in Australia. Whilst a voluntary process, continual accreditation with ACHS is an expectation of, and for, Australian healthcare providers. Juxtapositioned with the ACHS, the Nursing and Midwifery Board of Australia (NMBA) set the mandatory practice requirements of, and for, Australian nurses. Despite these overarching quality and governance directives, a regional Queensland Hospital and Health Service (HHS) demonstrated deficits in the quality of nursing care. Accordingly, a HHS project was commissioned with the aim of producing a quantum shift in the quality of nursing services such that the service was *ready-everyday* for accreditation assessment, and nursing practice exemplified the NMBA standards.

Several barriers to achieving the aim were identified and it was considered that the implementation of critical system changes would structurally and operationally support the achievement of the aim. The system changes are pivoted around an interactive matrix that links nursing care services to the array of nursing professional and practice standards and provides real-time quantitative output measures. This paper outlines the protocol that will be used to establish, implement and evaluate the matrix.

Methods and analysis

A participatory action research design with a modified Delphi methodology will be used for the development the matrix. The organisational change management around the matrix implementation will be informed by Kotter's model and supported by the use of the McKinsey's 7S. The matrix implementation phase will be conducted using a modified PARiHS model. Quantitative and qualitative data will be collected over a 12-month pre-test/post-test design to measure the statistical significance of the matrix in supporting compliance with nursing standards and the achievement of quality nursing care. Quantitative data from quality of care assessments will be analysed using descriptive and comparative statistics. Qualitative data from staff surveys will be analysed by content analysis of the major themes (n ~ 200).

Ethics and dissemination

The project has ethics approval from a QHealth Human Research Ethics Committee. Results will be reported to participants and other stakeholders at seminars and conferences and through peer-reviewed publications.

Strengths and limitations of this study

- For healthcare providers, achieving ACHS accreditation is an episodic, time and resource intense process with inherent complexity around the quantification of the nursing standard components.
- This protocol is the first to map nursing professional and practice standards into an interactive, real-time quantitative matrix to provide a constant nursing service measure.
- This protocol uses non-probability sampling, and while economically and logistically advantageous, elevates the risk of selection bias.

Keywords

Healthcare accreditation, nursing standards, measuring nursing care.

Introduction

In Australia, the ACHS[1] has established standards for the delivery of healthcare services. Healthcare organisations voluntarily measure their achievement of the ACHS through a range of external and internal processes. The ACHS healthcare service external accreditation process is a cyclic four-year event, with an interim review once within the four-year period. ACHS conduct both the interim and final assessments on specified dates with specified assessors. In counterpart, the Nursing and Midwifery Board of Australia (NMBA) define the specific code of conduct and standards for nurses[2], with nurses self-auditing their practice against these standards as a component of their yearly registration renewal. At an organisational level, compliance with nursing standards is measured through a combination of methodologies and tools. As an example, in Queensland public hospitals, the yearly bedside audit (QBA)[3] is the sentinel tool which measures a range of Nurse Sensitive Indicators (NSIs).

External and internal ACHS and nursing standard compliance assessments are intended to demonstrate the achievement of quality and safety benchmarks. An organisation's and individual's compliance with these benchmarks provides a level of surety for organisations around the achievement of quality and safety expectations. Moreover, the process of conducting compliance assessments and the findings provide an opportunity to bring about system and individual changes to healthcare delivery.

In 2017, the HHS initiated with ACHS, QHealth and other partners, an Australian-first research project with the aim of being *Accreditation Ready Everyday* (ARE). The project methodology is such that an accreditation review can occur at any time and with any frequency[4, 5]. The initial 2017 ACHS research project assessment evidenced deficits in nursing documentation, the conduct and the quality of nursing care, and the use of evidence-based nursing practice. These findings were supported by the 2017 QBA report which demonstrated concerns in the acute care areas of the two larger HHS hospitals. Further confirmation that the nursing standards were not being achieved in those areas was provided from internal NSI assessments.

The consistent downward trend in compliance achievement across several time periods and assessment methodologies was an organisational risk. It was evident that a dichotomy existed between nursing standards and patient outcomes. This separation was supported (counter-intuitively) by system-generated rote nursing processes that were not based on evidence-informed or patient-centered care delivery. That is, nursing assessment, planning, implementation and evaluation processes had become firmly standardised and scripted into large documents with numerous checklists. Nursing standards and care planning processes were being driven by the requirement to have the 'form completed'. As a result, the patient record often contained the appropriate nursing form, however the nursing care delivery was not being completed, or to the standard required. Furthermore, the HHS's standards compliance reports were provided only as aggregate end-of-month data. This created a time-lag between the patient experience and the individual nurse/shift/day and reduced the ability for nurse leaders to activity monitor and respond to real-time compliance achievement.

In response to the deficits in care delivery, the HHS introduced several policies and conducted a series of training sessions and focus groups with the senior nursing staff within the acute care areas at both hospitals. Evaluation of the impact of the training and group workshops on the quality of nursing care was through an external review in February and March of 2018. That review supported the previous unfavourable findings and emphasized the continued deficits in the nursing standards around the level and quality of nursing care.

Varying approaches were initiated to identify the barriers to compliance achievement. Overarchingly, as a barrier to the provision of quality nursing care, nursing staff reported that there was confusion and a knowledge gap related the large number of governance standards and professional guidelines. Augmenting the barrier, was the disparate location of standards and guidelines on HHS systems and in the nursing care areas. Furthermore, the standards and guidelines often lacked quantitative measurement criteria.

Consultation around the structures and processes to enable the acute care areas to continuously achieve nursing standards occurred with the broad stakeholder group. The group agreed upon the following *Ready-everyday Nursing Standards* (RENS) project aim: To provide proof of concept for a method (the matrix) that articulated nursing professional standards, organisational standards and guidelines for nursing practice against measurable criteria and which could provide compliance information at any time and against any standard.

Change management framework.

The establishment of the system changes (the project) and the implementation of the matrix is expected to involve major shifts in the management, planning and delivery of nursing care. Planning and implementing significant workplace change provides a milieu of complexities requiring concerted leadership and management investment. Change management research demonstrates that organisations which adopt a formal process for large-scale changes are more successful in achieving the desired change. Kotter[6] articulates eight compelling change management principles, and in this project, those principles have been agreed upon as the mechanism by which the stages to effective change will be undertaken. Table 1 briefly outlines the principles and their application to this project.

Table 1. Kotter's principles of leading change applied to this project

Kotter's principles	Project application
Establishing a sense of urgency.	Kotter dissuades leaders from a) allowing too much complacency, and b) failing to establish a high enough sense of urgency – both of which propel a project to failure. In the context of this project, the urgency is inherently linked to patient risk; change is imperative to reduce that risk, and this has been communicated to the stakeholder team.
Creating a guiding coalition of team members.	A team has been created with the expertise and the authority, the responsibility and the relationships to lead the change. Kotter warns that 'when…minimum mass is not achieved early in the effort, nothing much worthwhile happens'. In this project, the critical mass consists of executive and high-level multidisciplinary team members whose participation is mandated and who have specific project accountabilities.
Create a clear vision that is expressed simply and has specific strategies.	In this project, the direction and alignment are articulated in each stage of the project including the project title and key messages from the coalition stakeholders.
Communicate the vision.	Following Kotter's advice, this project has embedded a Communications Officer into the project to ensure that multiple communication modalities are used to deliver the new vision and strategies.
Empowering others to act on the vision.	Kotter's notion of empowerment also includes the recognition and removal or alteration of obstructions. In this project, the coalition is supported to take risks with non-traditional ideas, activities and actions.
Planning for and creating short-term wins.	Kotter contends that acknowledging short-term wins supports the credibility of the project. In this project, short-term wins and escalating celebrations of each milestone has been established in the timelines.
Consolidate improvement and produce more change.	Kotter further advocates the use of the short-term wins as stepping stones, as opposed to an end itself. The wins enable larger targets to be addressed. In this project, the coalition has been specifically selected to re-engineer the system, to implement strategies sequentially, and to remain focused on the long-term aims.
Anchor the changes in the institution's culture.	Kotter sees that change must be embedded into the everyday, and cautions that the sustainability of change must be planned into the recruitment of change successors. In this project, the role of the change champions is now a significant component of position descriptions.

Adapted from Kotter[6]

Kotter's principles[6] will be supported by the use of the McKinsey's 7-S framework[7]. McKinsey's 7-S[8] model is structured around seven internal focal points: strategy, structure and systems (hard elements) and shared values, skills, style and staff (soft elements). In this project, McKinsey 7-S (Figure 1) will be used to consider the alignment of the elements, identify the likely effects and team specific impacts of the change, and determine how best to implement the proposed matrix

Figure 1 about here.

The implementation of the matrix is expected to be provide a number of challenges, accordingly the project team considered a range of theoretical and practice implementation models[9-13] before selecting *Promoting Action on Research Implementation in Health Services* (PARiHS)[14]. PARiHS is generally utilised for the implementation of evidence-based guidelines, however the project team believed that a modification of this model offered a structure to support the identification and embedment of professional standards (which inform practice guidelines) into the acute care areas. The implementation structure for this project will employ the three primary PARiHS themes: a) the evidence, b) the context, and c) the facilitators of change.

Methods and analysis

Population, recruitment, consent and data sources

This is a mixed methods study with two cohorts. Cohort One. This population will consist of all patients who have had an admission to the surgical and/or medical wards of the two major HHS hospitals over the past three years (2016-2019). Pre- and post- implementation de-identified data will be collected from QHealth HHS reports and quality systems (listed in Table 2) under a waiver of consent. No individual patient data will be collected.

Cohort Two. This population will consist of the acute care nursing teams in the surgical and medical wards of the two major HHS hospitals (n ~ 200). This population will be exposed to the new process (the matrix) as part of their standard workplace roles. In order to understand what those staff consider to be the important issues related to the achievement of quality nursing care in their unit, a pre-implementation survey will be conducted. Potential survey participants will be purposely invited to participate through a generic email to their work address. In addition, the survey will be available in the clinical areas and on the HHS website. The survey study which should take less than 30 minutes to complete. Participants will be informed that participation in the survey is anonymous and voluntary. Completion and return of the survey to an independent third party will signify consent to participate.

Six-months post implementation of the matrix, the procedure will be repeated to obtain post-implementation survey data.

Table 2. Data sources and consent procedures

Cohort	Data tool	Consent format
One	HHS Accreditation Report (2017)	Waiver of Consent
One	HHS Accreditation Report (2019)	Waiver of Consent
One	HHS External Review (2018)	Waiver of Consent
One	HHS QBA (2017)	Waiver of Consent
One	HHS QBA (2019)	Waiver of Consent
One	HHS NSIs (2016-2017 yearly report)	Waiver of Consent
One	HHS NSIs (2019 yearly report)	Waiver of Consent
Two	Pre-implementation survey	Participant Information and Consent Form
Two	Post-implementation survey	Participant Information and Consent Form

The Intervention

The matrix will be developed and implemented as follows:

Phase 1

The project team will identify relevant nursing professional standards, organisational standards and guidelines. The project team will use a modified Delphi methodology to gain consensus on the standards for inclusion, exclusion and their context into the tool. The inclusion criteria will be based on the standard's ability to influence or impact the nursing service and nursing practice. Statements without linkage to nursing and nursing practice will not be included. Standards without validated measurement criteria will have measurement criteria or indicators developed by the project team. All criteria will be expressed as single elements of a standard and written in plain English using a structured and standardised format. Clinical nursing standard criteria will follow the nursing process of assessment, planning, implementation and evaluation. The broader stakeholder team will review all standards and criteria in terms of importance to patient care, impact on nursing service or nursing care, and feasibility and viability of measurement criteria. Initially the tool will be developed as a hardcopy and online Excel® tool before moving to a purpose-designed electronic application (App). The tool will be positioned on HHS computer desktops and portable devices and enable real-time data collection.

Phase 2

Using a modified PARiHS model, the matrix will be implemented into the acute care areas of the two hospitals. Participation in Phase 2 is an expectation for all nursing staff employed in the surgical and medical wards of HHS hospitals as part of a standard Quality Improvement activity. The Phase 2 elements are listed in the Project Plan Outline (Table 3).

Data collection and analysis

Quantitative and qualitative data will be collected to measure the statistical significance of the matrix in supporting compliance with nursing standards and the achievement of quality nursing care. Table 2 lists the reports that will be used as the data sources for this project. From those reports, variables that relate to nursing services quality of care will be identified and a range of patient outcome data will be obtained. Six-months following the implementation of the matrix, post-implementation data will be obtained from the same sources (excluding a repeat external review). Included will be adverse incidents, for example the development of a pressure injury, medication errors, and falls.

Pre- and post-test statistical analysis will be used to compare the results on both the qualitative and quantitative data to determine if there has been a statistically significant improvement in the nursing standards by showing if the results can be attributed to chance variation. Quantitative data will be compiled onto Excel® spreadsheets and imported into SPSS® version 25.0 (IBM® SPSS® Statistics 25) for Windows for analysis. Validation of the data accuracy following transfer will be conducted by comparing the computed values on the Excel® spreadsheets with the computed values in SPSS®. Missing data will be reported but will be excluded from analysis. Outliers will be identified by the use of boxplots in SPSS®. These outliers will be confirmed based on the established procedures[15] and will be reported but excluded in the data analysis.

Descriptive and comparative analyses will be undertaken. Means ± SD or proportions will be reported for in-group dispersion and central tendency where applicable. Continuous variables will be tested for statistically significant differences using t-test and ANOVA, followed by appropriate post-hoc tests when required. Categorical variables will be analysed by chi-square with appropriate post-hoc tests when required. Confounders, variable modifiers, and biases will be identified, eliminated were possible, or appropriately dealt with. Results will be reported at alpha .05 and accompanied by 95% confidence intervals (95% CI).

Qualitative data will be collected from the External Review and from the pre- and post-implementation nursing staff surveys. Qualitative data will be analysed by content analysis of the major recurring themes and a frequency count may then be performed.

De-identified quantitative and qualitative data will be reported as aggregate data. Qualitative and quantitative analysis which shows statistically significant post-implementation results will provide proof of concept around the use of the matrix to impact the quality of nursing care.

Ethics, timelines and dissemination

HHS and ethics approval for the project has been obtained through the standard QHealth processes.

Timelines. Initial roll-out of the matrix is planned for June 2019.

Dissemination of findings. Findings, including the validated matrix, will be reported using the STROBE guidelines for observational studies[16, 17]. Participants and healthcare consumers will be informed of the project results through publication on publicly accessible websites, media and local newsletters. Additionally, HHS newsletters will contain details of the research findings and links to the journal articles. Findings will be presented at Australian and international conferences and seminars.

Conclusion

This paper describes a participatory action research project aimed at establishing a mechanism for measuring the delivery of nursing care in the acute care areas of a regional Queensland HHS against professional nursing and clinical standards. The paper identifies the theoretical frameworks for developing the implementation plan and identifies the disablers and enablers to delivering the project aim. The mixed methods approach to data collection aligns with the project aim of delivering a substantial and sustainable improvement in the delivery of nursing care and achievement of nursing standards by embedding *Ready Everyday Nursing Standards* into practice.

Table 3. Project Plan Outline

Project Aim To provide proof of concept for a method (the matrix) that articulated nursing professional standards, organisational standards and guidelines for nursing practice against measurable criteria and which could provide compliance information at any time and against any standard.		
Participants: Acute care areas: Nursing Directors, nursing staff, Nurse Unit Managers (NUMs), Clinical Nurse Consultants (CNSs), Nurse Educators, Associate Nurse Educators.		
Stakeholders: HHS Executive and General Managers. Matrix Development: Executive Director of Nursing and Midwifery Services and Director of Nursing. Project Lead: Chief Executive		
Project Phases 1. Identify relevant nursing professional standards, organisational standards and guidelines; using a modified Delphi methodology obtain consensus on the standards to include in the matrix; and develop a range of measurable standard against those standards. Develop a user friendly, online data collection system that will record and report in real-time against the standards. 2. Implement the matrix into the clinical setting. 3. Evaluate the project effectiveness and the matrix on the quality of nursing care. The study will use mixed methods to collect and measure the statistical significance of the standards matrix on the quality of nursing care. **Project Goals** • Improve standards of nursing care delivered by the HHS. • Empower nurses and midwives to use clinical judgement to inform clinical decision making. • Empower Nurse Unit Managers (NUMs) to engage with their team and lead their teams to deliver excellence in nursing and standards. • Empower nurses to be involved in every level of decision making. • Improve culture and staff retention.		
	Objectives	Methodology
Phase 1 Development	• Obtain consensus on the nursing professional standards, organisational standards and guidelines to include in a matrix. • Develop measurable criteria that can record in real-time against those standards • Articulate a HHS nursing and standards matrix that aligns with NMBA standards, code of professional conduct and NSQHC standards • Develop standards matrix into an app • Monitor the standard being performed by every nurse and midwife on regular intervals, utilising the app to document and formulate reports on each nursing and standard • Enable comments to be fed into the app that supports education requirements and lifelong learning framework for individual nurses and midwives	Kotter's model -Organisational change McKinsey 7S -Team change impact Modified PARiHS model - Evidence aspect (Standards, Guidelines) • Project team: Search and source relevant standards and guidelines • Broader stakeholder group: Modified Delphi approach. • Develop measurable evidence criteria for each element of a standard • Project team: Upload agreed matrix onto App and locate on HHS computers
Phase 2 Implementation	• Invest in the development of HHS nurses and midwives • Engage team to develop more positive, caring and compassionate, patient-focused culture in which nurses and midwives feel valued, supported and empowered • Review role descriptions of NUMs, CNCs, NEs and ANEs to ensure clear delineation of roles and responsibilities • Develop specialty, evidence-based clinical pathways • Empower NUMs, CNCs, NEs and ANEs to be more visible on the floor, monitoring, supporting and educating. • Update and re-enforce uniform procedure • Introduce staff ID boards	Modified PARiHS model: • Context aspect (Culture, Leadership, Measurement) • Facilitator aspect (Characteristics, Role, Style, Effectiveness)

	• Review shift start and finish times to maximise handover time and enable shift completion at the designated time • Review staff lockers and provide enough to meet the needs of nursing staff • Ensure all required resources and equipment is available and in working order • Develop a process to ensure discharge summaries are provided within 2 days of discharge • Provide 'on the floor' training, education and support to deliver the standards • Release time for Nursing Directors (NDs) to be more visible on the floor by limiting the number of required meetings. • Review HHS meetings and meeting structures to ensure meetings are representative, are efficient and effective, are value-adding or ceased • Release time to care by improving processes (for example, clinical documentation review to reduce duplication, utilise systems approach to documentation using clinical judgement opposed to tick boxes, introduce medication administration processes using PYXIS) • Release time for NUMs by providing administration support • Support NUMs with the introduction of Clinical Nurse Consultant (CNC) positions • Support NUMs with changing the education model to provide on the floor education by either a Nurse Educator (NE) or Associate Nurse Educator (ANE) for 80% of training and education • Ensure medical consultants attend daily multi-disciplinary team (MDT) meetings • Review medical officer ward round times to enable the nurse or midwife to be present during ward rounds • Develop a succession planning framework and model for RNs wishing to work in NUM/CNC/NE roles • Consider the alignment of operational management of administration support. • Provide a mentorship program to NUMs • Develop a clinical information scorecard from floor-to-board that meets the needs of the NUM • Develop a HHS Leadership Education program for all leaders • Utilise the lifelong leaRNing framework to develop individual training and education plans for each nurse and midwife • Develop specialty-based nursing and education requirements and modules for each unit/ward • Review the Nursing Support Unit (NSU) and casual nursing and utilisation process, reducing inefficiencies in cost and nursing resources and empowering NUMs to be accountable for the nursing and staffing resources within their unit • Develop a recruitment strategy and campaign to attract nursing staff to the HHS • Improve recruitment processes to enable earlier advertising and fast track recruitment • Ensure each NUM is provided with a 'go to' Human Resource (HR) person for their unit • Review the nursing standards support matrix and ensure instructions on use is provided to NUMs • Ensure each nurse and midwife can print out their personal education assessment and plan • Review the out-of-hours patient flow process and refine and clarify the patient flow nurse manager role • Develop a Nursing and Workforce Plan to meet workforce capacity and capability requirements • Develop a Professional Consultation process and document to ensure all changes to process, including models of care receive input with the appropriate professional lead and risks are noted and managed or escalated to the Executive Governance Committee and risk register • Introduce new nursing and uniforms that demonstrate professionalism and clearly delineate designations • Communicate plan to all acute care teams and then to all of HHS	
Phase 3 Evaluation	• Provide proof of concept for a method that articulates nursing professional standards, organisational standards and guidelines to nursing practice	• Qualitative and quantitative data: • Accreditation Report (2017 & 2019) • QBA (2017 & 2019) • External Nursing Review (2018) • HHS NSI's (2016-2017 & 2018-2019) • McKinsey 7S (team impact) • Post-implementation survey

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Contributors. All authors contributed to the conception of the study protocol and the final approval of the manuscript. Study design: AP, FS. Literature search and assessment AR. Drafting the manuscript: AR. Critical revision of the manuscript for intellectual content: AP, FS.

Funding. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests. The authors declare no competing interests.

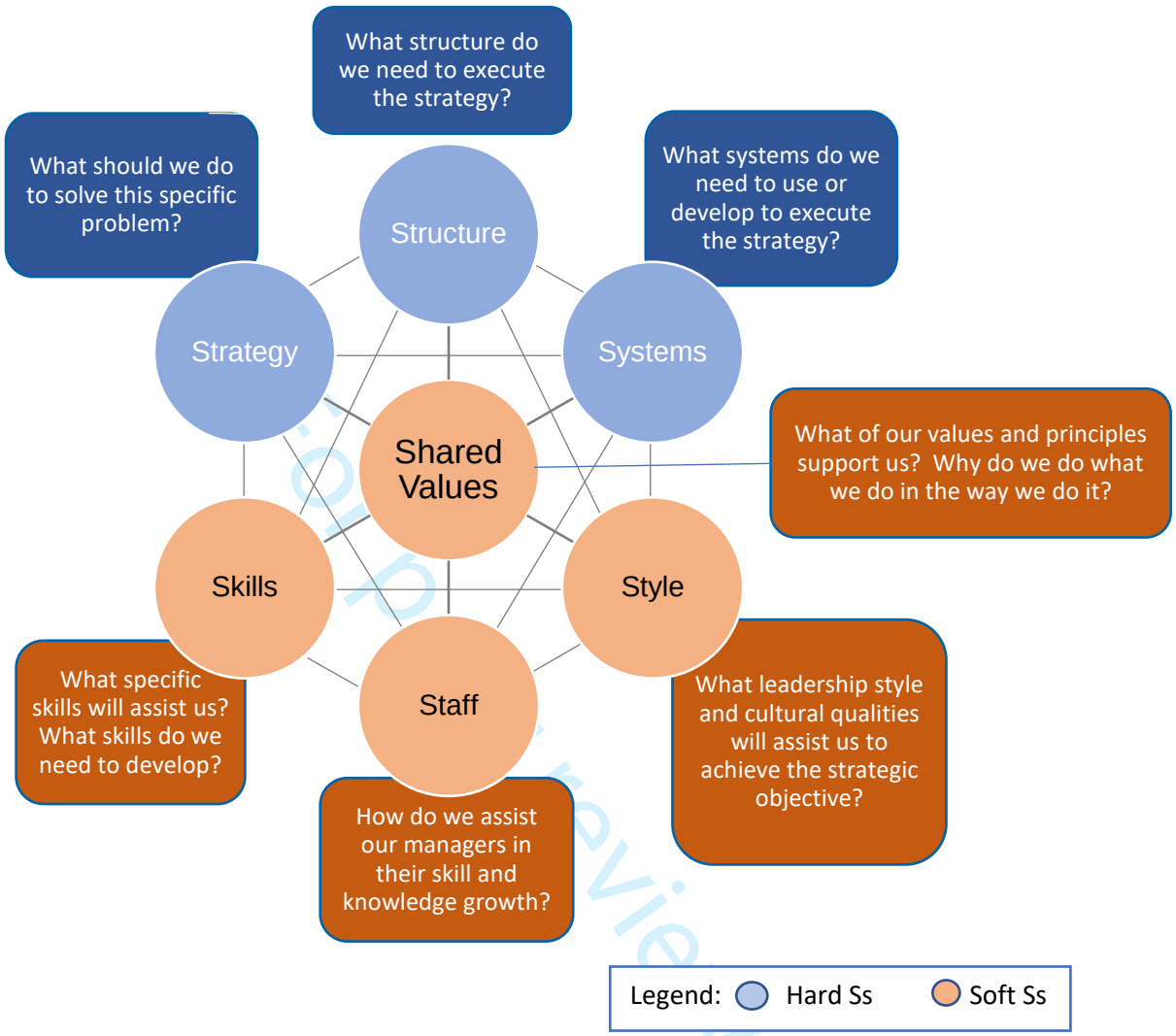
Patient consent. Not required.

Provenance and peer review. Not commissioned; externally peer reviewed.

Data sharing statement. There are no additional data available.

Figure legend

McKinsey 7-S framework[8] - Project modifications



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Strengths and limitations of this study

- The methodology broadly engages nursing services and organisational leads from clinical, education, management and research domains to achieve ACHS accreditation.
- This protocol is the first to map nursing professional and practice standards into an interactive, real-time quantitative matrix to provide a constant nursing service measure.
- This protocol uses non-probability sampling, and while economically and logistically advantageous, elevates the risk of selection bias.

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Introduction

In Australia, the ACHS[1] has established standards for the delivery of healthcare services. Healthcare organisations voluntarily measure their achievement of the ACHS through a range of external and internal processes. The ACHS healthcare service external accreditation process is a cyclic four-year event, with an interim review once within the four-year period. ACHS conduct both the interim and final assessments on specified dates with specified assessors. In counterpart, the Nursing and Midwifery Board of Australia (NMBA) define the specific code of conduct and standards for nurses[2], with nurses self-auditing their practice against these standards as a component of their yearly registration renewal. At an organisational level, compliance with nursing standards is measured through a combination of internal and external methodologies and tools. As an example, in Queensland public hospitals, the yearly bedside audit (QBA)[3] is the sentinel external tool which measures a range of Nurse Sensitive Indicators (NSIs).

External and internal ACHS and nursing standard compliance assessments are intended to demonstrate the achievement of quality and safety benchmarks. An organisation's and individual's compliance with these benchmarks provides a level of surety for organisations around the achievement of quality and safety expectations. Moreover, the process of conducting compliance assessments and the findings provide an opportunity to bring about system and individual changes to healthcare delivery.

In 2017, the HHS initiated with ACHS, QHealth and other partners, an Australian-first research project with the aim of being *Accreditation Ready Everyday* (ARE). The project methodology is such that an accreditation review can occur at any time and with any frequency[4, 5]. The initial 2017 ACHS research project assessment evidenced deficits in nursing documentation, the conduct and the quality of nursing care, and the use of evidence-based nursing practice. These findings were supported by the 2017 QBA report which demonstrated concerns in the acute care areas of the two larger HHS hospitals. Further confirmation that the nursing standards were not being achieved in those areas was provided from internal NSI assessments.

The consistent downward trend in compliance achievement across several time periods and assessment methodologies was an organisational risk. It was evident that a dichotomy existed between nursing standards and patient outcomes. This separation was supported (counter-intuitively) by system-generated rote nursing processes that were not based on evidence-informed or patient-centered care delivery. That is, nursing assessment, planning, implementation and evaluation processes had become firmly standardised and scripted into large documents with numerous checklists. Nursing standards and care planning processes were being driven by the requirement to have the 'form completed'. As a result, the patient record often contained the appropriate nursing form, however the nursing care delivery was not being completed, or to the standard required. Furthermore, the HHS's standards compliance reports were provided only as aggregate end-of-month data. This created a time-lag between the patient experience and the individual nurse/shift/day and reduced the ability for nurse leaders to activity monitor and respond to real-time compliance achievement.

In response to the deficits in care delivery, the HHS introduced several policies and conducted a series of training sessions and focus groups with the senior nursing staff within the acute care areas at both hospitals. Evaluation of the impact of the training and group workshops on the quality of nursing care was through an external review in February and March of 2018. That review supported the previous unfavourable findings and emphasized the continued deficits in the nursing standards around the level and quality of nursing care.

Varying approaches were initiated to identify the barriers to compliance achievement. Overarchingly, as a barrier to the provision of quality nursing care, nursing staff reported that there was confusion and a knowledge gap related the large number of governance standards and professional guidelines. Augmenting the barrier, was the disparate location of standards and guidelines on HHS systems and in the nursing care areas. Furthermore, the standards and guidelines often lacked quantitative measurement criteria.

Consultation around the structures and processes to enable the acute care areas to continuously achieve nursing standards occurred with the broad stakeholder group. The group agreed upon the following *Ready-everyday Nursing Standards* (RENS) project aim: To provide proof of concept for a method (the matrix) that articulated nursing professional standards, organisational standards and guidelines for nursing practice against measurable criteria and which could provide compliance information at any time and against any standard.

Change management framework.

The establishment of the system changes (the project) and the implementation of the matrix is expected to involve major shifts in the management, planning and delivery of nursing care. Planning and implementing significant workplace change provides a milieu of complexities requiring concerted leadership and management investment. Change management research demonstrates that organisations which adopt a formal process for large-scale changes are more successful in achieving the desired change. Kotter[6] articulates eight compelling change management principles, and in this project, those principles have been agreed upon as the mechanism by which the stages to effective change will be undertaken. Table 1 briefly outlines the principles and their application to this project.

Table 1. Kotter's principles of leading change applied to this project

Kotter's principles	Project application
Establishing a sense of urgency.	Kotter dissuades leaders from a) allowing too much complacency, and b) failing to establish a high enough sense of urgency – both of which propel a project to failure. In the context of this project, the urgency is inherently linked to patient risk; change is imperative to reduce that risk, and this has been communicated to the stakeholder team.
Creating a guiding coalition of team members.	A team has been created with the expertise and the authority, the responsibility and the relationships to lead the change. Kotter warns that 'when…minimum mass is not achieved early in the effort, nothing much worthwhile happens'. In this project, the critical mass consists of executive and high-level multidisciplinary team members whose participation is mandated and who have specific project accountabilities.
Create a clear vision that is expressed simply and has specific strategies.	In this project, the direction and alignment are articulated in each stage of the project including the project title and key messages from the coalition stakeholders.
Communicate the vision.	Following Kotter's advice, this project has embedded a Communications Officer into the project to ensure that multiple communication modalities are used to deliver the new vision and strategies.
Empowering others to act on the vision.	Kotter's notion of empowerment also includes the recognition and removal or alteration of obstructions. In this project, the coalition is supported to take risks with non-traditional ideas, activities and actions.
Planning for and creating short-term wins.	Kotter contends that acknowledging short-term wins supports the credibility of the project. In this project, short-term wins and escalating celebrations of each milestone has been established in the timelines.
Consolidate improvement and produce more change.	Kotter further advocates the use of the short-term wins as stepping stones, as opposed to an end itself. The wins enable larger targets to be addressed. In this project, the coalition has been specifically selected to re-engineer the system, to implement strategies sequentially, and to remain focused on the long-term aims.
Anchor the changes in the institution's culture.	Kotter sees that change must be embedded into the everyday, and cautions that the sustainability of change must be planned into the recruitment of change successors. In this project, the role of the change champions is now a significant component of position descriptions.

Adapted from Kotter[6]

Kotter's principles[6] will be supported by the use of the McKinsey's 7-S framework[7]. McKinsey's 7-S[8] model is structured around seven internal focal points: strategy, structure and systems (hard elements) and shared values, skills, style and staff (soft elements). In this project, McKinsey 7-S (Figure 1) will be used to consider the alignment of the elements, identify the likely effects and team specific impacts of the change, and determine how best to implement the proposed matrix

Figure 1 about here.

The implementation of the matrix is expected to be provide a number of challenges, accordingly the project team considered a range of theoretical and practice implementation models[9-13] before selecting *Promoting Action on Research Implementation in Health Services* (PARiHS)[14]. PARiHS is generally utilised for the implementation of evidence-based guidelines, however the project team believed that a modification of this model offered a structure to support the identification and embedment of professional standards (which inform practice guidelines) into the acute care areas. The implementation structure for this project will employ the three primary PARiHS themes: a) the evidence, b) the context, and c) the facilitators of change.

Methods and analysis

Population, recruitment, consent and data sources

Patient and Public Involvement: Patients and the public were not actively recruited to this study, nor did they actively inform the study.

This is a mixed methods study with two cohorts. Cohort One. This population will consist of all patients who have had an admission to the surgical and/or medical wards of the two major HHS hospitals over the past three years (2016-2019). Pre- and post- implementation de-identified data will be collected from QHealth HHS reports and quality systems (listed in Table 2) under a waiver of consent. No individual patient data will be collected.

Cohort Two. This population will consist of the acute care nursing teams in the surgical and medical wards of the two major HHS hospitals (n ~ 200). This population will be exposed to the new process (the matrix) as part of their standard workplace roles. In order to understand what those staff consider to be the important issues related to the achievement of quality nursing care in their unit, a pre-implementation survey will be conducted. Potential survey participants will be purposely invited to participate through a generic email to their work address. In addition, the survey will be available in the clinical areas and on the HHS website. The survey study which should take less than 30 minutes to complete. Participants will be informed that participation in the survey is anonymous and voluntary. Completion and return of the survey to an independent third party will signify consent to participate.

Six-months post implementation of the matrix, the procedure will be repeated to obtain post-implementation survey data.

Table 2. Data sources and consent procedures

Cohort	Data tool	Consent format
One	HHS Accreditation Report (2017)	Waiver of Consent
One	HHS Accreditation Report (2019)	Waiver of Consent
One	HHS External Review (2018)	Waiver of Consent
One	HHS QBA (2017)	Waiver of Consent
One	HHS QBA (2019)	Waiver of Consent
One	HHS NSIs (2016-2017 yearly report)	Waiver of Consent
One	HHS NSIs (2019 yearly report)	Waiver of Consent
Two	Pre-implementation survey	Participant Information and Consent Form
Two	Post-implementation survey	Participant Information and Consent Form

The Intervention

The matrix will be developed and implemented as follows:

Phase 1

The project team will identify relevant nursing professional standards, organisational standards and guidelines. The project team will use a modified Delphi methodology to gain consensus on the standards for inclusion, exclusion and their context into the tool. The inclusion criteria will be based on the standard's ability to influence or impact the nursing service and nursing practice. Statements without linkage to nursing and nursing practice will not be included. Standards without validated measurement criteria will have measurement criteria or indicators developed by the project team. All criteria will be expressed as single elements of a standard and written in plain English using a structured and standardised format. Clinical nursing standard criteria will follow the nursing process of assessment, planning, implementation and evaluation. The broader stakeholder team will review all standards and criteria in terms of importance to patient care, impact on nursing service or nursing care, and feasibility and viability of measurement criteria. Initially the tool will be developed as a hardcopy and online Excel® tool before moving to a purpose-designed electronic application (App). The tool will be positioned on HHS computer desktops and portable devices and enable real-time data collection.

Phase 2

Using a modified PARiHS model, the matrix will be implemented into the acute care areas of the two hospitals. Participation in Phase 2 is an expectation for all nursing staff employed in the surgical and medical wards of HHS hospitals as part of a standard Quality Improvement activity. The Phase 2 elements are listed in the Project Plan Outline (Table 3).

Data collection and analysis

Quantitative and qualitative data will be collected to measure the statistical significance of the matrix in supporting compliance with nursing standards and the achievement of quality nursing care. Table 2 lists the reports that will be used as the data sources for this project. From those reports, variables that relate to nursing services quality of care will be identified and a range of patient outcome data will be obtained. Six-months following the implementation of the matrix, post-implementation data will be obtained from the same sources (excluding a repeat external review). Included will be adverse incidents, for example the development of a pressure injury, medication errors, and falls.

Pre- and post-test statistical analysis will be used to compare the results on both the qualitative and quantitative data to determine if there has been a statistically significant improvement in the nursing standards by showing if the results can be attributed to chance variation. Quantitative data will be compiled onto Excel® spreadsheets and imported into SPSS® version 25.0 (IBM® SPSS® Statistics 25) for Windows for analysis. Validation of the data accuracy following transfer will be conducted by comparing the computed values on the Excel® spreadsheets with the computed values in SPSS®. Missing data will be reported but will be excluded from analysis. Outliers will be identified by the use of boxplots in SPSS®. These outliers will be confirmed based on the established procedures[15] and will be reported but excluded in the data analysis.

Descriptive and comparative analyses will be undertaken. Means ± SD or proportions will be reported for in-group dispersion and central tendency where applicable. Continuous variables will be tested for statistically significant differences using t-test and ANOVA, followed by appropriate post-hoc tests when required. Categorical variables will be analysed by chi-square with appropriate post-hoc tests when required. Confounders, variable modifiers, and biases will be identified, eliminated were possible, or appropriately dealt with. Results will be reported at alpha .05 and accompanied by 95% confidence intervals (95% CI).

Qualitative data will be collected from the External Review and from the pre- and post-implementation nursing staff surveys. Qualitative data will be analysed by content analysis of the major recurring themes and a frequency count may then be performed.

De-identified quantitative and qualitative data will be reported as aggregate data. Qualitative and quantitative analysis which shows statistically significant post-implementation results will provide proof of concept around the use of the matrix to impact the quality of nursing care.

Ethics, timelines and dissemination

HHS and an exemption from full Human Ethics Research Committee approval has been obtained for this quality improvement project (HREC/2019/QPCH/51342).

Timelines. Initial roll-out of the matrix is planned for June 2019.

Dissemination of findings. Findings, including the validated matrix, will be reported using the STROBE guidelines for observational studies[16, 17]. Participants and healthcare consumers will be informed of the project results through publication on publicly accessible websites, media and local newsletters. Additionally, HHS newsletters will contain details of the research findings and links to the journal articles. Findings will be presented at Australian and international conferences and seminars.

Conclusion

This paper describes a participatory action research project aimed at establishing a mechanism for measuring the delivery of nursing care in the acute care areas of a regional Queensland HHS against professional nursing and clinical standards. The paper identifies the theoretical frameworks for developing the implementation plan and identifies the disablers and enablers to delivering the project aim. The mixed methods approach to data collection aligns with the project aim of delivering a substantial and sustainable improvement in the delivery of nursing care and achievement of nursing standards by embedding *Ready Everyday Nursing Standards* into practice.

Table 3. Project Plan Outline

Project Aim To provide proof of concept for a method (the matrix) that articulated nursing professional standards, organisational standards and guidelines for nursing practice against measurable criteria and which could provide compliance information at any time and against any standard.		
Participants: Acute care areas: Nursing Directors, nursing staff, Nurse Unit Managers (NUMs), Clinical Nurse Consultants (CNSs), Nurse Educators, Associate Nurse Educators.		
Stakeholders: HHS Executive and General Managers. Matrix Development: Executive Director of Nursing and Midwifery Services and Director of Nursing. Project Lead: Chief Executive		
Project Phases 1. Identify relevant nursing professional standards, organisational standards and guidelines; using a modified Delphi methodology obtain consensus on the standards to include in the matrix; and develop a range of measurable standard against those standards. Develop a user friendly, online data collection system that will record and report in real-time against the standards. 2. Implement the matrix into the clinical setting. 3. Evaluate the project effectiveness and the matrix on the quality of nursing care. The study will use mixed methods to collect and measure the statistical significance of the standards matrix on the quality of nursing care. **Project Goals** • Improve standards of nursing care delivered by the HHS. • Empower nurses and midwives to use clinical judgement to inform clinical decision making. • Empower Nurse Unit Managers (NUMs) to engage with their team and lead their teams to deliver excellence in nursing and standards. • Empower nurses to be involved in every level of decision making. • Improve culture and staff retention.		
	Objectives	Methodology
Phase 1 Development	• Obtain consensus on the nursing professional standards, organisational standards and guidelines to include in a matrix. • Develop measurable criteria that can record in real-time against those standards • Articulate a HHS nursing and standards matrix that aligns with NMBA standards, code of professional conduct and NSQHC standards • Develop standards matrix into an app • Monitor the standard being performed by every nurse and midwife on regular intervals, utilising the app to document and formulate reports on each nursing and standard • Enable comments to be fed into the app that supports education requirements and lifelong learning framework for individual nurses and midwives	Kotter's model -Organisational change McKinsey 7S -Team change impact Modified PARiHS model - Evidence aspect (Standards, Guidelines) • Project team: Search and source relevant standards and guidelines • Broader stakeholder group: Modified Delphi approach. • Develop measurable evidence criteria for each element of a standard • Project team: Upload agreed matrix onto App and locate on HHS computers
Phase 2 Implementation	• Invest in the development of HHS nurses and midwives • Engage team to develop more positive, caring and compassionate, patient-focused culture in which nurses and midwives feel valued, supported and empowered • Review role descriptions of NUMs, CNCs, NEs and ANEs to ensure clear delineation of roles and responsibilities • Develop specialty, evidence-based clinical pathways • Empower NUMs, CNCs, NEs and ANEs to be more visible on the floor, monitoring, supporting and educating. • Update and re-enforce uniform procedure • Introduce staff ID boards	Modified PARiHS model: • Context aspect (Culture, Leadership, Measurement) • Facilitator aspect (Characteristics, Role, Style, Effectiveness)

	• Review shift start and finish times to maximise handover time and enable shift completion at the designated time • Review staff lockers and provide enough to meet the needs of nursing staff • Ensure all required resources and equipment is available and in working order • Develop a process to ensure discharge summaries are provided within 2 days of discharge • Provide 'on the floor' training, education and support to deliver the standards • Release time for Nursing Directors (NDs) to be more visible on the floor by limiting the number of required meetings. • Review HHS meetings and meeting structures to ensure meetings are representative, are efficient and effective, are value-adding or ceased • Release time to care by improving processes (for example, clinical documentation review to reduce duplication, utilise systems approach to documentation using clinical judgement opposed to tick boxes, introduce medication administration processes using PYXIS) • Release time for NUMs by providing administration support • Support NUMs with the introduction of Clinical Nurse Consultant (CNC) positions • Support NUMs with changing the education model to provide on the floor education by either a Nurse Educator (NE) or Associate Nurse Educator (ANE) for 80% of training and education • Ensure medical consultants attend daily multi-disciplinary team (MDT) meetings • Review medical officer ward round times to enable the nurse or midwife to be present during ward rounds • Develop a succession planning framework and model for RNs wishing to work in NUM/CNC/NE roles • Consider the alignment of operational management of administration support. • Provide a mentorship program to NUMs • Develop a clinical information scorecard from floor-to-board that meets the needs of the NUM • Develop a HHS Leadership Education program for all leaders • Utilise the lifelong leaRNing framework to develop individual training and education plans for each nurse and midwife • Develop specialty-based nursing and education requirements and modules for each unit/ward • Review the Nursing Support Unit (NSU) and casual nursing and utilisation process, reducing inefficiencies in cost and nursing resources and empowering NUMs to be accountable for the nursing and staffing resources within their unit • Develop a recruitment strategy and campaign to attract nursing staff to the HHS • Improve recruitment processes to enable earlier advertising and fast track recruitment • Ensure each NUM is provided with a 'go to' Human Resource (HR) person for their unit • Review the nursing standards support matrix and ensure instructions on use is provided to NUMs • Ensure each nurse and midwife can print out their personal education assessment and plan • Review the out-of-hours patient flow process and refine and clarify the patient flow nurse manager role • Develop a Nursing and Workforce Plan to meet workforce capacity and capability requirements • Develop a Professional Consultation process and document to ensure all changes to process, including models of care receive input with the appropriate professional lead and risks are noted and managed or escalated to the Executive Governance Committee and risk register • Introduce new nursing and uniforms that demonstrate professionalism and clearly delineate designations • Communicate plan to all acute care teams and then to all of HHS	
Phase 3 Evaluation	• Provide proof of concept for a method that articulates nursing professional standards, organisational standards and guidelines to nursing practice	• Qualitative and quantitative data: • Accreditation Report (2017 & 2019) • QBA (2017 & 2019) • External Nursing Review (2018) • HHS NSI's (2016-2017 & 2018-2019) • McKinsey 7S (team impact) • Post-implementation survey

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Contributors. All authors contributed to the conception of the study protocol and the final approval of the manuscript. Study design: AP, FS. Literature search and assessment AR. Drafting the manuscript: AR. Critical revision of the manuscript for intellectual content: AP, FS.

Funding. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests. The authors declare no competing interests.

Patient consent. Not required.

Provenance and peer review. Not commissioned; externally peer reviewed.

Data sharing statement. There are no additional data available.

Figure legend

McKinsey 7-S framework[8] - Project modifications