Patient Safety: A landscape of interventions from a nursing perspective

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Sunita Ferrao

Abstract

Healthcare organizations are challenged to deliver world class care in an increasingly complex environment. That environment is widely viewed as a complex adaptive system and requires the recognition that checklists alone are not the only answer to support clinicians, such as nurses, in their efforts to deliver safe care. The focus of the healthcare system is on population health and as such the elements that define quality include that it be safe, effective, patient centered, efficient, timely and equitable. The dimensions of safe care and effectiveness is primarily clinical and clinicians closest to the patient are in the best position to address this. This paper asks the question "How might clinicians be supported as they work to deliver safe care." and explores the landscape of patient safety interventions through the nurses' perspective. The aspiration of this project is to introduce a synthesis of the problem space to help those with a vested interest in supporting nursing achieve their goal of providing safe and ethical care to the public.

Acknowledgements

Dedications

To my partner Fil, who defines love, patience and dedication. I am certain that completing this program would not have been possible without your support in managing the rest.

To my parents, who taught us to access the privilege we were afforded through their hard work.

I will be forever grateful for your love.

List of Figures & Illustrations

Acronyms

AHRQ - Agency Health Research and Quality

CASN- Canadian Association of Schools of Nursing

CNA - Canadian Nurses Association

CNO - College of Nurses of Ontario

CPSI - Canadian Patient Safety Institute

CIHI - Canadian Institute for Healthcare Information

CHIR - Canadian Healthcare Information Research

ECRI – Emergency Care Research Institute

HBAM – Health Based Allocation Model

HQO - Health Quality Ontario

HRO - Highly Reliable Organizations

HSFR – Health System Funding Reform

IHI - Institute of Healthcare Improvement

IPE - Interprofessional Education

IOM - Institute of Medicine

NQF – National Quality Forum

PSW - Personal Support Worker (not a regulated profession)

QBP – Quality-Based Procedures

QIP – Quality Improvement Plans

QSEN – Quality & Safety Education for Nurses

RN - Registered Nurse (self regulating profession)

RPN - Registered Practical Nurse (self regulating profession)

WHO - World Health Organization

Table of Contents

Preface

I began my education with a healthcare focus and shifted to IT and the software vendor side of clinical risk, quality and safety. I have had a part in designing and implementing a suite of patient safety and quality focused software. The reasons often discussed for implementing such systems, by hospitals during the purchasing process, range from shifting to a culture of safety to meeting regulatory requirements.

The inquiry for this project started with the recognition that nearly a decade and a half has passed since the 2004 Canadian Adverse Events Study which highlighted an alarming rate of unintended harm and death occurring in Canadian hospitals. After hearing Dr. Don Berwick speak about the 3 eras of healthcare, his description of constant measurement, rewards and punishments as dominating the current environment struck me as particularly significant. If healthcare is what you receive to feel better, why would the environment in which the care is delivered be anything but supportive of that effort? From a systems perspective, the hospital is a complex environment and interventions at many levels are often required to affect change. I was curious to understand what specifically might be preventing those in most frequent contact with patients from being the last barrier to patients experiencing harm. The purpose of this project is to introduce a synthesis of the problem space to help those with a vested interest in supporting nursing achieve their goal of providing safe and ethical care to the public.

0 Introduction

According to the 2004 Canadian Adverse Events Study, 7.5% of all hospital patients

experienced an adverse event, where an unintended injury caused by health care led to

a longer hospital stay, disability or death; 37% of those events were deemed

preventable. A more recent study of pediatric patients found that 9.2% of children

hospitalized in Canada experience adverse events. ~ (CIHI, 2016)

0.1   Overview of the problem

The Institute for Healthcare Improvement (IHI) defines an adverse event as "unintended physical injury

resulting from or contributed to by medical care (including the absence of indicated medical treatment),

that requires additional monitoring, treatment, or hospitalization, or that results in death" (IHI, 2006). In

2004, a study conducted by P.G. Norton and G.R. Baker highlighted that between 9,000 and 24,000

patients die per year due to hospital related adverse events and 37% of those adverse events are 'highly'

preventable. Findings in 2014-15, jointly released by the Canadian Patient Safety Institute (CPSI) and

Canadian Institute for Healthcare Information (CIHI), revealed that more than 138,000 hospitalizations —

approximately 1 out of every 18 acute care hospitalizations — involved at least one occurrence of harm.

To the layperson, harm, adverse events, hospital acquired conditions, and preventable harm are not

terms they expect to encounter when seeking care for health-related conditions. So, what does that all

mean?

The paper, *Measuring Patient Harm in Canadian Hospitals, What can be done to improve patient safety?*

(CIHI 2016), offers a set of definitions for these terms (Figure 1).

Definitions

It is important to be clear about the meanings of and differences between specific words. A great deal of attention was paid to terminology by consulting with patients, clinicians and patient safety experts. Every attempt has been made to balance what we heard as we aligned the concept behind this work with international efforts in patient safety reporting and measurement, including the *International Classification for Patient Safety* of the World Health Organization (WHO).[1]
To that end, we are using the term "harm" because it is internationally accepted language and reflects patients' understanding of the term.

For the purposes of this report, the following definitions apply:

Harmful event: An unintended outcome of care that may be prevented with evidence-informed practices and that is identified and treated in the same hospital stay. Harm is a term used by the WHO and Institute for Healthcare Improvement (IHI) as reflecting the patient experience.

hospital harm: Acute care hospitalizations with at least 1 unintended occurrence of harm that could be potentially prevented by implementing known evidence-informed practices.

occurrence of harm: Harmful event is synonymous with occurrence of harm.

patient safety: The reduction of risk of unnecessary harm associated with health care to an acceptable minimum. An acceptable minimum takes into consideration current knowledge, the resources available and the context in which care was delivered, weighed against the risk of non-treatment or other treatment.

preventable: Accepted by the community as potentially reducible using evidence-informed practices.

Figure 1: Definition of Harm. Adapted Canadian Institute for Health Information, Canadian Patient Safety Institute. Measuring Patient Harm in Canadian Hospitals. With What can be done to improve patient safety? authored by Chan B, Cochrane D. Ottawa, ON: CIHI; 2016

The IOM report, *Crossing the Quality Chasm*, described the failures of the healthcare system, created by rapid advances in technology, increased patient complexity, and a tradition of working in separate silos without benefit of complete patient information. The healthcare delivery model of today fits within two well established systems theories, socio-technical systems and complex adaptive systems (described later), which provides the context from which to understand the challenges that healthcare organizations face as they aim to deliver safe, effective and patient centered care for patients.

0.2 Project Summary

This Major Research Paper is undertaken as part of the MDes, Strategic Foresight and Innovation at OCADU. The purpose of the project is to introduce a synthesis of the problem space to help those with a vested interest in supporting nursing achieve their goal of providing safe and ethical care to the public. The inquiry began with the knowledge that nearly two decades have passed since the 2004 Canadian Adverse Events Study which highlighted an alarming rate of unintended harm and death occurring in Canadian hospitals. I was curious to understand what had been done and specifically what might be preventing nurses from being the last barrier to patient harm. The project is grounded in exploratory and qualitative research and leverages systemic design approaches covered in the SFI program. This project draws on several areas of expertise including patient safety science, nursing theory, human factors theory, complex adaptive systems, socio-technical systems, learning organizations, quality improvement science, and systemic and cultural realities of different care settings. The healthcare delivery model of today fits within two well established systems theories, socio-technical systems and complex adaptive systems, which provides the context for why healthcare organizations are challenged to deliver seamless care for patients across the complex environment of the health spectrum. The results and findings will be presented from these two system concepts.

Socio-technical system (STS), which sees systems as composed of autonomous yet interdependent parts that mutually interact as part of a purposeful whole. The parts covered in this context extend from Canadian Healthcare System (Health Canada), the organization (an acute care hospital), the care team (nurse, doctor, other care professionals) and the individual clinician (nurse). Active factors such as funding and physician payment models, and latent factors, such as work environment, fatigue, teamwork and leadership are all discussed from this socio-technical perspective.

Complex adaptive system (CAS), is defined as "networks of networks or systems of systems that involve an enormous number of independent stakeholders and interests and which share 5 characteristics. They are nonlinear and dynamic, independent agents, their goals and behaviours are likely to conflict, they are intelligent, self organizing and there is no single point(s) of control" (Curran, 2008). Each agent within the socio-technical layers therefore can and often does define their own interests.

This paper is comprised of six (6) major sections which explore the history, problem and systemic factors relating to patient harm:

Section 1 provides an executive summary.

Section 2 gives an overview of the Canadian healthcare landscape and the issue that patient safety efforts are trying to address.

Section 3 provides information about quality, patient safety and quality improvement science in the healthcare context.

Section 4 provides an overview of the selected research approach, including gaps that I uncovered in my literature review, and the major lines of enquiry and hypotheses for my research study to build on. I acknowledge the limitations of my research - namely that this project synthesizes findings from literature on patient harm as it pertains to the nursing perspective in a typical med-surg unit in the Canadian setting.

Section 5 provides the results of the primary research which is synthesized with the supporting evidence from the literature review and quotes from semi-structured interviews. It will outline the landscape of efforts by the various stakeholders in healthcare and how they present detours along the nurses' path to supporting positive health outcomes. Insights are provided at the end of each stakeholder layer, as well as recommendations for consideration, to mitigate the unintended consequences to patients of a complex healthcare system.

Finally, **Section 6,** outlines several areas of exploration for future research.

1. Executive Summary

The topic of this research falls under the subject of patient safety. Patient safety is unintended harm to a patient during their care. Health Quality Ontario (HQO) reports that 1 in 18 hospital visits will result in harm, a risk that patients do not anticipate when they access healthcare (Figure 2). At some point, we or someone we know will experience a hospital stay and knowing that we might experience unintended harm, as severe as death, is more than just disconcerting.
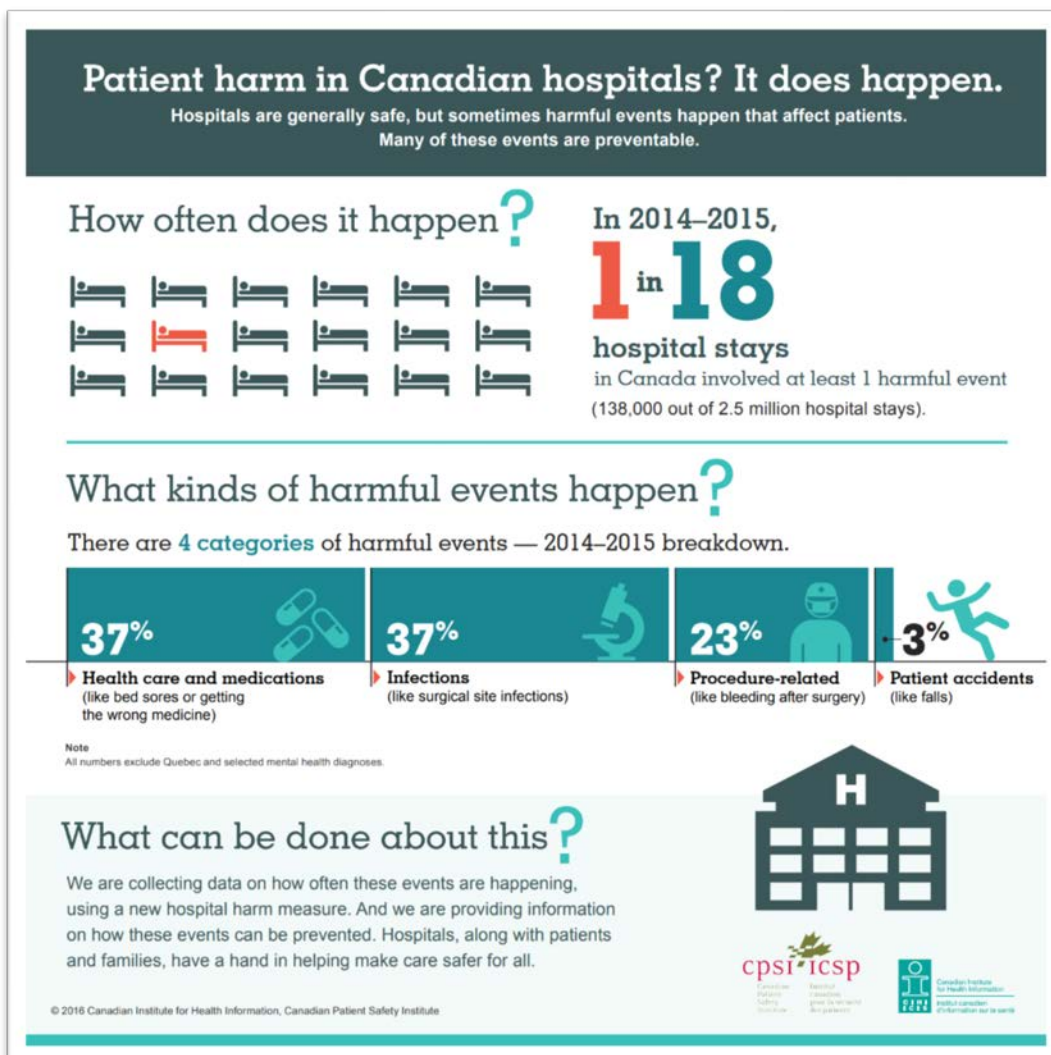
Figure 2: 1 in 18 hospital stays involved at least 1 harmful event. Canadian Institute for Health Information, Canadian Patient

Healthcare delivery in hospitals is commonly described and acknowledged as complex. It is, in essence, an interplay of networks, subsystems and subcultures, from private insurers, to network of providers, such as hospitals, independent physician practices, employed staff, such as nurses and allied health professionals, specialty services, big pharmaceuticals, device manufacturers, regulators and accreditors. It is ideal to believe that these networks and systems work in sync. However, it is more realistic to recognize that, in fact there are a lot of moving parts both within and between each stakeholder network. It is even more important to uncover patient safety interventions within each of these networks and subsystems to determine how likely they are to succeed within this complex and adaptive system.

Depending on the health condition, there are several pathways that a person requiring care might follow. The length of care or the type of care or a combination of the two, will determine the healthcare setting. As detailed by CIHI in Figure 3, there are several levels of care settings in Canada: primary health care, hospital care, community care and specialized care. The hospital setting can include a variety of services classified as acute care, transitional care, specialized care, in home care or ambulatory care. The medical surgical unit will be the focus of this paper.

Information on types of health care

Primary health care
Routine care, care for urgent but minor health problems, mental health care, maternity and child care, psychosocial services, and chronic disease prevention and management.

Hospital care
Acute and inpatient hospital care, and ambulatory care, including emergency, outpatient, community-based and continuing care and rehabilitation services.

Community care
Health care delivered by community programs and services, including home care, community care and community mental health services.

Specialized services
Treatment for mental health and addictions; trauma and injuries; joint replacements; organ replacements; and medical imaging.

Pharmaceutical care and utilization
Drug-related care, including a better understanding of how drugs are used in health care.

Figure 3: Types of health care. Canadian Institute of Health Information. Retrieved from https://www.cihi.ca/en/information-on-types-of-health-care

To understand the issue better, I decided to look at an intended journey of a patient (Figure 4) on a

medical surgical unit (an area that most acute (illness, fracture, trauma) patients will experience) in a

Canadian hospital.

A typical medical surgical unit visit follows this journey:
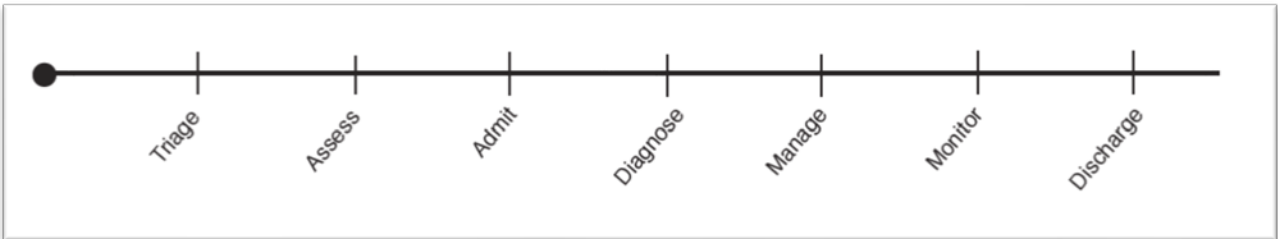
Figure 4: Typical Medical Surgical Journey (Illustration by Sunita Ferrao)
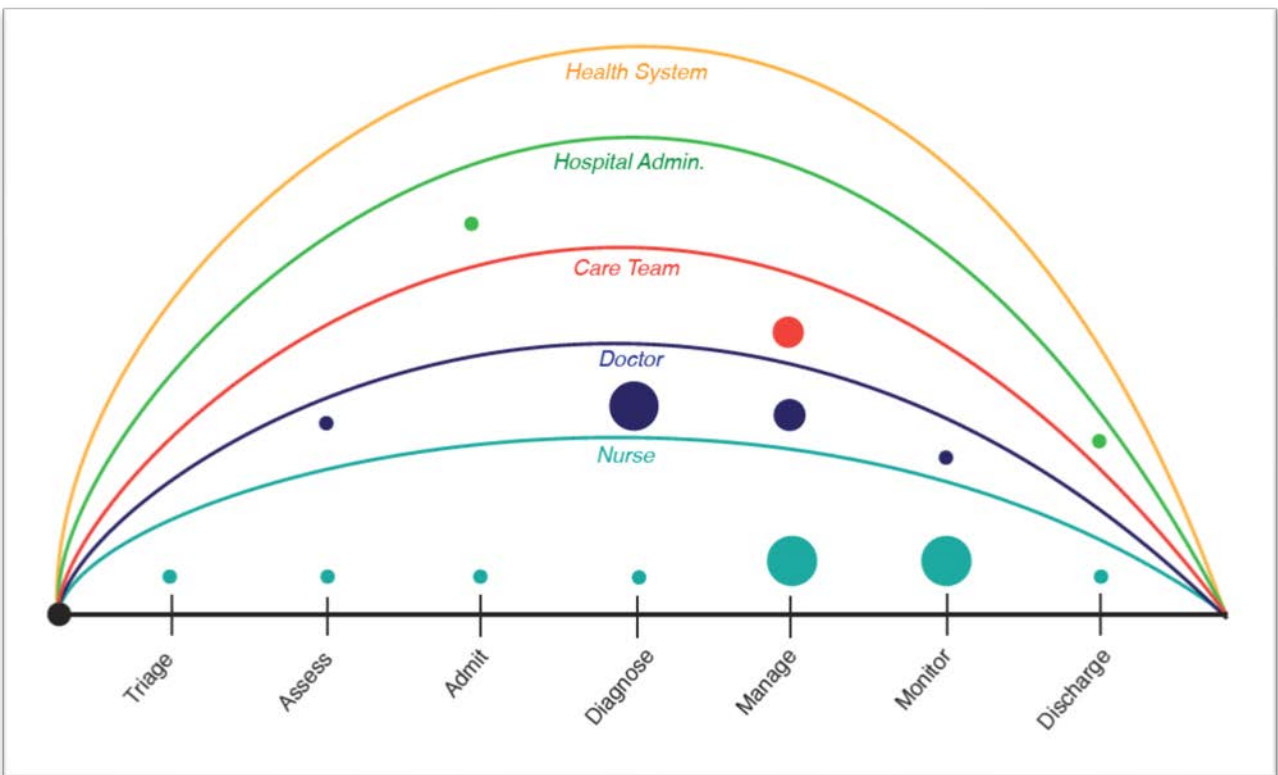
Figure 5: Journey of a patient admitted to a med surg unit and touchpoints encountered by various stakeholders. The nurse has the most touchpoints and the most face time with patients. (Illustration by Sunita Ferrao)

Figure 5 shows that nurses have the most frequent interactions with patients in the course of their journey

from admittance to discharge. Since nursing is regarded as a caring profession, the question that surfaces

then, is how and why patient harm occurs even when nurses are so closely involved in patient care? As

per the CNA, patient safety in nursing is a moral and ethical imperative.

A look at undergrad nursing education reveals that a broad range of nursing process skills are

covered. These skills are covered in courses spanning the subjects of medical science, evidence-based

practices such as infection prevention, medication management and falls prevention, research skills,

critical thinking, communication, leadership and ethics are intended to prepare a nurse to handle the

expectations of the role (Figure 6). These expectations go beyond patient care and encompass patient

advocacy, planning of care and education of patient and family. As cited by the Canadian Association of

Medical and Surgical Nurses (CAMSN), the needs of a med-surg unit are "unique in that it is not limited to

a disease or a body system but is holistic in nature requiring nurses to possess and maintain

comprehensive and diverse knowledge and competencies (CAMSN, 2008).
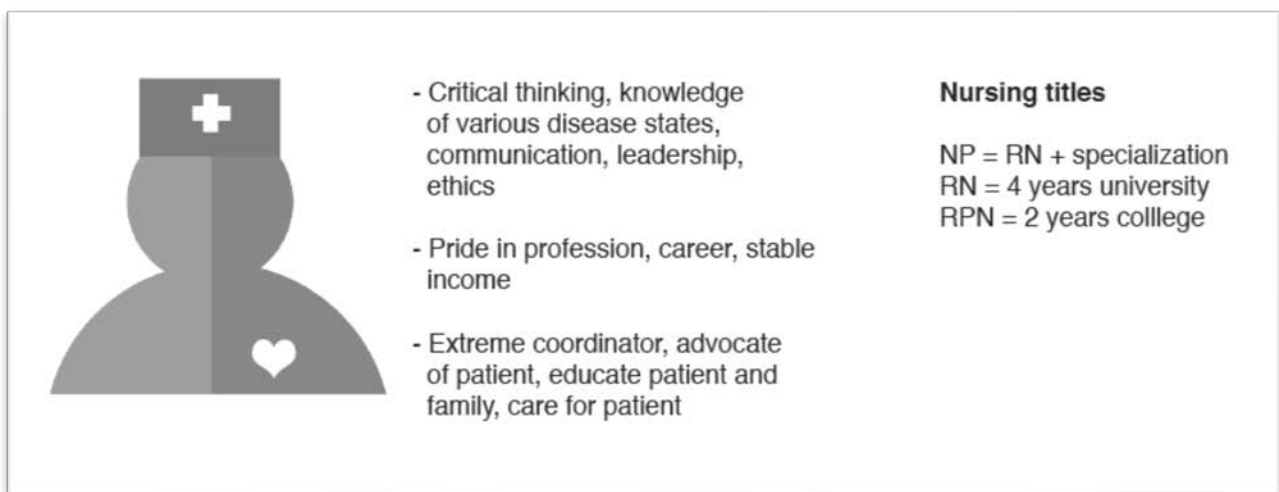
Figure 6: Persona of a nurse (Illustration by Sunita Ferrao)

Could there be a gap in undergrad education, that if resolved might better prepare nurses to address the

issue of unintended harm? CPSI, a federal advisor on patient safety, in consultation with several

regulated colleges, has created a guide describing knowledge, skills and attitudes that demonstrate

patient safety competencies. However, in an audit conducted by CPSI on education in undergrad schools

(nursing and medicine) and licensing standards, gaps were noted in both these areas with regards to the patient safety competencies. Literature also pointed to a lack of knowledge and research that describes what characteristics clinical learning environments should have to facilitate the development of patient safety competencies. While undergrad courses provide a broad foundational base, there are gaps in the clinical aspects of undergrad education. The answer seems straightforward: address the gaps in undergrad nursing education to reduce unintended harm to patients. That seems logical, until it becomes apparent that nursing is one of several roles interacting with a patient, each guided by their own set of norms. This led to a new query, namely what is the landscape of patient safety interventions from the lens of a nurse? The aspiration was to find an answer to the question, "How might nurses be supported in their moral and ethical imperative of patient safety?

Complex adaptive system (CAS) are defined as "networks of networks or systems of systems that involve an enormous number of independent stakeholders and interests and which share 5 characteristics. They are nonlinear and dynamic, independent agents, their goals and behaviours and likely to conflict, they are intelligent, self organizing and there is no single point(s) of control" (NAE 2008). Each agent within the socio-technical layers therefore can and often does define their own interests. A simple example is the current funding model that sees money distributed to the hospital, directed by the hospitals' board and based on their priorities, instead of initiatives that should be directed at the health system level. The findings from this research will be presented within this CAS framework.

As depicted in Figure 7, there are several networks that the patient encounters. Starting on the outermost part of this is the Canadian healthcare system. The primary goal of the healthcare system is to serve population health and is encompassed by the following principles; health care must be publicly administered, comprehensive, universal, portable and accessible. Inspired by the IOM, the Excellent Care For All Act (ECFAA) by Health Canada, defines quality care as being timely, equitable, cost effective,

safe, effective and patient. Quality of care is therefore articulated from a focus on performance of the provider (e.g. hospital) versus the actual outcome of the patient. This disconnect is evidenced through the implementation of measures such as reducing the length of stay (LOS) and decreasing emergency department (ED) wait times. While these measures are aimed at quality of care, a focus on reducing the length of stay might also come at the cost of the patient, who while stable, might still be awaiting results or who might benefit from not being discharged as quickly.
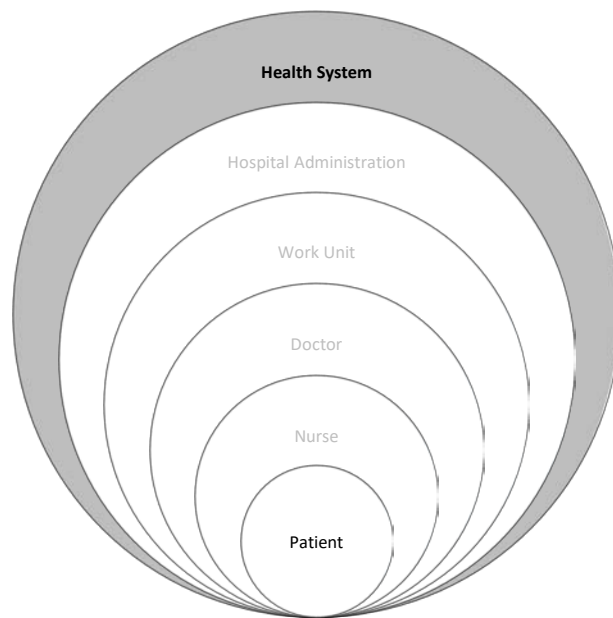
Figure 7: The Health System Layer (Health Canada)

Could changes in funding and leadership compensation be tied to measures that focus on patient outcomes (e.g. non-reimbursement for never-events)? This would require consideration of downstream effects in other layers of the complex adaptive system (CAS). Recent changes to the funding model through the Health System Funding Reform (HSFR), have seen a shift to holding providers accountable for services. However, measures such as cost per episode of care still evidence a "cult of efficiency" (as described by one respondent in this study). While patient acuity should lead the discussion around the skill mix, instead funding measures (such as HBAM) dictate the implementation of costed case mix services and compound the issues of staffing ratios and skill mix.
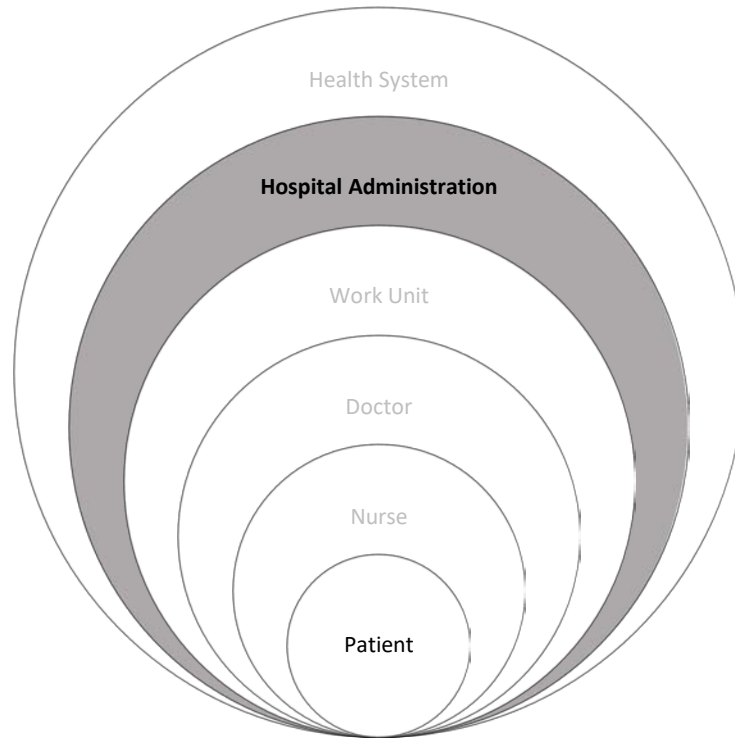
Figure 8: The Hospital Administration Layer

Hospitals from an administration standpoint, are recognizing the need to shift away from a culture of name, shame and blame. Most commonly referred to as "just culture", staff at all levels are being taught about safety. This shift, while intended to tackle the issue of patient safety, still has gaps in addressing the issue of hierarchy which is well documented in healthcare. Accepted cultures within the hospital, such as "nurses eat their young" or gender politics are issues that create, among other things, stress, unhappiness and silencing, all of which have been shown to lead to patient safety issues.

In addition, "just culture"risks create even further measures and worse yet - mandated, top-down quality improvement projects. A model introduced by Chris Hayes, MD, describes three factors that affect the adoptability of any initiative: 1) perceived value by the clinician, 2) effect on workload and 3) the capacity for the clinician to adopt the change. Based on this model, it could be implied that issues such as fatigue, cynicism, workarounds or missed care are unintended consequences of initiatives that lack adoptability as a result of perceived low value, increased workload and diminished capacity.
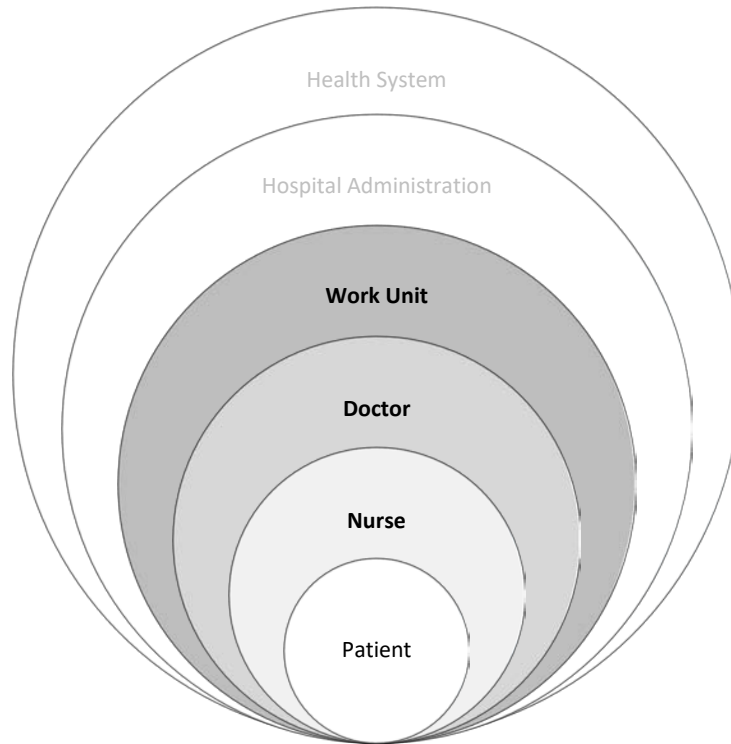
Figure 9: Care Team Layer (Allied Health Professionals, Doctor & Nurses)

An age-old issue of hierarchical structures within the hospital environment has the negative consequence of staff choosing to be silent. Accepted cultural environments such as physicians versus employed clinicians (nurses and other allied professionals) and nursing mantras such as "nurses eat their young", create fear or concerns in speaking up. Interprofessional teams also operate within and along this layer and raise issues such as lack of or missed communication and hand-offs of care, both of which are tied to care and coordination of a patient. Recognition of this has led to the development of interprofessional education aimed at integrating expertise to better coordinate, collaborate and communicate. Strategies such as daily huddles involving leadership and tools such as (Situation, Background, Assessment, Recommendation) SBAR and TeamStepps™ are improvements that support the clinical team deliver safer care.
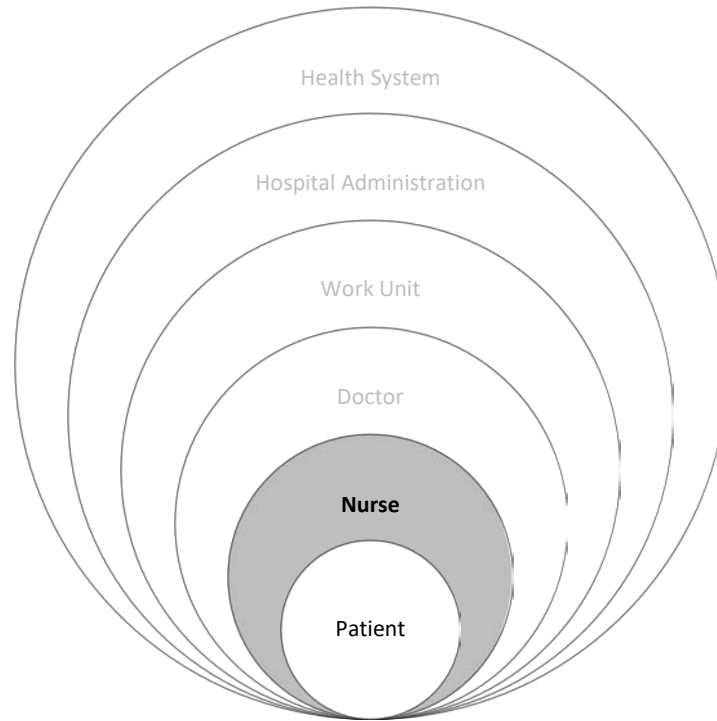
Figure 10: Nursing Layer (bedside care)

From shortages of the right staff (skill-mix), improvement projects that add non-care administration to their work day to negative work environments, a compounding effect of interventions from each of the layers discussed above, impact the nurses' ability to do their job. The role of the preceptor is vital for newly graduating nurses' as they transition to the hospital environment. The nurse preceptor bridges the gap between the classroom and the clinical area where nursing is practiced and helps the new nurse learn beyond the official curriculum. This can either enhance their practice or impart negative behaviours. Evidence-based practice is a problem-solving approach to clinical decision-making within a health-care organization that integrates the best available scientific evidence with the best available experiential (patient and practitioner) evidence. (CNA online). A clinical educator has extensive nursing experience and who provides education to nurses, students and other health-care providers on the use of evidence-based practice.   Both these roles are seen as vital by nurses at the patient bedside. Efforts to enhance and improve preceptor and CE roles require attention.

While initiatives that support bed side care, such as the introduction of a rapid response team (which allow nurses to access clinical advice that would otherwise involve a late-night call to the physician) are received well by nursing, there are other issues that require attention. The issue of post traumatic stress disorder (PTSD) along with amendments to Health Promotion and Protection Act to include public health whistleblower protection, is still being lobbied for to include nursing. This, along with the compounding effect of interventions in other layers of the system, have an impact on the environment in which the nurse practices. It can inevitably lead to unhappiness, nurses leaving the profession or worse, staying and perpetuating the negative work environment, all of which impact patient safety.

Nearly two decades have passed since the 2004 Canadian Adverse Events Study which highlighted an alarming rate of unintended harm and death occurring in Canadian hospitals. Healthcare organizations are challenged to deliver world class care in an increasingly complex environment. That environment is widely viewed as a complex adaptive system and requires the recognition that checklists alone are not the only answer to support clinicians, such as nurses, in their efforts to deliver safe care. Positive gains have been made since the issue of unintended harm to patients first came to light and improvements are occurring at each stakeholder layer. However, when examined together, a landscape emerges (Figure 11), and one that visualizes the need for a coherent approach to delivering safe care.

A core aspiration of this paper has been to attempt a synthesis based on some of the research work that has been published, coupled with interview data and some logical inferences, and with an emphasis on how it might be possible to support nurses (as they work to deliver safe care) while having to navigate the various layers of stakeholders within the complex adaptive system of the healthcare organization.

Further research topics related to this landscape (as outlined in the paper) is required to continue this exploration in other contexts and with other stakeholders.

This synthesis is intended to raise awareness about the (Canadian) healthcare landscape and serves as an aid to examining current and future patient safety initiatives with a constant eye on the effects on the people whose profession it is to care about, and for people accessing healthcare services.
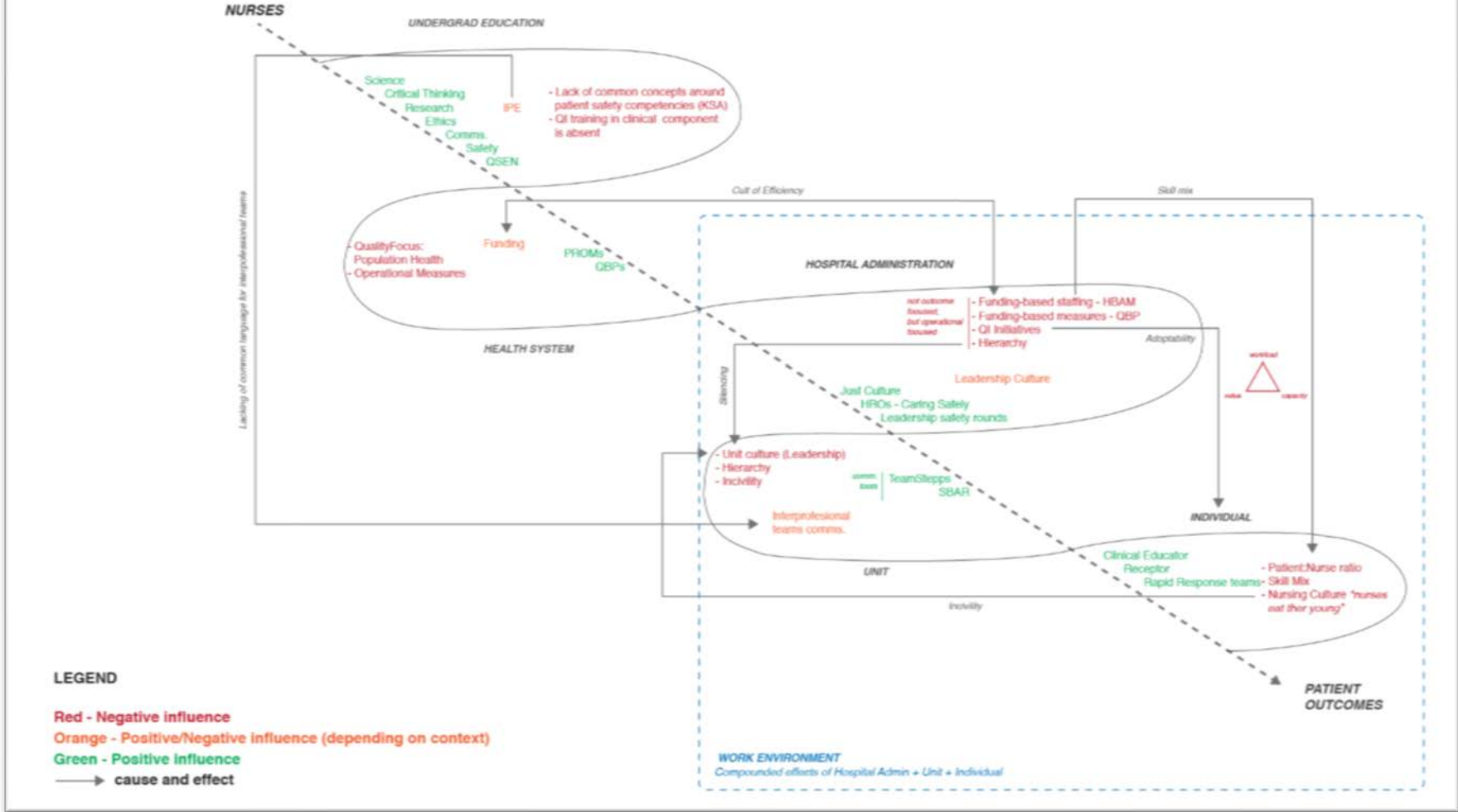
Figure 11: A landscape of interventions and its impact on the role of the nurse in patient safety. (Illustration by Sunita Ferrao)

2. Overview of the Problem Space

Health care organizations are challenged to deliver seamless care for patients across the complex

environment of the health spectrum. A study in 1999 by the Institute of Medicine (IOM), a non-profit

organization established in 1970 to provide evidence-based research and recommendations for public

health and science policy, initiated international discussion around the topic of unintended patient harm,

namely deaths caused by hospitals. Within the Canadian context, a similar study conducted by P.G.

Norton and G.R. Baker highlighted that between 9,000 and 24,000 patients die per year due to adverse

events and 37% of those adverse events are 'highly' preventable.

As depicted in Figure 12, Johnson, Dawson and Acquaviva, in their paper *The Quality Improvement Landscape*, health care (delivery) is a complex system involving a myriad of stakeholders (payers, providers, caregivers) who create incentives, measure incentives or use incentives and who in some way, shape the patient safety and quality agenda.
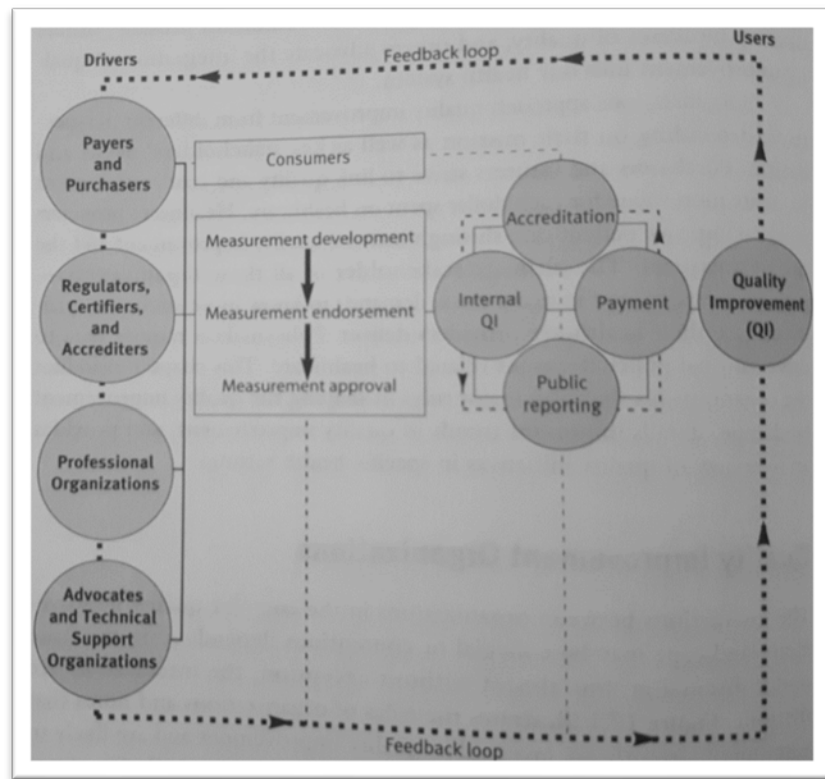
Figure 12: Complex system of stakeholders interacting to deliver healthcare. Ransom, E. R. (2008). The healthcare quality book: Vision, strategy, and tools. Chicago: Health Administration Press.

In this context, it is therefore recognized that philosophies, methods and toolsets alone are not

the answer for clinicians focused on delivering care. Organizations at every level in the healthcare

system (public and private) have formed to establish quality of care standards and, more importantly, to shift the focus to prevention. Well-known organizations leading patient safety and quality initiatives include Institute of Medicine (IOM), Institute for Healthcare Improvement (IHI), National Quality Forum (NQF), Agency for Healthcare Research and Quality (AHRQ), Emergency Care Research Institute (ECRI), Canadian Patient Safety Institute (CPSI) and Health Quality Ontario (HQO) to name a few. These organizations have been at the forefront of continual improvement initiatives, leveraging the work of Deming (Plan-Do-Study-Act (PDSA) cycle) to guide improvement work and to test changes on a small scale. Improvements, like those prescribed by the IHI, have been brought about through the refocusing of effort on the patient, from a previous focus on costs. Figure 13 provides an overview of four more commonly used models being employed by organizations (in their quest for quality improvement) as an easier way to identify and address the issue of adverse events and patient harm.

Yet, nearly 15 years after Dr. Baker's study on adverse events in Canada, unintended outcomes (otherwise known as adverse events) persist. Some have argued that using the rate of harm as an indicator of improvements over two decades is not analogous. The measure of what is regarded as preventable or the classification of adverse events may change over time, while the preventable adverse event rate might look unchanged. For example, outcome measures such as mortality rates are available on a national basis in Canada. However, without corresponding data related to adherence of evidence-based care standards, the rate of harm cannot be accurately evaluated. Organizations like CPSI and Canadian Institute for Health Information (CIHI) have developed complementary resources to define harm and to link measurement and improvement by providing evidence-informed practices that will support patient safety improvement efforts, however these can only be influenced and not mandated in a regionalized control system for healthcare delivery. In addition, patient safety metrics can benefit from reactive measures (i.e., errors and injuries) to measures of systems risks that ultimately

	High Resiliency Organizations (HRO)	IHI-QI	Systems Engineering Initiative for Patient Safety SEIPS	Highly Adoptable QI
Founder/Author	Various	Nolan & Provost	Engineering School	Christopher Hayes
Influenced by	Mercer, van Stralen, Roberts & Weick	Deming	existing models & theories	existing models & theories
Type	Philosophy	Framework	Framework	Model
Origins	1987 - Initial conference organized by University of Texas brought researchers together to focus attention on HROs	1992 - Associates in Process Improvement	2006 - Interdisciplinary research center in the University of Wisconsin-Madison's College of Engineering.	2015 - St. Michael's Hospital, Toronto
Description/Purpose	HRO, derived from human reasoning and behavior, looks at the commonality of decrements in quality, resilience, and safety. It appears intuitively obvious that resources used for Quality, Resilience, or Safety (the QRS Complex) will not be available for Productivity. However, when done correctly Quality, Resilience, and Safety will improve along with Productivity. This is the process of High Reliability.	Emphasizes rapid-cycle testing in the field in order to learn which interventions, in which contexts, can predictably produce improvements.	A multidisciplinary initiative applying systems engineering, human factors engineering, and quality engineering approaches. This research empirically examines systems design, quality management, job design, and technology implementations that affect safety-related patient and organizational and/or staff outcomes.	Developed on the premise that improvements that create additional workload without providing extra capacity or taking things away are less likely to be adopted. It is intended to be used by a quality improvement team (and those commissioning that team) to help guide the development and implementation of an improvement initiative.
Method/Model	Various models based on Neuro-psychology, Civil Engineering, Social Psychology, Organiz-ational Psychology Sociology, Naval Aviation & Nuclear Propulsion	Model for Improvement PDCA + 3 Questions - What are we trying to accomplish? - How will we know that a change is an improvement? - What changes can we make that will result in improvement?	Framework for understanding the structures, processes and outcomes in health care and their relationships, can be used toward these ends.	The model centralizes the recipients of change and emphasizes the constructs of workload/ capacity balance and perceived value.
Tools	Vary based on initiative. Draws on toolsets from multiple disciplines.	Vary based on initiative. Draws on toolsets from multiple disciplines.	Vary based on initiative. Draws on toolsets from multiple disciplines.	Vary based on initiative. Draws on toolsets from multiple disciplines.

Figure 13: Overview of four more commonly used models for engaging in quality improvement at the organizational level.

cause undesirable systems outcomes (errors and injuries).(Scanlon et al, 2008). New contributing factors need attention, such as the potential of electronic health records to introduce errors, alarm fatigue from countless equipment signals and burnout from having to perform additional administrative tasks, such as non-patient care related documentation (Izumi, 2012). While these errors appear as contributing factors in most root cause analysis performed after harm has reached a patient, they are not represented in most mandatory reportable measures of harm as they are not as easily quantifiable. The healthcare environment is viewed as a complex adaptive system and therefore requires the recognition that philosophies, methods and toolsets alone are not the answer for clinicians focused on delivering care. Key issues such as funding models, physician payment models, culture, interprofessional teams, coordination of care/handoffs all appear as areas where interventions could help to mitigate harm. Literature and expert interviews in this research paper validated patient safety and quality improvement

education as an intervention point that could arm nurses with knowledge, awareness and context of their practice. Meanwhile, patient safety issues arising from interprofessional team dynamics are far ahead in terms of being addressed through the development and accreditation of interprofessional education (IPE). In Canada, six regulated colleges (Nursing, Medicine, Pharmacy, Social Work, Physiotherapy and Occupational Therapy) organized and agreed upon a curriculum and format to support the issues arising in interprofessional team settings.

Patient safety and quality improvement education, on the other hand, has not received the same level of commitment. Organizations like QSEN (US) & CPSI (Canada) provide standardized patient safety competencies that elaborate on specific knowledge, skills and attitudes required to deliver patient safety and quality education prelicensure, however organizations like the Canadian Nurses Association (CNA) and Canadian Association for Schools of Nursing (CASN) have yet to fully support this through mandated changes within their respective jurisdictions. Since the release of the safety competencies framework 10 years ago, CPSI reviewed the accredited practice requirements of several regulated healthcare professions, that of university curriculum and hospital education against their framework. This evaluation helped highlight the fact that CPSI competencies are not fully embedded in curriculum. Studies and expert interviews have also shed light on gaps in curriculum, lack of specific accreditation standards in patient safety and quality improvement education. All this points to the need for explicit, education related accreditation guidelines for patient safety.

The focus of the healthcare system is on the various dimensions of quality and this system owned approach dominates the narrative of patient safety. The dimensions of safe care and effectiveness is primarily clinical and clinicians closest to the patient are in the best position to address this. This paper asks the question: "How might clinicians be supported as they work to deliver safe care" and explores the issue of harm through the nurses' perspective as they carry out their mission to deliver safe care.

3. What is Patient Safety, Healthcare Quality and Quality Improvement?

3.1 Patient Safety

The World Health Organization (WHO), on their website, defines patient safety as the prevention of errors and adverse effects to patients associated with health care. In Ontario, the Regulated Health Professions Act, 1991 (RHPA) applies to 26 health professions and the 24 regulatory bodies whose mandate is to promote and protect the public interest. These health regulatory colleges are responsible for ensuring that regulated health professionals provide health services in a safe, professional and ethical manner. Safety in this context has traditionally referred to practice standards, and related clinical competencies of an individual. Over the past decade the nursing definition of patient safety has evolved to include quality in the context of the healthcare environment to address system-wide problems through practices such as reporting adverse events and continuous improvement initiatives such as medication reconciliation and interprofessional team collaboration. (CNA, 2008). Within the nursing context, the Canadian Nurses Association (CNA), extends the definition of patient safety and describes it as "being under the care of a professional health-care provider who, with the person's informed consent, assists the patient to achieve an optimal level of health while ensuring that all necessary actions are taken to prevent or minimize harm. Harm is defined as "an unintended outcome of care that may be prevented with evidence-informed practices and is identified and treated in the same hospital stay". Patient safety is fundamental to nursing care and to health care more generally, across all settings and sectors. It is not merely a mandate; it is a moral and ethical imperative in caring for others." (CNA, 2009)

3.2   Healthcare Quality

In Canada, the provincial Excellent Care for All Act, enacted in 2010, defines a high-quality health care

system as "one that is accessible, appropriate, effective, efficient, equitable, integrated, patient centred,

population health focused, and safe". Health Quality Ontario (HQO), the provincial advisor on quality in

health care, has since adapted these 9 elements to just 6 elements (safe, effective, patient centered,

efficient, timely and equitable) to support the health systems mandate of population health. By doing

so, it believes it is "providing a focused way to engage clinicians, administrators, providers, and patients

in the healthcare system" (HQO, 2012). The field of Healthcare Quality originated with risk management

practices to address the high cost of reinsurance (ECRI 2014). That led to the creation of loss prevention

practices within hospitals with the primary goal of qualifying for reinsurance and protecting the

reputation of the organization (ECRI 2014). Accreditation Canada defines quality as "the degree of

excellence; the extent to which an organization meets clients needs and exceeds their expectations".

This reflects a shift from viewing quality of care as the responsibility of individual providers and hospitals

to the responsibility of the system itself.
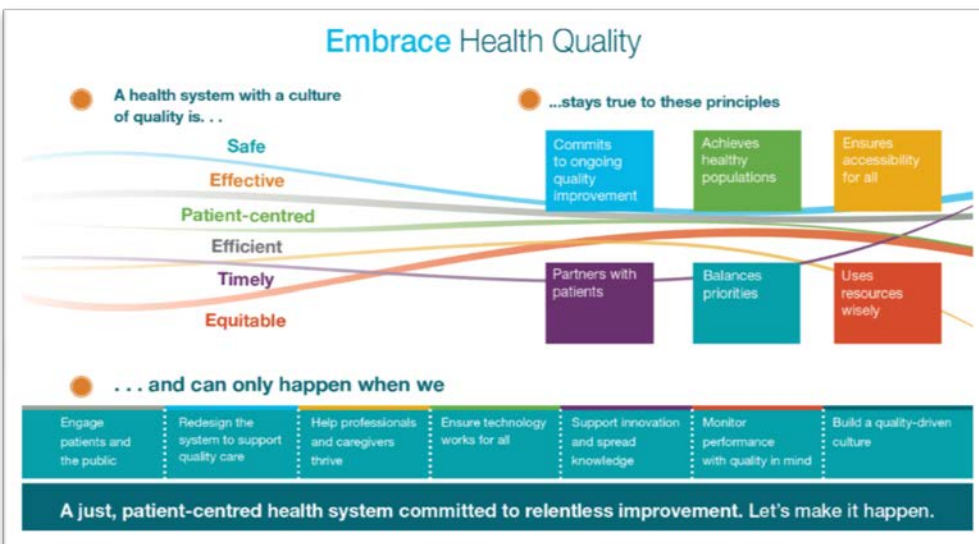
Figure 14: Dimensions of Quality. Health Quality Ontario. Quality Matters Poster. Retrieved from
http://www.hqontario.ca/portals/0/Documents/pr/quality-poster-en.pdf

3.3   Quality Improvement

The field of quality science is not sector-specific and quality improvement can be defined as any measure

taken to positively change the outcome of the target area of interest. Officially, the field of quality

improvement science originated during the post-war era with leaders such as Walter Shewhart, Edward

Deming, Joseph Juran and Taiichi Onho

translating their philosophies into

frameworks, models and tools applied to

the manufacturing and telecom

sectors. James Reason's model of accident

causation is widely recognized by its

associated "Swiss cheese" model which

demonstrates the alignment of weaknesses

Figure 15: The Donabedian Model for Quality Improvement

in each layer enables the error to occur.

Reason hypothesized that most accidents can be traced to one or more of four failure domains:

organizational influences, supervision, preconditions, and specific acts. He introduced the term active

and latent factors to distinguish errors by people versus those caused by systems. Today's healthcare

system has certainly made gains through QI efforts like the (root cause) analysis of harm using models

like Reasons and is seen through a shift in the culture of assigning blame that once focused on the

practice side of errors to a wider view that incorporates both system and human factors in determining

the causes of harm. Another more commonly used model in health care (McQuestion, 2009) is that of

Avedis Donabedian, which began as an inquiry into the definition of quality and "the consequences for

patient care and medical professionalism". The Donabedian Model in Figure 15 provides three ways to

acquire information about health care quality: 1) Structure, the environment in which care is provided;

2)Process, what is delivered and how; and 3) Outcomes, the impact of care on patients and populations.
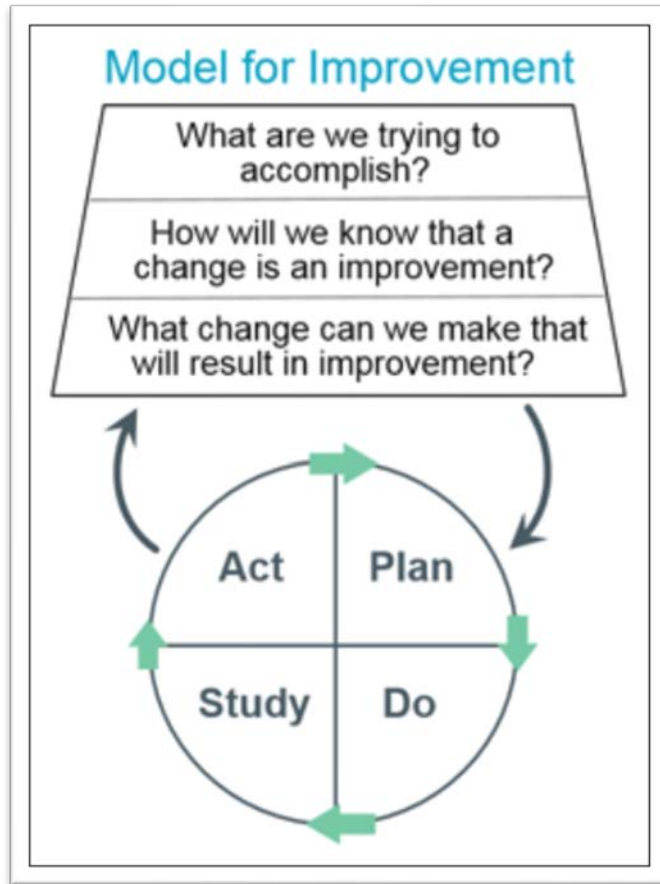
Figure 16: IHI-QI Quality Improvement Framework.

The IHI-QI framework (Figure 16) is the most recognized amongst these as it provides a simple framework that "emphasizes rapid-cycle testing in the field in order to learn which interventions, in which contexts, can predictably produce improvements." However, as the author of the *Highly Adoptable QI* framework, Christopher Hayes, M.D., M.Sc., M.Ed., states, "when providers at the point of care become overburdened, they can become fatigued, cynical, develop workarounds and develop resistance to ongoing improvement efforts and change. Improvement initiatives that do not add additional workload (or reduce workload) and have high perceived value are more likely to be sustainably adopted, cause less workplace burden and, achieve the intended outcomes." (Hayes, 2008)

4   Methodology

This project includes a balance of primary and secondary research. The area of study called for both

investigative and exploratory approaches to build a foundation of understanding about the problem and

to identify an area of opportunity.

4.1   Lines of Inquiry

- **Literature Review**
  - What is the current landscape of patient safety and quality improvement?
  - What factors result in patient harm?
  - What are current efforts around improving patient safety?
  - Who is involved in patient harm? Who can prevent it?
  - What education standards exists on patient safety and quality improvement?
- **Expert Interviews**
  - What are the barriers to safer care practices?
  - What are the perceptions of patient safety and QI efforts by healthcare workers?
  - Is embedded QI education during undergraduate or specialized training likely to deepen the understanding of quality care and prevent harm?
- **Survey**
  - What education/knowledge exists today among healthcare providers about effective QI?
  - How is patient safety and quality education during undergrad and specialized schooling viewed in supporting nurses deliver safer care.

4.2   Methods

The following research methods were used as part of this study. Initial conversations conducted with a

cross section of stakeholders; clinical staff, educators, and risk/quality/patient safety administrators to

develop an understanding of the problem space. An initial review of literature followed to deepen the

understanding of healthcare references used by experts during interviews. Search queries included

Canadian healthcare system, adverse events, patient harm, patient safety and quality, and nursing, PSQ

nursing education, nurse licensing). Initial interviews pointed to nursing education and a survey was

employed to target the same cross section of stakeholders, to quantitatively support/refute the

hypothesis that pre-licensure education is a significant lever to support nurses in their efforts to deliver safe care.

Secondary data laid a strong foundation for this project and is based on research done by practitioners and academics in this project's field of study. Data was collected from journals, peer-reviewed and academic papers, presentations, articles (print and digital) and government and independent reports. Iterative rounds of secondary research focused on understanding patient safety, nursing care and curriculum standards by leaders in the space. This included the IOM, WHO, IHI and, within the Canadian context, CPSI and HQO. This research revealed that while there are efforts made at the various levels in the system, nurses had the most frequent contact with patients. Coupled with their ethical responsibility to care for the patient, the role of the nurse was the closest intervention to preventing patient harm. Education gaps, both pre-licensure and ongoing while in practice, was referenced in several peer reviewed articles as a grassroots effort to support ongoing evidence-based practices along with the vital support of clinical educators and preceptors.

Semi-Structured expert interviews

To develop a deeper understanding of the issue of patient safety, I contacted experts to learn about their specific areas of speciality and the impact of their efforts.   Two major research methods were used for primary data collection: 1) Semi-structured interviews with experts and 2) a survey.

Semi Structured Interviews: Semi structured interviews were used to collect information about the area of study and its various programs, and to gather participant experiences and feedback. Interviews to translate data from literature into knowledge were executed as follows:

Educators (people who developed and/or delivered nursing curriculum pre-licensure). Chosen to understand education as a lever to support nurses in their efforts to deliver safe care. four (4) educators

were interviewed; 2 at the university level (Registered Nurse (RN)) and 1 at the college level (Registered Practical Nurse (RPN)) and 1 at the Clinical Educator (CE) level.

Administrators in patient safety and quality – Chosen to understand what efforts were being directed to the issue of patient safety, how this was being done and how effectiveness was determined. Six (6) experts were interviewed. 2 in Quality; 2 in Risk and Patient Safety; 2 in senior leadership.

Survey: A survey was used to investigate an early finding (in literature and interviews) that pointed to education as a lever to support nurses in their efforts to deliver safe care.

This method included two parts, survey questions and for those who agreed to a follow-up, a semi-structured interview to better understand some responses. The survey was divided into profile questions (age, years of experience, role, title), followed by closed ended questions about patient safety and quality education. Questions were categorized and directed based on the following eligible roles; clinician or educator or patient safety/quality administrator. These included questions about the topics covered and perceived value of education pre-licensure and while practicing in the clinical environment. The survey was promoted primarily through my personal LinkedIn account and through requests to share my post through connections who were heavily networked in the problem space. I also sent personalized messages directed to connections that I had in the problem space. My LinkedIn post was shared 6 times and the post received close to 1800 views. A total of 18 people responded to the survey, however, only 11 were eligible to complete the survey. 1 was an educator, 6 were administrators in patient safety or quality and 4 were clinicians (1 doctor and 3 nurses).

The option for a follow-up interview was provided, to allow for a better understanding of their responses. 5 respondents agreed to follow-up interviews (4 clinicians and 1 administrator). Follow-up interviews were used after the early period of analysis to delve into findings and to challenge assumptions that pre-licensure education was a significant intervention point in preventing patient harm.

Limitations: Being non-clinical and not directly working in a hospital setting meant that my

understanding has been developed primarily through information available in the public domain. While

the hypothesis, that there is a lack of pre-licensure education in quality improvement and patient safety

was invalidated by the survey results, the number of eligible respondents that contributed to the survey

data was too small for this result to be considered statistically significant. As a result, survey results do

not factor significantly in the results, findings nor recommendations. Instead, literature reviews, findings

in follow-up interviews with survey respondents and during semi-structured interviews with experts are

the foundation for results, findings and recommendations.

Finally, while this research project focuses on the role of nursing as an intervention point in prevention

of patient harm, in the interest of time, the following areas are not within the scope of this project:

- Planning, designing or refining strategies at the government level policy making decisions or at the healthcare system level.
- Addressing other regulated professions in healthcare and in other care settings. Only nursing (RN/RPN/LPN roles within the context of an acute care setting on a medical-surgical floor (med surg) is in scope for this project.
- Role of patient and family/care-givers, and their impact on patient safety and unintended harm.
- Other stakeholders in healthcare delivery, such as the patient, equipment and device manufacturers, the pharmaceutical industry, the insurance industry.
- Human factors in this paper excludes the investigative perspective of after harm occurs (e.g. Failure Mode & Effect Analysis (FMEA). Root Cause Analysis (RCA)).

5 Results

Don Berwick, MD and senior fellow with the Institute of Healthcare Improvement, described the health

care delivery challenge well by framing the journey over three eras of healthcare. Era 1 entrusted the

practitioner wholly and regardless of fault, the oath ensured trust was rarely eroded.   His description of

the current era (Era 2) reflects the consequence of this unquestioned approach in light of the high rate of

unintended harm to patients. Berwick indicates that this era, dominated by constant measurement,

reward and punishment, has dramatically shifted the balance from the days when the trusted

practitioner had unquestioned authority to the present time when practitioners are over managed.

Situated in the reality of this heavily measured system, Berwick finally advocates for a new era (Era 3),

driven by transparency, improvement science, less inspection, and more civility. So, while healthcare

focuses on the patient, he states that the health care system should focus on delivering that service by

attaching greater importance on achieving patient expected outcomes over the cost of delivering that

service. Whether it is the Nightingale Pledge or other similar attestations by regulated health

professionals, the tenancy of "do no harm" permeates the foundation of nursing, (which is) to deliver

value to patients seeking improved health outcomes. Following are results from this research project

that visualizes the landscape of efforts (based on prior era's) from a socio-technical systems perspective.

5.1   Pre-licensure Nursing Education

5.1.1   Patient Safety & Quality Improvement Education

Follow-up questions with experts about education revealed that unlike clinical practice, there was not a

consistent way to describe patient safety and quality specific knowledge areas. Experts at the hospital

referred to awareness training at all levels, from boiler room to boardroom. Educators at nursing

schools' education consistently spoke about education in the context of patient assessment, delivery of

medications etc.) and evidence-based practices, such as 7 rights of medication, falls prevention and

infection prevention practices. I was left with the question of whether this was a result of a lack of

consistent standards of education or rather that the goal of under grad education was on building a base

set of competencies in the context of the nursing process of patient care (assessment, diagnosis, plan,

implementation, evaluation). There is evidence that educational interventions to improve quality of care

are effective, particularly when integrated throughout the established curriculum, rather than 'bolted-

on' as a separate module (Hockey, Marshall, 2009).

"I just follow the curriculum standards outlined by the college. I'm sure things have changed, but the

fundamentals of nursing are still relevant." ~ Educator >10yrs

Results from a research study by Bianchi M, Bressan V, Cadorin L, Pagnucci N, Tolotti A, et al. found that

"undergraduate nursing students need to develop competencies to ensure patient safety." Interviews

with educators (pre-licensure) revealed that the question about how patient safety and quality is taught

has been answered by referring to the College of Nurses of Ontario (CNO) competencies and standards.

These competencies, while influenced by various nursing theories and more importantly widely accepted

nursing process, help regulate patient care and interactions with patients.   Among several key findings,

they noted that "there is a lack of knowledge and research that describes what characteristics clinical

learning environments should have to facilitate the development of patient safety competencies in

nursing students".

"We want to make some changes to the nursing curriculum and are talking to CASN to make this

change, however they can only influence the regulated colleges who have the authority do so." ~

Educator, Nursing School

While certifying bodies list quality and safety competencies and "students learned the 'five rights' of

medication administration, they lack the language of common concepts related to safety sciences quality improvement methods."(Cronenwett, L., Sherwood, G., Barnsteiner, J., Disch, J., Johnson, J., Mitchell, P., Warren, J. 2007). In an article titled Twelve tips for implementing a patient safety curriculum in an undergraduate programme in medicine, Armitage et al cite that "it is apparent that current educational provision in patient safety lacks a systematic approach, is not linked to formal assessment and is detached from the reality of practice". A review of the CNO competencies and standards confirms that safety is taught within the framework of accepted nursing processes and in more recent times includes but does not fully integrate topics such as interprofessional care teams, leadership and communication outlined in CPSI's Safety Competencies. This is evidenced by the mention of safety and quality interspersed in all regulated healthcare professions competency checklists, leaving room for variation in interpretations and validation of competencies (e.g. how is interprofessional communication and leadership measured across the board?)

"Faculty know-how is an issue as we don't always have the right experts to teach. This is not reflective of poor teachers, but rather that the required theory base might be absent and so they're not teaching that topic from experience." ~ Educator >15yrs

Whether it is the WHO, IHI or the IOM, when examining the issue of patient safety, adverse hospital events tend to point to a common list of root causes. However, there is no single accepted standard that defines or assesses how these issues are translated into competencies.   A study titled *Competencies for Patient Safety and Quality Improvement: A Synthesis of Recommendations in Influential Position Papers* found that there is "a need to discourage publication of recommendations of yet more competencies and to instead encourage development of an international consensus on the essential KSA (Knowledge, Skills, and Attitudes) for patient safety and QI across all health professions and all levels of skill acquisition" (Moran, 2016). Although it has not received international consensus, the Robert Wood

Foundation has attempted to do just that. They adapted the IOM's six competencies for nursing and developed QSEN (Quality & Safety Education in Nursing) "in the pursuit of strategies to build will and develop effective teaching approaches to assure that future graduates develop competencies in patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics." Taking this a step further, they proposed competencies that should be developed during pre-licensure nursing education for each of the three Knowledge, Skills and Attitudes (KSA's).

"We don't have an expectation about specific QI education pre-licensure. If they're licensed, then they have the basics to be hired." ~ Hospital Administrator, Patient Safety

Survey results from respondents demonstrated a mix of methods from lecture to online courses to hands-on training, however it is not clear if this was nursing foundations related or quality improvement related. During interviews with administrators of patient safety and quality departments, the type of education delivered for new staff (including new clinicians) varied compared to education delivered by educational institutions (prelicensure). Since a lack of knowledge and skills about improvement science is one of the key barriers to improving quality, educational solutions at this level are key (Hockey, Marshall, 2009).

In her article titled: *"Everything I Know About Informatics, I Didn't Learn in Nursing School"*, Dr. Lynn Nagle shares that "educators in healthcare organizations need multiple and flexible methods and tools for delivery, knowledge of adult learning principles and credibility among their peers. Expert user does not equate to educator." "Patient safety curriculum innovation depends on the interests of individual faculty members and the leveraging of accreditation and regulatory requirements. Building on existing curricular frameworks, opportunities now need to be created for faculty members to act as champions of curricular change, and patient safety educational opportunities need to be harmonized across all health professional training programmes." (Tregunno D, Ginsburg L, Clarke B, et al., 2013). Faculty champions

and practice setting leaders can collaborate to improve the culture of patient safety in clinical teaching and learning settings. Partnerships, such as Michener Institute of Education and the University Health Network (UHN), allows for clinicians to access continuing education (post under-grad) to respond to emerging trends and reflect the constant evolution of the clinical practice.

Figure 17: Snapshot of advantages of a partnership between a hospital network and academic institute. Adapted from the Michener Institute of Education at UHN website. Retrieved from http://michener.ca/discover-michener/michener-advantage/

Key Finding 1: Standards in prelicensure QI education are absent.
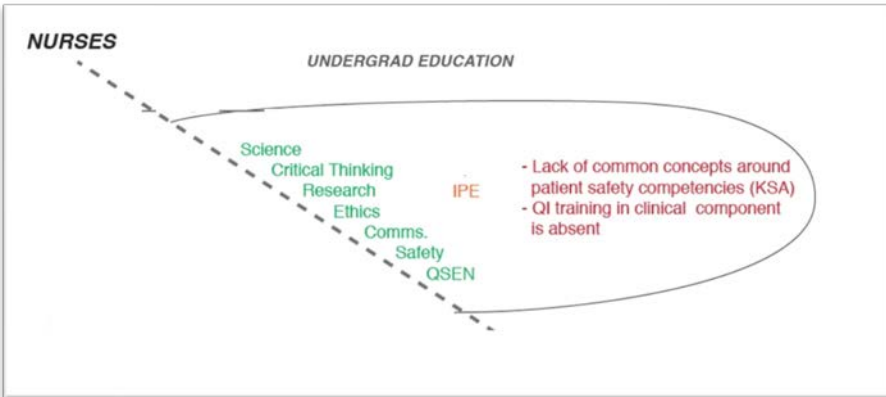
Figure 18:Key Findings in Prelicensure Education

Health Canada leaves it to the Regulated Colleges (e.g. CNO) to regulate professional standards and

Canadian Association of Schools of Nursing (CASN) to lead nursing education and nursing scholarship in

the interest of healthier Canadians. While CASN is the curriculum accreditation body, they do not

mandate how education must be delivered by the schools of nursing (SoN). CPSI, a federal agency

funded by Health Canada, has created a patient safety competency framework and defined the specific

knowledge, competencies and skills required. While this framework was created with involvement from

CNA, CASN and other regulated health professionals, it is up to the schools of nursing to decide what is

included or not.

Recommendations:

Re-evaluate the pre-licensure clinical component to ensure it has the depth required to prepare nurses

for the environment they are about to enter. Embed CPSI Patient Safety Competencies in the academic

and clinical setting. Deliver QI training pre-licensure using hands-on, workshop style sessions to

compliment lecture style sessions. This delivery method can incorporate evidence-based QI models such

as, IHI-QI and Robert Wood Foundation, TCAB (Total Care at the Bedside).

5.2 The Canadian Health Care System
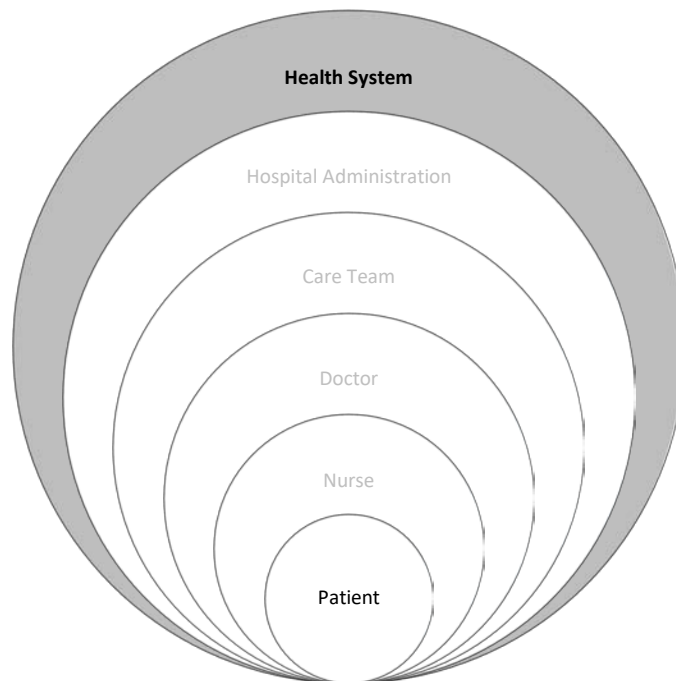
Figure 19: The Health System Layer (Health Canada)

As is depicted in this diagram, there are several networks that the patient encounters. Starting on the outermost part of this is the Canadian healthcare system.

5.2.1 Funding

"The healthcare system is rooted in a focus on providers and not on patients." ~ Healthcare VP

The Canadian health care system has gone through some structural changes with the regionalization of health care provider organizations managed through Regional Health Authorities (RHA), which recognizes and supports the community's efforts to determine their own health service needs and priorities. In Ontario, the Health System Funding Reform (HSFR) initiative includes aligning hospital funding with the specific needs of populations served, rewarding care providers for better outcomes, reimbursing providers based on the evidence-based quality of their services, driving standardization of

care across the province and improving value for money. While this represents a benefit to patient care

by shifting from volume based to activity and outcome-based funding like the Health Based Allocation

Model (HBAM), unlike the Regional Health Authorities (RHA) of other provinces, in the province of

Ontario, funding still flows from Local Health Integrated Networks (LHIN) to the individual hospitals and

their respective boards can determine the priorities. These decisions at the hospital board level may not

be congruent with an integrative approach envisioned at the LHIN level, however, the LHIN's do not have

the authority to mandate how funds will be directed. Critics point to the potential unintended outcome

of this turning into a purely financial driven model where a hospital specializes in services that are

reimbursed through Quality Based Practices (QBP) by reconfiguring their mix of services to focus on

Health Based Allocation Model (HBAM) specific services.

"In the Canadian system, you will still get most of your funding even with never events

occurring. There are no penalties like in the US, where reimbursements are tied to never-events. We

need a healthcare organization like Kaiser Permanente to come into Canada to show us how a

centrally managed system can run" ~ Hospital Administrator, Patient Safety

5.2.2   Measures

Funding is tied to the demand for measurements. One interview respondent cited the example of a

quality improvement measure that, while well intentioned, impacts patient care and if measured could

be shoxwn to have led to patient harm:

"You pay attention to what you measure. The cult of efficiency is overriding our ability to care for
patients. For example, the requirement to reduce the length of stay and improve the turnaround time
in the ED is tied to flow and discharging patients in a timely manner. This is meant to ensure the
discharges occur daily and before a set time. It frees up beds and leads to less wait times in ED. The
intended consequence is that appropriate processes will be completed, and the patient will be ready
for discharge. However, the shorter timeframe means that the patients results are not ready, but the
patient is discharged. Meanwhile, this measure, drawn from the EMR and administrative data sets
will demonstrate an improvement, however the patient will return to the ED with a possibly worse
condition than if they had been treated properly to begin with." ~ Senior Healthcare Leader

Health system performance measurement has improved to include elements of patient care and experience, however, a consistent set of measures, mandated across various hospitals and RHA's are still a work in progress. Implementation and tracking of measures require attention and resources. While it is a step in the right direction, as noted above, these measures vary between hospitals and between departments within hospitals. Key recommendations in a new report from the C.D. Howe Institute, "Measuring Outcomes in the Canadian Health Sector: Driving Better Value from Healthcare," authors Jeremy Veillard, Omid Fekri, Irfan Dhalla, and Niek Klazinga include,

- The federal and provincial governments should complement current data with outcome measures of relevance to patients, clinicians, system managers and policy practitioners.
- Organizations with a mandate to report publicly on health-system performance, such as the Canadian Institute for Health Information and provincial health quality councils, should collect outcomes data and report publicly on outcomes, filling current gaps in outcomes measurement and public reporting.

"The job of a Nurse has become one of reporting, not caring" ~ RN, >10 years

Complementary to the existing Health System Performance Measurement framework, CIHI's, patient reported outcome measures (PROM) builds a feedback loop from a patient's perspective, of whether health care services and procedures make a difference to patients' health status and quality of life. Efforts like this provide checks and balances in a complex system that is working to respond to the evolving needs of the population and experience they demand. It is evident that the needle on the issue of patient harm is shifting. Gains are being made as evidenced in interviews with educators and clinicians about patient safety.
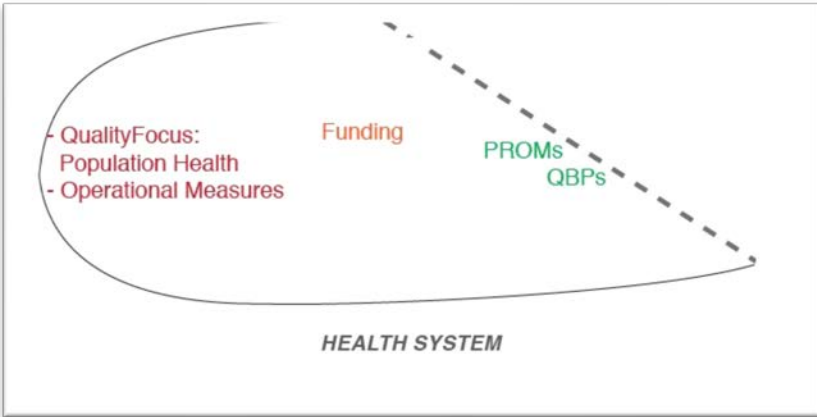
Figure 20: Key Findings in the Health System Layer

Key Finding 2: Population Health versus Patient Outcomes

The aim of government regulators at a health system level is to improve population health, deliver

quality health care services and populate resources sustainably across acute care facilities (hospitals). In

this regard, the six dimensions of quality: safe, effective, patient-centred, timely, efficient, and equitable

support the shift from viewing quality of care as the responsibility of individual providers and institutions

to the responsibility of the system itself. This contrasts with the goal of nursing, which is primarily

patient care. While the elements of safe, effective and patient centered care are included in the 6

dimensions of quality, it is still a top down, system driven view system driven pan-Canadian view of

population health versus a bottom up, person centered view of safety from the perspective of the nurse.

The underlying funding model of healthcare in Canada is meant to support these efforts.

Recommendation(s): Include patient outcomes (e.g. never events) to funding and leadership

compensation.

Key Finding 3: Accountability at the LHIN level needs to be evaluated.

There is a disconnect between how funding is directed in Ontario versus other provinces. If a hospital is

able to creatively shift their mix of services to qualify for both Health Based Allocation Model (HBAM)

and Quality Based Procedures (QBP) based funding, then where the funding is directed is up to the hospital board. This means that patient safety initiatives, while determined at the LHIN level, may never manifest within the hospital. In the US, this type of coordination is achieved through large HCO's, like Kaiser Permanente, who oversee a wide range of services, across multiple care settings along the entire continuum of care.

Recommendation(s): Examination of similarities between large effective HCO's in the US as a guide from which to model LHIN's in Ontario.

5.3   The Hospital Environment
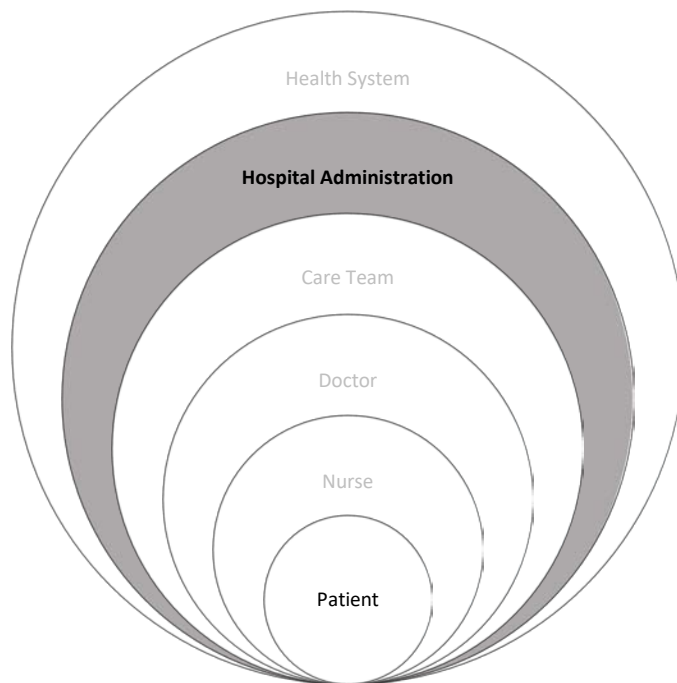
5.3.1   Culture of Safety

   "One of the goals of the training sessions is to debunk the notion that Caring Safely only applies to clinical staff. Among the ways we hope to achieve this is by presenting error prevention tools that can

be used in any context, no matter where someone works at UHN." ~ Brenda Perkins-Meingast, Caring

Safely Education Lead

The Institute of Medicine states that, "The health care organization must develop a culture of safety such that an organization's design processes and workforce are focused on a clear goal – dramatic improvement in the reliability and safety of the care process" (Kohn et al, 1999). Peter Senge is a leading writer in the area of learning organizations and in his book *The fifth discipline fieldbook: Strategies and tools for building a learning organization,* he describes five disciplines that must be mastered when introducing learning into an organization: Systems Thinking, Personal Mastery, Mental Models, Building Shared Visions, Team Learning (Senge, 1994). A patient safety program (and an example of Learning Organizations), being rolled out by University Health Network (UHN), is part of a larger leadership supported focus on the culture of safety. Developed by The Hospital for Sick Children (Sick Kids), the Caring Safely® program has four mandates, one of which is to "Enhance our Safety Culture by adhering to the principles of High Reliability Organizations (HRO)". This includes building a culture of patient safety which has led to a focus on education, from the boiler room to the board room.

As defined by Naylor et al, "leadership is the process of influencing people towards achievement of organizational goals". A UK study revealed that staff perceptions of the effectiveness of senior managers' leadership were linked to lower rates of patient complaints and better clinical governance ratings (Shipton et al, 2008). Safety rounds or leadership walkabouts is a method that connects senior leadership to patient safety through physically walking about the hospital. These safety rounds create an environment for administrators, staff and clinicians to come together and mutually agree on problems and action steps. Expert interview results also pointed to this.

"Just Culture" is a more widely known term in healthcare that is used to describe an organizational philosophy that shifts away from 'name, blame and shame' to encouraging people to speak up about

mistakes and take accountability for their actions. Dan Marx, a leading authority on Just Culture, describes it as "flourishing in an organization that understands the concept of shared accountability – that good system design and good behavioural choices of staff together produce good results. It has to be both."

"We get notified ahead of time that Accreditation Canada will be arriving. I've seen the rush to prepare and look like everything is in order. Hallways are cleared of safety hazards, staff are prepared. Once they leave, the hallways are cluttered again." ~RN>10yrs

Research has shown that perceptions of safety culture vary by work area and position, with non-clinician management reporting more positive assessments than nurses and providers actively engaged in patient care (Jones et al, 2008). Developed by Accreditation Canada to address themes of work life and patient safety culture, the work life and patient safety culture survey is in use in all accredited health organizations across Canada. The survey results allow leadership to identify common themes in work life and patient safety culture and helps inform strategies (local and system-wide) to improve the work environment and support safe, quality patient care. Surveys like this have been adopted internationally and, if used effectively, it provides a way to build feedback loops and confirm the impacts of efforts being made in this regard.

"While we're not supposed to use multi use vials for fear of spreading infections, single use vials are a huge cost to the hospital, so it's cheaper to buy the larger size than it is to purchase a single use vial." ~RN, 10 years

"Nurses fear losing good shifts or being blacklisted for speaking up. I don't believe the survey is anonymous, so I wouldn't fill it out and that's true for the nurses I know as well." ~RN, 10 years

I was unable to find any published reports to determine things like the response rates and respondent

groups by role and from which to gauge the effectiveness of this survey in determining patient safety

culture and work environments.

5.3.2   Staffing Ratios and Skills Mix

"There is a disconnect in relation to time. For example, on an orthopedic unit we might have a 65yr old
moderately obese lady with a knee replacement, who needs to go to the toilet. She is on falls
precaution so that means she cannot toilet alone. It takes approximately 20 minutes on average to
toilet a patient. On a floor with 20 patients, 3 Nurses and 2 care attendants, where all have to
toileted, that's approximately, 10 hours of a shift if they only have to go to the toilet once. Add to that
all the other duties we should be doing. At some point, we make calculated risk decisions --- value
between 2 patients level of harm --- maybe one falls. We don't want that, but we can't be in two
places. If the injury is visible, then you report, otherwise you don't. In nursing it's called "cutting the
line". ~ RN 10 years

Research has demonstrated that the role of the registered nurse is seen as integral to continuity of care.

In a position paper on patient safety, the College and Association of Registered Nurses of Alberta, cite

results from several studies that conclude "continuity of care is associated with improved access to care,

improved adherence to prescribed screening and treatment, recognition of unidentified problems,

better immunization outcomes, fewer hospitalizations, lower use of emergency rooms, improved client

satisfaction and a general reduction in costs (CARNA, 2008).

"On a unit with 20 patients and 4 nurses, with different years of experience, some are very junior; but

when you're short staffed, you can't assign based on the acuity of patient, as the staff for that day

might all be experienced." ~ RN >10yrs

Staffing levels, however are set by administrators and are affected by budgetary considerations. An

article in the Toronto Star titled *The perils of a part-time profession*, articulated the impact that the

funding model can have on Ontario's hospitals, nursing homes and long-term care facilities. It stated that

"handcuffed by a provincial budget freeze, hospitals are replacing more full-time nursing jobs (usually

RNs with seniority pay scales, overtime and paid benefits) with lower paid part-time RPNs (receiving few

or no benefits). Hospital administrators believe using part-timers gives them more scheduling flexibility

and saves them money. On average, an RN earns between $28-$40 an hour, while an RPN is paid

between $18 and $27 an hour."

"Patients we're seeing are much more complex; living a lot longer. Everyone wants to do the best that

you can; sometimes it's not the best, but we do the only thing we can do." ~ RN >10 years

Nurses have an important role "as a surveillance system" to constantly monitor the rapidly changing

medical status of complex patients. As such, failure to rescue is seen as an important indicator of the

quality of nursing care. (Aiken L, et al, 2002). While the Registered Nurses Association of Ontario (RNAO)

points to research literature, which has linked the presence of more RNs on a unit to better patient

outcomes, there is little research on what happens when LPNs/RPNs replace RN's. As such, decision

makers and administrators balancing tight budgets have only limited evidence to turn to when trying to

determine what is the right mix of RNs and LPN/RPNs. (Born, Dhalla et al, 2013). A study done to

examine the nature and prevalence of care left undone by nurses reported that "most nurses (86%)

reported that one or more care activity had been left undone due to lack of time on their last shift. Most

frequently left undone were: comforting or talking with patients (66%), educating patients (52%) and

developing/updating nursing care plans (47%). The number of patients per registered nurse was

significantly associated with the incidence of 'missed care'". (Ball, Murrells, Rafferty *et al.*, 2013)

"They're replacing RN's with unregulated staff to save money. How are PSW's supposed to understand

what to monitor. That's where harm will occur." ~ RN >10yrs

"How are nurses supposed to care for patients when patient to nurse ratios are more like 1:8, with

shortages, breaks, sick days. Workarounds and shortcuts are a necessary part of the job" ~ RN 10yrs

A recent study measured the workload associated with the implementation of the ventilator bundle.

"Nurses estimated that an additional 115 minutes/ patient/ day were required to complete the

ventilator bundle tasks, often resulting in delays of other required patient related tasks". (Hayes

2018). Clinicians implement workarounds in response to the complexity of delivering patient care.

Workarounds, temporarily 'fix' perceived workflow hindrances. Behaviours fitting the definition of

workarounds often include violations, deviations, problem solving, improvisations, procedural failures

and shortcuts. (Bazarko, Cate, Azocar, Kreitzer, 2013)

5.3.3   Adoptability

"When QI is mandated from the top, it shifts the nurses focus from caring for the patient to having to

care for the measures that need to be reported. If I question it, I'm asked "Don't you want to help

patients". In a way it demonizes the care provider." ~ RN >10 years

As seen in Figure 21, the adoptability of an initiative is a factor of it's perceived value, impact on

workload and the capacity of the individual. "Many improvement projects add process steps and tools

to existing workflows requiring caregivers to increase their workload activities without being provided
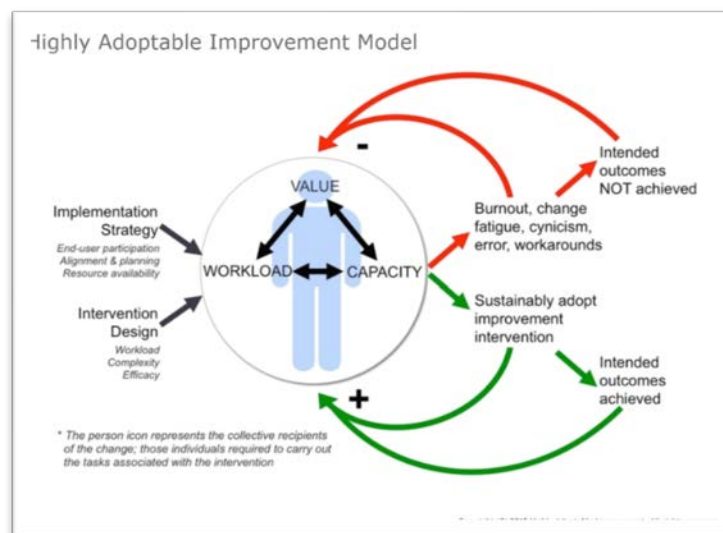
with additional capacity.

Figure 21: Adoptability as a factor of value, workload and capacity. Adapted from Hayes C, 2015. Retrieved from
http://www.highlyadoptableqi.com/model.html

"There is lots of data that hospitals are required to report on and it can be a manual process to mine that data. So, when a new data point is required, they first look at nursing documentation to have that field included to capture that. Let's create a new form with all these data elements – not related to the patient. For example, one unit was told by the ministry that they're pulling funding because their stats are abysmal; they purchase a new electronic reporting system and add all kinds of fields to make sure they capture their data." ~ RN >10 years

When asked "What is patient safety?", responses included infection prevention, medication safety, and falls prevention. These harm measures are commonly referred to as nursing sensitive indicators or measures. However, it must be noted that these issues receive the greatest attention due to the frequency and associated costs. Smaller, less measurable harm indicators such as staffing ratios and burn-out, to name a few, are referred to as soft factors that are hard to attribute to a rate and therefore harder to measure. From the view of nursing, these factors are more commonly cited as reasons hindering the delivery of safe care or preventing harm to the patient.
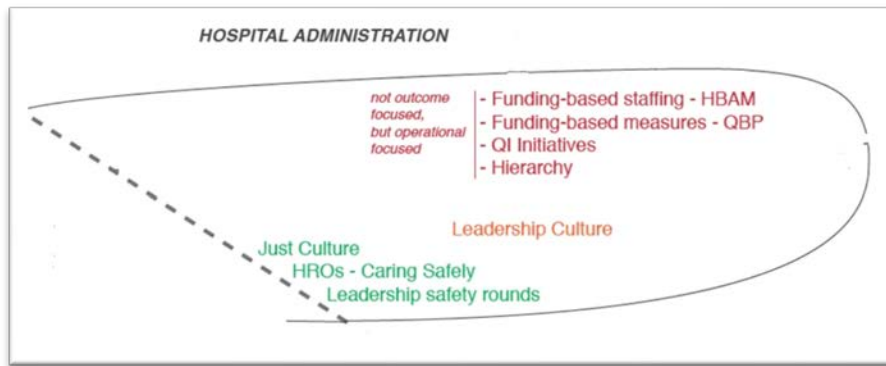
Figure 22:Key Findings in the Hospital Administration Layer

Key Finding 4: Improved measures focusing on QI result in increased nursing workload.

There has been a positive shift from a sole focus on performance measures (e.g. length of stay, ED wait times) to those that include nursing sensitive measures (e.g. pressure injuries, falls). This has also resulted in more reporting requirements (that eventually fall on nurses to record). These non-care related activities result in less patient interactions. While nursing recognizes the importance of tracking these measures, other organization level decisions such as staffing ratios, skill-mix and QI initiatives with

adoptability issues, result in additional non-care related workload, increasing the likelihood of patient safety issues resulting from workarounds and 'missed care'.

Recommendation(s): The IHI Trigger Tools provide a list of triggers that can be used to retroactively review a patient's chart. Finding ways to automate the collection of these required nursing sensitive measures is a step towards reducing non-care related workload on nursing.

Key Finding 5: More staff on the floor, just not the right mix

While the issue of Patient to Nurse ratios are being addressed with additional unregulated professionals (e.g. PSW), the issue of safety is exacerbated by questionable nursing skill mix on the unit. A culture of safety has resulted in awareness of safety issues beyond the boundaries of nursing, the very pressing issue of nursing workload created by nurse: patient ratios and skill mix are still resulting in patient safety issues. Administrators believe that statistics from the RNAO don't account for results that include the use of other care professionals (like RPN's and PSW's) and therefore are hesitant to change the skill mix that they believe allows for cost savings without compromising care.

Recommendation(s): The LHIN's should partner with the CNA/CNO to study the effectiveness of the recommended Staff Mix - Decision Making Framework for Nursing Quality on addressing patient safety and workload concerns. This will allow for an evidence-based foundation from which to proceed with mandating its use.

5.4 Work Unit
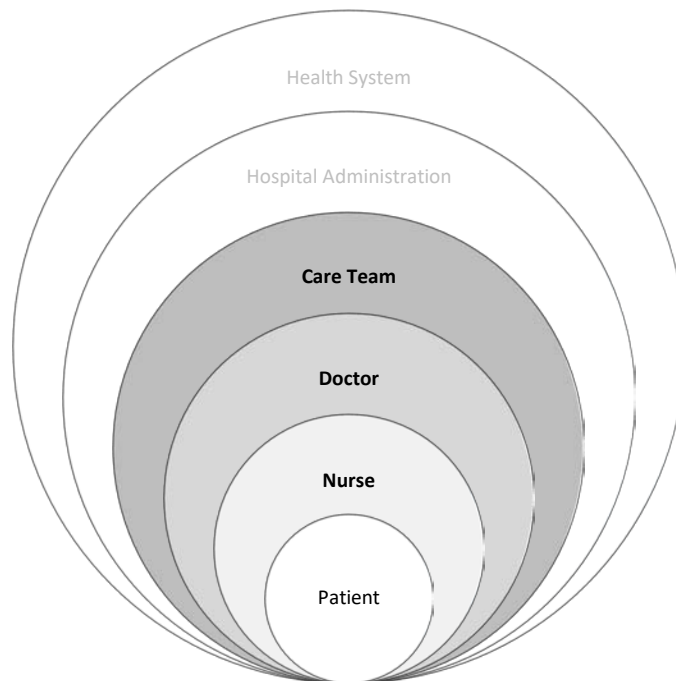
Figure 23: Care Team Layer (Allied Health Professionals, Doctor & Nurses)

5.4.1   Hierarchy

"Nurses aren't good at articulating what their value add is and that's partly due to the hierarchical environment and gender roles." ~ RN >10yrs x 3, VP Hospital Administration

"There has to be a shift in how physicians and nurses interact. The issue of hierarchy needs to be addressed as it prevents nurses from speaking up." ~ Educator 20+yrs

In her masters' paper, *I see, and I remain silent*, Wendy Sanders discusses the issue of silencing, using a feminist lens to guide her inquiry. "The discourse of silence in nursing has strong feminine roots beginning with Nightingale. In fact, prior to the 1960's, "nurses were socialized to work hard, do as they were told and keep quiet". Professional behavior included and encouraged self-sacrifice and dedication. In addition, "to be professional was also to be apolitical". Powerful ideologies seated in a patriarchal

health care model that endures today rendered those early nursing voices silent and the silence continues." (Sanders, 2011).

In an online article titled *Whistleblower Legislation: Letting Health Care Workers Speak their Minds*, the author notes that "historically, the role of nurses has been subordinated to that of doctors in our health-care system. While they are no longer explicitly told to see and be silent, it is clear that legitimate warnings and concerns raised by nurses were not always treated with the same respect or seriousness as those raised by doctors. There are many reasons for this, but the attempted silencing of members of the nursing profession, and the failure to accept the legitimacy of the concerns, meant that serious problems in the paediatric cardiac surgery programme were not recognized or addressed in a timely manner. As a result, patient care was compromised." (O'Brien, 2016)

"We are the largest workforce, but we are passive politically. Lack of unity within the profession and administration that makes you feel bad about advocating for yourself." RN > 10 yrs.

Another article titled "Nurses Vs. Doctors: Stop the Hospital Hierarchy", offers a more nuanced explanation of the gender divide. "Nursing is a profession that focuses less on the intensive study of the science behind disease, but in the "science of caring" for other human beings. Nurses are the intermediary between patients and doctors, acting as a calming agent and answering any questions that can be scary or uncomfortable. Doctors are brilliant and fantastic in their own way, but nurses often do the dirty work and are what "make or break" a hospital visit for the patient and their family."

"Even though I've been practicing for over 15 years, I find it intimidating to call the doctor in the middle of the night. I am so glad that the RRT (Rapid Response Team) has been in place as it's allowed me to get a timely intervention when I'm worried about a patient." ~ RN >10yrs x 2

The hierarchical relationship between physician and nurse, combined with a physicians' manner and lack

of confidence among newer nurses (among other factors) has been studied and is shown to result in communication gaps leading to patient safety issues. According to CPSI, communication refers to transfer of information, ideas and feelings. In the context of patient safety, these three types of communication matter. CPSI skills and attitudes refer to all three and they recommend the use of evidence-informed team communication tools to facilitate the improvement of patient safety, including: permission and invitation to speak up, question, and challenge; conversational turn-taking; listening; checklists and briefing. Situation, Background, Assessment, Recommendation (SBAR) is a tool developed by the military to provide a common predictable structure to communicating within a hierarchical organizational structure. While measures are being taken to address the underlying issues, using structured communication tools (SBAR) for safe communication have demonstrated success in addressing this challenge.

5.4.2 Coordination of care/Handoffs

"We see it on some units where there are strong leaders. They manage issues as they arise. They huddle, they talk, they learn, and they make improvements. They don't need to be told." ~ Hospital Administrator, Risk & Quality

According to the Canadian Patient Safety Institute (CPSI), teamwork is defined as working within interprofessional teams to optimize patient safety. Poor communication and teamwork is often a contributing factor of patient safety incidents, and patient safety improves with effective teamwork and communication. The Institute of Medicine defines an interprofessional team as "composed of members from different professions and occupations with varied and specialized knowledge, skills, and methods." Interprofessional teamwork involves a process by which "team members integrate their observations, bodies of expertise, and spheres of decision making to coordinate, collaborate, and communicate with one another in order to optimize patient care". (National Academy of Science, 2003)

"Huddles are extremely important. That's where the nurse can voice concerns (or that the night nurse

has passed along) or needs someone to be aware or I need some direction from the Physician –

knowing that the clinical leader is coming around on a schedule, gives me pause to make sure that I

understand my goal for that patient for that day." ~ RN >10 yrs

In Canada, federal and provincial funding activities have fostered significant growth and development of

IPE in post-secondary institutions across the country. The Canadian Interprofessional Health

Collaborative (CIHC) has been established as a network of faculty and other stakeholders with an interest

in interprofessional education (IPE). However, as noted by CIHC, "silence in standards and curriculum

policy statements may make it difficult to move from externally funded pilot programs to a second generation of institutionalized interprofessional efforts. A lack of specific reference to IPE may marginalize rather than support development of these programs." (Curran, 2008)

Figure 24: Canadian Patient Safety Institute has adopted and adapted the program and is now making TeamSTEPPS Canada™ available to the Canadian healthcare field. Retrieved from http://www.patientsafetyinstitute.ca/en/NewsAlerts/News/Pages/Step-up-your-teamwork-and-communication-with-TeamSTEPPS-Canada-2018

The Agency for Healthcare Research Quality (AHRQ) developed TeamSTEPPS (Team Strategies and

Tools to Enhance Performance and Patient Safety), an evidence-based framework to optimize team

performance across the health care delivery system and reduce risk that is inherent in healthcare. It has

five key principles, based on team structure and four teachable-learnable skills: Communication,

Leadership, Situation Monitoring, and Mutual Support.
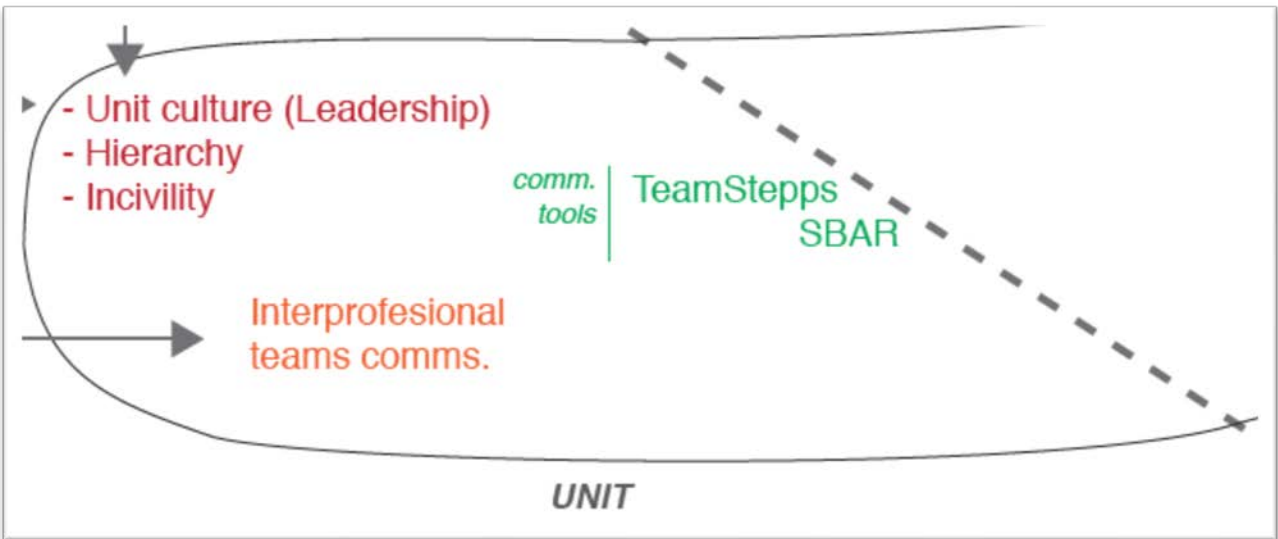
Figure 25: Interventions at the Work Unit level.

Key Finding 6: Hierarchy exists to the detriment of the patient and nurse.

Engendered roles continue to perpetuate within the hierarchy-based hospital environment. There have

been positive efforts made to address the issue of teamwork and communication as it relates to the

issue of hand-offs, however this form of hierarchy, seen both between nurses and at other levels, is

resulting in the nurse being silent. Silence manifests by preventing advocacy on behalf of the patient and

themselves, leading to a negative work environment and eventually patient safety issues.

Recommendation(s): The Whistleblower Act, while extended to nurses, involves the nurse having

to raise issues within the very structure that they fear. This includes senior nurse leaders, supervisors

and management. Create another mechanism by which nurses can communicate concerns without fear

of reprisal.

5.5 Nurses at the bedside
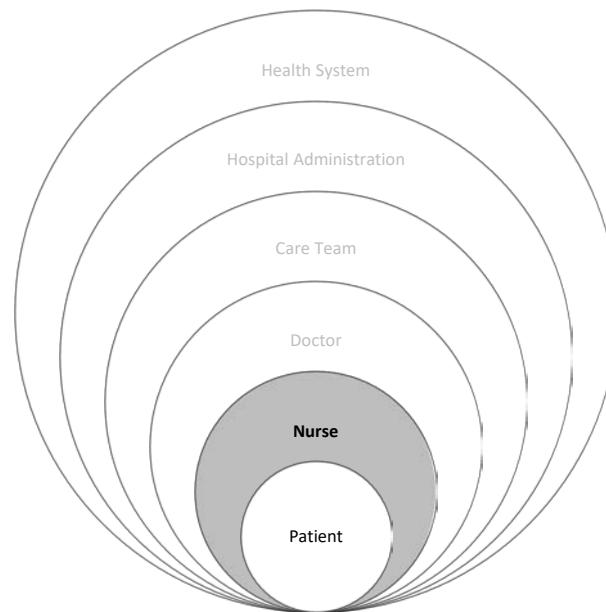
Figure 26: Nursing Layer (bedside care)

5.5.1   Nursing Culture

"It's true what they say, Nurses eat their young"

~ 3 nurses, 1 VP Hospital Administration, 1 Administrator, Risk & Quality Measures focus on big harm versus small harm" ~ Administrator, Patient Safety

Aspects of organizational climate, and in particular nursing practice environment, have also been

identified as significant predictors of nursing quality and patient outcomes.[15] A 'positive work

environment' has been described as comprising factors including autonomy, positive relationships

between staff, teamwork, job satisfaction and low risk of burnout.[16] A culture of safety, also referred to

as patient safety culture is the presence or absence of a positive culture of safety, and is widely accepted

as a determinant of patient safety. Figure 26, presents a journey of student-novice nurse, provided by

Catherine Clarke in her major research project "How might hospitals foster a nurse culture of respect

that enhances the experiences of novice nurses?". It demonstrates the issue of incivility in the hospital

environment and its negative impacts on a novice nurse.
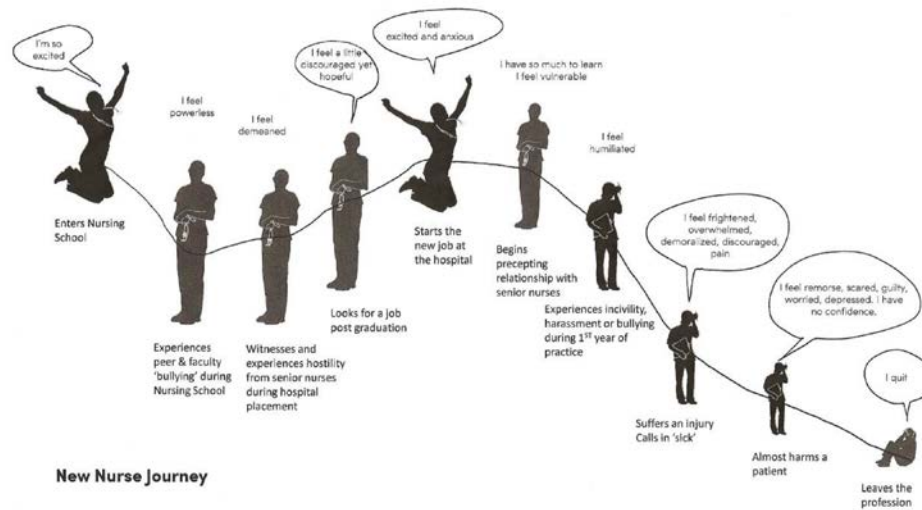
Figure 27: New Nurses Journey. Clarke, C., 2015. Adapted from Walk in My Shoes. Can an exhibition of nurses' shoes and stories promote change in nurses' perceptions of their peers? Retrieved from, http://openresearch.ocadu.ca/id/eprint/1126/1/Clarke_Catherine_2016_MDes_SFI_MRP.pdf

As evidenced in her paper, "uncivil behaviour negatively impacts staff morale, increases turnover, erodes the quality of patient care and contributes to errors and adverse events" (Clarke 2016).

5.5.2   Ongoing Nursing Support

Research has demonstrated that empathy plays a critical role in health care practice in terms of providing adequate support and care for patients, influencing patient satisfaction, and being related to patient compliance with clinical recommendations. (Bazarko et al, 2013)

"Doctors show up twice a day for 5 minutes, while a Nurse is tied to the unit. The family is wailing on you, there is noise and no quiet environment to take a break, there is always a patient that requires something. It's a dirty environment as a result, you're always around some kind of cleaning solution. You stop "getting switched on" ~ RN>10yrs

Individual factors such as stress and fatigue can affect a nurse's ability to make appropriate decisions and

can lead to patient safety issues. In aviation, Crew Resource Management refers to a set of training

procedures for use in environments where human error can have devastating effects. Pilots receive

Crew Resource Management training (CRM) on the main categories of non-technical skills such as

cognitive (situation awareness and decision making), social (leadership and teamwork) and managing

personal resources (stress and fatigue). No significant research has been done to investigate the

applicability in health care. However, hospitals are starting to use this in high stress units such as the

Emergency Department and Intensive Care Units and reporting positive outcomes.

"The most stressful part of my job is difficult patients and their families. Sometimes they get abusive

and violent." ~ RN > 10 yrs

"Complexity of human interactions in a place of complexity; high stress; primary care group having

little control about the policies forced upon us. You either have a nervous breakdown or you become

blind/silent to the situation. Many nurses suffer from PTSD." ~ RN>10 yrs

Mindfulness Based Stress Reduction (MBSR) is another technique that is being explored to build

resilience among caring professions who are faced with having to make critical decision in less than ideal

circumstances. As described in a paper titled "*Mindfulness-Based Stress Reduction in Advanced Nursing*

Practice: A Nonpharmacologic Approach to Health Promotion, Chronic Disease Management, and Symptom

Control", MBSR is "a relatively recent addition to the nonpharmacological approaches for disease

management. MBSR is based on the Buddhist principle of mindfulness. Mindfulness, "defined as an

awareness that emerges with purposeful, nonjudgmental attention within the present moment, is a

fundamental concept of most meditation practices. Individuals learn mindfulness techniques, such as

breath awareness (focus on breath and observing thoughts without being caught up in them) and body

scan (promoting awareness and acceptance of sensations in different parts of the body), to help them

understand that painful sensations and associated negative emotions do not need to be fought,

suppressed, or they need not inhibit them from living a meaningful life and accomplishing goals."

(Williams, Simmons, & Tanabe 2015)

"What you learn in school is the tip of the iceberg. You learn when you're in the field and when it actually happens to you, you're reflective and then realize how to apply what you learned in school." ~

RN >10yrs
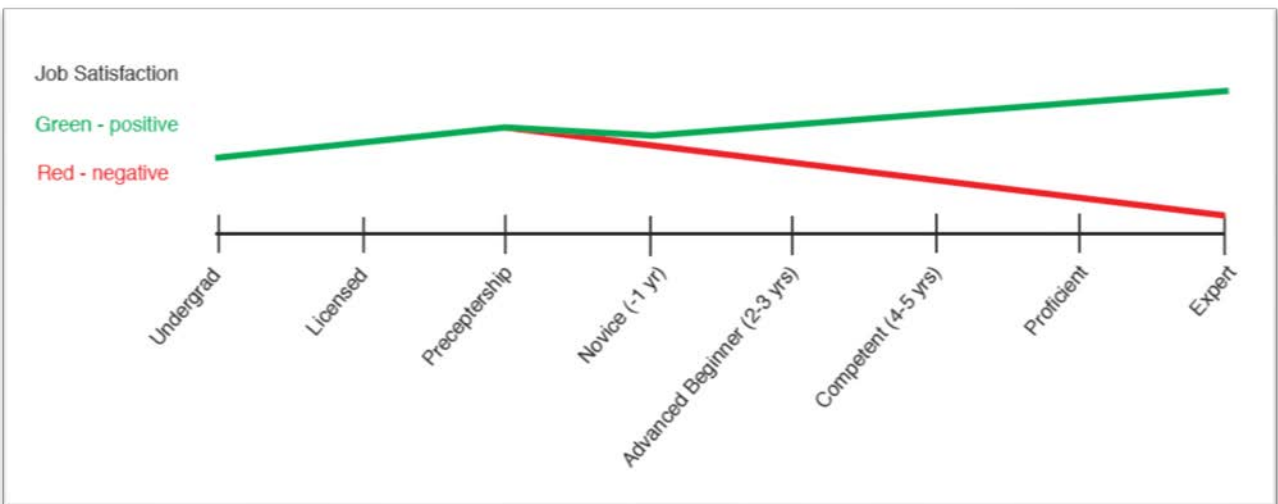
Figure 28: The impact of the work environment on the nurse through the various stages of knowledge acquisition (Benner's Theory)

In nursing, a preceptor is a practice-based teacher role and is considered vital in bridging the gap between nursing school and the hospital. Patricia Benner's theory (Benner's Stages of Clinical Competence) "proposes that expert nurses develop skills and understanding of patient care over time through a proper educational background as well as a multitude of experiences. Dr. Benner's theory is not focused on how to be a nurse, rather on how nurses acquire nursing knowledge. "A competent nurse and a proficient nurse will not approach or solve a clinical situation in the same way." (Benner, 1982) Modelled after the Dreyfus Model of Skill Acquisition, Benner's theory evidences the need for appropriate and ongoing education as clinicians advance through the 5 stages, novice, advanced beginner, competent, proficient and expert.

"Self awareness is also an issue. How aware can a 20 yr old nurse be? It's beyond their experience to

recognize certain situations." ~ RN >10yrs

What is expected, what is taught, how it is taught and when it is taught all influence the effectiveness of

patient safety and quality education. "The impetus to anchor preceptor <u>education</u> to a solid framework

rests on evidence that prelicensure nursing education, although sufficient for fostering formation of

professional identity and ethical comportment, doesn't provide hands-on clinical experience. By focusing

on well-defined competencies such as those outlined in QSEN, preceptors can better guide novice nurses

on what skills to focus on and develop." (Lim, Weiss, Herrera-Capoziello, 2016)

"I've been in practice for close to 15 years and I go to all the safety training that I'm told to attend. It's

good. But my CE (clinical educator) is the person I rely on the most if I'm stuck." ~ RN >10 years

Literature pointed to the term "hidden curriculum" to describe experiences of practiced and professional

nurses, that may not be documented or standard. In fact, this alone invalidates the notion that pre-

licensure education is a significant lever to support nurses in their efforts to deliver safe care. For the

nurses interviewed, the value of the preceptor and clinical educator, ranked higher than that of

mandatory yearly patient safety and quality online education. Interviews with three nurses with an

average of 24 years of experience, revealed that they continue to value the role that good preceptors

had early on during their entry to practice.

"Precepting is additional work on top of your regular workload. The right person for the job isn't

always interested, so sometimes people are just picked because they volunteered." ~ RN >10 yrs

However, interviews inquiring about the preceptorship revealed that it was valuable to the novice nurse,

but also additional work for an already over utilized nurse.

2017 Statistics from the College of Nurses of Ontario (Figure 29), shows there are around 5% or

approximately 6,600 nurses between the ages of 18 - 24. For these early career nurses, the clinical

setting will likely be their first full time career related job. With over 50% of the current nursing staff

between the ages of 25 - 54, preceptorship can offer an engaging opportunity for mid-career nurses

interested in advancing their professional experience.

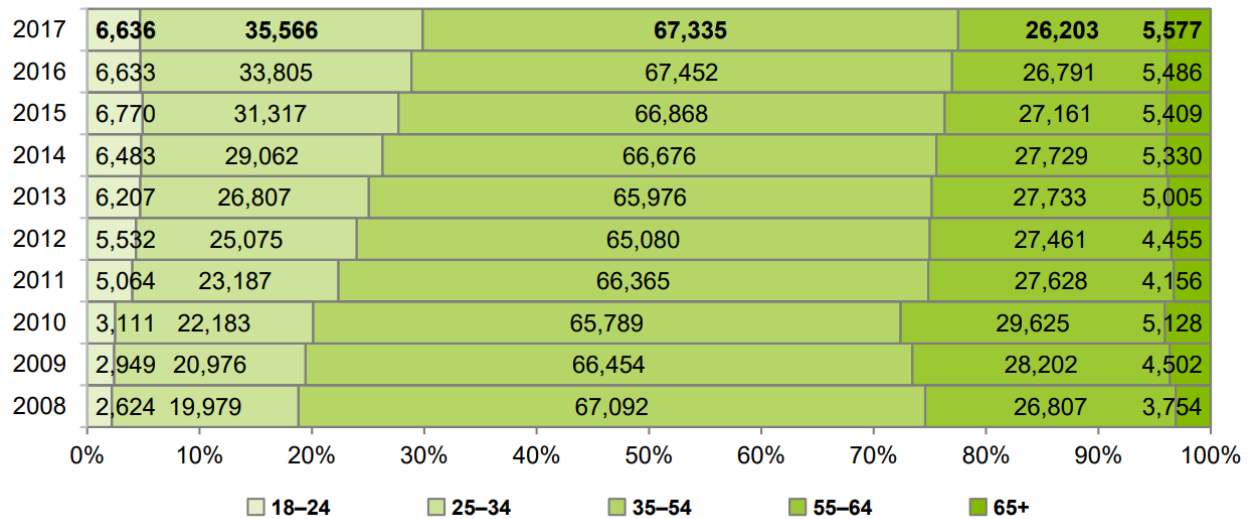|	18–24	25–34	35–54	55–64	65+
2017	6,636	35,566	67,335	26,203	5,577
2016	6,633	33,805	67,452	26,791	5,486
2015	6,770	31,317	66,868	27,161	5,409
2014	6,483	29,062	66,676	27,729	5,330
2013	6,207	26,807	65,976	27,733	5,005
2012	5,532	25,075	65,080	27,461	4,455
2011	5,064	23,187	66,365	27,628	4,156
2010	3,111	22,183	65,789	29,625	5,128
2009	2,949	20,976	66,454	28,202	4,502
2008	2,624	19,979	67,092	26,807	3,754

Figure 29: Age distribution of nurses employed in nursing in Ontario. Adapted from Colleges of Nurses of Ontario, 2017. Membership Statistics Report 2017. Retrieved from http://www.cno.org/globalassets/docs/general/43069_stats/2017-membership-statistics-report.pdf

Programs like Health Force Ontario's Nursing Graduate Guarantee program provides funding to qualified

healthcare organizations for newly licensed nurses as part of a work bridging program for up to 26

weeks. While this may lead to full or part-time employment opportunities, it also offers hospitals a way

to incentivize qualified nurses to be preceptors. However, preceptorship can be a double-edged sword

for those being instructed depending on the preceptor and the strength of the preceptorship program.

Grassroots efforts, like the one proposed by the "Walk in my shoes" arts-based exhibit by Catherine

Clarke, demonstrate the use of engaging and effective low-cost initiatives to promote personal reflection

and self-awareness among nurses about the impact of incivility on novice nurses. As described in the

abstract: "staff nurses and students at a Toronto hospital were invited to attend an exhibition of nurse

archetypes and artefacts and participate in activities designed to promote self-reflection. The outcomes

suggest that hospitals should consider using arts-based approaches, such as an interactive exhibition, as

interventions to reduce nurse-to-nurse incivility." (Clarke 2016)

While staffing ratios and budget cuts affect many areas, follow up interviews with both groups of experts

and with nurses, led to high praise for value of the clinical nurse educator and preceptorship programs as

a support for nurses faced with the complexity of the system.

"If you get a bad preceptor, you'll want to quit nursing. The good ones are tough, they show you how

it works in the real world, they will put you in tough situations and you'll come out better for it. 15

years later, I am still grateful for my preceptor" ~ RN >10 years
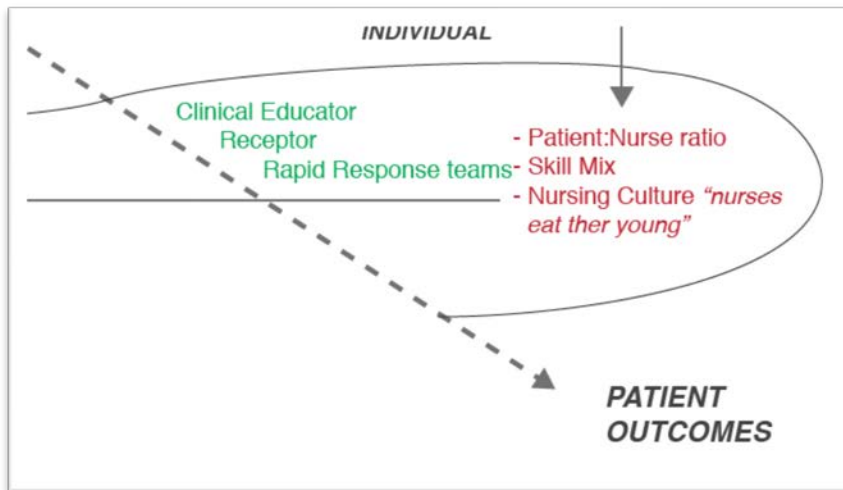
Figure 30: Interventions at the Individual level.

Key Finding 7: Role of preceptor and CE is regarded as vital by nurses

Ongoing education is vital to nursing to ensure the latest evidence-based practices are employed in

patient care. The role preceptor and the clinical educator are regarded as critical by nurses as they

deliver bedside care. Transition into the clinical setting is expected to occur during preceptorship, where

novice nurses are socialized into the professional world under the guidance of an experienced or expert

nurse. These vital roles exist in a program that has minimal structure and guidelines and an acceptance

of learning from the "hidden curriculum". While research pointed to the value in this, education must

also be focused on the preceptor as these roles are considered pivotal in socializing expected practices

and behaviours that lead to safe care of patients.

Recommendation(s):

There is evidence that educational interventions to improve quality of care are effective, particularly when integrated throughout the nurse's experience journey from novice to expert (Hockey, Marshall, 2009). The Robert Wood Foundation produced research that refers to five recommendations to strengthen these professional relationships, re-envision nursing student-staff nurse relationships, re-conceptualize the clinical faculty role, enhance development for school-based faculty and staff nurses working with students, re-examine the depth and breadth of the clinical component, and strengthen the evidence for best practices in clinical nursing education.

Key Finding 8: Nurses for Nursing

The historical baggage of gender roles is deeply rooted in nursing and the collective identity of servitude continues to perpetuate. While not an entirely bad word, nurses today are educated in sciences, research, critical thinking, communication, leadership and information systems and as such provide more preventative care related benefits. Nursing and medicine practices are not to be compared as they both fill vital roles in the journey of a patient receiving healthcare. This is even more relevant as approved changes to the Nursing Act (May 2017) increases the scope of practice of nursing to include the ability to "prescribe medication according to a list, and to communicate a diagnosis for the purpose of prescribing medication." The ever-present issue of civility and bullying between nurses, resulting in nurses leaving the profession or for those who stay to perpetuate the cycle of bullying. Advocating for the patient is one of the cornerstones in nursing and a work environment, that prevents this vital role, needs to be addressed.

Recommendation(s):

Become better advocates for the profession as it relates to patient safety and the issue of unintended harm. This can be done through grassroots efforts like that detailed by the Robert Wood Foundation, in their TCAB (Total Care At the Bedside) framework. Models like this requires nursing to employ and drive quality improvement at the unit level and involve other levels of leadership as necessary. This is in stark contrast to being told what to improve.

Tackle the issues of bullying and civility head-on. Ongoing efforts that assist with managing non-technical competencies such as interprofessional team issues and communication skills that tackle the hierarchy inherent amongst clinicians to name a few, are more likely to help nurses cope with stress and aid with time critical decisions.

Figure 31: Visualization of research data around unintended patient harm. (literature and interviews)

6. Next Steps/Future Work

The inquiry, leading to this research project, began with the knowledge that nearly two decades have passed since the 2004 Canadian Adverse Events Study which highlighted an alarming rate of unintended harm and death occurring in Canadian hospitals. Healthcare organizations are challenged to deliver world class care in an increasingly complex environment. That environment is widely viewed as a complex adaptive system and requires the recognition that checklists alone are not the only answer to support clinicians, such as nurses, in their efforts to deliver safe care. A core aspiration of this paper has been to attempt a synthesis based on some of the research work that has been published, coupled with interview data and some logical inferences, with an emphasis on how it might be possible to support nurses (as they work to deliver safe care) while having to navigate the various layers of stakeholders within the complex adaptive system of the healthcare organization. As such, the future direction of this work is proposed as follows:

1. Inquiry: There is some great research, that collaboratively developed recommendations that have yet to be widely adopted.
    - "What is preventing the following from becoming widely used or incorporated?"
        i. CPSI Core Competencies.
        ii. Robert Wood Foundation - 5 Recommendations for Pre-Licensure Education.
        iii. Robert Wood Foundation - Total Care by the Bedside – QI framework to support IHIs' Quadruple Aim.

2. Measurement: The need for nursing sensitive indicators relating to small harm (or non-rate-based measures).
    - "How might the wider range of nursing sensitive indicators (ie non-rate based) be reflected in mandatory reporting measures of harm?"

3. Inquiry: How transferable is this to other contexts?

   o What does the landscape of interventions look like in other contexts, such as,

     • Other nursing units, e.g. ED, NICU, ICU etc.

     • Other care settings, e.g. Long-term care, physician offices etc.

     • Other countries e.g. US, UK, Europe.

     • Other funding models e.g. privately funded health system.

     • The patient experience movement and it's impact on nursing.

4. Inquiry: How do interventions from other stakeholders in healthcare delivery impact nursing?

   o Role of the patient.

   o Role of device and equipment manufactures.

   o Role of the pharmaceutical industry.

   o Role of the insurance industry.

5. Nursing in the future: The landscape in which healthcare operates is changing. With the advent

   rapid technologic advances, the following questions arise,

   o What might healthcare in the future look like?

   o What aspects of the nurses' role might be better served through AI?

   o How might technology support the role of surveillance in preventing patient harm?

   o How might the role nurse be supported through robot nurses?

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Appendix A: Survey

Invitation-Consent

Date: **TBD**

Project Title: **How might educators better support effective patient safety and quality education?**

Principal Investigator:

Sunita Ferrao, MDes Candidate OCAD University

Faculty Supervisor:

Helen Kerr - Assistant Professor, OCAD University Faculty of Design, Graduate Studies

OCAD University

(416) 977-6000

hkerr@faculty.ocadu.ca

Invitation

You are invited to participate in a study that involves research. The purpose of this study is to help educators who support clinicians deliver safer care by providing recommendations for them to improve the delivery method of patient safety and quality education.

What's involved

As a participant, you will be interviewed on different issues and topics related patient safety training and education. Participation will take approximately 30 min of your time.

Potential benefits of participation include:

- For the organizations and their representatives, the project will provide strategic recommendations to face current and forthcoming challenges towards a preferable future.

- All participants will have a glimpse into future issues that may affect the overall system of supporting clinicians in delivering safer care.

- All participants will receive access to the final document of this research once it's finished.

There may be risks associated with your participation.

It is possible that during the interview:

- You may become emotional during the interview concerning the information you are sharing based on your personal work experience; or

- You may remember experiences that were challenging for you emotionally.

- You may feel obligated to answer a question that may make you uncomfortable, because of the

overall objective of helping.

Please be aware that your participation is voluntary and that you are not obligated to participate in any way. You may decide not to answer any specific question, and you may stop the interview at any time, without having to explain yourself and without any consequence.

Confidentiality

The information you provide will be kept confidential, i.e. your name will not appear in any thesis or report resulting from this study. However, with your permission attributed quotations may be used.

Please express your approval or exclusion below regarding the possibility to be quoted.:

☐   Yes, I wish to be attributed for my contribution to this research study. You may use my name alongside statements and/or quotations that you have collected from me.

☐   No, I do not wish to be attributed for my contribution to this research study.

The interview will be recorded for later access to information and analysis.

Data collected during this study will be stored in a secured computer property of the principal investigator. Data coming from the interviews will be kept for three months after the end of the research, after which time the data will be destroyed. Access to this data will be restricted only to the principal investigator and the primary advisor.

Voluntary participation

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study.

Further, you may decide to withdraw from this study at any time or to request withdrawal of your data (before data analysis which begins on TBD), and you may do so without any penalty or loss of benefits to which you are entitled. Please notify the Principal Investigator, Sunita Ferrao, during the interview or later via email at sunitaf@gmail.com

Publication of results

Results of this study may be published in: Final Academic Report at the library of the Ontario College of Art and Design University (Physical and Digital), Professional or Scholarly journals, Presentations at conferences, Websites, Exhibitions.

In any publication, data will be presented in aggregate forms. Quotations from interviews or surveys will not be attributed to you without your permission.

Feedback about this study will be available with the Principal Investigator Sunita Ferrao by email.

Contact Information and Ethics Clearance

If you have any questions about this study or require further information, please contact the Principal Investigator Sunita Ferrao using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [insert file #]. If you have any comments or concerns, please contact the Research Ethics Office through cpineda@ocadu.ca.

Consent Form

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

Signature: _____

Date: _____

Thank you for your assistance in this project. A scanned copy of this form will be sent to you by email. Please keep a copy of this form for your records.

Interview Invitation (Email/LinkedIn/Facebook)

Subject: Interview Invitation for Research - Master Research Project/Thesis - OCAD University

Dear _____

My name is Sunita Ferrao and I'm Master of Design Candidate from OCAD University, currently working on the final research project focused on supporting clinicians deliver safer care.

For my final paper, I am pursuing research to surface the variability that exists in understanding the science of safety and consequently the need for new education delivery methods. The outcome will be a current state view of patient safety curriculum for educators and professional bodies and a strategy to move forward by addressing the gaps in curriculum (delivery) in this area.

For this research I would appreciate your participation in a 30 minute interview (either in person, by phone or webcam) to understand the current challenges and what preferable possible future could be built.

Your participation will add to the information that will help the development of strategic recommendations for education delivery. (more information can be found below).

Should you agree to participate in the interview, please reply through this platform or to <email address>. The interview can be done by phone or I can meet you at a place of your convenience.

I'm attaching a consent form with more information about the details of the interview. If you agree to participate I will need you to sign your acceptance or withhold on disclosing personal identifiers such as the possibility to quote you in the final report or using materials from your organization during the interview.

About the research project:

Healthcare organizations are challenged to deliver world class care in an increasingly complex environment. As aptly stated by Donabedian, "which of a multitude of possible dimensions and criteria are selected to define quality will, of course, have profound influence on the approaches and methods one employs in the assessment of medical care." The healthcare environment is aptly viewed as a complex adaptive system and therefore the recognition that that philosophies, methods and processes alone aren't the answer.

There is evidence that educational interventions to improve quality of care are effective. Since a lack of knowledge and skills about improvement science is one of the key barriers to improving quality, educational solutions are key.

This Masters Research Paper will examine the current state of patient safety curricula in existing health professional training programs in Ontario. Of the many possible points of interventions, curriculum and learning organization theory will be explored as way to build adaptive thinking/ capabilities (or to build a preventative mindset) earlier in the pathway to patient care.

This research will include interviews with different stakeholder groups to understand and analyze the current state of patient safety & quality education received during undergrad and medical.

All this information plus the literature review will help to generate a current state view of patient safety curriculum for educators and professional bodies and a strategy to move forward by addressing the gaps in curriculum (delivery) in this area.

Thank you so much for your time.

Sincerely,

Sunita Ferrao, MDes SFI candidate

Appendix B: Online Survey

Survey: Patient Safety & Quality Education

You are invited to participate in a study that involves research. The survey should take no longer than 5 - 7 minutes.

This research will include interviews with different stakeholder groups to understand and analyze the current state of patient safety & quality education received during undergrad and medical school.

Thank you so much for your time.

Sincerely,

Sunita Ferrao, MDes SFI candidate
Student Investigator
3153174@student.ocadu.ca
Toronto, Ontario

Helen Kerr
Principle Investigator/Faculty Advisor
hkerr@faculty.ocadu.ca

VOLUNTARY PARTICIPATION
Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study or request withdrawal of your data, and you may do so without any consequence. Please notify the Student Investigator, Sunita Ferrao, via email at 3153174@student.ocadu.ca

PUBLICATION OF RESULTS
Results of this study may be published in: final academic report at the library of the OCAD University (physical and digital), professional or scholarly journals, presentations at conferences, websites, exhibitions. In any publication, data will be presented in aggregate forms. Quotations from interviews or surveys will not be attributed to you without your permission. Feedback about this study will be available from the Student Investigator, Sunita Ferrao by email.

CONTACT INFORMATION AND ETHICS CLEARANCE
If you have any questions about this study or require further information, please contact the Student Investigator Sunita Ferrao using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [REB#101238]. If you have any comments or concerns, please contact the Research Ethics Office through cpineda@ocadu.ca.

*Required

1. **CONFIDENTIALITY The information you provide will be kept confidential, i.e. your name will not appear in any thesis or report resulting from this study. However, with your permission attributed quotations may be used.Please express your approval or exclusion below regarding the possibility to be quoted.** *
   Mark only one oval.

   ( ) Yes, I wish to be attributed for my contribution to this research study. You may use my name alongside statements and/or quotations that you have collected from me.

   ( ) No, I do not wish to be attributed for my contribution to this research study.

2. **CONSENT FORM I agree to participate in this study described above. I have made this decision based on the information provided above. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.** *

Mark only one oval.

◯ Yes

◯ No   *Skip to "Thank you."*

Demographics

3. **Name**

_____

4. **Age Range** *

Mark only one oval.

◯ 19 - 24

◯ 25 - 29

◯ 30 - 34

◯ 35 - 39

◯ 40 - 49

◯ 50 - 59

◯ 60 - 69

◯ 70+

5. **Job Title** *

_____

6. **Job Role (Primary)** *

Mark only one oval.

◯ Nurse

◯ Primary Care Physician

◯ Hospitalist

◯ Resident

◯ Family Doctor

◯ Allied Health Professional (Physio, Radiology, Pathology, Pharmacy etc..)

◯ Professor/Assistant Professor

◯ Curriculum developer

◯ Clinical Risk & Patient Safety (specialist, manager, director, vp)

◯ Clinical Quality (specialist, manager, director, vp)

◯ Other: _____

7. **Which of the following describes your work setting?** *

Tick all that apply.

- ☐ ER
- ☐ Acute Care
- ☐ Ambulatory Care
- ☐ ICU, NICU, CCU
- ☐ Specialized care (Peds, LTC, Geriatric, Trauma)
- ☐ Clinic
- ☐ Other: _____

8. **Years of experience in your current role:** *

Mark only one oval.

- ◯ 1 - 5
- ◯ 6 - 10
- ◯ 11 - 15
- ◯ 16 - 20
- ◯ 21 - 25
- ◯ 25+

9. **Which one of the following closely describes your primary role?** *

Mark only one oval.

- ◯ Practitioner (Clinical)   *Skip to question 10.*
- ◯ Educator   *Skip to question 24.*
- ◯ Clinical Risk/Patient Safety/Quality   *Skip to question 38.*
- ◯ None of the above   *Stop filling out this form.*

Practitioner (Clinical)

10. **Name of Undergrad program**

_____

11. **Name of grad/specialized training program**

_____

12. **On a scale of 1 to 10, rate your knowledge of patient safety & quality.** *

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
None	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Expert

13. **When did you first receive education on patient safety/quality?** *
Mark only one oval.

◯ Undergrad

◯ Graduate studies

◯ Post grad or while employed

◯ Other: _____

14. **What was the course format** *
Mark only one oval.

◯ a dedicated course

◯ a section within a clinical course

◯ a section within a non clinical course

◯ Other: _____

15. **What method was primarily used to deliver the patient safety /quality education that you received?** *
Mark only one oval.

◯ Lecture

◯ Online course

◯ Hands-on practical scenarios

◯ Other: _____

16. **On a scale of 1 to 10, rate the effectiveness of the course** *
Mark only one oval per row.

	Extremely Ineffective	Somewhat in effective	Neither/Nor	Somewhat effective	Extremely effective	Not Applicable
Lecture	◯	◯	◯	◯	◯	◯
Online Course	◯	◯	◯	◯	◯	◯
Hands-on practical scenarios	◯	◯	◯	◯	◯	◯
Other method (if listed above)	◯	◯	◯	◯	◯	◯

17. **List or describe the key takeaways from your patient safety & quality education that have remained with you and/or that you have used effectively in your clinical practice.** *

_____

_____

_____

_____

_____

18. **Rate the following statements ...**
Mark only one oval per row.

	Strongly Disagree	Somewhat Disagree	Neither Disagree Nor Agree	Somewhat Agree	Strongly Agree
The education I received aligned with real world application in a clinical setting.	◯	◯	◯	◯	◯
The quality training I received during my undergrad gives me the confidence to recognize risks and prevent issues.	◯	◯	◯	◯	◯
My quality training is why I am less likely to harm a patient.	◯	◯	◯	◯	◯
I can deliver safe care regardless of the risk & quality training.	◯	◯	◯	◯	◯

19. **Have you had subsequent patient safety/quality education?**
Mark only one oval.

◯ Yes

◯ No

20. **What methods have you experienced that you have found to be the most effective? On a scale of 1 to 10, rate the effectiveness of the course by format.** *
Mark only one oval per row.

	Extremely Ineffective	Somewhat in effective	Neither/Nor	Somewhat effective	Extremely effective	Not Applicable
Lecture	◯	◯	◯	◯	◯	◯
Online Course	◯	◯	◯	◯	◯	◯
Hands-on practical scenarios	◯	◯	◯	◯	◯	◯

21. **If you could change anything about your patient safety / quality education what would it be?**

_____

_____

_____

_____

_____

22. **Comments (for anything else you might want to add)**

_____

_____

_____

_____

_____

23. **I agree to participate in a short 15 min follow-up interview.** *
    Mark only one oval.

    ( ) Yes   _Skip to question 48._
    ( ) No   _Skip to "Thank you."_

Skip to question 48.

Educator

24. **Which program level do you teach?** *
    Tick all that apply.

    [ ] Undergrad
    [ ] Grad
    [ ] Post grad or at work programs

25. **Which of the following describes your role** *
    Tick all that apply.

    [ ] Assistant Professor
    [ ] Professor
    [ ] Curriculum developer
    [ ] Other: _____

26. **On a scale of 1 to 10, rate your knowledge of patient safety & quality.** *
    Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
None	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	Expert

27. **What is the primary format used to deliver patient safety/quality education?** *
    Mark only one oval per row.

	a dedicated course	a section within a clinical course	a section within a non clinical course
Undergrad	( )	( )	( )
Grad/Specialized	( )	( )	( )
Post grad/At work programs	( )	( )	( )

28. **Do you determine the content and format of the patient safety and quality education that you deliver?** *

Mark only one oval.

◯ Yes

◯ No

◯ Other: _____

29. **What methods have you experienced that you have found to be the most effective? Rate the effectiveness of the course by format.** *

Mark only one oval per row.

	Extremely Ineffective	Somewhat in effective	Neither/Nor	Somewhat effective	Extremely effective	Not Applicable
Lecture	◯	◯	◯	◯	◯	◯
Online Course	◯	◯	◯	◯	◯	◯
Hands-on practical scenarios	◯	◯	◯	◯	◯	◯

30. **Rate the following statements ...** *

Mark only one oval per row.

	Strongly Disagree	Somewhat Disagree	Neither Disagree Nor Agree	Somewhat Agree	Strongly Agree
The quality training I deliver gives my students the confidence to recognize risks and prevent issues	◯	◯	◯	◯	◯
Receiving patient safety training means practitioners are less likely to harm a patient?	◯	◯	◯	◯	◯
Practitioners can deliver safe care regardless of quality training?	◯	◯	◯	◯	◯
The patient safety & quality education practitioners receive will sustain them throughout their careers.	◯	◯	◯	◯	◯

31. **List or describe the key takeaways that your students leave with from your patient safety & quality curriculum.** *

_____

_____

_____

_____

_____

32. **To what extent do you know/believe the following topic areas are covered in the context of patient safety/quality during undergrad/grad/specialized training (prior to entering the clinical setting)** *

Mark only one oval per row.

	No coverage	Some coverage	Intense focus	Unsure	N/A
Effective hand-offs between teams	◯	◯	◯	◯	◯
Effective communication in multi-disciplinary team settings	◯	◯	◯	◯	◯
Patient & Family engagement	◯	◯	◯	◯	◯
Family engagement	◯	◯	◯	◯	◯
Leadership & culture	◯	◯	◯	◯	◯
Teamwork & collaboration	◯	◯	◯	◯	◯
Systems thinking	◯	◯	◯	◯	◯
Human Factors	◯	◯	◯	◯	◯

33. **Have you taken any Patient Safety for Faculty training courses?** *

Mark only one oval.

◯ Yes

◯ No

◯ Other: _____

34. **If no, please explain why.** *

_____

35. **If you could change anything about patient safety & quality education what would it be?** *

_____
_____
_____
_____
_____

36. **Comments (for anything else you might want to add)**

_____
_____
_____
_____
_____

37. **I agree to participate in a short 15 min follow-up interview.** *

Mark only one oval.

◯ Yes   *Skip to question 48.*

◯ No   *Skip to "Thank you."*

Skip to question 48.

Risk/Patient Safety/Quality Staff

38. **On a scale of 1 to 10, rate your knowledge of patient safety & quality.** *

    Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
None	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Expert

39. **Rate the following statements ...** *

    Mark only one oval per row.

	Strongly Disagree	Somewhat Disagree	Neither Disagree Nor Agree	Somewhat Agree	Strongly Agree
The patient safety and quality education received by clinicians during undergrad/grad/specialized education aligns with real world application in a clinical setting.	⬭	⬭	⬭	⬭	⬭
The patient safety and quality education received by clinicians during undergrad/grad/specialized education gives them the confidence to recognize risks and prevent issues.	⬭	⬭	⬭	⬭	⬭
The patient safety and quality education received by clinicians during undergrad/grad/specialized education gives makes them less likely to harm a patient.	⬭	⬭	⬭	⬭	⬭
Practitioners can deliver safe care regardless of risk & quality training.	⬭	⬭	⬭	⬭	⬭
The patient safety & quality education practitioners received prior to entering the workforce will sustain them throughout their careers.	⬭	⬭	⬭	⬭	⬭

40. **To what extent do you expect the following topic areas are covered in the context of patient safety/quality during undergrad/grad/specialized training (prior to entering the clinical setting)** *

    Mark only one oval per row.

	No coverage	Some coverage	Intense focus	Unsure	N/A
Effective hand-offs between teams	⬭	⬭	⬭	⬭	⬭
Patient & Family Engagement	⬭	⬭	⬭	⬭	⬭
Effective communication in multi-disciplinary team settings	⬭	⬭	⬭	⬭	⬭
Leadership & Culture	⬭	⬭	⬭	⬭	⬭
Teamwork & Collaboration	⬭	⬭	⬭	⬭	⬭
Systems thinking	⬭	⬭	⬭	⬭	⬭

41. **Is patient safety/quality training mandatory at your organization?** *
Mark only one oval.

- ◯ Yes
- ◯ No

42. **Do you determine the content and format of the patient safety and quality education that staff receive?** *
Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Other: _____

43. **What methods have you experienced that you have found to be the most effective amongst practitioners (clinical)? Rate the effectiveness of the course by format.** *
Mark only one oval per row.

	Extremely Ineffective	Somewhat in effective	Neither/Nor	Somewhat effective	Extremely effective	Not Applicable
Lecture	◯	◯	◯	◯	◯	◯
Online Course	◯	◯	◯	◯	◯	◯
Hands-on practical scenarios	◯	◯	◯	◯	◯	◯

44. **To what extent does your organizational training on patient safety/quality cover the following topics ...** *
Mark only one oval per row.

	No coverage	Some coverage	Intense focus	Unsure	N/A
Effective hand-offs between teams	◯	◯	◯	◯	◯
Patient engagement	◯	◯	◯	◯	◯
Family & friends engagement	◯	◯	◯	◯	◯
Effective communication in multi-disciplinary team settings	◯	◯	◯	◯	◯
Leadership & Culture	◯	◯	◯	◯	◯
Teamwork & Collaboration	◯	◯	◯	◯	◯
Systems thinking	◯	◯	◯	◯	◯
Human Factors	◯	◯	◯	◯	◯

45. **If you could change anything about patient safety education delivered during undergrad/grad/specialized training (prior to entering the workforce) what would it be?**

_____

_____

_____

_____

_____

46. **Comments (for anything else you might want to add)**

_____

_____

_____

_____

_____

47. **I agree to participate in a short 15 min follow-up interview.** *
Mark only one oval.

◯ Yes   _Skip to question 48._

◯ No   _Skip to "Thank you."_

Contact information

48. **Email address** *

_____

49. **Best phone number to reach you at** *

_____

50. **Comments (for anything else you might want to add)**

_____

_____

_____

_____

_____

Thank you

Thank you for taking the time to participate in this study. Your participation in this survey is greatly appreciated.

PUBLICATION OF RESULTS

Results of this study may be published in a final academic report at the library of the OCAD University (physical and digital), professional or scholarly journals, presentations at conferences, websites, exhibitions. In any publication, data will be presented in aggregate forms. Quotations from interviews or surveys will not be attributed to you without your permission. Feedback about this study will be available from the Student Investigator, Sunita Ferrao by email (3153174@student.ocadu.ca)
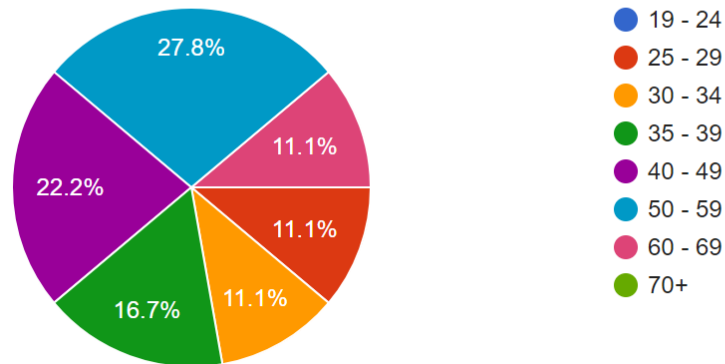
Powered by
Google Forms

Appendix E: Codified Data

Survey Views: 1800+ || Total Responses: 18 || Valid Responses: 11

Statistically insignificant and there excluded from findings and recommendations.
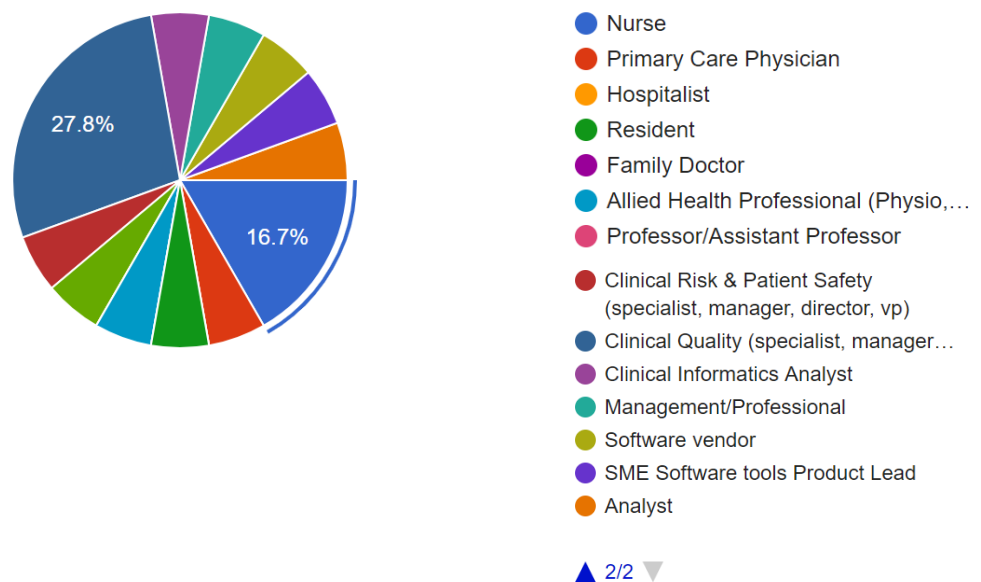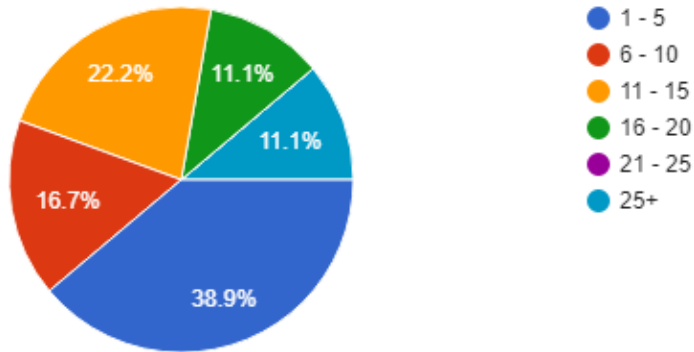
Age Range

18 responses

- 19 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 49
- 50 - 59
- 60 - 69
- 70+

Job Role (Primary)

18 responses

- Nurse
- Primary Care Physician
- Hospitalist
- Resident
- Family Doctor
- Allied Health Professional (Physio,…
- Professor/Assistant Professor
- Clinical Risk & Patient Safety (specialist, manager, director, vp)
- Clinical Quality (specialist, manager…
- Clinical Informatics Analyst
- Management/Professional
- Software vendor
- SME Software tools Product Lead
- Analyst

▲ 2/2 ▼

Years of experience in your current role:

18 responses

Legend:
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- 21 - 25
- 25+

Pie chart values: 22.2%, 11.1%, 11.1%, 38.9%, 16.7%

Which one of the following closely describes your primary role?

18 responses

Legend:
- Practitioner (Clinical)
- Educator
- Clinical Risk/Patient Safety/Quality
- None of the above

Pie chart values: 38.9%, 38.9%, 16.7%
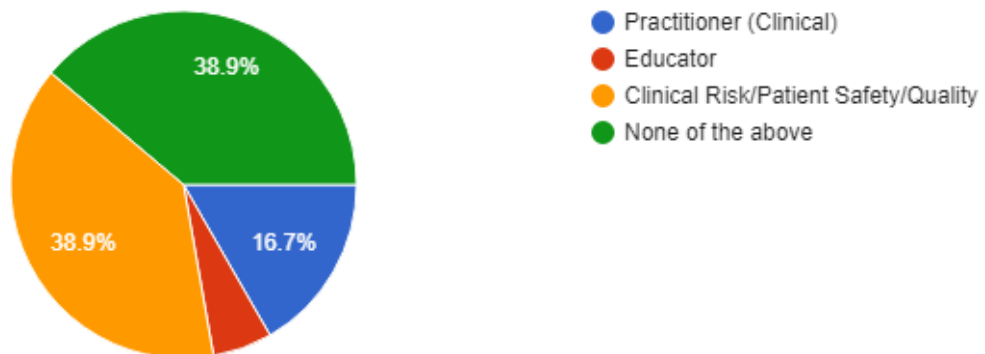
Appendix C: Semi-structured interview questions

Interview Questions (Practitioner delivering care)

Tell me about your job?

You answered X on the survey, can you tell me more about why?

Interview Questions (Educators)

Tell me about your job/role?

What Patient Safety & Quality education do you cover in your course?

Based on your role, what insights can you share that would support more sustainable patient safety & quality education?

You answered X on the survey, can you tell me more about why?

Interview Questions (Risk/Patient Safety/Quality Managers)

Tell me about your job/role?

Based on your role, what insights can you share that would support more effective or sustainable patient safety & quality education?

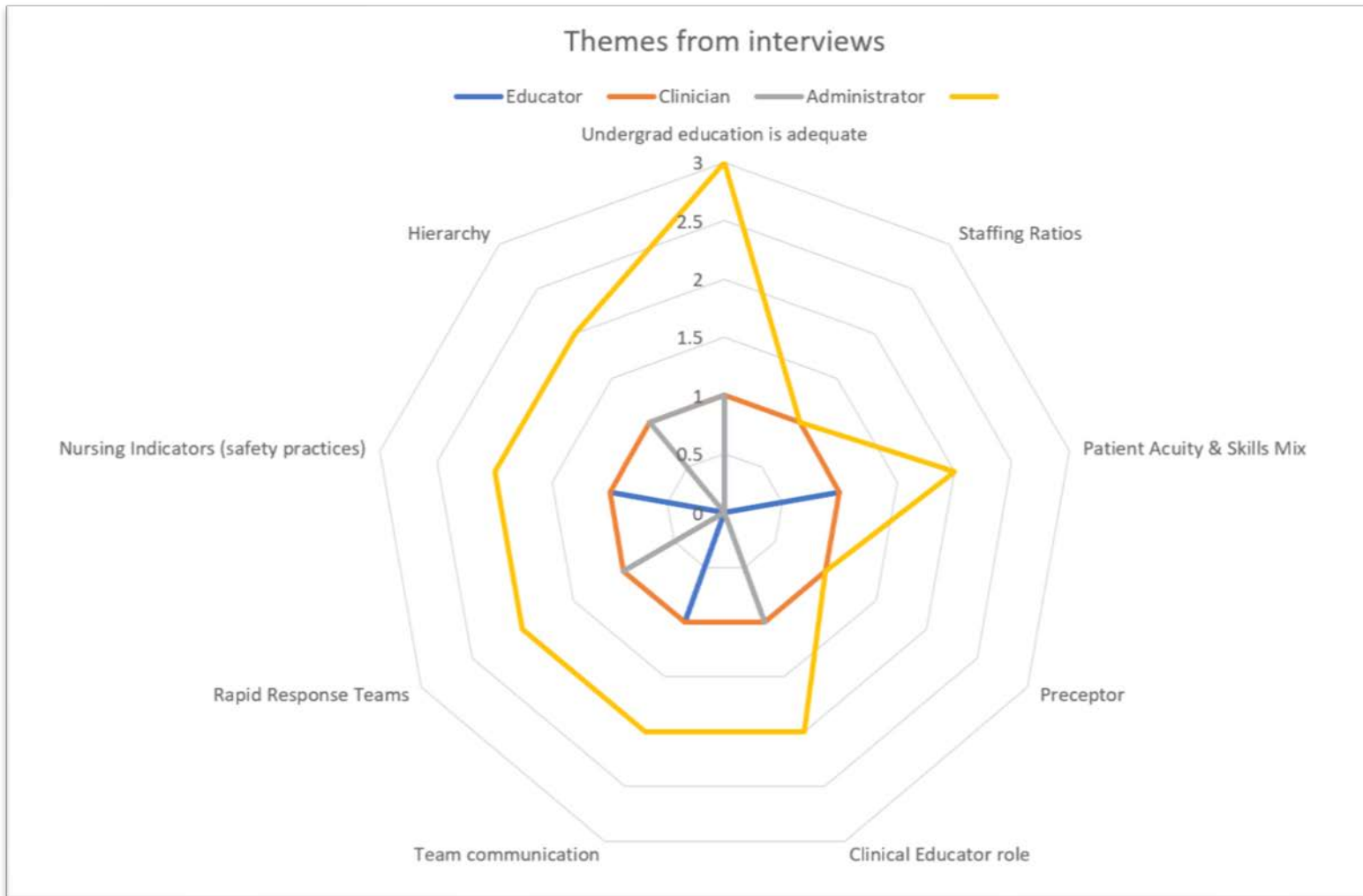You answered X on the survey, can you tell me more about why?

Appendix D: Codified Interview Themes

Figure 32: Interview Themes