



Georgia Highlands College / LibGuides / Introduction to Nursing (OER) / Chapter 4

Introduction to Nursing (OER): Chapter 4

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Evidence-Based Practice, Safety, and Quality Improvement

"Everything you do affects your patients" (Scott, p. 42, 2009).

"Knowing is not enough; we must apply. Willing is not enough; we must do" (Johann Wolfgang von Goethe Quotes, n.d., BrainyQuote.com).



In this chapter, students will learn:

- how nurses use scientific data to inform evidence-based practice
- that patient safety is one of the most important nursing responsibilities
- the impact of quality improvement initiatives on nursing practice

This chapter discusses evidence-based practice, safety, and quality improvement. These concepts are interrelated because nurses use evidence to provide consistently safe, high-quality care. NLN (2010) recommends that these concepts be taught at every level of nursing education to support practice excellence. Students graduate with sound nursing judgment and a life-long spirit of inquiry (NLN, 2010).

Evidence-Based Practice

Evidence-Based Practice

Imagine being a nurse caring for a person with end-stage chronic obstructive lung disease (COPD). The nurse knows that severe COPD makes it hard to exchange oxygen and other gases to keep the body in balance and that this person will probably feel anxious, scared, and irritable. The patient may also appear cyanotic (blue) and have trouble with simple tasks due to shortness of breath. When the patient lashes out, a novice nurse might feel hurt or angry, but an expert nurse would feel compassion and understand that this patient is suffering greatly. The expert nurse would use scientific (evidence-based) knowledge to explain the

understand that the patient is suffering greatly. The expert nurse would use scientific evidence-based knowledge to explain the outburst, not take it personally, and make clinical decisions to improve the gas exchange. Every working day, nurses use evidence to inform practice so that nursing care promotes the best possible health outcomes.

This section discusses how nurses use scientific evidence to promote health, prevent harm, and manage human responses to illness. Nurses assess, diagnose, plan, implement, and evaluate patient care across all levels of health and illness. Nurses also use evidence to provide for patient safety and continuously strive for quality improvement in the delivery of care and patient outcomes. One nurse educator summarized the need for the application of scientific evidence at the bedside: "...knowledge and the ability to use it correctly is the starting point for effective nursing practice" (Scott, p. 3, 2009).

Definitions, scope, and levels of research

Evidence is simply information that can be trusted. Evidence is a "testimony of facts" and can support or refute current clinical practice (Hendrix, 2017). Evidence-based practice can be defined as the consistent use of well-researched information for clinical decision-making that considers individual needs and preferences (NLN, p. 20, 2010). The ANA standards of nursing practice state that registered nurses utilize scientific evidence and research to care for patients (2010). Nurses learn a tremendous amount of scientific information about the human body, mind, and spirit as well as diverse human responses to health, illness, crises, and life in general. Nurses use this information to guide clinical judgment that evaluates patient status and risk for potential problems. They also integrate patient preferences into every decision. The image below from the medical discipline shows how clinicians blend all three components into evidence-based practice.



Source: Google Images

Scope. The body of knowledge within the nursing profession is like no other because it encompasses science from many other fields such as medicine, pharmacology, biology, physiology, microbiology, chemistry, physics, sociology, psychology, anthropology, and theology – to name only a few. Expert nurses learn to use knowledge from each of these disciplines to make the best possible decision at a moment's notice. They use scientific knowledge to know what to look for, how to look for it, and how to respond accurately (Scott, 2009). In other words, nurses learn how to "think like a nurse" through study and experience in this applied science.

Benner and Wrubel (1989) provide a great example of how nurses advance evidence-based practice. In heart transplantation, most people focus on the dramatic vision of a surgeon cutting out a sick heart and stitching in a new heart from someone who recently passed. However, few people know of the science that developed through the hourly problem solving that kept the new heart functioning. Nurses were there monitoring every sign and symptom and finding solutions to every problem that arose as the patient's body learned to live with the transplanted organ. Nurses made numerous clinical decisions to help patients adjust to immunosuppression, mouth sores, and hormonal changes and recognized and responded to signs of infection or rejection of the organ. These unsung heroes made daily caring discoveries "that led to the eventual success of heart transplantation" (Benner and Wrubel, 1989). Without nurses, heart transplants and many other wonders of modern healthcare would have failed. Today, nurse researchers are carefully studying and sharing findings about professional nursing care so that health outcomes can continue to advance.

Levels and types of evidence. Evidence enables nurses to provide high-quality care (Potter, Perry, Stockert, and Hall, 2017).

Nurses carefully consider the source and type of all information used for clinical decisions. In modern healthcare settings, information overload can confuse novice nurses who want and need only the best, most current, and accurate information for clinical situations. Expert opinions might seem worthy, however, higher levels of evidence such as clinical trials and systematic reviews provide stronger evidence that knowledge is accurate. The image below shows the progression from the weakest to the strongest levels. For more information on levels of evidence in research, view this video: <https://www.youtube.com/watch?v=5H8w68sr0u8>.

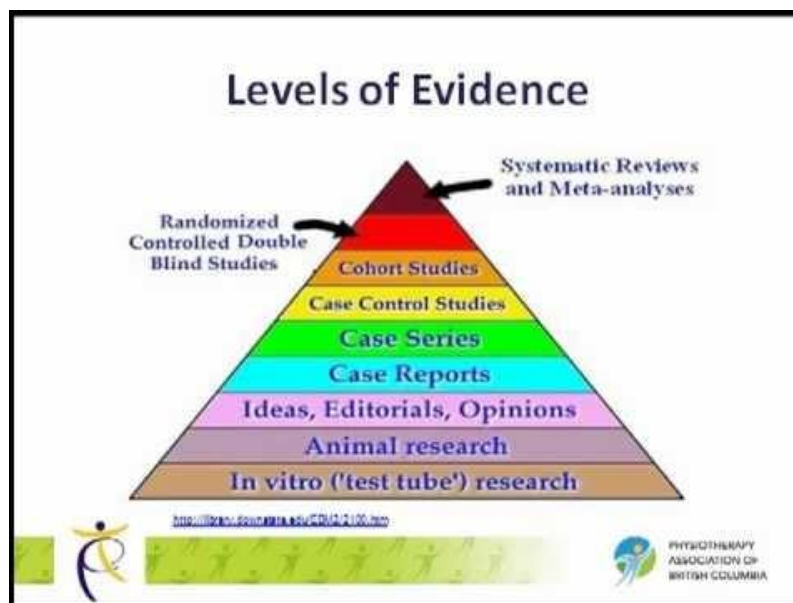


Image source: Ontario Physiotherapy Association. Understanding levels of evidence. Retrieved from <https://www.youtube.com/watch?v=5H8w68sr0u8>.

Attributes, criteria, and context in healthcare

As far back as Florence Nightingale, nurses observed and gathered data, analyzed findings, and responded correctly to improve healthcare delivery and patient outcomes (Nightingale, 1860). She emphasized observation skills as one of the most important nursing duties to save lives and increase health and comfort (Nightingale, p. 125, 1860). Nurses were told to be watchful of cleanliness to prevent infection. "...put the patient in the best condition for nature to act upon him" (Nightingale, p. 133, 1860). "The most important practical lesson that can be given to nurses is to teach them what to observe – how to observe – what symptoms indicate improvement – what the reverse – which are important – which are of non- which are the evidence of neglect – and of what kind of neglect" (Nightingale, p. 104, 1860). "...and in our calling of nurses, the think itself is essential...the habit of ready and correct observation" (Nightingale, p. 112, 1860).

Today, nurses have many resources, diagnostic tools, and scientific evidence to guide practice. Novice nurses are taught to begin noticing as much as possible about a patient's status to include physical, psychosocial, cultural, and spiritual needs. As a student progresses through each semester, more complex conditions require higher levels of observation, analysis, intervention, and evaluation. Students are taught how to notice, interpret, respond to, and reflect on nursing care and patient responses to that care (Tanner, 2006). This logical way of thinking trains the nurse to know what to do even when a new condition or situation presents itself.

Although facts can provide information about a patient's condition, the nurse's interpretation and response might be different for each patient or situation. Nurses develop the ability to think, solve problems, and evaluate what worked and did not work in each nurse-patient encounter. For example, an adult with a resting heart rate of 130 beats per minute would be a source of concern (interpretation), but for an infant, this rate would be within normal limits. The nurse would know what to do (respond): Check other vital signs, assess for several possible sources, and then call the provider if needed. Depending on the source of the high pulse rate, the nurse might help the patient with an anxiety-lowering breathing technique, adjust medication as prescribed, or help the patient to rest more comfortably in bed.

Knowledge of pathophysiology informs accurate problem identification and clinical decisions. As one nurse educator said, “The greatest friend a nurse can have...is a strong understanding of the body’s physiological processes” (Scott, p. 64. 2009). Nurses who use evidence can see past basic signs and symptoms that others might ignore, and then act quickly to prevent harm to the patient. These nurses look for patterns and trends. For example, a patient on medication for high blood pressure yesterday has a very low blood pressure today. This low blood pressure can be as dangerous as high blood pressure because it reduces perfusion of nutrients to the brain which can lead to dizziness, fainting, and falls, or to confusion and injury. A patient with limited perfusion to the brain could appear normal, but to an expert nurse, the low blood pressure would be cause for immediate action. The nurse would first keep the patient in bed for safety, then withhold the medication to prevent increasingly lower blood pressure, and then report the findings to the provider. The nurse would recheck the blood pressure frequently during the day and document the trend so that accurate medication dosing could be prescribed for this patient.

So, what if the patient did not respond to treatment due do multiple factors? The nurse would challenge the current practice and work with the healthcare team to search for better options. Melnyk and Fineout-Overholt (2015) list the steps in evidence-based nursing practice:

1. Cultivate a spirit of inquiry – consistency question clinical practice
2. Ask a clinical question using a research format
3. Search for best evidence that relates to the clinical question
4. Evaluate the evidence for worthiness
5. Blend the evidence with clinical expertise and patient preference
6. Measure the outcomes against expected goals
7. Share the findings with other nurses.

These steps help nurses identify, define, and investigate clinical practice issues that need improvement. The first step is crucial and fuels a nurse’s desire to provide quality care. Nurses who are continuously curious about best practice ask questions, search for answers, analyze the research, and integrate new evidence into practice while incorporating sound clinical judgment and patient preferences. The effectiveness of new evidence is evaluated in partnership with the patient. Results are shared with other nurses to advance the science and art of nursing. In the example above, the patient might have been elderly and frail which caused poor metabolism of the medication, allowing it to build up in the body. Too much medication was circulating which lowered the blood pressure to dangerous levels. The nurse found research that supported lower initial doses for elderly patients and shared this with the healthcare team.

Exemplar

The following example provides a glimpse into the responsibilities each registered nurse manages throughout a workday.

Evidence-based practice

A patient with diabetes was to receive five units of insulin every morning. The nurse mistakenly gave 50 units. The patient developed extremely low blood sugar and became unresponsive. The physician was notified, and the patient received intravenous glucose (sugar). Because of the nurse’s action, the hospital investigated the number of insulin dosage errors and searched the literature for clinical practice guidelines. The search found evidence that supported a practice called “dual sign off” which requires two nurses to witness and verify all insulin doses. Later, other high-risk medications were added to the dual sign off policy. Failure to follow established protocols called “clinical practice guidelines” (CPG) in modern healthcare settings can result in severe injury and death. In today’s healthcare settings, computerized medication systems incorporate evidence-based practices such as CPGs to prevent nurses from making many of these errors.

Safety

Safety

Nurses are responsible for patient safety and safe nursing practice. However, the Institute of Medicine (IOM, p. 1, 2000) reports that health care "is not as safe as it should be – and can be." Safety science from the aviation and nuclear energy disciplines is bringing new knowledge, skills, and attitudes to the healthcare industry which mandates that every worker maintain a systems perspective to remain alert for potential errors at all levels of care delivery (Armstrong and Sherwood, 2017). In other words, nurses are responsible for individual safety practices and must also be vigilant for potential errors throughout the healthcare system. The American Nurses Association (ANA) Standards of Practice state that each nurse should practice in an environmentally safe and healthy manner (2010). Nurses follow protocols such as raising the head of a patient's bed before offering a drink of water. Some protocols require that another nurse check the dose of medication before it is administered. This section introduces the student to the concept of safety and the myriad ways that nurses create safe environments that promote safety and prevent harm to patients.

Definitions and scope

Several definitions for safety are available and these include freedom from accidental injury related to healthcare, prevention of errors, and minimizing the risk of harm to patients and providers (Armstrong and Sherwood, 2017). **The Quality and Safety Education for Nurses (QSEN) Institute** identified competencies that include acquisition of knowledge, skills, and attitudes for patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics (QSEN, 2019). This initiative was in response to the 2000 report "To Err Is Human" by the Institute of Medicine (IOM). The estimated number of preventable errors at that time was shocking, however, new research demonstrates that healthcare errors are more frequent and serious than previously known. A recent study found that healthcare errors are the third leading cause of death in the U. S. (Makary and Daniel, 2016). For more information on this silent epidemic, view this video: <https://www.toerrishumanfilm.com/>.



Annual **National Patient Safety Goals (NPSG)** published by The Joint Commission address concerns based on data regarding deaths, permanent harm, or serious injuries within healthcare settings (<https://www.jointcommission.org/standards/national-patient-safety-goals/>).

Nurses are responsible for following these guidelines during each nurse-patient encounter and are often considered the last line of defense in the prevention of error.

The National Quality Forum (NQF) is a volunteer group of experts from the public and private sectors with diverse perspectives within every healthcare domain. The group generates reports, measurement tools, and materials to guide federal program measurement of healthcare quality and safety (<https://www.qualityforum.org>). All materials and events are open to the public. The NQF is committed to finding solutions to pressing healthcare issues that affect quality, safety, and access to healthcare. The group priorities are to:

- **Set standards.** NQF-endorsed indices are the gold standard for measurement of healthcare in the US due to the rigor of study and **consensus process**.
- **Recommend measures for use in payment and public reporting programs.** The NQF advises the federal government and private sector payers on measures of healthcare quality for performance-based payment and accountability programs.
- **Identify and accelerate quality improvement priorities.** Through partnerships, NQF consensus groups set and shape national healthcare improvement priorities and identify the best methods to meet those goals.
- **Advance electronic measurement.** The NQF strives to support the efficient and effective move toward electronic health data that is easy to access and share with providers and patients.
- **Provide information and tools to help healthcare decision-makers.** NQF provides reports, tools, events, and information to help healthcare professionals make adjustments to the rapidly changing healthcare environment.

Nurses participate in NQF practices when they document accurately, follow standard infection prevention practices, and prevent pressure ulcers and falls. These efforts help healthcare organizations demonstrate that quality improvement and error reduction are high priorities in the work culture.

Organizations use **systems thinking** to create environments where errors are prevented through environmental solutions. For example, look-alike medication labeling can result in the wrong drug being given when nurses are fatigued or working quickly. Also, potent drugs that need dilution can be kept in the pharmacy and mixed there before bringing it to the patient's floor. This video by Dr. Lucian Leape (n.d.) succinctly explains how environmental solutions can drastically reduce errors:

<http://www.ihi.org/education/IHIOpenSchool/resources/Pages/Activities/WhyDoErrorsHappen.aspx>.

Healthcare errors occur at different levels which are important to understand. The Institute of Medicine (IOM) (2000) defined an error as a failure to complete actions as intended or the use of an erroneous plan which leads to an error. An adverse event is an injury caused by medical intervention, as opposed to the health condition of a patient and many of these are preventable errors (IOM, p. 28, 2000). The Joint Commission (TJC, p. 1, 2011) defined the most severe error as a **sentinel event**. These definitions help identify problems clearly and guide solutions:

- **Adverse events** cause unintended harm due to an act or a failure to act.
- **Near misses** could have caused harm, but consequences did not occur because of chance, prevention of the consequence, or mitigation such as early discovery and intervention.
- **Sentinel events** are unexpected errors that cause death or a serious physical or psychological injury.

Errors can also be classified according to type: Diagnostic, treatment, preventive, and communication (Leape, Lawthers, Brennan, and Johnson, p. 145, 1993).

- **Diagnostic**
 - Error or delay in diagnosis
 - Failure to employ indicated tests
 - Use of outmoded tests or therapy
 - Failure to act on results of monitoring or testing
- **Treatment**
 - Technical error in the performance of an operation, procedure, or test
 - Error in administering the treatment (including preparation)
 - Error in the dose or method of using a drug
 - Avoidable delay in treatment or in responding to an abnormal test
 - Inappropriate (not indicated) care
- **Preventive**
 - Failure to provide prophylactic treatment
 - Inadequate monitoring or follow-up of treatment
- **Other**
 - Failure in communication
 - Equipment failure
 - Systems failures (other types)

The time and place where errors occur make a difference in preventing mistakes. This concept is called **placement of errors** (Leape, 1994). The image below illustrates two placement types: Active and latent errors. **Active errors** occur right away, and no system can prevent this type of injury due to the unpredictable and immediate nature of the error. For example, the nurse does not check physical landmarks and damages a nerve during an injection or does not verify the prescription and administers the wrong medication. **Latent errors** are unusually due to hidden system failures where correction of the system malfunction would prevent future errors. For example, the wrong drug is placed in the computer-assisted drug dispensing system, however, one nurse recognizes the error before administration while another nurse had already given the wrong drug. The error was dormant,



not causing injury in one case, but resulted in a medication error for the other patient.

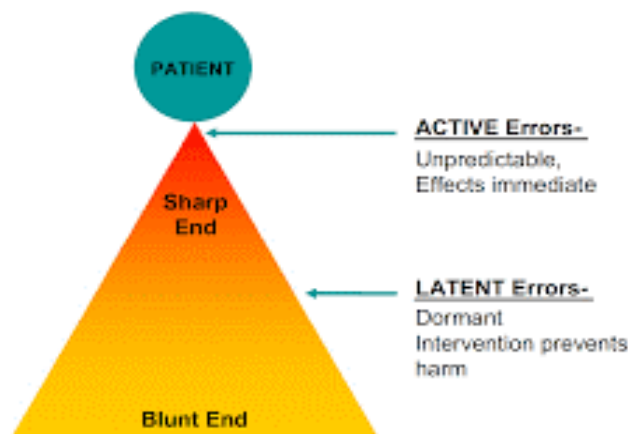


Fig. 2. Types of errors in health systems.

Swiss Cheese Model

Active failures

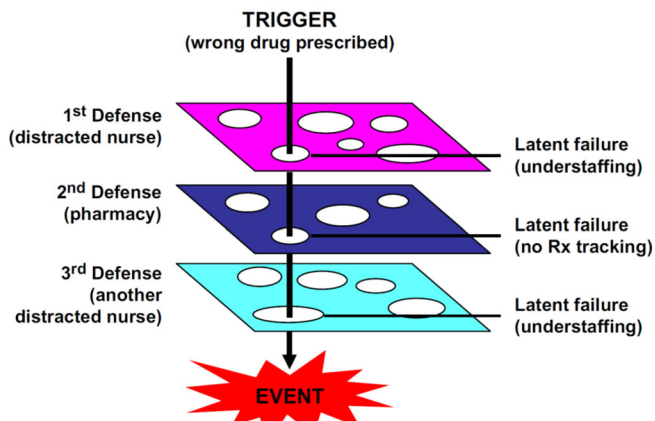
- Unsafe acts by persons in direct contact with patient or system
- Slips, lapses, fumbles, mistakes, procedural violations
- **'Sharp end'** of process
- RN, PharmD, MD, DO, RT

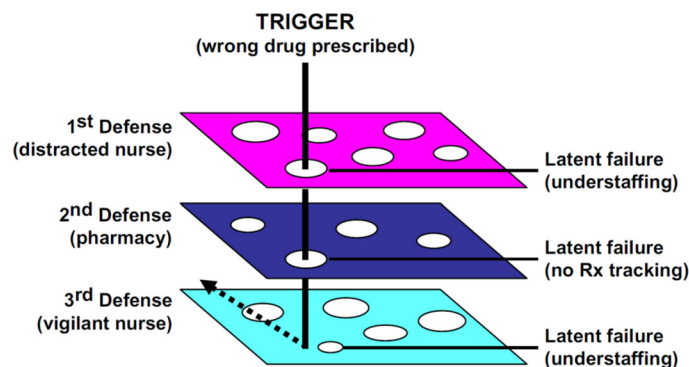
Latent failures

- Administrative level decisions
- Error provoking conditions
- Long lasting weaknesses
- 'Accidents waiting to happen'
- Should review proactively
- **'Blunt end'** of process

Images source: Leape, L. Patient Safety. Retrieved from http://ksunsc.com/download_center/4th/OB-GYN/GroupF/TheoryLectures28_F2BF29/17-PatientSafetyLecture_20_September_2018.pdf

The science of safety has developed several key prevention strategies. One such model is shown below. The trajectory of error is described along with defensive barriers that can stop the error at specific points along the way. In the example on the left, a provider prescribes the wrong medication. A distracted nurse signs off on the order. The pharmacist fills the order, and the second nurse gives the wrong medication – a medication error. In the second image, the error was prevented by the second nurse who recognized the drug as inappropriate for this patient.





Images source: Leape, L. Patient Safety. Retrieved from http://ksumsc.com/download_center/4th/OB-GYN/GroupF/TheoryLectures28_F2BF29/17-PatientSafetyLecture_20_September_2018.pdf

When errors occur, nurses must fully understand what led to unwanted results. Before seeking solutions, the Institute for Healthcare Improvement (IHI, n.d.) recommends that teams discover why a mistake was made by asking "Why did this happen?" five times. Each answer will point to moments during the process that leads to a root cause. Once the root cause is known, healthcare teams work together to correct risky processes, educate each other, and transform the system to prevent future errors. To better understand this simple investigative process and other tools to support patient safety efforts, go to <http://www.ihi.org/resources/Pages/Tools/Patient-Safety-Essentials-Toolkit.aspx>.

Attributes, criteria, and context in healthcare

Modern healthcare settings are complex systems with the potential for error or injury at many points during care delivery processes (IHI, 2017). All health care workers must be alert for risks of harm to patients and act to prevent mistakes every hour of every day. Individuals, organizations, and the healthcare system must strive for zero errors despite the realization that errors will occur due to many factors (IHI, 2017).

Culture of safety

Nurses are responsible for patient safety and prevention of work injuries. However, nurses cannot do this alone. The entire healthcare system must promote a culture of safety due to the inevitability of human error. To support this effort, three institutions offer training in safety science. The **Institute for Healthcare Improvement (IHI)** brings awareness, learning, solutions, and motivation to improve the safety and quality of healthcare across the US (IHI, 2019). The organization provides tools, videos, and webinars to educate healthcare providers, administrators, and consumers on ways to improve the systems, processes, and outcomes. The **Joint Commission (TJC)** releases National Patient Safety Goals each year with guidelines and standards of care (TJC, 2019). The **Agency for Healthcare Research and Quality (AHRQ)** used research from nuclear energy and aviation safety science to learn how high-reliability organizations "operate in complex, high-hazard domains for extended periods without serious accidents or catastrophic failures" (AHRQ, p. 1, 2019). Characteristics of these organizations include systems thinking which informs continuous re-design, monitoring, and evaluation of safety. High-reliability organizations are (AHRQ, 2019):

- alert to new threats and preoccupied with potential failure
- reluctant to simplify understanding of complex processes
- sensitive to operations at the 'big picture' level (situational awareness)
- able to defer to expertise of the people closest to the work
- committed to resilience in unpredictable systems

Nurses gain knowledge, skills, and attitudes that support a culture of safety (QSEN, 2019a). Knowledge includes factors discussed previously: Levels, types, and placement of errors. Knowledge also includes the analysis of "ethical and legal implications of patient-centered care" and description of limits and boundaries of that care (QSEN, slide 7.3, n.d). Skills include

careful observation, adherence to standards of care, safe use of technology, communication regarding errors, and participation in root-cause analysis. Nurses must also have patient teaching skills (QSEN, slide 7.4, n.d.). Nurses should be involved in the design, monitoring, and evaluation of processes to prevent errors at the systems level and develop skills in each of these areas. Attitudes of individual nurses are critical components in a culture of safety and shape nursing practice. Understanding that humans err can set a tone where nurses report errors immediately and receive support from peers and managers to identify the contributing system malfunction so that future errors can be prevented. For more information on QSEN competencies go to <https://qsen.org/>.

Another factor in the prevention of error is the partnership with patients and families (IHI, 2017). Nurses learn to listen to and educate patients and families who can see potential threats. For example, a nurse who forgets hand hygiene when entering the room is reminded by the family to correct this error and the nurse thanks and congratulates the patient's loved ones for recognizing a serious healthcare infraction.

A major source of potential patient harm is an infection. Careful hand washing is the best practice to prevent infection (<https://www.cdc.gov/handwashing/index.html>). Additionally, standard precautions protect the nurse and family members and prevent the spread of infection (<https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html>). These practices are taught to all healthcare workers annually. This basic principle guides clinicians to treat all body fluids from all persons as potentially infected. Everyone wears clean gloves when there is a potential of exposure to any type of body fluid and wears additional protective equipment (goggles, masks, gowns, shoe coverings) if exposure is expected or possible. To prevent the spread of known infections, nurses follow personal protective equipment (PPE) practices (<https://www.cdc.gov/niosh/ppe/>). Nurses also help patients increase resistance to infection through adequate hydration, nutrition, personal hygiene, and room sanitation.

Patients, families, and all healthcare workers must be vigilant to potential safety issues and system failures through continual environmental scanning. When a patient states, "Those pills look different from yesterday" or "I usually take that medicine by mouth, not an injection" the nurse should immediately stop and check the order. A culture of safety includes all persons, doing all tasks, at all moments in healthcare delivery. As the IOM (p. 45, 2001) states, "The health care environment should be safe for all patients, in all of its processes, all of the time." Nurses strive to think carefully and critically before each action to ensure patient safety.

Exemplar for Safety

In the example above, a patient said, "Those pills look different from yesterday. What is that medicine for?" The nurse ignored the patient and encouraged him to take the medicine so he could go to physical therapy on time. The drug was a potent blood pressure medication that caused the patient to faint during exercises in the rehabilitation gym. He fell, broke his hip, and required surgery. This sentinel event occurred because of two factors: The nurse had not taken time to scan the medication and patient armband before administration, and she ignored an important comment from the patient. She could have prevented this error by immediately stopping and verifying the order.

Quality Improvement

Quality Improvement

Nurses continuously strive to improve the quality of healthcare delivery and health outcomes. Even in small tasks, nurses can make a difference by attending to quality care. For example, a nurse who takes the last catheter insertion kit from the shelf stops for a moment to call the central supply staff. This 60-second action would make a big difference for the next nurse who can quickly relieve pain and discomfort from a distended bladder. This section addresses the concept of quality and the myriad ways that nurses work toward quality improvement.

Definitions and scope

The ANA standards of nursing practice state that registered nurses actively contribute to improving the quality of nursing practice (2010). However, many definitions of quality exist due to factors such as diverse situations and individual perspectives (Woods, 2017). For example, patients' perceptions, feelings, and impressions influence the experience of "excellent" care whether or not the standard of care was met. Healthcare providers might define quality as effective interventions delivered according to standards of practice, within financial constraints, that met clinician and/or patient goals. Risk managers and administrators in healthcare settings might focus on minimizing errors, cost-effectiveness, and efficiency. The IOM (2001) defines the quality of care as the "degree to which health care services for individuals and populations increase the likelihood of desired outcomes and are consistent with current professional knowledge" (IOM, p. 5, 1991).

The scope of healthcare quality is broad and deep due to several perspectives and a wide range of professional responsibilities and patient outcomes. The Agency for Healthcare Quality and Research (2017) monitors healthcare quality and access disparities through the evaluation of over 250 indicators. Six priorities for quality care include patient safety, person-centered care, care coordination, effective treatment, healthy living, and care affordability.

Patient safety protects the patient from harm and includes a culture of safety where everyone is alert to potential error and acts to prevent injury and mistakes (patients, families, healthcare workers, and system administrators). Indicators include healthcare-associated infections, pressure ulcers, inappropriate medications, and hospital readmissions (AHRQ, 2017). Person-centered care means that patients achieved desired outcomes and that clinical symptoms were resolved (AHRQ, 2017). It is also the art of listening carefully to patients and family members (Scott, 2009) and their inclusion in all decisions related to care delivery and preferred outcomes (AHRQ, 2017). Nurses value patient perspectives, preferences, and abilities to adhere to treatment (NLN, 2010). Therefore, they partner with patients during the assessment, planning, implementation, and evaluation of care. If a patient has a barrier to treatment or does not value it, adherence might be affected, which could lead to poor outcomes.

Care coordination is a conscious effort to communicate and organize key information required for safe patient-centered care across all settings, disciplines, and conditions (AHRQ, 2017). Nurses have a continuous role in care coordination due to the holistic nature of nursing care which attends to physical, mental, emotional, spiritual, social, cultural, economic, and educational needs. Other disciplines tend to focus on one aspect of care, so nurses often coordinate teams with diverse perspectives into a unified patient-centered care plan. Effective treatment means that patients receive preventive care and the right treatment at the right time for acute and chronic illnesses (AHRQ, 2017). Nurses are instrumental in providing treatment and alerting providers to adjustments in treatment plans and the timing of each. Since nurses are often closest to the point of care, their knowledge and skills in assessment and delivery of that care can make quite a difference in the quality of care.

Healthy living indicators include prevention services, child and maternal care, obesity prevention, functional status maintenance and rehabilitation, supportive and palliative care (AHRQ, 2017). Nurses work with patients and educate them on healthy lifestyle factors and ways to achieve health goals. Care affordability means that patients who need healthcare can afford it (AHRQ, 2017). Nurses assess a **patient's ability to afford medications**, treatments, and provider appointments at several phases of care. For example, when a patient refuses to take a medication because it is too expensive, the nurse reports this finding to the provider who must adjust the treatment plan.

The most recent AHRQ report (AHRQ, 2017) indicates improvement in these quality indicators: Person-centered care, patient safety, healthy living, effective treatment, care coordination, and care affordability. However, access to care varied by state and did not consistently improve. Access is monitored through several demographic measures such as ethnicity, geographic location, and availability of resources. If patients do not have access to care, then care is not provided, and quality cannot be measured. Other indicators worsened or maintained prior levels of quality. To learn more about quality improvement measures in healthcare, go to <https://www.ahrq.gov/>.

Attributes, criteria, and context in healthcare

Quality improvement is dependent on the ability to measure what a nurse wants to improve. In other words, the nurse must

identify a difference in current and desired outcomes and then evaluate the processes and performance that achieve those two outcomes. By analyzing the difference, nurses discover ways to improve quality along a continuum of tasks performed by everyone in the pipeline. When each healthcare worker completes necessary tasks consistently, outcomes are consistent. For example, if every time the pharmacy technician fills the medication bins correctly, at least one step in medication administration is accurate. Due to the potential for human error, however, the nurse who pulls the medication must ensure that the drug is the correct medication, dose, and route, before giving it to the patient. According to the IOM (p. 3, 2001) health care systems that strive for gains in six measurable attributes of care "would be far better at meeting patient needs."

- **Safe:** avoiding injuries to patients from the care that is intended to help them
- **Effective:** providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit
- **Patient-centered:** providing care that is respectful of and responsive to patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions
- **Timely:** reducing waits and harmful delays for both those who receive and those who give care
- **Efficient:** avoiding waste of equipment, supplies, ideas, and energy
- **Equitable:** providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status

Quality of nursing care can be measured using these characteristics. Many nurses serve on quality improvement committees where clinical practice issues are evaluated and re-designed for improved care delivery and outcomes. As discussed above, nurses use evidence and a spirit of inquiry to drive improvements in healthcare delivery so that excellent patient outcomes are achieved. The NLN (2010) emphasizes excellence as a core value that must influence all nursing practice. Excellence occurs when nurses create and implement "transformative strategies with daring ingenuity" and challenge the status quo with a refusal to tolerate mediocrity (NLN, p.12, 2010). Nurses who strive for excellence, think about systems of care and are perpetually curious about trying new ways to create better outcomes. For an engaging video on why quality improvement is important and can be inspiring, go to <http://www.ihl.org/resources/Pages/HowtoImprove/ScienceofImprovementHowtoImprove.aspx>.

Quality improvement processes

Quality improvement processes are systematic approaches to assess, change, and reassess the quality of desired performance and outcomes. To achieve excellence, nurses use performance measures (indicators) to evaluate whether a task was completed at the right time, on the right patient, for the right reason, to create an expected outcome. The National Database of Nursing Quality Indicators (NDNQI) gathers data on measures that evaluate the impact of nursing care on patient health outcomes (Montalvo, 2007). The group gathers data on workforce factors such as turnover, job satisfaction, skill mix, and hours spent in nursing care per patient per day. Other measurements include hospital readmission rates, pain assessment cycles, intravenous infiltration rates, physical restraint prevalence, assault rates, patient falls and injuries, pressure ulcer incidence, and hospital-acquired infections (Harding, 2017).

Several well-defined quality improvement processes are available. However, the Deming model offers a simple and highly effective tool that asks three fundamental questions as shown below:

Model for Improvement

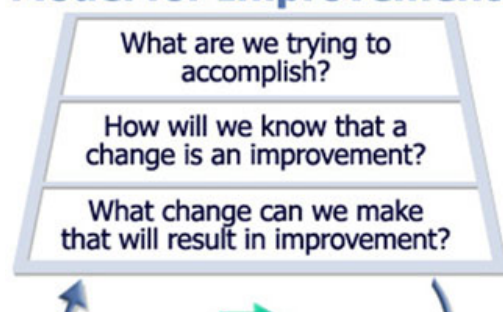




Image source: Associates in Process Improvement. Retrieved from <http://www.apiweb.org/>

Once the questions have been asked, a common approach to moving through the quality improvement process is PDSA – or Plan, Do, Study, Act (<https://www.deming.org/explore/p-d-s-a>, n.d.). This process guides nurses to continually learn about and understand healthcare delivery processes and is repeated frequently to achieve the best possible outcomes.

- Plan. Identify a goal or outcome, formulate a theory (why), decide on measurement tools, and plan action step
- Do. Perform the task(s)
- Study. Monitor and test for signs of progress, success, problems, and failures
- Act. Learn from the experience, adjust the goal, change methods, rethink the theory (why), broaden learning from the small-scale experiment to a larger plan for system improvement

W. Edwards Deming taught the PDSA Cycle to organizations around the world. He distinguished between the PDSA and the PDCA Cycle ('check' versus 'study') to focus on the knowledge and learning that comes from the study of improvement processes (Moen and Norman, 2010). For a video regarding the development of this model go to <https://deming.org/explore/p-d-s-a#andclickonthevideobyIanBradburyE93Deming0101>.

Quality improvement processes can seem daunting and not worth the effort, especially when nurses are busy providing patient care. However, healthcare teams can find that quality improvement processes are worth the effort. For an excellent example of one healthcare team's approach to quality improvement, go to: <https://link.springer.com/article/10.1007/s40746-015-0027-3> for an article titled "A practical guide to conducting quality improvement in the healthcare setting" in *Current Treatment Options in Pediatrics* 1(4), pages 380-392. This article provides excellent information on quality improvement processes (Kurowski, Schondelmeyer, Brown, Dandoy, Hanke, & Cooley (2015).

Health information technology

Information technology was designed to help the healthcare industry collect data, track performance processes, adjust delivery of care, and evaluate results to improve health outcomes (RAND, 2019). However, the implementation science of health information technology (HIT) is still under development and questions remain regarding effectiveness (Rudin, Jones, Shekelle, Hillestad, and Keeler, 2015). HIT includes electronic medical records, prescriptions, patient care plans, and many more bits of data. Many people from multiple disciplines use the information to assess and document health trends, diagnose conditions, plan treatment, document care, evaluate outcomes, and bill for services rendered. Therefore, many perspectives exist regarding the efficacy of HIT and how HIT can improve processes and outcomes. Ongoing research and development are continuously striving for improvement in these recommended areas (IOM, 2001):

- Care processes based on best practice
- Translation of new knowledge and skills into practice
- Support interdisciplinary teamwork
- Coordination of patient care across settings, services, and health conditions
- Measurement of performance improvement

Regulatory agencies

Multiple agencies and advisory bodies ensure public safety within healthcare systems (Woods, 2017). Different organizations focus on factors such as patient populations, disciplines, settings, health conditions, treatments, or care delivery systems. Healthcare systems are required to adhere to standards set by these agencies. Chapter Six addresses the use of informatics to improve quality and safety in healthcare systems.

Exemplars

The following examples highlight three agencies that define healthcare quality standards and monitor and evaluate adherence to improving healthcare delivery and patient outcomes.

Centers for Medicare & Medicaid Services

The Centers for Medicare and Medicaid Services (CMS) is a federal agency that oversees the quality and standards of healthcare for persons receiving healthcare funded by the agencies (CMS, n.d.a). Services can include hospital, home care, rehabilitation, nursing home, dialysis, hospice, and behavioral health care. Consumers can go to www.medicare.gov for assistance with locating healthcare and making decisions about care. New merit-based incentive programs are working to reduce the cost of healthcare with providers who accept reimbursement from these agencies. Additionally, funds can be denied for services rendered that do not meet quality standards.

The CMS uses a standardized approach for the development and maintenance of quality measures (CMS, n.d.a). Quality reporting programs encourage individual providers, organizations, and healthcare systems to improve the delivery of care and health outcomes. These programs require all staff to adhere to standards and to integrate patient and family preferences in all aspects of care. Within the CMS, the Office of Clinical Standards and Quality optimizes health outcomes by "leading clinical quality improvement and health system transformation" that reduces cost and improves patient experience and outcomes (<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/Downloads/OCSQMission2012.pdf>).

The Joint Commission

The Joint Commission (TJC) is a leader in healthcare delivery regulation with a vision that "All people always experience the safest, highest quality, best-value health care across all settings" (TJC, 2019). This agency provides accreditation to organizations that meet performance standards in a wide range of services and publishes manuals with detailed preparation instructions. The TJC also periodically publishes alerts regarding sentinel events and other safety and quality issues. For more information on The Joint Commission, go to <https://www.jointcommission.org/>.

The Agency for Healthcare Research & Quality (AHRQ)

The Agency for Healthcare Research and Quality (AHRQ) promotes the improvement of quality, safety, efficiency, and effectiveness of health care in the U.S. and supports research and projects that improve knowledge, tools, and information so that healthcare providers and policymakers can make informed decisions (<https://www.ahrq.gov/cpi/about/profile/index.html>). The agency focuses on support for these key areas:

- research on the nation's health delivery system that goes beyond the "what" of health care to understand "how" to make health care safer and improve quality
- creation of materials to teach health care professionals to put research results into practice
- generation of measurement tools and data used by providers and policymakers

The AHRQ developed evidence-based communication techniques that improve the safety and quality of healthcare delivery (AHRQ, n.d.). "TeamSTEPPS® aims to optimize "patient care by improving communication and teamwork skills among health care professionals, including frontline staff. It includes a comprehensive set of ready-to-use materials and a training curriculum to successfully integrate teamwork principles into a variety of settings" (AHRQ, n.d.).

Summary

In this chapter, students learned about:

- evidence-based practice
- safety considerations
- quality improvement

Key Terms

- Adverse event
- Agency for Healthcare Quality and Research
- Centers for Medicare and Medicaid
- Clinical judgment
- Evidence (levels, types, and placement)
- Evidence-based practice
- Latent error
- Near-miss event
- Patient-centered
- Quality improvement
- Safety
- Sentinel event
- Systems thinking
- TeamSTEPPS
- The Joint Commission



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