

Open School

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Key

100 = Introductory concepts for all health care audiences

200 = Intermediate concepts and specialized topic areas

300 = Project-based learning

*Basic Certificate in Quality and Safety = The Open School offers a certificate of completion to learners who complete 13 essential courses: *QI 101–105, PS 101–105, TA 101, PFC 101, & L 101*

About Us

The IHI Open School’s multimedia online courses cover a range of topics in quality improvement, patient safety, system design, leadership, and population management. Through narrative, video, and interactive discussion, the courses offer a dynamic learning environment to inspire students and health professionals of all levels.

Courses are broken into digestible 15- to 40-minute lessons — each focused on practical learning around a narrow topic — designed for busy learners and educators. Institutional faculty and organizational leaders around the world rely on the courses as an easy way to bring essential training to students and staff.

Visit [ihio.org/education/ihioopenschool/courses](https://www.ihio.org/education/ihioopenschool/courses) to learn more about how the Open School can help improve your interactions with patients, the safety within your organization, or any of the systems in which you live and work.

Improvement Capability

QI 101: Introduction to Health Care Improvement*

Lesson 1: Health and Health Care Today

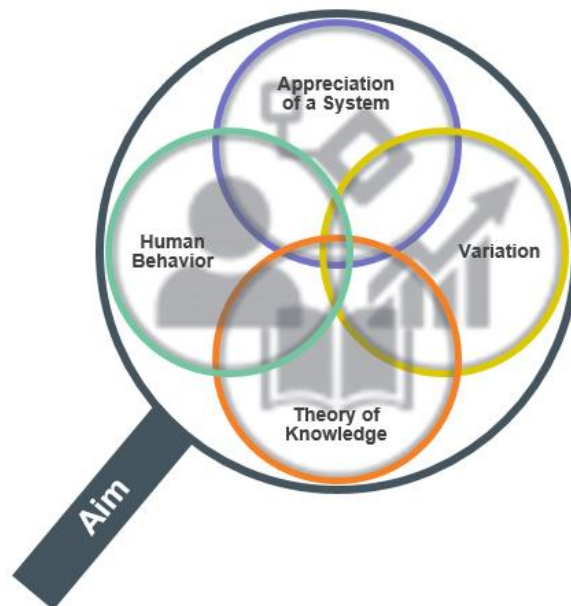
- As medical science and information evolve at a record pace, health systems must face new challenges:
 - Providers are becoming more specialized, contributing to gaps in communication and care.
 - Populations are aging, and the disease burden is shifting toward chronic conditions.
 - Patient and families are better informed and want personalized care.
 - There is growing availability of — and demand for — complicated procedures.
- Many health care systems, including the one in the United States, are struggling to make high-quality care available and affordable to all.
- Based on where someone lives and certain characteristics at birth, there are significant differences in the type of health and health care one is likely to experience; this is often true even within the same country or hometown.
- Although the root causes of inequalities in health care and human health by no means begin or end in the clinical setting, providers can do their part to help by learning and applying the science of improvement.

Lesson 2: The Institute of Medicine's Aims for Improvement

- In 2001, the Institute of Medicine (IOM) released a report, *Crossing the Quality Chasm: Health Care in the 21st Century*, that defined six key dimensions of our health care system upon which to focus improvement efforts. The report said care should be:
 - **Safe:** Avoid injuries to patients from the care that is intended to help them.
 - **Timely:** Reduce waits and sometimes harmful delays.
 - **Effective:** Provide the appropriate level of services.
 - **Efficient:** Avoid waste of equipment, supplies, ideas, and energy.
 - **Equitable:** Care shouldn't vary in quality because of personal characteristics.
 - **Patient-Centered:** Care should be considerate of individual preferences.
- A helpful mnemonic to remember the IOM's six dimensions is “**STEEEP.**”

Lesson 3: Changing Systems with the Science of Improvement

- Every system is perfectly designed to get the results it gets; the only way to get different results is to change the system.
- The science of improvement has its origins in manufacturing in the 1920s, when famous engineers such as **Walter A. Shewart** and **W. Edwards Deming** introduced a new type of science: **applied science**.
 - Traditional scientific discovery is only helpful if people can apply it.
- Deming's **System of Profound Knowledge** is a simple way of understanding the four key aspects of a system that you need to think about in order to improve:
 - **Systems thinking:** What is the whole system that you're trying to manage? How do the different parts interact with and rely on one another?
 - **Variation:** What is the variation in results trying to tell you about the system?
 - **Theory of knowledge:** What are the predictions about the system's performance? What are the theories that form the basis for these predictions?
 - **Psychology:** How do people in the system react to change, and what are the important interactions among people in the system? What motivates people to act as they do?



The lens depicting W. Edward's Deming's System of Profound Knowledge draws your attention to four areas you need to consider when you make a change within a system.

QI 102: How to Improve with the Model for Improvement*

Lesson 1: An Overview of the Model for Improvement

- Improvement requires **will, ideas, and execution**.
- The **Model for Improvement (MFI)**, developed by Associates in Process Improvement, is a simple yet powerful tool for executing improvement.
 - There are other useful models to guide improvement, such as **Lean** and **Six Sigma**, which can complement the MFI methodology.
- The MFI has two parts:
 - Three fundamental questions:
 - What are we trying to accomplish?
 - How will we know a change is an improvement?
 - What change can we make that will result in improvement?
 - The **Plan-Do-Study-Act (PDSA) cycle**, for testing changes
- Applying the MFI requires the following five steps: Set an aim, establish measures, identify changes, test changes, implement changes.

Lesson 2: Setting an Aim

- Setting an aim answers the first question in the Model for Improvement, “**What are we trying to accomplish?**”
 - A good aim addresses an issue that is important to the people involved.
 - Smaller, short-term aims can contribute to bigger, long-term aims.
- **Aim statements** must indicate specifically: **How good? By when? For whom?**

Lesson 3: Choosing Measures

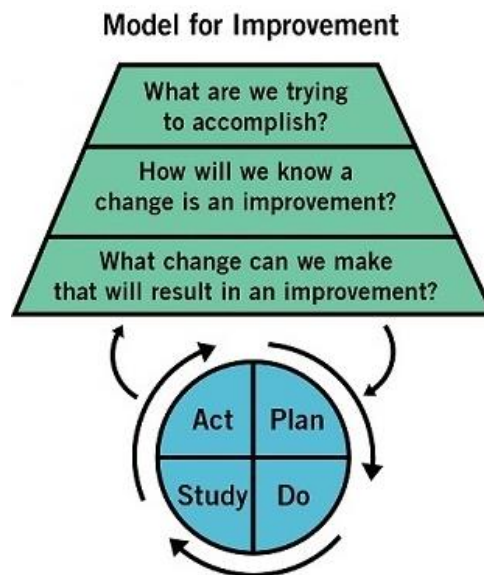
- Measuring answers the second question of the Model for Improvement, “**How will we know a change is an improvement?**”
- Measuring for improvement is different from measuring for research: The goal is to gather only enough data to inform whether to **adapt, adopt, or discard** an idea.
- Improvement teams typically use a **family of measures** that consists of:
 - **Outcome measures:** Where are we ultimately trying to go?
 - **Process measures:** Are we doing the right things to get there?
 - **Balancing measures:** Are the changes we are making to one part of the system causing problems in other parts of the system?
- Plotting measures on a **run chart** can reveal whether the data shows improvement.

Lesson 4: Developing Changes

- Developing change ideas answers the third question of the Model for Improvement, **What change can we make that will result in improvement?**
- Five useful ways to develop changes are: critical thinking, benchmarking, using technology, creative thinking, and change concepts.
 - A **process map (or flow chart)** can help teams gather and analyze data on how the system currently works.
 - A tool known as a **cause and effect diagram (or an Ishikawa or fishbone diagram)** can help teams identify root causes of a problem.

Lesson 5: Testing Changes

- Once a team has answered the Model for Improvement's three questions, the next step is to test the change ideas using **Plan-Do-Study-Act (PDSA) cycles**:
 - **Plan:** Plan the test or observation, including a plan for collecting data.
 - **Do:** Try out the test on a small scale.
 - **Study:** Set aside time to analyze the data and study the results.
 - **Act:** Refine the change, based on what was learned from the test.
- During the course of a few linked PDSA cycles, improvers refine their change idea until it's ready to implement.



The Model for Improvement consists of three questions and a cycle.

QI 103: Testing and Measuring Changes with PDSA Cycles*

Lesson 1: How to Define Measures and Collect Data

- Measuring for improvement requires selecting and tracking a **family of measures**, consisting of outcome, process, and balancing measures.
- These questions will help you establish an appropriate family of measures:
 - What do you want to learn about and improve?
 - What measures will be most helpful for this purpose?
 - What is the **operational definition** for each measure?
 - What's your **baseline** measurement?
 - What are your targets or goals for the measures?
- You also need a **data collection plan**; here are some questions to ask:
 - Who is responsible for collecting the data?
 - How often will the data be collected, e.g., hourly, daily, or weekly?
 - What is to be included or excluded, e.g., include only inpatients or include inpatients and outpatients?
 - How will these data be collected, e.g., manually on a data collection form or by an automated system?
- **Sampling** helps teams quickly understand how a process is performing.
 - **Simple random sampling** uses a random process to select data from a small sample of the population.
 - **Proportional stratified random sampling** divides the population into separate categories then takes a random sample for each.
 - **Judgment sampling** relies on the judgment of those with knowledge of the process to select useful samples for learning about the process performance.

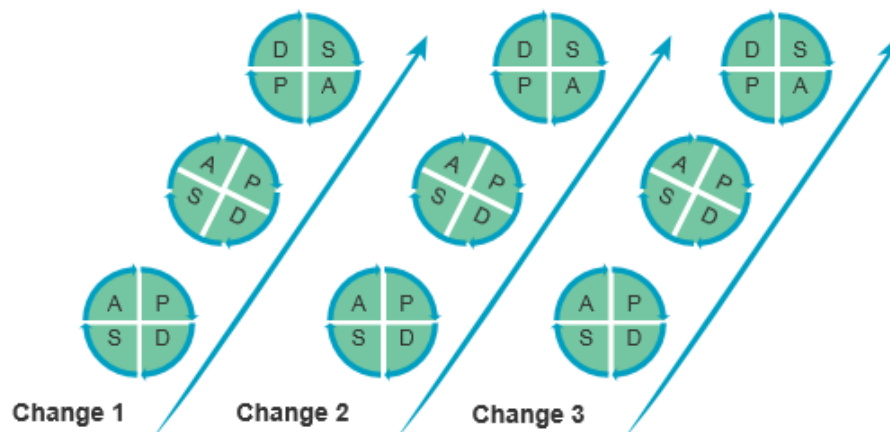
Lesson 2: How to Use Data for Improvement

- The purpose of measuring for improvement is to:
 - Keep track of what you're learning during Plan-Do-Study-Act (PDSA) testing.
 - Answer the second question in the Model for Improvement, "How will we know that a change is an improvement?"
- Because improvement happens over time, static displays of data are not helpful; you need a **dynamic** way to display the data, such as a run chart.
- A **run chart** is a graph that helps teams effectively interpret and communicate variation in data by showing change over time.

- Classifying and separating data according to specific variables, a practice called **stratification**, is another helpful way to understand the story the data is telling.

Lesson 3: How to Build Your Degree of Belief over Time

- We use “scale” and “scope” to talk about how large and how extensive a test will be.
 - **Scale** refers to the timespan or number of events included in a test cycle — such as a specific number of patient encounters.
 - **Scope** refers to the variety of conditions under which your tests occur — such as different combinations of patients, staff, and environmental conditions.
- The size of PDSA cycles should be based upon two things:
 - The **degree of belief** that the change will lead to improvement
 - The consequences if the change is not an improvement.
- Iterative test cycles allow teams to build a stronger degree of belief over time.
 - A **1:1:1 test** (e.g., “1 provider, 1 patient, 1 encounter”) is a useful rule for early PDSA cycles.
 - The **Five Times Rule** says to multiply the number of encounters or events used in the last cycle by five when scaling up a test of change.
 - Conducting more than one test at the same time (i.e., **concurrent test cycles**) allows teams to explore more than one set of conditions in parallel.
- A test that does not achieve the desired results is an opportunity to learn that can mean one of three things:
 - The test was not conducted as planned.
 - There was a problem with the data collection.
 - The change is not an improvement.



Concurrent testing allows teams to test more than one set of conditions at the same time.

QI 104: Interpreting Data: Run Charts, Control Charts, and other Measurement Tools*

Lesson 1: How to Display Data on a Run Chart

- A run chart is an essential improvement tool because it displays change over time.
- Steps for drawing a basic run chart include:
 - Plot time along the **X axis**.
 - Plot the key measure you're tracking along the **Y axis**.
 - Label both the X and Y axes, and give the graph a **useful title**.
 - Calculate and place a **median** of the data on the run chart.
 - Add other information as needed, such as a **goal line** and **annotations**.
- It's easy and often sufficient to build a run chart by hand.
- There are many computer programs, such as Microsoft Excel, Libre Office, or Google Docs that can help you draw a run chart.
 - IHI has a **run chart template** for Microsoft Excel freely available at: http://app.ihl.org/LMS/Content/77a180e3-18be-4969-a23b-d0e96e57e39f/Upload/QI104_RunChartTemplate.xls

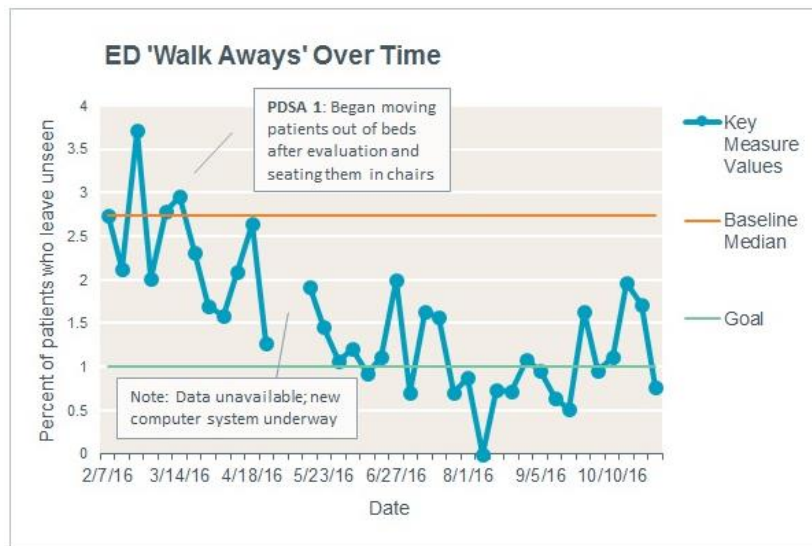
Lesson 2: How to Learn from Run Charts and Control Charts

- If you want a stable, predictable system, you need to separate common causes of variation from special causes of variation and remove the special causes.
 - **Common (random) causes** of variation are inherent to the system.
 - **Special (non-random) causes** of variation are due to irregular or unnatural influences on the system.
- Being able to identify and count runs is the first step for analyzing a run chart.
 - A **run** consists of one or more consecutive data points on the same side of the median, excluding data points that fall on the median.
- Applying four simple rules will allow you to identify four types of non-random patterns in the data displayed on a run chart:
 - **Rule 1: A shift** is six or more consecutive points above or below the median.
 - **Rule 2: A trend** is five or more consecutive points all increasing or decreasing.
 - **Rule 3: Too many or too few runs** is a non-random number of runs based on a mathematical formula.
 - **Rule 4: An astronomical data point** is a data point that appears far away from the others.

- A **Shewhart Chart (or control chart)** looks like a run chart but has the added feature of control limits. Data outside the limits indicates special cause variation.

Lesson 3: Histograms, Pareto Charts, and Scatter Plots

- A **histogram** is a special type of bar chart, used to display the variation in continuous data — such as time, weight, size, or temperature.
- The **Pareto chart (or ordered bar chart)** is a type of bar chart on which the various factors that contribute to an overall effect are arranged in order according to the **magnitude of their effect**.
 - The **Pareto principle** refers to the idea that, in many situations, 20 percent of contributing factors account for 80 percent of the results.
- Ordering the factors by magnitude allows teams to distinguish between the “**vital few**” (factors in the 20 percent category) and the “**trivial many**” (factors in the 80 percent category).
 - Focusing improvement efforts on the vital few will have the biggest payoff.
- A **scatter plot** is a graphic representation of the relationship between two variables. Scatter diagrams help teams identify and understand cause and effect relationships.



As a leader of improvement, you need tools, such as the run chart, to understand variation.

QI 105: Leading Quality Improvement*

Lesson 1: The Four Phases of a Quality Improvement Project

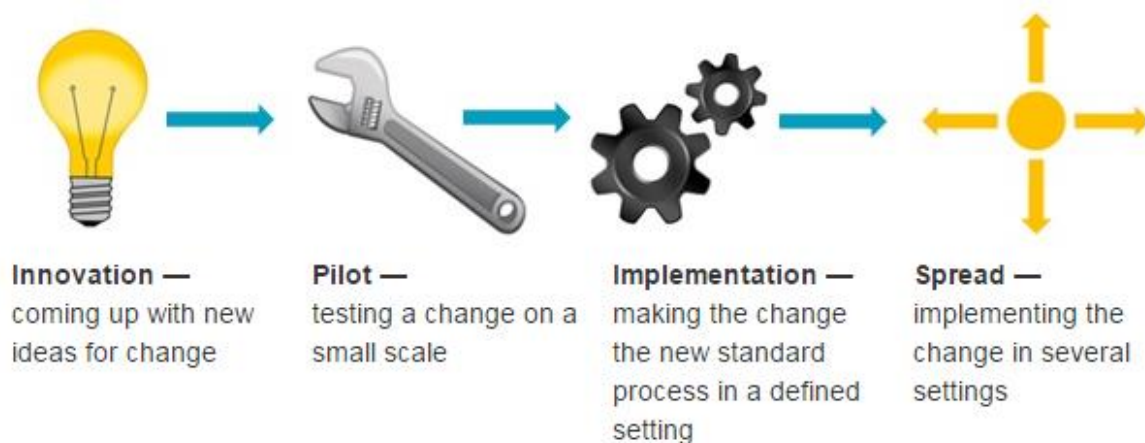
- Quality improvement (QI) projects have four phases:
 - **Innovation:** coming up with new ideas for changes. This is the phase in which teams brainstorm good ideas for changes to test.
 - **Pilot:** testing a change through Plan-Do-Study-Act (PDSA) cycles.
 - **Implementation:** making the change the new standard process in one defined setting.
 - **Spread:** implementing the change in several settings.
- During implementation, the change is “hardwired” into the system.
 - **Hardwiring** makes the change permanent, through such tactics as:
 - Documentation
 - Training
 - Addressing supply issues
 - Assigning day-to-day ownership for the new process
- The **Improvement Project Roadmap** from IHI and Richard Scoville helps manage the tasks required at each of the four stages to carry a QI project through to completion.

Lesson 2: Change Psychology and the Human Side of Quality Improvement

- People naturally react differently to change and have different strategies for leading change.
 - It is common for people to initially resist the idea of change.
- Many health care improvement projects come up against one or more of these barriers to change, outlined by author Herbert Kaufman:
 - The expected autonomy or independence of health care workers
 - Stability that comes with routine
 - An accumulation of policies, procedures, and regulations
 - Programmed behaviors
 - A limited focus or tunnel vision
 - A real or perceived limit on resources
- By identifying the reasons people are resistant to change, QI leaders can determine the best tactic(s) for overcoming that resistance. Some possible approaches include:
 - Sharing data
 - Telling stories
 - Speaking the language of improvement

Lesson 3: Working with Interdisciplinary Team Members

- Different perspectives are critical to a QI project's success, as is a strong leader who is capable of aligning a multidisciplinary team around a shared purpose.
- Effective improvement teams in health care typically are interprofessional and include members with different types of expertise:
 - Authority within the system
 - Technical expertise
 - Day-to-day leadership
- A four-step evolutionary process for teamwork has been described as follows:
 - Forming
 - Norming
 - Storming
 - Performing
- Some strategies to help align teammates around a common purpose include:
 - Create a team roster.
 - Do exercises in which team members self-identify their strengths.
 - Share stories to establish why the project is personally meaningful.
 - Establish a work plan, and write it down.
 - IHI has QI project tracking tools freely available here:
<http://www.ihl.org/education/IHIOpenSchool/Courses/Pages/PracticumForms.aspx>



There are four phases in the “life cycle” of an improvement project.

QI 201: Planning for Spread: From Local Improvements to System-Wide Change

Lesson 1: How Change Spreads

- Psychologist **Kurt Lewin** proposed that organizational change happens in three phases:
 - **Unfreezing**: Loosening the attachment to the current behavior or practice
 - **Change**: When the process of change actually occurs
 - **Freezing**: Making sure the change can continue to operate as designed
- Sociologist **Everett Rogers** said for any given change or innovation, there are five categories of adopters:
 - **Innovators** are always ready to try the latest, greatest thing, often even when there's risk involved.
 - **Early adopters** aren't as venturesome as innovators but are among the first ones willing to try the idea.
 - **Early majority** adopters of an innovation indicate the stage at which the masses begin to accept it.
 - **Late majority** adopters can be seen as skeptical about a given innovation. They may be driven to adopt the change out of economic need, peer pressure, or policy, rather than personal interest.
 - **Laggards** may take a long time to understand and accept an innovation. They'll adopt the change only because they have no other alternative.

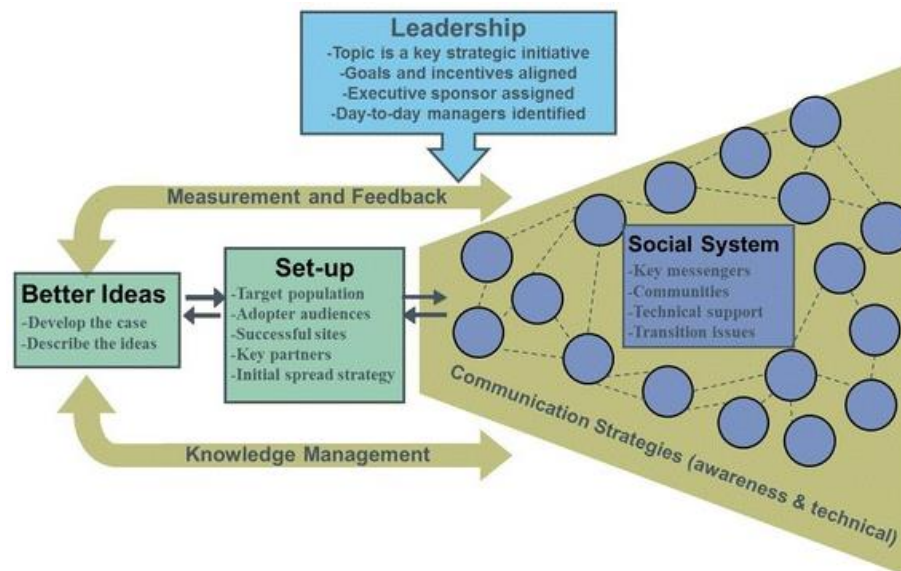
Lesson 2: Tactics for Spreading Change

- Sociologist **Everett Rogers** identified five characteristics of ideas that spread:
 - Relative advantage
 - Compatibility
 - Simplicity
 - Trialability
 - Observability
- Based on the characteristics of spreadable innovations, improvement teams can use a **New Idea Scorecard** to assess the ease with which a change is likely to spread.
- **IHI's Framework for Spread** identifies seven components for large-scale spread:
 - **Leadership**: setting the agenda and assigning responsibility for spread
 - **Setup for spread**: identifying the target population and initial plans
 - **Better ideas**: describing the new ideas and evidence for them
 - **Communication**: sharing awareness and technical information

- **Social system:** understanding the relationships among people
- **Knowledge management:** replicating successful spread efforts
- **Measurement and feedback:** collecting and using data about process and outcomes to monitor and make adjustments to the spread progress

Lesson 3: Case Study in Spreading Innovations: Transforming Care at the Bedside

- Seton Family of Hospitals in Greater Austin, Texas, participated in the early stages of an innovative program from the Robert Wood Johnson Foundation (RWJF) and IHI called **Transforming Care at the Bedside (TCAB)**.
- By following IHI's Framework for Spread, Seton Family spread the TCAB approach from an initial medical-surgical pilot unit at Seton Northwest Hospital to 21 units across eight hospitals in their system.



IHI's Framework for Spread identifies key components to consider when developing and executing a spread strategy.

QI 202: Achieving Breakthrough Quality, Access, and Affordability

Lesson 1: Two Mustangs

- Even though health care is unique, there are still many lessons – about reliability, agility, and problem solving – that organizations can learn from other high-risk industries, such as automobiles and aviation, which focus on safety and continuous improvement.
- In any complex system (health care or otherwise), the large number of interlocking parts (people, processes, departments, materials, etc.) makes it **almost impossible to design the system perfectly the first time around.**
 - In other words, you can't think your way to perfect care by creating a neat design on paper.
 - You have to discover your way to perfect care after you see how the design works in practice and continuously improve it.
 - We must keep getting better and better if we're to have any chance at delivering affordable, high-quality care to all patients.

Lesson 2: How to Make Complex Systems Fail

- The case of Mrs. Grant shows us what can happen when many small hazards come together to create one enormous hazard.
- The little problems that crop up in our daily routine become so familiar that we start assuming they're completely normal. **This tendency is called “normalizing deviance.”**
 - These little problems are “weak signals” that the system isn't working the way it should. These problems can combine in ways that can be deadly for patients; it's essential to call them out and work to fix them.

Lesson 3: Solving Problems in Complex Systems

- It's very important that organizations have a deliberate and reliable way of responding to concerns and “**weak signals**” workers raise.
- Here are the conditions that allow staff members to escalate problems effectively. If these conditions are in place, organizations have a better chance of seeing and solving problems before they have a chance to result in harm:
 - The people doing work must recognize they have a problem.

- Someone must be responsible for solving that problem.
- The people doing work must be able to notify the responsible person in a timely way.
- The responsible person must show up without blame and with a desire to solve the problem collaboratively.
- There must be enough time and resources to solve the problem.
- Here's an example to illustrate the importance of these five conditions: The issue is a missing nursing gown. Without a new gown in each room, it is easier to transfer infections. In order to address the problem:
 - The nurse had to recognize that the missing gown was a problem, rather than a normal condition of work.
 - The organization had to have designated a person (Mary) with the span of responsibility to deal with that problem.
 - The nurse had to be able to reach Mary right away.
 - Mary had to respond with concern and openness.
 - Several people involved in the process of distributing and using gowns had to be given enough time to meet and talk over the problem.
- If organizations reliably provide these conditions, they make it possible for staff to report many small problems – which can lead to the **resolution of big problems** in the future.

QI 301: Guide to the IHI Open School Quality Improvement Practicum

Are you ready to apply your improvement and safety knowledge in your own health care setting? The IHI Open School offers a course, *QI 301: Guide to the IHI Open School Quality Improvement Practicum*, designed to walk health professionals and students through the process of conducting a local quality improvement project. The course will call on your knowledge and learning from many other IHI Open School courses, and help you apply quality improvement skills in a real-world setting.

QI 301: Guide to the IHI Open School Quality Improvement Practicum consists of the following lessons:

- Lesson 1: Putting Quality Improvement into Practice
- Lesson 2: Starting Your Project
- Lesson 3: Looking for Changes? Try Cause and Effect Diagrams
- Lesson 4: Spell Improvement with P-D-S-A
- Lesson 5: Data: Collect and Display
- Lesson 6: Summarizing Your Project

If you are a health professions student, IHI faculty will help you along your improvement journey. You will submit documents after several of the lessons — including a charter, cause and effect diagram, and run charts — and receive timely feedback from a trained improvement advisor.

Upon successful completion of the course, students will receive the IHI Open School Practicum Certificate, showing future employers and health care organizations that they have the skills, knowledge, and desire to improve care processes. If you are a health professional, we invite you to use the framework of the course to guide your staff through projects that will improve the quality of the care in your local setting.

If you are a faculty member interested in using the Practicum with trainees, check out *GME 7: Faculty Advisor Guide to the IHI Open School Quality Improvement Practicum*. This one-lesson module offers tools and advice for serving the role of Practicum Faculty Advisor.

To learn more about this offering, visit <http://www.ihl.org/education/IHIOpenSchool/Courses/Pages/Practicum.aspx>.

Patient Safety

PS 101: Introduction to Patient Safety*

Lesson 1: Understanding Medical Error and Patient Safety

- Why should we study the field of patient safety?
 - According to the World Health Organization, patient safety means “freedom from unnecessary harm or potential harm associated with health care.”
 - According to Institute of Medicine’s 1999 report *To Err Is Human*, **between 44,000 and 98,000 Americans die in hospitals each year** due to errors in their care.
- Why is health care so dangerous?
 - Diagnosing and treating patients is incredibly complex.
 - Practitioners are often inadequately trained to deliver care as a team.
 - The **culture of safety** – the attitudes, beliefs, perceptions, and values that employees share in relation to safety – that exists in most health care organizations is weak compared to many other high-risk, complex businesses.
- Making dramatic improvements in patient safety will require the following commitments from both individuals and the organizations working in health care:
 - Acknowledge the scope of the problem of medical errors, and make a clear commitment to redesign systems to achieve unprecedented levels of safety.
 - Recognize that most patient harm is caused by bad systems and not bad people, and therefore we must end our historic response to medical error, which has been saddled with finger-pointing and shame.
 - Acknowledge that individuals alone cannot improve safety; it requires everyone on the care team to work in partnership with one another and with patients and families.

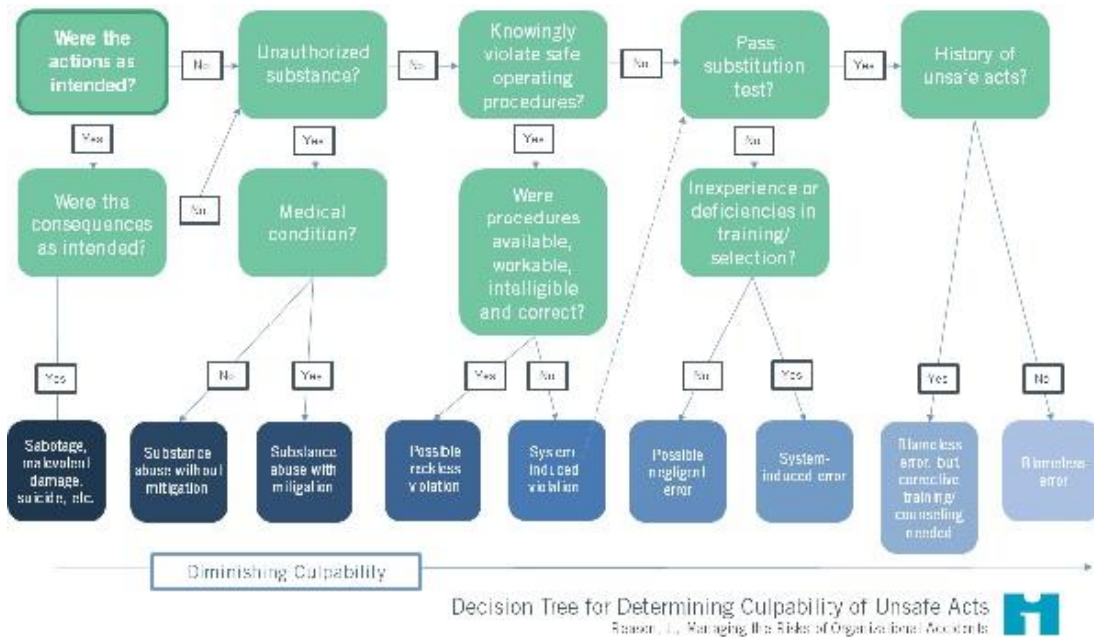
Lesson 2: Responding to Error

- Blaming and punishing an individual does not address the underlying issues that led to an event and does not prevent a recurrence.
 - A small minority of harm is caused by incompetent or poorly intended care.
 - The aviation industry learned that blaming and punishing individuals would not make transportation safer in 1977 through the Tenerife crash, which killed 583 people in aviation’s deadliest accident.
 - Adverse events cause psychological harm to health care providers.
- Although blaming and punishing individuals for errors are not appropriate responses, individuals should still be accountable for their actions.

- James Reason's decision tree for determining culpability of unsafe acts can help you determine whether an individual is to blame in an adverse event.
- Sorrel King, whose daughter Josie died at Johns Hopkins Hospital as a result of medical error, chose not to blame individuals but instead work for systems solutions.

Lesson 3: A Call to Action — What YOU Can Do

- Here are four behaviors any practitioner can do to improve safety for patients:
 - Follow written safety protocols. For example: Sanitize and wash your hands to reduce the spread of infection.
 - Speak up when you have concerns. For example: Report unsafe conditions, close calls, and adverse events.
 - Listen to patients, colleagues, and mentors. For example: Encourage patients and families to participate in decision-making.
 - Take care of yourself. For example: Get an appropriate amount of sleep and control your stress.



James Reason's decision tree for determining culpability of unsafe acts

PS 102: From Error to Harm*

Lesson 1: The Swiss Cheese Model

- The **Swiss cheese model**, from James Reason, is a useful way to think about errors in complex organizations.
 - The stack of cheese represents your organization’s safety system. Slices of cheese prevent hazards from resulting in harm, but every now and then, the “holes” line up and cause harm.
 - The holes represent both **latent conditions** (so-called accidents waiting to happen) and **active failures** (errors and violations by front-line providers).
- The Tenerife plane crash in 1977 is an example of how multiple unsafe conditions allowed the pilot to make an error, which the system then failed to stop from causing harm.
- The Swiss cheese model reveals the importance of improving latent conditions so that they do not eventually cause harm.
 - Voluntary reporting systems, in which providers submit reports on unsafe conditions and errors, can help improve unsafe conditions before they cause serious adverse events.

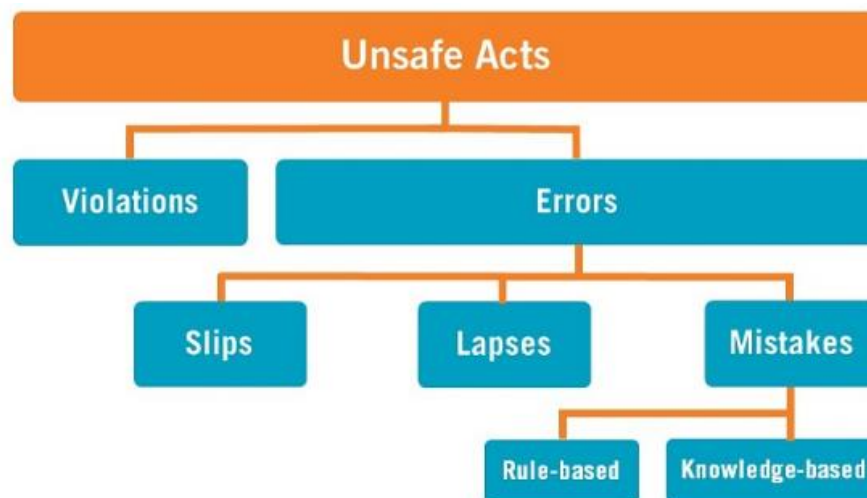
Lesson 2: A Closer Look at Error

- **Unsafe acts** are categorized as either errors or violations.
 - An **error** is lapse, slip, or mistake.
 - When an action fails to go as intended, the error is called either a **slip** (if it is observable) or a **lapse** (if it is unobservable).
 - When an action goes as intended but is the wrong one, it is called a **mistake**.
 - A **violation** is a deliberate deviation from an operating procedure, standard, or rules.
- An example of a *slip* is accidentally pushing the wrong button on a piece of equipment: You and others can see that you pushed the wrong button.
- An example of a *lapse* is some form of memory failure, such as failing to administer a medication: No one can see your memory fail, so the error is not observable.

Lesson 3: A Closer Look at Harm

- Improving patient safety isn’t just about preventing errors — it’s also about reducing harm

- A project in Michigan, US, developed a comprehensive safety system for reducing catheter-associated bloodstream infections (CLABSIs). It included a checklist, supply carts, and explicit roles for the various members of a care team.
 - The system showed that hospitals could nearly eliminate CLABSIs, which people once thought to be an inevitable complication of care.
- IHI has defined **harm** as “unintended physical injury resulting from or contributed to by medical care that requires additional monitoring, treatment, or hospitalization or that results in death.”
 - Patient safety innovators and patients have suggested a broader definition of harm, including three types of injury that have not traditionally been included in the definition of harm:
 - Errors of omission (what providers fail to do)
 - Psychological harm
 - Financial harm in the form of unaffordable care
- The history of medicine shows that many harms that used to be accepted are actually preventable, including high doses of chemotherapy, radical mastectomies, and overuse of antibiotics that leads to resistance.



According to James Reason, unsafe acts may be categorized as either errors or violations. Errors may be further categorized as slips, lapses, and mistakes.

PS 103: Human Factors and Safety*

Lesson 1: Understanding the Science of Human Factors

- Human cognition, both conscious and unconscious processing, is prone to error in known ways.
- Human factors is an established science that uses many disciplines (such as anatomy, physiology, physics, and biomechanics) to understand how people perform under different circumstances.
- This course defines **human factors** as: the study of all the factors that make it easier to do the work in the right way.
- The science of human factors is particularly useful for understanding human behavior in safety-critical situations, such as providing health care.
- Issues that impact human performance and increase risk for error include the following:
 - Factors that are in play before action takes place. These are predisposing mental and physiological states, such as fatigue, stress, dehydration, hunger, and boredom.
 - Factors that directly enable decision making, such as perception, attention, memory, reasoning, and judgment.
 - Factors that directly enable decision execution, such as communication and being able to carry out the intended action.

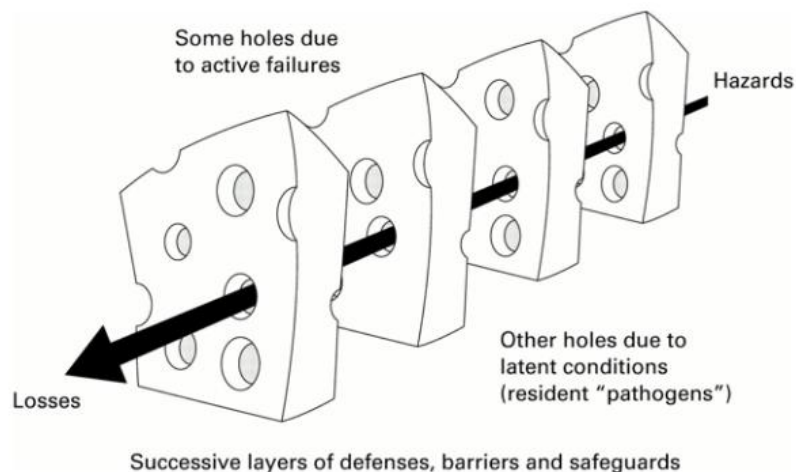
Lesson 2: Changes Based on Human Factors Design Principles

- The science of human factors — the study of the interrelationship between humans and their environment — has identified design principles that include the following:
 - **Simplify.** Simplifying involves taking steps out of a process.
 - **Standardize.** Standardizing removes variation and confusion and promotes predictability and consistency.
 - **Use forcing functions and constraints.**
 - Forcing functions make it impossible to do a task incorrectly. They create a hard stop that you cannot pass unless you change your actions.
 - A constraint is the state of being checked, restricted, or compelled to avoid or perform some action.
 - **Use redundancies.** A typical redundancy is double-checking someone's work.
 - **Avoid reliance on memory.** Checklists are a valuable tool to reduce reliance on memory.

- **Take advantage of habits and patterns.**
 - Habits are those actions we perform in consistent circumstances and are triggered by our surroundings.
 - A pattern is a recognizable regularity in events.
- **Promote effective team functioning.** Teamwork can prevent an individual's failings from harming patients, and miscommunication is at the root of many errors.
- **Automate carefully.** Technology can sometimes – but not always – be helpful.

Lesson 3: Using Technology to Mitigate the Impact of Error

- Technology, especially electronic medical records, has eliminated the possibility of certain human errors while creating entirely new opportunities for other errors.
- Examples of technology in health care include computerized prescriber order entry systems, bar-coding systems, and intravenous medication infusion pumps.
- Technology can contribute to error and harm when it is poorly designed and poorly implemented. Technology should facilitate how you do your work, not dictate it.



In James Reason's Swiss Cheese Model (discussed in PS 102: From Error to Harm), a stack of cheese represents an organization's safety system.

PS 104: Teamwork & Communication in a Culture of Safety*

Lesson 1: Why Are Teamwork and Communication Important?

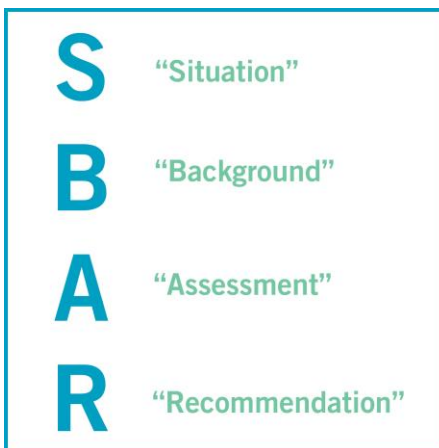
- Effective teamwork and communication are critical to functioning safely in health care. These skills are important to:
 - Help groups navigate competing priorities.
 - Manage dynamic situations effectively.
 - Overcome error-prone human psychology.
- A **team** is a group of people who work together in a coordinated way, to maximize each team member's strengths and achieve a common goal.
 - Teamwork must be intentional and systematic.
 - Communication is a critical part of effective teamwork.
- As a member of a patient care team, you have a responsibility to communicate effectively and value the contributions of other team members.
 - In a culture of safety, each person who works in that organization must understand that his or her actions contribute to safety or the lack of safety.

Lesson 2: How Can You Contribute to a Culture of Safety?

- A **culture of safety** is an atmosphere of mutual trust in which all staff members can talk freely about safety problems and how to solve them, without fear of unfair blame or punishment.
- Some of the characteristics of a safety culture include:
 - **Psychological safety:** People know their concerns will be received openly and treated with respect.
 - **Active leadership:** Leaders actively create an environment where all staff are comfortable expressing their concerns.
 - **Transparency:** Team members have a high degree of confidence that the organization will learn from problems and use them to improve the system.
 - **Fairness:** People know they will not be punished or blamed for system-based errors.
- Concrete actions you can practice today that will have an impact on the safety of your patients and your peers include:
 - Be respectful to colleagues and patients.
 - Model curiosity and active listening.
 - Speak up when you have concerns.
 - Learn how to differentiate between system error and unsafe behaviors.

Lesson 3: Basic Tools and Techniques for Effective Communication

- Effective teams use specific, structured techniques and behaviors that help communicate the appropriate messages in an efficient manner.
- Structured communication techniques and behaviors include:
 - **Critical language:** an agreed-upon set of terms that indicates to all members of a patient care team that there is a problem.
 - **Two challenge rule:** a subordinate can take action if he or she has warned a superior about a safety issue multiple times and continues to be ignored.
 - **Briefings:** short, structured meetings in which the patient care team comes together to talk about a patient, procedure, or situation.
 - **Debriefing:** a concise exchange that occurs at the completion of an event to identify what happened and what could be done better next time.
 - **SBAR (situation, background, assessment, recommendation):** a structured communication tool that standardizes how team members relay critical information.
 - **Repeating back:** a communication tool in which information is explicitly acknowledged and restated to assure mutual understanding.



SBAR is a structured communication tool that standardizes how team members relay critical information.

PS 105: Responding to Adverse Events*

Lesson 1: Responding to an Adverse Event: A Step-by-Step Approach

- Communicating with patients and families after something serious goes wrong is the right thing to do — and the best thing for them and the caregivers involved.
- Four steps to follow immediately after an adverse event include:
 - Step 1: Care for the patient.
 - Step 2: Communicate with the patient.
 - Step 3: Report the event to appropriate parties.
 - Step 4: Document in the medical record.
- The best person to have an initial conversation with a patient after something goes wrong is the physician who is responsible for the patient’s care or someone who is familiar with the patient, his or her clinical condition, and future treatment options.
 - When you initially communicate, keep it simple, express empathy and compassion, and don’t place blame.
- Providers and organizations often assume that communicating with patients after adverse events increases the risk of lawsuits; however, many hospital risk managers are starting to view open communication as a way to reduce malpractice claims.

Lesson 2: When and How to Apologize to Patients

- A sincere apology after an adverse event leads to patient harm can be healing to the patient, the family, and the caregivers involved.
 - Apologizing effectively is a skill to be learned and practiced.
- Four components of an effective apology, according to psychiatrist and researcher Aaron Lazare, include:
 - Acknowledgment
 - Explanation
 - Expression of remorse, shame, and humility
 - Reparation
- Although it depends on the situation, the physician responsible for the patient’s care is typically the best person to apologize.

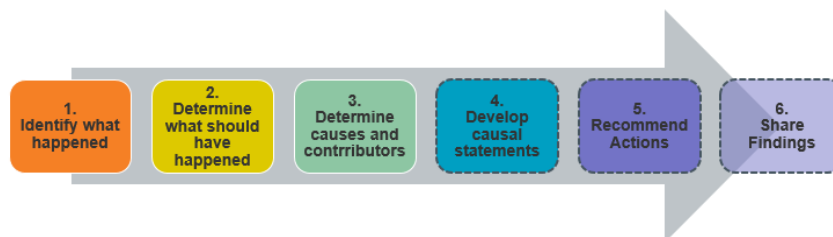
Lesson 3: The Impact of Adverse Events on Caregivers: The Second Victim

- Although many health care providers adjust well to the difficulty of an unexpected or traumatic clinical event, for others, the long-term effects can be devastating.

- After an adverse event, clinicians can feel upset, guilty, self-critical, depressed, or scared.
- Caregivers involved in an adverse event are sometimes called **second victims**.
- Research has found caregivers ask for the following support after an adverse event:
 - Early identification of suffering
 - Provision of ongoing emotional support from peers
 - Gossip control
 - Involvement in improvement efforts
- Assigning disproportionate blame to the individuals involved in an adverse event is a common type of mistake that psychologists call **fundamental attribution error**.
- Second victims should take advantage of resources within their organizations to whatever extent they exist and seek out ways to address their feelings.

Lesson 4: Learning from Errors Through Root Cause Analysis

- A **root cause analysis (RCA)** is a systematic approach to understanding the causes of an adverse event and identifying system flaws that can be corrected to prevent the error from happening again.
- Accidents in health care almost never stem from a single, linear cause. They come from a mix of **contributory factors**.
- There are six steps common to most RCAs:
 - Step 1: Identify what happened.
 - Step 2: Determine what should have happened.
 - Step 3: Determine causes (“Ask why five times”).
 - Step 4: Develop causal statements.
 - Step 5: Generate a list of actions to prevent the recurrence of the event.
 - Step 6: Share the findings.



Six common elements of a root causes analysis, which hospitals will modify to fit their systems

PS 201: Root Cause and Systems Analysis

Lesson 1: Root Cause Analysis Helps Us Learn from Errors

- A **root cause analysis** (RCA) is a systematic approach to understanding the causes of an adverse event and identifying system flaws that can be corrected to prevent the error from happening again.
 - RCAs are *retrospective*: they look back at an error that occurred.
 - An RCA is not appropriate in cases of *negligence* or *willful harm*.
- Laying events out in chronological order is one way to understand the past, but when we start to group events into categories, we begin to see them in a different way.
- Focusing on system causes, rather than blame, is the central feature of RCA.
 - A systems approach to error asks, “What circumstances led a reasonable person to make reasonable decisions that resulted in an undesirable outcome?”
- **Accidents in health care almost never stem from a single, linear cause.** They come from a mix of active failures, work conditions, and deeply embedded latent failures — what some safety experts call **contributory factors** — that all align precisely to slip through every existing defense.

Lesson 2: How a Root Cause Analysis Works

- Typically, an RCA team consists of four to six people from different professions.
 - The team should include individuals at all levels of the organization who are close to and have fundamental knowledge of the issues and processes involved in the incident.
- There are six steps common to most RCAs:
 - **Step 1: Identify what happened. The team must try to describe what happened accurately and completely.**
 - To organize and further clarify information about the event, some teams create a **flowchart**, a simple tool that allows you to draw a picture of what happened in the order it occurred.
 - **Step 2: Determine what should have happened.** The team has to determine what would have happened in ideal conditions.
 - It can be useful to create a flow chart based on this information and compare it to the chart from Step 1.
 - **Step 3: Determine causes (“Ask why five times”).** This is where the team determines the factors that contributed to the event.

- Teams look at direct causes (most apparent) and contributory factors (indirect in nature) during this process.
- One useful tool for identifying factors and grouping them is a **fishbone diagram** (also known as an “Ishikawa” or “cause and effect” diagram), a graphic tool used to explore and display the possible causes of a certain effect.
- **Step 4: Develop causal statements.** A causal statement links the cause (identified in Step 3) to its effects and then back to the main event that prompted the RCA in the first place.
 - By creating causal statements, we explain how the contributory factors — which are basically a set of facts about current conditions — contribute to bad outcomes for patients and staff.
 - A causal statement has three parts: the cause (“This happened ...”), the effect (“... which led to something else happening ...”), and the event (“... which caused this undesirable outcome”).

Lesson 3: How a Root Cause Analysis Can Help Improve Health Care

- **Step 5: Generate a list of recommended actions to prevent the recurrence of the event.** *Recommended actions* are changes that the RCA team thinks will help prevent the error from occurring in the future.
 - Recommendations often fall into one of these categories:
 - i. Standardizing equipment
 - ii. Ensuring redundancy
 - iii. Using forcing functions that prevent users from making mistakes
 - iv. Changing the physical plant
 - v. Updating or improving software
 - vi. Using cognitive aids, such as checklists or mnemonic devices
 - vii. Simplifying a process
 - viii. Educating staff
 - ix. Developing new policies
 - The National Center for Patient Safety defines strong, intermediate, and weak actions:
 - i. A strong action is likely to eliminate or greatly reduce the likelihood of an event.
 - ii. An intermediate action is likely to control the root cause or vulnerability.
 - iii. A weak action by itself is less likely to be effective.
- **Step 6: Write a summary and share it.** This can be an opportunity to engage the key players to help drive the next steps in improvement.

PS 202: Building a Culture of Safety

Lesson 1: Leading Health Systems Through Adverse Events

- When errors inevitably occur in health care, leaders must decide how to react.
- When a wrong-site surgery occurred at Beth Israel Deaconess Medical Center (BIDMC), the hospital publicly apologized and did not blame the surgical team.
- A number of years have passed since the BIDMC incident, but adverse events continue to occur, and organizations struggle with the same types of questions about fairness and transparency.
 - How to avoid unfair blame while preserving individual accountability
 - How to protect themselves and those involved while promoting learning
- A **just culture** recognizes that competent professionals make mistakes and acknowledges that even competent professionals will develop unhealthy norms — shortcuts or “routine rule violations” — but has zero tolerance for reckless behavior.

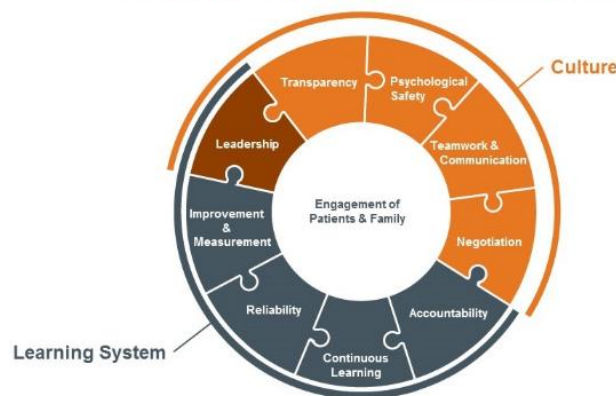
Lesson 2: What Does a Culture of Safety Look Like?

- The culture of an organization influences safety of daily operations and the effectiveness of implementing quality improvement initiatives.
- In a culture of safety, you’ll find the following characteristics:
 - **Psychological safety:** People know their concerns will be openly received and treated with respect.
 - **Active leadership:** Leaders actively create an environment where all staff are comfortable expressing their concerns.
 - **Transparency:** Team members feel comfortable speaking up about safety concerns and have a high degree of confidence that the organization will learn from problems and use them to improve the system.
 - **Fairness:** People are not punished or blamed for system-based errors.
- The **Organizational Fairness and Professionalism Algorithm** asks a set of five practical questions to help assess accountability for error:
 - Did the individual(s) intend to cause harm?
 - Did the individual(s) come to work drunk or impaired?
 - Did the individual(s) knowingly do something unsafe?
 - Could 2–3 peers have made the same mistake in similar circumstances?
 - Is there a history of the individual(s) being involved in similar events?
- The culture of an organization typically must evolve through the following phases: Pathological, Reactionary, Calculative, Proactive, and Generative.

Lesson 3: Tactics for Leading Cultural Change

- Process change and culture change must work together to improve performance.
 - **Culture change** involves a shift in the perspective and values of a group.
 - Appreciating the foundations of patient safety and quality improvement is something that evolves over time, with practice and appropriate mentorship.
 - **Process change** is a change in the way a task is performed — whether it's the way you admit a patient, administer a medication, or anything else.
 - No amount of training, vigilance, hard work, or personal heroism can make up for a poorly designed and supported system.
- W. Edwards Deming and Alfie Kohn said intrinsic motivators were most effective.
 - **Intrinsic motivators** in health care include: improved patient outcomes, increased satisfaction, and decreased mortality.
 - Stories, which help connect people's hearts to their work, are a powerful way to engage patients and staff, family, and clinicians.
 - **Extrinsic motivators** include: promotions or monetary rewards.
- The best ideas for improvement often come from the people within the system.
 - Involving patients and frontline staff in improvement will promote success.

Patient Safety Framework



© Institute for Healthcare Improvement and Allan Frankel

IHI's framework to help organizations understand the components of safe systems of care

PS 203: Partnering to Heal: Teaming Up Against Healthcare-Associated Infections

Partnering to Heal: Teaming Up Against Healthcare-Associated Infections is a computer-based, interactive learning tool for early-career clinicians, health professional students, patients, and visitors on preventing healthcare-associated infections. The training video was created by the U.S. Department of Health & Human Services (HHS), in consultation with subject matter experts from various disciplines and sectors, as well as patient advocates, as part of a wider effort that works closely with public and private sector partners to improve the quality, safety, and affordability of healthcare for all Americans.

PS 204: Preventing Pressure Ulcers

Lesson 1: Why Work on Preventing Pressure Ulcers?

- A pressure ulcer, also known as a bed sore, is a localized injury to the skin and/or underlying tissue, usually over a bony prominence.
- Pressure ulcers usually appear on a patient's tailbone, back, heels, elbows, and areas subjected to device-related pressure.
- Pressure ulcers are separated into four stages or categories:
 - Stage I: Skin may be painful, but there are no open wounds or tears.
 - Stage II: The skin actually breaks away and forms an ulcer.
 - Stage III: The sore gets worse, extending into tissue below the skin.
 - Stage IV: The sore reaches into muscle and bone, and causes serious, extensive damage.
- Elderly, obese, and/or malnourished patients are more likely to develop pressure ulcers. Other risk factors include:
 - Incontinence
 - Limited mobility (the patient can't reposition himself)
 - Poor nutritional/hydration status (the patient isn't eating enough or drinking enough water)
 - Skin in continuous contact with a hard surface
- More than 2.5 million acute care patients in the United States suffer from a pressure ulcer each year.

Lesson 2: Assessing Patients

- A strong pressure ulcer assessment process involves both initial assessment and reassessment. There are two parts to an initial assessment:
 - A risk assessment: A standardized approach to evaluating a patient's risk for developing a pressure ulcer.
 - [The Braden Scale](#) is the most popular risk assessment tool.
 - A skin assessment: A thorough examination of the patient's skin to see if he or she already has a pressure ulcer or an area that looks like it could develop into one.
 - Consider visual cues (such as a sticker, a sign, or a bracelet) to help identify at-risk patients.

Lesson 3: Responding to Patients

- For at-risk patients, it is important to:
 - Inspect skin daily.
 - This should involve a thorough examination of all problem areas.
 - Manage moisture.
 - Wet skin can lead to rashes and is more likely to break down, resulting in pressure ulcers.
 - Optimize nutrition and hydration.
 - Malnourished patients are twice as likely to develop skin breakdowns.
 - Minimize pressure.
 - Repositioning and using pressure-redistribution surfaces are two useful strategies.

Lesson 4: How to Implement a Pressure Ulcer Prevention Program

- To be successful at creating or modifying a pressure ulcer prevention program:
 - Form an interprofessional skin care team.
 - Use the Model for Improvement:
 - Set a clear, specific aim.
 - Develop some change ideas.
 - Select a pilot unit.
 - Run tests using the PDSA cycle.
 - Educate staff.
 - Involve patients in your prevention work.

Leadership

L 101: Introduction to Health Care Leadership*

Lesson 1: What Makes a Leader?

- You can lead without a position of power — leadership is about taking responsibility and taking action.
- When leaders see a problem, they tackle the issue through the following steps:
 - Take initiative.
 - Investigate.
 - Make connections.
 - Identify solutions.
 - Take action.
- Leaders collect data to solve shared problems — not to advance their own agenda.
 - Leaders promote an agenda that makes sense for the people around them.

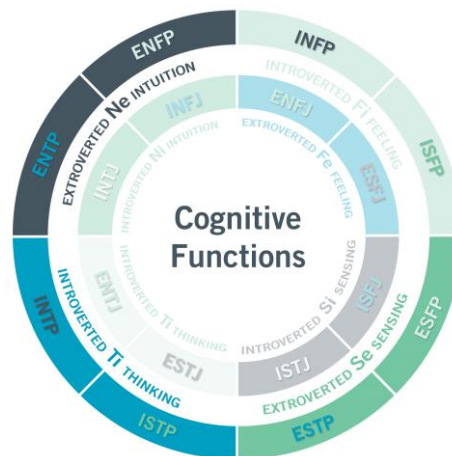
Lesson 2: Practical Skills for Leading Teams

- To make a change in a system, you need to function as part of a diverse team.
- As a team leader, you need to:
 - Navigate people’s differences.
 - Make the most of what each person can offer.
- Many assessment tools can help leaders better understand individual team members and team dynamics. Here are some tools that may be useful in different situations:
 - The HRET Working Styles Questionnaire
 - StrengthsFinder 2.0
 - Myers-Briggs Type Indicator
 - Strength Deployment Inventory
 - DiSC Profile
 - Riso-Hudson Enneagram Type Indicator (RHETI)
- Three ways to persuade people to take action with you, which will appeal to different types of people, include:
 - Use logic.
 - Get endorsed by people with power and authority.
 - Appeal to emotions.
- Good leaders know their followers include a spectrum of personalities and viewpoints, and they find a way to achieve a “**workable level of unity.**”
- Some helpful leadership tactics include:

- Assign clear roles.
- Set ground rules.
- Treat teammates with respect.
- Listen to others with an open mind.
- If you are the type of person who regularly assumes a leadership stance, it is likely you will one day find yourself in a management role if you are not already.
 - Like leadership, management is a skill that takes learning and practice.

Lesson 3: Strategies to Sustain Your Health Care Leadership Journey

- Some general advice for launching a career in health care leadership is:
 - Seek out new knowledge and experience.
 - Get to know the people around you at all levels, and become familiar with their processes and challenges.
 - Learn and practice quality improvement skills — and demonstrate success.
- Sociologist Michael Farrell described how some of the most creative work of artists, scientists, and professionals occurred within a circle of like-minded friends.
- Several resources to help expand your professional network include:
 - Journals and publications in your field
 - Online social networks (e.g., Twitter and Facebook)
 - Improvement organizations (e.g., the World Health Organization and IHI)
 - Professional conferences



The Myers–Briggs Type Indicator is a questionnaire designed to indicate psychological preferences.

Person- and Family-Centered Care

PFC 101: Introduction to Person- and Family-Centered Care*

Lesson 1: Patient-Provider Partnerships for Health

- The patient-provider relationship is evolving to be more patient-centered.
 - Providers are trying to collaborate with patients to provide health care that improves health and helps patients reach their own goals.
- Models of the patient-provider relationship include the paternalistic model, the informative model, the interpretive model, and the deliberative model.
 - The traditional model of the patient-provider relationship is paternalism, where providers make decisions on behalf of patients, which they believe to be in their patients' best interests.
 - The paternalistic model does not acknowledge the reality that patients are more in control of their health than providers in the vast majority of situations.
 - Patient-provider partnerships is one way to describe the interpretive or deliberative model, in which patients and providers work together to devise a plan of care that works best for the patient.
 - Another term to describe this relationship is **co-production**, a term that acknowledges the active role all patients play in their own health.

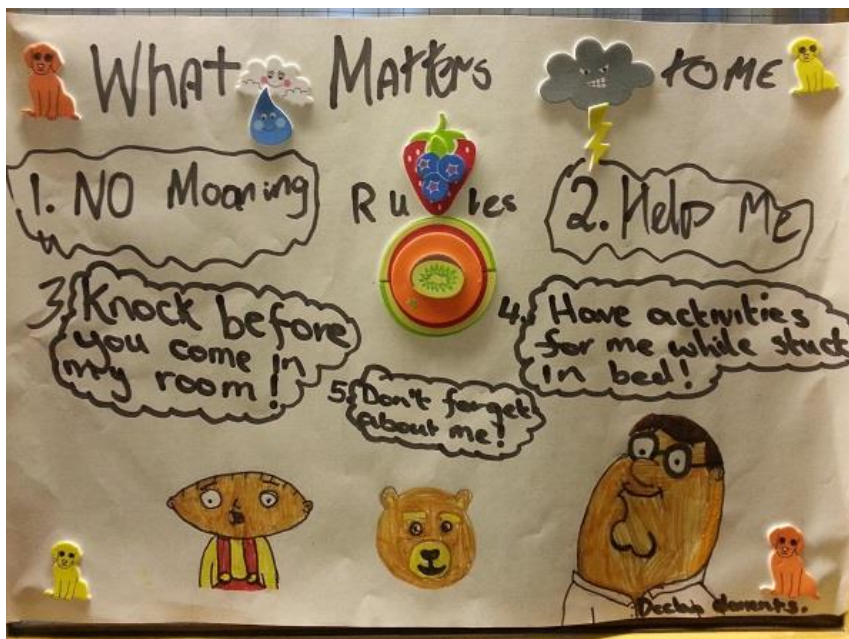
Lesson 2: Understanding Patients as People

- In order to better collaborate with patients, providers must understand their patients' lives — including patients' goals, struggles, and values.
 - It's important to understand patients' choices in the context of their life chances. The **social determinants of health** are factors such as education, income, and geography that influence the health choices that people have available to them.
- Many patients have religious beliefs that affect the way they see their health.
- The term “non-compliance” originates in the paternalistic model of care, where the provider's role is to decide on a treatment and the patient's role is to follow it.
- Racism still plays a role in health care for minority patients in the United States.
 - Some patients may mistrust health care institutions because of betrayals of trust, such as the Tuskegee experiment.

- Health care providers have been found to have implicit biases that lead to lower quality care for minority patients than for white patients.
- When people enter the health care setting, they become “patients,” and they lose some of the control over what happens to them.
- Providers can build relationships with their patients as individuals, rather than based on assumptions about social characteristics.

Lesson 3: Skills for Patient-Provider Partnerships

- Providers can use the following skills to help develop strong partnerships with their patients:
 - Showing empathy
 - Setting a collaborative tone with listening skills, body language, and using plain language
 - Asking patients, “What matters to you?” in addition to, “What’s the matter?”
 - Using **shared decision making** to help patients choose treatments that work best for them
 - Communicating information with **Ask-Tell-Ask** and **Teach Back**
 - Coaching patients to achieve their health goals with **brief action planning**
- Health care and the clinical relationship alone are not always enough to achieve good health outcomes.



PFC 102: Dignity and Respect

Lesson 1: An Introduction to Person- and Family-Centered Care

- The Children’s Hospital of Philadelphia defines person- and family-centered care as a series of values or principles:
 - Dignity and Respect
 - Information Sharing
 - Participation
 - Collaboration
 - Access
 - Care Coordination
- Providing person- and family-centered care is also critical to creating an environment that fosters safety and quality of care.

Lesson 2: First Impressions

- When she was a child, Lauren Sampson created “Lauren’s List,” four simple rules for health care providers when they make their first impressions: Please knock on my door. Please introduce yourself. Please explain why you are here. Please tell me if something might hurt.
- Here are some basic behaviors that demonstrate dignity and respect:
 - Acknowledge the patient and family; make eye contact, ideally at the level of the patient and family.
 - Introduce yourself. Make sure your introduction includes your title and a description of your role. Avoid using medical jargon or titles that do not have value or meaning for patients and families.
 - Ask family members how they would like to be addressed, and ask the patient or family if there are designated family members with whom the staff should communicate about the plan of care. Don’t make assumptions about the role of friends or family members and their access to information.
 - If possible, partner with the patient and family to decide the best time for a meeting, procedure, or discussion.
 - Be open, nonjudgmental, and accepting.

Lesson 3: Privacy and Confidentiality

- Here are some essential behaviors providers need to practice to respect their patients’ privacy and confidentiality:

- Use a hushed voice when speaking with patients and families or when sharing information in public areas.
- When possible, find a private area for talking with patients and families.
- Never discuss patient information in public areas.
- Ask patients for permission to discuss their care with family members present. Some patients may prefer to speak with you one-on-one.
- Make sure systems and staff keep patient information confidential. Angle computer screens away from public areas and store patient printouts, lab results, insurance information, and other private paperwork out of view.

Lesson 4: Culture and Belief Systems

- Here are some basic things you can do to show respect for the culture and belief systems of patients and families:
 - Avoid assumptions about a patient's or family's culture or beliefs.
 - Learn by asking patients and families about their culture and preferences.
 - Ask patients and families how you can help make them more comfortable.
 - Keep in mind that some patients and families may be reserved about expressing their needs, and that this may be cultural as well.
 - Refrain from placing judgment.
- Here are some basic things you can do when you are caring for a patient and family whose primary language is not the language spoken in your setting:
 - Ask them which language they prefer and offer the assistance of an interpreter, if available.
 - Introduce the interpreter to the patient and family members.
 - Look at the patient or family — not at the interpreter — when you speak so you can gauge their reaction to what you're saying.
 - Use short sentences and avoid jargon.

Lesson 5: Creating and Restful Healing Environment

- Here are some basic things you can do to create a restful and healing environment:
 - Think about how much noise you are making, especially at night.
 - When possible, bundle services that need to happen during the night, such as taking vital signs and administering pain medication, at the same time.
 - At night, use lighting judiciously.
 - Take everything you need into a room when you enter to limit the number of times you open the door.

PFC 201: A Guide to Shadowing: Seeing Care through the Eyes of Patients and Families

- **“Patient and family shadowing”** is the direct, real-time observation of patients and families as they move through each step of a **care experience**. Shadowing patients and families allows you to observe all the **caregivers** and **touchpoints** in the care process as they happen.
 - A **“care experience”** can be any aspect of the patient’s and family’s health care journey, in any inpatient or outpatient setting.
 - A **“touchpoint”** is any place patients and families go during their care experience, such as the waiting room, exam room, lab, or any other place to which they travel.
 - A **“caregiver”** is any person whose work touches a patient’s or family’s experience, including doctors, nurses, therapists, pharmacists, technicians, aides, dietitians, appointment schedulers, parking attendants, janitors, hospital leaders, supply chain employees, medical records clerks, financial representatives, etc.
- Shadowing can help you to:
 - Empathize with patients and families.
 - Reveal inefficiencies and needed changes.
 - Create a sense of urgency for improvement among you and your colleagues.
- Shadowing includes **five steps**:
 - **Establish your purpose.** What care experience would you like to examine? What do you hope to learn? Who will do the shadowing?
 - **Set up.** Ensure all parties on both sides of the shadowing experience — including patients, families, providers, and staff — are well-informed and on board.
 - **Follow, observe, and record.** As you move through the care experience, document everything that occurs at every step of the process, including everyone with whom the patient and family come into contact. (Do not use names or include personal health information; you are observing the care experience only and recording only information related to the experience).
 - **Create a care experience flow map and observational summary.** Organizing your findings in a thoughtful way helps you to identify opportunities for improvement and prepares you for sharing with others.
 - **Report your findings.** An important part of shadowing is to present your notes and observations, in both a verbal and written report, to people in the organization who can help make improvements.

PFC 202: Having the Conversation: Basic Skills for Conversations about End-of-Life Care

Lesson 1: Conversation: An Essential Element of Good End-of-Life Care

- In some ways, developing skills for effective conversations with patients and families — especially conversations about end-of-life care — is harder than developing technical skills like placing IVs or taking blood pressures.
- In the last century, pretty much everything has changed about how and where people are dying in the US. We're living much longer and dying for different reasons.
- Although dying has changed, the way we care for patients at the end of life has not kept pace. Today, there is increasing evidence that too many people are dying in ways they would not choose.
- There's a big difference between a "good" death and a "hard" death. The goals to achieve a "good" death are simple:
 1. First, people need to "have the conversation" about end-of-life care wishes with their families — to let their loved ones know what matters most to them. They need to have this conversation before a medical crisis occurs: at the kitchen table — and not in the intensive care unit.
 2. Second, clinicians need to strive to understand what matters most to patients, and then provide care that aligns with their wishes as much as possible.

Lesson 2: The Conversation Begins with You

- The Conversation Project, which began in 2010, is a national campaign dedicated to helping people talk about their wishes for end-of-life care — and to transforming our culture by bringing discussions about dying out in the open. The goal is to make it easier to initiate conversations about dying, and to encourage people to talk now, and as often as necessary, so that their wishes are known when the time comes.
- [The Conversation Starter Kit](#) is a tool on The Conversation Project website that helps people get ready to "have the conversation."

Lesson 3: Understanding and Respecting Your Patients' Wishes

- Just as there is a checklist of steps you use to place a central venous catheter with sterile technique, there are essential pieces of a conversation or family meeting focused on the end of life. Here's a 10-step guide you can use:
 1. Do your homework before the meeting. Review the patient's medical issues, recent events, test results, and consultants' recommendations.
 2. Have a pre-meeting with other members of the care team.

3. Create the right setting. Make sure everyone can sit, and that there are tissues if necessary. Don't have these conversations in a busy hallway!
4. Determine what the patient and family understand about the current medical situation.
5. Give a brief, understandable medical summary.
6. Use silence and pay attention to the emotions of the moment.
7. Explore values, goals, and treatment preferences.
8. Recommend medical care that contributes to the goals.
9. Translate the goals into a care plan.
10. Summarize and follow up.

Lesson 4: Changing the Culture: Better Ways to Care for Patients Nearing the End of Life

- Many health care organizations do not have processes in place to prompt discussions with patients and families about end-of-life wishes, or follow those wishes.
- Sometimes the language we use to describe treatment options to patients and their families is very technical. Loaded, “TV” phrases (“Give me the whole enchilada,” “Pull the plug”) can also give the patient the wrong idea about end-of-life care.
- Cultural background can play a role in decision making before death:
 - The level of interest in details
 - The desire to return to or be buried in one's home country
 - The need for pastoral counseling
 - The reluctance to sign “DNR” orders
 - The definition of death
- In partnership with IHI, The Conversation Project is working to help hospitals become [“Conversation Ready.”](#) These organizations are testing new tools and strategies related to end-of-life care.
- Here are steps you can take to start changing the culture related to end-of-life care:
 - Have “the conversation” with your own family.
 - Ask to be present at a death.
 - Continue to care for patients even if a cure is no longer possible.
 - Share stories of good deaths and stories of hard deaths with people you trust.
 - Share stories of what it's like to care for patients at the end of life — what you did well, what you wished you had done better, what you're unsure about, what you need help with.
 - Develop your skills for listening to what matters to patients.
 - Explain care options to patients in language they can understand.
 - Provide care consistent with patients' wishes, one patient at a time.
 - Learn more at TheConversationProject.org.

Triple Aim for Populations

TA 101: Introduction to the Triple Aim for Populations*

Lesson 1: Improving Population Health

- **Health** has been defined as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity.”
- **Population health** has been defined as “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.”
 - When referring to patient populations, some experts prefer to use the term “**population health management**” or “**population medicine**.”
 - Focusing on **equity** is essential to improving population health.
- According to one of several population health models, the **County Health Rankings model**, four main factors determine population health:
 - Social and economic factors — 40 percent
 - Health behaviors — 30 percent
 - Clinical care — 20 percent
 - Environmental factors — 10 percent
- The **Triple Aim** is one overall aim for health and health care improvement that consists of three dimensions:
 - Improving the health of populations
 - Improving the individual experience of care
 - Reducing the per capita cost of care

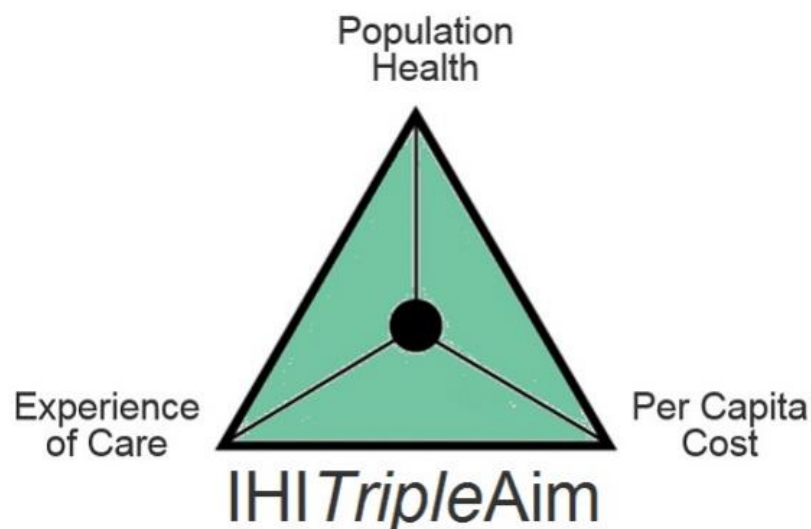
Lesson 2: Providing Better Care

- Even though health care is not the largest driver of health outcomes, caregivers have a powerful lever to make an impact on population health by improving the quality of care they provide.
 - The **Institute of Medicine’s six dimensions of care** should guide quality improvement efforts.
- Optimizing care for one patient or one population requires multidisciplinary professionals to work together to administer coordinated care and effective preventive medicine.
 - Some health concerns, such as the availability of healthy food, may require partnerships and interventions outside of the clinical setting.
 - Improvement science can be a way forward, one small change at a time.
- Asking patients “**What matters to you?**” is an action providers can take today to facilitate shared decision-making to improve care.

- Learning more about the perspectives and experiences of individuals can help health systems improve the health of larger populations.

Lesson 3: Lowering Costs of Care

- A significant portion of many countries' economies consists of health care spending, and often that spending is wasteful because it does not improve health.
- Spending less money on unnecessary health care would free up resources for other public services.
- You cannot achieve the Triple Aim by lowering costs while reducing quality; you must therefore increase the value of care.
 - **Value** is an equation of quality divided by cost; you can improve value by either increasing quality or decreasing costs.
 - **Resource stewardship** refers to appropriate allocation of resources, which results in high-value care.
- **Population management** refers to the focus on paying for health care services for defined populations (versus individual patients).
 - Improving clinical care at the population level requires health professionals to work across disciplines and across communities.
 - To reduce costs and improve quality on a large scale, health systems need to improve care for populations with the worst health outcomes.



The Triple Aim is one overall aim for health and health care improvement with three dimensions.

TA 102: Improving Health Equity

Lesson 1: Understanding Health Disparities

- Life expectancy and health care quality vary significantly throughout the US.
 - Within some US cities, life expectancy by neighborhood varies up to 25 years.
- Globally, huge disparities exist, as well.
 - Life expectancy is strongly correlated with a country's income — the higher the income per person of the country, the longer the average life expectancy of its citizens.
- Disparities in health and health care are issues of quality and justice.
 - The Institute of Medicine says that equitable health care — health care that does not vary based on race, socioeconomic status, or sex, for example — is a dimension of health care quality.
 - Equitable health and health care are matters of justice because they indicate that social conditions beyond the control of an individual — where you are born, for example — do not dramatically increase your risk of death or needless injury.
 - *Health disparities* are unjust, unwanted, and avoidable differences in health..
 - *Health differences* result from patient preferences or biology, and are clinically appropriate.
- Socioeconomic factors — income, job type, and educational level — contribute more to health disparities than medical care.
- In the US, researchers have also found that race has an effect on health. Marginalized racial and ethnic groups, such as African Americans, American Indians, and Latinos have worse health than whites, even when their socioeconomic status is the same.
- Variation in health care quality also contributes to health disparities.

Lesson 2: Initiatives to Improve Health Equity

- Community health centers and mobile clinics improve health equity by bringing health care to people with the worst health outcomes.
- HealthPartners, a health system in Minneapolis, MN, reduced racial disparities in breast and colorectal cancer screening rates by developing interventions targeting groups with the worst screening rates.
- Because social circumstances largely determine a person's health, efforts to improve health equity must also address social needs.

- An organization called Health Leads addresses social needs by allowing clinicians to screen for non-medical needs such as job training, housing, and essentials like heat and electricity.
- The Early Years Collaborative is a nationwide quality improvement initiative in Scotland that is working to reduce disparities in health within the country and the health disparity between Scotland and the rest of Europe.
 - The collaborative is working to improve medical and social services for young children.
- In Malawi, a partnership called the MaiKhanda Trust is working to reduce the deaths of women in childbirth and of newborns.
 - The MaiKhanda Trust works with women's groups to increase access to health care and with health care providers to improve quality.
- The Global Fund to Fight AIDS, Tuberculosis, and Malaria addresses the gap between high-income and low-income countries in resources to improve health.
 - The Global Fund's support for health programs in low-income countries has contributed to a 40 percent decline in deaths worldwide from these diseases since 2000.

Lesson 3: What You Can Do

- Students and health professionals can work toward health equity by:
 - Learning about implicit bias and using strategies improve their interactions with people from backgrounds different than their own
 - Working with others to embrace diverse perspectives
 - Learning from — and advocating for — diversity in their school or workplace
 - Volunteering with organizations providing care to underserved people in their community
 - Studying quality improvement as a methodology to help reduce disparities
 - Learning from frameworks such as the Roadmap to Reduce Disparities to guide future improvement projects

TA 103: Quality, Cost, and Value in Health Care

- When you think about the **true cost** of a medical test or procedure, you need to include several things, such as: costs to the system, costs to patients, downstream costs, and opportunity costs.
- Providing **high-value care** means providing the highest-quality care at the lowest cost. You can improve value by either increasing quality or decreasing costs. To put that into a simple equation: $\text{Value} = \text{Quality} / \text{Cost}$.
 - **Quality** includes clinical outcomes and the patient's experience.
 - **Costs** include monetary costs and harm to both patients and the system.
 - This equation is a reminder that spending more money doesn't necessarily mean better health care.
- **Resource stewardship** is the appropriate allocation of resources.
 - The definition of "appropriate" varies by clinical situation, but generally it refers to an allocation of resources that results in high-value, effective (i.e., evidence-based) care.
 - Inappropriate spending diverts resources from other patients, other health care areas (prevention, promotion), and other industries (education, transportation).
 - Resource stewardship is not about rationing care. The goal is *not* to reduce health care opportunities for patients who need them, but rather to eliminate harm and waste.
- When considering the reasons to pursue high-value care, you will notice alignment with some important ethical principles. For example:
 - **Beneficence**: Promote the well-being of others.
 - **Non-maleficence**: Do no harm to others.
 - **Justice**: Distribute resources fairly and equitably.
 - **Autonomy**: Respect the individual's rights and opinions.
- **Beneficence** and **non-maleficence** support care that improves patient outcomes while minimizing harms and costs. Following the **justice** principle means allocating time, money, and energy into high-value interventions, so that resources are being used appropriately and not wasted.
- Respecting patient autonomy does not mean you should say "yes" to every request. Instead, you should employ good communication skills and counsel patients about the evidence and rationale for using or not using a given intervention.
- **Barriers to stewardship** for health care providers include established habit, time constraints, the ease of access to tests and procedures, and discomfort with giving the impression of "doing nothing."

- **Incentives for overuse** include new technologies, patient expectations, requests from referrers, financial incentives, defensive medicine, and curiosity.
- **Students face unique challenges as well**, including lack of training, faculty expectations, the desire to develop experience with ordering, and evaluation methods that celebrate thoroughness instead of restraint.
- Some steps you can take to learn more about the relationship between quality, cost, and value:
 - Be aware of the incentives for overuse and barriers to stewardship, and how they might impact your behavior.
 - Get informed of the newest guidelines in your field.
 - Get involved in organizations such as Costs of Care and movements such as the Choosing Wisely campaigns.
 - Work to change the culture in your local setting by sharing your knowledge, encouraging role models to be open to feedback, and changing the discussion around cost and value.
 - Develop effective communication skills by explaining the true indications of tests and procedures to patients and providing meaningful feedback to peers and colleagues.

Graduate Medical Education

GME 201: Why Engage Trainees in Quality and Safety?

- There are many reasons why academic medical centers should involve residents and fellows in quality and safety efforts:
 - Trainees are at the front line of care and can see problems no one else sees.
 - Trainees have the vantage point of working with patients every day.
 - The first principle of quality improvement and Lean is the people doing the work are deeply engaged in improving the way the work is done.
 - Trainees can provide “fresh eyes.”
 - Organizations may expect trainees to fix systems, which means they need knowledge to drive improvement.
 - Residents and fellows are the future of health care.
 - Starting early in teaching patient safety and quality improvement allows trainees to learn these foundational concepts over time.
- Imperfections in system design can put front-line workers at risk for:
 - Duplicated efforts
 - Workarounds
 - Poor communication with other members of the care team
 - Medical errors that result in near misses or actual harm to patients
- Medicare and other payers have started to penalize and reward hospitals and practices based on the quality of care delivered.
 - Pay-for-performance, alternative quality contracts, and penalties for “never events” are all strategies to incentivize better and safer care for patients.
- Physicians must meet a new requirement as part of the American Board of Medical Specialties’ Maintenance of Certification (MOC) program: Physicians must regularly report their active participation in quality improvement, which can include:
 - Use of a registry with a learning collaborative
 - Completion of a self-administered module
 - Participation in a group quality measurement and improvement activity
- Barriers to engaging trainees in improvement may include:
 - Residents’ busy schedules
 - Not enough mentors who feel comfortable providing guidance
 - Perception that quality is not central to a successful career in medicine
 - Belief that quality is not relevant to day-to-day patient care responsibilities
 - Trainees’ transient presence on certain units or rotations
 - Lack of time to teach basic foundational principles of quality and safety
 - Lack of access to performance data
 - Lack of support within academic medical centers from residency leadership

GME 202: A Guide to the Clinical Learning Environment Review (CLER) Program

- The Accreditation Council of Graduate Medical Education (ACGME) has redesigned its accreditation process with the goal of improving the resident learning environment.
- ACGME's CLER has one overarching purpose: To help organizations generate a strong learning environment for residents to improve their appreciation of — and ability to engage in — quality and safety work.
- CLER involves three main components:
 - CLER site visits
 - The CLER Evaluation Committee
 - Support for faculty and leadership development
- CLER has six focus areas:
 - Patient safety
 - Health care quality (including health care disparities)
 - Transitions in care
 - Supervision
 - Duty hours, fatigue management, and mitigation
 - Professionalism
- Faculty have a responsibility to:
 - Educate residents about the components of quality improvement.
 - Supervise residents as they incorporate quality improvement and patient safety principles into everyday clinical practice.
 - Mentor residents both in training and throughout their careers.
 - Conduct academic research to advance the fields of quality and safety.
- In a CLER site visit, the site visit team, which includes two to four members, meets with residents and fellows, GME faculty, and other key hospital leaders, and conducts walking tours of the institution.
 - The emphasis is on the organizational infrastructure, administrative processes, and clinical processes that facilitate trainee learning in each of the CLER six focus areas.
- CLER site visits occur on an 18-month cycle. ACGME intends a first-round visit to:
 - Be formative and aimed at learning.
 - Establish a baseline of current quality and safety efforts in the institution.
 - Provide feedback about the quality and safety learning environment.
 - Allow ACGME to collect and disseminate best practices.

GME 203: The Faculty Role: Understanding & Modeling Fundamentals of Quality & Safety

- According to the Association of American Medical Colleges (AAMC), in the changing environment of graduate medical education, clinical faculty members should be able to facilitate trainee engagement in quality improvement and patient safety (QI/PS) work tied to everyday clinical care.
 - This is an emerging field, and many faculty members will be learning together, perhaps in tandem with students.
- In a 2012 article in the *Joint Commission Journal on Quality and Safety*, four expert QI/PS scholars and educators defined the following four general principles for designing educational experiences in health care improvement:
 - The learning experience should involve the role modeling of quality improvement in educational processes.
 - The learning experience should be a combination of didactic and project-based work.
 - The learning experience should link with health system improvement efforts.
 - The learning experience should involve the assessment of educational outcomes.
- The faculty member has a crucial role to play in creating a safe, fair environment that values systems understanding and interdisciplinary teamwork.
 - When you're role modeling QI/PS, every episode of suboptimal care is a teaching opportunity.
- To be a QI/PS role model, you do not have to be the clinical leader of a unit or a departmental quality officer. Each faculty member who interacts with trainees can actively model a quality and safety worldview:
 - Encourage communication with other team members to understand the system failure.
 - Push trainees to suggest potential solutions to problems they identify.
 - When a trainee is involved in an incident or a gap in a patient's care, ask "Why?"
 - Model transparency and voluntary reporting of adverse events and near misses.

GME 204: The Role of Didactic Learning in Quality Improvement

- Forward-thinking institutions have set the standard for quality improvement and patients safety (QI/PS) training by developing curricula aimed at familiarizing their entire clinical staff – trainees and everyone else – with the basic principles of QI/PS, while also allowing a subset of individuals to “specialize” in these areas.
 - Mayo Clinic in Rochester, Minnesota, USA, has a formalized, tiered certification system known as the Quality Academy that familiarizes all staff with QI/PS methods.
 - Modules consist of both in-person and online training, and staff can earn four levels of certification in quality and safety.
- There are many examples of institutions that have developed resident-focused curricula that operate within the confines of busy training programs.
 - More than 500 organizations around the world are using these Open School courses as part of QI/PS training programs.
 - The Open School courses offer an example of how existing content can be woven together to build a curriculum tailored for a specific audience and setting.
- A general “to-do” list for establishing a QI/PS curriculum is available here: http://app.ihl.org/LMS/Content/a38a8fad-9787-47d2-93fa-565b1289d78d/Upload/GME4_QICurriculumChecklist.doc.
- Successful QI/PS curricula should:
 - Teach teamwork skills.
 - Provide learners with opportunities to work with colleagues from other disciplines.
 - Provide intensive coaching from expert faculty members.
 - Provide residents with access to their own performance data.
 - Facilitate experiential learning with incremental change from trial and error.
 - Provide trainees with access to pre-developed process improvement tools, to enable them to focus on implementing interventions rather than developing their own tools.

GME 205: A Roadmap for Facilitating Experiential Learning in Quality Improvement

- Three models for experiential learning related to quality improvement and patient safety (QI/PS) at the point of care include:
 - **The team-based model** focuses on behavior change and limited process change to improve a workflow that is within the control of the interdisciplinary medical team.
 - If you are a front-line clinician-educator who is building your knowledge of quality and safety, you are well positioned to lead a team-based effort with trainees.
 - **The unit-based model** focuses on a workflow in a particular unit or clinic with aims that are tied to institutional priorities.
 - If you are the quality leader for a unit who has participated in prior QI efforts, you will likely facilitate the unit-based model of experiential learning about QI/PS for trainees.
 - **The systems-based model** focuses on a workflow that crosses multiple units/clinics with an aim to improve systems at the departmental or institutional level.
 - If you are a quality leader for a department with the ability to effect broader change across a department or a system, then you will likely apply the systems-based model to your work with trainees.
- Among the key variables that distinguish the three models for experiential learning are:
 - Who initiates and sustains the efforts
 - How interprofessional the improvement efforts are
 - Whether the aim is to change behavior/workflow, unit-specific functioning, or institution-wide systems and processes.
- In order to decide which model for experiential learning to use, ask yourself:
 - Who (what type of faculty member) can facilitate this model of work?
 - What do I need to get started to do this work?
 - Where (in what clinical setting) does this model work best?
- An overview of the three-model framework for experiential learning is available here: http://app.ihl.org/LMS/Content/9af3cd40-3569-49c8-a617-5f87be06b116/Upload/GME5_ExperientialLearningModels.pdf.

GME 206: Aligning Graduate Medical Education with Organizational Quality & Safety Goals

- There are many examples of graduate medical education (GME) programs that are pursuing quality improvement and patient safety (QI/PS) programs for trainees that are not well-aligned with the academic medical centers' wider QI/PS pursuits.
 - This lack of coordination poses significant threats to relevance and long-term sustainability of GME QI/PS programming.
- Change ideas from institutions around the country that are making strides in creating strong alignment between the GME programs and the priorities of the larger organizations include:
 - Institution-wide efforts to increase resident reporting of errors and near misses
 - Resident participation in institutional QI/PS activities and committees
 - Personal performance measures based on a resident's own panel of patients
 - Innovative morbidity and mortality (M&M) conferences
- The Joint Commission mandates that accredited training institutions have voluntary reporting systems for adverse events and near misses.
 - However, despite the widespread availability of voluntary reporting systems, the data show they're highly underused, particularly by residents.
 - In one survey of physicians in teaching hospitals, only 55 percent of participants knew how to report errors, and only 40 percent knew which errors to report.
 - Another study at a large academic medical center found that less than 1 percent of reports came from the 500 residents who rotated through the institution each year.
- Rather than placing blame, M&Ms have emerged that favor root cause analysis — an approach that identifies systemic flaws that organizations can correct to prevent errors.
 - These new models foster real-time experiential learning in a supportive environment, sometimes with the help of data dashboards, key performance indicators, and standardized instruments such as the IHI Global Trigger Tool.

GME 207: Faculty Advisor Guide to the IHI Open School Quality Improvement Practicum

- To be successful in early improvement efforts, students and residents need faculty help.
- This course is the faculty advisor's guide to using the IHI Open School Quality Improvement Practicum to provide students and residents with experiential training in quality improvement and patient safety (QI/PS) within their local settings.
 - Faculty will assist learners in completing QI projects, which they will conduct as part of a unique IHI Open School course, *QI 301: Guide to the IHI Open School Quality Improvement Practicum*.
- As they carry out their clinical improvement project, students will submit the following documents to IHI to receive credit for completing the IHI Open School Practicum:
 - A teacher-learner agreement (Lesson 1)
 - A project charter (Lesson 2)
 - A cause and effect diagram (Lesson 3)
 - At least two PDSA forms and a run chart (Lesson 5)
 - A project summary report (Lesson 6)
- An IHI faculty member will provide student learners with feedback on their QI documents within two to three weeks of receiving them.
- Learn more at:
<http://www.ihf.org/education/IHIOpenSchool/Courses/Pages/Practicum.aspx>