

Medical Error Prevention Strategies



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Learning Objectives

Upon completion of this course, learners will be able to:

- Describe how medical errors occur in healthcare settings
- Identify common medical error prevention strategies
- Discuss vulnerable patient population to adverse medical events associated with medical errors

Introduction

Every healthcare encounter should be safe and free from harm. This is what our customers expect.

Americans may report positive experiences with healthcare encounters despite having personally experienced a “medical error.”

Errors occur in hospitals, clinics, surgery centers, dialysis centers, medical offices, dental offices, nursing homes, pharmacies, and even in patients’ homes—anywhere patients receive care.

Introduction

Medical errors are a serious public health issue

Every patient involved in the healthcare system represents a potential recipient of medical errors leading to adverse outcomes

Injuries and death can occur in addition to psychological trauma on patients and family members

Errors can occur at any point while receiving care in the healthcare system

How Harm Comes to Patients

Medical errors occur when patients:

- receive a wrong medication or dose of medication
- experience mistakes in surgery
- receive treatments meant for another patient
- experience a fall in the hospital
- develop a pressure injury
- are subjected to a misdiagnosis, misinterpreted medical order, or experience equipment failure

Error Prevention Strategies

- Analyzing why medical errors occur in organizations has been focused on human factors in the past
 - concentrating on individual responsibility for making an error
 - solutions have involved training or retraining, additional supervision, or even disciplinary action
- The alternative to this individual-centered approach is a system-centered approach, which:
 - assumes that humans are fallible and that systems must be designed so that humans are prevented from making errors
 - creates systems designed by system engineers
 - examples include defibrillators not discharging electric shock without patient contact; inability to insert a needle into a needleless intravenous tubing, etc.

Importance of Transparency

Healthcare organizations need to publicly acknowledge mistakes and take ownership to mitigate future errors by:

- acknowledging that errors happen
- learning from errors
- working to prevent errors in the future

These important goals represent a major change in the culture of healthcare

- a shift from blame and punishment to analysis of the root causes of errors (accomplished through root cause analysis (RCA))
- the creation of strategies to reduce the risk of errors proactively through failure mode and effects analysis (FMEA)

Creating Cultures of Safety

- Healthcare organizations must create a culture of safety that views medical errors as opportunities to improve the system.
- Every person on the healthcare team has a role in making healthcare safer for patients and workers.

Definitions

medical error, adverse events, near misses, sentinel events, never events, active error, & latent error

Medical Error Defined

- A medical error has been defined as:
 - the failure of a planned action to be completed as intended, or
 - the use of a wrong plan or action to achieve an aim
- Errors can include problems in:
 - practice
 - products
 - procedures
 - systems

Adverse Events Subcategories Defined

- Errors are further described as adverse events
- Important subcategories of adverse events include:
 - **Preventable** adverse events can be avoided by any means currently available unless the means is not considered standard care.
 - **Unpreventable** adverse events result from a complication that cannot be prevented.
 - **Ameliorable adverse** events are not preventable, but the severity of injury could have been substantially reduced if different actions or procedures had been performed or followed.

Near Misses Defined

A near miss is any event that could have had adverse consequences but did not

- indistinguishable from full-fledged adverse events in all but outcome
- an error was committed, but the patient did not experience clinical harm, either through early detection or sheer luck

Sentinel Events

Sentinel event as defined by the Joint Commission Sentinel Event Policy is an event that reaches a patient and results in one of the following:

- death
- permanent harm
- severe temporary harm and intervention required to sustain life



Not all sentinel events occur because of an error, and not all medical errors result in sentinel events.

Sentinel Event Examples

Suicide of any patient receiving care, treatment, or services in a staffed, around-the-clock care setting or within 72 hours of discharge, including from the emergency department

Unanticipated death of a full-term infant

Discharge of an infant to the wrong family

Abduction of any patient receiving care, treatment, or services

Any elopement of a patient from a staffed, around-the-clock care setting leading to death, permanent harm, or severe temporary harm of the patient

Sentinel Event Examples

Rape, assault, or homicide of any patient receiving care, treatment, or services, or any staff member, licensed independent practitioner, visitor, or vendor while on site

Surgery or other invasive procedure performed at the wrong site, on the wrong patient, or that is the wrong (unintended) procedure for the patient

Unintended retention of a foreign object in a patient after an invasive procedure, including surgery

Severe neonatal hyperbilirubinemia

Prolonged fluoroscopy to a single field or any delivery of radiotherapy to the wrong body regions or delivery of the wrong radiotherapy dose

Sentinel Event Examples

- Fire, flame, or unanticipated smoke, heat, or flashes occurring during direct patient care caused by equipment operated and used by the hospital (staff do not need to be present)
- Any intrapartum maternal death
- Sexual abuse/assault involving a patient and another patient, staff member, or other perpetrator while being treated or on hospital premises

Never Events

- The National Quality Forum established 29 serious reportable events (SREs), which are consequential and largely preventable
- Such events are also called never events
- These are events that should never happen

Never Events aka “Serious Reportable Events”

SREs can be grouped into seven categories, as follows:

1. Surgical SREs (e.g., surgery performed on wrong body parts or the wrong patient, or wrong surgical/invasive procedure performed on a patient)
2. Product/device SREs (e.g., patient death/serious injury associated with use of devices provided by the healthcare setting)
3. Patient-protective SREs (e.g., patient elopement or suicide while in a healthcare setting)
4. Care management SREs (e.g., patient death/serious injury associated with a fall while in a healthcare setting, medication errors)

Never Events aka “Serious Reportable Events”

SREs can be grouped into seven categories, as follows:

5. Environmental SREs (e.g., patient death/serious injury associated with the use of restraints while in a healthcare setting, burns, electric shock)
6. Radiological SREs (e.g., patient/staff death/serious injury associated with the introduction of a metallic object into an MRI area)
7. Criminal SREs (e.g., sexual abuse/assault on a patient while in a healthcare setting)

Active Errors

- Active errors are also known as human errors
- The errors occur at the point of contact between a human and some aspect of the healthcare system
 - e.g., machine, elevator, furniture, etc.
- Active errors are usually readily apparent
 - e.g., pushing an incorrect button or ignoring a warning light
 - almost always involve someone providing direct care

Latent Errors

- Latent errors represent an accident waiting to happen
- These errors point to a not-so-obvious failure of organization or design that contributes to the occurrence of errors or allows them to cause harm to patients
- These are errors in
 - system or process
 - design
 - faulty installation or maintenance of equipment
 - ineffective organizational structure

Active and Latent Errors

Combined, these errors cause adverse events



Medical Errors

Medical errors are likely to occur in situations where providers are challenged to make decisions in dynamic, fast-paced, complex environments under tight time constraints

Errors stem from technical, organizational, or human factors that set off a chain reaction that could result in an adverse event

Common Causes of Medical Error

Altered ability to make good judgments and quick decisions (e.g., misapplying expertise)

Ineffective communication (the most common cause)

Deficiencies in education, training, orientation, and experience

Inadequate methods of identifying patients, incomplete assessment on admission, failing to obtain consent, and failing to provide education to patients

Inadequate policies to guide healthcare workers

Common Causes of Medical Error

Lack of consistency in procedures

Inadequate staffing and/or poor supervision

Technical failures associated with medical equipment

No audits in the system

No one prepared to accept responsibility or change the system

Reactive Error Prevention Strategy



Root cause analysis (RCA) is the process of discovering the root causes of problems in order to identify appropriate solutions



RCA assumes that it is much more effective to systematically prevent and solve for underlying issues rather than just treating ad hoc symptoms and putting out fires



Performed after every sentinel event as mandated by The Joint Commission

Steps of Root Cause Analysis (RCA)



Define the problem

Analyze what you see happening and identify the precise symptoms so that you can form a problem statement



Gather data



Identify causal factors



Determine the root cause(s)



Recommend and implement solutions

Proactive Error Prevention Strategy

Begun in the 1940s by the U.S. military, failure modes and effects analysis (FMEA) is a step-by-step approach for identifying all possible failures in a design, a manufacturing or assembly process, or a product or service. It is a common process analysis tool.

- "Failure modes" means the ways, or modes, in which something might fail. Failures are any errors or defects, especially ones that affect the customer, and can be potential or actual.
- "Effects analysis" refers to studying the consequences of those failures.

Failure Modes and Effects Analysis (FMEA)

- Failures are prioritized according to how serious their consequences are, how frequently they occur, and how easily they can be detected.
- The purpose of the FMEA is to take actions to eliminate or reduce failures, starting with the highest-priority ones.
- Failure modes and effects analysis also documents current knowledge and actions about the risks of failures for use in continuous improvement.

Failure Modes and Effects Analysis (FMEA)

FMEA is used during design to prevent failures.

Later it's used for control before and during ongoing operation of the process.

Ideally, FMEA begins during the earliest conceptual stages of design and continues throughout the life of the product or service.

When to Use FMEA

When a process, product, or service is being designed or redesigned; after quality function deployment (QFD)

When an existing process, product, or service is being applied in a new way

Before developing control plans for a new or modified process

When improvement goals are planned for an existing process, product, or service

When analyzing failures of an existing process, product, or service

Periodically throughout the life of the process, product, or service

FMEA Procedure



Assemble a cross-functional team of people with diverse knowledge about the process, product or service, and customer needs.



Identify the scope of the FMEA. Is it for concept, system, design, process, or service? What are the boundaries? How detailed should we be? Use flowcharts to identify the scope and to make sure every team member understands it in detail.



Fill in the identifying information at the top of your FMEA form. The remaining steps ask for information that will go into the columns of the FMEA form used in the process.

FMEA Procedure

Identify the functions of your scope. Ask, "What is the purpose of this system, design, process, or service? What do our customers expect it to do?" Name it with a verb followed by a noun. Usually, one will break the scope into separate subsystems, items, parts, assemblies, or process steps and identify the function of each.



For each function, identify all the ways failure could happen. These are potential failure modes. If necessary, go back and rewrite the function with more detail to be sure the failure modes show a loss of that function.

FMEA Procedure

For each failure mode, identify all the consequences on the system, related systems, process, related processes, product, service, customer, or regulations. These are potential effects of failure. Ask, "What does the customer experience because of this failure? What happens when this failure occurs?"

Determine how serious each effect is. This is the severity rating, or S. Severity is usually rated on a scale from 1 to 10, where 1 is insignificant and 10 is catastrophic. If a failure mode has more than one effect, write on the FMEA table only the highest severity rating for that failure mode.

FMEA Procedure



For each failure mode, determine all the potential root causes. Use tools classified as cause analysis tools, as well as the best knowledge and experience of the team. List all possible causes for each failure mode on the FMEA form.



For each cause, determine the occurrence rating, or O. This rating estimates the probability of failure occurring for that reason during the lifetime of your scope. Occurrence is usually rated on a scale from 1 to 10, where 1 is extremely unlikely and 10 is inevitable. On the FMEA table, list the occurrence rating for each cause.

FMEA Procedure

For each cause, identify current process controls. These are tests, procedures or mechanisms that you now have in place to keep failures from reaching the customer. These controls might prevent the cause from happening, reduce the likelihood that it will happen or detect failure after the cause has already happened but before the customer is affected.

For each control, determine the detection rating, or D. This rating estimates how well the controls can detect either the cause or its failure mode after they have happened but before the customer is affected. Detection is usually rated on a scale from 1 to 10, where 1 means the control is absolutely certain to detect the problem and 10 means the control is certain not to detect the problem (or no control exists). On the FMEA table, list the detection rating for each cause.

FMEA Procedure

- Ask, "Is this failure mode associated with a critical characteristic?" (Critical characteristics are measurements or indicators that reflect safety or compliance with government regulations and need special controls.) If so, a column labeled "Classification" receives a Y or N to show whether special controls are needed. Usually, critical characteristics have a severity of 9 or 10 and occurrence and detection ratings above 3.
- Calculate the risk priority number, or RPN, which equals $S \times O \times D$. Also calculate Criticality by multiplying severity by occurrence, $S \times O$. These numbers provide guidance for ranking potential failures in the order they should be addressed.

FMEA Procedure

Identify recommended actions. These actions may be design or process changes to lower severity or occurrence. They may be additional controls to improve detection. Also note who is responsible for the actions and target completion dates.

As actions are completed, note results and the date on the FMEA form.



Wrong site, procedure, patient;
Retained foreign bodies;
Anesthesia-related adverse event

Surgical Errors

Wrong Site, Procedure, or Patient

Wrong-site, wrong-procedure, and wrong-patient surgical errors

- It is estimated that in the United States such errors occur in approximately 1 of 112,000 surgical procedures and are infrequent enough that an individual hospital would only experience one such incident every 5 to 10 years
- This includes only procedures performed in an operating room
- If procedures are performed in other settings such as ambulatory, the rate of error may be much higher

Retained Foreign Bodies/Surgical Items

- Retained foreign bodies (also called retained surgical items) and unintentionally retained foreign objects are defined as objects retained after skin closure following an invasive procedure
- Most unintended retained foreign bodies are associated with failures in leadership, communication, or other human factors that should be under the control of the operating team

Anesthesia- Related Adverse Events

Anesthesia-related adverse events may include inadvertent gas flow change, premature extubation, or breathing circuit connection

Strategy to Prevent Surgical Errors

- The World Health Organization (WHO) Surgical Safety Checklist was developed after extensive consultation aimed at decreasing errors and adverse events and increasing teamwork and communication in surgery
- This checklist has gone on to show significant reduction in both morbidity and mortality and is now used by surgical providers around the world

WHO Surgical Safety Checklist

A surgical checklist is an algorithmic listing of actions to be taken in any given clinical situation intended to make everyone aware that others expect these things to be done

“SIGN IN” checklist must be completed orally and in writing before induction of anesthesia (with at least a nurse and anesthesiologist)

Who Surgical Checklist Steps

1. Has the patient confirmed their identify, site, procedure, and consent?
2. Is the site marked?
3. Is the anesthesia machine and medication check complete?
4. Is the pulse oximeter on the patient and functioning?
5. Does the patient have a:
 - Known allergy?
 - Difficult airway or aspiration risk?
 - Risk of >500 ml blood loss (7 ml/kg in children)?

WHO Surgical “Time Out” Checklist Steps

“TIME OUT” checklist must be completed orally and in writing before skin incision (with nurse, anesthetist, and surgeon)

1. Confirm all team members have introduced themselves by name and role
2. Confirm the patient’s name, procedure, and where the incision will be made
3. Has antibiotic prophylaxis been given within the last 60 minutes?

WHO Surgical “Time Out” Checklist Steps

4. For the anticipated critical event:
 - To surgeon:
 - What are the critical or non-routine steps?
 - How long will the case take?
 - What is the anticipated blood loss?
 - To anesthetist:
 - Are there any patient-specific concerns?
 - To nursing team:
 - Has sterility (including indicator results) been confirmed?
 - Are there equipment issues or any concerns?
5. Is essential imaging displayed?

WHO “Sign Out” Checklist

“SIGN OUT” checklist must be completed orally and in writing before the patient leaves the operating room (with nurse, anesthesia provider, and surgeon)

WHO “Sign Out” Checklist Components

1. Nurse verbally confirms:
 - The name of the procedure
 - Completion of instrument, sponge, and needle counts
 - Specimen labeling (read aloud specimen labels, including patient name)
 - Whether there are any equipment problems to be addressed
2. To surgeon, anesthesiologist, and nurse:
 - What are the key concerns for recovery and management of this patient?

Medication Errors

7,000 to 9,000 people die annually in the United States due to a medication error.

Countless individuals experience adverse medication reactions or other complications related to a medication that go unreported by either patients or their caregivers.

Medication errors often result from system failures with:

- 1.) inadequate error detection processes in place
- 2.) system design safeguards to prevent errors

Medication Errors

Medication errors may occur at any step, including:

- Ordering/prescribing
 - The clinician must select the appropriate medication, dose, frequency, and duration.
- Transcribing
 - In a paper-based system, an intermediary must read and interpret the prescription correctly.
- Dispensing
 - The pharmacist must check for drug-to-drug interactions and allergies and release the appropriate quantity of the medication in the correct form.

Medication Errors

Medication errors may occur at any step, including:

- Administering
 - The correct medication must be supplied to the correct patient at the correct time, either by a nurse other trained staff, patient, or caregiver.
- Monitoring
 - This includes laboratory tests, side effects, effectiveness of therapeutic action, and vital signs.
- Documenting
 - The name, strength, and quantity of drug; the date and time administered; and the name of the person administering the drug must be entered in the patient's medication administration record in a timely manner.

Medication Prescribing & Transcribing Errors

- Errors occur most commonly during the ordering/prescribing and transcribing stages
 - Accounts for almost 50% of medication errors
- Even with the increasing use of electronic health records designed with medication safeguards, errors continue to occur
- The prescribing clinician must have all the information needed to make the best possible prescribing decisions for each patient to avoid these errors

Medication Prescribing & Transcribing Errors

Strategies for preventing errors when prescribing medications include:

- avoiding unnecessary medications
- adhering to conservative prescribing principles
- maintaining heightened awareness concerning side effects
- exercising skepticism about new drugs
- remaining alert for high-risk medications
- involving the patient in decision making
- considering long-term impacts of medications prescribed
- considering patient age and body weight
- considering liver and kidney function

Prescribing & Transcribing Error Prevention

- Use of a **computerized provider order entry (CPOE)** avoids the necessity for transcribing an order and thus reducing risk of error
- **Medication reconciliation** should be performed at key times of transitions in care between facility units or another facility, or upon discharge to home to reduce medication errors
- **Double-checking** medications is when another nurse reviews all new orders to ascertain that each order is correctly noted and transcribed on the physician's order and on the medication administration record
- **Read-back** to another professional is another procedure in which a nurse reads back an order to the prescribing physician or another nurse to make certain the medication ordered is correctly transcribed

“Do Not Use” Abbreviation List

- In 2001, The Joint Commission issued a Sentinel Event Alert on the subject of medical abbreviations.
- Misreading medical abbreviations can be a cause of serious medication errors.
- The Joint Commission has created a “do not use” list of abbreviations that endanger patients’ safety and it requires its members to follow.
- Applies to all orders and all medication-related documentation that is handwritten (including free-text computer entry) or on preprinted forms.

“Do Not Use” Abbreviation List Timeline

The Joint Commission approved a National Patient Safety Goal requiring accredited organizations to develop and implement a list of abbreviations not to use in 2003.

In 2010, NPSG.02.02.01 was integrated into the Information Management standards as elements of performance 2 and 3 under IM.02.02.01.



In 2004, The Joint Commission created its “Do Not Use” List to meet that goal.

In 2021, a FAQ was developed to address the key concepts organizations need to understand regarding the use of terminology, definitions, abbreviations, acronyms, symbols, and dose designations.

“Do Not Use” Abbreviation List



Official “Do Not Use” List¹

Do Not Use	Potential Problem	Use Instead
U (unit)	Mistaken for “0” (zero), the number “4” (four) or “cc”	Write “unit”
IU (International Unit)	Mistaken for IV (intravenous) or the number 10 (ten)	Write “International Unit”
Q.D., QD, q.d., qd (daily)	Mistaken for each other	Write “daily”
Q.O.D., QOD, q.o.d, qod (every other day)	Period after the Q mistaken for “T” and the “O” mistaken for “T”	Write “every other day”
Trailing zero (X.0 mg)* Lack of leading zero (.X mg)	Decimal point is missed	Write X mg Write 0.X mg
MS	Can mean morphine sulfate or magnesium sulfate	Write “morphine sulfate” Write “magnesium sulfate”
MSO ₄ and MgSO ₄	Confused for one another	

¹ Applies to all orders and all medication-related documentation that is handwritten (including free-text computer entry) or on pre-printed forms.

*Exception: A “trailing zero” may be used only where required to demonstrate the level of precision of the value being reported, such as for laboratory results, imaging studies that report size of lesions, or catheter/tube sizes. It may not be used in medication orders or other medication-related documentation.

“Do Not Use” Abbreviation List

Additional Abbreviations, Acronyms and Symbols (For <u>possible</u> future inclusion in the Official “Do Not Use” List)		
Do Not Use	Potential Problem	Use Instead
> (greater than) < (less than)	Misinterpreted as the number “7” (seven) or the letter “L” Confused for one another	Write “greater than” Write “less than”
Abbreviations for drug names	Misinterpreted due to similar abbreviations for multiple drugs	Write drug names in full
Apothecary units	Unfamiliar to many practitioners Confused with metric units	Use metric units
@	Mistaken for the number “2” (two)	Write “at”
cc	Mistaken for U (units) when poorly written	Write “mL” or “ml” or “milliliters” (“mL” is preferred)
µg	Mistaken for mg (milligrams) resulting in one thousand-fold overdose	Write “mcg” or “micrograms”

Preventing Errors in Dispensing

- Dispensing medications involves preparing and packaging a prescription drug or device in a container and labeling the container with information required by state and federal law.
- Dispensing errors in U.S. clinical and community pharmacies occur at an average rate of 4 in 250 prescriptions.
- Forty-one percent of all medication incidents related to information technology are due to choosing the wrong drug.

Errors during Dispensing Medication

- One third of incidents are associated with confusion of similar drug names, and nearly half are associated with drug strength confusion.
- The most common causes for dispensing errors involve:
 - Workload
 - Similar drug names
 - Interruptions
 - Lack of support staff
 - Insufficient time to counsel patients
 - Illegible handwriting

Preventing Errors in Dispensing of Medications

Strategies to reduce the risk of medication dispensing errors include:

- Verifying the prescription entry is correct
- Clarifying any ambiguous information such as prescriptions that are illegible or that use non-standard abbreviations and other symbols
- Checking prescriptions thoroughly and verifying via another person
- Providing patient counseling
- Checking for drug-to-drug interactions and allergies
- Supervising dispensing medications by pharmacist assistants

Preventing Errors in Dispensing

Strategies to reduce the risk of medication dispensing errors include:

- Opening containers and showing them to the patient (patients may raise an alert if the medication looks different from what they usually take)
- Using tall-man lettering (TML), a technique that uses uppercase lettering to highlight the differences between similar drug names by capitalizing dissimilar letters (e.g., “CISplatin” vs. “CARBOplatin”)
- Using barcode scanners to check whether the selected drug from the shelf is the same as the selected drug on the dispensing screen

Errors in Medication Administration

Habits that increase the risk of medication dispensing errors include:

- Failing to follow the “five rights” to medication administration:
 - Right patient
 - Right drug
 - Right dose
 - Right route
 - Right time
- Failing to educate the patient as to why the drug is being prescribed
- Leaving a medication at the bedside without knowing if it was taken

Errors in Medication Administration

Habits that increase the risk of medication dispensing errors include:

- Omitting medications
- Administering an unauthorized medication
- Not shaking a medication that should be shaken before use, leading to overdose or underdose
- Crushing medications not intended to be crushed
- Failing to follow facility policies and procedures

Preventing Medication Administration Errors

In inpatient settings, interventions to prevent medication administration errors include:

- Barcoding for both medications and patients
- Adherence to the “five rights” of medication safety
- Smart infusion pumps for intravenous administration
- Single-use medication packages
- Package design features such as tall-man lettering for look-alike drug names
- Minimizing interruptions

Preventing Medication Administration Errors

Few of these interventions are likely to be successful in isolation, and efforts to improve safe medication use must also focus on transitions to home, primary care, and patient caregiver understanding and administration of medication. These efforts include:

- Patient education
- Revised medication labels to improve patient comprehension of administration instructions
- Multicompartment medication devices for patients taking multiple medications in ambulatory or long-term care settings

Errors in Medication Monitoring

- Monitoring and assessment are essential to the process of administration of medications.
- Monitoring involves observing the patient to determine if the medication is working, is being used appropriately, and is not harming the patient.



Errors in Medication Monitoring

Types of errors in monitoring that can occur include:

- Failure to monitor effectiveness of therapeutic action of a medication
- Lack of awareness of side effects of a medication
- Failure to monitor, assess, and report laboratory tests
- Failure to monitor, assess, and report vital signs
- Failure to educate patients about potential side effects
- Failure to comply with a pain management program
- Communication failures during handoff procedures to accepting nurse



Errors with High-Alert Medications

High-alert medications are drugs that have a heightened risk for causing significant harm when used in error.

The FDA requires such drugs be given a label referred to as a black box warning.

Preventing Errors with High-Alert Medications

The Institute for Safe Medication Practices maintains a current listing of medications with black box warnings along with recommendations for reducing error:

- Standardize ordering, storage, preparation, and administration of these medications
- Improve access to information about these drugs
- Limit access to high-alert medications
- Use auxiliary labels and automated alerts
- Employ redundancies—duplicate devices used for backup purposes to prevent or recover from the failure of a specific part of the process (e.g., asking another nurse to perform an independent check)
- In community/ambulatory settings, provide mandatory patient education

Tubing Misconnections

- The FDA reports medical device misconnections occur when one type of medical device is attached in error to another type of medical device that performs a different function.
- Tubing misconnections can occur due to:
 - Similar design of many connectors and the widespread use of connectors with similar shapes and sizes
- Human error arising from conditions such as:
 - Multiple connections for one patient
 - Poor lighting
 - Lack of training
 - Time pressure
 - Fatigue
 - High-stress environment

Tubing Misconnection Examples

- Enteral feeding tube connected to an IV
- Enteral feeding tube connected to ventilator-inline suction catheter
- Blood pressure cuff tubing connected to an IV port
- IV tubing connected to trach cuff
- IV tubing connected to nebulizer
- Oxygen tubing connected to a needleless IV port
- IV tubing connected to nasal cannula
- Syringe connected to trach cuff
- Epidural solution connected to a peripheral or central IV catheter
- Epidural line connected to an IV infusion
- Bladder irrigation solution utilizing primary IV tubing connected to a peripheral or central IV catheter
- Foley catheter connected to NG tube
- IV infusion connected to an indwelling urinary catheter
- IV infusion connected to an enteral feeding tube
- Primary IV tube connected to a blood product meant for transfusion

Preventing Tubing Misconnections

Attempts to prevent device misconnections have included color-coding, labels, tags, and training

- These methods alone have not effectively solved the problem because of inconsistent application
- These methods do not physically prevent the misconnections

Non-Luer lock connections have been introduced to reduce tubing misconnections; these include:

- NR-Fit connector for neuraxial and regional anesthesia catheters
- Enfit connectors for feeding tubes

Preventing Tubing Misconnections

While these connectors are designed to be incompatible with Luer adaptors used mostly in intravenous applications, new Luer adapters have been introduced that will only connect to feeding tubes and not intravenous tubing to further prevent tubing misconnections

The connectors look and secure in a way very similar to a Luer threaded lock system, although they are larger and incompatible with connectors for unrelated delivery systems such as tracheal tubes, intravenous lines, and catheters

“ACT” to Prevent Device Misconnections

Assess equipment

- Assess and clearly label each device, including low-risk devices and high-risk catheters

Communicate

- Ensure communications between healthcare staff during patient transfer
- Inform non-clinical staff, patients, families, and caregivers that they must get help from clinical staff whenever there is a real or perceived need to connect or disconnect devices or tubing

Trace

- Trace every tube from the patient to the point of origin prior to connecting any new devices or replacing an old one, label them, and recheck with every assessment
- Vigilantly check and recheck fittings and connectors to ensure proper connections prior to and during use

Healthcare-Associated Infections (HAIs)

These infections are often preventable

Healthcare- Associated Infections (HAIs)

HAIs are infections that occur while receiving healthcare in a hospital or other healthcare facility

HAIs appear 48 hours or more after admission or within 30 days after having received healthcare

HAIs are considered system failures and are often preventable

Healthcare- Associated Infections (HAIs)

Poor hand hygiene is responsible for the spread of bacteria in healthcare settings

Studies show that, on average, healthcare providers clean their hands less than half of the times they should, contributing to the spread of HAIs

Catheter-Associated Urinary Tract Infections

- Catheter-associated urinary tract infections (CAUTIs) occur at a rate of approximately 3% to 10% per day of catheterization, making duration of catheterization an important risk factor
- Complications of CAUTIs include sepsis, bacteremia, and involvement of the upper urinary tract

Preventing CAUTIs

The CDC (2019a) recommends the following actions supported by evidence-based research for preventing urinary tract infections:

- Insert catheters only for appropriate indications
- Leave catheters in place only as long as needed
- Avoid use of urinary catheters in patients and nursing home residents for management of incontinence
- Avoid routinely using urinary catheters in operative patients unless necessary
- Perform hand hygiene immediately before and after insertion or any manipulation of catheter device or site
- Ensure that only properly trained persons insert and maintain catheters

Preventing CAUTIs

The CDC (2019a) recommends the following actions supported by evidence-based research for preventing urinary tract infections:

- In acute care hospital settings, insert catheters using aseptic technique and sterile equipment
- In non-acute care settings, use clean technique for intermittent catheterization
- If ultrasound bladder scanners are used, ensure that equipment is cleaned and disinfected between patients
- Properly secure indwelling catheters after insertion to prevent movement and urethral traction
- Unless clinically indicated, use the smallest-bore catheter possible consistent with good drainage

Preventing CAUTIs

The CDC (2019a) recommends the following actions supported by evidence-based research for preventing urinary tract infections:

- Follow aseptic insertion and maintain a closed drainage system
- If breaks in aseptic technique, disconnection, or leakage occur, replace the catheter and collection system
- Maintain unobstructed urine flow
- Always keep urine collection bag below level of bladder
- Do not place urine collection bag on the floor
- Empty collection bag regularly using separate, clean container for each patient while avoiding contact of spigot with the container

Preventing CAUTIs

The CDC (2019a) recommends the following actions supported by evidence-based research for preventing urinary tract infections:

- Obtain urine samples aseptically by aspirating urine from the needleless sampling port with a sterile syringe or cannula adapter after cleaning the port with a disinfectant
- If obstruction occurs and catheter material is contributing to obstruction, change the catheter instead of flushing it out
- Comply with CDC hand hygiene recommendations and Standard Precautions

Preventing CAUTIs

The CDC (2019a) recommends also considering the following:

- Alternatives to indwelling urinary catheterization in selected patients
- Urinary catheter systems with preconnected, sealed catheter tubing junctions
- Use of portable ultrasound devices for assessing urine volume to reduce unnecessary catheterizations

Surgical Site Infections (SSIs)

Surgical site infections (SSIs) occur in 2% to 4% of all patients undergoing inpatient surgical procedures

SSIs represent a significant cause of morbidity and mortality after surgery

SSIs are the leading cause of readmissions to the hospital following surgery

Approximately 3% of patients who contract an SSI will die as a result

Surgical Site Infection (SSI) Prevention

The CDC recommends the following measures for the prevention of surgical site infections:

- Administer preoperative antimicrobial agents in accordance with clinical practice standards and guidelines
- In clean and clean-contaminated procedures, do not administer additional prophylactic antimicrobial agent doses after the surgical incision is closed in the operating room, even in the presence of a drain
- Do not apply antimicrobial agents to the surgical incision with the aim of preventing SSI
- Consider the use of triclosan-coated sutures for the prevention of SSI

Surgical Site Infection (SSI) Prevention

The CDC recommends the following measures for the prevention of surgical site infections:

- Use perioperative glycemic control by maintaining euglycemia for all patients
- Maintain perioperative normothermia
- Advise patients to shower or bathe the entire body with either antimicrobial or non-antimicrobial soap or an antiseptic agent the night prior to surgery
- Perform intraoperative skin preparation with an alcohol-based antiseptic agent unless contraindicated
- Consider intraoperative irrigation of deep or subcutaneous tissues with aqueous iodophor solution
- Do not withhold transfusion of necessary blood products from patients undergoing prosthetic joint arthroplasty as a means of preventing SSI

Central Line-Associated Bloodstream Infections (CLABSIs)

- Central line-associated bloodstream infections (CLABSIs) are laboratory-confirmed bloodstream infections
- CLABSIs are not:
 - secondary to an infection at another body site
 - due to the presence of an intravascular catheter that terminates at or close to the heart
 - in one of the great vessels that is used for infusion, withdrawal of blood, or hemodynamic monitoring

AHRQ 2018 CLABSI Prevention Guidelines

Catheter insertion

Central venous catheter site selection

Central venous catheter selection

Arterial line site selection

Post-insertion care

AHRQ Guidelines: Catheter Insertion

Use aseptic technique:

- Use appropriate hand hygiene using soap and water or a waterless hand sanitizer
- Use face mask, cap, and sterile gloves
- Wear a sterile gown with neck snaps and wrap-around ties properly secured
- Instruct anyone assisting to wear the same barriers
- Cover the patient entirely with a large sterile drape
- Create a sterile working surface that acts as a barrier between the insertion site and any possible source of contamination

AHRQ Guidelines: Catheter Insertion

Use aseptic technique:

- Prepare skin with antiseptic/detergent chlorhexidine 2% in 70% isopropyl alcohol
- Apply a sterile dressing to the insertion site before the sterile barriers are removed
- Transparent dressings are preferred to allow visualization of the site
- Use chlorohexidine for skin preparation
- Use full barrier precautions during central venous catheter insertion
- Avoid using the femoral vein for catheter in adult patients

AHRQ Guidelines— Central Venous Catheter Site Selection

Use the subclavian site unless medically contraindicated (anatomic deformity, coagulopathy, renal disease that may require dialysis)

If the internal jugular vein is chosen, use the right side to reduce risk of non-infectious complications since it has a larger diameter and a straighter path to the superior vena cava

AHRQ Guidelines— Central Venous Catheter Selection

Use a single-lumen central venous access device (CVAD) for patients requiring long-term access (more than 30 days)

Use a PICC or cuffed CVAD for patient requiring access for greater than 2 weeks

AHRQ
Guidelines—
Arterial Line
Site
Selection

Radial artery is the preferred site

Dorsalis pedis is the alternative site

Femoral sites have higher infection rates

Brachial and maxillary sites should only be used as a last resort

AHRQ Guidelines: Post-insertion Care

Evaluate Evaluate the need for CVAD daily

Remove Remove catheter when not needed or change to a single-lumen CVAD when possible

Replace Replace the dressing when it becomes damp, loosened, or soiled

Replace Replace gauze dressing used on short-term central venous catheter (CVC) sites every 2 days

Peripheral Intravenous (IV) Catheter-Related Bloodstream Infections

Peripheral vascular catheter (PVC)- associated bloodstream infections occur in approximately 0.18% of patients

Preventing Peripheral Intravenous (IV) Catheter- Related Bloodstream Infections

Site selection

Catheter selection

Catheter insertion

Catheter and site care

Replacement of IV administration sets
(tubing)

Preventing Peripheral Intravenous (IV) Catheter-Related Bloodstream Infections

Site Selection

- In adults, use an upper-extremity site for catheter insertion
- In pediatric patients, use the upper or lower extremities or the scalp (in neonates or young infants)

Catheter Selection

- Avoid using steel needles for administration of fluids and medications that might cause tissue necrosis if extravasation occurs
- Use midline or peripherally inserted central catheters (PICCs) instead of short peripheral catheters when duration of IV therapy will exceed six days

Preventing Peripheral Intravenous (IV) Catheter-Related Bloodstream Infections

Catheter Insertion

- Perform hand hygiene before insertion
- Prepare clean skin using a chlorhexidine-based solution
 - If contraindicated, tincture of iodine, an iodophor or 70% alcohol can be used
 - Allow to dry prior to placing catheter
- Maintain aseptic technique for insertion of peripheral IV (PIV)
- Wear clean gloves for insertion of a peripheral intravenous catheter if the access site is not touched after application of skin antiseptics
- Use maximal sterile barrier precautions (cap, mask, sterile gown, sterile gloves, and sterile full body drape) for insertion of PICCs
- Use sterile gauze or sterile, transparent, semipermeable dressing to cover site

Preventing Peripheral Intravenous (IV) Catheter-Related Bloodstream Infections

Catheter and Site Care

- Perform hand hygiene procedures before and after palpating catheter insertion sites as well as before and after replacing, accessing, repairing, or dressing an intravascular catheter
- Evaluate catheter insertion site daily both visually and by palpation through the dressing to discern tenderness and by inspection if a transparent dressing is in use. If local tenderness or other signs of possible infection occur, an opaque dressing should be removed and the site inspected visually
- Replace catheter site dressing if it becomes damp, loosened, or visibly soiled
- Do not use topical antibiotic ointment or creams on insertion sites, except for dialysis catheter

Preventing Peripheral Intravenous (IV) Catheter-Related Bloodstream Infections

Catheter and Site Care

- Remove peripheral venous catheter if patient develops signs of phlebitis, infection, or a malfunctioning catheter
- Wear clean or sterile gloves when changing the dressing on catheter sites
- Replace dressing every 7 days for transparent dressing, except in pediatric patients in which risk for dislodging catheter may outweigh the benefit
- Do not submerge catheter or catheter site in water
- Cover site during showering

Preventing Peripheral Intravenous (IV) Catheter-Related Bloodstream Infections

Catheter and Site Care

- In both adult and pediatric patients, leave peripheral venous catheters in place until IV therapy is completed, unless a complication occurs
- For catheters inserted under emergency conditions, insert a new catheter at a different site within 24 hours
- Encourage patients to report any changes in their catheter site or any new discomfort to their provider

Replacement of Administration Sets

- Replace administration sets, including secondary sets and add-on devices, no more frequently than at 96-hour intervals, unless clinically indicated
- Replace tubing used to administer blood, blood products, or lipid emulsions within 24 hours of initiating the infusion

CDC

*Clostridium
difficile (C.
diff)* Infection
Control
Guidelines

- Clostridioides (Clostridium) difficile (C. diff) infections cause life-threatening diarrhea
- It is usually a side-effect of taking antibiotics
- Those most at risk are patients, especially older adults, who take antibiotics and people staying in hospitals and nursing homes for a long period of time

CDC *Clostridium difficile* Infection Prevention Guidelines

Strategies for preventing *Clostridioides* (formerly known as *Clostridium*) *difficile* infection (CDI) include:

- Isolate and initiate Contact Precautions for suspected or confirmed CDI
- Maintain Contact Precautions for at least 48 hours after diarrhea has resolved, or longer, up to the duration of hospitalization
- Adhere to recommended hand hygiene practices
- Use dedicated patient care equipment (e.g., blood pressure cuffs, stethoscopes)
- Implement daily patient bathing or showering with soap and water

CDC
*Clostridium
difficile*
Infection
Prevention
Guidelines

Strategies for preventing *Clostridioides* (formerly known as *Clostridium*) *difficile* infection include:

- When transferring patients, notify receiving wards or facilities about the patient's CDI status
- Perform daily cleaning of CDI patient rooms using *C. difficile* sporicidal agent at least once a day, including toilets
- Clean and disinfect all shared equipment prior to use with another patient (e.g., wheelchair)
- Perform terminal cleaning after CDI patient transfer/discharge using a *C. difficile* sporicidal agent
- Clean additional areas that are contaminated during transient visits by patients with suspected or confirmed CDI (e.g., radiology, emergency rooms, physical therapy) with *C. difficile* sporicidal agent

CDC
*Clostridium
difficile*
Infection
Prevention
Guidelines

Strategies for preventing *Clostridioides* (formerly known as *Clostridium*) *difficile* infection include:

- Restrict use of antibiotics with the highest risk for CDI (e.g., fluoroquinolones)
- Ensure that patients receive the shortest effective duration of antibiotic therapy
- Limit use of non-antibiotic patient medications (e.g., proton pump inhibitors, H2-receptor blockers) that are hypothesized to increase risk for CDI
- Consider additional disinfection of CDI patient room with no-touch technologies (e.g., UV light)
- Have dedicated healthcare personnel who care only for patients with CDI to minimize risk of transmission to others

Multidrug-resistant Organism (MDRO) Infections

- The CDC recommends the use of Contact Precautions in inpatient acute care settings for patients known to be colonized or infected with epidemiologically important MDROs, including methicillin-resistant *Staphylococcus aureus* (MRSA)
- There is debate as to the most beneficial way to manage patients with MDRO infections
- Based on current evidence, the CDC continues to recommend the use of Contact Precautions for MRSA-colonized or infected patients
- The CDC will continue to evaluate the evidence on Contact Precautions as it becomes available

Multidrug-resistant Organism (MDRO) Infection Prevention

In **acute care hospitals**, CDC recommendations state:

- Promote the judicious use of antimicrobial agents
- Follow Standard Precautions during all patient encounters in all healthcare settings
- Use a mask according to Standard Precautions when:
 - Performing a splash-generating procedure
 - Caring for patients with open tracheostomies
 - In circumstances where there is evidence of transmission from heavily colonized sources, such as burn wounds
 - Not recommended during routine care
- Implement Contact Precautions for all patients known to be colonized/infected with target MDROs

Multidrug-resistant Organism (MDRO) Infection Prevention

In **long-term care facilities**, CDC recommendations state:

- Consider the individual patient's clinical situation and prevalence or incidence of MDROs in the facility when deciding whether to implement or modify Contact Precautions in addition to Standard Precautions for a patient infected or colonized with a target MDRO

In **ambulatory and home care settings**, CDC recommendations state:

- Follow Standard Precautions
- Limit the amount of reusable patient care equipment that is brought into the home of patients infected or colonized with MDROs

Hospital- Acquired Pneumonia (HAP)

Hospital-acquired pneumonia (HAP) occurs 48 hours or more after hospital admission at a rate of 5 to 10 per 1,000 hospital admissions

Ventilator-associated pneumonia (VAP) is a subset of HAP occurring in intensive care units that presents more than 48 to 72 hours after tracheal intubation

Hospital- Acquired Pneumonia (HAP) Prevention

Strategies for preventing ventilator-associated pneumonias include:

- Use of routine infection control practices and hand hygiene
- Prophylactic antibiotic administration
- Sedation interruption
- Keeping head of bed elevated 30 to 45 degrees
- Limitation of ventilation times
- Endotracheal suctioning
- Avoiding gastric overdistention

Hospital- Acquired Pneumonia (HAP) Prevention

Strategies for preventing ventilator-associated pneumonias include:

- Draining ventilator tube condensate
- Kinetic bed therapy
- Changing ventilator circuit if visibly soiled or mechanically malfunctioning
- Using sterile suctioning techniques and handling of respiratory equipment
- Performing oral care at least every 2 to 4 hours with an antiseptic swab and brushing the teeth twice a day

Patient Falls

Falls are the most common type of accident in people 65 years of age and older

Falls in institutional settings occur more frequently and are associated with greater morbidity than falls that occur in the community

Approximately 50% of individuals in the long-term care setting fall yearly

Patient Falls

Fall risk can be categorized as either intrinsic or extrinsic

- **Intrinsic factors** include issues that are unique to the individual and concern medical, psychological, and physical issues such as advanced age, inner ear disorders, and lower extremity weakness
- **Extrinsic factors** generally can be changed and include environmental risks that patients encounter, such as use of restraints, dim lighting or glare, ill-fitting or inappropriate footwear

Patient Falls

Older patients are not the only population at risk

Any patient who has had excessive blood loss may experience postural hypotension, increasing the risk of falling

Maternity patients or other patients who have epidural anesthesia are at risk for falls due to decreased lower-body sensation



Fall Prevention

Fall prevention involves
assessing patients for risk for falls
developing a personalized plan of care
utilizing consistent preventive interventions

Hospitalized Patient Falls

A fall risk assessment should be done on admission

A fall risk reassessment should be done whenever there is a change in a patient's condition or when a patient is being transferred to another unit

Tools extensively studied and tested for reliability and validity, thus recommended for use, include:

Morse Fall Scale

STRATIFY Scale

Schmid Fall Risk
Assessment Tool

Hospitalized Patient Fall Prevention

Some examples of tailored prevention/
interventions include:

- Physical therapy evaluation/treatment for gait instability
- Toileting schedule for incontinence
- Continuous virtual monitoring for agitation, confusion, or impaired judgment
- Pharmacy consults for medication side effects

Community-Dwelling Patient Fall Prevention

- The Centers for Disease Control and Prevention's STEADI (Stop Elderly Accidents, Deaths and Injuries) initiative is a coordinated approach for the implementation of practice guidelines for fall prevention in community-dwelling adults.
- It consists of these three core elements:
 - Screen for fall risk annually or any time the patient presents with an acute fall
 - Assess those who are found to be at risk
 - Intervene to reduce identified risk factors

Error Risks Among Vulnerable Populations

- Patient safety is of paramount concern for all healthcare providers
- Some patients, including the very young, the very old, and the very sick, are particularly vulnerable to the effects of medical errors
 - often due to their inability to participate actively as a member of the healthcare team due to communication issues
- Their physical status (including but not limited to body weight and body mass composition, nutritional status, and metabolism) may also cause them to react differently to interventions, putting them at special risk
- Caregivers must recognize the special needs of these patients and act accordingly

Older Adult Safety Risks

- There are multiple issues of concern when providing healthcare to adults ages 65 and over
- Failure to recognize the unique problems of this age group can result in adverse events
- Safety risks include:
 - Polypharmacy
 - Cognitive impairment
 - Functional decline
 - Fall risk
 - Malnutrition
 - Dehydration

Older Adult Safety Risk: Polypharmacy

- Older adults often are taking multiple medications (polypharmacy), thus creating a significant risk for adverse drug events
- Medication management in the older adult population involves considerations for:
 - drug dosing
 - drug interactions
 - adverse effects
 - Adherence
 - social issues
 - clinical practice guidelines
 - altered physiology

Older Adult Safety Risk: Cognitive Impairment

- Confusion and/or delirium in the older adult, especially someone with pre-existing cognitive impairment, can be due to certain aspects of hospitalization, such as changes in environment and sensory deprivation
- Delirium can also be the result of polypharmacy
- Effective measures include:
 - orientation protocols
 - environmental modification
 - non-pharmacologic sleep aids
 - early and frequent mobilization
 - minimizing use of physical restraints
 - use of vision and hearing aids
 - adequate pain relief
 - reduction in polypharmacy

Older Adult Safety Risk: Functional Decline

- When an older adult is hospitalized, functional decline can occur as early as the second day of hospitalization
- Immobility can increase the risk for adverse events such as falls, delirium, skin breakdown, and venous thromboembolic disease
- Improved mobility during hospitalization has been linked to decreased risk of death
- Activity order for bed rest should be avoided unless ABSOLUTELY medically required
- Patients should be assisted out of bed to a chair for meals, which can also decrease the risk of aspiration, and patients should be encouraged to walk several times a day

Older Adult Safety Risk: Fall Risk

- Risk for falls increases in older adults and may be due to the effects of acute illness compounded by an unfamiliar environment and side effects of treatments.
- Tethering medical devices such as urinary catheters, IV lines, cardiac monitor leads, and restraints make it more difficult to mobilize patients safely; this is associated with increased rates of:
 - Delirium
 - Infection
 - falls

Older Adult Safety Risk: Fall Risk

- Strategies to help prevent falls may include
 - weighing risks versus benefits of medications with significant psychotropic and anticholinergic effects
 - monitoring patients when prescribed drugs that may increase fall risk
 - supervising high-risk patients when ambulating
 - encouraging time out of bed walking or sitting in a chair to prevent orthostatic hypotension associated with prolonged immobility

Older Adult Safety Risk: Malnutrition and Dehydration

Malnutrition and dehydration in hospitalized and nursing home older patients may result due to:

- impairment in cognition
- restriction of movement
- no access to dentures
- difficulty with self-feeding
- missed or interrupted meals
- reduced appetite due to illness or lack of activity
- lack of assistance with meals and drinks
- severely restricted diet orders, such as nothing by mouth

Older Adult Safety Risk: Malnutrition and Dehydration

Simple interventions such as getting the person out of bed at mealtime and providing assistance with eating can be of benefit

Inpatient assessment by a nutritionist can identify deficiencies

Combined with nutritional follow-up after discharge, inpatient assessment may decrease mortality

Infant and Children Safety Issues

The potential for adverse drug events is higher in the hospitalized pediatric population due to:

- pharmacokinetic parameters
- the need for precise dosage measurement

Safety measures to keep infant and children safe include:

- accurate weight scales
- standardized equipment system throughout
- drug dose range limits
- programmable “smart” infusion pumps for hospitals
- standardized order sets

Infant and Children Safety Issues

- Pharmacists can be consulted to
 - check dosing calculation
 - screen for drug-to-drug interactions
 - educate caregivers regarding proper administration and medication storage safety
- Infants and young children do not have the communication abilities needed to alert clinicians to effects they experience
- Parents of infants and children need to be fully informed and involved in their child's care during any encounter with the healthcare system and must be educated to question caregivers about medications and procedures

Patients Admitted to the Intensive Care Unit

Intensive care settings are one of the most complex environments in healthcare

Medical errors and deaths due to preventable harms are more common in ICU settings due to higher patient acuity and complexity of care

A safety smart list integrated into intensive care patients' electronic health records has been found to decrease complications and length of stay in the ICU

The checklist covers common ICU conditions associated with HAIs, thrombosis, and worse clinical outcomes

Patients with Limited English Proficiency (LEP)

- Individuals with limited English proficiency (LEP) have problems with language competence, negatively affecting communication
- LEP individuals are at higher risk for complications because of:
 - poor comprehension of medication instructions
 - inaccurate assessment, increased psychological stress
 - poor compliance with treatment and follow-up
- Use of family or friends as interpreters increases chances of error
- Both The Joint Commission and the Affordable Care Act mandates adequate medical interpreter and translation services for patients who have LEP
- Translation and interpreter services provided by Certified Medical Interpreters is the gold standard

Patients with Low Health Literacy

- Health literacy is defined as the degree to which individuals take in basic health information and services needed to make appropriate health decisions based on their ability to:
 - obtain health information
 - process health information
 - understand health information
- Low health literacy may have a negative effect on a person's adherence to a treatment regimen and may impact parent/caregiver behavior and children's health outcomes

Patients with Low Health Literacy

- Since limited health literacy is common and may be difficult to recognize, it is recommended that clinicians assume all patients and caregivers may have difficulty comprehending health information so that they communicate in ways that anyone can understand.
- Improving health literacy includes:
 - Simplifying oral and written communications
 - Confirming comprehension for all patients and caregivers
 - Making the healthcare system easier to navigate
 - Supporting patients' efforts to improve their health

Essential strategies healthcare facilities must consider in their efforts to reduce medical errors include:

- Changes in organizational culture
- Involvement of leadership
- Education of providers
- Development of patient safety committees
- Adoption of safe protocols and procedures
- Use of technology

Institutional Strategies for Addressing Errors

Creating a Culture of Safety

A culture of safety encompasses the following key features:

- Acknowledging the high-risk nature of an organization's activities and the determination to achieve consistently safe operations
- Fostering a blame-free environment where individuals can report errors or near misses without fear of reprimand or punishment
- Encouraging collaboration across ranks and disciplines to seek solutions to patient safety problems
- Committing organizational resources to address safety concerns

Just Culture Model

- A just culture is defined as organizational accountability for the systems they have designed and employee accountability for the choices they make
- Trust is critical to shared accountability
- Trust in leaders is defined as the perception that healthcare employees will receive fair treatment from leaders following an adverse event, regardless of their position in the hospital or the event's severity
- In highly reliable organizations, employees routinely identify and report unsafe conditions and errors because they trust leaders want to know what is not working and will implement visible and meaningful improvements with this information

Just Culture Model

All types of errors hold equal importance in a just culture, not just those with poor outcomes

Error identification and reporting are encouraged to provide opportunities for staff education and system redesign

Two important features of a just culture include:

- a non-blaming incident investigation
- An understanding of the behavioral choices that a person makes

Leadership

- Hospital boards now use strategic initiatives to influence quality and safety
- Data shows that executives and management can further improve safety by having more direct interactions with frontline workers
- Visits by management to clinical areas to engage in open and frank discussions with the staff about safety concerns have been shown to have a positive impact on safety culture
- To be credible among frontline staff during these walkarounds and huddles, it is important to address issues raised by the staff promptly and follow up sufficiently after an error has been reported



Leadership

Leadership can also directly address safety concerns by recognizing and managing disruptive and unprofessional behavior by clinicians

Leaders can ensure unprofessional or incompetent clinicians do not put patients at risk

Conclusion

- Everyone has a stake in the safety of the healthcare system—healthcare workers as well as the general public.
- All healthcare workers are being actively educated about their roles in the prevention of avoidable negative outcomes for all patients.
- It is essential that all clinicians:
 - understand the journey every patient makes through the system
 - recognize how the system can fail
 - take action to prevent those failures

Conclusion

- Caregivers must work to counter errors and safeguard patients
- Improvements must continue to be made in workforce and work process designs
- The leadership, management, and the culture of healthcare organizations should be challenged to address both system and individual failures
- Because communication issues are so commonly involved in medical errors, it is crucial that physicians, nurses, therapists, and other healthcare personnel work together as a team to improve communication

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