Medication Safety & Quality

Medication Error	preventable event that causes or leads to inappropriate medication use or patient harm while the medication is in the control of a HCP, patient or consumer are **preventable**
Adverse drug reactions (ADRs)	**NOT** preventable
System-Based Causes:	focus on the system, not the individual errors will always occur; goal is to design systems to prevent medication errors from reaching the patient = **sentinel event** in a just culture, safety is valued, reporting of safety risks is encouraged without penalization and a clear and transparent process evaluates the errors - amended to prevent error from repeating

Medication Error Occurred. What to do?	immediately resolve the error document the error external notification investigation: RCA improvement must tell physician when: - error will lead to side effect - error will cause adverse drug reaction - error will impact disease being treated
Errors of Omission	something that was **left out** that is needed for safety ex = failing to warn a pt about an important side effect with a new medication
Errors of Commission	something was done incorrectly Ex = prescribing bupropion with a history of seizures
Reporting in Community Pharmacy	staff member who discovers error reports to corporate office or to the owner of independently owned pharmacy report within 48 hours (state-specific) many states require that the patient and prescriber are also notified

Reporting in Hospitals	report to Pharmacy & Therapeutics committee and Medication Safety Committee
Organizations that Specialize in Error Prevention: Patient Safety and Quality Improvement Act of 2005	authorized creation of Patient Safety Organizations (PSOs)
Organizations that Specialize in Error Prevention: AHRQ	Agency for Healthcare Research and Quality administer the provisions of the Patient Safety Act and rules for PSOs
Organizations that Specialize in Error Prevention: ISMP	Institute of Safe Medicine Practices national medication errors reporting program (MERP) confidential national voluntary reporting program on website, med errors and close calls can be reported
FDA MedWatch	report adverse drug reactions here

Root Cause Analysis	findings from RCA used to improve system Identify the Problem Define the Problem Understand the Problem Identify root cause Corrective action Monitor the system
Prospective analysis	failure mode and effects analysis (FMEA)
At Risk Behaviors that can Compromise Patient Safety: Drug and Patient-related	failure to check/reconcile home medications and doses dispensing medications without complete knowledge of the medications not questioning unusual doses not checking/verifying concerns
At Risk Behaviors that can Compromise Patient Safety: Communication	not addressing questions/conerns rushed communication
At Risk Behaviors that can Compromise Patient Safety: Technology	Overiding computer alerts without proper consideration not using available technology

Work Environment	inadequate supervision and orientation/training
At Risk Behaviors that can Compromise Patient Safety: In A COMMUNITY Pharmacy	use a second patient identifier - as for address or DOB in addition to name open bag employ technology - flag patients with similar names educate patients
The Joint Commission (TJC)	independent, not-for-profit organization that accredits and certifies more than 17000 HCOs and programs, including **hospitals** TJC = safety and standards, with onsite visits

TJC = National Patient Safety Goals	reduce harm associated with anticoagulation therapy maintain and communicate accurate patient medical information report critical results (labs and diagnostic) on a timely basis comply with CDC hand hygiene guidelines reduce health-care associated infections
Common Methods to reduce Medications Errors	abbreviations are unsafe minimum list of "Do Not Use" approeviations per TJC ISMP established list of error-prone abbreviations, symbols and dosage designations

Common Methods to reduce Medications Errors: DO NOT USE	IU (international unit) - use international unit QD (daily) - use daily QOD (every other day) - use every other day Trailing zero (X.0 mg) - write X mg Lack of leading 0 (.X mg) - write 0.X mg MS - write morphine sulfate MSO4 or MgSO4 - write magnesium sulfate

Tall Man Lettering	highlight dissimilarities required by TJC ISMP list = gold standard ex = valACYclovir valGANCiclovir
High Alert Drugs:	can cause significant harm to patient Insulin Anticoagulatns Concentrations electrolytes (KCl, NaCl, Mg, phosphate) Opioids Anesthetics Inotropes Epidural medications Neuromusclar blocking agents

High Alert Drugs: Safe Use Precautions	max dose, exclusions to use, restricted access to drug dispense by pharmacy (not from ADC); remove from floor stock use premixed products whenever possible special bins and labels
Examples of Safe Use Precautions: Insulin	If U-500 is stocked, specify conditions under which it is to be used, which product will be used (vials and syringes vs pen) and how does will be applied develop protocols for insulin infusions, transition from infusion to SC and sliding scale orders, use standard orders for management of hypoglycemia do not use U for units, always label with units or units = ml but never just units do not place insulin in ADCs, all insulin orders should be reviewed by pharmacist prior to dispensing

Examples of Safe Use Precautions: Potassium chloride	using premixed containers use protocols for KCl delivery which include indications for IV administration, max rate of infusion, max allowable concentration, guidelines for when cardiac monitoring is required, stipulation that all KCl infusions must be given via a pump, prohibition of multiple simultaneous KCl solutions allow for automatic substitution of oral KCl for IV KCl, when appropriate label all fluids containing potassium with "potassium added" sticker
Examples of Safe Use Precautions:	inadvertent administration of concentrated electrolyte check level at baseline, repeatedly limit available concentrations of hypertonic saline standardize dosing and monitoring separate solution from other fluids in controlled-access cabinets use colored labeling, with oversight by pharmacists

Medication Therapy Management (MTM):	personal medication record (PMR) medication-related action plan (MAP) patients targeted for MTM most often = - multiple, chronic conditions who are taking multiple drugs
Medication Reconciliation:	MED-REC whenever a patient changes where they are located (comparing inpatient to outpatient) 1. develop a list of current medications 2. develop a list of medications to be taken in the new setting 3. compare two lists 4. fix any discrepancies
Use the Metric System:	100 kg is not 100 lbs; 100 kg = 220 pounds 100 lbs is NOT 100 kg; 100 lbs = 45.45 kg common conversions = - pounds to kg - feet and inches to meters and cm (2.54 cm to an inch)

Based on Packaging Alone:	never rely on package
Safe Practices for Emergency Medications/Crash Carts:	medications should be unit dose and age-specific including pediatric-specific doses store in sealed or locked containers monitor drug expiration dates trained RPh should be present at codes when possible
Codes:	Code red = fire or smoke code orange = evacuation code purple = bomb threat code black = personal threat code yellow = internal emergency code brown = external emergency code blue = medical emergency
5 Rights of Medication Administration	Right - patient - medication - dosage - time - route

Automated Systems:	ADCs
Use of Technology and Automated Systems: CPOE	Direct entry into computer system decision support functionality - on-screen alert - "alert fatigue"
Use of Technology and Automated Systems: Automated Dispensing Cabinets	acute care sites such as patient care floors, operating rooms, and surgery centers, ICUs and ED non-acute care sites such as skilled nursing facilities, rehabilitation centers and clinics

Patient Controlled Analgesia Devices:	PCA - friends and family members should not administer PCA doses - risk of opioid-induced respiratory depression -- advanced age, obesity and concurrent use of CNS depressants (in addition to higher opioid doses) increases risk -- assess patient's pain, sedation (appears first) and respiratory rate on a scheduled basis limit opioids available in floor stock - hydromorphone and morphine mix-ups - double-check the drug, pump setting, and dosage - concentration on MAR should match PCA level use barcoding technology
Infection Control in Hospitals	most hospital acquired (nosocomial) infections = preventable presence of microorganisms in hospital environment + immunocompromised patients + transmission of pathogens between staff and patients and among patients = nosocomial infection

Common Types of Hospital Acquired (Nosocomial) Infections:	blood stream infections from IV lines (central lines have the highest risk) and catheters surgical site infections decubitus ulcers hepatitis C. difff pneumonia (mostly due to ventilator use), bronchitis

Universal Precautions to Prevent Transmission:	contact droplet airborne
Universal Precautions to Prevent Transmission: Contact Precautions	includes MRSA and VRE and C. diff single patient rooms preferred - or >/= 3 feet spatial separation between beds and prevent sharing of items HCP wear gown and gloves for all interactions

Universal Precautions to Prevent Transmission: Droplet precautions	single patient rooms preferred - or >/= 3 feet spatial separation between beds and draw curtain between beds HCP wear a N95 mask (respirator not necessary)
Universal Precautions to Prevent Transmission: Airborne precautions	patient should have airborne infection isolation room (AIIR) - single patient room that is equipped with special air and ventilation handling pressure rooms - air exhausted directly to outside or re-circulated through HEPA filtration before return HCP wear a mask or respiratory (N95 level or higher)
Catheter-Related Bloodstream infections:	aseptic technique during insertion minimize catheter use, replace often skin antiseptics (2% chlorhexidine) ABX in the catheter
When to Perform Hand Hygiene	1. before patient contact 2. before aseptic task 3. after body fluid exposure risk 4. after patient contact 5. after contact with patient surroundings

Use Soap and Water (instead of Alcohol-based rub):	after using restroom when hands are visible soiled after caring for a patient with diarrhea when caring for a patient with food allergies

Safe Injection Practices: Sharps Disposal	never reinsert used needles into a multiple-dose vial or solution container - single dose vials are preferred over multiple dose vials needles used for withdrawing blood or any other body fluid, or used for administering medications or other fluids should preferably have **"engineered sharps protection"** - reduces risk of an exposure incident such as drawing needle into syringe barrel after use never touch tip or plunger of a syringe throw entire needle/syringe assembly into red plastic sharps container immediately discard used disposable needles/sharpes into a sharps container without recapping sharps containers should be easily accessible and not allowed to overfill' routinely replaced