

Medication Safety Pharmacist and Technician Impact on Patient Safety

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Disclosure

- Sarah Garcia declares no conflicts of interest, real or apparent, and no financial interests in any company, product, or services mentioned in this program including grants, employment, gifts, stock holdings, and honoraria.

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Learning Objectives

Upon completion of this activity Pharmacists will be able to ...

1. Define adverse drug event and medication error.
2. Identify the 5 rights of medication.
3. Describe three ways to maximize patient safety in addition to avoiding medication errors.
4. Describe how the expanded roles of the pharmacist allow us to contribute to increased patient safety.

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Technician Learning Objectives

Pharmacy Technicians will be able to:

1. Identify the 5 rights of medication.
2. Define medication error and adverse drug event.
3. Outline ways you can minimize dispensing errors.
4. Describe 3 ways technicians can help improve patient safety.

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Patient Safety

- Preventing medication errors
- Achieving medication goals
- Avoiding adverse reactions
- Decreasing hospitalization or readmission
- Improving adherence to medication
- Reducing cost to patient or system
- Improved patient satisfaction
- Enhanced quality of life

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Terminology

Adverse Drug Event (ADE): an injury from a medicine or from the lack of an intended medicine

- **Adverse drug reaction (ADR):** these are reactions that occur with a correct medication, at the correct dose, and the correct indication (for example nausea and vomiting)

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What is a Medication Error?

- A medication error can be defined as, 'a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient' ²
- A study across two Harvard teaching hospitals showed serious injury producing medication errors occurred in nearly 2% of the patients, and an additional 5.5% of patients had near misses.³
- Near miss is defined by ISMP as, "an event, situation, or error that took place but was captured before reaching the patient."⁴

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Conditions that encourage errors

- Active failures
 - Errors involving slips, lapses, and mistakes as well as violation- rules of correct behavior are consciously ignored
- Latent Conditions
 - Organizational processes and management decisions such as short staffing, turnover, medication administration protocols
- Error Producing Conditions
 - Environmental, team, or task factors that affect performance; distractions and interruptions, transporting patients, performing ancillary services

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Active Failures

Let's look first at active failures:

Human Error

At Risk behavior

Reckless Behavior

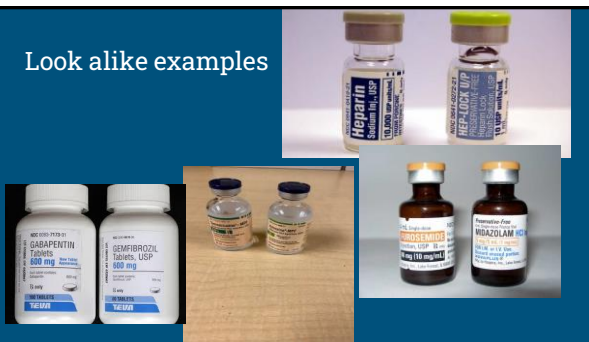
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Human Error

- Medication errors can be expected as a result of human error.
- Looking at human factors studies we can see that under ideal circumstances the best we can do is to make 1-4 mistakes for every 10,000 attempts. ⁵
- This is inadvertent behavior!
- Examples: inadvertently mistyping dose information into the computer system, or making a calculation error when calculating a dose, reading the label wrong

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Look alike examples



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Look Alike and Sound Alike

See Institute for Safe Medication Practices (ISMP) List of Confused Drug Names for complete list

<https://www.ismp.org/recommendations/confused-drug-names-list>

ARIPiprazole	Omeprazole
Depo-Medrol	Solu-Medrol
buPROPION	busPIRone
clonazepam	cloZAPine
ePINEDrine	EPINEPine
niCARdipine	NIFEddine
rRAMPh	rRAXIMin

It is recommended this list be used to identify and make changes to practice of handling these medications

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Human Error

Remember NOT a behavioral choice

The best way to manage human error is to examine the system and console the individual.



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Active Failure

● **At risk behavior** is a choice or set of choices made by an employee that increases risk, however employee believes risk is justified, or risk is not recognized. This often happens when employees are trying to do more with less.⁶

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How to identify at risk behaviors

- What shortcuts do we take to get the work done?
 - What work around do we utilize to achieve our goal?
 - How do we get the work done when short staffed?
 - What system issues are causing frustration ?
- Examples: technology work arounds, carrying medication in pockets, not labeling syringes, unnecessary verbal orders, borrowing medications, estimated weight, disregarding patient concerns

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Managing At Risk Behavior

- One thing to recognize is at risk behavior is often a work around for a problem, so it is considered a sign of critical thinking, resourcefulness, productive-
- BUT First order problem solving rarely reported
- Promote resiliency and reporting of at risk behaviors
- Conduct an investigation
 - How prevalent is the behavior?
 - What are system based causes?
 - Are there any personal factors causing the behavior?
 - Are you rewarding the unsafe behavior?

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First Order Problem Solving

First order problem solving merely transfers the problem to another time, person, or place; a temporary work around.

Hewitt et al.⁷ describes this as "fixing and forgetting". The research team found this was a choice for how to address problems chosen predominantly by physicians, nurses, pharmacists and other healthcare practitioners when faced with problems they could resolve temporarily or work around, even with problems that threatened safety.

A similar study by Tucker et al.⁸ found 92% of nurses responded to obstacles in their work with first order problem solving and failed to report the problem for system wide learning and resolution.

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Which of the following is NOT an example of at risk behavior?

- A. Making a calculation error
- B. Not labeling a syringe that leaves the hands of the preparer
- C. Utilizing a workaround for a system that is too slow
- D. Overriding an alert without fully considering its importance

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- D. Overriding an alert without fully considering its importance

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Active Failures

- Reckless behavior is a blame worthy behavior.
- Conscious disregard of what is known to be a substantial and unjustifiable risk.
- Behave intentionally, do not believe risk is justified, putting themselves first, not the norm.
- Do not have to wait for harm to result to address this with remedial action or disciplinary action

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Active Failures

Human Error will happen so we should control the other factors contributing to errors.

At risk behavior is often a result of a poor design to a system and prevalent in healthcare.

Reckless Behavior is intentional and should be punished.

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Latent Conditions

If we can accept there is going to be continued human error then we must either accept that medication errors will continue to be a problem or address the latent conditions contributing to unsafe systems.

Systems should include fail safes, barriers, redundancies, goal should be to design systems that minimize human errors.

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Latent Conditions⁹

Organizational- provide leadership make safety a priority

- Make safety everyone's priority
- Provide financial and human resources for error analysis and system redesign

Respect human limits in process design

- Design for safety
- Don't rely on memory
- Use of constraints and forcing functions.
- Don't rely on vigilance

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Medication Alerts

Drug safety alerts can help avoid adverse drug events (ADEs), playing an important role in improving patient safety.

However, alerts are only effective when users deem them to be relevant and therefore worth time and attention.¹⁰

Studies have shown that processing inappropriate or low quality alerts leads to alert fatigue and suggest that minimizing alerts to the highest importance only or tiering alerts can be helpful.¹¹

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Error Producing Conditions

Healthcare is full of error producing conditions; multiple patients needing care, transporting patients, setting a pump, administering, preparing medication, distractions.

We need to design systems that minimize errors, implement processes that work, standardization

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Improve the Process

High leverage techniques Leverage	Medium leverage	Low
-Forcing functions -Rule/Policies		-Standard processes
-Automation -Educational Programs	-Barriers/Fail Safes Programs	-Warning alerts, reminders -Redundancies
	-Suggestions to	"be more careful"

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Ways to recognize errors

- Error reporting, including near misses
- Looking at external information
 - ISMP newsletters
 - The Joint Commission Sentinel Event Alert Newsletter
 - US Food and Drug Administration (FDA) drug alerts and statements
 - National Alert Network (NAN) alerts
 - National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) recommendations and statements
 - American Society of Health System Pharmacists (ASHP)
- Second order problem solving

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Second Problem Solving

Second Order Problem solving is an attempt to understand why the problem exists and aiming to correct the problem.

Reporting errors, reporting near misses, looking at cause analysis,

Near misses; occur more frequently than adverse events and have very similar causes as adverse events helping to shed light on system vulnerabilities

Cause Analysis; a critical step in learning about the errors and how to improve the process

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Medication Errors

- Medication errors can occur at any step of the medication process, prescribing, dispensing, administration, and monitoring.
- Pharmacists and technicians make an improvement on errors occurring in any of these steps.

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Prescribing

- Prescribing errors account for 70% of errors that could potentially result in adverse drug reactions.¹²

• Pharmacist Clinicians and other Prescribers can all make errors prescribing medication, these can often be the result of slips or lapses.

• Errors can occur due to wrong drug, wrong, route, wrong dose, wrong frequency or duration and also from erroneous or inappropriate prescribing with coexisting conditions or allergies.

• Causes of prescribing errors tend to include lack of knowledge about the patient, or insufficient drug knowledge.¹³

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Prescribing

- A study looked at nearly 10,000 prescriptions written by community based prescribers and found over a 15 month period that 1 in 4 prescriptions contained at least one prescribing error (not counting poor handwriting).¹⁴
- Antibiotics had the most prescribing errors in this study. Followed by cholesterol medications, narcotic analgesics, and blood pressure drugs.¹⁴

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How do we improve?

Provider miscalculates the amount of an antibiotic suspension to be dispensed for the correct duration of therapy.

Provider sends the script to the pharmacy without noting allergies.

Provider selects a medication dose that is not appropriate for the patient's renal function.

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Prescribing Errors

- Some ways to minimize errors include automation, including pertinent information about allergies, weights, indications, and avoiding error prone abbreviations.
- Staying up to date with clinical knowledge.
- Avoid verbal orders, if necessary read back all the information.

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Dispensing Errors

• Dispensing error can be defined as inconsistency between the dispensing of medication and the prescribing of a medication.¹⁵

- Incorrect drug
- Incorrect dose strength and /or frequency
- Failure to identify drug interactions or contraindications
- Drug dispensed to the wrong patient
- Causes of dispensing errors include; not updating patient's history, not questioning the provider if script is unusual, doses are too high or strengths seem incorrect, not reviewing the order, failure to counsel the patient, technicians acting out of their scope of practice.

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Dispensing Errors

- Follow the dispensing policies in your organization, don't overlook alerts and warnings, clarify information with provider and patient
- Technicians:
 - Alert pharmacist to any alerts received in dispensing system,
 - Ask any questions you might have
 - Ask open ended questions of patients versus yes or no questions.
- Keep Look Alike Sound Alike meds labeled and separate
- ISMP has a List of Commonly Confused Drug Names as well as Look Alike Sound Alike list with Tall man lettering recommendations¹⁶

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Dispensing Errors¹⁷

Double check the entry of the prescription

Use 2 patient identifiers, if there are any questions about the script contact the prescriber.

Organize your workplace to minimize distractions.

Balance workload. Adequate staffing will help reduce errors.

Store medications correctly

Always provide patient counseling, approximately 83% of errors are discovered during counseling, which should include discussion of how to take the medication and a chance for the patient to see the actual medicine.¹⁸

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Administration Errors

Administration errors can lead to medication errors as well. Not discussing the drug name, drug appearance, the indication, when is the best time to administer and how often to take, what to do about a missed dose.

Often communication or lack of communication contributes to these errors when patients are involved.

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Administering Errors

Administration errors in healthcare facilities or hospitals can be improved with barcode scanning, automated infusion pumps, and effective communication among the healthcare team.

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Not having complete information about the patient or discussing the medication with the patient can lead to which type of error?

- A. Prescribing errors
- B. Dispensing errors
- C. Administration errors
- D. All of the above

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An Error Happens what next?

First you need to follow up with the patient, perform any reversal or treatment options needed.

Report the error.

Talk to someone if you have contributed to an error.

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Patient Safety

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- Enhanced quality of life

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Expanding Roles

Pharmacy has grown and changed from just dispensing medications to providing care in almost all health settings, health and wellness screenings, managing chronic diseases, assisting patients with medication management, administering immunizations, working in healthcare facilities and hospitals to improve patient care and minimize readmissions.

With the expanded roles of pharmacists and technicians we can see other impacts pharmacists and technicians can make toward medication and patient safety.

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APhA

- Pharmacists' impact on Patient Safety, looked at actions taken by Pharmacists to improve patient safety across a variety of patient care settings ¹⁹

- They highlighted 8 actions taken by Pharmacists

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Pharmacists Contribution to Safety

- Ensure access to medication
- Supply medication information
- Evaluate medication appropriateness
- Improve medication adherence
- Provide health and wellness services
- Medication Management
- Assess health status
- Coordinating care transitions

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Ensure Access to Medication

- Medication cost can be a barrier to patients achieving their treatment goals
- Skipping doses, not picking up the preferred medication due to cost can lead to readmission to hospitals.
- Pharmacists and technicians have the knowledge and resources to help these patients, working directly with insurance, enrolling patients in patient assistance programs with manufacturers.

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Ensure Access to Medication

This happens in all areas of pharmacy

Pharmacists and technicians in retail settings interact with the patient at the point of sale and are in a prime position to understand the impact of cost of medications and to help find alternatives or suggest discount programs. ²¹

Pharmacists in care settings can help with transition of care to avoid high cost medications or plan ahead and help with prior authorizations.

Clinical pharmacists that prescribe medications are able to intervene and make cost effective choices for their patients.

Technicians can contact insurance companies to determine costs of medications.

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Patient safety goals

Access to medication can:

- Reduce cost
- Help achieve patient treatment goals
- Enhance patient quality of life
- Potentially avoid adverse reactions
- Improve patient satisfaction

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Medication Information

- Pharmacists are the medication experts.²¹
- Pharmacists can provide their expertise to patients and to other healthcare workers.
- An important step in providing medication information is counseling.
- Both pharmacists and technicians should use open ended questions and confirm the patient understands what they are being told.

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Medication Information

Examples:

Inpatient pharmacist reviews orders and finds a drug interaction with an anticholinergic and potassium tabs suggests a change to formulation of potassium avoids an adverse effect.

Outpatient pharmacist sees an order for paxlovid and notes patient is on tacrolimus for transplant, noting the interaction they can reach out to transplant provider for the plan for tacrolimus while paxlovid is on board.

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Patient Safety Goals

Medication Information can:

- Help achieving medication goals
- Avoid adverse reactions
- Decrease hospitalization or readmission
- Improving adherence to medication
- Reducing cost to patient or system
- Improved patient satisfaction
- Enhanced quality of life

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Evaluating Medication Appropriateness

Renal function, liver function, age, weight allergies these all play a role in the 5 rights of medication selection

Ensuring the rights of medication; the right dose of the right medicine reaches the right patient at the right time and by the right route.

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Medication Appropriateness

Pharmacists evaluate the medication profile for any interactions

This is done individually for each patient and can make such a difference for medication safety

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Medication Appropriateness

Medication appropriateness is important for every patient but especially in our older patients

Evaluating the clinical utility and potential for side effects or interactions is critical for patients with several medications and disease states²²

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Appropriate Medication choices

Patient Safety Goals you can meet:

- Help achieving medication goals
- Avoid adverse reactions
- Decrease hospitalization or readmission
- Improving adherence to medication
- Reducing cost to patient or system
- Improved patient satisfaction
- Enhanced quality of life

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Medication Adherence

3 types of nonadherence²³

1. non fulfillment adherence
2. non persistent adherence
3. non conforming

Non-Adherence rates vary widely in studies however review shows about 50% of nonadherence is intentional the remainder is related to lack of understanding and all types of nonadherence improved upon by pharmacists.

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Improved Medication Adherence

Reviewing how a patient takes medication can help key into changes that need made

Pharmacists may be the only healthcare worker with a complete medication list and access to the patient to determine what is affecting their compliance, maybe they just forget, maybe the regimen is too complex, maybe there is an interaction

There are consequences for non adherence a study by Anon demonstrated that patients with diabetes, hypercholesterolemia, hypertension, or congestive heart failure whom were non adherent to prescribed therapies were more than twice as likely to be hospitalized compared to the regular population²⁴

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Improved Medication Adherence

Patient Safety Goals you can meet:

- Help achieving medication goals
- Decrease hospitalization or readmission
- Improving adherence to medication
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- Improved patient satisfaction
- Enhanced quality of life

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Health and Wellness Services

Pharmacists are able to provide a variety of health and wellness services from blood pressure, blood glucose, and cholesterol screenings to vaccinations, smoking cessation, contraception and disease state education.

It should be clear how preventative measures are key to help with patient safety.

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Health and Wellness Services

Studies have demonstrated the benefit of pharmacist run health and wellness programs

Pharmacists are in a good position to address vaccine hesitancy and the most available to provide vaccinations in many circumstances²⁵

Immunizations protect from diseases that can often be severe and life threatening. Pharmacists are well trusted by patients and can make a difference with chronic disease state management.

Smoking cessation programs can help impact the long term consequences of smoking.

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Health and Wellness Services

Patient Safety Goals you can meet:
 Decrease hospitalization or readmission
 Reducing cost to patient or system
 Improved patient satisfaction
 Enhanced quality of life

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Assess Health Status

Pharmacist managed anticoagulation clinics have been found to reduce rates of anticoagulant related hospitalizations and ER visits and have a subsequent financial benefit.²⁶

Pharmacist clinicians and pharmacists that run clinics that assess blood pressure, blood glucose, or anticoagulant clinics all are in a prime position to based on health status make medications recommendations.²⁷

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Assess Health Status

Patient Safety Goals you can meet:
 Achieve medication goals
 Decrease hospitalization or readmission
 Reducing cost to patient or system
 Improved patient satisfaction
 Enhanced quality of life

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Medication Therapy Management (MTM)

MTM is a pharmacist review of a patient's profile can help to simplify the patient's regimen.

To avoid drug -drug and drug - disease interactions

Identify gaps in reaching treatment goals

MTM services are provided in all areas of pharmacy

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MTM

Patient Safety Goals you can meet:
 Help achieving medication goals
 Avoid adverse reactions
 Decrease hospitalization or readmission
 Improving adherence to medication
 Reducing cost to patient or system
 Improved patient satisfaction
 Enhanced quality of life

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Coordinating Care

Pharmacist led medication reconciliation may identify potential interactions or omissions from the medication lists at transitions to care, which are prone to error.

The reconciliation process helps identify problems such as drug interactions, omissions, duplicates, dose errors and by doing so minimizes ADE.

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Coordinating Care

Patient Safety Goals you can meet:
 Help achieving medication goals
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Pharmacists Impact

As we have moved from dispensing medications to being involved in all areas of healthcare we can have an even bigger impact on patient safety.

Avoiding medication errors, designing systems to minimize and by working to minimize ADE by providing access to medicine, and health care services we can improve patient safety.

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Technician Impact

Technicians are in prime position to help with medication errors and to help minimize errors and suggest corrections to processes. This is especially true with the dispensing of medications, often the technician is responsible for filling automatic dispensing cabinets, preparing IVs and compounds, and for interacting with the patient in the retail setting and can at each of those points help to improve safety.

Technicians also have expanded roles with vaccinations and health screenings and can make an impact toward patient safety with their expanded roles.

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In what ways do you plan to improve patient safety?

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Questions?

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