

# All I Want For Christmas is Medication Safety

NYSCHP New Practitioner Committee CE  
December 1<sup>st</sup>, 2021

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# Objectives

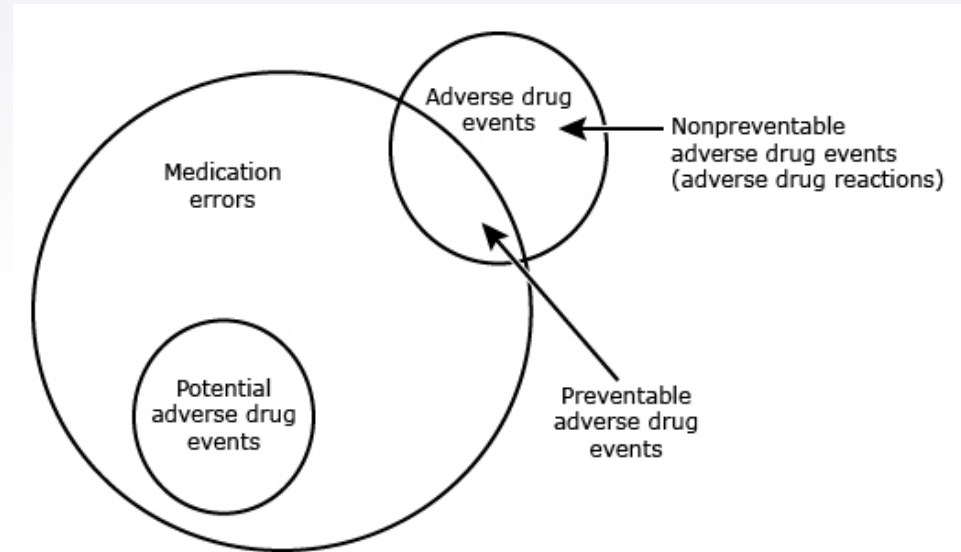
- ? Define common medication safety terminology and discuss different type of medication errors
- ? Identify contributing factors associated with medication-related safety events
- ? Define second victim syndrome and its impact on patient safety
- ? Describe the six stages of second victim syndrome and barriers for support
- ? Introduce various process improvement strategies
- ? Identify ways to improve and create a culture focused on patient safety



Background

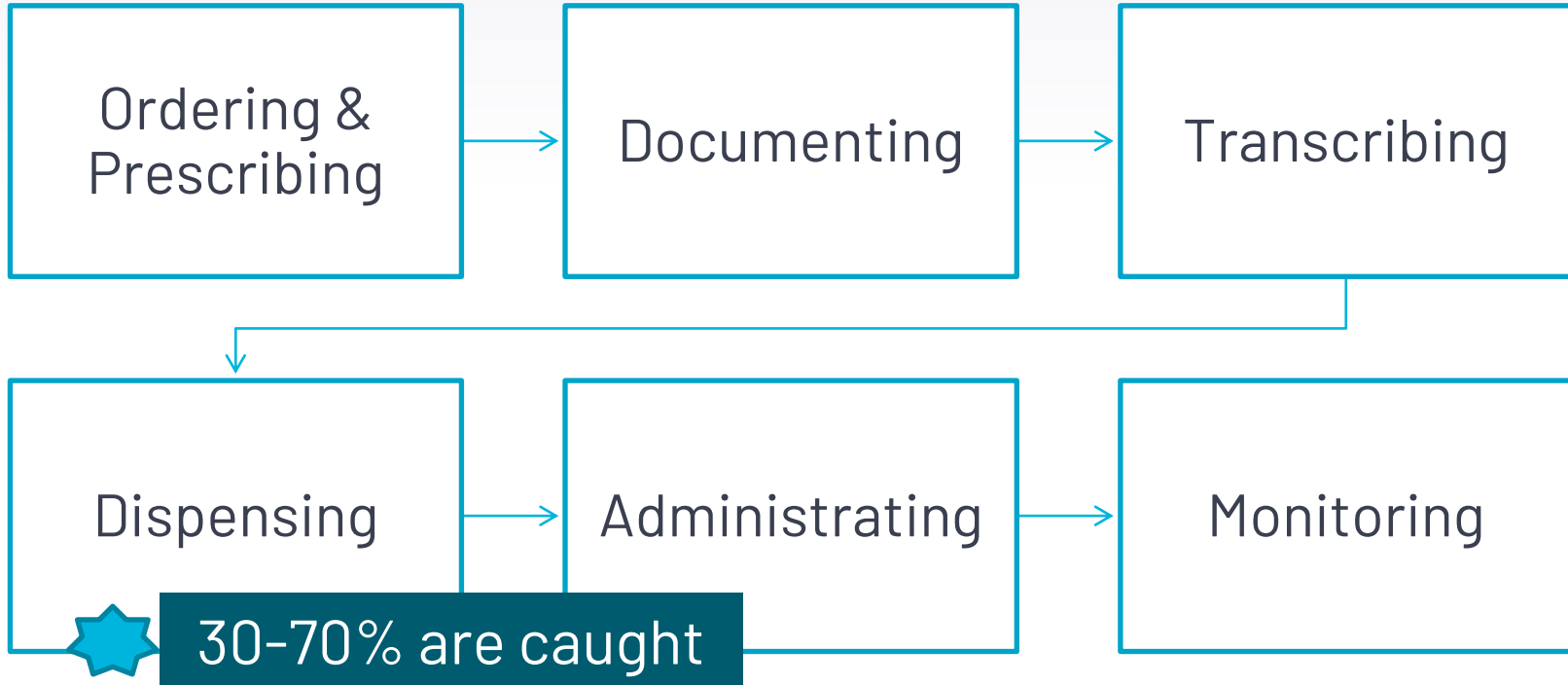
# Definition

- ? **Medication Error:** Any mistakes occurring in the medication use process, **regardless** of whether an injury occurred or whether the potential for injury was present
- ? **Adverse Drug Event (ADE):** any injuries resulting from medication use, including physical harm, mental harm, or loss of function
  - ? **Adverse Drug Reactions (ADR):** **non-preventable** ADEs that occur due to pharmacologic properties of the drug



**Approximately 1 in 100 medication errors result in an adverse drug events (ADE)**

# Errors Can Occur in Any Step



# A nurse was just sentenced to 3 years of probation for a lethal medical error

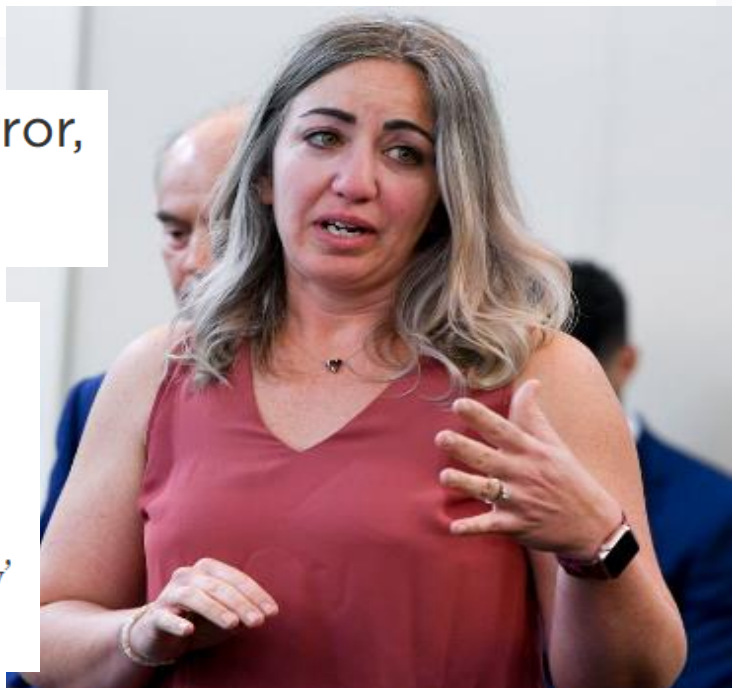
RaDonda Vaught's conviction set a dangerous precedent for patient safety, but is also driving a push for better protections for nurses.

As a nurse faces prison for a deadly error, her colleagues worry: Could I be next?

March 22, 2022 · 5:00 AM ET

## *Ex-Nurse Convicted in Fatal Medication Error Gets Probation*

RaDonda Vaught, a former nurse at Vanderbilt University Medical Center in Tennessee, said at her sentencing, "I'm sorry" doesn't seem like enough."



# Sequence of Events

## Covering RN:

- Radonda was going to conduct swallowing study but agreed to first administer Versed to CM first

## Automated Dispensing Cabinet

- Radonda typed "VE", but medication did not come up
- Initiated *override* setting
- Removed the 1<sup>st</sup> medication that came up

Override

Can take out medications without verification of RPh

## Covering RN (RaDonda)

- Worked ~2 years as All-Help Nurse
- Had an orientee shadowing
- Never administered vecuronium before

## Patient CM

- 75 yo came in for subdural hematoma
- Requested anxiolytic during MRI

## Radiology Tech/Primary RN:

- Radiology Tech called primary RN to administer 1mg Versed
- Primary RN asked Radonda to cover for her

## Wrong Drug Selection

- Radonda mis-selected vecuronium instead of versed (midazolam)
- At least 3 screens **warned** statin. "paralyzing agent"
- Radonda had to type in reason for removal
- She **noticed** different dosage form (liquid vs. reconstitute)

**WARNING:**  
Paralyzing Agent

# Sequence of Events

- CM was not on any monitoring for 30 minutes
- CM was found by radiology staff as unresponsive
- CPR performed but patient suffered anoxic brain injury

## Administration

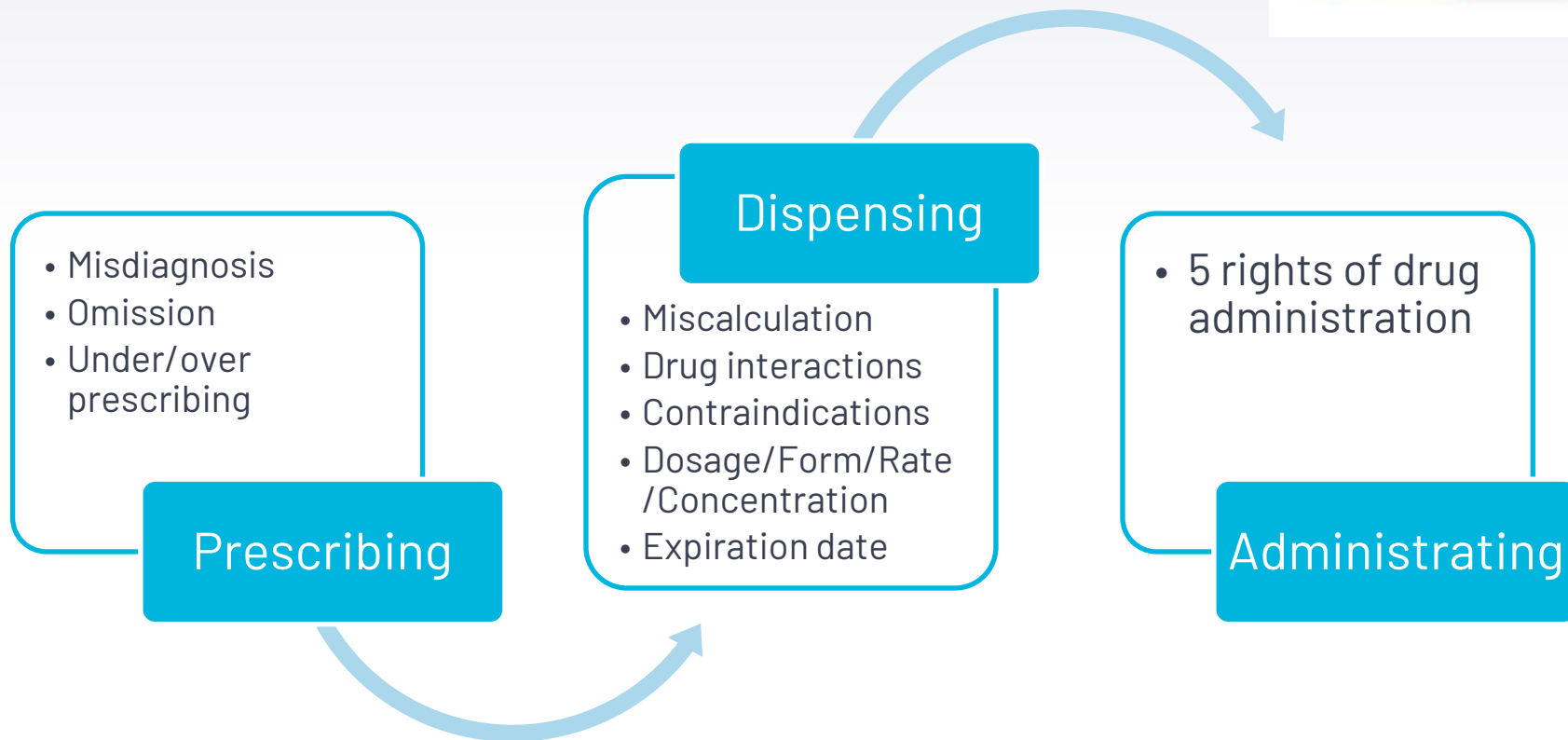
- Looked at **back** of the vial for reconstitution instructions
- Failed to acknowledge “paralyzing agent” at the top of the vial
- Verbally checked patient’s name and administered 1mg of VECURONIUM instead of Versed
- RaDonda immediately left and did not document in the medical record



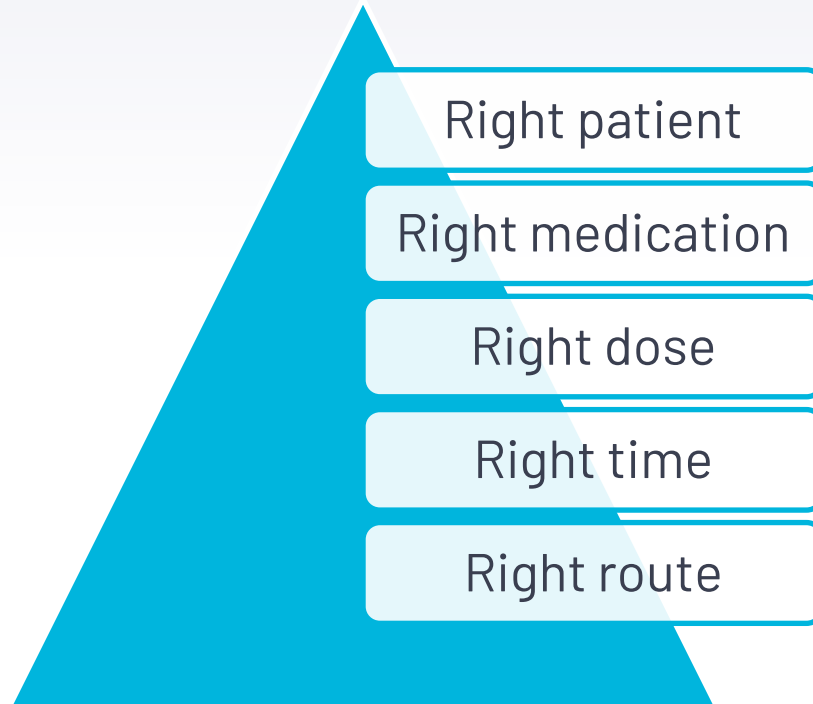
- Patient was removed from life support the following morning
- Radonda was fired from the hospital a week after



# Types of Medication Errors



# 5 Rights of Medication Administration



# Causes of Medication Errors

- ? Environmental Factors
  - ? Distractions (e.g. forgetting)
  - ? High risk settings/medications
- ? Inexperienced staffs & lack of knowledge
- ? Poor communications & Verbal Orders
- ? Lack of policy enforcement
- ? Fatigue/Burnout

## High Risk Settings

Intensive Care Units

Off-hours

## High Risk Populations

Pediatrics

Elderly

# What risks do you identify with RaDonda Vaught Case?

## Environment

- ? Intensive Care Units
- ? Transfer
- ? Verbal Orders
- ? Lack of monitoring
- ? Lack of policy enforcement (double check, monitoring, documentation etc)

## Personnel

- ? Distractions (orientee)
- ? Relatively inexperienced staff
- ? Was not in charge of that patient
- ? Dismissed alert (fatigue/burnout)

## Medications/Patient Related

- ? High risk medication
- ? Overridable
- ? High risk patient (elderly)

# High-Alert Medications

- Institute for Safe Medication Practices (**ISMP**) publishes high-alert medications
- Guide clinicians which medications require special safeguards

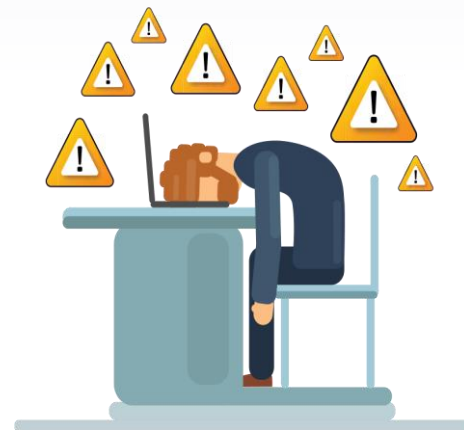
Specific Medications
<b>EPINEPH</b> rine, subcutaneous
epoprostenol (e.g., Flolan), IV
insulin U-500 (special emphasis*)
magnesium sulfate injection
methotrexate, oral, nononcologic use
nitroprusside sodium for injection
opium tincture
oxytocin, IV
potassium chloride for injection concentrate
potassium phosphates injection
promethazine injection
vasopressin, IV and intraosseous

## Classes/Categories of Medications

adrenergic agonists, IV (e.g., <b>EPINEPH</b> rine, phenylephrine, norepinephrine)
adrenergic antagonists, IV (e.g., propranolol, metoprolol, labetalol)
anesthetic agents, general, inhaled and IV (e.g., propofol, ketamine)
antiarrhythmics, IV (e.g., lidocaine, amiodarone)
antithrombotic agents, including: <ul style="list-style-type: none"><li>■ anticoagulants (e.g., warfarin, low molecular weight heparin, unfractionated heparin)</li><li>■ direct oral anticoagulants and factor Xa inhibitors (e.g., dabigatran, rivaroxaban, apixaban, edoxaban, betrixaban, fondaparinux)</li><li>■ direct thrombin inhibitors (e.g., argatroban, bivalirudin, dabigatran)</li><li>■ glycoprotein IIb/IIIa inhibitors (e.g., eptifibatide)</li><li>■ thrombolytics (e.g., alteplase, reteplase, tenecteplase)</li></ul>
cardioplegic solutions
chemotherapeutic agents, parenteral and oral
dextrose, hypertonic, 20% or greater
dialysis solutions, peritoneal and hemodialysis
epidural and intrathecal medications
inotropic medications, IV (e.g., digoxin, milrinone)
insulin, subcutaneous and IV
liposomal forms of drugs (e.g., liposomal amphotericin B) and conventional counterparts (e.g., amphotericin B desoxycholate)
moderate sedation agents, IV (e.g., dexmedetomidine, midazolam, <b>LOR</b> azepam)
moderate and minimal sedation agents, oral, for children (e.g., chloral hydrate, midazolam, ketamine (using the parenteral form))
opioids, including: <ul style="list-style-type: none"><li>■ IV</li><li>■ oral (including liquid concentrates, immediate- and sustained-release formulations)</li><li>■ transdermal</li></ul>
neuromuscular blocking agents (e.g., succinylcholine, rocuronium, vecuronium)
parenteral nutrition preparations
sodium chloride for injection, hypertonic, greater than 0.9% concentration
sterile water for injection, inhalation and irrigation (excluding pour bottles) in containers of 100 mL or more
sulfonylurea hypoglycemics, oral (e.g., chlorpro <b>PAMIDE</b> , glimepiride, gly <b>BURIDE</b> , glipiz <b>IDE</b> , <b>TOLBUT</b> amide)

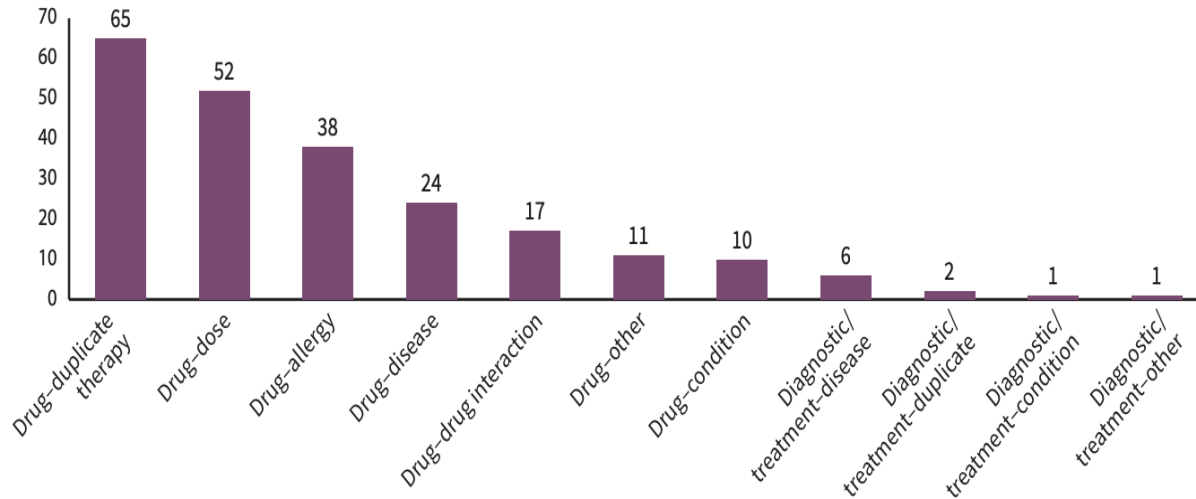
# Alert Fatigue

- ? Desensitization that occurs when providers are presented with too many warnings
- ? Providers face an average **20,000 alerts** per month
- ? On average, it takes **331** alerts to prevent a single ADE
- ? More than **96%** of the alerts are found to be overridden
- ? In 2015, Knight et al studied factors associated with medication warning acceptance
  - ? Alerts were most frequently overridden in elderly, longer hospital stay, and interaction warning types

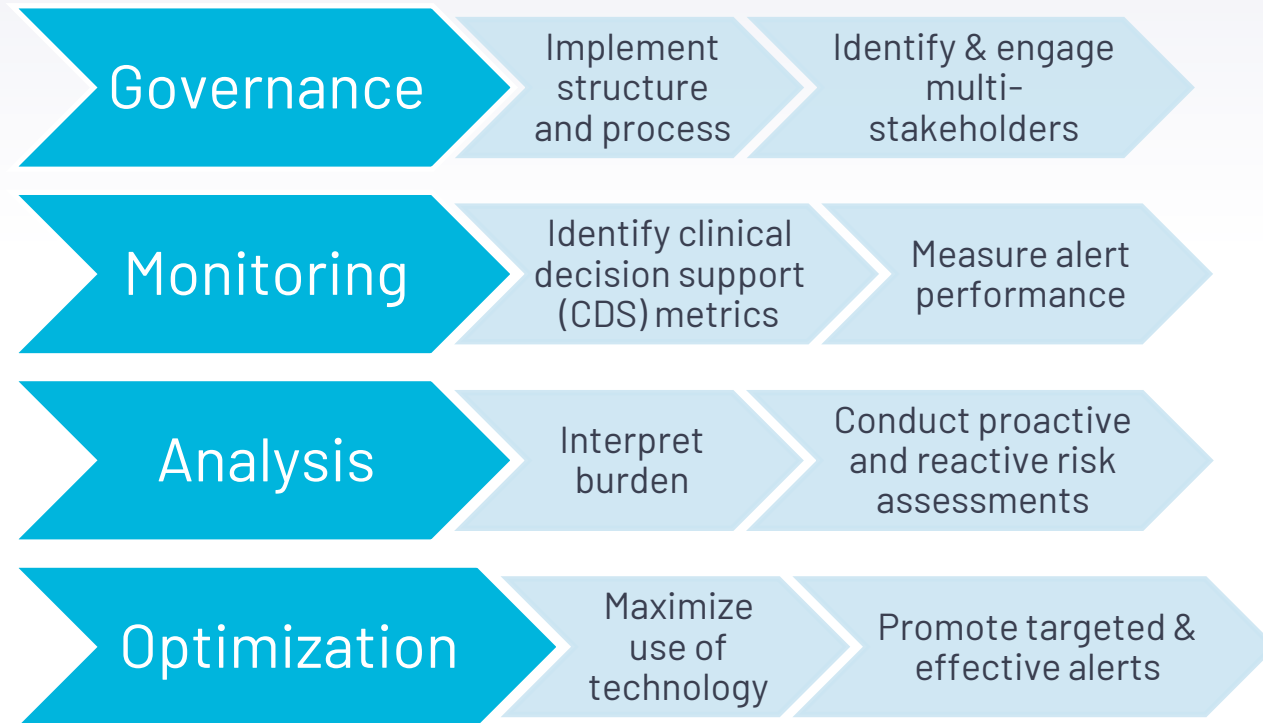


# ECRI and Health IT Safety Experts Team up to Tackle Alert Fatigue

## Types of Computer Physician Order Entry (CPOE) Alerts



# Best Safety Practice Recommendations





# 7 Million People

Impacted by medication errors every year

# \$21-40 Billion

Cost of medication errors annually

# 10%

Hospital patients will be subject to a medication error



# Consequences





PUBLIC HEALTH



# Why nurses are raging and quitting after the RaDonda Vaught verdict

April 5, 2022 · 5:00 AM ET

BRETT KELMAN HANNAH NORMAN

FROM KHN



Aiken said. "The only way you can really learn about errors in these complicated systems is to have people say, 'Oh, I almost gave the wrong drug because ...'"

"Well, nobody is going to say that now."



News

## AACN's Statement on the Conviction of RaDonda Vaught

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On March 25, former Vanderbilt University Medical Center nurse RaDonda Vaught was convicted of criminally negligent homicide and impaired adult abuse due to a 2017 medication error that resulted in a patient's death. This conviction sets a dangerous precedent that puts patient safety at risk for years to come.

Decades of safety research, including the Institute of Medicine's pioneering report *To Err Is Human*, has demonstrated that a punitive approach to healthcare errors drives problems into the shadows and decreases patient safety. In addition, catastrophic errors are often the result of many factors, and the ability to safely report errors allows for root cause analysis and correction of systemic problems. Vaught immediately reported her error to her supervisors and took responsibility for her actions. This criminal prosecution and verdict will negatively impact the timely and honest reporting of errors. In addition, this case has further demoralized an already exhausted and overworked nursing workforce in the face of existing nurse staffing shortages.

FEATURED ARTICLES

# Another Round of the Blame Game: A Paralyzing Criminal Indictment that Recklessly “Overrides” Just Culture

February 14, 2019



ISMP was shocked and saddened to learn that, once again,<sup>1-4</sup> a frontline healthcare practitioner has found herself on the receiving end of a criminal indictment after making a medication error that led to the tragic death of a patient. RaDonda Vaught, a 35-year-old registered nurse, was indicted on charges of reckless homicide and abuse of an impaired adult, more than a year after inadvertently administering intravenous (IV) vecuronium instead of **VERSED** (midazolam) to a patient in radiology. Prior to a full body scan, IV Versed had been ordered as an anxiolytic due to the patient’s claustrophobia. Unable to find Versed on the patient’s profile in an automated dispensing cabinet (ADC), RaDonda enabled the override function, entered “VE” into a search field, and erroneously selected and removed vecuronium. She did not notice the selection error and administered vecuronium to the patient, believing it was Versed. The patient experienced an unwitnessed respiratory arrest and died.<sup>5</sup>

According to the Davidson County (Tennessee) District Attorney’s Office, the nurse’s decision to obtain the medication via ADC override was central to the criminal indictment.<sup>6</sup> While barred from discussing details of the case, the

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## RELATED

[Guidelines for the Safe Use of Automated Dispensing Cabinets](#)

[Access Full February 14, 2019 Acute Care Newsletter Issue](#)

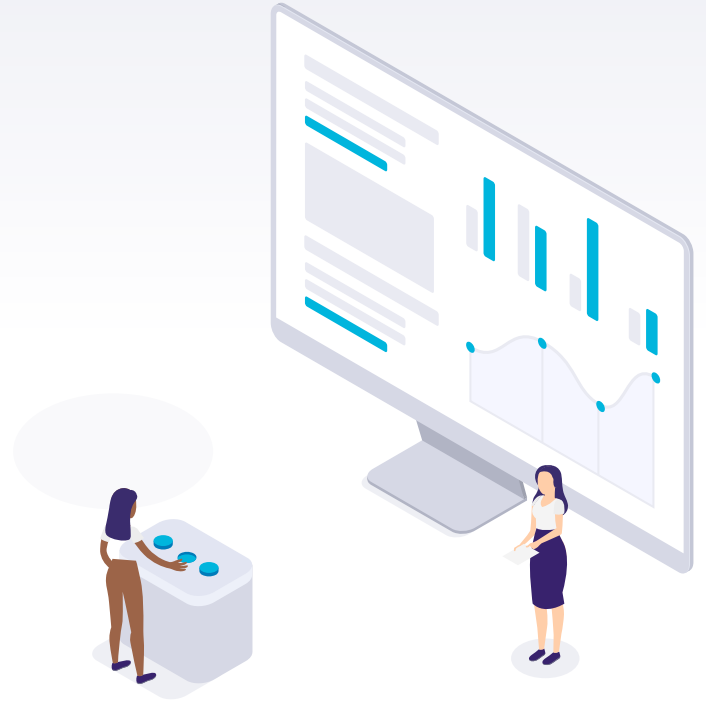
# Criminalization of Medical Errors

- ? Inhibit error reporting
- ? Undermine the creation of a culture of safety
- ? Accelerate the exodus of practitioners from clinical practice
- ? Practice “defensive” medicine





# Second Victim Syndrome



# Background

- ❓ Phenomenon when a caregiver experiences emotional trauma as a result of having a role in a harmful patient safety incident





# Consequences

- ? Burnout
- ? Depression
- ? Suicidal Ideation
- ? Compromise patient safety



**10.4 - 43.3%**

Prevalence of Second Victim Syndrome Following an Adverse Event

**46%**

Healthcare Practitioners Will Experience Impacts of Second Victim Syndrome in Their Lifetime

**18.2%**

Respondents' Organization Automatically Referred Team Members to Supportive Services Following an Adverse Event

# Barriers

- ? Stigma associated with reaching out for help
- ? Difficulty taking time off work
- ? Doubts about confidentiality of services offered
- ? Inadequate organization safety culture



# Signs and Symptoms

- ? Physical Symptoms
  - ? Sleep disturbances
  - ? Difficulty Concentrating
  - ? Muscle Tension
- ? Psychological Symptoms
  - ? Isolation
  - ? Fear
  - ? Flashbacks



# Stages of Second Victim Syndrome

1

CHAOS AND  
ACCIDENT  
RESPONSE



2

INTRUSIVE  
THOUGHTS



3

RESTORING  
PERSONAL  
INTEGRITY



4

ENDURING THE  
QUESTION



5

OBTAINING  
EMOTIONAL  
FIRST AID



6

MOVING ON





- How did this happen?
- Why did this happen?

### Characteristics

- Error realized
- Stabilize/treat the patient
- Distracted



CHAOS AND  
ACCIDENT  
RESPONSE





- What did I miss?
- Could this have been prevented?

2

INTRUSIVE  
THOUGHTS



### Characteristics

- Re-evaluate scenario
- Haunted re-enactments of event
- Feelings of internal inadequacy

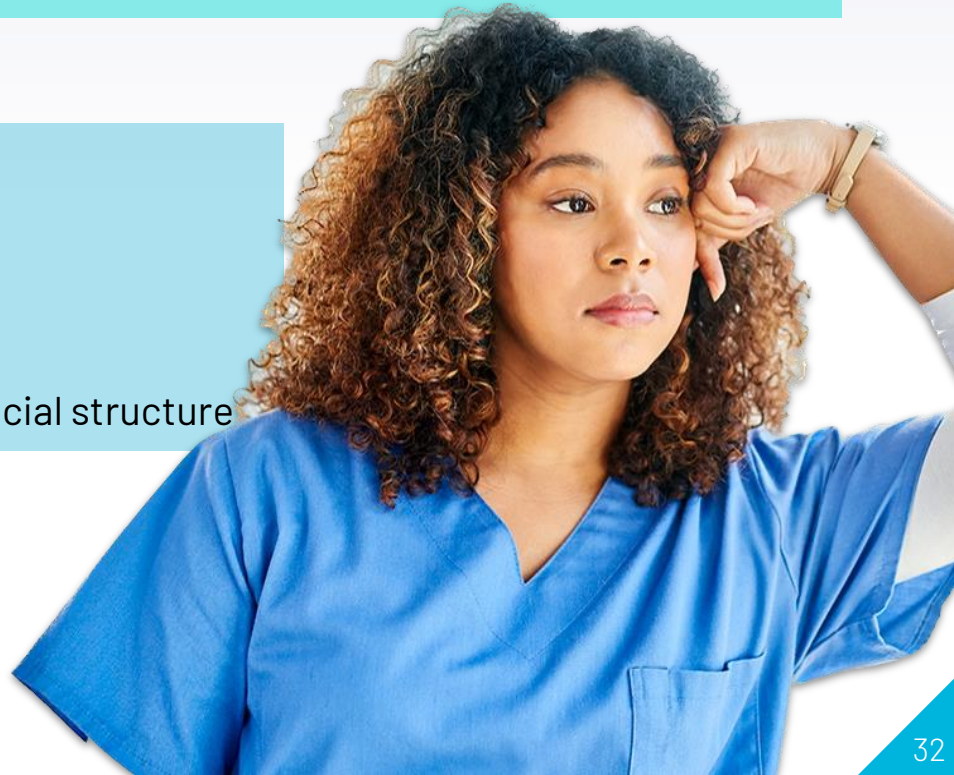




- What will others think?
- Will I ever be trusted again?
- How much trouble am I in?

### Characteristics

- Fear is prevalent
- Managing gossip
- Acceptance among work/social structure



3

RESTORING  
PERSONAL  
INTEGRITY







- What will happen next?
- Who can I talk to?
- Will I lose my job or license?

### Characteristics

- Realization of seriousness
- Litigation concerns emerge
- Respond to multiple "Whys"



4

ENDURING THE  
QUESTION





- What is wrong with me?
- Do I need help?
- Where can I turn for help?

### Characteristics

- Seeking personal/professional support
- Getting and receiving help and support



5

OBTAINING  
EMOTIONAL  
FIRST AID





- Is this the profession I should be in?
- Can I handle this kind of work?

### Characteristics

- Consider quitting
- Feelings of inadequacy
- Transferring to a different unit or facility



6

MOVING ON

1. Dropping Out





- Why do I still feel so badly/guilty?
- How could I have prevented this from happening?

### Characteristics

- Coping but still has intrusive thoughts
- Persistent sadness and trying to learn from the event



6

MOVING ON

2. Surviving





- What can I do to improve our patient safety?
- What can I learn from this?

### Characteristics

- Maintains work/life balance
- Does not base practice on one event
- Advocates for patient safety initiative



6

MOVING ON

3. Thriving



# ► Ways to Cope?

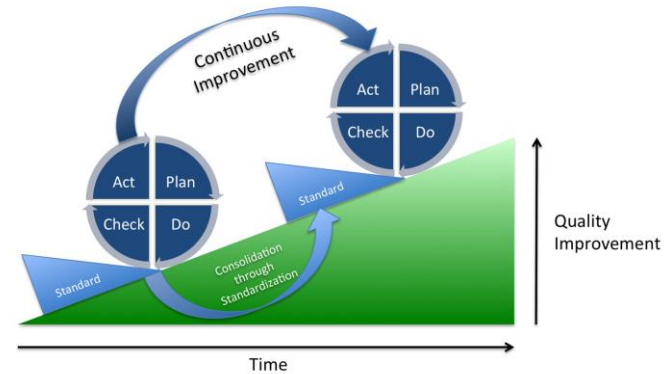


# ▶ What can you do?

- ❓ Awareness and education
  - ❓ ForYOU Team
- ❓ Develop a peer-to-peer support system/second victim program
  - ❓ John Hopkins



# Process Improvement





# Process Improvement Techniques

Root Cause  
Analysis

FMEA

Plan Do  
Check Act

Lean Six  
Sigma

A3

# Question

Which of the following process improvement techniques is a retrospective technique that uses such tools as the Ishikawa diagram and the 5 whys to identify underlying factors or causes for an error?

- A. FMEA
- B. Plan Do Check Act
- C. Root Causes Analysis
- D. Lean Six Sigma

# Root Cause Analysis (RCA)

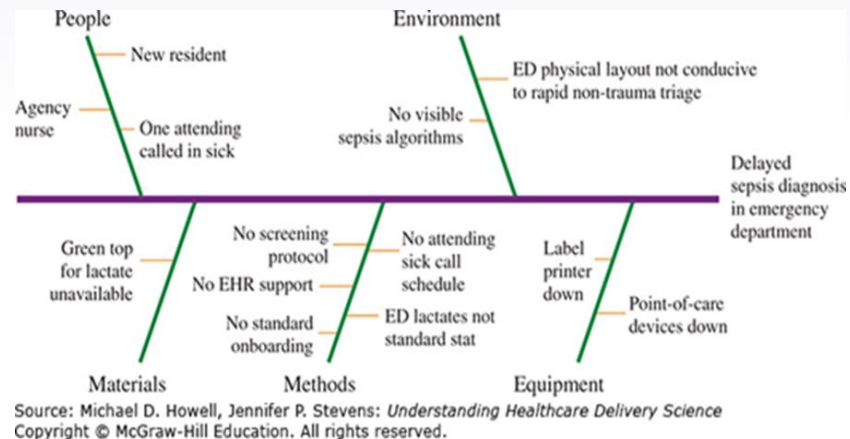
- ? Retrospective technique used to identify the cause or all of the factors that contributed to the error
- ? Focuses on systems of care not individual performance
- ? Techniques
  - ? 5 whys: Ask why 4 to 5 times until you get to the root cause of the issue

Question	Analysis	Corrective Action
What happened	Nurse gave the wrong medication	None
Why	She pulled the wrong medication	Discipline the nurse (wrong)
Why	She typed in VE and selected the first medication	Discipline the nurse (wrong)
Why	She went into override mode	Discipline the nurse (wrong)
Why	Couldn't pull the medication	Discipline the nurse (wrong)
Why	Pharmacy had not verified the order yet	Educate all staff about override policy

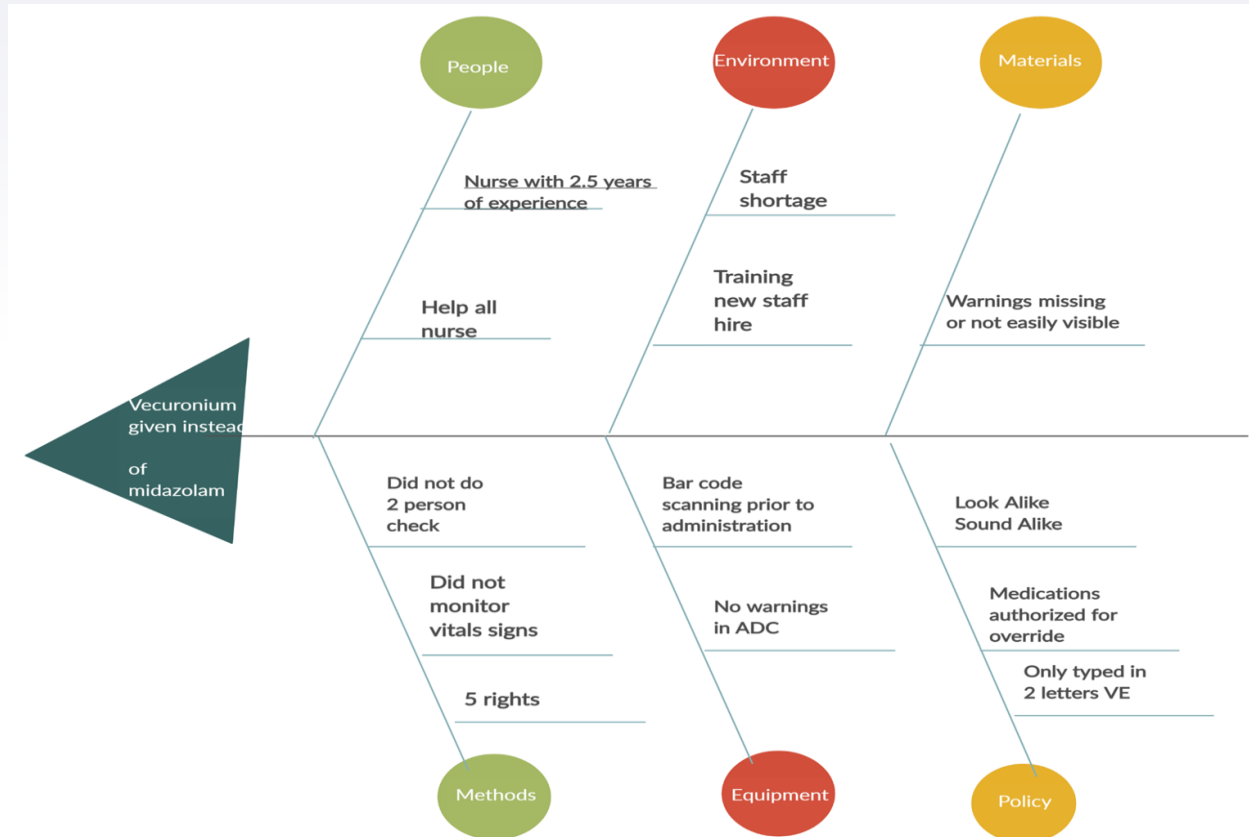
# Root Cause Analysis

## Ishikawa( Fishbone Diagram)

- ? Adverse event is placed on the right side of the diagram and definite and potential causes are filled into the diagram's branches
- ? Advantage is that this technique makes it clear that there are many potential contributing factors and may help identify related areas for improvement
- ? Be specific




# Ishikawa Diagram




# Steps Conducting a RCA

- ? Determine what happened
- ? Establish what should have happened
- ? Identify the direct and contributing factors of the error
- ? Identify actionable root causes and implement measures to prevent recurrence
- ? Establish outcome measures
- ? Feedback

# RCA ISMP Assess ERR Worksheet

 **ASSESS - ERR™**

 **MEDICATION SYSTEM Worksheet**

Patient MR# \_\_\_\_\_ Incident # \_\_\_\_\_  
*(if error reached patient)* if no callback identified:

Date of error: \_\_\_\_\_ Date information obtained: \_\_\_\_\_ Patient age: \_\_\_\_\_

Drug(s) involved in error: \_\_\_\_\_

Non-formulary drug(s)?  Yes  No  
Drug sample(s)?  Yes  No  
Drug(s) packaged in unit dose/unit of use?  Yes  No  
Drug(s) dispensed from pharmacy?  Yes  No  
Error within 24 hours of admission, transfer, or after discharge?  Yes  No  
Did the error reach the patient?  Yes  No

Source of IV solution:  Manufacturer premixed solution  Pharmacy IV admixture  Nursing IV admixture

Brief description of the event: (what, when, and why) \_\_\_\_\_

## Mini RCA Worksheet

- ? ISMP 10 Key Elements
- ? Helps identify root cause(s)



# Application to RaDonda Case



# Case Debrief

Automated Dispensing Cabinet procedures:

- ? Clarify Overriding procedures
  - ? Avoid unnecessary overrides
  - ? Require a witness or 2 person verification
- ? Limit access of users
- ? Educate staff to use patient specific profiles
- ? Avoid distractions while dispensing
- ? Monitor for Overrides



# Case Debrief

Automated Dispensing Cabinet procedures:

- ? Increase the number of letters required when searching- require 5 letters
- ? Building interactive warnings
  - ? Require purpose of medication removal

Limit storage of neuromuscular blockers to certain cabinets located in the ED, perioperative, labor and delivery, and critical care

- ? Close lidded cubicles

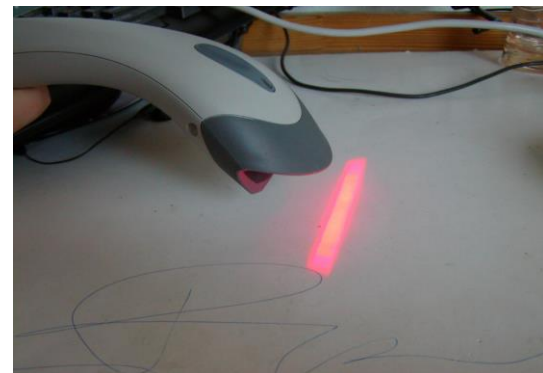


# Case Debrief

Bar code scanning

- ❓ Prior to administration verify each medication via barcode medication to ensure accuracy

Place auxiliary labels on all vials of neuromuscular blockers that clearly warn for respiratory depression and patient must be ventilated



# Case Debrief

## High Alert

- ❓ Neuromuscular blockers or IV sedatives should require monitoring
  - ❓ Heart rate, blood pressure, SPO2, and ECG monitoring

## Look Alike Sound alike

- ❓ Avoid storing drugs with similar sounding names together in the automated dispensing cabinet
- ❓ Apply auxiliary labels





**Just Culture**

# ▶ Just Culture



“The single greatest impediment to error prevention in the medical industry is “that we punish people for making mistakes.”

# ▶ Just Culture

- ❓ Employees feel safe when reporting concerns about safety
- ❓ Human error is not viewed as the cause of an adverse event, but rather the symptom of an imperfect system
- ❓ Leadership should not rush to punish employees involved in medical errors; rather seek to examine the system

# Just Culture

- 3 Behaviors to expect
  1. Human Error-Inevitable, unpredictable, unintentional
  2. At Risk Behavior-Lost perception of risk
  3. Reckless Behavior- Conscious disregard for substantial and or unjustifiable risk



# Human Error

To Err is Human

Not a behavioral choice

Causes

- ? Endogenous- stress, anxiety, preoccupation, fear, dread
- ? Exogenous- poor lighting, interruptions, absence of job aids, staffing shortages, technology glitches

Management

- ? System redesigns- forcing functions, fail safes, barriers, automation,
- ? Discipline is not warranted
- ? Console the person
- ? Avoid severity Bias

# At Risk Behavior

To drift is human

- ? It's human behavior to drift
- ? Feel an immediate reward for taking risks ie. saved time but consequences can be delayed or remote
- ? Overtime the risk fades and the entire culture becomes tolerant to the behavior
- ? Safe behavioral choices may invoke criticism and at-risk behavior may be rewarded
- ? Nurse who takes longer to administer medication vs nurse who can handle 6 new admissions



# At Risk Behavior

- Management
  - ? Identify underlying system causes
  - ? Remedy the system failures
  - ? Coaching individuals to identify the risks
  - ? Help the individual see that the risk associated with a behavioral choice that was not seen or misread
  - ? Positive conversation
- Purpose is to raise awareness of the risk and to uncover the underlying reasons for the behavior and to align expectations
- Can be done peer to peer



# ▶ Reckless Behavior

Always perceives the risk and understands that the risk is substantial and not justified

Knows the behavior is not the norm in the group

Knows the choice is not safe

Makes a conscious choice to disregard

# Reckless Behavior

## Management

- ? Blameworthy behavior
- ? Requires remedial or disciplinary action according to the organization's human resource policy

**Health care system fails to secure DEA registration for 15 off site ambulatory care sites pays \$4.3 million as part of a settlement**

**Pharmacist convicted with healthcare fraud and drug diversion charged with 10 years in prison**



# No Outcome Based Model of Accountability

- ? Organizations operating under a system of just culture do not employ an outcome-based model of accountability Blameworthy behavior
  - ? There is no severity bias
  - ? The potential or actual severity of the outcome plays no role in determining how staff are treated
- ? Instead, staff are judged on the quality of their behavioral choices not the outcome or potential outcome of a hazard or mishap

# Question

The pharmacy department has a robot that fills outpatient prescriptions for discharge. One of the cells in the robot needs to be replenished. The technicians grab multiple bottles off the shelf but only scans the barcode of one of the bottles multiple times to replenish the cell, despite being instructed to scan each individual bar code . As the supervisor you notice this at risk behavior. What is the appropriate way to manage this behavior

- A. Let it slide
- B. Punish the person
- C. Have a conversation with the employee and find out why they are doing that
- D. Reward the employee for their efficient methods

# THANKS!

## Any questions?

