Utilizing Leverage to Create Safer Systems in Life and in Healthcare

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Pharmacy Medication Safety

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Disclosure – None

Use Statement

Objectives

By the end of this lecture, you will be able to…

i. Explain the relationship between human error and operating within a Just Culture

ii. Differentiate between the human error, at-risk behavior, and reckless behavior

iii. Illustrate improvement strategies with their corresponding leverage and effectiveness

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The Scary Truth about Safety in Health Care…

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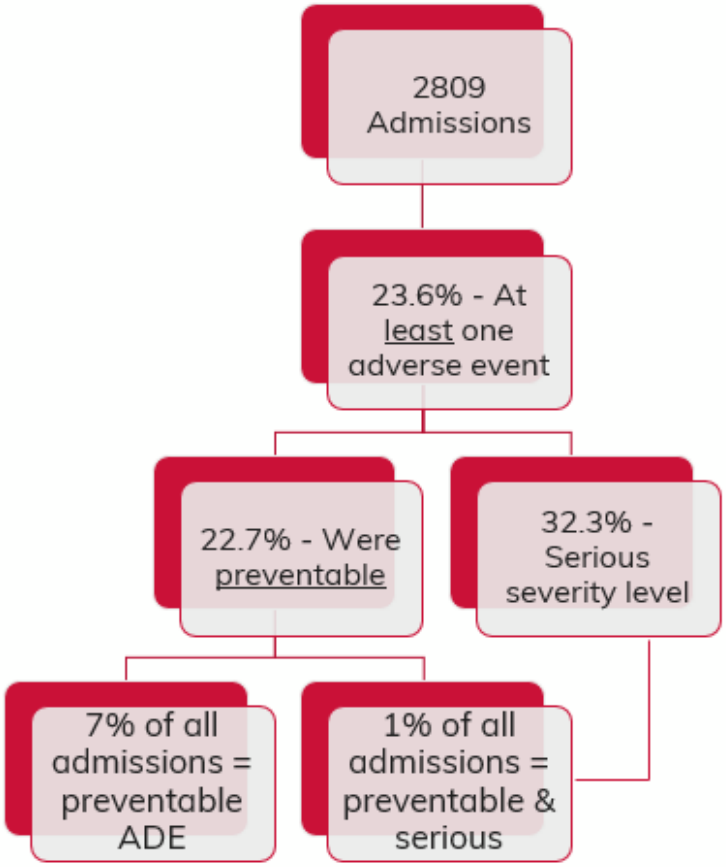
The NEW ENGLAND JOURNAL of MEDICINE

- Retrospective study of 11 hospitals
  - During 2018
- Published Jan 2023



Bates DW, Levine DM, Salmasian H, et al. The Safety of Inpatient Health Care. N Engl J Med. 2023;388(2):142-153. doi:10.1056/NEJMsa2206117

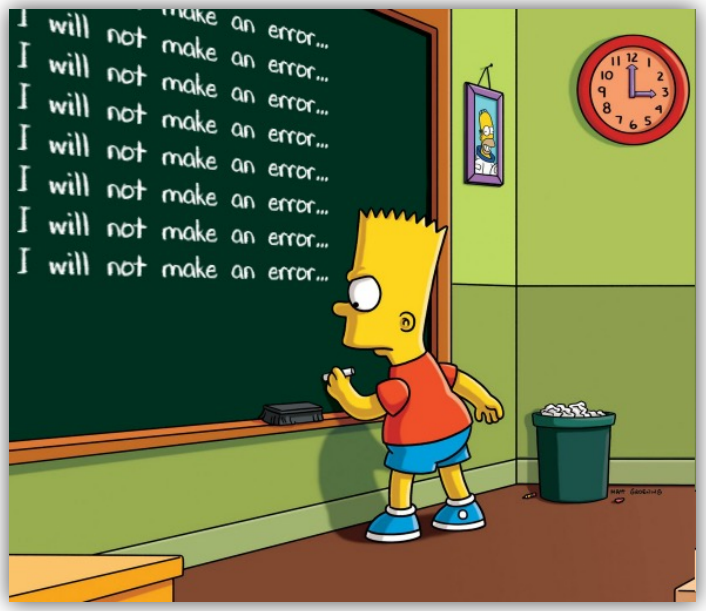
Culture in Healthcare

What is it?

A complex framework of national, international, organizational, and professional attitudes and values within which groups and individuals' function

Parparella, Susan. Sharping Behaviors in a Just Culture. ISMP Medication Safety Intensive Course. January 2022

Culture in Healthcare



Why is it important?

How we think about and respond to errors reflects our healthcare culture

Culture affects the behaviors of employees

Striving for a *Just Culture*

What does a *Just Culture* look like?

- Fair and Just
- System of accountability that best supports system values
- Applies to everyone

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Three Core Beliefs in a *Just Culture*

To err is human

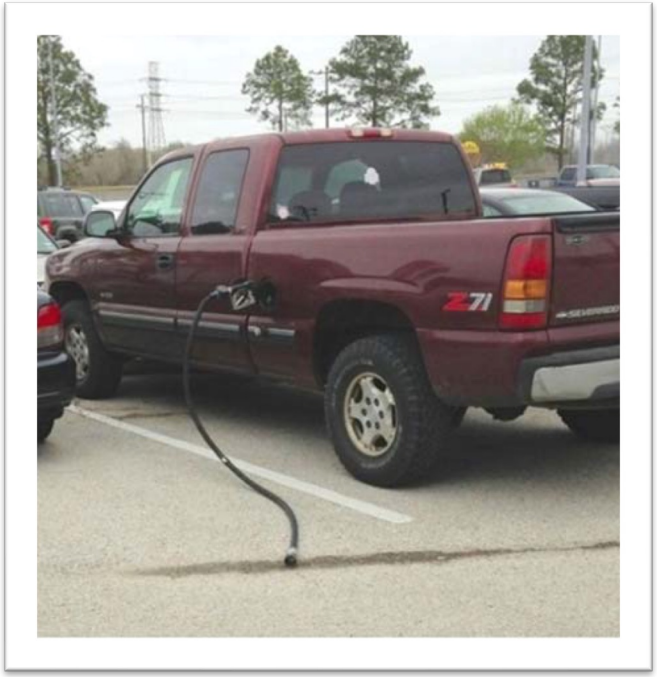
To drift is human

Risk is everywhere

Human Behaviors in a *Just Culture*

Human Error

Inadvertently doing other than what was intended or what should have done



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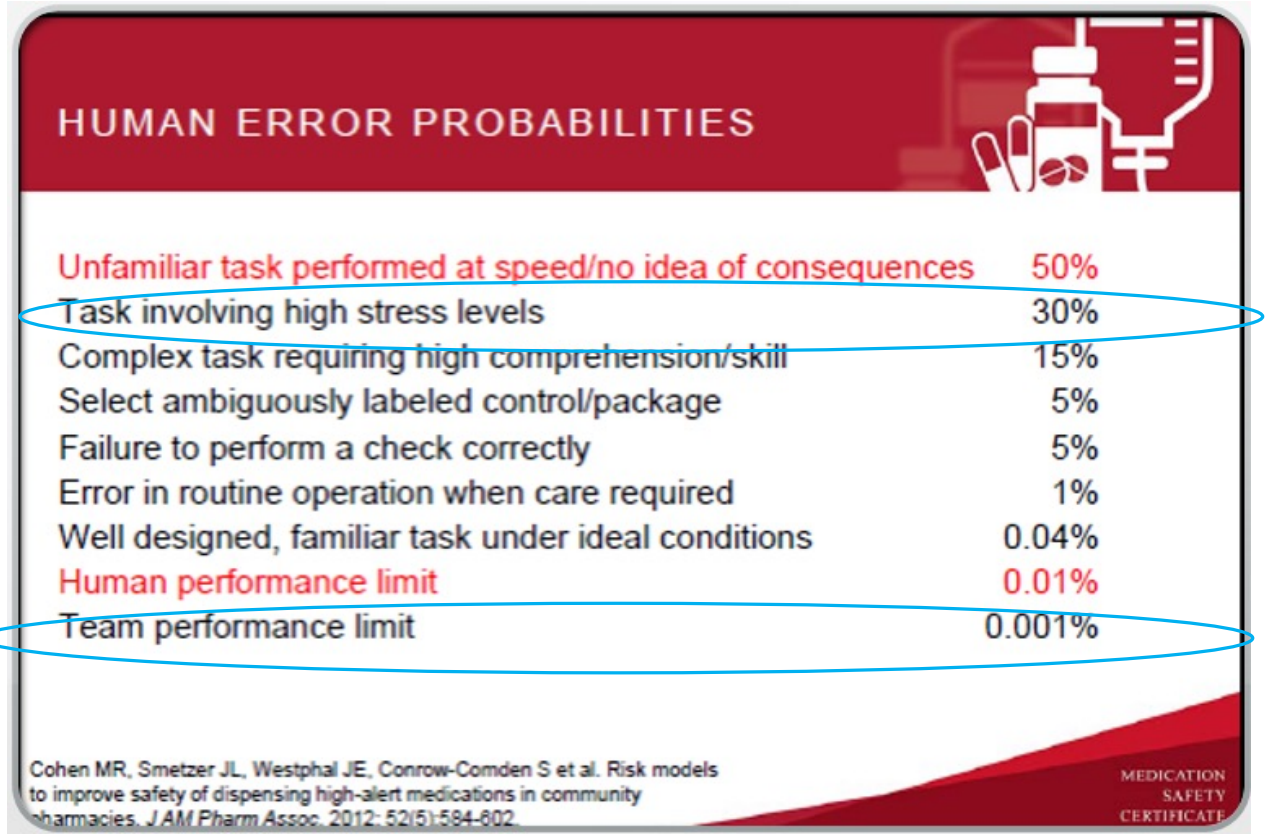
HUMAN ERROR PROBABILITIES
Unfamiliar task performed at speed/no idea of consequences 50%
Task involving high stress levels 30%
Complex task requiring high comprehension/skill 15%
Select ambiguously labeled control/package 5%
Failure to perform a check correctly 5%
Error in routine operation when care required 1%
Well designed, familiar task under ideal conditions 0.04%
Human performance limit 0.01%
Team performance limit 0.001%
Cohen MR, Smetzer JL, Westphal JE, Conrow-Comden S et al. Risk models to improve safety of dispensing high-alert medications in community pharmacies. J Am Pharm Assoc. 2012; 52(5):584-602.
MEDICATION SAFETY CERTIFICATE

Human Behaviors in a *Just Culture*

Drift aka At-Risk Behaviors

Behavioral choice that increases risk where risk is not recognized, or is mistakenly believed to be justified or insignificant

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Human Behaviors in a *Just Culture*

Reckless Behaviors

Conscious disregard of a substantial and unjustifiable risk.

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Active and Latent Failures

Active Failures:

Latent Failures:

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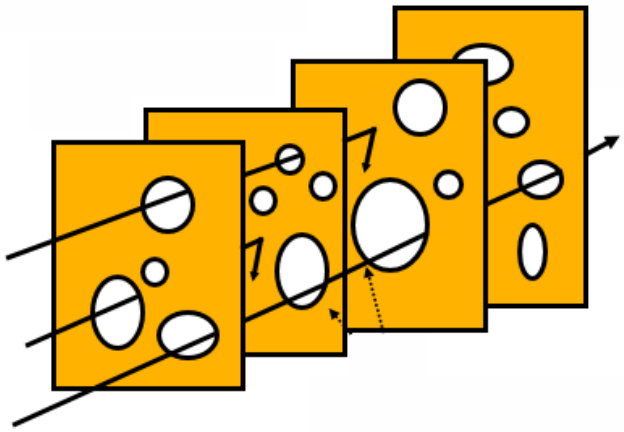
The Swiss Cheese Effect



Adapted from James Reason, *Managing the Risks of Organizational Accidents* (1997)

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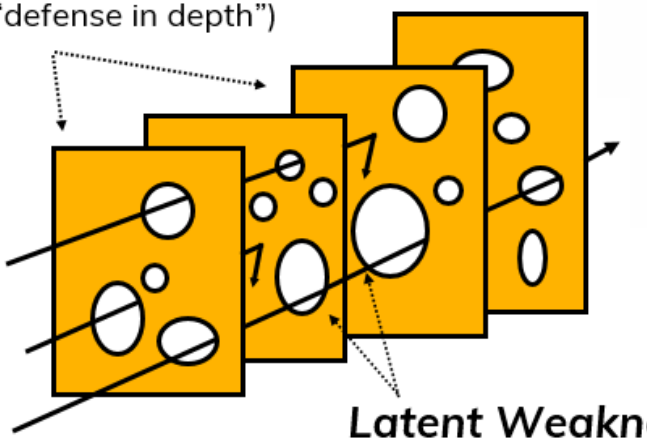
The Swiss Cheese Effect

Multiple Barriers - technology, processes, and people - designed to stop active errors (our "defense in depth")



Latent Weaknesses in barriers

DETECT & CORRECT

The System Weaknesses

Adapted from James Reason, *Managing the Risks of Organizational Accidents* (1997)

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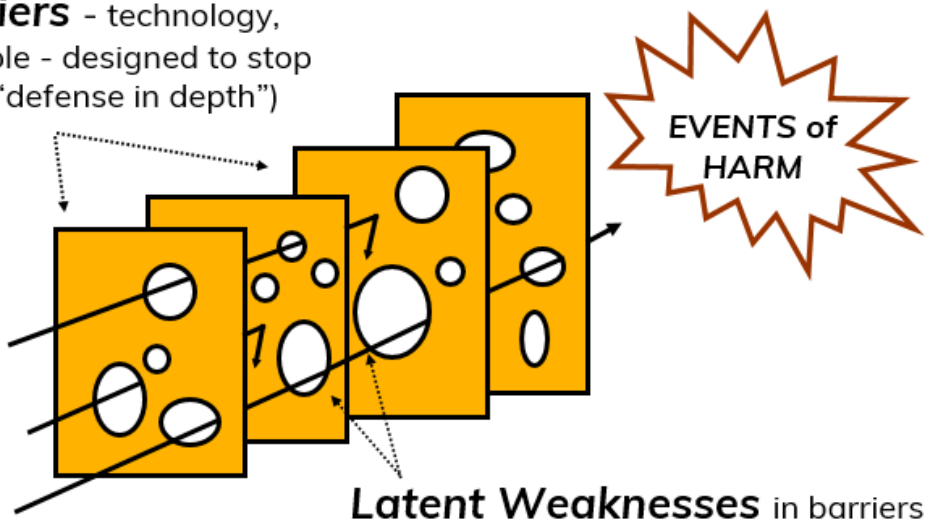
The Swiss Cheese Effect

Multiple Barriers - technology, processes, and people - designed to stop active errors (our "defense in depth")



Active Errors by individuals result in initiating action(s)

Latent Weaknesses in barriers

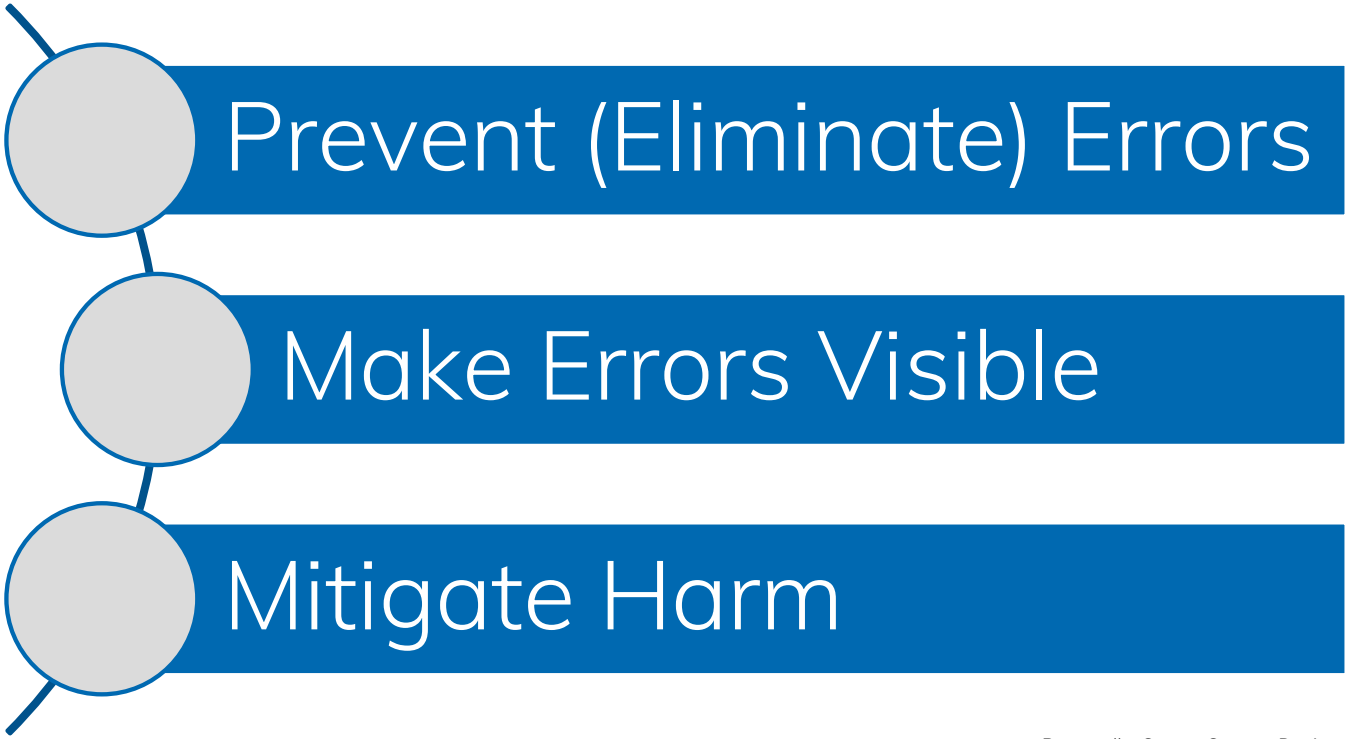
PREVENT
The Errors

DETECT & CORRECT
The System Weaknesses

Adapted from James Reason, *Managing the Risks of Organizational Accidents* (1997)

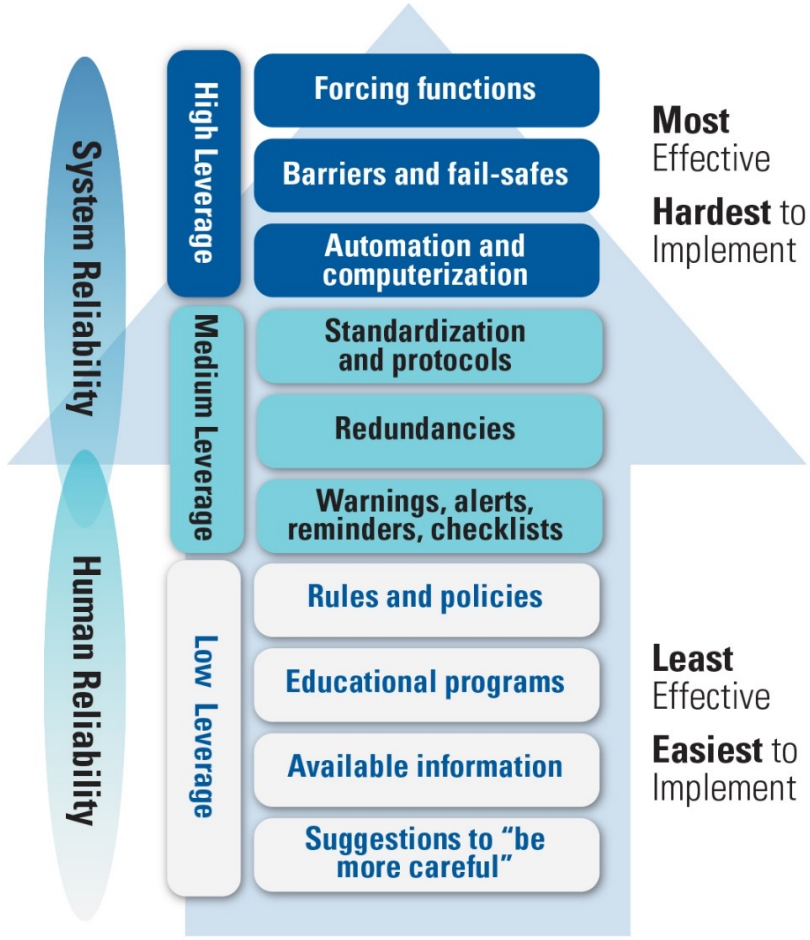
Strengthening our Systems…

Goals for Safety and Risk Control



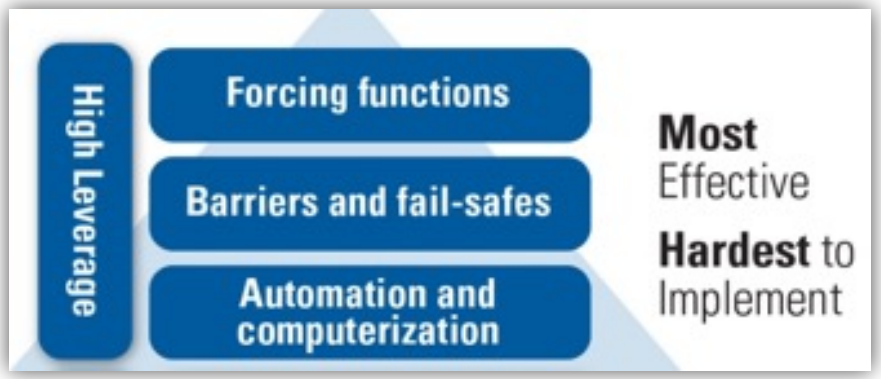
Parparella, Susan. *System Design and Risk Reduction Strategies for High Aler Medications*. ISMP Medication Safety Intensive Course. January 2022

Strengthening our Systems with Leverage



1. Parparella, Susan. *System Design and Risk Reduction Strategies for High Alert Medications*. ISMP Medication Safety Intensive Course. January 2022

Strengthening our Systems with **Leverage**



Institute for Safe Medication Practices. (2022). Chart of strategies for improving system and human reliability in medication practices. ©2022 ISMP

Pharmacy – Safety Leverage in Action

Acute Care
ISMP Medication Safety Alert!
Educating the Healthcare Community About Safe Medication Practices

FEBRUARY 19, 2019

Taking a Closer Look at a Fatal Vecuronium Error

Versed mix-up in radiology leads to lethal dose

On Dec. 26, 2017, a nurse at Vanderbilt University Medical Center opened an automated dispensing cabinet (ADC) seeking a sedative for a patient with a cerebral hematoma about to undergo a PET scan. Rather than taking out 2 mg of Versed (midazolam, Roche) to treat the patient's anxiety, as ordered, she mistakenly selected vecuronium, a neuromuscular blocking agent (NMBA). The patient subsequently received a lethal dose of the paralyzing anesthetic. No one in the radiology department was monitoring the patient as she went into cardiac arrest.

Michael R. C
RPh, MS, FA

This is by no means the first time that an NMBA has caused a fatal error—the Institute for Safe Medication Practices (ISMP) has been reporting on them since the 1990s (sidebar). These repeated tragedies show that "directors of pharmacy have been hitting the snooze button on this for at least 25 years," said Jeffrey Norenberg, PharmD, PhD, the director of the radiopharmaceutical sciences program in the College of Pharmacy at the University of New Mexico Health Sciences Center, in Albuquerque. "Departments of pharmacy are culpable in ignoring the mandate from the Joint Commission, which requires prospective medicatio order review by a pharmacist and that formulary controls are in place for all drugs used in radiology."

ISMP President Michael R. Cohen, RPh, MS, FASHP, agreed that this latest error points to a serious, widespread saf gap. Indeed, "this is the type of thing that could happen at other hospitals," he said in an interview.

Peeples L. Taking a Closer Look at a Fatal Vecuronium Error. Anesthesiology News. https://www.anesthesiologynews.com/Online-First/Article/01-19/Taking-a-Closer-Look-at-a-Fatal-Vecuronium-Error/53790. Published January 2019. Accessed September 15, 2025

Dammeier, B. (2023). [AI-generated image of a healthcare worker scanning a bottle labeled "PARALYTIC WARNING"]. Created with Microsoft Copilot, October 2023

Pharmacy – Safety Leverage in Action

Dammeier, B. (2023). [AI-generated image of a rabbit pharmacy technician using barcode scanning technology to produce a bottle label. Created with Microsoft Copilot, October 2023

Strengthening our Systems with **Leverage**

Institute for Safe Medication Practices. (2022). Chart of strategies for improving system and human reliability in medication practices. ©2022 ISMP

Strengthening our Systems with **Leverage**

Institute for Safe Medication Practices. (2022). Chart of strategies for improving system and human reliability in medication practices. ©2022 ISMP

Assessment Time!

During a busy evening, a new technician is preparing refills for the medrooms and an accidentally pulls *guaifenesin* tablets instead of *guanfacine* tablets. A teammate catches the issue during verification; no patient harm occurs.

What is the most appropriate Just Culture response?

A. Issue a written warning to the technician

B. Console the technician and address the *look-alike sound – alike vulnerabilities*

C. Require the technician to repeat on boarding training

D. Suspend the technician from core/main Rx duties for 2 weeks

Assessment Time!

Which responses best align with each behavior type?

Human error: Console + system fixes | Punitive action | Coaching on risk recognition

At-risk behavior: Strengthen barriers | Coaching & remove incentives to drift | Console only

Reckless behavior: Process mapping | Disciplinary action | More reminders

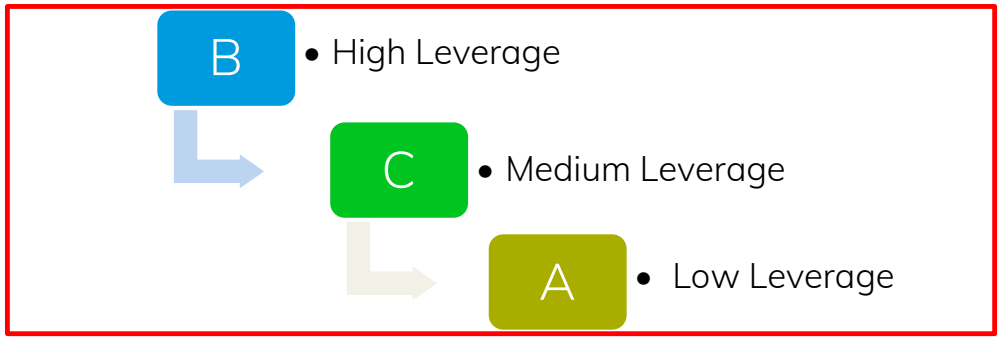
Assessment Time!

Rank the following interventions from **highest** to **lowest leverage** for preventing **wrong-patient handoffs** at outpatient pickup:

A. Send an email reminding staff to be careful at will-call

B. B. Configure POS to hard-stop release unless the Rx bottle is barcode scanned+ two patient identifiers are entered in the system

C. Add a small sign on the register that says -- “Verify two identifiers!”



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Questions?

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4. Parparella, Susan. *Sharping Behaviors in a Just Culture*. ISMP Medication Safety Intensive Course. January 2022
5. Parparella, Susan. *System Design and Risk Reduction Strategies for High Alert Medications*. ISMP Medication Safety Intensive Course. January 2022
6. Reason J. *Human error*. New York, NY: Cambridge University Press; 2003


The End