

## Patient Safety and High Reliability

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### Objectives

- Review the role of patient safety and high reliability in pharmacy operations
- Discuss reliability science
- Review a case study of a harm event and strategies to review events.

### High Reliability

- Reliability is the probability that our delivery system gets it right. 100% would be right every time – 90% reliability would mean we get it right only 9 out of 10 times.
- Performs as expected consistently over time

### Healthcare safety stats:

The probability of death in aircraft accident: 1 in 125,000,000 passenger journeys  
 Rock climbing: 1 in 320,000 climbs  
 Fairground rides: 1 in 834,000,000

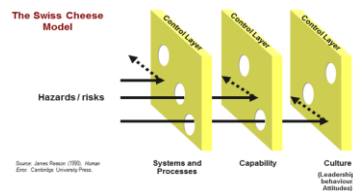
The probability of death from human error during a hospital admission is 1 in 600

### Patient Exposure

35 million hospital discharges annually

900 million clinic visits annually

### Swiss Cheese Effect



## Causes of Errors

System (a.k.a. latent errors, proximal errors, blunt end)

- Computer system (e.g., lack of warnings)
- Unclear/lacking policies and procedures
- Look alike/sound alike medications
- Lack of accessible or up-to-date references
- Poorly designed MAR
- Environmental (inadequate lighting, distractions)

Human (a.k.a. active errors, distal errors, sharp end)

- Knowledge deficit (person didn't know better)
- Stress at home or work (e.g., arising from handling third-party requirements)
- Fatigue

## Human Performance

**Skill based** - A skill pattern exists in your brain, cued by something in the environment

**Rule based** - Brain scans for a rule, you apply the rule. Experts live in rule-based thinking – they know what to do and they know to stop when they don't have the answer or know what to do.

**Knowledge based** - This is the "I'll figure it out on my own" mode or NO knowledge.



## Chance of Error

**Complexity (of the Process)**



**Coupling (of an action to a consequence)**

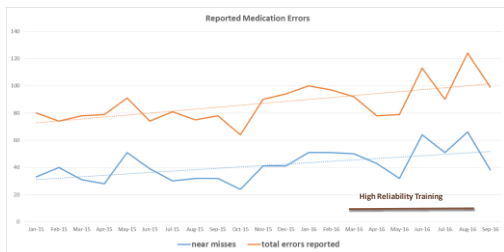


## Journey to High Reliability

- Training for all staff
- Encouraging reporting of events
- Reinforcement of behaviors and tools
- Daily Safety Huddle
- Safety coaches



## Does it make a difference?



## Event review process

- Root Cause Analysis (RCA) of events is completed within 14 days
- The RCA meeting will be a set time every Thursday morning from 0730-0930 as a standing meeting
- The review of action items will be available to executive team members on the 1<sup>st</sup> of every month
- The completion of the event review is done within 21 days, and will be measured and shared with the board

## Case in point

**Situation:** Patient MJ received 900 units of Lantus insulin subQ instead of 90 units

**Background:** MR. J is a 67 year old male admitted for pacemaker replacement. History of hypertension, hyperlipidemia, heart failure and diabetes.

**Assessment:** The insulin was sent by the pharmacy in a vial. The nurse was unfamiliar with the techniques of drawing from a vial. She was unaware that insulin needed to be administered via an insulin syringe. She misunderstood the label to read that there were 100 units in 10 mL. She drew up 9mL (900 units) and administered it subQ. She was also unaware of the maximum volume that may safely be administered subQ. She was distracted by a patient in the next room that was at risk for fall.

**Recommendation:** Assessment of System Failures and completion an RCA with action plan

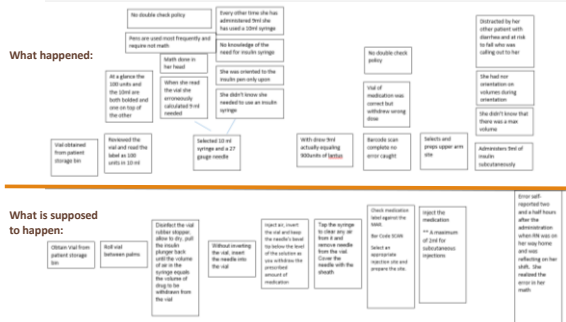


Figure 1. Familiar Lantus label on the left and confusing Lantus label (more recent) on the right.



## Labels matter

## Action planning

1. Training for all staff – weak
2. Notification to ISMP
3. Insulin Pen use as the primary delivery system for insulin, regardless of dose



## What makes a strong action item?

Stronger	Intermediate
Actions that do not depend on staff to remember to do the right thing; the action may not totally eliminate the vulnerability but provide very strong controls	Actions are somewhat dependent on staff remembering to do the right thing, but they provide back to help staff to remember or to promote clear communication
Architectural/physical plant changes	Process or policy/structure is modified
New devices with usability testing before purchasing	Change in scheduling procedures
Engineering control updates, or testing functions	Software requirement documentation/modifications
Standardize the process and remove unnecessary steps	Eliminate/reduce distractions
Standardize equipment or standardize operating procedures (SOP)	Checklist/cognitive aid, including electronic alerts, algorithms
Transfer/reduce and return to baseline in support of patient safety and accountability	Enhanced look and sound alerts
Develop/refine prioritizing criteria	Real-time report back
	Enhanced documentation/communication (clarifying questions, validate & verify, phonetic & numeric differentiation, CUA, STAR, chain of command, signaling)
Actions that depend on staff to remember their training or remember what is written in the policy	Remember to look at system or process
Double checks	Structure for explicit feedback loop such as sounding, audible, pointing or signaling
Warnings and labels	Change Simulations/ mock event training
New implementation/audit/guideline	Implement new patient centered change process with validated tools
Education and training alone	Develop Learning Board or Brief/Security/Defend process
Additional staff/medication/assessment/Investigation	
Expert/peer review with staff including Morbidity/Mortality conferences	
Develop flow or tag charts	
Devote to staff a adhere to problem/ procedures	
One-time simulation/ mock event training	
Report equipment failure/ design. Base to the manufacturer, FDA, and/or other regulatory bodies	

## Pay Attention to Detail: Self Check Using STAR

**Stop** - Pause for one second to focus attention on the task at hand

**Think** - Visualize the act and think about what is to be done

**Act** - Concentrate and perform the task

**Review** - Check for the desired result



Self check takes 1 second, but can decrease your error rate by 10 fold!

## Pay Attention to Detail: Peer Check

Take advantage of working together!!

- Check the accuracy of each other's work
- Identify slips and lapses
- Point out unusual situations or hazards
- Impromptu consultation



Keys to successful peer checking  
Be willing to check others AND  
be willing to have others check us

## Have a Questioning Attitude: Validate and Verify

Validate:

- Does it make sense to me?
- Is this what I expected?
- Does this information "fit-in" with my past experience?



Verify:

- Check it with an independent, expert source

## Managing Errors and Violations

Errors

- Console
  - Monitor trends, patterns
  - Look at the system

At-Risk Behavior

- Coach
  - Change perceptions of risk
  - Change consequences
  - Humans may "drift"; with more experience, the less likely you are to recognize you've drifted...

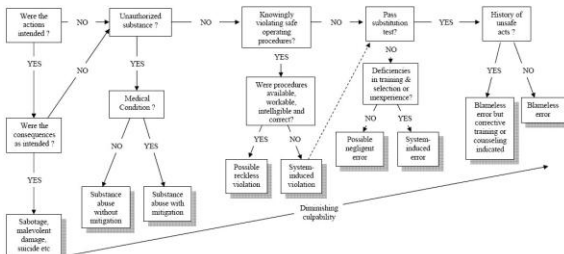
Reckless Behavior

- Punish

## Reason's "Culpability Tree"

- Intentionality Test
- Incapacity Test
- Foresight Test
- Substitution test

### Reason's "Culpability Tree"



- "All health care provider groups should seek to be high-reliability organizations preoccupied with the possibility of failure"
- "We cannot change the human condition, but we can change the conditions under which humans work."

-James Reason