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Patient safety

Objectives:

- Not given.

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If they ask me to write Q in the exam this is my number 1: what is the most common medical error in our health system? **Medication error.**

Medical error theory

Scope of Problem & History of Patient Safety

- In 1999, IOM issued "To Err is Human: Building a Safer Health Care System"
- 44,000 - 98,000 Americans die each year from medical errors, which equals or more than a Jumbo jet crashing each and every day in the U.S. !

Lucian Leape[1]
Patient Safety Champion

Medical Error Theory

Four factors contributing to medical errors:

Human fallibility	Complexity	System deficiencies	Vulnerability of defensive barriers

1- Human Fallibility: you will never have 0% human error.

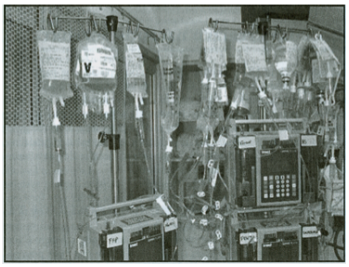
- " To err is human": mistakes are part of the human condition.
- System changes are needed to make it harder to do the wrong and easy to do the right thing "philosophy to reduce medical errors".

A- Forcing functions.
B- Reminders at the point of care.

Forcing functions	Reminders at the point of care
- Physical or process constraints that make errors **difficult** if not impossible.	- Keeping a **checklist** to help ensure the steps are performed in the proper sequence.
Examples: ● **Connections:** Green pic  in the past, the couplings connecting the various gases to the anesthesia machine were universal. The oxygen could be connected to the nitrous oxide port and vice versa. - Now They make it harder to fit so even when the surgeon/anesthesiologist sleepy it's difficult to make mistake (you can't mix them up it will only fit with o2) ● **KCL:**  - picture: All of them are drugs that look the same and kept in the same place, so what to do? We change size, code label/color (as seen in the picture) and keep them separated.	- Checklist similar to a cockpit flight crew Now everyone holds a checklist for every procedures aiming to reduce medical errors. Example:  ● **Thermachoice Endometrial Ablation System (Gynecare):** 1. checklist attached to machine that lists the sequence for the nurse to properly attach the connections. 2. machine itself prompts the physician on the order of the steps and monitors the completion of one step before proceeding to the next. i.e. The machine will not move to the next step until you finish the current step.e.g. Did you check patient's ID? You can't proceed unless you click yes. ● Checking patients' information before starting the operation.

[1] Harvard School of Public Health.

2- Complexity:



- Modern health care is the most complex activity ever undertaken by human beings.

- Inpatient medication system:
  * It shows the major steps in this process.
  * Each of these major steps has several components, all potential sources for error.
  * This system is complex and disjointed.
  * Strategy to improve medication safety would include simplifying and standardizing the process by using tools e.g., electronic prescribing.

Table 1
Inpatient medication system

Prescribe →	Transcribe →	Dispensing →	Administer →	Monitor
Clinical decision	Receive order	Data entry	Receive from pharmacy	Assess therapy effect
Choose drug	Verify correct	Prepare, mix, compound	Prepare to administer	Assess side effects
Determine dose	Check allergy	Check Accuracy	Verify order and allergy	Review labs
Med record document		Check allergy	Administer drug	Treat side effects
Order		Dispense to unit	Document in MAR	Document

Abbreviation: MAR, medication administration record.
Adapted from Aspden P, Wolcott J, Bootman, JL, et al. Preventing medication errors. Washington, DC: The National Academies Press; 2006. p. 60; with permission.

The more complex it is the more likelihood of error to occur even in the best hand best hospital there is risk for error

3- System Deficiencies and Defensive Barriers:

No system is perfect and no perfect Defensive Barriers

We cannot change the human condition, but we can change the conditions under which humans work

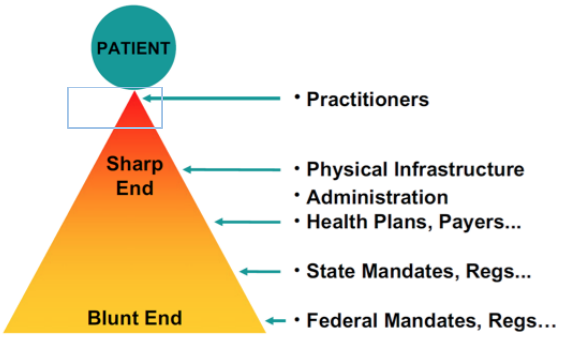


Fig. 1. Components of health systems.

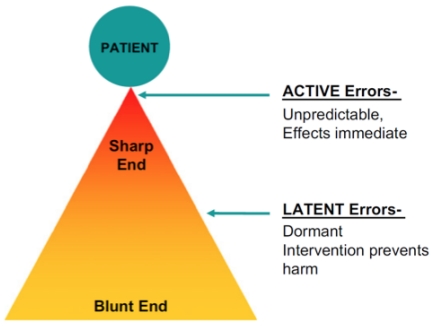


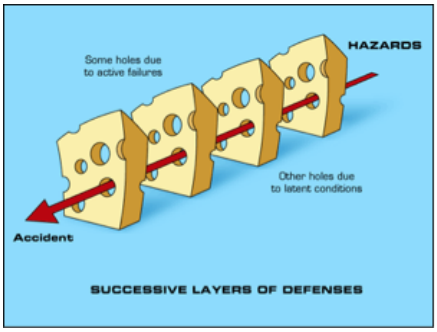
Fig. 2. Types of errors in health systems.

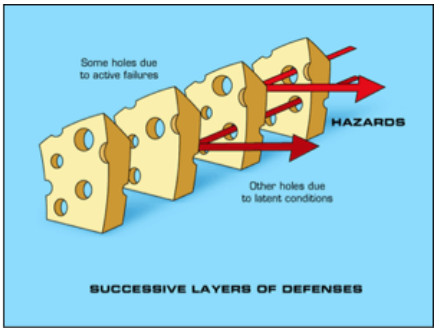
- Sharp end: الطبيب مثلا لما يسوي غلط راح يتضرر المريض مباشرة
- Physical infrastructure: e.g. bed broken.
- Blunt end: وزارة الصحة if they make a mistake it will not affect patient directly.
- Latent error: is a system error not because of anyone, like what happens in Ramadan with the overcrowding.

* 2 major components; Sharp and Blunt Ends.

Active Errors	Latent Errors
- At the **sharp end** of care. - Immediate effects. - Generally unpredictable and unpreventable. - There is no " system" that would prevent this injury.	- System deficiencies hidden in the **blunt end** of care. - Holes in Swiss cheese. See below - We work around these risks until the wrong set of circumstances occur → Patient injury.
- Example: inadvertent bladder injury during a hysterectomy for endometriosis with multiple adhesions. No system will prevent it	- Examples: understaffing, engineering defects, on-call during holidays, natural disasters. "An Accident Waiting To Happen"

- **Defensive Barriers; Swiss cheese Model:**



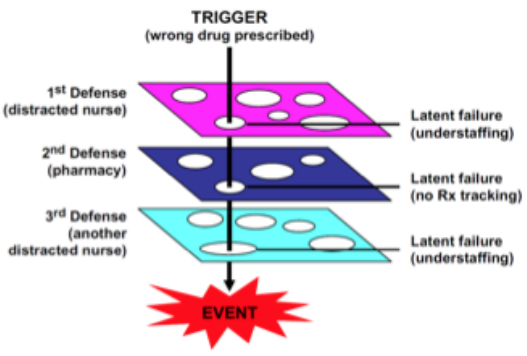


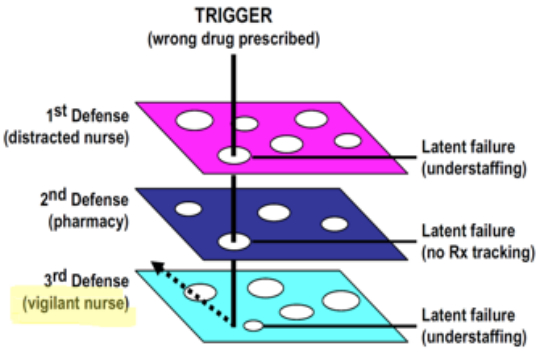
Just move the pieces so the error will not proceeds to the last slice.

- **Trajectory of Error & Defensive Barriers:**

Ex: resident described the wrong medication then the nurse didn't check, the pharmacist didn't know that the patient has allergy from this medication, in the end the nurse who administer the medication didn't check. If anyone in this chain noticed the mistake and stopped it the patient will be fine.

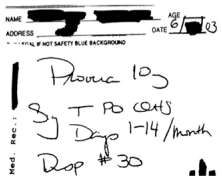
* No defensive barrier is perfect, each has inherent vulnerabilities that, under the wrong circumstances, can be pierced by the trajectory of error.
* Complex medical processes often have multiple layers of such barriers.
* When the potential defects in each of these barriers align in just the wrong way, the error will not be deflected and patient injury or death will result.
* Preventing harm: By interposing another piece of " Swiss cheese" between the hazard and the potential injury.



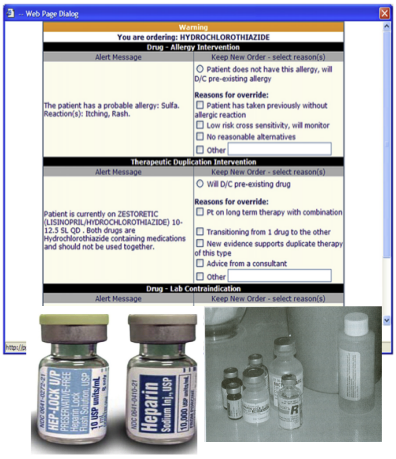


Practical solutions to improve safety in OB/GYN:

• Medication errors account for the largest number of errors in health care.
If they ask me to write Q in the exam this is my number 1: what is the most common medical error in our health system? **Medication error.**
- Picture: The patient was given Prozac (instead of the intended Provera).



• Advance Decision Support Alert. We have this in our hospital now, it alert you to drug drug interaction and allergy.. ect (I smell informatique in the air)



- Picture 1: Indiana Hospital, NICU: September 2006: 3 preterm infants died as a result of lethal overdoses of IV heparin. Similar vials of heparin involved in fatal dispensing error in neonatal setting (the doses for adults and infants were similarly packaged).
Neonatal dosage: 10 U/ml, Adults: 10000
Neonates were given the adults med > intracranial hemorrhage > death

- Picture 2: heparin and insulin vials on a bedside tray.
Don't keep similar meds beside each other!

Medication Safety and Errors:

• Clear handwriting.
• Distinguishing between look-alike / sound-alike drugs.
• Avoid using abbreviations / non-standard abbreviations.
• Electronic system for generating and transmitting Rxs.
• All prescriptions should include detailed instructions to the patient for using the medications.
• Comprehensive recommendations /guidelines published by ACOG, ACS & Joint Commission.
- When you use handwriting you have to be careful when using abbreviation especially the non standard

JCAHO's "do not use" list

To comply with Goal 2, hospitals are required develop a list of abbreviations, acronyms, and symbols that must not be used in orders or other medication-related documentation that are handwritten, are entered into a computer, or appear on pre-printed forms. JCAHO has created its own "do not use" list that facilities can emulate.

Do not use	Potential problem	Use instead
U (unit)	Mistaken for "0" (zero), the number "4", or "cc"	Write "unit."
IU (international unit)	Mistaken for IV or the number 10	Write "International Unit."
Q.D., QD, q.d., qd (daily) and Q.O.D., QOD, q.o.d., qod (every other day)	Mistaken for each other. Period after the Q mistaken for "I" and the "O" mistaken for "I"	Write "daily" or "every other day."
Trailing zero (X.0 mg) Lack of leading zero (.X mg)	Decimal point may be missed.	Write "X mg" or "0.X mg." (Trailing zero may be used only when required to demonstrate the level of precision of the value being reported, such as for lab results, imaging studies that report the size of lesions, or catheter/tube sizes.)
MS	Can mean morphine sulfate or magnesium sulfate	Write "morphine sulfate" or "magnesium sulfate."
MSO_4 and $MgSO_4$	Mistaken for each other	Write "morphine sulfate" or "magnesium sulfate."

In addition, JCAHO is considering the following items for inclusion on its do not use list: All abbreviations for drug names; the symbols "<" (less than), ">" (greater than), and "@" (at); the abbreviations "cc" and "μg"; and apothecary units. While these items are not currently prohibited, eliminating them now will make it easier to meet this requirement if JCAHO does add them to the list in coming years.

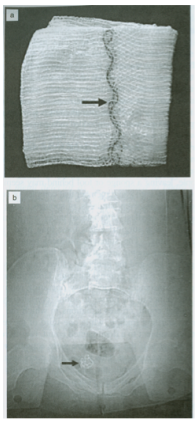
Source: Joint Commission on Accreditation of Healthcare Organizations. "The official Do Not Use list." 2006. www.jointcommission.org/PatientSafety/DoNotUseList2006 (11 Sept. 2006).

Patient Role in her safety:

we always blame the ones who are at the sharp end "practitioners" but what about the patient?

Patient should be an active partner not a passive receiver of care, engaged in all processes, steps and decisions:

- Speak up if you have questions or concerns. She should volunteer all the informations.
- Pay attention to the care you're receiving.
- Educate yourself about your diagnosis, tests you are undergoing and your treatment plan.
- Know <u>what</u> medications you take and <u>why</u> you take them (medication errors are the most common healthcare errors!).
- Participate in <u>all</u> decisions about your treatment.



Surgical Environment:

- In Obstetrics and Gynecology, the risks of surgical error may have increased because:
  - ↑ Cesarean sections.
  - ↑ Minimally Invasive Surgeries. More complex so more complications
  - ↑ Robot-assisted laparoscopy. Commonly used in Ob/Gyn, laparotomy is only used for CS
  - ↑ Pressure for short lengths of stay post-op.
  - ↑ More outpatient procedures.

1. Retained Foreign Objects e.g. Sponges and surgical instruments	- Indefensible!! - "Correct sponge count" does not exonerate the surgeon. Even if the nurse counted them it's not an excuse for the surgeon if it's retained in the patient. Pic a&b: Surgical sponge with an embedded radiopaque thread on X-ray.
2. Surgical Fire	- Rare - In OB/GYN there are all the 3 elements necessary to start / support fires: **1- Oxidizers:** supplies of oxygen gas. **2- Ignition sources:** electrocautery, fiber-optic light cables, lasers. **3- Flammable fuels:** surgical drapes, alcohol-based prepping agents, anesthetic gases.
3. Transition & Handoff Errors:	- "Care transition", "Hand over", or "shift change" **> Breakage of the continuity of care.** - Breakdowns and inconsistencies in the handoff process contribute to medical errors. - Risky time: 1- Provider handoff. missing info between the two shifting persons 2- Patient handoff. The doctor takes a holiday and the patient continues with another doctor. Or the patients is shifted from the ER to the surgery, so ER staff will have to fill in surgery staff.