

Error Proofing Poke Yoke for Health Care

Error Proofing

What is it?

- Mistake-proofing mechanisms
 - **Prevents mistakes**
 - **Makes them obvious**
- Does not rely on users catching mistakes
- Quick feedback 100% of the time

“Be More Careful” is not effective

Poka-Yoke

To err is human....

- Have you ever travelled to work and not remembered it?
- Have you ever gone home when you meant to stop at a store?



Why does that happen?

How would you prevent it if your life depended on it?

Error Proofing – Provides Knowledge

Which dial turns on the burner?



Stove A

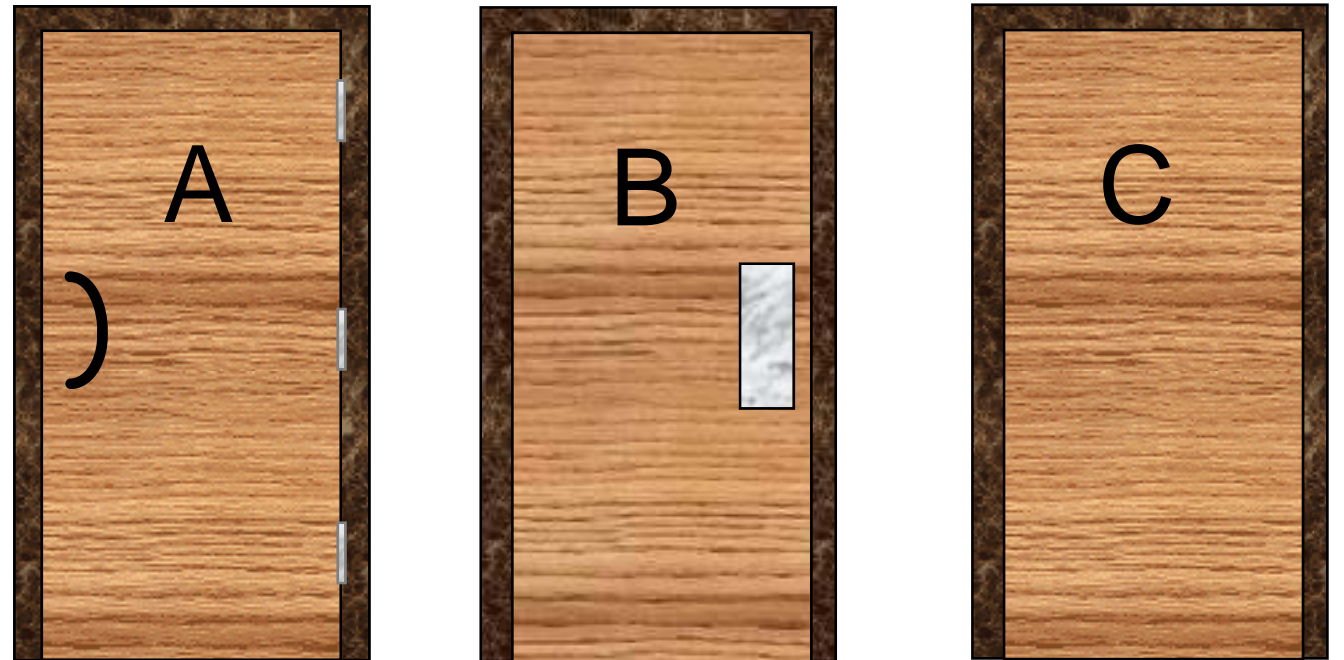


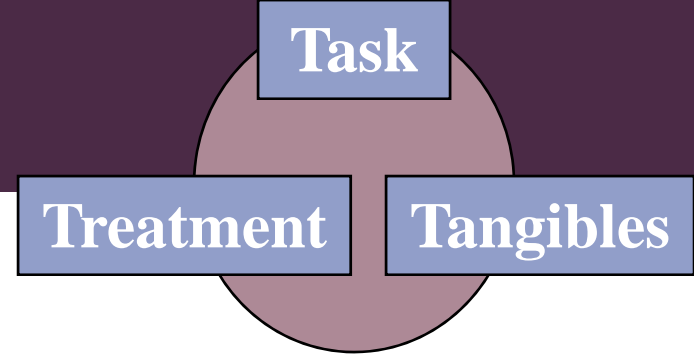
Stove B

Error Proofing

How would you operate these doors?

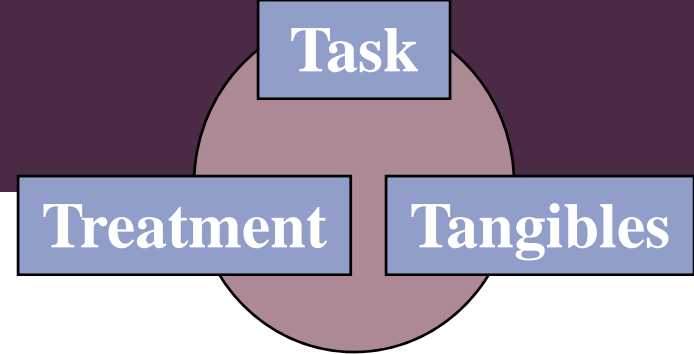
Push or pull? left side or right? How did you know?





- **Task Error Proofing**
 - ✓ Doing work incorrectly or not requested, wrong order, too slowly
- **Treatment Error Proofing**
 - ✓ Lack of courteous, professional behavior
- **Tangible Error Proofing**
 - ✓ Errors in physical elements of service

Healthcare Error Proofing



- **Task Error Proofing:**
 - ✓ Call bell labeled with picture of nurse and TV
 - ✓ Time on ED admission form to indicate order of arrival
 - ✓ Gas sterilization pieces labeled with special tags
- **Treatment Error Proofing:**
 - ✓ Record the name the patient wants to be called in the admission process
 - ✓ Rate/volume of call bell changes after it is illuminated for a prescribed time period
 - ✓ Brakes on the wheelchair before the patient sits in it
- **Tangible Error Proofing:**
 - ✓ Sterilization strips in packages of sterile towels
 - ✓ Test foley catheter balloons prior to insertion
 - ✓ Paper strips around towels (indicate clean linens)

Customer Error Proofing

Preparation

Encounter

Resolution

- **Preparation Error Proofing**
 - ✓ Failure to bring necessary materials, understand role, or engage correct service
- **Encounter Error Proofing**
 - ✓ Inattention, misunderstanding, or memory lapses
- **Resolution Error Proofing**
 - ✓ Failure to signal service failure, provide feedback, learn what to expect

Customer Error Proofing

Preparation

Encounter

Resolution

- **Preparation Error Proofing**
 - ✓ Appointment reminder calls
 - ✓ Checklist by physician for surgical procedures
- **Encounter Error Proofing**
 - ✓ Ventilator alarms if it is not reconnected or is disconnected from the patient's ET tube
 - ✓ Infusion pump that alarms before the IV fluid is depleted
 - ✓ Vehicle height bar in hospital parking ramp
 - ✓ ATM in the hospital lobby using card swipe instead of insertion
- **Resolution Error Proofing**
 - ✓ Provide premium for completed patient survey

Everyday Error Proofing Examples

Fueling area of car has three error-proofing devices:

1. Insert keeps leaded-fuel nozzle from being inserted
2. Tether does not allow loss of gas cap
3. Gas cap has ratchet to signal proper tightness and prevent over tightening.



New lawn mowers require a safety bar on the handle that must be pulled back in order to start the engine. If you let go of the safety bar, the mower blade stops in 3 seconds or less.



Everyday Error Proofing Examples

Sink overflow outlet, if the facet is left on



File drawers:

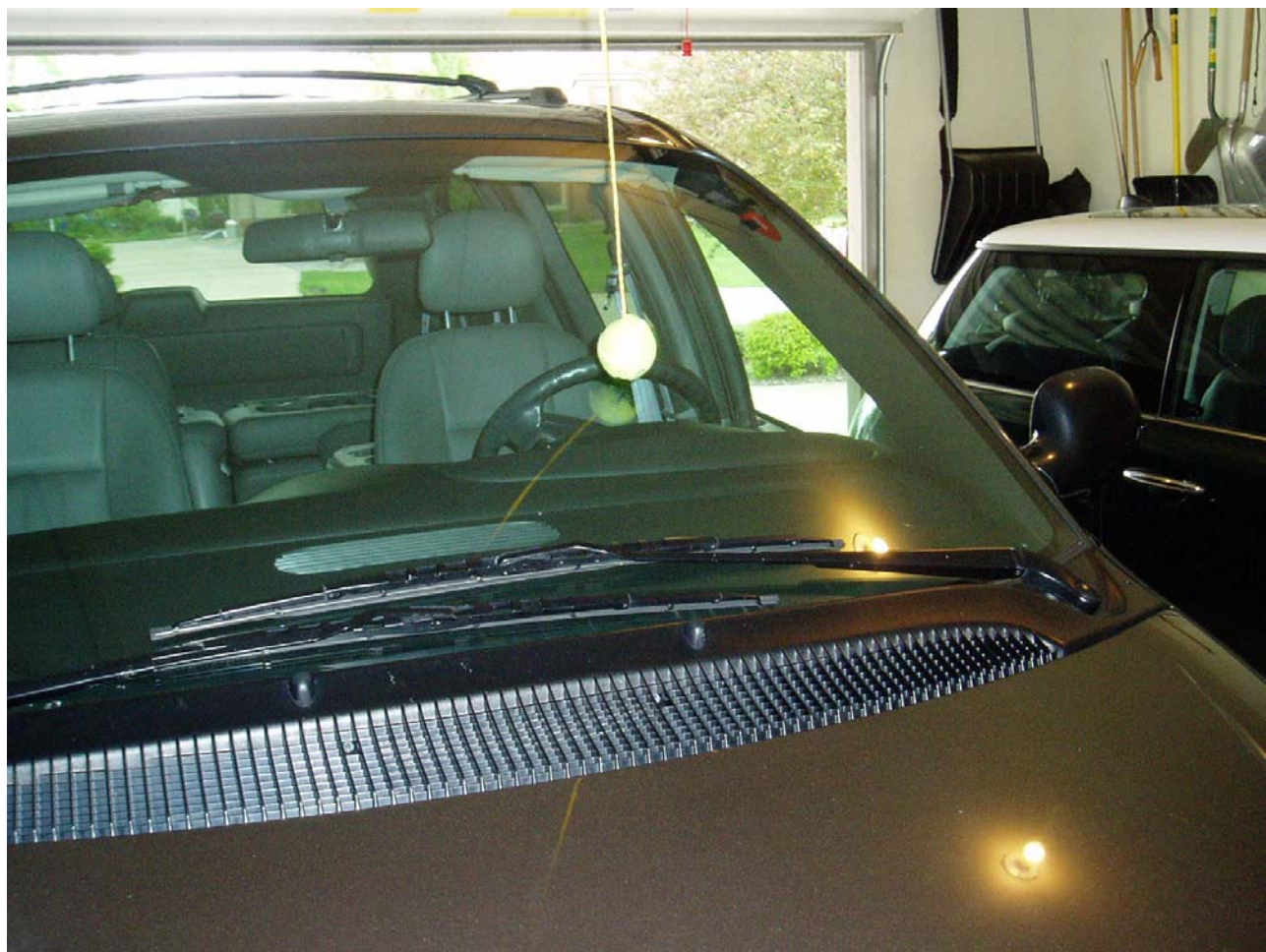
- Stop to prevent drawer from being pulled out completely
- Inability to open more than one at a time to prevent cabinet from tipping over



Home Grown Error Proofing

Error proofing is not rocket science

- Tennis ball on a rope, tells the vehicle operator when they are far enough into the garage



Healthcare Error Proofing

- **Error: esophageal intubation (putting a tube into a patient's stomach which was intended for their lungs)**
- **Error Proofing: Squeeze bulb and put on tube. If bulb inflates, the tube is in the lungs. If not, tube is incorrectly placed in the esophagus.**





Healthcare Error Proofing

Providence, RI - A surgeon at hospital operated on the wrong side of a man's brain after a CAT scan was placed the wrong way round on an X-ray viewing box, the hospital told the state health department.

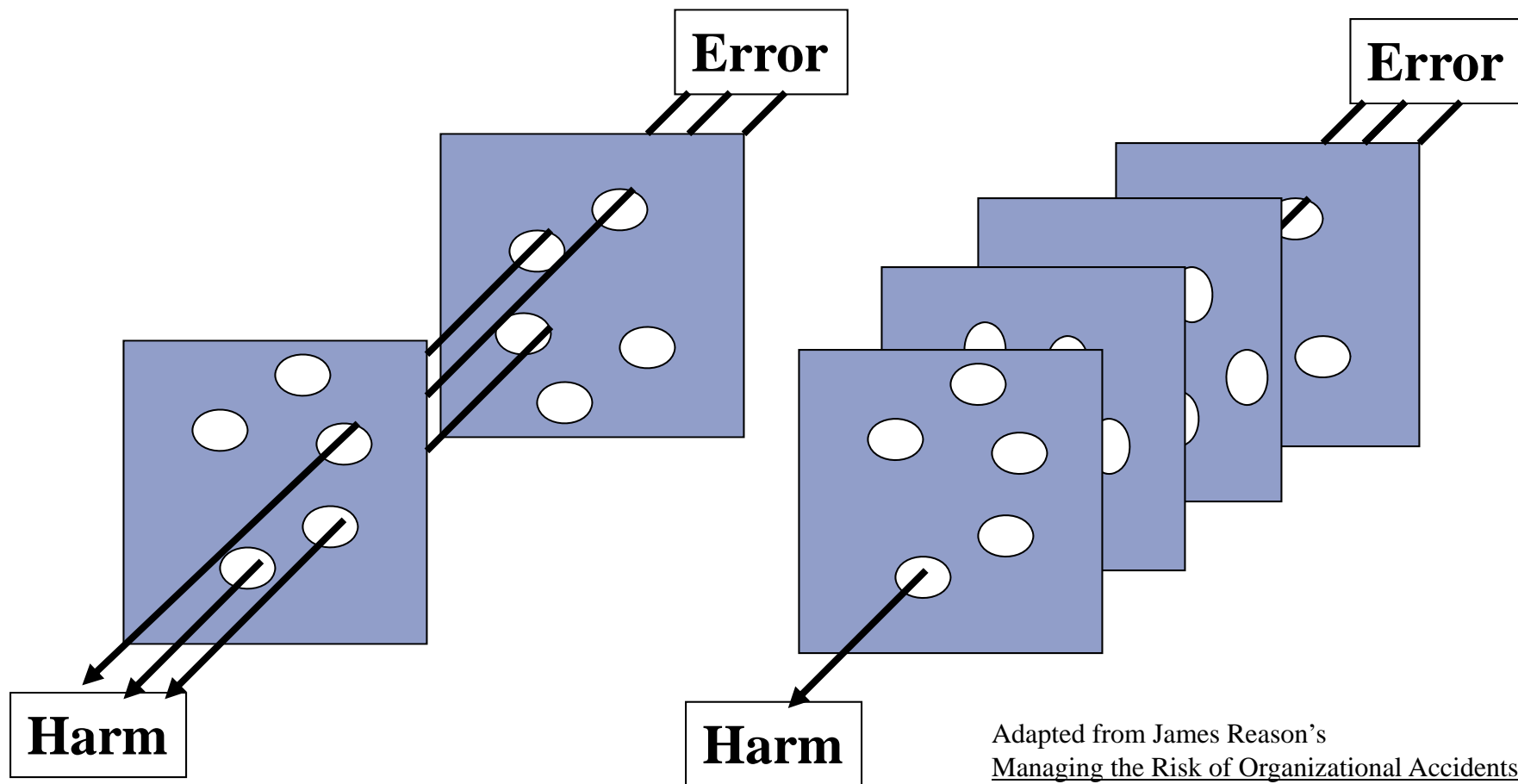
The patient had bleeding on the right side of his brain but the reversed scan made it look as if the bleeding was on the left. In addition, the patient's incision site had not been marked with a pen, as recommended by error-prevention experts.

Error Proofing:

- **Right and left marks on radiological images – not error proof**
- **Marking the patient's surgical site**

Healthcare Error Proofing


**No System of Barriers is Perfect...
But improvements can be made**



Adapted from James Reason's
Managing the Risk of Organizational Accidents

Error Proofing

Where to Begin?

- 
- Easier**
- 1. Identify existing examples of error proofing in your facilities**
 - 2. Determine where additional error proofing is needed**
 - 3. Look for examples in other industries that are applicable to healthcare**
 - 4. Invite suppliers to include/develop mistake-proof products**
 - 5. Invent and perform trials on new error proof devices**
- Harder**

Courtesy of Janice Ahlstrom (jahlstrom@wipfli.com)

HIMSS Management Engineering & Process Improvement (ME-PI) Community

http://www.himss.org/ASP/MEPI_Home.asp