Mistake Proofing to Reduce Medical Errors

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Objectives

• You will have an understanding of what mistake-proofing is, where it is likely to be effective and ineffective and the basics of how to get started.

• You will be exposed to a relatively new “lean” presentation format: “pecha kucha” 20 slides x 0:20 seconds, Total time = 6:40
Agenda

• Introduce Pecha Kucha
• Perform a Pecha Kucha to Introduce mistake-proofing
• Discuss 13 Pharmacy/medication examples
• Perform a second Pecha Kucha to describe which errors mistake-proofing works on and how to get started?
• Homework assignment + Q&A
Pecha Kucha (ペチャクチャ)

- Pecha Kucha is Japanese for “chatter”
- It was devised in 2003 by architects Astrid Klein and Mark Dytham in Tokyo, as a way to attract people to Super Deluxe, their experimental event space.
- Pecha Kucha is a presentations having 20 slides, each shown for exactly 20 seconds. 6:40 seconds, that’s it.
- The format keeps presentations concise, fast-paced and (hopefully) entertaining.
OK, I’m going to cheat

- I had to replace slide number 4’s video clip with 13 slides each containing one video screenshot.
- Powerpoint will page through them a little faster than one per second creating a zoetropic, stop-action, video-esque experience.
- Search “time warp table saw” at youtube.com. Select the 5:18 length video.

Ready? Go!
ポカヨケ
Poka-Yoke
STOP
You Must Be Under 42" To Enter Playtown
Get a new toothbrush

Use a metric wrench

Your syrup is hot

Take the elevator to X-ray
MRI is this way

Alcatraz kitchen: The convicts are armed
Leave me alone while I get these meds

Beware the magnet

Wear your scrubs
Time's up!
Example #1: Most common
Example #2: High tech reminders
Example #3: Not invented here

See the difference?
Example #4: Place keeping

Dosage Directions
To remove tablet, press from this side.

1st day
Take 2 tablets before breakfast, 1 tablet after lunch and supper, and 2 tablets at bedtime.

2nd day
Take 1 tablet before breakfast, 1 tablet after lunch and after supper, and 2 tablets at bedtime.

3rd day
Take 1 tablet before breakfast and 1 tablet after lunch, after supper, and at bedtime.

4th day
Take 1 tablet before breakfast, after lunch, and at bedtime.

5th day
Take 1 tablet before breakfast and at bedtime.

6th day
Take 1 tablet before breakfast.
Example #5: Most expensive
Example #6: Tallest
Example #7: Child-proof
Example #8: Guaranteed to break
Example #9: Easily labeled

Clindamycin 150mg
Example #10: No label needed
Example #11: Shrink from danger
Example #12: Details matter

Special thanks to Parson, Hicks & Heller; Wellstar Paulding County Hospital
Example #13: Pharmacy Kanban

- Designated colors for each stage of the medication fill process
  - Red = Work
  - Yellow = yield to pharmacist
  - Green = go to floor

- Designated places on the counter for each stage of medication fill to “wait” until it is moved to the next stage

Special thanks to Parson, Hicks & Heller; Wellstar Paulding County Hospital
Another Pecha Kucha is about to begin…

This one is about

1. On which errors does mistake-proofing work well?
2. and, how do I get started?
Intent: Help visitors find their way

Execution: A little confusing
Skill, Rule and Knowledge-based actions

• Skill-based action: action by autopilot.

• Rule-based action: we’ve seen it before and recall a rule about what action is appropriate.

• Knowledge-based action: Truly novel circumstances require careful thought and deliberation about what to do.
Rule-based action
Knowledge-based action

1 minute  2 minutes  3 minutes  4 minutes  5 minutes
Errors in knowledge-based action?

Don’t use mistake-proofing

Use human error prevention strategies
Errors in rule-based action?

Mistake-proofing may work well

Combine with human error prevention strategies
Errors in skill-based action?

Mistake-proofing is ideal

Perhaps best human error prevention strategy for these actions
Root Cause Analysis

• Root Cause: a cause that can be acted upon such that it meets our goals and objectives and is within our control

• Look for actions AND conditions

1. Understand the problem

Ignition source

Combustible material

Oxygen

Fire
1. Understand the problem

Cause and effect are same thing

<table>
<thead>
<tr>
<th>Effects</th>
<th>Caused by</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Injury</td>
<td></td>
<td>Fall</td>
</tr>
<tr>
<td>2. Fall</td>
<td></td>
<td>Wet surface</td>
</tr>
<tr>
<td>3. Wet surface</td>
<td></td>
<td>Leaky valve</td>
</tr>
<tr>
<td>4. Leaky valve</td>
<td></td>
<td>Seal failure</td>
</tr>
<tr>
<td>5. Seal failure</td>
<td></td>
<td>Not maintained</td>
</tr>
</tbody>
</table>

A continuum of causes
1. Understand the problem

Cause and effect are same thing

- Toyota says ask why 5 times
- If it’s a continuum, why not more?
- Keep going until your answer to why is:
  - I don’t know.
  - I don’t care.

Apollo Root Cause Analysis: A New Way of Thinking
by Dean L. Gano
2. Start brainstorming solutions
2. Start brainstorming solutions

Try-storming  (w/full-sized cardboard mock-ups)
3. Learn quickly which ideas are mistakes

**Boeing Moonshine Shop**

- No Money Spent = Creativity at a New Level

- Scrounge for EVERYTHING! EVERYWHERE!

- Fast and Inexpensive is the ONLY way to Try-Storm

- A 50% solution actually implemented, beats all hell out of a 100% perfect plan, created by meetings

- Get out of Kansas! To think differently you have to see and try different things – LEAVE YOUR WORKSITE! *Frequently*
3. Learn quickly which ideas are mistakes

Day 1: Lots of mock-ups

Day 1.5: discard some ideas consolidate others

Day 2: proof of concept

Day 2.75: prototype

Day 5: Finished tool
Position Airplane Here

Load Seats Here
Mistake-Proofing: When and How

Knowledge-based action? 🚫

Rule-based action? ✅

Skill-based action?” ✅

1. Find the root cause
2. Try-storm prevention strategies
3. Fail quickly and cheaply to find success
Time’s up!

Any questions?
Design (& details) still matters

It’s there...

But can you see it in use?
A proposal for action: Homework

• Do something meaningful
  – Eliminate an error by mistake-proofing
  – Create significant cost savings

• Do something you’ll be proud of

• Do something cool
  – Brew some moonshine: do something with nothing
Thank you!