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Mistake Proofing

Key Learning Points

1. Describe the importance of Mistake Proofing.
2. Explain how to conduct Mistake Proofing.
3. Utilize Mistake Proofing in improvement projects.

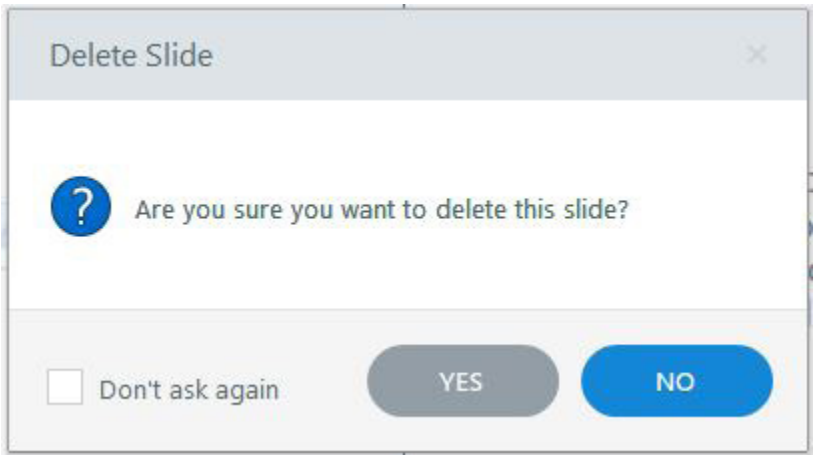
What is Mistake Proofing?

When a team mistake-proofs it's solution, it makes it so reliable that the likelihood of mistakes or failure is minimal. Here are a few tactics that can help to mistake-proof a solution:

1. Design systems to reduce the likelihood of error.
2. Replace human sensing with technological sensing.
3. Keep feedback loops as short as possible.
4. Use active, rather than passive, checking.
5. Use visual control.

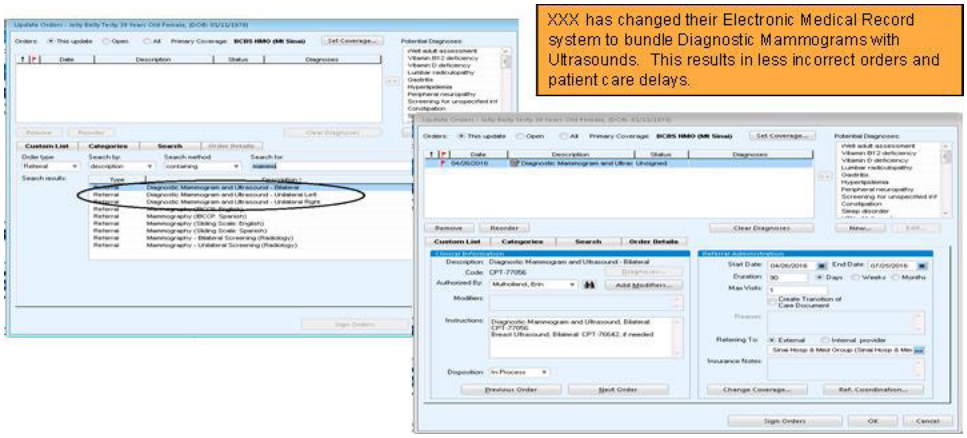
Ultimately, Mistake Proofing makes it difficult to perform a task incorrectly. It makes the "right way" obvious.

Mistake Proofing



Examples of Mistake Proofing

Healthcare



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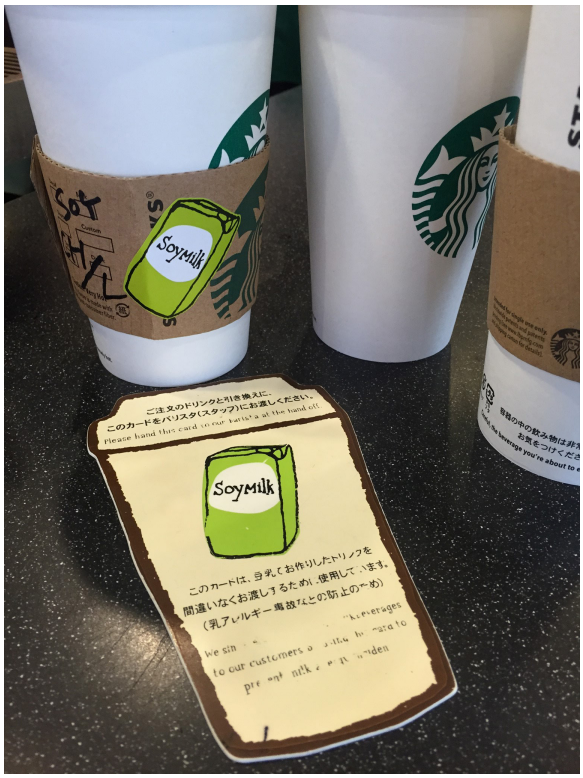
Service



Manufacturing

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Defects vs. Errors

A DEFECT is a non-conformity with requirements

ERRORS are the causes of DEFECTS

A DEFECT is the result of an ERROR

An error is when any of the conditions necessary for successful processing are wrong or absent.

The ten most common errors (Causes of Defects):

- Processing omissions
- Processing errors
- Error in setting up the workplace
- Assembly omissions (missing forms, codes)
- Inclusion of item/form
- Wrong workplace
- Adjustment, measurement, dimensional errors
- Error in kit maintenance
- Operations errors

Methods of Mistake Proofing

Design Systems to Reduce the Likelihood of Error

Often it is possible to design work so that errors are either impossible or very unlikely.

Example

- Automated shutoffs on electric coffee pots
- Unable to remove keys if car shift is not in Park
- Questioning “Are you sure you want to delete” after pressing the “Delete” key on your computer
- Tamper evident packaging

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Technological Sensing

Usually, technology can provide better measures than human senses.

Examples

- A computer system tracks shipping and receiving more reliably than using a manual shipping log.
- A date-time stamp is more reliable than human transcription.
- The laser reading of bar codes is more accurate than manual entry by keyboard or paper and pencil.
- The reading and input of insurance numbers by optical scanning is more error-free than manual entry.
- Using the computer to edit and cross-check entries is more dependable than proofreading.

Keep Feedback Loops as Short as Possible

There are two ways to keep a feedback loop short. First, if checking is required, examine each piece of work soon after it is completed. This can prevent repetition of an error.

Examples

- Computer entries are best edited as they are made, not later, in "batch runs."

The second way for a feedback loop to be short is to report the results of checking directly to the individual doing the work. The longer the delay in reporting, the more likely it is that the feedback will be ineffective, and new errors will be made. Providing individuals with the means and the authority to check their own work is the ideal way to keep feedback loops short.

Examples

- Posting current wait times at the point of service to provide direct and immediate feedback
- Reporting real-time call volume compared to capacity, to provide immediate intervention opportunity

Active vs. Passive Checking

With blood donations, it is critical that the identifying number on the blood bag match the number on the sample tube that goes to the lab for testing and typing. A single person assigned to compare the two numbers might miss as much as 20 percent of the errors. This is passive checking, and it is highly unreliable.

If two individuals are assigned to compare the identifying numbers, one can check the bag while the other reads the tube. The first person is active, and the second is passive. This method is more effective than the first, but two checkers might still

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miss a small percent of the errors.

A third method would also use two checkers. With this method though, each checker would independently key the number for each donor into a small computer terminal that compares the number on the bag with the number on the tube, and the error rate would be so small it might even be impossible to measure.

Visual Control

Visual control consists of simple visual signals that allow for immediate understanding
of a condition. Visual controls are self-regulating and are manageable by staff members.

Visual controls are often portrayed as signs and universally known images. They also can make information obvious.

Steps to Mistake Proofing

1. Describe the defect or potential defect. Show the defect rate.
2. Determine the operation where a defect is or can be discovered, or the operation where a defect is made.
3. Detail the sequence of events documented in the standard.
4. WATCH the operation being done and detail the steps that differ from the standard.
5. Step 5: Identify error conditions that could be contributing to the defect (tools, environmental, gauging, etc.). Refer to observations made in Step 4, and ask WHY (5 WHYs) the error happens until the root cause (or source error) is identified. Do not try to develop the device yet!
6. Identify the Mistake-Proofing device required to prevent the error or defect.
7. Try-storm a device. If it doesn't work, try again.

When Should Mistake Proofing Be Used?

- In the Improve and Control steps of DMAIC.
- As a standalone technique to be used anytime.

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Pitfalls to Avoid

- Blaming employees for creating errors if they are not in a state of self-control.
- Creating a mistake-proof solution on a process without working with people involved in that process.

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