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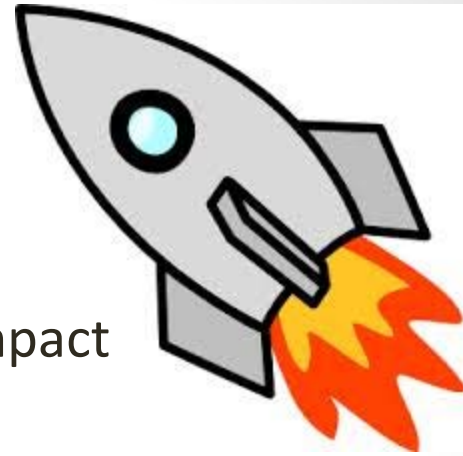
Failure Modes and Effect Analysis and the Breathe Easy at Home Program

July 18th, 2014

What is FMEA?

- Structured process to identify, prioritize, and fix risks
- With priorities in place, you can send limited resources on the most important things
- Allows you to credibly communicate risks to leadership and other organizations, which can help secure funding and support
- Allows you to create a more replicable program

History of FMEA



- 1940-military used to classify failures by their impact on mission and personal and equipment safety
- 1960-space program, automotive and consumer products use it
- 1975-U.S- Nuclear Regulatory Industry utilizes it
- 2000-The Joint Commission incorporates FMEA for hospitals to prospectively evaluate and redesign processes
- 2014-Breathe Easy at Home utilizes it!

Step-by-Step FMEA process

- Step 1: Select the process to be evaluated-**Breathe Easy at Home**
- Step 2: Select the boundaries of the FMEA-**7/18**
- Step 3: Make sure the process is mapped and understood-**7/18**

Step-by-Step FMEA Process

- Step 4: Develop the failure modes-**July 21 and 28**
- Step 5: Evaluate the effects-**July 21 and 28**
- Step 6: prioritize the risks-**July 21 and 28**

Step-by Step FMEA process

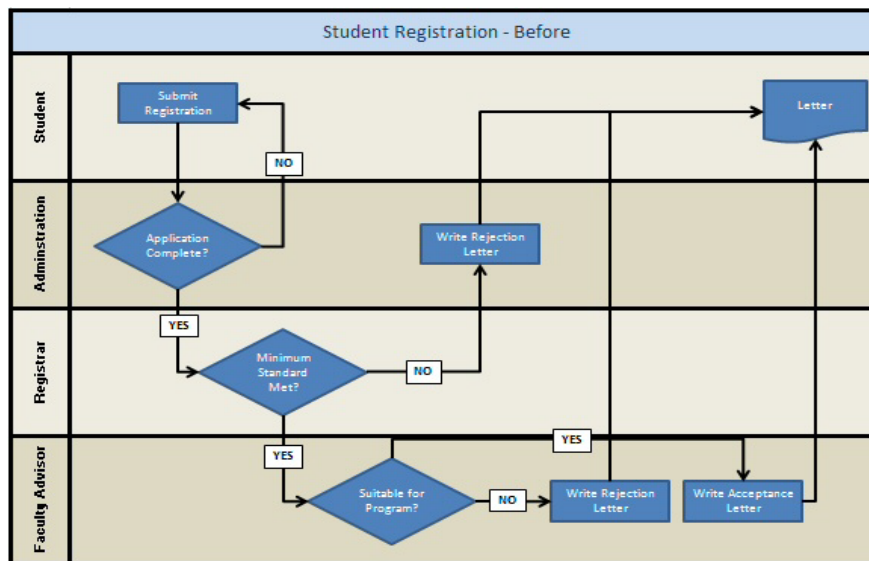
- Step 7-select the risks to be reduced-
8/11
- Step 8-implement corrective actions-
8/11
- Step 9-evaluate effectiveness-8/11

Step 2: Map the process: Boundaries: Wide or Deep?

- Where does the BEAH process start and Where does it end?
- What does it include?
- FMEAs that are too deep analyze too much detail
- FMEAs that are too wide are overwhelming
- **Thus break down process into several FMEAs**
- Ideally 30 to 60 failure modes (15-30 per meeting)

Step 3: Map the Process: Swim Lane Chart

- What happens versus What we expect to happen
- Process versus Chronological
- Shows graphically who is doing what



Step 4: Define the Failure Modes: Determine Functional Objective

- The wording of the Functional Objective steers the analysis
- Accurate and Comprehensive in order to consider failures related to all parts of the process
- Example:

Objective: Dry Clothes

Functional Objective: Dry clothes in a safe fashion without damaging them.



Step 4: Define the Failure Modes: How and Why do functions go wrong?

- What causes the enabling functions not to function successfully?
- How can we fail? Why do we fail?
- stay within width and depth!

Step 5: Evaluate the Effects: Severity

Severity: How bad would it be?

- Catastrophic – Hospitalization as result of failure (FMEA rating 10)
- Major Failure-Harm is result of failure (FMEA rating 7)
- Moderate Failure-Dissatisfaction is result of failure (FMEA rating 4)
- Minor Failure-Delay is result of failure (FMEA rating 1)

Step 5: Evaluate the Effects: Occurrence

Occurrence: How often could it happen?

Frequent: Likely to occur immediately or within a short period (50 times a year)

Occasional-Probably will occur (10-20 times a year)

Uncommon-Possible to Occur (once every 2 or 3 years)

Remote-Unlikely to occur (may happen once or twice during program)

Step 5: Evaluate the Effects: Detectability

Detectability-Will we know in time to do something about it?

Impossible-No ability to detect problem

Slight-After the fact, we know something is wrong, so we do a special investigation of this problem

Medium-We proactively look for a problem

High-Problem is immediately self revealing

Step 6: Prioritize the Effects

- Severity X Probability X Detectability