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Presentation Timing

The complete presentation (slides 1-33 with group discussions and exercises) is designed for a 4-5 hour training program. If the instructor adds examples, exercises or other materials, additional time may be necessary.

The presentation can be divided into 3 shorter learning experiences. For example:

- Slides 1-8: Overview of FMEA (approximately 30-45 minutes)
- Slides 9-26: Five Steps of a FMEA project (approximately 2 – 2 ½ hours)
- Slides 27-32: FMEA project exercise (approximately 1 hour)

Slide #33 (Summary slide) can be used at the end of any learning experience.

See the next few pages for examples of slides and instructor notes.

Failure Mode and Effects Analysis (FMEA)

- A systematic methodology by which each potential process failure is analyzed to determine:
 - (1) the effects on the process and final outcome;
 - (2) the severity of each potential failure;
 - (3) causes of the failure; and
 - (4) the actions to be taken to prevent the failure.

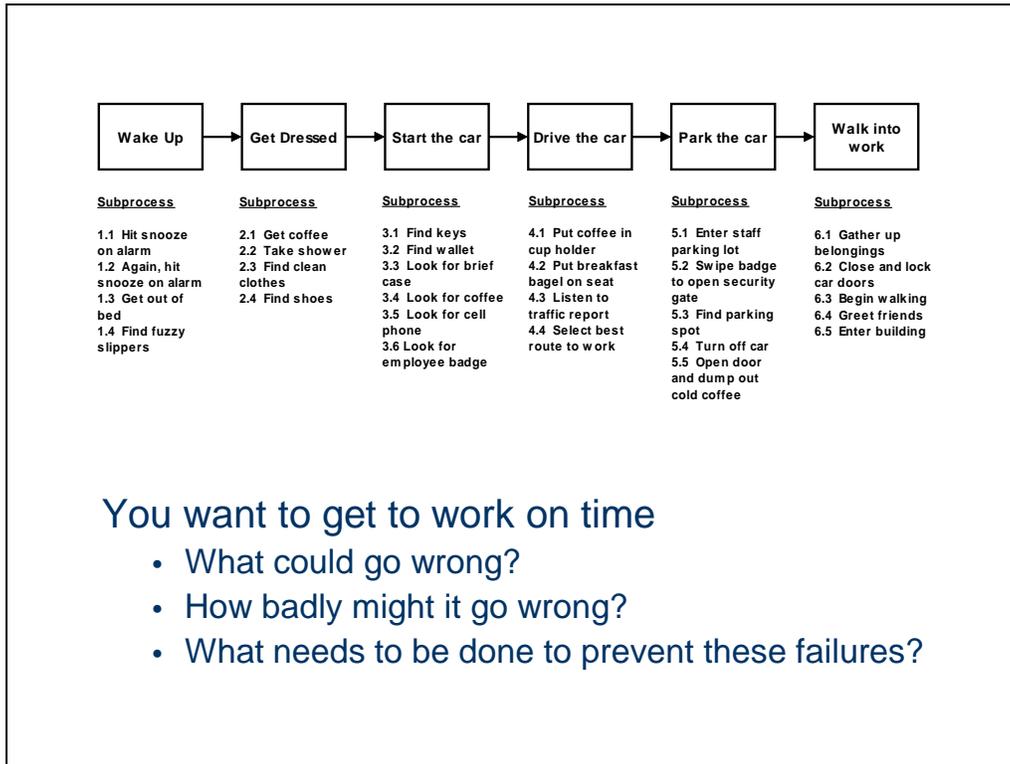
Instructor Notes:

Failure mode and effects analysis (FMEA) is a prospective risk analysis technique that involves a close examination of a high-risk process to determine where improvements are needed to reduce the likelihood of unintended adverse events.

This risk assessment process is used in manufacturing, aviation, computer software design, and other industries to conduct safety system evaluations. FMEA is now being used in health care organizations to evaluate and improve the safety of patient care activities.

On the next slide you'll see a flow chart of a process that you all should recognize – the process of getting up and going to work each day. The goal of this process is to get to work on time. Let's see how we'd use the FMEA methodology to improve this process.

Slide 6



Instructor Notes

There are six major steps in the process: wake up, get dressed, start the car, drive the car, park the car, and walk into work. Each of these six major steps has several sub-steps. Your process may look a bit different from the one you see on the slide, however for the sake of this discussion, let's assume this is your process.

You want to get to work on time – that is your goal. Let's examine the process using FMEA methodology questions. **Ask participants** to discuss answers to each of the following questions:

- What could go wrong?
- How badly might it go wrong? (e.g., what would be the effect on getting to work on time?)
- What needs to be done to prevent these failures?

When discussions are complete, **tell participants** that they've just done a very simple FMEA project. The projects they will be doing for patient care process aren't much different than what they just did.

Hazard Analysis: Rank the severity of the effect

Severity Rating Scale:

- 1 = No effect
- 2 = Minimal effect
- 3 = Moderate, short-term effect
- 4 = Significant, long-term effect
- 5 = Catastrophic

- Judging severity
 - Actual past experience (objective)
 - Personal/anecdotal experience (subjective)

Instructor Notes

This scoring system is used to rank the severity of the effect – what is likely to happen if the failure mode actually occurs (read the scales shown on the slide).

The ratings correspond to the seriousness of the effect of a potential failure mode. In other words, what would be the impact on the outcome of the process? If this were a FMEA on a patient care process, we'd ask "What is the impact on the outcome of the patient?" For our exercise, we are looking at the impact on the process of eating lunch in a fast food restaurant.

Each failure mode is given a numeric severity rating that is derived through team consensus and based in part on what has occurred in the past (objective data) and personal or anecdotal experience (subjective information).

Hazard Analysis: Rank the probability of each failure

Probability Rating Scale:

- 1 = It is highly unlikely/it's never happened before
- 2 = Low/relatively few failures
- 3 = Moderate/occasional failures
- 4 = High/repeated failures
- 5 = Very high/failure almost inevitable

- Judging probability
 - Actual past experience (objective)
 - Personal/anecdotal experience (subjective)

Instructor Notes

This scoring system is used to rank the probability that each failure will actually occur (read the scales shown on the slide). The ratings correspond to the probability or likelihood that the failure will actually occur. This determination can be based on past history as well as the personal experience of team members.

Every potential failure that has been identified by the team is evaluated and a probability judgment made. This judgment is based in part on what has occurred in the past (objective data) and personal or anecdotal experience (subjective information).

Define and Monitor Measures of Success

How will you know if the actions have been effective?

- Percent of time warning signs are posted after floor is mopped
- Number of customers that slip on wet floor



Instructor Notes

The last activity in the FMEA project is to evaluate the effect of process redesigns and other actions intended to reduce or prevent failures. The FMEA project team identifies how the success of action plans will be evaluated. During the discussion of this evaluation phase, the team should identify measures of success, data collection strategies, and reporting timeframes.

The FMEA project team may be charged with periodically reviewing performance data to assess how much safer the process has become since implementing the actions or this responsibility may fall to a leadership team or committee.

Note: Explain the follow-up reporting process in your facility (if applicable)

Success measures will vary according to the actions that are implemented and the intended goals. Many success measures will focus on compliance with important human actions (e.g. posting of warning signs after mopping). Other success measures will focus on outcomes (e.g. number of customers that slip on a wet floor). Don't rely entirely on outcome measures to evaluate the success of actions. Ideally the measures will help identify and correct process vulnerabilities before an undesirable outcome occurs.