

# Intermittent vs Continuous Monitoring: Is Healthcare as good as Fedex?

Michael A. DeVita, M.D.

Exec. Vice President Medical Affairs  
West Penn Allegheny Health System

# Overview

- Describe purpose and capabilities of intermittent and continuous monitoring
- Describe potential goals of monitoring
- Match tool to the goals

# Purpose and capabilities of intermittent monitoring

- Intermittent monitoring = periodic assessments of vital physiologic functions with the intent to intervene based on findings
- Why monitor?
- Risk prediction
  - Data show that most patients show evidence of deterioration hours prior to collapse/crisis
  - Identifying such patients early enables interventions which may prevent harm/death

# Purpose and capabilities of intermittent monitoring

- Benefits
  - Low cost
  - Always/usually has person-person interaction
  - Opportunity to intervene on most patients
- Downside
  - Events may occur between assessments
  - Scheduled assessments may not occur
  - Analysis of assessment data may be faulty

# Purpose and capabilities of continuous monitoring

- Continuous monitoring = continuous or near continuous collection of physiologic data from a patient.
- Always a mechanical device attached to the patient, usually with alerts that can be preset or directed to staff
- Telemetered or hard-wired
- Examples

# Why continuously monitor?

- Risk prediction
- Event detection

# Continuous Monitoring

- Benefits:
  - More data points may permit more accurate trending of patient status
  - Continuous data means critical events can be discovered immediately (Dead-in-bed events)
  - Enables immediate life saving interventions that would be futile if delayed
  - Enables work flow adjustments by floor staff
  - Enables staffing adjustments
  - Improved patient flow (more beds) lowers cost

# Continuous Monitoring

- Downside:
  - Expensive?
  - False positives:
    - Increase staff work, fatigue
    - Increase unnecessary treatments?
  - False negatives
  - Patient satisfaction? (tethering vs security)



# Match Tool to the Goals

- IF the goal is low cost risk assessment:
  - Intermittent monitoring
- IF the goal is minute by minute risk assessment, as well as critical event detection:
  - Continuous monitoring

# Match tool to the goals

- ALL PATIENTS IN HOSPITAL ARE SICK AND HAVE INCREASED MORTALITY RISK
- IT IS IMPOSSIBLE TO ACCURATELY RISK STRATIFY (99% VS 96% EVENT FREE)
- 1/3 OF DEAD IN BED EVENTS OCCUR IN UNMONITORED (THE HEALTHIEST) PATIENTS

# Is Fedex better?

- Fedex can tell you where any package is at any moment anywhere in the world.
- They do this because they value the items delivered, and the security it provides its customers
- Currently, in virtually every hospital in the world, the staff do not know at any moment who is alive and who is dead.
- The technology exists, the desire does not.

# The reasons to continuously monitor

- Respect for our patients
- Improve healthcare delivery
- Improve staffing
- Decrease staff stress
- Improve patient flow (no more shopping for monitored or unmonitored beds)
- Minimum requirement for preventing all preventable deaths