When the Lights Go Out…
Battery-powered Medical Devices:
Healthcare Provider Perspectives

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How many devices are you carrying **RIGHT NOW** that rely on batteries?

A. 0
B. 1 to 2
C. 3 to 5
D. 5 to 7
E. too many to count
What happens when the lights go out?
A Day In the Life…

- Ambulatory Infusion Pumps
- IV Infusion Pumps
- Blood pressure machine
- O2 saturation
- Thermometers
- Glucometers
- Ventilators
- Suction Machines
- Scales
- Portable Telemetry
- Feeding Pumps

- Defibrillators
- Automated External Defibrillators (AEDs)
- Sequential Compression Devices
- Portable EEG/EKG machines
- Patient Transfer Lifts (Hoyer/Golvo)
- Patient beds
- Ultrasound machines
- CPAP/BIPAP machines

- Etc…
A Day In the Life…
Support Point of Care systems***
• Portable workstations
  – LapTop computer
  – Bar code scanner
  – Bar code printer
  – PDA scanner
• Unit based Cell phones
• Medication Dispenser/Storage (controlled substances)
• Supply cabinet for stock patient care items
Expectations for devices

• Under both normal use and emergency...
  – Work properly as expected or better than expected when used by staff and/or patients
  – Reliable
  – Safe for patient use and health care provider
Benefits

• Efficiency in care
  – Improved accessibility at the bedside
  – Point of care availability

• Allows enhanced bedside and ambulatory monitoring
  – Remote monitoring
  – Patients are able to receive care in ambulatory and home care settings in lieu of inpatient hospital stays.

• Safety during transport

* Not an exhaustive list.
Challenges

• Frequent use leads to under charging with potential battery loss/failure
• Instructions for battery use, replacement or failure not always on the devices
• Battery indicators
• Storage of equipment when not in use
• Limited troubleshooting available on units
• Unit based education
• Proper disposal of batteries
Medical Devices in Research

• Actigraphy watches
  – Measures activity and ambient to measure sleep/wake patterns
  – Inpatient, worn daily throughout stay
  – Fully charged prior to placement and programming
  – Early battery failure
    • Missing data
    • Endpoints for subjects not complete
WHAT HAPPENS WHEN THE LIGHTS GO OUT?