EC.02.05.01 EP 2

The hospital maintains a written inventory of all operating components of utility systems or maintains a written inventory of selected operating components of utility systems based on risks for infection, occupant needs, and systems critical to patient care (including all life-support systems).

The hospital evaluates new types of utility components before initial use to determine whether they should be included in the inventory.

(See also EC.02.05.05, EPs 1, 3-5)
Maintaining Utilities Equipment

Inventory is populated based on one of two strategies:

- All equipment inclusion
- Based on physical risks for
  - Infection
  - Occupant needs
  - Systems critical to patient care

- All life support equipment is included
- All new types of equipment is evaluated for inclusion
Utility System as defined in the Accreditation Manuals Glossary and EC.02.05.03 include:

- Electrical distribution
- Emergency Power Supply System (EPSS)
- Vertical & Horizontal Transport
- Heating, Ventilation & Air Conditioning
- Plumbing
- Boiler and Steam
- Piped Gases
- Vacuum Systems
- Communication Systems & Data Exchange
Specific Utility Systems include

- Features of Fire Safety (EC.02.03.01)
- Alarm and Notification (LS.02.01.34)
- Suppression Systems (LS.02.01.35)
- Design criteria (EC.02.05.01)
- Power Distribution System (EC.02.05.03)
- Emergency Power Supply Systems (EC.02.05.07)
- Medical Gases (EC.02.05.09)

Specific populations of equipment

- Life support systems (EC.02.05.05)
- Infection Control utility systems (EC.02.05.05)
The hospital identifies, in writing, inspection and maintenance activities for all operating components of utility systems on the inventory. (See also EC.02.05.05, EPs 3 - 5; EC.02.05.09, EP 1)

Note: Hospitals may use different approaches to maintenance. For example, activities such as predictive maintenance, reliability-centered maintenance, interval-based maintenance, corrective maintenance, or metered maintenance may be selected to ensure dependable performance.
MAINTAINING EQUIPMENT: STRATEGIES

Written strategies identify the activities for
- Maintaining
- Inspection
- Testing

Strategies may include
- Predictive maintenance
- Reliability-centered maintenance
- Interval based maintenance
- Corrective maintenance
- Metered maintenance
- Other recognized strategy
  - Manufacture’s recommendations
MAINTENANCE STRATEGIES

Predictive Maintenance
- The scheduled activities designed to extend equipment reliability based on performing activities prior to equipment failure based on risk levels and organization experience

Interval Based Maintenance
- The scheduled activities are based on a preset schedule that is established regardless of need
- Determine Interval Time:
  - Manufacturer’s guidelines
  - Accepted industry practices
  - Regulatory code requirements
  - Organization’s past experiences
- Most preventive maintenance software programs are “Interval-Based”
MAINTENANCE STRATEGIES

Reliability-Centered Maintenance
- Based on historical analysis of the reliability of equipment
- Anticipated maintenance activities to extend the reliability based on intersecting historical failure

Metered Maintenance
- Based on established amount of time the equipment has operated rather than a calendar schedule
MAINTENANCE STRATEGIES

Corrective Maintenance

- Equipment is not serviced based on preventive models, but allowed to run until repairs are needed
- Also includes response to any corrective measures related to the physical environment

Other, such as manufacturer’s recommendations

- Always during warranty period
- Evaluate against other strategies
EC.02.05.01   EP 4

The hospital identifies, in writing, the intervals for inspecting, testing, and maintaining all operating components of the utility systems on the inventory, based on criteria such as

- Manufacturer’s recommendations
- Risk levels
- Hospital experience

(See also EC.02.05.05, EPs 3-5)
**MAINTENANCE FREQUENCIES**

- Manufacturer’s Recommendations
  - New equipment that has no operating history should follow manufacturer’s recommendations until enough history and level of risk has been established.
  - Industry experience has established that often manufacturer’s recommendations are based on worse-case situations and may exceed the normal operating condition level maintenance activity.
MAINTENANCE FREQUENCIES

Risk levels

- Evaluating the potential risk of equipment failure is a significant part of evaluating maintaining, inspecting and testing requirements

- Based on physical risks impact for
  - Infection
  - Occupant needs
  - Systems critical to patient care
MAINTENANCE FREQUENCIES

Hospital experience

- Evaluating the benefits of maintaining, inspecting and testing activities based on history may contribute to increasing or extending those activity periods.
EC.02.05.05: THE HOSPITAL INSPECTS, TESTS, AND MAINTAINS UTILITY SYSTEMS

EP 2. The hospital inspects, tests, and maintains the following: Life support utility system components on the inventory. These activities are documented. (See also EC.02.05.01, EPs 2-4)

EP 3. The hospital inspects, tests, and maintains non-life support equipment identified on the medical equipment inventory. These activities are documented. (See also EC.02.04.01, EPs 2-4 and PC.02.01.11, EP 2)

EP 4. The hospital inspects, tests, and maintains the following: Infection control utility system components on the inventory. These activities are documented. (See also EC.02.05.01, EPs 2-4)
Document Review

- Evaluate the Management Plan
  - Determine the Maintenance Strategies applied to the inspection, testing and maintenance of the equipment

- Evaluate the work completion rates (% complete)
  - To compute the *percent complete* divide the number of devices completed by the number of scheduled work orders

**Example:**
795 devices completed out of 825 scheduled = 96.4%
795 ÷ 825 = 96.36
SURVEY PROCESS

Evaluate the program documentation

- Logs are completed and reflect both Life Support Systems, Infection Control equipment, and Non-life support equipment on the inventory

- Accuracy of Inventory
  - All Life Support equipment must be represented on the inventory
  - Preventive maintenance frequencies must be clearly defined in writing

- Confirm work done as per scheduled activities
  - Ensure appropriate work is scheduled based on maintenance strategies
  - Evaluate equipment failure and scheduled actions
SURVEY PROCESS: STAFF INTERVIEWS

Department Leader
- Establish how the inventory was created
- Establish the Maintenance Strategies used
- Evaluate the Monitoring processes
- Evaluate the effectiveness of the program

Equipment Maintainers
- Evaluate their understanding of the maintenance process/strategies
- Evaluate competencies based on repeat work orders
- Evaluate work scheduled against completed
SURVEY PROCESS: STAFF INTERVIEW

- Users of the Equipment
  - Evaluate equipment reliability
  - Evaluate response time when equipment fails
    - Evaluate emergency response process
  - Evaluate “Culture of Safety”
    - Appropriate training of staff related to equipment use
  - Customer satisfaction with department

- Contract Services
  - Evaluate reliability of equipment serviced
  - Evaluate integration of the process
SURVEY PROCESS

- Evaluate the effectiveness of the program to maintain the equipment
  - Repeat work orders
  - Equipment turn-around time
  - Completion rates

- Evaluate confidence of the users while using equipment
CMS CONDITIONS OF PARTICIPATION

42 CFR 482.41
- Hospital must maintain adequate facilities for its services

42 CFR 482.41(c)(2)
- Facilities, supplies and equipment must be maintained to ensure an acceptable level of safety and quality.
- The CMS Interpretive Guideline states “the hospital must monitor, test, calibrate and maintain equipment periodically in accordance with the manufacturer’s recommendation and Fed and State law.”
I am happy to inform you that the Joint Commission’s approach of utilizing a preventive maintenance schedule has been approved. Thank you for your cooperation and collaboration.

CMS Deputy Director
July 26, 2010
S&C: 12-07-HOSPITAL

Published 12/2011

- Allows non-life support to adjust maintenance frequencies
- Restricts non-life support from adjusting maintenance activities
- Restricts life support from frequencies and maintenance activity adjustments
- Restricts equipment maintenance methods
DISCUSSION WITH CMS

The Joint Commission had an opportunity to discuss the S&C: 12-07 4/9/2012

- Restriction related to test equipment lifted
- Collaborative discussion with the conclusion research would be of benefit
- Research should be specific to reliability of the Joint Commission process in EC.02.05.01
DISCUSSION, CONTINUED

Research Issues:

- How many organizations use the Joint Commission process?
  - What guidance is used to modify frequency and maintenance activities?
- Have there been any adverse outcomes based on solely on this process?
  - If so, what?
- Self diagnostic equipment:
  - How many devices with this feature?
ASHE is hosting for Facilities:
- ASHE.ORG
  - Select Facility Equipment Survey

Clinical Engineering is hosted by AAMI at:
- https://www.surveymonkey.com/s/JCQuestionnaire
QUESTIONS?
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