Commentary

Reliability-Centered Maintenance: A Tool for Optimizing Medical Device Maintenance

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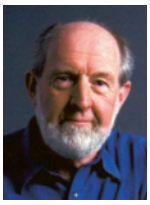
About the Authors



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After many years of inconclusive discussions about the role of planned maintenance (PM) in keeping medical equipment safe, AAMI announced its support for a new project in October 2015, stating that it would begin exploring whether an approach known as reliability-centered maintenance (RCM) should be adopted on a wider scale throughout the field of healthcare technology management (HTM).

The project established an ad-hoc Maintenance Practices Task Force and charged it with four objectives.

1. Develop and gain communitywide acceptance for a scientifically sound but easy-to-understand RCM-based methodology for determining which types of medical devices are actually made safer by periodic planned maintenance, along with a simple explanation of why routine PM fails to improve the safety of the great majority of medical devices.
2. Develop guidelines and tools to facilitate a rational optimization of PM programs for medical devices, including a standardized format for the maintenance documentation required to support the analytical methods being proposed.
3. Create a communitywide database to provide a substantial body of quantitative evidence to support the proposed RCM-based optimization.
4. Build a collection of information on each device's demonstrated level of PM-related reliability and safety based on aggregated maintenance data for specific manufacturer-model versions of various devices.

The RCM project sought to provide a practical solution to the dilemma posed by the current medical equipment maintenance requirements in Centers for Medicare & Medicaid Services regulations. Although the default approach to compliance is simple, it's also very extravagant in terms of technical manpower because it requires every medical device in a facility to be maintained in strict accordance with manufacturer recommendations. However, use of the much more efficient alternate equipment maintenance (AEM) program option calls for each facility to address three challenging requirements:

1. The facility must use a risk assessment method that is considered widely accepted.
2. The facility must be able to provide credible evidence that their AEM program results in a level of patient safety that the facility considers acceptable.
3. The facility must analyze, categorize, and label their medical equipment according to its potential "risk."

The publication of this first article represents a major milestone in the RCM project. A second article describing a practical, step-by-step process for creating an individual, customized AEM program that addresses each of the three key regulatory requirements also is in progress.

In May 2016, an article was published describing the basic principles of the RCM approach.[1] These principles can be used to address each of the three challenges noted above, including how a device's demonstrated likelihood of failing from a PM-preventable cause can be used as a measure of PM-related patient safety. The publication of this first article represents a major milestone in the RCM project. A second article describing a practical, step-by-step process for creating an individual, customized AEM program that addresses each of the three key regulatory requirements also is in progress.

The task force also has developed a website containing additional explanatory articles on this topic, as well as a companion set of tables—some of which will act as the public database around which the entire project is centered. The task force website is available at **www.HTMCommunitydB.org**. ■

Reference

1. **Ridgway M, Clark M, Bettinardi C.** Reliability-centered maintenance: a tool for optimizing medical device maintenance. Available at: http://s3.amazonaws.com/rdcms-aami/files/production/public/FileDownloads/HTM/Idea_Exchange/160523_Ridgway_RCM_Tool.pdf. Accessed Sept. 27, 2016.