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Who's watching the cardiac monitor? Does it matter?

Thomas, Tamekia L. MSN, RN, PCCN

Author Information

Tamekia L. Thomas is critical care education coordinator at Christiana Care Health System in Wilmington, Del. This article previously appeared in *Nursing2010 Critical Care*, July 2010.

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Metrics

CARDIAC MONITORING TECHNOLOGY has expanded over the past 40 years to include the detection of dysrhythmias and monitoring for ST-segment changes and myocardial ischemia. The American Heart Association and American College of Cardiology (AHA/ACC) have practice standards for ECG monitoring, and many institutions have used these standards to create protocols and guidelines for cardiac monitoring on multiple units.¹

But hospitals continue to struggle with issues related to cardiac monitoring, including compliance with monitoring protocols, monitor use, and maintaining competency among monitoring staff. And the demand for cardiac monitoring continues to increase, often exceeding the facility's capacity for monitoring.² Difficulties accommodating patients who need a monitor often are the result of monitor use beyond the evidence-based recommendations.³⁻⁵

Many facilities have been challenged to create safe, cost-effective measures for cardiac monitoring outside the ICU. Research supports the use of a designated monitor watcher in a non-ICU setting. This article explores the various methods of monitoring and the implications of who's watching the monitor: nurse or monitor technician.

Overview of monitoring

Improved technology in cardiac monitoring equipment, capacity, and capabilities has taken monitoring to the next level. As a result, the need for skilled healthcare workers with the expertise to interpret ECG rhythms and the ability to detect monitoring changes has increased.

The AHA/ACC rating system for ECG monitoring in a hospital setting divides patients into three groups:

- Class I—cardiac monitoring is indicated for most of these patients. Examples are patients resuscitated after cardiac arrest, those in the early phase of myocardial infarction, and those having cardiac surgery. These patients are typically cared for in an ICU, where nurses are skilled in cardiac and hemodynamic monitoring and can manage unstable critically ill patients.

- Class II—cardiac monitoring may be beneficial in some patients but isn't indicated in all. Examples include patients with chest pain syndrome, postpercutaneous coronary intervention, or heart failure; patients admitted for syncope evaluation; patients admitted on an antiarrhythmic medication; or patients who require dosage adjustments of medications for chronic atrial tachydysrhythmias. These patients usually are cared for in progressive care or telemetry units.
- Class III—monitoring isn't indicated and has no therapeutic benefits because the risk of a serious cardiac event is low. Examples include patients with permanent, rate-controlled atrial fibrillation; patients undergoing hemodialysis; and stable patients with chronic ventricular premature beats.¹

From a distance

The terms *flexible monitoring* and *remote telemetry* describe monitoring a patient's vital signs or cardiac rhythm remotely, via a network connection to a central workstation. Flexible monitoring lets low-risk patients be placed in appropriate settings based on nursing expertise rather than cardiac monitoring capabilities. Workstations may be located in a designated monitoring area on the unit, off the unit, or within an ICU.⁶ The "virtual ICU" is another form of telemedicine that provides an on-duty intensivist and critical care nurse to monitor patients from a remote location.⁷ These programs improve patient outcomes by letting intensivists prescribe medical treatments and therapies based on real-time patient data.

Communication between the monitor watcher and the bedside nurse is essential for remote cardiac monitoring to be successful. The monitor watcher must alert the nurse about any changes in the patient's physiologic data that appear on the monitor. The nurse can then assess the patient and deliver appropriate care.⁸

Although hospitals have incorporated the AHA/ACC guidelines on ECG monitoring into their protocols, policies, and order sets, overuse of flexible monitoring continues to be a problem.⁵ The demand for flexible monitoring continues to increase, and instead of addressing compliance and overuse issues, hospitals are creating more flexible monitoring units and identifying alternative monitoring capabilities.^{3,5}

The need for monitor watchers

The evolution of flexible monitoring in remote locations introduced the need for a designated monitor watcher. On flexible monitoring units, where the nurse to patient ratios exceed 1:2 or 1:3, the monitor watcher could deliver continuous observation of the patient's cardiac rhythm from a centralized location.⁹ Controversy still exists over the necessity for someone to watch the monitors at all times. However, the use of designated monitor watchers has increased and more institutions have adopted this practice. One study concluded that dedicated monitor watchers (in this case, nurses) may prevent episodes of ventricular tachycardia.¹⁰ However, the use of a dedicated monitor watcher didn't lower incident rates or mortality compared with patients without a dedicated monitor watcher.¹⁰

Another study found that dedicated nurse monitor watchers detected life-threatening dysrhythmias correctly 95% of the time, compared with 88% for patients who didn't have a monitor watcher.⁹ Both studies supported the use of a designated monitor watcher to enhance the efficiency and quality of patient care.

When remote monitoring is used without a continuous designated monitor watcher, but with nurses from the ICU assigned to respond to patient alarms from another unit, activity on the unit can reduce the monitor watcher's effectiveness.⁶ In this study, critical care nurses monitored telemetry patients in a general medical ward while maintaining a patient assignment in the coronary care unit. Accurate detection of dysrhythmias and response to alarms declined when activities increased in the CCU.⁶

Who should watch the monitor?

Potential monitor watchers include RNs, monitor technicians, and nurse assistants. In some cases, a person such as a unit secretary or telemetry technician may be cross-trained. See *Pros and cons of a dedicated monitor watcher* for more information. The AHA/ACC guidelines don't specify the ideal professional level of the monitor watcher, but highly recommend that staff receive formal education related to the monitoring system, goals of monitoring, and ECG interpretation (didactic and hands-on demonstration).¹ Having one monitor watcher observe several monitors at one time is only recommended if training for the nurses isn't provided and the monitor watcher has superior expertise in dysrhythmia identification.¹

Flexible monitoring in practice

Christiana Care Health System (CCHS) has more than 1,100 licensed hospital beds at its two locations. CCHS adopted flexible monitoring in November 2000 with the initial average daily monitoring capacity of 122 patients.¹¹ The average daily capacity is now more than 400 patients across many units. Individual patient rhythm strips are transmitted to a centralized monitoring room staffed 24/7 by 11 monitor technicians per shift.

Each monitor technician observes up to 40 patients, watching for changes to the patient's cardiac status. For the pulmonary step-down unit, the technicians monitor SpO₂, heart rate, and cardiac rhythm. The technicians alert the patient's unit whenever a dysrhythmia is detected, an alarm sounds, a parameter changes, or monitor maintenance is needed (for example, electrode and battery issues). The technicians document the cardiac rhythm interpretation on patient admission, every 4 hours, and as needed for changes in rhythm. They also document, at the direction of the nurse, changes in vital signs and level of consciousness, chest pain, and the effects of antiarrhythmic agents.

The technicians also will obtain a rhythm printout for dysrhythmia onset or changes in the cardiac rhythm and fax it to the nursing unit. The technicians call the charge nurse or the patient's nurse to alert them of the change. Rhythm interpretation includes measured PR intervals and QRS duration. The charge nurse or bedside nurse will obtain a rhythm printout on admission and every 8 hours; these printouts are placed in the patient's medical record.

Lethal alarm conditions, defined by set parameters for dysrhythmias and alarm limits, are communicated by the Emergency Heart Phone, a specific telephone on each unit dedicated for this purpose.

All true **nonlethal alarm** conditions are communicated via the unit-designated Telemetry Companion Phone, which is carried by the charge nurse or a designee. The charge nurse then notifies the patient's bedside nurse of any changes in the patient's rhythms or areas of concern. The bedside nurse can assess the patient's hemodynamic status and for the presence or absence of clinical signs or symptoms. Depending on the patient's clinical status, the bedside nurse will contact the physician, notify the Rapid Response Team, or initiate basic life support and call the code response team. The event is documented in the patient's medical record.

Monitor technician training includes 3 months of observation and monitoring with a preceptor, extensive education related to basic and advanced dysrhythmia interpretation, and an individualized orientation plan. Nurses working on a flexible monitoring unit are also trained in basic dysrhythmia interpretation and management. A partnership between the nurses and technicians helps to foster a safe environment for cardiac monitoring in which the nurse is free to deliver other essential care for the patient.

Annual competency for CCHS monitoring technicians includes a series of didactic review staff development sessions with a comprehensive test that includes review materials and rhythm strips. We're in the process of creating an annual competency for the nurses who work on flexible monitoring units.

CCHS has adapted the recommendations from the ACC/AHA into the clinical practice guidelines for cardiac monitoring and dysrhythmia management. Order sets for cardiac monitoring options have also been created for initiation, duration, transport options, and order renewal. Similar to other institutions throughout the country, CCHS also

struggles with the issues of flexible monitoring overuse and adherence to set guidelines. However, challenges have been noted and opportunities for improvements are currently being addressed.

Eye to the future

Flexible monitoring with dedicated monitor watchers may help with dysrhythmia detection in noncritical care settings. Monitor watchers must be appropriately trained and notify healthcare providers of patient changes in a timely manner.

Pros and cons of a dedicated monitor watcher¹

Pros

- Patient alarms are immediately reviewed and validated
- Subtle changes in ECG waveforms and rhythms can be detected early
- Proper lead placement, signal quality, and alarm parameter settings can be assured
- Nurses are free to spend more time on patient care instead of monitoring duties
- Cost-efficient
- The monitor is continuously observed

Cons

- Additional staff needed to watch the monitors
- Improved technology of cardiac monitors may be better equipped to alert nurse of detected dysrhythmia better than an actual monitor watcher
- Potential for decreased vigilance if monitor watcher becomes mesmerized from watching multiple screens of ECG waveforms
- Shifts responsibility away from the nurse, fostering dependence on the monitor watcher
- May impair the nurse's ECG interpretation skills

References

1. Drew BJ, Califf RM, Funk M, et al. Practice standards for electrocardiographic monitoring in hospital settings: an American Heart Association Scientific Statement from the Councils on Cardiovascular Nursing, Clinical Cardiology, and Cardiovascular Disease in the Young; endorsed by the International Society of Computerized Electrocardiology and the American Association of Critical-Care Nurses. *Circulation*. 2004;110(17):2721–2746.
 - Cited Here
2. Helms S, Adkins S. Telemetry and evidence-based practice go hand in hand. *Nursing Critical Care*. 2006;1(1):17–19.
 - Cited Here
3. Kanwar M, Fares R, Minnick S, Sarovale L. Inpatient cardiac telemetry monitoring: Are we over doing it? *J Clin Outcomes Man*. 2008;15(1):16,17,20.
 - Cited Here
4. Reilly T, Humbrecht D. Fostering synergy: A nurse-managed remote telemetry model. *Crit Care Nurse*. 2007;27(3):22–26, 29–33.
 - Cited Here