HACKETTSTOWN REGIONAL MEDICAL CENTER
NURSING POLICY MANUAL
Continuous CARDIAC MONITORING and
Continuous PULSE OXIMETRY via Telemetry Unit

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SCOPE
All RNs and monitor techs responsible for monitor cardiac rhythms or continuous pulse oximetry via the telemetry unit..

PURPOSE
To apply standards of practice to ECG monitoring to ensure prompt detection of change in heart rate or rhythm and to detect changes in pulse oximetry in conjunction with cardiac monitoring for the Orthopaedic patient.

DEFINITIONS
Cardiac Monitoring, also referred to as ECG (electrocardiographic) monitoring is defined as any of the following:

- Bedside Monitors only (monitored by the nurse or physician) i.e ICU, PACU, DASH monitors in SDS, Minor Procedures
- Bedside Monitors with central monitoring occurring within the unit (monitored by the bedside nurse) i.e ED, Cardiac Rehab
- Telemetry with central monitoring occurring within the unit (monitored continuously by a Monitor Technican (MT) or nurse from the Center Information Center) i.e. PCU
- Centralized Telemetry Monitoring- cardiac monitoring widely distributed across multiple inpatient units with 24 hour visualization for a Centralized telemetry monitoring area staffed by Monitor Technicians. i.e. 3N, 3S

Central Information Center (CIC)- the central monitoring system located in the Progressive Care Unit's (PCU) Monitor Technician room that has the ability to display a continuous cardiac rhythm if a patient is connected to a telemetry unit and pulse oximetry if the appropriate adapter is connected to the telemetry unit.

Continuous Pulse Oximetry- for the processes of this policy, continuous pulse oximetry refers to the continuing monitoring pulse oximetry via a telemetry unit. Only Orthopedic patients on the Medical Surgical units at risk for obstructive sleep apnea (OSA) after completion of preoperative OSA screening may be monitored via the telemetry unit.

POLICY
It is the policy of Hackettstown Regional Medical Center to establish standards for cardiac and pulse oximetry monitoring for adult patients in the clinical areas in which they are managed.

PROCEDURE
A. General Information
1. A Provider order is needed for cardiac monitoring when it is not the standard of care for all patients on the unit. This applies to in the following areas: ED and Medical Surgical units.
2. A Provider order is needed to monitor continuous pulse oximetry for Orthopaedic patient on Med Surg.
3. Once a patient has continuous monitoring the following is applicable

a. Order for continuous cardiac monitoring on Medical Surgical units will need to be renewed or discontinued after 36 hours per Cardiac Monitoring Powerplan. Then daily alerts will fire for the provider to review necessity.
b. IV access is required on all patients who have continuous cardiac monitoring.
c. Vital signs are obtained a minimum of 6 times a day, approximately every 4 hours on Med Surg and PCU. All other units follow specific unit standards.
d. A sample of the cardiac rhythm strip will be obtained and interpreted on admission or at the initiation of monitoring, at the beginning of each 12 shift and in the event of a significant change in patient's rhythm or clinical status. The interpretation includes Rhythm, Rate, PR Interval, QRS, QT and any ectopy.
e. An additional sample will be documented for patients who are monitored by the MT at 0400 and 1600 to identify the rhythm, rate, ectopy

B. Equipment/Parameter Alarms

1. All telemetry transmitters and SPO2 probes and cables for PCU and MedSurg are kept in the Monitor tech room. Other monitoring equipment such as telemetry transmitters, DASH monitors and bedside cardiac monitors are housed in units that provide the service.
2. All requests for equipment will be through the monitor tech and returned there when the patient's continuous monitoring is discontinued.
3. All nursing units are required to clean equipment with germicidal agent before returning equipment.
4. Initial set up for alarms is established by using patient's baseline settings. A specific physician orders for parameters would supersede using baseline settings.
5. The parameters can be individualized for the patient by a RN or monitor tech. When the monitor tech adjusts parameters it will be in conjunction with the nursing and/or medical staff.
6. Parameters should be based upon the patient baseline average if there are no specific orders from the physician. The alarm parameters should be set 10-20 beats/minute above and below their individual baseline. The regularity of the patient's heart rate will determine whether 10 or a 20 beat difference is warranted.
7. Volume alarm should never be set below 50%
8. Other parameters that are monitored via a central station or portable/free standing monitoring include blood pressure, O2 saturation and respirations. All monitoring units will adjust those parameters on initiation and every 12 hours based on patients baseline and normal acceptable parameters:
    - *Blood pressure: Within 20% of patient initial BP and then within 20% of stabilized BP. In cardiac rehab parameters are set at SBP 240 and DBP 110 for the exercising. They follow unit specific policies.*
    - *O2 saturation: all patients will have alarm parameters of 90-100% unless patient baseline is less. Those known to have chronic low saturation will have parameters set for 3 above and below their normal.*
    - *Respiratory Rate: Within 10 of their normal. Low rate should never be below 10.*

C. Procedure for attaching the cardiac monitor

1. Explain procedure for patient
2. Connect five electrodes to each of the lead wires on the telemetry unit
3. Assure new batteries are installed.
4. Peel covering from electrodes and place in appropriate position on the patient as per telemetry units' visual display on the back of the unit.
5. Those that have been trained, can attached the patient to a cardiac monitoring device
6. Confirm with monitor tech that an adequate display is received. If in the ED the nurse checks the ED central console to confirm. All other units, the RN assure appropriate display on their bedside display.

D. Procedure Steps for Communication Nurse-Monitor Technician (MT)

1. The Nurse and Monitor tech should communicate the following information to each other when the event takes place:
   a. Request for transmitter and cables
   b. Initiation of monitoring
   c. Discontinuation of monitoring
   d. Interruption of monitoring
   e. Chest PT
   f. Transfer to another room
   g. Pacemaker or AICD
   h. Transporting for diagnostic testing or procedure
2. The nurse should call the MT to inform the tech of any specific orders i.e.: Call MD with rates less than 50.
3. The patient assignment sheet will be sent to the monitor tech within 30 minutes of the start of the shift. Additional changes to assignments must be communicated ie: change of shift, mid shift assignments changes, patient transfers/discharges.
4. Crisis alarms will be communicated to the nurse when noted, they include:
   - Asystole
   - Ventricular tachycardia
   - Ventricular fibrillation
   - These alarms will always remain a crisis alarm
5. Warning Alarms will be communicated to the nurse when noted, they will include:
   - Bradycardia (patient's low HR parameter)
   - VT> 2
   - Accelerated Ventricular rate
   - Heart rate greater than the patient's high HR parameter, such as SVT, PAT
   - Pause or any dysrhythmia not addressed as a Crisis alarm

6. Message Alarms will be communicated to the nurse when noted, they will include:
    - Bigeminy
    - Couplets
    - Trigeminy
    - PVC
    - Atrial Fibrillation
    - ST alarms
7. R on T

E. Specific Monitor Tech Responsibilities

1. Communicates change battery alarm.
2. Leaves copies of the telemetry strips in PCU for each nurse to review and the Med-surg charge nurse will pick up the telemetry strips from the Monitor tech when reports are ready. Interpretations are documented in the electronic record.
3. Notifies Bio- Medical Engineering of faulty equipment and takes equipment out of service and labels as such.
4. Admits patient to the CIC, including entering patient data and initial rhythm strip.
5. Sets parameters and rechecks parameter every 12 hours.
6. Monitors patients continuously via central station.
7. Reviews prior alarm history and clears out artifact related alarms.
8. The monitor tech will immediately calls the nurse via Vocera or calling the unit upon :
    a. recognition of a crisis alarm
    b. warning alarms
    c. out of parameter alarms
    d. Change in rhythm
    e. Off telemetry alarm
    f. If the patient is in a testing area off the unit and develops a change, the monitor technician will notify the nurse and the ancillary department. The nurse will go to the testing area and check on the patient, the ancillary department checks the patient while awaiting the nurse to arrive. The ancillary department can initiate BLS and call for a Rapid Response or Code Blue if necessary.
9. In the event the nurse is unable to be reached by Vocera immediately the monitor tech will use the “emergent” call function of Vocera. In the event the emergent call does not get a staff member to the patient’s bedside the Monitor tech will call a RRT.
10. Documents new strip in the electronic record for any changes noted
11. Documents all notifications to nurse
12. Labels each telemetry strip with the following information:
    - Patient’s name and medical record number
    - Patient’s room number
    - Time and date
    - Measured Parameters

F. Specific Nurses Responsibilities

1. Patients on telemetry monitoring (Medical/Surgical and PCU) who require transport for testing will be transported without a nurse to the department, unless otherwise ordered by the Physician. The patient will be continuously monitored via telemetry by the Monitor tech. In those areas where telemetry is not monitored by Monitor Tech or telemetry is not transmitted, the nurse will accompany and monitor the patient unless ordered otherwise by the physician.
2. Electrodes are changed prn and at least every 72 hours based upon manufacturer's recommendations. Do not use tape to affix to patient's body.
3. Telemetry ECG strips are placed on the patient record after the nurse verifies the Monitor's tech interpretation.
4. Any area where the RN is responsible for continuous monitoring of cardiac rhythms; the RN will place a cardiac rhythm strip on the patient chart when the patient is initially placed on telemetry, The strip will include patient's name, Rhythm, Rate, PR Interval, QRS, and any ectopy.
5. Broken or faulty equipment should be returned to the CIC. The Monitor tech and/or nursing staff will call Bio-Medical engineering and report the problem and label equipment out of service.
6. If nurse is unable to trouble shoot equipment in a timely manner, the Nurse should notify Monitor tech promptly for replacement equipment or the nurse needs to obtain replacement equipment. In other areas where the MT doesn't monitor the patient, the RN replaces equipment from unit supply.
7. On Medical/Surgical and PCU, notify the Monitor Tech when the patient's telemetry is discontinued, the patient leaves the floor or the unit is taken off for any reason.
8. The Charge nurse or designee from Med-Surg will pick up telemetry strips from the MT after the MT has interpreted and entered the information into the electronic record.
9. Check the lead placement and interpret patient rhythm at the beginning of each shift and compare it to the interpretation of the Monitor tech. Verify in electronic record.
10. In areas where the MT doesn't complete the initial interpretation, the RN will follow the same steps and document in the interpretation in the electronic record.
11. If the Nurse observes an arrhythmia, or is notified by the Monitor Tech the nurse will:
    a. Verify the patient by name and medical record number
    b. Go immediately to check on the patient on the unit or testing area.
    c. Nursing assessment will include:
        - Level of Consciousness
        - HR and rhythm regularity, BP, pulse oximetry, respiratory rate
        - Assess for presence of chest pain
        - Color of skin
        - Observe slave monitor and/or portable bedside monitor
    d. Communicate patient status immediately to the Monitor Tech
    e. Call RRT and notify attending physician immediately for all symptomatic rhythms.

F. Transporter Responsibility and/or Diagnostic areas if the patient is not accompany by an RN

1. Transporter will notify Monitor Tech at extension 8747 or via Vocera prior to transporting the patient off the unit and again upon return to the unit.
2. Transporter will also communicate which department the patient will be going to.
3. The ancillary department will notify the monitor technician when the patient is being sent to another department.
4. Patients going to surgery will have the telemetry monitor removed upon arrival in the holding area. The patient will be placed on an EKG monitor in the holding area. The telemetry transmitter (tele box) will be wiped off with a germicidal immediately after being taken off the patient in the holding area.
5. Ancillary departments will keep a par level of electrodes and "AA" batteries.
6. Patients with telemetry orders from the Emergency Department, Intensive/Coronary Care Units, PACU/Operating Room will be transported with a portable monitor/defibrillator and accompanied by a RN, unless physician orders specify differently.

G. Documentation

1. Interpretations are recorded in the electronic medical record in addition to the information recorded on each individual print out
    - Rate, Rhythm, PR, QRS and QT interval
    - Notes any ectopy or arrhythmia patterns
    - Initials/Signature
2. Change in rhythm: documents new rhythm and name of nurse who was notified of the change, time of the change (i.e. Atrial fibrillation to sinus rhythm, print strip, write parameters measured and Nurse ____ aware.)
3. Documents persistent warnings such as "Patient off telemetry" if not corrected immediately after notifying the nurse.
4. Complete all documentation prior to discharging patient from the system.

H. Alarm Testing

1. Clinical Departments will conduct periodic operational testing and functional (human factor) testing
2. Functional testing will be performed by activation of an alarm on the monitor in a patient care area. The staff will be evaluated on the response to the audio alarm.
3. The Biomed Department will perform testing of alarms and alarm systems associate with the equipment as part of routine preventive maintenance.
4. Upon identification of any environmental noise, staffing or other issues that prevent staff from hearing and responding to the alarm, the department manager will be notified.

5. The department manager will then work an interdisciplinary team (unit staff, Biomed, Patient safety committee member and if needed a representative from the Manufacturer of the equipment) to develop a process improvement plan.
6. Testing and follow up plan will be communicated to the Safety Committee.

REFERENCES

American Association of Critical Care Nurses, AACN Practice Alert, "Alarm Management," 5/2013

The Joint Commission Perspectives on Patient Safety, December 2011, Volume 11, Issue 12, Copyright 2011 Joint Commission on Accreditation of Healthcare Organizations

The Joint Commission Sentinel Event Alert, Issue 50, April 2013