Title: CARDIAC (ECG) MONITORING (ADULTS AND PEDIATRICS)

RNSP: RN Procedure

I.D. Number: 1142

Authorization: [X] Former SktnHR Nursing Practice Committee

Source: Nursing

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Scope: SktnHR - Acute

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DEFINITIONS

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

- Bedside monitors only (monitored by bedside nurse/physician)
- Bedside monitors with central monitoring occurring within the unit (monitored by bedside nurse)
- Telemetry with central monitoring occurring within the unit (monitored by bedside nurse)
- Telemetry with remote central monitoring occurring within the unit (monitored by central monitoring nurse)
- Telemetry with remote central monitoring occurring off the unit (monitored by central monitoring nurse)

Certified bedside nurse: Registered Nurse in a targeted practice setting who has met certification requirements as described in policy statement 2.1.

Telemetry: as a monitoring system attached to the patient which uses a wireless network to transmit ECG data continuously to a centralized monitor location.

Uncertified bedside nurse: includes both Registered Nurses and Licensed Practical Nurses.

ROLES

Registered Nurses (RNs): RNs identified by their manager in targeted practice settings will be certified in the RN Specialty Practice (RN Procedure): ECG Monitoring and Rhythm Interpretation.

1. PURPOSE
1.1 To apply best practice standards to ECG monitoring to ensure prompt detection of changes in heart rate or rhythm.

2. POLICY

2.1 The RN certified in this RNSP will have first completed the following learning modules/activities prior to providing cardiac monitoring and rhythm interpretation independently:

- Attended an educational session on cardiac monitoring and rhythm interpretation
- Completed the learning package and quiz and returned to CNE
- Complete skills checklist with certified RN to validate and ensure safety checks are followed appropriately

2.2 Physician order required

- Physician will order monitoring
- Physician will use appropriate approved forms to order monitoring.
  Example: if patient requires telemetry; recommended Telemetry Order Set (Appendix B)
- If ECG monitoring is a physician order, then an order to discontinue ECG monitoring (temporary or permanent) is also required.
- Units which utilize ECG monitoring may have unit-specific standards pertaining to the monitoring requirements of that patient population. (i.e. PACU, ER, PICU, NICU, Acute Care Pediatrics)

2.3 Special Considerations

- ECG monitoring may be initiated by a certified nurse if it will assist in their clinical assessment.
- If ECG monitoring is initiated by a certified nurse, it may be discontinued by the nurse, if the clinical condition is stable, unless there is a written physician order to continue ECG monitoring.
- The Most Responsible Physician (MRP) or designate is responsible for decisions regarding the significance and treatment of identified arrhythmias.
- In a circumstance where the nurse is not certified in ECG Monitoring and Rhythm Interpretation and bedside ECG monitoring is initiated by the physician, ECG monitoring is the responsibility of the physician.

3. PROCEDURE

3.1 Initiating ECG monitoring:

With bedside ECG monitoring the certified bedside nurse:

3.1.1 Explains the purpose of ECG monitoring to the patient and family.

3.1.2 Applies the electrodes to the appropriate location and attaches the correct cables to each electrode. (See Appendix A).

  Note: Electrodes are to be changed q24hours and pm.

3.1.3 Selects an appropriate Lead in which to monitor the patient
3.1.4 Ensures that an acceptable ECG tracing is present

3.1.5 Sets the appropriate alarm limits based on the initial rate / rhythm and ensures alarms are set to the ON position.

Note: Pediatrics- Alarms are set that are appropriate for the patient’s age or as ordered by physician.

With remote ECG monitoring the uncertified bedside nurse:

3.1.6 Explains the purpose of ECG monitoring to the patient and family.

3.1.7 Applies the electrodes to the appropriate location and attaches the correct cables to each electrode. (See Appendix A)

3.1.8 Ensures that the central station is receiving an acceptable tracing

3.1.9 Communicates to certified central monitoring nurse the following:

- Patient identifiers (name, age, gender, medical record number)
- Patient room, unit and contact phone number
- Attending MRP
- Diagnosis and reason for ECG monitoring
- Relevant history and medications

3.1.10 Takes responsibility for ongoing surveillance of telemetry system integrity

With remote ECG monitoring the certified central monitoring nurse:

3.1.11 Sets the appropriate alarm limits based on the initial rate / rhythm and ensures alarms are set to the On position

3.2 Ongoing Care

With bedside ECG Monitoring the certified bedside nurse:

3.2.1 Checks the alarm limit settings at the start of every shift and continues to adjust the alarm limits as the patient’s rhythm and condition warrant.

3.2.2 Reviews every shift the monitoring trends and alarms. (If monitor capability exists)

3.2.3 Reassesses the patient for signs of hemodynamic compromise with any significant changes in cardiac rate or rhythm (i.e. BP, oxygen saturation, respiratory rate, signs of myocardial ischemia etc.)

3.2.4 Reports to the MRP or designate

- Life threatening cardiac arrhythmias and initiates appropriate actions.
- Significant changes in cardiac rate and/or rhythm
- New or unexpected changes in the cardiac rate, rhythm or clinical status.

3.2.5 Ensures that temporary discontinuance of ECG monitoring during patient transfer for tests or personal care does not occur unless ordered by the MRP or designate.
3.2.6 Reviews daily the continued requirement for ECG monitoring

W ith remote ECG monitoring the certified central monitoring nurse:

3.2.7 Checks the alarm limit settings at the start of every shift and continues to adjust the alarm limits as the patient’s rhythm and condition warrant.

3.2.8 Reviews every shift the monitoring trends and alarms. (If monitor capability exists)

W ith remote ECG monitoring the uncertified bedside nurse:

3.2.9 Reassesses the patient for signs of hemodynamic compromise with any significant changes in cardiac rate or rhythm (i.e. BP, oxygen saturation, respiratory rate, signs of myocardial ischemia etc.)

3.2.10 Reports to the MRP or designate
   - Life threatening cardiac arrhythmias and initiates appropriate actions.
   - Significant changes in cardiac rate and/or rhythm
   - New or unexpected changes in the cardiac rate, rhythm or clinical status.

3.2.11 Ensures that temporary discontinuance of ECG monitoring during patient transfer for tests or personal care does not occur unless ordered by the MRP or designate.

3.2.12 Reviews daily the continued requirement for ECG monitoring

3.3 Communication with telemetry and remote central monitoring

3.3.1 The uncertified bedside nurse communicates with the certified central monitoring nurse when:
   - There has been a sudden change in the patient’s condition
   - There has been a change in the patient’s cardiac medications, (i.e. new, discontinued or dose adjustment)
   - The patient will be temporarily off telemetry or is returning from temporary absence
   - A report on the patient trends is required
   - ECG monitoring has been ordered discontinued.

3.3.2 The certified central monitoring nurse communicates with the bedside nurse when:
   - An acceptable ECG tracing is not being received
   - A change from the patient’s baseline occurs
   - Potential life threatening arrhythmias occur
   - Non-life threatening rhythms / rates occur that are a significant change from the previous monitoring trends
   - Additional clinical information is required to clarify the significance of cardiac rate / rhythm changes noted.

3.4 Documentation
3.4.1 The cardiac rhythm will be interpreted and documented in the patient chart at the initiation of cardiac monitoring and at the beginning of every shift.

**Note:** May use ECG Interpretation Strip (Appendix C)

3.4.2 All documented ECG strips must have the required patient identifiers and include the date and time of the strip.

3.4.3 All cardiac rates/arrhythmias which require immediate intervention must be documented in the patient’s chart.

3.4.4 Remote central monitoring by other than bedside nurse:

3.4.4.1 Uncertified bedside nurse documents

- Verbal report given by certified central monitoring nurse at shift end and pm

3.4.4.2 Certified central monitoring nurse documents on the telemetry record:

- Initial baseline rhythm strip and significant arrhythmias as they occur
- Shift trends and significant events/ treatments
- Sends tracing documentation to unit daily (AM) and pm
- Times of verbal communication with bedside registered or licensed nurse

4. **REFERENCES**


Appendix A

Electrode Placement

**Standard Lead Placement** - Five electrodes
- White – RA
- Black – LA
- Green – RL
- Red – LL
- Brown – C right or left sternal border @ 4th intercostal space

**EASI Lead**

<table>
<thead>
<tr>
<th>LEAD</th>
<th>Lead Color</th>
<th>EASI Lead Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>brown</td>
<td>On the lower sternum at the level of the fifth intercostal space</td>
</tr>
<tr>
<td>A</td>
<td>red</td>
<td>On the left midaxillary line at the same level as the E electrode</td>
</tr>
<tr>
<td>S</td>
<td>black</td>
<td>On the upper sternum</td>
</tr>
<tr>
<td>I</td>
<td>white</td>
<td>On the right midaxillary line at the same level as the E electrode</td>
</tr>
<tr>
<td>N</td>
<td>green</td>
<td>Can be anywhere, usually below the sixth rib on the right hip</td>
</tr>
</tbody>
</table>

*Ensure that the lead placement corresponds to the ECG monitor configuration. (EASI or Standard lead placement) Incorrect placement will result in inaccurate ECG tracings.*

NOTE: Make sure that the S and E electrodes line up vertically on the sternum and that the I, E and A electrodes align horizontally.
Chest Lead Placement for (LifePak 15)

Chest leads are in addition to the standard three lead system, but includes a right leg (RL) lead as well.
Appendix B

Telemetry Order Set

At RUH only: fax signed completed orders to CCU (fax #1347) excluding patients located on RUH ward 6000
Service requesting telemetry: __________________________
Admitting diagnosis: __________________________ Documented Code Status: __________________________
Patient ward / location: __________________________ Order faxed to CCU: date ________ time ________

Consults
Has Cardiology been consulted? □ Yes □ No

Monitoring
Telemetry monitoring for: □ 24h □ 48h □ Other __________________________
   Interruption of telemetry (i.e. showers / diagnostic test, etc.) □ Yes □ No
   Baseline 12 lead ECG faxed to CCU

Reasons for Telemetry Monitoring
□ Post arrest
□ Acute Coronary Syndrome (ACS)
□ Post myocardial infarction (MI)
□ Cardiovascular (CV) surgery
□ Potential for lethal arrhythmias after initial control
□ Response to therapy of known arrhythmias
□ Significant / symptomatic tachyarrhythmia
□ Significant / symptomatic bradyarrhythmia / AV block
□ New onset or symptomatic atrial fibrillation / atrial flutter
□ Syncope (rule-out arrhythmia)
□ Long QT with potential for arrhythmia
□ Electrolyte disorders
□ Stroke
□ Evaluation of permanent pacemaker / ICD function
□ Overdose of drugs known to have cardiac arrhythmia implications
□ Selected surgical patients pre or post operation (rule-out arrhythmia)
□ Obstetrical patient with congenital / acquired heart disease
□ Other __________________________

Telemetry Review / Discontinuation
Telemetry to be reviewed q24hr by: __________________________
Telemetry will be discontinued after designated time by telemetry RN if no arrhythmia detected
(to continue telemetry past the designated time a new order MUST be completed and faxed to CCU)
Telemetry discontinued by: __________________________ RN Date: ________ Time: ________
Appendix C

SASKATOON HEALTH REGION
Saskatoon, Saskatchewan

DATE: ____________  TIME: ____________  LEAD: ________

Rhythm: [ ] Reg [ ] Ireg  E-Caliper measurements on strip: [ ] Yes [ ] No - complete below

Rate: ________ P wave: ________ PR Int: ________ QRS: ________ QT Int: ________ QTc: ________

ST Segment: [ ] Isoelectric [ ] Depressed [ ] Elevated  T Wave: [ ] Positive [ ] Inverted [ ] Flattened [ ] Peaked

Interpretation: ____________________________________________________________

See Progress Notes  Initials: ________

Please attach rhythm strip within the border using glue stick or tape.

Date: ____________  Time: ____________  LEAD: ________

Rhythm: [ ] Reg [ ] Ireg  E-Caliper measurements on strip: [ ] Yes [ ] No - complete below

Rate: ________ P wave: ________ PR Int: ________ QRS: ________ QT Int: ________ QTc: ________

ST Segment: [ ] Isoelectric [ ] Depressed [ ] Elevated  T Wave: [ ] Positive [ ] Inverted [ ] Flattened [ ] Peaked

Interpretation: ____________________________________________________________

See Progress Notes  Initials: ________

Please attach rhythm strip within the border using glue stick or tape.

Date: ____________  Time: ____________  LEAD: ________

Rhythm: [ ] Reg [ ] Ireg  E-Caliper measurements on strip: [ ] Yes [ ] No - complete below

Rate: ________ P wave: ________ PR Int: ________ QRS: ________ QT Int: ________ QTc: ________

ST Segment: [ ] Isoelectric [ ] Depressed [ ] Elevated  T Wave: [ ] Positive [ ] Inverted [ ] Flattened [ ] Peaked

Interpretation: ____________________________________________________________

See Progress Notes  Initials: ________

Please attach rhythm strip within the border using glue stick or tape.