New Practices in Clinical Deterioration Identification and Intervention

Standard Call Parameters

Subtle changes in vital signs can be the initial signs of clinical deterioration, including sepsis. Early recognition and intervention are critical. Meridian Nursing has recognized a need to standardize vital sign reporting in the absence of more stringent physician orders or unit standards in med surg, telemetry, and observation patients.

Changes in nursing policy now define expected vital sign measurement timeframes as well as reporting parameters in the absence of more stringent guidance. Education for nurses on standard call parameters will begin October 1.

Effective October 15, 2015, vital signs (VS) expectations include:

- Complete vital signs include blood pressure, pulse, temperature (oral or rectal), respiratory rate, and pulse oximetry;
- VS are measured every four hours:
  - For 24 hours upon admission
  - For 24 hours post ICU transfer to the floor
  - For 24 hours post-operatively
  - Upon nursing judgment
  - Upon concern for clinical deterioration as is seen in an early warning score of five or more.

The standard definition of routine VS will be every eight hours, unless defined more frequently by unit standards. The timeline for every four-hour VS is 12:00 a.m., 4:00 a.m., 8:00 a.m., 12:00 p.m., 4:00 p.m., and 8:00 p.m. The timeline for every eight-hour VS is 8:00 a.m., 4:00 p.m., and 12:00 a.m. With 12-hour shifts, this requirement may not meet the concerns of an individual nurse’s routine; nurses are guided that vital signs need to be based on patient needs for additional VS measurement. Many concerns exist with respect to the timing of VS, not the least of which is patient sleep and medication administration. No perfect answer exists.

When should physicians/APNs/PAs be notified? The guidelines here reflect the absolute parameters for notification in the absence of more stringent orders. Please note that changes in mental status direct notification at all times, as does little or no response to treatment. At any time, nursing judgment regarding the patient may reflect a need for calling sooner or initiating a rapid response team (RRT) call.
Exclusions to this policy are hospice and comfort care patients. Practical notes relate to temperature measurement. Patients with any suspicion of sepsis need a rectal temperature. Patients with shortness of breath/respiratory compromise should not have oral thermometers used. PCAs/NAs are being asked to use a general guideline for reporting to a R.N. on changes in vital signs. This is the “Rule of 100” and means prompt reporting of:

- A pulse over 100
- A systolic BP under 100
- A temperature over 100

**Early Warning Scores (EWS)**

Early warning scores have been around for more than 15 years. One of the most widely publicized EWS tools was published by Subbe (2001). The EWS correlates with mortality. As the scores rise above four, mortality risk increases. As scores move to eight and above, mortality risk increases at an even steeper rate.

The EWS is a composite score of vital signs, oxygen requirements, and mental status.

![EWS Chart](chart.png)

**Source:** Prytherch, et al., 2010.

<table>
<thead>
<tr>
<th>Score</th>
<th>Heart Rate (bpm)</th>
<th>Respiratory Rate (bpm)</th>
<th>Oral Body Temperature (°F)</th>
<th>Systolic Blood Pressure (mmHg)</th>
<th>SaO2%</th>
<th>Inspired O2</th>
<th>Alertness Scale (AVPU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>≤40</td>
<td>≤8</td>
<td>≤95</td>
<td>≤90</td>
<td>≤91</td>
<td>Room Air (21%)</td>
<td>Alert (A)</td>
</tr>
<tr>
<td>2</td>
<td>41-50</td>
<td>9.11</td>
<td>95.1-96.8</td>
<td>91-100</td>
<td>92-93</td>
<td>Any prescribed Oxygen</td>
<td>Alert (A)</td>
</tr>
<tr>
<td>1</td>
<td>51-90</td>
<td>12.20</td>
<td>96.9-100.4</td>
<td>101-110</td>
<td>94-95</td>
<td>Insufficient Oxygen</td>
<td>Alert (A)</td>
</tr>
<tr>
<td>0</td>
<td>91-110</td>
<td>21.24</td>
<td>100.5-102.2</td>
<td>111-219</td>
<td>≥96</td>
<td>Extravasation Oxygen</td>
<td>Alert (A)</td>
</tr>
<tr>
<td>1</td>
<td>111-130</td>
<td>≥25</td>
<td>102.3</td>
<td></td>
<td></td>
<td>Extravasation Oxygen</td>
<td>Alert (A)</td>
</tr>
<tr>
<td>2</td>
<td>≥131</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extravasation Oxygen</td>
<td>Alert (A)</td>
</tr>
</tbody>
</table>

**Source:** Wake Forest Baptist Medical Center, a modification of the Modified Early Warning System developed by Subbe, C.P. (2001).
Handwashing: The Proof is in the Numbers

When a patient is scored between zero and four, they are most likely stable. Significant instability begins at a score of five. For scores of five to seven, patient VS monitoring must be every four hours, physicians/APNs/PAs must be notified, individual symptoms must be addressed, and at any time that additional concern for patient safety is evident, a RRT is to be called.

When the EWS is eight or above, a RRT must be called, and responsible physicians must be notified. Decisions regarding escalation to higher levels of care must be addressed. When a RRT is called, the team must complete sepsis screening for every case.

These processes will promote early identification of sepsis. With positive sepsis screens, early management would ensue with fluid therapy, antibiotics, vasopressors, and supportive therapies. This is summarized in the treatment guidelines of the Surviving Sepsis Campaign.

All communication of handoffs will include the EWS once it is implemented. EWS education will begin in the latter part of October, and implementation will be in early November.

EWS is a tool to be used in med-surg, telemetry, and observation areas, but its application will grow in the future to additional settings. Again, hospice and comfort care patients are excluded.

This kind of early identification system for clinical deterioration is far from unique to Meridian. These systems are in place at many U.S. hospitals and several of today’s clinical information systems come with such systems embedded.

We will be making provisions for the early warning score within Soarian. Complete sets of vital signs with mental status assessments will be pulled from existing documentation to be scored and tallied. Nurses will acknowledge the score at the appropriate frequency and follow the algorithm on the following page for action steps.

When delays in response by any party in these processes occur, a leader must be promptly notified to assist in issue escalation and a MeridianCarelink is to be filed. VPCE’s have agreed that when delays occur, the issue should be reviewed at the organization’s QI& O Committee. This is part of the policy on chain of command.
<table>
<thead>
<tr>
<th>Early Warning Score</th>
<th>Frequency of EWS/Vital Signs</th>
<th>Nursing’s Action</th>
<th>Escalation</th>
<th>Licensed Independent Practitioner (LIP)'s Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4</td>
<td>Every 4 hours for the first 24 hours &amp; no “Call Parameters” met</td>
<td>1. After 24 hours, if patient does not meet “Call Parameters” AND EWS has been &lt;5, Vital Signs may decrease to every 8 hours.</td>
<td>1. None</td>
<td></td>
</tr>
<tr>
<td>LOW risk of Mortality</td>
<td>Every 4 hours for the first 24 hours, then if patient has had no “Call Parameters” AND the EWS is &lt;5, vital signs every 8 hours</td>
<td>If a patient meets the “Call Parameters” 1. Administer prn meds or interventions if ordered, recheck vital signs in 1 hr. 2. Notify the Licensed Independent Practitioner (LIP) if no prn orders; administer as ordered, repeat vital signs within 1 hour 3. Any acute or new change in mental status from previous assessment, contact LIP and notify Rapid Response Team</td>
<td>2. For “Call Parameters”, order medications or diagnostic studies as appropriate.</td>
<td></td>
</tr>
<tr>
<td>5 – 7</td>
<td>Vital signs with EWS every 4 hours until no “Call Parameters” met AND the EWS is &lt;5 for 24 hours.</td>
<td>If a patient meets the “Call Parameters” 1. Administer prn meds or interventions if ordered, recheck vital signs within 1 hour. 2. Notify the LIP if no prn orders; administer as ordered, repeat vital signs within 1 hour 3. Monitor VS/EWS at the q4 hour frequency for 24 hours 4. May call RR if concerned for patient’s well being 5. Any acute or new change in mental status from previous assessment, page LIP and notify Rapid Response Team 6. Staff RN to document event in Nursing Note.</td>
<td>1. For “Call Parameters”, order interventions/medications appropriate 2. If the EWS is increasing, Licensed Independent Practitioner (LIP) should consider bedside evaluation and consultation with Nurse 3. Notify Upper level resident/Attending of change in the patient’s condition 4. Consider level of monitoring or transfer of patient to higher level of care 5. If patient transferred to a higher level of care, document event in progress notes.</td>
<td></td>
</tr>
<tr>
<td>8 +</td>
<td>During the RRT, VS should be monitored every 15 minutes. If patient stabilizes and remains on floor, Rapid Response will enter protocol order to increase vital signs/EWS to every 4 hours minimum until score &lt;5 and no further “Call Parameters” met for 24 hours.</td>
<td>1. Alert Rapid Response Team and LIP to bedside 2. If the patient remains at EWS &gt;8 and is unstable, anticipate and prepare for patient transfer to a higher level of care 3. If patient stabilizes at 8 or less, RRT team or RN will enter into the electronic health record an order for increased vital signs monitoring (every 4 hours). 4. If patient requires transport off unit for diagnostic testing, the RN must accompany and monitor the patient 5. Initiate the Chain of Command as needed 6. RRT doctor to document in Rapid Response note. 7. Staff RN to document event in Nursing Note.</td>
<td>1. Licensed Independent Practitioner (LIP) to bedside 2. If the patient’s EWS does not improve within the first hour, notify the upper level resident or Licensed Independent Practitioner for transfer to a higher level of care is indicated for increased monitoring 3. Upper- level resident/Attending to evaluate patient and discuss with Attending if this illness is reversible; are end of life discussions indicated, determine code status, and/or need for Palliative care 4. If full code status, initiate transfer to critical care. Transfer to critical care should proceed promptly. Documentation of transfer is completed in a Critical Care Consult note. 5. Document event in Physician Notes</td>
<td>Action Target &lt;15 minutes Bedside Physician Evaluation</td>
</tr>
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</table>
Sepsis

Mortality rates for sepsis are high. For our Meridian hospitals, mortality rates were as high as 16-38 percent in 2014. This translated to a loss of 329 lives. National models of best practice indicate that these rates can be dramatically reduced, and it is not an over-statement to say that lives will be saved through evidence-based practice changes. Standard call parameters and early warning score guidelines are the tools to help us achieve these lofty goals.

According to The Advisory Board, the large majority of sepsis cases arrive through the emergency department. Accordingly, sepsis screening is critical in the emergency department and upon admission to the critical care unit. Appropriate evidence-based care can promptly ensued.

A comprehensive review of the sepsis guidelines, standard call parameters, and early warning system will be presented October 27, 2015, at noon in a Webinar titled, Clinical Deterioration and Sepsis: Early Identification to Management. The presenters include Kimberly Clements, MSN, R.N., senior manager, Southern Ocean Medical Center; Sharon Jacob, M.D., Emergency Department, Jersey Shore University Medical Center; and Michelle Kohute, Pharm D, Jersey Shore University Medical Center. Please register at www.MeridianIEBC.com/Webinars and join us for a more in depth review of sepsis.

References:

Proton Pump Inhibitors (PPIs) Safety Information

By Michelle Kohute, Pharm D

Proton Pump Inhibitors (PPIs) are used widely for the prevention and treatment of acid-related disorders. The efficacy, availability (prescription and OTC), and ease of use of PPIs has led to overuse in both inpatient and outpatient settings. Although PPIs are most commonly associated with mild and self-limiting adverse effects such as headache, diarrhea, nausea, and abdominal pain, there is mounting evidence of several potentially serious adverse effects due to malabsorption of key minerals and bacterial colonization resulting from the elevated gastric pH. PPIs have been associated with pneumonia, C. difficile associated diarrhea, risk of fractures, and hypomagnesemia. Of note, pneumonia and C. difficile can occur following SHORT-TERM use of a PPI. Additionally, thrombocytopenia, iron deficiency, vitamin B12 deficiency, rhabdomyolysis, acute interstitial nephritis, enteric infections and neoplasms have been reported. Based on the existing evidence, the following FDA MANDATED WARNINGS were added to the PPI Drug Class: Clostridium difficile associated diarrhea, bone fractures, hypomagnesemia, acute interstitial nephritis. cyanocobalamin (Vitamin B-12) deficiency, and tumorigenicity. Furthermore, the American College of Gastroenterology (ACG) released guidelines for GERD in 2013 which also warn of the long-term consequences of chronic PPI use.

Key Points to Minimize Exposure and Risks of PPIs:
- Only prescribe PPIs when a clear indication is present, utilizing the lowest dose and shortest duration appropriate for the condition being treated.
- Consider a Histamine-2 (H2) Antagonist (i.e. Famotidine) for mild GERD or heartburn symptoms.
- H2 Antagonists should be considered first line over a PPI for stress ulcer prophylaxis (unless the patient has a pre-existing condition necessitating a PPI).

(cont.)
Proton Pump Inhibitors (PPIs) Safety Information

- Reassess need for continued stress ulcer prophylaxis on a daily basis and upon transition of care:
  - Transfer out of ICU
  - Discharge
- DISCONTINUE stress ulcer prophylaxis when the risk of stress ulcers no longer exists, such as when a patient is eating a regular diet.
- DISCONTINUE therapy upon discharge of the patient out of the hospital if the original indication has been resolved.
- Ensure that a complete diagnostic work-up has confirmed a diagnosis before initiating a long-term PPI.
- If a patient is being discharged on a PPI for a chronic condition (i.e. severe GERD), counsel the patient on potential adverse effects and appropriate follow up.

Note: The published meta-analyses include heterogeneous patient populations with varied indications, duration and doses of PPIs. Many of the trials combined different PPIs to assess adverse effects. Conflicting data exists.

References:

This issue of Eye on Evidence is now approved for use as an independent study. In order to receive these credits you must complete the attached quiz and evaluation form. When completed, please fax to:

Jean Primavera, Meridian Health CME Coordinator  
Phone: 732-776-4072; Fax: 732-776-2432  
Email: Pprimavera@meridianhealth.com

Be sure to include your contact information so you can receive your certificate.

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Location: Online or document
Activity Date: NA
Speaker(s): NA

1. Do you **intend** to make changes or apply learnings to your practice as a result of this educational activity?

| Yes, I plan to make changes | Yes, I'm considering changes | No, I already practice these recommendations | No, I don't think this applies to my practice |

If **Yes**, describe two things you intend to try or do differently as a result of this educational activity:

2. Identify the major strengths of this educational activity: *(check all that apply)*

- Speaker(s)
- Networking
- Other: __________________________
- Discussions
- Support materials
- Clinical Case Presentations
- Demos/Hands-on
- Knowledge gained
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3. Was this educational activity appropriate for your level of training? Yes No __________________________

4. Were the educational activity’s objectives met? Yes No __________________________

*The reader should be able to demonstrate knowledge of current evidence care related to quality issues addressed in the newsletter.*

5. What **additional** education and training would be helpful to your practice?

6. Other comments:

7. Was this educational activity free of commercial bias? Yes No __________________________

*The editor, K. Russell-Babin, and all planners involved with this educational activity have nothing to disclose.*
CME Quiz Questions

Name: ___________________________________________ Dept.: ____________
(Please print)

Please answer these questions “T” for True and “F” for false.

_____ 1. Exclusions to the process of standard call parameters and EWS include hospice and comfort care patients.

_____ 2. An early warning score of 12 would reflect mortality less than ten percent.

_____ 3. A change in mental status always warrants a call to a physician/LIP.

_____ 4. Rapid response teams will be called for EWS of 5.

_____ 5. Sepsis screening will be completed for every patient for whom a RRT is called.