Early Warning Score Procedure

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Purpose

Use of an Early Warning Score (EWS) assists with the recognition and appropriate response to the patient at risk of clinical deterioration as well as a clinically deteriorating patient. The EWS is a support to skilled clinical assessment, decision making and plan of care.

An Early Warning Score must be used for all patients within a hospital setting when recording vital signs for:

- Early detection of detrimental changes.
- Safe, timely, effective management of care in response to a patient’s deteriorating condition.

Specialist areas that do not use EWS routinely are required to for safe transfer.

The EWS is to be communicated between staff when transferring patients between areas and with requests for clinical assistance.

Types of early warning scores in use

- The New Zealand Early Warning Score (NZEWS) is a nationally standardised scoring tool designed for adults. For the present the NZEWS is intended for adult non-obstetric patients only.
- Maternity patients use the Modified Early Obstetric Warning Score (MEOWS).
- Paediatric patients up to 15 years of age, use the age appropriate Paediatric EWS (PEWS).
- For the purposes of this policy when the term EWS is used, this encompasses the EWS, MEOWS and PEWS.

Scope/Audience

All CDHB clinical staff or equivalent and all inpatient settings.

The Neonatal ICU is exempt from using PEWS.
Associated documents

CDHB Resources:

- Volume 11 – Transfer of patients between hospitals
- Volume 11 – ISBAR handover / communication policy
- WCH Maternity guidelines – Modified Early Obstetric Warning Score MEOWS
- healthLearn
  - Deteriorating Patient Course (DP001)
  - New Zealand Early Warning Score
  - Paediatric Early Warning Score (PE001)
- Early Warning Score management pathway audit tool (Nursing)
- EWS lanyard cards (in development)
- PEWS lanyard cards (in development)
- ISBAR CDROM
- ISBAR lanyard cards ref 2299
- ISBAR communication tool poster ref 2581

CDHB Charts:

- Adult observation chart C280010
- Adult cardiology observation chart C280094
- Cardiothoracic observation chart (trial)
- Neuroscience observation chart C280014
- Neurology observation chart C180002
- Modified early obstetric warning score MEOWS observation chart C280012
- New-born Observation Chart C280106
- Child observation chart (0-3 months) C280011A
- Child observation chart (3-12 months) C280011B
- Child observation chart (1-4 years) C280011C
- Child observation chart (5-11 years) C280011D
- Child observation chart (12 years and over) C280011E
- Paediatric HDU observation chart (0-3 months) C280016A
- Paediatric HDU observation chart (3-12 months) C280016B
- Paediatric HDU observation chart (1-4 years) C280016C
- Paediatric HDU observation chart (5-11 years) C280016D
- Paediatric HDU observation chart (12 years and over) C280016E
Definitions

Early Warning Score Parameters

**Adult patients**
For an adult patient, the following observations/symptoms must be recorded to obtain an accurate EWS:

- Respiratory rate calculated over 1 minute
- Presence or absence of oxygen therapy
- Oxygen saturation
- Heart rate for at least ½ minute
- Blood pressure using appropriate cuff and calibrated equipment
- Level of consciousness using AVPU (alert, voice, pain, unresponsive)
- Temperature (using a consistent site and method)

**Maternity patients**
For a maternity patient, the following observations / symptoms must be recorded to obtain an accurate MEOWS:

- Respiratory rate calculated over 1 minute
- Heart rate for at least ½ minute
- Blood pressure
- Conscious level using the AVPU
- Temperature (by a consistent method)
- Urine output
- Lochia (post-natal)
- Proteinuria (ante and post-natal)
- Reflexes (ante and post-natal)

**Paediatric patients**
For a paediatric patient the following observations / symptoms must be completed on admission to obtain accurate PEWS. Subsequent observation requirements are determined by the PEWS management plan and/or the medical team.

- Respiratory rate calculated over 1 minute
- Respiratory distress score
- Pulse oximetry
- Heart rate for at least ½ minute
- Blood pressure
- Conscious level using the AVPU
- Capillary refill time

**Note:** Whilst temperature is not included in the PEWS, a baseline temperature recording is taken on admission and four hourly thereafter for an inpatient.
Equipment

All equipment must be clean before use.

- Pulse oximeter
- Equipment to record vital signs.

Appropriate form/ application to record observations.

Education and training of staff

All staff within the scope of this procedure must have completed relevant clinical training on the EWS score, escalation and response.

Clinical staff responsibilities

All patients must have a clinically appropriate plan of care recorded, including monitoring of vital signs and any limitations or ceiling of care.

Staff must be able to perform their responsibilities within this procedure.

1 Recognition

1.1. Provide adequate privacy and ensure informed consent
1.2. Take the vital signs using appropriate techniques, inform the patient of the results and record
1.3. Using appropriate EWS, check for EWS triggers, and calculate the zone colour and record
1.4. If escalation pathway triggered, activates according to the response pathway zone colour and follows plan
1.5. Recording activation in clinical progress notes. Use of the NZEWS activation template is mandatory unless the activation is yellow, in which case it is only used when requesting a medical review.

Note: The EWS does not replace clinical judgement. Should a clinician or family member be concerned consider medical review or clinical emergency.

2 Response: Escalation

2.1 Activator cares for patient, records and acts on vital signs as per the EWS zone colour and clinical protocols while awaiting review,
2.2 Activator records care provided and updates plans following review
2.3 Responder as per activated zone colour, responds according to the escalation pathway, clinical plans and clinical judgement
2.4 Responder records the response in the clinical notes (using the template for NZEWS):
   a. The EWS triggers and zone
   b. Date and time of review
   c. Assessment, decisions and management plan including vital sign frequency, follow up, higher level of care needs, treatment limitations, ceiling of care
   d. Staff notified and consulted
   e. If a follow up review is required, indicate the timeframe for the review to prevent further patient clinical deterioration.
   f. If a Senior Medical Officer or Registrar modifies a trigger, the reason is recorded, and the modification must be reviewed by the patient’s Home Team in the am the next day (12 noon at the latest).
3 Communication / handover/ transfer of care requirements

Any pathway communication / handover or transfer of care with other staff is provided using 'Identity, Situation, Background, Assessment, Response' (ISBAR) communication method stating the:

a. Patient’s condition / diagnosis
b. Patient’s EWS
c. The parameters that drove the score
d. The actions already been taken
e. Repeat back the plan of action to take following the communication i.e. repeat EWS in set timeframe and contact medical staff again as required.

Measurement / Evaluation

Use of early warning system One System Dashboard in clinical governance meetings; regular audit of adherence of the EWS system conducted in areas using the CDHB EWS / MEOWS / PEWS Audit tool; inclusion in morbidity and mortality meetings
Appendix One: Adult Early Warning Score (EWS) Score and Response

Any red or blue parameter triggers an equivalent zone response.
Add abnormal parameters to a get a score to determine the escalation response zone.

<table>
<thead>
<tr>
<th>New Zealand Early Warning Score</th>
<th>10+</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>10+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resp rate</td>
<td>≤ 4</td>
<td>5-8</td>
<td>9-11</td>
<td>12-20</td>
<td>21-24</td>
<td>25-35</td>
<td>≥ 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpO2</td>
<td>≤ 91</td>
<td>92-93</td>
<td>94-95</td>
<td>≥ 96</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplemental O2</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>≤ 34.9</td>
<td>35.0-35.9</td>
<td>36.0-37.9</td>
<td>38.0-38.9</td>
<td>≥ 39.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sys BP</td>
<td>≤ 69</td>
<td>70-89</td>
<td>90-99</td>
<td>100-109</td>
<td>110-219</td>
<td>≥ 220</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart rate</td>
<td>≤ 39</td>
<td>40-49</td>
<td>50-89</td>
<td>90-110</td>
<td>111-129</td>
<td>130-139</td>
<td>≥ 140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of consciousness</td>
<td>Alert</td>
<td>Voice or Pau</td>
<td>Unresponsive or fitting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total EWS Score Zone</td>
<td>EWS 1-5</td>
<td>EWS 6-7</td>
<td>EWS 8-9</td>
<td>EWS 10+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add up score from</td>
<td></td>
<td>Acute illness or unstable chronic disease</td>
<td>or any vital sign in RED ZONE</td>
<td>or any vital sign in BLUE ZONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>table above</td>
<td></td>
<td>Likely to deteriorate rapidly</td>
<td>Immediately life threatening critical illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ref: CDHB-23-9115  Authorised by: Quality and Safety Director, Quality  Aug 2017
## CDHB New Zealand Early Warning Score (NZEWS)

In the case of staff, patient or family/whānau concern arrange for clinical review

<table>
<thead>
<tr>
<th>Total Early Warning Score (EWS)</th>
<th>Actions</th>
</tr>
</thead>
</table>
| **EWS 1-5** YELLOW ZONE        | • Manage pain, fever or distress  
                                    • Discuss with Nurse in Charge (NIC)  
                                    • Consider *medical review  
                                    • Increase frequency of obs if required |
| **EWS 6-7 ORANGE ZONE**        | • Manage pain, fever or distress  
                                    • Inform NIC  
                                    • Consider Clinical Team Coordinator (CTC) or medical review  
                                    • Increase frequency of obs to Q30 – 60mins  
                                    • Document treatment plan, if not improving *medical review |
| Acute illness or unstable chronic disease |         |
| **EWS 8-9** or any vital sign in RED ZONE | • *Registrar bedside review within 20mins  
                                            • Document treatment plan  
                                            • Discuss with Senior/Specialist  
                                            • Inform NIC and CTC after hours  
                                            • Increase frequency of obs to minimum Q30mins  
                                            • CHRISTCHURCH CAMPUS: Contact ICU Outreach if not improving  
                                            • NON CHRISTCHURCH HOSPITAL SITES: → |
| Likely to deteriorate rapidly |         |
| **EWS 10+ or any vital sign in BLUE ZONE** | • Immediate *Registrar and ICU Outreach review  
                                            • Inform NIC and/or CTC after hours  
                                            • Stay with patient  
                                            • CHRISTCHURCH CAMPUS: Consider clinical emergency activation  
                                            • NON CHRISTCHURCH HOSPITAL SITES: → |
| Immediately life threatening critical illness | NON CHRISTCHURCH HOSPITAL SITES:  
                                            • Activate clinical emergency  
                                            • Consider transfer to Christchurch Hospital or AAU (Ashburton Hospital) |

IF PATIENT NOT SEEN or NOT RESPONDING TO TREATMENT, CONTACT ICU OUTREACH

* Patient’s home team

Reference: CDHB-23-9112  Authorised by: Executive Management Team  August 2017

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**Response**

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Appendix Two: Modified Early Obstetric Warning (MEOWS) Management Protocol

Score and management / response

Modified Early Obstetric Warning Score (MEOWS)

Notify the doctor for early intervention if the woman triggers ONE RED or TWO YELLOW scores at any one time.

<table>
<thead>
<tr>
<th>Score</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempy</td>
<td>Patient</td>
<td><strong>Under threat</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelet</td>
<td>&lt;50</td>
<td>50-100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory Rate/min</td>
<td>&lt;10</td>
<td>10-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Rate/min</td>
<td>&lt;40</td>
<td>40-50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycemic BF</td>
<td>&lt;170</td>
<td>170-200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>&lt;60</td>
<td>60-100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Loss</td>
<td>Heavy</td>
<td>Moderate</td>
<td>Minimal</td>
<td>Normal</td>
<td>Offensive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urine Output</td>
<td>&lt;10</td>
<td>10-20</td>
<td>20-30</td>
<td>&gt;30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp °C</td>
<td>&lt;35</td>
<td>35-37</td>
<td>38-39</td>
<td>&gt;39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebreath for PEDI</td>
<td>Absent or MgSO4</td>
<td>Present</td>
<td>Pressed</td>
<td>Hypertensive and +Chronic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscious Level (Glasgow)</td>
<td>Confused/Coma</td>
<td>Alert (A)</td>
<td>Responds to voice (V)</td>
<td>Responds to pain (P)</td>
<td>No Response (N)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Urine output to be averaged over 4 hours. If no IN score initially consider RSI and ECG in concern. **For severe respiratory compromise activate a CLINICAL EMERGENCY.

Modified Early Obstetric Warning Score (MEOWS) Management Pathway

<table>
<thead>
<tr>
<th>Score 1 – 2</th>
<th>Score 3 – 5 or one score of 3</th>
<th>Score &gt;6</th>
</tr>
</thead>
<tbody>
<tr>
<td>increases frequency of observations to Q2 or more frequently if required</td>
<td>increases frequency of observations to Q5 times</td>
<td>increases frequency of observations to Q10 times</td>
</tr>
<tr>
<td>Consult available in house</td>
<td>Obstetric review within 30 minutes</td>
<td>Urgent obstetric review</td>
</tr>
<tr>
<td>Inform midwife in charge</td>
<td>Registration of the patient</td>
<td>Patients to be formulated and documented</td>
</tr>
<tr>
<td>Inform midwife in charge</td>
<td>--</td>
<td>Inform midwife in charge</td>
</tr>
</tbody>
</table>

If Cardiac or Respiratory Arrest is imminent call a Clinical Emergency Immediately

Ref: 239155
Authorised by: EDON
Owner: Director Quality and Patient Safety
Issue Date: Sep 2017

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Appendix Three: Paediatric Early Warning Score (PEWS) Management Protocol

Score and management / response

Calculating PEWS scores:
- Calculate a full PEWS score:
  - on admission • when patient deteriorates • on transfer between clinical areas
  - For observations outside the range of the graph write as a number
  - SpO2 is to be written as a number

Minimum standards for observations as per Vol. Q to be followed.
Variation away from this standard or the above PEWS management plan is required to be documented in the nursing care plan or medical management plan.

Variance to PEWS
- If abnormal ranges are expected for a child’s clinical condition, please specify accepted parameters:
  - The patient should be reviewed if vital signs are outside documented parameters below
  - Respiratory Rate: SpO2:
  - Heart Rate: Signature
  - Systolic Blood Pressure: Date: …../…./… Time:

Respiratory Distress Score
- Score as nil, mild, moderate or severe depending on the degree of increased respiratory effort. Clinical indicators that describe increased effort include:
  - CHEST RECEDING, accessories muscle use, head bobbing, nasal flaring, tracheal tug, atelectasis, grunting
  - Indicators will vary with each patient

Visual Phlebitis Score
- Score IV Site
  - 0: No symptoms
  - 1: erythema at insertion site with or without pain
  - 2: All above plus oedema
  - 3: All of the above plus limb formation/palpable cord
  - 4: All of the above plus palpable venous cord 3cm and discharge

“Oxygen Delivery Method
- NP = Nasal Prongs (Low Flow O2)
- HF = High Flow Nasal Oxygen (record % O2)
- BU = F&P Bubble CPAP (record % O2)
- M = Face Mask
- AC = Airway Mask CPAP (record % O2)
- FD = EME Flow Driver CPAP (record % O2)
- R = Non-Rebreather Mask

Paediatric Early Warning Score (PEWS) Management Plan
- PEWS is a tool and does not replace sound clinical judgement — IF CONCERNED AT ANY TIME seek medical review even if patient’s score does not trigger management plan. Use ISBAR format to communicate with medical staff re change in patients condition.

<table>
<thead>
<tr>
<th>Score 1 – 3</th>
<th>Score 4 – 5</th>
<th>Score 6 – 7</th>
<th>Score 8 +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notification: Consider informing Nurse in charge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions: Optimise appropriate treatment as prescribed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage anxiety/pain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations at least Q6H or more frequently if required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review oxygen requirement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notification: Notify nurse in charge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notify RM/O and discuss patient’s condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions: Calculate full PEWS score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimise treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plan to be formulated and documented (including timeframe and criteria for review and frequency of observations)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recalculate PEWS after interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notification: Notify nurse in charge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Request Registrar review within 15 min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions: Calculate full PEWS score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations minimum of 08h Document plan which includes time frame &amp; criteria for review.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recalculate PEWS after interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider PHDU</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Call a Clinical Emergency immediately
- If respiratory or cardiac arrest is imminent
- Any observations in E Zone
- Major Bleeding
- Airway threat

Request urgent review if
- Anaphylaxis
- Unexpected decline
- If score has increased by >4 in last hour
- Nurse concerned about patient

<table>
<thead>
<tr>
<th>FLACC Scale (Children &lt; 5y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
</tr>
<tr>
<td>0: No particular expression</td>
</tr>
<tr>
<td>1: Grimace of pain,</td>
</tr>
<tr>
<td>with drawn disinterested</td>
</tr>
<tr>
<td>2: Frequent to constant</td>
</tr>
<tr>
<td>MOANING, crying,</td>
</tr>
<tr>
<td>quieter crying than</td>
</tr>
</tbody>
</table>

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