Neurovascular Observations – more than just a tick!

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Why?
Neurovascular Observation

- Neurovascular obs – fundamental nursing observation and monitoring skill
- Basic observation undergraduate education
- Prevention compartment syndrome
Why change

- Observation by clinical nurses – inconsistencies in accuracy, useful information
- What does CWMS mean
- Current policy & NV Chart poor tool for collection of important/relevant information
- Documentation varied
- Lack understanding significance of NV results
- Useful Information = Timely action
  Adverse events required action
Was there a problem to be fix (was it broke!)

- **Audit taken** over 2 weeks by a retrospective review of patient’s case notes from wards

- 44 notes total reviewed – various orthopaedic and non orthopaedic wards

- All patients required NV obs casts, lower surgery (NOF’s) at risk NV compromise
Results

- Nerve blocks – tibia
- No neurovascular observations charted at all for couple patients (same ward)
- Post surgery at 12 hours lower limb surgery no documentation by nursing staff
This graph shows the usage of the neurovascular observation methods on 4 surgical wards audited. Time Period - 2 week Audit.
Brainstorming

- Nurses
- Medical colleagues
- Policy/chart expert designers
- Multi speciality consultation
Result

- New Policy/procedure
- New Chart
- Upper and lower Limb
Parameters tested

- Nerve Block
- Pain – increasing, on active or passive movement
- Colour, warmth – descriptive terms
- Venous return – quantified
- Pulse
- Testing specific motor and sensation characteristic
- Swelling, Ooze - descriptive
- ABSENTS OF THE TICK METHODOLOGY
# Upper Limb Observation Chart

**Patient Label:**
- U.R. Number: __________________________
- Surname: ____________________________
- Given Names: _________________________
- D.O.B.: ______________________________
- Sex: ________________________________

**When two (2) limbs affected - use separate forms:**
- Left
- Right (Please check)

**Nerve Block:**
- No
- Yes

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Pain</th>
<th>Pain Score</th>
<th>Pain Increasing</th>
<th>Level of Block</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.10</td>
<td>0.10</td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
</tbody>
</table>

**Colour**
- N = Normal
- P = Pale
- D = Dusky
- C = Cyanotic

**Warming**
- H = Hot
- W = Warm
- T = Tepid
- C = Cold

**Capillary Refill Time**
- B = brisk < 3 seconds
- S = Sluggish > 3 seconds

**Pulse**
- P = Present
- A = Absent

**Movement**
- F = Full fingerhand movement
- L = Limited fingerhand movement
- N = No fingerhand movement

**Sensation**
- R = Radial
- M = Median
- U = Ulnar

**Swelling**
- N = Nil
- S = Small
- M = Moderate
- L = Large

**Initials**
- Refer over for guidelines on how to conduct neurovascular assessment.
Ulnar nerve
Radial nerve
Median nerve
Deficit to median nerve
# Lower limb observation chart

**Word:**

- When two (2) limbs affected - use separate forms
- Left
- Right (Please check)

<table>
<thead>
<tr>
<th>Nerve Block:</th>
<th>No</th>
<th>Yes</th>
<th>Date:</th>
<th>Time:</th>
<th>Level of Block:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time:</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Pain:**
- Pain Score 0-10
- Pain increasing Yes/No

**Colour:**
- N = Normal
- P = Pale
- D = Dusky
- C = Cyanotic

**Warmth:**
- H = Hot
- W = Warm
- T = Tapid
- C = Cold

**Capillary return time:**
- E = Break < 3 seconds
- S = Sluggish > 3 seconds

**Pulses:**
- P = Present
- A = Absent

- Dorsalis pedis
- Posterior tibial

**Movement:**
- Yes only if restricted by plaster
- Full foot movement
- Limited foot/fist movement
- No foot movement
- Active movement without pain
- Active movement with pain
- Passive movement without pain
- Passive movement with pain

**Sensation:**
- F = Full
- N = Nil
- PN = Pins and Needles
- P = Partial
- M = Moves to touch

**Swelling:**
- N = Nil
- M = Moderate
- L = Large

**Ooze:**
- N = Nil
- M = Moderate
- L = Large

**Initials:**

> Refer over for guidelines on how to conduct neurovascular assessment
This information is provided to assist you in assessing Neurovascular Status and deviations from normal

<table>
<thead>
<tr>
<th>Neurovascular observation</th>
<th>Variations from normal and action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>If any of the following deterioration occurs in the patient’s limb(s):</td>
</tr>
<tr>
<td></td>
<td>• becomes mottled, dark plum/blurish in colour</td>
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<tr>
<td></td>
<td>• cold, unable to warm up</td>
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<tr>
<td></td>
<td>• unable to move limb(s)/digits actively</td>
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<tr>
<td></td>
<td>• numb, tingly, loss of or decrease in sensation</td>
</tr>
<tr>
<td></td>
<td>• faint pulses, no pulse</td>
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<tr>
<td></td>
<td>• slow capillary refill</td>
</tr>
<tr>
<td></td>
<td>• increased pain not relieved with adequate pain relief</td>
</tr>
<tr>
<td></td>
<td>Re-check neurovascular status with RN and confirm variation.</td>
</tr>
<tr>
<td></td>
<td>If having difficulty obtaining a pulse manually use a Doppler to determine presence or absence of blood flow (pulse).</td>
</tr>
<tr>
<td></td>
<td>Document in medical record</td>
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<tr>
<td></td>
<td>Report to NP/RMO/Registrar immediately</td>
</tr>
<tr>
<td></td>
<td>Increase frequency or neurovascular observations to 1/2 hourly until reviewed by NP/RMO/Registrar.</td>
</tr>
<tr>
<td></td>
<td>If any oozing on plaster/brandge, mark around edges, so that any increase can be seen. If any marked increase report to</td>
</tr>
<tr>
<td></td>
<td>NP/RMO/Registrar as may be indication or underlying bleeding</td>
</tr>
</tbody>
</table>

Compartment Syndrome

“Any swelling in a compartment will lead to increase pressure in that compartment, which will compress the muscles, blood vessels, and nerves. If this pressure is high enough, blood flow to the compartment will be blocked, which can lead to permanent injury to the muscle and nerves.” [Link](http://www.nlm.nih.gov/medlineplus/eny/article/001224.htm). Kevin B. Freedman, M.D., Medline Plus, May 2005.

Signs and Symptoms of Compartment Syndrome

- **Pain**
  - Most common. Patient very reluctant to move limb(s).
  - Complains constantly about increasing pain despite regular analgesia

- **Parasthesia**
  - Ongoing numbness/tingling

- **Pallor**
  - Pale, mottled, cyanotic limb(s), sluggish capillary refill

- **Paralysis**
  - Loss of movement of limb(s) from ongoing nerve damage. **LATE SIGN**

- **Pulselessness**
  - Absence of pulse. **VERY LATE SIGN**

Adapted from The Women’s and Children’s Hospital Neurovascular observation chart - Lower limb. Adelaide 2009.
Education Strategies

- Inservice
- Moodle
- Consultant - expert
Current status

- Ward 5C: N/V chart, Full description in notes
- Ward 5D: N/V intact
- Ward 4E: CWMS
- Ward 4GS: N/V chart, Full description in notes
Sustainability

- NV chart – frequency
- Medical records
- Preoperative issues
- Medical team
- Non orthopaedic area/wards
- Ongoing education required
Orthopaedic Nurse driven

- Making difference
- Filling the gap
- Improving practice
- Patient outcome
References: