A Review on

Mask Rotation in Ventilator (VEN) Bed
- Prevention of Mask Related Skin Lesion

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NIV Mask Related Skin Lesion

Background

- Incidence rate of 13 Pilot hospitals in HA:
- Designated VEN Beds: 5.6%
- Non-designated VEN beds: 8.0% (HA NIV Audit Report, 2015)

Objective

- To review the effectiveness of mask rotation on preventing mask related skin lesion
Protocol for Mask Rotation

Use Oronasal mask as a first interface

Inspect facial skin condition in the first 2 hours after commence NIV (when ABG available)

Rotate to Full Face mask as second interface (when patient develop apparent skin redness OR Use NIV continuos longer than 12 hours per day)

Rotate between first & second interface (together with oral hygiene & puff administration) Q4H at the daytime

Allow regular breaks (3-5 mins) every 4 hours at the daytime if tolerated

Inspect facial skin condition on every mask rotation

Monitoring patient’s parameters & avoid over-tightening of mask (keep leakage ~7-25 L/min) Q1H
Results

- 1/9/15 – 31/12/16
- N=66

**Non-Mask Rotation Group** (1/9/2015 – 31/7/2016)
- 10.7% developed skin lesion

**Mask Rotation Group** (1/8/2016 – 31/12/16)
- 5 cases enrolled
- 0% developed skin lesion
- All cases recovered from skin redness after the first mask rotation (4 hrs)
Results

**Effectiveness of mask rotation in skin lesion prevention (redness occurrence)**

<table>
<thead>
<tr>
<th>Mask Rotation</th>
<th>Skin Lesion</th>
<th>Skin Lesion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>-</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

**Time to skin lesion develop & NIV use per day between non-mask rotation & mask rotation group**

<table>
<thead>
<tr>
<th></th>
<th>Time to skin lesion develop (hr)</th>
<th>Time of NIV use per day (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td><strong>SD</strong></td>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>No mask rotation</td>
<td>176.00</td>
<td>17.67</td>
</tr>
<tr>
<td>Mask rotation</td>
<td>∞</td>
<td>19.38</td>
</tr>
</tbody>
</table>

Odds ratio: 0.0070
95% CI: 0.0001 to 0.4141
z statistic: 2.383
Significance level: P = 0.0172