A randomised controlled trial (RCT) to determine the effectiveness of tea tree oil (TTO) body wash in preventing MRSA in critically ill adults

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What I’m going to talk about

• Background
• Study aim
• Methodology
• Results
• Conclusion
• TTO is indigenous to Australia
• Distilled from leaves of the tea tree plant
• Used by the aborigines for centuries
• The first published report of TTO and its antimicrobial activity was in 1925
• TTO effective at treating a range of conditions
• In vitro studies show TTO kills MRSA
• Promising results from two RCTs on TTO as a decolonising agent
• If TTO can kill MRSA can it prevent it?
Study aim

• A systematic review of the literature uncovered no evidence of TTO effectiveness at preventing MRSA colonisation.

• This is the first clinical trial to determine the effectiveness of TTO as a preventative intervention for acquisition of MRSA colonisation.
Methods

• Prospective RCT in a large ICU in the UK
• Aimed to recruit 1080 patients
• Patients assigned to one of two groups
  – TTO body wash
  – Johnsons baby soft wash (JBS)
• Nasal and groin swabs on admission and discharge
• Primary outcome - MRSA colonisation
Flowchart of participants

Admitted to ICU N = 1297
Assessed for eligibility N = 1196
Randomized N = 445

Excluded N=751
< 48hrs in ICU N = 355
Enrolled in other study N = 268
MRSA positive N = 48
Declined consent N = 5

Withdrew N=50
Declined consent N = 9
Pre-intervention MRSA screen positive N = 30

5% TTO body wash N =199
Withdrawn N=4
Adverse events N=2
Patient withdrew consent N=2
Completed N = 195

JBS N = 196
Completed N = 196

Admission swabs for MRSA

Discharge swabs for MRSA
Results (study period October 2007 to June 2009)

- 391 patients completed the trial
- Study was terminated early for low accrual
- Study was underpowered to detect a statistically significant difference
- Results showed a 2.5% difference in colonisation rates in favour of TTO, this was not statistically significant (95% CI -8.95 to 3.94. p=0.50)
Days to Detect MRSA colonisation
### Colonisation sites detected during ICU admission

<table>
<thead>
<tr>
<th>Site</th>
<th>JBS n=17</th>
<th>TTO n=15</th>
<th>Total n(%) N=32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nose</td>
<td>9 (52.9)</td>
<td>7 (46.6)</td>
<td>16 (49.9)</td>
</tr>
<tr>
<td>Groin</td>
<td>5 (29.4)</td>
<td>6 (40.0)</td>
<td>11 (34.3)</td>
</tr>
<tr>
<td>Sputum</td>
<td>6 (35.3)</td>
<td>7 (46.6)</td>
<td>13 (40.5)</td>
</tr>
<tr>
<td>Urine</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Throat</td>
<td>1 (5.9)</td>
<td>0</td>
<td>1 (3.1)</td>
</tr>
<tr>
<td>Wound</td>
<td>0</td>
<td>1 (6.7)</td>
<td>1 (3.1)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (5.9)</td>
<td>1 (6.7)</td>
<td>2 (6.25)</td>
</tr>
</tbody>
</table>

A further 7 patients had MRSA colonisation detected on discharge from nasal & groin swabs.
### Total MRSA colonisation

<table>
<thead>
<tr>
<th></th>
<th>JBS n=196</th>
<th>TTO n=195</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonised</td>
<td>22</td>
<td>17</td>
<td>39</td>
</tr>
<tr>
<td>Not colonised</td>
<td>174</td>
<td>178</td>
<td>352</td>
</tr>
<tr>
<td>% colonised</td>
<td>11.22</td>
<td>8.72</td>
<td>9.97</td>
</tr>
</tbody>
</table>

P=0.50
Conclusion

• TTO cannot be recommended for preventing MRSA colonization, however this study adds to the body of nursing research in many ways.
  – First, it is a useful pilot study that provides important insights for further research in this area.
  – Second, it highlights that TTO is safe to use and well tolerated.
  – Large multi-centred studies are required to determine its effectiveness
Thank you

Any questions?