Probiotics in Critical Illness: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Objectives
To determine the safety and efficacy of probiotics or synbiotics on morbidity and mortality in critically ill adults and children.

Study Selection
Systematic search for randomized controlled trials (RCTs) that compared enteral probiotics or synbiotics to placebo or no treatment in critically ill patients.

Data Synthesis

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Effect Size</th>
<th>95% CI</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAP</td>
<td>RR 0.72</td>
<td>0.59 to 0.89</td>
<td>6.9% risk reduction</td>
</tr>
<tr>
<td>HAP</td>
<td>RR 0.70</td>
<td>0.55–0.89</td>
<td>5.5% risk reduction</td>
</tr>
<tr>
<td>MV</td>
<td>Mean difference 2.53 days</td>
<td>1.31–3.74 days fewer</td>
<td></td>
</tr>
<tr>
<td>ICU LOS</td>
<td>Mean difference 1.38 days</td>
<td>0.57–2.19 days fewer</td>
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</tr>
<tr>
<td>Hospital LOS</td>
<td>Mean difference 2.21 days</td>
<td>1.18–3.24 days fewer</td>
<td></td>
</tr>
</tbody>
</table>

Mortality
RR 0.95
95% CI -2.8 to 0.8%

Serious Adverse Events
Defined differently across trials
2. Studies reported any SAEs
9. Mesenteric ischaemia
15. Probiotic organism isolates from sterile sites
2. Lactobacillus culture isolates may be associated with significant morbidity or mortality

Conclusion
Low certainty RCT evidence suggests that probiotics or synbiotics during critical illness may reduce VAP, HAP, ICU LOS and hospital LOS, but probably have no effect on mortality.

Data from Sharif, et al: Crit Care Med 2022

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