Higher oxygen saturation targets did not improve growth and neurodevelopment in extremely preterm infants


METHODS:

Does maintenance of higher oxygen saturation (SpO2) targets (95–98%) improve growth and neurodevelopment compared with standard targets (91–94%) in extremely preterm infants dependent on supplemental oxygen?

Patients: 358 infants (mean age 26.5 wks, 53% boys) who were born at <30 weeks gestational age and remained dependent on supplemental oxygen at 32 weeks postmenstrual age (PA).

Exclusion criteria: major congenital abnormalities; major surgery or severe intracranial disorder diagnosed at <32 weeks PA; and multiple births with >3 eligible infants.

Interventions: Infants were stratified by hospital, singleton or multiple birth, and gestational age (22–27 wks or 28–29 wks) and allocated to higher SpO2 targets (95–98%) (n = 180) or standard SpO2 targets (91–94%) (n = 178).

Outcomes: Growth (mean weight, length, and head circumference; and weight <10th percentile) and major developmental abnormality (blindness, cerebral palsy, or a score on the revised Griffiths Mental Developmental Scales >2 standard deviations below the mean). Secondary outcomes included duration of oxygen therapy, worst retinopathy, and dependence on supplemental oxygen at 36 weeks PA.

Patient follow up: 93%; analysis included all patients.

MAIN RESULTS

Analysis was by intention to treat. The groups did not differ for growth outcomes or major developmental abnormalities (table), or worst retinopathy (p = 0.34). However, the higher target group had higher rates of dependence on supplemental oxygen at 36 weeks PA (table) and spent more days on oxygen (median 40 v 17.5 d, p<0.001) than those in the standard target group.

CONCLUSION

In extremely preterm infants who are dependent on supplemental oxygen, maintenance of higher oxygen saturation targets (95–98%) did not improve growth or neurodevelopment.

Information provided by author.

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Higher oxygen saturation targets (95–98%) v standard saturation targets (91–94%) for extremely premature infants*

<table>
<thead>
<tr>
<th>Outcomes at 12 months corrected age</th>
<th>Higher targets</th>
<th>Standard targets</th>
<th>Mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>9.25</td>
<td>9.10</td>
<td>0.15 (–0.2 to 0.5)</td>
</tr>
<tr>
<td>Length (cm)</td>
<td>74.1</td>
<td>74.0</td>
<td>0.1 (–0.8 to 1.0)</td>
</tr>
<tr>
<td>Head circumference (cm)</td>
<td>46.3</td>
<td>46.3</td>
<td>0.0 (–0.4 to 0.4)</td>
</tr>
<tr>
<td>RRR (CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NNT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight &lt;10th percentile</td>
<td>33%</td>
<td>37%</td>
<td>11.4% (–34 to 19)</td>
</tr>
<tr>
<td>Major developmental abnormality</td>
<td>23%</td>
<td>24%</td>
<td>3.7% (–34 to 41)</td>
</tr>
<tr>
<td>RRI (CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NNH (CI)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependence on supplemental oxygen</td>
<td>64%</td>
<td>46%</td>
<td>40% (16 to 70)</td>
</tr>
</tbody>
</table>

*PA = postmenstrual age, other abbreviations defined in glossary. RRI, NNH, and CI calculated from data in article.
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