

FACTSHEET FOR BOOST II INVESTIGATORS

Improved survival for preterm babies needing oxygen treatment

Extremely preterm babies breathing extra oxygen have improved short term survival if doctors and nurses target a higher level of oxygen saturations in the blood in the range that was previously accepted as normal.

In 3,651 babies who were born before the 28th week of pregnancy in Australia, New Zealand, the UK and US, survival to 36 weeks was between 20% and 65% greater if their blood oxygen saturation target was 91% to 95% rather than 85% to 89% when they were being treated with oxygen.

This has important implications for preterm babies around the world.

Many preterm babies need extra oxygen for several weeks. How much they get is guided by measuring oxygen saturation levels in their blood. There are risks from both high and low levels of blood oxygen.

Accepted practice has been to aim for blood oxygen saturations between 85% and 95% when preterm babies are given oxygen.

The ideal target within that range – to achieve the highest rate of survival without disability in early childhood - remains unknown.

To answer this, trials are in progress around the world. Very preterm babies were randomly given oxygen saturation targets of either 85-89% or 91-95% - both in the accepted range for standard care - when treated with extra oxygen. After each trial is published, the results will be pooled in an analysis of survival without disability in early childhood in nearly 5,000 babies

A US trial published preliminary results a year ago. This suggested that babies on the high target had a slightly higher short term survival in hospital but twice the rate of severe eye disease.

As with all large trials, the results have been regularly monitored by independent committees. When three committees looked at three ongoing trials separately, each found no reason to stop recruitment.

In December 2010, two independent committees combined short term survival data from babies in Australia, New Zealand, the UK and US. This showed an increase in survival to 36 weeks with the 91% to 95% target both in all 3,651 babies and in the 1,055 babies in Australia and the UK who were being cared for with oxygen saturation monitors using an updated version of the software algorithm. Both algorithms performed within recommended standards of accuracy.

Because of the improved short term survival with the high target, the trials in Australia and the UK stopped recruitment. The other trials had already completed recruitment. All five trials are continuing to follow the children. Doctors and nurses are being advised not to target the range 85 – 89%.

Oxygen targeting can never be completely accurate, because blood oxygen levels are changing all the time. But it is important for doctors and nurses specifically not to target the lower range.

This is a step towards resolving a 50 year old question. But the final answer will depend on combined results for survival without disability in early childhood in all the trials, which are expected by 2014.

A preliminary report is published in this week's New England Journal of Medicine.

The studies were conducted in about 80 centres in Australia, New Zealand, US, Canada, UK and Europe. The Australian research was funded by the National Health and Medical Research Council

Further Reading:

Stenson B, Brocklehurst P, Tarnow-Mordi W, for the UK and Australian and New Zealand BOOST II (Benefits of Oxygen Saturation Targeting) Trials. Increased 36-Week Survival with High Oxygen Saturation Target in Extremely Preterm Infants. N Engl J Med 2011; 364 (17): 1680 - 82

www.nejm.org

BOOST II Australia website

http://www.ctc.usyd.edu.au/trials/other_trials/boost.htm

BOOST II UK website.

<https://www.npeu.ox.ac.uk/boost>

NeOProM: Neonatal Oxygenation Prospective Meta-analysis Collaboration study protocol. BMC Pediatrics 2011: 11:6.

<http://www.biomedcentral.com/1471-2431/11/6>