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LETTER

Appropriate methods of cooling for South Africa

To the Editor: We welcome the comprehensive review on neonatal mortality in South Africa by Rhoda and Velaphi,[1] and strongly agree with their recommendation to implement therapeutic hypothermia where appropriate infrastructure and equipment exist. In the light of that recommendation and the inherent limitations of the budget constraints common to all public hospitals, we wish to discuss their statement regarding appropriate cooling methodology.

The authors acknowledged the work done by our institution on the gel-pack cooling method,[2,3] but stated that this method needs to be studied further to assess the impact on long-term neurodevelopmental outcome. We would like to draw attention to the fact that long-term neurodevelopmental outcome following simple gel-pack cooling has already been studied in the Infant Cooling Evaluation (ICE) trial.[4] This study randomised 221 infants with signs of moderate or severe hypoxic ischaemic encephalopathy to cooling with gel-packs or normothermia within the first 6 hours of life. A radiant warmer was used to avoid overcooling. The mean core temperature during cooling was 33.8˚C (standard deviation (SD) 0.4˚C). The ICE trial found a significant increase in disability-free survival at age 2 years in the cooled infants (relative risk (RR) 1.75, 95% confidence interval (CI) 1.13 - 2.17, p=0.01).

We devised and validated a similar method of cooling[2,3] to the ICE trial, the only difference being that the radiant warmer was servo-controlled in our method versus manually controlled in the ICE trial, and we used a heat shield over the head as recommended in the CoolCap study.[5] Our method can be used with either rectal temperature monitoring or an insulated back temperature probe. With the radiant warmer set to a target core temperature of 34ºC, the mean core temperature during cooling was 33.9˚C (SD 0.3ºC).[2] With the radiant warmer set to a target core temperature of 33.5ºC, the mean core temperature during cooling was 33.6˚C (SD 0.3ºC).[3] A recent meta-analysis recently concluded that cooling studies with a *target* core temperature of ≤34ºC in cooled infants showed a significant reduction in mortality and moderate to severe disability (RR 0.7, 95% CI 0.6 - 0.82).[6]

Both the cooling devices on the market in South Africa are expensive and require specialised training and purchase of consumable items. While these devices may be the preferable method of cooling if resources permit, the gel-pack method that we have devised offers a simple and cost-effective method of cooling. This method is currently in use in several hospitals in the Western Cape.

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