Co-ordinated multidisciplinary intervention to reduce time to successful extubation for children on mechanical ventilation: the SANDWICH cluster stepped-wedge RCT

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GlaxoSmithKline (Brentford, UK), Boehringer Ingelheim (Ingelheim am Rhein, Germany), Bayer (Leverkusen, Germany), Novartis (Basel, Switzerland) and Eli Lilly (Indianapolis, IN, USA) and from sitting on a Data Monitoring and Ethics Committee for a trial undertaken by Vir Biotechnology (San Francisco, CA, USA). In addition, his institution has received funds from grants from the NIHR, Wellcome Trust, Innovate-UK, the Medical Research Council and the Northern Ireland Health and Social Care Research and Development Division. He has a patent issued to his institution for a treatment for acute respiratory distress syndrome and is a Director of Research for the Intensive Care Society (2009–20) and NIHR EME Programme Director (2019 to present).

Disclaimer: This report contains transcripts of interviews conducted in the course of the research and contains language that may offend some readers.

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Plain English summary

The SANDWICH cluster stepped-wedge RCT

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Plain English summary

Mechanical ventilation is a life-saving therapy, but may involve related risks because of the breathing tube in the mouth and throat, the sedative drugs required to reduce anxiety and remaining confined to bed. Therefore, getting off the ventilator (called weaning) is an important patient outcome. Previous studies have shown that an organised approach involving nurses, doctors and physiotherapists reduces the time that patients spend on the ventilator.

Our study involved more than 10,000 patients admitted to 18 children's intensive care units. We tested a co-ordinated staff approach for managing a child's sedation and ventilator needs against usual care, which was mainly consultant led and did not involve bedside nurses. We wanted to find out if this approach improved the outcomes for children and did not cause additional harm. We first collected information in the intensive care units when children were weaned from the ventilator using usual care. Following staff training in the new approach, we compared children's outcomes between the two approaches. Compared with usual care, the new approach reduced the time that children spent on the ventilator by between 5 and 9 hours, and increased children's chances of having their breathing tube removed successfully. Some children pulled out their breathing tubes themselves before it was medically planned to do so. This happened more with the new approach, but the chance of needing the breathing tube put back in was not different from usual care. With the new approach, more children needed to use a mask ventilator than those receiving usual care, although the length of time that this was required was not different from usual care. The intensive care length of stay was the same for children receiving the new approach and usual care. However, with the new approach, children stayed in hospital 1 day longer, which resulted in higher costs (£715 per child); thus, the clinical relevance is uncertain.

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This report

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