

## **Implementation of a nurse-driven ventilation weaning protocol in critically ill children: Can it improve patient outcome?**

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**Statement of the problem:** Critically ill children treated with invasive mechanical ventilation in a paediatric intensive care unit (PICU) may suffer from complications leading to prolonged duration of ventilation and PICU stay. The purpose of this study is to find out if the use of a nurse-driven ventilation weaning protocol in a PICU can shorten the duration of mechanical ventilation.

**Methodology-Theoretical Orientation:** In a prospective, pretest-posttest implementation study, we implemented a nurse-driven ventilation weaning protocol and compared its outcomes with those of the usual physician-driven weaning. In the posttest period, nurses weaned the patients until extubation as per this protocol. The primary outcome was duration of ventilation. The secondary outcomes were length of PICU stay, reintubation rate, and compliance with the protocol (measured by use of the prescribed support mode).

**Findings:** In total, 424 patients aged from 0 to 18 years (212 pretest and 212 posttest) were included; in both groups, the median age was 3 months. The median duration of ventilation did not differ significantly between the pretest and posttest periods: 42.5 h. (interquartile range, IQR 14.3-121.3) vs. 44.5 h (IQR 12.3-107.0), respectively;  $p=0.589$ . In the posttest period, the PICU stay was nonsignificantly shorter: 5.5 days (IQR 2-11) vs. 7 days (IQR 3-14) in the pretest period;  $p=0.432$ . Compliance with the prescribed support mode was significantly higher in the posttest period: 69.9% vs. 55.7% in the pretest period;  $p=0.005$ . The reintubation rate was not significantly different between periods (5% vs. 7%, respectively;  $p=0.418$ ). The extubation rate during nights was higher in the posttest period but not significantly different ( $p=0.097$ ).

**Conclusions:** Implementation of a nurse-driven weaning protocol did not result in a significantly shorter duration of invasive mechanical ventilation but was safe and successful. The reintubation rate did not significantly increase compared with usual care.

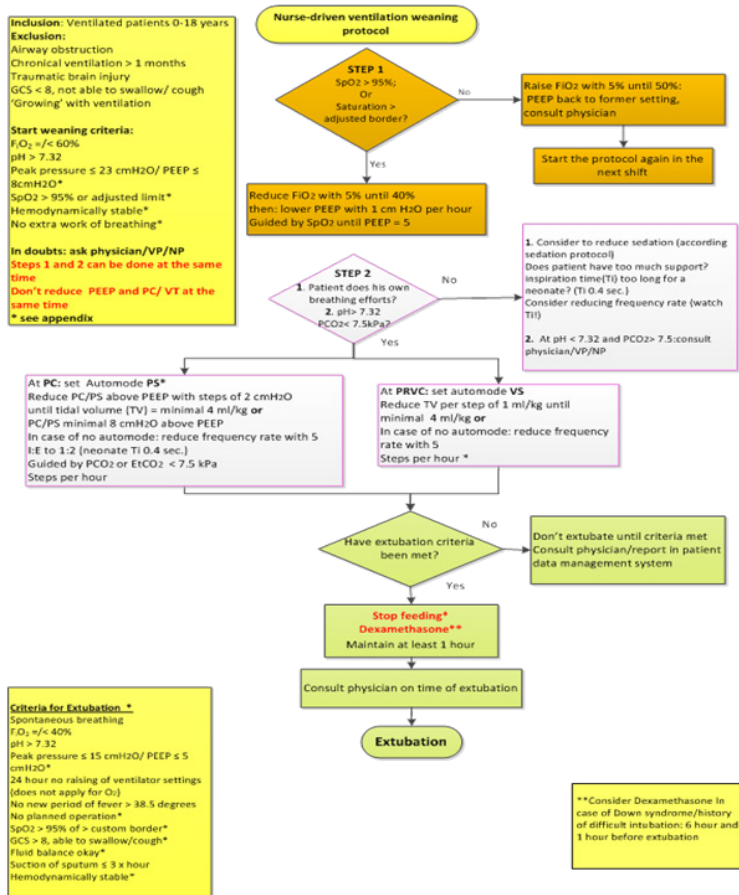


Figure 1. Nurse-driven ventilation weaning protocol

Biography

Anita Duyndam (54 years old) is Nurse Practitioner at the Pediatric Intensive Care of Children in the Erasmus MC Sophia in Rotterdam and PhD candidate in the field of ventilation in children. Part of the doctoral work involves the study of the weaning of ventilation by nurses.