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Training Pediatric Mechanical Ventilation to Front Line Pediatric Physicians

Mechanical ventilation (MV) is one of the defining interventions of critical care medicine helping save millions of patients' lives.¹ Providing pediatric critical care in Pakistan is a unique challenge because of limited, less prioritised resources and lack of training.² Because of few centres having trained pediatric intensive care unit (PICU) physicians, MV is being managed by residents/nurses/non-ICU physicians, while MV is not included in their curriculum.³ Without proper training, this life-saving machine can be a weapon of "mass destruction".⁴

Keeping need-demand gap in mind, we designed a half-day course on MV with the aim to train frontline pediatricians on use of MV at 10 tertiary care academic hospitals in two cities of Pakistan; all of these centres had postgraduate pediatric residency programme and mechanical ventilators. Target audience was pediatric trainees, nurses and consultants who were working in PICU, and were actively involved in providing care to children requiring MV. This 4-hour course consisted of didactic lectures covering anatomic and physiologic airways differences in infants and children, concepts and principles of MV, initiation, monitoring, trouble-shooting and liberation from MV in the first half; followed by small-group (4-5 persons) hands-on training on MV machine with artificial lung with common case scenarios of acute respiratory insufficiency in the second half. Each course had a written pre- and post-test covering aspects discussed during the course.

A total of 311 participants were trained in 17 courses from July 2013 to December 2016; including 234 pediatric trainees, 26 consultants, and 31 PICU nurses. The mean

(±SD) percentage of scores in pre- and post-test were 50.63% ±27.22 and 62.12% ±23.19, respectively; with an increase in mean percentage of scores in pre- and post-test of 11.49% (p<0.001). Median of the overall evaluation of the course on a 5-point Likert Scale was 4; the course was excellent. Highest evaluations were given to 'acquired new knowledge', 'time management' and 'objectives of activity were defined'.

Focused educational intervention, like this, increased the knowledge which was unsatisfactory in the pre-test. The translation of this knowledge into practice has the potential of improving clinical outcomes of sick children and saving many preventable deaths.

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