Innovating Clinical Education for Safe Long-Term NIV in Children with Complex Neurodisability: A Scalable Practice-Based Model

Dominic Twinn, Clinical Educator (RCN, PGCert)
Nicola Scivier, Highly Specialist Respiratory Physiotherapist

ABSTRACT: The number of children and young people (CYP) requiring long-term non-invasive ventilation (NIV) is increasing alongside rising clinical complexity (Fauroux et al., 2022).

CYP with severe neurodisability often present with multiple risk factors for NIV-related complications (Grychtol and Chan, 2018). Educating and upskilling a diverse non-specialist workforce to deliver safe and effective NIV in CYP with complex needs in out-of-hospital settings presents a significant educational challenge.

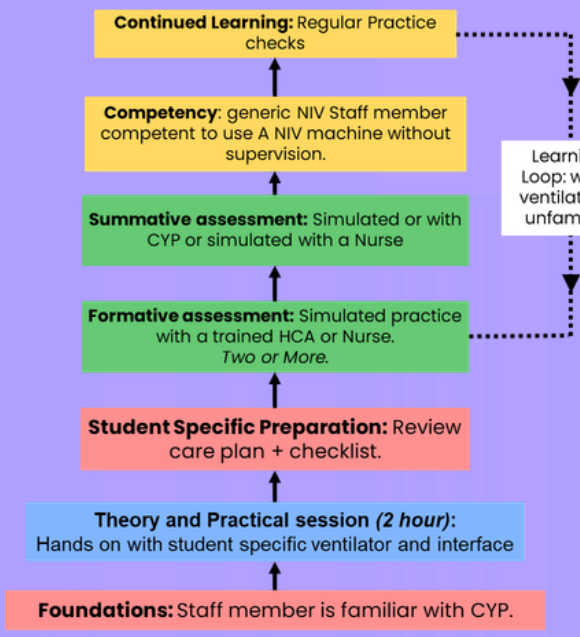
A practice-based clinical education model was developed in a residential special school, integrating applied clinical reasoning, case-based learning, and standardised tools to support staff confidence, competency development, and safe, consistent NIV delivery. Key components included structured care planning, risk stratification to guide staffing and observation levels, and a standardised bedside checklist for NIV set-up and pre-use safety checks, supporting safer escalation decisions. Training reflected real-world complexity, including management of multiple devices and interfaces within a single clinical environment.

This approach reduced reliance on repeated competency assessments involving CYP with complex needs. Embedding safety prompts and decision support within routine care supported more consistent staff initiation and management of NIV, while reducing the need for direct patient involvement in training.

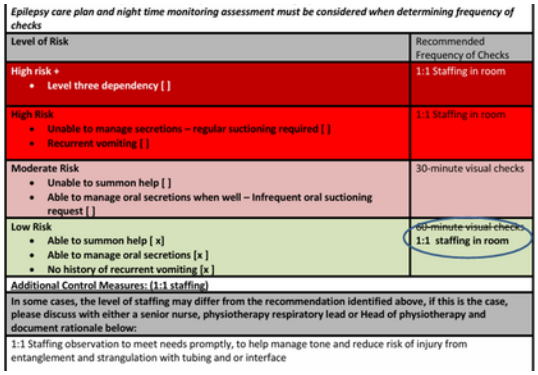
Evaluation draws on implementation experience, early implementation data, and staff feedback within multidisciplinary teams. Staff reported improved confidence in preparing and initiating NIV and valued clarity from structured tools and standardised processes, alongside reduced variability in practice. The model also strengthened nurses' confidence in delegating NIV-related clinical tasks, supported by clearer systems, documentation, and governance structures. The model supported more consistent care planning and risk management across the setting and improved escalation decision-making.

This work suggests that combining standardised bedside tools, risk-informed decision-making, and practice-based education supports safer, more consistent NIV delivery in residential special school settings. It offers a scalable, implementation-ready approach for clinical educators balancing workforce capability, patient safety, training pathways, and the complexity of long-term ventilation in community-based care.

Training Model



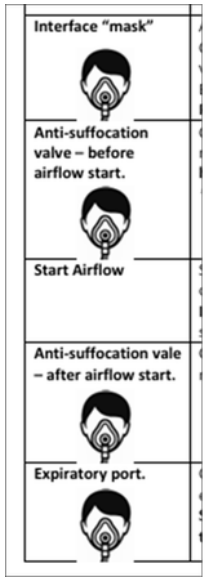
Risk Stratification Tool



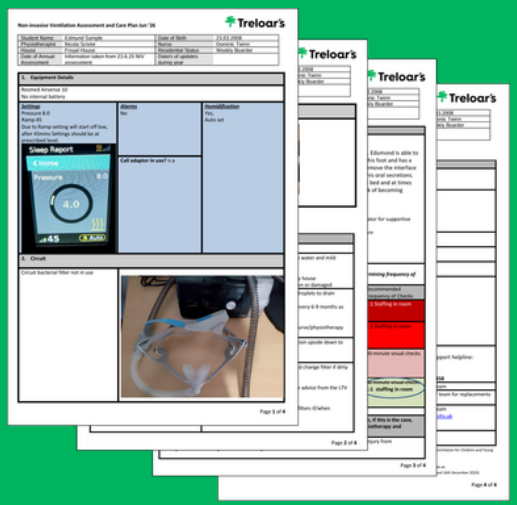
Epilepsy care plan and night time monitoring assessment must be considered when determining frequency of checks

Level of Risk	Recommended Frequency of Checks
High risk + • Level three dependency [ ]	1:1 Staffing in room
High Risk • Unable to manage secretions – regular suctioning required [ ] • Recurrent vomiting [ ]	1:1 Staffing in room
Moderate Risk • Unable to summon help [ ] • Able to manage oral secretions when well – Infrequent oral suctioning request [ ]	30-minute visual checks
Low Risk • Able to summon help [x] • Able to manage oral secretions [x] • No history of recurrent vomiting [x]	~~60-minute visual checks~~ 1:1 staffing in room
Additional Control Measures: (1:1 staffing)	
In some cases, the level of staffing may differ from the recommendation identified above, if this is the case, please discuss with either a senior nurse, physiotherapy respiratory lead or Head of physiotherapy and document rationale below:	
1:1 Staffing observation to meet needs promptly, to help manage tone and reduce risk of injury from entanglement and strangulation with tubing and or interface	

Interface Safety Checks



Assessment and Care Plan Document



Bedside Checklist



References

Fauroux, B., Abel, F., Amaddeo, A., Bignamini, E., Chan, E., Corel, L., Cutrera, R., Ersu, R., Installe, S., Khirani, S., Krivec, U., Narayan, O., MacLean, J., Perez De Sa, V., Pons-Odena, M., Stehling, F., Trindade Ferreira, R. and Verhulst, S. (2022) 'ERS statement on paediatric long-term noninvasive respiratory support', European Respiratory Journal, 59(6), 2101404. doi: 10.1183/13993003.01404-2021.

Grychtol, R. and Chan, E. (2018) 'Use of non-invasive ventilation in cerebral palsy', Archives of Disease in Childhood, 103, pp. 1170–1177. Available at: https://doi.org/10.1136/archdischild-2017-313959