



*Topic Expert Group: Patient safety and hygiene practice*

**Safe equipment use**

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*Target group*

Infants and parents

*User group*

Healthcare professionals, neonatal units, hospitals, and health services

*Statement of standard*

Safe use of equipment in neonatal care is ensured using standardised operating procedures and systematic monitoring and reporting of incidents.

*Rationale*

The goal is to assure safe equipment use in the complex environment of neonatal intensive care units (NICU). It is important to understand factors that contribute to failures in patient safety. (1–4) In NICUs a large variety of different technological devices is used, and their inappropriate use may lead to unplanned, critical events. Despite built-in safety systems, the occurrence of device related errors and their consequences for patient outcomes are still not well-defined. (1–12) In a recent prospective study using random safety audits, the rate of appropriate use of NICU equipment was only 34%, while critical incidents were reported in 2.3%. (13) Besides individual human aspects (inexperience, fatigue (14)), system factors (e.g. staffing, crowding, team process, complexity of clinical workload, obsolete equipment) play an important role for the risk of adverse events.(4) Adverse events occur at 74 events/100 infants in NICUs, e.g. hospital-acquired infections, dislocation of catheters and accidental extubations. (15) Considering the high rate of short term morbidity and long-term complications of extreme prematurity and the potential impact of equipment use, a patient safety culture is essential in the NICU environment and should be embedded in the organisation's efforts to enhance resilience and to assure patient- and family-satisfaction. (15–19)

*Benefits*

*Short-term benefits*

- Better informed parents on the benefits and risks of the use of equipment (consensus)
- Facilitated systematic reporting of inappropriate equipment use (1,4,19)

*Long-term benefits*

- Reduced morbidities as a consequence of inappropriate exposure to medical equipment (consensus)
- Improved healthcare professional training and understanding of the use of health technologies (1)
- Improved care by implementation of a “safety culture” (transparency, disclosure, feedback) (6,19) (see TEG Patient safety & hygiene practice)



### *Components of the standard*

<b>Component</b>	<b>Grading of evidence</b>	<b>Indicator of meeting the standard</b>
<b>For parents and family</b>		
1. Parents are informed by healthcare professionals about equipment used. (1,3,6)	A (Moderate quality) B (High quality)	Patient information sheet
2. In situations where parents will use and interpret information from medical equipment and their possible side effects they are educated and updated regularly by healthcare professionals in its use. (16)	A (High quality) B (High quality)	Training documentation
3. Appropriate equipment use is included in discharge planning (see TEG Follow-up & continuing care and TEG Infant- and family-centred developmental care).	B (Moderate quality)	Guideline
<b>For healthcare professionals</b>		
4. A guideline for all intensive care equipment including checklists for development, implementation and regular updates is adhered to by all healthcare professionals.	A (High quality) B (High quality)	Guideline
5. Training on reporting and learning from adverse events and inappropriate use of equipment is attended by all responsible healthcare professionals. (1,6,19)	A (Moderate quality) B (High quality)	Training documentation
<b>For neonatal unit and or hospital</b>		
6. A guideline for all intensive care equipment including checklists for development, implementation is available and regularly updated.	B (High quality)	Guideline
7. Training on reporting and learning from adverse events and inappropriate use of equipment is ensured to optimise the use of equipment, including simulation of clinical team working. (20)	A (Moderate quality) B (High quality)	Training documentation
8. Equipment maintenance is specified and audited regularly. (7)	A (Moderate quality)	Audit report



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| 9. Adverse events and inappropriate use of equipment are audited and feedback is given on a regular basis. (19) | A (Moderate quality)<br>B (Moderate quality) | Audit report |
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For health service

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| 10. Local safety investigations are collated nationally, monitored and reported. (3,6,19,21) | B (Moderate quality) | Audit report |
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*Where to go – further development of care*

Further development	Grading of evidence
<b>For parents and family</b>	
<ul style="list-style-type: none"><li>Parents are involved in the design and delivery of education about medical equipment.</li></ul>	B (Moderate quality)
<b>For healthcare professionals</b>	
<ul style="list-style-type: none"><li>Healthcare professionals are involved in the design and delivery of education about medical equipment.</li></ul>	B (Moderate quality)
<b>For neonatal unit</b>	
<ul style="list-style-type: none"><li>Develop a structure of critical incident root-cause analysis and feedback and communicate learning. (22)</li></ul>	A (Moderate quality)
<b>For hospital</b>	
<ul style="list-style-type: none"><li>Provide dedicated medical technical support for neonatal equipment.</li></ul>	B (Moderate quality)
<b>For health service</b>	
<ul style="list-style-type: none"><li>Develop a national network for benchmarking of safe equipment use including parent organisations, healthcare providers, industry, and other stakeholders.</li></ul>	B (Moderate quality)

*Getting started*

Initial steps
<b>For parents and family</b>
<ul style="list-style-type: none"><li>Parents are verbally informed by healthcare professionals about safe equipment use.</li></ul>
<b>For healthcare professionals</b>
<ul style="list-style-type: none"><li>Attend training on reporting and learning from adverse events and inappropriate use of equipment.</li><li>Report critical incidences.</li></ul>
<b>For neonatal unit</b>
<ul style="list-style-type: none"><li>Develop and implement a guideline for all intensive care equipment including checklists for development, implementation and regular updates.</li><li>Develop information material on safe equipment use for parents.</li><li>Implement a formal system to record errors/adverse events.</li></ul>
<b>For hospital</b>
<ul style="list-style-type: none"><li>Support healthcare professionals to participate in training on safe equipment use.</li></ul>



- Provide time and resources for effective safety management and support.

#### For health service

- Develop service wide sharing of information on equipment use.

#### Source

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First edition, November 2018

### *Lifecycle*

5 years/next revision 2023

### *Recommended citation*

EFCNI, Härtel C, Tissières P et al., European Standards of Care for Newborn Health: Safe equipment use. 2018.