

Supplementary material II – Individual framework summaries

Framework I - Bronchiolitis

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D16	Clinical guideline Standard trust layout	Created 2020 (review 2023)	PICU consultant. Physiotherapist involved in development.	All staff on PICU	Not explicitly stated Aimed at invasively and mechanically ventilated children only.	Introduction to and definition of disease Non physiotherapy related content (nursing/infection control etc). Specific guidance for physiotherapy input. Criteria and specific indications with suggested treatments. Some guidance for CDM. General guideline covering all elements of treatment for these patents. Evidence based.

Framework II - Directed saline lavage

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D3	Clinical guideline Standard trust layout.	Updated 2019 (review in 2022)	Physiotherapists	Physiotherapists	Description of technique. Children with endotracheal tube or tracheostomy.	Brief indications List of CI and precautions Step by step guide of procedure Relatively brief document Minimal support for CDM

Framework III - High frequency chest wall oscillation

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D27	Guidance document	Created 2012	Not comment on	Not covered	Not explicitly stated	Device explanation, how it works. Indications for use. CI and precautions Overview of procedure Very brief document. No references. Appears more of an informal guide.
D4	Clinical guideline Standard trust layout	Updated 2018 (review 2021)	Physiotherapists	Physiotherapists (ward/PICU)	Not explicitly stated All PICU patients	Indications Safety considerations, CI, precautions, appropriate monitoring. Equipment and set up. Method for use, step by step, clear/labelled images. No rationale. 4 references; minimal support for clinical decision making.

Framework IV – Manual assisted cough

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D23	Local guideline/policy Standard trust layout	Updated 2020 (review in 2024)	Physiotherapists	Physiotherapists completing paediatric on calls.	Safe and consistent practice of manual assisted cough. All paediatric patients within hospital.	Goal of technique, indications for use and types of patients. Some support for clinical decision making, related to indications. Background physiology to technique. Safety aspects, contra-indications and precautions. Practical explanation of technique. Comprehensive. Evidence based and up to date.

Framework V - Manual techniques

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D14	Procedural document Standard trust layout	Created 2019 (review in 2022)	Physiotherapists	Physiotherapists	Guidelines for use of techniques. And to support training. All paediatric patients within hospital.	Safety considerations, contra-indications, precautions and considerations. Potential adverse events. Brief Indications for use for each manual technique. Step by step procedure for each technique with rationale. Including links to other trust guidelines. Some support for clinical decision making related to indications and adaptations. References included but not evidence based.

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D7	Standard operating procedure Standard trust layout	Created 2019 (review 2021)	Physiotherapist	Paediatric physiotherapists	Improve confidence working with device. All paediatric patients within hospital, specific instructions for those intubated and ventilated.	Brief paragraph on indications. Requires own clinical reasoning. Contraindications, precautions and potential adverse events listed. List of equipment Step by step guide to assembly, treatment and cleaning. Minimal support for CDM. Indications included. But no management strategies for adverse events or problem solving guidance

	Document type	Year created/ updated	Development	Target audience	Purpose	Content
D11	Guideline Standard trust layout	Created 2020 (review 2023)	Physiotherapists	Paediatric physiotherapists - deemed competent in use of MHI	Not explicitly stated Intubated and ventilated patients.	Physiology underpinning technique and evidence. Indications for use. Safety considerations, Precautions and CI. Treatment procedure, including detailed rationale, with photographs of all equipment. Some support for CDM, full assessment described, rationale during treatment. Thorough document, referenced.
D13	Clinical guideline Standard trust layout	Created 2020 (review 2023)	Physiotherapists, reviewed by other members of MDT.	Physiotherapy staff	To provide standardised outline of technique to optimise safety. Intubated paediatric patients.	Brief introduction to technique. Indications, brief list. Safety considerations. Contra-indications and precautions. Possible adverse events of technique. List and photos of equipment required, step by step guide to completing procedure, actions and rationale. Support for CDM during treatment with rationale section. Adaptations, things to look for.

D25	Local clinical guideline Standard trust layout	Updated 2020 (review 2032)	Physiotherapists	Physiotherapists, nursing and medical staff.	Formalise a consistent and safe method of MHI for ACT. Evidence based and up to date. Intubated and ventilated patients or those with a tracheostomy.	Indications for use with associated evidence. Safety considerations. Contra-indications and precautions. Hazards and complications, including actions to manage these, guidance for decision making. Equipment and settings. Step by step guide to procedure, with information to improve effectiveness and ensure safety. Well referenced and evidence-based.
D6	Standard operating procedure Standard trust layout	Updated 2020 (review 2022)	Physiotherapist	Physiotherapists	To provide guidance and ensure competence and effectiveness. Intubated patients.	Equipment required. Brief comment on precautions/CI, and side effects. Step by step guide to procedure. No rationale, indications provided. Describes throughout physiotherapists having to use own clinical reasoning.

Framework VIII – Manual insufflation/exsufflation

	Document type	Year created/ updated	Developed by	Target audience	Purpose	Content
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D2	Clinical guideline Standard trust layout	Updated 2021 (review 2024)	Physiotherapists	Physiotherapists. Other staff and carers.	To standardise practice, ensure safe and evidence-based use. All paediatric patients within hospital.	Introduction to device and effects. Indications for use Safety considerations, CI, precautions. No adverse events/risks. Clear explanation of device and procedure for use; including, set up, display, modes, cleaning. Images included. Some guidance for CDM in considerations for use section. Includes references but not integrated into document.
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D18	Clinical guideline Standard trust layout	Updated 2019 (review 2022)	Physiotherapists	Children's physiotherapists Medical staff on wards and senior nurses on PICU should be aware of doc. Specific guidance to how each group should use.	Guidance for the use of the device as an adjunct to physiotherapy techniques. All paediatric patients within hospital.	Brief introduction to device and how works. Detailed indications for use, including types of patients. Safety considerations, CI, precautions, AEs/risks. Equipment and step by step instructions for use, including labelled images. Section on monitoring and ending treatment. Some support for CDM. Additional bedside documents/log of use.
D8	Standard operating procedure Standard trust layout	Created 2013	Physiotherapist	Paediatric physiotherapists	Guidance for safe use of device. All paediatric patients within hospital.	Indications for use. Contra-indications and precautions. Step by step instructions for use. No details about settings/modes to use. Brief document. No support for decision making.

Framework IX - Non-bronchoscopic bronchoalveolar lavage

	Document type	Year created/updated	Developed by	Target audience	Purpose	Content
D10	Clinical guideline	Created 2017	Physiotherapists	Physiotherapists	Not explicitly outlined	Indications Referral process for procedure Brief comment on safety, contra-indications and adverse events. Assumes certain level of knowledge Description of equipment with photo. Step by step guide. Minimal support for decision making
D12	Clinical guideline (draft version provided) Standard trust layout	Created 2015	Physiotherapists	Physiotherapists Other PICU staff (indications)	To provide standardised outline of technique, optimise safety. Support competency. to inform PICU staff of indications. Intubated paediatric patients.	Introduction to procedure. Indications Safety considerations, contra-indications, precautions, potential adverse events with detailed rationale. Infection control. Equipment needed and photo. Links to other relevant guidelines. Step by step procedure with

						rational and reasoning. Includes support for decision making
D17	Clinical guideline Standard trust layout	Updated 2019 (review 2022)	Physiotherapists	Physiotherapists Other PICU staff should be aware	To provide support for set up and completion of procedure.	Background to procedure. Safety considerations, contraindications and precautions, potential complications. Organisational information and preparation of patient Equipment preparation with photos. Step by step guide to procedure. Evidence-based. Some CDM support with regards to indication and

						appropriateness of procedure, but not during.
D20	Clinical guideline Standard trust layout	Not stated	Physiotherapist	PICU physiotherapists and medical team	Not explicitly discussed. Intubated children.	Brief introduction. Indications. Cautions and potential complications Equipment with photos. Step by step procedure with rationale and actions to implement in reaction to patients response. Support for decision making in indications and appropriateness also during procedure. Evidenced based and referenced throughout

D21	Standard operating procedure	Created 2019 (review 2021)	Physiotherapist	Physiotherapist, medic, senior nurse	Not explicitly discussed	Rationale and indications. Safety considerations, contra-indications and potential complications. Equipment with photos. Step by step procedure with photos. Some decision making support for indications and preparation. Minimal for during procedure. Referenced throughout.
D24	Local guideline Standard trust layout	Updated 2021 (review 2023)	Physiotherapist and Intensivist.	All individuals trained in procedure. (physiotherapist, nurse, medic)	Best practice guidelines. Also to ensure in line with ongoing research study.	Introduction to procedure and indications Safety considerations, complications, contra-indications and precautions Equipment with photos. Step by step guide to procedure. Few comments around actions. Summary table of evidence/benchmarking. Support for CDM with regards to indications and preparation of patient but minimal for during procedure.

D5	Guideline	Updated 2018 (review 2020)	Clinical lead PICU, lead nurse, PICU consultant.	Medical staff All HCPs involved ?if relevant for physiotherapists.	To establish clear guidance on how to perform procedure. Intubated patients.	Background to procedure and indications. Potential complications, contraindications. Equipment required with photos. Step by step guide to procedure with a few rationale points. How to request, with photos. Practical guide with minimal support for CDM.
D28	Guideline Standard trust layout	Updated 2017 (review 2020)	Physiotherapists	Those trained to undertake procedure (physiotherapists, PICU advanced nurse practitioners, medics)	To establish consensus and evidence-based guidelines for safe and effective use. Patients with an artificial airway.	Indications Safety considerations, contra-indications, Potential risk/issues and how to manage these. Support for clinical decision making. Pre-procedure observations with rationale. Equipment with photos. Step by step procedure with photos. Including bedside check list. Evidence-based throughout.

Framework X – Ventilator hyperinflations

	Document type	Year created/ updated	Developed by	Target audience	Purpose	Content
D15	Clinical guideline Standard trust layout	Created 2020 (review 2023)	Physiotherapists. Reviewed by lead consultant and matron.	Paediatric physiotherapists. Medical and nurses should be aware of document	Standardise and facilitate best practice, using evidence-based approach. Ensure safety and effectiveness. Invasively and non-invasively ventilated children.	Introduction to technique, physiology, definitions. Aim of technique, indications for use. Safety considerations. Lists of contra-indications, precautions and adverse events. Equipment required. Step by step method including calculations. Includes how to adapt/progress treatment. Guidance on what to monitor and document. Support with decision making provided. Referenced and evidence-based.

D22	Standard operating procedure/guideline Standard trust layout	Created 2021 (review 2023)	Physiotherapist	Physiotherapists. Although circulated to wider PICU team.	Guide practice in relation to evidence and standards available. Invasively ventilated children.	Introduction to technique, including description, physiology, evidence. Indications for use with associated evidence. Safety considerations, including contra-indications, precautions. Hazards and complications included with actions. Comment on importance of individual, comprehensive assessment. Equipment required, and step by step method, including rationale behind. Adds decision making support.
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D26	Local clinical guideline Standard trust layout	Created 2020 (review 2022)	Physiotherapist	Paediatric physiotherapists	Formalise a consistent and safe method. Evidence based and up to date.	Purpose and indications, including associated rationale. Safety considerations, including contra-indications and precautions. Hazards/complications including actions to manage these. Equipment needed. Step by step method, including adjustments to improve effectiveness. Guides decision making during treatment. Referenced throughout.
D29	Guideline	Created 2020 (review 2022)	Physiotherapists	Physiotherapists	Not explicitly mentioned. Ventilated patients.	Brief intro on aims of treatment and indications for use. Brief comment on risks. Does link to MHI guideline. Step by step procedure including example calculations. Video link. No real support for clinical reasoning. Comment including on evaluating effectiveness and progressing treatment.

						Mainly related to COVID19, more of a technical guide.
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Framework XI – Mucoactive agents

	Document type	Year created/ updated	Developed by	Target audience	Purpose	Content
D1	Clinical guideline Standard trust layout	Updated 2020 (review 2023)	Physiotherapists and PICU consultant.	PICU doctor, advanced nurse practitioner and physiotherapist.	Guideline for use of DNase in critical mucus plugging. Mechanically ventilated children.	Brief introduction to DNase Indications. Contra-indications and precautions. Potential side effects. Preparation of drug. Summary of procedure, photos of positions, guidance of how to adapt treatment depending on how tolerating. Documentation requirements. Some support for decision making related to indications, adaptations during treatment and monitoring requirements after.

D9	Guideline	Created 2020 (review 2022)	Physiotherapist, pharmacist and PICU consultant.	PICU doctor or physiotherapist	Guideline for DNase use. Ventilated patients on PICU.	Indications. Mechanism of action Dosage information Step by step procedure, photos of positioning. Brief guidance for adapting/managing response. Safety considerations, contra-indications, adverse events, pharmacokinetics/interactions. Referenced but not integrated into guideline.
D19	Guideline Standard trust layout	Updated 2020 (review 2024)	Physiotherapist and pharmacist	Staff at trust	Guideline for use of 0.9% sodium chloride, 3 and 7% hypertonic saline, DNase. All paediatric patients.	Brief description of action of each medication. Indications for use. Dosage and how delivered. Detailed step by step guide and safety considerations for instilled DNase. Minimal support for decision making, other than specific indications for DNase.