

# Use of Ventilator Hyperinflation in the Paediatric Intensive Care Unit (PICU)

\* Indicates required question

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1. How many years have you been working as a Physiotherapist? \*

Mark only one oval.

- 0-2 years  
 3-5 years  
 6-10 years  
 11-15 years  
 16-20 years  
 >20 years

2. How many years of Paediatric ICU experience do you have? \*

Mark only one oval.

- 0-2 years  
 3-5 years  
 6-10 years  
 11-15 years  
 16-20 years  
 >20 years

3. What is your highest level of qualification? \*

Mark only one oval.

- Diploma of Physiotherapy  
 Bachelor of Physiotherapy / Graduate entry Masters in Physiotherapy  
 Post graduate diploma  
 Postgraduate Masters degree  
 PhD / Doctorate of Physiotherapy  
 Other: \_\_\_\_\_

## Paediatric Intensive Care Unit (PICU) information

4. In which geographical region is your unit based? \*

Mark only one oval.

- East Anglia  
 East Midlands  
 Greater London  
 Ireland  
 North East  
 Northern Ireland  
 North West  
 Scotland  
 South East  
 South West  
 Wales  
 West Midlands  
 Yorkshire and the Humber  
 Other: \_\_\_\_\_

5. In which category of hospital is your PICU located? \*

Mark only one oval.

- District general hospital  
 Tertiary hospital  
 Other: \_\_\_\_\_

6. What is the maximum level of care that your unit can provide? \*

Mark only one oval.

- Level 1 (monitoring available in a district general hospital)
- Level 2 (eg high dependency unit, non-invasive ventilation)
- Level 3 (intensive and critical care)

7. How many beds do you have in your Paediatric Intensive Care Unit? \*

\_\_\_\_\_

8. Do you perform the technique of Ventilator Hyperinflation (VHI) in your PICU? \*

Mark only one oval.

- Yes
- No
- No - but we are interested in using VHI in the future

Paediatric Ventilator Hyperinflation (VHI)

9. How did you learn the theoretical aspects of VHI? \*

Check all that apply.

- Taught VHI theory as an undergraduate
- Taught VHI theory at a professional development course
- Taught VHI theory at the bedside by a senior paediatric physiotherapist
- Taught VHI theory at the bedside by a senior adult physiotherapist
- Taught VHI theory by a medical colleague
- Self-taught VHI theory through reading of scientific literature
- Other: \_\_\_\_\_

10. How did you learn the practical aspects of performing VHI? \*

Check all that apply.

- Taught how to perform VHI as an undergraduate
- Taught how to perform VHI at a professional development course
- Taught at the bedside by a senior paediatric physiotherapist
- Taught at the bedside by a senior adult physiotherapist
- Taught at the bedside by a medical colleague
- Self-taught through reading of scientific literature
- Other (please give details)

11. Do you need medical approval to perform VHI in your PICU? \*

Check all that apply.

- Yes
- No
- Under certain circumstances (please specify in the "other" box below)
- Other: \_\_\_\_\_

12. Which of the following staff perform VHI in your PICU? (please tick all that apply) \*

Check all that apply.

- Band 8a physiotherapist
- Band 7 physiotherapist
- Band 6 physiotherapist
- Band 5 physiotherapist
- Physiotherapy student
- Medical staff
- Nursing staff
- Critical care support workers
- Other: \_\_\_\_\_

13. Do you use a VHI protocol in your PICU? \*

Check all that apply.

- Yes - we follow a paediatric protocol
- Yes - we follow an adult protocol
- No
- Other: \_\_\_\_\_

14. How would you describe the frequency that you perform VHI in PICU? \*

Mark only one oval.

- Rarely (less than once per month)
- Sometimes (less than once per week)
- Frequently (more than once a week)
- Very frequently (daily)

15. What do you consider to be the main indications for performing VHI? \*

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16. What do you consider to be the main contraindications for performing VHI? \*

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17. When would you choose VHI over MHI (manual hyperinflation)? \*

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Unit preference/guidance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal preference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ventilator PEEP >8cmH2O	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ventilator PEEP >10cmH2O	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concerns of derecruitment on disconnection from the ventilator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiovascular instability requiring high inotropic support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High respiratory infection risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. When would you choose MHI over VHI? \*

Mark only one oval per row.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Unit preference/guidance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal preference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ventilator PEEP >8cmH2O	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ventilator PEEP <8cmH2O	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient reportedly stable on disconnection from ventilator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High sputum load	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiovascular instability requiring high inotropic support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High respiratory infection risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19 positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Are your paediatric patients routinely paralysed prior to VHI? Please add comments in the "other" section. \*

Check all that apply.

- Yes
- No
- Other: \_\_\_\_\_

20. Please indicate in which of the following modes of ventilation you would commonly perform VHI (tick all that apply) \*

Check all that apply.

- SIMV volume control
- SIMV pressure control
- CPAP / Pressure support mode
- Bilevel
- Assist control
- PRVC
- Other: \_\_\_\_\_

21. How do you position the child for VHI? \*

\_\_\_\_\_

22. Please outline how you would most commonly perform VHI? Please give as much information as possible. \*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

23. Do you alter your technique of VHI when treating lung collapse versus sputum retention? If yes, please explain how in the "other" section. \*

Check all that apply.

- Yes
- No
- Other: \_\_\_\_\_

24. Do you have a maximum pressure or maximum volume that you do not exceed during VHI? If yes, please give a value in the "other" section with a unit or indication of either pressure or volume. \*

Check all that apply.

- Yes
- No
- Other: \_\_\_\_\_

25. During an average treatment, how many deep breaths do you provide in one set? (A set is a group of consecutive breaths, which may be followed by a suction). This may vary, please give additional comments in the "other" section if necessary. \*

Check all that apply.

- 1-2
- 3-4
- 5-10
- >10
- Other: \_\_\_\_\_

26. During an average treatment, how many sets of deep breaths do you provide? \*

Check all that apply.

- 1-2
- 3-4
- 5-10
- >10
- Other: \_\_\_\_\_

27. What outcome measures would you use to indicate a successful, or unsuccessful, outcome? \*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

28. Would you be willing to share your VHI protocol please? This is for a larger project between the UK and Australia. If so, please provide your email address below (in the "other" section), or email your protocol directly to [j.balls@rbht.nhs.uk](mailto:j.balls@rbht.nhs.uk) or [ellie.melkuhn@gstt.nhs.uk](mailto:ellie.melkuhn@gstt.nhs.uk) We will share future project plans and outcomes with you. \*

*Check all that apply.*

Yes

No

Maybe

Other: \_\_\_\_\_

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