

AQUATIC PHYSIOTHERAPY FOR CHILDREN WITH A TRACHEOSTOMY OR LONG-TERM MECHANICAL VENTILATION

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- This guideline addresses the management of children with a tracheostomy including those who require long term mechanical ventilation to participate in aquatic physiotherapy safely
- Each individual patient will need to be assessed for their suitability to participate in aquatic physiotherapy taking into consideration their condition and the physiological effect of immersion. It is important to never put the patient or therapist at risk and participation in aquatic physiotherapy may not be appropriate if uncertainty exists.
- Children requiring long-term mechanical ventilation may not participate in aquatic physiotherapy if baseline mechanical ventilation has not been established

CHANGE SUMMARY

- Not applicable as this is a new document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st December 2020	Review Period: 3 years
Team Leader:	Department Head	Area/Dept: Physiotherapy

READ ACKNOWLEDGEMENT

Read Acknowledge Only –

- All physiotherapy staff at CHW are required to read and acknowledge ‘Aquatic physiotherapy at The Children’s Hospital, Westmead’
- All physiotherapy staff at SCH are required to read and acknowledge ‘Aquatic physiotherapy at Sydney Children’s Hospital, Randwick’
- All physiotherapy staff at CHW and SCH are required to read and acknowledge this document
- All Long Term Ventilation Allied Health staff are required to read and acknowledge this document
- All nursing staff looking after tracheostomy and long term mechanical ventilation patients who are participating in aquatic physiotherapy are required to read and acknowledge this document.
- Medical staff should be aware of this document and refer to it when necessary.

TABLE OF CONTENTS

Background	3
Indications	3
Contraindications	4
Precautions	4
Risks	4
Risk Management	5
Procedure	6
Self-Ventilating via a tracheostomy.....	6
Mechanical ventilation via a tracheostomy.....	7
References	8
Resources	8
Appendix	9
1. Risk Treatment (Management) Plan	9

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

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Background

Aquatic physiotherapy has been defined by the Australian Physiotherapy Association as the application of the specific practice of physiotherapy in water (1). Aquatic physiotherapy incorporates individual patient assessment, the use of clinical reasoning skills, knowledge of the unique properties of the aquatic environment and family-centred goals to formulate treatment plans.

The delivery of aquatic physiotherapy services to children with a tracheostomy, including those who require long term-ventilation can be challenging for clinicians. Individual patient factors, staffing logistics, airway management, equipment management, space and risk management all need to be carefully considered when planning aquatic physiotherapy for this high risk population group.

This practice guideline has been designed to assist and guide clinicians in planning and executing safe and effective aquatic physiotherapy sessions for children with a tracheostomy, including those who require long-term mechanical ventilation. There is limited published evidence on the effects of aquatic physiotherapy in this population. As such, this practice guideline is based on expert clinical opinion and consensus from the available literature.

Site specific procedures for aquatic physiotherapy are detailed in the following policies:

- 'Aquatic physiotherapy at the Children's Hospital, Westmead' (***hyperlink to the document to be inserted once published***)
- 'Aquatic physiotherapy at Sydney Children's Hospital, Randwick' (***hyperlink to the document to be inserted once published***)

Staff should read the aforementioned policy in conjunction with this practice guideline prior to undertaking any aquatic physiotherapy intervention for tracheostomy or long term mechanical ventilation patients.

Indications

Aquatic physiotherapy is a regular therapeutic treatment option which can be utilised in the management of a number of presenting conditions. Individual patient presentation and goals of therapy are always considered along the benefits of therapy. Benefits of aquatic physiotherapy include but are not limited to:

- Maintain/improve the integrity of the musculoskeletal system (e.g. joint range of motion and strength)
- Maintain or improve cardiovascular fitness
- Prevent and minimise the secondary effects of immobility
- Facilitate gait and functional mobility where possible.
- Assist with pain management strategies

Contraindications

Although there are no absolute contraindications, each individual patient will need to be assessed for their suitability to participate in aquatic physiotherapy taking into consideration their condition and the physiological effect of immersion. It is important to never put the patient or therapist at risk and participation in aquatic physiotherapy may not be appropriate if uncertainty exists.

For details on local recommendations please refer to following policies:

- 'Aquatic physiotherapy at the Children's Hospital, Westmead'
- 'Aquatic physiotherapy at Sydney Children's Hospital, Randwick'

Precautions

Precautions to aquatic physiotherapy are detailed in the following policies:

- 'Aquatic physiotherapy at the Children's Hospital, Westmead'
- 'Aquatic physiotherapy at Sydney Children's Hospital, Randwick'

In addition to standard precautions, children with a tracheostomy or those requiring long-term mechanical ventilation may not participate in aquatic physiotherapy if baseline mechanical ventilation has not been confirmed and established with the child's treating medical team (i.e. frequently changing pressure settings, medical instability).

Risks

There are risks associated with aquatic physiotherapy with patients who have a tracheostomy or require long term mechanical ventilation. These include, but are not limited to:

- Tracheostomy decannulation
- Aspiration through tracheostomy
- Water entering ventilator circuitry
- Water damage to ventilator
- Respiratory compromise during period of immersion
- Work Health and Safety considerations for manual handling and potential risks to personnel (staff, parents, carers) undertaking manual handling
- Transferring in and out of the pool whilst maintaining the tracheostomy airway and particularly if the child has a significant physical disability.

Individual patient factors may also create a level of risk when participating in aquatic physiotherapy (e.g. history of seizures) and should be considered when providing services.

Delivery of aquatic physiotherapy is at the discretion of the treating Physiotherapist considering patient condition, staffing and risk management.

Risk Management

Risks to patients, staff and families/carers must be identified, and steps taken to minimise the risk in each case. A thorough risk management plan must be completed prior to the initial aquatic physiotherapy session (Appendix 1).

A comprehensive risk management plan should be completed by the primary physiotherapist, in conjunction with the managing team. The risk management plan should outline any specific precautions and emergency procedures specific to the individual patient. The risk management plan must be appropriately updated to reflect any changes in the patient's clinical condition.

The risk management plan should include all aspects of participation in aquatic physiotherapy including:

- Mode of entry and exit from the hydrotherapy pool
- Management of tracheostomy/airway
- Management of equipment (ventilators, hoists, emergency equipment, equipment utilised during aquatic physiotherapy sessions)
- Emergency response to adverse event

In addition to clearance process outlined in the site specific aquatic hydrotherapy policies:

- Clearance must be obtained and documented from the appropriate ENT CNC. CHW ENT CNC (page #6928) or SCH ENT CNC (page # 47165) prior to initial aquatic physiotherapy session
- Risk Treatment (Management) plan (appendix 1) must be completed and documented on eMR by the physiotherapist in consultation with the patient's primary medical team and prior to the initial aquatic physiotherapy session.
- For those on long term mechanical ventilation, clearance must be obtained and documented in eMR prior to initial aquatic physiotherapy session.

In the event of a clinical deterioration or adverse event please follow the emergency care plans/procedures outlined in the local aquatic physiotherapy guidelines

Procedure

Self-Ventilating via a tracheostomy

1. Staffing:

- Staffing ratios are specific to each individual, but as a minimum must include:
- One Physiotherapist in the pool at all times
- One individual trained in emergency tracheostomy procedures poolside at all times. Based on individual risk management, it is at the discretion of the Physiotherapist if this individual is required to be in the hydrotherapy pool
- Pool observer with appropriate clinical competency for hydrotherapy rescue qualification +/- the ability to perform tracheostomy suction

At the discretion of the primary Physiotherapist, extra personnel may be required considering individual clinical presentation, goals, therapeutic interventions, risk of harm and care need escalation. Prior to each aquatic physiotherapy session, individual roles and responsibilities must be discussed and clarified.

2. Equipment:

- A heat and moisture exchange device (e.g. Swedish nose) must be worn when in the pool, with a replacement readily available
- Emergency tracheostomy kit (i.e. replacement trache tube of the same size and one smaller, lubricant, tracheostomy tapes), must be poolside at all times. It is the responsibility of those trained in tracheostomy emergency procedures to check the contents of the emergency bag prior to aquatic physiotherapy.
- Portable suction unit with appropriate catheters must be set up pool side. Backup wall suction is available as required.
- Laerdal bag attached to oxygen source appropriate for patients size.

3. Safety:

- It is the responsibility of all staff and parents and carers to ensure all safety and emergency equipment is set-up and readily available prior to the patient entering the pool.
- The use of flotation equipment is used as recommended by the primary Physiotherapist.
- **CHW only:** Individuals with a tracheostomy are able to share the hydrotherapy pool with other users following consideration by the primary Physiotherapist.

Mechanical ventilation via a tracheostomy

CHW

All long term ventilation patients, when admitted, are admitted under the care of the long-term ventilation unit on Hunter Baillie Ward or in PICU if requiring critical care. The designated ward AIN/RN must accompany the patient to the hydrotherapy pool. Any exceptions must be discussed with the primary Physiotherapist and the ward NUM.

Individuals requiring continuous or intermittent mechanical ventilation may not share the pool with other users during initial aquatic physiotherapy sessions. For subsequent sessions, the hydrotherapy pool may be shared following careful consideration and risk management from the primary Physiotherapist.

SCH

At SCH long term ventilation patients are generally admitted to either C2South or C3South. The trache/Vent CNC will accompany patients to the hydrotherapy pool for all initial sessions and in consultation with the treating physiotherapist, determine the requirements to be present for future planned aquatic physiotherapy sessions.

1. Staffing:

Staffing ratios are specific to the individual and are determined on the risk assessment of each individual patient and may include:

- One Physiotherapist in the pool at all times
- One individual trained in emergency tracheostomy procedures to be in the pool at all times. This individual will assist as directed by the Physiotherapist
- Two individual trained in emergency tracheostomy procedures pool side at all times. These individuals are responsible for monitoring the ventilator and ventilator tubing to ensure it does not contact the water, and have access to suction as required. If the family are unable to provide two trache trained individuals, in some circumstances, hospital staff may be utilised; this is however at the discretion of the physiotherapist and multidisciplinary team
- Pool observer with appropriate clinical competency for hydrotherapy rescue qualification +/- the ability to perform tracheostomy suction
- At the discretion of the primary Physiotherapist extra personnel may be required considering individual clinical presentation, goals, therapeutic interventions, risk of harm and care need escalation. Prior to each aquatic physiotherapy session, individual roles and responsibilities must be discussed and clarified.

2. Equipment:

- Emergency tracheostomy kit (i.e. replacement trache tube of the same size and one smaller, lubricant, tracheostomy tapes), must be poolside at all times. It is the responsibility of those trained in tracheostomy emergency procedures to check the contents of the emergency bag prior to aquatic physiotherapy.
- Portable suction unit with appropriate catheters must be set up pool side. Backup wall suction is available as required.
- Laerdal bag attached to oxygen source appropriate for patients size.
- Cover the ventilator with a towel to prevent water damage to the ventilator.

3. Safety:

- It is the responsibility of all staff and parents and carers to ensure all safety and emergency equipment is readily available, set-up and checked prior to the patient entering the pool.
- The use of flotation equipment is used as recommended by the primary Physiotherapist.

References

1. Australian Guidelines for aquatic physiotherapists working in and/or managing Aquatic Physiotherapy pools. Australian Physiotherapy association Aquatic Physiotherapy Group 2nd Edition 2015
2. Geytenbeek, J (2002). 'Evidence for effective hydrotherapy', Physiotherapy, 88, 9, 514-529.

Resources

- Australian Physiotherapy Association – Australian guidelines for aquatic physiotherapists working in and/or managing hydrotherapy pools (second edition). © 2015 AUSTRALIAN PHYSIOTHERAPY ASSOCIATION
- Geytenbeek, J, (2008). Aquatic Physiotherapy Evidence-Based Guide. National Aquatic Physiotherapy Group on Australian Physiotherapy Association.
- Aquatic physiotherapy at the Children's Hospital, Westmead
- Aquatic physiotherapy at Sydney Children's Hospital, Randwick

NSW Health Risk Matrix	Consequence Examples				
	Catastrophic	Major	Moderate	Minor	Minimal
NSW HEALTH RISK CATEGORIES					
Clinical Care & Patient Safety	Unexpected multiple patient deaths unrelated to the natural course of the illness.	Unexpected patient death or permanent loss/reduction of bodily function unrelated to the natural course of the illness.	Unexpected temporary reduction of patient's bodily function unrelated to the natural course of the illness which differs from the expected outcome.	Patient's care level has increased unrelated to the natural course of the illness.	First Aid provided to patient unrelated to the natural course of the illness.
Health of the Population	An increase in the prevalence of known conditions contributing to chronic diseases across all the state-wide population health KPI categories currently measured by NSW Health and/or an increase of more than 10% in one or more category.	Failure to materially reduce the prevalence of known conditions contributing to chronic disease across the majority of the state-wide population health KPI categories measured by NSW Health and/or an increase of more than 5% up to 10% in one or more category.	Failure to materially reduce the prevalence of more than one of the known conditions contributing to chronic disease from the state-wide population KPI categories measured by NSW Health and/or an increase of more than 2% and up to 5% in one or more category.	Failure to reduce the prevalence of one of the known conditions contributing to chronic disease from the state-wide population health KPI categories measured by NSW Health or an increase of up to 2% in one or more category.	A preventative Health program has not demonstrably met planned objectives but the prevalence of known condition is continuing to decrease in line with KPI targets.
Workforce	Unplanned cessation of a critical state-wide program or service or of multiple programs and services.	Unplanned cessation to a service or to program availability within a Service Area with possible flow on to other locations.	Unplanned restrictions to services and programs in multiple locations or a whole hospital or community service.	Unplanned service delivery or program delays localised to department or community service.	Minimal effect on service delivery.
Communication & Information	Cessation of services due to loss, damage or unauthorised access to property, assets, records and information.	Prolonged service disruption or suspension of services due to the loss, damage or unauthorised access to property, assets, records and information.	Temporary suspension of services due to the loss, damage or unauthorised access to property, assets, records and information.	Localised disruption to services. Minor loss damage or unauthorised access to property, assets, records and information.	Minimal effect on services. No loss or damage to property, assets, records or information.
Facilities & Assets Management					
Security					
Emergency Management	State-wide system dysfunction resulting in total shutdown of service delivery or operations.	Services compromised as service providers are unable to provide effective support and other areas of NSW Health are known to be affected.	Disruption of a number of services within a location with possible flow on to other locations in the area.	Some disruption within a location but manageable by altering operational routine.	No interruption to services.
Legal	Legal judgement, claim, non-compliance with legislation resulting in indeterminate or prolonged suspension of service delivery.	Legal judgement, claim, non-compliance with legislation resulting in medium term suspension of service delivery.	Legal judgement, claim, non-compliance with legislation resulting in medium term but temporary suspension to services.	Legal judgement, claim, non-compliance with legislation resulting in short term disruption to services.	Legal judgement, claim or legislative change but no impact on service delivery.
Finance	More than 5% over budget NOT recoverable within the current or following financial year. Unable to pay staff or finance critical services.	Up to 5% over budget or a material overrun NOT recoverable within the current financial year. Unable to pay creditors within MOH benchmark.	Up to 5% over budget but recoverable within current financial year.	Up to 1% temporarily over budget and recoverable within current financial year.	Less than 1% over budget. Temporary loss of or unplanned expenditure related to individual program or project but no net impact on budget.
Work Health & Safety	Multiple deaths or life threatening injuries or illness to non-patients.	Death or life threatening injury or illness causing hospitalisation of non-patients.	Serious harm, injury or illness causing hospitalisation or multiple medical treatment cases for non-patients.	Minor harm, injury or illness to a non-patient where treatment or First Aid is required.	Harm, injury or illness not requiring immediate medical treatment.
Environmental	Permanent effect on the environment or is unlikely to recover.	Long term effect on the environment. The environment will only recover through external assistance / intervention (EPA)	Short term effect on the environment. Environment likely to make a full recovery through local planning and response measures.	Minor effect on the environment. Environment to make a full recovery by routine procedures.	g lasting effect on the environment.
Leadership & Management	Failure to meet critical priority KPI's included in the service's performance agreement. Sustained adverse national publicity. Significant loss of public confidence, loss of reputation and/or media interest across NSW in services.	Failure to meet a significant number of priority KPI's included in the service's performance agreement. Sustained adverse publicity at a state-wide level leading to the requirement for external intervention. Systemic and sustained loss of public support/opinion across a service.	Failure to meet a number of priority KPI's included in the services' performance agreement. Increasing and broadening adverse publicity at a local level, loss of consumer confidence, escalating patient/consumer complaints. Extended loss of public support/opinion for a Facility/Service.	Failure to meet one or more of the KPI's included in the service's performance agreement. Periodic loss of public support.	Minimal impact on local operations, local management review and occasional adverse local publicity.
Community Expectations					

RISK RATINGS			Consequences					
Probability	Frequency	Likelihood	Catastrophic	Major	Moderate	Minor	Minimal	
> 95% - 100%	Several times a week		Almost certain	A	D	J	P	S
> 70% - 95 %	Monthly or several times a year		Likely	B	E	K	Q	T
> 30% - 70%	Once every 1-2 years		Possible	C	H	M	R	W
> 5% - 30%	Once every 2 to 5 years		Unlikely	F	I	N	U	X
< 5%	Greater than once every 5 years		Rare	G	L	O	V	Y

RISK ESCALATOR	Consequences	Action
Extreme (A – E)	A, D, J, P, S	Escalate to CE or Head of Health service or Secretary, MoH. A detailed action plan must be implemented to reduce risk rating with at least monthly monitoring and reporting.
High (F – K)	B, E, K, Q, T	Escalate to Senior Management. A detailed action plan must be implemented to reduce risk rating.
Medium (L – T)	C, H, M, R, W	Specify Management Accountability and Responsibility. Monitor trends and put in place improvement plans.
Low (U – Y)	U, V, X, Y	Escalate to Supervisor. Monitor trends. Manage by routine procedures.