The Association of Paediatric Chartered Physiotherapists
Respiratory Risk Identification Matrix for Children and Young People with Neurological Impairment

INTRODUCTION

This risk identification matrix is intended to aid health professionals to identify people at risk of respiratory compromise and to guide actions to prevent or reduce this.

It may be used in a variety of settings, for example; during a routine therapy review, alongside Cerebral Palsy Integrated Pathway (CPIP) assessment, following a hospital admission.

The items have been selected based upon risks identified in the two key documents referenced below: Gibson et al. 2021 (Items 1,2,4,5,8,9,10,12,13), Legg et al. 2023 (Items 11,14,16,17) and on those used by existing community respiratory physiotherapy services (Items 3,6,7,15).

It is primarily designed for use with children and young people aged 0-25 but users may choose to adapt for use with older people. It has not been validated. The identification matrix may be adapted for local use, and in particular the 'actions' column may need amendment depending upon your setting and services.

We acknowledge the Glasgow Paediatric Respiratory Team, Zoe Johnstone and Lesley Harper (NHS Lothian) who kindly shared their matrix which we adapted with their permission.

Consultation History

DATE	PROGRESS
September 2023	First draft compiled using template from NHS Lothian Paediatric respiratory (RHC Glasgow) team alongside recommendations from Gibson et al (2021) and Legg et al (2023)
October 2023	Draft circulated for comments (Feedback via Microsoft Forms): - Members of 'Consensus to Action' Multidisciplinary Group - Paediatric Physiotherapists at the Association of Paediatric Chartered Physiotherapy (APCP) Conference
November 2023	Amendments from members of Paediatric Dysphagia Clinical Excellence Network (PDCEN) addition of oral health
January 2024	Amendments - removed 'immunocompromised' as evidence related to elderly population and non-specific
May 2024	Final consultation with consensus group. Some rewording and revisions made from paediatrician comments

References:

1) Gibson, N., Blackmore, A.M., Chang, A.B., Cooper, M.S., Jaffe, A., Kong, W., Langdon, K., Moshovis, L., Pavleski, K. and Wilson, A.C. (2020). Prevention and management of respiratory disease in young people with cerebral palsy: consensus statement. Developmental Medicine & Child Neurology, 63(2). doi:https://doi.org/10.1111/dmcn.14640

2) Legg, J., Allen, J.-L., Andrew, M., Annesley, C., Chatwin, M., Crawford, H., Elverson, J., Forton, J., Oulton, K., Renton, K., Tavare, A., Tedd, H. and Simpson, A.J. (2023). BTS Clinical Statement on the prevention and management of community-acquired pneumonia in people with learning disability. Thorax, [online] 78(Suppl 1), pp.s22–s52. doi:https://doi.org/10.1136/thorax-2022-219698.

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The 'Consensus to Action' Multidisciplinary group, including Paediatric Physiotherapists, Paediatricians from the British Academy of Childhood Disability (BACD) Toni Wolff, Morag Andrew and Jill Cadwgan, and Speech and Language Therapists from the Paediatric Dysphagia Clinical Excellence Network (PDCEN), Caroline Weighton, Rebecca Davidson and Linzi Crisp.

Item	Risk	Low	Medium	High	R/A/G	Actions if medium or high
1	**Gross Motor Function Classification Scale level 5 equivalent** (difficulty controlling head and body posture in most positions)**/ neurodegenerative diagnosis**	No	Yes	n/a		Ensure 24-hour postural care optimised
2	**Frequent respiratory symptoms** (e.g. daily cough or weekly wheeze, phlegm or gurgly chest)	No regular respiratory symptoms	Intermittent symptoms but with periods of more than one month with no symptoms	Frequent respiratory symptoms		Respiratory physiotherapy review to optimise routine airways clearance - if no local service may require tertiary referral Respiratory review with paediatrician - optimisation of modifiable risk factors, consideration of prophylactic antibiotics if frequent respiratory tract infections
3	**Respiratory Intensive Care Unit (ICU) admission in the last 5 years**	None	1	>1		(NB. Actions may not be necessary if isolated incident without a background of, or subsequent respiratory morbidity) Respiratory physiotherapy review to optimise routine airways clearance – if no local service may require tertiary referral Full respiratory review by appropriately skilled consultant – if no local service may require tertiary referral
4	**Hospital admissions with respiratory infection/year**	None	1	>1		Respiratory physiotherapy review to optimise routine airways clearance - if no local service may require tertiary referral Full respiratory review by appropriately skilled consultant - optimisation of modifiable risk factors, consideration of prophylactic antibiotics - If no local service may require tertiary referral
5	**Courses of oral antibiotics for respiratory infections/year**	<2/year	2-3/year	>4/year		Respiratory physiotherapy review to optimise routine airways clearance - if no local service may require tertiary referral Respiratory review with paediatrician - optimisation of modifiable risk factors, consideration of prophylactic antibiotics

Item	Risk	Low	Medium	High	R/A/G	Actions if medium or high
6	**Home oxygen**	None	n/a	Yes		Ensure has regular respiratory review with appropriately trained clinician, clear prescription and monitoring of trends Ensure target oxygen saturations (wake and sleeping) agreed and clearly documented
7	**Non-Invasive Ventilation (NIV) / Tracheostomy / mechanical cough assist / high flow oxygen**	None	n/a	Yes		Ensure on active tertiary respiratory consultant caseload - refer if not on active caseload (NB. tracheostomy for structural concerns only may not require respiratory care)
8	**Current seizures**	None	n/a	Yes		Ensure seizure management regularly reviewed and optimised If frequent use of rescue medications and active respiratory problems, consider need for proactive escalation of usual airway clearance techniques and positioning to prevent secondary complications from hypoventilation post rescue medications
9	**Upper airway obstruction/ Snoring every night**	None/treated	Clinical signs of airway obstruction (noisy breathing/snoring/ increased work of breathing)	Moderate to severe Abnormal overnight oximetry		Medium - Ensure has been assessed by ENT and overnight oximetry performed High - Ensure sleep study completed and reviewed – refer if not completed N.B. consider multidisciplinary team discussion on ceilings of care – if nocturnal NIV would not be an option, then sleep study may not be indicated
10	**Gastro-oesophageal reflux disease (GORD)**	None or well controlled	Mild symptoms on treatment	Regular symptoms/ vomiting		Medication review with paediatrician, referral to gastrointestinal specialist if unable to achieve adequate control

Item	Risk	Low	Medium	High	R/A/G	Actions if medium or high
11	**Scoliosis**	None or postural only	Mild to moderate	Severe		Ensure 24-hour postural management is optimised Ensure on active orthopaedic caseload for monitoring and appropriate intervention If bracing used, ensure respiratory comfort and efficiency is assessed with bracing
12	**Mealtime respiratory symptoms when well** (e.g. gurgly voice, coughing, wheezing, sneezing, choking with feeding)	No symptoms evident and no history of frequent chest infections	Infrequent symptoms present with oral intake or combination of oral intake and gastrostomy	Frequent symptoms present and has some oral intake and / or on an Eating and Drinking with Acknowledged Risks (EDAR) Plan		Speech and language Therapy dysphagia assessment Ensure mealtime positioning is optimised for safe feeding
13	**Dysphagia** (e.g. needs food or drink with modified texture or has feeding tube or coughs or chokes with saliva)	No concerns or swallow concerns are effectively managed	Requires modified texture, supported posture, specific feeding techniques and supplementary tube feeding to reduce risk of aspiration and dependence on other people to eat / drink safely	Nil By Mouth (NBM) but coughs on saliva or needs frequent oral care / suction for saliva management Or EDAR plan in place with oral intake		Speech and language therapy dysphagia assessment If difficulty with saliva, Paediatrician to review management of drooling, including oral medications, Botulinum toxin and salivary gland surgery Therapy team to review positioning to optimise head control for optimal airway management
14	**Nutritional status**	No concerns	Underweight but maintaining current growth trajectory	Losing weight		Flag to paediatrician to consider dietetic referral

Item	Risk	Low	Medium	High	R/A/G	Actions if medium or high
15	**Using/prescribed nebulisers**	None	Bronchodilators or normal saline	Mucolytics or nebulised antibiotics		Respiratory specialist (nurse/physio/paediatrician) to ensure optimal nebuliser timing and administration - if stable prescription may not require review
16	**Secretion management**	No concerns in ability to manage own secretions	Difficulties managing oral secretions; may be using oral suction, be on medication, Botox or surgical intervention for saliva management	NBM but coughs on saliva or needs frequent oral care / oropharyngeal or nasopharangeal suction for saliva management		Speech and language therapy dysphagia assessment If difficulty with saliva, Paediatrician to review management of drooling, including oral medications, Botulinum toxin and salivary gland surgery Therapy team to review positioning to optimise head control for optimal airway management, including consideration of night time positioning
17	**Oral Health / mouth care**	No concerns	Dry mouth, some tooth decay, sticky secretions and difficulty brushing teeth. No oral intake	Ulceration, infection, bleeding or red sites within oral cavity, decayed teeth, limited / no saliva, no daily mouth care routine in place.		.