

Are cough augmentation techniques offered to people with Motor Neurone Disease who cannot cough effectively?

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# Introduction



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# Are cough augmentation techniques offered to people with motor neurone disease (pwMND) who cannot cough effectively?

## Background

pwMND experience difficulties with the respiratory system including swallowing, breathing and impaired cough (Hough, 2014). An audit tool was developed to evaluate if community physiotherapists are implementing current evidence based NICE guidelines of MND NG42 (2016) recommendation 1.13 for cough effectiveness.

## Aims

1. To identify the five NICE recommendations for cough augmentation techniques which should be considered and offered to pwMND.
2. To establish which of the individual techniques were offered?
3. If cough augmentation techniques were not offered to classify reason for this.
4. If techniques are not being offered, to identify common themes that may be preventing implementation of the NICE guideline.
5. To formulate a plan to address any themes.

## Evaluation

Audit completed for population of 20 pwMND in Swindon, Wiltshire. Results demonstrate up to 58% of pwMND are not being offered cough augmentation techniques as recommended in NICE guidance. Few physiotherapists feel confident and competent to carry out cough augmentation techniques, most commonly stating lack of confidence, skills, knowledge and resources as the main reasons. Many pwMND may experience a 'postcode lottery' when accessing domiciliary services. This appears to be the case for pwMND living in the Swindon area, as there is currently no community specialist respiratory service or pathway to receive comprehensive cough augmentation techniques or equipment to manage their respiratory symptoms.

Audit tool published on the NICE shared learning data base and available via: <https://www.nice.org.uk/sharedlearning/audit-proposal-to-address-cough-augmentation-for-people-with-motor-neurone-disease-mnd-a-shared-resource-tool>

## Conclusion

Overall the audit highlights the inconsistency in service provision. Cough augmentation techniques have been demonstrated to improve quality of life for pwMND. Therefore it is unacceptable that pwMND are having difficulty accessing the community respiratory services, support and equipment they require.

Although the audit focused on physiotherapists it is beneficial for all professionals who work with pwMND to be aware of signs of respiratory weakness so they can signpost appropriately.

## Recommendations

1. Audit tool available to evaluate local services.
2. Funding for a designated community specialist respiratory physiotherapist in Swindon.
3. All health care professionals should be aware of the NICE guidance and how to clinically implement recommendations.
4. All health care professionals should be aware of the Motor Neurone Disease Association respiratory checklist to identify signs and symptoms of respiratory weakness in pwMND.
5. Need to ensure pwMND are referred for respiratory assessment and support.

### MND Respiratory checklist

#### Symptoms

- breathlessness, especially when lying flat (orthopnoea)
- repeated chest infections
- disturbed/irregular sleep
- night sweats
- daytime sleepiness/fatigue
- poor concentration/irritability
- confusion/hallucinations
- morning headaches

#### Signs

- increased respiratory rate
- shallow breathing
- weak cough/hoarse voice
- breath sounds reduced when breathing in (abdominal paradox)
- use of accessory muscles for breathing
- reduced chest expansion on maximum inspiration

For health and social care professionals

mnda

The image shows a screenshot of a form titled 'MND cough augmentation audit tool'. The form is divided into several sections: 'Patient details', 'Symptoms', 'Signs', and 'Cough augmentation techniques offered to person with MND'. The 'Cough augmentation techniques offered' section includes a table with columns for 'yes', 'no', and 'not recommended'. The 'Signs' section includes a table with columns for 'yes', 'no', and 'not recommended'. The 'Symptoms' section includes a list of symptoms with checkboxes. The 'Patient details' section includes fields for name, address, and phone number. The form also includes a section for 'Recommendations for cough augmentation techniques offered' and a section for 'Notes'.

### References

- Hough, A. (2014) *Physiotherapy in Respiratory and Cardiac Care: An evidence-based approach to respiratory management*. 3rd ed. United Kingdom: Gange Learning.
- Motor Neurone Disease Association P6 (2016) *Evaluation and management of respiratory symptoms in motor neurone disease (MND): A fact sheet for health care professionals*. Northampton: MND Association.
- National Institute for Health and Clinical Excellence (2016) *Motor Neurone Disease: assessment and management*. NICE guideline (NG42)

# Cough in MND

- A weak cough is the main respiratory complication
- Respiratory muscle weakness occurs eventually in everyone with MND
- Reduced vital capacity due to inspiratory, expiratory &/or bulbar muscle weakness
- Leads to underventilation & decreased aeration at the base of the lungs
- Ineffective cough & decreased ventilation may lead to an increased risk of chest infections, pneumonia, peripheral atelectasis & respiratory failure
- Respiratory failure is the main cause of A&E hospital admissions & death
- Sudden coughing & choking will lead to the inability to breathe
- Choking **DOES NOT** result in a hasty loss of breathing or sudden death



*‘A cough is only as effective as the  
deep breath preceding it’*

*‘When you can’t breathe, nothing  
else matters’*

(Hough, 2014)

# Technique

# Explanation of technique

# Picture of technique

First-line treatment:  
Reference NG42: 1.13.1

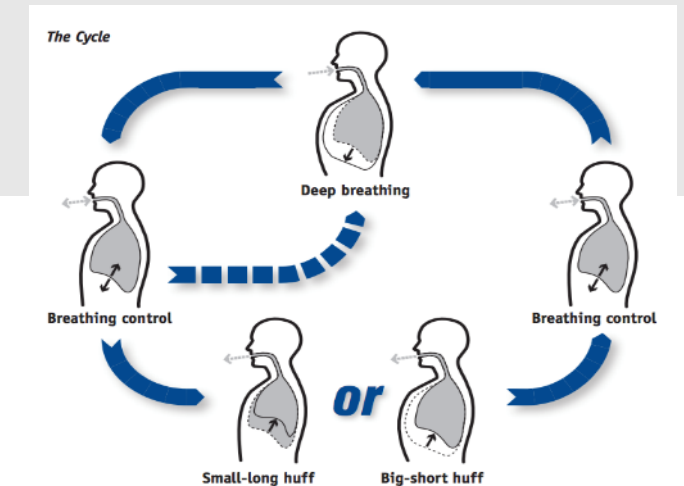
Manual assisted cough

Physical assistance given through abdominal thrusts to increase cough effectiveness.  
**Contraindications:** paralytic ileus, internal abdominal damage, a bleeding gastric ulcer, unstable angina or arrhythmias, and spinal and rib fractures.



ACBT (active cycle of breathing technique) including huff

Consists of a cycle of huffs at various lung volumes interspersed with relaxed abdominal breathing and deep breathing  
**Caution:** hyperventilation syndrome.



First-line treatment:  
Reference NG42: 1.13.2

Unassisted breath stacking

A succession of deep breaths on top of each other, without exhaling to increase lung volume.  
**Caution:** hyperventilation syndrome.

# Technique

# Explanation of technique

# Picture of technique

If first-line treatment ineffective or for patients with bulbar dysfunction:

Assisted breath stacking  
Reference NG42: 1.13.3

A succession of deep breaths on top of each other, without exhaling using a lung recruitment device such as modified ambu-bag.

**Contraindications:** extra-alveolar air, e.g. undrained Pneumothorax, subcutaneous or bulla, bronchospasm and acute asthma.



If assisted breath stacking is ineffective, and/or during a respiratory tract infection:

Mechanical cough assist device  
Reference NG42: 1.13.4

A machine which applies gradual positive pressure to the upper airways, followed by rapid negative pressure to simulate a cough.

**Contraindications:** inadequate bulbar function, undrained Pneumothorax or subcutaneous emphysema, bullous emphysema, nausea, chest pain of unknown origin, severe acute asthma, recent lung surgery, raised intracranial pressure, inability to communicate, and haemodynamic instability.



# Conclusion & discussion

- Swindon postcode lottery
- pwMND have difficulty accessing support they require
- Inconsistent commissioning of community respiratory services & equipment
- No community pathways e.g. suction, NIV, Cough Assist
- Highlights need for optimal Swindon respiratory care pathway
- Is this a Physiotherapist / Palliative Care Specialist / Respiratory Specialist role?



# Recommendations

- Audit tool available to evaluate local services
- Designated community Neurorespiratory Physiotherapist in Swindon
- All Health Care Professionals should be aware of the NICE guidance & how to clinically implement recommendations
- All Health Care Professionals should be aware of the MNDA respiratory checklist to identify signs & symptoms of respiratory weakness in pwMND
- Need to ensure pwMND are referred for early respiratory assessment & support

# MND Respiratory checklist



## Symptoms

- breathlessness, especially when lying flat (orthopnoea)
- repeated chest infections
- disturbed/non-refreshing sleep
- nightmares
- daytime sleepiness/fatigue
- poor concentration/memory
- confusion/hallucinations
- morning headaches

## Signs

- increased respiratory rate
- shallow breathing
- weak cough/sniff/voice
- stomach moves inwards when breathing in (abdominal paradox)
- use of accessory muscles for breathing
- reduced chest expansion on maximum inspiration



Mild respiratory symptoms are red flags for early assessment & treatment

# References

- <https://www.nice.org.uk/sharedlearning/audit-proposal-to-address-cough-augmentation-for-people-with-motor-neurone-disease-mnd-a-shared-resource-tool>
- Hough, A. (2014) *Physiotherapy in Respiratory and Cardiac Care: An evidence-based approach to respiratory management*. 3<sup>rd</sup> ed. United Kingdom: Cengage Learning.
- MND Association. Available from URL: <http://www.mndassociation.org/>
- National Institute for Health and Care Excellence (NICE). Motor neurone disease: assessment and management. London: NICE; 2016. (publication no. NG42). Available from URL: <https://www.nice.org.uk/guidance/ng42/chapter/recommendations>
- NHS Choice: Motor Neurone Disease. Available from URL: <http://www.nhs.uk/Conditions/Motor-neurone-disease/Pages/Introduction.aspx>
- Talbot, K., Turner, M.R., Marsden, R. and Botell, R. (2010) *Motor Neurone Disease: A Practical Manual*. New York: Oxford university press.
- Talbot, k. and Marsden, R. (2008) *Motor Neurone Disease the facts*. New York: Oxford University Press.

# Thank you for listening



## Any questions?