



P3

Managing saliva problems in Motor Neurone Disease

Motor Neurone Disease (MND) results from the progressive loss of motor neurones in the brain and spinal cord. These are the nerve cells that control movement. It leads to muscle weakness and can cause difficulties with movement, breathing, swallowing and speaking.

Many people with MND experience saliva control problems and dysphagia (swallowing difficulties).¹ These can make eating and drinking difficult and may cause anxiety about choking on saliva, food or liquids.² People may have thin, runny saliva, thick tenacious saliva or phlegm, or a dry mouth. Some people may experience more than one of these difficulties, either at the same time or at different times.

Evidence for saliva management in MND is limited and research is ongoing. This information sheet includes saliva management pathways developed by experts from our Community of Practice, bringing together current best practice, clinical experience and expert guidance.

1. Problems with saliva
2. Managing saliva problems
3. Treating thick saliva, mucus and phlegm
4. Treating thin, watery saliva
5. Removing secretions
6. Dry mouth (xerostomia)
7. Examples of assessment tools



Information to share with people with or affected by MND:

Information sheet 7A – Swallowing difficulties
Information sheet 7B – Tube feeding

Information for professionals

Information sheet P5 – Dysphagia
Information sheet P6 – Managing respiratory symptoms in MND
Information sheet P9 – Oral suction

See page 17 for details of how to order publications.

1. Problems with saliva

Thin, watery saliva

People with MND may experience pooling of thin, watery saliva, which can cause drooling. Although people with MND usually produce a normal amount of saliva, around 1 to 1.5 litres each day, difficulty managing saliva and drooling (sialorrhoea) are commonly reported symptoms.¹

In most cases, sialorrhoea is the result of increasing weakness of muscles in the mouth, tongue and throat. This can make it difficult to manage saliva, both in the mouth and during swallowing.¹ Drooling is worse if the person has a poor lip seal, neck weakness or swallowing difficulties (dysphagia).

Thick, tenacious saliva, mucus and phlegm

People with MND may experience thickened mucus in the mouth and throat, which is difficult to swallow. Additionally, phlegm in the airways may be difficult to cough up due to weakened respiratory muscles and an ineffective cough.²

Thick mucus can build up in the mouth and at the back of the throat due to:

- dehydration
- mouth breathing or open mouth posture, which can lead to evaporation of saliva
- non-invasive ventilation (NIV) drying out their airways
- medication side effects.

This may produce stringy mucus and cause airways to become partially blocked.¹ This can be very distressing for the person with MND and those who care for them.

2. Managing saliva problems

If a person with MND has problems with saliva, the volume and viscosity of the saliva should be assessed, along with the person's respiratory function, swallowing, diet, posture and oral care.³

Saliva problems can be difficult to control. All management options should be explored, based on clinical assessment and available evidence, as it is often a case of trial and error to find the right solution. If the person has both thin, watery saliva and thick, tenacious saliva, it is recommended to treat the thick, tenacious saliva first.

Assessment tools can be used to measure the severity and impact of saliva problems. See section 7: Examples of assessment tools.

Professionals who can help

MND specialist practitioner or consultant: They will usually manage saliva problems with options which may include:

- self-help techniques including non-pharmacological options
- prescription medication
- organising equipment and treatment.

This may vary where the specialist centre is not within easy reach. A speech and language therapist or physiotherapist may be able to provide suggestions or strategies to help with saliva control.

Palliative care specialist: They can:

- support symptom management, particularly in more complex or advanced stages of the disease
- advise on medication options and adjustments
- provide holistic support, including psychological and end of life care planning.

Speech and language therapist: They can:

- help to identify any problems that may be present, including poor lip seal or weakness in oral and facial muscles or the tongue
- advise on different swallowing techniques that may make swallowing easier
- recommend exercises or techniques, such as expiratory muscle strength training (EMST), that may help improve swallowing and saliva management.

Physiotherapist: They can advise on:

- cough management techniques, which may help to clear thick, tenacious saliva (see page 10).

Occupational therapist: They can advise on:

- postural problems and ways to alter the person’s position. In some cases, improving posture may help to control the flow of saliva. Neck weakness and a drooping posture can cause the head to tilt forward, and saliva may flow through the lips before it can be swallowed
- head supports or neck collars to improve the posture, though in some cases the person may only be able to wear the collar for short periods due to discomfort
- a reclining armchair or wheelchair to support the head and keep an upright posture.

Medication

Medication options are outlined on pages 5 and 7. Before medication is prescribed, the nature of the saliva should be properly assessed. Medication that can reduce watery saliva may lead to thick, tenacious saliva.

If thick, tenacious secretions are the problem, medication to thin these might be considered.¹

Key actions

Medication should always be prescribed by a doctor or a suitably qualified prescribing professional, as appropriate.

Other medicines, including those available without a prescription, should never be taken without consulting a qualified prescribing professional, as there may be contraindications.

Some people with MND will have a gastrostomy (feeding tube). Some medication can be given through the tube, but before putting any medication through, check with a pharmacist that it will not harden or clog the tube, or affect how well the drug works.

3. Treating thick saliva, mucus and phlegm

Strategies and equipment that may help⁸

- Review all current medicines, particularly treatments for sialorrhoea.³
- Provide advice on swallowing, diet, posture, positioning, suctioning and hydration.³
- Encourage rehydration if safe to swallow, for example with jelly, frozen mousses or ice lollies. Seek advice from a speech and language therapist. Cold temperatures may stimulate swallowing. For people with a gastrostomy, additional water boluses may be advised by a dietitian or nutrition nurse.
- Maintain good oral hygiene. A district nurse may be able to assist. Teeth, tongue and gum margins should be cleaned regularly, especially before or after oral medication.

- Avoid mouth breathing where possible, although this may not be feasible for people with bulbar symptoms.
- Pineapple or papaya juice, taken before or with meals, may help break down mucus due to proteolytic enzymes (bromelain and papain). It can also be applied gently with a sponge as part of mouth care. These enzymes are also available as tablets.
- Reducing dairy intake may help, but check with a dietitian as some people with dysphagia rely on dairy products to maintain weight.
- Sugar-free lozenges may stimulate saliva flow and reduce viscosity if safe to suck. Avoid menthol lozenges as they may have a drying effect.
- Humidification or inhaling water vapour may reduce mucus viscosity and help loosen secretions.³

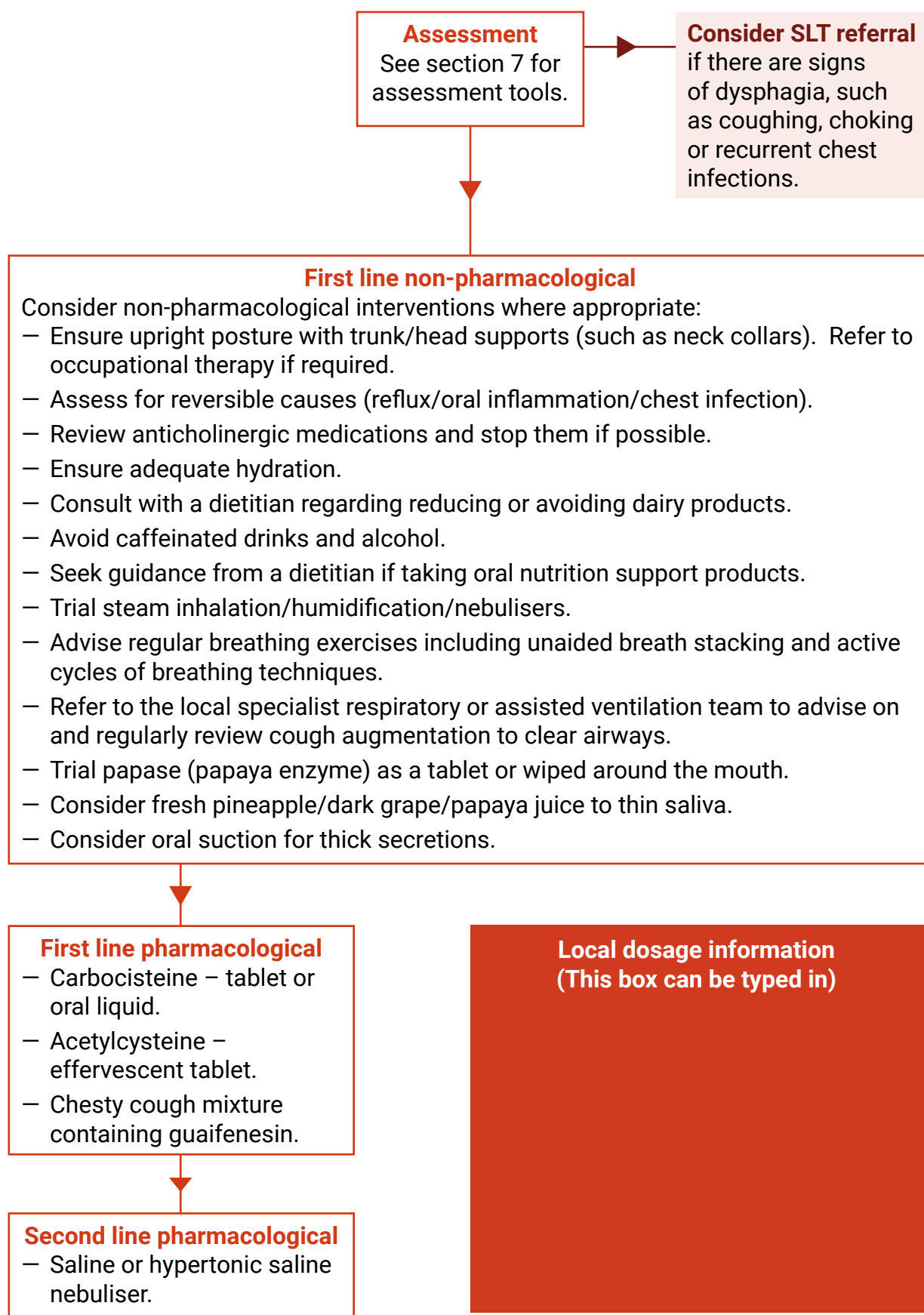
Medication for thick, tenacious mucus or saliva

A prescribing professional may consider the following drugs.

For drug dosages please refer to the British National Formulary (BNF). Some medications can be dissolved or administered via a feeding tube, but a pharmacist should be consulted first to ensure this is safe and appropriate.

Medication	Preparation
Mucolytics ⁴ Carbocisteine, acetylcysteine	Carbocisteine: capsules or liquid (oral or via feeding tube). Acetylcysteine: effervescent or dispersible tablet (oral).
Cough mixture containing guaifenesin ¹¹	Available in most over-the-counter chesty cough preparations. Can be taken orally or administered via feeding tube.
Saline (including hypertonic) ⁵	Given using a nebuliser, this can help to loosen chest secretions. ⁹
Beta-blockers Propranolol/ metoprolol/ atenolol ¹⁰	This is given in tablet form, which can be taken orally. There is limited evidence that this medication may reduce secretions. The person with MND should be monitored for hypotension (low blood pressure) and bradycardia (slow heartbeat).

Pathway for thick or tenacious saliva



4. Treating thin, watery saliva

Strategies and equipment that may help

- Advice should be given on swallowing, diet, posture, positioning and oral care.³
- Protect surrounding skin with a barrier cream to prevent soreness.
- Clothing may be adapted to include a discreet waterproof insert to protect clothes and prevent skin irritation.
- Encourage a well-supported head position. A slightly reclined chair, and a collar or chin support may be used. A physiotherapist, occupational therapist or orthotist should be able to suggest a suitable option.
- Where available, portable oral suction units are helpful if saliva builds up in the mouth (see page 10).³
- At night, the person should lie on their side, supported by pillows, so saliva does not collect in their throat. This may not be an option if the person has postural or respiratory needs.

Medication for thin, watery saliva

Consider what the person is able to swallow safely and whether medication can be administered via feeding tube where appropriate. A prescribing professional may consider the following drugs, recommended in the NICE Guideline on MND.

- Consider a trial of antimuscarinic medicine as the first-line treatment.³
- Consider glycopyrrolate as the first-line treatment in people at increased risk of central nervous system side effects, as it is less likely to cause these effects.³

Antimuscarinics can cause confusion in older people, urine retention and other side effects, such as tachycardia, which should be monitored.

For drug dosages, please refer to the British National Formulary (BNF). Some medications can be dissolved or administered via a feeding tube, but a pharmacist should be consulted first to ensure this is safe and appropriate.

Antimuscarinics	Preparation
Glycopyrronium bromide (Glycopyrrolate)	Oral tablet. A suspension is available for oral or feeding tube administration. The parenteral form can be given subcutaneously or via continuous infusion using a syringe pump.
Hyoscine butylbromide (Buscopan)	Tablets can be taken orally or crushed and given via a feeding tube, with care, and may be dissolved in water. A parenteral form can be given subcutaneously as needed or via continuous infusion using a syringe pump.

Antimuscarinics	Preparation
Hyoscine hydrobromide	Transdermal patch (changed every 72 hours). Tablets for oral or feeding tube use. Parenteral form for subcutaneous injection or continuous infusion via syringe pump.
Atropine	Although unlicensed for this symptom, eye drops can be given sublingually. Effects last only a few hours, so may be useful for specific, timed situations (for example appointments). The oral mucosa should be dry before administration. To avoid overdose, use a measured dose with a disposable dropper or administer via a spoon.
Tricyclic antidepressants Amitriptyline/ Imipramine	Low dose, given at night. Available as a suspension to be given orally or via a feeding tube. Usually given at night as it can cause sedation.
Clonidine	May be considered in some cases. Low doses administered 2–3 times daily. Tablets can be crushed and administered via feeding tube. May be considered if other options are not tolerated or are ineffective.

Potential next steps

Botulinum toxin A (Botox)

If first-line treatment for sialorrhoea is not effective, not tolerated or is contraindicated, consider referral to a specialist service for botulinum toxin A.³ Studies have shown that injecting botulinum toxin A into the salivary glands may decrease saliva production for weeks or months¹ by interrupting the messages from the nerves that tell the glands to secrete.

Be aware that treatment with botulinum toxin A may increase dysphagia (temporarily or permanently), so some suggest using these injections only if the person already has a feeding tube. Botulinum toxin A should only be administered by qualified practitioners.³

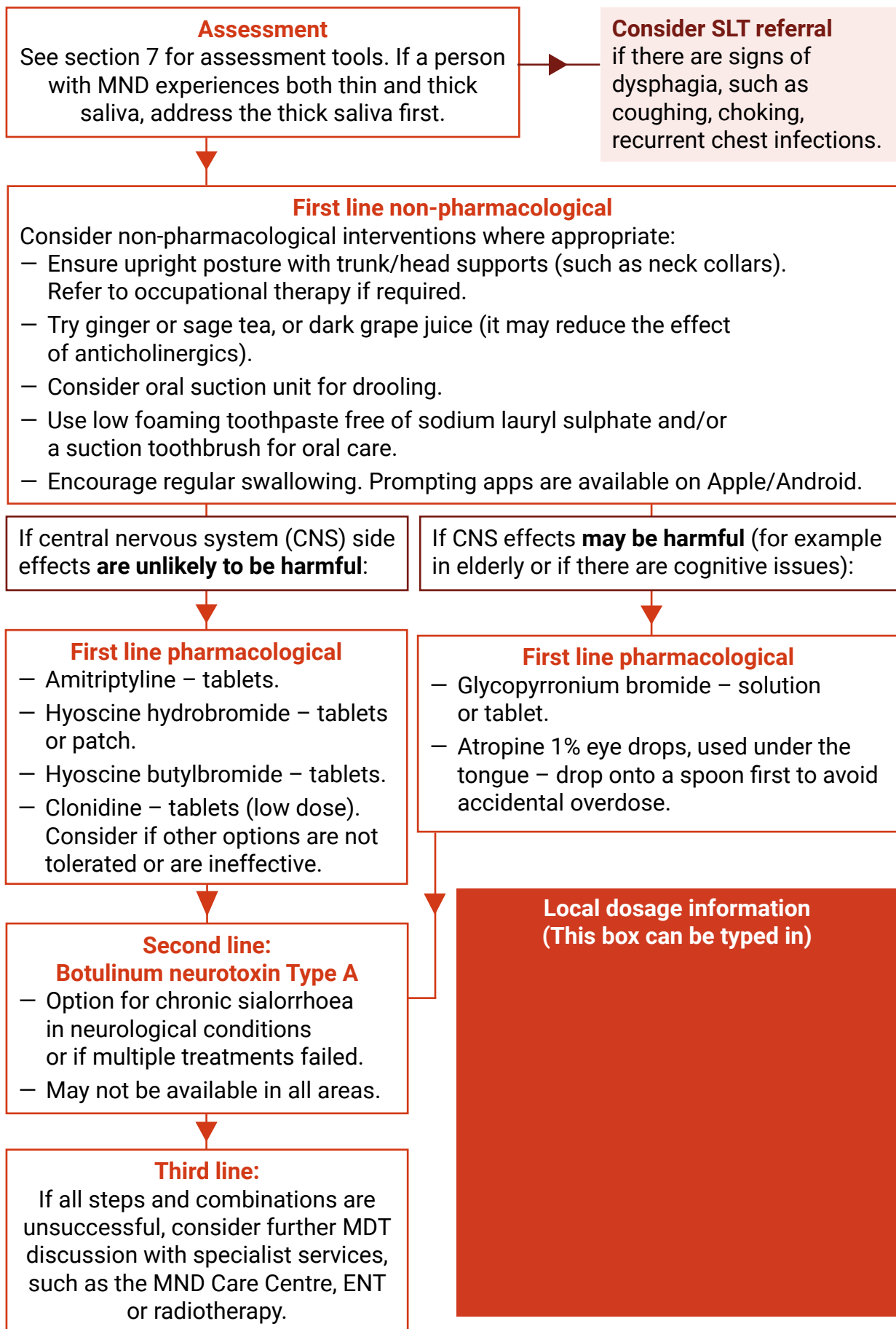
Radiotherapy¹³

Another possible treatment for excessive, watery saliva is single-dose radiotherapy, where x-rays are used to destroy part of the salivary glands. The effect is permanent, but may be partial depending on the amount of x-rays used. The effect of radiotherapy is seen gradually over several weeks after treatment. The radiotherapist may treat one side only first.

Surgical options¹²

Surgical treatment of the salivary glands, ducts or nerves is a possible option, but they are generally only used as a last resort when other options have failed. These procedures are irreversible.

Pathway for thin saliva or sialorrhoea



5. Removing secretions

People with MND may be unable to clear secretions from the mouth and throat because they have an ineffective cough. This can lead to respiratory infections.

The following techniques, taught by a specialist respiratory physiotherapist, may help to remove phlegm or mucus from the throat or respiratory tract.

The NICE Guideline on MND recommends:

- unassisted breath stacking and/or manual assisted cough as first-line treatment. Breath stacking involves adding additional air to that already in the lungs to add force to a cough³
- assisted breath stacking (for example using a lung volume recruitment bag with a one-way valve) for those with bulbar dysfunction or whose cough is ineffective with unassisted breath stacking³
- if available, use of a mechanical insufflation-exsufflation machine (MIE, sometimes known by the brand name CoughAssist), if assisted breath stacking is not effective and/or during a respiratory tract infection. This machine clears secretions by gradually applying a positive pressure to the airway, then quickly shifting to negative pressure. This rapid change in pressure simulates a natural cough.⁵

Provision or loan of MIE machines varies between regions, and servicing or maintenance can sometimes be problematic. If a person is likely to benefit, professionals are encouraged to make a case and push for provision as early as possible. If difficulties arise, contact MND Connect: mndconnect@mndassociation.org or 0808 802 6262.

Suction units

A suction unit can help remove saliva, mucus or food particles from the mouth.² Availability varies between regions and services. The person's MND care centre or specialist team can advise on local options for obtaining a suction unit. If you experience difficulties obtaining a suction unit, contact MND Connect: mndconnect@mndassociation.org or 0808 802 6262.

The person with MND, carers and family should receive appropriate training and guidance on the safe use and maintenance of oral suction equipment. This may be provided by a respiratory physiotherapist, nurse, member of the MND specialist team or equipment supplier, depending on local arrangements.



Information for professionals

Information sheet P9 – Oral suction

See page 17 for details of how to order publications.

6. Dry mouth (xerostomia)

Some people with MND experience a dry mouth, which may be caused by the medication they are taking, thrush, a coated tongue, insufficient fluids or breathing through the mouth.⁶

Treatments and strategies for dry mouth

Dosage of medication should be checked by a prescribing professional and changed if needed.⁷

Preparations such as artificial saliva sprays or gels, for example Aquoral, Biotene Oralbalance, Orthana or Xerotin, can help to relieve a dry mouth.⁷ They also help to reduce odour-causing bacteria.

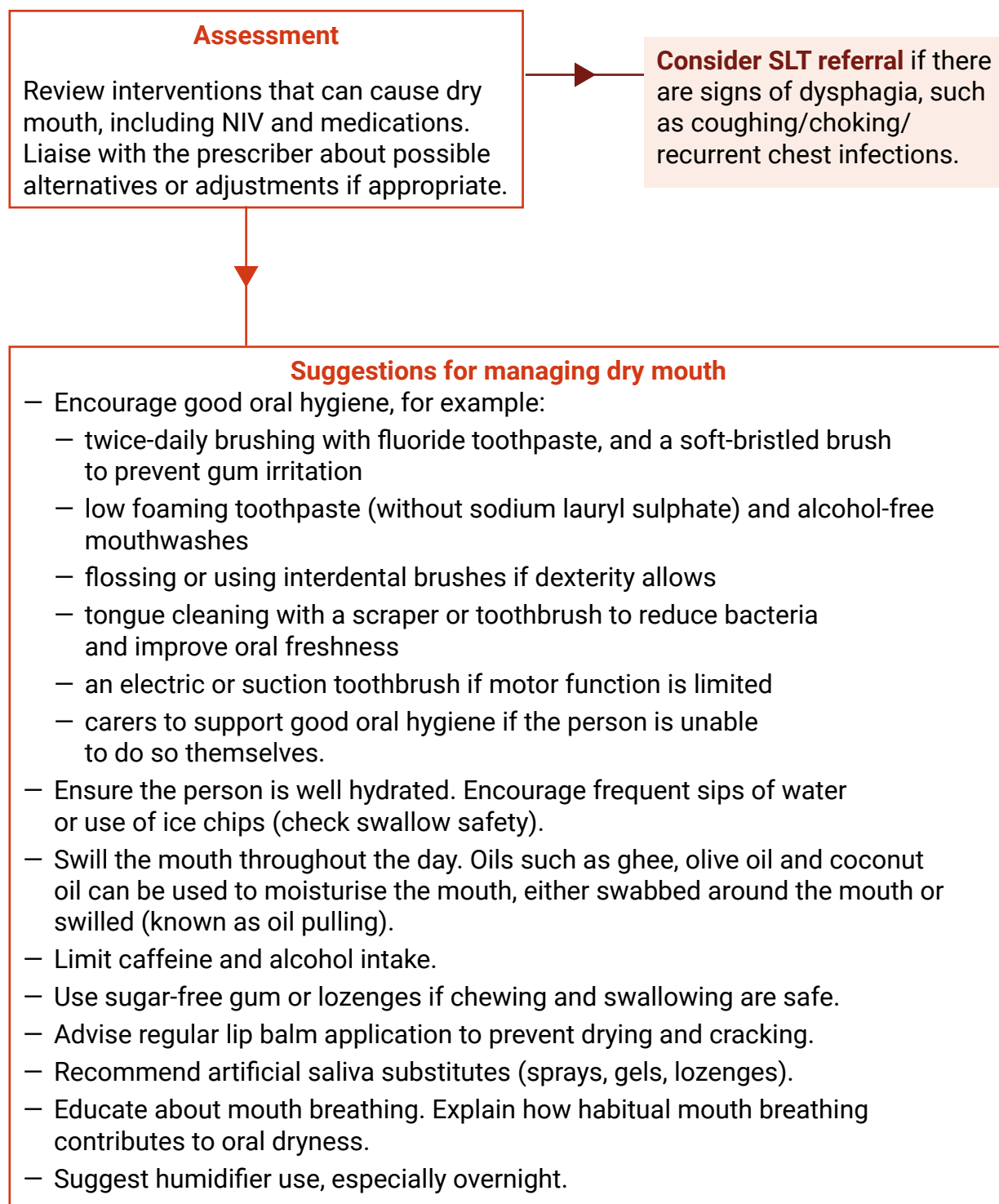
These treatments may be applied or used around the mouth before meals or at bedtime. Clean the mouth before gels are given. Some of these items are available without a prescription. These products may contain sorbitol and overuse can have a laxative effect.

Oral hygiene should also be checked.⁷ A district nurse may be able to help with this. Teeth, tongue and gum margins should be cleaned regularly, especially before oral medication is given.

The amount of fluid taken in by the person should be increased, whether orally or through a feeding tube.⁷ A dietitian, nurse or doctor can advise on ways to increase fluid intake.

Some professionals recommend using olive, grapeseed or groundnut oil (where appropriate) or ghee as a lubricant when swabbed around the mouth, or swilled in a way similar to mouthwash known as oil pulling.

Pathway for dry mouth



7. Examples of assessment tools

The saliva assessment tools listed below are presented in alphabetical order and are intended as a starting point for further exploration. Each tool offers a different approach to assessing saliva-related symptoms, and their inclusion here aims to support informed decision-making in clinical practice.

For accurate use and interpretation, please refer to the original research publications associated with each tool to gain a comprehensive understanding of their application and limitations.

If you are using a digital version of this document, the links are clickable.

Clinical saliva scale for MND (CSS-MND)

Research has highlighted the clinical saliva scale for MND (CSS-MND) to be an easy-to-use tool to assess and reflect the impact of saliva problems. Scoring is based on a questionnaire completed by the person with MND or their carer.

McGeachan AJ, et al. 'Developing an outcome measure for excessive saliva management in MND and an evaluation of saliva burden in Sheffield.' *Amyotroph Lateral Scler Frontotemporal Degener*, 2015;16:108–13.

Drooling severity and frequency score (DSFS)

Score	Severity	Score	Frequency
1	Dry (never drools)	1	No drooling
2	Mild drooling, only lips wet	2	Occasionally drools
3	Moderate – drool reaches lips and chin	3	Frequently drools
4	Severe – drool drops off chin onto clothing		
5	Profuse – drooling off the body onto objects		

Find the tool in the “Supporting information” menu.

Evatt ML, et al. 'Dysautonomia rating scales in Parkinson's disease: sialorrhea, dysphagia, and constipation – critique and recommendations by movement disorders task force on rating scales for Parkinson's disease.' *Mov Disord*. 2009 Apr 15;24(5):635-46.

Oral secretion score

This tool was developed to measure oral secretions in correlation with the ability to swallow saliva and clear the upper airway in people with MND.

Cazzolli PA, et al. 'The oral secretion scale and prognostic factors for survival in subjects with amyotrophic lateral sclerosis.' *Respiratory Care*. 2020 Aug;65(8):1063–76.

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7. British National Formulary. 'Treatment of dry mouth.' London: BMJ Group and Pharmaceutical Press. Available from: [bnf.nice.org.uk/treatment-summaries/dry-mouth](https://www.bnf.nice.org.uk/treatment-summaries/dry-mouth). Accessed February 2026.
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9. Van Damme P et al. 'European Academy of Neurology (EAN) guideline on the management of amyotrophic lateral sclerosis.' *European journal of neurology*. 2024 Jun;31(6):e16264.
10. Woodman MJ, et al. 'Beta-blockers for tenacious saliva: a case report.' *BMJ Support Palliat Care*. 2022.
11. Seagrave J, et al. 'Effects of guaifenesin, N-acetylcysteine, and ambroxol on MUC5AC and mucociliary transport in primary differentiated human tracheal-bronchial cells.' *Respir Res*. 2012;13(1):1–10.
12. Garuti G, et al. 'Sialorrhea in patients with ALS: current treatment options.' *Degener Neurol Neuromuscul Dis*. 2019;9:19–26.
13. Slade A, Stanic S. 'Managing excessive saliva with salivary gland irradiation in patients with amyotrophic lateral sclerosis.' *Journal of the neurological sciences*. 2015 May 15;352(1-2):34-6.

Further Reading

- Garuti G, et al. 'Sialorrhea in patients with ALS: current treatment options.' *Degener Neurol Neuromuscul Dis*. 2019;9:19–26.
- Hockstein NG, et al. 'Sialorrhea: a management challenge.' *Am Fam Physician*. 2023;107.
- Jenkins TM, et al. 'The evidence for symptomatic treatments in amyotrophic lateral sclerosis.' *Curr Opin Neurol*. 2014;27(5):524–31.

Kasarskis EJ, et al. 'Unilateral parotid electron beam radiotherapy as palliative treatment for sialorrhoea in amyotrophic lateral sclerosis.' *J Neurol Sci.* 2011;308:187–93.

Miller RG, et al. 'Practice parameter update: the care of the patient with amyotrophic lateral sclerosis.' *Neurology.* 2020.

Pearson I, et al. 'The prevalence and management of saliva problems in motor neuron disease: a 4-year analysis of the Scottish motor neuron disease register.' *Neurodegener Dis.* 2020;20(4):147–52.

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Squires N, et al. 'The use of botulinum toxin injections to manage drooling in ALS/MND: a systematic review.' *Dysphagia.* 2014;29(4):500–508.

Weikamp J, et al. 'A prospective randomised controlled study comparing radiotherapy with botulinum toxin A as treatment for drooling in ALS.' *Amyotroph Lateral Scler.* 2008;9.

How we can support you and your team

Our MND Connect helpline offers practical and emotional support, information and signposting to people with MND, carers, family and professionals. They can also provide further information about our services mentioned below.

Email: mndconnect@mndassociation.org

Tel: **0808 802 6262**

MND Association website

Our website offers supporting information on MND, our work, services, and how to get involved.

mndassociation.org/professionals

Stay updated on events, publications and opportunities for professionals.

mndassociation.org/educationupdate

X: [mndeducation](https://twitter.com/mndeducation)

Bluesky: [mndeducation.bsky.social](https://bsky.app/profile/mndeducation.bsky.social)

Information resources

We produce high quality information for people with MND, carers, families and professionals, available in multiple formats and languages.

mndassociation.org/pro-info-finder

mndassociation.org/careinfinder

Education

Our education programme aims to improve standards of care and quality of life. Opportunities include webinars and face to face equipment training.

mndassociation.org/education

MND Professionals' Community of Practice

A peer led group supporting cross disciplinary learning in MND care. Membership can contribute to CPD and offers access to networking and learning events.

mndassociation.org/cop

Local support

We offer online and local peer support, plus trained volunteers who provide practical help by phone, email or visits.

mndassociation.org/local-support

We fund and develop specialist care centres and networks across England, Wales and Northern Ireland, offering multidisciplinary care.

mndassociation.org/care-centres

Financial support

We offer a range of grants to support people living with MND, their families and unpaid carers. These are not in place of any statutory funding that should be available.

mndassociation.org/getting-support

MND register

The Register aims to collect information about everyone with MND in England, Wales and Northern Ireland to support care planning and research.

mndregister.ac.uk

Research into MND

We fund and promote research that leads to new understanding and treatments, and brings us closer to a cure for MND. We also produce information sheets on MND research for people with or affected by MND.

mndassociation.org/research

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We value your feedback

Your feedback helps improve our information for the benefit of people living with MND and those who care for them. Visit smartsurvey.co.uk/s/mndprofessionals or email your comments to education@mndassociation.org.

If you would like to help us by reviewing future versions of our information resources, please email us at education@mndassociation.org.

How to order our publications

Our publications are free for anyone with or affected by MND or Kennedy's disease, including professionals. Health and social care professionals can also order items on behalf of someone with or affected by MND or Kennedy's disease.

Download from mndassociation.org/publications or contact MND Connect to order hard copies. Call 0808 802 6262 or email mndconnect@mndassociation.org.

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Motor Neurone Disease Association
Francis Crick House
6 Summerhouse Road
Moulton Park
Northampton NN3 6BJ

Tel: 01604 250505

Email: enquiries@mndassociation.org

Website: mndassociation.org

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**Every day we support people affected
by Motor Neurone Disease.
Because with MND, every day matters.**