MND Association | For professionals

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.[1]

Many people with MND experience saliva control problems and dysphagia (swallowing difficulties).[2] These issues can make eating and drinking challenging, and may cause anxiety about choking on saliva, food or liquids.[3] People may have thin, runny saliva that drools, thick tenacious saliva or phlegm, or a dry mouth. Thick saliva and phlegm can be especially hard to clear if the cough is weak.[2] Some people experience all these difficulties at different times.

This information sheet outlines suggestions, medication options and practical tips for managing saliva. Evidence for saliva management in MND is limited and research is ongoing.

1. **Problems with saliva**
2. **Managing saliva problems**
3. **Treating thin, watery saliva**
4. **Treating thick saliva, mucus and phlegm**
5. **Removing secretions**
6. **Dry mouth**

RCSLT This information sheet is endorsed by the Royal College of Speech and Language Therapists

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 – Evaluation and management of respiratory symptoms in MND
Information sheet P9 – Oral suction

See page 13 for details of how to order publications.

1. Problems with saliva

Thin, watery saliva

People with MND may find they experience pooling of large amounts of thin watery saliva, which can cause drooling. Although a normal amount of saliva is produced by those with MND, around two to three pints every day, excessive saliva (sialorrhoea) is a commonly reported symptom.[2]

In most cases, saliva problems are 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.[2] 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.[3]

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.

This may produce stringy mucus and cause airways to become partially blocked.[2] 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.[5]

Saliva problems can be difficult to control. All management options should be explored, as it is often a case of trial and error to find the right solution.

A tool can be used to assess the scale and impact of saliva problems. Research has highlighted the clinical saliva score for MND (CSS-MND) to be an easy-to-use tool to assess and reflect the impact of saliva problems.[6] Visit **bit.ly/CSS-MND** for further information and to access the tool.

Professionals who can help

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

- self-help techniques
- prescription medication
- organising equipment/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.

Speech and language therapist: A speech and language therapist 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.

Physiotherapist: They can advise on:

- cough management techniques, which may help to clear thick, tenacious saliva (see pages 6–7).

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 problem should be properly assessed. Medication that can “dry up” or reduce watery saliva may lead to thick, tenacious saliva.

If mucoid secretions are the problem, medication to thin these might be considered.[2]

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 doctor, as there may be contraindications.

Some people with MND will have an enteral feeding tube. Medication can sometimes be given through the tube, but before putting any medication through, check with a pharmacist that it won’t harden or clog the tube, or affect how well the drug works.

3. Treating thin, watery saliva

Strategies and equipment that may help

- Advice should be given on swallowing, diet, posture, positioning and oral care.[5]
- Portable oral suction units are helpful if saliva builds up in the mouth (see page 8).[5]
- 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.
- 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

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.[5]
- Consider glycopyrrolate as the first-line treatment in people with cognitive impairment, because it has fewer central nervous system side effects.[5]

Antimuscarinics can cause confusion in older people, urine retention and other side effects that should be monitored.

For drug dosages, please refer to the British National Formulary (BNF).

Antimuscarinics	Preparation
Glycopyrronium bromide (Glycopyrrolate)	Oral tablet. A suspension is available, which can be given orally or via PEG. A parenteral form can be given under the skin (subcutaneously) as an injection when needed or as a continuous infusion using a syringe pump.
Hyoscine butylbromide (Buscopan)	Tablets can be taken orally or crushed[13] and given via a feeding tube, with care. They can also be crushed and dissolved in water. A parenteral form can be given subcutaneously as an injection when needed or as a continuous infusion via syringe pump. It can also be given orally or via feeding tube, depending on the dose.
Hyoscine hydrobromide	A skin patch is available that is applied behind the ear and changed every 72 hours. Tablets can also be taken orally or crushed and given via a feeding tube. A parenteral form can be given under the skin (subcutaneously) as an injection when needed or as a continuous infusion using a syringe pump.
Atropine	Although unlicensed for this symptom, eye drops can be given under the tongue (sublingually). Benefits only last a few hours, so it may be more suitable for specific, timed events such as appointments. To avoid overdose, the dose should be given using a disposable dropper, or may be dropped on to a spoon first.
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[18]	Low doses administered 2–3 times daily. Tablets can be crushed and administered via PEG.

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.[5] Studies have shown that injecting this nerve toxin into the salivary glands may decrease saliva production for weeks or months[2] by interrupting the messages from the nerves that tell the glands to secrete.

Be aware that treatment with botulinum toxin A may have the side effect of increasing dysphagia (temporarily or permanently), so some suggest only resorting to these injections if the person already has enteral feeding in situ. Botulinum toxin A should only be administered by qualified practitioners.[5]

Radiotherapy

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 options[19]

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

4. Treating thick saliva, mucus and phlegm

Strategies and equipment that may help[8]

- Review of all current medicines, especially any treatments for sialorrhoea.[5]
- Advice should be given on swallowing, diet, posture, positioning, suctioning and hydration.[5]
- Rehydration. Increase the intake of fluid, for example with jelly, frozen mousses or ice lollies, if safe to swallow. Seek advice from the speech and language therapist. Cold temperatures may stimulate the swallow.
- Improvement of oral hygiene. A district nurse may be able to help with this. The teeth, tongue and gum margins should be cleaned regularly and especially before or after oral medication is given.
- Avoidance of mouth breathing, if possible. This may not be an option for people with bulbar symptoms.

- Drinking pineapple or papaya juice before/with a meal. These juices contain proteolytic enzymes, bromelain (pineapple – most concentrated in the core) and papain (papaya), which help break down protein in mucus. The juices can also be applied gently on a sponge as part of a mouth care regimen. Bromelain and papain enzymes are also available as tablets.[14]
- Reducing intake of dairy products may be helpful. Check with the dietitian, as some people with limited diets due to dysphagia may rely on dairy products to maintain their weight.
- Sucking on sugarless lozenges can stimulate saliva flow and reduce the viscosity of saliva, providing it is safe to do this and will not cause the person with MND to choke. Avoid lozenges containing menthol as these can have a drying effect.
- Inhaling water vapour or humidification can decrease the viscosity of mucus and help to loosen secretions.[5]

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).

Medication	Preparation
Mucolytics[9] Carbocisteine	Available as capsules or liquid. The liquid form can be administered by feeding tube.
Cough mixture containing Guaifenesin[18]	Available in most over the counter chesty cough preparations. Can be administered via feeding tube.
Saline[10]	Given using a nebuliser, this can help to loosen chest secretions.[15]
Beta blockers Propranolol/ metoprolol/ atenolol[16]	This is given in tablet form. There is limited evidence that this type of medication can reduce secretions. The person with MND should be monitored for hypotension (low blood pressure) and bradycardia (slow heartbeat).

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 cough[5]
- 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 stacking[5]
- if available, use of a mechanical insufflation:exsufflation machine (MI:E, 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]

The provision or loan of MI:E machines varies from region to region and sometimes servicing and maintenance can be problematic. If a person is likely to benefit from an MI:E machine, professionals are urged to make a case and push for provision as soon as possible.

If you experience difficulties, contact MND Connect.
Email mndconnect@mndassociation.org or call 0808 8026262.

Suction units

A suction unit can help to remove saliva, mucus or food particles in the mouth.[2] Suction units should be available via the person's GP or district nurse. In some areas, suction units are only available through the local MND care centre. If statutory provision has been explored and is not available, it may be possible to loan a suction unit from the MND Association.

Ask the GP or district nurse to contact our Support Services team, or speak to your local MND care centre. If a suction unit is borrowed from the MND Association, the local health authority or health and social care trust will need to make a small contribution to the cost of the unit. Contact our MND Connect helpline for further details. Email mndconnect@mndassociation.org or call 0808 8026262.

The person with MND, carers and family should be trained to carry out oral suction by the professional who supplies the equipment. This may be a respiratory physiotherapist or nurse, or a member of the MND specialist team.

ℹ **Information for professionals**

Information sheet P9 – Oral suction

See page 13 for details of how to order publications.

6. Dry mouth

Some people will 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.[11]

Treatments and strategies for dry mouth

Dosage of medication should be checked by a prescribing professional and changed if needed.[12]

Preparations such as artificial saliva sprays or gels, for example Aquoral, Biotene Oralbalance, Orthana or Xerotin, can help to relieve a dry mouth.[12] They also help to reduce odour-causing bacteria.

These treatments are given using a swab 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.[12] 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.[12] A dietitian, nurse or doctor can advise on ways to increase fluid intake.

Some people with MND and professionals report that olive, grapeseed or groundnut oil (where appropriate) or ghee can be used as a lubricant when swabbed around the mouth, or swilled in a way similar to mouthwash known as oil pulling.

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Further Reading

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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 8026262**

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**
Bluesky: **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/careinfofinder

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 8026262 or email mndconnect@mndassociation.org.

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