Aim

The aim of this guide is to provide a template for those who wish to develop their own nebuliser guidance for patients and professionals. This guide covers some practical and clinical aspects but does not aim to explain the technical aspects of nebuliser use.

Evidence for the use of a nebuliser

The evidence for the use of nebulisers was reviewed by the ERS and was found to be of variable quality.

There is good evidence (grade A) that suggests that using hand held devices through a spacer device is as effective as a nebuliser for most normal acute and chronic conditions.

1 Professional advice

- Nebulisers should only be ‘prescribed’ after the patient has been specifically assessed and its use can be demonstrated to be clinically necessary. This should apply for both the acute and chronic use of nebulisers.
- If a GP or Hospital Consultant has not recommended the use of a nebuliser, then NHS staff and GPs are not obliged to prescribe.
- Any medication requested by a patient should not be prescribed if the patient has purchased their own nebuliser before a full assessment.
- The NHS will not pay for medication that has not been assessed as clinically necessary.
- GPs / community staff cannot prescribe associated peripheral equipment (tubing, masks etc)
- Some Health Boards have specific arrangements for the loan of a nebuliser, for specified situations. This usually only applies in secondary care when they have specific funding.
- Nebulisers are not generally available on the NHS and patients may have to buy their own compressor.
2 Indications for considering the use of nebulised treatment:

All clinicians should consider the following before assessing whether a patient might benefit from nebulised medication.

1. An inhaled drug is needed which cannot be given any other way.
2. Where a patient cannot use other inhaler devices.
3. Where a patient’s co-operation with other devices may be problematic (e.g. during an acute asthma attack)
4. Where it is thought that very high doses of bronchodilator medication are needed.

1 Boe, J. Dennis, JH. & O'Driscoll, BR: European Respiratory Journal 2001;18:228-242

3 When might nebulisers be used?

The default assumption should be that a nebuliser is not required. (evidence grade A)

- The NHS is only obliged to meet the associated prescribing costs where there is a clear clinical need for this method of medication administration.
- A clinician should not prescribe nebulised medication unless a full assessment has occurred and when the use of a nebuliser has been proved to be needed.
- The clinician should never feel obliged to prescribe if a patient has purchased a nebuliser without prior advice or approval.

4 Advice for GPs (see section 8 for acute treatment)

- The use of a nebuliser should only be considered when other treatment choices have been tried, and found not to be helpful.
- This should only occur after a full clinical assessment, and when indicated, a referral to the secondary services.
- A scoring method to assess the response to treatment is detailed in ERS guide (Appendix 1)
- A full step by step clinical and therapeutic assessment must be done. (section 11)

NB
- Hand held inhalers used with a spacer device are as effective as nebulisers in delivering the medication and should be used in most circumstances. (grade A evidence)
5 ADULT assessment prior to Referral

- It is recommended that a GP makes a full clinical assessment as outlined later in this guidance before considering a referral.
- The GP should discuss or refer the patient to a secondary care colleague before recommending a nebuliser. (There may be local guidance in place to take account of particular Regional needs)
- Discussion between the clinician and patient is important to ensure that the full potential of inhaled therapy is optimised compared to hand held inhalers.
- Full written instructions for the use of the drugs, doses and schedules, should be provided by the doctor or nurse to promote compliance and understanding.
- Written instructions must be given concerning the maintenance and servicing of any nebuliser

6 CHILD assessment prior to Referral

- GPs should not advise long term nebulised treatments for children.
- GPs should not initiate nebulised therapy.
- A nebuliser should only be recommended by a Consultant Paediatrician.
- Any drugs that are requested on prescription, must be accompanied by full written instructions about the drugs and the dosage schedule.
- The Paediatric department should take responsibility for the maintenance and servicing of any nebuliser.

7 The responsibilities of the Prescriber

- The prescriber should be responsible for ensuring that the use of nebulised drugs is approved and appropriate.
- The prescriber should provide appropriate advice in writing, to the patient, and not depend on the chance that others will do so.

8 Nebuliser use in Acute Care

- GPs may purchase a nebuliser and consider using it for the treatment of acute episodes of asthma.
- They must make sure that any nebuliser is maintained and regularly serviced as detailed by the manufacturer.
- They must make sure that all peripheral equipment such as tubing and masks are destroyed after being used once.
- All practices must have a replacement policy (purchasing policy) for peripheral equipment.
• Practices must ensure that new tubing, masks and nebuliser chambers are available for each separate use. (Usually face masks are the most acceptable in acute episodes.)
• Practices must make sure that the nebulisers are within the expiry date before use.
• Practices must store all medication correctly as per the manufacturer’s instructions.
• Doctors / nurses must make sure that the nebuliser is cleaned after each and every use. (see section 14)
• The compressor unit uses air to drive the nebuliser.
• High flow oxygen, if available, can be used, with a face mask, when the patient is nebulised (high flow oxygen regulators can be obtained from the oxygen supplier. See oxygen guide)
• High flow oxygen should not be used for patients with COPD
• The doctor / nurse must continually monitor the patient throughout the acute episode. (this includes the use of an oximeter)
• The doctor/ nurse must monitor the patient for at least 30 minutes after the nebulisation has finished.
• The patient should always be clinically reassessed before being dismissed and never within 30 minutes after full nebulisation.
• Ambulance services should have written instructions for the use of nebulisers when transferring a patient to Hospital. (All SAS ambulances have instructions on the use of oxygen in COPD)

9 Palliative Care

• The Palliative service must make a full clinical assessment of the need for nebulised therapy.
• If any drugs need to be given in a nebulised form, the local Palliative service should be responsible for the provision of the nebuliser.
• The patient should give full written instructions about the drugs and the dosage schedule to be used.
• The Palliative service should be responsible for the maintenance and servicing of the equipment.
• The Palliative service must give full written instructions, for use by any clinician, if the patient is discharged home with nebulised medication.

10 Specialist therapies

Nebulisers are use in other clinical situations.
The best know may be with patients who have cystic fibrosis, when inhaled antibiotics are indicated.
• The specialists should be responsible for the assessment for the need for nebulised therapy.
• The specialist should be responsible for the clinical assessment of the patient.
• The specialist should be responsible for the review of the patient.
• The specialist should provide the compressor and arrange for regular maintenance and servicing of the equipment.
• The prescription of drugs will depend on local protocols

11 The patient assessment for inhaled nebulised therapy

All patients should be assessed prior to a nebuliser being ‘prescribed’.

Any assessment should take place over at least a two week period, to assess the response to each treatment.

• Check the diagnosis and confirm the severity and baseline disability; (Symptoms/ lung function/ qualitative assessment of functional ability)
• Ensure that the patient can use their existing inhaler device effectively;
• Check the patient’s inhaler technique and educate them on the correct procedures.
• The patient’s response should be recorded using a peak flow diary.
• Current medication must be maximised as per guidelines. This may include a trial of oral steroids or theophylline, as well as non-drug therapy such as pulmonary rehabilitation.
• Existing asthma or COPD therapy must be optimised using a hand-held inhaler which the patient is able to use i.e. salbutamol 200 – 400 micrograms four times per day.
• If these measures do not achieve benefit, the dose of inhaled therapy should be increased using a handheld inhaler e.g. up to 1 milligram salbutamol four times per day and/or up to 240 micrograms ipratropium 4 times daily.
• Use a pressurised meter dose inhaler through a large volume spacer device to gain maximum benefit / effect.
• If the patient responds well to treatment at any stage, the assessment should be stopped and this treatment regime should be continued long term.
• If the patient responds poorly to all of the above measures, only then consider a referral to secondary care.

12 Considerations prior to a nebuliser being advised for patient use

• Who is responsible in the local Health Board area, for assessing a patient for use of a nebuliser?
• Who will buy / provide the nebuliser?
• Who will buy / provide consumables?
• Who will be responsible for prescribing? Are there clear written instructions for the prescriber and patient?
• Who will be responsible for the continuing assessment of the patient who uses a nebuliser regularly?
• Who will perform the annual servicing of the nebuliser?
• Consider the use of a patient contract/ agreement.

13 Other specialised uses for nebulised therapy

Specific instructions and assessment will apply in each situation and will require additional guidance.

• Nebulised antibiotics
• Cystic fibrosis
• Testing for allergy
• Palliative drugs

14 Cleaning, Maintenance and Breakdown

Failure to clean the masks and nebuliser chamber will result in the medication taking much longer to nebulise.

Cleaning

• Clean the compressor unit daily if the nebulisers is in regular use and after each use if not used daily.
  Use a damp cloth or ‘baby wipe’ as per manufacturer's instructions.
• Always use new peripherals with each new patient (mask, mouthpiece and chamber).
• Run the nebuliser unit for a few seconds before medication is added.
Maintenance

- Change the filters in the compressor every 3 months (available from manufacturer).
- Arrange for the compressor to be serviced every year by the manufacturer or local service provider as advised by manufacturer.
- Some Health Regions have special local arrangements for servicing nebulisers.
- Nebulisers should not be recommended without the patient being advised on the local servicing arrangements.

Breakdown

- Patients should be provided with a written plan of what to do in case of an emergency.
- If the nebuliser times are becoming slower, for example > 10 minutes, the equipment should be cleaned.
- If time is still slow a spare nebuliser should be used and the original nebuliser sent for a service.
- A nebuliser should only be used by one patient and not shared with any other patient.
- Sharing a nebuliser may spread of infection.
- When the nebuliser is no longer required for a patient’s treatment, prescribing should cease.
- The patient should not hand the equipment on to any other seemingly deserving patient or friend.
- If the nebuliser is on loan it should be returned to the respiratory nurse, or other person, who supplied it.
- The patient should have a written instruction on how to return a nebuliser to the correct person.

Care of the Nebuliser

- It is important that the nebuliser is treated gently to ensure that it continues to work effectively.
- It is important to remember that if the nebuliser is on loan from the hospital and it remains their property.
- It is the patient’s responsibility to take reasonable care of the nebuliser while it is in their possession.
Appendix 1

ERS scoring method for assessing the response to treatment.

Suggested tools to measure the response to each treatment modality during "inhaled therapy optimisation protocol"

To assess response to therapy with hand held inhalers or nebulised therapy.

**Objective response:** (compared with two weeks on usual treatment):

<table>
<thead>
<tr>
<th>Condition</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEF worse</td>
<td>-1</td>
</tr>
<tr>
<td>PEF unchanged or rise of 0–10%</td>
<td>0</td>
</tr>
<tr>
<td>PEF rise of 11–20%</td>
<td>1</td>
</tr>
<tr>
<td>PEF rise &gt;20%</td>
<td>2     (but reconsider the diagnosis of COPD)</td>
</tr>
</tbody>
</table>

**Subjective response:** ask the patient to respond to the following question:
"compared with your previous therapy, how was your condition overall during this period of therapy?

<table>
<thead>
<tr>
<th>Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worse</td>
<td>-1</td>
</tr>
<tr>
<td>Same or no definite change</td>
<td>0</td>
</tr>
<tr>
<td>Definitely better</td>
<td>1</td>
</tr>
<tr>
<td>Definitely much better</td>
<td>2     (and ask the patient to state which symptoms have improved)</td>
</tr>
</tbody>
</table>

**Evaluation of the outcome** following each period of treatment during "inhaled therapy optimisation protocol"

<table>
<thead>
<tr>
<th>Possible outcomes for each period</th>
<th>Suggested action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Response +1 or +2</td>
<td>Consider continuing this treatment long term</td>
</tr>
<tr>
<td>Objective Response +1 or +2</td>
<td>depending on side-effects and patient preference</td>
</tr>
<tr>
<td>Objective Response 0</td>
<td></td>
</tr>
<tr>
<td>Subjective Response +1 or +2</td>
<td>Consider a longer trial of this treatment modality</td>
</tr>
<tr>
<td>Objective Response 0</td>
<td></td>
</tr>
<tr>
<td>Subjective Response -1 or 0</td>
<td>Stop this treatment and proceed to next step of assessment if appropriate.</td>
</tr>
<tr>
<td>Objective response -1 or 0</td>
<td></td>
</tr>
<tr>
<td>Subjective response -1 or 0</td>
<td>Reconsider diagnosis and consider longer trial</td>
</tr>
<tr>
<td>Objective Response +1 or +2</td>
<td>Reconsider diagnosis of COPD.</td>
</tr>
</tbody>
</table>

If the objective response is +2, reconsider diagnosis of COPD.
Appendix 2

Costs 2013

Nebuliser ex vat £79 - £215

Servicing extra

1 adult face masks and tubing £17.50
4 paediatric face mask and tubing £17.50
1 mouth piece set £3.99

Salbutamol
Nebule x 20 2.5 mg = £1.91
Nebule x 20 5 mg = £3.83

Terbutaline
Respule x 20 2.5mg = £5.82

References

Full European Respiratory Society (ERS) Guideline: available at
http://erj.ersjournals.com/content/18/1/228.full

BNF chapter 3: available at

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