



ASSOCIATION OF
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CHIEF EXECUTIVES

NAsMeD
National Ambulance Service Medical Directors

Guidance during the Covid-19 pandemic for adults and children 1 year old and over who have a prior diagnosis of asthma/COPD; AND who are prescribed a salbutamol metered dose inhaler (MDI)

This guidance is supplementary to the JRCALC Guidance on Asthma in Adults and Children and COPD in Adults. All other treatments should be as per JRCALC.

Introduction

Inclusion criteria:

- An adult or child with an acute asthma attack who normally has been prescribed a salbutamol metered dose inhaler (MDI)
- An adult with COPD who normally has been prescribed a salbutamol metered dose inhaler (MDI)
- Patients with acute breathlessness or wheeze, who are prescribed a salbutamol MDI and have used it but are still experiencing difficulty in breathing

Normal side effects and cautions to salbutamol administration apply – see JRCALC Guidelines: Medicines – Salbutamol.

The New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) advise Public Health England (PHE). Although clinicians have expressed concerns around nebulisation, the current position of PHE is that **nebulisation is not an AGP**. The mist seen around the nebulisation mask is a mist of the nebulised drug solution, considered to be a sterile.

Pathophysiology of asthma/COPD

Unchanged – refer to current JRCALC Guideline.

Assessment

Don the appropriate PPE required for the overall care of the patient, following your dynamic risk assessment: see NHSE guidance. Try to maintain a distance of at least two metres from your patient, as much as is practically possible during assessment and treatment.

Assess <C>ABCDE (refer to Medical Emergencies in Adults – Overview and Medical Emergencies in Children – Overview). Assess for the severity of asthma/COPD presentation. Refer to Features of asthma severity (Table 3.22). Also reproduced below.

Use of Peak flow meters

Do not record a peak expiratory flow rate (PEFR) until after salbutamol treatment is completed and **only if** you are considering leaving the patient at home. The patient will either use their own peak flow meter if they have one (see below) or a new sealed peak flow meter for single patient use (if available). The peak flow meter cannot be used for other patients as it carries a potential infection risk due to viral droplets within the unit after use. The use of a peak flow meter is not an aerosol generating procedure (AGP).

REMEMBER: Children under 1 year of age are probably not asthmatic but may have another illness. See also JRCALC Guideline – Respiratory Illness in Children and Medical Emergencies in Children – Overview. Also, there are a number of young adults who appear to cope well with a potentially seriously low PEFR, but who may rapidly deteriorate later.

Management

Ask the patient to make themselves as comfortable as they can.

- It is good practice for respiratory infections to ensure there is adequate ventilation to help increase the number of room air changes. If possible, ventilate the environment. In a house, consider opening a window/ door. If you are outdoors, try to stand upwind of the patient. In the ambulance, consider opening side window. Keep the window between the patient compartment and the driver compartment (in the bulkhead) **closed**. Keep the patient warm. Do not use the 'recirculate' function on the ambulance air conditioning system.

Mild/Moderate Exacerbation

- Consider the use of MDI and spacer for patients with mild and moderate asthma. Many patients with asthma / COPD will have their own prescribed MDI. Use either the patient's own or ambulance (where available) salbutamol inhaler and spacer.
- Standard treatment should be using an MDI and a spacer, see below for dosage and spacer type guidance.
- Use nebulisation if an MDI is not available.

Acute Severe/Life-threatening

- In acute severe or life-threatening asthma or severe exacerbation of COPD undertake a dynamic risk assessment to consider if the patient may deteriorate and require airway interventions including AGPs.
- Where an MDI is available, nebulisation should ideally be reserved for acute severe and life-threatening asthma and severe exacerbation of COPD.
- If clinically appropriate, nebulise the patient on scene, before moving them to the ambulance.

- If nebulisation is required, try to stay at least 2 metres away from the patient during administration.
- Use the minimum flow rate of oxygen to achieve nebulisation, this is normally around 6 litres / min (or as indicated by the mask manufacturer). For COPD patients, where available, use air driven nebulisation.

Appropriate Non-conveyance

- If you are planning to leave the patient at home, ask them if they have a peak flow meter. If they do; ask the patient to perform a peak reading, by either:
 - a. If the patient is mobile, ask them to perform the peak flow in another room, as this can ensure the patient is able to walk a short distance, perform the peak flow then return without exacerbation.
 - b. If they are not able to move to another room, the clinician should try to remain at least 2 metre away and not directly in front of the patient to prevent cross-infection from droplets. This procedure will produce an increased level of droplets and may cause the patient to cough, although a fluid resistant surgical mask provides adequate protection against this, as with a cough, good practice is to ensure you are not directly in front of the patient whilst this is being performed.
- Check with the patient that the post-treatment peak flow reading is within the normal range for that patient for that patient.
- Give the appropriate safety netting advice i.e. tell patients that they must contact their own GP, Community / Primary Care Respiratory Nurse, or if out of hours the Out of Hours Service ASAP and inform them of this episode of care, as they may require a course of oral steroids.
- Remind the patient to keep themselves hydrated.
- Advise the patient to follow the instructions that come with the MDI and the spacer. The patient should be advised to follow their asthma/COPD management plan.
- If the patient had no spacer they should be advised to ask whether it is appropriate to be prescribed one via their GP, Respiratory Nurse, or other asthma health care professional.

Use of salbutamol MDIs and spacers: see Appendix 1 for images.

- The patient may require supplemental Oxygen, which may be given via nasal cannulae in order to maintain saturations of 94- 98% (Asthma) or 88-92% (COPD).
- Good spacer device/ MDI technique is essential. Correct fitment of the MDI into the spacer will minimise any risk of cross-infection from the patient (i.e. safer than using the MDI on its own). Refer to dosing chart in Appendix 1:
 - a. Shake the inhaler/MDI well.
 - b. Put the salbutamol inhaler/MDI in the correct end of the spacer.

- c. Put the mouthpiece between the patient's teeth and lips.
- d. Sit the patient up and ask them to slightly tilt their chin up.
- e. Press the canister within the inhaler to expel a puff of salbutamol into the spacer.
- f. Ask the patient to continuously breathe in and out slowly and steadily through the mouthpiece. The first breath should be slow and deep with a breath hold if possible.
- g. If there is no improvement, repeat the same dose after 1 to 2 minutes up to a maximum of 10 doses (puffs).
- h. Dosage and Administration:

Salbutamol SLB – Metered Dose Inhaler (MDI)

Route: Inhalation via Volumatic or Aerochamber spacer

Age	Initial Dose	Repeat Dose	Dose interval	Max Dose
Adult	One puff	One puff	1 – 2 minutes	10 puffs
Child	One puff	One puff	1 – 2 minutes	10 puffs

- i. If after 10 doses there is no improvement, consider nebulisation.
- j. Reassess the patient (SpO₂, respiratory rate, GCS, work of breathing, wheeze) as per JRCALC guidelines. Refer to Features of asthma severity below.

Features of asthma severity (Table 3.22)

Near-fatal asthma	Life-threatening asthma
<ul style="list-style-type: none"> • Raised PaCO₂ and/or requiring mechanical ventilation with raised inflation pressures. 	Any one of the following in a patient with severe asthma: <ul style="list-style-type: none"> • Altered conscious level. • Exhaustion. • Arrhythmia. • Hypotension. • Cyanosis. • Silent chest. • Poor respiratory effort. • PEF <33% best or predicted. • SpO₂ <92%. • PaO₂ <8 kPa. • 'Abnormal' PaCO₂ (Normal range: 4.6–6.0 kPa).
Acute severe asthma	Mild/moderate asthma exacerbation
Any one of: <ul style="list-style-type: none"> • PEF 33–50% best or predicted. • Inability to complete sentences in 	<ul style="list-style-type: none"> • Able to speak in sentences. • Increasing symptoms.

<p>one breath.</p> <ul style="list-style-type: none"> • Pulse: <ul style="list-style-type: none"> >110/minute in adults. >125/minute in children >5 years. > 140/minute in children 2-5 years • Respiration: <ul style="list-style-type: none"> >25/minute in adults >30/minute in children >5 years >40/minute in children 2-5 years 	<ul style="list-style-type: none"> • PEF >50–75% best or predicted. • No features of acute severe asthma. • Heart rate: <ul style="list-style-type: none"> ≤140/min in children aged 2–5 years. ≤125/min in children >5 years. • Respiratory rate: <ul style="list-style-type: none"> ≤40/min in children aged 2–5 years. ≤30/min in children >5 years.
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Benefits of spacer use with salbutamol MDI

- There is no requirement for oxygen to deliver the salbutamol.
- It is a faster and more efficient way to deliver medication to the lungs in mild- moderate asthma.
- In severe to life-threatening asthma or severe exacerbation of COPD, spacer devices/MDI may be given to those patients as an interim measure before starting nebulisation.

References

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3. British Thoracic Society. *Updated BTS/SIGN national Guideline on the management of asthma*. Available from: <https://www.brit-thoracic.org.uk/about-us/pressmedia/2019/btssign-british-guideline-on-the-management-of-asthma-2019>, 2019.
4. British Thoracic Society. *Clinical Resources: COPD*. Available from: <https://www.brit-thoracic.org.uk/quality-improvement/clinical-resources/copd-spirometry/>, 2020.
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7. Health Protection Scotland. *Aerosol Generating Procedures (AGPs)*. Available from: https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2893/documents/1_tbp-lr-agp-v1.pdf, 2019.

Appendix 1: Dosages and images of spacers and MDI

Volumatic Spacer

Salbutamol SLB – Metered Dose Inhaler (MDI)

Route: Inhalation via Volumatic spacer

Age	Initial Dose	Repeat Dose	Dose interval	Max Dose
Adult	One puff	One puff	1 – 2 minutes	10 puffs
Child	One puff	One puff	1 – 2 minutes	10 puffs



Aerochamber Spacer

Salbutamol SLB – Metered Dose Inhaler (MDI)

Route: Inhalation via Aerochamber spacer

Age	Initial Dose	Repeat Dose	Dose interval	Max Dose
Adult	One puff	One puff	1 – 2 minutes	10 puffs
Child	One puff	One puff	1 – 2 minutes	10 puffs

