



Adult Emergency Department
Asthma Care Pathway
(EDACP)

March 2013

Contact Information

Email: edacp@on.lung.ca

Phone: 416-864-9911/888-344-5864(toll-free) extension 270

Fax: 416-922-9430

Adult Emergency Department Asthma Care Pathway

Instructions.....	3
Medication Guidelines.....	4
Physician’s Orders – Mild, Moderate, Severe Asthma.....	5
Physician’s Orders – Potentially Life Threatening Asthma.....	6
Patient Discharge Instructions.....	7
Patient Education Checklist.....	9
Medical Directive.....	10
References.....	14

EMERGENCY DEPARTMENT ASTHMA CARE PATHWAY ADULT: 16 years and over

Indications: Age 16 years or older with one of the following: history of asthma; or previous episode of wheezing requiring treatment; or asthma and pregnancy; or COPD with asthma

Contraindications: COPD without asthma; or CHF; or ED visit for prescription refill only

Introduction

1. This is a proactive tool that provides considerations for asthma management based on Canadian Association of Emergency Physicians' (CAEP) Asthma Guidelines (1996), the Canadian Asthma Consensus Guidelines (2012) and other evidence from subsequent publications.
2. This pathway should be attached to the hospital's standard triage form once inclusion criteria are met.

ED Adult Asthma - Quality Assurance Guidelines:

CTAS Level 3: Nurse Assessment: less than 30 minutes; 1st Bronchodilator: less than 30 minutes; MD Assessment: less than 30 minutes

CTAS Level 2: Nurse Assessment: immediate; 1st Bronchodilator: less than 10 minutes; MD Assessment: less than 15 minutes

CTAS Level 1: Nurse Assessment: immediate; 1st Bronchodilator: immediate; MD Assessment: immediate

*Canadian Triage and Acuity Scale (CTAS) "Times to Assessment" are operating objectives, not standards of care. Facilities without on-site physician coverage may meet assessment objectives using delegated protocols and remote communication.

Disclaimer:

This Clinical Pathway is not intended to set the standard of care applicable in any particular clinical situation. It is merely prepared as a guide to assist physicians, nurses, respiratory therapists and other healthcare providers, in deciding on the appropriate care required for a particular patient. At all times, physicians, nurses, respiratory therapists and other healthcare providers must exercise their independent clinical judgment, based on their knowledge, training and experience, taking into account the specific facts and circumstances of each patient, when deciding on the appropriate course of investigation and/or treatment to recommend in a particular clinical situation. Any reference throughout the document to specific pharmaceutical products as examples does not imply endorsement of any of these products.

INSTRUCTIONS:

1. **Triage** to determine patient eligibility for clinical pathway.
2. **Nurse/RT** to begin Adult ED Asthma Care Pathway Medical Directive **OR** **Physician** to choose order set according to asthma severity (page 1 or 2 of "Physician's Orders")
3. Refer to medication guidelines on reverse of physician orders for more information.
4. **Physician/Nurse Practitioner** to fill out and sign "Discharge Instructions"
5. **Physician/Nurse/RT** to review "Education Checklist" and "Discharge Instructions" with patient

This care pathway was developed with input from and has been endorsed by:

CANADIAN THORACIC SOCIETY
SOCIÉTÉ CANADIENNE DE THORACOLOGIE



Canadian Society of Hospital Pharmacists
Société canadienne des pharmaciens d'hôpitaux

Ontario Branch/Section de l'Ontario

Ontario Pharmacists' Association

THE LUNG ASSOCIATION™
ONTARIO THORACIC SOCIETY

RNAO Registered Nurse's Association of Ontario
l'Association des infirmières et infirmiers autorisés de l'Ontario



FAMILY PHYSICIAN AIRWAYS GROUP OF CANADA
l'Association canadienne des médecins de famille contre l'asthme



ENAO
ASSOCIATION OF ONTARIO
EMERGENCY NURSES



THE LUNG ASSOCIATION™
ONTARIO RESPIRATORY CARE SOCIETY



RTSO
Respiratory Therapy Society of Ontario
Société de la Thérapie Respiratoire de l'Ontario

Medication Guidelines for Emergency Management of Adult Asthma

STANDARD EMERGENCY DEPARTMENT TREATMENT

Supplemental oxygen to keep SpO₂ 92% or more

Bronchodilators

beta₂-agonist (inhaled **salbutamol**); first line therapy – titrate to response

- MDI + spacer (100 mcg/puff): 4–8 puffs q 15–20 min, 3 times is usual; for FEV₁ or PEF less than 40%, consider increasing to 1 puff q 30–60 sec (4–20 puffs) PRN (within patient's tolerability); **OR**
- wet nebulizer (5 mg/mL solution): 5 mg q 15–20 min 3 times is usual, continuous if necessary

anticholinergic (inhaled **ipratropium bromide**); additional bronchodilator

- MDI + spacer (20 mcg/puff): 4–8 puffs q 15–20 min 3 times is usual; consider increasing to 1 puff q 30–60 sec (4–20 puffs) PRN; **OR**
- wet nebulizer (250 mcg/mL solution): 250–500 mcg q 15–20 min 3 times is usual, continuous if necessary

Notes

- for wet nebulizer: salbutamol and ipratropium bromide may be mixed together in the doses above; adjust the volume of 0.9% sodium chloride for a minimum volume of 3–4 mL; unit dose vials (nebulizers) also available; administer with oxygen if SpO₂ less than 92%
- decrease frequency of bronchodilators in recovery phase
- increase dose of bronchodilators with intubated patients

Corticosteroid

- prednisone**: 50 mg tablet PO once
- methylprednisolone**: 40–125 mg IV x 1 dose, as bolus. Available in vials of 40 mg and 125 mg; reconstitute just prior to use. May dilute in 50 mL D5W or 0.9% sodium chloride and infuse over 15–30 minutes; **OR if methylprednisolone not available (or patient allergic to it):**
- hydrocortisone**: 250–500 mg IV x 1 dose; dilute in 50–100 mL of D5W or 0.9% sodium chloride and give over 15–30 minutes

DISCHARGE MEDICATIONS

All patients should be advised to follow up with their health care provider to review reasons for loss of asthma control. If adherence to controller therapy and inhaler technique is adequate, an increase in ICS dose or additional therapy (LABA or LTRA) may be appropriate.

Short-acting beta₂-agonist (e.g. inhaled salbutamol)

- Regular use is often needed for first 48 hours after discharge
- First 48 hours post discharge**: recommend salbutamol 2–4 puffs QID and q4h PRN; **after 48 hrs**: recommend PRN, up to q4h
- Advise patient to go to ED if relief from beta₂-agonist lasting < 2hrs; **AND** to call MD if beta₂-agonist is needed more frequently than q4h

Corticosteroid

- Prednisone**: 30–80 mg/day PO for 7–10 days; taper not necessary; **AND**
- Inhaled Corticosteroid (ICS)**: Ensure patient is prescribed at least a medium dose of ICS, even if taking prednisone – see table below.

Comparative Inhaled Corticosteroids (ICS) Dosing Categories in Adults ¹		Adult Daily ICS Dose (mcg) (12 years of age and over)		
PRODUCT	Trade Name	Low	Medium	High
Beclomethasone dipropionate HFA	QVAR ^{®†}	≤ 250	251- 500	> 500
Budesonide*	Pulmicort [®] Turbuhaler ^{®‡}	≤ 400	401- 800	> 800
Ciclesonide*	Alvesco ^{®§}	≤ 200	201- 400	> 400
Fluticasone	Flovent [®] MDI and spacer; Flovent [®] Diskus ^{®¶}	≤ 250	251- 500	> 500
Mometasone*	Asmanex [®] Twisthaler ^{®**}	200	≥ 400- 800	> 800 ^{¶¶}

Source: Loughheed MD, Lemiere C, Ducharme F, et al. Canadian Thoracic Society 2012 guideline update. Diagnosis and management of asthma in preschoolers, children and adults. Can Respir J 2012; Vol 19(2), 127-64. ¹Pediatric doses removed from table with permission from the Canadian Thoracic Society. Note: Dosing categories are approximate, based upon a combination of approximate dose equivalency as well as safety and efficacy data rather than available product formulations. ²Licensed for once daily dosing in Canada. ³Graceway Pharmaceuticals, Canada; ⁴AstraZeneca Inc, Canada; ⁵Nycomed Canada, Inc.; ⁶GlaxoSmithKline Inc, Canada; ⁷Merck & Co Inc, USA ⁸daily doses of mometasone > 800 mcg/day are not approved for use in adults in Canada

Additional Therapy (e.g. leukotriene receptor antagonist [LTRA], long acting beta₂-agonist [LABA]) *Note*: LABA should only be an add-on to ICS, ideally in the same inhaler; never give as monotherapy

- Continue use of previously prescribed agents on discharge.
- Review use with family physician, consultant, or asthma educator.

NON-STANDARD TREATMENT (PATIENT IN EXTREMIS)

High-flow oxygen to keep SpO₂ 92% or more

salbutamol infusion (IV solution only)

- Load: 4 mcg/kg (over 2–5 minutes)
- IV Infusion: 0.1– 0.2 mcg/kg/minute

magnesium sulfate (IV)

- IV: 2 g (4mL of 0.5 g/mL) in 100 mL D5W over 20 minutes, once

epinephrine (IM or IV)

- IM**: 0.3– 0.5 mg (= 0.3 – 0.5 mL of 1:1,000 solution) q 20 min PRN; **OR**
- IV single dose**: 0.1 mg IV over 5–10 min via injection or mini-bag; may repeat q 5–15 min PRN
ampoule: dilute 1 mL of 1:1,000 solution in 9 mL 0.9% sodium chloride (=1:10,000 dilution), give 1 mL (= 0.1 mg) IV over 5–10 min; **OR**
pre-filled syringe: give 1mL of 1:10,000 solution (= 0.1 mg) over 5–10 minutes;

OR

- IV infusion**: dilute 4 mL of 1:1,000 solution (1 mg/mL) in 250 mL of D5W (= 16 mcg/mL) and infuse at 1– 4 mcg/min (= 4 – 15 mL/hr)

methyloxanthine (e.g. aminophylline): *not recommended in first 4 hours*

- Load: 6 mg/kg IV over 30 minutes (reduce by 50% if already on theophylline or aminophylline)
- Infusion: 0.2–1 mg/kg/hour (follow levels)

Rapid Sequence Intubation

Consult a physician experienced in this procedure, when available.

Induction

- ketamine**: 1.5 mg/kg IV (some patients may require 2–3 mg/kg); **OR**
- propofol**: 2– 2.5 mg/kg IV (start with 1 mg/kg)
- with or without **midazolam**: 0.1– 0.3 mg/kg IV

Paralysis

- succinylcholine**: 1.5 mg/kg IV; **OR**
- rocuronium**: 1 mg/kg IV

Heliox, Invasive Ventilation, and Non-Invasive Ventilation

These treatments require consultation with the Intensive Care Unit (ICU)

Notes

- Intubated/ventilated patients may require ongoing sedation +/- paralysis
- Ketamine may be an effective bronchodilator at higher doses (2 – 3 mg/kg)
- Avoid high volumes & rates when assisting ventilation (↑ air trapping)
- Rule out pneumothorax and upper airway obstruction

Peak Expiratory Flow (PEF) in Normal Adults (L/min)

Ht cm	142	147	152	157	163	168	173	178	183	188	193	198
in	56	58	60	62	64	66	68	70	72	74	76	78
MALES												
Age	Mean PEF											
20	535	545	554	563	571	579	587	594	601	608	614	621
25	560	570	580	589	598	607	615	622	630	637	643	650
30	574	584	594	604	613	621	629	637	645	652	659	665
35	579	589	599	609	618	626	635	643	650	657	664	671
40	577	587	597	607	616	625	633	641	648	655	662	669
45	570	581	591	600	609	618	626	633	641	648	655	661
50	560	570	580	589	598	606	614	622	629	636	643	649
55	547	557	566	575	584	592	600	608	615	621	628	634
60	532	541	551	559	568	576	583	591	598	604	611	617
65	515	524	533	542	550	558	565	572	579	585	591	597
70	497	506	515	523	531	538	545	552	559	565	571	577
75	479	478	496	504	511	518	525	532	538	544	550	555
FEMALES												
Age	Mean PEF											
20	447	454	460	456	471	476	481	486	490	495	490	503
25	458	465	471	477	482	488	493	497	502	506	511	515
30	462	469	475	481	486	492	497	502	506	511	515	519
35	461	468	474	480	485	491	496	501	505	510	514	518
40	457	463	469	475	481	486	491	496	500	505	509	513
45	449	456	462	468	473	478	483	488	493	497	501	505
50	440	447	453	458	464	469	474	478	483	487	491	495
55	430	436	442	447	453	458	462	467	471	475	479	483
60	418	424	430	435	440	445	450	454	458	462	466	470
65	406	412	417	422	427	432	437	441	445	449	453	456
70	393	399	404	409	414	419	423	427	431	435	438	442
75	380	385	391	395	400	404	409	413	416	420	424	427

¹Adult Normal Range (2 SD) = mean ± 80 L/min Values calculated from Nunn and Gregg; BMJ 1989; 298: 1065-70. The above table is meant to be used only as a guide. Normal standards will vary between racial and ethnic groups.

**Emergency Department
Asthma Care Pathway
Adult: 16 Years and over
PHYSICIAN'S ORDERS**

Drug Allergies: _____
Ht: ____ cm Wt: ____ kg *Please use ballpoint pen and press firmly*

ADULT EMERGENCY DEPARTMENT ASTHMA CARE PATHWAY (EDACP)
Refer to Medication Guidelines on reverse of orders.

Transcription
& RN Notes

FOR MILD, MODERATE OR SEVERE ASTHMA

** orders marked with an asterisk may have been started per Adult EDACP Medical Directive*

1. baseline respiratory assessment, then q 30 – 60 mins and PRN
2. vitals routine OR q ____h
3. lung function at baseline, after treatment, and before disposition:
 FEV₁ OR PEF (FEV₁ preferred if equipment/personnel available)
4. oxygen: to keep S_pO₂ at 92% or greater OR at 95% or greater (if pregnant)
5. intravenous access: saline lock OR _____
6. blood gases: venous OR arterial
7. beta₂-agonist: **salbutamol MDI (100 mcg/puff) + spacer**
 initial dose: 6 puffs inhaled q ____ mins x 3 doses PRN
 subsequent doses: ____ puffs inhaled q 4h and q1h PRN

 OR salbutamol solution (5 mg/mL)
 initial dose: 5 mg in 3 mL 0.9% sodium chloride q ____ mins x 3 doses PRN
 subsequent doses: 5 mg in 3 mL 0.9% sodium chloride q 4h and q1h PRN
8. anticholinergic: **ipratropium bromide MDI (20 mcg/puff) + spacer**
 initial dose: 6 puffs inhaled q ____ mins x 3 doses PRN
 subsequent doses: ____ puffs inhaled q 4h

 OR ipratropium bromide solution (250 mcg/mL)
 initial dose: 500 mcg in 3 mL 0.9% sodium chloride q ____ mins x 3 doses PRN
 subsequent doses: 500 mcg in 3 mL 0.9% sodium chloride q 4h
9. corticosteroid (as soon as possible and within 60 minutes of triage)
 predniSONE 50 mg PO once now
 OR predniSONE ____ mg PO once now
 OR methylPREDNISolone ____ mg IV (40–125 mg) once now, as bolus
 (if oral route unavailable or unreliable)
10. magnesium sulfate (*for severe asthma only*)
 magnesium sulfate 2 g IV once now over 20 mins (dilute in 100mL D5W)
 Note: check BP q 5 mins during infusion and for 30 mins after infusion is complete

At Discharge or Admission:

11. review asthma education checklist
12. referral to: respiratory therapy asthma educator specialist: _____

**If patient status deteriorates, or if there is inadequate response to treatment,
consider moving to “Potentially Fatal Asthma” pathway**

MD Name: _____ MD Signature: _____
Date (YYYY/MM/DD): _____ Time: _____

**Emergency Department
Asthma Care Pathway
Adult: 16 Years and over
PHYSICIAN'S ORDERS**

Drug Allergies: _____
Ht: ____ cm Wt: ____ kg *Please use ballpoint pen and press firmly*

ADULT EMERGENCY DEPARTMENT ASTHMA CARE PATHWAY (EDACP)
Refer to Medication Guidelines on reverse of orders

Transcription
& RN Notes

FOR POTENTIALLY FATAL ASTHMA

*Consider Consulting: Respiriology, ICU, Anesthesiology, Internal Medicine
and/or **CritiCall Ontario: 1-800-668-4357**
For Intubation Agents refer to Medication Guidelines on reverse.*

1. high flow oxygen (> FiO₂ 0.60 if possible) to keep S_pO₂ at 92% or greater
2. continuous cardiac and oxygen saturation monitoring
3. intravenous access: (if not already obtained) saline lock OR _____
4. nothing by mouth
5. **salbutamol** 5 mg in 3 mL 0.9% sodium chloride, continuous nebulization
6. **ipratropium bromide** 500 mcg, continuous nebulization; mix with salbutamol
7. IV corticosteroid (if not already given)
 - methylPREDNISolone 125 mg IV once now as bolus
8. magnesium sulfate (if not already given)
 - magnesium sulfate 2 grams IV once now over 20 mins, dilute in 100 mL D5W

Note: check BP q 5 mins during infusion and for 30 mins after infusion is complete
9. epinephrine
 - epinephrine 0.3 mg IM now and q 20 mins PRN (0.3 mL of 1:1,000 solution)

Note: for pre-arrest, consider IV epinephrine (see Medication Guidelines on reverse)
10. Tests:
 - chest x-ray (portable)
 - blood gases: venous OR arterial
 - CBC, electrolytes, urea, creatinine, glucose
 - ECG
 - attempt spirometry (FEV₁) or peak expiratory flow (PEF)

At Discharge or Admission:

11. review asthma education checklist
12. referral to: respiratory therapy asthma educator specialist: _____

Additional Orders: _____

MD Name: _____ MD Signature: _____
Date (YYYY/MM/DD): _____ Time: _____

**Emergency Department
Asthma Care Pathway
Adult: 16 years and over
Patient Discharge
Instructions/Prescription**

Discharge FEV₁: _____ L % predicted _____

OR Discharge Peak Flow: _____ L/min % predicted _____

Circle Presenting Asthma Severity: Mild Moderate Severe

**Discharge Instructions: Physician/Nurse Practitioner to complete
FAX to Patient's Primary Care Provider**

1. Reliever Medication*: (circle) salbutamol (e.g. Airomir™, Apo®-Salvent, Teva-Salbutamol®, ratio-Salbutamol®, Ventolin®) or terbutaline (e.g. Bricanyl®) or other _____

For the first 48 hours, take your reliever (circled above) _____ inhalations 4 times a day and, if needed, every 4 hours (while awake) to relieve asthma symptoms.

After the first 48 hours, use reliever _____ inhalations only as needed, up to every 4 hours.

*If you need your reliever more often than every 4 hours, call your doctor

*If your reliever is lasting less than 2 hours, go the Emergency Department

2. Prednisone:

Take prednisone _____ mg, once a day for _____ days, in the morning (with food) until the prescription is finished.

3. Controller Medication:

(circle) Single Medication: Alvesco®, Asmanex™, Flovent®, Pulmicort®, QVAR™ or other _____

Combination Medication: Advair®, Symbicort®, Zenhale™ or other _____

Take your controller (circled above) _____ mcg/inhalation, _____ inhalation(s) _____ time(s) per day, even when you are feeling well.

4. Additional Medication:

Take: _____

Take: _____

NOTE: Continue with the other medication you were taking at home unless advised otherwise

5. Please make a follow-up appointment with:

Family Doctor _____ **within 1 week or as soon as possible**

Specialist _____ **within 2 to 4 weeks**

Your local Asthma Education Centre _____

Name: _____

CPSO# _____

CNO# _____

Signature: _____

Date: _____

Time: _____

Return to the Emergency Department immediately if any of the following occur:

- Your symptoms worsen
- Your reliever medication is lasting less than 2 hours
- You cannot talk in sentences without taking a breath
- You have blueness around your lips and nails
- You are unsure or frightened by your asthma

REMEMBER...Asthma can be LIFE THREATENING, especially IF NOT TREATED

Important Asthma Information on Back →→→

QUICK FACTS ABOUT ASTHMA...

What is Asthma?

Asthma affects the airways (bronchi) in your lungs.

Three main things happen in your airways when you have asthma:

- the lining of your airways swells (inflammation) and makes more mucus
- the airways become sensitive or twitchy to triggers
- the muscles that wrap around your airways tighten

These changes make your airways narrow and cause the symptoms of asthma

Symptoms of asthma can include: wheezing, cough, chest tightness and shortness of breath.

You may have just one symptom or a combination of these symptoms

Asthma Triggers

Examples of asthma triggers include: smoke, lung infections/colds, allergies (such as to animals, dust mites, pollens, moulds), strong odours, air pollution, exercise, high humidity, stress and cold air.

- not everyone with asthma has the same triggers
- it is important to know what triggers your asthma
- avoiding things that trigger your asthma can reduce the amount of medication needed to control your asthma and can reduce your asthma symptoms

Asthma Medications

There are three major categories of medications used to treat asthma:

- 1. Relievers:** salbutamol (examples: Airomir™, Apo-Salvent®, Teva-Salbutamol®, ratio-Salbutamol®, Ventolin®) or terbutaline (example: Bricanyl®)
 - relax the muscles that tighten around the airways
 - are used to treat asthma symptoms and provide relief within minutes
 - are taken on an as needed basis when you are well
 - can be used frequently during an asthma attack
- 2. Prednisone:** (white pill)
 - is used to treat severe airway inflammation (swelling) and mucus;
- 3. Controllers:** single medication (examples: Alvesco®, Asmanex™, Flovent®, Pulmicort®, QVAR™) OR combination of 2 medications (examples: Advair®, Symbicort®, Zenhale™)
 - control asthma symptoms and prevent asthma from flaring
 - generally treat airway inflammation (swelling) and mucus; combination controllers also include a medication that relaxes the airway muscles for up to 12 hours
 - need to be taken regularly even when you feel well

Your Asthma Is In Control If:

- you have symptoms (cough, wheeze, chest tightness or shortness of breath) less than 4 days a week
- you use your reliever less than 4 times per week
- you are not waking at night or early in the morning with symptoms
- you can do your usual physical activities and you do not miss school or work due to asthma

REMEMBER...Asthma can be LIFE THREATENING, especially IF NOT TREATED

IF YOU HAVE QUESTIONS ABOUT ASTHMA CALL:
The Lung Association's Lung Health Information Line
1-888-344-LUNG (5864) or visit online: www.on.lung.ca



**Emergency Department
Asthma Care Pathway
Adult: 16 years and over

Education Checklist**

Education Checklist

Learning Goals Reviewed with Patient (To be completed by MD/Nurse/RT)	Initials & Comments
<p>1. Assessed device/spacer technique and demonstrated optimal technique: MDI: Shake canister, place end of MDI into holding chamber; breathe out, place holding chamber mouthpiece into mouth and make a seal; release puff, inhale slowly (no whistle), hold for 10 seconds, exhale; wait 30 seconds between each puff of the same MDI.</p>	
<p>2. Reviewed basics of asthma:</p> <ul style="list-style-type: none"> ▪ airway inflammation (swelling), increased mucus, and bronchospasm ▪ airways narrow and cause the symptoms of asthma: cough, wheeze, chest tightness and/or shortness of breath 	
<p>3. Reviewed asthma triggers:</p> <ul style="list-style-type: none"> ▪ not everyone with asthma has the same triggers. ▪ important to know what the individual's asthma triggers are and how to avoid them. ▪ trigger avoidance can reduce the amount of medication needed to control asthma and can reduce asthma symptoms. 	
<p>4. Reviewed asthma medications:</p> <p>Relievers: salbutamol (e.g. Airomir™, Apo-Salvent®, Teva-Salbutamol®, ratio-Salbutamol®, Ventolin®) or terbutaline (Bricanyl®)</p> <ul style="list-style-type: none"> ▪ relax smooth muscle around airways <p>Prednisone: treats severe airway inflammation and mucus</p> <p>Controllers: single medication: e.g. Alvesco®, Asmanex™, Flovent®, Pulmicort®, QVAR™ combination of 2 medications: e.g. Advair®, Symbicort®, Zenhale™</p> <ul style="list-style-type: none"> ▪ treat airway inflammation and mucus; combinations include a medication to relax airway muscles for up to 12 hours (long-acting beta₂-agonist) ▪ need to be taken regularly even when feeling well 	
<p>5. Reviewed parameters for acceptable asthma control (below) and when to return to the Emergency Department (on front of Discharge Instructions).</p> <ul style="list-style-type: none"> ▪ symptoms less than 4 days per week ▪ reliever use less than 4 times per week ▪ not waking at night or early in the morning with symptoms ▪ not missing school or work due to asthma 	
<p>6. If patient does not have a drug plan, refer to Social Work (if available) or the Trillium Program (applications usually available at the local pharmacy).</p>	
<p>7. If patient does not have a family physician, ED physician notified and alternatives discussed (if available).</p>	
<p>8. Patient Discharge Instructions reviewed with patient <u>and</u> 2 copies given to patient (one for the pharmacy, one for patient reference)</p>	
<p>9. Hospital's Asthma Booklet (if available) or Lung Association Booklet given to patient.</p>	
<p>Name (print): _____ Designation: _____ Signature: _____ Date: _____ Time: _____</p>	

Emergency Department Adult Asthma Medical Directive

Title: Emergency Department Asthma
Medical Directive – Adult Age 16
years and over

Number:

Activation Date:

Review due by:

Sponsoring/Contact Person(s)

(name, position, contact particulars):

**(hospital based site champion e.g. professional practice advisor(s),
clinical educator)
Ontario Lung Association – www.on.lung.ca**

Order and/or Delegated Procedures:	Appendix Attached: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Title: Appendix A: Medical Directive Flowchart
<ol style="list-style-type: none"> 1. supplemental oxygen to keep SaO₂ at 92% or greater (95% or greater in pregnancy) 2. spirometry (FEV₁) or peak expiratory flow (PEF) - complete as per Flowchart, Appendix A attached 3. salbutamol metered dose inhaler (MDI) with spacer device (100 mcg/puff) 6 puffs/dose, up to 3 doses (18 puffs) within 60 minutes - complete as per Flowchart, Appendix A attached 4. ipratropium bromide MDI with spacer device (20 mcg/puff) 6 puffs/dose, up to 3 doses (18 puffs) in 60 minutes - complete as per Flowchart, Appendix A attached 5. prednisone 50mg PO once at triage 	
Recipient Patients:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
<p>Patients who are registered in the Emergency Department presenting with symptoms of an acute asthma exacerbation (e.g. dyspnea, wheezing), under the care of an authorizing physician, who meet the following:</p> <p>Inclusion criteria: Age 16 years or older with one of the following: history of asthma; or previous episode of wheezing requiring treatment; or asthma and pregnancy; or COPD with asthma</p> <p>Exclusion criteria: COPD without asthma; or CHF; or chest pain different from patient's normal or ED visit for prescription refill only.</p>	
Authorized Implementers:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
<p>Nurses, Respiratory Therapists, Pharmacists registered and in good standing with their respective regulatory college in Ontario, who have received up-to-date education and training on this medical directive.</p>	

Indications:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
<p>Age 16 years or older presenting with mild, moderate or severe symptoms of asthma, with one of the following: history of asthma; or previous episode of wheezing requiring treatment; or asthma and pregnancy; or COPD with asthma.</p> <p>Contraindications:</p> <ul style="list-style-type: none"> • patient does not fit the inclusion criteria • patient or Substitute Decision Maker does not give consent • spirometry or peak expiratory flow: <ul style="list-style-type: none"> - patient unable to perform test • salbutamol: <ul style="list-style-type: none"> - heart rate greater than 140 beats per minute requires emergent physician assessment - allergic to salbutamol – hold salbutamol and proceed with rest of medical directive • ipratropium bromide: <ul style="list-style-type: none"> - allergic to ipratropium bromide - hold ipratropium bromide and proceed with rest of medical directive • prednisone: <ul style="list-style-type: none"> - allergic to prednisone – hold prednisone and proceed with rest of medical directive 	
Consent:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
<p>Consent must be provided by patient or substitute decision maker prior to commencing medical directive.</p>	
Guidelines for Implementing the Order/ Procedure:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
<p>This medical directive allows nurses, respiratory therapists or pharmacists to initiate quantitative assessment, pharmacotherapy with inhaled bronchodilators and oral corticosteroids as soon as possible to adults 16 years and over who present to the Emergency Department with a clinical picture consistent with asthma and who are entered into the Adult Emergency Department Asthma Care Pathway (Asthma Pathway).</p> <p>Although it is intended that these patients will be treated by a physician according to the Asthma Pathway, the earliest possible nurse/respiratory therapist/pharmacist-initiated therapy will allow symptom relief while awaiting assessment by the physician and is anticipated to shorten the patient’s length-of-stay in the ED. Dosage, frequency and choice of medication will be determined by the degree of respiratory distress as described in the Asthma Pathway decision tree appended to this medical directive.</p> <p>If the patient’s condition worsens at any time, the physician is to be notified STAT.</p>	

Documentation and Communication:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
As per institution's policy and procedure for documentation of implementation of medical directives	
Review and Quality Monitoring Guidelines:	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
Administrative Approvals (as applicable):	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:
Approving Physician(s)/Authorizer(s):	Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title:

Appendix A: Medical Directive Flowchart: post triage according to CTAS standards Emergency Department Adult Asthma Medical Directive

Mild and Moderate Asthma

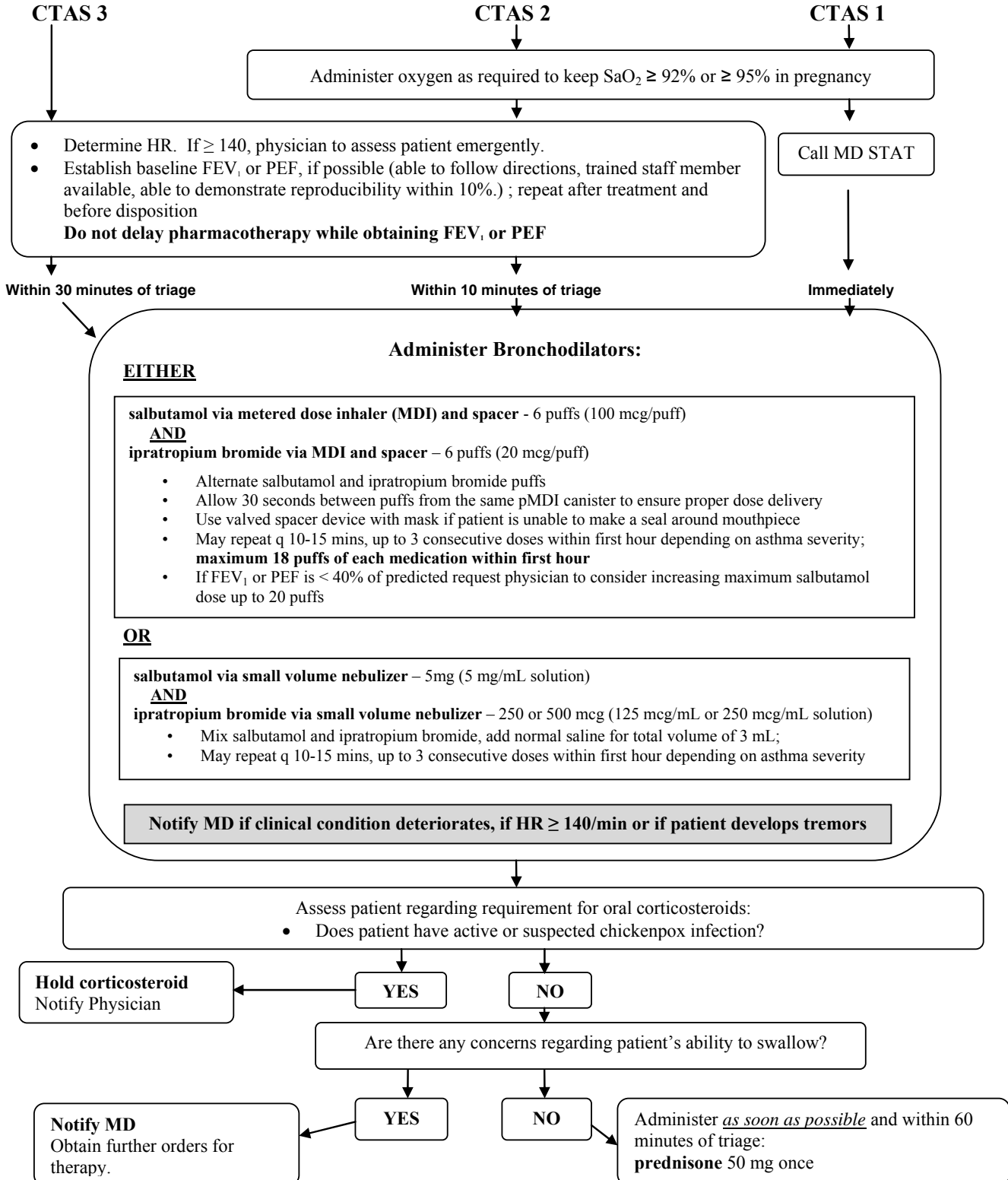
Mild: FEV₁ or PEF > 60% predicted/personal best
Moderate: FEV₁ or PEF 40 to 60% predicted/personal best

Severe Asthma

FEV₁ or PEF < 40% predicted/personal best
or unable to do

Potentially Fatal Asthma

FEV₁ or PEF – unable to do



Adult Emergency Department Asthma Care Pathway (EDACP) References

- Becker A, Lemièrre, C, Bérubé, D, Boulet, L-P, Ducharme FM, D'Urzo, T, Ernst, P...Zimmerman, B (2005). Summary of recommendations from the Canadian Asthma Consensus Guidelines, 2004 and Canadian Pediatric Asthma Consensus Guidelines, 2003 (update to December 2004). *CMAJ* 2005; 173(6 suppl):S1-S56
- Beveridge RC, Grunfeld AF, Hodder RV, Verbeek PR . Guidelines for the emergency management of asthma in adults. CAEP/CTS Asthma Advisory Committee. Canadian Association of Emergency Physicians and the Canadian Thoracic Society. *CMAJ*. 1996 Jul 1;155(1):25-37.
- Boulet LP, Becker A, Bérubé D, Beveridge R, Ernst P (1999). Canadian asthma consensus report. *CMAJ*1999;161(11 suppl):S1-62.
- Boulet, LP et al. Update to the 1999 Canadian Asthma Consensus Guidelines. *Can Respir J* Vol 8 Suppl A March/April 2001: 5A-27A.
- British Thoracic Society/Scottish Intercollegiate Guidelines Network (2008, updated Jan 2012) British Guideline on the Management of Asthma: A national clinical guideline.
- Federation of Regulatory Health Colleges of Ontario (2007). An Interprofessional Guide on the Use of Orders, Directives and Delegation for Regulated Health Professionals in Ontario.
- Global Initiative for Asthma (2011). Global Strategy for Asthma Management and Prevention. Available at www.ginasthma.org
- Hodder et al. Management of acute asthma in adults in the emergency department: nonventilatory management. *CMAJ* Feb. 9, 2010; 182(2): E55-E67.
- Hodder et al. Management of acute asthma in adults in the emergency department: assisted ventilation. *CMAJ* Feb. 23, 2010; 182(3): 265-272.
- Kingston General Hospital "Adult Collaborative Care Plan" Medication Guidelines
- Krishnan, JA, Davis, SQ, Naureckas, ET, Gibson, P, Rowe, BH (2009). An Umbrella Review: Corticosteroid Therapy for Adults with Acute Asthma. *The American Journal of Medicine* (2009); 122: 977-991.
- Lougheed MD, Lemiere C, Ducharme FM, Licskai C, Dell SD, Rowe BH, Fitzgerald M, Leigh R, Watson W, Boulet LP; Canadian Thoracic Society Asthma Clinical Assembly. *Can Respir J*. 2012 Mar-Apr;19(2):127-64.
- National Heart, Lung, and Blood Institute (2007). Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report.
- Registered Nurses' Association of Ontario (2002). Toolkit: Implementation of Clinical Best Practice Guidelines.