Provincial Clinical Knowledge Topic
Asthma, Adult – Inpatient
Version 1.0

Revision History

Version	Date of Revision	Description of Revision	Revised By
1.0	December 2017	Topic Completion	Brandie Walker

Important Information Before you Begin

The recommendations contained in this knowledge topic have been provincially adjudicated and are based on best practice and available evidence. Clinicians applying these recommendations should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care. This knowledge topic will be reviewed periodically and updated as best practice evidence and practice change.

The information in this topic strives to adhere to Institute for Safe Medication Practices (ISMP) safety standards and align with Quality and Safety initiatives and accreditation requirements such as the Required Organizational Practices. Some examples of these initiatives or groups are: Health Quality Council Alberta (HQCA), Choosing Wisely campaign, Safer Healthcare Now campaign etc.

Guidelines

This Clinical Knowledge Topic is based on the following guidelines(s):

- Canadian Thoracic Society
- British Thoracic Society – BTS/SIGN British guideline on the management of asthma
- Global Initiative for Asthma (GINA)
- National Institute for Health and Care Excellence – Asthma Pathway

Keywords

- adult asthma
- respiratory distress
- reactive airway disease

Order Set: Asthma, Adult - Admission Management and Discharge

Order Set Components

Order Set Restrictions: This order set is recommended for ages 18 or greater
Order Set Keywords: adult asthma, respiratory distress, reactive airway disease

Goals of Care Designation

Conversations leading to the ordering of a Goals of Care Designation (GCD), should take place as early as possible in a patient's course of care. The Goals of Care Designation is created, or the previous GCD is affirmed or changed resulting from this conversation with the patient or, where appropriate, the Alternate Decision-Maker.
Complete the Goals of Care Designation (GCD) Order Set within your electronic system, or if using paper process, complete the Provincial Goals of Care Designation (GCD) paper form (http://www.albertahealthservices.ca/frm-103547.pdf)".

Admit

- ☐ Admit to: _____
- ☐ Anticipated Date of Discharge: _____
- ☐ Clinical Communication – Call for old charts from _____ *(clinician clinic, current site, other recent admission – specify site)*
- ☐ Clinical Communication – Call for old PFT reports from _____ *(clinician name or clinic)*

Patient Care

Activity

- ☐ Bed rest – With Bathroom Privileges; head of bed elevated at 30 degrees. Progress to Activity as Tolerated as condition improves
- ☐ Activity as Tolerated
- ☐ Mobilize – Early mobilization

Monitoring

- ☐ Vital Signs: Respiratory Rate, Pulse, Blood Pressure, Temperature, Oxygen Saturations every _____ hour(s)
- ☐ Notify Authorized Prescriber if patient develops tremors, or heart rate greater than _____ beats per minute

Safety and Precaution

- ☐ Isolation – Isolation Type: _____

Diet

- ☐ NPO
- ☐ NPO – may take medications with sips
- ☐ Clear Fluids
- ☐ Regular Diet
- ☐ Other Diet: _____

Respiratory Care

- ☐ Notify attending Authorized Prescriber if _____ *(specify parameters)*
- ☐ O2 Therapy - titrate to maintain SpO_2 between 92-96%
- ☐ O2 Therapy - titrate to maintain SpO_2 between _____- _____ %

Oxygen Therapy In pregnancy

- ☐ O2 Therapy - titrate to maintain SpO2 greater than 95% in pregnancy

Lung function – Asthma

- ☐ Peak Expiratory Flow Rate - Bedside for baseline (if not already completed in ED)
- ☐ Peak Expiratory Flow Rate - Bedside 15 minutes post bronchodilator

Daily Peak Expiratory Flow Rate recommended, pre discharge PEF should be documented on discharge summary

- ☐ Peak Expiratory Flow Rate - Bedside daily
- ☐ Peak Expiratory Flow Rate - Beside BID
- ☐ Peak Expiratory Flow Rate - Bedside pre discharge

PFT is required to confirm asthma diagnosis before discharge if the diagnosis of asthma has not been objectively demonstrated previously

- ☐ Spirometry - Pre And Post Bronchodilator (if available)

Laboratory Investigations

Initial Investigations

- ☐ Complete Blood Count (CBC) with differential
- ☐ Electrolytes (Na, K, Cl, CO2)
- ☐ Creatinine
- ☐ HCG Beta
- ☐ Sputum Bacterial Culture

Consider only for patients presenting with Influenza-like Illness symptoms

- ☐ Respiratory Virus Panel via Nasal Pharyngeal Swab

- ☐ Other *(specify)* _____

Investigations Day 1 post admission

- ☐ Complete Blood Count (CBC) with differential on day 1 post admission. Date:_____
- ☐ Electrolytes (Na, K, Cl, CO2) on day 1 post admission. Date:_____

Blood Gas is recommended in severe asthma, clinical deterioration (decreasing Peak Expiratory Flow [PEF], SPO_2 less than 92% / increasing O2 requirement), or if PEF or FEV1 under 50% predicted value

- ☐ Blood Gas Arterial STAT

Diagnostic Imaging

- ☐ Chest X-ray PA and Lateral (GR Chest, 2 Projections). Indication: _____

Other Investigations

- ☐ Electrocardiogram. Indication: _____

Intravenous Therapy

- ☐ Intravenous Cannula – Insert
- ☐ lactated ringers infusion 30 mL/hour to keep vein open
- ☐ lactated ringers infusion at _____ mL/hour
- ☐ 0.9 % NaCl infusion 30 mL/hour to keep vein open
- ☐ 0.9 % NaCl infusion IV at _____ mL/hour
- ☐ D5W - 0.45% NaCl IV infusion 30 mL/hour to keep vein open
- ☐ D5W - 0.45% NaCl infusion at _____ mL/hour
- ☐ Saline Lock IV, flush with 2 to 5 mL 0.9% sodium chloride every 8 hours for peripheral lines
- ☐ IV Fluids (other): _____ infusion at _____ mL/hour

Medications

- ☐ Refer to local institutional practices for Venous Thromboembolism (VTE) Prophylaxis until provincial orders available

Condition Specific Medication Considerations - Asthma

- *Ask about any previous reactions to NSAIDS or beta blockers, and document any allergies.*
- *Presence of asthma, Chronic Rhinosinusitis with Nasal Polyposis, and Aspirin Sensitivity suggests Aspirin Exacerbated Respiratory Disease*
- *Do not sedate patients with Acute asthma unless for intubation*

Acute Bronchodilation – Moderate-Severe Asthma

Salbutamol is the mainstay of therapy. Ipratropium in moderate to severe exacerbations

Metered Dose Inhaler (MDI) *– preferred option*

- ☐ salbutamol 100 mcg MDI 4 puffs inhaled every 20 minutes with spacer x 3 doses
- ☐ salbutamol 100 mcg MDI 4 puffs inhaled every 1 hour PRN with spacer for wheeze
- ☐ salbutamol 100 mcg MDI _____ puffs inhaled every _____ hour(s) with spacer

- ☐ ipratropium 20 mcg MDI 4 puffs inhaled every 20 minutes with spacer x 3 doses
- ☐ ipratropium 20 mcg MDI 4 puffs inhaled every 1 hour PRN with spacer for wheeze
- ☐ ipratropium 20 mcg MDI _____ puffs inhaled every _____ hour(s) with spacer

Nebulization Therapy *– Formulary Restricted Use: Use nebulization ONLY for patients who have severe, life-threatening respiratory disease (e.g. impending respiratory arrest, continuous nebulization required), are uncooperative or are unable to follow the directions required for MDI with spacer*

- ☐ salbutamol 5 mg inhaled by nebulizer every 20 minutes x 3 doses
- ☐ salbutamol 5 mg inhaled by nebulizer every 1 hour PRN for wheeze
- ☐ salbutamol _____ mg inhaled by nebulizer every_____ hour(s) with spacer

- ☐ ipratropium bromide 0.5 mg inhaled by nebulizer every 20 minutes x 3 doses
- ☐ ipratropium bromide 0.5 mg inhaled by nebulizer every 1 hour PRN for wheeze
- ☐ ipratropium bromide _____ mg inhaled by nebulizer every_____ hour(s) with spacer

Adjunctive Therapies

If persistent severe airflow obstruction despite maximal medical therapy. Must be assessed by an Authorized Prescriber prior to administration

☐ magnesium sulphate 2 g IV over 20 min once

Maintenance Therapy

There is perceived value in monitoring technique and emphasizing the importance of inhaled steroids, even during an acute exacerbation. Corticosteroids should be the first line controller medication. LABA should never be used as monotherapy.

Inhaled Corticosteroid (*Choose ONE, utilize patient's home medication if possible*)
For ciclesonide, recommended frequency is daily or BID

☐ ciclesonide (Alvesco) 100 mcg MDI ____ puff(s) inhaled _____ with spacer
☐ ciclesonide (Alvesco) 200 mcg MDI _____puff(s) inhaled _____ with spacer
☐ fluticasone (Flovent) 50 mcg MDI ____ puff(s) inhaled BID with spacer
☐ fluticasone (Flovent) 125 mcg MDI ____ puff(s) inhaled BID with spacer
☐ fluticasone (Flovent) 250 mcg MDI _____puff(s) inhaled BID with spacer
☐ fluticasone (Flovent) 250 mcg diskus ____ puff(s) inhaled BID
☐ beclomethasone (Qvar) 50 mcg MDI ____ puff(s) inhaled BID with spacer
☐ beclomethasone (Qvar) 100 mcg MDI ____ puff(s) inhaled BID with spacer
☐ budesonide (Pulmicort) 200 mcg turbuhaler ____ puff(s) inhaled BID

Combination Inhaled corticosteroid / Long-acting beta-agonist

☐ fluticasone-salmeterol (Advair)100 mcg-50 mcg diskus 1 puff inhaled BID
☐ fluticasone-salmeterol (Advair) 125 mcg-25 mcg MDI ____ puff(s) inhaled BID with spacer
☐ fluticasone-salmeterol (Advair)250 mcg-25 mcg MDI ____ puff(s) inhaled BID with spacer
☐ fluticasone-salmeterol (Advair) 250 mcg-50 mcg diskus 1 puff inhaled BID
☐ fluticasone-salmeterol (Advair) 500 mcg-50 mcg diskus 1 puff inhaled BID
☐ budesonide-formoterol (Symbicort)100 mcg-6 mcg turbuhaler _____puff(s) inhaled BID
☐ budesonide-formoterol (Symbicort) 200 mcg-6 mcg turbuhaler _____puff(s) inhaled BID

fluticasone-vilanterol is restricted to:

1. *Asthma uncontrolled on inhaled corticosteroid therapy OR*
2. *Maintenance treatment of moderate to severe (i.e. FEV1 less than 80% predicted) COPD AND inadequate response to a long-acting bronchodilator OR*
3. *Maintenance treatment of severe (i.e. FEV1 less than 50% predicted) COPD*

☐ fluticasone-vilanterol (Breo Ellipta) 100 mcg-25 mcg DPI ____ puff(s) inhaled daily

The inhalers listed above are on formulary, use patient's own supply or complete non-formulary request when ordering non-formulary inhalers

☐ Other:_____ *(drug name, delivery device, strength, dose, route and frequency)*

Corticosteroids

Systemic corticosteroids are indicated in all acute asthma exacerbations.
Oral and parenteral agents are considered equivalent; consider IV administration if actively vomiting, too dyspneic to swallow, severe exacerbations, or high likelihood of requiring airway intervention.

☐ predniSONE 50 mg PO once now if not already given
☐ predniSONE _____ mg PO daily x _____ days

If not tolerating oral corticosteroids or is NPO; consider switching to PO once clinically appropriate
☐ methylPREDNISolone (Solu-MEDROL) _____ mg IV every _____ hour(s)

Immunization – Influenza and Pneumococcal

If indicated, when the patient is no longer febrile or acutely ill, with verbal informed consent

During influenza season if NOT already vaccinated
☐ influenza vaccine 0.5 mL IM once

Review vaccine history and eligibility criteria if not previously immunized
☐ pneumococcal polysaccharide vaccine 0.5 mL IM once

Transitions and Referral (Inpatient)

Patients admitted for an Asthma Exacerbation should have a community respirologist referral, inpatient referral, or urgent outpatient referral at a minimum. If Respirology is not available, refer to Internal Medicine.

☐ Consult Respirology
☐ Consult General Internal Medicine
☐ Consult Critical Care
☐ Consult RAAPID in rural settings
☐ Occupational Therapy, Reason for Referral:_____
☐ Physiotherapy, Reason for Referral:_____
☐ Respiratory Therapist, Reason for Referral: _____
☐ Certified Respiratory Educator, Reason for Referral : _____

A major contributor to poorly controlled asthma is medication affordability. If applicable, refer to Social Work

☐ Social Work, Reason for Referral: Financial Concerns

Patient Education and Discharge Planning

Educational intervention may decrease subsequent hospital admission in adults who present to emergency department for acute asthma. Should include Asthma Self-Management 'Action' Plan. Distribution of Asthma Action Plan to Patient's circle of care and pharmacy is suggested.

Sample Asthma Action Plans: Asthma Action Plan (myHealthAlberta), also available at www.asthma.ca
Refer to AHS Asthma Toolkit

Teaching and Patient Discharge Instructions

☐ Teach inhaler device technique (Registered Nurse / Respiratory Therapist / Certified Respiratory Educator / Pharmacist or Pharmacy Technician)
☐ Discharge Instructions – patient to follow up with Family Physician 2 weeks post discharge
☐ Discharge Instructions – send discharge summary to Family Physician

Outpatient Referrals

Patients admitted for an Asthma Exacerbation should have a community respirologist referral, inpatient referral, or urgent outpatient referral at a minimum.

☐ Consult Respirology
☐ Consult General Internal Medicine
☐ Alberta Quits Helpline Referral
☐ Certified Asthma Educator (if available or refer to highest level of asthma education)

Analytics

Analytics – Outcome Measure #1

Name of Measure	Number of times order set Asthma, Adult - Admission Management and Discharge used
Definition	Number of times order set Asthma, Adult - Admission Management and Discharge is used. Overall, by zone, by sites, by domain (ED, Inpatient, etc.), and by units. Will be required on an ongoing basis with the ability to filter by location, time period, domain, etc
Rationale	Intended to measure how often the order set cited in the knowledge topic is being used, in what domain, and be for different lengths of time. May indicate areas with adoption issues or gaps in topic

Analytics – Outcome Measure #2

Name of Measure	Compliance to clinical standards of CKT, specific items/orders in the order set
Definition	The elements of the CKT for which it is important to measure compliance against, specific items/orders in the order set are: • Use of PEF/FEV1 • Baseline asthma medication use and discharge medications • Medication use (which drugs, dose schedule, route, duration) • Use of MDI instead of nebulizers • Nasal swab use for respiratory viruses and number of patients admitted who are swabbed for respiratory viruses (and % positive) • Referral to asthma educator • Use of asthma action plan • Patient Experience who received disease specific education in hospital (patient feels confident with asthma action plan) and follow up arranged and patient comfortable with follow up plan
Rationale	Measure compliance to specified clinical standards within the CKT

Analytics – Outcome Measure #3

Name of Measure	Length of stay and percent of readmission or ED visit for patients admitted with acute exacerbation of asthma
Definition	Length of stay for patients admitted with acute exacerbation of asthma. Number of patients requiring ICU admission/ventilation. Percent of readmission or ER visit for asthma within 30 days, 3 months, 6 months.
Rationale	To facilitate the identification of gaps in care; and define severity and prevalence of the disease in Alberta and by zone/site

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