Asthma – Adult
Clinical Care Pathway (CCP)

- For Pediatric client see Pediatric Asthma CCP (Respiratory Chapter)
- For EMERGENCY presentation see Adult Asthma Exacerbation e-CCP (Respiratory Chapter)

Purpose of this Document

- ❖ Outlines key elements of the clinical care process for Asthma in the Adult population
- ❖ Provides a *condition-specific* pathway of assessment and care for diagnosed or suspected Asthma. Refer to the **Introduction - General Assessment** (Adult Respiratory System), for complete general assessment
- ❖ Supports the assessment, Physician/Nurse Practitioner consultation, and documentation for the clinical encounter within the primary health care setting, in remote and isolated Indigenous communities

ASSESSMENT [1-14]

Consult Physician/Nurse Practitioner promptly for severe presentation that may require medical evacuation

- Refer to the **Introduction - General Assessment** (Adult Respiratory System), for complete general assessment

Red Flags

- ☐ Silent chest
- ☐ Altered mental status
- ☐ Hypoxia
- ☐ Tachypnea
- ☐ Severe dyspnea and/or signs of respiratory distress
- ☐ Lethargy
- ☐ Cyanosis
- ☐ Decreasing respiratory effort
- ☐ Angioedema

Provide trauma-informed care and ensure an approach based on cultural safety and humility, at all stages of the nursing encounter.

Health History

Respiratory

- ☐ Cough (worse at night)
- ☐ Dyspnea
- ☐ Chest tightness
- ☐ Wheezing
- ☐ Dyspnea

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- ☐ Nasal congestion

Risk Factors

- ☐ Family or personal history of atopic conditions such as eczema or allergic rhinitis
- ☐ Obesity
- ☐ Childhood symptoms such as chronic cough or nocturnal cough may be indicators
- ☐ Gastroesophageal reflux disease (GERD)

Social History

- ☐ Exposure to tobacco smoke, damp homes (mould), wood-burning or gas stoves
- ☐ Overcrowded living conditions
- ☐ Health disparities and inequities associated with social determinants of health

Triggers

- ☐ Viral respiratory infections
- ☐ Allergens: house dust mites, animal dander (dogs, cats), cockroach allergen, mould, pollens, yeast
- ☐ Exposure to tobacco smoke, damp homes (mould), wood-burning or gas stoves
- ☐ Air pollution
- ☐ Medications, e.g., aspirin, NSAIDs
- ☐ Dietary sulphites commonly found in dried fruits, vinegar, processed potatoes and shrimp
- ☐ Emotional stress
- ☐ Exercise
- ☐ Weather (cold, hot or humid air; changes in barometric pressure; rain; thunderstorms)

Considerations for Elderly Clients

- ☐ Discuss ability to maintain Activities of Daily Living (ADL)
- ☐ Assess personal supports available to the client
- ☐ Memory impairment may hinder the client's ability to follow instructions and understand the condition

Record Allergies

Physical Exam

Integumentary

- ☐ Eczema

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- ☐ Nasal polyps

Respiratory

Inspection	Palpation	Percussion	Auscultation
☐ Use of accessory muscles	☐ Asymmetrical tactile fremitus ☐ Decreased transmitted voice sound	☐ Hyperresonance	☐ Prolonged expiratory phase ☐ Wheezing ☐ Crackles

Ensure vital signs are recorded and within normal values

Normal adult values

Age	Heart rate (beats/min)	Blood pressure (mmHg)	Respiratory rate (breaths/min)	Oxygen saturation	Temperature
All Ages	60-100	SBP 90-140 DBP 60-90	12-20	>94%	**Oral:** 36.4-37.6°C

- Refer to the **Introduction - General Assessment** (Adult Respiratory System), for additional information on measurement of vital signs, if required

Clinical Pearls and Tools

Complications from poorly controlled asthma:

- Severe asthma exacerbation: hypoxia and respiratory distress which may progress to respiratory failure, atelectasis, pneumothorax, or death
- Limitations to activities of daily living
- COPD
- Increased susceptibility to viral and bacterial infections
- Depression and anxiety

Table 1: Clinical differences between COPD and Asthma

Characteristics	COPD	Asthma
Symptom Onset	Midlife	Early in life
Associated past history/risk factors	Long history of smoking (however, may also occur in non-smokers)	Allergy, rhinitis and/or eczema
Presentation	Dyspnea on exertion with chronic symptoms Severity of symptoms may vary day to day	Symptoms at night/early morning Usual triggers: sports, laughter, allergies, respiratory infection

Condition process	Largely **irreversible** airflow limitation Symptoms are progressive and occur over an extended period of time	**Reversible** airflow limitation

Differential Diagnoses

- Respiratory infection
- Chronic obstructive pulmonary disease (COPD)
- Foreign body obstruction
- Congestive heart failure
- Severe allergic reaction
- Medication side effects (ACE inhibitors, beta blockers)
- Aspiration from swallowing mechanism dysfunction or gastroesophageal reflux disease (GERD)
- Laryngeal dysfunction
- Pulmonary edema

Refer to the **Introduction - General Assessment – Common Presentations section** (Adult Respiratory System), to review other potential differential diagnoses for common presentations.

Diagnostic Tests and Investigations

Diagnostic test selection is based on client history, risk factors, physical examination findings, and test availability.

Consult Physician/Nurse Practitioner when practice is outside legislated scope and without authorized delegation.

Pulmonary Function Testing

- Spirometry: Pulmonary function measurement that shows reversible airway obstruction (pre- and post-bronchodilator) by measuring volume and flow rates during forced expiration
- Symptoms and signs of airway obstruction and response to therapy are only suggestive of a diagnosis of asthma
- Clinical suspicion must be confirmed by objective pulmonary function measures indicating reversible airway obstruction, variable airflow limitation over time, or airway hyper-responsiveness

Point of Care Testing

- Point of care tests are not generally indicated for this condition

Laboratory

- For severe asthma, a specialist may order specific tests

X-rays

- Chest x-rays may be ordered for clients not responding to treatment, or to rule out a differential diagnosis

MANAGEMENT, INTERVENTIONS AND MONITORING [1-8, 13-17]

Goals of Management

- Client feels safe, listened to, and involved in management and care decisions
- Prevent acute asthma exacerbations and complications
- Achieve long-term control of asthma symptoms
- Maintain normal activity
- Maintain normal lung function
- Maintain adherence to medication
- Minimize side effects of medication

Considerations

- Use a client-centred,collaborative approach based on **respect, empathy, dignity, compassion, and shared-decision making**
- Consider the client's individual, community and cultural context in management decisions and care planning
- Discuss supports available to the client, and ensure the client and/or caregiver can manage the care plan after discharge
- Consider determinants of health such as access to basic amenities (clean, potable water), phone and means of transportation, and any other financial or environmental limitations that may affect the care plan

Non-Pharmacological Interventions

Client-Centred Learning

- Provide education and instructions to the client/caregiver
- Advise client/caregiver of appropriate use of medications to treat current condition
- Explain to client/caregiver the importance of closely adhering to ICS therapy as prescribed, and appropriate use of rescue medications
- Counsel client about appropriate use of medications; emphasize the **difference between a reliever and a controller**
- Demonstrate appropriate use of delivery device with spacer as appropriate. Observe client inhaler technique at all follow-up visits. Click here for videos illustrating proper inhaler technique
- Counsel client/caregiver about how to minimize local side effects (oral candidiasis) by carefully rinsing the mouth and gargling after using inhaled corticosteroids
- Provide client/ caregiver with self-management education that includes a **written asthma action plan** outlining how and when to adjust treatment. For more information, see My Asthma Action Plan from the Canadian Lung Association
- Discuss with client/caregiver any concerns or limitations they may have in relation to the care plan and work to identify strategies to address them

Prevention Strategies

- Discuss environmental effects on asthma symptoms and ways to reduce those effects (for example, reducing exposure to dust, pollens, viral respiratory tract infections, etc.)

- Discuss the effects of smoking and second-hand smoke and offer smoking cessation information if appropriate.

Pharmacological Interventions

Review and document current medications, including over-the-counter, complementary, alternative, and traditional Indigenous medicines, as well as chemical or substance intake which may impact management, prior to initiating treatment.

Review the drug monograph, the FNIHB Nursing Station Formulary and/or provincial/territorial formulary prior to initiating treatment.

Consult Physician/Nurse Practitioner when practice is outside legislated scope and without authorized delegation.

Oxygen Therapy

- If required, provide oxygen therapy and titrate as clinically indicated

For EMERGENCY presentation see Adult Asthma Exacerbation e-CCP (Respiratory Chapter)

Asthma is managed in a stepwise approach:

Note: Salbutamol inhaler and fluticasone inhaler are listed in the FNIHB Nursing Station Formulary at the time of publication of this document; additional therapies exist and may be provided through NIHB. Any changes to the client's current regimen should be discussed with the prescriber and/or specialist

Reliever therapy

Reliever medications are used to treat acute symptoms of asthma (wheezing, shortness of breath); they do not address underlying inflammation associated with asthma, and should not be the mainstay of treatment.

Frequency of symptoms as well as use of reliever therapy will guide maintenance therapy; see follow-up monitoring section below.

If the client requires salbutamol more often than usual the client should be re-evaluated and the treatment plan should be adjusted

Short-Acting B_2-agonists (SABAs)
• The client should be provided with a SABA (salbutamol) for urgent relief that quickly reverses bronchoconstriction as needed
Recommended dose for Salbutamol as reliever therapy
Salbutamol 100 mcg/puff, 1 to 2 puffs inhaled by MDI with spacer (or without if spacer unavailable) every 4 to 6 hours PRN **Maximum dose**: 8 puffs per day **Caution**: cardiac

Reliever therapy PLUS Inhaled Corticosteroid

Traditionally, SABA monotherapy has been the preferred medication for infrequent or mild asthma symptoms. The **2019 GINA (Global Initiative for Asthma) guidelines** now recommend that all adolescents and adults with asthma receive an ICS-containing controller treatment to address underlying inflammation along with a reliever medication:

Initial treatment recommendation for mild asthma:

- As-needed low-dose **inhaled corticosteroids and long-acting bronchodilator (ICS/LABA)** (budesonide-formoterol combined in one inhaler)

OR

- As-needed **short-acting beta$_2$-agonist (SABA**) **PLUS low-dose ICS.** ICS to be used whenever SABA is taken to address underlying inflammation (separate inhalers)

Maintenance Therapy

Maintenance medications are used daily to treat underlying inflammation associated with recurrent symptoms of asthma, and are considered the mainstays of treatment

The prescriber will determine the choice of therapy and manage changes based on the frequency of symptoms as well as use of reliever therapy; see the follow-up monitoring section below

Inhaled Corticosteroids

- Inhaled corticosteroids (ICS) are considered first-line maintenance therapy for the treatment of chronic asthma
- Improve symptom control
- Improve lung function
- Reduce frequency and severity of exacerbations
- Decrease asthma-related mortality
- When symptoms are controlled, ICS is titrated to a lower dose to maintain control of asthma

Recommended dose for inhaled corticosteroid

Dose of ICS is dependent on the severity of asthma symptoms. Other medications may be combined with ICS as add-on therapy for moderate and severe asthma symptoms.

Mild	Moderate	Severe
Fluticasone propionate MDI 125 to 250 mcg inhaled by MDI with spacer BID	**Fluticasone propionate MDI** 250 to 500 mcg inhaled by MDI with spacer BID	**Fluticasone propionate MDI** 500 mcg inhaled by MDI with spacer BID Note: Clients with very severe asthma requiring higher doses of corticosteroids such as those clients currently requiring oral corticosteroids may use doses of up to 1000 mcg twice daily.

Caution: Rinse mouth and gargle with water after inhalation

Long-acting beta$_2$-agonists (LABA)

- Should never be given as monotherapy
- LABA (e.g., formoterol) may be used as adjunctive therapy with ICS, as it improves lung function and symptoms and decreases asthma attacks
- For patients not well controlled on low-dose ICS therapy, a LABA may be added.

Combination inhalers: Inhaled corticosteroids and long-acting beta$_2$ agonists (ICS/LABA)

- The 2019 GINA guidelines recommend that as needed low-dose ICS-formoterol be used as a preferred controller option.
- **Note:** In acute exacerbations, SABAs are still recommended as reliever medications, not combination inhalers such as budesonide-formoterol.

Leukotriene receptor antagonists (LTRAs)

- **Leukotriene receptor antagonists (**LTRAs) (e.g., montelukast) have anti-inflammatory properties but are not as effective as low-dose ICS at alleviating symptoms or preventing exacerbations.
- LTRAs may be prescribed as monotherapy in clients who are unable to take inhaled corticosteroids, or as add-on therapy to low-dose ICS for preventing exacerbations.

Long-acting inhaled muscarinic antagonists (LAMA*)*

- Tiotropium bromide monohydrate (Spiriva **respimat**) may be prescribed to clients who have severe asthma, with a history of one or more severe exacerbations within the previous year.
- **Tiotropium bromide is prescribed in clients over 18 years of age.**

Oral corticosteroids

- Oral corticosteroid therapy may be used as maintenance therapy in select clients with severe asthma

Immunizations

- Annual influenza vaccine
- Pneumococcal polysaccharide 23-valent vaccine
- Pneumococcal conjugate 13 vaccine for those over 65 in addition to pneumococcal polysaccharide 23 vaccine

Monitoring

- Monitor cardiorespiratory status and vital signs as indicated by client's condition
- Monitor for signs of complications such as an asthma exacerbation
- Before considering discharge home, ensure that the client does not have symptoms of an asthma exacerbation, such as respiratory distress

DISCHARGE AND FOLLOW-UP PLAN [1,5,13,14]

- Before discharge home, ensure that the client/caregiver:
  - Understands and is able to recognize the clinical signs of an acute exacerbation of asthma, signs indicating that asthma is becoming worse, and how and when to seek medical attention
  - Understands instructions provided (translator may be needed if English/French not the first language of the client)
  - Is able to administer inhalers properly
  - Understands and is aware of when to return for re-evaluation
  - Has no concerns or limitations that may prevent their return for re-evaluation if required
- Follow-up should take place at any time if the client is not improving or their condition deteriorates
- 24-48 hours after initial visit, follow up with the client/caregiver by telephone or schedule a follow-up visit as necessary
- Encourage client/caregiver to keep a diary of symptoms and home peak flow monitoring to be discussed at follow-up visits

Follow-up monitoring:

- Follow-up every 4–6 weeks while gaining control
- Within 1-2 working days and again within 2-4 weeks of severe exacerbation requiring emergency visit or oral steroid use
- Every 1–6 months to monitor control

- At follow-up visits, assess:
  - Adherence to existing medication plan
  - Daytime or night-time asthma symptoms
  - Bronchodilator reliance (number of times used per week)
  - Activity limitation due to asthma
  - Proper inhaler technique with correction if inadequate
  - Control or eliminate trigger exposure
  - Comorbidities
  - Review action plan

- The table below can help assess and qualify asthma control

Table 2: Asthma Control Criteria

Characteristic	Frequency or value
Daytime symptoms	3-4 days per week
Night time wakening with symptoms	Any
Need for a short acting β_2-agonist **including, when used for exercise**	3-4 doses per week
Limitations to physical activity, work, or school	Any
Exacerbations	Mild, infrequent, none within the last year

- **Well controlled asthma:** None of the above criteria are met
- **Partly-controlled asthma:** 1-2 of the above criteria
- **Uncontrolled asthma:** 3-4 of the above criteria

Record discharge plan and date of follow-up

Referral and/or Consultation

- Coordinate asthma care referral request(s), within and outside the community, if the client:
  - Experienced an acute severe or life-threatening asthma exacerbation
  - Has symptoms that result in diagnostic uncertainty or there is a suspicion of comorbidity
  - Has had (≥ 2) exacerbations requiring rescue oral corticosteroids or hospitalization
  - Fails to meet the goals of asthma therapy after three to six months of treatment
  - Presents with other conditions that complicate treatment or diagnosis, e.g., sinusitis, nasal polyps, severe rhinitis, GERD, COPD
  - Is being considered for immunotherapy
- Arrange for medical evacuation if indicated
- Emergency travel outside of the community can be stressful for clients and their families: provide open and clear information on the reasons for the transfer, what is needed and what may be expected

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