

# Croup – Pediatric Clinical Care Pathway (CCP)

- There is no Adult version of this CCP. In case of Adult client, conduct assessment as per the **Introduction - General Assessment (Adult Respiratory System)**, this CCP, and consult with Physician/Nurse Practitioner as required

## Purpose of this Document

- ❖ Outlines key elements of the clinical care process for croup in the Pediatric population
- ❖ Provides a *condition-specific* pathway of assessment and care for diagnosed or suspected croup. Refer to the **Introduction - General Assessment (Pediatric 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 1-10



### Consult Physician/Nurse Practitioner promptly:

- For severe presentation that may require medical evacuation
- For any febrile infant

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



### Red Flags

- Severe dyspnea and/or signs of respiratory distress
- Symptoms of impending respiratory failure: decreased retractions or asynchronous chest wall and abdominal movement, decreasing stridor or breath sounds
- Drooling
- Lethargy
- Pallor
- Cyanosis
- Irritability
- Signs of dehydration
- Significant respiratory distress persisting 2-4 hours after treatment with corticosteroids and nebulized EPINEPHrine

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

### Health History

- Cough
- Rhinorrhea
- Fever
- Abrupt late evening/nighttime onset of hoarseness and seal-like barking cough
- Symptoms are typically worse at night and improve during the day
- Symptoms become worse with agitation
- Exposure to cool air relieves symptoms

### Risk Factors

- Younger infants are at greater risk for respiratory distress due to their small airways
- Functional or anatomic upper airway narrowing
- Immunosuppression
- Asthma and predisposition to atopy
- Family history of croup

### Social History

- Overcrowded living conditions
- Daycare attendance



### Record Allergies

### Physical Exam

#### General appearance

- Altered mental status
- Irritability

#### HEENT

- Enlarged and/or tender cervical lymph nodes
- Nasal congestion
- Coryza
- Hoarseness

#### Respiratory

Inspection	Auscultation
<ul style="list-style-type: none"><li><input type="checkbox"/> Use of accessory muscles</li><li><input type="checkbox"/> Nasal flaring</li><li><input type="checkbox"/> Asymmetrical chest movement</li><li><input type="checkbox"/> Tachypnea</li></ul>	<ul style="list-style-type: none"><li><input type="checkbox"/> Seal-like barky cough</li><li><input type="checkbox"/> Decreased air entry/breath sounds</li><li><input type="checkbox"/> Stridor</li></ul>






Refer to [Table 1: Alberta Clinical Practice Guideline scale for croup severity](#) to assess croup severity.

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Ensure vital signs are recorded and within normal values

### Normal pediatric values

Age	Heart rate (beats/min)	Blood pressure (mmHg)	Respiratory rate (breaths/min)	Oxygen saturation	Temperature
Neonate 0-1 month	90-190	SBP 67-84 DBP 35-53	30-60	All Ages	All Ages
Infant 1-12 months	100-180	SBP 72-104 DBP 37-56	30-53	>94%	<b>Rectal:</b> 36.6°C-38°C
Toddler 1-2 years	98-140	SBP 86-106 DBP 42-63	22-37		<b>Oral:</b> 35.5°C-37.5°C
Preschooler 3-5 years	80-120	SBP 89-112 DBP 46-72	20-28		<b>Axillary:</b> 36.5°C-37.5°C
School-age 6-11 years	75-118	SBP 97-120 DBP 57-80	18-25		<b>Tympanic:</b> 35.8°C-38°C
Adolescent 12-19 years	60-100	SBP 110-131 DBP 64-83	12-20		

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



### Clinical Pearls and Tools

- Croup occurs predominantly in late fall to early spring
- In the majority of children, symptoms resolve within 48 hours but may occasionally persist for up to one week

**Table 1: Alberta Clinical Practice Guideline scale for croup severity <sup>7</sup>**

Mild	Moderate	Severe	Impending respiratory failure
<ul style="list-style-type: none"> <li><input type="checkbox"/> Occasional seal-like barks cough</li> <li><input type="checkbox"/> No audible stridor at rest</li> <li><input type="checkbox"/> May or may not have mild suprasternal and/or intercostal indrawing</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Frequent seal-like barks cough</li> <li><input type="checkbox"/> Easily audible stridor at rest</li> <li><input type="checkbox"/> Suprasternal and sternal wall retractions at rest</li> <li><input type="checkbox"/> May or may not have mild distress or agitation</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Frequent seal-like barks cough</li> <li><input type="checkbox"/> Prominent inspiratory and occasionally expiratory stridor</li> <li><input type="checkbox"/> Marked sternal wall retractions</li> <li><input type="checkbox"/> Significant distress and agitation</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Seal-like barks cough (often not prominent)</li> <li><input type="checkbox"/> Audible stridor at rest (occasionally hard to hear)</li> <li><input type="checkbox"/> Sternal wall retractions (may not be marked as respiratory failure progresses)</li> <li><input type="checkbox"/> Lethargy or decreased level of consciousness</li> <li><input type="checkbox"/> Often dusky appearance without supplemental oxygen</li> </ul>

### Differential Diagnoses

- [Epiglottitis](#)
- Bacterial tracheitis
- [Foreign-body obstruction](#)
- [Retropharyngeal abscess](#) or [peritonsillar abscess](#)
- Airway trauma
- [Diphtheria](#)
- [COVID-19](#)
- [Influenza](#)
- [Community acquired pneumonia](#)
- Acute allergic reaction
- Ingestion of corrosives

Refer to the **Introduction - General Assessment – Common Presentations Section** ([Pediatric Respiratory System](#)), to review other potential differential diagnoses for common presentations.

Proactively identify suspected or confirmed cases of communicable respiratory diseases. Implement appropriate precautions and manage as per local, regional and/or provincial/territorial guidelines.

**Note: Stridor may be heard in both epiglottitis and croup.** It can be challenging to distinguish these two diagnoses in children.

**Table 2: Characteristics of epiglottitis versus croup**

Characteristics	Epiglottitis	Croup
Age	Any age	6 months to 6 years
Typical onset	Abrupt onset	Slower onset
Fever	High fever	Mild fever
Voice	Unable to speak, dysphonia	Hoarse
Position	Sitting/tripod	Variable
Cough	Minimal/absent	Barking
Discriminating features	Droling	Symptoms worse at night

### 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.

Diagnosis of croup is based on clinical presentation

### Point of Care Testing

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

### Laboratory

- Laboratory tests are not generally indicated for this condition

### X-rays

- X-rays may be ordered to rule out other etiologies if the diagnosis is unclear

## **MANAGEMENT, INTERVENTIONS AND MONITORING** <sup>1-3, 6, 7, 11-29</sup>

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### Goals of Management

- Client feels safe, listened to, and involved in management and care decisions
- Relieve symptoms, provide supportive care
- Prevent complications
- Provide parent/caregiver with clear education on the course and expected outcomes of the illness

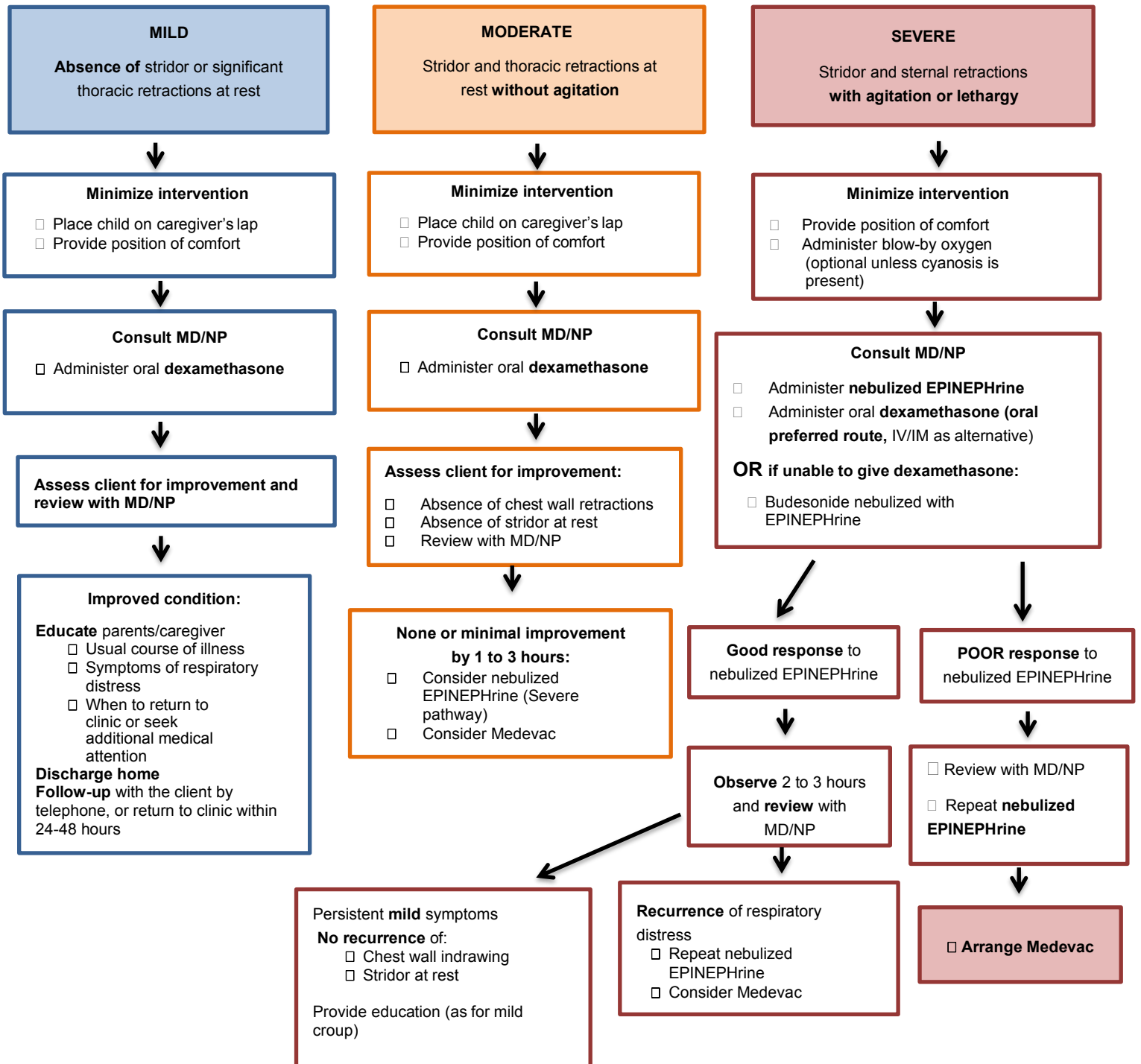
### Considerations

- 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
- Recent exposure to varicella for non-immunized or immunocompromised clients (dexamethasone is contraindicated)

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**Figure 1: Management of Croup in the Nursing Station Setting <sup>7</sup>**

\*For dosing and administration of medications, please see following pages on [Pharmacological Interventions](#)



### Non-Pharmacological Interventions

- Avoid agitating the child with unnecessary procedures, as this may provoke respiratory distress

### Client-Centred Learning

- Provide education and instructions to the client/caregiver
- Advise client/caregiver of appropriate use of medications to treat current condition
- 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
- Review signs of dehydration and how to maintain hydration (parents or caregivers should be encouraged to offer water, flavoured ice pops (such as Popsicles), or crushed-ice drinks several times each hour - see also [Fluid Management e-CCP \(Pediatric\)](#))
- Breathing steam from a hot shower for ten to fifteen minutes may be effective at improving croup-related respiratory symptoms (Note: Children should not be placed in hot showers; steam should be inhaled when sitting next to the shower only)
- Breathing in cooler outdoor air may help with respiratory distress in some children (Note: ensure that the child is dressed in warm clothes, and accompany them outside for ten minutes to monitor for respiratory improvement)
- Warn parents or caregiver that croup symptoms may become worse at night
- If the symptoms continue during the night, parents or caregivers should be encouraged to sleep near their child to monitor them until morning
- There should be no smoking around the child or in the house
- Remind client/family/caregiver the following Health Canada recommendations regarding over-the-counter (OTC) cough and cold medications:
  - Do not use OTC cough and cold medicine in children under six years of age
  - Always check the label first to make sure the medication is suitable for the child
  - Do not give children medication labeled only for adults
  - Do not give children aged six years and older more than one kind of cough and cold medicine. Combining medications with the same ingredient(s) may cause side effects

### Prevention Strategies

- Hand hygiene with soap and water or hand sanitizers
- Adequately covering coughs and sneezes (respiratory etiquette)
- Eliminate exposure to environmental tobacco smoke or pollution
- Limit exposure to siblings, other children, the elderly, and immunocompromised individuals, and settings where risk of transmission high
- Ask client to wear mask if they present with signs and symptoms of respiratory illness
- Health care providers should ensure to wear appropriate Personal Protective Equipment (PPE)

### 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
- Monitor pulse oximetry for children with moderate or severe symptoms of croup

### Antipyretics/Analgesics

Acetaminophen: Pediatric usual dosage [Oral]	
Acetaminophen 10 to 15 mg/kg/dose PO every 4 to 6 hours PRN	
<b>Maximum dose:</b> From all sources Acetaminophen 75 mg/kg in 24 hours or 4000 mg in 24 hours, whichever is less. <b>Do not exceed 5 doses per day.</b>	
	<b>Caution:</b> hepatic, INR, renal
Acetaminophen: Pediatric usual dosage [Rectal]	
Acetaminophen 10 to 20 mg/kg/dose <b>PR</b> every 4 to 6 hours PRN	
<i>Rectal administration results in erratic absorption and a much slower onset of action compared to oral administration.</i>	
<b>Maximum dose:</b> From all sources Acetaminophen 75 mg/kg in 24 hours or 4000 mg in 24 hours, whichever is less. <b>Do not exceed 5 doses per day.</b>	
	<b>Caution:</b> hepatic, INR, renal

<b>Ibuprofen: Pediatric usual dosage</b>	
<b>Infant less than 6 months:</b>	Limited data available in infants. Consult with prescriber.
For <b>6 months to 12 years of age:</b> Ibuprofen 5 to 10 mg/kg/dose PO every 6 to 8 hours PRN	
<p><b>Maximum dose:</b> From all sources Ibuprofen 400 mg per dose. Daily maximum of ibuprofen is 40mg/kg in 24 hours.</p> <p> <b>Caution:</b> cardiac, hepatic, INR, pregnancy, renal</p>	
For <b>Greater than 12 years of age:</b> Ibuprofen 200 to 400 mg PO every 4 to 6 hours PRN	
<p><b>Maximum dose:</b> From all sources Ibuprofen 40 mg/kg in 24 hours or 1200 mg in 24 hours, whichever is less. Under physician/nurse practitioner supervision, daily doses up to 2400 mg may be used.</p> <p> <b>Caution:</b> cardiac, hepatic, INR, pregnancy, renal</p>	

**Note:** ASA should not be used in children, teenagers or young adults with a viral infection such as chickenpox, a cold, influenza or flu-like illness due to the association with Reye’s syndrome.

### IV Therapy

- If required, insert an IV line with fluid running at a sufficient rate to keep the vein open
- When administering IV medication or solutions, refer to regional/territorial protocols and/or manuals for guidance




Record IV fluid and rate





### Fluid Management

- For pediatric dehydration management refer to the **Fluid Management e-CCP (Pediatric)**

**Table 3: Pharmacological Management of Croup**

Severity of Croup	Medication
<b>Mild</b>	<p><b>Dexamethasone 0.15 to 0.6 mg/kg/dose PO/IM/IV ONCE*</b></p> <p>*PO preferred route</p> <p><b>Maximum dose:</b> 12 mg per dose, once</p> <p> <b>Caution:</b> cardiac, INR, pregnancy, renal</p> <p>Relative contraindications (use with caution) if recent exposure to varicella in non-immune clients or if immunocompromised.</p>

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Moderate	<p><b>Dexamethasone 0.15 to 0.6 mg/kg/dose PO/IM/IV ONCE*</b></p> <p>*PO preferred route</p> <p><b>Maximum dose:</b> 12 mg per dose, once</p> <p> <b>Caution:</b> cardiac, INR, pregnancy, renal</p> <p>Relative contraindications (use with caution) if recent exposure to varicella in non-immune clients or if immunocompromised.</p>	
	<p><b>NONE OR MINIMAL IMPROVEMENT BY 1 TO 3 HOURS:</b></p>	
	<p><b>EPINEPHrine 1:1000 (1 mg/mL): 5 mL</b> via nebulization for one dose</p> <p>Same dose given for all children regardless of age and size</p> <p><b>Maximum dose:</b> 5 mg per dose</p> <p> <b>Caution:</b> Close cardiac monitoring is recommended if patients require repeated doses of epinephrine. Patients should be observed for a minimum of 2 hours prior to discharge.</p> <p>Note: A repeat dose may be needed if the child's symptoms reoccur or worsen.</p>	
Severe	<p><b>Preferred Option</b></p> <p><b>Dexamethasone</b>  <b>0.15 to 0.6 mg/kg/dose PO/IM/IV ONCE*</b></p> <p>*PO preferred route</p> <p><b>Maximum dose:</b> 12mg per dose, once</p> <p> <b>Caution:</b> cardiac, INR, pregnancy, renal</p> <p>Relative contraindications (use with caution) if recent exposure to varicella in non-immune clients or if immunocompromised.</p>	<p><b>Alternative Option</b>  <i>[Consider for children who are vomiting and who lack IV access]</i></p> <p><b>Budesonide nebulized solution 2 mg</b></p> <p>Inhalation via nebulizer for <b>one dose*</b></p> <p><b>Maximum dose:</b> 4 mg per dose</p> <p> <b>Caution:</b> Rinse mouth out with water after use</p> <p>Providing both dexamethasone and budesonide <b>is not recommended.</b></p> <p><b>*May be administered with EPINEPHrine in same nebulizer if croup is severe</b></p>
	<p><b>PLUS:</b></p>	

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	<p><b>EPINEPHrine 1:1000 (1 mg/mL): 5 mL</b> via nebulization for one dose*</p> <p>Same dose given for all children regardless of age and size.</p> <p><b>Maximum dose:</b> 5 mg per dose</p> <p>Note: A repeat dose may be needed if the child's symptoms reoccur or worsen.</p> <p><b>*May be administered with budesonide in same nebulizer if croup is severe</b></p>
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### Immunizations

- Ensure immunizations are up to date
- Influenza vaccine

### Monitoring

- Monitor cardiorespiratory status and vital signs as indicated by the client's condition
- **Continuous pulse oximetry** is recommended for children with moderate or severe croup symptoms
- Monitor for signs of complications such as lethargy, decreased breath sounds, marked retractions (may be decreased if obstruction present)
- Monitor intake and output
- **If EPINEPHrine is administered** for severe respiratory distress, monitor client for a minimum of two hours after treatment
- Before considering discharge home, ensure that:
  - There is no stridor present at rest
  - There is no respiratory distress
  - The child is able to talk and feed without difficulty
  - At least >2 to 4 hours from last EPINEPHrine treatment
  - No supplemental oxygen is required

## DISCHARGE AND FOLLOW-UP PLAN

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- Before discharge home, ensure that the client/caregiver
  - Understands and is able to recognize the clinical signs of respiratory distress
  - Understands to call or return to the clinic if the child's symptoms do not improve after 30 minutes
  - Understands instructions provided (translator may be needed if English/French not the first language of the client)
  - Is able to provide/take the medication
  - 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

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- 24-48 hours after initial visit, follow up with the client/caregiver by telephone or schedule a follow-up visit as necessary



Record discharge plan and date of follow-up

### **Referral and/or Consultation**

- Coordinate referral request(s) as required, within or outside the community
- 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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