# Asthma Clinical Pathway
## Urgent Care (UC)

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Center for Clinical Excellence

**Inclusion criteria**

- Patient 2-18 years of age with acute exacerbation of known asthma or with a presentation for which asthma is the most likely diagnosis

**Exclusion criteria**

- Patients with another primary diagnosis including bronchiolitis or croup
- Patient with a chronic lung disease other than asthma including cystic fibrosis or restrictive lung disease
- Patients diagnosed with congenital or acquired heart disease
- Patients requiring chronic invasive or non-invasive airway support
- Immunocompromised patients
- Patients diagnosed with sickle cell anemia

**Age ≥ 2 years**

**Yes**

**Perform ACS in triage**

**ACS 0-1**
Await Provider Evaluation

ACS ≥ 2 LPIP Bronchodilator + PO Steroid

**Rpt ACS + Provider Evaluation**

**ACS 0-2**
Consider Discharge

**ACS ≥ 5**

- Raise head of bed
- Duoneb aerosol q 20 mins x 2 prn until ACS ≤ 2
- Consider IM Epinephrine for severe respiratory distress

ACS 3-4 Bronchodilator q 20 mins x 2 PRN until ACS ≤ 2

**Rpt ACS + Provider Evaluation**

**ACS ≤ 2**

- Good Response
- SpO2 > 90% on room air
- Discharge home with prescription for steroids (+ albuterol if needed)

**ACS ≥ 5**

- Poor Response
- Initiate transfer to main campus ED
- Start Albuterol aerosol q 20 mins x3 while awaiting transport

ACS 3-4 Incomplete Response Observe for 30mins

**Rpt ACS + Provider Evaluation**

**ACS ≤ 2**

- Good Response
- Consider discharge home with prescription for steroids (+ albuterol if needed)

**ACS ≥ 3**

- Incomplete response
- Consider transfer to MCED
- Consider Albuterol nebulizer q 20 mins x3 if awaiting transport

# Definition & Diagnosis

- Clinicians should diagnose an asthma exacerbation on the basis of history and physical examination.
- A typical presentation of an asthma exacerbation is characterized by acute or subacute episodes of progressively worsening shortness of breath, cough, wheezing, chest tightness, or some combination of these symptoms caused by decreases in expiratory airflow in a patient with known asthma
- In a patient without a previous diagnosis of asthma, an asthma exacerbation is more likely in a patient with:
  - Recurrent wheezing and/or chronic cough
  - Prior bronchodilator or corticosteroid use
  - Past medical history of eczema or food/environmental allergies
  - Family history of asthma, eczema or allergies

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# Differential Diagnoses

**Acute**

- Bronchiolitis
- Pneumonia
- Foreign body

**Chronic**

- Vocal cord dysfunction
- Anatomic anomalies such as: vascular rings, laryngeal web
- Laryngotracheomalacia
- CF

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# Asthma Clinical Score

| Scoring Key (Maximum score is “13”) | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| **Tachypnea** *(see reference)* | No | Yes | | | |
| **O2 Requirement** to keep SaO2 ≥ 92% | RA | ≤ 2 liters/31% | > 2 liters/31% ≤ 4 liters/50% | > 4 liters/50% | |
| **Wheezing** | None | End expiratory or scattered wheeze | Expiratory wheeze throughout | Inspiratory and expiratory wheeze | “Silent chest” (no air movement) |
| **Air Movement** | Normal/Good | Fair | Tight | Silent | |
| **Retractions** *(see references)* | None | One type of reaction | Two or more types of reactions | | |

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# Recommended Treatments

**Oxygen** is recommended for most patients.
Administer supplemental oxygen (by nasal cannula or mask, whichever is best tolerated) to maintain an SaO2 >92 percent *(1,2)*

**Short-acting-beta-agonist (SABA) treatment** is recommended for all patients.
In the urgent care (UC), three treatments of SABA spaced every 20 minutes can be safely given as initial therapy. Thereafter, the frequency of administration varies according to the improvement in airflow obstruction, associated symptoms, and the occurrence of side effects. In mild or moderate exacerbations, equivalent bronchodilation can be achieved either by high doses (4–12 puffs) of a SABA by MDI and spacer in infants, children, and adults under the supervision of trained personnel or by nebulizer therapy. However, nebulizer therapy may be preferred for patients who are unable to cooperate effectively in using an MDI because of their age, agitation, or severity of the exacerbation (1, 2).

**Ipratropium bromide**
In the UC, adding 3 doses of ipratropium bromide (0.5 mg nebulizer solution or 8 puffs by MDI in adults; 0.25–0.5 mg nebulizer solution or 4–8 puffs by MDI in children) to a selective SABA produces additional bronchodilation, and results in fewer hospital admissions, particularly in patients who have severe airflow obstruction (2).

**Systemic corticosteroids** are recommended for most patients in the urgent care (UC).
Administration of steroids within the first hour has shown to reduce hospitalization rates in children with acute asthma (6). Give Prednisone/prednisolone 2 mg/kg PO q day, Max: 60 mg for 5 days or Dexamethasone 0.6mg/kg PO x Q day x 2 doses. There is no difference in relapse rate between dexamethasone and prednisone/prednisolone. Dexamethasone has some advantages over prednisone/prednisolone including palatability, cost, and decreased frequency of administration. Oral administration of prednisone has been shown to have effects equivalent to those of intravenous methylprednisolone and is usually preferred because it is less invasive. Give a total of 5 day course of prednisone/prednisolone or a total of 2 day course of dexamethasone following UC discharge to prevent early relapse. Give supplemental doses of oral corticosteroids to patients who take them regularly, even if the exacerbation is mild (1,2,7).

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# Treatments Not Recommended

**Antibiotics** are not generally recommended for the treatment of acute asthma exacerbations except as needed for comorbid conditions. Bacterial, Chlamydia, or Mycoplasma infections infrequently contribute to exacerbations of asthma therefore, the use of antibiotics is generally reserved for patients who have fever and purulent sputum and for patients who have evidence of pneumonia. When the presence of bacterial sinusitis is strongly suspected, treat with antibiotics (1).

**Return to Age: ≥2 Years Algorithm**

# Discharge

- Prescription for steroids
- Albuterol home pack
- Follow-up with Primary Care Physician within the next week

**Return to Age: ≥2 Years Algorithm**

# References


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# Metrics

**Goal:**
To appropriately determine asthma severity and provide optimal treatments while minimizing urgent care length of stay.

**Process measure:**
- Order set utilization
- Discharge smart set utilization

**Outcome measures:**
- Percent of patients presenting with asthma exacerbations who receive steroids in the UC
- Percent of patients who receive steroids within 60 min
- Time to disposition
- UC Length of Stay

**Balancing Measure:**
- 48 hour return to UC rate

**Return to Age: ≥2 Years Algorithm**

# Pathway Team & Process

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## Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associates with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.



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