Pediatric Common Conditions: Asthma in Acute Care

A process to deliver evidence-based diagnosis, treatment and follow-up of children with asthma in the emergency department (ED), during hospitalization and at hospital discharge to minimize morbidity and mortality.

Domain

Patient Care Processes:
Clinical processes that ensure delivery of high-quality care to individual patients

Aims

Effective:
An evidence-based practice that produces better outcomes than its alternative

Timely:
Care delivery that is prompt and provided without delay to mitigate any harm to a patient

Process Attributes

$ Cost to Implement
The monetary resources required to implement this process

Minimal: Just the cost of the improvement effort itself

Time to Implement
The amount of time, from months to years, it will take on average to establish this process

Fewer than 12 months

Difficulty to Implement
The challenges of implementing this process

Least Challenging: Involves a single unit or discipline and does not require a substantial shift in culture and/or operations

Level of Evidence
The degree to which the actions in this process are supported by research and experience; based on the Cochrane scale

Strong Evidence: Level I or Level II — Studies published using randomized trials

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Details

Elements

- For patients presenting to the emergency department (ED) with wheezing, triage immediately, using a combination of subjective and objective parameters.

- Accurately diagnose asthma as the etiology of wheezing and begin asthma treatment immediately following recognition of a moderate, severe, or life-threatening exacerbation.
  Provide special attention to high-risk populations (e.g., infants, and children with other forms of chronic lung disease, such as bronchopulmonary dysplasia) for assessment and treatment; monitor oxygen saturation (SaO2) by pulse oximetry; recognize lack of response to immediate treatment (noted by either physical examination or objective measurements) as an indicator of the need for inpatient admission.

- Provide ED and inpatient treatment based on guidelines:
  - Oxygen to relieve hypoxemia in moderate or severe exacerbations.
  - Inhaled short-acting beta2-agonist (SABA), with inhaled ipratropium bromide in severe exacerbations.
  - Systemic corticosteroids in moderate or severe exacerbations or for patients who fail to respond to a SABA.

- Monitor severity and response to therapy:
  - Repeat assessment after initial and repeated doses of SABA.
  - Monitor SaO2, respiratory rate, degree of labored breathing, and wheezing until a clear response has occurred.

- At discharge from the ED or hospital, mitigate exacerbation relapse or recurrence by providing the family with a home management plan of care (HMPC) written document that includes exacerbation warning signs and symptoms, method and timing of rescue actions (e.g., changes in controller and reliever doses and frequency), and instructions on who to call and where to seek care if an exacerbation is developing.
  - Assess family’s potential barriers to effective asthma home management and work with family in a culturally competent approach to overcome any barriers to minimize environmental triggers and maximize use of the asthma action plan when needed.
  - Address language and literacy issues when communicating home management plan.
  - Ensure the family has an adequate understanding of the home management plan by using “teach back” approach.

Outcomes

- Mortality (HSMR): Decreased mortality (hospital standardized mortality ratio, or HSMR)
- Cost of Care: Decreased cost per inpatient case
- Readmissions within 30 Days: Decreased readmissions within 30 days
- Reliability: Increased delivery of evidence-based care 100% of the time

Service Lines and Critical Functions

- Emergency Department
- Pediatrics
Key Measures

- No difference in all measures by race/ethnicity/language

- Percent of asthma inpatients readmitted back to the hospital within 72 hours, 7 days, 14 days and 30 days of hospital discharge

- Percent of pediatric asthma inpatients (age 2 years through 17 years) discharged home with documentation that they or their caregivers were given a written Home Management Plan of Care (HMPC) document that addresses all of the following:
  - Arrangements for follow-up care
  - Environmental control and control of other triggers
  - Method and timing of rescue actions
  - Use of controllers
  - Use of relievers

- Percent of Pediatric Asthma Inpatients Who Received Asthma Relievers
  - Numerator: Number of pediatric asthma inpatients (age 2 years through 17 years) who received asthma relievers during hospitalization
  - Denominator: Pediatric asthma inpatients who were discharged with a principal diagnosis of asthma

- Percent of Pediatric Asthma Inpatients Who Received Systemic Corticosteroids
  - Numerator: Number of pediatric asthma inpatients (age 2 years through 17 years) who received systemic corticosteroids during hospitalization
  - Denominator: Pediatric asthma inpatients who were discharged with a principal diagnosis of asthma

Reasons and Implications

Importance for Patients and Families
Caring for a child with asthma can be stressful. Providing children with asthma the right care in both the ED and the hospital can prevent sudden increases in illness and relapses, and may prevent future admissions or readmissions to the hospital.

Requirement, Standards, Policies, and Guidelines

- Agency for Healthcare Research and Quality (AHRQ)

- Centers for Medicare & Medicaid Services (CMS)

- National Heart Lung and Blood Institute (NHLBI) Guidelines for Diagnosis and Management of Asthma

- National Quality Forum (NQF)

Financial Implications

- Expense reduction may occur due to decreased patient time in ED or avoided admission/readmission for pediatric asthma.
- Expense increase can occur due to equipment and staff time.

Prerequisites
Accurate diagnosis of asthma exacerbation
Resources

Additional Resources

- **Centers for Disease Control and Prevention (CDC)**
  National Center for Chronic Disease Prevention and Health Promotion
  Healthy Youth!
  Health Topics, Asthma

- **National Association of Children’s Hospitals and Related Institutions (NACHRI)**
  Pediatric asthma length of stay

- **The Joint Commission (TJC)**
  Children's Asthma Care (CAC) Performance Measure Set

- **National Heart Lung and Blood Institute (NHLBI), National Institutes of Health (NIH)**
  Physician Asthma Care Education

- **National Heart Lung and Blood Institute (NHLBI), National Institutes of Health (NIH)**
  National Asthma Education and Prevention Program

- **Agency for Healthcare Research and Quality (AHRQ)**

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