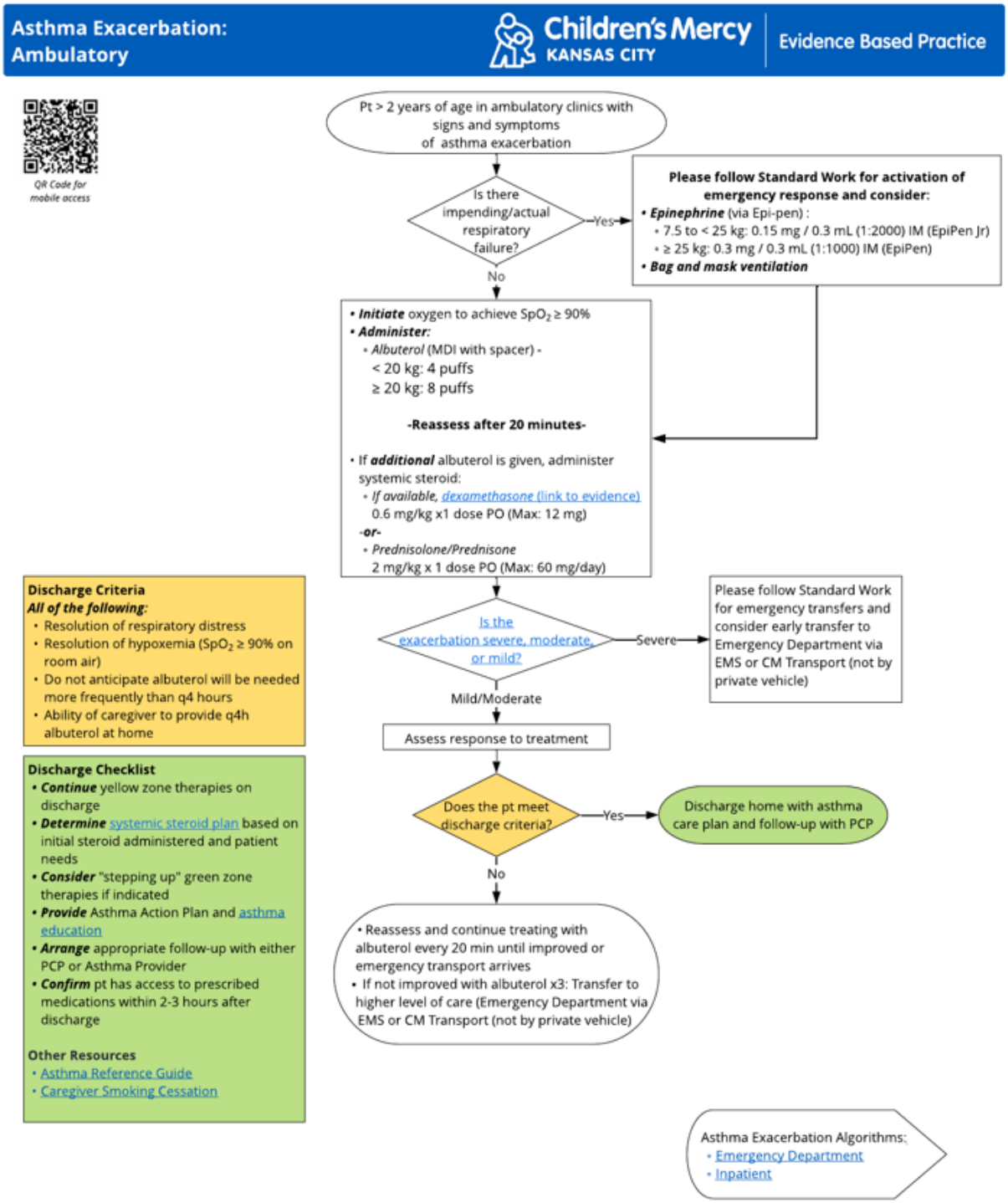
Asthma Exacerbation Clinical Pathway

Asthma Exacerbation: Ambulatory Algorithm



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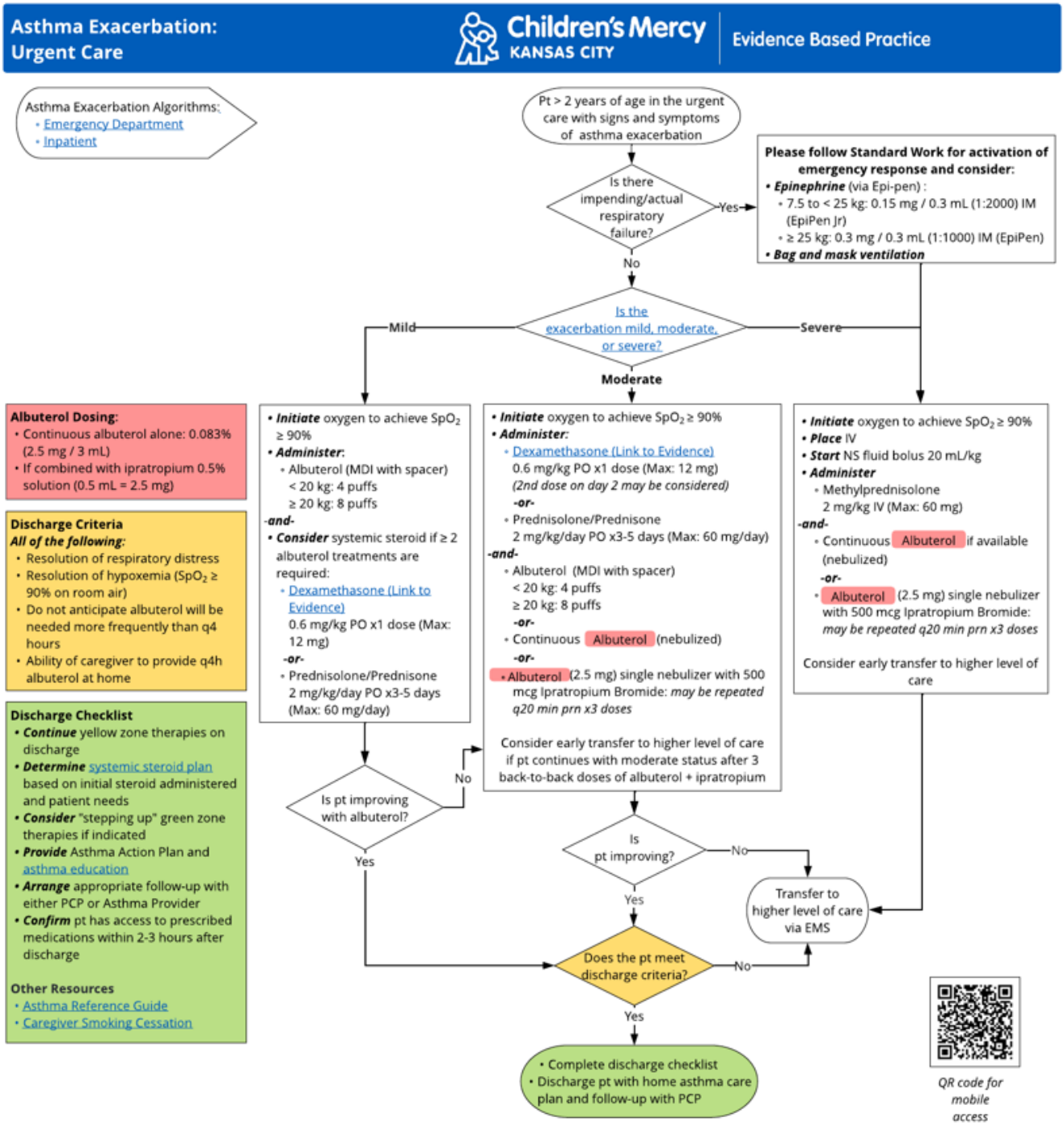
Asthma Exacerbation: Urgent Care Algorithm



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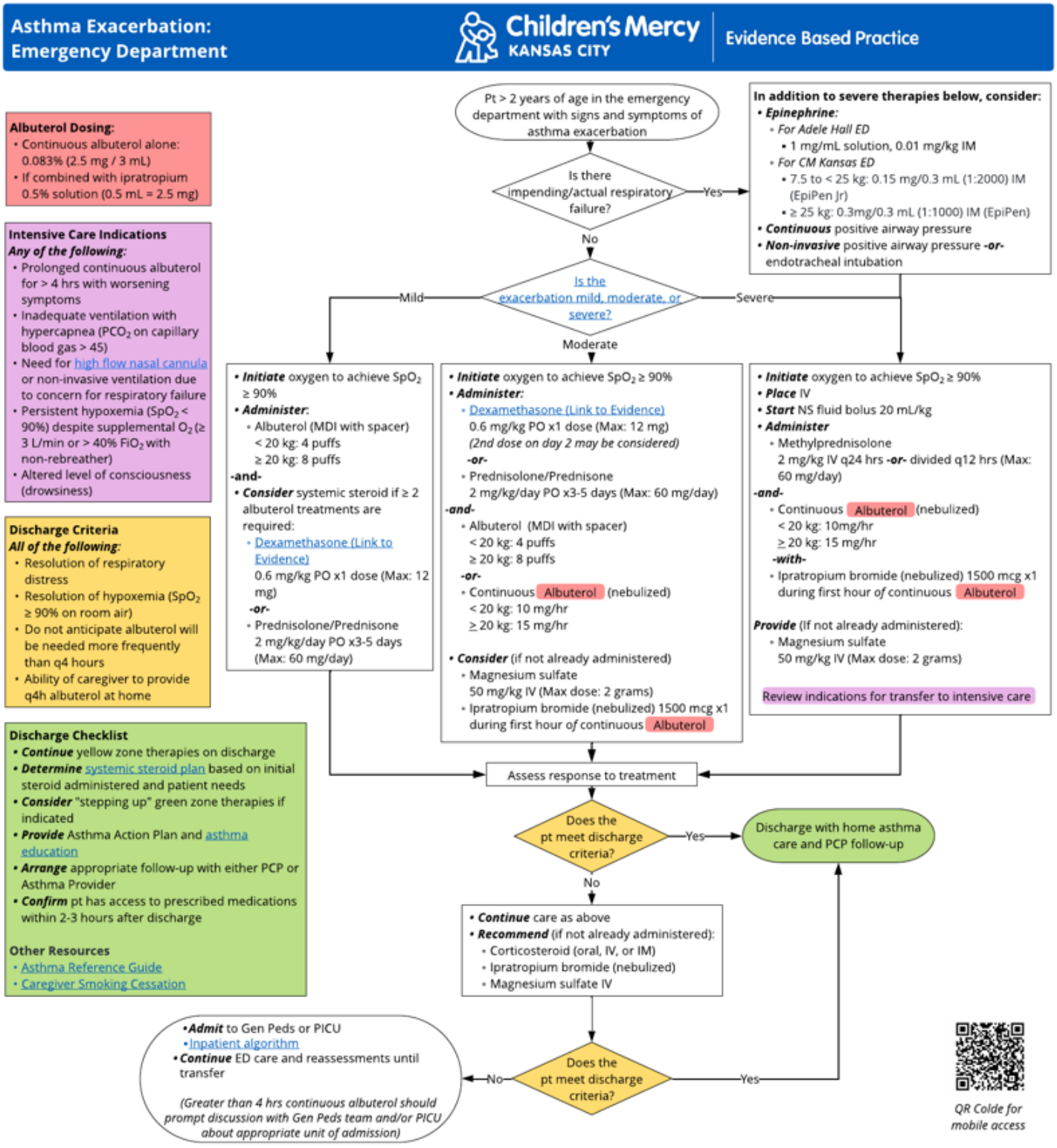
Asthma Exacerbation: Emergency Department Algorithm



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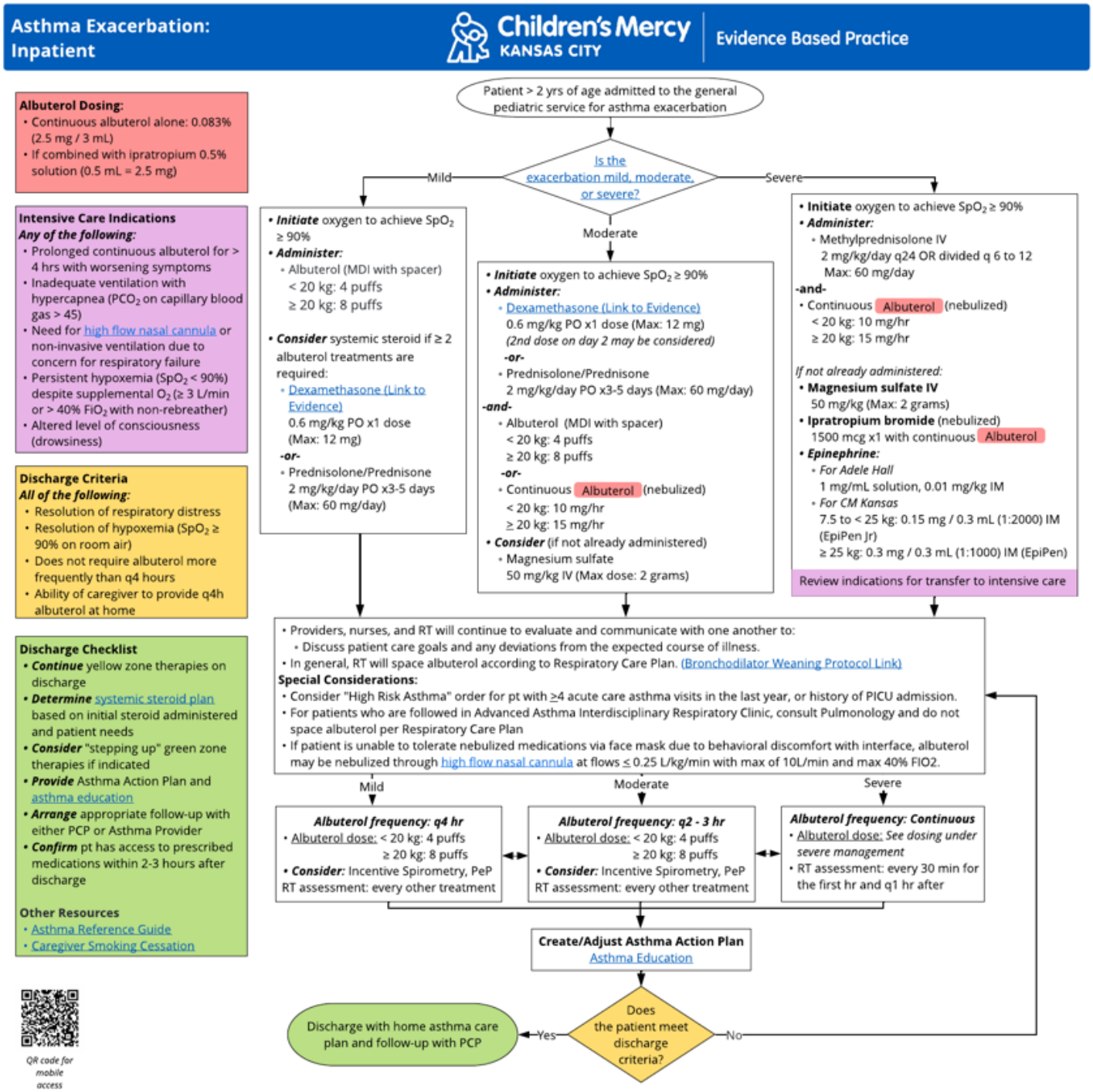
Asthma Exacerbation: Inpatient Algorithm



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Objective of Clinical Pathway

To provide care standards for the patient diagnosed with asthma exacerbation throughout the care continuum.

Background

Efficient and effective treatment of asthma exacerbation is key to decreasing the need for hospitalization, decreasing the length of stay when hospitalization is required, reducing readmissions, and mitigating adverse safety events. At Children's Mercy Kansas City, patients with asthma exacerbations may receive care in the ambulatory clinics, urgent care clinics (UCC), emergency departments (ED), medical/surgical inpatient units, or pediatric intensive care. It is imperative that we provide consistency of care and safe transitions between care settings. This clinical pathway provides evidence-based strategies and decision support for providers caring for patients with asthma exacerbation.

Target Users

- Physicians (Ambulatory, Urgent Care, Emergency Medicine, Hospital Medicine, Community Physicians, Fellows, Resident Physicians)
- Nurse Practitioners
- Nurses
- Respiratory Therapists

Target Population

Inclusion Criteria

- Patients experiencing asthma exacerbations
- Signs and symptoms: acute onset of wheezing, coughing, and/or breathlessness with known or suspected asthma

Exclusion Criteria

- Patients less than two years of age
- Patients with other chronic pulmonary conditions aside from asthma
- Long-term care of asthma without current exacerbation

AGREE

The National Asthma Education and Prevention Program Coordinating Committee Expert Panel Report (EPR-4) national guideline and the Global Initiative for Asthma (GINA) international guideline provided guidance to the Asthma Exacerbation Committee (GINA, 2022; Expert Panel Working Group of the National Heart et al., 2020). See Tables 1 and 2 for AGREE II.

Table 1.
AGREE II Summary for the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group (Cloutier et al., 2020)

Domain	Percent Agreement	Percent Justification
Scope and purpose	94%	The clinical questions posed, and target populations **were** identified.
Stakeholder involvement	92%	The guideline **was developed** by the appropriate stakeholders and convened focus groups of patients and caregivers to garner input on their preferences and values.
Rigor of development	82%	The process used to gather and synthesize the evidence and the methods to formulate the recommendations **were** explicitly stated.
Clarity and presentation	94%	The guideline recommendations **are** clear, unambiguous, and easily identified; in addition, different management options are presented.
Applicability	45%	The guideline **did not** address barriers and facilitators that could be faced during implementation, monitoring or audit criteria, nor other resource costs associated with guideline implementation.
Editorial independence	94%	The recommendations **were not** biased with competing interests.

Note: Four EBP Scholars completed the AGREE II on this guideline.

Table 2.
AGREE II Summary for the GINA Guideline (GINA, 2021)

Domain	Percent Agreement	Percent Justification
Scope and purpose	94%	The aim of the guideline, the clinical questions posed, and target populations **were** identified.
Stakeholder involvement	61%	It is **unclear** if the guideline included appropriate stakeholders. It is **unclear** if the patient's viewpoint was sought.
Rigor of development	73%	The guideline developers **did not** provide how the evidence was gathered and synthesized, or how the recommendations were formulated.
Clarity and presentation	97%	The guideline recommendations **are** clear, unambiguous, and easily identified; in addition, different management options are presented.
Applicability	90%	Recommendations for monitoring adherence and treatment response **are** included.
Editorial independence	63%	It is **unclear** if the recommendations were biased by competing interests.

Note: Four EBP Scholars completed the AGREE II on this guideline.

Practice Recommendations

Please refer to the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group (Cloutier et al., 2020) and the Global Initiative for Asthma (GINA, 2021) guidelines for evaluation and treatment recommendations.

Additional Questions Posed by the Asthma Exacerbation Clinical Pathway Committee

While Children's Mercy adopted most of these practice recommendations, one additional question posed by the clinical pathway committee led to further clarifications in care:

1. In a child greater than 2 years old with an acute asthma exacerbation, are 1-2 doses of dexamethasone (DEX) as effective as a 3-5-day course of prednisolone/prednisone (PSL) in the prevention of symptom recurrence?

Recommendations from the Asthma Exacerbation Clinical Pathway Committee

Based on the best available evidence and additional considerations related to feasibility, value, and compliance, a conditional recommendation is made for DEX as the preferred treatment for an acute asthma exacerbation in children greater than 2 years of age being treated in non-intensive care settings at Children's Mercy.

Two meta-analyses found no significant difference between DEX and PSL in treating acute asthma exacerbations for the outcome of symptom recurrence. Both meta-analyses reported less vomiting in children receiving DEX compared to PSL. The overall certainty of evidence for the two meta-analyses was low to very low based on risk of bias (underpowered comparisons; open-label studies), indirectness (lack of data for children under 5; studies from other countries), and imprecision (low number of events).

Measures

- Use of Asthma Exacerbation Power Plan (UCC, ED, inpatient)
- Provision of dexamethasone as systemic steroid of choice for mild to moderate asthma exacerbations (UCC, ED, inpatient)
- Length of stay (inpatient)
- Readmissions within 72 hours of inpatient discharge
- Revisits to the UCC or ED within 72 hours of a UCC or ED visit

Potential Cost Implications

The following potential improvements may reduce healthcare facility costs and resource utilization and reduce healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families.

- Decreased frequency of admission
- Decreased inpatient length of stay
- Decrease in readmission or acute care facility re-evaluation in less than seven days of initial exacerbation

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- Decreased time to treatment in the ED setting
- Increased safety of patient transfer between settings
- Decreased unwarranted variation in care
- Narrowing gaps in health care disparities related to inequities in transportation, health literacy, and medication compliance

Organizational Barriers and Facilitators

Potential Barriers

- Variability of the acceptable level of risk among providers
- Different clinical perspectives among providers in the various care settings (acute care, subspecialty care)
- Challenges with follow-up faced by some families

Potential Facilitators

- Collaborative engagement across care continuum settings during clinical pathway development
- High rate of use of the clinical pathway and order sets
- Standardized order set for Urgent Care, Emergency Department, Hospital Medicine, and Pediatric Intensive Care

Order Sets

- Urgent Care Quick Orders
- EDP Asthma Exacerbation Pathway
- IP Asthma Pathway

Associated Policies

- Division of Emergency Medicine: Asthma Initiation Standing Order
- Continuous Albuterol Administration

Clinical Pathway Preparation

This pathway was prepared by the Evidence Based Practice (EBP) Department in collaboration with the Asthma Exacerbation Clinical Pathway Committee composed of content experts at Children's Mercy Kansas City. If a conflict of interest is identified, it will be disclosed next to the team member's name.

Clinical Pathway Representation

This clinical pathway was originally created in 2016 with representation from Pulmonology, Urgent Care, Emergency Medicine, Respiratory Care, Hospital Medicine, Allergy and Immunology, Critical Care, and Evidence Based Practice.

Asthma Exacerbation Revision Representation

- Jade Tam-Williams, MD | Pulmonology | Committee Chair
- Katie Macmillan, MD | Critical Care Medicine | Committee Member
- Cara Holton, MD | Critical Care Medicine | Committee Member
- Kate Kyler, MD, MSc | Hospital Medicine | Committee Member
- Jesi Neuhart, MD, FAAP | Hospital Medicine | Committee Member
- Kylie Smith, BS, RRT-NPS, AE-C | Asthma Program Coordinator | Committee Member
- Madison Buchanan, BHS, RRT-NPS | Respiratory Care | Committee Member
- Grace Arends, MD | Emergency Medicine | Committee Member
- Erin Scott, DO | Emergency Medicine | Committee Member
- Michelle DePhillips, MD | Emergency Medicine | Committee Member
- Stephanie Duehlmeyer, PharmD, BCPPS, AE-C | Ambulatory Pharmacy | Committee Member
- Celtina Reinert, PharmD, CSP | Ambulatory Pharmacy | Committee Member
- Nikita Raje, MD | Allergy, Asthma, and Immunology | Committee Member
- Amanda Nedved, MD | Urgent Care | Committee Member
-

EBP Department Members:

- Kathleen Berg, MD, FAAP | Evidence Based Practice
- Jarrod Dusin, PhD, RD, CPHQ | Evidence Based Practice

Additional Review & Feedback

- The clinical pathway was presented to each division or department represented on the clinical pathway committee, as well as other appropriate stakeholders. Feedback was incorporated into the final product.

Clinical Pathway Development Funding

The development of this clinical pathway was underwritten by the following departments/divisions: EBP, Pulmonology, Respiratory Care, Emergency Medicine, Hospital Medicine, Urgent Care, and Allergy & Immunology.

Approval Process

This pathway was reviewed and approved by the Asthma Exacerbation Clinical Pathway Committee, content experts, departments/divisions, and the EBP Department.

Approval Obtained

Department/Unit	Date Approved
Pulmonology	August 2025
Allergy & Immunology	August 2025
Respiratory Care	August 2025
Pediatric Intensive Care Unit	August 2025
Emergency Medicine	August 2025
Hospital Medicine	August 2025
Urgent Care	August 2025

Version History

Date	Comments
10/2016	Version 1a: Inpatient care standards based on EPR-3 and GINA guidelines.
5/2019	Version 1b: Emergency Department and Urgent Care Clinics care standards based on EPR-3 and GINA guidelines
7/2022	Version two: Updated all previous guidelines (Urgent Care Clinics, Emergency Department, and Inpatient) and developed new guidelines (Care Continuum, and Ambulatory) using the EBP-4 (2020) and GINA (2021) guidelines as foundational guidelines.
7/2025	Version three: Algorithms revised and updated synopsis. Removal of Care Continuum algorithm. Update of Dexamethasone CAT.

Date for Next Review: August 2028

Implementation & Follow-Up

- Order sets consistent with clinical pathway recommendations were maintained for each care setting (Emergency Department, Inpatient, Intensive Care).
- Policies were reviewed.
- Care measurements may be assessed and shared with appropriate care teams to determine if changes need to occur
- Clinical pathways are reviewed every 3 years (or sooner) and updated as necessary within the EBP Department at CMKC. Clinical pathway committees are involved with every review and update

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the clinical pathway and the power plans that accompany the clinical pathway.

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References

Cloutier, M. M., Baptist, A. P., Blake, K. V., Brooks, E. G., Bryant-Stephens, T., DiMango, E., ... & Walsh, C. G. (2020). 2020 focused updates to the asthma management guidelines: a report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group. *Journal of Allergy and Clinical Immunology*, *146*(6), 1217-1270. https://doi.org/10.1016/j.jaci.2020.10.003

Global Initiative for Asthma. (2021). *Global Strategy for Asthma Management and Prevention* (2021 update). https://ginasthma.org/ wp-content/uploads/2021/05/GINA-Main-Report-2021-V2-WMS.pdf