

Croup – December 2011

Executive Summary

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Objective

To improve care for otherwise healthy children with croup in the emergency department and inpatient medical unit.

Additional objectives:

- To standardize the delivery of care
- To use dexamethasone for ALL patients with croup
- To deliver the first dose of inhaled racemic epinephrine in a timely manner
- To identify transfer criteria and discharge readiness in a timely manner
- To eliminate the use of non-proven modalities (e.g. cool mist, radiographs, viral testing)

Recommendations

1. Give ALL patients ONE 0.6mg/kg dose of oral dexamethasone to a maximum dose of 16mg regardless of symptom severity
2. Use racemic epinephrine for moderate to severe croup defined as stridor at rest **AND** one or more of the following symptoms:
 - prominent sternal wall retractions
 - tachypnea
 - agitation/restlessness/tired appearing
 - difficulty with talking or feeding
3. Do **NOT** use cool mist in the emergency department or hospital setting
4. Do **NOT** routinely use viral testing
5. Do **NOT** routinely perform radiographs
6. Do **NOT** give additional steroids at discharge
7. Discharge patients that meet the following criteria
 - Minimal stridor at rest
 - Minimal retractions
 - Able to talk or feed without difficulty
 - 2 hours since racepinephrine
 - No supplemental oxygen for more than 12 hours
8. Patients with typical croup will not receive additional doses of steroids.

Rationale

- Safety - Important safety alerts are imbedded in the algorithm and ordersets to identify patients at high risk of impending respiratory failure or serious alternative diagnoses.
- Quality of care will improve by:
 - Decreasing the time to racemic epinephrine which is a vital treatment for patients with croup and significant respiratory distress
 - Delineating specific times for re-evaluations for patients with croup
 - Having clear indications for racemic epinephrine and defined observation times.

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- Delivery of care will be improved by providing the emergency department with tools to expedite appropriate croup care.
- Engagement is grounded in the fact that the pathway has been developed by RNs, RTs, and MDs. All involved groups in the emergency department and inpatient unit had multiple opportunities during its development to provide feedback and suggestions.
- Patient/Family Satisfaction will be addressed by implementing clinical standard work that will assure the highest quality of care. This work makes it clear to families what the discharge criteria are and provides guidelines for safe discharge as early as possible.
- Costs will be reduced by eliminating the use of unnecessary testing and prolonged hospitalization.

Evidence

We initially performed a filtered search of the literature that included systematic reviews, meta-analyses, and published guidelines from 1996-2011. This search yielded 99 publications which were reviewed by title and abstract and reduced to 50 pertinent publications. The full text of each of these 50 publications were reviewed by one physician and one nurse and categorized by type and by clinical question addressed. Three guidelines were identified which were then evaluated using the AGREE II tool to determine the quality of the guidelines. All three were reviewed independently by 4 reviewers and accepted for use with modifications.

The three guidelines were:

- **Diagnosis and management of croup.(2008). Toward Optimized Practice (Referred to as “Alberta”)** - developed by an Alberta Clinical Practice Working Group as part of the Alberta Medical Association in Alberta, Canada.
- **Croup.(2008). CKS (Formerly PRODIGY) (Referred to as “CKS”)** - published BY CKS, which was initially commissioned by the National Institute for Health and Clinical Excellence (NICE) in Great Britain.
- **Mazza, D., Wilkinson, F., Turner, T., Harris, C., & Health for Kids Guideline Development, Group. (2008). Evidence based guideline for the management of croup. Australian Family Physician, 37(6 Spec No), 14-20. (Referred to as “Australia”)** - developed by the Health for Kids Guideline Development Group in Australia and is endorsed by the Royal Australian College of General Practitioners.

Additionally we reviewed the comprehensive Cochrane reviews below:

- Russell KF, Liang Y, O’Gorman K, Johnson DW, Klassen TP. (2011) Glucocorticoids for croup. *Cochrane Database of Systematic Reviews*, 1, 001955.
- Bjornson, C., Russell, K.F., Vandermeer, B., Durec, T. Klassen, T.P., & Johnson, D.W. (2011). Nebulized epinephrine for croup in Children. *Cochrane Database of Systemic Reviews*, 2, 006619.

Additional citations are listed at the end of the learning module.

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Implementation Items

- Created two algorithms: one for inpatient and one for the Emergency Department for the management of croup.
- Created a Learning Center training module with test questions for the management of croup
- Developed two ordersets: ED Croup Orderset and Croup Admit Orderset
- Refined ED discharge instructions to provide more safety and treatment education for families

Metrics Plan

1. Monitor the number of ED and inpatient discharges with croup diagnosis. (every 3-6 mo)
2. Inpatient median length of stay (every 3-6 mo)
3. Pathway/orderset usage rate as a percentage of croup discharges (every 3-6 mo)
4. Percentage of patients with discharge diagnosis of croup receiving dexamethasone (every 3-6 mo)
5. Median time to first dose of racemic epinephrine in the emergency department. (every 3-6 mo)
6. Readmission within 2 days of discharge from ED or inpatient unit (monthly)
7. Monitor the number of additional tests (XR, respiratory FA) for patients whose discharge diagnosis is croup. (every 3-6mo)

PDCA Plan

The CSW owner and committee will follow metrics, continue to review medical literature, and make alterations to the pathway as needed.

Revision History

Date Approved:

Revision Date: