

Decision Making Process for Implementing System-Level Improvements

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Office of Clinical Quality Improvement

- Teams: Improvement, Analytics, Informatics
- CHOP Improvement Framework
- 60-80 QI projects
- Programs
 - Clinical Pathways
 - High Value Prescribing
 - Keeping Kids Out of the Hospital
 - Patient Reported Outcomes

Clinical Pathways

- 119 Pathways
- ED, Inpatient, Primary Care, Specialty Care
- Clinical Decision Support
- Measurement Tools
- Coverage (FY17: 51% ED, 43% IP encounters)
- Publicly Available (30,000 sessions/mo; 68% external)
- Example: Bronchiolitis (ED care)

Related Pathways

Goals & Metrics

Assessment

Risk Stratification

Treatments

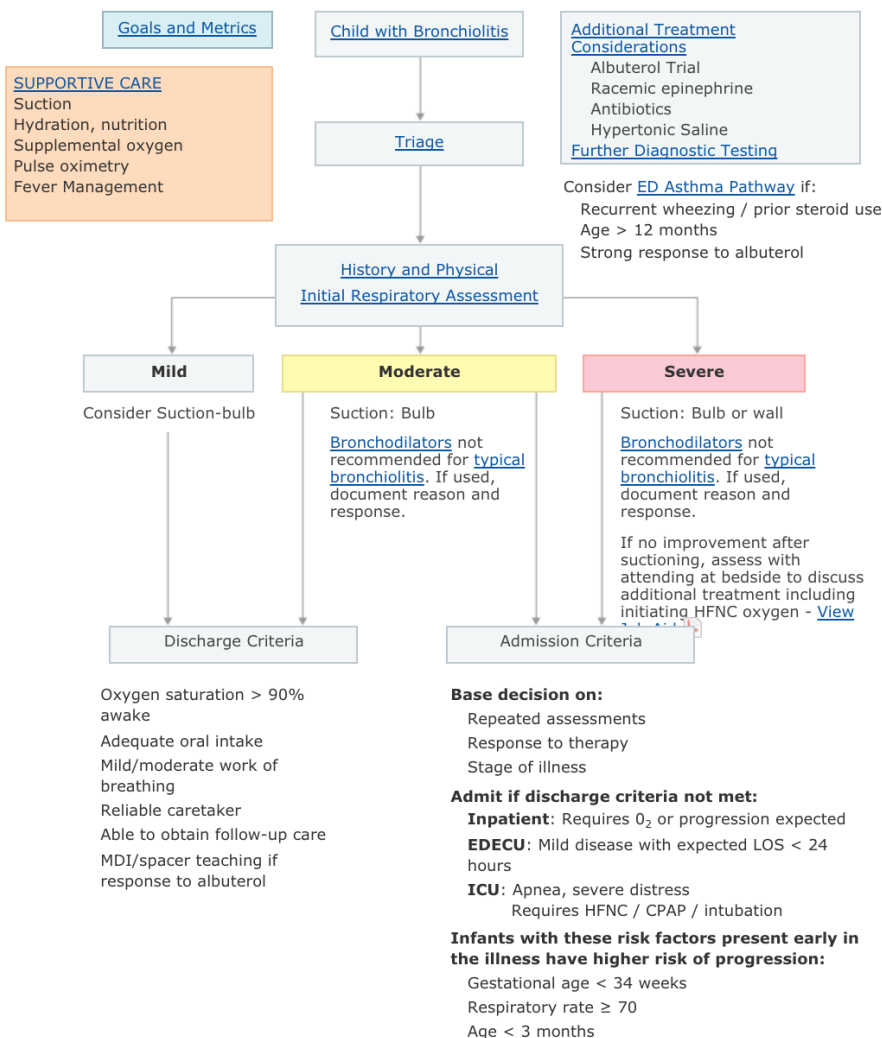
Discharge/Admit Criteria

Dates

Authors

Related Pathway:
[Inpatient Bronchiolitis Pathway](#)

ED Pathway for Evaluation/Treatment of
Children with Bronchiolitis



Posted: September 2005

Revised: September 2011, November 2013, November 2015, February 2016, October 2017, November 2017

Authors: R. Abaya, MD; K. Crescenzo, RN; E. Delgado, MD; M. Dunn, MD; M. Kerrigan RRT; N. Muthu MD; C. Nelson, MD; A. Reardon CRNP; B. Rodio, RN; N. Strobel CRNP; D. Simpkins RRT; L. Tyler, RRT; J. Zorc, MD

Learn More

[RN Learning Assessment](#)

[High Flow Nasal Cannula \(HFNC\) Job Aid](#)

[RN Learning Module](#)

[MD/CRNP Learning Module](#)

Related Links

[Bronchodilators for bronchiolitis for infants with first-time wheezing](#) +

[Clinical Practice Guideline: The Diagnosis, Management, and Prevention of Bronchiolitis](#) +

Key References



Suggested Order Sets

- 70 triage complaints
- RN choice drives order set suggestion to MD/NP

Current Impression	
Chief Complaint	Comment
Respiratory Distress	

Epic Patient Station ED Manager Track Board Patient Lists In Basket ED Chart Lexicomp XTend Page Web Sites Login Cbt NP FIU Print Secure Log

Testing, Troy Female, 14 year old DOB: 01/01/... MRN: 310113... Allergies (0): Not on File Weight (kg): 1... MDRO None Code: Not on file ED15 ED15 PCP: MCNETT, WILLIAM (215-861-8800) Outside CHOP: Yes

ED Orders Allergies (0): Not on File Problems (0): None 5 patients with the same last name

Always use an Order set if one is available. Suggested Order sets are below and others can be found by typing ED in the Order set box.

Order Sets Search Add

Suggestions

ED Asthma Pathway	ED Pneumonia (Age > 56 Days) Pathway
ED Bronchiolitis Pathway	EDECU Asthma Clinical Protocol
ED Croup Order Set	EDECU Bronchiolitis Clinical Protocol
ED Influenza Pathway	

Right click on an Order Set to add to favorites. Remove Open

ED Bronchiolitis Pathway

- ED Bronchiolitis Pathway

ED Bronchiolitis Pathway

▼ Supportive Care

- ☒ Suction Nares per Nursing Standard. Review bulb syringe with family and escalate to wall suction only if unable to clear with bulb.
Suction Nares per Nursing Standard. Review bulb syringe with family and escalate to wall suction only if unable to clear with bulb.

Medications

▼ Bronchodilators

Not recommended for routine use. Suction and reassess before ordering. If used, document indication and response in ED provider note.

- ☐ Albuterol Bronchiolitis Trial
- ☐ racemic EPINEPHrine 2.25 % neb
ONCE

> Steroids: Not recommended for routine use

Laboratory

▼ Laboratory tests: Viral testing not recommended for routine use

- ☐ Respiratory Viral Testing

Radiology

▼ Radiology: Chest Xrays are not recommended for routine use



Bronchiolitis

Metrics

Admitted Patients

EDECU Patients

All ED Patients

ED Discharged Patients

Triage ESI:

- 1 Critical
- 2 Acute
- 3 Urgent
- 4 Urgent
- 5 Non-Urgent

ICU Events

No
Yes

Current Selections:

Clear Selections

Albuterol Use

Viral Testing

Chest X-

Length of Stay

Admission Rate

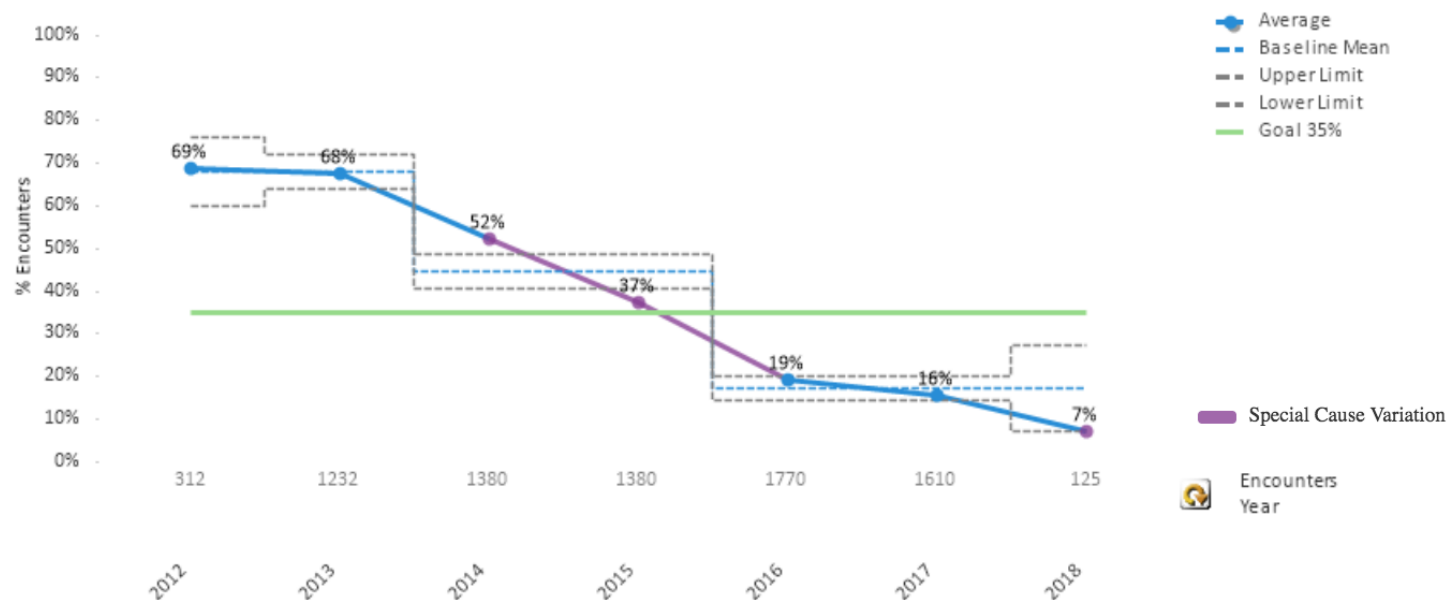
Revisits

Pathway

Contin. Pulse Ox

% of All Patients seen in the ED with Albuterol Administered in the ED

Includes patients with ICU events



Definition: Patients (admitted & discharged) with albuterol administered while in the ED
/ All patients seen in the ED

[See special cause variation rules](#)
[Learn more about control charts](#)

Baseline mean shift after Q4-2013 and Q4-2015 due to Nov 2013 and Nov 2015 pathway updates

Last Updated: 1/20/2018 9:23:00 AM
Michelle Dunn, MD Joseph Zorc, MD
Data Source: CDW

Decision Making Process for Implementing System-Level Improvements in Care Delivery

- Is there unwarranted variation in practice that is negatively impacting quality?
- Can a multidisciplinary group of experts and key stakeholders come to a consensus on a best practice protocol (locally accepted standard)?
- Is there sufficient evidence to support recommendations for a protocol (pathway)?
- Is the risk/benefit of implementing the protocol better than allowing the current variation to continue?

What types of evidence are needed to support these decisions?

- Prefer RCTs, not always available
- Accept well done observational studies
- Strength of recommendations reflect strength of evidence and degree of consensus
- Use our own data and redesign systems of care
- Sickle Cell Disease with Fever

Sickle Cell Disease with Fever

- Standard of care at CHOP in 2014: Admit for antibiotics until blood culture negative
- 7-valent pneumococcal vaccine reduced SBI rates in children with SCD
- Review of 920 febrile episodes among patients with SCD evaluated in our ED between July 2012 and November 2013: only 2 blood cultures (0.2%) positive for a pathogen.
- Both children extremely ill upon presentation.

Ellison, A., Smith-Whitely, K. Kittick, M., Schast, A., Norris, C., Hartung, H., McKnight, T., Coyne, E. Lavelle, J. Dec 15, 2017. *A Standardized Clinical Process to Decrease Hospital Admissions Among Febrile Children with Sickle Cell Disease*. Journal of Pediatric Hematology/Oncology.

Sickle Cell Disease with Fever

- Developed criteria for discharge home after ceftriaxone: low risk for bacteremia, reliable telephone follow-up
- Developed safe and effective follow-up process
- Pre-implementation simulation and refinement
- Post-implementation monitoring and refinement

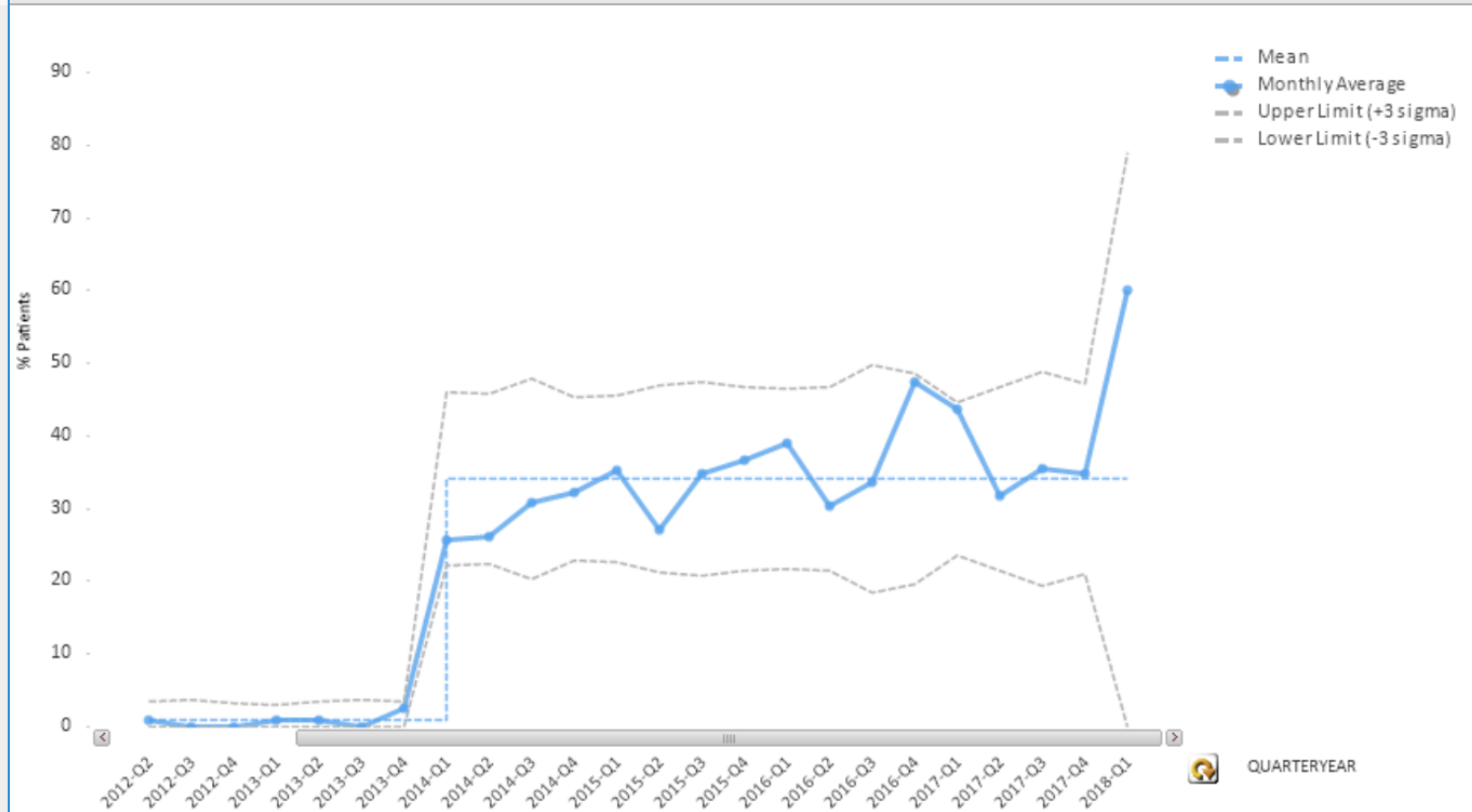
Sickle Cell Disease with Fever

Discharged
from ED

Readmitted
within 72 hrs

Approximately 500 visits per year

% of Patients with Fever Discharged from the ED



Last Updated: 1/14/2018 10:22:34 AM

Angela Ellison, MD

Data Source: CDW

No increase in revisits within 72 hours.

Evaluating Effectiveness

- Prospective before/after design
- Statistical Process Control
- Most improvement efforts conducted over short period of time, under fairly static conditions, with large anticipated effect sizes, so less concerned about secular trends, confounding, and bias
- Have not randomized at patient or unit level
- What is the best approach for learning in a complex adaptive system?