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Supporting Evidenced Based Practices

Choosing the Right Path: Growing a Clinical Pathways Program

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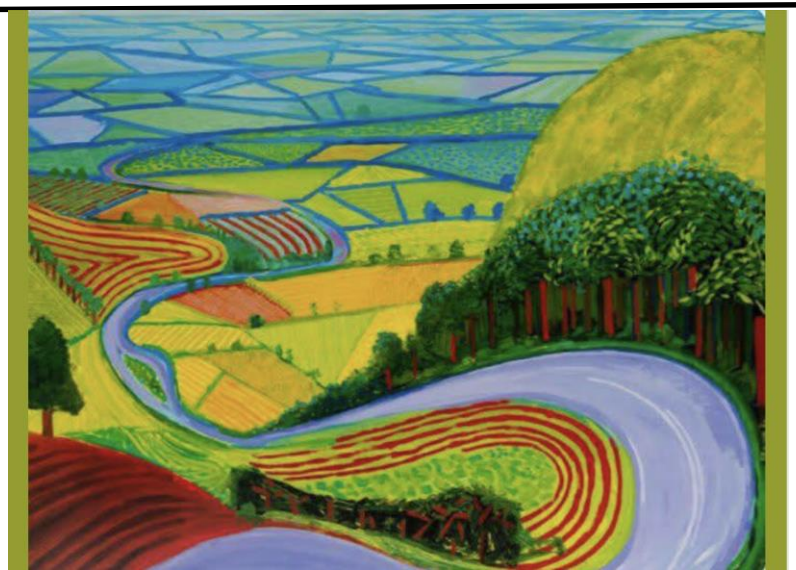
February 10, 2026



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A Path Towards Quality – A Defining Principle

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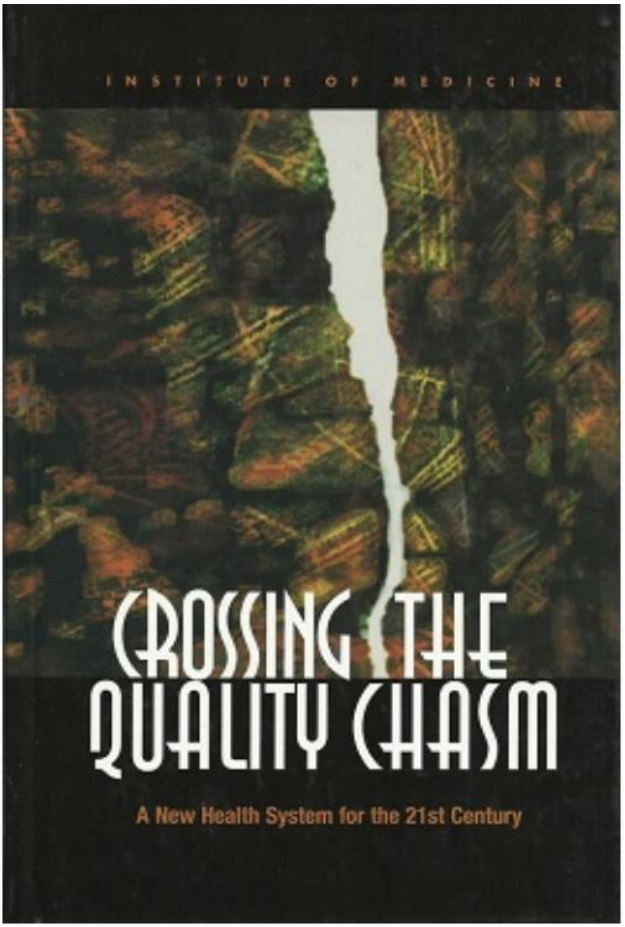

Six Aims for Improvement

Safe	As safe in health care as in our homes
Effective	Matching care to science Avoid Overuse of ineffective care and Underuse of effective care
Efficient	Reduce waste
Timely	Less waiting for patients and those who give care
Patient Centered	Honoring the individual, respecting choice
Equitable	Closing racial and ethnic gaps in health status

"The fundamental problem with the quality of American medicine is that we have failed to view the delivery of healthcare as a science…
Involves all involved in an episode of care……"

Peter Pronovost, MD, PhD, Johns Hopkins

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Exponential Growth of Medical Knowledge

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The Rapid Evolution of Medical Knowledge

1950	1980	2010	2025
Medical knowledge estimated to double every 50 years	Medical knowledge doubling every 7 years	Doubling time reduced to every 3.5 years	Estimated Doubling time - 73 days

Volume of medical knowledge exceeds an individual clinician's capacity to retain it..

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Knowing – Doing Gap

Unwarranted variation in Medical Care

Adults receive 54.9% of recommended care

Children receive 40% of recommended care

Overuse of testing, overtreatment

- Culture of perfection
- Clinical uncertainty
- Lack of evidence
- Malpractice risk
- Patient request
- Payment structure

Underuse of testing, treatment

- Knowledge, process gap
- Access to healthcare
- Social determinants

Organizational Complexity, Interdisciplinary Teamwork

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A Path Toward a Best Practice & Team Mental Model

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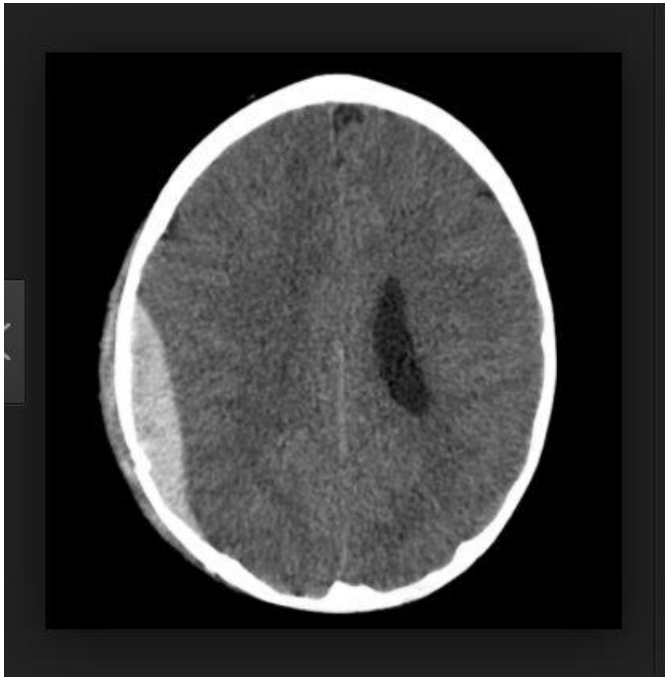

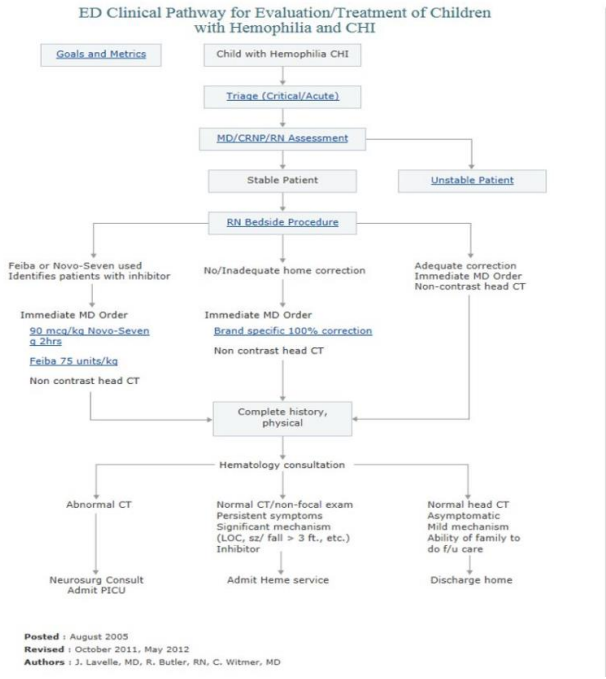

Evidence, expert consensus, Whiteboard, Word document
Posted CHOP Internet, 2005, Paper Order Set

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Bottom-up and Top-Down

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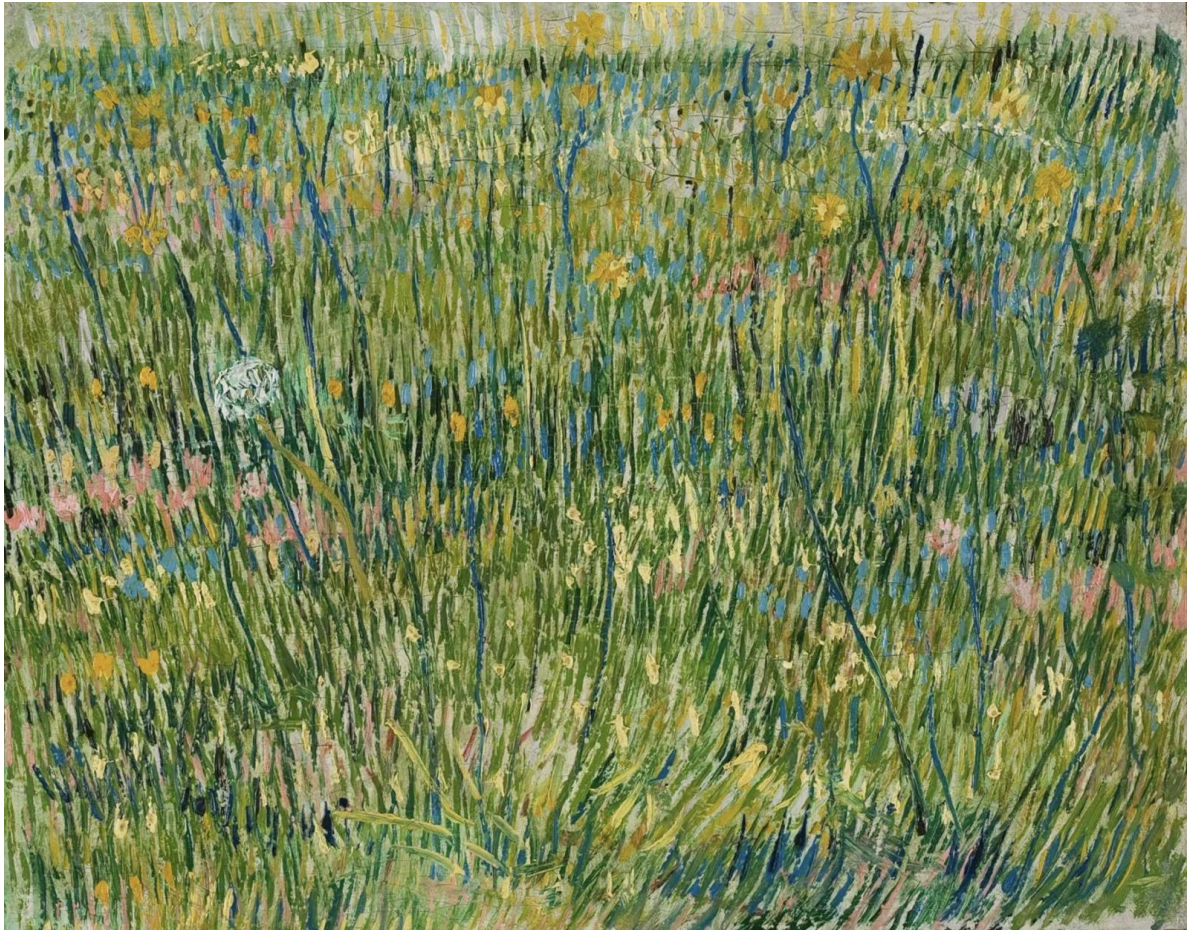

Emergency Department

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Key Elements of Quality Improvement

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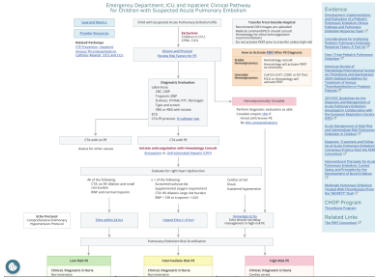
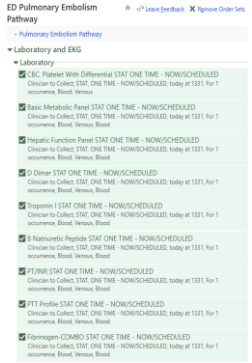
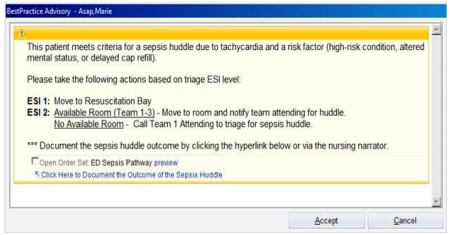
Interdisciplinary Team

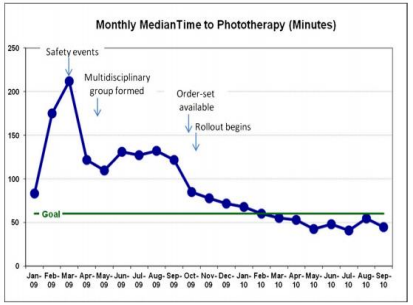
Process



Education, Clinical Decision Support, Measurement







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Hypothesis

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- Decrease Evidence to Care Gap
- Common Mental Model
  - Enhance Teamwork
  - Expectations around communication
  - Improved care process
- Care Model Enhancement
  - Clinicians function at top of license
  - Role specific jobs
- Implementation Strategies
  - Education
  - Chief complaint-based Order Set
  - RN Initiated Orders
  - Practice alerts
- Meaningful measurement
- Continuous Learning

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SCD Fever: Defining Low Risk Criteria, 2010

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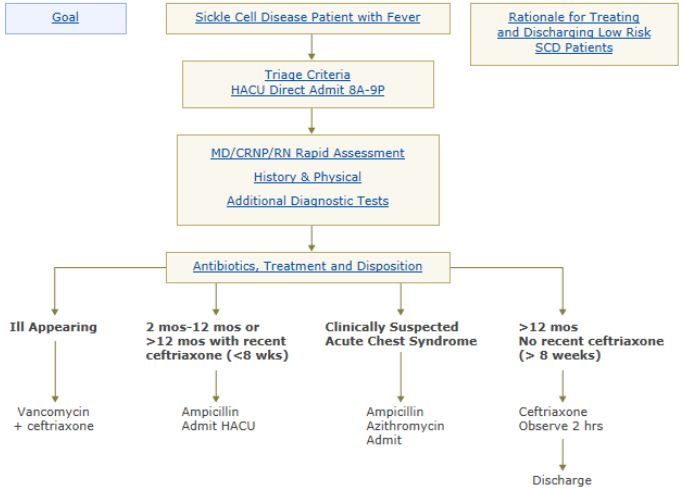

If all Low Risk Criteria met,
patients are eligible for ceftriaxone and discharge after Hematology consultation

CLINICAL
- >12 mos
- Well-appearing
- Good VS
- Tolerating po well
- No concern for complications
  - Sequestration
  - Acute chest syndrome
  - VOC requiring IV analgesia
- No new hypoxia
- O_2 sat ≥ 92% if baseline not known ***or***
- RA sat < 3% below baseline

LABS/X-RAY FINDINGS
- Hgb >5
- Reticulocyte count >1% (unless Hgb >10)
- No significant drop Hgb (>2g)
- WBC >5K and < 30K
- Chest x-ray (if indicated) without infiltrate
- UA (if indicated)

SCD PMH/SOCIAL

No history of:
- Ceftriaxone in preceding 8 weeks
- Bacteremia
- Sepsis
- Sequestration
- Recent antibiotic treatment
- Multiple visits for same febrile illness

No history of:
- Non-compliance with penicillin prophylaxis
- Missing, delayed immunizations
- Low likelihood of follow-up:
  - No phone
  - No transportation
  - Currently in shelter
  - Missed appointments

ED Sickle Cell Discharge

Diagnosis

Sickle Cell Diagnosis

- ☐ Sickle-Cell Disease with Vaso-Occlusive Pain [282.69D]
- ☐ Sickle-Cell Disease, Unspecified [282.60]
- ☐ Dactylitis [686.9AC]
- ☐ Priapism [607.3]
- ☐ Headache [784.0]
- ☐ Migraine [346.90A]
- ☐ Back Pain [724.5E]
- ☐ Other Chest Pain [786.59]
- ☐ Abdominal Pain [789.00AF]
- ☐ Leg Pain [729.5H]
- ☐ Viral Syndrome [079.99B]
- ☐ Fever [780.60C]
- ☐ Nausea with Vomiting [787.01]

Medications

▷ **Sickle Cell Pain Medications**

ED Nurse Practioner Follow-Up

ED NP Follow-Up

- ☐ Message to ED NP Follow-up (lab test/medical issue)

ED Sickle Cell Hematology Fever Follow-Up

ED Sickle Cell Hematology Fever Follow-Up

- ☑ Message to Hematology for ED Sickle Cell Fever Follow-Up
  Internal referral

Disposition and Follow-Up

Dispo and Follow-Up Information

- ☑ Discharge edit
- ☐ Follow-up with PCP tomorrow
- ☐ Follow-up with PCP within 3-5 days
- ☐ Follow-up with PCP as needed
- ☐ Follow-up with your regular provider
- ☐ Follow-up with CHOP Hematology at 215-590

Discharge Instructions

Sickle Cell Discharge Instructions

- ☐ Work School Excuse - click edit to complete
- ☐ Sickle Cell Fever
- ☐ Sickle Cell Pain

▷ **Non-English Discharge Instructions**

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SCD Fever Outpatient Care

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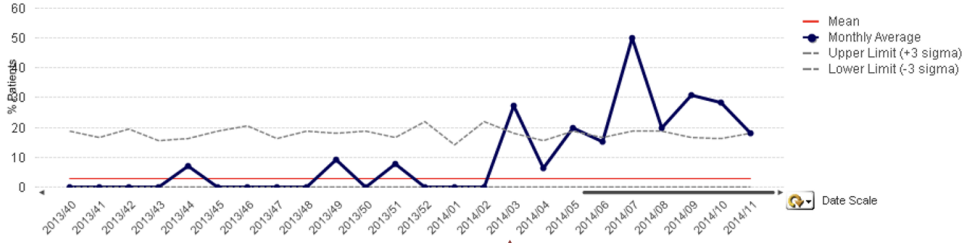
Our Decision is NO Admission!

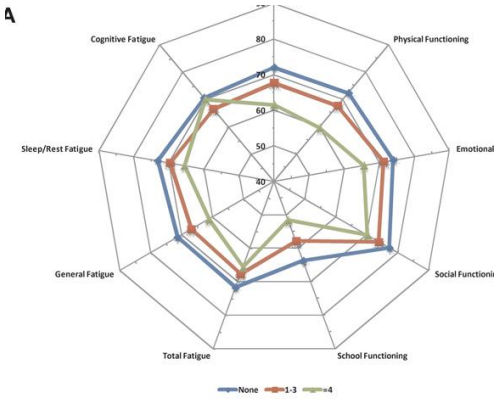
Proportion of Patients Discharged from the Emergency Department



These blips are pts >18 who present to CHOP and were transferred to the adult hospital next door

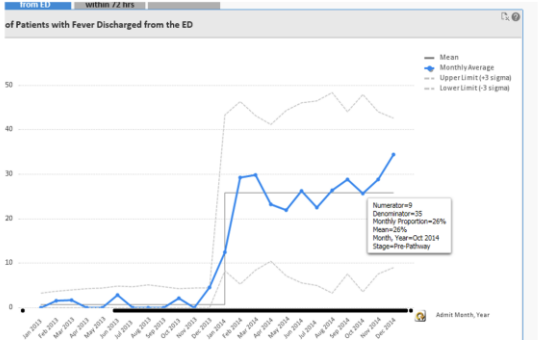
Go Live

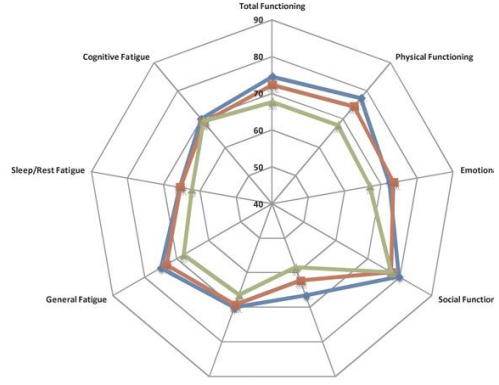
These are patients since the new Pathway and process went live



No bad outcomes

Low Risk SCD Patients with Fever Discharged from ED





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Changing Culture

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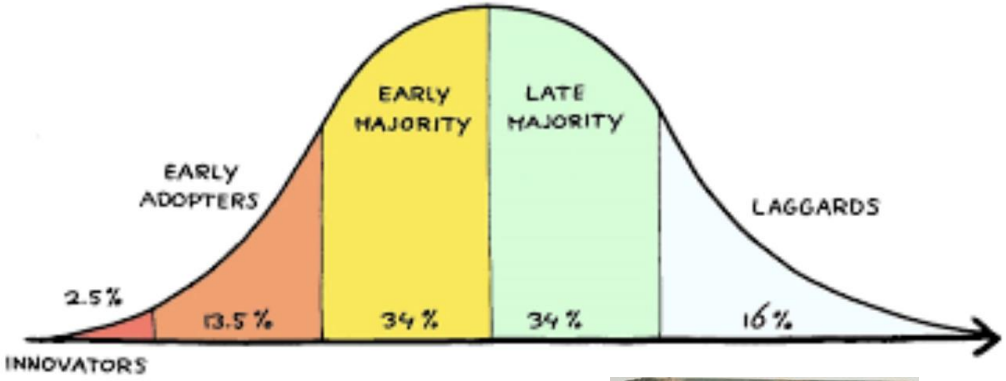
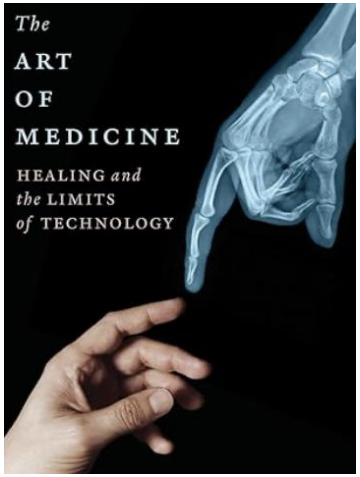
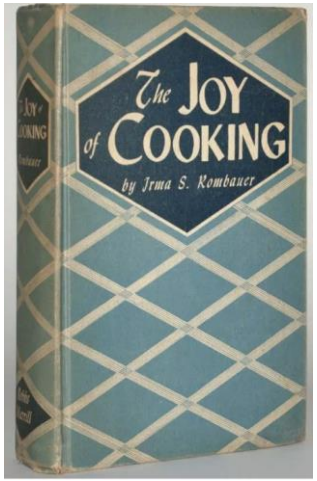




VS



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Chairs Initiative, 2009-2011

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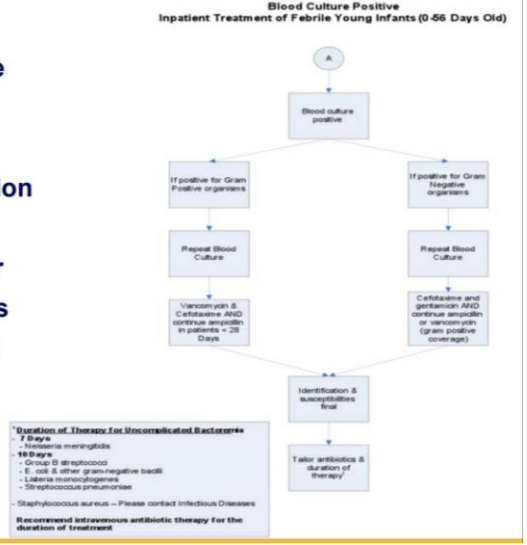
Collaborative Clinical Pathways

GOAL:

To develop the infrastructure required to support the ongoing development, implementation, and evaluation of expert consensus and evidence-based practices for clinical conditions in patients whose care crosses multiple clinical settings and is provided by multiple clinical groups.



Neonatal Fever Pathway

- **Created a standard of care for the treatment of infants < 56 days of age with fever in both Emergency Department and Inpatient settings**
- **Educated bedside clinicians**
- **Developed Quality Metrics**

Quality
- Appropriate use of antibiotics
- Reduced use of acyclovir
- Appropriate use of laboratory testing
- Standardized interpretation of negative cultures
- Early discharge if viral studies positive

Efficiency
- Decreased ED, hospital length of stay

Education
- RN, MD, all team members

The Children's Hospital of Philadelphia

Febrile Neonates Scorecard - DRAFT — Data as of: November-2009

	Current Month Indicator Status	Best Practice	Target	Current Month Median	Current Year Trend
ED Arrival to Antibiotics in Mins			232.5	325.0	
ED Arrival to Antibiotics <= 28 days		130.0	220.0	244.0	
ED Arrival to Antibiotics >28 days		180.0	240.0	341.0	
ED Arrival to Urine Cath in Mins		90.0	108.2	148.0	
ED Arrival to LP in Mins		120.0	179.8	258.5	
ED Arrival to Phys Eval in Mins			28.5	47.0	
Phys Eval to Dec to Admit in Mins			99.8	153.5	
Phys Eval to Dec to Admit <= 28 days			75.0	159.0	
Phys Eval to Dec to Admit > 28 days			123.8	153.0	
Dec To Admit to Md Report in Mins			78.0	69.5	
Md Report to PT to Floor in Mins			33.8	50.5	

		Prior Year Median	Current Month Median	
Hospital Length of Stay in Hrs	N/A Since No Target	55.0	55.0	
Hospital Length of Stay <= 28 days		59.0	54.0	
Hospital Length of Stay > 28 days		53.0	56.0	
Hospital Charges/Cost	N/A Since No Target	$12,425.34	$16,296.68	
Hospital Charges/Cost <= 28 days		$13,067.18	$14,787.40	
Hospital Charges/Cost > 28 days		$11,782.83	$16,610.68	
Ev Per Sent When Appropriate	N/A Since Target is 100%	100.0%	0.00%	

FY11 Care Model Operating Plan
FY12 Operating Plan

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Highlights of Pathway Impact

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ED Sickle Cell with Fever Pathway	• Admission rate decreased by 33%
ED Oncology Patient with Fever Pathway	• Admissions decreased by 16% in ED, 33% in Oncology clinic
ED Anaphylaxis Pathway	• Admission rate decreased by 60%
ED Ventricular Shunt Pathway	• CT radiation exposure decreased by 50%, decreased shunt surveys from 62% to 5%
AIS Spinal Fusion Rapid Recovery Pathway	• Post-op LOS reduced by median of 2 days

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Program Vision

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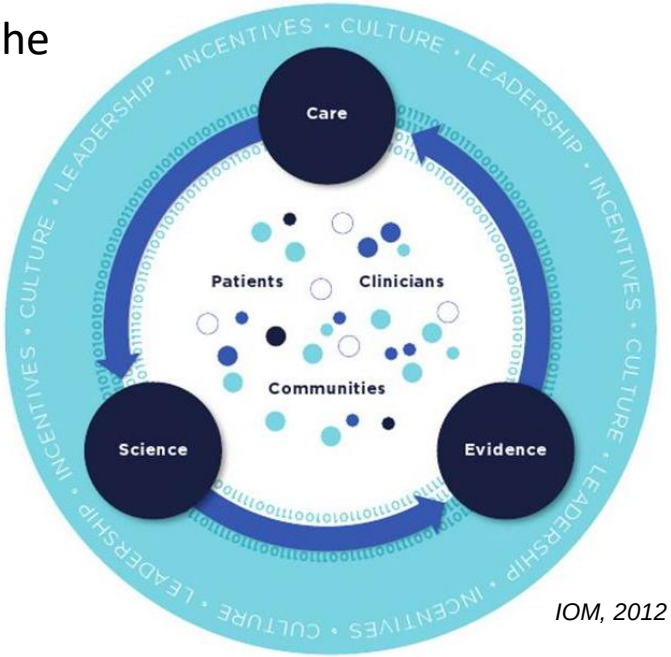
Become a **Continuously Learning Healthcare System**, the Clinical Pathways Program will enable CHOP to:

- Engage **multidisciplinary** teams in embedding evidence & local expertise into the delivery of pediatric medical care
- Reduce **unnecessary variation** in care
- Reliably **measure** the quality of care we provide
- **Iteratively incorporate new evidence** and information from measurement and clinician/family feedback into care recommendations.



IOM, 2012

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Clinical Pathways Program - 2017

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Clinical Pathways Program
2017

Chief Quality Safety Officer
Director of CHQA

Marketing/PR
Interactive Designer
Editor

Local Healthcare Teams
Individual QI Projects
CHQA Queue
Time-Limited Resources
IA, DA, Informatics

Standardized best practice
Better care delivery process
Supports work of teams

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Clinical Pathways Program - 2022

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Clinical Pathways Program
2022

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Clinical Pathways Team

Children's Hospital of Philadelphia
Center for Healthcare Quality & Analytics

Medical Director
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Program Manager
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Improvement Advisor
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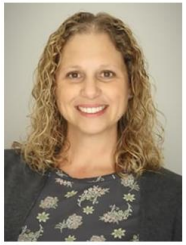

Improvement Advisor
Nina Capoferri, RN, BSN

Senior Interactive Designer
Stephen Crawford, BS

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Pathway Development

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Clinical Pathways Request for Proposal

Clinical Pathways are intended to standardize care for a specific clinical chief complaint, disease, process/procedure, or episode of healthcare in a specific population by bringing guidelines/ evidence/ expert consensus to the bedside through detailed steps, timeframes and criteria-based progression in care when appropriate. Pathways assist in standardizing care for 80% of the pathway population, for the remaining 20%, individual clinical decision making by the team is required. Variation resulting from specific patient characteristics is preserved; variation from the individual provider is eliminated.

Clinical Pathways will be posted on the webpage (https://www.chop.edu/pathways) for internal and external (public) use. The information below will assist the CHQA team in determining if a clinical pathway is the appropriate tool to solve the problem you've identified and if so, where your pathway will be placed in the development queue. Of note, after RFP submission, most teams will not begin pathway development for at a minimum several months.

Request Type:
* must provide value
- ○ New Pathway
- ○ Significant Update to Existing Pathway

reset

Submitter Name:
* must provide value

Pathway Name:
* must provide value

Team Leads Names, Roles, Units/Divisions:
* must provide value

Required Team Leads at least 2 multidisciplinary clinical experts for given clinical problem or process - Physician-nurse dyad suggested; other content experts may be added/substituted based on content.

Team Members Names, Roles, Units/Divisions:
* must provide value

Expand

Team Members represent ALL important stakeholders for this clinical problem or process - (i.e. nursing, social work, nutrition, etc. Please include APP when possible).

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Prioritization Matrix

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Initial Screen	**Pathway Alternatives**	CDS, Policy/Procedure
Impact	**Supporting Evidence**	Guidelines, Research, Expert Consensus
	Quality Impact Themes	Improve Outcomes, Increase Effectiveness/Efficiency, Promote Health & Healthy Communities, Reduce Disparities, Reduce Suffering, Reduce Time Needed to Care, Reduce Unnecessary Care, Keeping Kids out of the Hospital
	Safety	Harm Prevention, Employee Safety, RCA/ACA, Public Health Urgency, Delayed Diagnosis
	Organizational Benefit	Employee Engagement, Alignment with Strategic Plan, Employee Well Being, Financial Stewardship
	Size/Scope of the Problem	Appropriately Defined Scope, Care Areas Impacted, Patient Volume, High Risk/Low Volume
Effort	**SMARTIE Aim**	Clinical Outcomes
	Team's Commitment	Previous Pathway Work, Support From Division Leadership

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CHOP Improvement Framework

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DEFINE

Clinical problem identified by local teams

DIAGNOSE

RFP submission

Supporting evidence, quality impact themes, safety, SMARTIE Aim, size/scope, team commitment

TEST & IMPLEMENT

Pathways team helps map the process and identify appropriate interventions based on evidence and expert consensus

Published pathway enhanced with CDS

SUSTAIN & SPREAD

Ongoing data measurement and pathway updates every 3 years

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3-Year Review Process

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- Evidence, expert consensus
- Local data
- Clinical Decision Support
  - Use of Phrase Health to aid in review, analysis

New Pathways

Botulism, Infant, ED, Inpatient and PICU

Thyroid Function in Newborns, N/IICU

Acute Bacterial Rhinosinusitis, Primary Care, Emergency Department, Inpatient

Urticaria or Angioedema, ED, Primary Care

Lipid Screening, Primary Care

Revised Pathways

Periacetabular Osteotomy (PAO), Inpatient

Hyperbilirubinemia/Jaundice, All Settings

Pulmonary Embolism, Acute, ED, ICU and Inpatient

Mpox, ED, Outpatient Specialty Care and Primary Care

Sexually Transmitted Infections (STI) in Adolescents, ED, Primary Care

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Retiring Pathways

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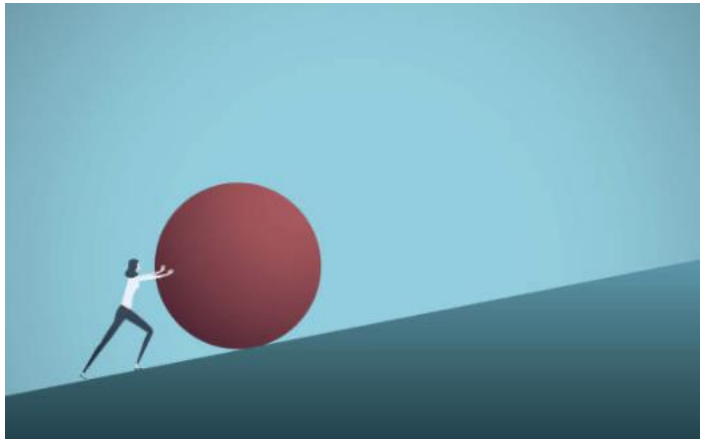
- Has the process or care become standard?
- Are there better tools now available to meet the team's needs?
- Web analytics



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Pathways Library

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Care Area	Number of Pathways
Emergency Department, Urgent Care	90
Inpatient Care	87
Intensive Care (PICU, CICU, N/IICU)	76
Outpatient Specialty Care	41
Primary Care	46
Behavioral Health	17

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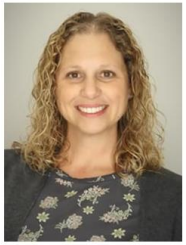

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Stephen Crawford, BS

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Pathway Template

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Emergency Department and Inpatient Clinical Pathway for Evaluation/Treatment of Febrile Infants ≤ 56 Days Old with Community Onset Fever

Goals and Metrics

Provider Resources

Related Pathway
Urinary Tract Infection (UTI), All Settings
Bronchiolitis, Inpatient
Bronchiolitis, ED
Sepsis, ED, Inpatient, PICU
Sepsis, N/IICU

Summary of Pathway Updates
Adapted from AAP Guidelines 2021

Febrile Young Infant ≤ 56 Days Old with Community Onset Fever

Triage (Critical/Acute)
ED nursing pathway standing order set: Febrile Young Infant

Ill-appearing or as clinically indicated:
Sepsis Huddle
Sepsis Pathway
Sepsis N/IICU
Sepsis ED, Inpatient, PICU

ED Team Assessment and Bedside Procedure
History and Physical
IV and Laboratory Studies
POC glucose as needed
Consider HSV and Other Diagnostic Testing
If 0-21 days old: LMX to LP site, LP tray at bedside

Inclusion Criteria
0 to 56 days of age
Recorded temp ≥ 38.0° C (100.4° F) in past 24 hrs
Well-appearing

The following infants may have higher risk of invasive bacterial infection. IMs alone should not be used for risk stratification:
Premature birth < 37 wks gestation
Prolonged N/IICU stay
Complex Medical History
Physical Exam with Concern for Focal Bacterial Infection

Lab Study	Definition of Abnormal
Procalcitonin	> 0.5 ng/mL
Absolute Neutrophil Count	> 4000 neutrophils/µL < 1000 neutrophils/µL
Urinalysis with Reflex to Microscopy	Any leukocyte esterase (LE) on dipstick **or** > 5 WBCs per hpf
CSF	0-28 days: ≥ 15 WBC/µL 29-56 days: ≥ 9 WBC/µL

Antimicrobials: Recommendations, Dosing, and Rationale

Infants 0-21 Days Old

Blood culture
UA, urine culture
HSV Testing
Perform LP

Antimicrobials
Acyclovir

Infants 22-28 Days Old

CBC, blood culture
Inflammatory Markers (IMs): Procalcitonin, ANC
UA, urine culture
Consider HSV Testing

Abnormal UA
or
≥ 1 abnormal IM
Perform LP

Antimicrobials

Normal UA
Normal IMs
No LP

No antimicrobials

Infants 29-56 Days Old

CBC, blood culture
Inflammatory Markers (IMs): Procalcitonin, ANC
UA, urine culture
Consider HSV Testing

Infants with Bronchiolitis

Normal UA
≥ 1 abnormal IM
Perform LP

Antimicrobials

Abnormal UA
Normal IMs
No LP

Abnormal UA
Abnormal IMs
LP Guidance

Antimicrobials

Normal UA
Normal IMs
No LP

Discharge home w/follow-up
or
Admit w/o antimicrobials as indicated for etiologies other than serious bacterial infections

Admit from Emergency Department

LP Indicated, but No CSF Obtained

Any Positive Culture or HSV PCR

Discharge Criteria

Evidence

Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old

Use of Procalcitonin Assays to Predict Serious Bacterial Infection in Young Febrile Infants

Time to Pathogen Detection for Non-ill Versus Ill-Appearing Infants ≤60 Days Old With Bacteremia and Meningitis

Prevalence of Bacterial Meningitis Among Febrile Infants Aged 29-60 Days With Positive Urinalysis [illegible] Systematic Review and Meta-analysis

Validation of the "Step-by-Step" Approach in the Management of Young Febrile Infants

View All Evidence

Educational Media

Approach to the Febrile Young Infant (FYI)

Episode 8: The Febrile Infant - Join host Dr. Bob Belfer as he talks to PEM Experts Dr. Rich Scarfone and Dr. Prashant Majahan About how to Approach the Infant with a Fever

Posted: August 2010
Revised: August 2023
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Editors: Clinical Pathways Team

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Body System
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- [ ] Skin
- [ ] Trauma

22q11.2 Hypocalcemia Screening/Treatment, Inpatient, Outpatient Specialty Care and PICU

Abdominal Solid Organ Injury, ED, Inpatient, and ICU

Abuse Physical, ED

Abuse, Physical, Outpatient Specialty and Primary Care

Abuse, Sexual, ED

Acute Bacterial Rhinosinusitis, Primary Care, Emergency Department, Inpatient

ADHD, Primary Care

Airway Clearance/Hyperinflation Therapy, ICU and Inpatient - Updated

Airway, Difficult/Critical, All Settings

Anaphylaxis, ED

Anaphylaxis, Inpatient

Anaphylaxis, Outpatient Specialty and Primary Care

Anesthesia/Sedation, Preoperative Care and Preparation, ED and Inpatient

Ankyloglossia (Tongue-Tie), Outpatient Specialty Care, Primary Care

Anti-NMDA Encephalitis, Inpatient

Anxiety Disorder and OCD, Outpatient Behavioral Health and Primary Care

Aplastic Anemia, All Settings - Updated

Appendicitis, Inpatient

Lymphatic Disorders, Neonatal, Inpatient

Malnutrition (Undernutrition), Inpatient

Malnutrition Weight Loss and Eating Disorders, ICU and Inpatient

Malnutrition, Infant, Outpatient Specialty Care, Primary Care

Malnutrition/Failure to Thrive, Infant, Inpatient

Measles Suspected Exposure or Infection, ED, Outpatient Specialty and Primary Care

Meningitis, Suspected, ED, Inpatient, ICU

Micrognathia-Retrognathia, Neonate/Infant, N/IICU

Migraine Headache, ED

Migraine Headache, Inpatient

Mitochondrial Disease, ED and Inpatient

Mpox, ED, Outpatient Specialty Care and Primary Care - Updated

Multiple Patient Events and Mass Casualty Incidents, ED

Multisystem Inflammatory Syndrome (MIS-C)

Myelomeningocele/Myeloschisis, Neonatal, N/IICU

NAS/NOWS, Neonatal, Inpatient - Updated

Neck Space Infection, Deep, ED, Inpatient

Neonatal Seizure/Status Epilepticus Clinical Pathway, N/IICU

Nephrolithiasis, ED - Updated

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Keyword or Condition

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Getting the Word Out

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Radar Dashboard - ED

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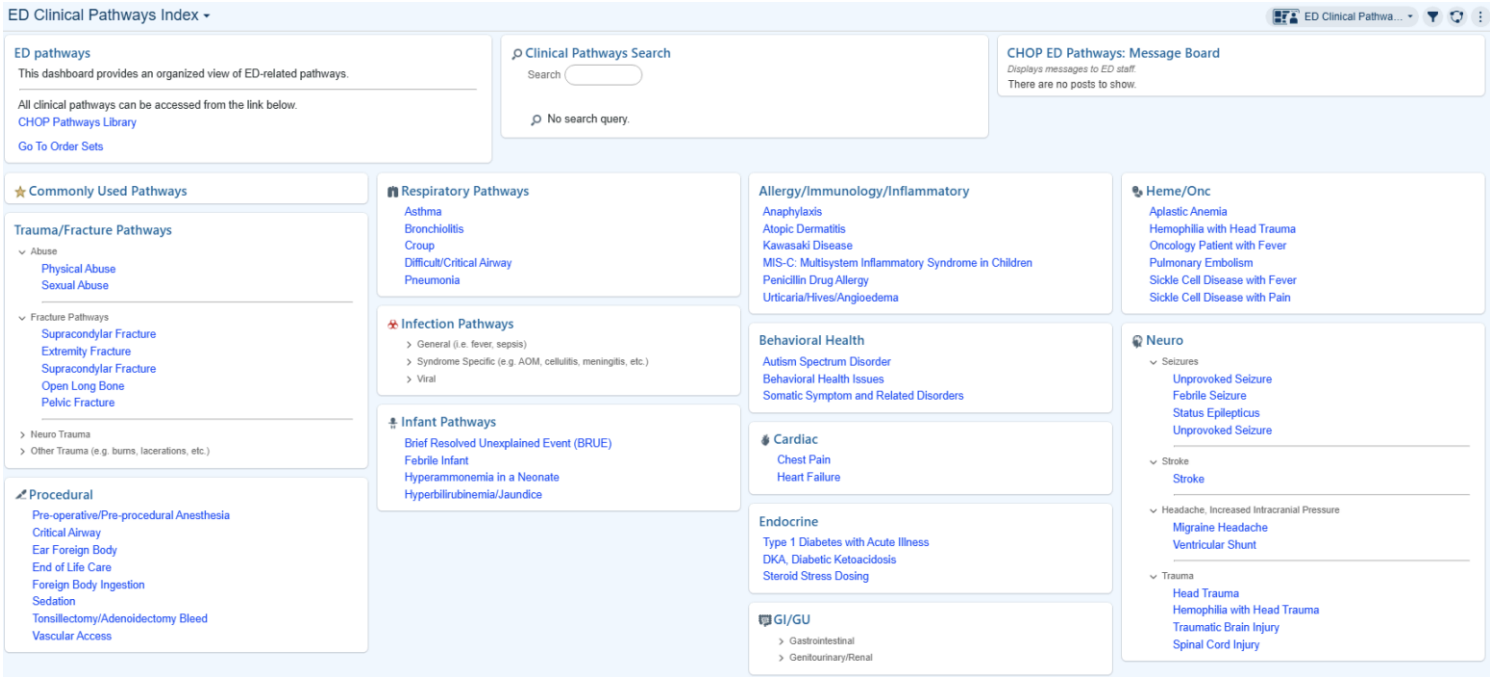

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ED, Inpatient: Diabetic Ketoacidosis Pathway

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Emergency Department, ICU and Inpatient Clinical Pathway for Evaluation/Treatment of Children with Suspected Diabetic Ketoacidosis (DKA)

Goals and Metrics

Patient Education

Provider Resources

Related Pathways
Type 1 DM and Acute Illness, ED
Diabetic Ketosis without Acidosis, Inpatient

Child with Suspected DKA

ED Triage
POC glucose, POC beta-hydroxybutyrate (BOHB)

Team Assessment
History and Physical Exam

Assess	MS, VS, dehydration Risk for Cerebral Edema
IV Access	2 PIV
Initial Labs	VBG, BMP, Mg, Phos, HgbA1C HCG, CBC as indicated
IV Fluids	20 mL/kg NS over 1 hr
Monitor	VS q15min, I/O hourly, start DKA Care Map

60 min

Cerebral Edema Risk, Treatment

DKA Confirmed Glucose > 200 mg/dL **and**
BOHB > 3 mmol **and**
pH < 7.3 or HCO3 < 15 mmol/L

Ongoing Treatment

Care Goals
Frequent MS, VS, PE assessment
Initial NS bolus over 1st hr
Insulin to start after 1st NS bolus
Decrease blood glucose (BG)
- 50-100 mg/dL/hr

Adjust dextrose
- Based on hourly BG

Adjust K+
- Based on q2hr BMP/mag/phos
- ECG for < 2.5 or K > 6

IVF Rehydration, Electrolytes, Glucose

Additional NS or LR bolus as indicated by PE, VS
Start NS 1.5x maintenance until electrolyte results
Then start 2 bag (D10NS, NS) system:
- Dextrose provided based on BG
- Electrolyte content based on K+ level
- Rate 1.5x maintenance

Glucose Concentration in IVF

Blood Glucose	Dextrose
< 200	All D10
200-299	Half D10, half NS
> 300	All NS

Concentration of Potassium in IVF: KCL + KPhos

Serum K	KCL	KPhos
< 4	30 mEq	30 mEq, 20.4 mM
4-5.4	20 mEq	20 mEq, 13.6 mM
5.5-6	10 mEq	10 mEq, 6.8 mM
> 6	None	None

Electrolyte Abnormalities in DKA
Na HCO_3 is not recommended

Insulin

Start regular insulin 0.1 units/kg/hr after initial NS bolus completed
Stop home insulin pump
Review Lantus dosing with Endocrine

Labs Monitoring

POC BG hourly
BMP/mag/phos and POC BOHB q2hr
VBG q2hr until pH > 7.0

Physical Monitoring

Full Cardiorespiratory Monitoring
VS, neuro assessment hourly

Admission Considerations

ICU Admission Indications and Considerations
Diabetes Care Flow Chart

Evidence
Diabetic Ketoacidosis in Children
ISPAD Clinical Practice Consensus Guidelines 2022: Diabetic Ketoacidosis and Hyperglycemic Hyperosmolar State

CHOP Programs
Diabetes Center for Children
Refer to CHOP >

Podcast
PEM Podcast, DKA

Related Links
American Diabetes Association
CDC Diabetes Public Health Resource
National Diabetes Information Clearinghouse

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ED DKA Care Path

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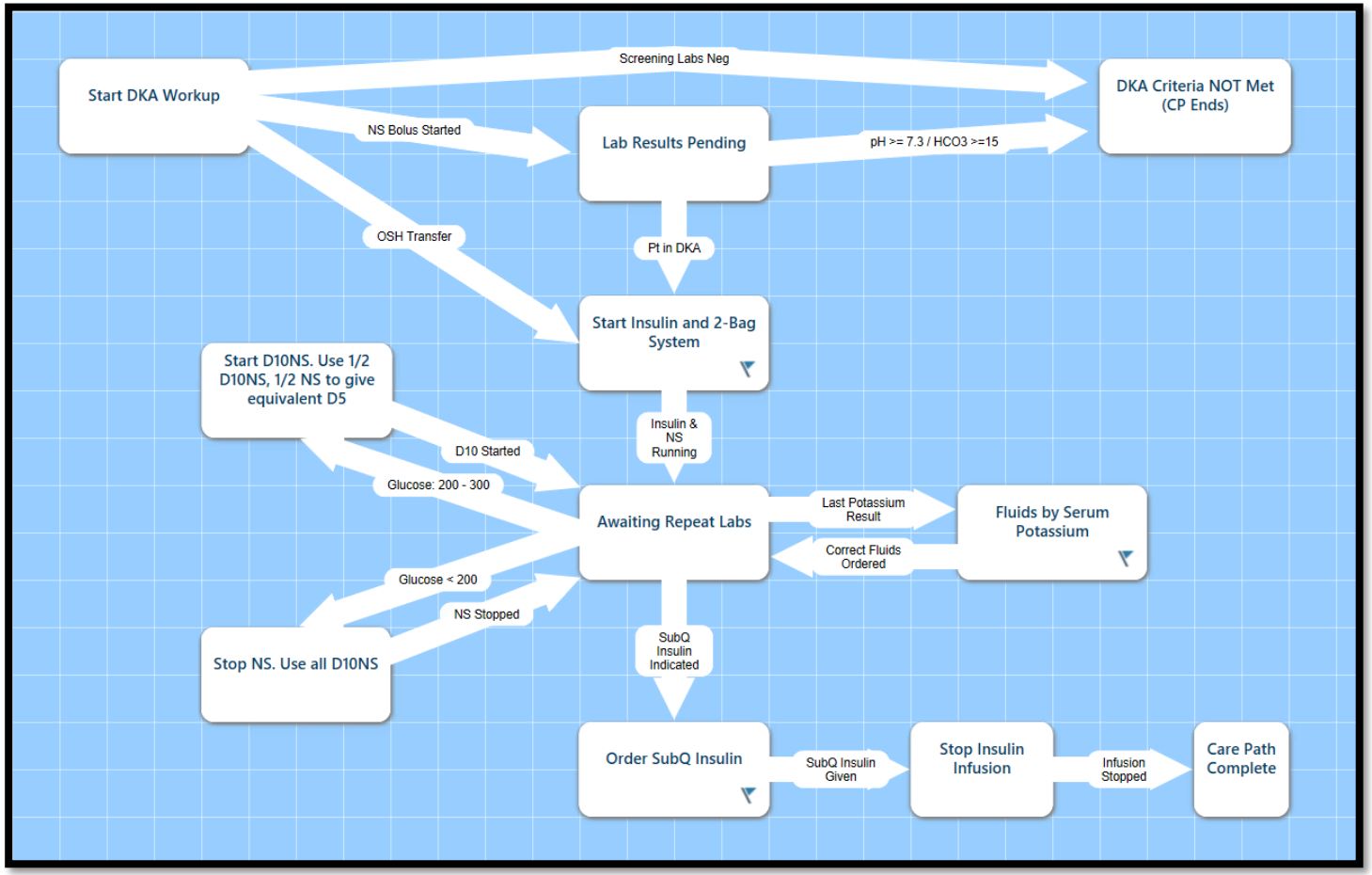

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ED DKA Care Path

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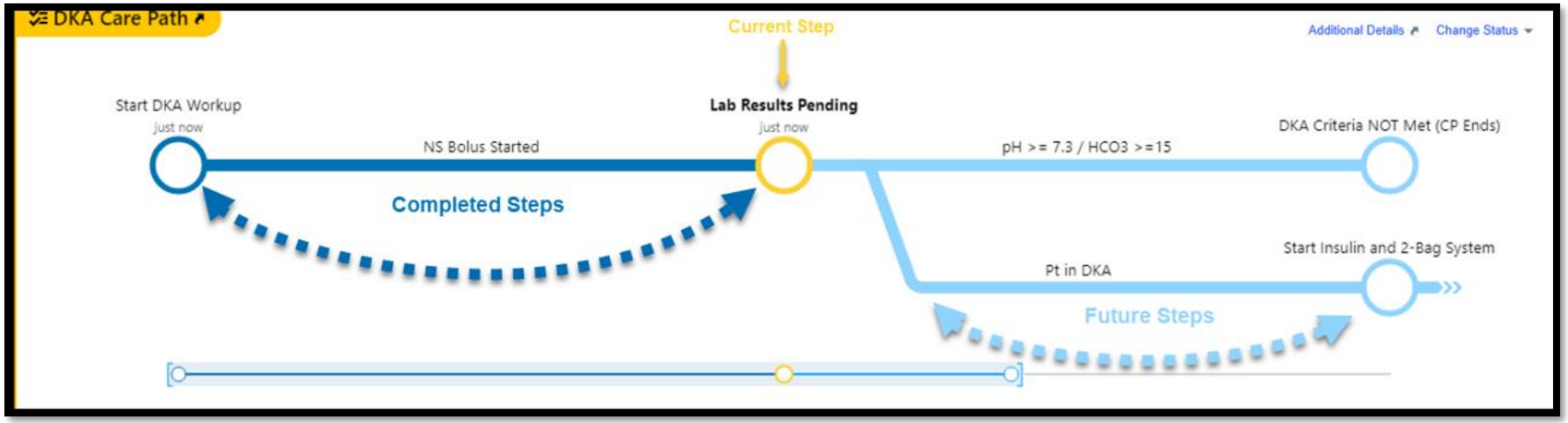

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Primary Care: Headache Pathway

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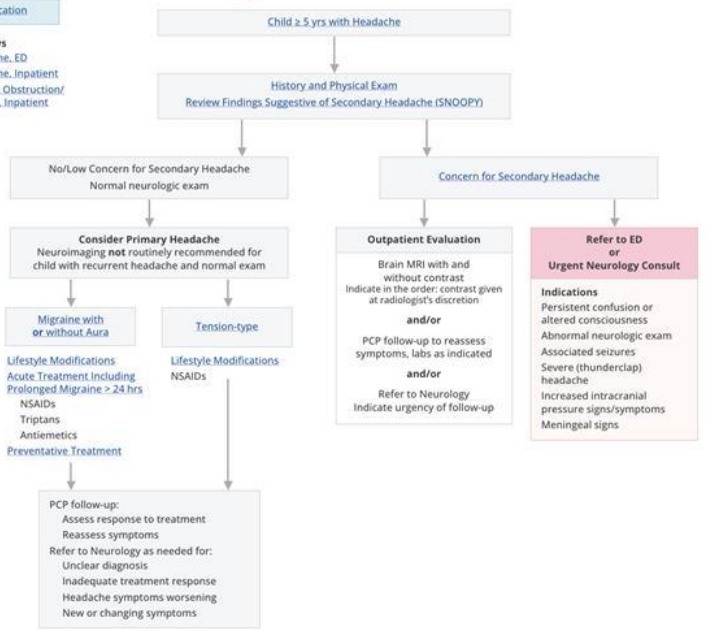
Goals and Metrics

Patient Education

Related Pathways
Migraine Headache, ED
Migraine Headache, Inpatient
Ventricular Shunt Obstruction/ Infection, ED, ICU, Inpatient

Primary Care Clinical Pathway for Evaluation and Management of Child with Headache



Evidence
Headache in Children and Adolescents
Incidental Findings and Normal Anatomical Variants on Brain MRI in Children for Primary Headaches
Acute Treatment of Migraine in Children and Adolescents
Pharmacologic Treatment for Pediatric Migraine Prevention

CHOP Programs
Division of Neurology
Pediatric Headache Program
Refer to CHOP >

Podcast
Primary Care Perspectives Podcast, Managing Pediatric Migraine Headaches

Posted: October 2023
Last Revised: August 2025

Authors: D. Elliott, MD; C. Szperka, MD; D. Stephenson, MD; J. Zook, PharmD
Editors: Clinical Pathways Team

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Primary Care: Headache Pathway

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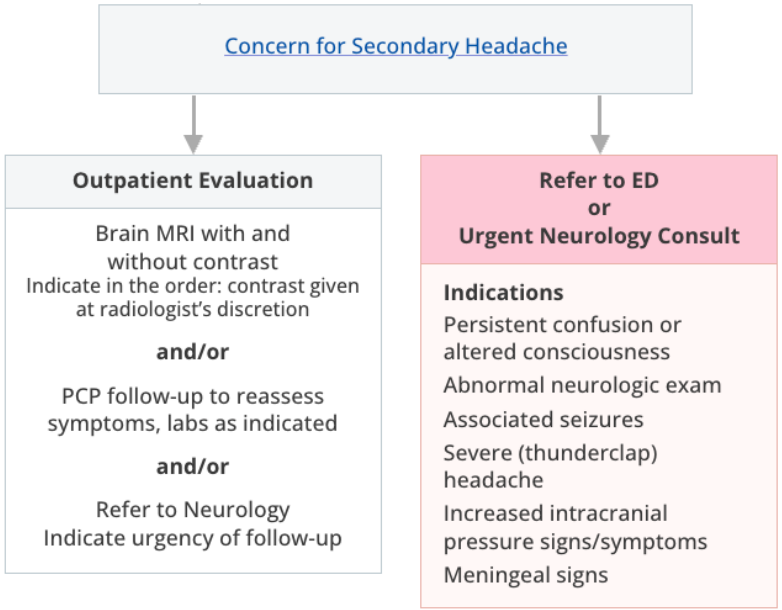
SNOOPY: Snoop for Secondary Headache

S	**Systemic Disease** History of malignancy or tumor History of congenital heart disease Immunosuppression or immune deficiency Hematologic – thrombophilia, thrombocytopenia, coagulopathy or sickle-cell disease Genetic disease with predisposition Recent history of head trauma **Signs of Systemic Disease** Constitutional – weight loss, fever, fatigue, malaise, morning vomiting or recurrent vomiting without cause Infectious – sinusitis, encephalitis/meningitis, tickborne Rheumatologic – arthritis, rash
N	**Neurologic Signs** Altered mental status Papilledema Focal neurologic findings New seizure
O	**Onset Sudden** Thunderclap headache – may signal vascular cause
O	**Occipital Location** May be risk factor for secondary headache
P	**Progressive** Chronic or acutely progressive pattern **Precipitated by Valsalva** Cough or sneeze triggering a headache may signal increased or decreased ICP **Positional** Worse lying down, awakens patient at night when previously no headache or severe upon awakening may signal increased ICP Persistently worse with standing may be dehydration, decondition, low blood pressure, or low ICP
Y	**Years < 6** Risk factor for secondary headache (may be due to limited ability to describe headache)



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Primary Care: Enhanced Note Templates

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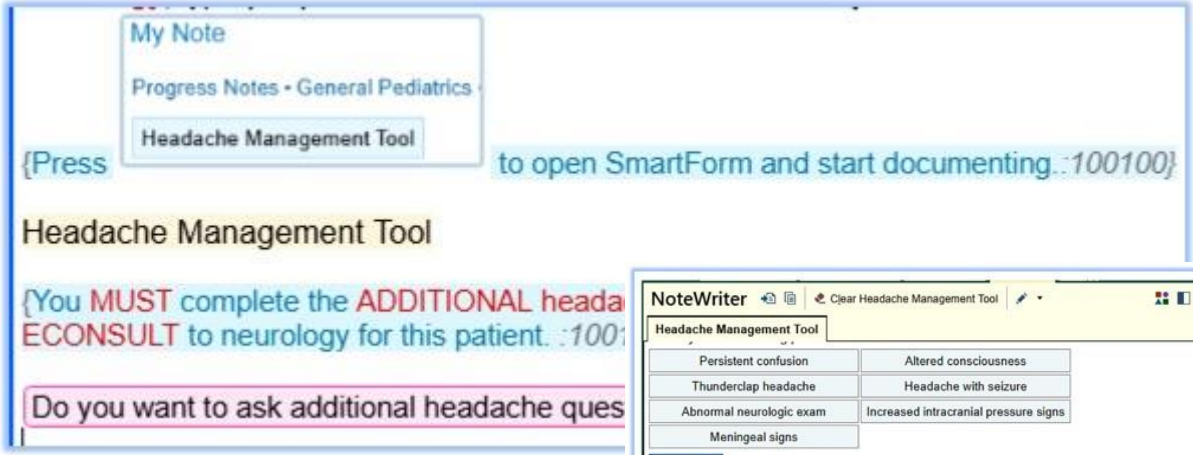

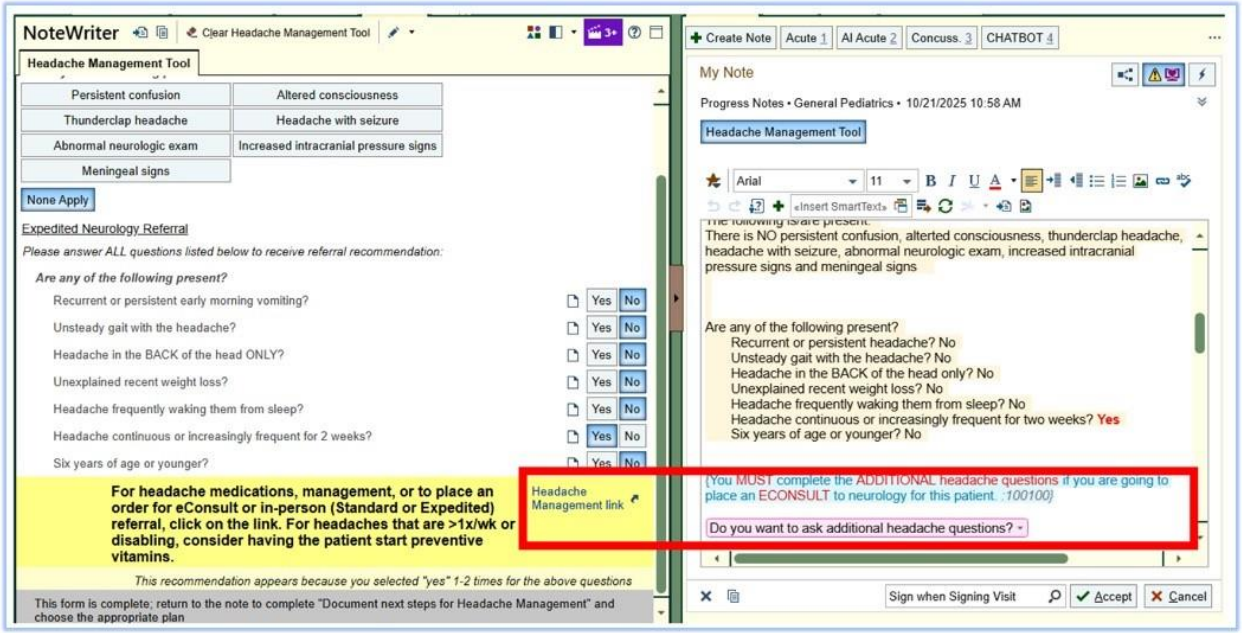

Primary Care: Smart Set

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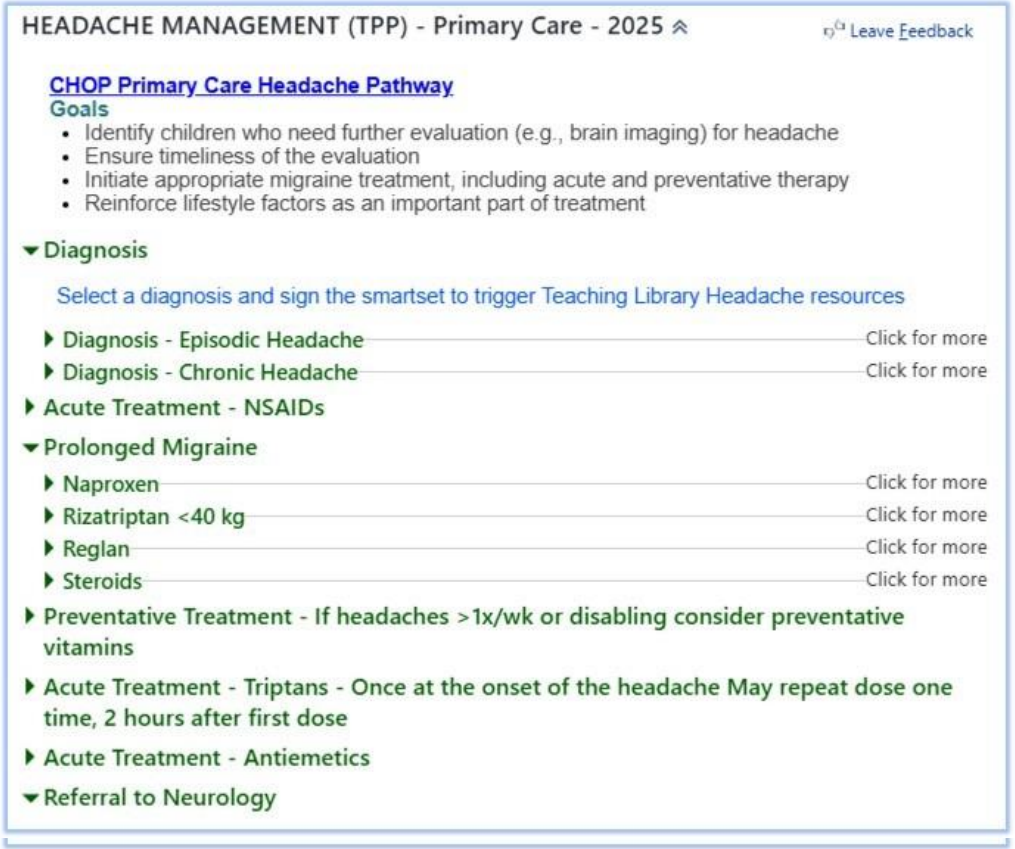

HEADACHE MANAGEMENT (TPP) - Primary Care - 2025

Leave Feedback

CHOP Primary Care Headache Pathway

Goals

- Identify children who need further evaluation (e.g., brain imaging) for headache
- Ensure timeliness of the evaluation
- Initiate appropriate migraine treatment, including acute and preventative therapy
- Reinforce lifestyle factors as an important part of treatment

▼ Diagnosis

Select a diagnosis and sign the smartset to trigger Teaching Library Headache resources

▶ Diagnosis - Episodic Headache — Click for more

▶ Diagnosis - Chronic Headache — Click for more

▶ Acute Treatment - NSAIDs

▼ Prolonged Migraine

▶ Naproxen — Click for more

▶ Rizatriptan <40 kg — Click for more

▶ Reglan — Click for more

▶ Steroids — Click for more

▶ Preventative Treatment - If headaches >1x/wk or disabling consider preventative vitamins

▶ Acute Treatment - Triptans - Once at the onset of the headache May repeat dose one time, 2 hours after first dose

▶ Acute Treatment - Antiemetics

▼ Referral to Neurology

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ED, UC, Primary Care: Otitis Media Pathway

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Clinical Pathway for Evaluation/Treatment of Suspected Acute Otitis Media in Children 2 Months to 12 Years

Goals and Metrics

Patient Education

Suspected Acute Otitis Media (AOM)

Diagnostic Criteria

Assess severity or presence of otorrhea from TM perforation

Severe disease (any one of):
Temperature ≥ 39°C (102.2°F) in past 48 hrs
Moderate to severe ear pain
Ear pain for ≥ 48 hours

Severe or otorrhea from TM perforation

Non-severe

< 6 mos

6-23 mos

≥ 2 yrs

Bilateral

Unilateral

Treat immediately
Durations by Age
Antibiotic Recommendations

Recommend 48-72 hrs observation
Consider safety-net antibiotic prescription (SNAP)
Durations by Age for SNAP
Antibiotic Recommendations

Evidence

The Diagnosis and Management of Acute Otitis Media

Antibiotic Durations by Age	
< 2 yrs	10 days
2-5 yrs	7 days
≥ 6 yrs	5 days

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ED Otitis Media Discharge Smart Set

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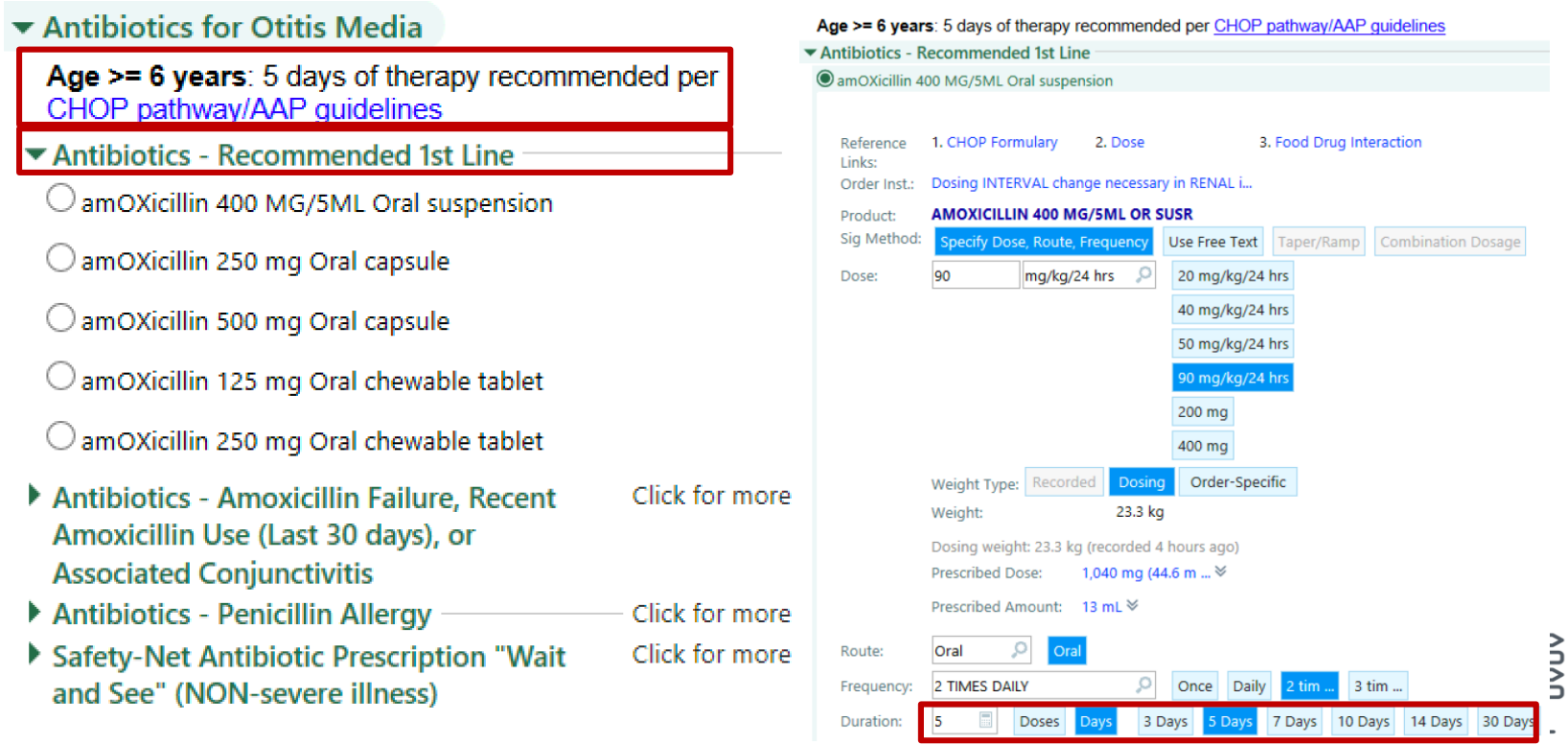

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Overall Adherence to AOM Guidelines

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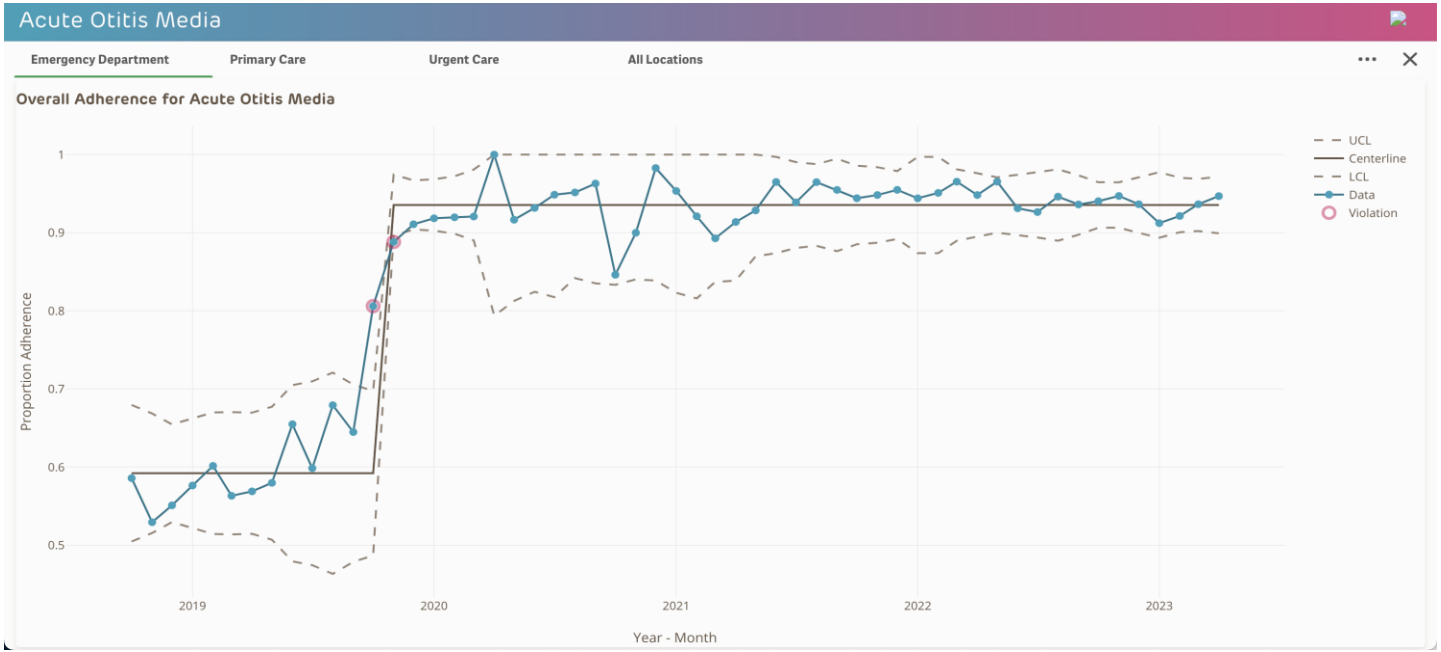

Antibiotic Days Saved

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Overall Adherence to AOM Guidelines

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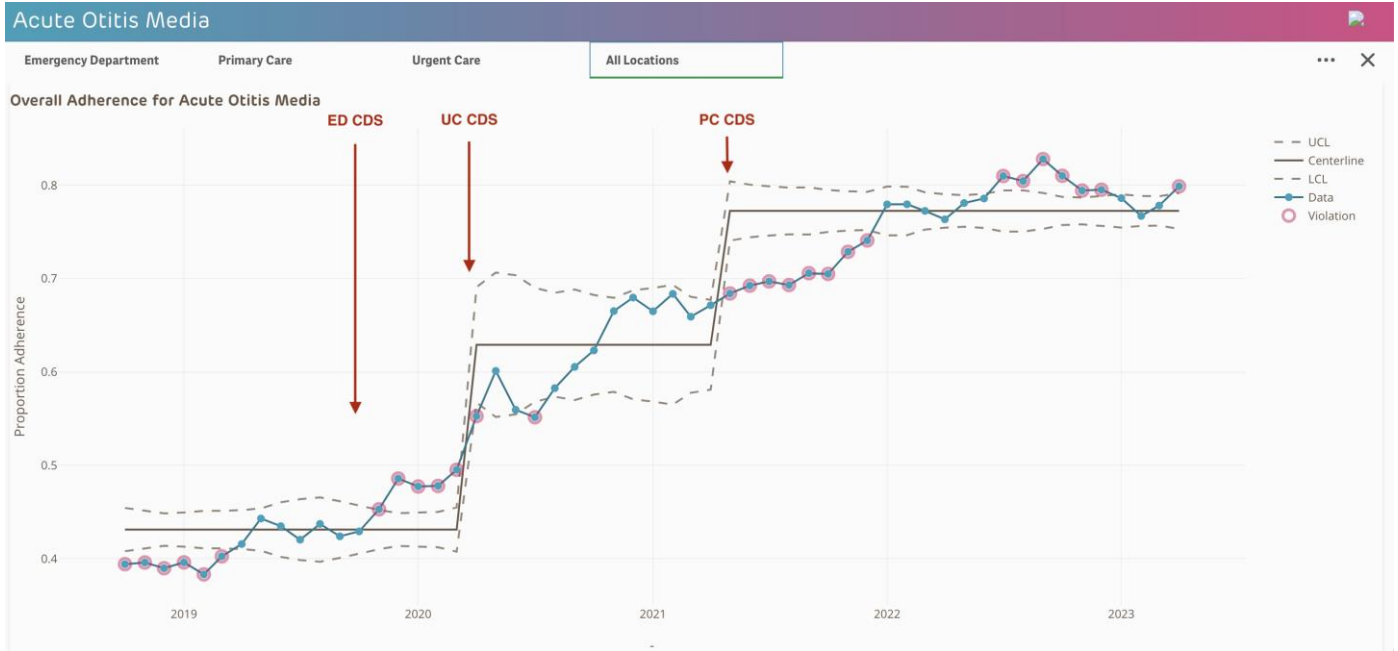

Antibiotic Days Saved

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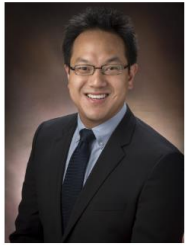

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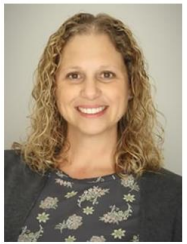

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Thank You

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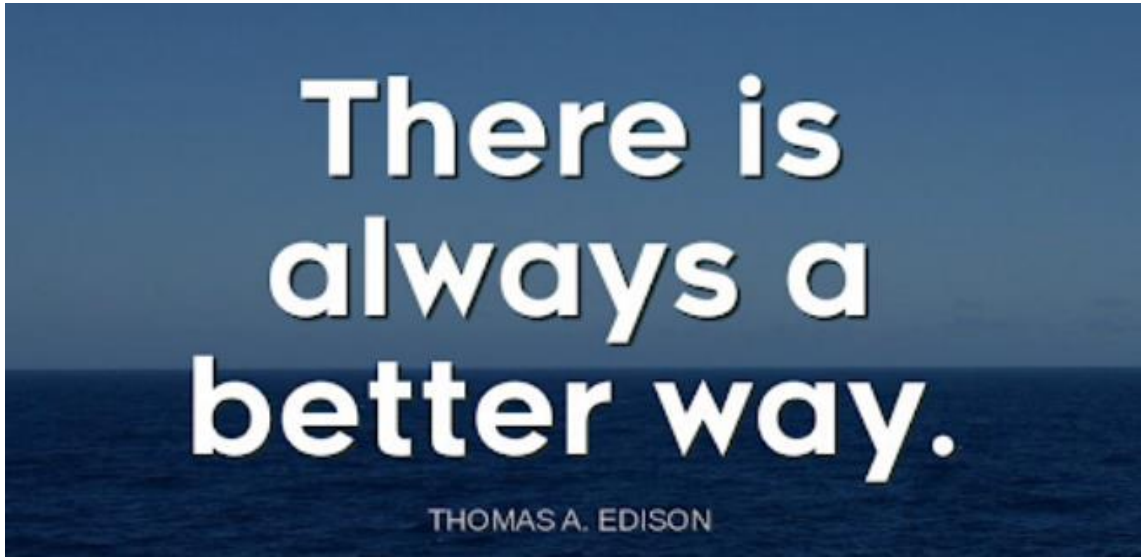

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