



Pathways in Action: Turning Data into Better Decisions

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February 9th, 2026



PATHWAYS4KIDS

Supporting Evidenced Based Practices





Agenda



Program - Data Partnership

Timeline
Investment



Analytics Support



Centralized Dashboard



Capturing Meaningful Insights

Influenza
Lipid Screening
Kawasaki Disease
Hyperbilirubinemia



Data and Analytics

- Only 10 Data Analysts working on projects for entire enterprise
 - Operational projects prioritized over QI work
- Duplicative work
- No asset life cycle

Clinical Pathways Program

- Local Healthcare Teams completed individual QI projects
 - Competition for resources based on Request for Proposals (RFP)
 - Time-limited project
 - Siloed work
 - Inconsistent cohorts and metrics



Data and Analytics

- All Data Analytics teams combined into one department
- "Trusted Data Layer" created to make reusable business logic

Clinical Pathways Program

- More available analytics resources for project support
- Continued with RFP-based QI work
 - Requests distributed across data teams



Data and Analytics

- *Safety & Quality (SnQ) Product Team* created with 8 Data Analysts, supporting Clinical Pathways as well as other programs
- Dedicated analytics FTE available for Clinical Pathways projects
- No limit to number of requests

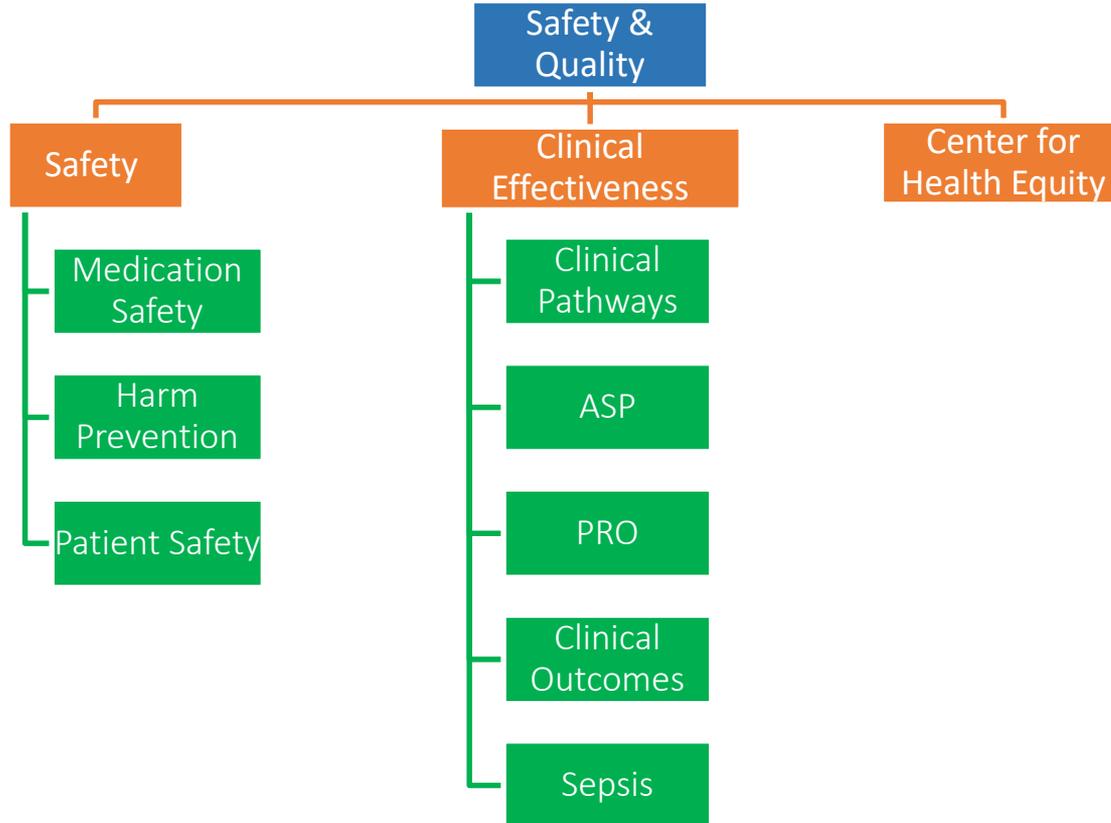
Clinical Pathways Program

- Clinical Pathways Program maintains and prioritizes a backlog of requests with SnQ
- Begin to standardize requests and metrics





Safety & Quality Data Team



Data and Analytics

- Identified several unused pathways dashboards
 - Wanted to preserve metrics and data for the program
- SnQ proposes Centralized Pathway initiative

Clinical Pathways

- Adoption of Centralized Pathway model as baseline for many Clinical Pathways projects





Address multiple technical problems with a single solution

1. Many dashboards went unmonitored
2. Projects take 6+ months from start to finish
 - Oversaturation of metrics delayed project completion
3. PHI security complicates visibility





Proposed Solution

1. Summary slide with high-visibility metrics; Sustained and New Projects
2. Core Metrics + 3 pathway-specific metrics in a templated dashboard
 - Analyst-friendly; create dashboard in minutes instead of months
 - Halved project completion time
3. Created a de-sensitized dashboard to share information and streamline metrics and improvement opportunities





Metrics Stratified by Pathway Utilization

Campus

King of Prussia Campus

Philadelphia Campus

Fiscal Year

FY-2026

FY-2025

FY-2024

FY-2023

Care Location

Pathway

Values

Pathway Utilizati...

	Number of Visits		Average Length of Stay		72-Hour Revisit Rate		7-Day Readmission Rate	
	Pathway Used	Not Used	Pathway Used	Not Used	Pathway Used	Not Used	Pathway Used	Not Used
	Emergency Department	21827	21885	4.34	4.79	5.6%	5.2%	2.6%
Bronchiolitis	4193	8691	5.91	4.81	6.3%	7.8%	4.4%	5.3%
Constipation	4737	11700	5.40	4.96	4.3%	3.3%	2.3%	1.7%
Croup	12897	1494	3.44	3.42	5.8%	4.6%	2.2%	2.6%
Inpatient	10658	6894	2.31	5.01	4.0%	2.7%	3.5%	3.6%
Bronchiolitis	5407	627	2.09	2.98	3.7%	3.0%	3.2%	2.6%
Constipation	1249	3510	4.90	6.89	2.4%	2.1%	3.0%	3.6%
Croup	1164	113	1.20	1.15	6.7%	5.3%	4.9%	5.3%
Gastrodehydration	2482	2443	1.69	2.72	3.8%	3.4%	3.1%	3.8%
Infant Botulism	-	107	-	11.79	-	0.0%	-	3.7%
Kawasaki	356	94	4.46	4.78	7.9%	5.3%	7.9%	7.4%





Centralized Dashboard - Constipation

Care Location

Emergency Department

Inpatient

Campus

King of Prussia Campus

Philadelphia Campus

ED Admission?

DEI Filters

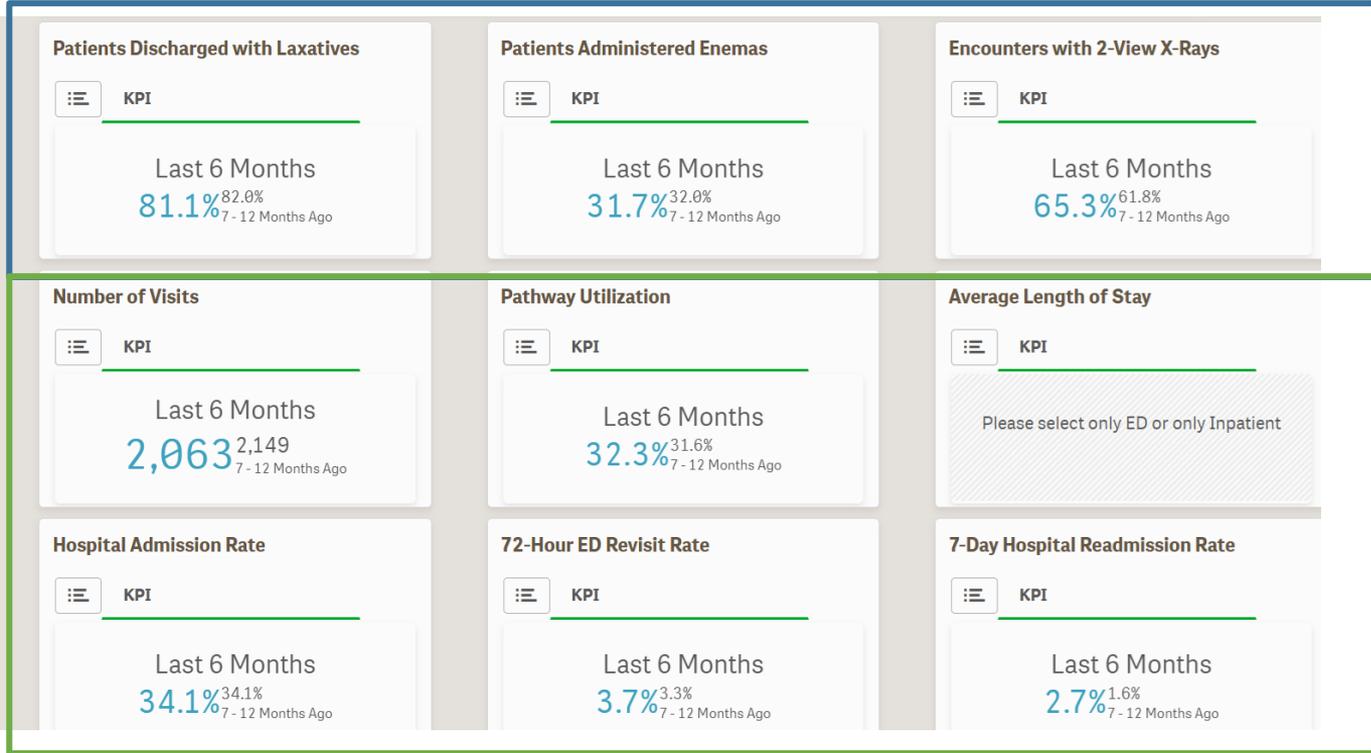
Race/Ethnicity

Preferred Language

English

Non-English

Payor



Pathway-specific metrics

Core metrics





Collaboration between Data and Healthcare Teams

1. Cohort development
 - Broad approach - assigned to pathway *and* qualified patients
 - Validation iterative and collaborative
2. Metric Refinement
3. Dashboard for monitoring improvement
 - Statistical Process Control (SPC) charts
 - Metrics
 - Patient Details





PATHWAYS4KIDS

Supporting Evidenced Based Practices

Influenza Pathway, ED





ED Influenza Testing, Treatment Pathway

Emergency Department Clinical Pathway for the Evaluation/Treatment of Children with Suspected Flu

- Goals and Metrics
- Patient Education
- Provider Resources

Related Pathways
 COVID-19 Screening, ED
 COVID-19 Screening, Inpatient
 COVID-19 Screening, Outpatient
 Specialty and Primary Care
 COVID Active COVID-19, Acute, All Settings

Influenza-like Illness (ILI)
 Fever \geq 100.4°F and Cough and/or Sore Throat During Influenza Season

CDC Weekly US Map: Influenza Summary Update

Influenza Vaccination for Discharged Children

Surveillance for Avian Influenza
 Current High-Risk Exposure Definition
 Recommendations for Influenza A Testing

PPE and Isolation Recommendations
 Mask in triage for child and caregivers
 Mask, eye protection, HH, gloves for care providers (gowns per symptoms)

Evidence
 CDC Guidelines for Treatment
 CDC Prevention and Control with Flu Vaccine
 CDC Seasonal Influenza (Flu) Information for Health Professionals
 Recommendations for Prevention and Control of Influenza in Children, 2024-2025: Policy Statement
 Recommendations for Prevention and Control of Influenza in Children, 2024-2025: Technical Report

Child Requires Admission

All children requiring admission are considered **at higher risk** for influenza complications

Testing Recommended
 Send Rapid PCR Quad Panel SARS-CoV-2, Flu A/B, RSV

Test Result	Action
Positive	Begin oseltamivir
Negative	Do not begin oseltamivir

If test result is unavailable prior to floor transfer, inpatient team can begin oseltamivir when test results are available.

Child Stable for Discharge

Assess risk of influenza complications Based on individual factors of the child

Children considered **at risk** for influenza complications

< 12 mos or **12-24 mos Old and Moderately Ill**
 No chronic condition, social factor

Chronic Conditions
 Pulmonary (e.g., Asthma), cardiac, renal, hepatic, hematologic, metabolic, neurologic
 Immunosuppressed
 Long term ASA therapy
 Morbid obesity
Social Factors
 Resident of chronic care facility
 Household contact < 6 mos or with chronic condition

Testing Recommended

Consider Testing

Additional Considerations:
 Consider testing/treating only if symptoms are present < 48 hrs

Send Rapid PCR Quad Panel SARS-CoV-2, Flu A/B, RSV

Children considered to be **at low risk** for influenza complications

> 24 mos Old
 No chronic condition, social factor

No testing or treatment recommended

Reduce unnecessary testing

Published 2013
Updated annually

Data support 2023



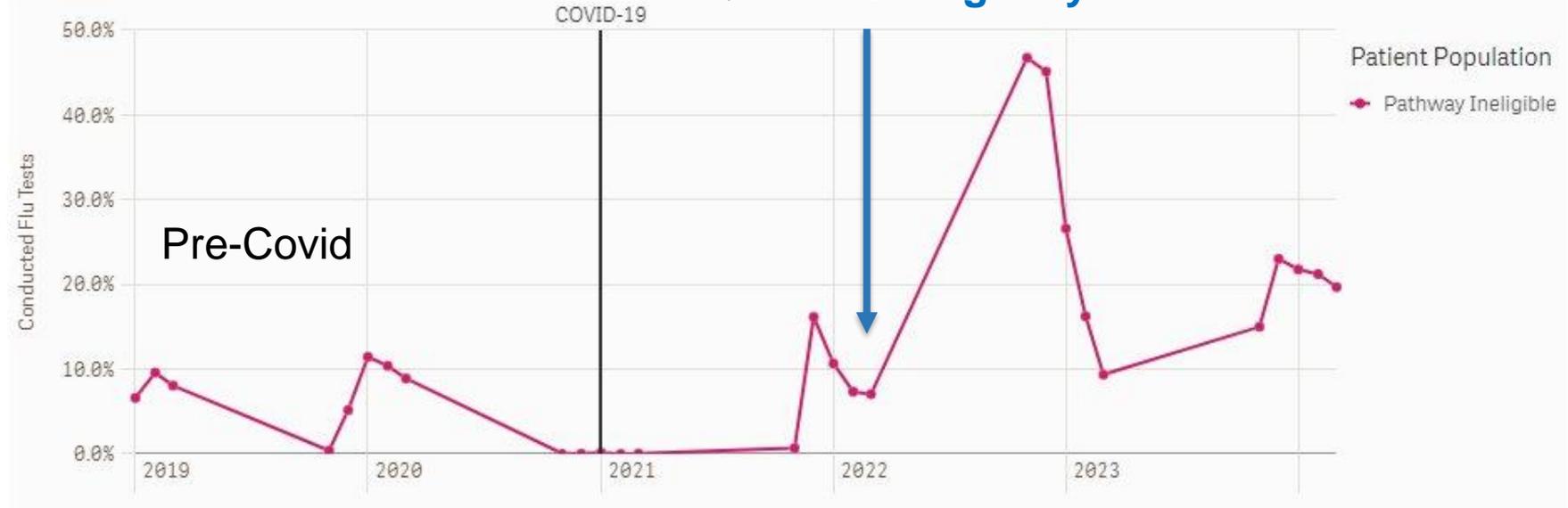


Respiratory Pathogen QUAD Testing at CHOP

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COVID Restrictions Lifted QUAD Testing only

Rate Flu Tests were Conducted

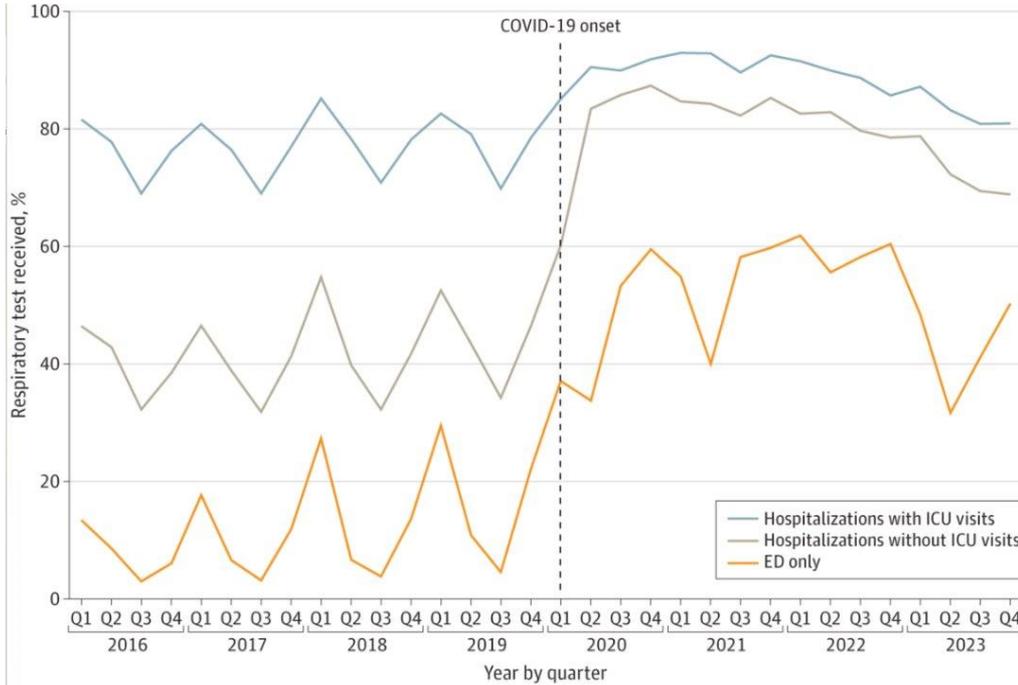


QUAD: Flu A/B, COVID, RSV





Respiratory Pathogen Testing at US Children's Hospitals



Retrospective, cross-sectional study
38 Children's Hospitals 2016-2023

13.6% pre-pandemic to 62% in 2022

Not returned to pre-pandemic levels

Testing costs: 20.6 to 110 million

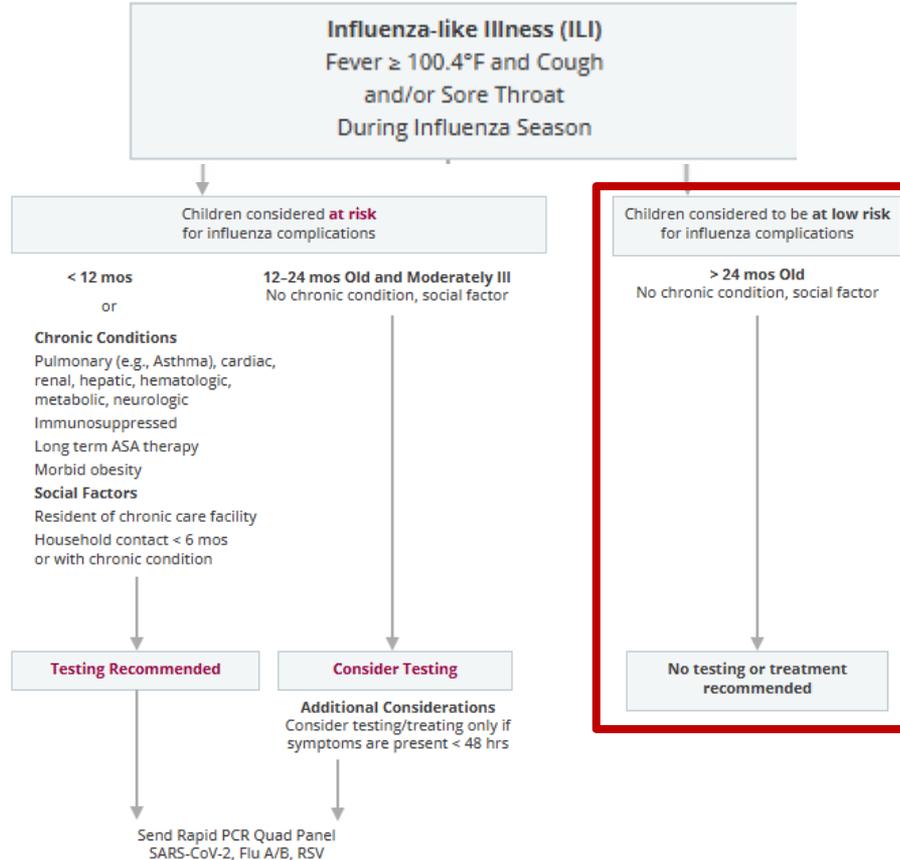
De-implementation strategies are needed

Molloy MJ, Hall, M, Markham J et al Trends in Respiratory Pathogen Testing at US Children's Hospitals. JAMA Network Open 2025;8(3):e250160.doi:10.1001/jamanetworkopen.2025.0160





Low Risk Patients





- Rounding Tip at Provider Hand-off
- Talking Points for Providers
- Restricted Criteria for QUAD Testing at Triage
- Updated School Note
- Patient Education, Screensavers
- Data Sharing Weekly

DOES MY CHILD NEED A FLU TEST?

PROBABLY NOT!

For most healthy kids, testing for the flu does not change how we treat children with flu symptoms!

Most kids get better at home with:



Fever medication for comfort



Hydration



Rest



Monitoring symptoms to guide whether your child needs another check-up





Reducing Unnecessary Flu Testing in the ED

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Rate Flu Tests were Conducted





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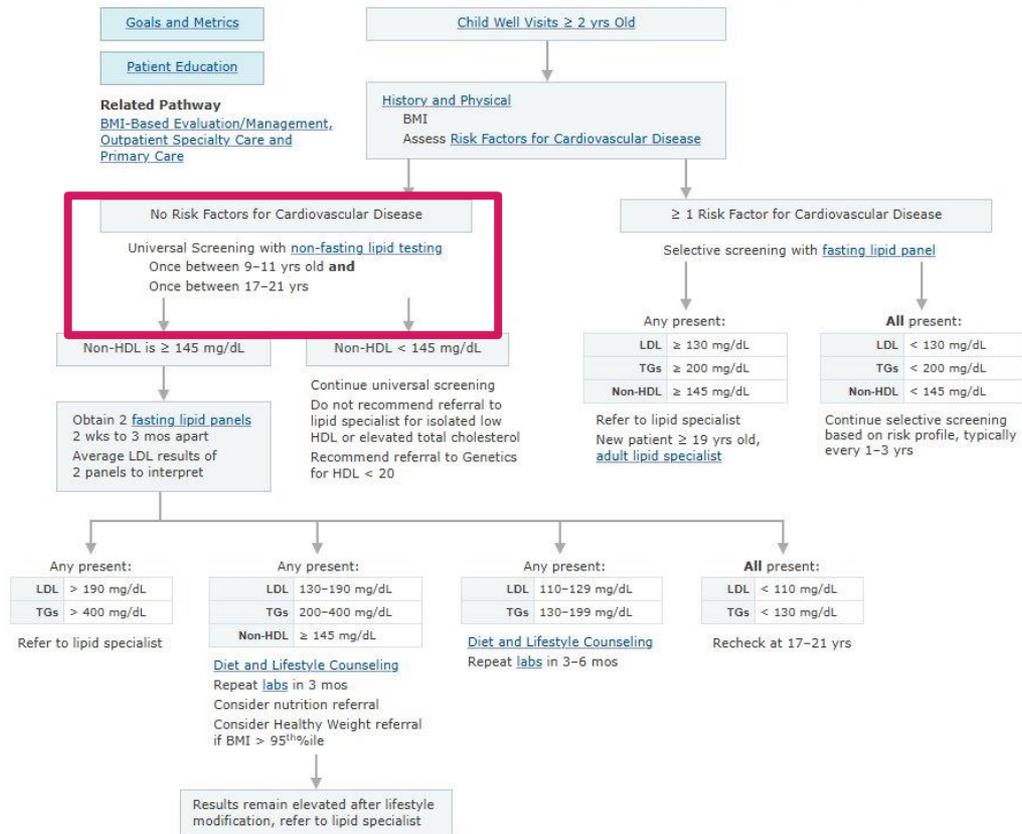
Supporting Evidenced Based Practices

Lipid Screening Pathway, Primary Care



Lipid Screening in Primary Care

Primary Care Clinical Pathway for Lipid Screening in Children



Standardize referrals to the lipid heart clinic for hypercholesteremia

Pathway published 2025



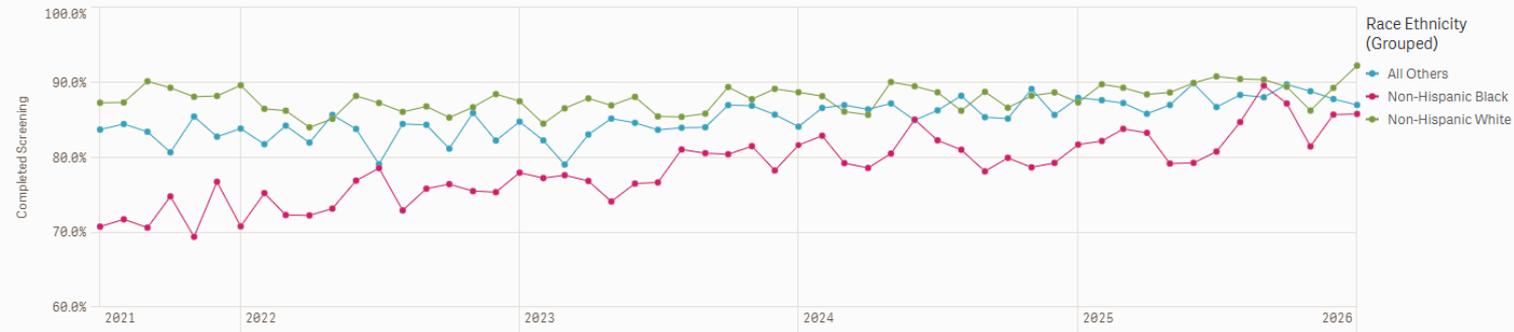


Lipid Screening in Primary Care

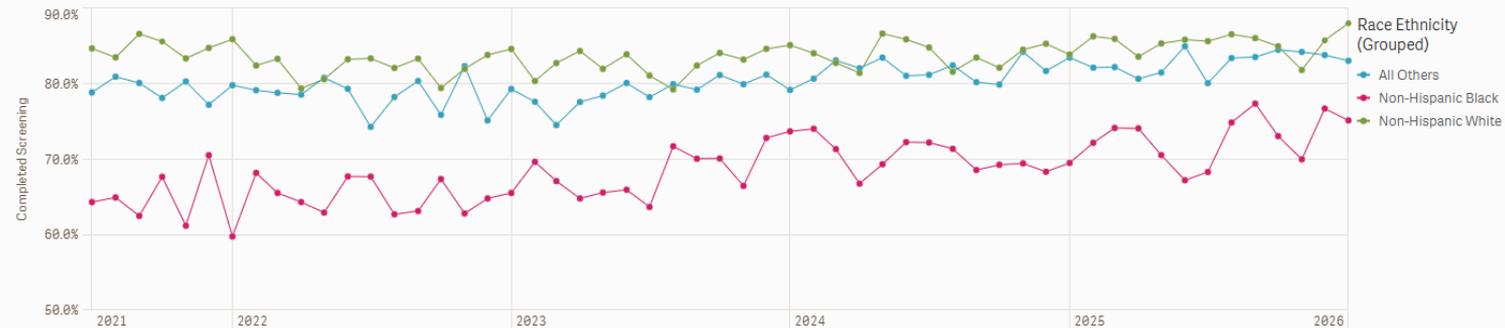
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Lipid Screening in Non-Hispanic Black children compared to other Race/Ethnicities

Lipid Screening Order Rate



Lipid Screening Completion Rate

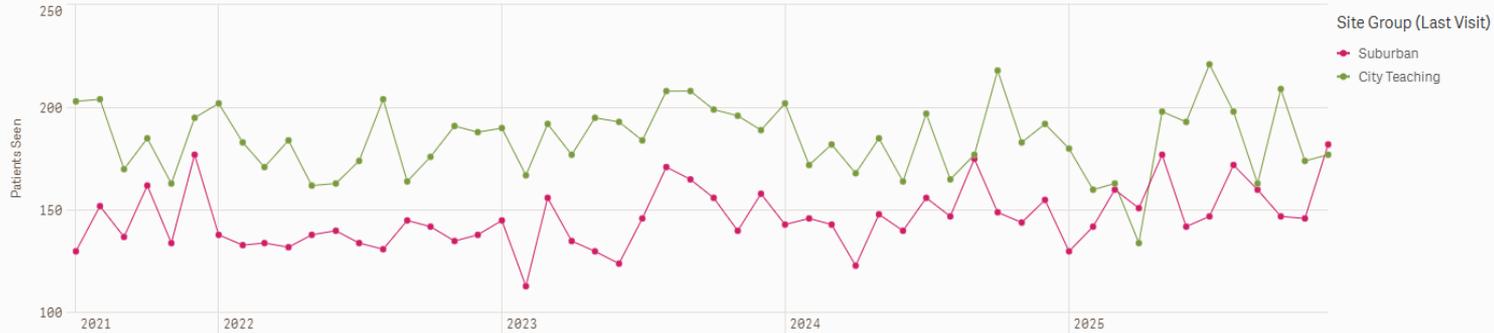




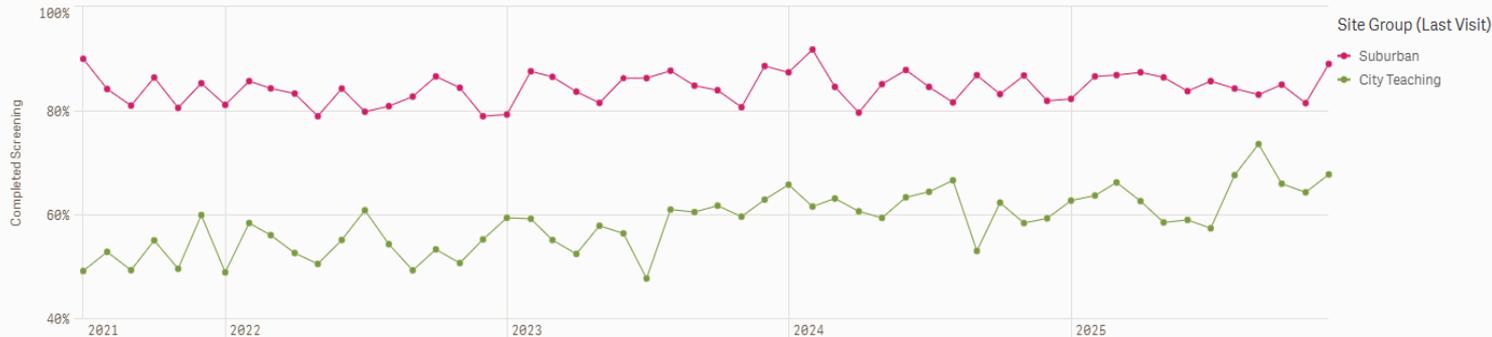
Lipid Screening in Primary Care

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Non-Hispanic Black Patients Seen



Lipid Screening Completion Rate in Non-Hispanic Black Patients

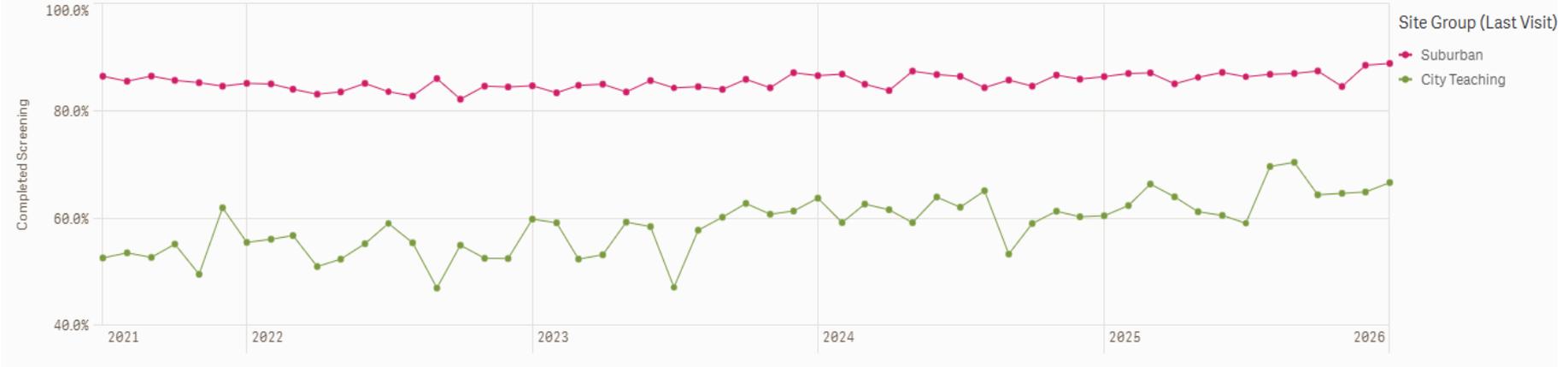




Lipid Screening in Primary Care

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Lipid Screening Completion Rate



Suburban: Point-of-care (POC) testing

City: Phlebotomy, additional visit





Lipid Screening in Primary Care

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Lipid Lab Order Rate at Eligible Visits



Suburban site test ordering declined during POC supply shortage





Lipid Screening in Primary Care

- The convenience of POC testing helps implement pathway recommendations for universal lipid screening
- Data shared with Primary Care leadership to explore other causes of screening differences and to standardize practice across 30+ sites





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Supporting Evidenced Based Practices

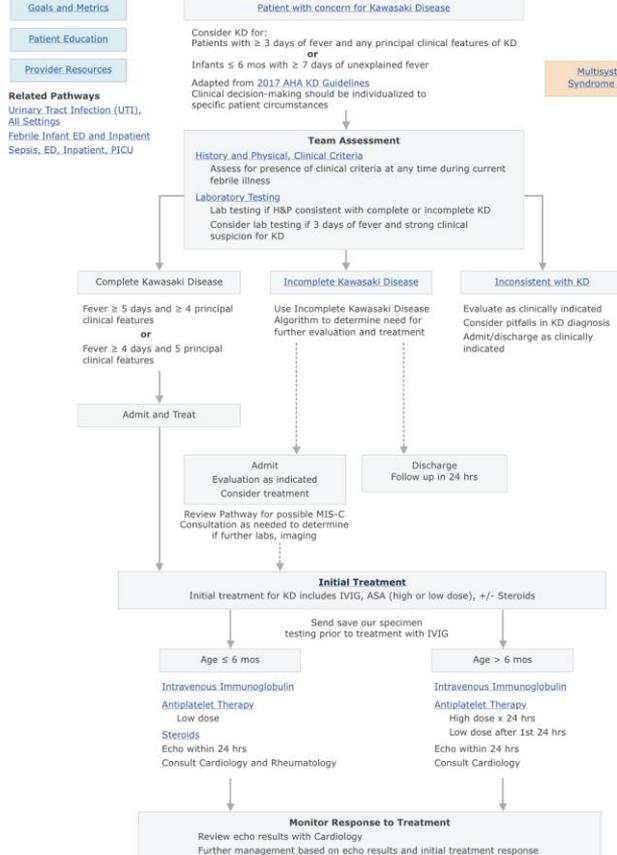
Kawasaki Disease Pathway, ED and Inpatient





Kawasaki Disease Pathway

Emergency Department and Inpatient Clinical Pathway for Evaluation/Treatment of Children with Kawasaki Disease or Incomplete Kawasaki Disease



Evidence

[View Evidence](#)

CHOP Programs

[Cardiac Center](#)

[Division of Rheumatology](#)

[Refer to CHOP >](#)

Principal Clinical Features of KD

May not all be present at the same time

Oral changes

Erythema and cracking of lips, strawberry tongue, and/or erythema of oral and pharyngeal mucosa

Conjunctivitis

Bilateral bulbar conjunctival injection without exudate

Rash

Maculopapular, diffuse erythroderma, or erythema multiforme-like

Extremity changes

Erythema and edema of the hands and feet in acute phase and/or perungual desquamation in subacute phase

Lymphadenopathy

Cervical lymphadenopathy (≥ 1.5 cm diameter), usually unilateral

See AHA Guidelines page e935, Figure 2. Clinical features of classic Kawasaki disease

Pitfalls in KD Diagnosis

Consider KD for:

Infants < 6 mos w/ prolonged fever and irritability
Infants with prolonged fever and unexplained aseptic meningitis
Infants/children with prolonged fever and any of the following:

Unexplained or culture negative shock
Cervical lymphadenitis unresponsive to antibiotic therapy
Retropharyngeal or parapharyngeal phlegmon unresponsive to antibiotic therapy
Documented viral or bacterial (e.g., strep) may co-exist in patients with KD

KD with Shock or

KD with Macrophage Activation Syndrome

Consult Rheumatology and Cardiology
Timely management with IVIG and additional treatments
Consider ICU consult and/or management

Normal Echocardiogram Subsequent Treatment

Guidelines for assessment and management for patients of all ages with **normal echocardiogram results (Z-scores of coronary arteries all < 2.5)**

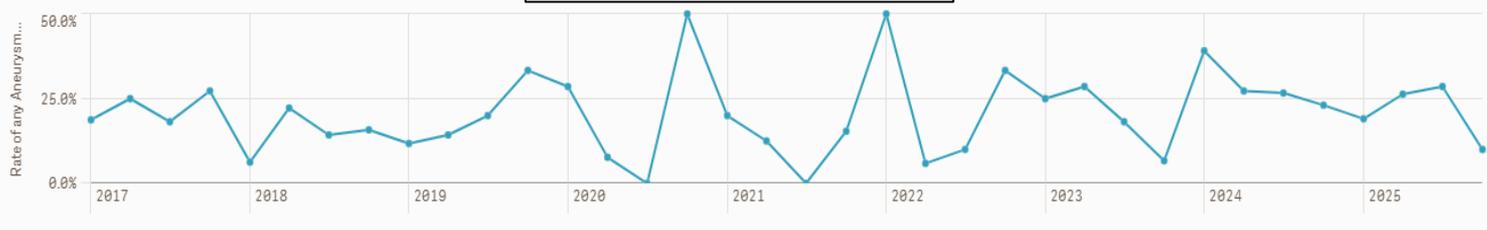
For all patients, monitor and manage as indicated based on response to initial treatment.

Response to Initial Treatment	Management and/or Treatment
<p>Resistant Fever > 38.0</p> <p>OR Lingering clinical symptoms > 24-36 hours after completion of IVIG</p>	<p>Re-check labs (CBC, CRP, LFTs) before escalating therapy Start PO prednisolone 2 mg/kg divided BID x 5 days then taper Consult Rheumatology to guide infliximab therapy Infliximab 10 mg/kg Repeat labs (as above) 24 hours after completing infliximab treatment Discuss timing of repeat echo with Cardiology</p>

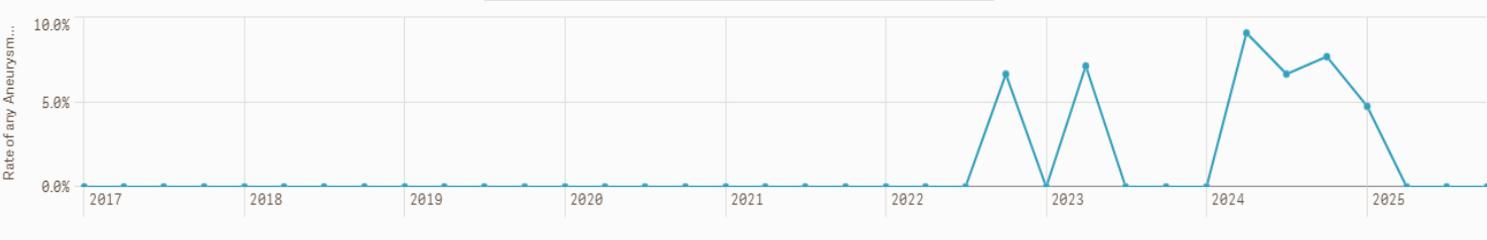
Pathway Updated Fall 2022



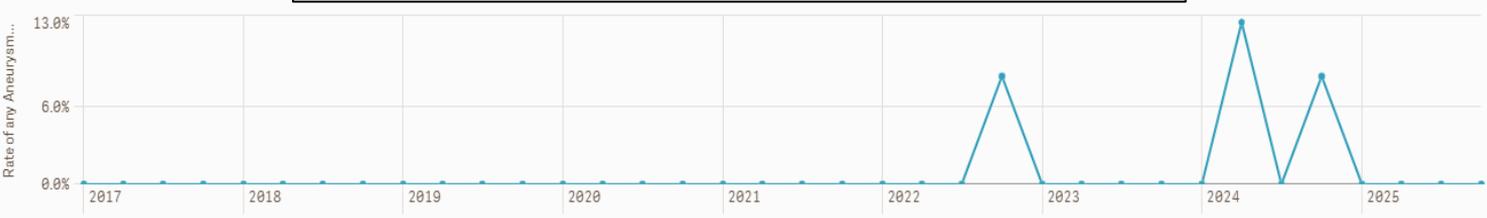
Rates of CAA ($z \geq 2.5$)



Rates of giant CAA ($z \geq 10$)



Rates of giant CAA ($z \geq 10$) with normal initial echo



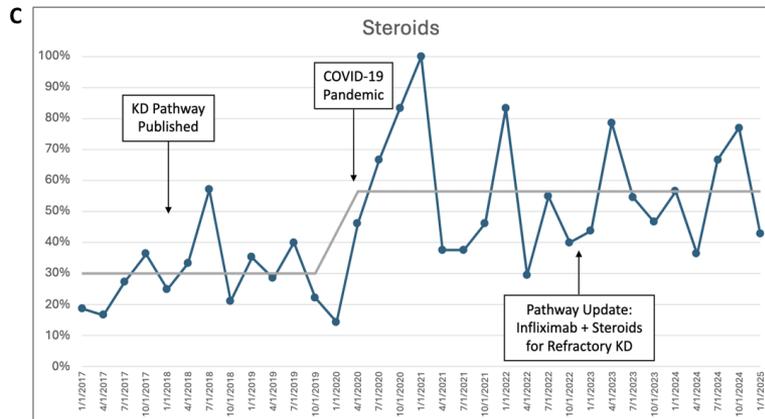
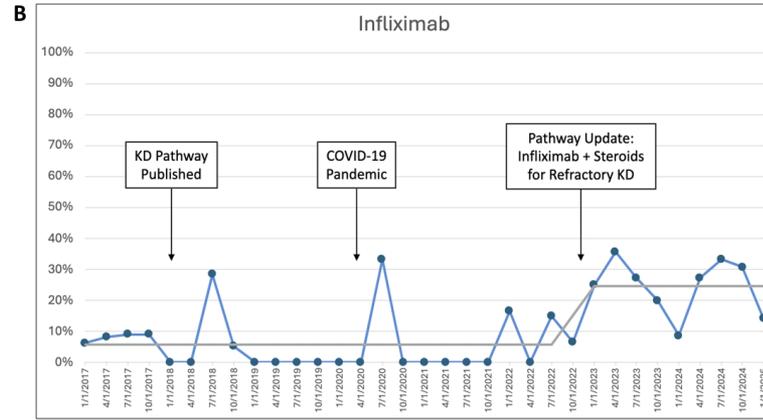
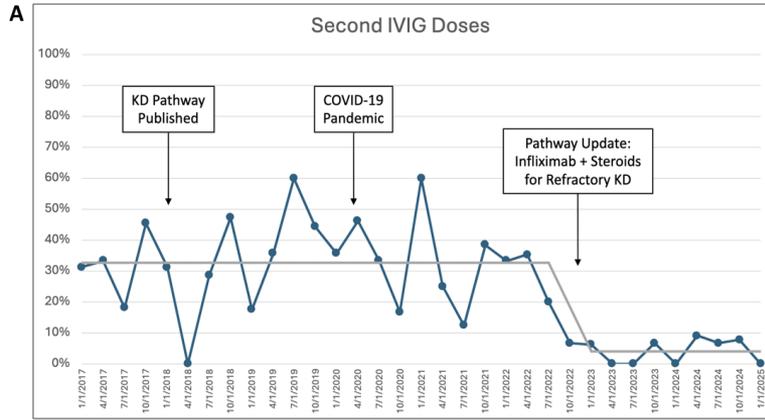
Slide provided by
Matthew Elias, MD,
Sandy Burnham, MD,
Jonathan Yu, MD





Kawasaki Disease Pathway Data

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Slide provided by
Matthew Elias, MD,
Sandy Burnham, MD,
Jonathan Yu, MD



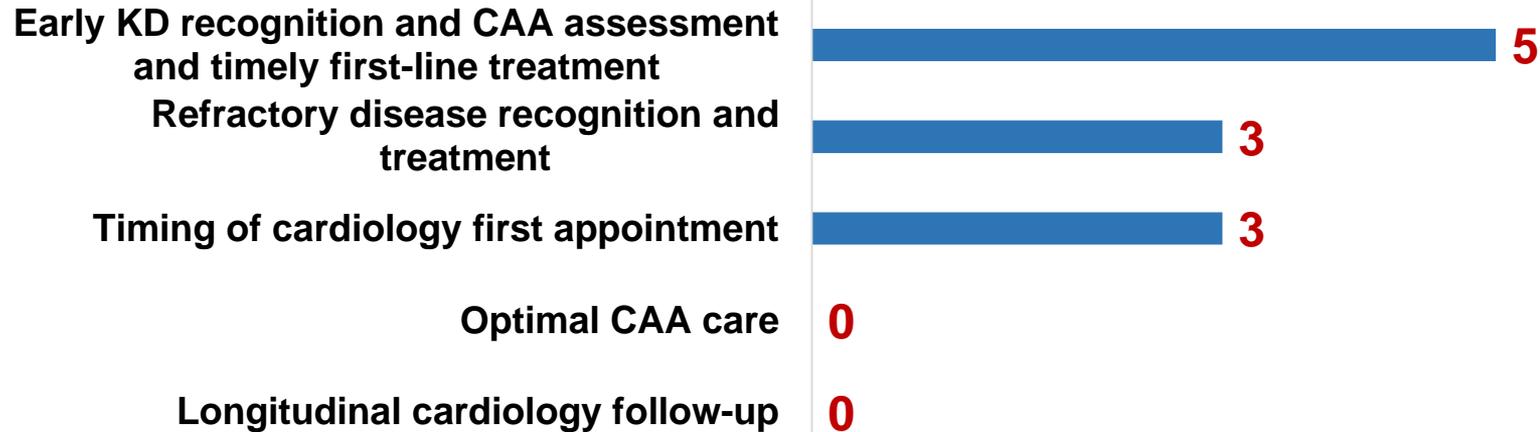


Kawasaki Disease Pathway QI

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Team reviewed medical records of 17 patients with KD and medium or large CAA

Analysis to identify potential contributing variables for the development of CAA



Some patients with more than one contributing variable.

Slide provided by
Matthew Elias, MD,
Sandy Burnham, MD,
Jonathan Yu, MD





Discharge Planning and Follow Up

- Follow up in the discharge period is important to ensure resolution of systemic inflammation and monitoring of coronary artery status
- Obtain CBC and CRP within 24 hours prior to discharge for high-risk patients
 - ≤ 6 months old
 - Z-score ≥ 2.5
 - Received anti-inflammatory therapy (steroids, infliximab) in addition to IVIG





Kawasaki Disease – Pathway Updates

	High-Risk Patients ≤ 6 months old, z-score ≥ 2.5, OR received anti-inflammatory therapy in addition to IVIG (ex: steroids, infliximab)	Standard Risk Patients >6 months old, normal coronary arteries, AND responsive to 1st dose of IVIG
Medication		
Aspirin	Low-dose ASA should be continued until directed by cardiology. Patients with coronary abnormalities may require prolonged use of ASA, at the discretion of cardiology. Avoid NSAIDS while on ASA.	
Steroids	2-3 week oral prednisolone/prednisone taper after initial treatment. Suggested taper: 2 mg/kg/day div BID x 5 days, 1 mg/kg/day div BID x 5 days, 0.5 mg/kg/day DAILY x 5 days.	N/A
Laboratory studies	Weekly CBC and CRP until CRP is in normal range AND patient has been off steroids for approximately 2 weeks	If any further fever or recurrence of symptoms, return to ED
Follow Up		
Cardiology follow up appointment and echo: Schedule prior to discharge	Within 1 week (or sooner, depending on coronary artery involvement)	Within 2 weeks
Rheumatology follow up: Schedule prior to discharge	Within 2-3 weeks of discharge	As needed
PCP follow up	Within 2-3 days	





PATHWAYS4KIDS

Supporting Evidenced Based Practices

Hyperbilirubinemia Pathway, All Settings





Hyperbilirubinemia Pathway

Goals and Metrics

Patient Education

Provider Resources

Related Pathways

[Double Volume Exchange Transfusion, ICU](#)

Infants ≥ 35 Weeks Gestation with Hyperbilirubinemia/Jaundice

[Summary of Changes AAP 2022 Guidance](#)

Concern for other diseases: e.g., sepsis, cardiac, metabolic

[History and Physical](#)

Maternal blood type, RhD, DAT
Review risk factors
Significant hyperbilirubinemia
Neurotoxicity

[Differential Diagnosis for Neonatal Jaundice](#)

[Laboratory Studies, TcB Interpretation](#)

Total Serum Bilirubin (TSB):
TSB = Conjugated + Unconjugated
CBC, retic, infant blood type, DAT
Consider albumin (neurotoxicity)
Escalation:
Type and screen, albumin

Risk Factors for Developing Significant Hyperbilirubinemia

Gestational age < 40 weeks
Jaundice in 1st 24 hrs after birth
Discharge TSB or TcB close to the Phototherapy Threshold
Hemolysis from any cause, or rapid rate of increase of TSB or TcB:
> 0.3 mg/dL per hour in the 1st 24 hrs **or**
> 0.2 mg/dL per hour thereafter
Phototherapy before discharge from the birth hospital
Parent, sibling requiring phototherapy or exchange transfusion
Family history, genetic ancestry suggest inherited RBC disorder including G6PD deficiency
Exclusive breastfeeding with suboptimal intake
Down syndrome
Macrosomic infant of diabetic mother

Hyperbilirubinemia Neurotoxicity Risk Factors

Isimmune hemolytic disease
Other hemolytic diseases, e.g., G6PD Deficiency
Significant clinical instability in the previous 24 hours: e.g., sepsis, acidosis, asphyxia, significant lethargy, temperature instability
Albumin < 3.0 g/dL

Phototherapy Thresholds

[No Neurotoxicity Risk Factors](#)
[One or More Neurotoxicity Risk Factors](#)

Exchange Transfusion Thresholds

[No Neurotoxicity Risk Factors](#)
[One or More Neurotoxicity Risk Factors](#)

CLINICAL PRACTICE GUIDELINE Guidance for the Clinician in Rendering Pediatric Care

American Academy of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation

Alex R. Kemper, MD, MPH, MS, FAAP; Thomas B. Newman, MD, MPH, FAAP; Jonathan L. Slaughter, MD, MPH, FAAP; M. Jeffrey Maisels, MB BCh, DSc, FAAP; Jon F. Watchko, MD, FAAP; Stephen M. Downs, MD, MS; Randall W. Grout, MD, MS, FAAP; David G. Bundy, MD, MPH, FAAP; Ann R. Stark, MD, FAAP; Debra L. Bogen, MD, FAAP; Alison Volpe Holmes, MD, MPH, FAAP; Lori B. Feldman-Winter, MD, MPH, FAAP; Vinod K. Bhutani, MD; Steven R. Brown, MD, FAAP; Gabriela M. Maradiaga Panayotti, MD, FAAP; Kymika Okechukwu, MPA; Peter D. Rappo, MD, FAAP; Terri L. Russell, DNP, APN, NNP-BC

September, 2022 Update:
25 Key Action Statements, 27 pages
Pediatrics. 2022;150(3):e2022058859

[Nursery Care at Birth Hospital](#)

Visual jaundice assessment q12 hrs after delivery
Measure TcB or TSB 24-48 hrs after birth or prior to discharge
Phototherapy based on TSB, risk factor
Discharge plan, follow-up, [Rebound Testing](#)

[Primary Care](#)

Measure TcB or TSB
Obtain TSB if:
TcB level within 3 mg/dL of Phototherapy Threshold
TcB > 15 mg/dL
Determine the time of bilirubin recheck
Refer to ED as indicated

[Emergency Department Care](#)

[Triage](#)
RN standing order
Measure TSB, apply biliblanket
Admit or discharge with a follow-up plan





Hyperbilirubinemia Pathway



**Discharge from
Newborn
Nursery Care**
Extra PTX
Longer Stay



Emergency Dept.
Limited Access:
Off-hours, Weekends
Health Literacy



**Hyperbilirubinemia/Jaundice
Infant & Family Journey**



Primary Care
TcB, TSB Availability
Time of Day, Weekends, Holidays
ED Referral



Inpatient
Follow-up Access
Longer LOS



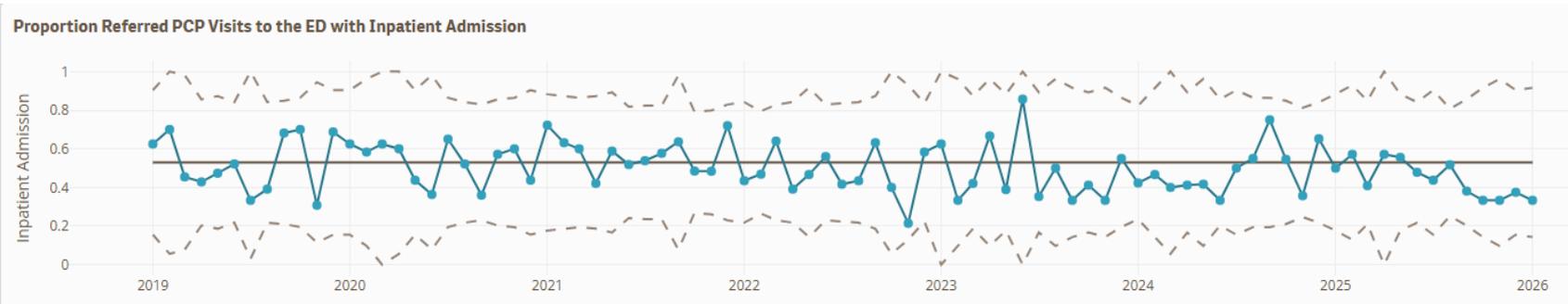


Hyperbilirubinemia Pathway

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Decreased referral rates from 2.8% to 1.5%



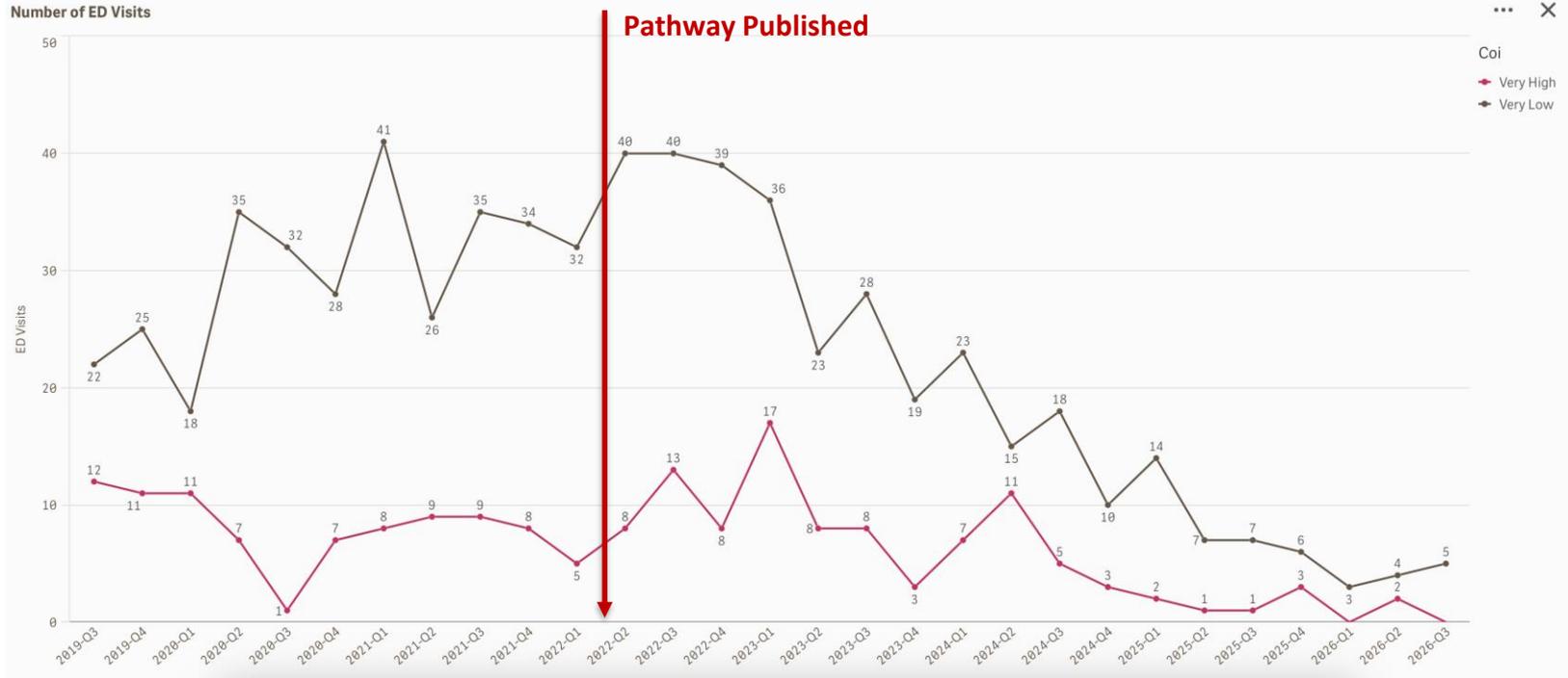
No increase in inpatient admissions (53%)





Hyperbilirubinemia Pathway - COI

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Thank You

**There is
always a
better way.**

THOMAS A. EDISON



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