



U.S. Department of Health and Human Services



Agency for Healthcare Research and Quality

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# **A National Web Conference on the Use of Health IT To Improve Health Care Delivery for Children**

Presented by:

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Moderated By:

Edwin Lomotan, M.D.

Agency for Healthcare Research and Quality

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# Agenda

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- Welcome and Introductions
- Presentations
- Q&A Session With Presenters
- Instructions for Obtaining CME Credits

**Note:** After today's Webinar, a copy of the slides will be emailed to all participants.



# Presenters and Moderator Disclosures

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The following presenters and moderator have no financial interests to disclose:

- Jonathan Wald, M.D., M.P.H.
- Elizabeth Alpern, M.D., M.S.C.E.
- Edwin Lomotan, M.D.

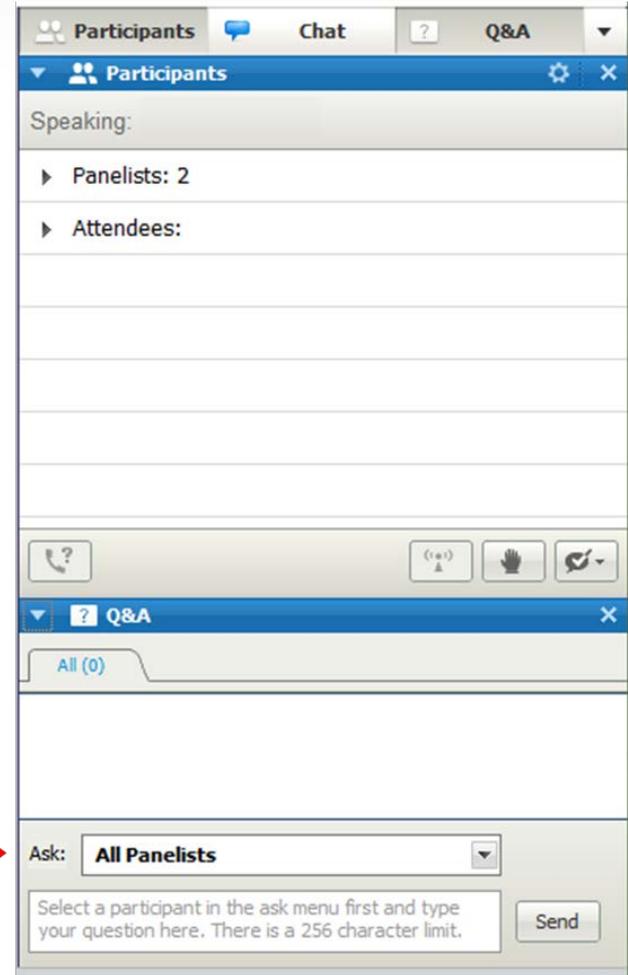
This continuing education activity is managed and accredited by the Professional Education Services Group (PESG), in cooperation with AHRQ, AFYA, and RTI.

PESG, AHRQ, AFYA, and RTI staff have no financial interests to disclose.

Commercial support was not received for this activity.

# How To Submit a Question

- At any time during the presentation, type your question into the “Q&A” section of your WebEx Q&A panel.
- Please address your questions to “All Panelists” in the drop-down menu.
- Select “Send” to submit your question to the moderator.
- Questions will be read aloud by the moderator.



The screenshot shows the WebEx interface with the Q&A panel open. The top bar includes 'Participants', 'Chat', and 'Q&A'. The 'Participants' panel is expanded, showing 'Speaking:' with 'Panelists: 2' and 'Attendees:'. The 'Q&A' panel is also expanded, showing 'All (0)'. At the bottom, there is an 'Ask:' dropdown menu with 'All Panelists' selected, a text input field with the instruction 'Select a participant in the ask menu first and type your question here. There is a 256 character limit.', and a 'Send' button.



# Learning Objectives

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At the conclusion of this activity, the participant will be able to:

1. Describe recommendations for electronic health record (EHR) functionalities expected to improve the safety and quality of care provided to children.
2. Discuss the development and potential impacts of multisite performance measure reporting, using an EHR data-driven pediatric registry.



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# Children's EHR Format

## *The 2015 Priority List*

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Director, Digital Health and Clinical Informatics

Division of eHealth, Quality, and Analytics

RTI International



# Acknowledgements

## **RTI International**

- Jonathan S. Wald, M.D., M.P.H.
- Jennifer R. Webb, M.A.
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- Stephen Brown, M.S.
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- Vanessa A. Shorte, M.P.H.

## **c3 Consulting**

- Vicki Estrin
- Sarah France

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# Background

Problem: EHRs are not fully effective in the care of children without improvements in their design, implementation, and use.

In response:

- 2009: HITECH Act
  - ▶ Under Children's Health Insurance Program Reauthorization Act (CHIPRA), the Health Information Technology for Economic and Clinical Health (HITECH) Act called for improvements in health IT
- 2010-2013: Children's EHR Format
  - ▶ Development and public release of the Children's EHR Format
  - ▶ Interactive release (December 2013) via the U.S. Health Information Knowledgebase Web site at <http://ushik.ahrq.gov>
- 2012-2015: State Evaluation of the Children's EHR Format
  - ▶ CHIPRA-funded evaluation by grantees in North Carolina and Pennsylvania
- 2014-2015 Children's EHR Format Enhancement
  - ▶ Development of the 2015 Priority List & Recommended Uses for the Children's EHR Format



# Children's EHR Format Work 2010-2013

- Children's EHR Format = 547 functional requirements
  - ▶ *"The system shall..."*
    - *Title: **Flag special health care needs (Req-2014)***
    - *Description: **The system shall support the ability for providers to flag or unflag individuals with special health care needs or complex conditions who may benefit from care management, decision support, and care planning; and shall support reporting.***
  - ▶ 26 topic areas
  - ▶ Published and available for download: <http://ushik.ahrq.gov>
  - ▶ Based on an assessment of EHRs used in the care of children
    - Environmental scan and gap analysis
    - Interaction with standards organizations
    - Engagement of diverse stakeholders



# 26 Topics in the 2013 Format

Topic	#
Well Child/Preventive Care	131
Security and Confidentiality	24
Medication Management	38
Primary Care Management	47
Child Welfare	24
Growth Data	60
Newborn Screening	16
Immunizations	16
Patient Portals - PHR	13
Birth Information	66
Children with Special Health Care Needs	25
Registry Linkages	18
Child Abuse Reporting	29

Topic	#
Early and Periodic Screening, Diagnostic, and Treatment (PSDT)	14
Genetic Information	4
Patient Identifier	9
Prenatal Screening	17
School-Based Linkages	4
Specialized Scales/Scoring	39
Activity Clearance	8
Adolescent Obstetrics	5
Community Health	4
Parents, Guardians & Family Relationship Data	27
Quality Measures	5
Records Management	17
Special Terminology and Information	10



# State Grantee Experiences in NC and PA

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- Practicing pediatricians and their vendors were asked to review Format items, one by one, to:
  - ▶ Assess if their EHR “matched” the capability
  - ▶ “Implement” the capability (i.e., meet the functional requirement), if possible
- RTI team
  - ▶ Reviewed project artifacts
  - ▶ Conducted site visits
  - ▶ Interviewed providers, vendors, practice managers, information technology (IT) staff, and CHIPRA program leaders



# Grantees Reported Format Benefits

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- **Positive overall grantee perceptions of the Format**
  - ▶ The Format provided a **helpful framework** for conversations about pediatric needs for EHRs among members of a practice and between practitioners and vendors.
  - ▶ Grantees gained a **better understanding** of their EHR's capabilities.
- **Priority areas identified by grantees**
  - ▶ Automatically calculating percentiles for blood pressure, body mass index (BMI), and growth
  - ▶ Accommodating specialized calculations tailored for a child's condition, such as Down syndrome
  - ▶ Integration of existing screening tools and educational resources into decision support and practitioner workflows
  - ▶ Information exchange
  - ▶ Integrated reporting and decision support to manage patient panels and support the care of individual patients
  - ▶ Family linkage to siblings



# Grantees Also Reported Format Challenges

- **Difficulty interpreting requirements**
  - ▶ Use of technical language, vague language, leading to differing interpretations by different stakeholders
  - ▶ Examples and supporting materials ambiguous or lacking
- **Difficulty prioritizing requirements**
  - ▶ 547 items made it difficult to determine what to focus on
- **Limited success adapting their use of the EHRs due to inflexibility**
- **Some missing requirements/gaps in the Format**
  - ▶ Social factors such as socioeconomic status
  - ▶ Religious and cultural considerations
  - ▶ Food insecurity
  - ▶ Conditions in the home
  - ▶ Women, infants, and children (WIC) assessments
  - ▶ Language considerations



# Multi-Stakeholder Work Group (Jan.-Jun. 2015)

- ▶ **Kevin Johnson, M.D., M.S. (Chair)**  
Vanderbilt University School of Medicine  
Nashville, TN
- ▶ **Christoph U. Lehmann, M.D. (Co-chair)**  
Vanderbilt University School of Medicine
- ▶ **William G. Adams, M.D.**  
Boston Medical Center
- ▶ **Gregg Alexander, D.O.**  
Health Nuts Media, Madison Pediatrics
- ▶ **Mary Applegate, M.D.**  
Ohio Medicaid
- ▶ **Louise Bannister, R.N., J.D.**  
University of Massachusetts Medical  
School
- ▶ **Bobbie Byrne, M.D., M.B.A., F.A.A.P.**  
Edwards Health System
- ▶ **Ajit Dhavle, Dr.Ph.**  
Surescripts
- ▶ **Laurie Dameshek**  
EHR Association (HIMSS)  
Formerly: Siemens Medical Solutions
- ▶ **Chip Hart**  
PCC—Physician’s Computer Company
- ▶ **Beth Morrow, J.D.**  
The Children’s Partnership
- ▶ **Karen Parr, R.N., M.S. Nursing**  
Oregon Community Health Information  
Network (OCHIN)
- ▶ **Fred Rachman, M.D.**  
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- ▶ **Judith Shaw, Ed.D., M.P.H., R.N.**  
UVM NIPN program
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Oklahoma University Health Sciences  
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- ▶ **Feliciano “Pele” Yu, Jr, M.D., M.S.H.I.,  
M.S.P.H.**  
St. Louis Children’s Hospital
- ▶ **Alan Zuckerman, M.D.**  
Georgetown University Medical Center
- ▶ **Sheila Driver, R.N.**  
Ashe Pediatrics
- ▶ **Charles Anthony Gallia, Ph.D.**  
State of Oregon Medicaid program



# Federal Work Group

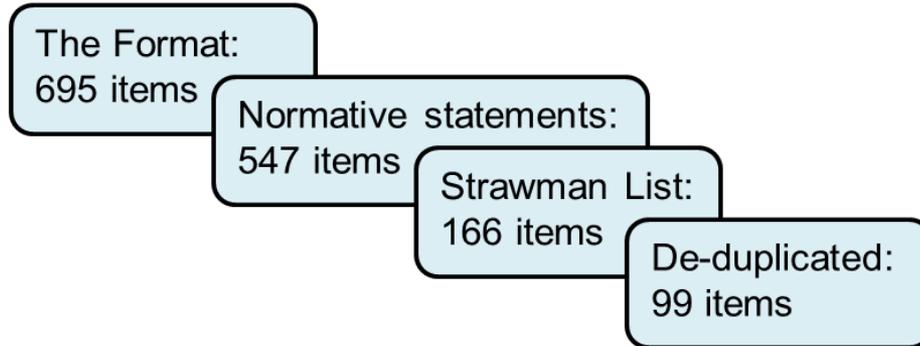
Name	Org
Romuladus Azuine, Dr.P.H., M.P.H., R.N.	HRSA
Katherine Beckmann, Ph.D., M.P.H.	ACF
Linda Bergofsky, M.S.W., M.B.A.	AHRQ
Denise Daugherty, Ph.D.	AHRQ
Nicole Fehrenbach, M.P.P.	CDC
Erin Grace, M.H.A.	AHRQ
Steven Hirschfeld, M.D., Ph.D.	NIH
Cara Mai, Dr.P.H., M.P.H.	CDC
Marie Mann, M.D., M.P.H.	HRSA
Samantha Wallack Meklir, M.P.Aff.	ONC

Name	Org
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CAPT Alicia Morton, D.N.P., R.N.-B.C.	ONC
Michelle Ruslavage, D.N.P., R.N., N.E.-B.C., C.P.E.	IHS
CDR Samuel Schaffzin, M.P.A.	CMS
COL John Scott	DOD
LT Anca Tabokova, M.D.	HRSA
Albert Taylor, M.D., F.A.C.O.G.	ONC
Kate Tipping, J.D.	SAMHSA
Michael Toedt, M.D., F.A.A.F.P.	IHS



# How the 2015 Priority List Was Developed

## Pre-work (late 2014)



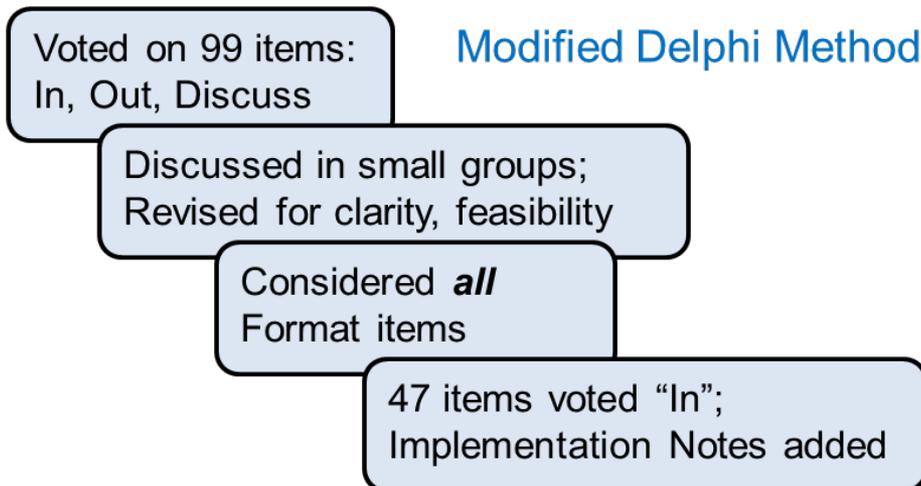
## Inclusion criteria

- Ambulatory....
- Pediatric specific...

## Exclusion criteria

- Inpatient only
- Adult only
- Addressed in Meaningful Use (MU)
- Already common in EHRs
- Solved using a template
- Too vague and/or broad
- Specific, and covered under a general feature

## MSWG work (early 2015)





# Topics in the 2015 Priority List (547→47 Normative Statements)

Topic	'13	'15
Well Child/Preventive Care	131	12
Security and Confidentiality	24	7
Medication Management	38	6
Primary Care Management	47	5
Child Welfare	24	4
Growth Data	60	4
Newborn Screening	16	4
Immunizations	16	3
Patient Portals - PHR	13	3
Birth Information	66	2
Children with Special Health Care Needs	25	2
Registry Linkages	18	2
Child Abuse Reporting	29	1

Topic	'13	'15
EPSDT	14	1
Genetic Information	4	1
Patient Identifier	9	1
Prenatal Screening	17	1
School-Based Linkages	4	1
Specialized Scales/Scoring	39	1
Activity Clearance	8	0
Adolescent Obstetrics	5	0
Community Health	4	0
Parents, Guardians & Family Relationship Data	27	0
Quality Measures	5	0
Records Management	17	0
Special Terminology and Information	10	0



# 2015 Priority List - Examples

Req	2001
Topic	Birth Information
Title	Link maternal and birth data to child health record
Description	The system shall import birth information from an electronic newborn discharge summary as discrete data elements. All other requirements, such as gestational age, can be incorporated into a birth data elements list.

Req	2005
Topic	Medication Management
Title	Closest available standardized dose
Description	The system shall inform the ordering provider about the closest available standardized dose after calculating the dose based on patient age and weight and other factors.



# 2015 Priority List - Examples

Req	2002
Topic	Growth Data
Title	Record all vital signs and growth parameters precisely
Description	The system shall record all pediatric vital signs and growth parameters listed in the implementation note with appropriate precision as needed to prepare growth charts and other growth assessments. Some of these parameters may be age-specific and some may not be used for all patients or in all practices; therefore, not all parameters need to be displayed or entered for all patients at all times.

Req	2009
Topic	Prenatal Screening, Birth Information, Genetic information
Title	Allow unknown patient sex
Description	The system shall provide the ability to record a patient's sex as male, female, or unknown, and shall allow it to be updated.



# 2015 Priority List: Direct Uses

Stakeholders	Direct Uses
Providers and associated staff who use and select EHRs	<ol style="list-style-type: none"><li>1. Inform request for proposal (RFP)/request for information (RFI) development to ensure needed EHR functionality for the care of children</li><li>2. Support more productive vendor/provider discussions and expectation setting</li><li>3. Support ongoing improvements in the use of the EHR by providers and practice staff</li></ol>
Software developers	<ol style="list-style-type: none"><li>4. Improve the design and product road map for an EHR used in the care of children</li><li>5. Support better interoperability and integration within and between systems</li></ol>



# 2015 Priority List: Indirect Uses

Stakeholders	Indirect Uses
User advocacy groups, EHR system evaluators, and end users	1. Surface opportunities to improve workflow and other aspects of EHR use
School district providers and medical administrators	2. Share information with school districts
CMS, State Medicaid, and CHIP, and private payers and policymakers	3. Improve the alignment of EHR functionality with emerging financial policy
Standard development organization (SDO), certification bodies, and professional associations	4. Support standards development 5. Identify functionalities for certifying health IT product functionality (indirect)
State or county health and human services agencies	6. Establish expectations for electronic data capture and retrieval 7. Coordination of care, specifically children with special health care needs
Public health agencies	8. Support the public health functions of population health assessment, public health policy development, and assurance of public health policy compliance
Administrators, care coordinators, and health plans	9. Improve reporting around population health management
Quality reporting measure developers	10. Support for eMeasure development and specification
Pharmacists, pharmacy staff, and pharmacy management system vendors	11. Increase communication with pharmacists to support safer medication use



# USHIK Web site

<https://ushik.ahrq.gov>

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Feedback / Help Search Child EHR Format

USHIK Home Standards HITSP Common Formats Meaningful Use All-Payer Claims Draft Measures **Child EHR Format**

## Children's Electronic Health Record Format

### About

The Children's Electronic Health Record (EHR) Format is a list of functional requirements that was released publicly in 2013.

The Format provides information to EHR system developers and others about critical functionality, data elements, and other software requirements that need to be present in an EHR system to address health care needs specific to the care of children.

An initial group of requirements released in 2013 are referred to here as the [2013 Format](#). In 2015, the Children's EHR Format (the Format) was expanded and enhanced by adding 47 items that were developed by a national multi-stakeholder work group. This resulted in the creation of the [2015 Priority List](#).

### Explore

The Format contains a total of 747 requirements all of which are searchable on this site. Perform a keyword search using the search box in the header of this page on the right.

You can also search by topic area and release package. Use the selections tools below to start exploring:

Show All Topic Areas

Show All Releases

### Downloads

You may [download](#) the whole set of requirements, any configured lists of requirements and/or individual requirements in Microsoft Excel (.xls), Microsoft Word (.docx), and/or Adobe PDF (.pdf) formats. To download the entire set, use the quick links below:

**Children's EHR Format Enhancement: Final Recommendation Report**

- [Final Report, Unabridged \(pdf\)](#)
- [Final Report, Abridged \(pdf\)](#)
- [Final Report, Unabridged \(docx\)](#)
- [Final Report, Abridged \(docx\)](#)

The Children's EHR Format (the Format) contains portions of the Health Level Seven International (HL7™) Child Health Functional Profile Specification, release 1, and modifications thereof, developed by HL7, the copyright of which is owned by HL7. For more information on HL7's IP Policy, go to

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# Summary & Recommendations

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- The 2015 Priority List includes:
  - ▶ 47 high-priority functional requirements in 19 topic areas
  - ▶ Implementation notes to provide additional guidance
  - ▶ Serves as a “starting point” for software developers, EHR users, and EHR purchasers
  - ▶ Available on the USHIK Web site in a variety of formats
- Recommendations
  - ▶ Expand use and awareness of the 2015 Priority List
  - ▶ Continue stakeholder collaboration to improve the Format
- Lessons Learned
  - ▶ Complex, detailed work requires focus
  - ▶ Priorities will shift with context
  - ▶ Stakeholder coordination is critical for this work to have impact



# Crosswalk Findings

- Most Priority List items were not addressed in Stage 2 or Proposed Stage 3 Certification Criteria (79%).
- Priority List items had greater detail than three comparison documents.
- “Close match” and “Concept Addressed” are most likely for HL7 CHFP (45%, 26%) than other documents (4%, 17%).

Status	2015 Priority List items compared with...	2015 Priority List items compared with...	2015 Priority List items compared with...
	HL7 Child Health Functional Profile Release 1	Stage 2 Certification Criteria	Proposed Stage 3 Certification Criteria
<b>Close Match</b>	21 (45%)	2 (4%)	2 (4%)
<b>Concept Addressed</b>	12 (26%)	8 (17%)	8 (17%)
<b>Not Addressed</b>	14 (30%)	37 (79%)	37 (79%)
<b>Total</b>	47 (100%)	47 (100%)	47 (100%)



# 2015 Priority List limitations

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- High-priority items are subject to change!
  - ▶ Expect future Priority Lists will differ as user needs and product capabilities shift.
- These items reflect a specific context
  - ▶ Interests/backgrounds of MSWG members
  - ▶ Time available
  - ▶ Heuristics used to include or exclude items
  - ▶ Feedback from the FWG and individual AAP members
  - ▶ Inputs of the project team
- These are functional requirements (not software specifications)
  - ▶ Items may overstate or understate what would be needed for a specific software product.
  - ▶ 2015 Priority List and Recommended Uses documents are intended to be used to spur dialogue among software users, developers, and other stakeholders.

# Future work

- A number of areas discussed by the MSWG and FWG were deemed important for future work, but they were not included in the Priority List:
  - ▶ **Immunization forecasting**
    - Immunization guidelines and periodicity schedules are varied among different States, making specification complex.
  - ▶ **Specific populations**
    - A number of important functional areas, such as food security, socioeconomic indicators of wellness, and maternal depression screening, were excluded because they applied in specific cases rather than in the general population.
  - ▶ **Quality measurement**
    - The MSWG's primary focus was to improve EHR use for care activities routinely performed by providers, not quality metrics by themselves.
  - ▶ **Health IT standards, data harmonization, and data exchange**
    - These were not a direct focus of the MSWG when developing the Priority List, but were acknowledged to be important.



# Recommendation 1 (detail)

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## **Expand Use and Awareness of the 2015 Priority List**

- The Priority List is intended to provide a strong foundation for using EHRs in the care of children.
- The Priority List and Recommended Uses should be shared with software developers, practitioners, and provider organizations.
- The Priority List can serve to inform many software development efforts about functional requirements, even if teams lack deep domain expertise in pediatrics, and the typical activities and workflows that matter when caring for children.
- The Recommended Uses list provides suggestions about how key stakeholders can use the Priority List.
- AHRQ's USHIK Web site should be adapted to provide public access to the 2015 Priority List and Recommended Uses of the Format.

# Recommendation 2 (detail)

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## **Encourage Stakeholder Collaboration to Improve the Format**

- Collaboration across disciplines and stakeholders proved essential in developing and enhancing the Format:
  - ▶ Multiple user perspectives help to assure a broad set of requirements are included in the Format.
  - ▶ Using the Format to tackle different kinds of challenges, such as improving health IT design, requires a multidisciplinary understanding of the problem and proposed solution.
  - ▶ The Format and the 2015 Priority List items can improve over time as they are used, especially if lessons learned during the implementation of requirements can be captured.
  - ▶ Convening stakeholders for joint learning and collaboration will help to ensure that the Format and 2015 Priority List items can have the most impact on the care of children.

# Contact Information

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# **PECARN Registry: *Harnessing Electronic Health Record Data To Improve Quality of Care***

**Elizabeth R. Alpern, M.D., M.S.C.E.**

Professor of Pediatrics

Ann and Robert H. Lurie Children's Hospital

Northwestern University





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# Project work supported by: AHRQ R01HS020270

PECARN infrastructure support by:

Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB), Emergency Medical Services for Children (EMSC) through the following grants: U03MC00008, U03MC00003, U03MC22684, U03MC00007, U03MC00001, U03MC22685, U03MC00006

- Emergency care for children is variable with significant opportunities for improvement.
  - ▶ IOM Report: “Emergency Care for Children: Growing Pains”
- Basic administrative data are not adequate for reporting and improving quality of care.
  - ▶ Minority of quality measures available
- Advances in health information technology to access patient-centric clinical data (natural language processing [NLP] and penetrance of EHR) provide opportunity.



# PECARN Registry

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- Aims:
- Develop an emergency care visit registry for pediatric patients from EHR.
- Collect and determine benchmarks for stakeholder-prioritized emergency care performance at Emergency Department (ED) and clinician level.
- Report performance to individual ED clinicians and sites while evaluating change using a staggered time-series study.



# The Pediatric Emergency Care Applied Research Network (PECARN)

Welcome to the

**PEDIATRIC EMERGENCY CARE  
APPLIED RESEARCH NETWORK**

**PECARN Home**

Contact Info



*Conducting High Priority,  
High-Quality Research in  
Pediatric Emergency Care*

[www.pecarn.org](http://www.pecarn.org)

- PECARN Network >>
- Research Nodes >>
- Coordinating Center
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- Publications
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- Tools
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## PECARN UPDATES

### Studies Currently Enrolling

#### Fluid Therapy and Cerebral Injury in Pediatric Diabetic Ketoacidosis

ASSESS (Age Specific Screen for Ethanol and Substance Status)



PECARN, the Pediatric Emergency Care Applied Research Network, is the **first federally-funded** pediatric emergency medicine research network in the United States. PECARN conducts high-priority, multi-institutional research on the **prevention and management of acute**

- 60 balanced, stakeholder-endorsed quality performance measures

[www.childrensnational.org/EMSC/PubRes/toolbox.aspx](http://www.childrensnational.org/EMSC/PubRes/toolbox.aspx)



#### Resources

- ▶ [Toolbox Home](#)
- ▶ [Healthcare Provider Resources](#)
- ▶ [Description of Targeted Issue Grant](#)
- ▶ [Pub Med Search](#)

## Emergency Department Performance Measures

Assessing the quality of medical care and identifying opportunities for improvement of care is an important responsibility of medical professionals, as well as all health care facilities. Though children account for 20% of emergency care visits nationally, few measures have been defined for assessing the emergency care of pediatric patients. This toolbox features the work of Evaline Alessandrini, MD, and her EMSC Targeted Issues project "Defining Quality Performance Measures for Pediatric Emergency Care." Her project seeks to improve pediatric emergency care through the consensus identification of pediatric emergency care performance measures and associated elements of documentation. Providing a framework for the measurement of pediatric emergency care will facilitate national benchmarking as well as an opportunity for development of risk adjustment processes to facilitate better pediatric emergency care research.



# Performance Measures

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- Initial care for every ED patient
- Measuring weight in Kg
- Measuring vital signs for ED patients
  
- ED flow
  - ED door-to-provider time
  - Total ED length of stay
  - ED left-without-being-seen rate
  - Radiology availability
    - ▶ Plain film imaging turnaround time
    - ▶ Radiology report availability
  
- Quality and safe care relevant to every ED patient
- ED return visits within 48 hours and return visit result in admission



# Performance Measures

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## Childhood infections

- Reducing antibiotic use in children with viral illnesses

## Pain and sedation

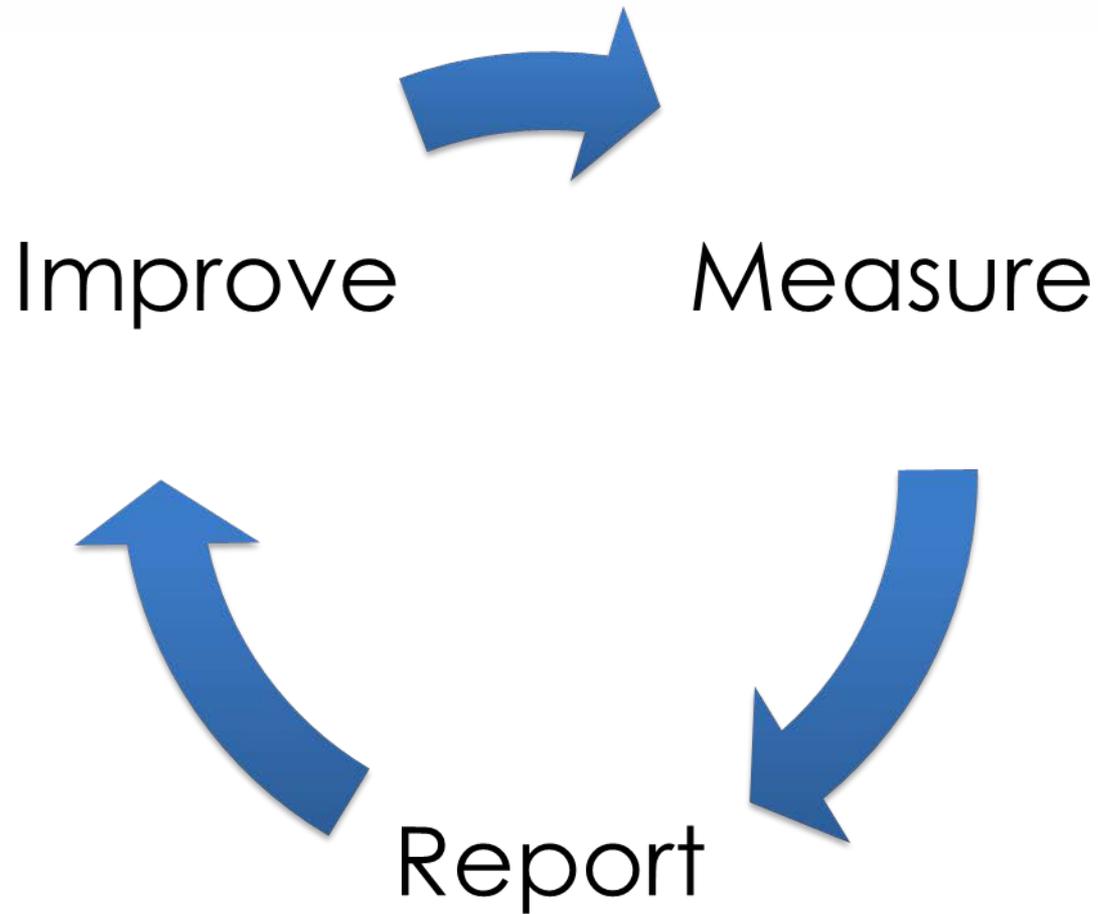
- Documenting pain score in children with long bone fracture (fx)
- Timely pain reassessment in children with long bone fx
- Reducing pain in children with long bone fx

## Respiratory diseases

- Systemic corticosteroids in acute asthma exacerbation
- Timeliness of inhaled B-agonist treatment in acute asthma exacerbation
- Objective improvement in asthma severity score in acute asthma exacerbation

# PECARN Registry

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Patient Electronic Health Record

All ED Visits from 7 sites

Monthly Data Transmission

validation

De-identification

Data Coordinating Center

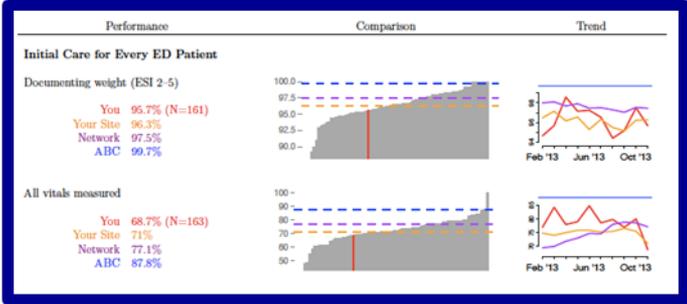
Natural Language Processing (NLP)

Performance Measures

PECARN Registry

Benchmarks  
Site specific  
Provider specific  
Timely

**Improved Patient Care**





# PECARN Registry

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- Children's Hospital of Philadelphia
  - ▶ EPIC
- Children's Hospital Colorado
  - ▶ EPIC
- Cincinnati Children's Hospital Medical Center
  - ▶ EPIC
- Children's National Medical Center
  - ▶ Cerner



# Variables

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- Site
- Patient identifiers:
  - ▶ Patient number, encounter number
- Demographics
  - ▶ Date of birth (DOB), sex, race, ethnicity, zip, payer
- Visit information
  - ▶ Triage category, chief complaint, arrival mode
  - ▶ Date/Time: notification, ED door, sort/triage, discharge
- Providers
  - ▶ Provider ID, provider role, provider D/T
- Vitals
  - ▶ Vitals D/T, heart rate (HR), respiration rate (RR), systolic blood pressure (SBP), diastolic blood pressure (DBP), oxygen saturation, temperature, weight
- Medications
  - ▶ Current, ED (D/T), discharge

# Variables

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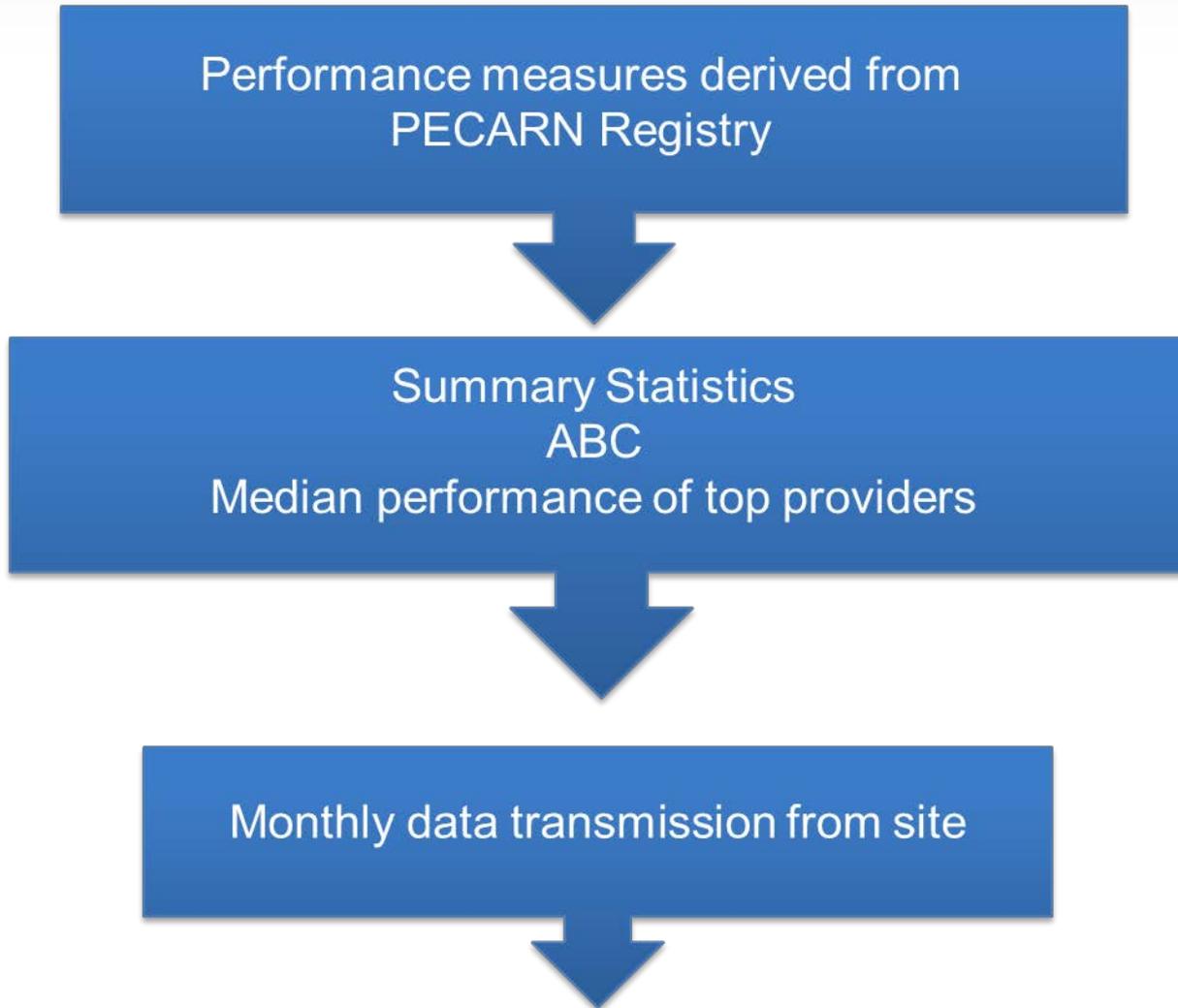
- Clinical assessments
  - ▶ Asthma score, pain score, Glasgow Coma Scale (GCS)
- Narrative
  - ▶ Narrative D/T, author type, narrative
- Radiology
  - ▶ Order D/T, start D/T, avail D/T, report D/T, report
- Labs (including Micro)
  - ▶ Lab D/T result
- Procedures
  - ▶ CPT, ICD9, ICD10
- Diagnosis
  - ▶ ICD9, e-codes, ICD10
- Disposition
  - ▶ ED disposition
  - ▶ Hospital discharge D/T
  - ▶ Vital status



# Scope of the PECARN Registry

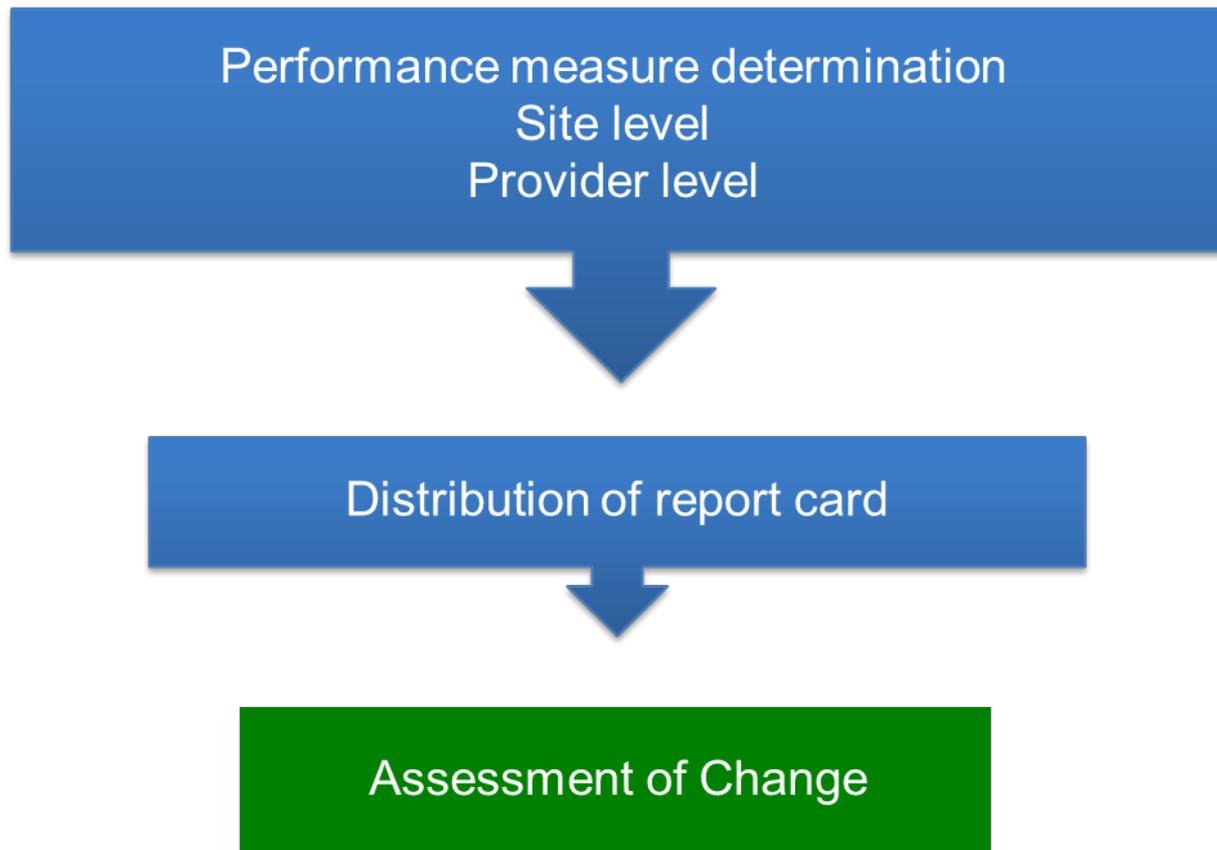
PECARN Registry 2012-2015	N
Encounters	1,774,742
Patients	769,594
Diagnoses	4,878,885
Lab Results	10,953,782
Medication Orders	2,330,253
Radiology Tests	627,788
Narrative Documents	11,232,211

# Process



# Process

---



# Report Cards

June 2016 visits

Performance Measures Derived from PECARN Registry

June 2016 data ripens

June 2016 data submitted to data center (7/29/16)

Data locked (8/5/16)

Expert Panel determination  
Ideal Benchmark

June 2016 data “masked”  
Report Card emailed (8/14/16)



# Report Cards

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- Visits attributable to provider (or site)
- Not identifiable to anyone but provider
- Stringent case identification for cohorts
- Number of cases involved in the measure provided
  - ▶ Monthly or rolling quarter count
- Graphic representation of performance
- Trends over time
- Comparisons of performance for:
  - ▶ Site (proportion or median)
  - ▶ Network (7 sites) together
  - ▶ Achievable Benchmark of Care (ABC)



# Achievable Benchmark of Care

---

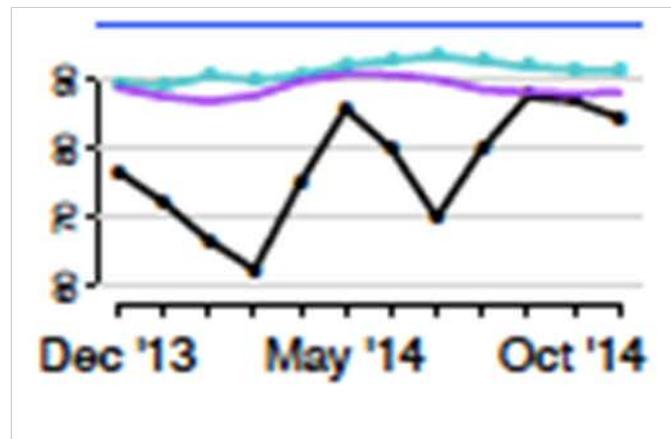
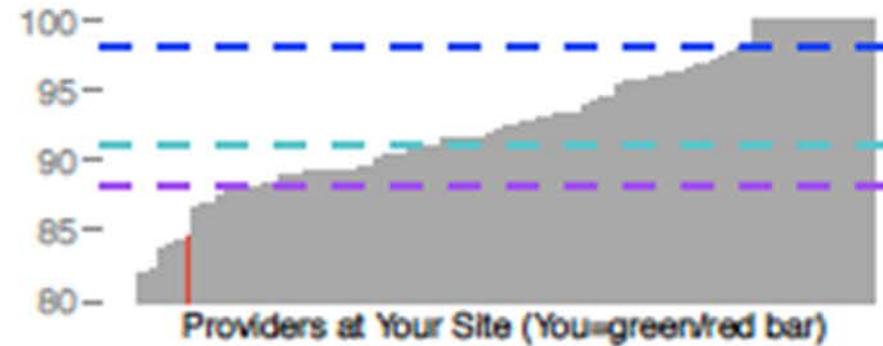
- Measurable level of excellence
- Objective, reproducible, and predetermined
- Providers with high performance define achievable level of excellence
- Providers with a small number of relevant visits will not have high influence on benchmark



# Report Card

## Systemic corticosteroids given in the ED

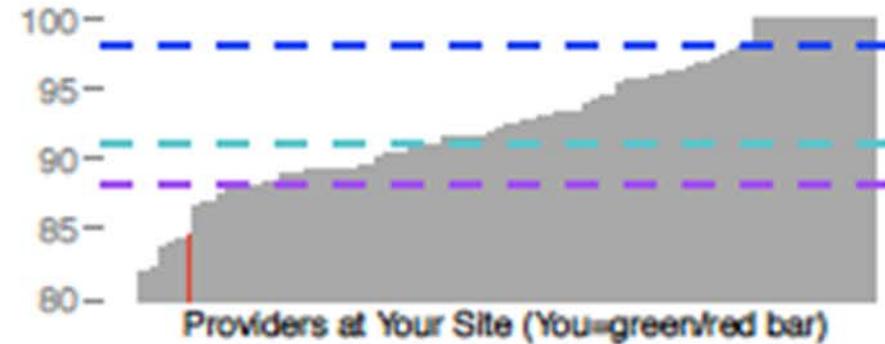
You	84.4% (N*=45)
Your Site	91.2%
Network	88.1%
ABC	98.2%



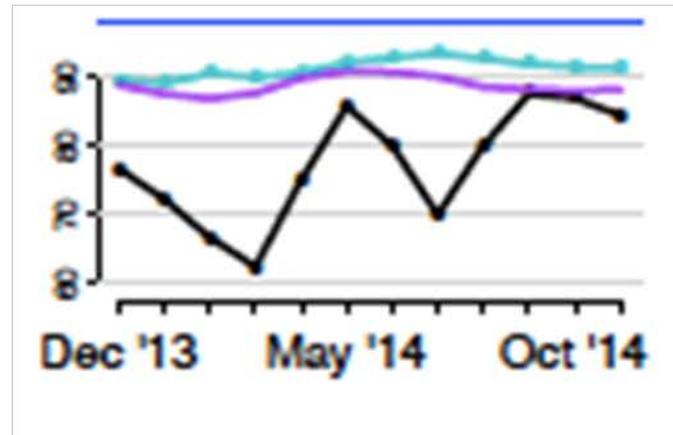
# Report Card

## Systemic corticosteroids given in the ED

You	84.4% (N*=45)
Your Site	91.2%
Network	88.1%
ABC	98.2%



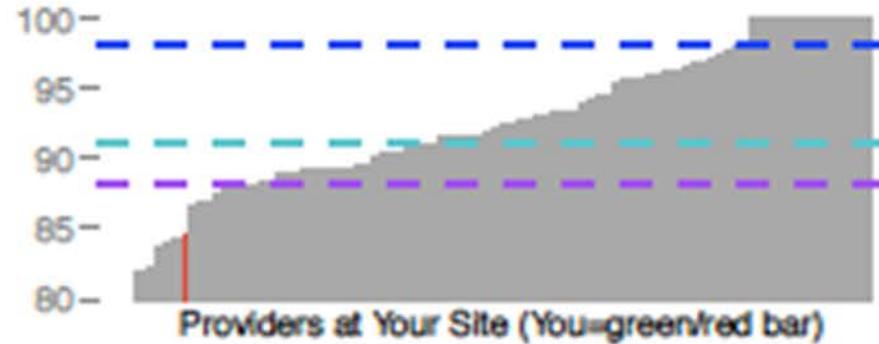
Provider performance



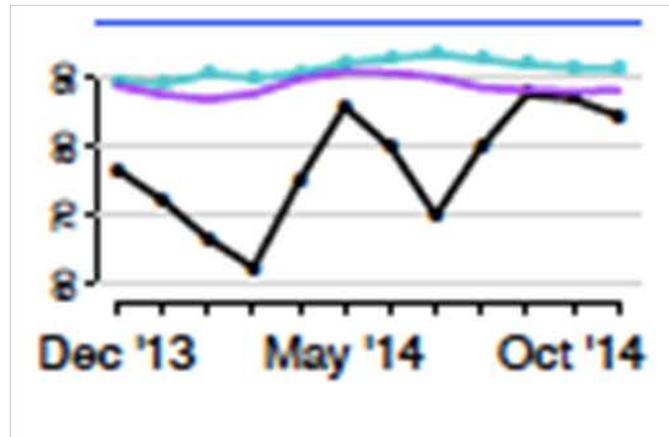
# Report Card

## Systemic corticosteroids given in the ED

You	84.4% (N*=45)
Your Site	91.2%
Network	98.1%
ABC	98.2%



Site performance

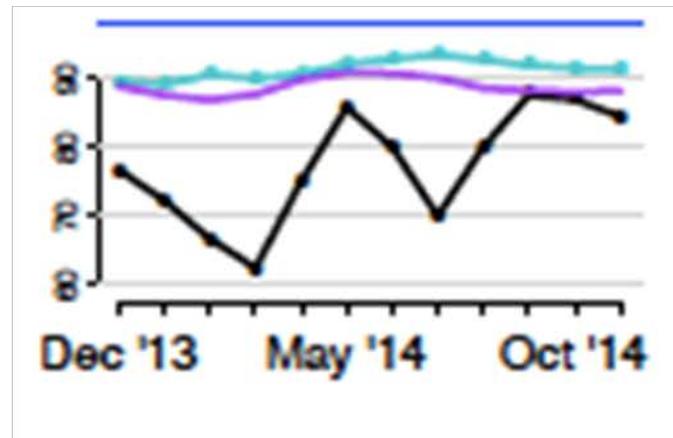
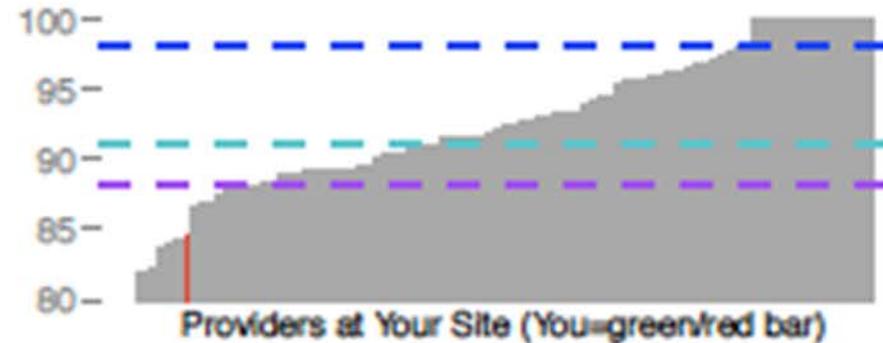




# Report Card

## Systemic corticosteroids given in the ED

You	84.4% (N*=45)
Your Site	91.2%
Network	88.1%
ABC	8.2%

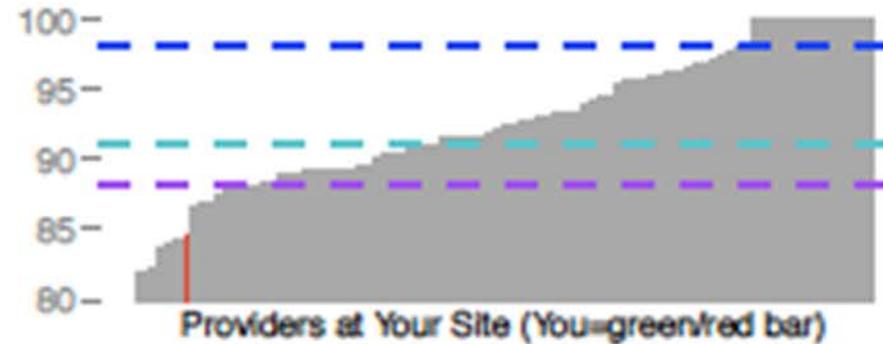


Overall network performance

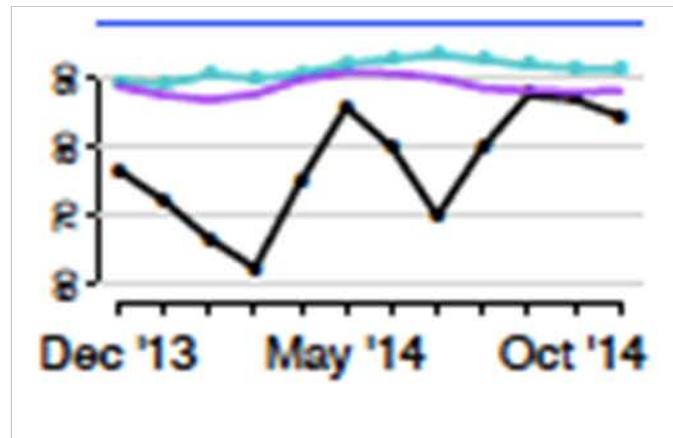
# Report Card

## Systemic corticosteroids given in the ED

You	84.4% (N*=45)
Your Site	91.2%
Network	88.1%
ABC	98.2%



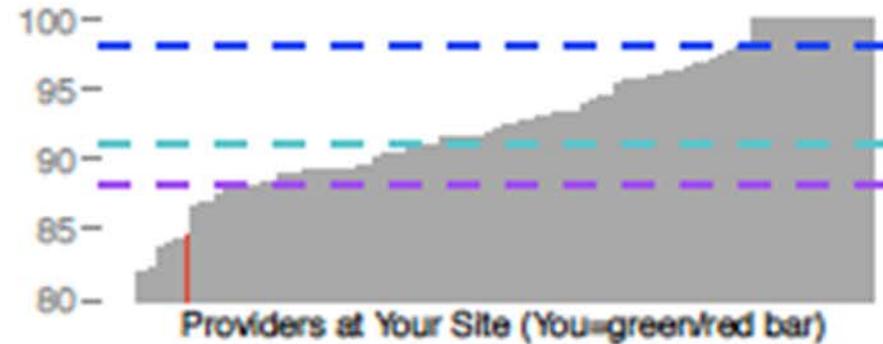
Achievable benchmark of care



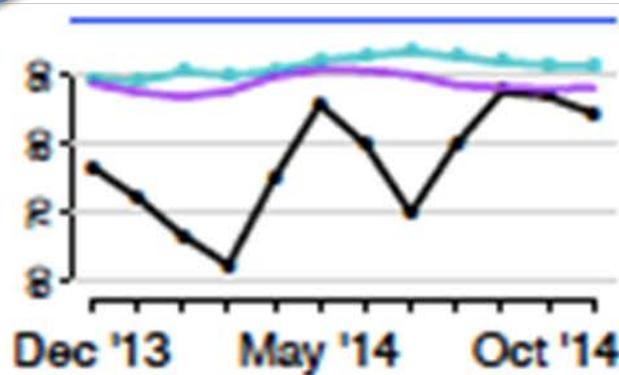
# Report Card

## Systemic corticosteroids given in the ED

You	84.4% (N*=45)
Your Site	91.2%
Network	88.1%
ABC	98.2%



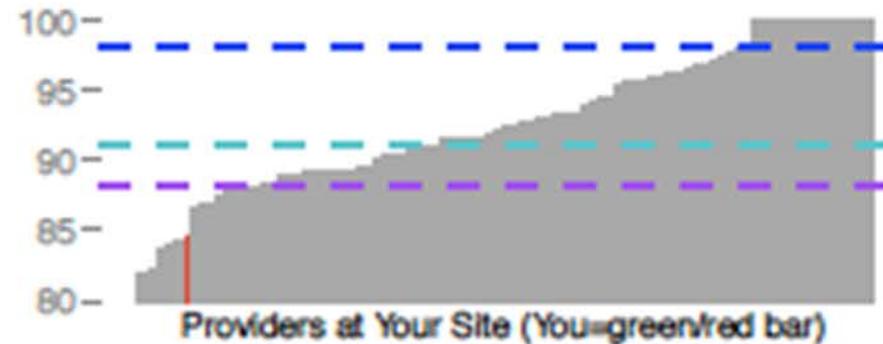
Variability of providers within site



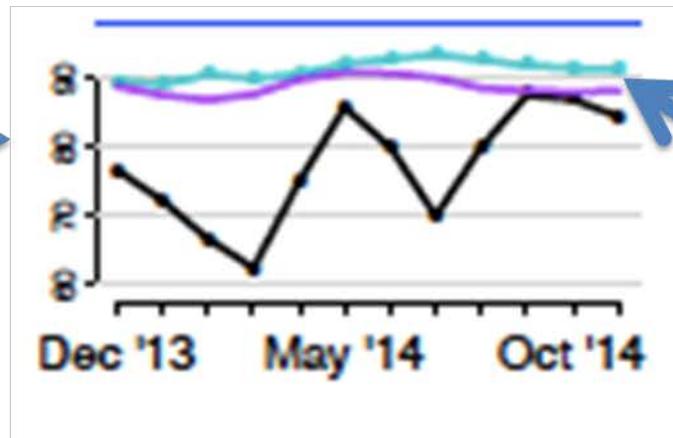
# Report Card

## Systemic corticosteroids given in the ED

You	84.4% (N*=45)
Your Site	91.2%
Network	88.1%
ABC	98.2%



Trend of single provider over time



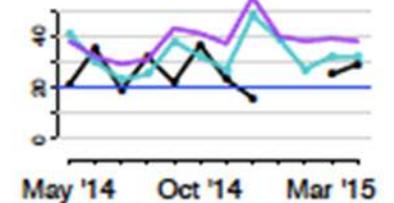
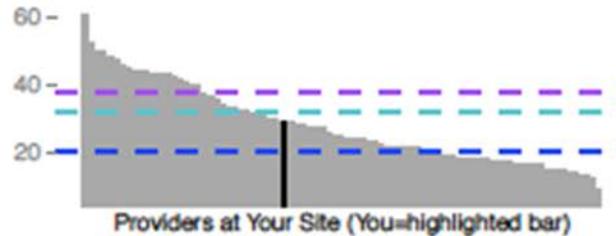
Trends of site and network over time



# Provider Report Card

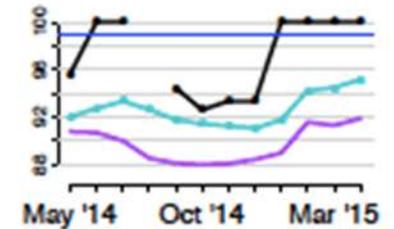
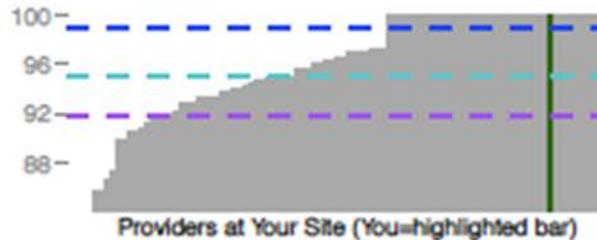
Time from ED arrival to being seen by any provider who can initiate care (resident, NP, PA, fellow, or attending) for all visits regardless of ESI

You (med[IQR])	29 [11,67] (N=248)
Your Site (med[IQR])	32 [13,70]
Network (med[IQR])	38 [18,75]
Site ABC	18
Network ABC	20



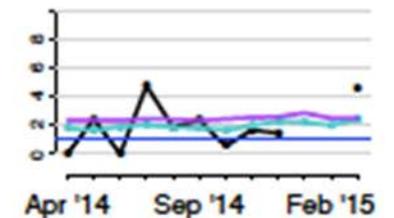
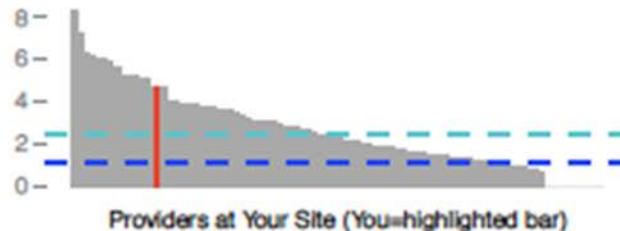
Systemic corticosteroids given in the ED

You	100% (N*=14)
Your Site	95.2%
Network	91.9%
Site ABC	98.2%
Network ABC	99%



ED Return visits within 48 hrs of prior ED departure

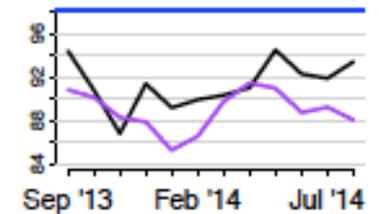
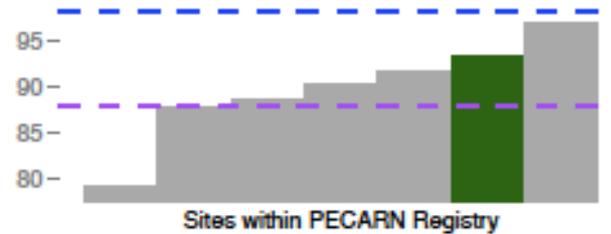
You	4.6% (N=87)
Your Site	2.4%
Network	2.5%
Site ABC	1.1%
Network ABC	1.1%



# Site Report Card

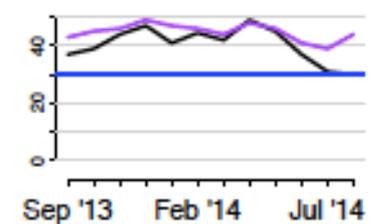
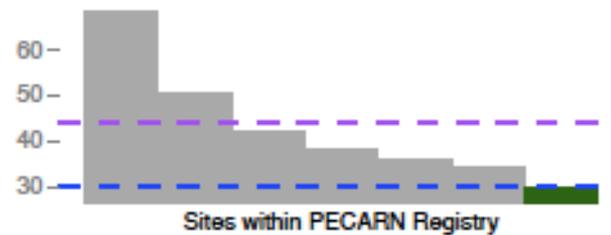
## Systemic corticosteroids given in the ED

Site	93.4% (N=259)
Network	88.1%
ABC	98.2%



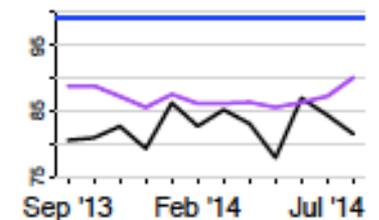
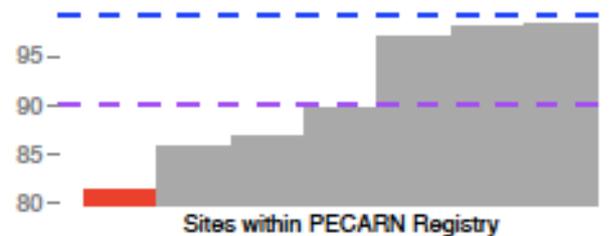
## Time (min) to first beta-agonist treatment

Site (med[IQR])	30 [22,50] (N=259)
Network (med[IQR])	44 [27,76]
ABC	30



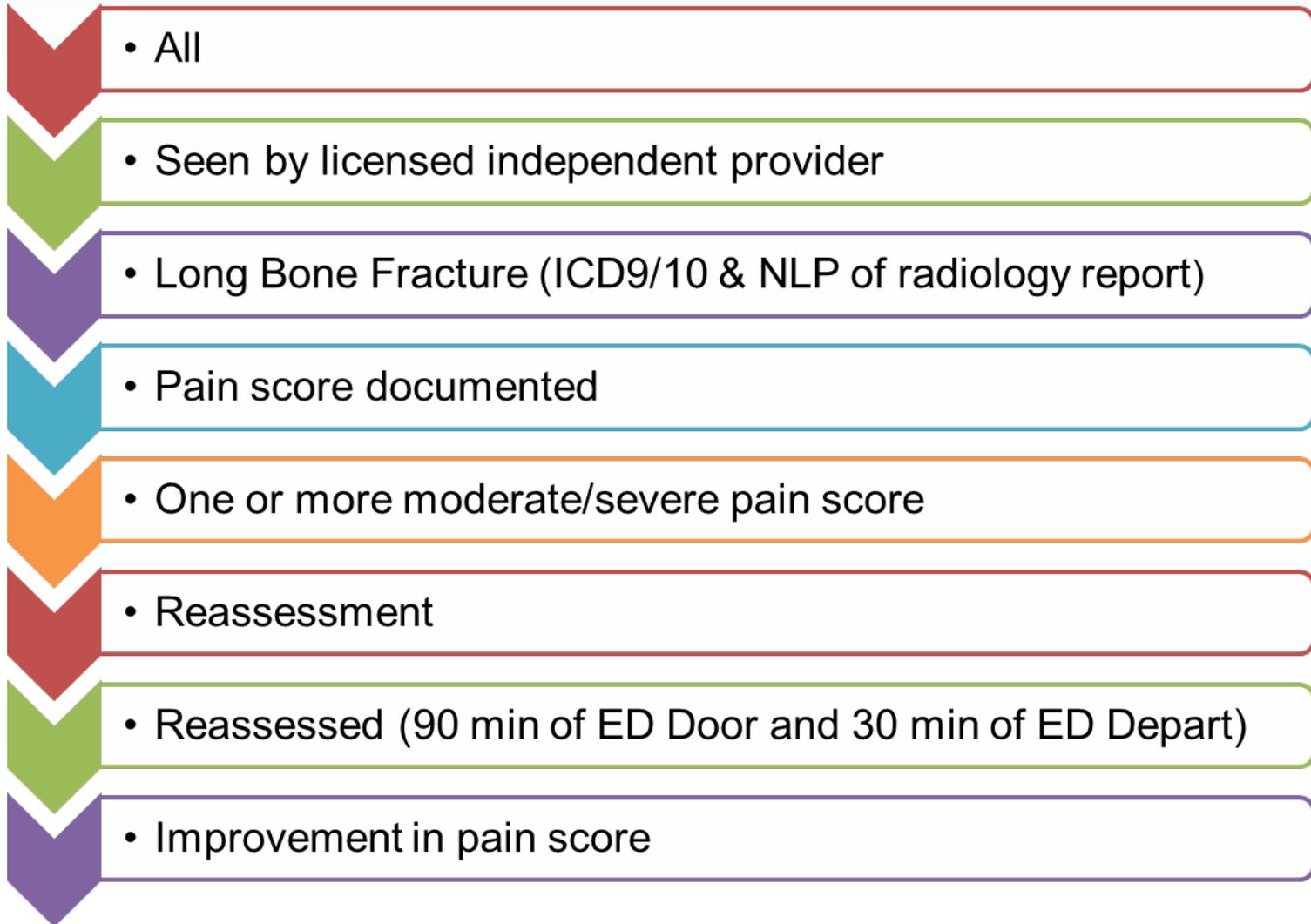
## Asthma score documented while in the ED

Site	81.5% (N=259)
Network	90.1%
ABC	99.3%





# Improving Pain in Patients With Long Bone Fracture



# Pain Care in Fractures

---

## Documenting pain scale

- Overall performance = 92.9%
- Site range = 80.6% - 100%
- ABC = 99.9% (91.2% - 100%)

## Reducing pain in children with acute fractures

- Overall performance = 56.9%
- Site range = 35.4% - 72.7%
- ABC = 89% (67.5% - 90%)

# Pain Care in Fractures

---

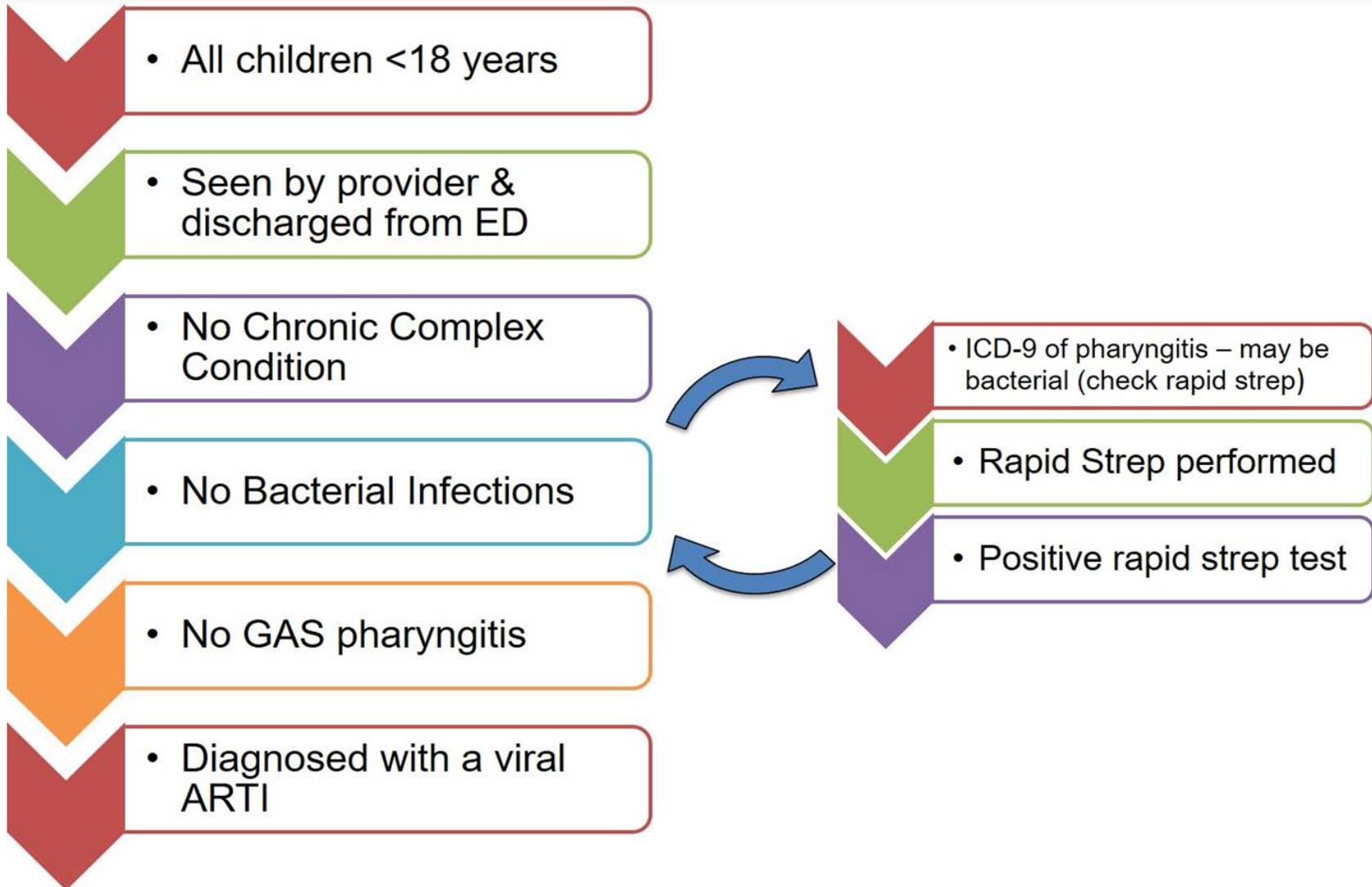
## Documenting pain scale

- Overall performance = 92.9%
- Site range = 80.6% - 100%
- ABC = 99.9% (91.2% - 100%)

## Site impact

- Reducing pain in children with acute fractures
- Overall performance = 56.9%
- Site range = 35.4% - 72.7%
- ABC = 89% (67.5% - 90%)
- “Best Practice” provider impact

# Antibiotic Use in Viral Illness



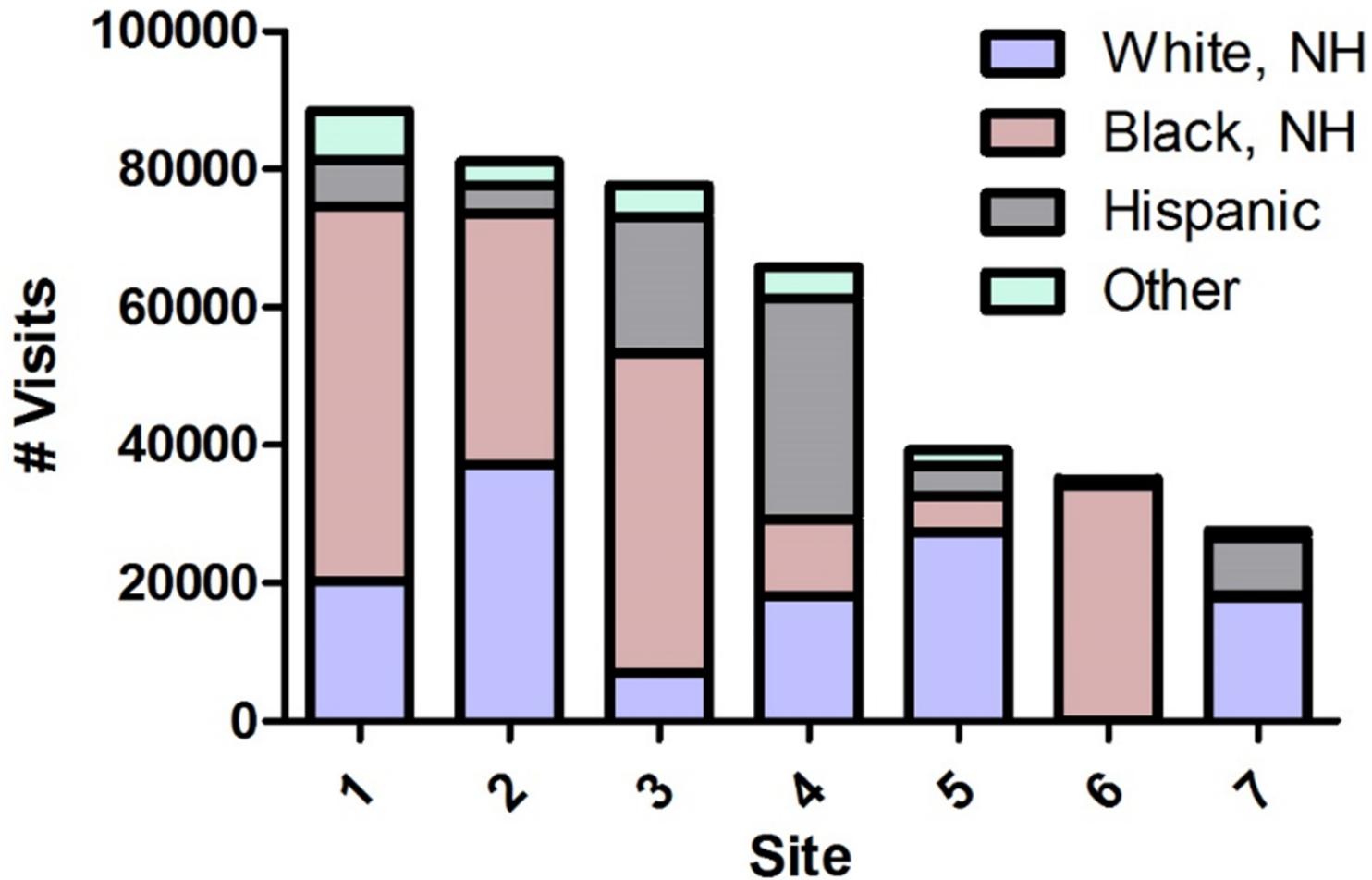
# Disparities in Care

---

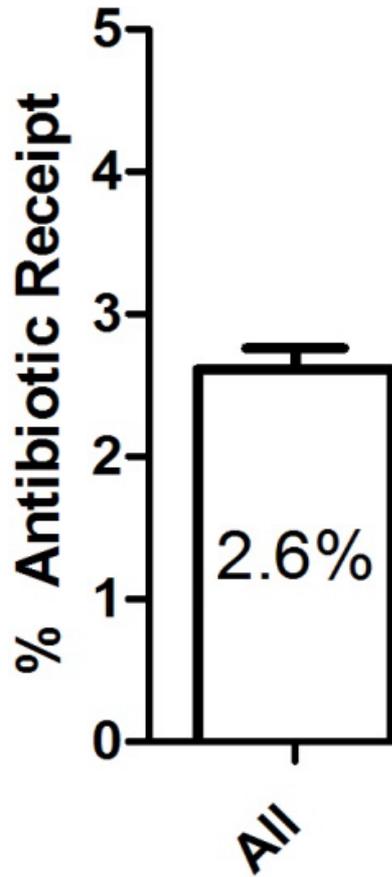
- Outcome:
  - ▶ Antibiotic (oral or IV/IM) administration in ED or upon discharge
- Exposure:
  - ▶ Race/ethnicity
    - White, NH
    - Black, NH
    - Hispanic
    - Other
- Patient Characteristics:
  - ▶ Age
  - ▶ Gender
  - ▶ Insurance status
  - ▶ Triage acuity level
- Visit Characteristics:
  - ▶ ED site (Sites 1-7)
  - ▶ ED type (main/satellite)

# Racial/Ethnic Composition

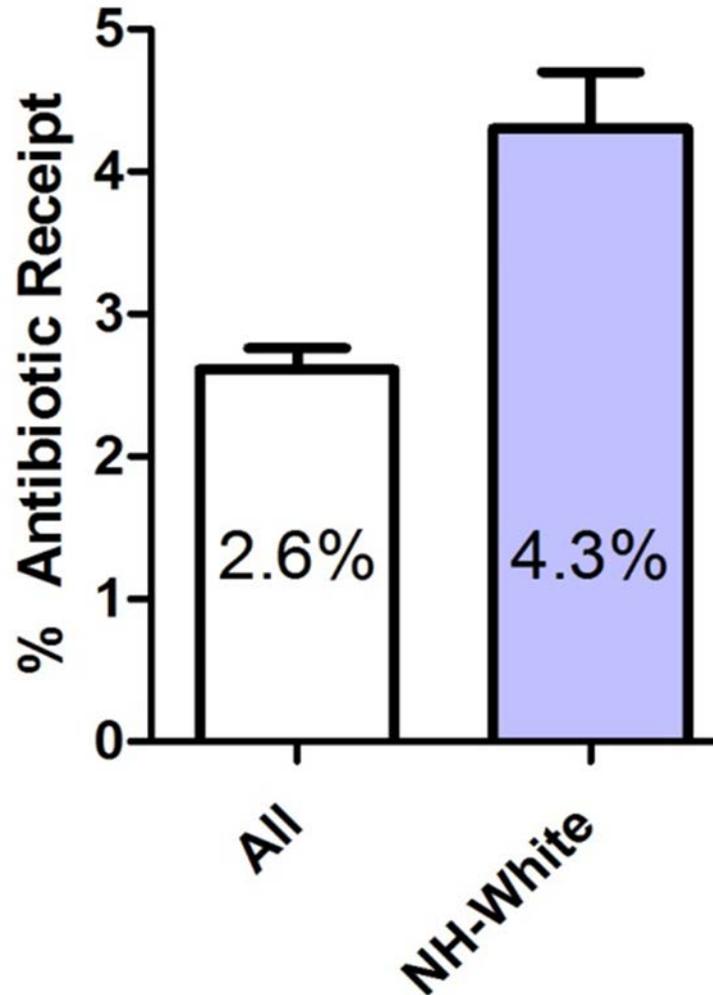
N=38,420 ED visits



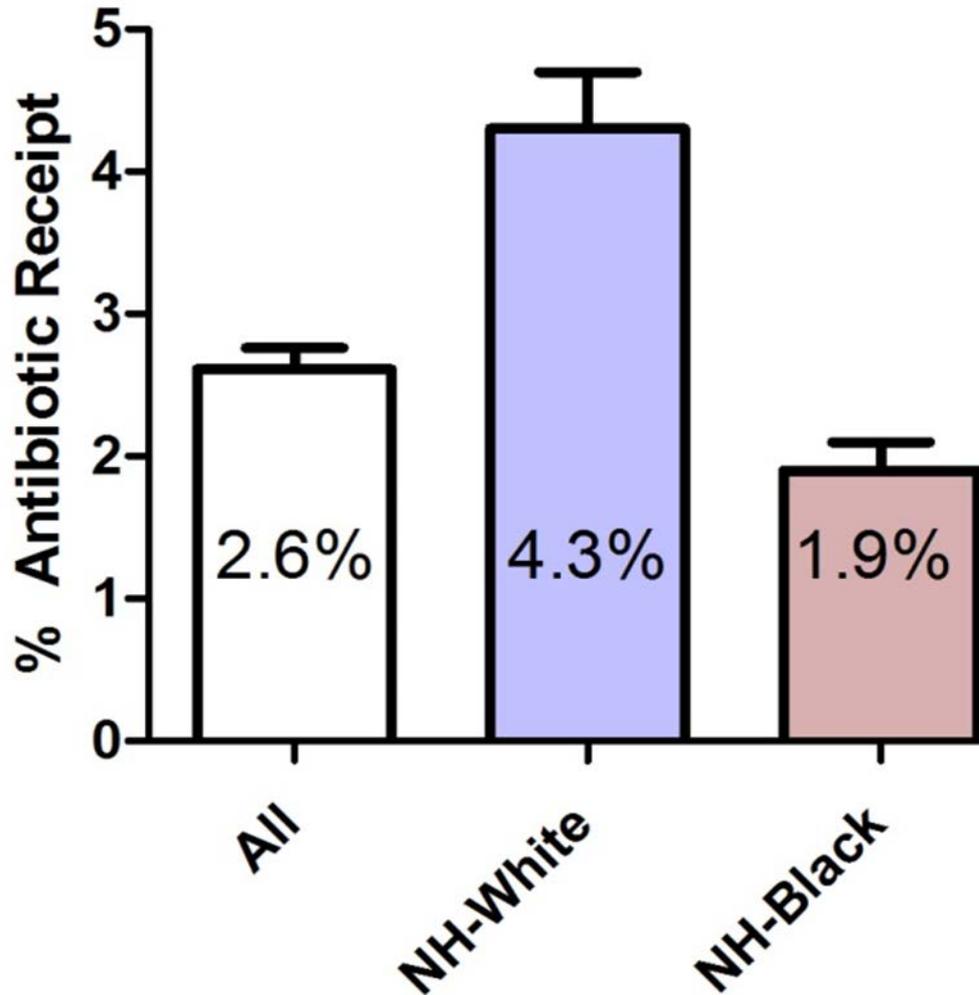
# Antibiotics by Race/Ethnicity



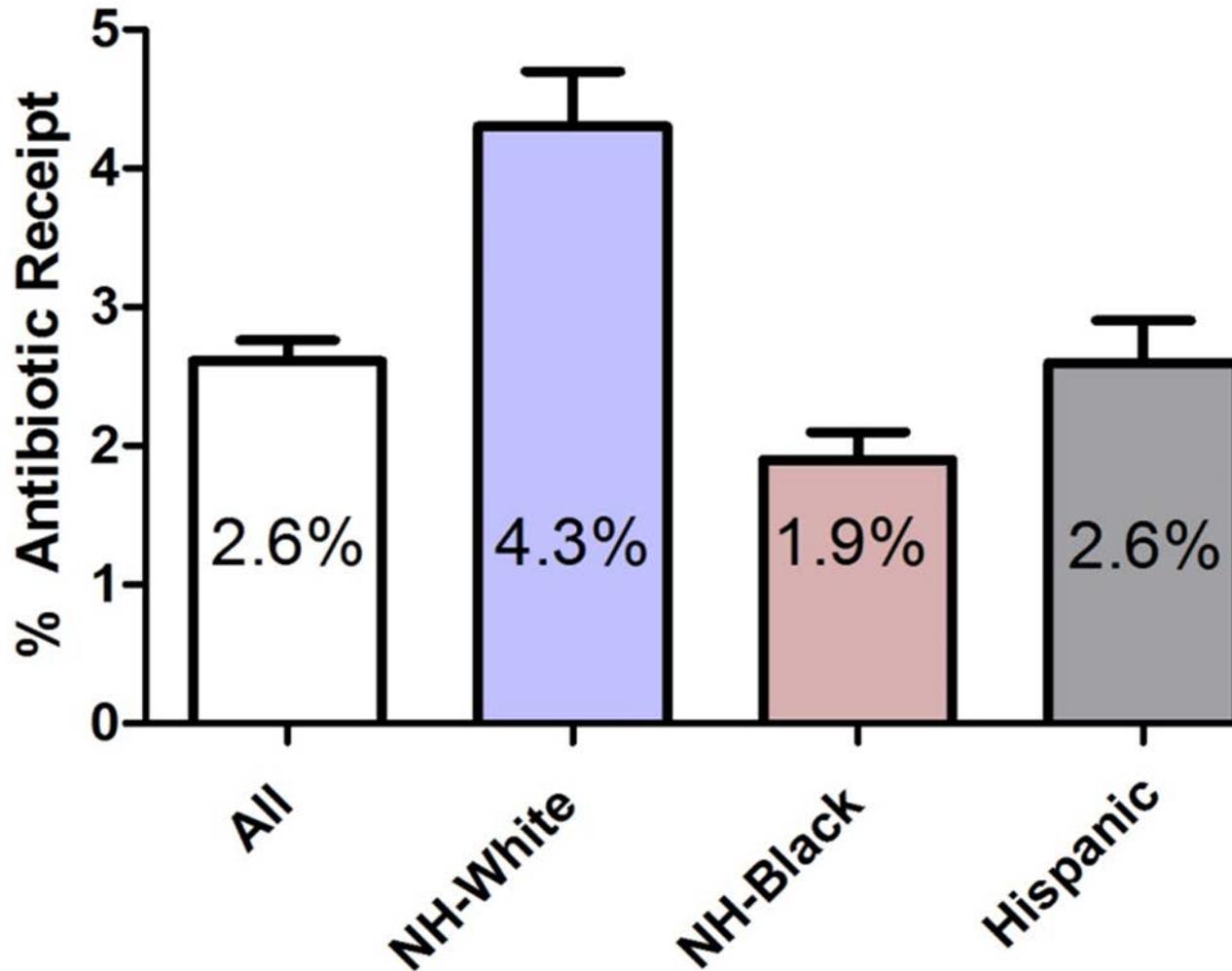
# Antibiotics by Race/Ethnicity



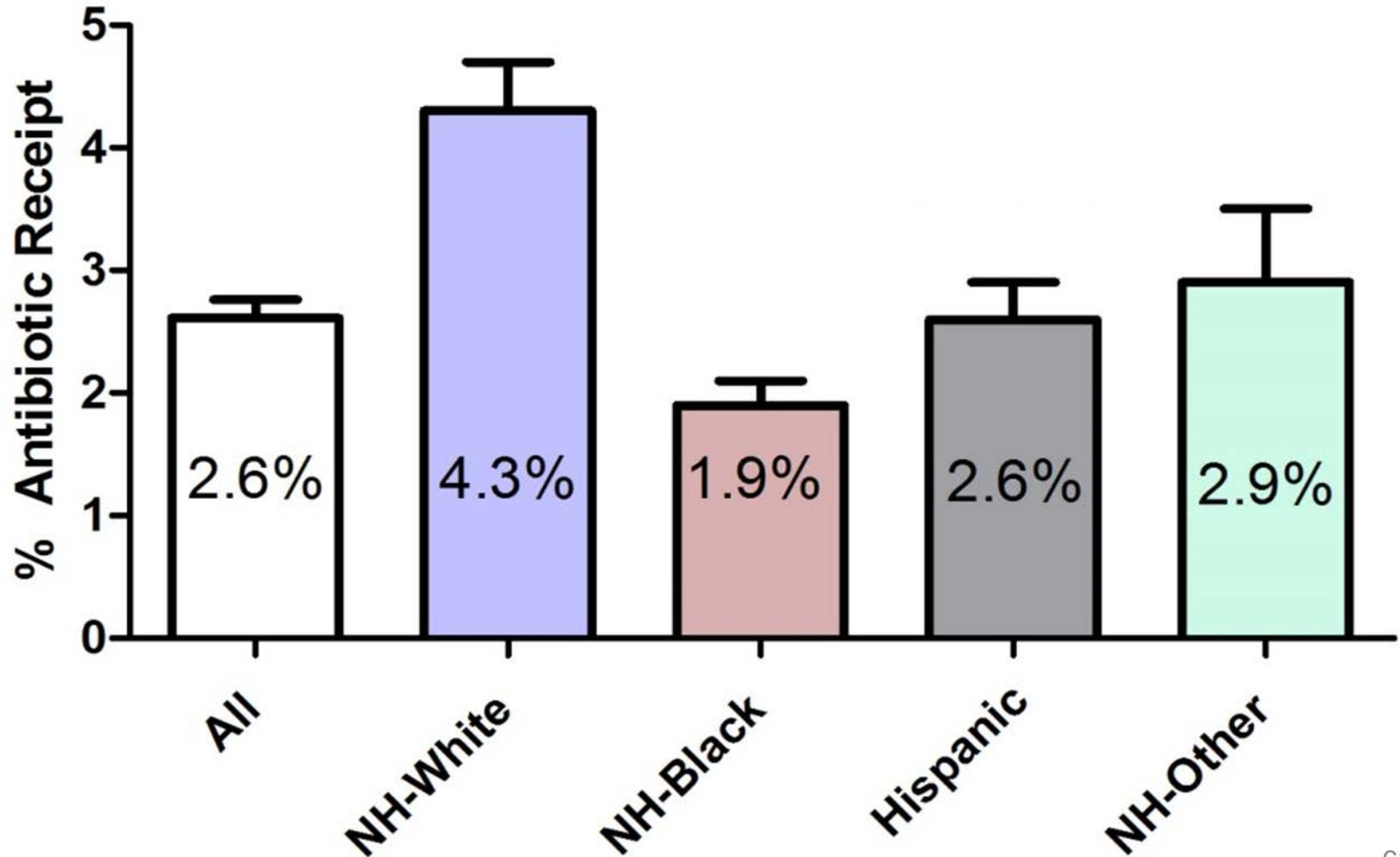
# Antibiotics by Race/Ethnicity



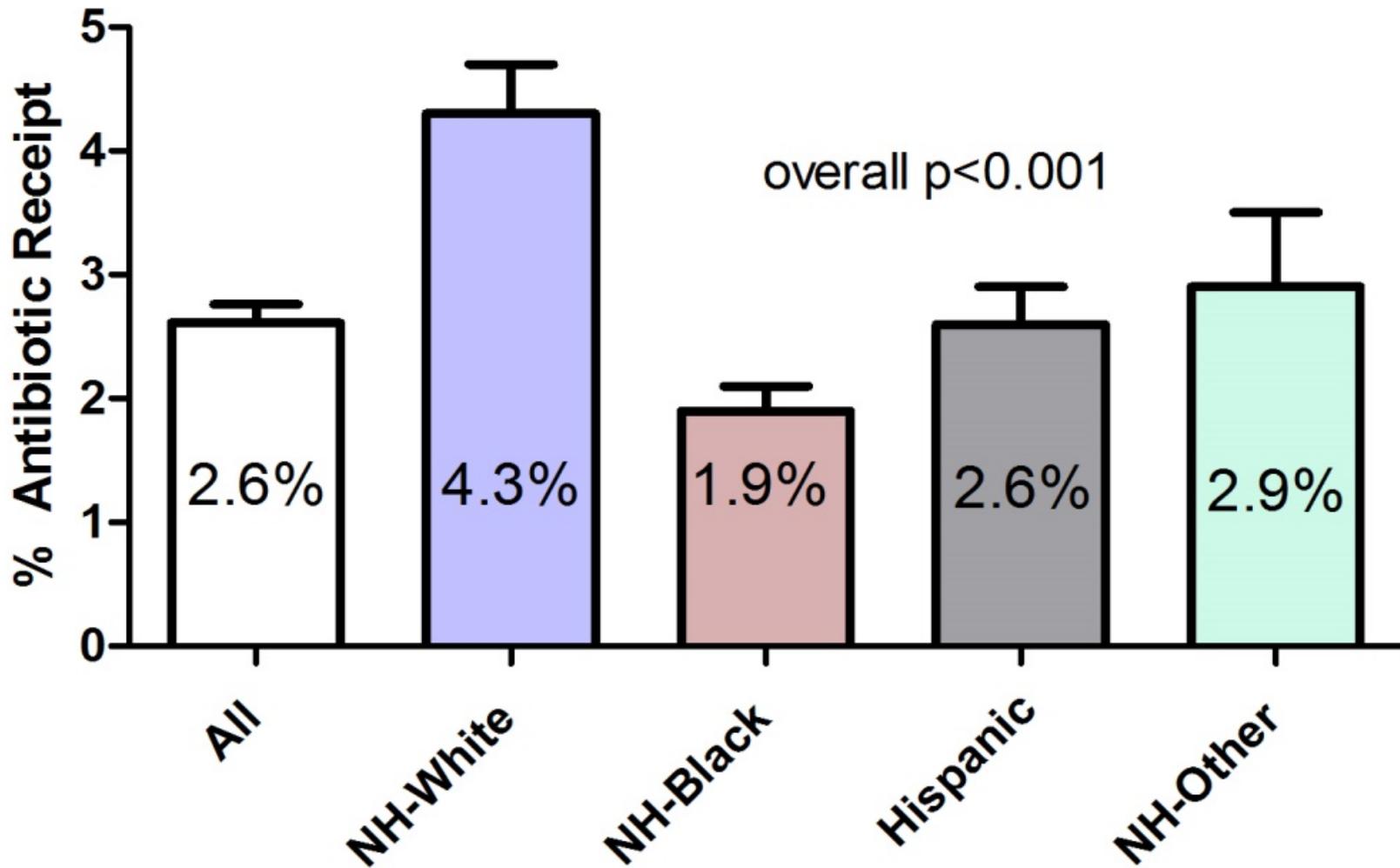
# Antibiotics by Race/Ethnicity



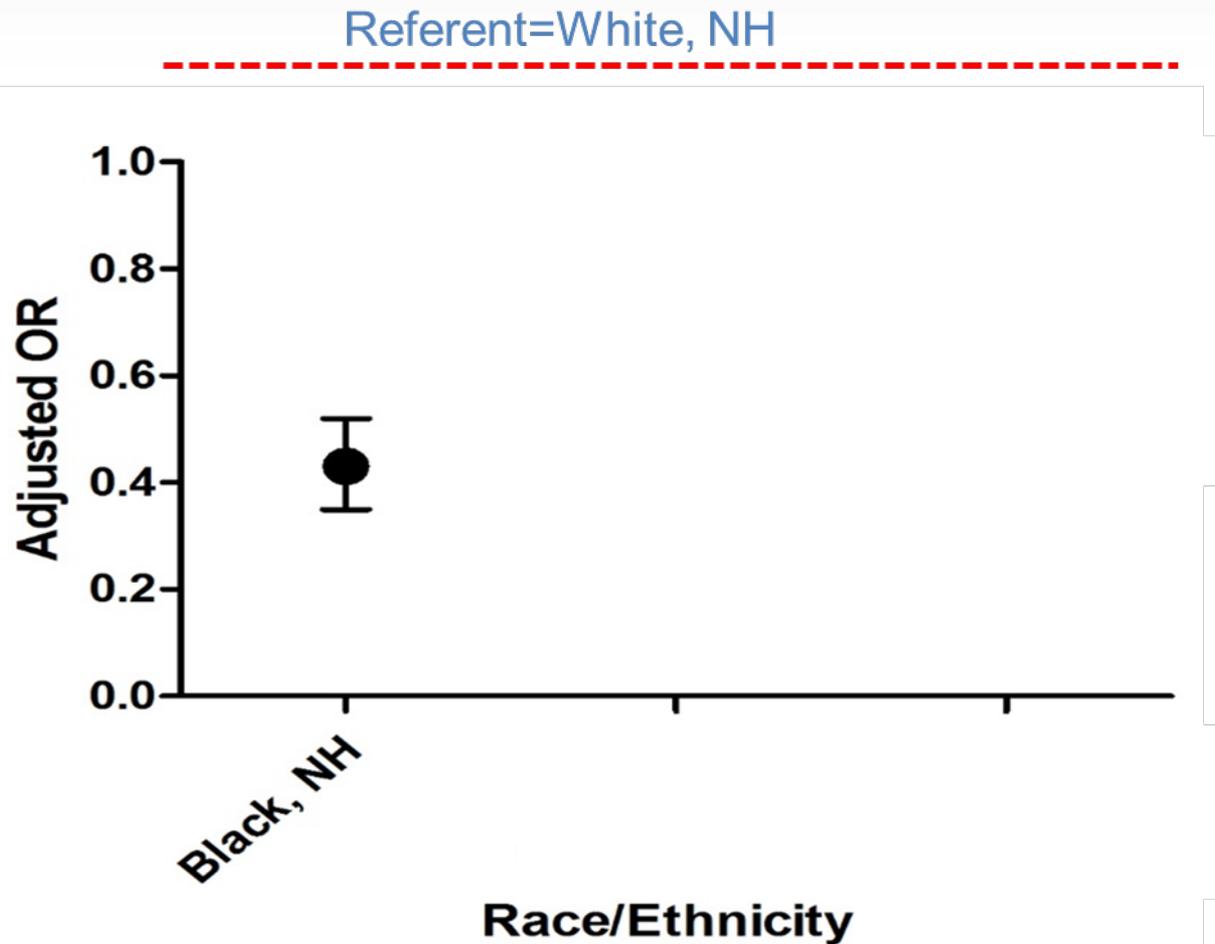
# Antibiotics by Race/Ethnicity



# Antibiotics by Race/Ethnicity

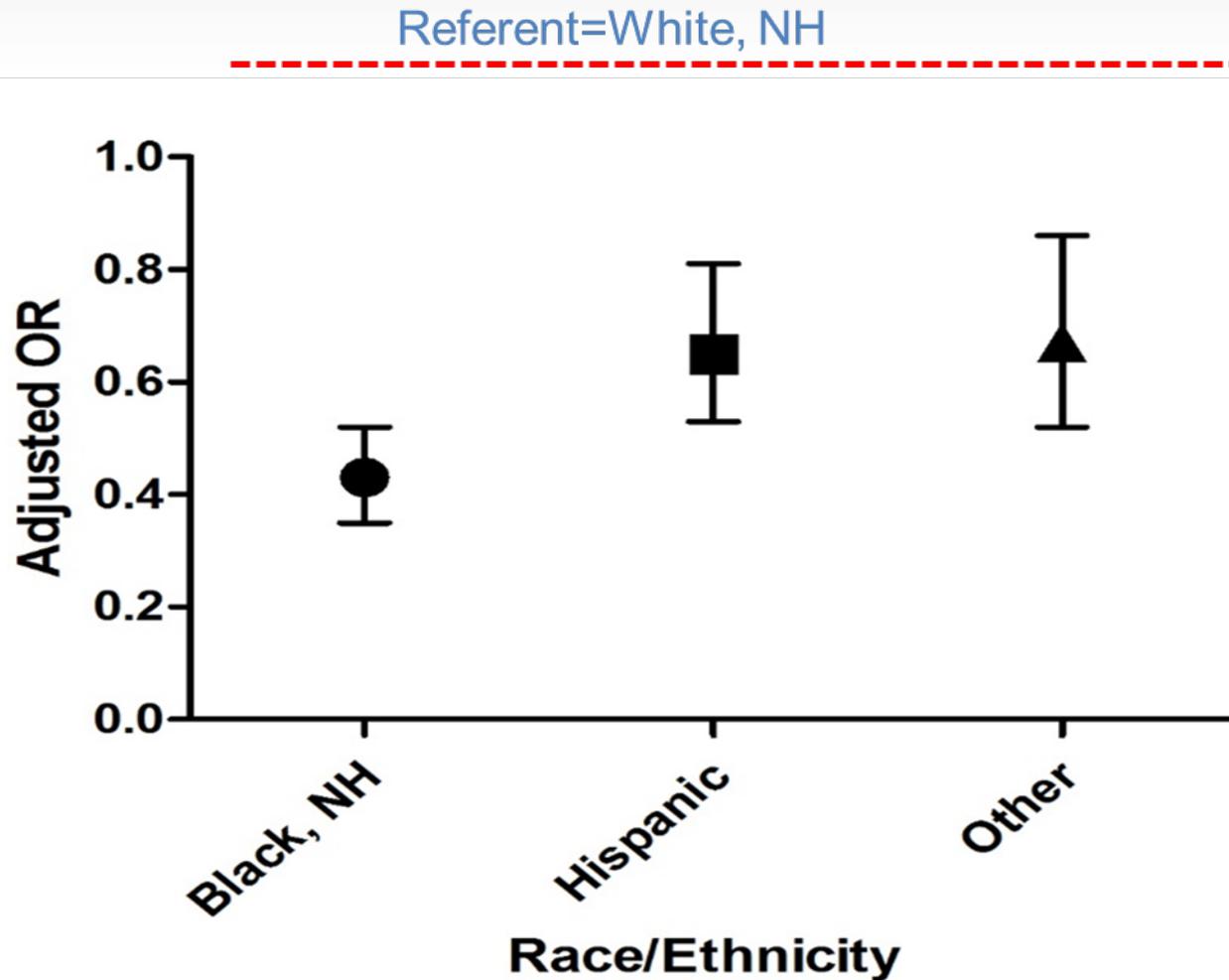


# Antibiotics by Race/Ethnicity



\*Adjusted for gender, age, insurance status, acuity level, ED site, ED type 70

# Antibiotics by Race/Ethnicity



\*Adjusted for gender, age, insurance status, acuity level, ED site, ED type 71

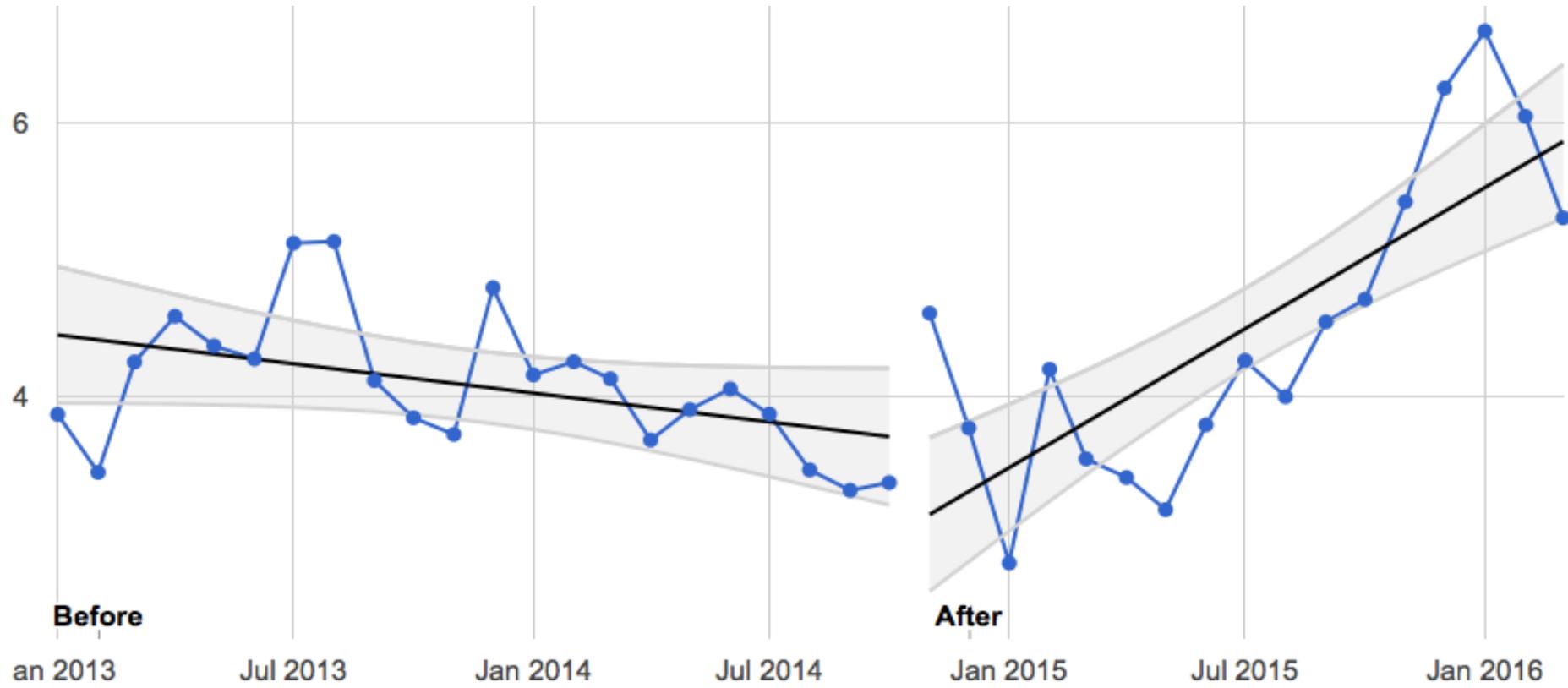
# Disparity of Care

---

- Overall antibiotic provision for viral Acute Respiratory Tract Infections (ARTIs) low
- Differences in antibiotic provision by patient race/ethnicity exist
  - ▶ NH-whites more likely to receive unnecessary antibiotics than minority patients
  - ▶ Differences persisted after adjustment for confounding

# PECARN Registry: Next Steps

- Impact of report cards on quality of care?

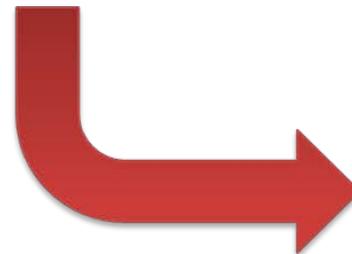




- Can we improve care?
- Can we expand to all components of care (pre-hospital, ED, inpatient)?



- Can we use the rich clinical data of the EHR to evaluate diagnostics, therapeutics, and outcomes?





# Thanks!



Evaline Alessandrini  
Lalit Bajaj  
Jamie Bell  
Jackie Cao  
Diego Campos  
Charlie Casper  
Jim Chamberlain  
Sara Deakyne  
Mike Dean  
Elizabeth Edgerton  
Cara Elsholz  
Rene Enriquez  
Marc Gorelick

Robert Grundmeier  
Katie Hayes  
Marlena Kittick  
Kendra Kocher  
Holly Lynd  
Venita Robinson  
Beth Scheid  
Kate Shreve  
Timothy Simmons  
Russ Telford  
Angie Webster  
Joe Wojdula  
SallyJo Zuspan

PECARN Steering Committee



# Contact Information

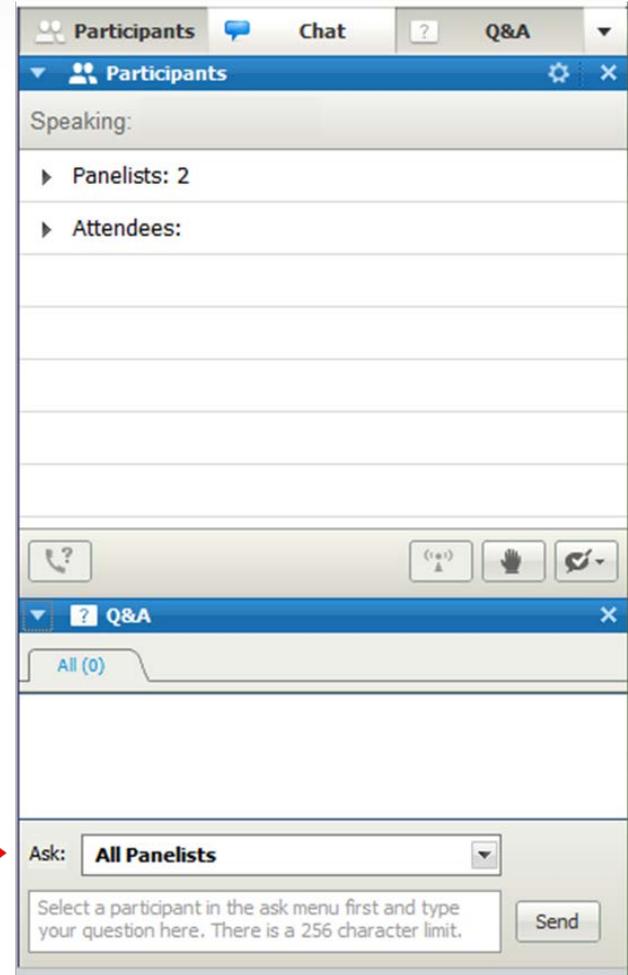
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Elizabeth Alpern, M.D., M.S.C.E.

[EAlpern@luriechildrens.org](mailto:EAlpern@luriechildrens.org)

# How To Submit a Question

- At any time during the presentation, type your question into the “Q&A” section of your WebEx Q&A panel.
- Please address your questions to “All Panelists” in the drop-down menu.
- Select “Send” to submit your question to the moderator.
- Questions will be read aloud by the moderator.



The screenshot shows the WebEx interface with the Q&A panel open. The top navigation bar includes 'Participants', 'Chat', and 'Q&A'. The 'Participants' panel is expanded, showing 'Speaking:' with sub-sections for 'Panelists: 2' and 'Attendees:'. Below this is the 'Q&A' panel, which has a dropdown menu set to 'All (0)'. At the bottom of the Q&A panel, there is an 'Ask:' dropdown menu currently set to 'All Panelists', a text input field with a 256-character limit, and a 'Send' button.



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