

# Improving Asthma Health through Multidisciplinary Teams

Utah Asthma Program Webinar  
Michael D. Johnson MD MS  
3 August 2016

# Accreditation

- The content of this telehealth presentation has been approved for CNE and RT CE credit.
- Measures have been taken by the Utah Department of Health, Bureau of Health Promotion, to ensure there is no conflict of interest in this activity.

# Objectives

By the end of this presentation, an audience member will:

- Recall examples of health improvements in asthma accomplished by multidisciplinary teams in acute care, chronic care, and across care areas by applying the Medical Home concept.
- Identify an opportunity in their own realm of care where better collaboration can improve health for people with asthma.

# Teams are made of....

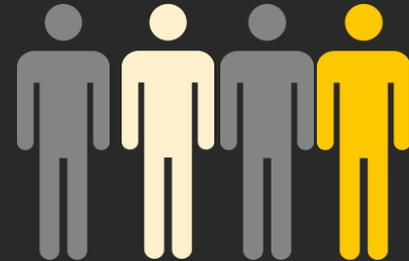
## People

*"Do my best"*



## Roles

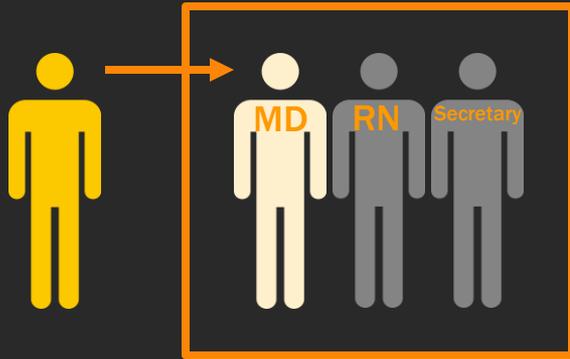
*Evaluate and change*



# Two contradictory modes of 'role'

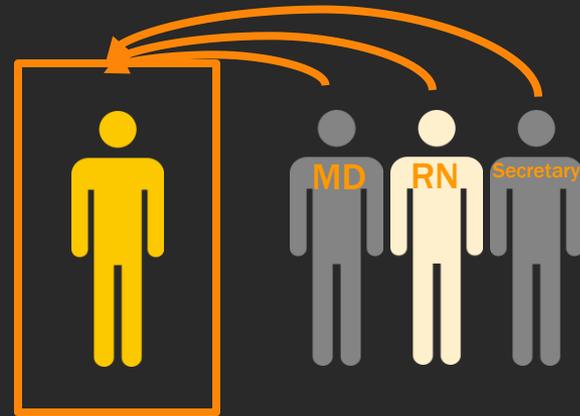
## Skilled Craftsman

*"Do my best"*

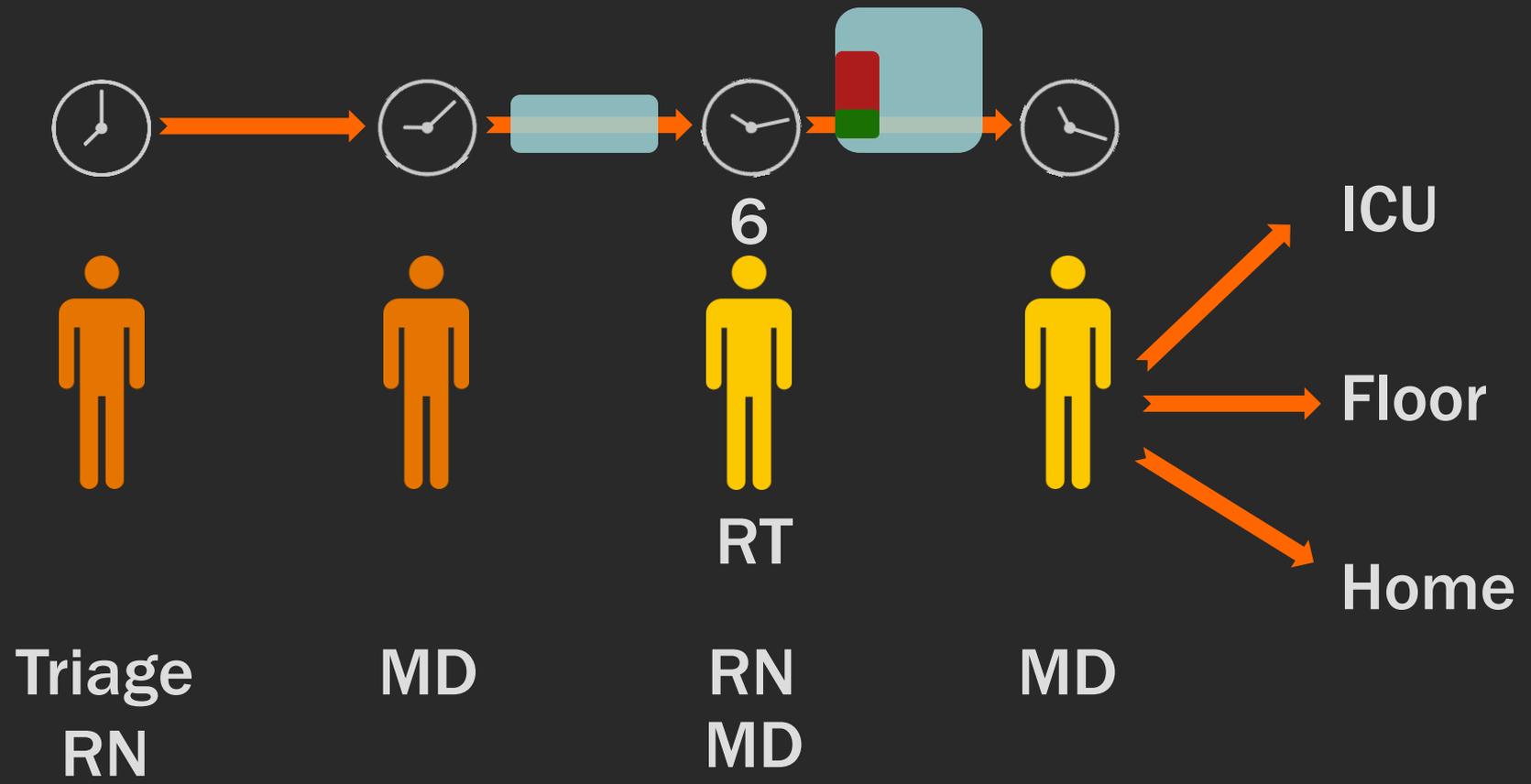


## System Member

*Evaluate and change*



# Do we have a problem?



# Why worry?

- Variable care delivery is common

## Variation in Emergency Department Admission Rates in US Children's Hospitals

**AUTHORS:** Florence T. Bourgeois, MD, MPH, Michael C. Monuteaux, ScD, Anne M. Stack, MD, and Mark I. Neumar MD, MPH

*Division of Emergency Medicine, Boston Children's Hospital, Boston, Massachusetts; and Department of Pediatrics, Harvard Medical School, Boston, Massachusetts*



**WHAT THIS STUDY ADDS:** We observed wide variation in admission rates for common pediatric conditions across US children's hospitals. Our findings highlight the need for greater focus on the standardization of decisions regarding hospitalization of patients presenting to the emergency department.

## Pediatric Asthma Care in US Emergency Departments

*Current Practice in the Context of the National Institutes of Health Guidelines*

*Ellen F. Crain, MD, PhD; Kevin B. Weiss, MD; Michael J. Fagan, MPP*

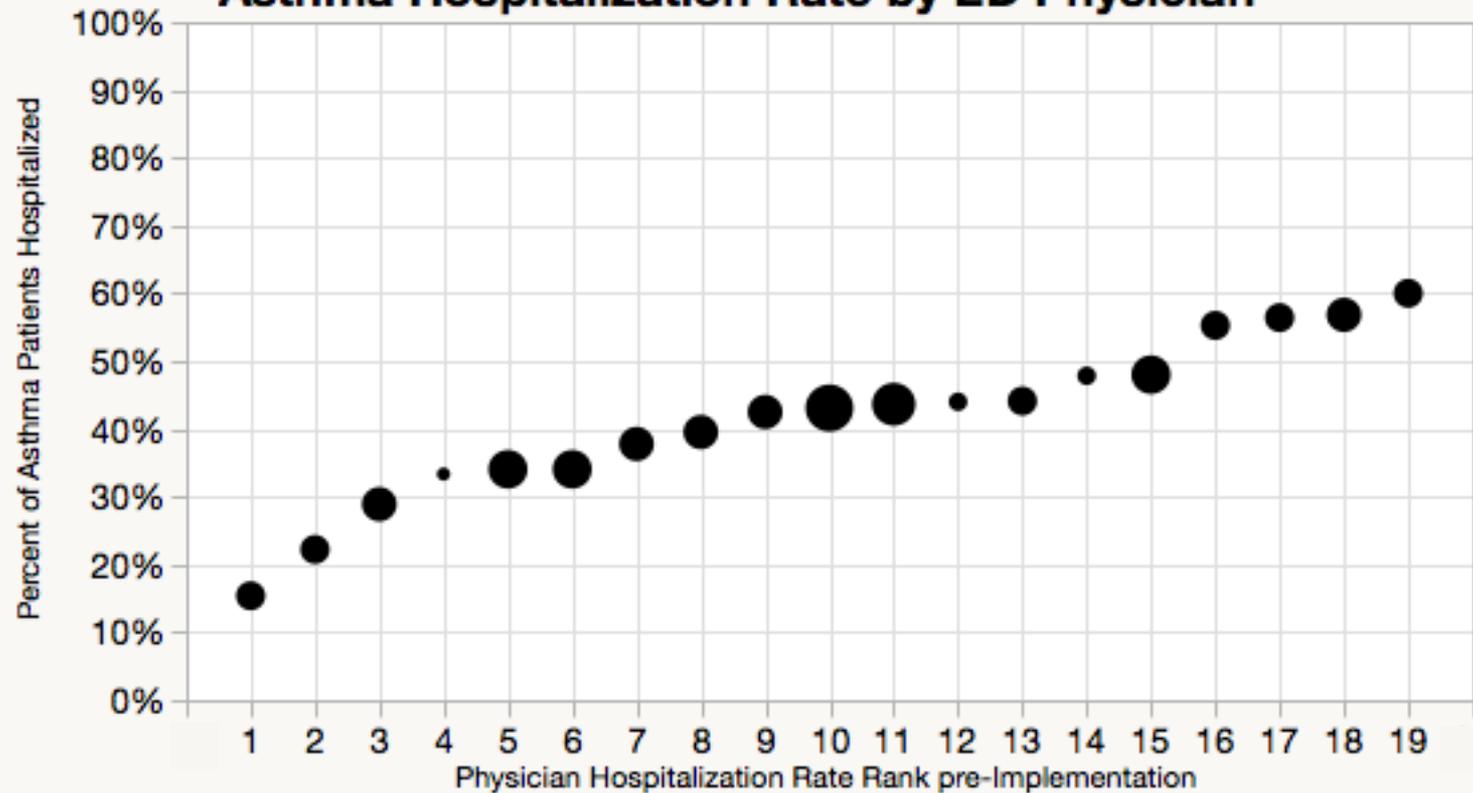
**Conclusions:** These data suggest that reported pediatric asthma care in US emergency departments differs substantially from the National Institutes of Health guidelines, with considerable variation by hospital type. The

## Quality of Care for Common Pediatric Respiratory Illnesses in United States Emergency Departments: Analysis of 2005 National Hospital Ambulatory Medical Care Survey Data

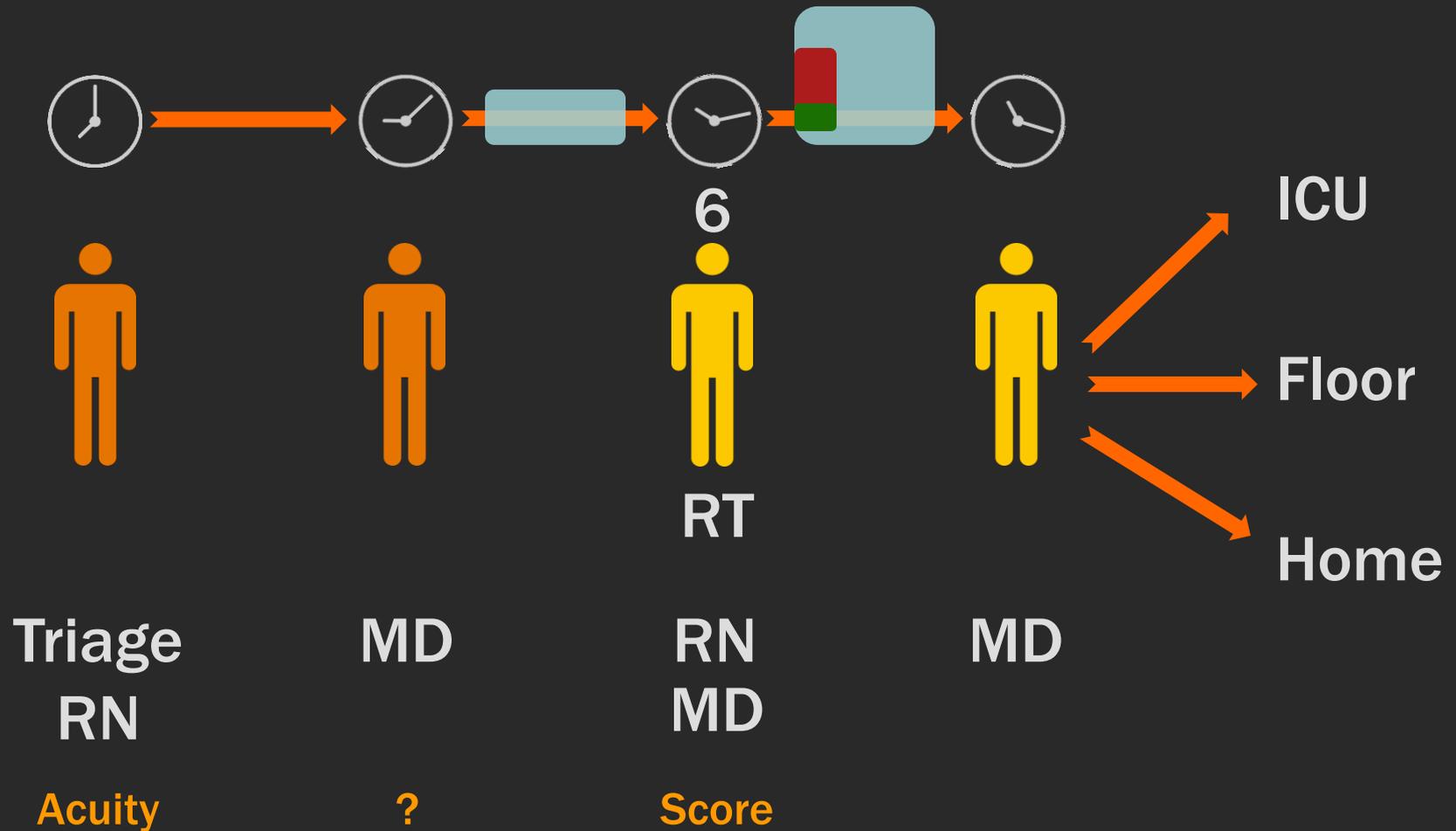
*Jane F. Knapp, MD<sup>a</sup>, Stephen D. Simon, PhD<sup>b</sup>, Vidya Sharma, MBBS, MPH<sup>a</sup>*

**CONCLUSIONS.** Physicians treating children with asthma, bronchiolitis, and croup in US emergency departments are underusing known effective treatments and overusing ineffective or unproven therapies and diagnostic tests. *Pediatrics* 2008;122:1165–1170

## Asthma Hospitalization Rate by ED Physician



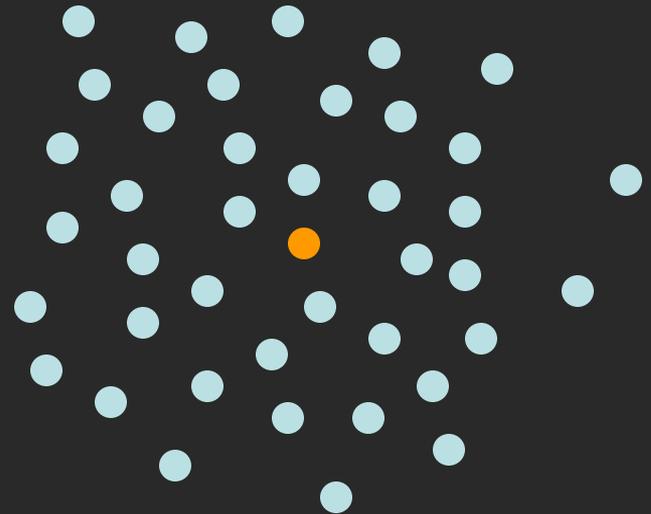
# Is there room to improve?



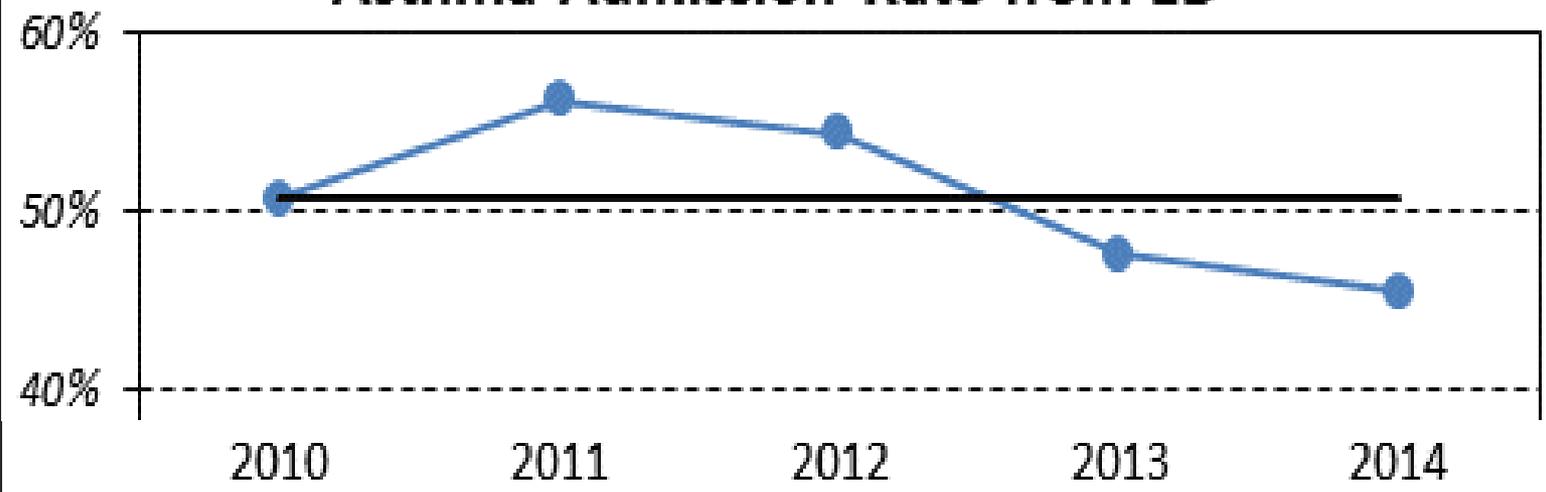
# Which do we believe more?

Doctors are  
smart

Doctors are  
human



## Asthma Admission Rate from ED



# Evidence for ED asthma **processes**

beyond the guidelines

- **Timing of steroids**
- **Recognition of asthma**
- **Nurse initiation of treatment**

## Early Administration of Systemic Corticosteroids Reduces Hospital Admission Rates for Children With Moderate and Severe Asthma Exacerbation

Sanjit K. Bhogal, PhD, David McGillivray, MD, Jean Bourbeau, MD, Andrea Benedetti, PhD, Susan Bartlett, PhD, Francine M. Ducharme, MD, MSc

## Identifying asthma exacerbations in a pediatric emergency department: A feasibility study

David L. Sanders<sup>a</sup>, William Gregg<sup>a</sup>, Dominik Aronsky<sup>a,b,\*</sup>

<sup>a</sup> Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, TN, United States

<sup>b</sup> Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN, United States

## IMPACT OF AN EMERGENCY NURSE-INITIATED ASTHMA MANAGEMENT PROTOCOL ON DOOR-TO-FIRST-SALBUTAMOL-NEBULIZATION-TIME IN A PEDIATRIC EMERGENCY DEPARTMENT

**Authors:** Khajista Qazi, MD, MS, Saleh A. Altamimi, MD, Hani Tamim, PhD, and Khandee Serrano, RN, Riyadh, Saudi Arabia

Ottawa, Ottawa, Ontario, Canada

### KEY WORDS

asthma, pediatrics, emergency department, multidisciplinary teams, medical directive

### ABBREVIATIONS

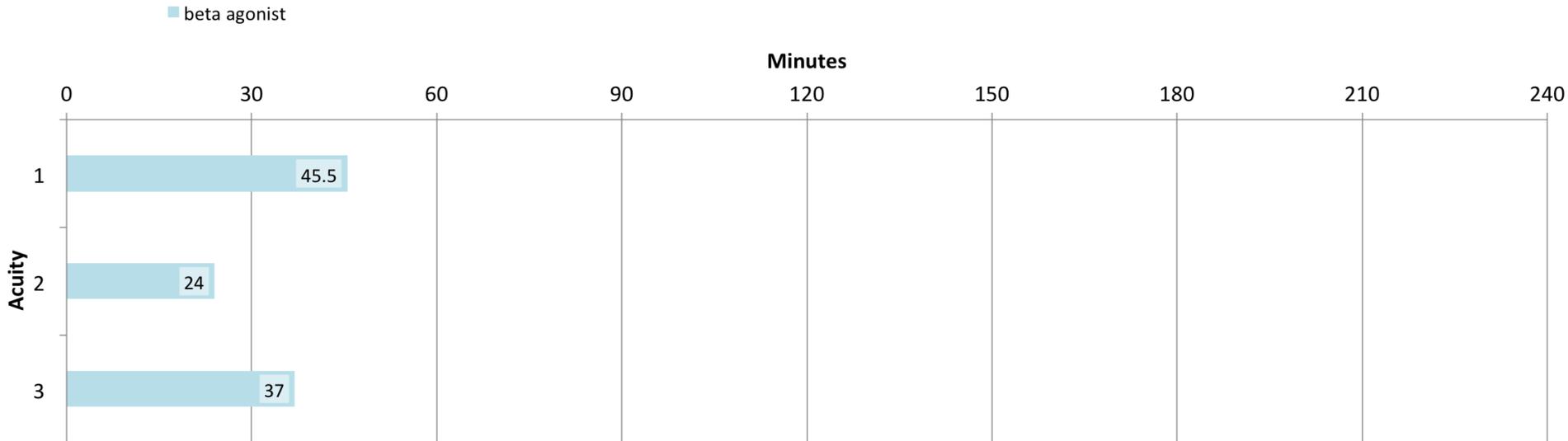
CI—confidence interval



**WHAT THIS STUDY ADDS:** A medical directive allowing nurse initiation of oral corticosteroids before physician assessment was associated with improved quality and efficiency of care provided in the pediatric emergency department by ensuring implementation of evidence-based practice.

# Do sicker patients get medication faster?

Median (IQR) minutes to admission decision and medication administration  
admitted patients only; disposition decision 2013-2014; medications 2012-2013

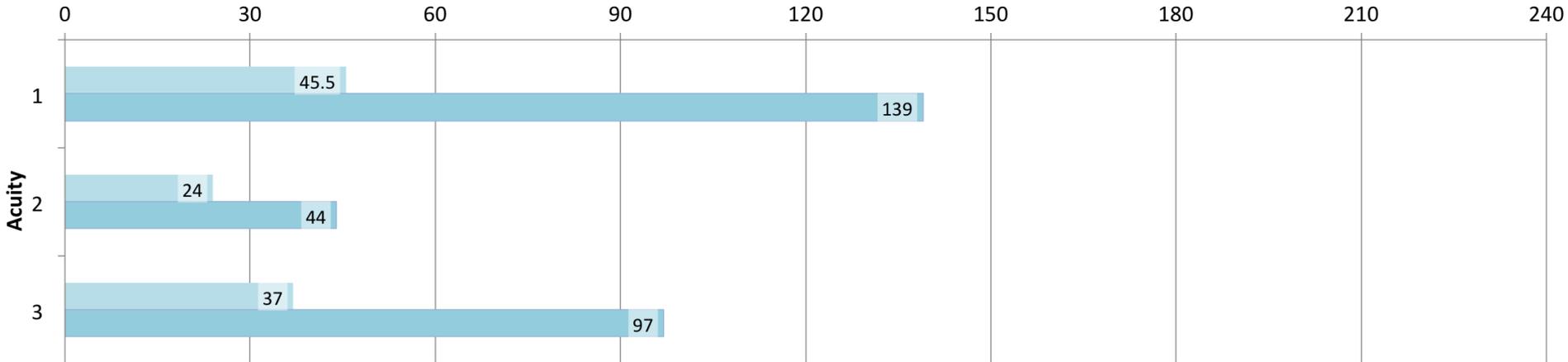


# Do sicker patients get medication faster?

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■ beta agonist ■ steroid

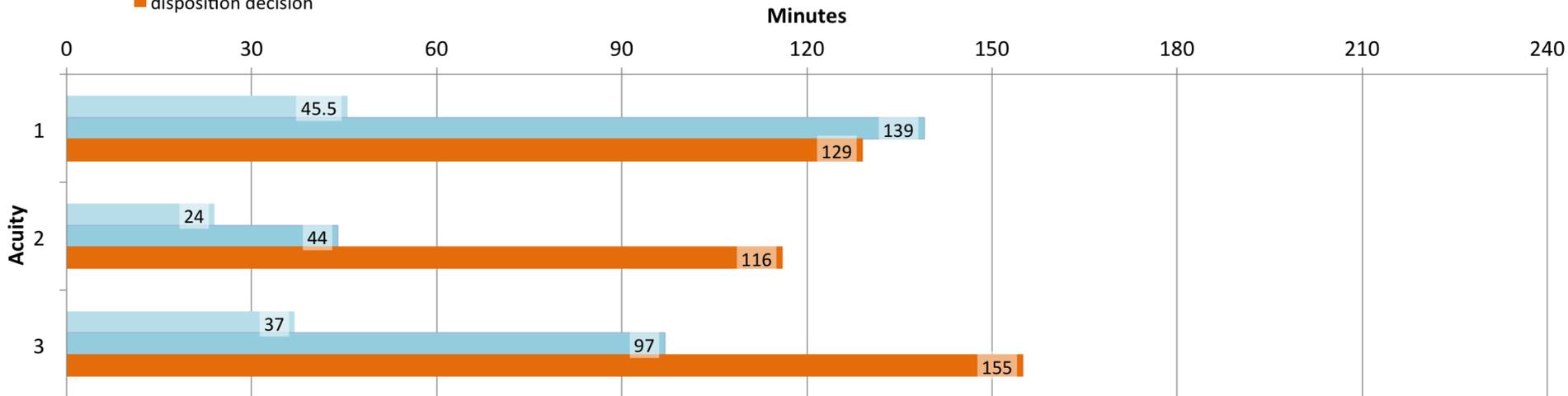
Minutes



# Do sicker patients get medication faster?

Median (IQR) minutes to admission decision and medication administration  
admitted patients only; disposition decision 2013-2014; medications 2012-2013

- beta agonist
- steroid
- disposition decision



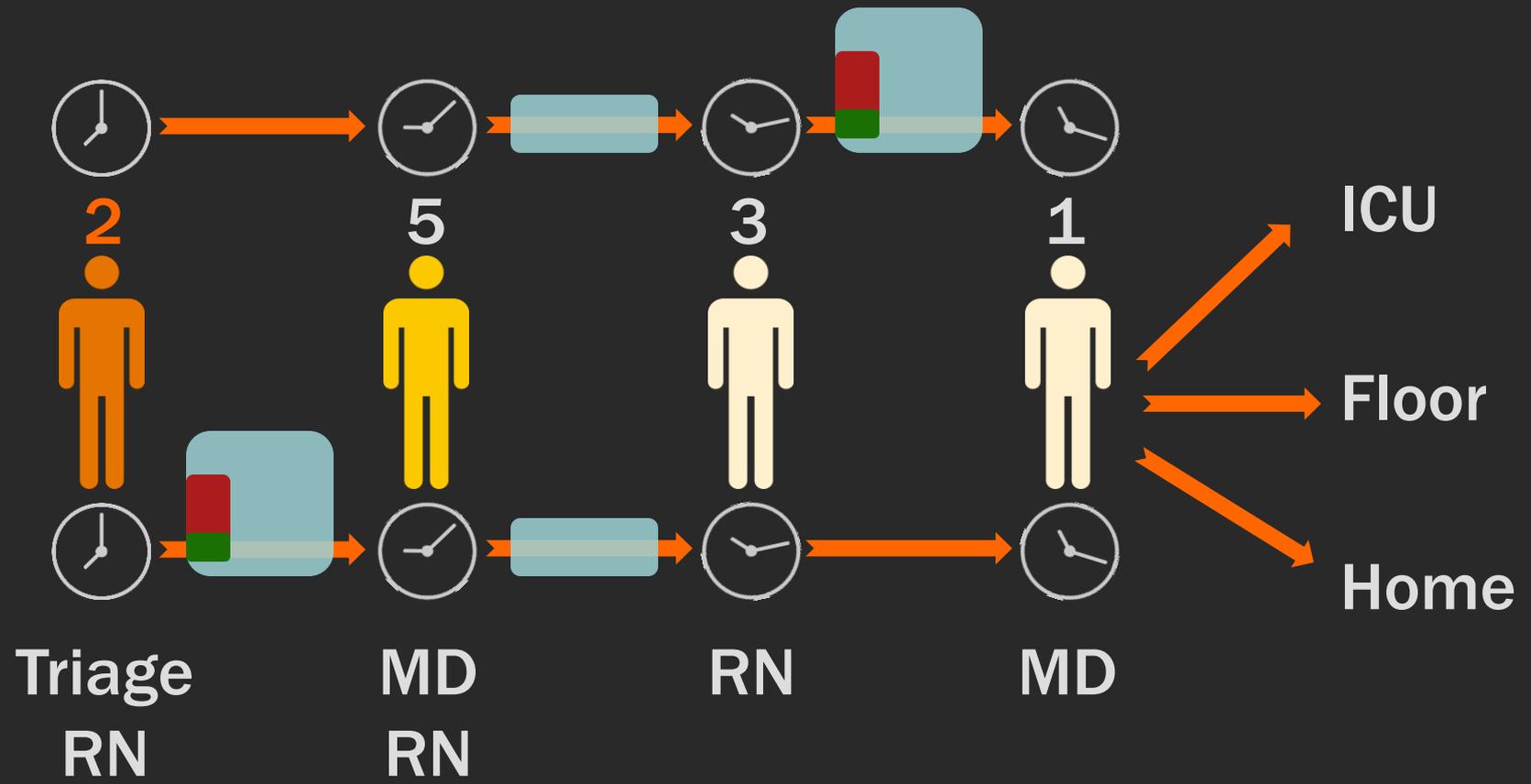
# Overcoming **obstacles**

- Medications are delivered slowly
  - Allow nurses and RTs to identify patients with asthma and **deliver medications by standing order**
- Sick patients do not receive appropriately intensive treatment on arrival
  - Use nurse triage information to **drive medication delivery according to hospitalization risk**
- MD – led process is extremely variable
  - Remove initiation of medications from rate-limiting MD
  - **Standardize** admission timing and criteria

# Who is at risk of hospitalization?

- **ESI 1:** 83% (50 per year)
- **ESI 2:** 80% (257 per year)
- **ESI 3:** 37% (210 per year)
- **ESI 4:** 5% (3 per year)
- **ESI 5:** 0% (0 per year)
- **CAS Severe:** 70%
- **CAS Moderate:** 59%
- **CAS Mild:** 27%

# What's happening now?



Consider all patients 12 months or older who describe their main problem as difficulty breathing, cough, or asthma. Suggestions/Concerns? mike.johnson@hsc.utah.edu text or call (801) 935-0503

**Step 1: IDENTIFY**

Triage RN

Ask parents: does this child have a history of either  
 1) diagnosed asthma or  
 2) prior episodes of wheezing needing albuterol Yes

If Yes to both

On your exam: is there difficulty breathing? Yes   
 remove barriers to a clear assessment (jackets, blankets, car seat)  
 tachypnea alone may or may not be a sign of difficulty breathing  
 clear signs of difficulty breathing include:  
 - retractions, grunting, or nasal flarin  
 - breathing interfering with speaking

note "asthma process" in PTS comments  
 place this form on chart and notify ED RN  
 mark QL Triage Acuity:  
 5 4 3 2 1

weight \_\_\_\_\_ kg  
 drug allergies: \_\_\_\_\_  
 NKDA

**Step 2: ORAL STEROID**

Has this child received any oral or IV steroid medicine in the last 12 hours?  
 Yes  No

weight in kg: 8 10 13 17 21 25+  
 Dose by weight  
 Give dexamethasone by mouth  
 Dose in mg: 6 8 10 12 14 16  
 Circle dose provided

initials / title \_\_\_\_\_ steroid time \_\_\_\_\_

**Step 3: INHALED TREATMENT**

Initiate treatment by Triage Acuity - Notify RT to assess ASAP, but do not wait to start treatment  
 - Administer oxygen to maintain SpO<sub>2</sub> of 88% or higher

5 4 3 2 1

Discuss treatment with LIP

Albuterol 0.083% inhaled  
 ALL WEIGHTS = 10 mg / 12 mL

Ipratropium (Atrovent) inhaled  
 ALL WEIGHTS = 1 mg / 5mL

Albuterol 0.083% inhaled  
 ALL WEIGHTS = 10 mg / 12 mL

Ipratropium (Atrovent) inhaled  
 ALL WEIGHTS = 1 mg / 5mL

IV magnesium sulfate  
 - document on RN chart -  
 - run over 20 minutes -  
 Requires separate LIP order on MD order sheet

initials / title \_\_\_\_\_ CAS \_\_\_\_\_ time \_\_\_\_\_  
 initials / title \_\_\_\_\_ albuterol/atrovent START time \_\_\_\_\_  
 initials / title \_\_\_\_\_ albuterol/atrovent END time \_\_\_\_\_

**Step 4: REASSESS**

Continue based on Clinical Asthma Score (CAS) 15 minutes after finishing initial treatment

0-3 4-10

initials / title \_\_\_\_\_ CAS \_\_\_\_\_ time \_\_\_\_\_

**Step 5: REFRACTORY TREATMENT OR OBSERVATION**

Albuterol 0.083% inhaled  
 ALL WEIGHTS = 10 mg / 12 mL

IV magnesium sulfate  
 - only if not already given -  
 - run over 20 minutes -  
 - document on RN chart -  
 Requires separate LIP order on MD order sheet

initials / title \_\_\_\_\_ albuterol START time \_\_\_\_\_  
 initials / title \_\_\_\_\_ albuterol END time \_\_\_\_\_

**Step 6: REASSESS**

Continue based on CAS after 2nd hour of treatment

0-6 7-10

initials / title \_\_\_\_\_ CAS \_\_\_\_\_ time \_\_\_\_\_  
 initials / title \_\_\_\_\_ CAS \_\_\_\_\_ time \_\_\_\_\_

Observe without further treatment for 60 minutes, then reassess CAS

Determine DISPOSITION using CRITERIA

Home CAS 0-3 AND SpO<sub>2</sub> > 88% on room air  
 RTU CAS 4-6 OR CAS 0-3 AND oxygen need < 3L  
 Floor CAS 4-8 AND needs continuous albuterol with FIO<sub>2</sub> < 0.6  
 ICU CAS 9-10 OR needs continuous albuterol with FIO<sub>2</sub> ≥ 0.6

Admit Team to consult in ED for CAS 7-8

initials title signature \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

PATIENT STAMP

Order 50261

Form CHEMR124, Revision 05/2016  
 PCH Emergency Department  
 Acute Asthma Standing Order Pilot

LIP signature + title \_\_\_\_\_ time + date \_\_\_\_\_

Triage RN screens and identifies asthma

↓

RN or RT gives steroid

↓

RN or RT start treatment based on triage acuity

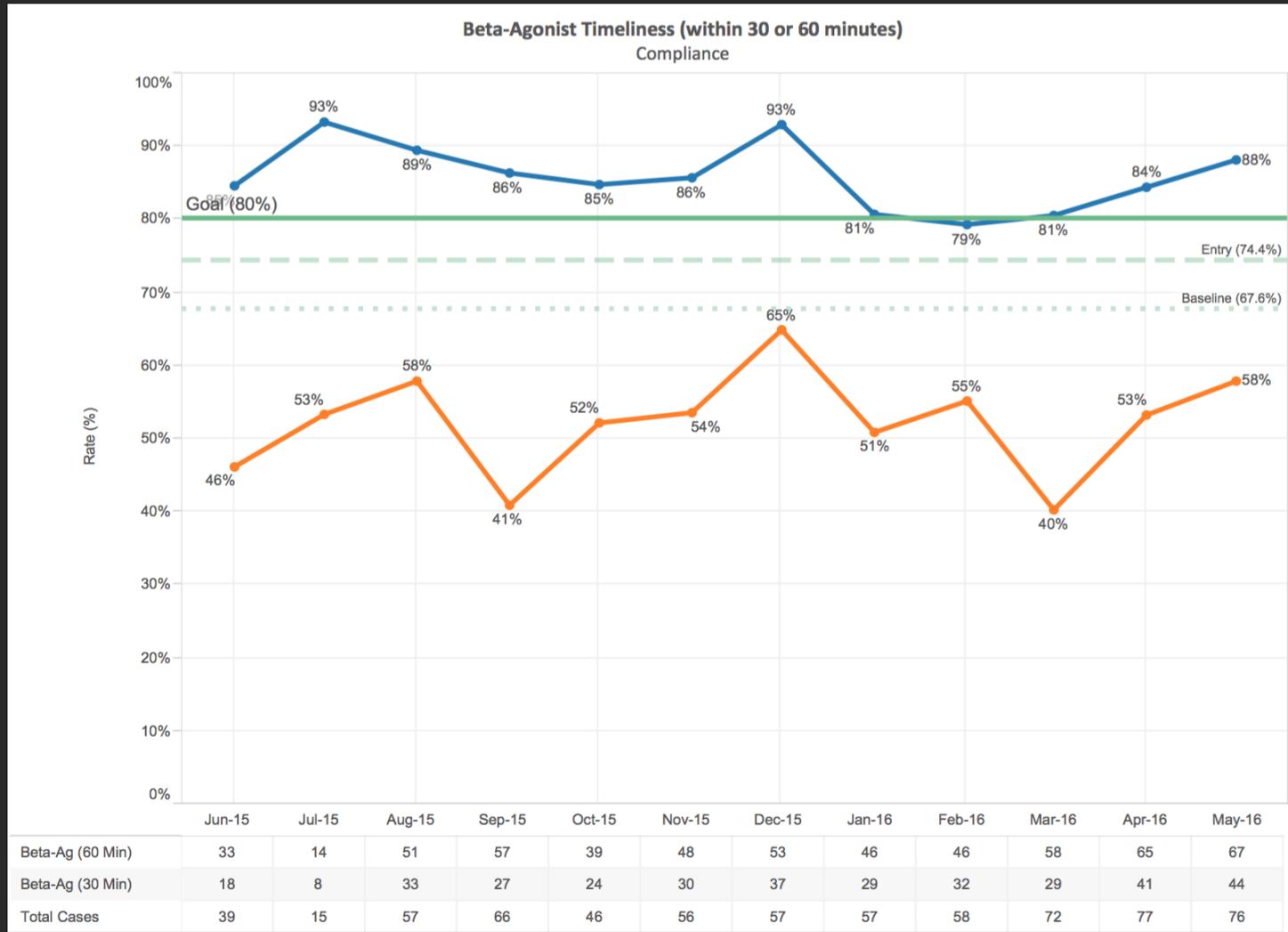
↓

RN or RT continue treatment based on asthma score

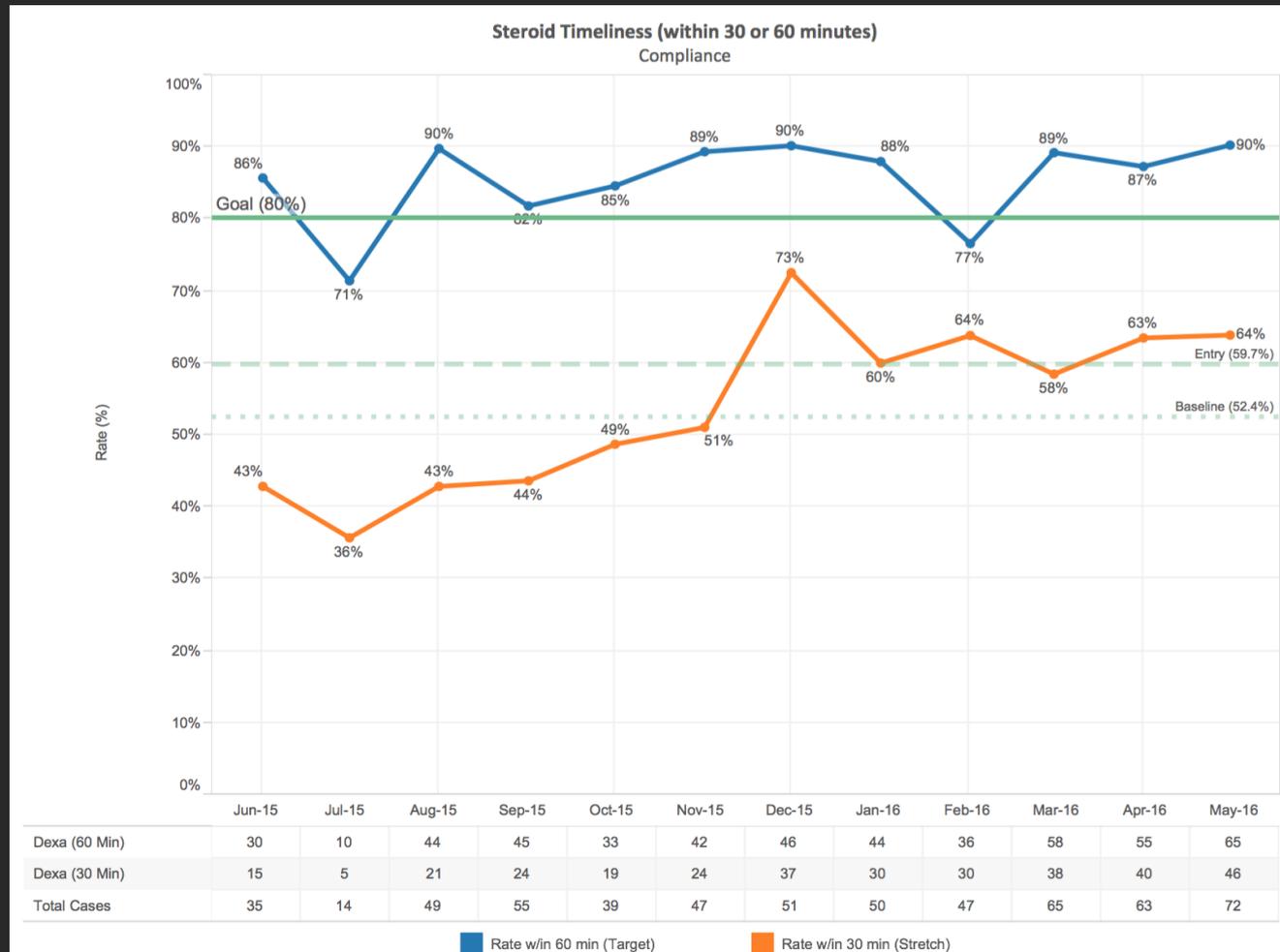
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MD decides disposition with structured assessment

# We deliver albuterol faster

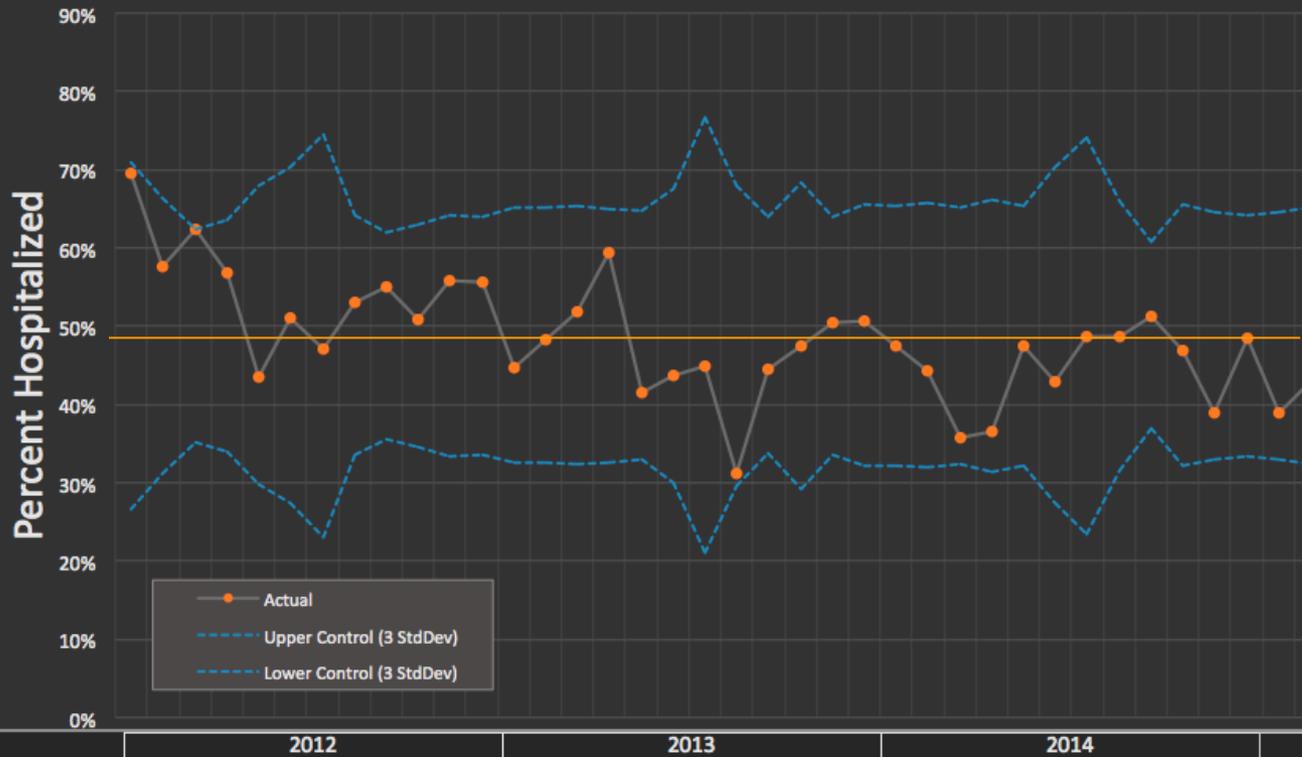


# We deliver steroid faster



# And hospitalizations after ED treatment?

## PCH Asthma Hospitalizations from ED



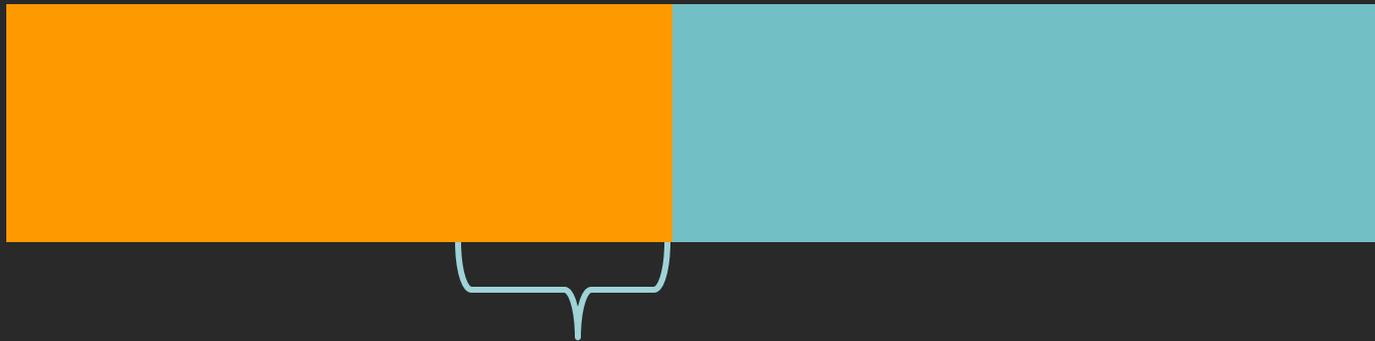
Organization: Primary Children's Hospital  
Requested by: Mike Johnson, MD  
Process Owner: Callie Thackeray, Systems Improvement

Design Version: , Data Last Updated: 03/01/2016  
Aggregate Control Limits: 3 std. deviations from mean (99.7% confidence level)  
Data Owner: Jeff Povilus, Systems Improvement

Data Sources: EDW (imcp.ed\_visit, cm.casemix\_smry, cdrdm.encounter\_los\_room)

# Outcomes - better than expected

- 706 patients June - May
- Anticipate ~ 344 admissions
- **115 fewer hospitalizations**



170 fewer patient days

# Who was involved?

Howard Kadish - Administrative Sponsor

## Investigation Team

Michael Mundorff MBA MHSA - Investigator

Mike Johnson MD MS- Investigator

## Design Team

Lauren Allen - Project Coordinator

Amanda Orme - ED Nurse Practitioner

Karmella Koopmeiners - PCH Clinical Nurse Specialist

Brandon Anderson - Respiratory Therapist

Nanette Dudley MD - ED QI Director

Bernhard Fassel - Hospitalist Physician

Kylie King - PCH Data Analyst

Mike Mundorff - Senior Data Analyst

## Implementation Team

Callie Thackeray - Project Coordinator

Cameron McFarland - ED Nurse Practitioner

Brandon Anderson - Respiratory Therapist

Jamee Crowder - ED Nurse Education Specialist

Nanette Dudley MD - ED QI Director

Jeffrey Povilus - PCH Data Analyst

Allison Neeley - PCH Data Specialist

## PCH ED

Nurses

Nursing Leadership

Respiratory Therapists

Physicians

Clerks

Billing and Coding

Medical Librarians

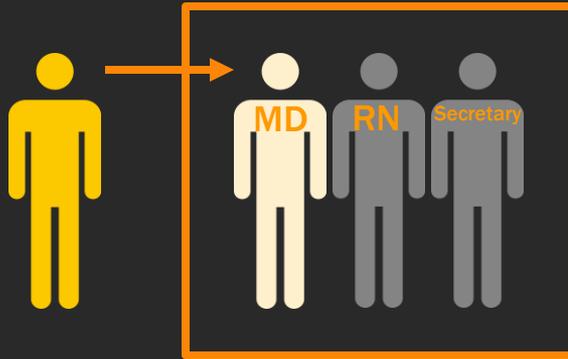
# Roles changed & patients benefited

- MD: from comprehensive “**orderer**” to big-picture decisions and customization
- RN: from treatment “**deliverer**” to owner of treatment process
- RT: from “**evaluator**” to expert partner in evaluation and treatment delivery

# Two contradictory modes of 'role'

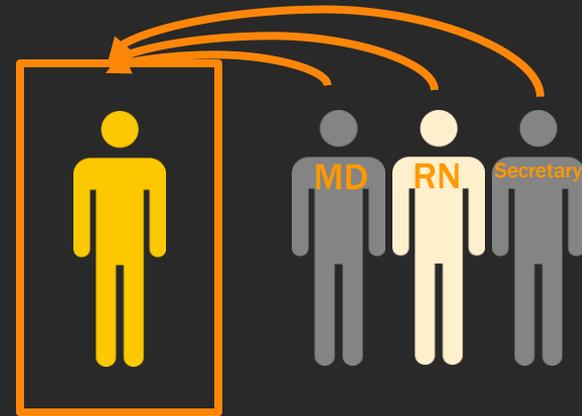
## Skilled Craftsman

*"Do my best"*



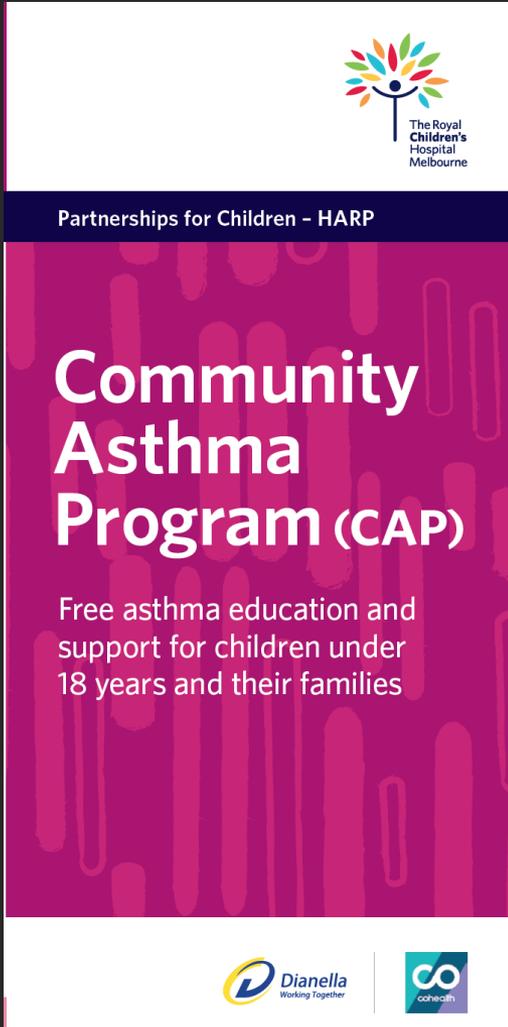
## System Member

*Evaluate and change*



# Chronic care

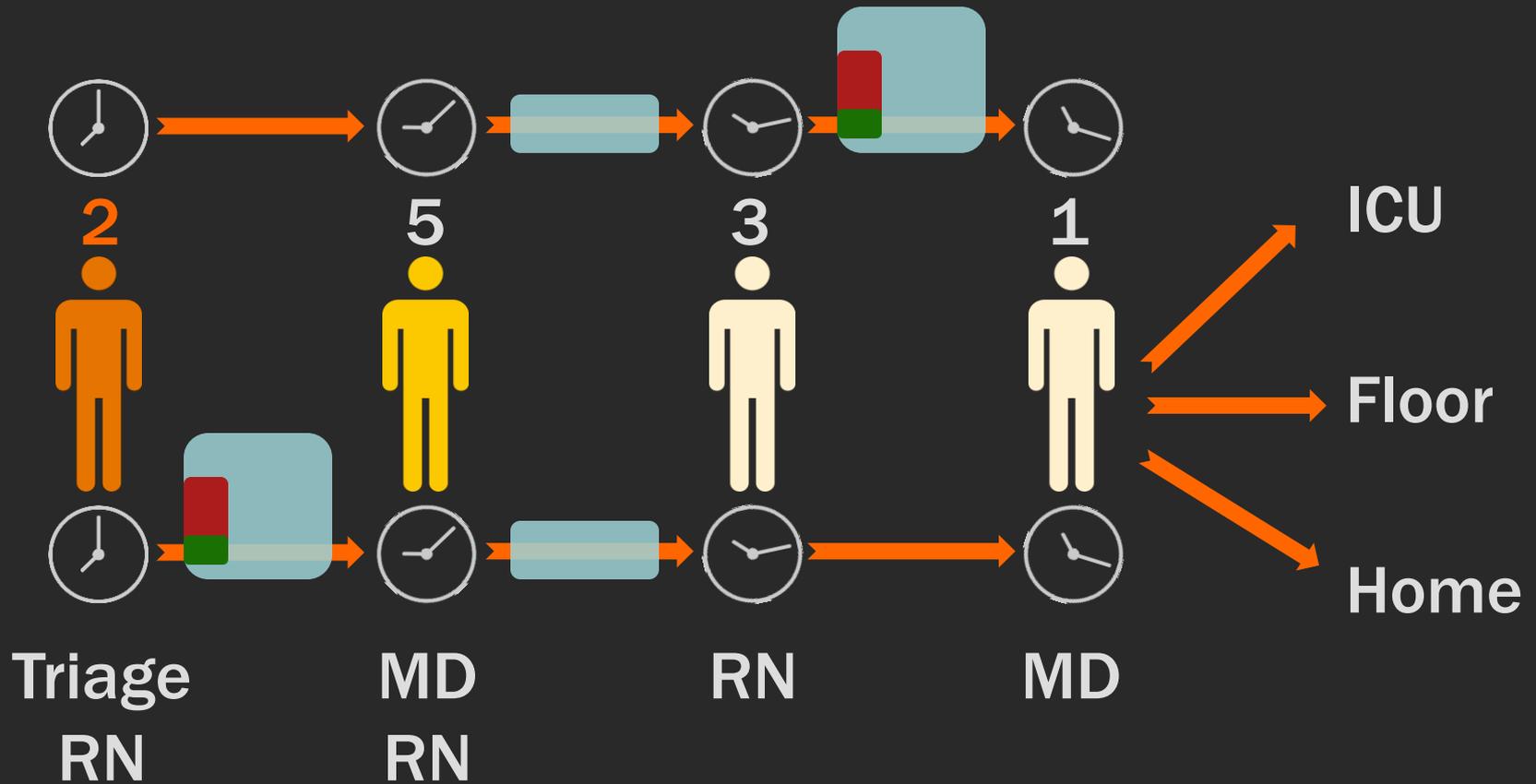
- Asthma management in Australia
  - Gateway system (data flagging)
  - Disease-specific streams (MD, nurses)
  - Assessment of needs (care facilitator)
  - Care coordination and facilitation (conference)
  - Education and action plans (care facilitator)
  - Facilitated access (referrals by care facilitator)
- Results
  - Reduced ED visits by **57%**
  - Reduced hospitalizations by **74%**



The flyer features a white header with the Royal Children's Hospital Melbourne logo (a stylized tree with colorful leaves) and the text 'The Royal Children's Hospital Melbourne'. Below this is a dark blue horizontal band with the text 'Partnerships for Children - HARP'. The main body of the flyer has a pink background with a pattern of vertical, rounded rectangular shapes. The title 'Community Asthma Program (CAP)' is written in large, white, sans-serif font. Below the title, the text 'Free asthma education and support for children under 18 years and their families' is written in a smaller white font. At the bottom of the flyer, there are two logos: 'Dianella Working Together' (a blue and yellow circular logo) and 'cohealth' (a blue square logo with a white infinity symbol).

Bird SR et al. Integrated care facilitation model reduces use of hospital resources by patients with pediatric asthma. J Healthc Qual. 2012;34(3):25-33.

# Look familiar?



# Bridging care areas

- Utah Department of Health
  - Gateway system
  - Disease-specific streams
  - Assessment of needs
  - Care coordination and facilitation
  - Education and action plans
  - Facilitated access



**Utah Asthma Home Visiting Program**

In this free program, you will work with a health educator to learn about asthma and make your home asthma-friendly. Offered only in Salt Lake and Utah Counties.

In 2015, the Utah Asthma Program and partners from the Asthma Task Force developed the Utah Asthma Home Visiting Program. The program will help families of children with asthma who have uncontrolled asthma. The program includes three visits and two phone calls.

**Visit 1**  You will learn more about asthma symptoms, triggers, medications, and inhaler technique.

↓ 2-3 weeks

**Visit 2**  You will walk through your home to identify asthma triggers, then set goals to reduce these triggers.

↓ 4-6 weeks

**Visit 3**  You will discuss progress on controlling your asthma and reducing triggers.

↓ 6 months

**Call 1**  You will get a phone call 6 months after completing visit 3 to talk about your questions or concerns.

↓ 6 months

**Call 2**  You will get a phone call 12 months after completing visit 3 to talk about your questions or concerns.

Currently, the program is available only in Utah County and Salt Lake County. The Utah Asthma Program hopes to expand the program to all parts of Utah. To enroll in the program, use the contact information below:

**For more information, contact**  
**Salt Lake County Health Department (385) 468-4085**  
**Utah County Health Department (801) 851-7509**

<http://health.utah.gov/asthma/homevisit/index.html>

# Bridging care areas

- **Utah Department of Health**
  - Gateway system
  - Disease-specific streams
  - Assessment of needs
  - Care coordination and facilitation
  - Education and action plans
  - Facilitated access
- **Primary Children's**
  - Gateway system
  - Disease-specific streams
  - Facilitated access



+



# The Medical Home

- **Crosses physical boundaries**
- **Requires new relationships**
- **Roles need to be tailored to patient needs**
- **Evaluation is needed to know what is needed**
- **Change is necessary and must be focused on improving health**

**Thank You!**

# Tell me!

[mike.johnson@hsc.utah.edu](mailto:mike.johnson@hsc.utah.edu)

(801) 935-0503