Pediatric Sepsis

"Reducing Excessive Variability in Infant Sepsis Evaluation" (R.E.V.I.S.E)

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New Jersey Hospital Association

New Jersey Sepsis Learning Action Collaborative

Wednesday September 19th, 2018

Onsite Neonatal Partners

- *Onsite Neonatal Partners* is a national 24/7 in-house neonatology practice that partners with leading hospitals across the country to develop and manage neonatology programs that are patient centered, evidence-based, and financially viable

Our *Passion*
Makes Us The Best

SHORE MEDICAL CENTER

Shore Medical Center

- Full-service acute care community hospital
- Six Centers of Excellence:

  -Advanced Spine & Orthopedic Institute

  -Cancer Center

  -Cardiovascular Services

  -Emergency Department

  -Maternity & Pediatrics

  -Neurosciences Center

Shore Medical Center

- **1st** and **ONLY** Planetree patient friendly hospital designated in NJ
- 1,200 Employees
- Eight **A**s in Leap Frog quality measures

Objectives

- Identify steps in development of a policy, documentation and screening for pediatric sepsis
- Compare and contrast sepsis in pediatrics versus other populations

The Journey…

- October 2015, NJ began journey to address sepsis in adult patients….
  - The organization made a decision to address *all populations* (Adult, OB, Pediatrics)
- 2017, AAP project REVISE addressing neonatal/pediatric sepsis

The Journey…

Peds are different

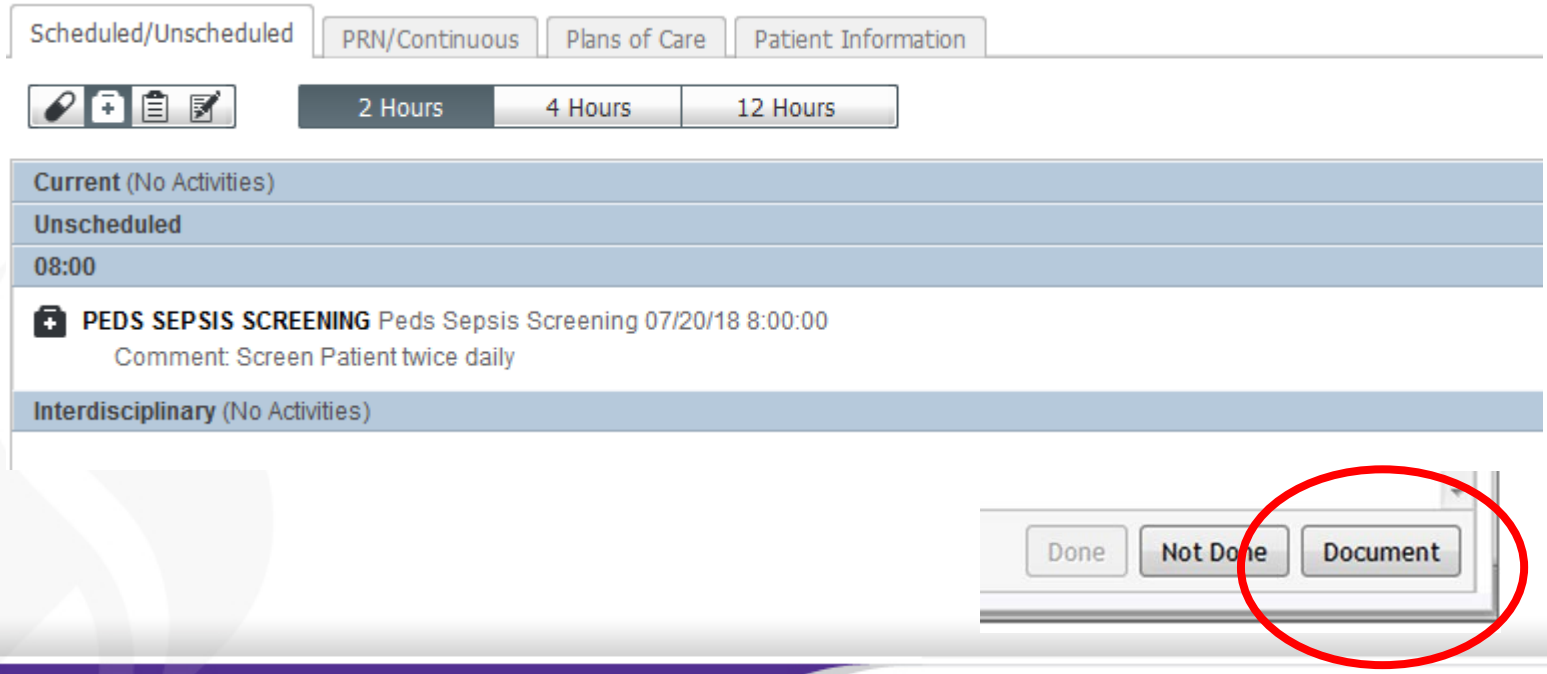
- RNs cannot memorize all “Normals” for each age in peds
- Kids run fevers and are not septic (not easily identified)
- Procedures take longer in kids

What we did..

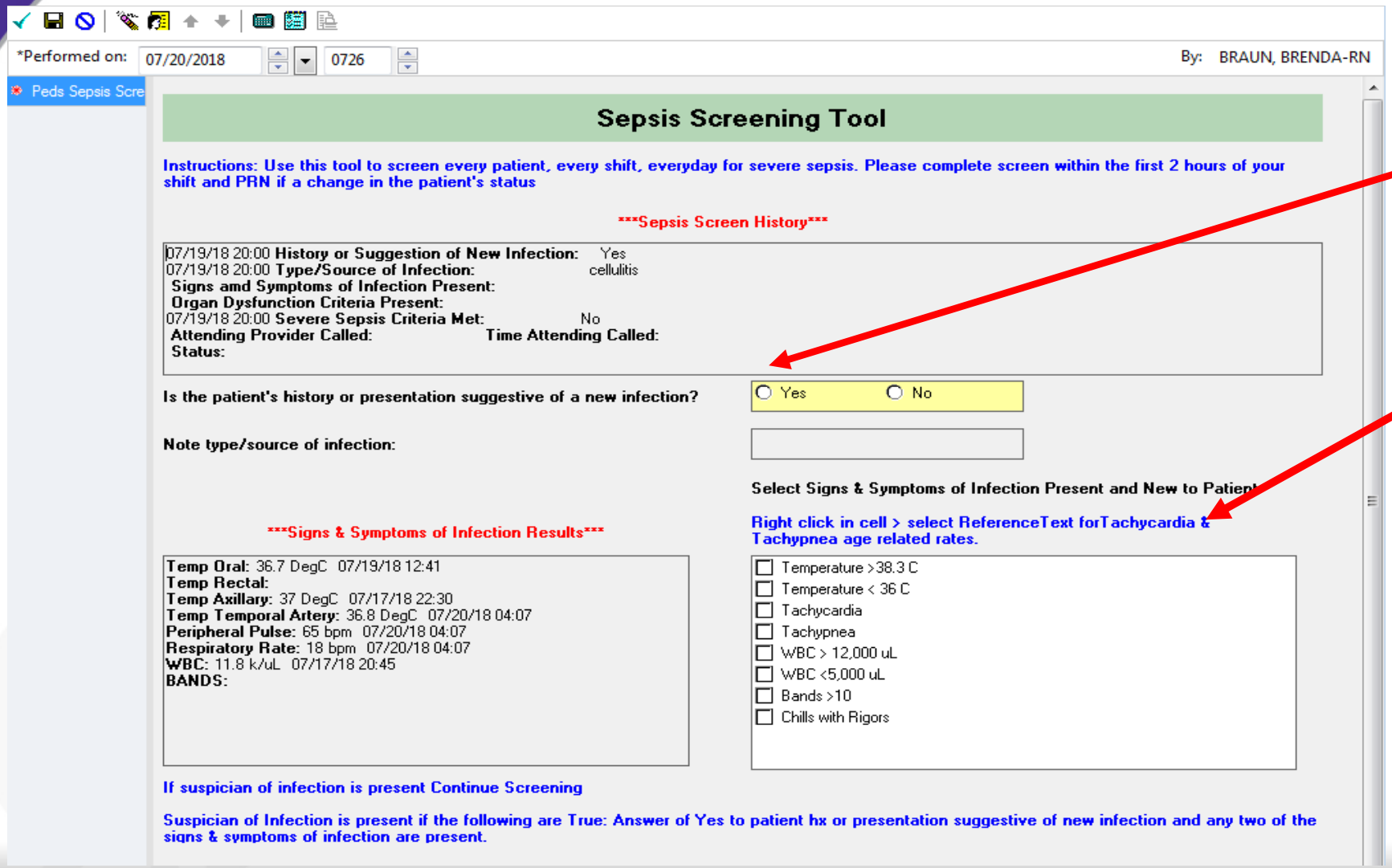
- User friendly resources
- Changes time zero
- IVs, labs, etc.

The Tool

This “fires” every 12 hours for all pediatric inpatients on nursing task list. It is also completed on all ED pediatric patients upon arrival to peds ED



The Tool


*Performed on: 07/20/2018 0726
By: BRAUN, BRENDA-RN
Peds Sepsis Scre
Sepsis Screening Tool
Instructions: Use this tool to screen every patient, every shift, everyday for severe sepsis. Please complete screen within the first 2 hours of your shift and PRN if a change in the patient's status
Sepsis Screen History
07/19/18 20:00 History or Suggestion of New Infection: Yes
07/19/18 20:00 Type/Source of Infection: cellulitis
Signs amd Symptoms of Infection Present:
Organ Dysfunction Criteria Present:
07/19/18 20:00 Severe Sepsis Criteria Met: No
Attending Provider Called: Time Attending Called:
Status:
Is the patient's history or presentation suggestive of a new infection?
Yes No
Note type/source of infection:
Select Signs & Symptoms of Infection Present and New to Patient
Right click in cell > select ReferenceText forTachycardia & Tachypnea age related rates.
Signs & Symptoms of Infection Results
Temp Oral: 36.7 DegC 07/19/18 12:41
Temp Rectal:
Temp Axillary: 37 DegC 07/17/18 22:30
Temp Temporal Artery: 36.8 DegC 07/20/18 04:07
Peripheral Pulse: 65 bpm 07/20/18 04:07
Respiratory Rate: 18 bpm 07/20/18 04:07
WBC: 11.8 k/uL 07/17/18 20:45
BANDS:
Temperature >38.3 C
Temperature < 36 C
Tachycardia
Tachypnea
WBC > 12,000 uL
WBC <5,000 uL
Bands >10
Chills with Rigors
If suspician of infection is present Continue Screening
Suspician of Infection is present if the following are True: Answer of Yes to patient hx or presentation suggestive of new infection and any two of the signs & symptoms of infection are present.

The Tool

Reference

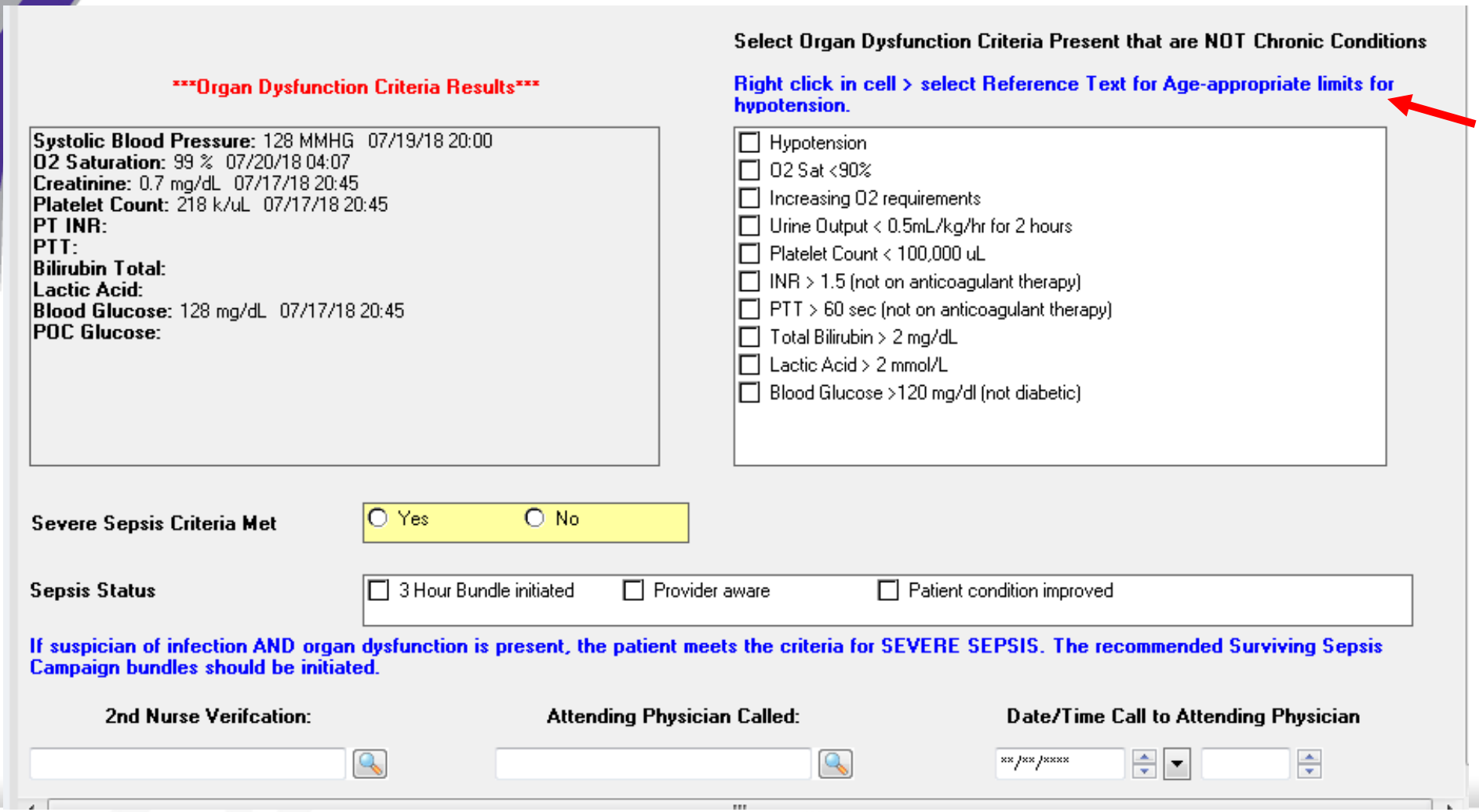
Peds Sepsis S/S of Infection Present

CarePlan information | Chart guide | Nurse preparation | Pa

Sepsis S/S Peds of Infection Present

	Heart Rate, Beats/Min		Respiratory rate Breaths /min
	Tachycardia	Bradycardia	
0 days – 1 wk	>180	<100	>50
1 wk - 1 mo	>180	<100	>40
1 mo – 1 yr	>180	<90	>34
2 – 5 yrs	>140	NA	>22
6 – 12 yrs	>130	NA	>18
13 to <18 yrs	>110	NA	>14

The Tool


Organ Dysfunction Criteria Results
Systolic Blood Pressure: 128 MMHG 07/19/18 20:00
O2 Saturation: 99 % 07/20/18 04:07
Creatinine: 0.7 mg/dL 07/17/18 20:45
Platelet Count: 218 k/uL 07/17/18 20:45
PT INR:
PTT:
Bilirubin Total:
Lactic Acid:
Blood Glucose: 128 mg/dL 07/17/18 20:45
POC Glucose:
Select Organ Dysfunction Criteria Present that are NOT Chronic Conditions
Right click in cell > select Reference Text for Age-appropriate limits for hypotension.
Hypotension
O2 Sat <90%
Increasing O2 requirements
Urine Output < 0.5mL/kg/hr for 2 hours
Platelet Count < 100,000 uL
INR > 1.5 (not on anticoagulant therapy)
PTT > 60 sec (not on anticoagulant therapy)
Total Bilirubin > 2 mg/dL
Lactic Acid > 2 mmol/L
Blood Glucose >120 mg/dl (not diabetic)
Severe Sepsis Criteria Met
Yes
No
Sepsis Status
3 Hour Bundle initiated
Provider aware
Patient condition improved
If suspician of infection AND organ dysfunction is present, the patient meets the criteria for SEVERE SEPSIS. The recommended Surviving Sepsis Campaign bundles should be initiated.
2nd Nurse Verifcation:
Attending Physician Called:
Date/Time Call to Attending Physician
//****

The Tool

Peds Sepsis Organ Dys Criteria Present

CarePlan information | Chart guide | Nurse preparation | Patient

Age-appropriate limits for hypotension	
Age Group	**Systolic Blood Pressure, mm Hg**
Newborn – 30 days	≤ 60
1 mo - <1 yr	≤ 70
> 1 year – 10 yrs	≤ 70 + 2x (age in years)
≥ 10 yrs	< 90

The Procedure

Introduction

The use of "Pediatric sepsis order set" in ED is preferred when taking care of pediatric patients with fever without obvious source.

To assist during patient's work up, verification and consideration of the child's immunization history is important.

Recommendations

For pediatric fever, age less than 28 days

1. RN completes sepsis screening, notify provider of findings.
2. Diagnostic testing:
    a. CBC with Differential
    b. CMP
    c. Blood culture
    d. Urinalysis
    e. Urine Culture (Catheterized)
    f. CSF panel including Herpes (HSV) PCR and Enterovirus PCR
    g. CXR/RSV/Flu/RVP: if URI symptoms are present
    h. Stool culture and WBC stool (fecal leukocytes): if Diarrhea is present
3. Intravenous antibiotics to be started in the ED:
    a. Ampicillin and gentamicin
4. Consider intravenous acyclovir empirically in full term infants under 4 weeks of age and preterm infants under 32 weeks gestation who are under 8 weeks old secondary to an increased risk of herpes infection, especially if:
    a. History of HSV lesions in mother in 3rd trimester
    b. Skin lesions suspicious for HSV on infant

The Procedure

c. Ill appearing infant
d. Seizure associated with this acute illness
e. Abnormal LFTs (over 100s for SGOT/SGPT)
f. CSF pleocytosis (clinical judgment if bloody tap)

5. Admit to Pediatric Floor

For pediatric fever, age between 28 and 90 days

1. RN completes sepsis screening, notify provider of findings.
2. Toxic appearance proceed workup as in 2 above but treat with intravenous ceftriaxone alon
3. Non-toxic appearance:
    a. CBC with Differential
    b. CMP
    c. Blood culture
    d. Urinalysis
    e. Urine Culture (Catheterized)
    f. Lactate

The Procedure

g. CXR/RSV/Flu/RVP: if respiratory symptoms present
h. Stool culture and fecal leukocytes: if Diarrhea is present
i. Lumbar Puncture
    i. In infants 4-8 weeks old AND with the presence of all Low Risk Criteria (see below)
    ii. Delay or omit a lumbar puncture if:
        1. There is available and reliable follow-up in 12-24 hours
        2. Healthcare provider is confident that parents will use appropriate follow-up skills/reliable parents as per HCP
        3. PCP is notified and family agrees with plan
        4. Antibiotic therapy will not be initiated

4. Disposition:
    a. ED workup is negative and child meets low risk criteria, consider discharge assuming:
        i. There is available and reliable follow-up in 12-24 hours
        ii. Healthcare provider is confident that parents will use appropriate follow-up skills
        iii. PCP is notified and family agrees with plan
        iv. Antibiotic therapy will not be initiated
    b. Consider admission, lumbar puncture and treatment with antibiotics if child does not meet Low Risk Criteria

Pediatric fever, age between 3 and 36 months

1. RN completes sepsis screening, notify provider of findings.
2. Diagnostic testing IF
    a. Toxic appearance proceed as in 2 above but treat with intravenous ceftriaxone
    b. Non-toxic appearance:

The Procedure

b. Non-toxic appearance:
    i. In this scenario, the physical exam will best guide the management and plan. However, for fever >48 hours with no reliable source consider checking urine.
        1. Catheterized urinalysis only if:
            a. Male <6 months, circumcised
            b. Male < 1 year, non-circumcised
            c. Female < 2 years
            d. If bagged UA is positive, then must obtain Urine Culture (Catheterized)
        2. If Diarrhea present: Stool culture and WBC
        3. If respiratory symptoms present: CXR/RSV/Flu/RVP
        4. If ED work-up is negative, patient is well appearing, follow up is Reliable, then discharge with 24 hours follow up

Toxic appearance/Pediatric Shock States and Severe Sepsis

1. Assess and triage as per policy
2. Apply oxygen via non-rebreather or nasal CPAP
3. Administer isotonic crystalloid solutions via intravenous or intraosseous bolus of 20mL/kg over 5-10 minutes up to 3 boluses or as ordered by prescriber.
    a. End goals are:
        i. Capillary refill under 2 seconds
        ii. Normal blood pressure
        iii. Urine output over 1mL/kg.hour
        iv. Normal mental status
        v. Normal pulses with no differences between peripheral and central pulses
4. Reassess after each bolus.

The Procedure

Based on this struggle we began to look at specific populations and looked at national collaboratives…

5. Antibiotic initiation within one hour.
    a. Consider intravenous clindamycin and anti-toxin therapies for toxic shock syndromes with refractory hypotension.

Sepsis Kills.

250,000 Americans die each year from sepsis.
That's more than from AIDS, breast cancer and prostate cancer COMBINED. Sepsis is the body's life-threatening reaction to an infection. Anyone can get sepsis. A small cut, a bug bite or an infected tooth can all lead to sepsis.

Sepsis is preventable and treatable.

Do you know the Signs of Sepsis?

Fever/ Shivering or Very Cold

Rapid Breathing

Extreme Pain/ Physical Discomfort

Pale or Mottled Skin

Disoriented/ Confused & Sleepy/Difficult to Wake

Elevated Heart Rate

THE RORY STAUNTON FOUNDATION
FOR SEPSIS PREVENTION

Help Save Lives. Share the Signs of Sepsis with your family and friends.
For more information, visit **www.rorystauntonfoundationforsepsis.org**

Pediatric Sepsis

- What's going on nationally?
- How can be a part of a national collaborative?
- How do our benchmarks compare to the national ones?
- Is there an opportunity to do a Quality Improvement Project?

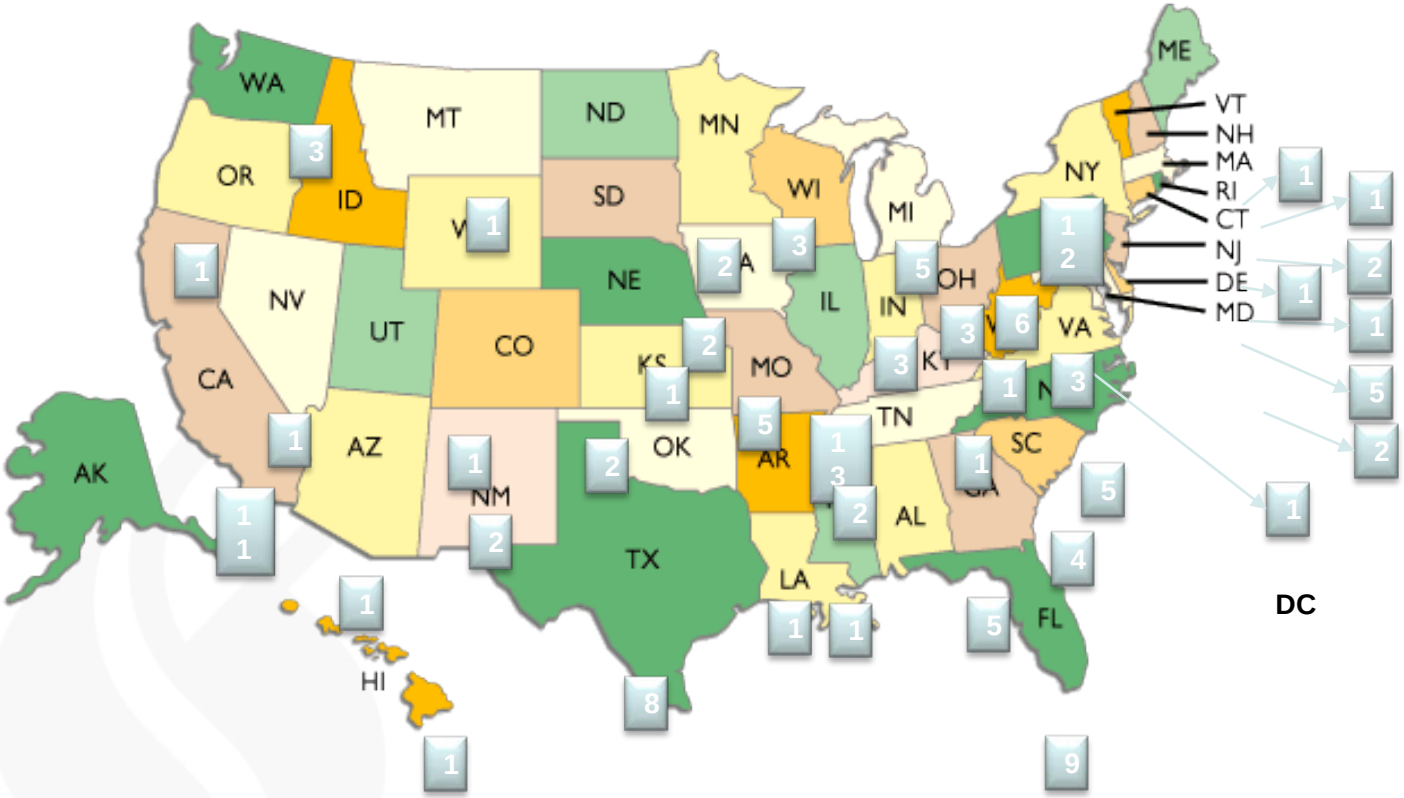
Institute for Healthcare Improvement
Triple Aim

- Improving individual experience of care
- Improving the health of populations
- Reducing per-capita healthcare costs

Reducing Excessive Variability in Infant Sepsis Evaluation (R.E.V.I.S.E.) Quality Improvement Project

SLIDES SHARED WITH PERMISSION FROM EBIONDI, RMCCULLOH, BBARSOTTI "REVISE: ORIENTATION WEBINAR" ORIGINALLY PRESENTED 10/31/16 TO THE VIP NETWORK PROJECT REVISE QI PROJECT TEAMS

133 Teams Participating in Project REVISE



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How will we manage this large collaborative?

Listserv

Email/Phone

Meet Deadlines

Background

Fever in infants is very common resulting in trips to the hospital and/or emergency room

The clinical management of fever in infants has been a topic of much ambiguity for decades

Despite available research, fever management remains extremely variable from hospital to hospital

This collaborative improvement project seeks to build a national QI collaborative designed to improve and standardize care for febrile infants between the ages of 7 to 60 days

Project Aim

Provide multi-disciplinary teams with quality improvement education and tools specific to management of children with fever to increase compliance with the evidence-based research and thereby decrease overuse of non-evidence-based therapies and tests.

Overall Project Timeline (Tentative)

Pre-work Period:	Action/Intervention Period:	Wrap-up & Data Analysis (February – March 2018)
• Gain hospital leadership buy-in to project participation • Obtain local IRB approval (if necessary) • Remit payment for participation as outlined in consent form • Watch data entry webinar offered by QIDA (required for Group Administrator) • Submit 12-month retrospective baseline data in QIDA (representing September 2015 – August 2016 charts) • Complete Pre-project survey • Participate in 1-2 webinars (QI Basics and Introduction to the Change Package)	• Participate in up to 10 periodic learning session webinars • Collect monthly data for 12 months between December 2016 – November 2017 • Test changes using PDSA cycles • Provide feedback on tools	
October - December	**January 2017 – January 2018**	

INCLUSIONS AND EXCLUSIONS

Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
• Age 7 through 60 days • Evaluated in site ED or transferred to site inpatient unit from an outpatient setting • Evaluated for fever without a source • Discharged from site ED or inpatient unit	• Infant was not well-appearing on presentation • Co-morbid conditions predisposing to severe or recurrent bacterial illness, including genetic, congenital, chromosomal, neuromuscular, or neurodevelopmental abnormalities. • Transfer to or from site inpatient hospital from another inpatient setting

Metric Evidence

Metric 1: Increase proportion of appropriately hospitalized infants

TWO COMPONENTS TO THIS METRIC, MUST FUFILL ALL OF THEM TO GET CREDIT

WORKUP (meant to mimic risk stratification criteria) *MUST* INCLUDE:

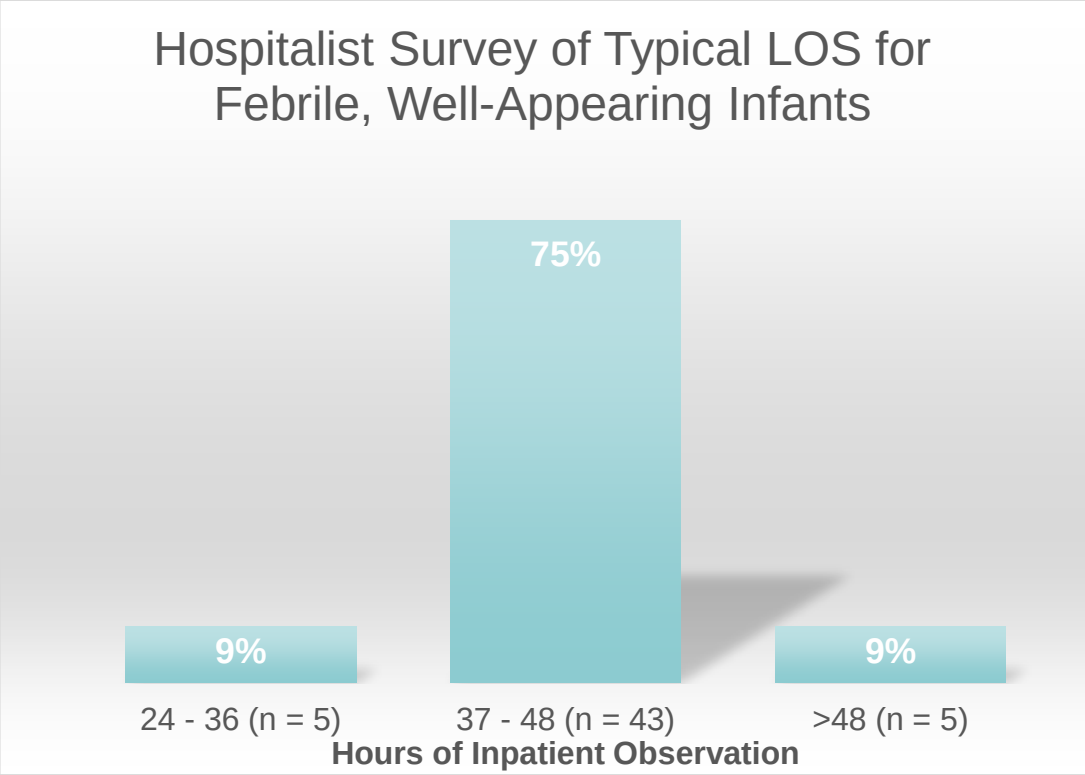
- ❑ Urinalysis
- ❑ Inflammatory Marker (e.g. CBC, CRP, Procalcitonin)

APPROPRIATE PATIENTS TO ADMIT (meant to mimic risk stratification criteria):

- ❑ Less than 30 days at time of presentation
- ❑ Abnormal urinalysis
- ❑ Abnormal inflammatory marker (e.g. CBC, CRP, Procalcitonin)
- ❑ Past medical history or social concern suggestive of need for hospitalization

TARGET: 90%

Metric 2: Increase the proportion of hospitalized infants discharged in an appropriate time frame for their risk category
(low risk <30 hours and non-low risk <42 hours)



Biondi E, et al. Peds in Review. 2013;34(3)

Metric 2: Increase the proportion of hospitalized infants who are discharged in an appropriate time frame for their risk category (low risk <30 hours and non-low risk <42 hours)

12. Was the infant admitted to your hospital (includes through the ED or as a direct admission from an outside ED, urgent care or other outpatient setting)?

◯ Yes ◯ No

12A. How many hours was the hospitalization (inclusive of ED visit it it occurred at your institution) from the time of first recorded vital sign to time of placement of the discharge order?

☐ hours

TARGET: 80%

Metric 3: Increase the proportion of infants who have a urinalysis (UA) performed via any method of collection within 24 hours of presentation

METRIC 3: URINALYSIS UTILIZATION

18. Was a urinalysis performed within 24 hours before or after arrival to the ED or, if a direct admission to your hospital, within 24 hours before or after arrival on the inpatient unit?

○ Yes ○ No

TARGET: >95%

Metric 4: Decrease proportion of infants receiving a CXR within 24 hours of presentation without documented respiratory symptoms

METRIC 4: CHEST X-RAY UTILIZATION WITHIN 24 HOURS OF INITIAL ENCOUNTER

19. Did the patient have documented respiratory symptoms within 24 hours arrival to the ED or, if a direct transfer to your hospital, within 24 hours before or after arrival on the inpatient unit?

○ Yes ○ No

20. Did the patient receive a chest x-ray within 24 hours PRIOR TO presentation at your institution (e.g. an infant who arrives to your ED after having a chest x-ray done at an urgent care clinic)?

○ Yes ○ No

21. Did the patient receive a chest x-ray within 24 hours after arrival to the ED or, if a direct admission to your hospital, arrival on the inpatient unit?

○ Yes ○ No

TARGET: <10%

Metric 5: Increase proportion of infants who receive only recommended empiric antibiotic regimens within 24 hours of presentation

MERTIC 5: EMPIRIC ANTIBIOTICS WITHIN 24 HOURS OF INITIAL ENCOUNTER

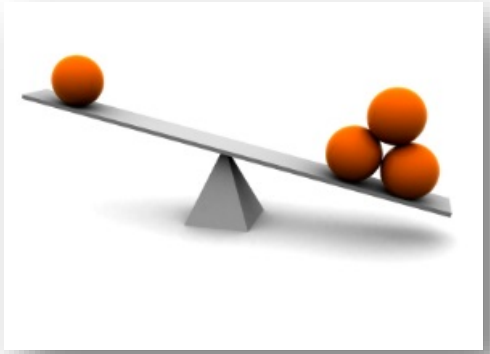
22. Please select the answer that best describes ALL the antibiotics the patient received within 24 hours after arrival to your E[redacted] direct admission to your hospital , arrival on your inpatient unit? The answer should not include arrivals.

- ◎ No antibiotics were administered
- ◎ Monotherapy or combination therapy with ampicillin, amikacin, gentamicin, or a 3rd generation cephalosporin
- ◎ Any other antibiotic or combination of antibiotics

TARGET: >90%

Balancing Measure

Missed serious bacterial infection: Decrease proportion of patients diagnosed within 7 days of treat and release or discharge with UTI, bacteremia or meningitis (<2%)



Brief Introduction to the Project R.E.V.I.S.E. Change Package

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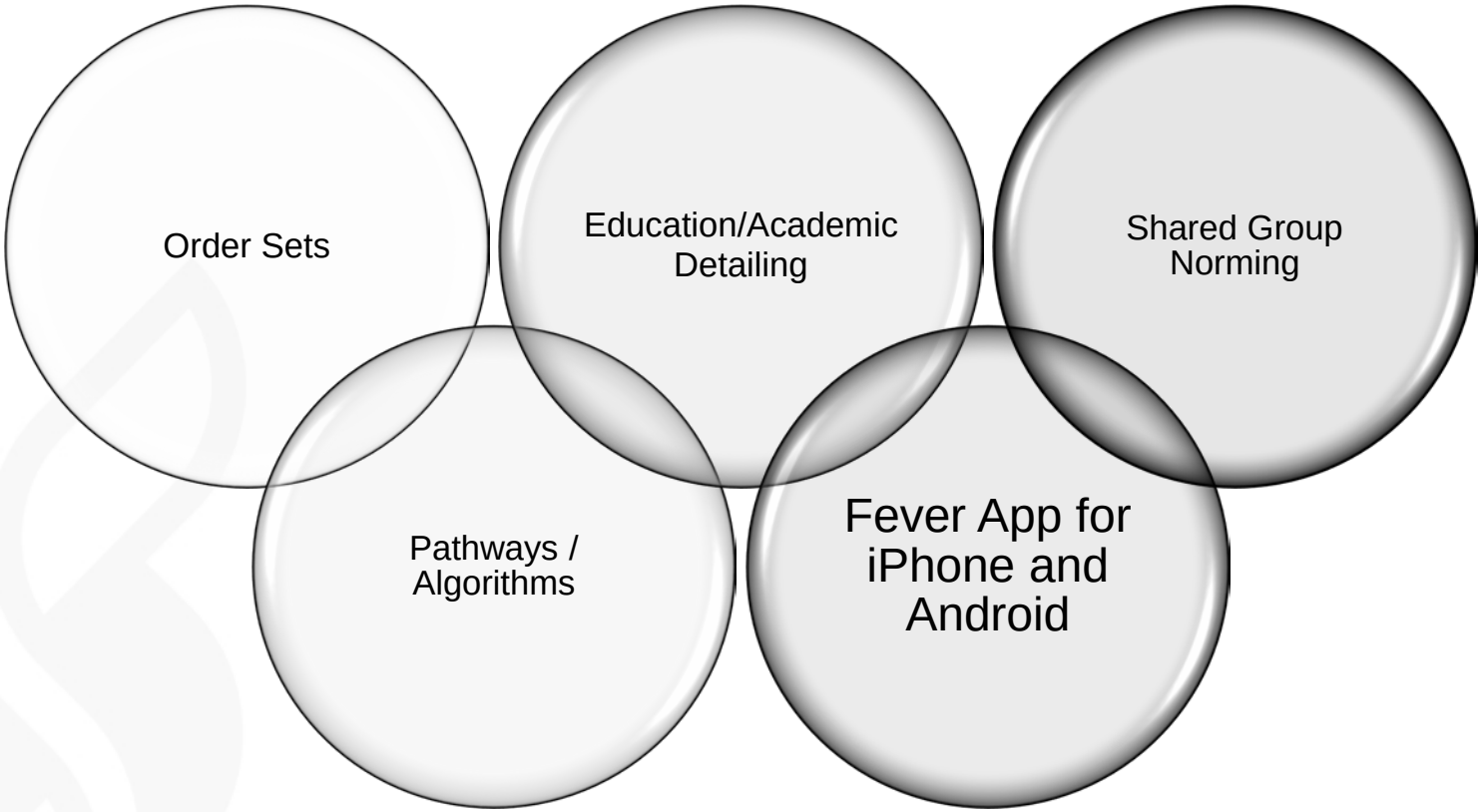
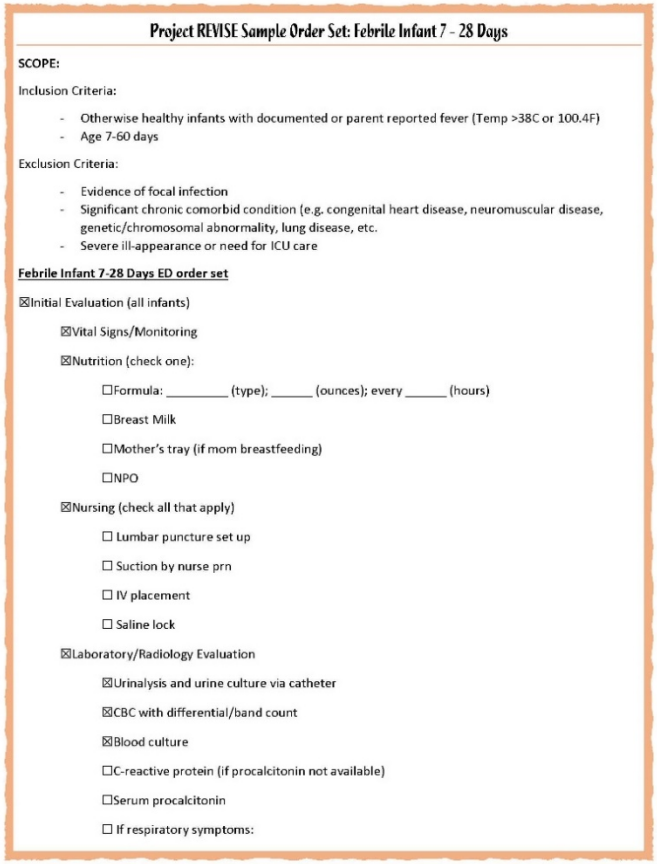
Change Package Resources & Tools



Order sets



Project REVISE Sample Order Set: Febrile Infant 7 - 28 Days

SCOPE:

Inclusion Criteria:

- Otherwise healthy infants with documented or parent reported fever (Temp >38C or 100.4F)
- Age 7-60 days

Exclusion Criteria:

- Evidence of focal infection
- Significant chronic comorbid condition (e.g. congenital heart disease, neuromuscular disease, genetic/chromosomal abnormality, lung disease, etc.
- Severe ill-appearance or need for ICU care

Febrile Infant 7-28 Days ED order set

☒Initial Evaluation (all infants)

☒Vital Signs/Monitoring

☒Nutrition (check one):

☐Formula: _____ (type); _____ (ounces); every _____ (hours)

☐Breast Milk

☐Mother's tray (if mom breastfeeding)

☐NPO

☒Nursing (check all that apply)

☐ Lumbar puncture set up

☐ Suction by nurse prn

☐ IV placement

☐ Saline lock

☒Laboratory/Radiology Evaluation

☒Urinalysis and urine culture via catheter

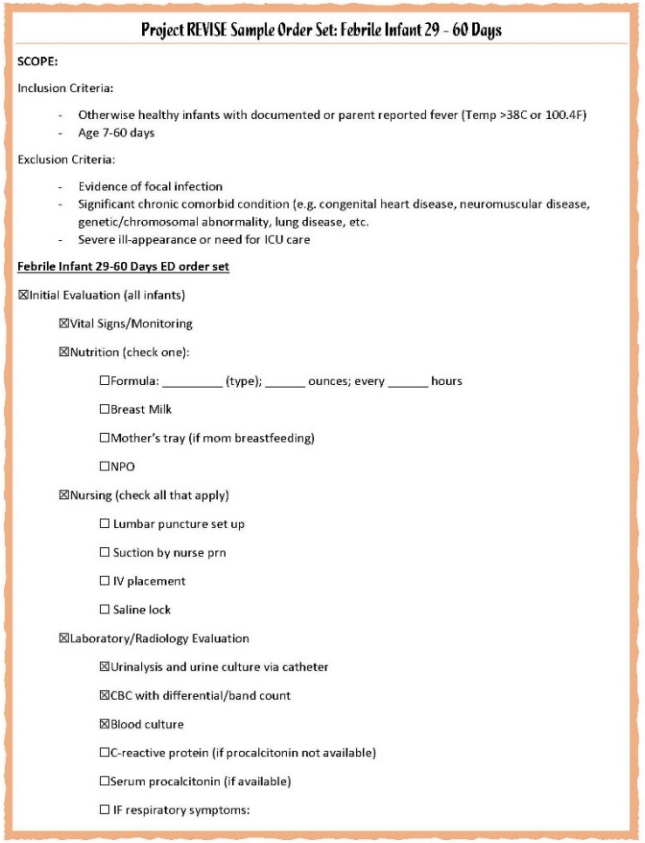
☒CBC with differential/band count

☒Blood culture

☐C-reactive protein (if procalcitonin not available)

☐Serum procalcitonin

☐ If respiratory symptoms:



Project REVISE Sample Order Set: Febrile Infant 29 - 60 Days

SCOPE:

Inclusion Criteria:

- Otherwise healthy infants with documented or parent reported fever (Temp >38C or 100.4F)
- Age 7-60 days

Exclusion Criteria:

- Evidence of focal infection
- Significant chronic comorbid condition (e.g. congenital heart disease, neuromuscular disease, genetic/chromosomal abnormality, lung disease, etc.
- Severe ill-appearance or need for ICU care

Febrile Infant 29-60 Days ED order set

☒Initial Evaluation (all infants)

☒Vital Signs/Monitoring

☒Nutrition (check one):

☐Formula: _____ (type); _____ ounces; every _____ hours

☐Breast Milk

☐Mother's tray (if mom breastfeeding)

☐NPO

☒Nursing (check all that apply)

☐ Lumbar puncture set up

☐ Suction by nurse prn

☐ IV placement

☐ Saline lock

☒Laboratory/Radiology Evaluation

☒Urinalysis and urine culture via catheter

☒CBC with differential/band count

☒Blood culture

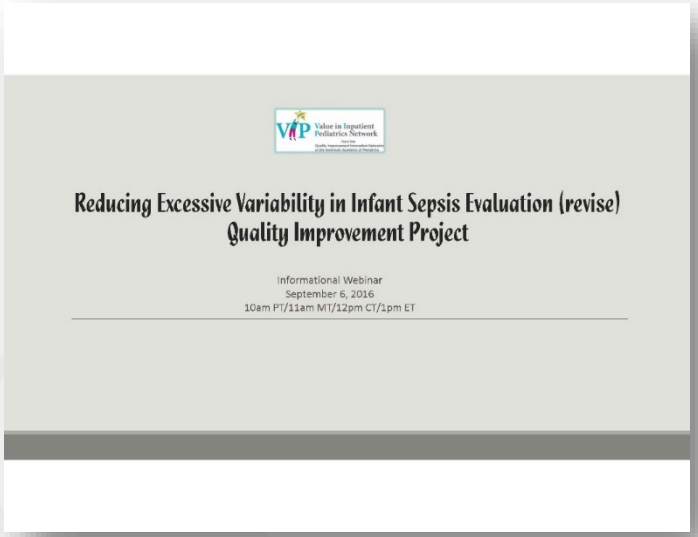
☐C-reactive protein (if procalcitonin not available)

☐Serum procalcitonin (if available)

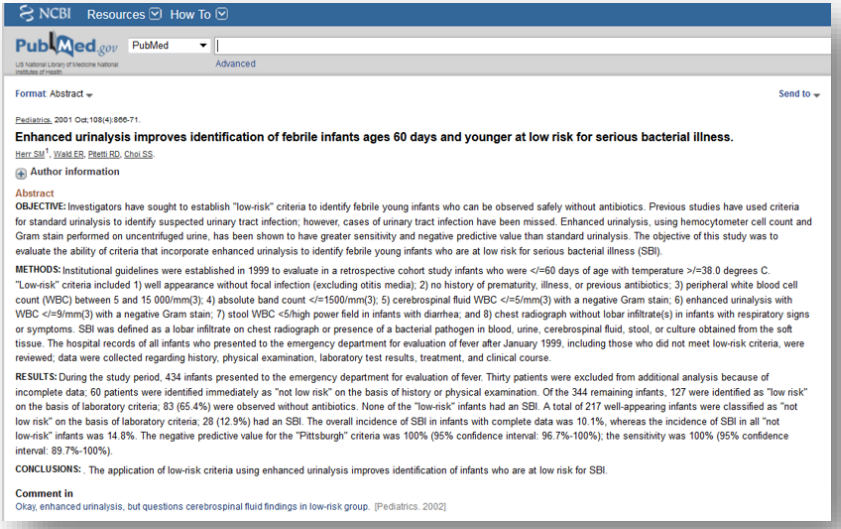
☐ IF respiratory symptoms:

Academic Detailing

Webinars



Relevant Publications



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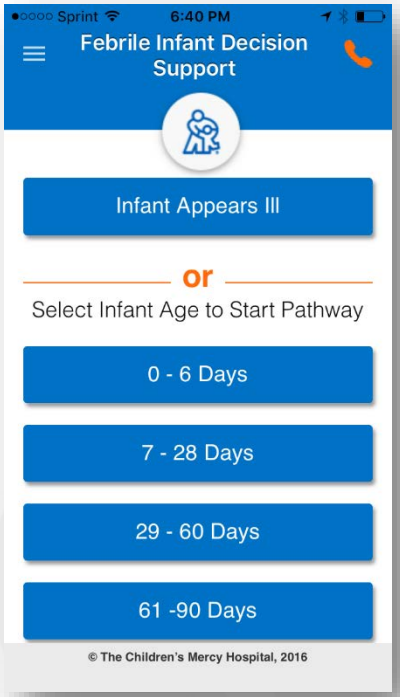
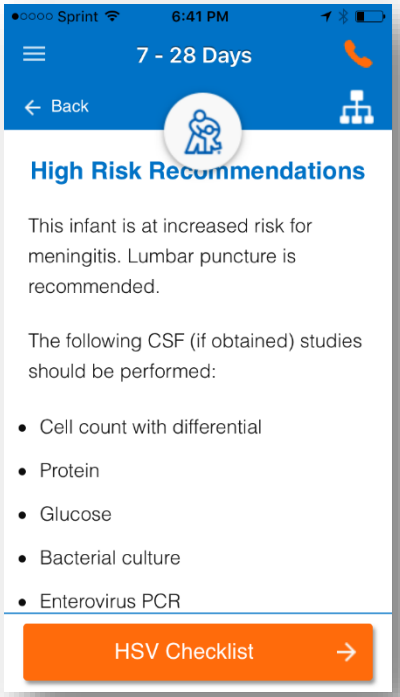
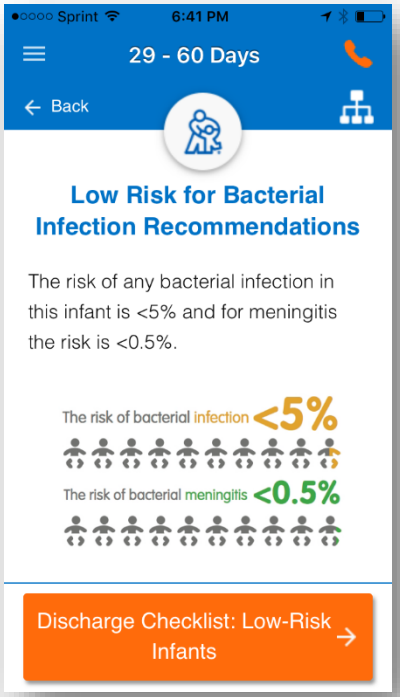
R.E.V.I.S.E







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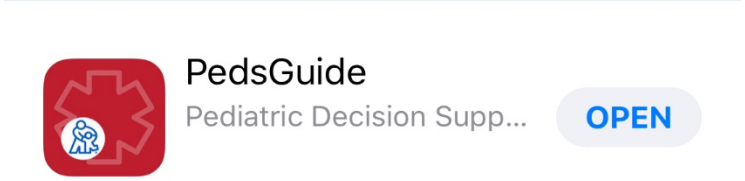
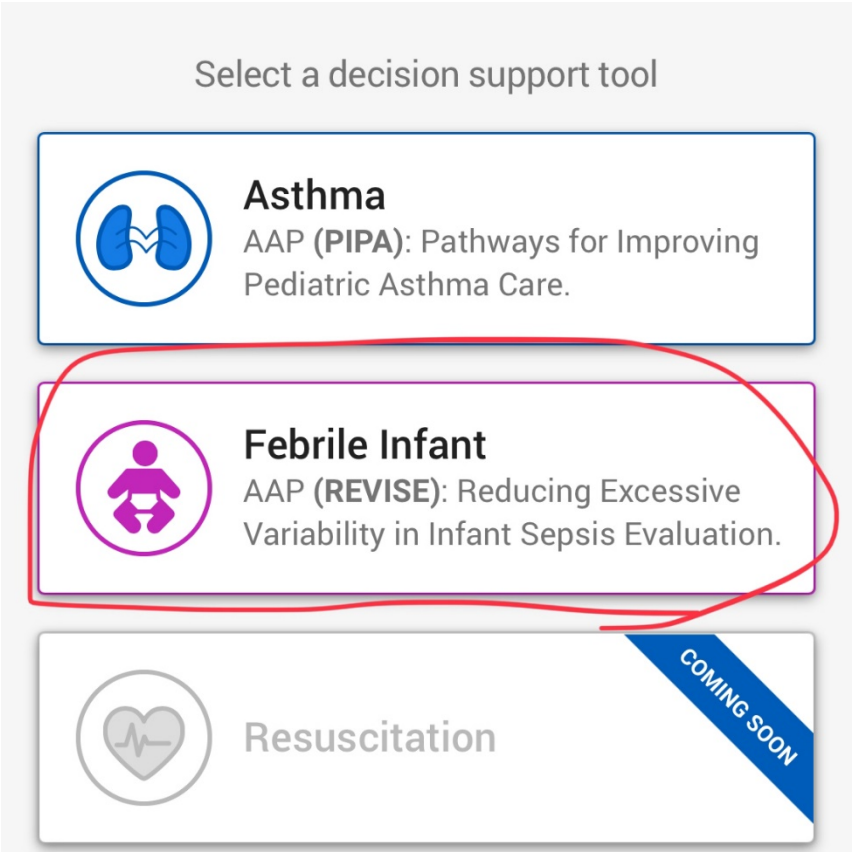
Please Download App
“Peds Guide”





Scenario # 1

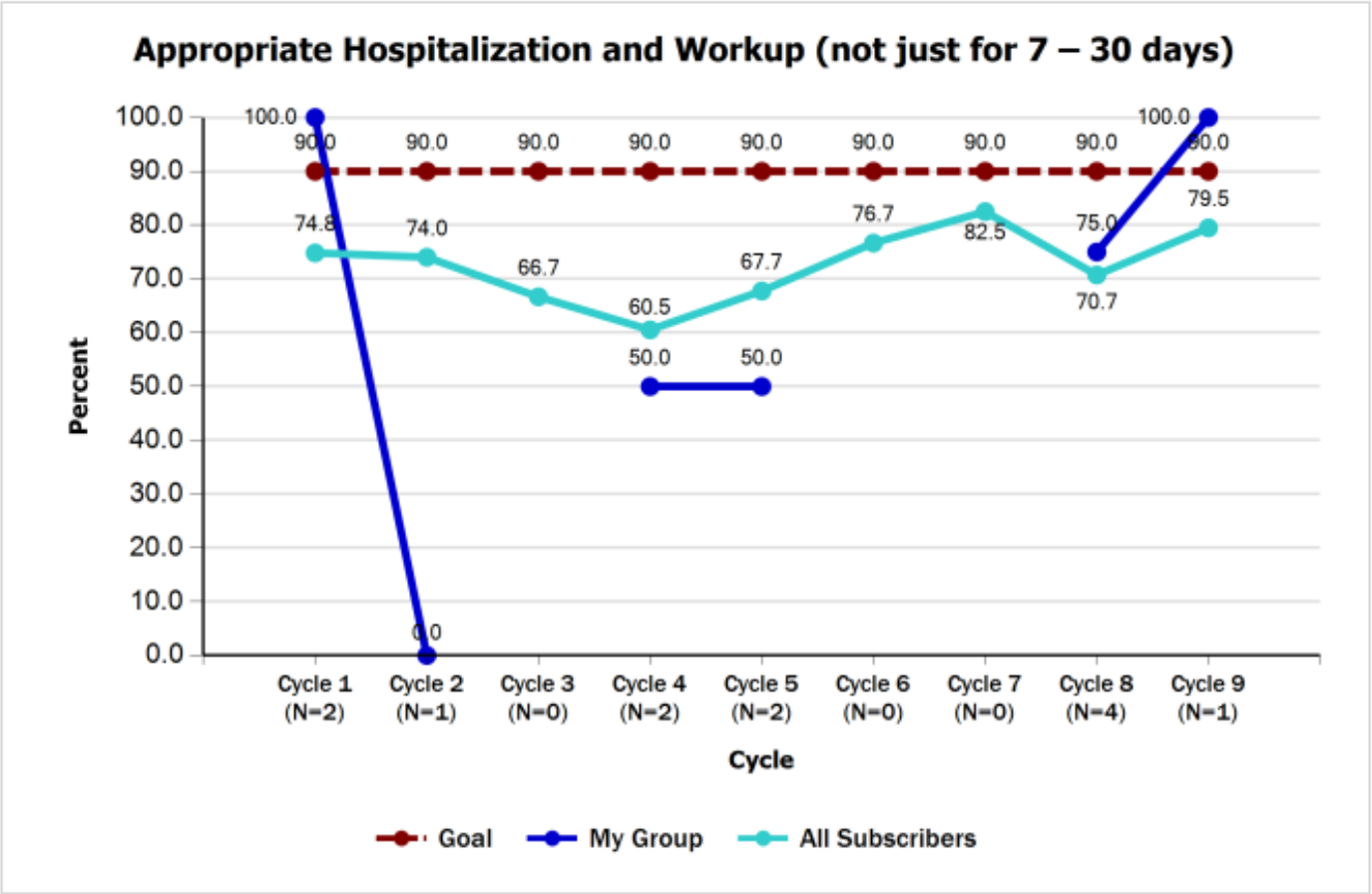
- 14 day old F no PMH, well appearing
- Born FT, NSVD
- No previous hospitalization
- Fever 101F rectally, no focus of infxn
- Lab work done: CBC, CRP → WNL
  BCx and UCx pending
- *Low risk vs. High risk ? LP?*

Scenario # 2

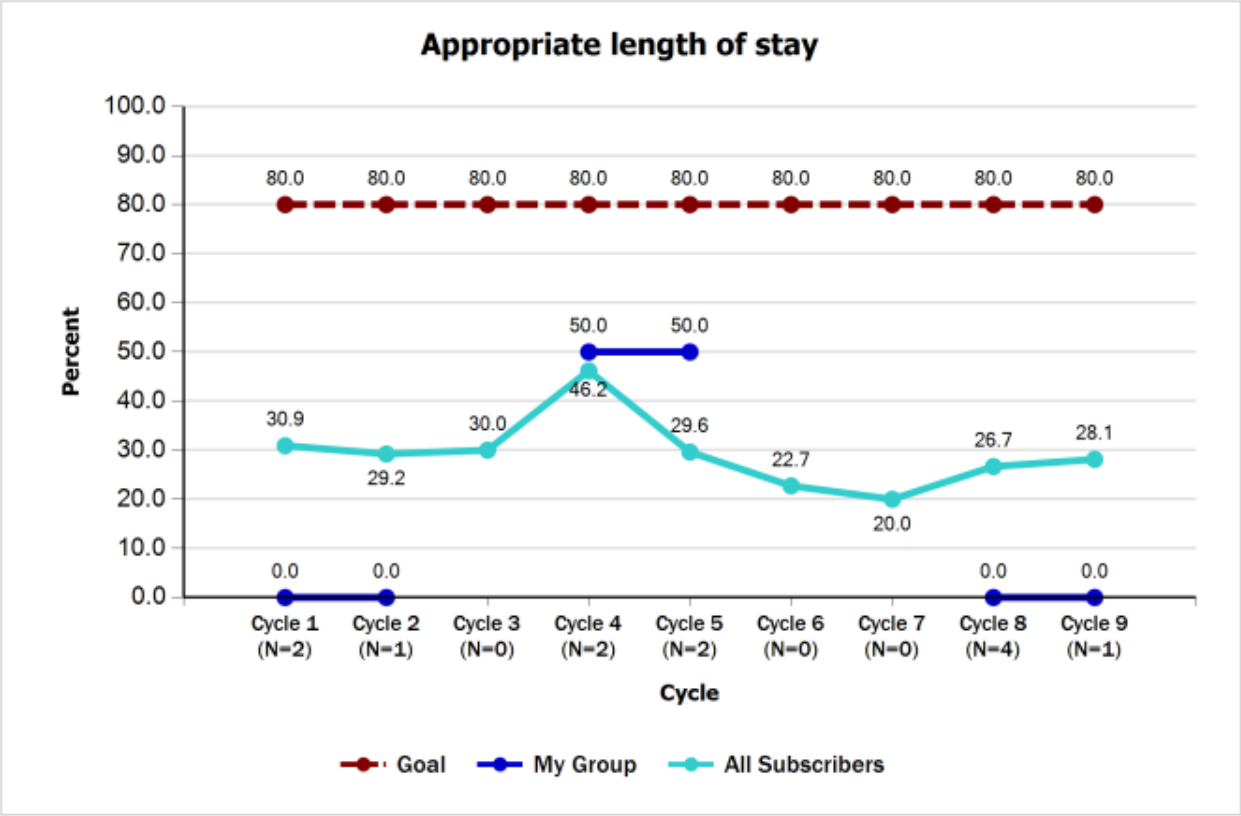
- 35 day old M, 32 GA, well appearing
- NICU stay x 4 days
- Fever 100.8F rectally
- Lab work done:
  - CBC, CRP, BCx
  - UA/UCx (cath)
  - CSF Studies

Patient was admitted and started on Abx

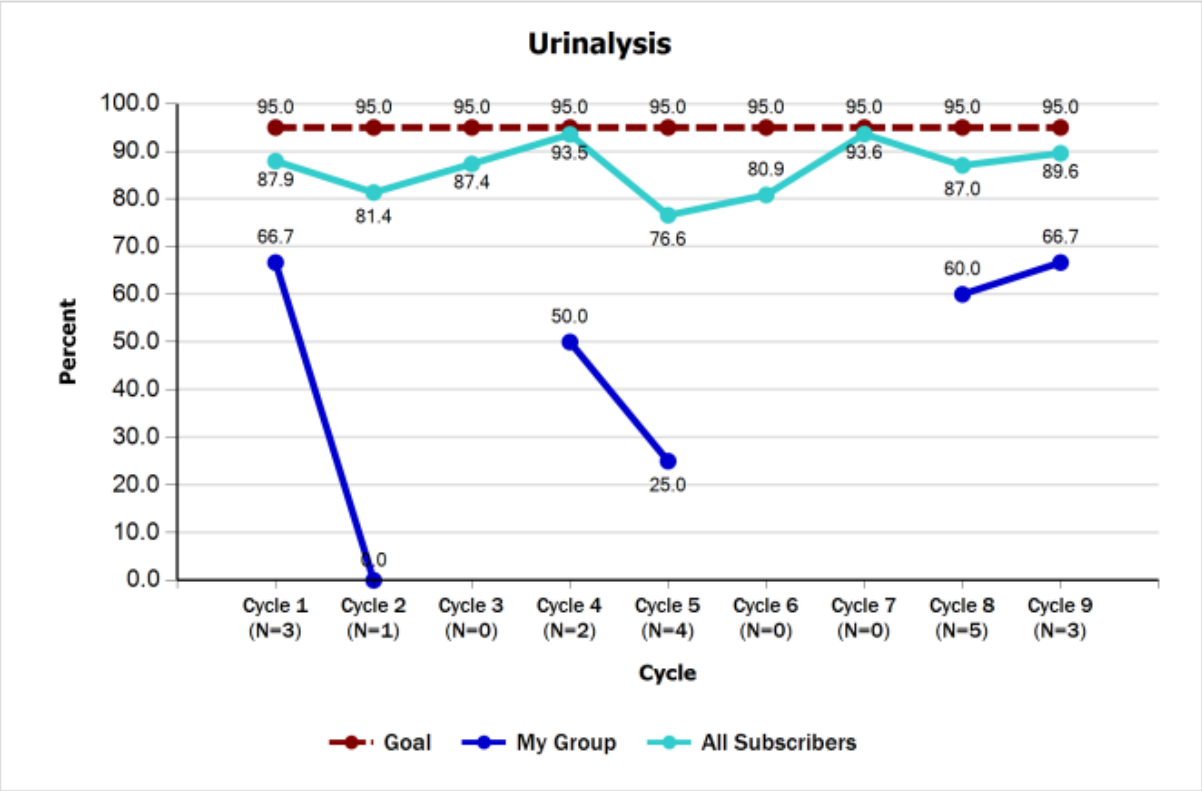
Note: HISTORICAL data from 2016



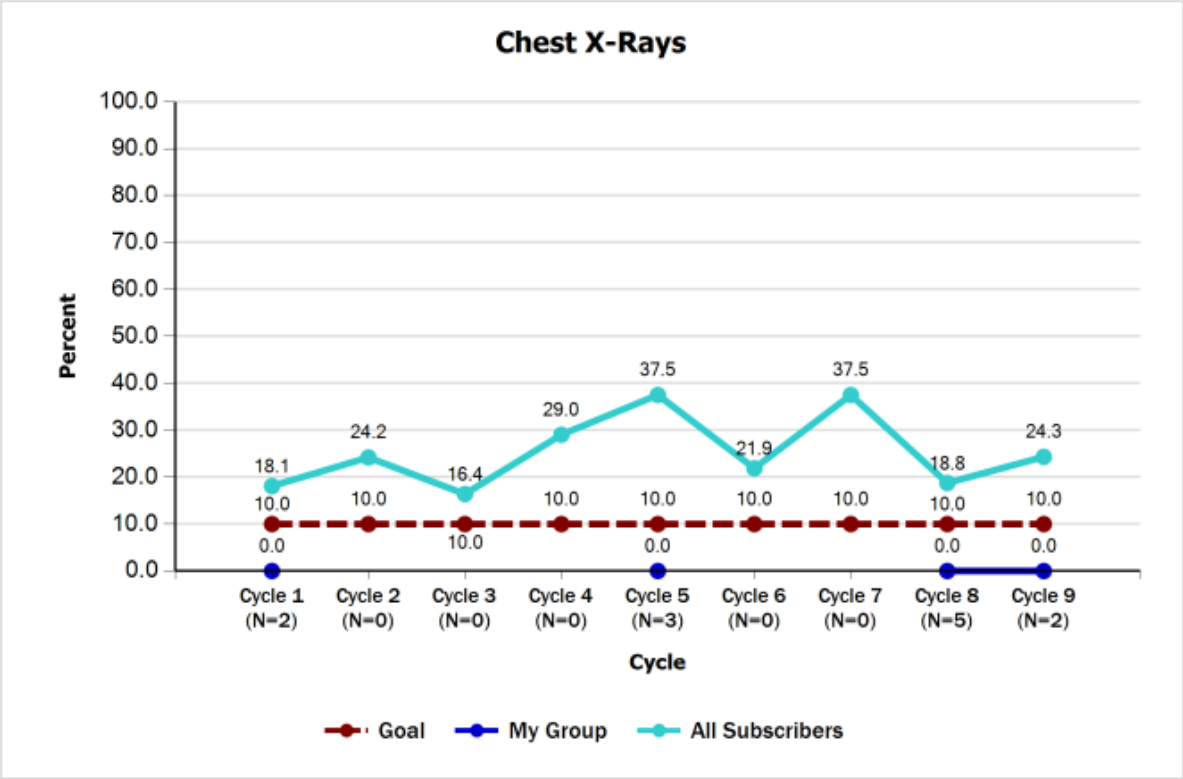
Note: We keep them too long or not long enough!



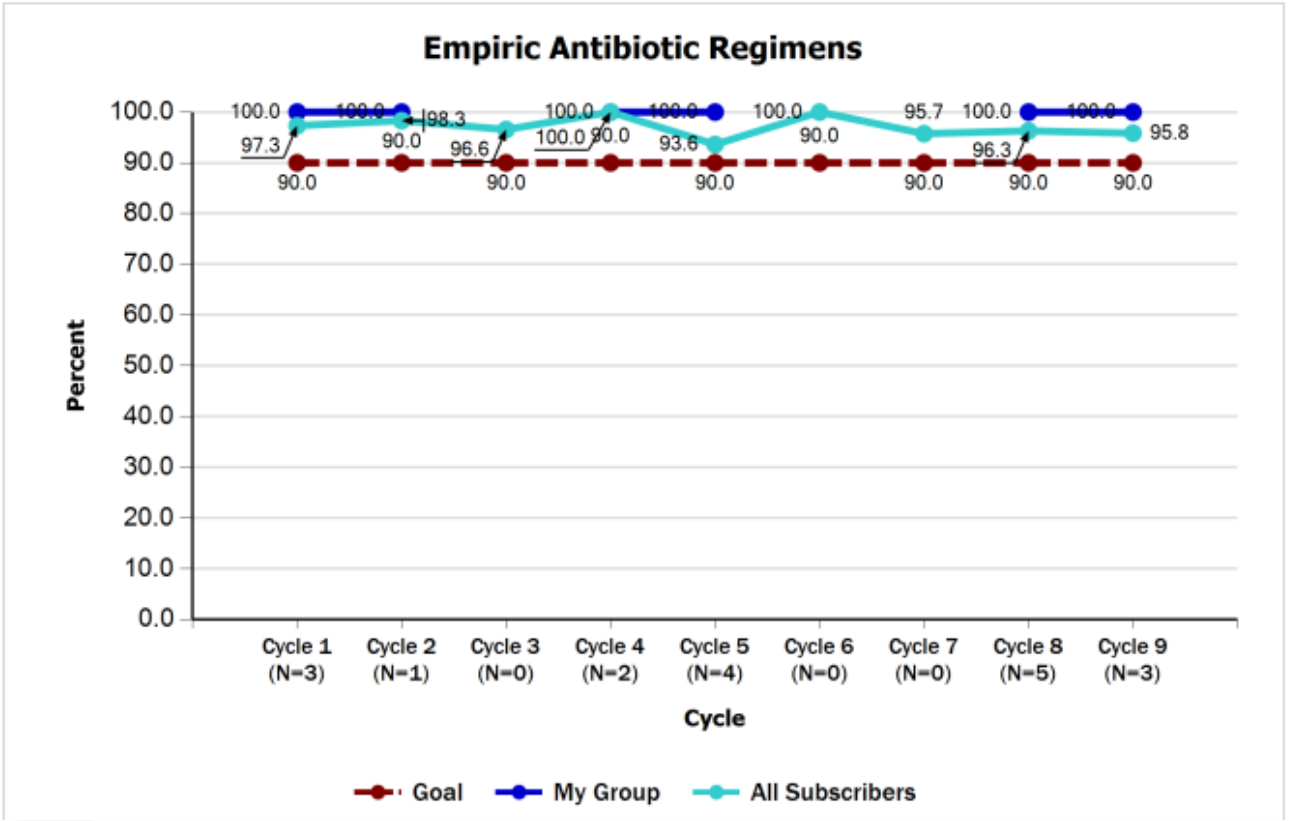
UA not done consistently



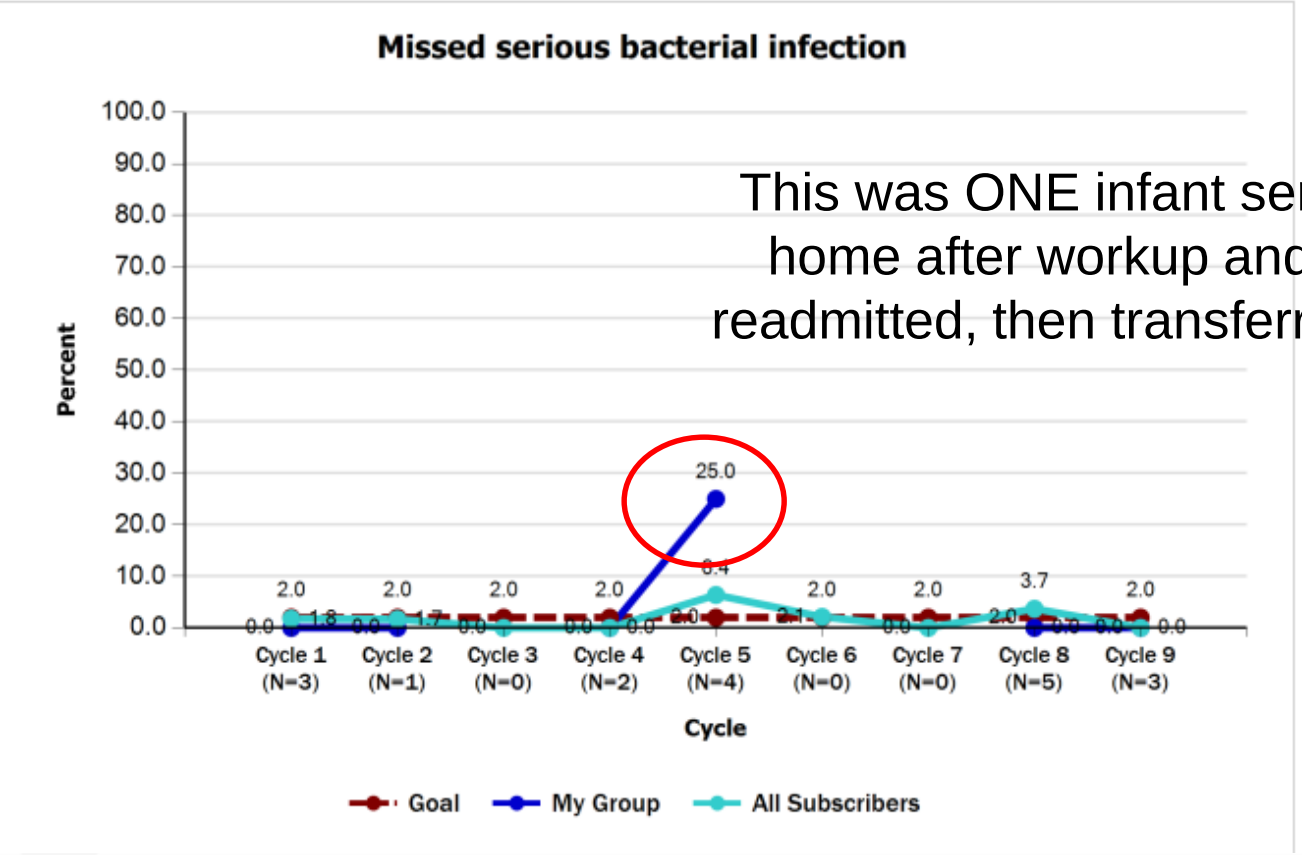
CXR done too often



BUT- we used correct ABX



Missed ONE!

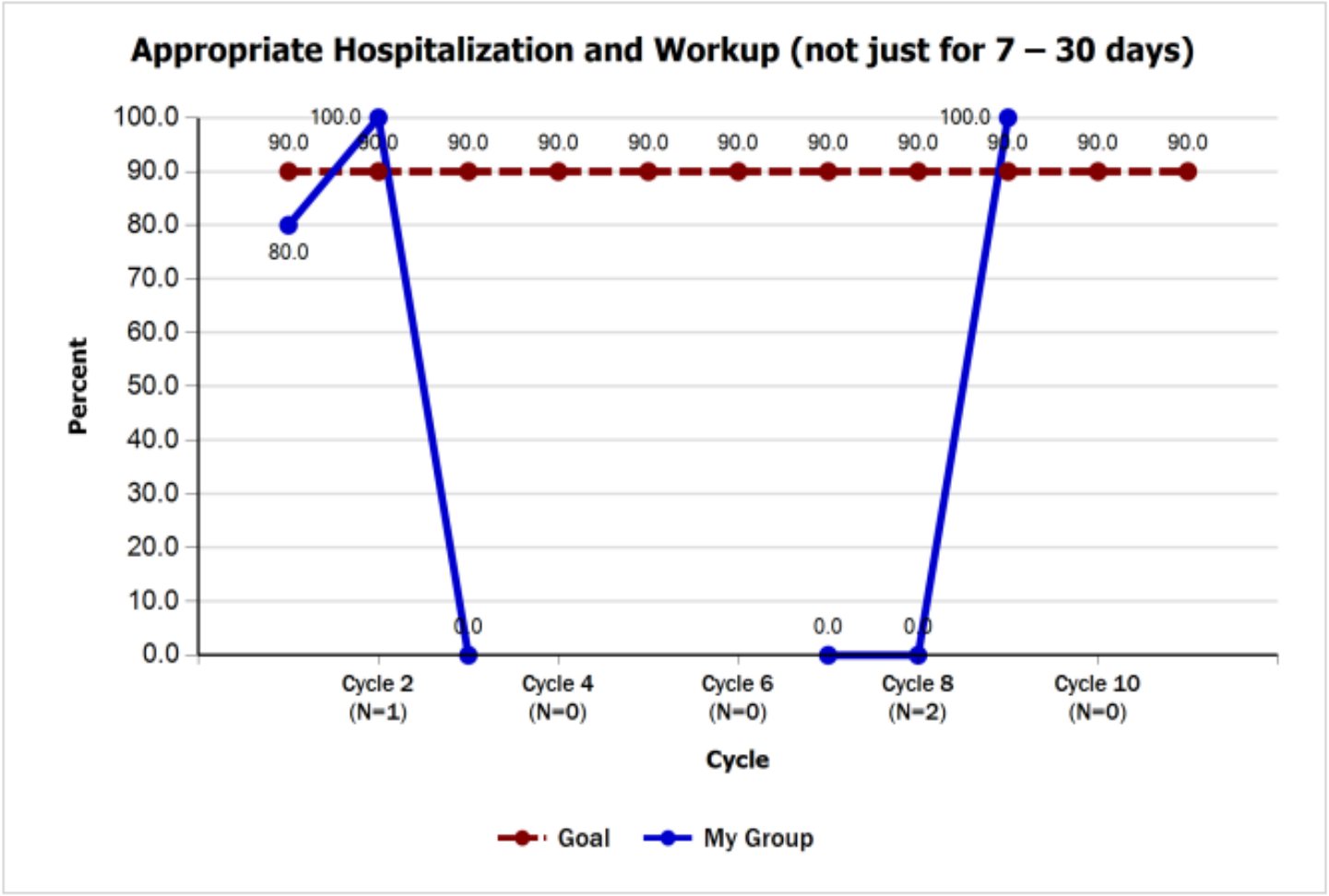


This was ONE infant sent home after workup and readmitted, then transferred

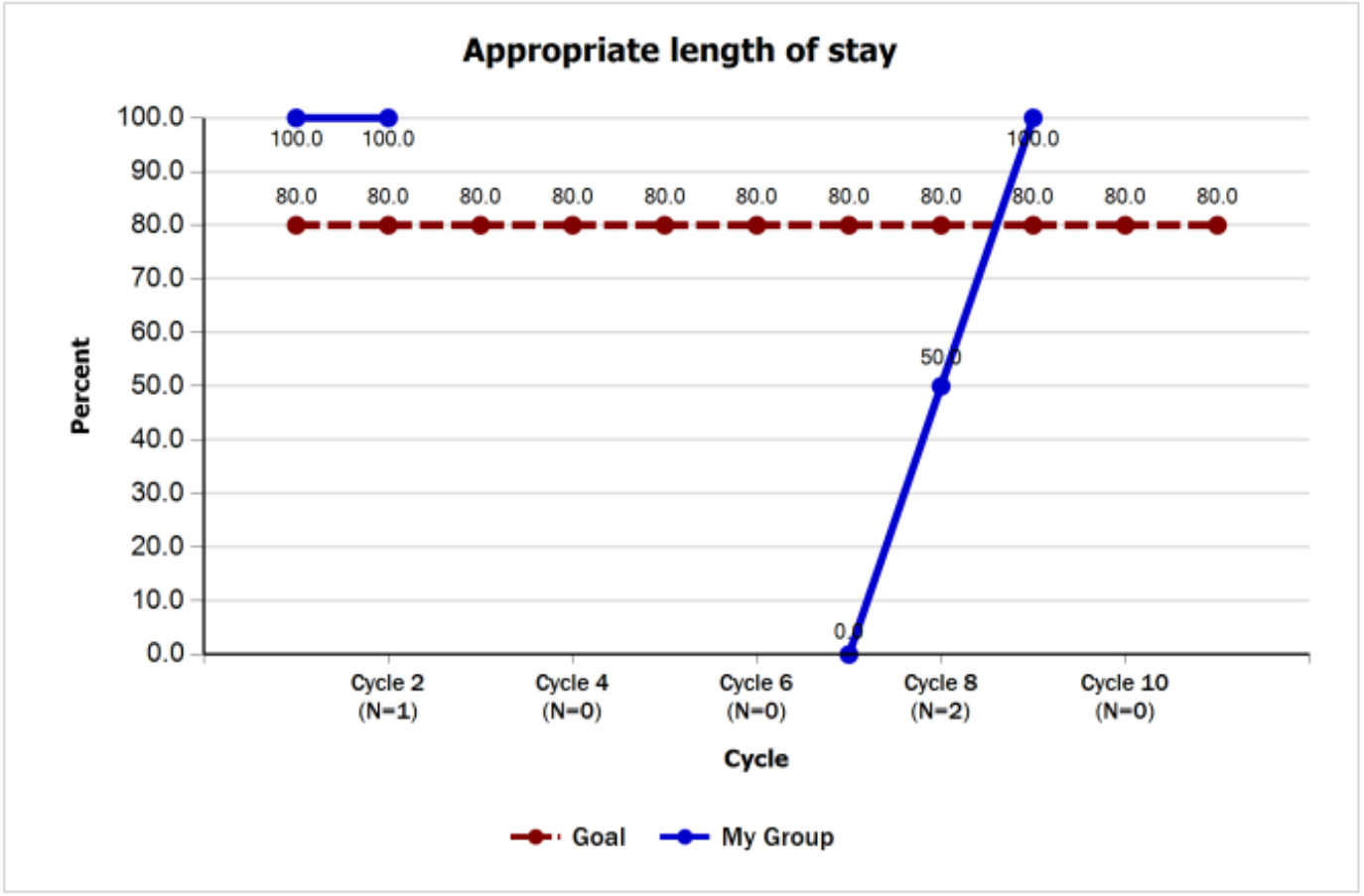
Post Intervention Data- Locally Shore Medical Center

Nickolas Dawlabani MD, CPE, FAAP

Brenda Braun MSN, RN, CEN

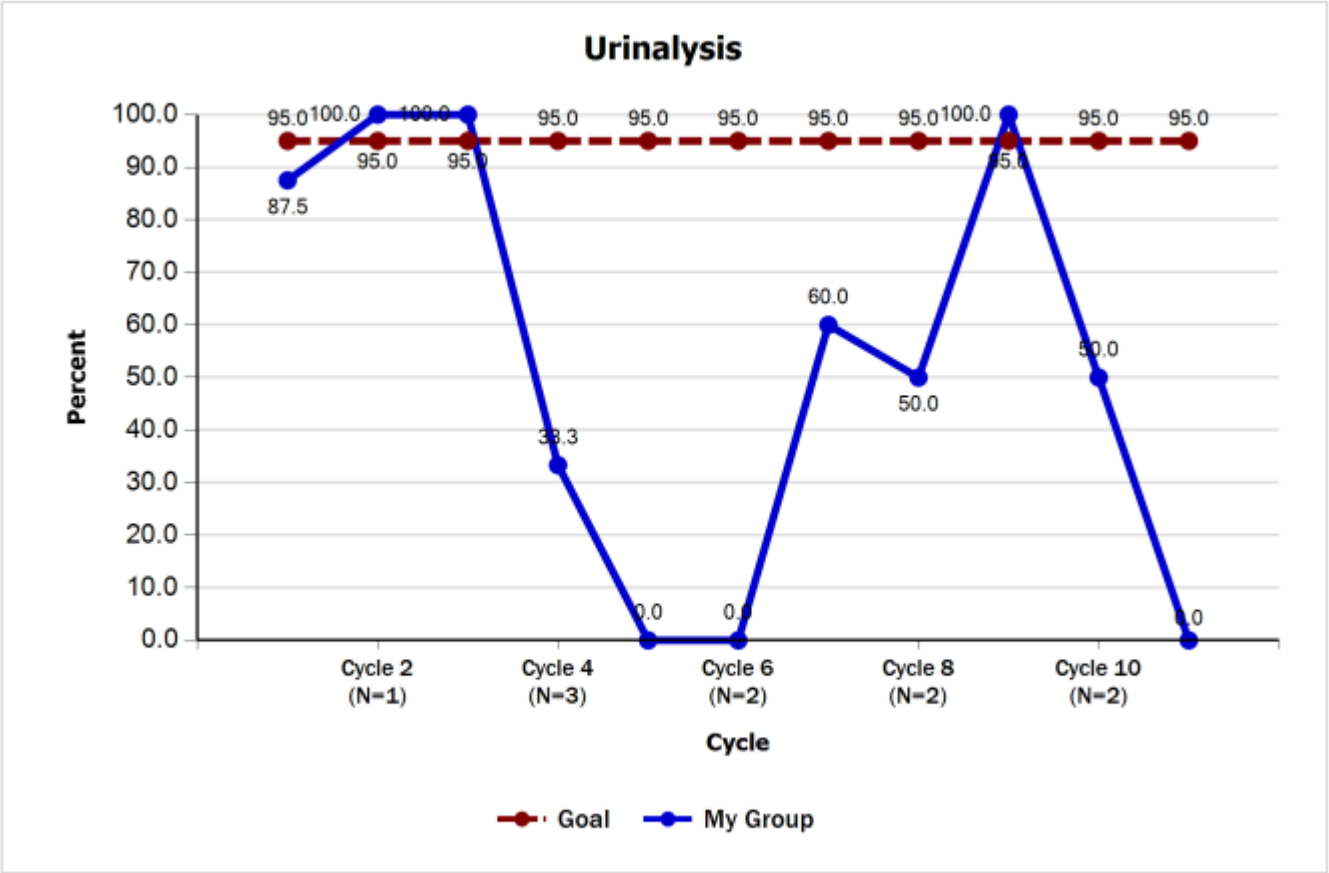


Annotations



Annotations

Cycle 3	Historical Data through Dec 2015



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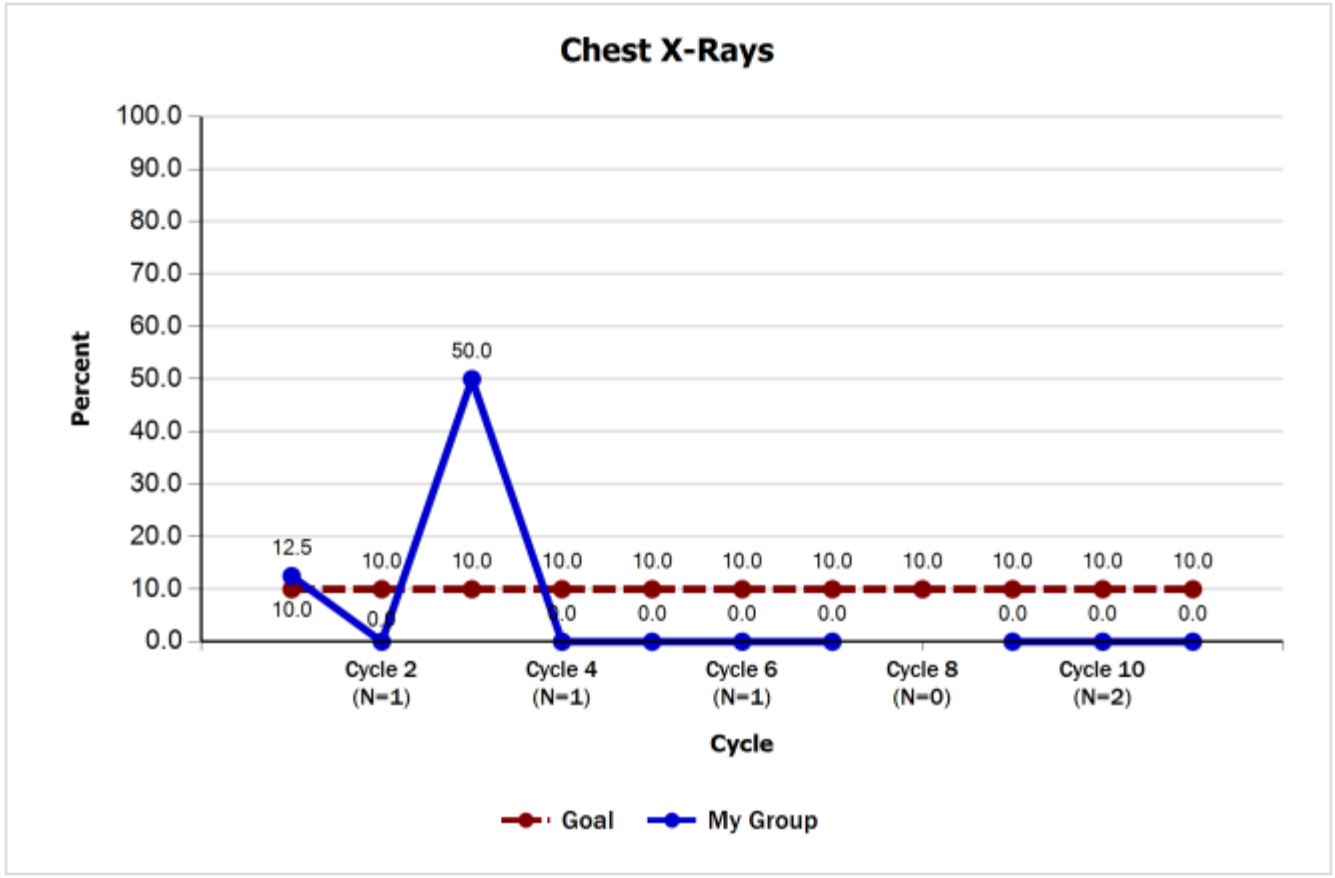

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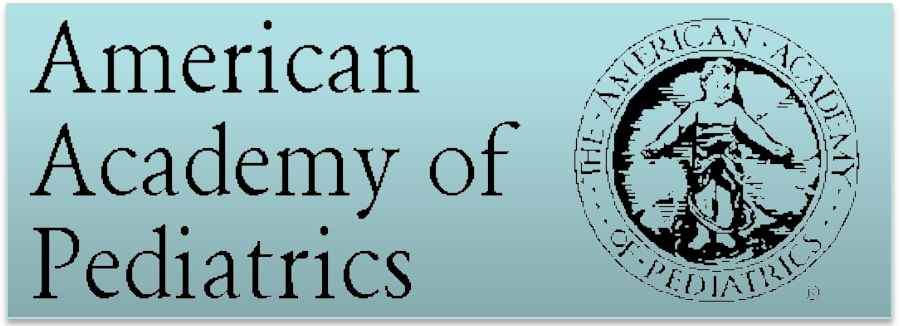
Project R.E.V.I.S.E. Nationally
Final Analysis

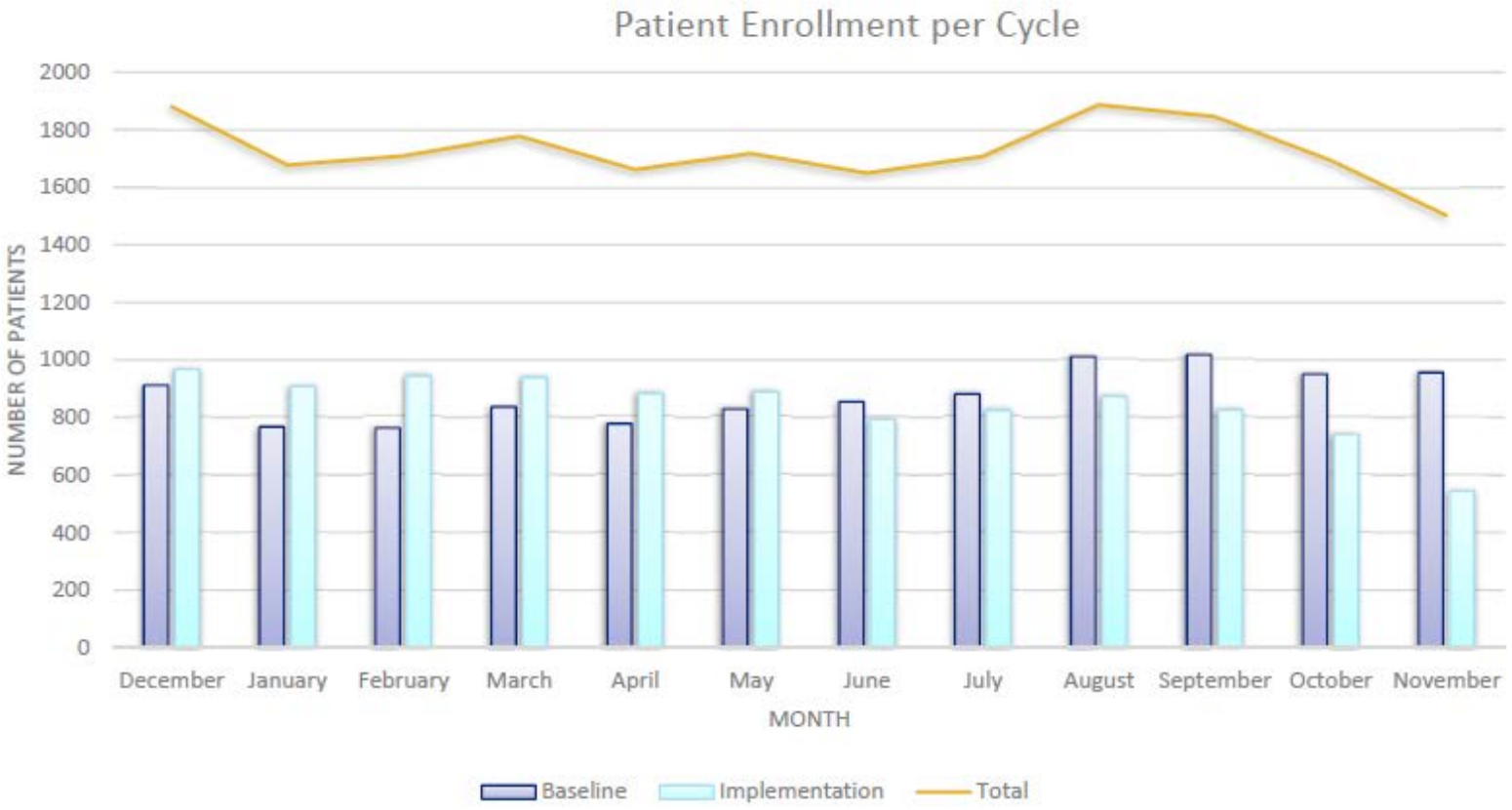
Presented by Dr. Eric Biondi and Expert Workgroup-Wednesday March 14th, 2018



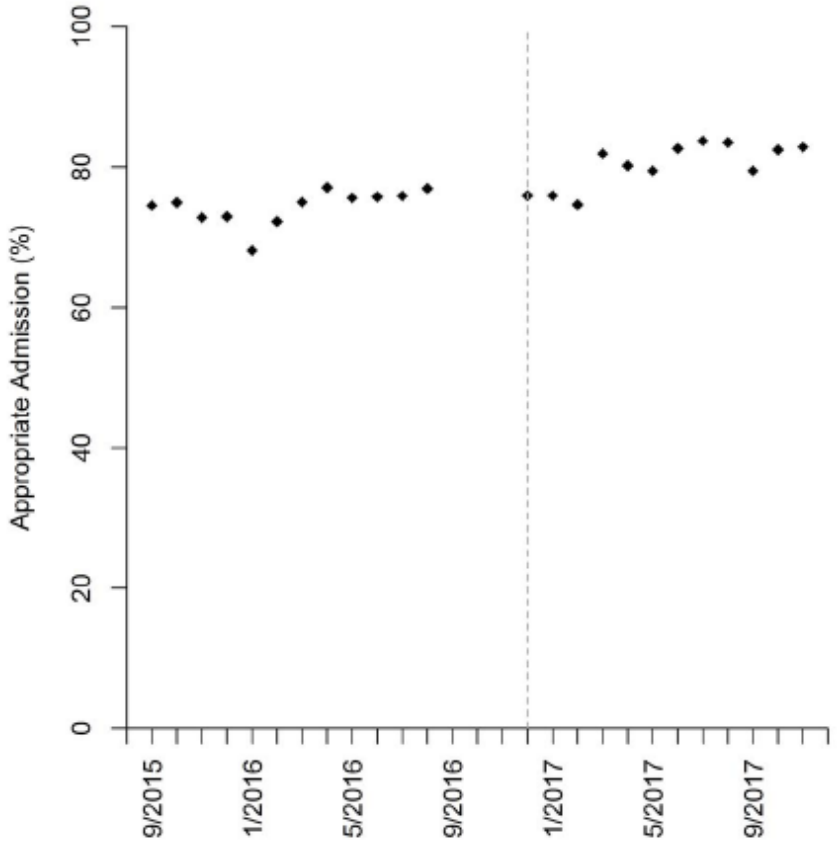
Variable	Sites (n = 124)	Patients (n = 20570)
Hospital type		
Community	49 (40%)	6335 (31%)
University	73 (59%)	14085 (68%)
Non-ICU beds		
<10	6 (5%)	262 (1%)
11-30	44 (35%)	3918 (19%)
31-50	19 (15%)	2958 (14%)
>50	55 (44%)	13432 (65%)
Annual cases		
<50	15 (12%)	1241 (6%)
51-100	40 (32%)	4113 (20%)
101-200	26 (21%)	4249 (21%)
201-300	17 (14%)	3308 (16%)
>300	26 (21%)	7659 (37%)
Board-certified pediatric ED physicians		
No	24 (19%)	1622 (8%)
Yes	98 (79%)	18798 (91%)
Area		
Urban (inner city)	39 (31%)	6482 (32%)
Urban (non-inner city)	44 (35%)	8977 (44%)
Suburban	33 (27%)	4634 (23%)
Rural	6 (5%)	327 (2%)
Census region		
Midwest	39 (31%)	5765 (28%)
Northeast	27 (22%)	3244 (16%)
South	39 (31%)	7944 (39%)
West	19 (15%)	3617 (18%)

	Baseline	Implementation
Age		
< 30 days	4173 (40%)	3704 (37%)
> 31 days	6339 (60%)	6354 (63%)
Gender		
Male	5883 (56%)	5593 (56%)
Female	4651 (44%)	4443 (44%)

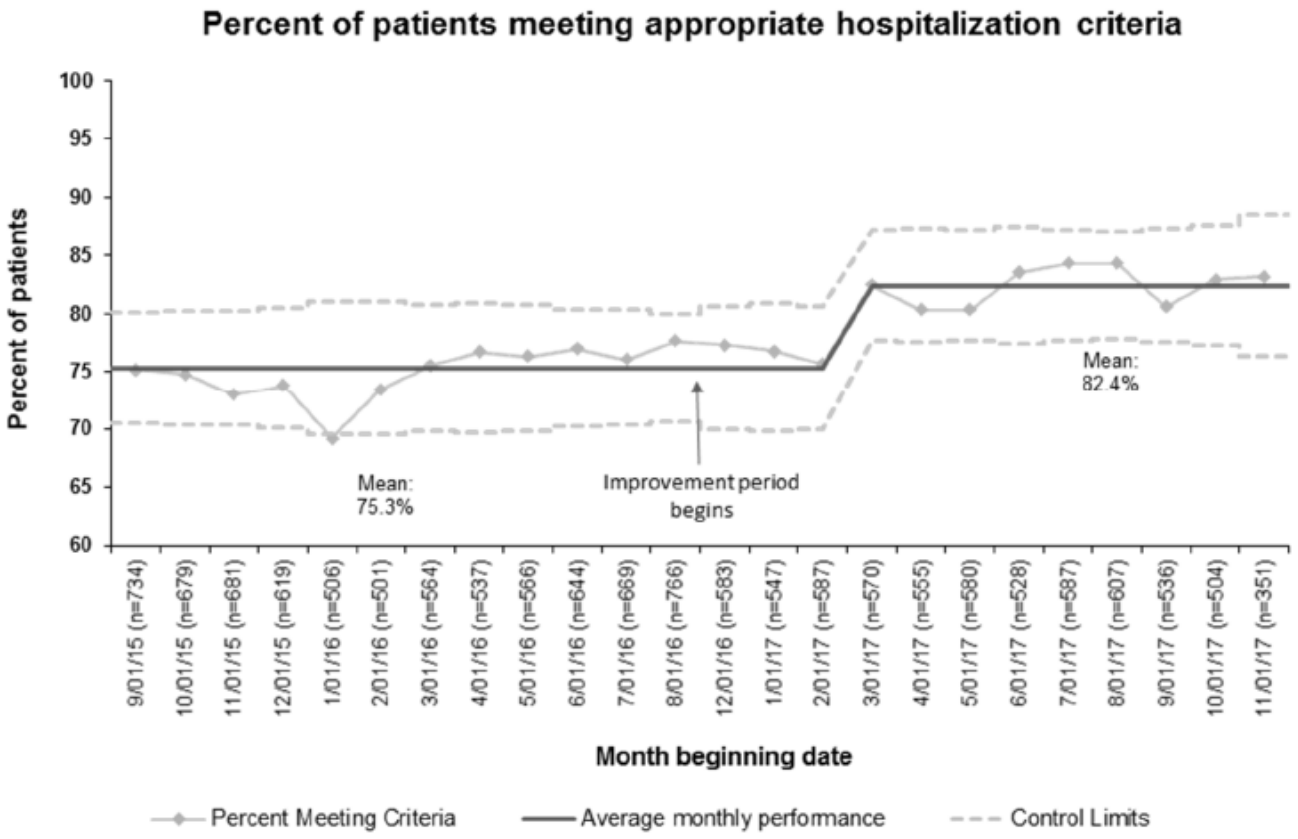
Patient Enrollment Cycle



Metric	Parameter	Est (95% CI)	p-value
Appr admission	Pre slope	1.8 (0.3, 3.3)	0.018
Appr admission	Post slope	4.2 (2.3, 6.2)	0
Appr admission	Slope diff	2.4 (0, 4.9)	0.055
Appr admission	Time period	-7.4 (-23.4, 12)	0.429
Appropriate LOS	Pre slope	1.1 (-0.9, 3.2)	0.287
Appropriate LOS	Post slope	2.9 (0.7, 5.1)	0.009
Appropriate LOS	Slope diff	1.7 (-1.2, 4.8)	0.247
Appropriate LOS	Time period	70.3 (33.4, 117.5)	0
Urinalysis	Pre slope	2 (0.1, 3.9)	0.043
Urinalysis	Post slope	2.7 (0.6, 4.9)	0.013
Urinalysis	Slope diff	0.7 (-2.1, 3.6)	0.612
Urinalysis	Time period	-22.8 (-38.6, -3)	0.026
Chest X-ray	Pre slope	-3 (-4.9, -1.2)	0.002
Chest X-ray	Post slope	-2.3 (-4.7, 0.1)	0.064
Chest X-ray	Slope diff	0.7 (-2.4, 3.9)	0.647
Chest X-ray	Time period	0.1 (-21.9, 28.4)	0.992
Appr antibiotics	Pre slope	3.1 (-0.9, 7.2)	0.129
Appr antibiotics	Post slope	-4 (-8, 0.2)	0.062
Appr antibiotics	Slope diff	-6.9 (-12.1, -1.3)	0.016
Appr antibiotics	Time period	2.8 (-37.3, 68.5)	0.913
Delayed Treatment	Pre slope	-0.7 (-6.2, 5.3)	0.825
Delayed Treatment	Post slope	-0.6 (-6.8, 6.1)	0.86
Delayed Treatment	Slope diff	0.1 (-8.3, 9.1)	0.988
Delayed Treatment	Time period	1.9 (-49.7, 106.4)	0.958
Combined Care	Pre slope	2.4 (0.2, 4.7)	0.03
Combined Care	Post slope	4 (1.7, 6.3)	0.00
Combined Care	Slope diff	1.5 (-1.6, 4.7)	.339
Combined Care	Time period	45.2 (12.3, 87.8)	0.005



Process Control Chart



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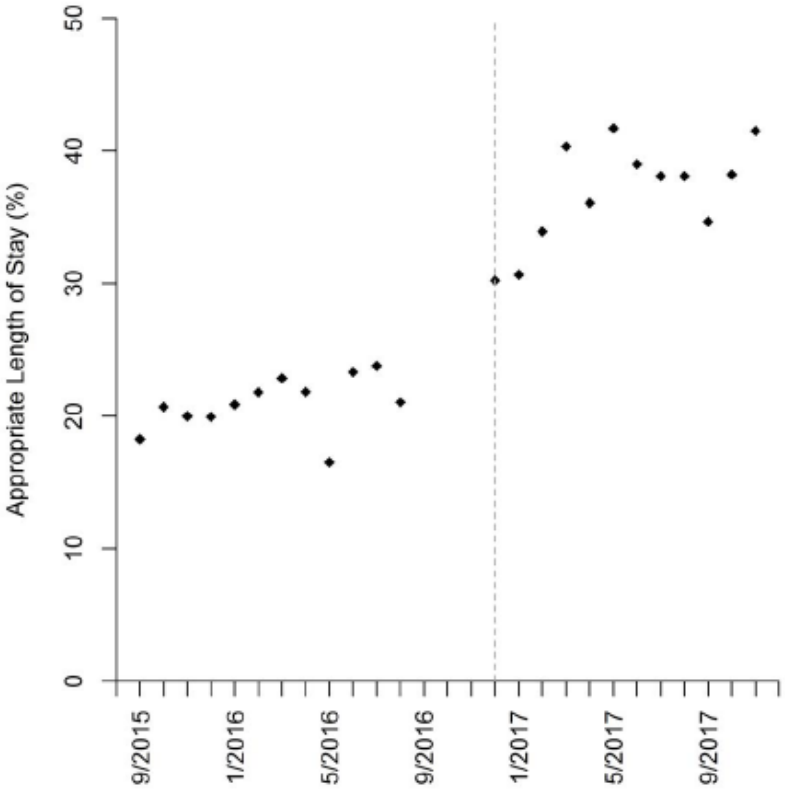

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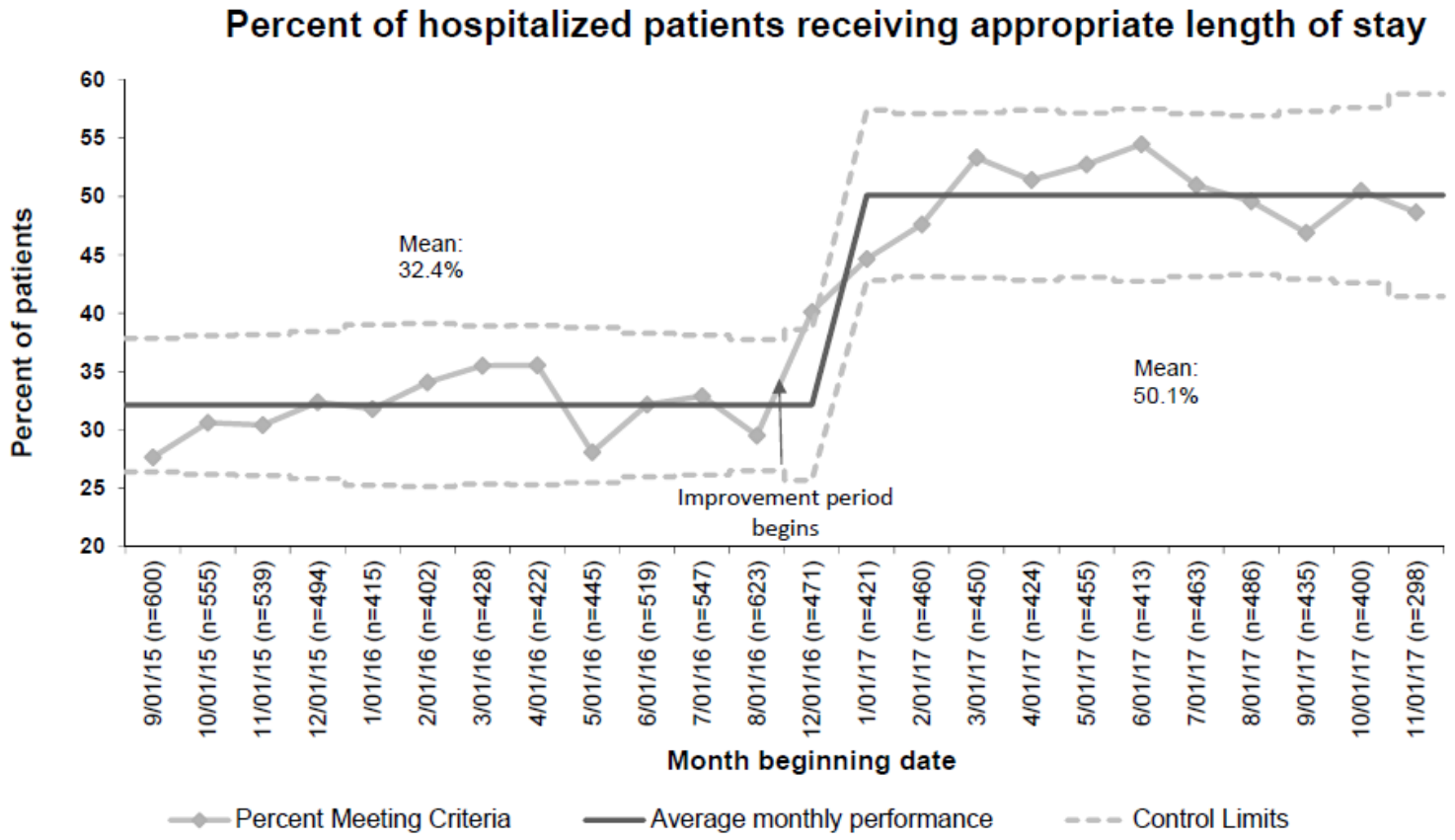
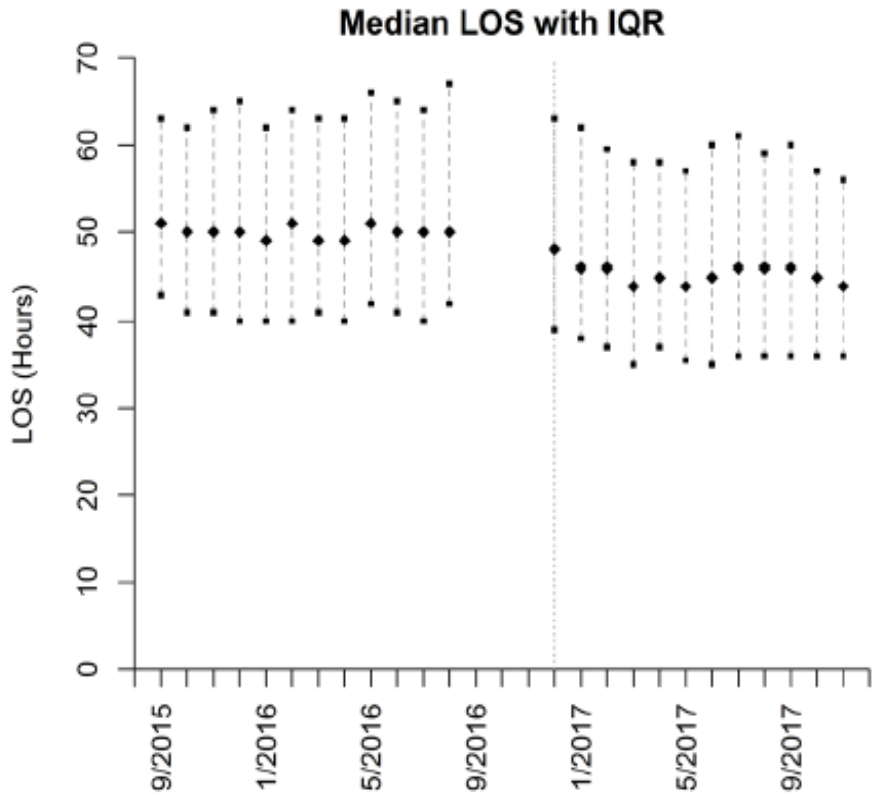


LENGTH OF STAY

Length of Stay in Hours		
Pre slope	0.5 (0.2, 0.9)	
Post slope	-0.5 (-1.0, -0.1)	
Slope difference	-1.1 (-1.6, -0.5)	p = <0.001



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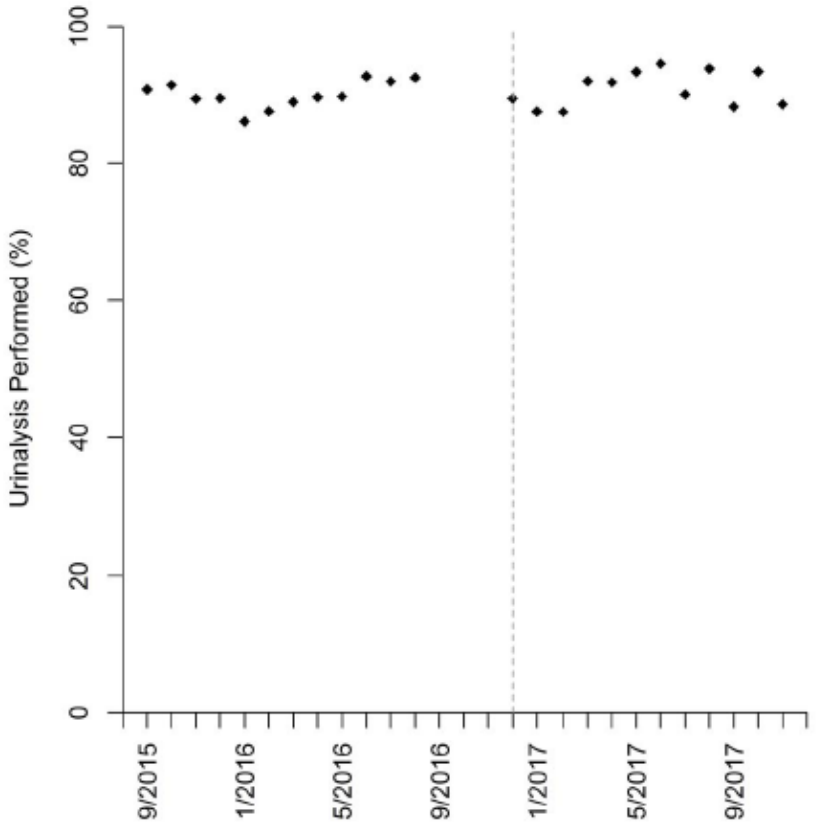

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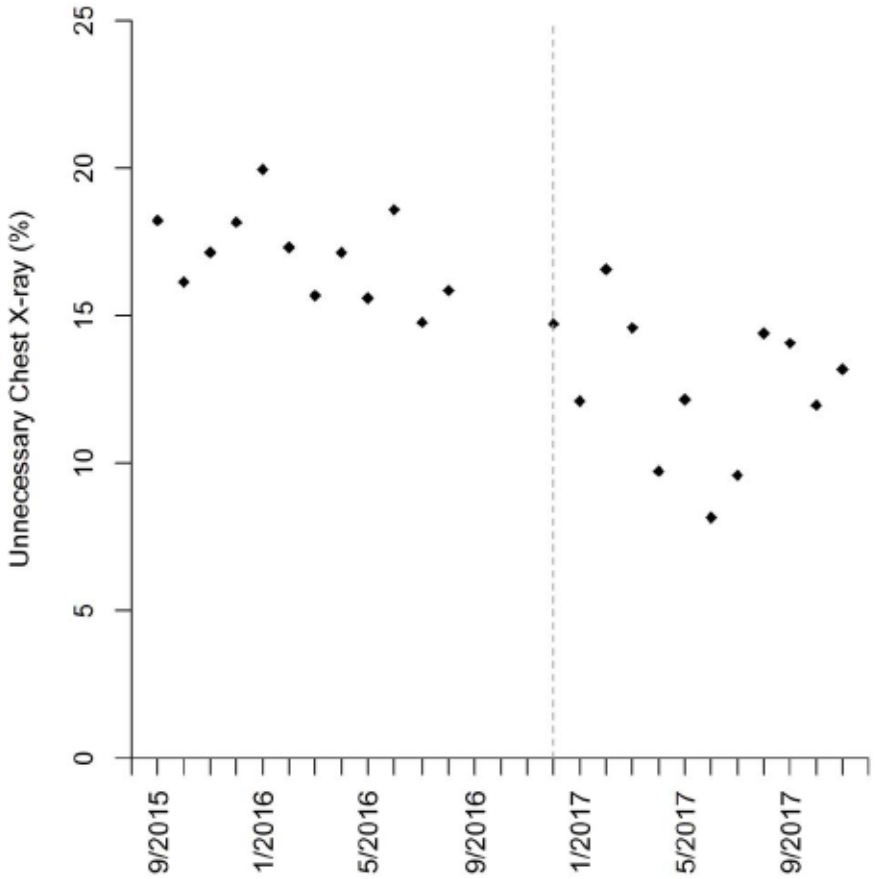

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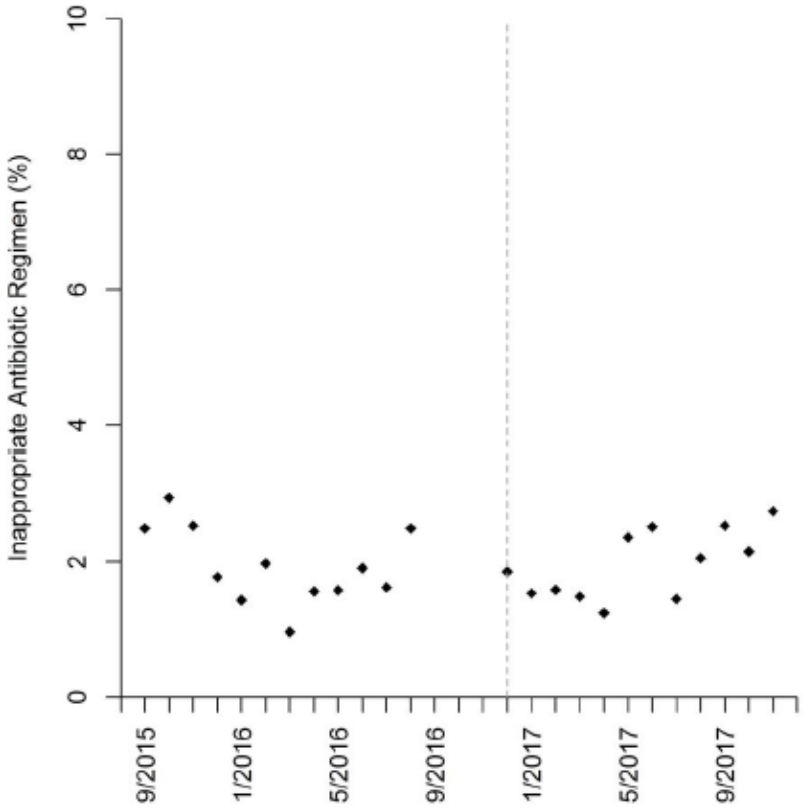

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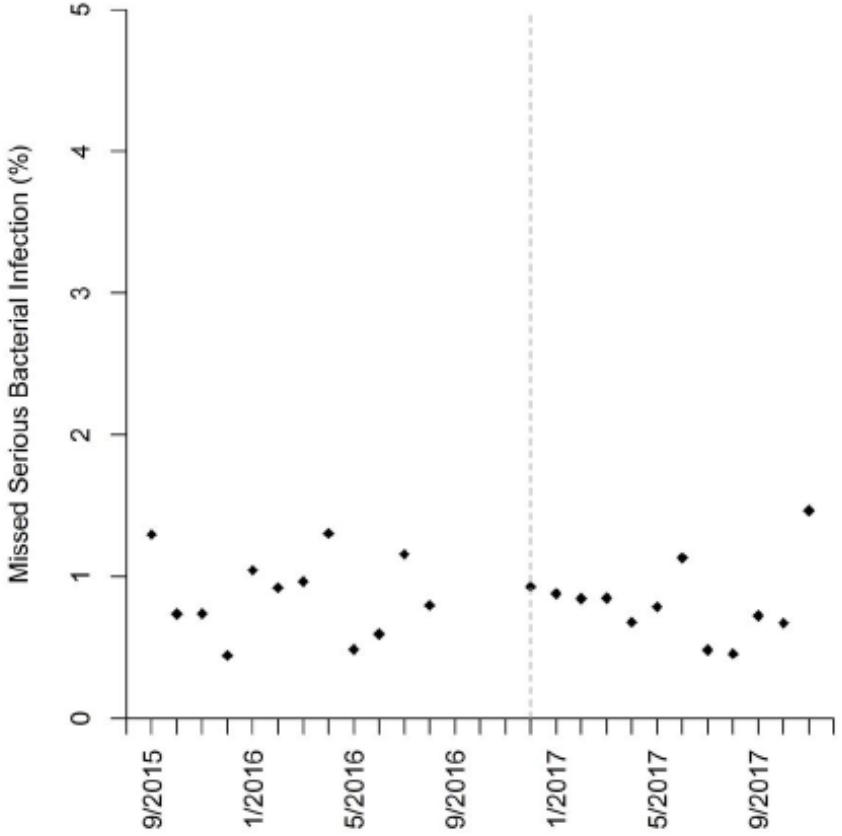

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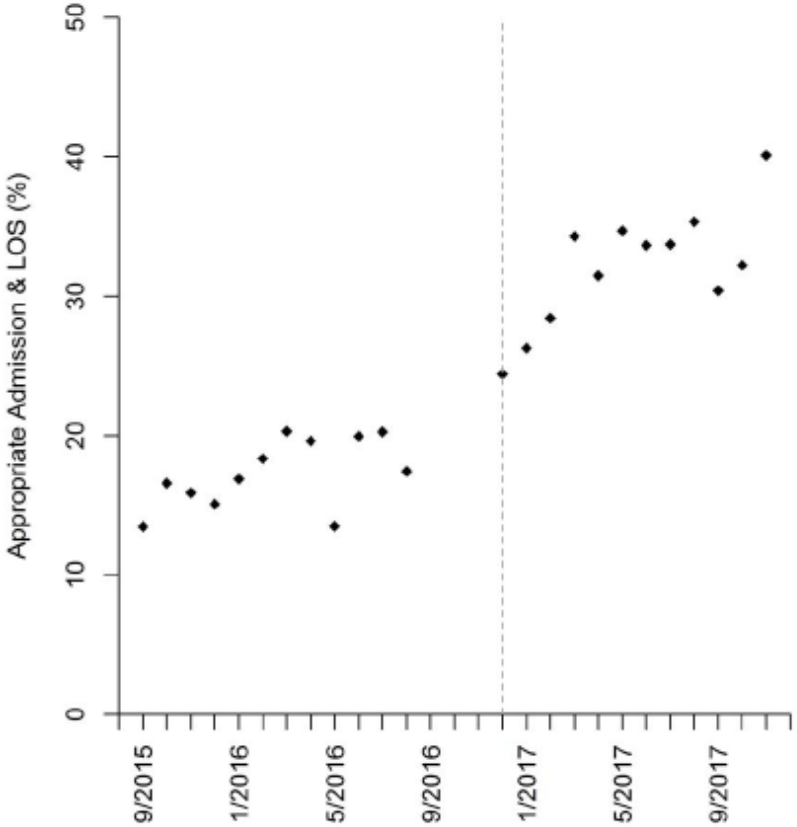
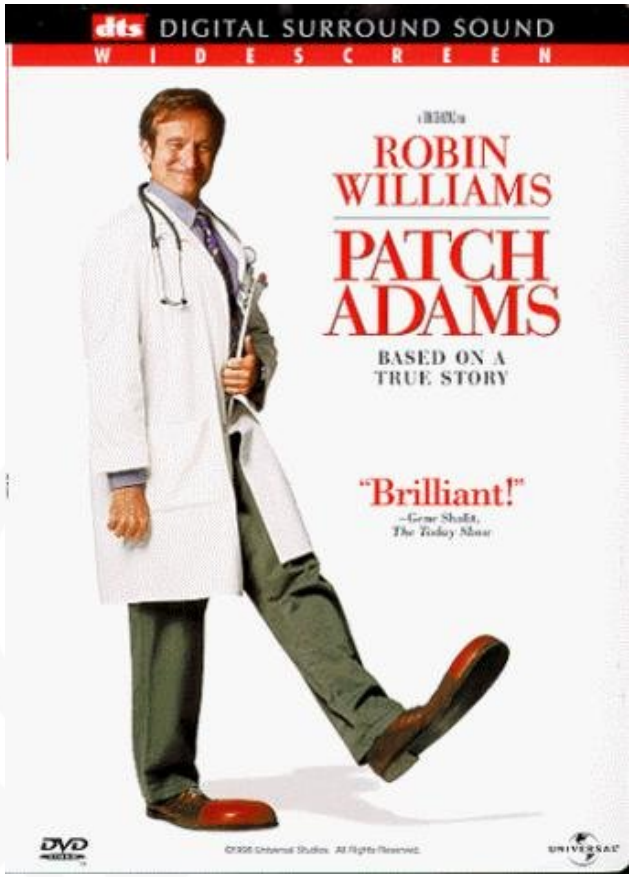
Chest X-ray	Pre slope	-3 (-4.9, -1.2)	0.002
Chest X-ray	Post slope	-2.3 (-4.7, 0.1)	0.064
Chest X-ray	Slope diff	0.7 (-2.4, 3.9)	0.647
Chest X-ray	Time period	0.1 (-21.9, 28.4)	0.992
Appr antibiotics	Pre slope	3.1 (-0.9, 7.2)	0.129
Appr antibiotics	Post slope	-4 (-8, 0.2)	0.062
Appr antibiotics	Slope diff	-6.9 (-12.1, -1.3)	0.016
Appr antibiotics	Time period	2.8 (-37.3, 68.5)	0.913
Delayed Treatment	Pre slope	-0.7 (-6.2, 5.3)	0.825
Delayed Treatment	Post slope	-0.6 (-6.8, 6.1)	0.86
Delayed Treatment	Slope diff	0.1 (-8.3, 9.1)	0.988
Delayed Treatment	Time period	1.9 (-49.7, 106.4)	0.958
Combined Care	Pre slope	2.4 (0.2, 4.7)	0.03
Combined Care	Post slope	4 (1.7, 6.3)	0.00
Combined Care	Slope diff	1.5 (-1.6, 4.7)	.339
Combined Care	Time period	45.2 (12.3, 87.8)	0.005




YOU WANT TO TAKE MY TEMPERATURE
WHERE EXACTLY?
More pics on www.imfunny.net

"We treat a disease, we either win or lose but if we treat a **PERSON** we will win no matter what the outcome is"



THANK YOU!

Our *Passion*
Makes Us The Best

SHORE MEDICAL CENTER