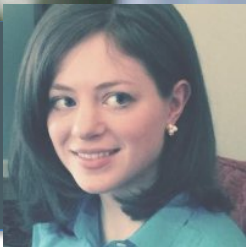


HEN 2.0 QUALITY IMPROVEMENT (QI) OFFICE HOURS: SEPSIS



Welcome & Introductions

Katie Harris, Program Manager, HRET

SPEAKERS

- Dr. Marty Doerfler
- Jane Taylor
- Kathy Luther
- Kathy Duncan

Beyond Regulatory Requirements: Addressing the Sepsis Spectrum

Martin E. Doerfler, MD
SVP, Clinical Strategy and Development
Northwell Health



Northwell
HealthSM

Sepsis Definition

A documented or suspected infection with two or more of the following:

- Fever (core temperature $>38.3^{\circ}\text{C}$)
- Hypothermia (core temperature $<36^{\circ}\text{C}$)
- Heart rate $>90\text{ min}^{-1}$ or $>2\text{ SD}$ above the normal value for age
- Tachypnea $> 20\text{ bpm}$
- Leukocytosis (WBC count $>12,000\ \mu\text{L}^{-1}$)
- Leukopenia (WBC count $<4000\ \mu\text{L}^{-1}$)
- Normal WBC count with $>10\%$ immature forms

Why the Diagnosis Is So Difficult

- No single criteria makes the diagnosis (Unlike New ST Elevation on ECG, or New Onset Focal Neuro. Exam)
- Changing patient status during **encounter**
- Diagnosis not black and white but gray
- Patient may look good and yet crash two hours later
- Many physicians like an observation period before reacting, and they lose the critical window of opportunity

HUMAN FACTORS

- Competing priorities, lack of awareness, patient looking good leads physicians to going down another path.

The Sepsis Continuum

SIRS

Sepsis

**Severe
Sepsis**

**Septic
Shock**



A clinical response arising from a nonspecific insult, with ≥ 2 of the following:

- T $>38^{\circ}\text{C}$ or $<36^{\circ}\text{C}$
- HR >90 beats/min
- RR >20 /min
- WBC $>12,000/\text{mm}^3$ or $<4,000/\text{mm}^3$ or $>10\%$ bands

SIRS with a presumed or confirmed infectious process

Sepsis with organ failure

Refractory hypotension

SIRS = systemic inflammatory response syndrome



Mortality Increasing with Successive Organ Failures

Mortality Rate	# of Organ Dysfunctions
21.2%	1
44.3%	2
64.5%	3
76.2%	4

Time-Sensitive Interventions

AMI – “Door to PCI”

- Focus on the timely return of blood flow to the affected areas of the heart.

Stroke – “Time is Brain”

- The sooner that treatment begins, the better one’s chances of survival without disability are.

Trauma – “The Golden Hour”

- Requires immediate response and medical care “on the scene.”
- Patients typically transferred to a qualified trauma center for care.

Strategies to Improve Early Recognition

Examples of Level Two Reliability Methods:

- Standardized Recognition Process: Use “screening check list/handoff tool/data collection tool” on all admissions, and shift handoffs.
- Use redundancy: everyone is responsible to speak up if sepsis is suspected
- Emphasize early lactate and blood cultures
- Early feedback regarding compliance and using Real Time Data Collection

Achieving Sepsis Goals 3-hour & 6-hour bundles

Process Development

- Brainstorm, map workflow, assess what you actually do, collect data, test change

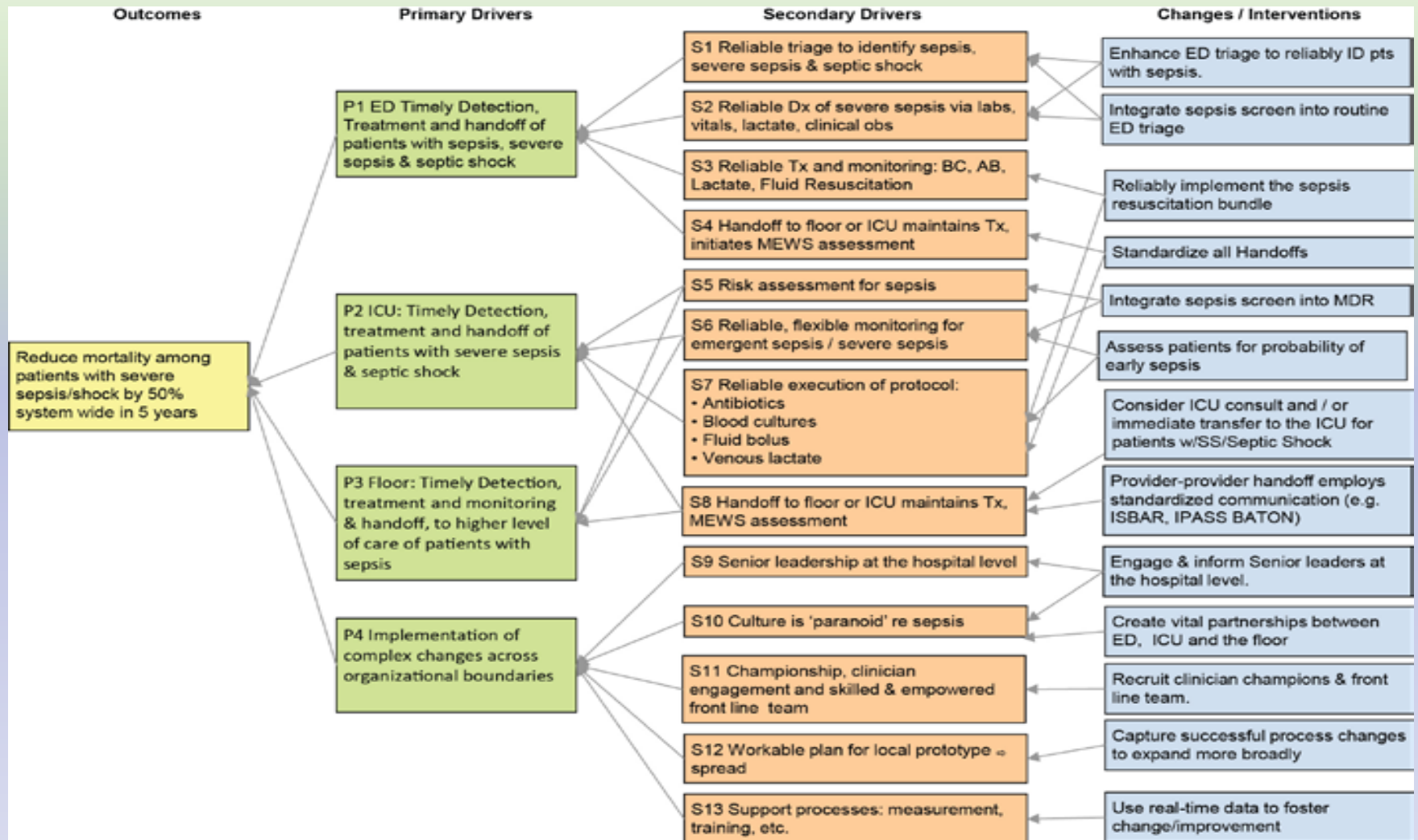
Standardize the process

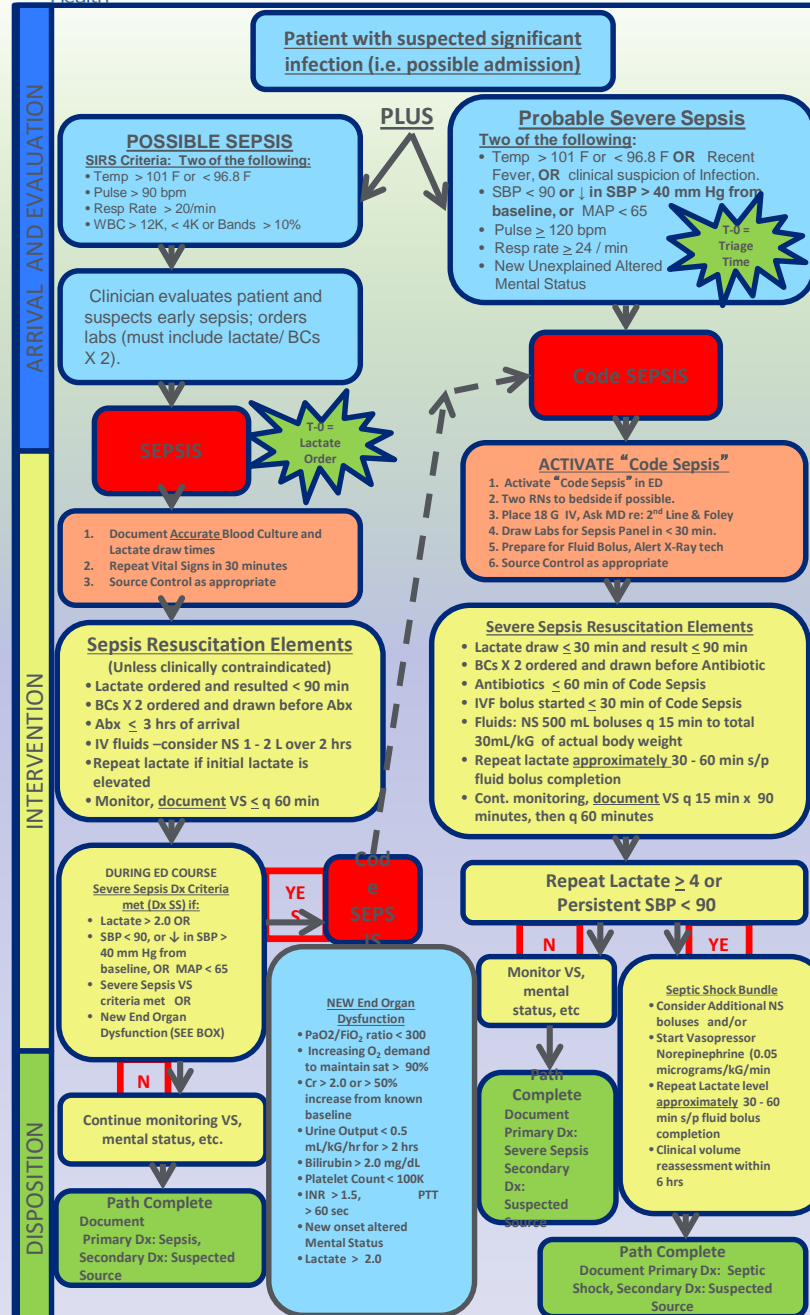
- Everyone does the same thing repeatedly - omissions become more obvious

Education about the process

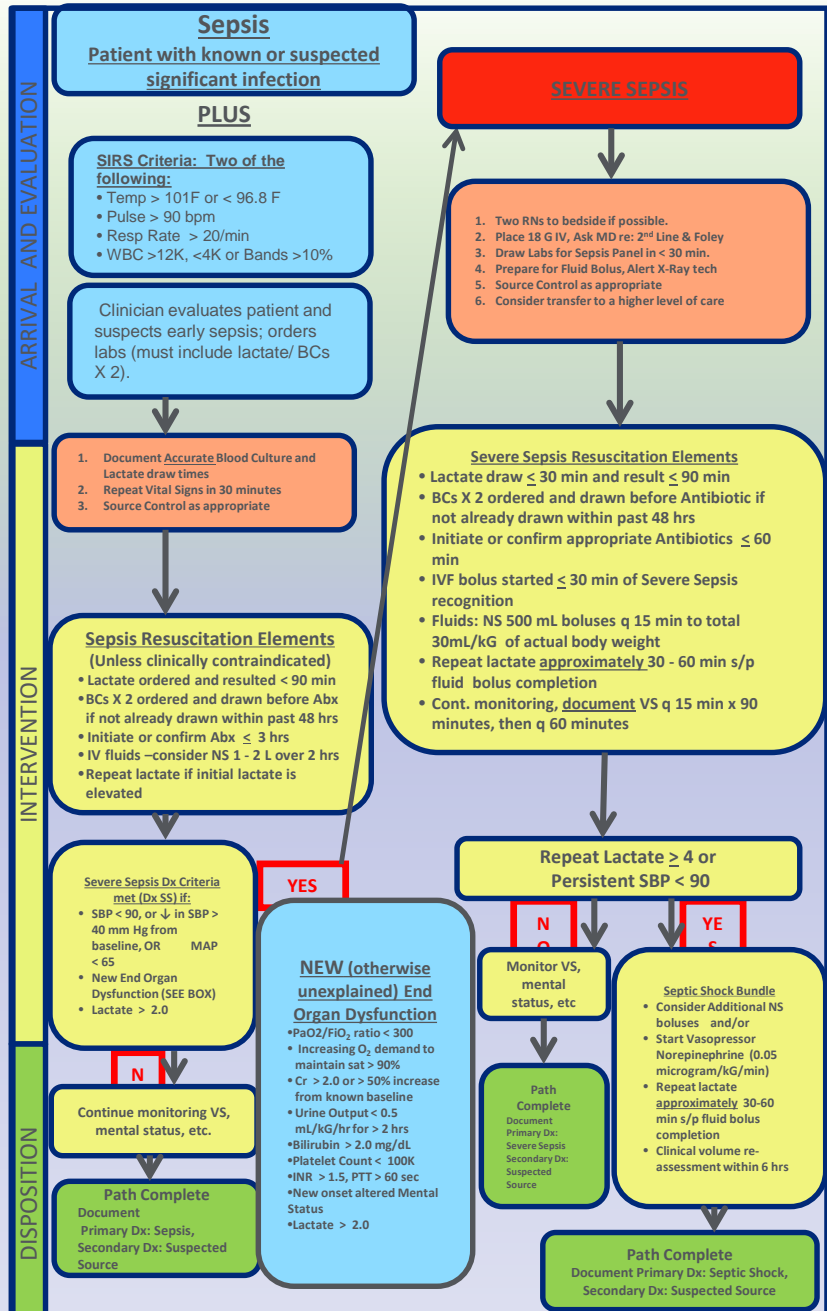
- Formal education so everyone is aware of the common goal and how to achieve it

Driver Diagram





Consultation, disposition, and transfer of care can occur at any point in the above care map. Hand off communication is critical and must include discussion of incomplete and complete elements.



Consultation, disposition, and transfer of care can occur at any point in the above care map. Hand off communication is critical and must include discussion of incomplete and complete elements.

Northwell Health ED Sepsis/Severe Sepsis Management

ARRIVAL AND EVALUATION

Patient with suspected significant infection (i.e. possible admission)

POSSIBLE SEPSIS

SIRS Criteria: Two of the following:

- Temp > 101 F or < 96.8 F
- Pulse > 90 bpm
- Resp Rate > 20/min
- WBC > 12K, < 4K or Bands > 10%

PLUS

Probable Severe Sepsis

Two of the following:

- Temp > 101 F or < 96.8 F **OR** Recent Fever, **OR** clinical suspicion of Infection.
- SBP < 90 or ↓ in SBP > 40 mm Hg from **baseline, or** MAP < 65
- Pulse ≥ 120 bpm
- Resp rate ≥ 24 / min
- New Unexplained Altered Mental Status

T-0 =
Triage
Time

Clinician evaluates patient and suspects early sepsis; orders labs (must include lactate/ BCs X 2).

SEPSIS

T-0 =
Lactate
Order

Code SEPSIS

ACTIVATE "Code Sepsis"

1. Activate "Code Sepsis" in ED
2. Two RNs to bedside if possible.

ARRIVAL AND EVALUATION

- Pulse > 50 bpm
- Resp Rate > 20/min
- WBC > 12K, < 4K or Bands > 10%

Clinician evaluates patient and suspects early sepsis; orders labs (must include lactate/ BCs X 2).

SEPSIS

T-0 = Lactate Order

1. Document Accurate Blood Culture and Lactate draw times
2. Repeat Vital Signs in 30 minutes
3. Source Control as appropriate

Sepsis Resuscitation Elements
(Unless clinically contraindicated)

- Lactate ordered and resulted < 90 min
- BCs X 2 ordered and drawn before Abx
- Abx ≤ 3 hrs of arrival
- IV fluids –consider NS 1 - 2 L over 2 hrs
- Repeat lactate if initial lactate is elevated
- Monitor, document VS ≤ q 60 min

INTERVENTION

baseline, or MAP < 65

- Pulse ≥ 120 bpm
- Resp rate ≥ 24 / min
- New Unexplained Altered Mental Status

T-0 = Triage Time

Code SEPSIS

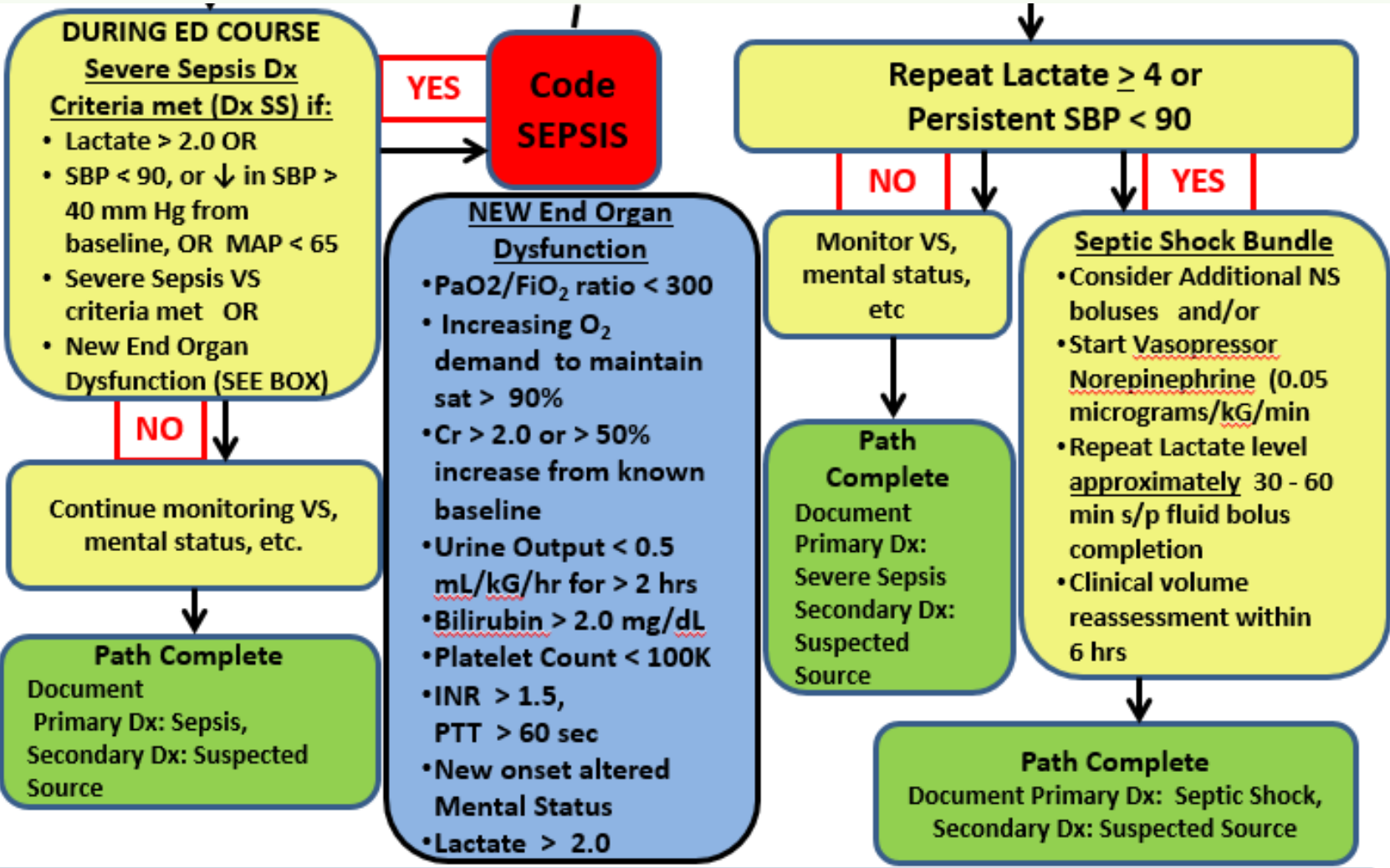
ACTIVATE "Code Sepsis"

1. Activate "Code Sepsis" in ED
2. Two RNs to bedside if possible.
3. Place 18 G IV, Ask MD re: 2nd Line & Foley
4. Draw Labs for Sepsis Panel in < 30 min.
5. Prepare for Fluid Bolus, Alert X-Ray tech
6. Source Control as appropriate

Severe Sepsis Resuscitation Elements





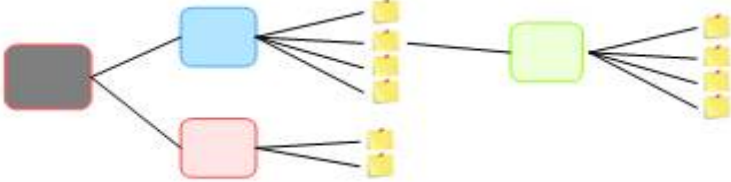

- Lactate draw ≤ 30 min and result ≤ 90 min
- BCs X 2 ordered and drawn before Antibiotic
- Antibiotics ≤ 60 min of Code Sepsis
- IVF bolus started ≤ 30 min of Code Sepsis
- Fluids: NS 500 mL boluses q 15 min to total 30mL/kg of actual body weight
- Repeat lactate approximately 30 - 60 min s/p fluid bolus completion
- Cont. monitoring, document VS q 15 min x 90 minutes, then q 60 minutes

DISPOSITION

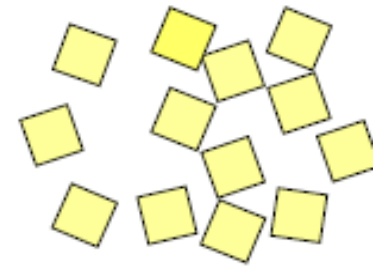


Consultation, disposition, and transfer of care can occur at any point in the above care map.
Hand off communication is critical and must include discussion of incomplete and complete elements.

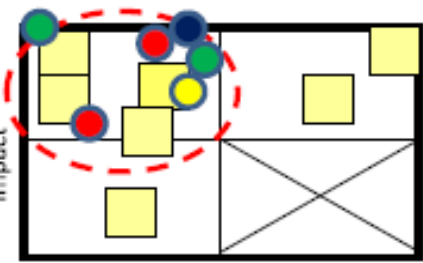
Improvement Science

<p>Gather together the subject matter experts</p>	
<p>Brainstorm "to achieve our goal, the things we need to improve are ..."</p>	
<p>Cluster the ideas to see if groups represent a common driver</p>	
<p>Expand the groups (or single ideas) to see if new drivers come to mind</p>	
<p>Logically link together the groups into a driver diagram format</p>	
<p>(Work backwards from project ideas if that helps!)</p>	

Collaborative Swim lane/PDSA Process



Create a current map of process



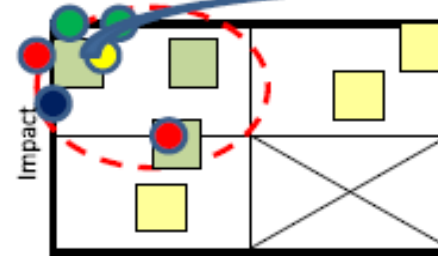
Ease Implementation

Prioritize **Causes** found during Brainstorm, then Vote for one to try to solve



Post your PDSA form and Swim lane on team site for

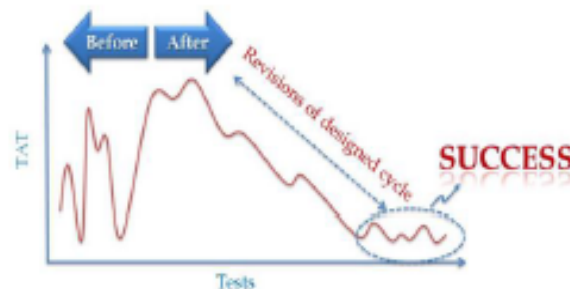
Identify current challenges and areas that have opportunities for Improvement



Ease Implementation

Brainstorm Potential **Solutions** to the cause chosen in prior step

Prioritize **Solutions** found during Brainstorm. Then vote for one for your 1st PDSA

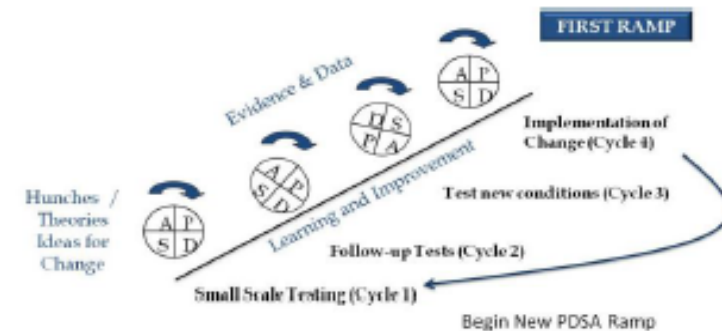


Run and test Your PDSA. You can use a Run chart to Graph your defined Process Metric

Brainstorm **Causes** to process inefficiencies

A PDSA form with a header section for 'Problem Statement', 'Hypothesis', and 'Plan'. Below the header is a table with columns for 'Date', 'Metric', 'Target', 'Actual', and 'Notes'. The table has several rows for data entry.

Design your PDSA Using PDSA form



Scale and Ramp-up your PDSA

Keys to Success

Teams needed from each site that consist of

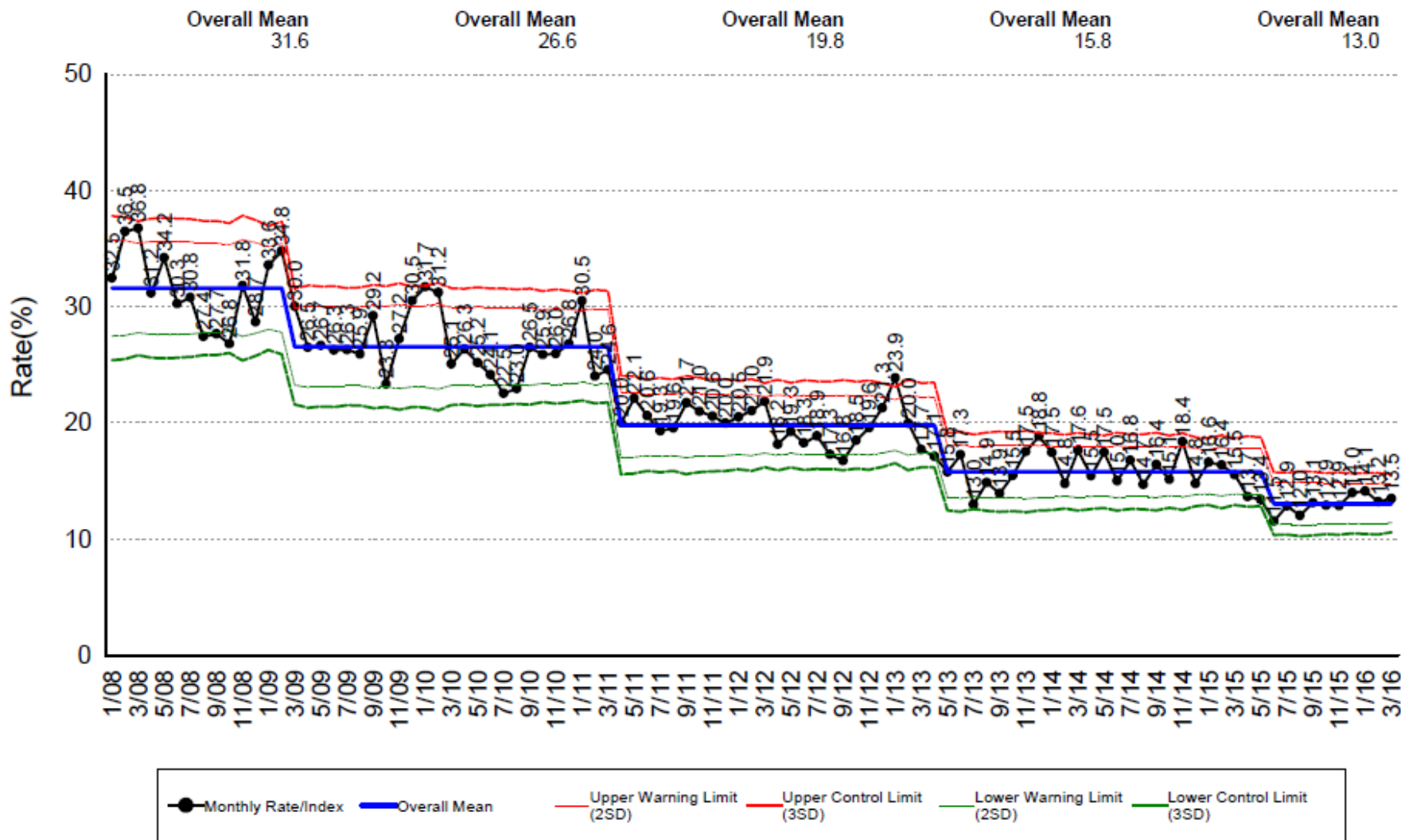
- A designated champion to serve as team lead at each site
- **Sponsor/Hospital Lead**

- **Clinical Leads**
 - physician and nurse “champions”
- Teams ~ 5-8 members and should expect a cumulative work load of ~ 40 hours per week per team in early stages; decreasing significantly over time but never disappearing.
- Weekly logistical support for Sepsis teams – protected time, meeting rooms, access to records, database support, etc.
- Engaged med. staff, especially ED and hospitalist at each facility
- IT support for sites needing to automate tools (ED algorithm, handoff tools, order sets, Modified Early Warning Score (MEWS), etc.)
- Educational commitment:
 - ED and ICU RN participation in CLI Sepsis Education Program (TSEP)
- Engagement of medical surgical-ward teams
- Near real-time metrics and review by physician and nursing leadership

Northwell Health

Raw Sepsis and Severe Sepsis/Septic Shock Mortality Rate

January 2008 - March 2016



Note: Sepsis and Severe Sepsis/Septic Shock discharges based on the following secondary ICD-9 codes: 99591 (Sepsis), 99592 (Severe Sepsis), 78552 (Septic Shock) is a subset of 99592 and is included in this report. The following ICD-10 codes for Sepsis, Severe Sepsis and Septic Shock are included after September 2015: 'A400','A401','A403','A408','A409','A4101','A4102','A411','A412','A413','A414','A4150','A4151','A4152','A4153','A4159','A4181','A4189','A419','A427','A5486','A021','A227','A267','A327','B377','R6520','R6521'. Excludes patients under 18 years of age.

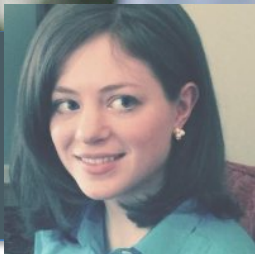
WHAT WOULD YOU LIKE TO SHARE OR ASK?

Share



Ask





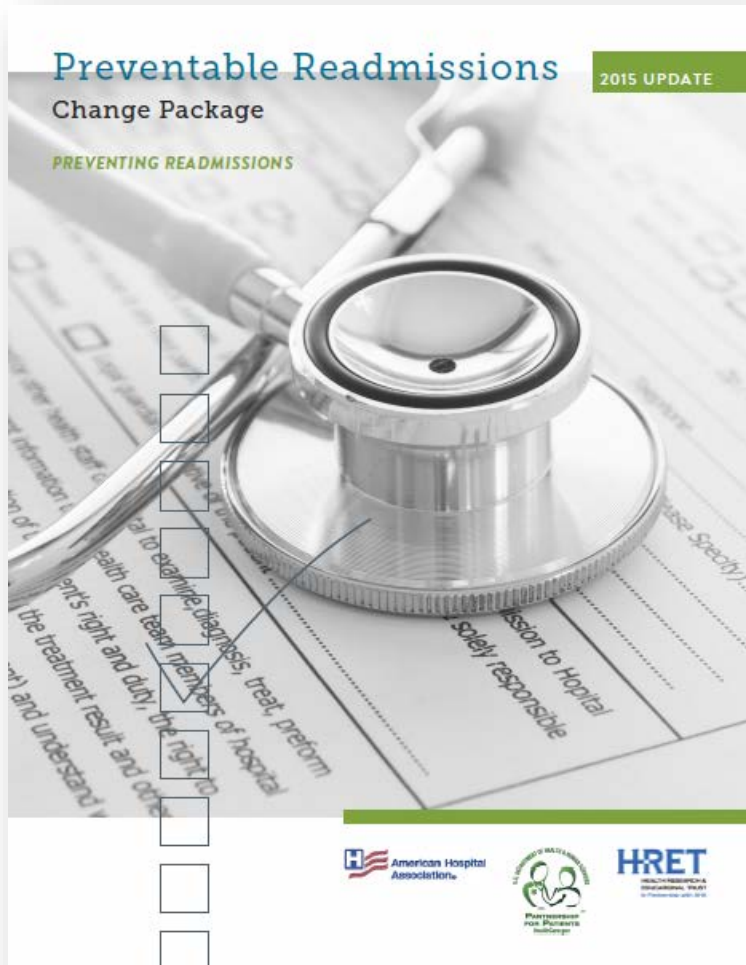
BRING IT HOME

Katie Harris, Program Manager, HRET | 11:50 – 11:55

MEASURING YOUR OVERALL SEPSIS RATE

- <http://www.hret-hen.org/topics/sepsis/20160126-Sepsis-FactSheet.pdf>

SEPSIS CHANGE PACKAGE



- Sepsis driver diagrams and change ideas
- Example PDSA cycles
- Descriptions and guidance on how to use change package effectively
- Referenced appendices

THANK YOU!

Find more information on our website:

www.hret-hen.org

Questions/Comments: hen@aha.org