

# Development of a patient care dashboard helps visualize sepsis care and identify opportunities for improvement

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# Disclosure



- We have no actual, potential, or perceived conflict of interest in relation to this presentation

# Motivation



- Complex sequence of events contributes to sepsis episode identification
- Timeline visualization helps:
  - Chart review
  - Data quality check
  - Quality improvement metric selection

# Dashboard content



- IPSO variables and other clinically relevant variables
- Filters for critical sepsis population, time zero location, date range
- Event detail in hover tooltips
- Color coding and shape to highlight key events
- Dashed line delineates pre/post functional time zero

Population  Time Zero Location  Time Zero Service

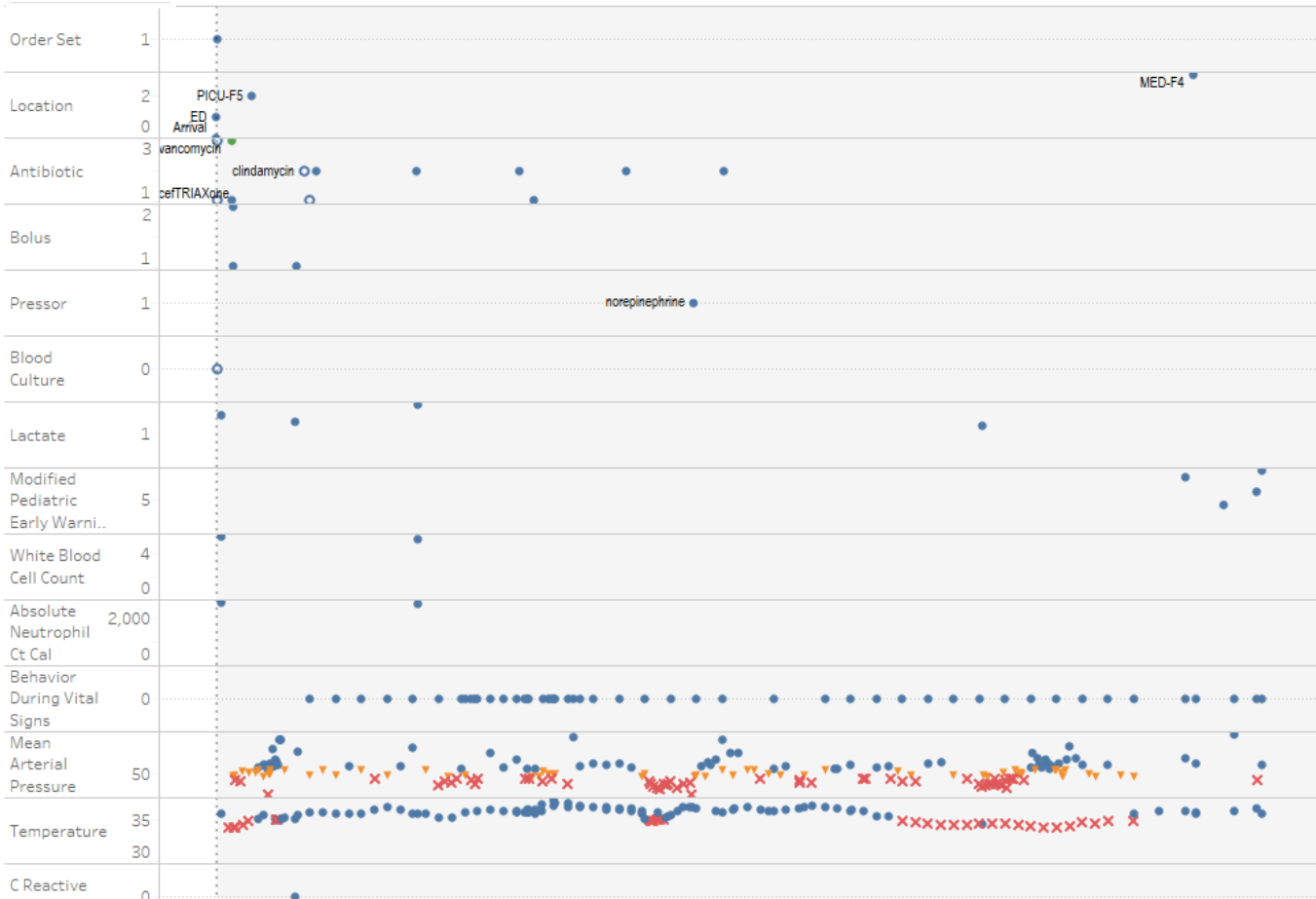
Patient Class   TZ +/- 3 days  Full encounter

Timeline Date Range

Select Time Zero Date Range

Day of DI	TZ TS	Population	Location
07/16/2016	Sepsis	ED	
	Sepsis	ED	
07/13/2016	Sepsis	ED	
	Sepsis	ED	
07/12/2016	Critical Sepsis	ED	
	Sepsis	ED	
07/11/2016	Sepsis	ED	
07/09/2016	Critical Sepsis	ED	
07/06/2016	Sepsis	ED	
	Critical Sepsis	ED	
07/02/2016	Critical Sepsis	ED	
06/30/2016	Critical Sepsis	ED	
	Critical Sepsis	ED	
06/29/2016	Critical Sepsis	ED	
06/28/2016	Sepsis	ED	
06/27/2016	Sepsis	ED	
06/23/2016	Sepsis	ED	
06/21/2016	Sepsis	ED	
06/20/2016	Critical Sepsis	ED	
06/19/2016	Sepsis	ED	
	Sepsis	ED	
06/18/2016	Sepsis	ED	
06/17/2016	Sepsis	ED	
06/13/2016	Critical Sepsis	ED	
06/12/2016	Critical Sepsis	ED	
06/08/2016	Critical Sepsis	ED	
06/05/2016	Sepsis	ED	
06/04/2016	Sepsis	ED	
	Critical Sepsis	ED	
06/02/2016	Sepsis	ED	
06/01/2016	Critical Sepsis	ED	
	Sepsis	ED	

### Example Encounter



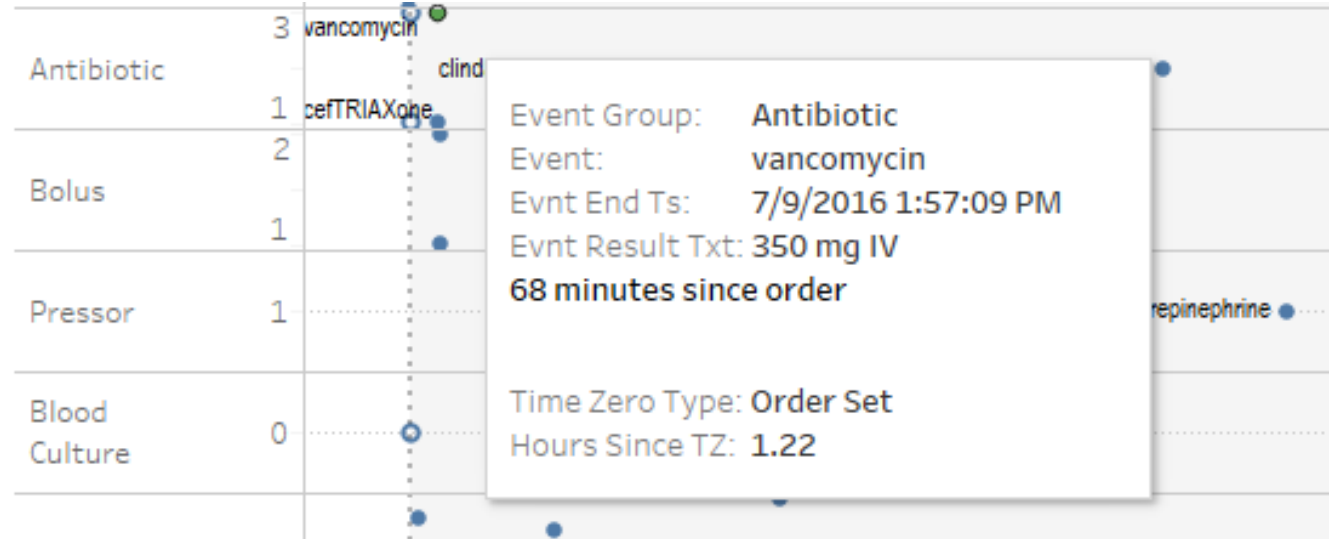
# Dashboard detail



(All) [dropdown]

Enter search text

- (All)
- Screen
- Huddle
- Order Set
- Location
- Antibiotic
- Bolus
- Pressor
- Blood Culture
- Lactate
- Diagnosis
- Modified Pediatric Early Warning Score
- Significant Event
- White Blood Cell Count
- Absolute Neutrophil Ct Cal
- Behavior During Vital Signs
- Mean Arterial Pressure
- Temperature
- C Reactive Protein
- Procalcitonin

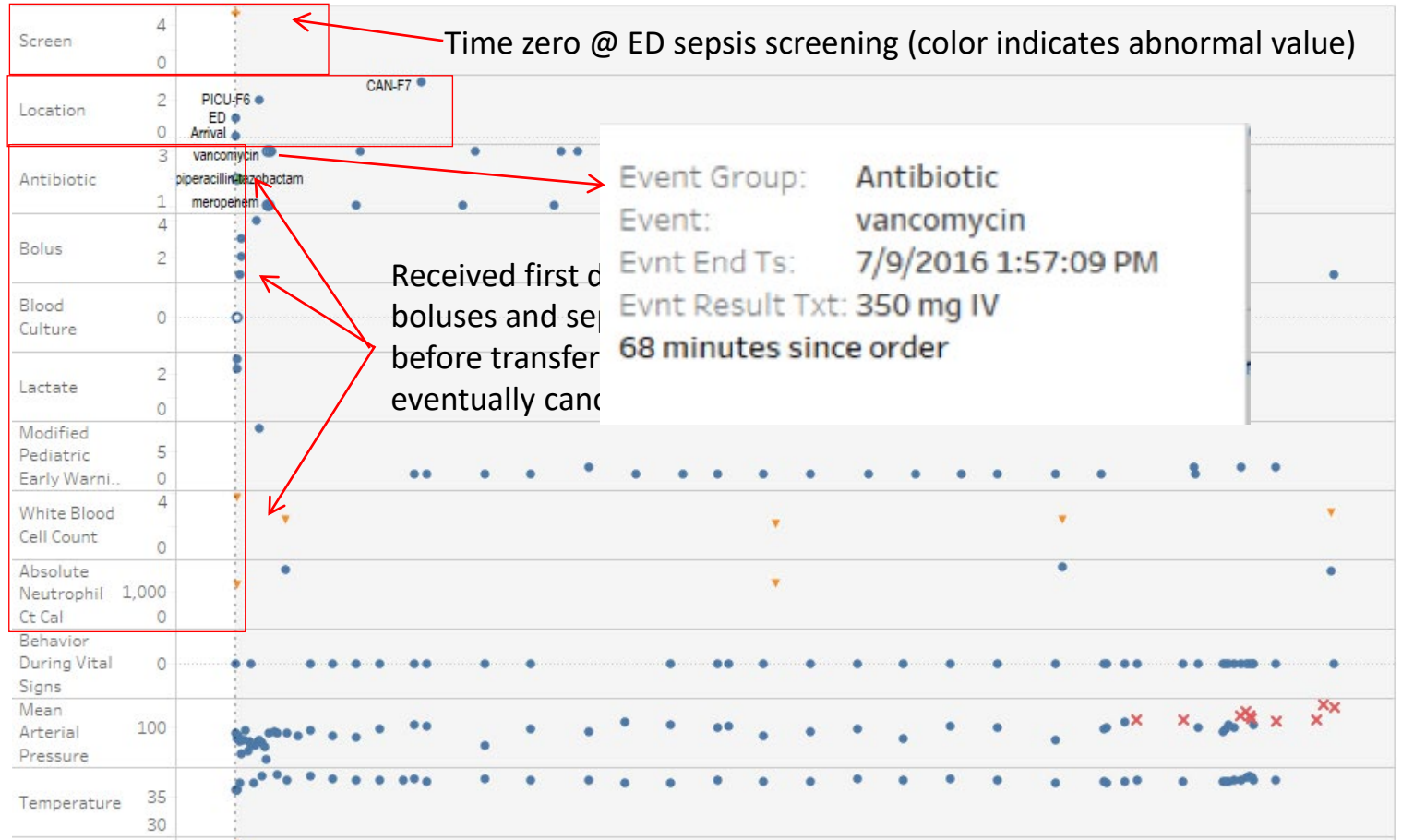


# Example 1

## ED

Typical sepsis episode

events



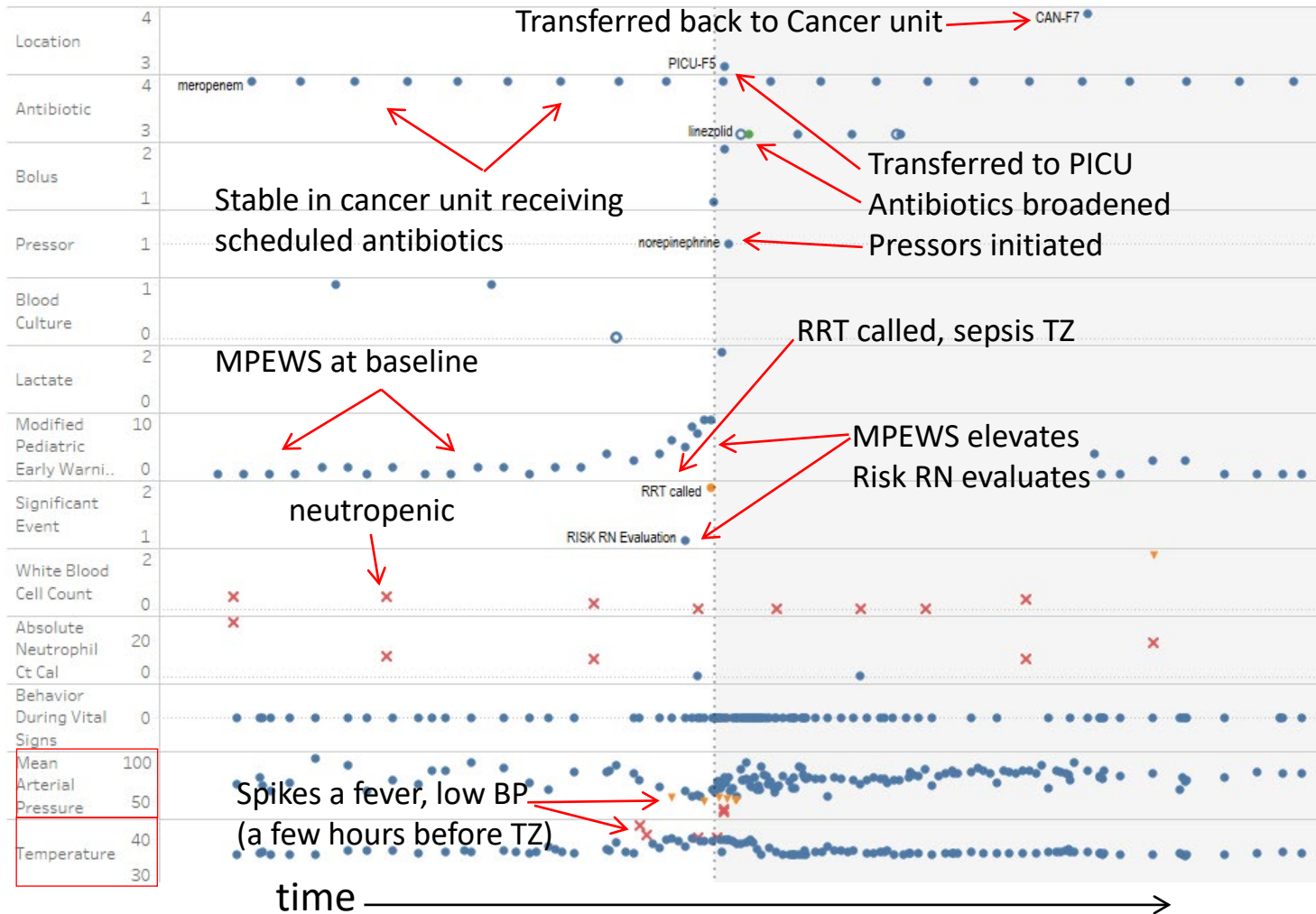
time →

## Example 2

### Cancer Unit

Facilitating chart review

events





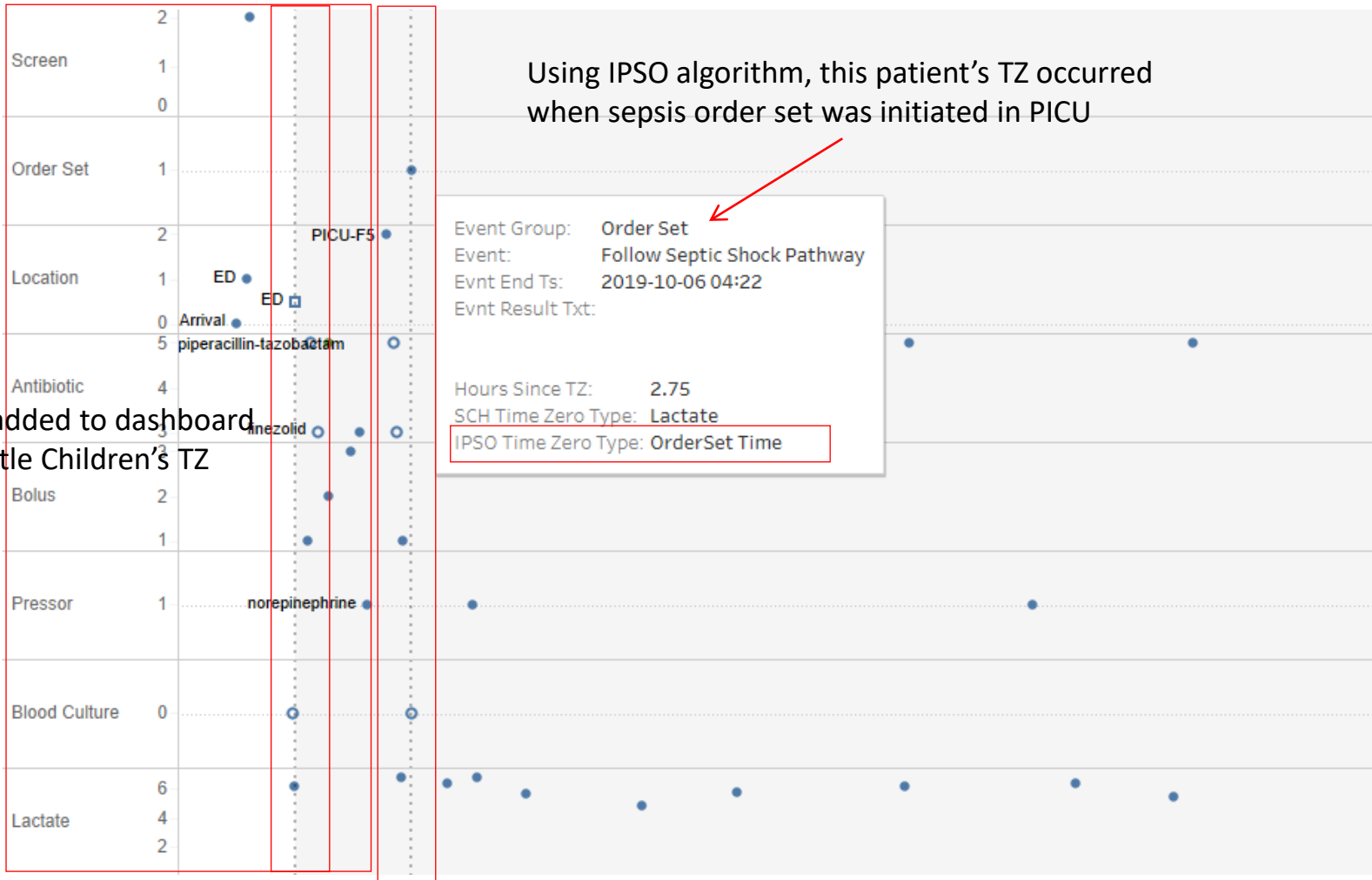
# Example 3

## PICU

Redefining time zero

Despite a negative screen and no order set use, they clearly

received sepsis care in the ED – including 3 boluses, antibiotics, and pressors!



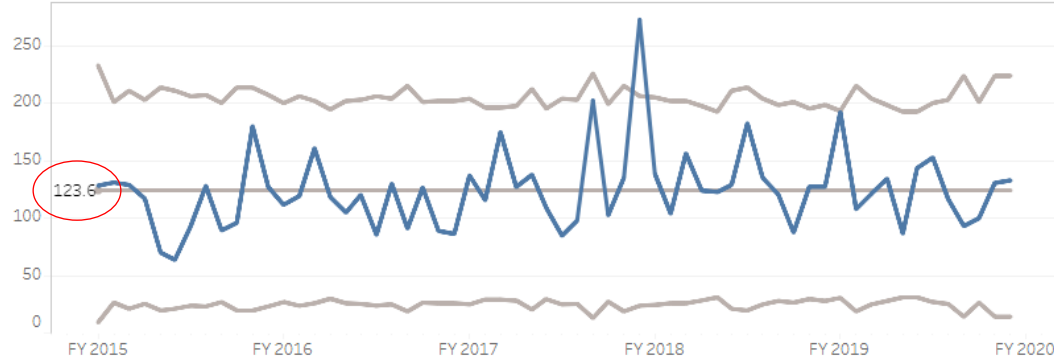
Additional TZ line added to dashboard to reflect true Seattle Children's TZ

# Evaluate quality improvement metrics

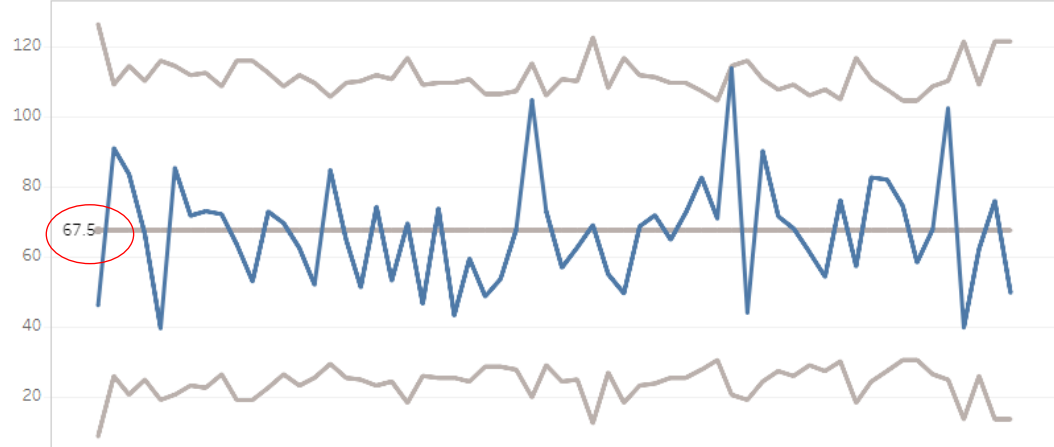


Need to understand baseline before defining quality metric for hospital dashboard

Time zero to antibiotic start



Order to antibiotic start



Population

- (All)
- Critical Sepsis
- Sepsis

Location Group

- (All)
- ACU
- CAN
- CICU
- ED
- MED
- NICU
- PICU
- REHB
- SUR
- SURGNTR

Time Zero Type

(All)

Date Level

- month
- quarter

Order to ABX Range

1 1041

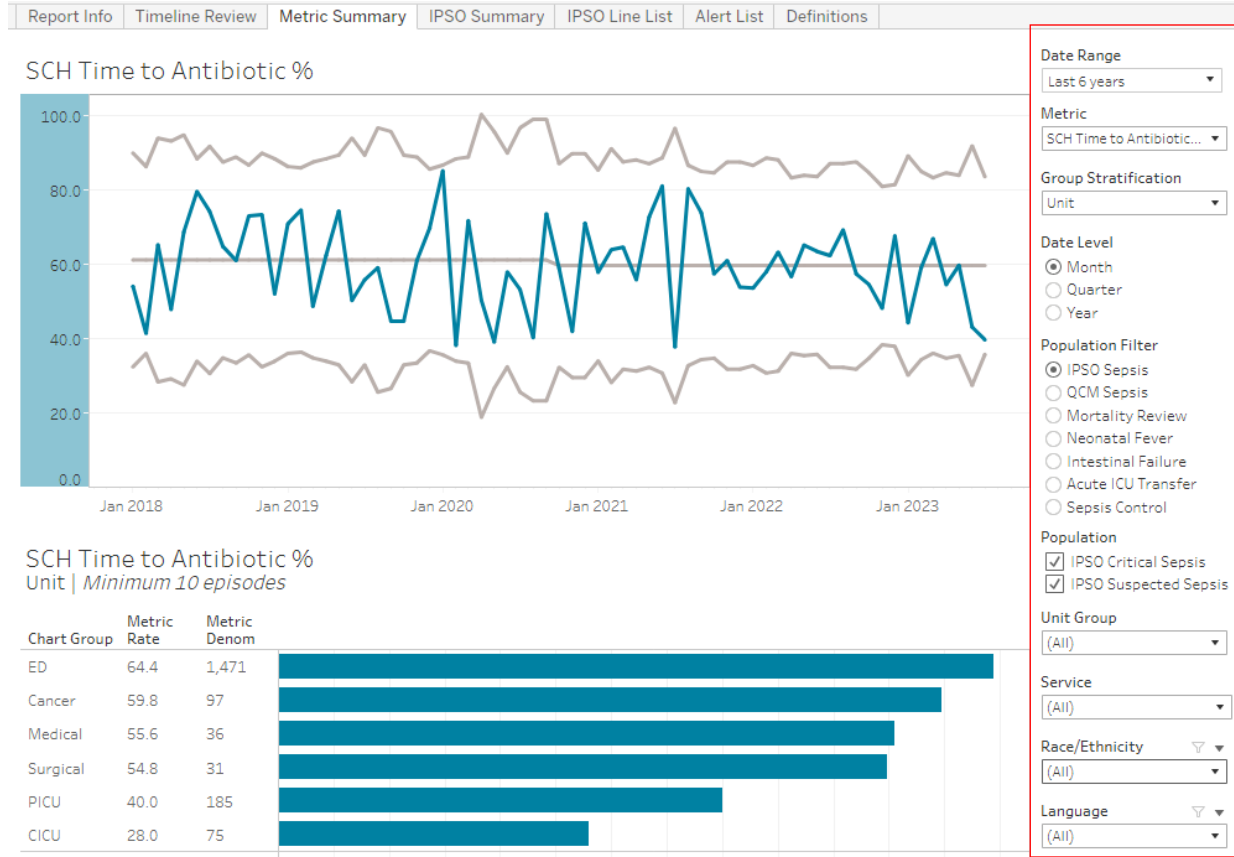
TZ to ABX

0 1438

Antibiotic start is the first administration of a new antibiotic agent 0-24 hours after IPSO functional time zero. Encounters where no administration meets this criteria are excluded.

SPC charts change in real time depending which populations, locations time zero type and time frames are selected

# Filter detail



Ability to visualize measures by hospital location, race/ethnicity, or language.

# Implementation



- Two tables in enterprise data warehouse
  - 1) Sepsis episode list
  - 2) Associated events list linked by encounter ID
- Dashboard published on organization's Tableau server
- Can refresh daily with yesterday's data
- Analytics resources: 2 data engineers, 1 data analyst