



**Billings Clinic**

# Early Sepsis Identification at the Point of Triage

Pam Zinnecker RN, BAN, MSNEd, CCRN  
ICU Clinician

# Billings Clinic

- Community-owned health care organization
- 272 bed hospital
- Magnet Designation

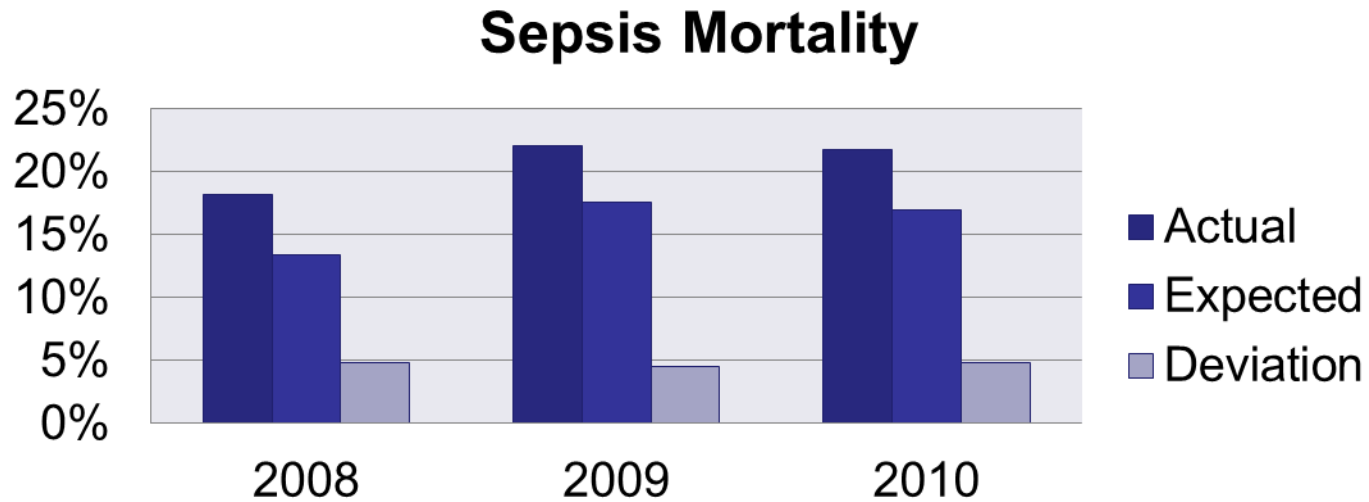


# Purpose

- Sepsis is the 10<sup>th</sup> leading cause of death in the United States
- Patient's admitted with septic shock have 46% mortality rate
- Mortality increases with delay in treatment



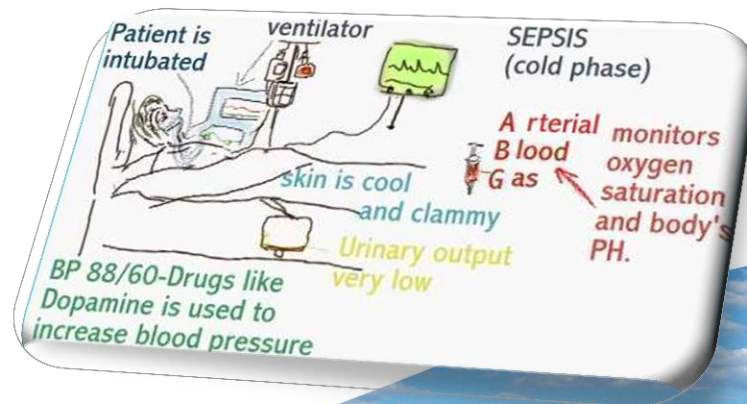
# What our data showed



- Our actual mortality exceeded our expected mortality
- Something had to be done!

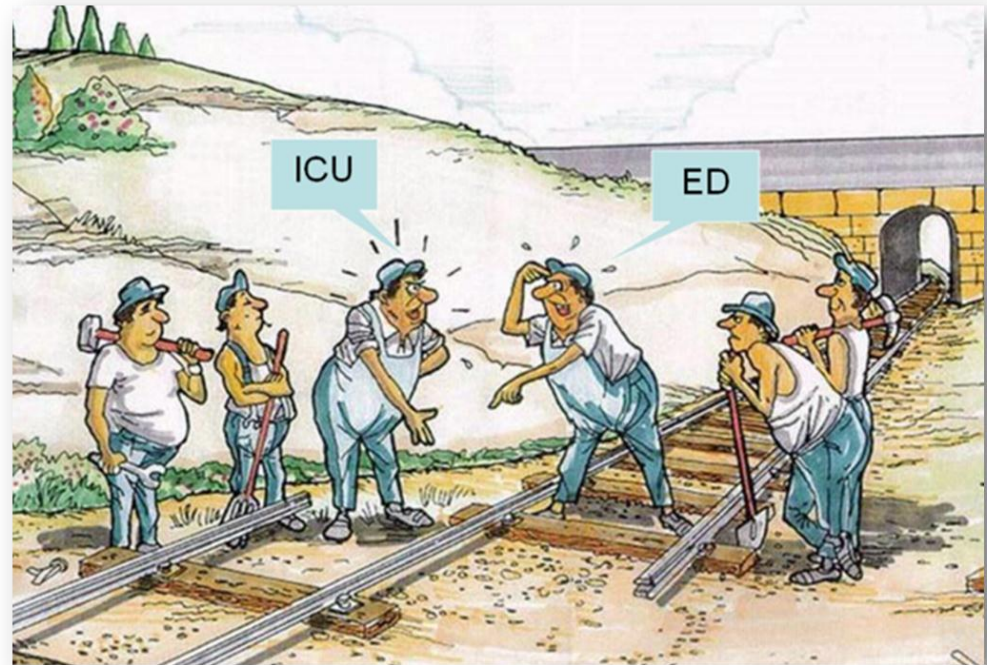
# Goal

- Improve mortality
  - Early identification
  - Patient placement for treatment
    - Up to 3 patients per month were transferred to ICU within hours of admission to the hospital with Sepsis



# Multidisciplinary Team

- ICU
- ED
- Pharmacy
- Med-Surg
- Informatics



# Process

- ED triage
- Computerized cue
- Standard order sets
- Guidelines for patient placement
- Nursing and medical staff education



# ED initial triage and screening

ED Sepsis Screening - Triage

Chief Complaint  
Ht/Wt  
Sepsis Screen  
Pain Assessment

Does Patient Meet Criteria for Possible Sepsis?

- Possible infection
- Temperature > 100.4 F
- Temperature < 96.8 F
- Heart rate > 90
- Respiratory rate > 20
- PaCO2 < 32
- Mechanical ventilation

Patient Meets ED Criteria for Possible Sepsis

Yes

If "Possible infection" is checked above along with at least 2 of the other criteria elements, the the patient meets ED criteria for possible sepsis



| Tracking Shell   |    |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
|--|----|----|------|-----|-----|-----|----|------|-----|----------------|--------|-------------------------------------|-------------------------------------|--------------------------|-----|----------------|--------------|
| <span>ED All Beds</span> <span>ED A</span> <span>ED B</span> <span>ED C</span> <span>ED D</span> <span>ED Triage</span> <span>ED Checkout</span> <span>ED Discharged</span> <span>ED Disaster</span> <span>ED GB EMS</span> <span>ED direct admits</span> <span>ED WR</span> |    |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| Patient: SEIB JR, DAVID    WR: 1    Total: 16    Avg LOS: 1:35    Filter: <None>   |    |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| Ba   | St | Ac | LOS  | MD  | RN  | Iso | No | Name | Age | Visit Reason   | Events | Lab                                 | Rad                                 | Ord                      | MAI | Comments       | Patient Care |
| A1   | As | 2  | 1:13 | RT  | ML  |     |    |      | 82  | Syncope        |        | 10/1                                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2   |                |              |
| A2   | As | 2  | 3:45 | RT  | ML  |     |    |      | 52  | Chest Pain     |        | <input checked="" type="checkbox"/> |                                     | 3/2/2                    |     |                |              |
| A3   | As | 2  | 1:02 | RT  | DS  |     | ★  |      | 55  | Ingestion      |        | 8/5                                 |                                     | <input type="checkbox"/> |     |                |              |
| A4   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| A5   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| A6   | As | 2  | 0:34 | RW  | ewv |     |    |      | 44  | Chest Pain     |        | 5/0                                 |                                     |                          |     | NO OLD EKG     |              |
| A7   | As | 3  | 0:19 |     | ewv |     |    |      | 27  | OTHER          |        | 5/0                                 |                                     |                          |     | need EKG order |              |
| A8   | As | 2  | 2:08 | PJL | DS  |     |    |      | 49  | DYSPNEA        |        | 9/5                                 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1   |                |              |
| B1   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| B2   | As | 2  | 1:45 | PJL | SF  |     |    |      | 32  | PAC            |        |                                     |                                     |                          |     |                |              |
| B3   | As | 2  | 0:23 | RW  | SF  |     |    |      | 17  | PAC            |        | 5/0                                 |                                     |                          |     |                |              |
| B4   | As | 2  | 2:29 | PJL | RB; |     |    |      | 25  | PAC            |        |                                     |                                     |                          |     | pick up 1700   |              |
| B5   | As | 2  | 3:10 | PJL | RB  |     |    |      | 51  | PAC/SPINE PAIN |        |                                     |                                     |                          |     |                |              |
| B6   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| B7   | As |    | 0:35 |     |     |     |    |      |     | HOUSEKEEPING   |        |                                     |                                     |                          |     |                |              |
| B8   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| B9   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| C1   | As | 3  | 1:43 | PRI | CR  |     |    |      | 87  | LIMB PAIN OLD  |        |                                     |                                     |                          |     | schultz        |              |
| C2   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| C3   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| C4   | As | 3  | 0:14 | RT  | CR  |     |    |      | 20  | Abdominal Pain |        | 5/0                                 |                                     |                          |     |                |              |
| C5   | Av |    |      |     |     |     |    |      |     |                |        |                                     |                                     |                          |     |                |              |
| C6   | As |    | 1:46 | RT  | TS  |     |    |      | 18  | Mult Traum     |        |                                     | <input checked="" type="checkbox"/> |                          |     | Gorsuch        |              |
| C7   | As | 3  | 3:02 | RT  | TS  |     |    |      | 53  | Dizziness      |        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                          | 4   |                |              |

# ED Identifier

# ED 2<sup>nd</sup> Screening

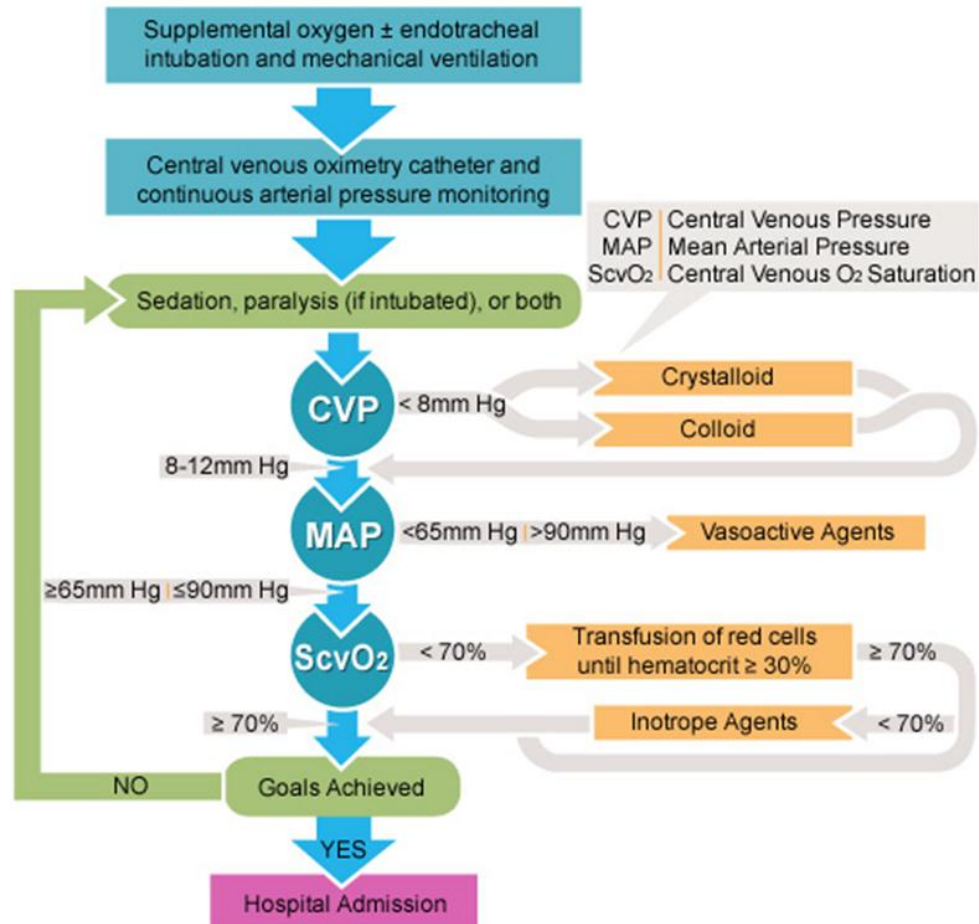
|                                 |  | 09/12/2011                          |       |       |       |       |                     |
|---------------------------------|--|-------------------------------------|-------|-------|-------|-------|---------------------|
|                                 |  | 14:55                               | 14:49 | 14:43 | 14:41 | 13:05 | 12:49               |
| <b>- Sepsis Screening</b>       |  | <input checked="" type="checkbox"/> |       |       |       |       |                     |
| Screen Criteria for Possibl...  | Screen Criteria for Possible Sepsis                                  |                                     |       |       |       |       | Possible infecti... |
| Screen For Sepsis               | <input checked="" type="checkbox"/> Possible infection               |                                     |       |       |       |       | Yes                 |
| <b>- Pain</b>                   | <input checked="" type="checkbox"/> Temperature > 100.4 F            |                                     |       |       |       |       |                     |
| <b>- Pain</b>                   | <input type="checkbox"/> Temperature < 96.8 F                        |                                     |       |       |       |       |                     |
| No complaint of pain            | <input checked="" type="checkbox"/> Heart rate > 90                  |                                     |       |       |       |       |                     |
| <a href="#">Pain Scale Used</a> | <input type="checkbox"/> Respiratory rate > 20                       |                                     |       |       |       |       |                     |
| Pain Location                   | <input type="checkbox"/> PaCO2 < 32                                  |                                     |       |       |       |       | Other: pelvis       |
| Pain Intensity/Score            | <input type="checkbox"/> Mechanical ventilation                      |                                     |       |       |       |       |                     |
| Pain Interventions              | <input type="checkbox"/> BP MAP < 65                                 |                                     |       |       |       |       |                     |
| Pain Quality                    | <input type="checkbox"/> SBP drop of 40 from baseline                |                                     |       |       |       |       |                     |
| Pain History/Comments           | <input type="checkbox"/> New mental status change                    |                                     |       |       |       |       | ain to left...      |
| <b>- Additional Pain</b>        | <input type="checkbox"/> WBC > 12,000                                |                                     |       |       |       |       |                     |
| <b>- HEENT</b>                  | <input type="checkbox"/> WBC < 4,000                                 |                                     |       |       |       |       |                     |
| Eye, Right Visual Acuity        | <input type="checkbox"/> WBC diff showing > 10% immature neutrophils |                                     |       |       |       |       |                     |
| Eye, Right w/Correction V...    | <input type="checkbox"/> Other                                       |                                     |       |       |       |       |                     |
| Eye, Left Visual Acuity         |  |                                     |       |       |       |       |                     |
| Eye, Left w/Correction Vis...   |  |                                     |       |       |       |       |                     |

# Admit to ICU

- Suspected Sepsis
- Lactate  $>3$
- Greater than 2 organ failure



# Early Treatment



# Med-Surg Education



## Early Identification

### \*Vital Signs

- Blood Pressure
  - Drop of 40 from baseline
- MAP
  - Less than 65
- HR, Pulse
  - Greater than 90
- RR
  - Increased greater than 20
- Temperature
  - Greater than 100.4 F
  - Less than 96.8 F

### \*Change in 2 or more systems

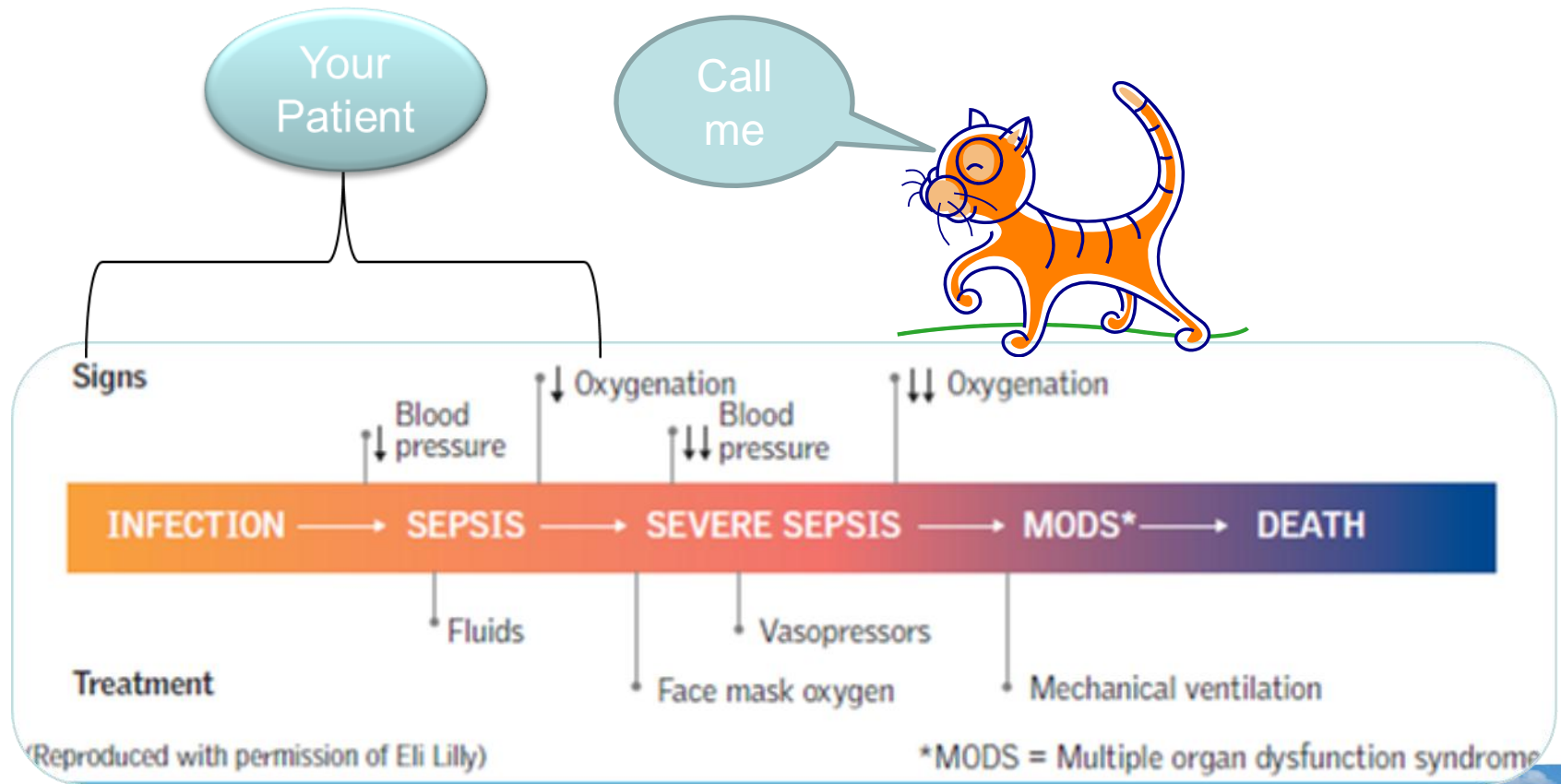
- LOC, mentation
- Increased RR, work of breathing
- Urine output

### \*Labs

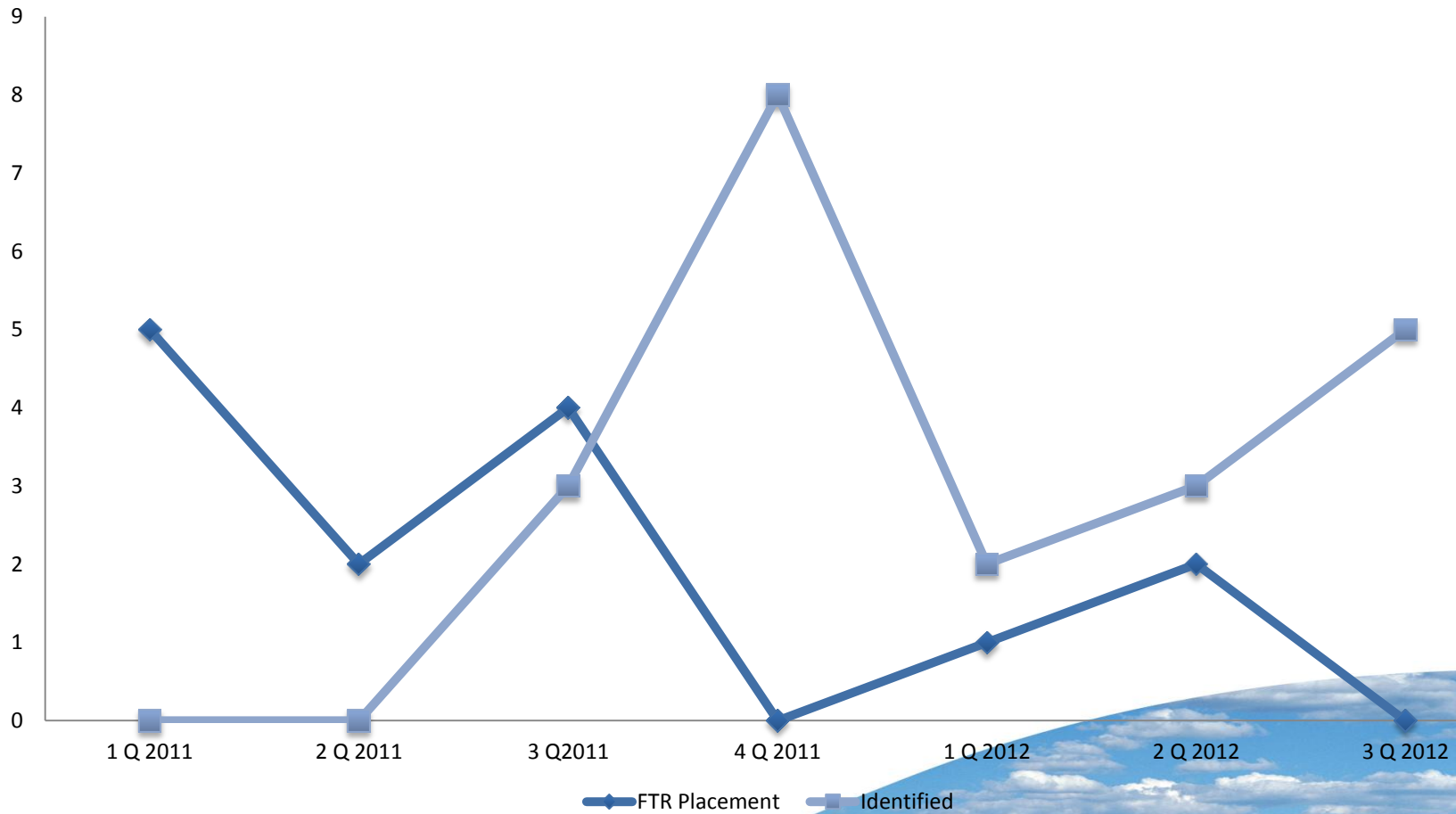
- WBC—identify signs of infection
  - Greater than 12,000
  - Less than 4,000
- Lactate—indicates perfusion
- Cultures—identify source of infection

- Mandatory Classes
- Sepsis Case Studies
- Failure to recognize individual case reviews

# Med-Surg Involvement



# Patient Placement and Case Identification



# Latest Outcomes

