Streamlining Sepsis Initiative

Nicholas Graff DO

Robert Nolan DO

Lakeland Health

MICHIGAN STATE UNIVERSITY | College of Osteopathic Medicine

Intro

- Disclosures
  - None

- Our research is IRB approved

Background[1-9]

Sepsis[1,2]

- 1 million cases annually
- In-hospital mortality 14.7% - 29.9%
- $17 billion nationally

- Surviving Sepsis Campaign[1]
- Treatment barriers[5-9]
  - Resources
  - Recognition
  - Treatment modalities

Background

- 2011 - Lakeland Health announces a transition from paper charting to electronic based medical records
  - 80,000 patient/year community ED

Adapting Technology to Healthcare

- How can we use this technology to improve
  - medical staff workflow
  - patient centered care
  - medical outcomes

Early Recognition

- Earlier recognition > earlier therapies = improved patient outcome[10,11]
- Goal
  - To recognize sepsis from the onset of hospitalized care
- How
  - Creating an identification tool used during ED triage

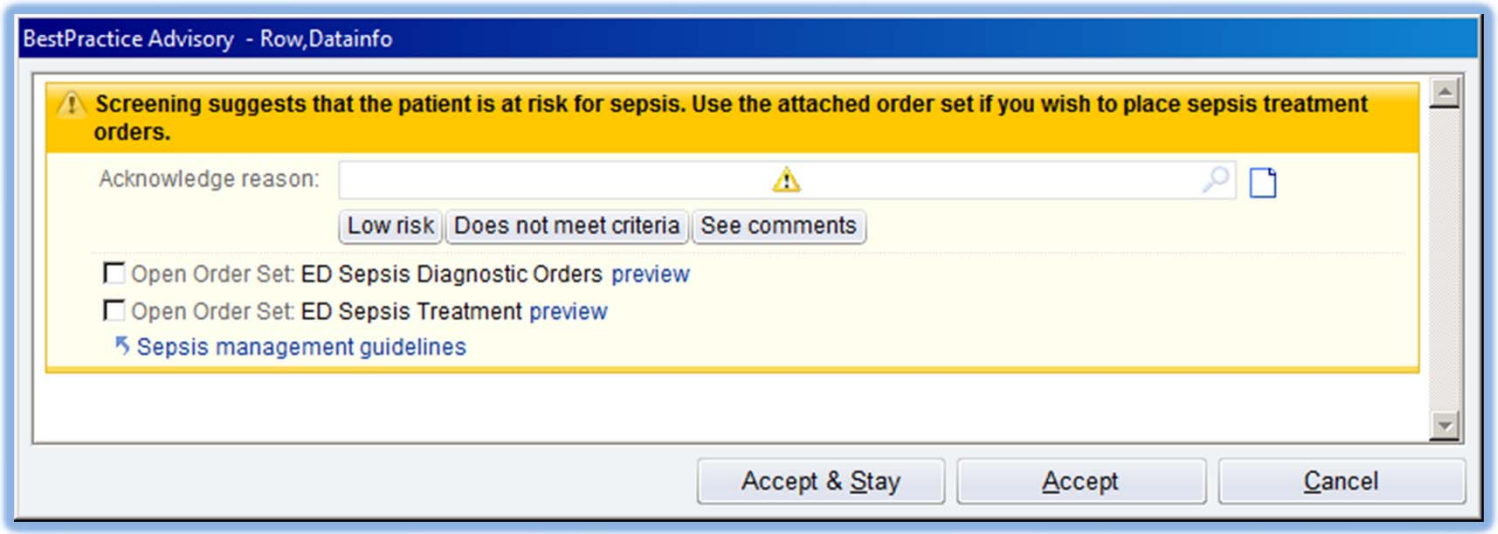
Parametric Tools

- We can use technology for patient care by encoding evidence based parameters

- SIRS criteria[1]
  - HR > 90 bpm
  - RR > 20 brpm or $PaCO^2$ > 32 mmHg
  - Temp > 38^C; < 36^C
  - WBC > 12k; < 4k; >10% bands

Best Practice Advisory

- BPA
  - Using SIRS parameters we encoded a “hard stop” medical alert into our EMR
  - June 1, 2013 implementation



Clinical Question

- Will the implementation of an electronic medical record based sepsis identification tool in the emergency department lead to earlier sepsis treatment?

Methods

- A retrospective cohort study of clinically effectiveness
- 3,076 patients
- Patient charts were identified for this study who met the criteria of: ≥18 years old; emergency department evaluation; ICD-9 code of sepsis, severe sepsis, or septic shock.

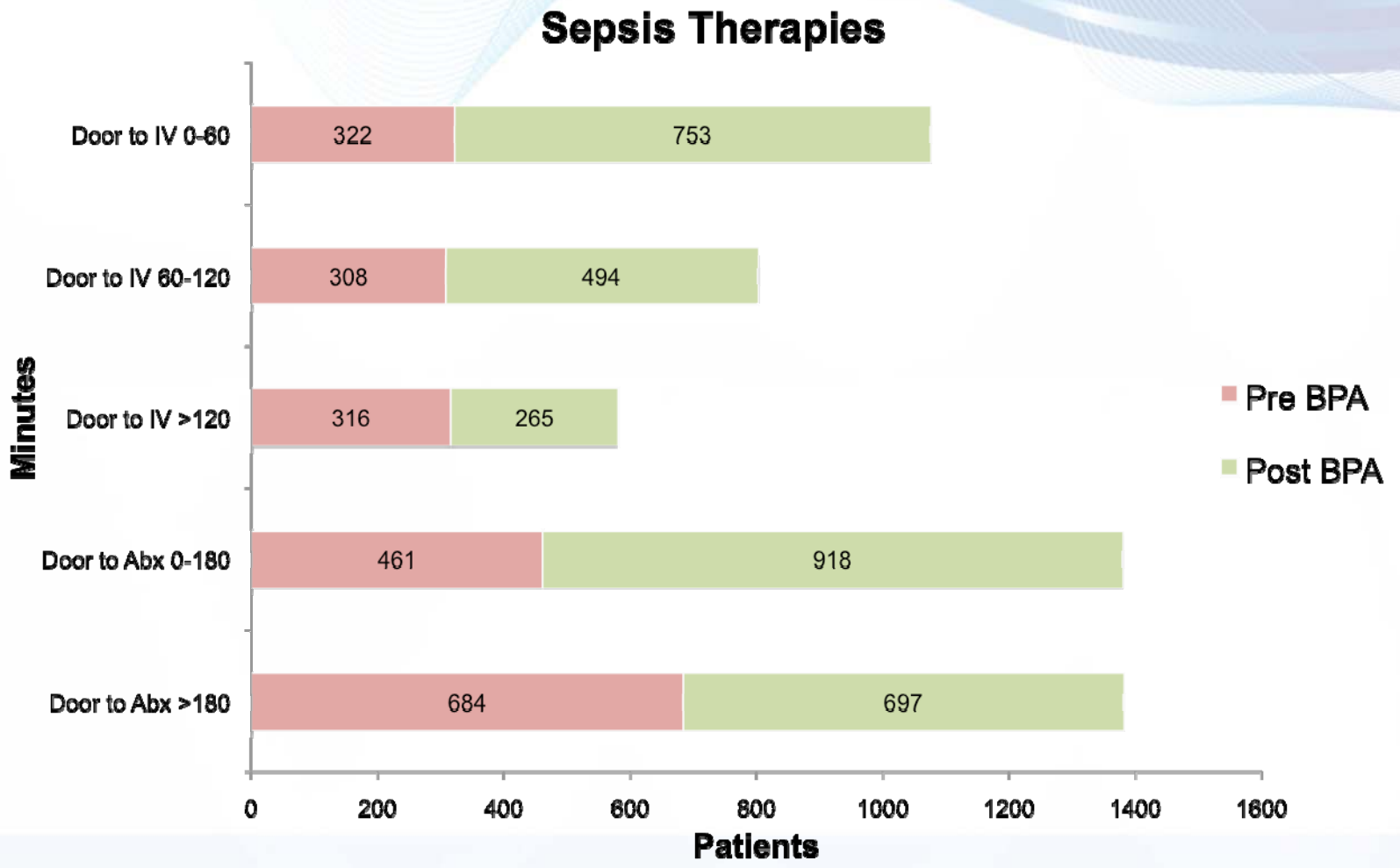
- 2 treatment groups: pre- and post-BPA
  - Treatment in each group was unchanged and followed SSC guidelines tailored to our institutional resources.

- Outcomes:
  - Primary: time from emergency department arrival to intravenous fluids and antibiotics
  - Secondary: in-patient mortality

Results

- Time to IV fluids in the first 60 minutes of ED arrival improved from 34% to 49.9
  - (difference of 15.9%; P value <.05)
- Time to antibiotics in the first 180 minutes of arrival improved from 40.3% to 56.8
  - (difference of 16.5%; P value <.05)
- Analyzed data via 2-tailed chi^2 test

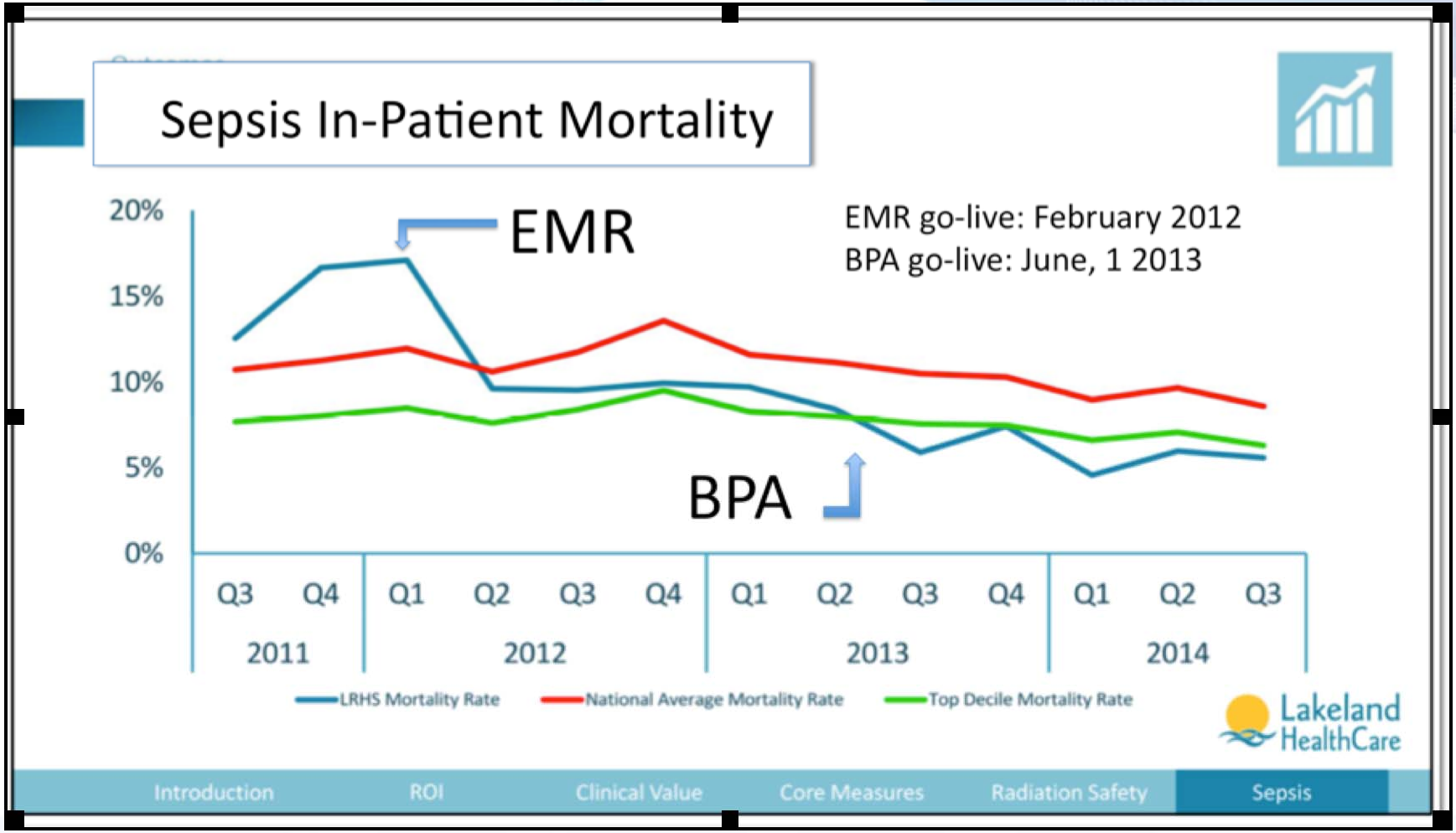
Primary Outcome



Secondary Outcome

- 1,266 patients treated pre-BPA and 1,810 post-BPA with in-patient mortality 10.5% and 7.5%, respectively
  - (difference of 3%; P value < .05)

Mortality Comparison[2]



Conclusion

- Our study has demonstrated effective earlier implementation of sepsis therapy.
- This earlier treatment correlates with the utilization of an electronic sepsis identification tool in the emergency department that may have contributed to decreased mortality of septic patients.

Discussion

- Generalizability and Validity concerns
  - Retrospective approach
  - Recent studies have shown that a tight sepsis protocol is not necessary to improve survival, but that earlier recognition and treatment of sepsis may be.[10,11]
  - We believe that this is why improvement in mortality was demonstrated in our study.

Discussion Cont

- Similar parametric tools have been employed for stroke and ACS
- We are benefiting our community by utilizing technology as an active clinical tool.

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