# Impact of Emergency Department Sepsis Policy

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## Significance

- Sepsis is a serious concern due to high incidence, mortality, and cost
- 6th most common admitting diagnosis
- Mean length of stay 8.8 days
- Daily cost of $2,300
- Mortality 16%
  (AHRQ, 2012)

## PICOT

In adult emergency department (ED) patients, what is the impact of a sepsis policy on staff compliance to best practice recommendations (early identification of potential sepsis patients, diagnosis utilizing lactate levels and cultures, and timely treatment with the sepsis bundle), length of stay, and patient mortality as compared to no policy over a four month period?

## Review of the Literature

- **Databases Searched:** JBI, Medline, CINAHL, Cochrane, ProQuest, National Guideline Clearinghouse
- **Key Terms:** emergency, lactate, protocol, sepsis screening, sepsis identification
- **Inclusion Criteria:** peer-reviewed, scholarly, published in English since 2012
- **Exclusion Criteria:** non ED units, focus on advanced care, utilized guidelines developed prior to 2012, focused on pediatric or obstetrical populations

## Evidence

| Level of Evidence | Included | Designs of Evidence | Quality Grade |
|---|---|---|---|
| Level 1 | 0 | Randomized Controlled Trials (RCTs) Meta-Analyses of RCTs | |
| Level 2 | 6 | Quasi-Experimental with independent variable manipulation (6) | A (3) B (2) C (1) |
| Level 3 | 2 | Non-experimental studies (2) Qualitative Studies Meta-synthesis of Qualitative Research | A (1) C (1) |
| Level 4 | 1 | Systematic Reviews Clinical Practice Guidelines (1) | A (1) |
| Level 5 | 5 | Quality Improvement Projects (2) Expert Opinion/Literature Review (3) Case Studies | A (4) B (1) |

*John Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal and Non-Research Appraisal tools used for leveling of evidence and appraisal of evidence

## Synthesis of Evidence

**14 Articles Included**

**Outcomes:**
- Protocolized format improves care
- Early identification of potential sepsis patients decreases mortality
- Early treatment improves patient outcomes
- Bundled care decreases mortality/length of stay

(Bastani et al., 2012;Dellinger, et al., 2013; Keegan et al., 2014; Kent et al., 2012; Perman et al., 2012, Rivers et al., 2012; and Singer et al., 2014)

## Decision to Change Practice

**Best Practice Recommendations:**
- Protocolized format for early identification of potential sepsis patient using a screening tool and point of care lactate levels
- Blood cultures drawn prior to antibiotics
- Early treatment with administration of broad spectrum antibiotics/fluids

**Practice Change:**
- Development of sepsis identification and care policy incorporating best practice
- Utilization of existing computer screening tool
- Face to face and computer education
- Daily feedback on compliance with policy

## Implementation

**Participants and Setting:**
- Hospital Based Emergency Department in Northwest Indiana
- All patients $\geq$ 18 years of age presenting to ED ($n = 4326$)

**Theoretical Framework:** Kotter Model of Change (Kotter, 1996)

**Evidence Based Practice Model:** Stetler Model of Evidence Based Practice (Stetler, 1994)

**Method:**
- Identify and appraise best evidence
- Develop early identification/treatment policy
- Disseminate policy to ED staff
- Display posters throughout ED and provide "Badge Buddies" to each staff member to reinforce policy
- Monitor Electronic Health Records for staff compliance to policy
- Provide daily feedback to staff on compliance to policy components

**Time:** 4 months

## Evaluation

**Demographics:**
- Age, Gender
- Pre-implementation group (8/1–11/30, 2014) ($n = 2219$)
- Post-implementation total group (8/1–11/30, 2015) ($n = 6963$)
- Post-implementation adjusted screening group (9/21–11/30, 2015) ($n = 2107$)

Chi-square test of independence of screening between pre and post adjusted screening group

Percentage of compliance to individual policy components

Odds Ratio for mortality calculated between screened and non screened members of post implementation group

## Outcomes

**Demographic characteristics:**
- No significant differences in age or gender between groups

**Primary Outcome:** Statistically significant increase in patient screening between pre and post implementation groups ($p<.001$)
- Pre- implementation Screening = 26.27%
- Post- implementation Screening = 37.9%
- Adj. Post-implementation Screening (9/21, 2015) = 57.66%
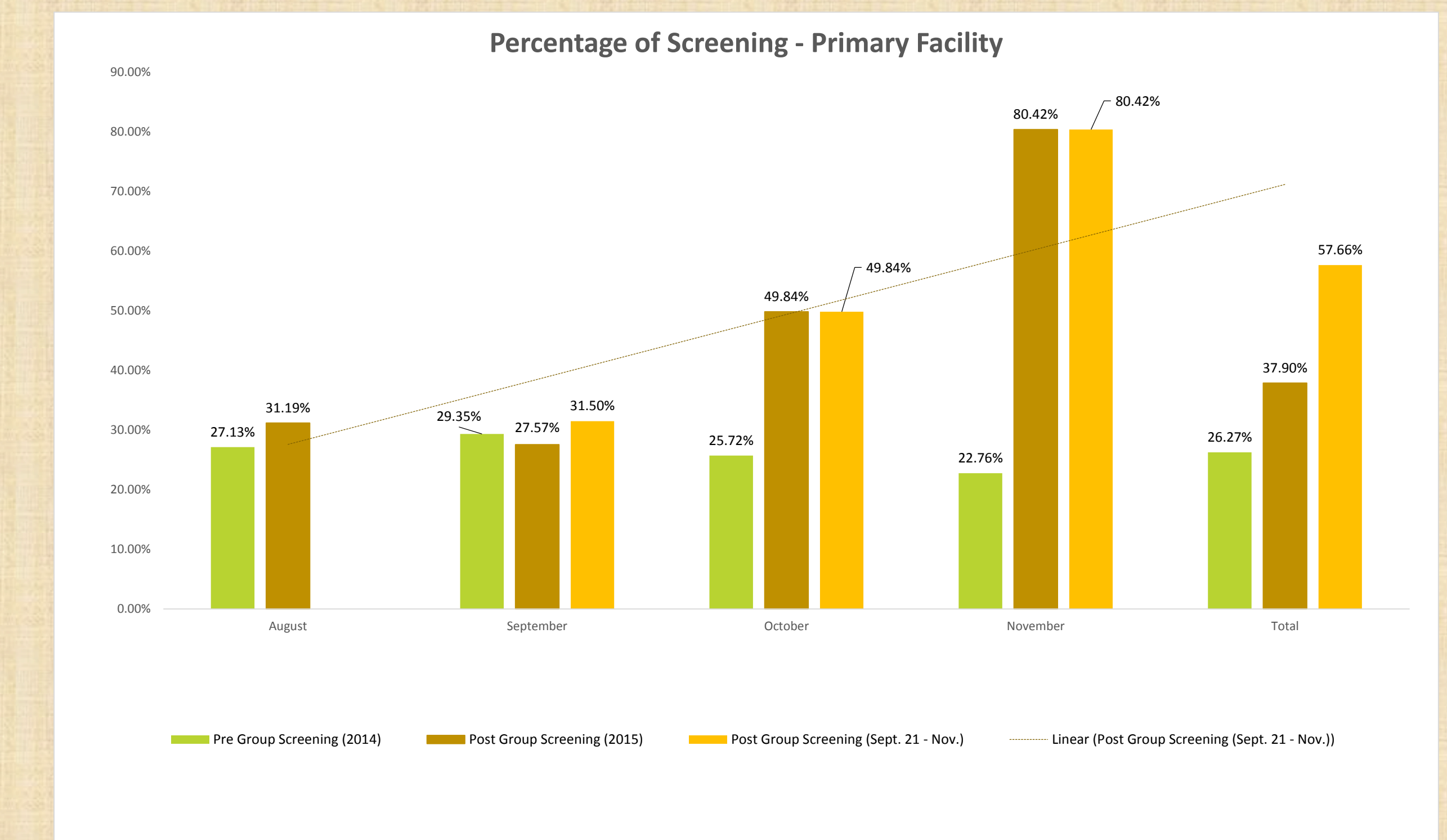


**Compliance with individual policy components:**
- Lactate Drawn = 61.68%
- Blood culture prior to antibiotics = 96.30%
- Antibiotic within one hour = 42.30%
- Appropriate fluid resuscitation = 92.31%
- Use of Sepsis Order Sets = 61.54%

**Patient Mortality:**
- Decreased from 40% in August to 7.69% in November
- Odds Ratio revealed patients who were screened were 34% less likely to die while in the hospital than those not screened
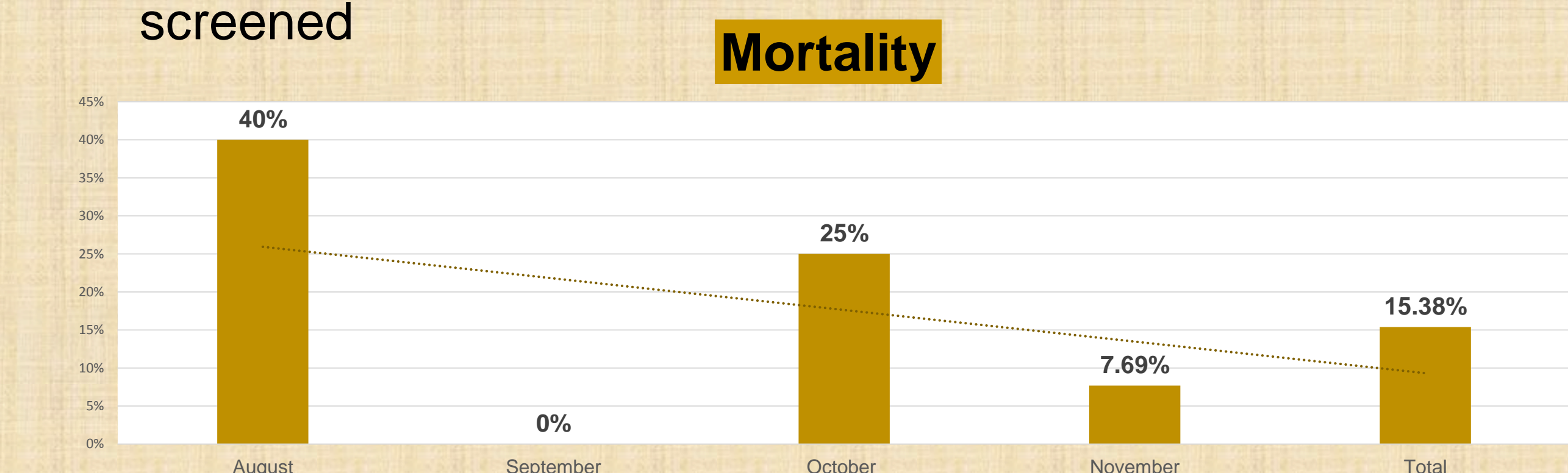


**Length of Stay:**
- Average length of stay was 7.16 days, compared to first quarter 2015 data of 8 days

## Conclusions

Implementation of a sepsis policy is an effective tool leading to:
- Early identification of potential sepsis patients
- Increased compliance with individual treatment components
- Decreased mortality
- Decreased length of stay

## Recommendations

Implement APN initiated Sepsis Policy throughout EDs and In House Rapid Response Staff

Deliver multi-prong educational strategies, have administrative support, provide daily feedback, and distribute rewards to obtain success

Determine which treatment components have the greatest impact on outcomes