Quality Improvement in Sepsis Management in Hospital

Charis Marwick
CSO Clinical Academic Fellow
SpR Infectious Diseases

PhD supervisors: Peter Davey, Bruce Guthrie, Josie Evans
Overview

• Sepsis and associated mortality
• Improving process and outcome - examples
• Aims this project and relation to SPSP work
• Local (preliminary) process data – need for improvement
• Potential barriers to good care and to improvement
• Strategy for improvement
Definitions and mortality

- **SIRS (Systemic Inflammatory Response Syndrome)** = 2 of:
  - Heart rate > 90
  - WCC < 4 or > 11
  - Temp < 36 or > 38
  - Resp rate > 20

- **Sepsis** = SIRS due to infection
  - Mortality 15%

- **Severe sepsis** = with organ hypoperfusion / dysfunction
  - Mortality 30%

- **Septic shock** = with hypotension unresponsive to fluids and/or requiring vasopressor support
  - Mortality 50%
Improving process and outcome

1. RCT: EGDT in severe sepsis/shock on admission – mortality reduced from 46.5% to 30.5%
2. Compliance with severe sepsis guidelines reduces mortality (23% versus 49%)
3. QI in bloodstream infection: Introduction sepsis screening tool and severe sepsis guideline reduced “major errors” in bloodstream from 30% to 8%
4. QI in CAP: Promotion national guidance increased timely antibiotics from 33% to 56%

Aims of this work

• To develop and evaluate (ITS) a complex QI intervention for sepsis management
  – Informed by the literature and by clinical, questionnaire and interview data from project

• To improve early recognition septic patients in Ninewells Hospital
  – Prompt treatment: antibiotics within 4 hrs
  – Prompt assessment: source and severity
Scottish Patient Safety Program

• Auditing compliance with SEWS charts
  – >95% complete in some areas
• Global Trigger Tool case-note reviews
  – Response to ↑SEWS lacking/inappropriate
• Review case-notes after “crash-calls”
  – Can deterioration be predicted/arrested?
Do we need to improve?

• Primary process of care is antibiotics within 4 hours of onset\textsuperscript{1,2,3}

• 339 in-patients, mean age 67.5yrs, 57% male

• Time to antibiotics: Mean 10.31hrs, median 5.5hrs

• 40% patients got antibiotic within 4hrs

Where do delays occur?

- **Patient sepsis**
  - ??

- **Observations checked**
  - 3.68

- **Medical review**
  - 2.79

- **Antibiotic given**
  - 0.00

- **Antibiotic prescribed**
  - 0.83

Red number = mean time in hours

Purple number = median time in hours

Main delay is in review to prescription
Why do delays occur?

• Questionnaires junior doctors
  – Assessing knowledge, opinions and attitudes about sepsis and QI
  – 147 responses

• Interviews of purposive sample
  – Barriers/facilitators to good care and to intervention

• Results informed improvement strategy
Preliminary Results - summary

- Overall knowledge was quite good
  - BUT only 32% correctly identified sepsis criteria
- Confusion on how to assess severity - clear-cut case scenario 68% correct
- Treatment choices generally good
- Confidence high (better than knowledge)
- Attitudes to sepsis and guidelines positive
- Barriers – communication, handovers, shift patterns, low knowledge (others), busy workload....
Improvement Strategy

• Implement sepsis tools
  1. Sepsis screening and severity assessment
  2. Management severe sepsis/septic shock

• Education/ awareness raising
  – Early detection and treatment of sepsis

• Audit and feedback to clinical groups
  – Monthly, unit level numbers
  – Critical incidents / near misses
Any questions?