EVIDENCE AND COLLABORATION IN ACTION:
PRACTICAL STRATEGIES IN THE EARLY DIAGNOSIS AND TREATMENT OF SEVERE SEPSIS

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    • None

• SSC
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    • None
    • No industry support since 2006
Surviving Sepsis

Phase 1  Barcelona declaration
Phase 2  Evidence based guidelines
Phase 3  Implementation and education
Surviving Sepsis Campaign: Timeline

- Barcelona Declaration
- Phase III starts: IHI partnership
- Guidelines Revision
- Guidelines and bundles Revision

- 2002
- 2004
- 2005
- 2006
- 2008
- 2010
- 2012

- SSC Guidelines
- NEJM editorial
- Results published 15,000 pts 20% RRR
- 2012--
Campaign Targets

• Mortality goal
  • 25% reduction in 5 years
    • 35% to 26%:
      • 72,000 lives saved in US
      • 500,000 worldwide
Surviving Sepsis

Phase 1  Barcelona declaration
Phase 2  Evidence based guidelines
Phase 3  Implementation and Education
Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2008


Crit Care Med 2008; 36:296-327
Intensive Care Med 2008;30:536-555
Current Surviving Sepsis Campaign Guidelines Sponsors

- American Association of Critical-Care Nurses
- American College of Chest Physicians
- American College of Emergency Physicians
- Australian and New Zealand Intensive Care Society
- Asia Pacific Association of Critical Care Medicine
- American Thoracic Society
- Brazilian Society of Critical Care (AIMB)
- Canadian Critical Care Society
- Chinese Society of Critical Care Medicine
- Chinese Society of Critical Care Medicine of Chinese Medical Association
- European Respiratory Society
- European Society of Clinical Microbiology and Infectious Diseases
- European Society of Intensive Care Medicine
- European Society of Pediatric and Neonatal Intensive Care
- German Sepsis Society
- Infectious Diseases Society of America
- Indian Society of Critical Care Medicine
- Japanese Association for Acute Medicine
- Japanese Society of Intensive Care Medicine
- Latin American Sepsis Institute
- Pan Arab Critical Care Medicine Society
- Pediatric Acute Lung Injury and Sepsis Investigators
- Society Academic Emergency Medicine
- Society of Critical Care Medicine
- Society of Hospital Medicine
- Surgical Infection Society
- World Federation of Critical Care Nurses
- World Federation of Societies of Intensive and Critical Care Medicine
Surviving Sepsis

Phase 1  Barcelona declaration
Phase 2  Evidence-based guidelines
Phase 3  Implementation and education
SSC Phase III: Methodology

• Partner with Institute for Healthcare Improvement (IHI)
  – Develop sepsis “change bundles”

• Facilitate adoption of guidelines
  – VAP, CLABSI

• 15 member panel
  – Gap analysis
Surviving Sepsis Campaign: Phase III

• A global, multi-center, 4-year trial (2006-2010)
  – Multiple hospital networks
• Non-interrupted time series

• Primary outcome
  – The impact of a model for changing bedside management of sepsis

• Secondary outcome
  – Mortality
SSC Methodology: Multifaceted Intervention

- National/regional/network “launch meetings”
  - Identify local champions
  - Introduce sepsis bundles
  - Educational tools
    - SSC manual
    - SSC slides
  - Staff support for coordinating sites
  - Regular conference calls
- Website
  - SSC and IHI website
  - Sepsis list-serve
- Interactive database
  - Automated uploading to SSC server
  - Technical support
  - Local audit and feedback capabilities
Data
Bundled care for septic shock: An analysis of clinical trials

Sepsis care bundles were associated with consistent and significant increases in survival across eight studies.

Author Yr
Trzeciak 06

Survival

Jones 07

Heterogeneity
$I^2 = 0\%, p = 0.87$

Overall Odds Ratio of Survival (95% CI)

$\ Diamond p < 0.0001$

Favors Control

Favors Bundle
Change in Compliance Over Time

- **Bundle Compliance (%)**:
  - Management
  - Resuscitation

- **Site Quarter**
  - 1, 2, 3, 4, 5, 6, 7, 8

- **Notes**:
  * p<0.01 compared to site quarter 1

Change in Mortality Over Time

The Surviving Sepsis Campaign: A Global Effort at Knowledge Translation

• What is it:
  – A model for knowledge translation
  – International guidelines for sepsis
  – An attempt to standardize care
    • Provide guidance for bedside ICU clinicians
    • Variations are expected and necessary
      – Regional, cultural
      – Individual patient
  – Provide user-friendly tools for audit and feedback
    • To be used locally to drive improvement
The Surviving Sepsis Campaign: A Global Effort at Knowledge Translation

Strengths
• Significant cultural impact
  – 30,000 patients currently
• Significant compliance change
  – Model successful in knowledge translation
  – Cross-cultural success
• Significant mortality reduction
• Insights emerging of impact of individual elements
• Guidelines

Weaknesses
• Initial industry funding
• Evidence base for performance metrics
  – How much is enough?
• All prospective, observational trials
• Which elements are important?
So, Where are We?

- The Surviving Sepsis Campaign has successfully employed a collaborative model of knowledge translation, using bundled performance metrics, to integrate “best practice” models into bedside clinical practice
- Increased compliance with performance metrics is associated with improved survival
- Bundles = performance metrics = protocols = checklists = guidelines
Conclusions

• Surviving Sepsis Campaign achieved targeted goal of 25-39% mortality reduction
  – Performance metrics can change clinical practice
• Practical Strategies for diagnosis and treatment of severe sepsis:
  – Protocolized care/check lists/bundles can improve patient care
• Increased compliance with performance metrics is associated with improved survival
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• Derek Angus
• Nancy Brunner
• Ricard Ferrar
• So many others.....
What’s Next?
What’s Next?

• Marked increased attention to sepsis
  – Governments
  – National funding agencies
  – Hospital networks
The Surviving Sepsis Campaign: Ongoing Performance Initiatives

• A multitude of ongoing Sepsis Performance Improvement initiatives derived from SSC
  – New York City initiative (STOP SEPSIS)
  – Partnership between IHI and large hospital system in New York
  – Moore Foundation initiative (West coast USA)
  – Many others…
The Surviving Sepsis Campaign: Government involvement

- Sepsis metrics (from SSC) now under consideration by National Quality Forum (US)
- New York State department of health programs
- CMS
  - Multiple sepsis projects
- CMMI funding
Revised SSC Bundles

• Based on 2012 SSC guideline Revision
  – Utilizing analysis of 28,000 pt SSC database
• New software to be developed
• No industry funding utilized in revising guidelines or bundles
Revised SSC Bundles

• Management bundle dropped
  – IPP: High compliance at outset of study
    • No significant change in compliance
  – Glucose
    • Clouded by controversy
  – Steroids
    • OR > 1.0 in SSC analysis
  – rhAPC
    • PROWESS-SHOCK negative
    • Removed from market
Revised SSC Bundles

• Two resuscitation bundles
  – Analysis of large database confirm importance of early identification and resuscitation
  – Initial resuscitation bundle
    • To be initiated immediately upon identifying patients with severe sepsis and septic shock
  – Septic Shock bundle
    • To be initiated immediately and completed within 6 hours for patients with septic shock

• Bundles consistent with previous Resuscitation bundle
  – No new metrics
SSC/NQF Sepsis Resuscitation Bundle

- **WITHIN THREE HOURS OF SEVERE SEPSIS:**
  1) Measure lactate level
  2) Obtain blood cultures prior to antibiotics
  3) Administer broad spectrum antibiotics
  4) Administer 30ml/kg crystalloid for hypotension or lactate >=4mmol/L
SSC/NQF Septic Shock Bundle

• WITHIN 6 HOURS OF INITIAL SYMPTOMS FOR SEPTIC SHOCK:

  5) Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation to maintain a mean arterial pressure >=65mmHg)

  6) In the event of persistent arterial hypotension despite volume resuscitation (septic shock) or initial lactate >=4 mmol/L (36 mg/dl):
     - Measure central venous pressure (CVP)
     - Measure central venous oxygen saturation (ScvO2)

  7) Re-measure lactate if initial lactate elevated
Discussion