Using Appraisal of Guidelines for Research & Evaluation II (AGREE II) Tool: To Evaluate the Sepsis Resuscitation Bundle (SRB) Practice Guideline

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Learning Objectives

AGREE II Tool Evaluation of Sepsis Guidelines

1. The learner will be able to discuss use of the AGREE II tool to evaluate practice guidelines

2. The learner will be able to evaluate practice guidelines to treat septic patients using AGREE II Tool
Appraisal of guidelines developed by the Surviving Sepsis Campaign (SSC) Sepsis Resuscitation Bundle (SRB) using the AGREE II tool will show nurses how to:

- Summarize results and recommendations for clinical implementation and appropriateness for use in practice.
Clinical Significance Of Evaluating the Sepsis Resuscitation Bundle

- Severe sepsis can result in 29-50% mortality rate (Seymour et al., 2010)

- $17 billion to annually treat sepsis, ~2.5% of health care expenditure in the United States (IHI, 2012)

- Incidence of sepsis has risen since 1979 at a growth rate faster than the population (Kumar & Mann, 2004)
Sepsis identified & treated with modified SRB in < 6 hours meta-analysis

- Mortality Reduction 5-20%

(Seymour et al., 2010)

Rivers et al. (2001) early goal-directed therapy (EGDT) randomized controlled trial results

- Absolute Risk Reduction (ARR) 16%
- Number Needed to Treat (NNT) 6.25

(Rivers et al., 2012)

SRB use alone meta-analysis over ten years

- ARR 18.3%
- NNT 5.45

(Rivers et al., 2012)
<table>
<thead>
<tr>
<th>Evidence Grade</th>
<th>Evidence</th>
<th>Serum Lactate Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B</td>
<td>Evidence Grade</td>
<td>Blood Cultures Obtained Prior to Antibiotic Administration</td>
</tr>
<tr>
<td>1C</td>
<td>Evidence Grade</td>
<td>Improve Time to Broad Spectrum Antibiotics</td>
</tr>
<tr>
<td>1B</td>
<td>Evidence Grade</td>
<td>Treat Hypotension and/or Elevated Lactate with Fluids</td>
</tr>
</tbody>
</table>

(Institute for Healthcare Improvement, 2012)
**Sepsis Resuscitation Bundle Elements**

| Evidence Grade 1C | Apply Vasopressors for Ongoing Hypotension  
|                   | • Maintain MAP ≥ 65 mmHg |
| Evidence Grade 1C | Maintain Adequate Central Venous Pressure  
|                   | • CVP ≥ 8 mmHg |
| Evidence Grade 1C | Maintain Adequate Central Venous Oxygen Saturation  
|                   | • ScvO₂ ≥ 70% |

(Institute for Healthcare Improvement, 2012)
AGREE II tool Appraisal of SSC Sepsis Resuscitation Bundle

• Allows for analysis of development methodology used to create clinical guidelines

• Assesses the usability, validity and reliability prior to adoption into practice

• Leads to a better understanding of development of the clinical recommendations within the practice guideline

(AGREE II, 2010)
Contains 23 items organized under six domains:

1. Scope & Purpose
2. Stakeholder Involvement
3. Rigor of Development
4. Clarity of Presentation
5. Applicability
6. Editorial Independence

2 final assessment questions

Scoring using 7-point Likert scale

(AGREE II, 2010)
AGREE II Tool

- Allowed for scoring of the SSC SRB by 4 clinicians using a 7-point Likert scale.
Using a Tool to Appraise Guidelines

AGREE II TOOL RESULTS
Domain 1: Scope & Purpose Appraisal

**Purpose**: Use to treat severe sepsis, septic shock, or lactate > 4 mmol/l to:
- decrease mortality
- progression of organ failure
- health care resource consumption
- impact on systemic inflammation

**Aim of Treatment**: 25% mortality reduction in patients presenting to the emergency department or intensive care unit in severe sepsis or septic shock.

(SSC, 2008)
## Domain 1: Scope & Purpose Appraisal

<table>
<thead>
<tr>
<th>Measure</th>
<th>Evaluator A</th>
<th>Evaluator B</th>
<th>Evaluator C</th>
<th>Evaluator D</th>
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Scores were obtained by rating the AGREE-II items on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree). Evaluated from the “Sepsis Resuscitation Bundle”. Copyright 2008 by the Society of Critical Care Medicine Surviving Sepsis Campaign.
Domain 2: Stakeholder Involvement Appraisal

Guideline Development Group:
• Expert panel from 27 professional organizations from around the world with a vast knowledge in sepsis (SSC, 2008)

Stated Target Users of Practice Guidelines:
• Patients are key stakeholders & recipients of the SRB
• No evidence of public views & preferences were noted (SSC, 2008)
### Domain 2: Stakeholder Involvement Appraisal

<table>
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<tr>
<th>Measure</th>
<th>Evaluator A</th>
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Domain 3: Rigour of Development Appraisal

- Databases provided meta-analyses, systematic reviews, & randomized control trials (Dellinger et al., 2008)

- GRADE system methodology used for selecting & rating evidence (SSC, 2008)

- Expert opinions & evidence gathered through meta-analysis (SSC, 2008)

- Guideline developed by international experts from 27 professional organizations (SSC, 2008)

- Data collected from 165 hospitals (SSC, 2008)

- Periodic updating of guideline through evidence review (SSC, 2008)
## Domain 3: Rigour of Development Appraisal

<table>
<thead>
<tr>
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SMUSE = Systematic Methods Used to Search for Evidence; CSECD = Criteria for Selecting the Evidence are Clearly Described; SLBECD = Strengths and Limitations of the Body of Evidence are Clearly Described; MFRCD = Methods for Formulating Recommendations Clearly Described; HBSERC = Health Benefits, Side Effects, and Risks Considered; ELBRSE = Explicit Link Between the Recommendations and the Supporting Evidence; GEREPP = Guideline Externally Reviewed by Experts Prior to Publication; PUGP = Procedure for Updating Guideline Provided.
• The presentation makes the practice recommendations understandable and concise.

• Guidelines for clinicians are posted on the SSC & Institute for Healthcare Improvement websites:
  
  - poster
  - brochure
  - smart phone application
  - algorithm format

(SSC, 2008)
## Domain 4: Clarity of Presentation Appraisal

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Advice and tools for implementation:
• Offered through the SSC and Institute for Healthcare Improvement websites

Quality improvement:
• Available through the Institute of Healthcare Improvement website

Resource implications:
• The SSC (2008) reported that implementation:
  Decreased hospital related costs by 20%
  Decreased hospital length of stay by five days

(SSC, 2008)
## Domain 5: Applicability Appraisal

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<td><strong>26.50</strong></td>
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</table>

GPMAC = Guideline Presents Monitoring and/or Auditing Criteria; GDFBA = Guideline Describes Facilitators and Barriers to its Application; GPATRPP = Guideline Provides Advice and/or Tools on how the Recommendations can be Put into Practice; PRIARC = Potential Resource Implications of Applying Recommendations Considered; Scores were obtained by rating the AGREE-II items on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree). Evaluated (all evaluators) from “Sepsis Resuscitation Bundle”. Copyright 2008 by the Society of Critical Care Medicine Surviving Sepsis Campaign.
Domain 6: Editorial Independence Appraisal

- SSC (2008) reported views of funding body have not influenced the guideline.

- No industry funding purportedly used.

- Allocation & management of grant funding described in detail on SSC website.
## Domain 6:
### Editorial Independence Appraisal

<table>
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</table>

VFBICG = Views of Funding Body not Influenced Content of Guideline; CIGDGMRA = Competing Interests of Guideline Development Group Members Recorded and Addressed.
Scores were obtained by rating the AGREE-II items on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree).
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Meta-analysis examined a decade of research regarding effectiveness of SSC SRB:

- 146 publications including RCTs
- 83 research results reported between 2009 & 2012
- Sample size of over 18,000 adult patients
- Study Limitations: Increase in awareness & compliance versus advances in technology effecting results

(Rivers et al., 2012)
Recommendations for Clinical Implementation

- Appropriate practice guideline for incorporation into practice

- Demonstrated benefits of using bundled interventions for treatment of severe sepsis or septic shock:
  - Increased survival
  - Lowered cost to treat
  - Decreased length of hospital stay


References

