The special problem of sepsis: how to prevent and to recognize it

K. Reinhart ML
Chairman Global Sepsis Alliance
The majority of people have not heard the term sepsis in 2013.

**Sepsis Awareness**

Have you ever heard the term “Sepsis”?

- **NO**
  - 50% (Germany)
  - 46% (USA)
  - 60% (UK)
  - 71% (Canada)
  - 79% (Sweden)
  - 93% (Brazil)

- **YES**
  - 49% (Germany)
  - 44% (USA)
  - 40% (UK)
  - 29% (Canada)
  - 21% (Sweden)
  - 7% (Brazil)
WARE
HITLER'S
GREATEST
ALLY

HERR SEPTICAEMIA
(ALIAS BLOODPOISONING)

USES BLITZ METHODS
Only waiting for the slightest scratch to inject his poison.
Has more victims to his discredit than the whole of the
German fighting forces put together.
Is usually defeated by immediate FIRST AID treatment.
To neglect yourself is to play into the enemy's hands.
DON'T HELP HITLER!

Issued by the Ministry of Labour and National Service and produced by the Industrial Accident Prevention Department of the
“Sepsis is the primary cause of death from infection, especially if not recognized and treated promptly. Its recognition mandates urgent attention.”
Sepsis can be prevented by vaccination and clean care.

It must become common knowledge that...
Vaccination must also become standard for the adult at risk population

- Elderly above age 60
- Healthcare personnel
- Pregnant women
- Asplenic and immunocompromised
- Diabetes
- Chronic lung, heart, liver and renal disease
- Chronic alcoholism

Vaccination of 85,000 adults ≥65 years, in the Netherlands reduced Invasive Pneumococcal Disease/Sepsis and Pneumococcal Pneumonia by 75% and 45% respectively (M. Bonten et al NEJM, 2015)
Sepsis is important because it is a major cause of avoidable death in our hospitals.
Between 20-50 percent of patients admitted to hospitals in the UK are diagnosed and treated too late.

![Chart showing delay in identifying sepsis, severe sepsis, and septic shock]

Figure 6.1 Delay in identifying sepsis, severe sepsis and septic shock – Reviewers’ opinion

National Confidential Enquiry into Patient Outcome and Death (2015)
Global estimates of hospital treated sepsis cases/year 30.7 million
Global Deaths from Infectious Diseases mostly occur in resource poor countries
Lower respiratory tract infections are the number one cause of Global Years of Life Lost:

This means that the number one cause of Global Years Life Lost is sepsis!

Lozano R et al Global and Regional Mortality…, Lancet 2012
Highest Incidence in Neonates, Newborns and the Elderly

- 270,000 cases
- 70,000 deaths
- Appr. 500 children below one year
- Plus 10-12 influenza deaths.
- Costs 7.7 billions
Globally sepsis is more common than heart attacks and kills more people than any cancer!
SEPSIS KILLS program: reduce preventable harm to patients with sepsis

RECOGNISE:
Risk factors, signs and symptoms of sepsis and inform senior clinician

RESUSCITATE:
With rapid antibiotics and IV fluids within one hour

REFER:
To specialist care and initiate retrieval if needed
NSW hospital sepsis mortality

Data Source: Hospital Billing System  Copyright © 2016, Krasnoff Quality Management Institute  Data as of: August 17, 2016
Development of Sepsis Mortality

• Australia: 2000-2012 from 35% to 18.5%
• England: 2000-2012 from 45.5% to 32.1%
• USA: 2003-2007 from 37% to 29%
• Germany: 2003-2013 from 47.8% to 43.6%
Necessary Steps to Achieve the Goals of the WHA Resolution on Sepsis

• Foster the collaboration with between the GSA and WHO
• Achieve adequate representation if sepsis in the GBDR
• Encourage national governments for national action plans:
  • Sepsis awareness campaigns
  • Sepsis mortality as quality indicators
  • National reporting of incidence and mortality
  • Promotion of certified facilities for acute and longterm care
• Support of research for innovative diagnostics and therapeutics
Stop Sepsis the number one cause of preventable deaths
This report identified sepsis as a primary cause of preventable deaths!
Increase in Sepsis Awareness 2013-2016

- USA: 44% to 55%
- UK: 40% to 60%
- Germany: 49% to 62%
News

NHS unites to tackle sepsis

© 23 November 2016 - 10:20

Professor Sir Bruce Keogh, NHS England Medical Director, has issued a rallying call to healthcare professionals across the country to focus on improving early recognition and timely treatment of sepsis.

At an event in London last night and ahead of a major new public awareness campaign delivered in collaboration with the UK Sepsis Trust, he set out the work that has been done so far to help nurses and doctors to recognise and treat sepsis and what more can be done to reduce deaths from sepsis.

Since April 2015 the number of people screened for sepsis has significantly increased, and it is now being diagnosed and treated quicker than ever before. However, one in four acutely ill patients is still not being
CDC Launches Report & Awareness Initiative

Four types of infections are most often associated with sepsis: lung, urinary tract, skin, and gut.

A CDC evaluation found 7 in 10 patients with sepsis had recently used health care services or had chronic diseases requiring frequent medical care.

Sepsis begins outside of the hospital for nearly 80% of patients.

Think Sepsis. Time Matters.

Know the signs and symptoms:
- Shivering, fever, or very cold
- Extreme pain or discomfort
- Confusion or disorientation
- Short of breath

If suspected, get medical care.
This report identified sepsis as a primary cause of preventable deaths!
“Sepsis is the primary cause of death from infection, especially if not recognized and treated promptly. Its recognition mandates urgent attention. “Sepsis is a life-threatening condition that arises when the body’s response to an infection injures its own tissues and organs.”
Früh- und Neugeborene sowie Ältere sind besonders stark betroffen

- 70 000 Todesfälle
- ca. 500 Kinder unter 1 Jahr
- Plus 10-12 Tsd. Grippetote
- Kosten 7.7 Milliarden
stop sepsis
save lives

WHO / WHA / Sepsis Resolution – Opportunities & Challenges

K. Reinhart ML
Chairman Global Sepsis Alliance
Strategy for 2017-2020

• Foster the collaboration with WHO to achieve the requests of the resolution
• Achieve adequate representation if sepsis in the GBDR and the WHO ICD 11 coding system
• Increase the pressure on national governments for national action plans in terms of:
  • Sepsis awareness campaigns
  • Sepsis mortality as quality indicators
  • National reporting of incidence and mortality
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The majority of people have not heard the term sepsis in 2013.

Sepsis Awareness

Have you ever heard the term “Sepsis”?

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Fleischmann et al DÄB 2016
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<tr>
<th></th>
<th>Patients at Risk</th>
<th>Mortality Rate in First Quarter of Study Period/Participation Period (%)</th>
<th>Odds Ratio(^b) (95% CI) of Mortality per Month of Study Period/Participation Period</th>
<th>Absolute Mortality Rate Change Over 3.5 Yr (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All patients(^a)</strong></td>
<td>213,667</td>
<td>13.0</td>
<td>0.995 (0.994–0.997)</td>
<td>−1.8(^b)</td>
</tr>
<tr>
<td><strong>Nonparticipating ICUs</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>All patients</td>
<td>115,602</td>
<td>13.0</td>
<td>0.999 (0.996–1.002)</td>
<td>−0.4</td>
</tr>
<tr>
<td>Patients without diagnosis severe sepsis or septic shock</td>
<td>107,571</td>
<td>11.4</td>
<td>0.999 (0.996–1.002)</td>
<td>−0.3</td>
</tr>
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<td>Patients with severe sepsis or septic shock</td>
<td>8,031</td>
<td>33.8</td>
<td>0.997 (0.993–1.002)</td>
<td>−1.7</td>
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<td><strong>Participating ICUs</strong></td>
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<td></td>
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<tr>
<td>All patients</td>
<td>98,065</td>
<td>13.1</td>
<td>0.995 (0.992–0.997)</td>
<td>−2.0(^b)</td>
</tr>
<tr>
<td>All nonscreened patients</td>
<td>22,821</td>
<td>13.0</td>
<td>1.004 (0.996–1.013)</td>
<td>1.2</td>
</tr>
<tr>
<td>All screened patients</td>
<td>75,244</td>
<td>13.1</td>
<td>0.994 (0.991–0.998)</td>
<td>−2.3(^b)</td>
</tr>
<tr>
<td>Screened patients without diagnosis severe sepsis or septic shock</td>
<td>66,857</td>
<td>10.0</td>
<td>0.995 (0.9906–0.9996)</td>
<td>−1.9(^b)</td>
</tr>
<tr>
<td>Screened patients with severe sepsis or septic shock</td>
<td>8,387</td>
<td>31.1</td>
<td>0.992 (0.986–0.997)</td>
<td>−5.8(^b)</td>
</tr>
</tbody>
</table>
Guideline Bundles Adherence and Mortality in Severe Sepsis and Septic Shock

Arthur R. H. van Zanten, MD, PhD, Sylvia Brinkman, PhD, M. Sesmu Arbous, MD, PhD, Ameen Abu-Hanna, PhD, Mitchell M. Levy, MD, Nicolette F. de Keizer, PhD, for The Netherlands Patient Safety Agency Sepsis Expert Group

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A graph showing the proportion adherence of different bundles over time in participation months.
From 2009 to 2012 “we achieved a relative mortality reduction of 15%, corresponding to an absolute mortality reduction of 5.2%”
Fig 7. Forest plot showing individual and overall ES of studies that evaluated changes in mortality following the implementation of the...
Fig 5. Forest plot showing individual and overall ES of studies that evaluated changes in compliance with the complete 24-hour bundle following the implementation of the performance improvement program (k = 11). The size of the boxes is inversely proportional to the size of the result study variance.

Fig 7. Forest plot showing individual and overall ES of studies that evaluated changes in mortality following the implementation of the performance improvement program (k = 48). The size of the boxes is inversely proportional to the size of the result study variance, so that more precise
“Sepsis is the primary cause of death from infection, especially if not recognized and treated promptly. Its recognition mandates urgent attention. “

Sepsis is a life-threatening condition that arises when the body’s response to an infection injures its own tissues and organs.
Fig 7. Forest plot showing individual and overall ES of studies that evaluated changes in mortality following the implementation of the Performance Improvement Programs for Sepsis Care.