HEALTHCARE ASSOCIATION OF NEW YORK STATE

HOSPITAL SEPSIS CARE RESOURCE GUIDE

COMMITTED TO IMPROVING SEPSIS CARE AND OUTCOMES
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter from the Executive Director</td>
<td>2</td>
</tr>
<tr>
<td>New York State Regulations and Guidance</td>
<td>3</td>
</tr>
<tr>
<td>National Quality Forum Sepsis Bundles</td>
<td>4</td>
</tr>
<tr>
<td>Adult Sepsis Care</td>
<td>5</td>
</tr>
<tr>
<td>Pediatric Sepsis Care</td>
<td>6</td>
</tr>
<tr>
<td>Emergency Department Resources</td>
<td>7</td>
</tr>
<tr>
<td>Inpatient Resources</td>
<td>8</td>
</tr>
<tr>
<td>Patient Transfer Policies</td>
<td>9</td>
</tr>
<tr>
<td>Staff Training Resources</td>
<td>10</td>
</tr>
<tr>
<td>Data Collection</td>
<td>11</td>
</tr>
<tr>
<td>Special Populations</td>
<td>11</td>
</tr>
<tr>
<td>Engaging Patients and Families</td>
<td>12</td>
</tr>
<tr>
<td>Engaging Hospital Leadership</td>
<td>13</td>
</tr>
<tr>
<td>Sepsis Vendors</td>
<td>14</td>
</tr>
<tr>
<td>Scientific Literature</td>
<td>15</td>
</tr>
</tbody>
</table>

Last Updated November 2013
Committed to Improving Sepsis Care and Outcomes

The Healthcare Association of New York State (HANYS) is committed to working with members to improve hospital sepsis care and associated patient outcomes. In 2013, HANYS launched a Statewide Sepsis Learning Network to build upon previous efforts to raise awareness of the growing incidence of sepsis in New York, the devastating impact on patients’ lives, and the availability of evidence-based best practices to improve patient care.

This Hospital Sepsis Care Resource Guide was developed by the HANYS Sepsis Advisory Committee and clinical experts from the Surviving Sepsis Campaign; it draws upon the successful strategies of these medical professionals, as well as hospitals and professional associations from across the country and around the world that have improved sepsis care and outcomes. We thank these health care leaders for lending their expertise and tools.

This Guide is intended to serve as a resource for HANYS’ members. We hope that members will adapt the resources contained in this Guide to expand and refine their own campaigns to continuously improve sepsis care. The Guide will also help hospitals comply with the New York State Department of Health (DOH) Hospital Sepsis Protocol regulations. For easy reference, regulatory requirements are highlighted in gray in the pages that follow.

Hospitals should also consider how to adjust identification and treatment strategies for other special populations, including maternity patients, cancer patients, HIV/AIDS patients, and others with compromised immune systems.

Sincerely,

Kathleen Ciccone, R.N., M.B.A.
Executive Director
HANYS Quality Institute
New York State Regulations and Guidance

In April 2013, New York State’s Public Health and Health Planning Council (PHHPC) approved regulations outlining Hospital Sepsis Protocols.

The regulations:

1. Require hospitals to use evidence-based protocols for the early recognition and treatment of patients with severe sepsis and septic shock;
2. Specify six specific components that must be included in hospital sepsis protocols for adults and children; and
3. Outline the framework for data collection for the purposes of internal quality improvement and hospital reporting to DOH. Using data submitted by hospitals, DOH will develop risk-adjusted severe sepsis and septic shock mortality rates in consultation with appropriate national, hospital, and expert stakeholders. DOH intends to make this information available to the public.

In June 2013, DOH released a formal guidance document that provides additional detail about the Hospital Sepsis Protocol regulatory requirements.

In July 2013, DOH released a Protocol Submission Guide, which hospitals must use to submit their Hospital Sepsis Protocol for review and approval.

Resources:

Sepsis Hospital Protocol Submission Guide
Source: HANYS

Other Resources:

Surviving Sepsis Campaign Chart Review Data Collection Tool
Source: Surviving Sepsis Campaign
DOH’s guidance explains that hospital sepsis protocols must be consistent with the National Quality Forum-approved severe sepsis measure (NQF #0500) with the following exceptions:

1. Components that assume use of central venous pressure and central venous oxygen saturation shall not be reported if not relevant due to use of “non-invasive” (no central venous access) protocol;

2. Multiple definitions of “time zero” shall be used for purposes of quality improvement and to recognize differences between characteristics of care delivered in the emergency department compared to hospital inpatient units. These definitions will include: (a) earliest time recorded (time of arrival); (b) time of triage; (c) time at which signs, symptoms, and laboratory findings are first consistent with definitions of severe sepsis or septic shock (time of meeting definitional criteria); and (d) time at which the severe sepsis or septic shock protocol was initiated.

NQF #0500 requires:

To be completed within three hours:

- Measure lactate level;
- Obtain blood cultures prior to administration of antibiotics;
- Administer broad spectrum antibiotics; and
- Administer 30 ml/kg crystalloid for hypotension or lactate \(\geq 4\text{ mmol/L}\).

To be completed within six hours:

- Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) \(\geq 65\) mm Hg;
- In the event of persistent arterial hypotension despite volume resuscitation (septic shock) or initial lactate \(\geq 4\) mmol/L (36 mg/dL):
  - Measure central venous pressure (CVP);*
  - Measure central venous oxygen saturation (ScvO2);* and
  - Remeasure lactate if initial lactate was elevated.*

*Targets for quantitative resuscitation included in the guidelines are CVP of \(\geq 8\) mm Hg; ScvO2 of \(\geq 70\%\), and normalization of lactate.
Resources:

Protocols, Algorithms, and Order Sets

Surviving Sepsis Campaign Bundle Cards
Source: Surviving Sepsis Campaign

Other Resources:

NQF Endorsement of #0500
Source: National Quality Forum

Surviving Sepsis Campaign Implementation Kit
Source: Surviving Sepsis Campaign

Adult Sepsis Care

As required by New York State regulations, hospitals must implement sepsis care protocols for all patients in the hospital (with specific exclusions permitted) and include use of explicit algorithms and/or alert systems to assist in the early identification of patients with severe sepsis and septic shock. Protocols must include an approach to stratify patients into sepsis, severe sepsis, and septic shock based on a constellation of appropriate clinical and laboratory findings. Protocols directed at treatment should address both emergency room (ER) and inpatient presentations of severe sepsis and septic shock.

HANYS compiled the following resources to assist hospitals in their implementation of adult sepsis care protocols.

Resources:

Professional Guidance

Guidance for Managing Severe Sepsis and Septic Shock from the Surviving Sepsis Campaign
Source: Society of Critical Care Medicine

Protocols, Algorithms, and Order Sets

Adult Sepsis Order Set (first six hours)
Source: UCLA Health System

Identification of Infection and Antibiotic Order
Source: Medical Center Hospital, Odessa, Texas

Sepsis STAT Resuscitation Protocol
Source: Medical Center Hospital, Odessa, Texas

Severe Sepsis Screening Tool
Source: Medical Center Hospital, Odessa, Texas
Pediatric Sepsis Care

As required by New York State regulations, hospitals must implement sepsis care protocols for pediatric patients in the ER and inpatient units. According to the DOH guidance document, protocols for children may exclude newborns and infants in the neonatal intensive care unit. In addition to including many of the elements of the adult sepsis care protocol, for infants and children, DOH requires that protocols include age-specific values for clinical and laboratory measurements pertinent to recognition of severe sepsis and septic shock. Protocols should address early intravenous (IV) or intraosseous (IO) access and be consistent with American College of Critical Care Medicine guidelines in terms of fluid resuscitation amounts, antibiotic administration, physiologic goals to be reached within 60 minutes of initial resuscitation, and use of cardiovascular drug therapy support in fluid refractory septic shock. Protocols must also include criteria for ongoing treatment and transfer for those infants and children who may require a more intensive level of care than can be provided at the initial facility.

A separate protocol for pediatric patients is important; symptoms of infection and treatment best practices are different from those commonly used for adult sepsis patients.

HANYS compiled the following resources to assist hospitals in their implementation of pediatric sepsis care protocols.

Resources:

Professional Guidance

Guidance from the American College of Critical Care Medicine
Source: Journal of Critical Care Medicine

Special Considerations in Pediatrics
Source: Surviving Sepsis Campaign

Protocols, Algorithms, and Order Sets

Pediatric Advanced Life Support (PALS) Algorithm
Source: Pediatric Emergency Care

Pediatric ICU Screening Tool
Stony Brook University Medical Center via the Surviving Sepsis Campaign

Pediatric Order Set
Stony Brook University Medical Center via the Surviving Sepsis Campaign

Pediatric Recognition and Treatment Protocol
Stony Brook University Medical Center via the Surviving Sepsis Campaign

Pediatric Severe Sepsis Protocol Orders #1
Source: Georgetown University Medical Center
HANYS members report that about 75% of patients with sepsis are admitted through the ED. Survival outcomes can be significantly improved with rapid, intensive care interventions administered by clinicians in the ED, but the nature of this care environment presents unique challenges, including a high volume of patients, potential patient flow issues, and a high level of stress for clinical and administrative staff.

In recognition of the unique nature of the ED, HANYS compiled the following resources to help hospitals implement sepsis care protocols.

**Resources:**

**Professional Guidance**

- [The Surviving Sepsis Campaign Guidelines 2012 for Emergency Physicians](#)
  
  Source: American College of Emergency Physicians

- [Severe Sepsis and Septic Shock: Review of the Literature and Emergency Department Management Guidelines](#)
  
  Source: Annals of Emergency Medicine

- [Emergency Department Treatment Guidance for Children](#)
  
  Source: Pediatrics

**Protocols, Algorithms, and Order Sets**

- [Emergency Department/ICU Protocol](#)
  
  Source: John Dempsey Hospital Department of Nursing, University of Connecticut Health Center

- [Emergency Department Sepsis Screening Tool](#)
  
  Source: Munson Healthcare, Traverse City, Michigan

- [Sepsis Admit Order Professional Guidance from the SCCM](#)
  
  Source: Palm Drive Hospital, California
Inpatient Resources

Much of the scientific literature has focused on the implementation of sepsis protocols in EDs and intensive care units (ICUs). However, patients may also develop severe sepsis and septic shock while receiving treatment as an inpatient on a medical or surgical unit. HANYS compiled the following resources to assist hospitals in their efforts to implement sepsis care protocols in the inpatient setting. Hospitals should also consult the resources provided elsewhere in this document, as they may be adapted for use with the inpatient population.

Resources:

Professional Guidance

Early Recognition and Treatment of Sepsis in the Medical-Surgical Setting
Source: Med Surg Nursing

Sepsis Alert Program Shows Evidence of Success on Inpatient Units
Source: Agency for Healthcare Research and Quality

Protocols, Algorithms, and Order Sets

ICU Severe Sepsis Screening Tool
Source: St. Joseph Mercy Health System, Ann Arbor, Michigan, via the Surviving Sepsis Campaign

Patient Units Severe Sepsis Screening Tool
Source: St. Joseph Mercy Health System, Ann Arbor, Michigan, via the Surviving Sepsis Campaign

Sepsis Protocol Pocket Card
Source: St. Joseph Mercy Health System, Ann Arbor, Michigan, via the Surviving Sepsis Campaign

Presentations

Process Management for Creating a Successful Hospital Wide Sepsis Initiative
Source: HANYS

Timely Recognition of Sepsis on the Floors
Source: Surviving Sepsis Campaign
Other Resources

**Surviving Sepsis: You Make the Difference, an Article for Medical-Surgical Nurses**
Source: Academy of Medical-Surgical Nurses Official Newsletter

**ICU Admittance by a Rapid Response Team versus Conventional Admittance, Characteristics, and Outcome**
Source: Critical Care Medicine

In recognition of hospital resource limitations, DOH is requiring that Hospital Sepsis Protocols include criteria for ongoing treatment and transfer of those adults and children who may require a more intensive level of care than can be provided at the initial facility.

Patient Transfer Policies

HANYS compiled the following resources to help hospitals develop and implement transfer policies for septic patients.

**Resources:**

**Professional Guidance**

- [Appropriate Interhospital Patient Transfer Guidance](#)
  Source: American College of Emergency Physicians

- [Study of Rural Hospital Pediatric Transfers](#)
  Source: Rural Health Research & Policy Centers

**Policies and Procedures**

- [Sample Interhospital Patient Transfer Policy](#)
  Source: Livingston County, Michigan

**Presentations**

- [Prehospital Care and Sepsis](#)
  Source: DOH Sepsis Symposium

Other Resources

- [Emergency Medical Services Agency Information by County](#)
  Source: DOH
Staff Training Resources

As part of the Hospital Sepsis Protocol regulatory requirements, a hospital must inform DOH, in a document separate from treatment protocols, about the manner and frequency with which the hospital will provide initial and ongoing training to all staff responsible for implementation of sepsis protocols in the emergency room and on inpatient floors. Such training should include appropriate medical (including physicians in training when present), nursing, pharmacy, and laboratory staff.

HANYS compiled the following resources, which may be useful to hospitals as they develop staff education programs on sepsis.

Resources:

Presentations

Sepsis Training for Non-Clinical Staff
Source: Surviving Sepsis Campaign

Sepsis Teamwork Presentation
Source: Surviving Sepsis Campaign

Sepsis Survivor Tells His Story
Source: Surviving Sepsis Campaign

Other Resources

Septris: A Free Sepsis Training App for Apple and Android Devices
Source: Stanford School of Medicine

Sepsis Training Video: Managing Sepsis in ICU
Source: Indiana University, Department of Internal Medicine
Data Collection

The regulations outline the framework for the data collection process for the purposes of internal quality improvement and hospital reporting to DOH. Using data submitted by hospitals, DOH will develop risk-adjusted severe sepsis and septic shock mortality rates in consultation with appropriate national, hospital, and expert stakeholders. DOH intends to make this information available to the public.

The DOH sepsis regulation guidance requires that hospitals describe how they make information technology resources available to assist in the implementation of protocols and data collection.

HANYS urges hospitals to work with their vendors to identify strategies for collecting data to measure adherence to the hospital’s protocol, and data that will be reported to DOH to help develop risk-adjusted mortality rates.

Resources:

Article

Understand How ICD-10 Expands Sepsis Coding
Source: AAPC

Other Resources

NYSDOH Frequently Asked Questions - Data Collection and Reporting Requirements for Severe Sepsis

DOH Sepsis Data Dictionary Version 1.2

HANYS Severe Sepsis and Septic Shock Data Collection Tool (WORD Version)
Source: Stanford School of Medicine

HANYS Severe Sepsis and Septic Shock Data Collection Tool (EXCEL Version)
Source: Indiana University, Department of Internal Medicine

Special Populations

While New York State does not require a separate Hospital Sepsis Protocol for elderly patients, hospitals should consider how to best serve this population, as the frail elderly are among the most vulnerable populations with regard to sepsis infection, morbidity, and mortality.

According to the U.S. Centers for Disease Control and Prevention (CDC):
• The rate of hospitalizations for sepsis was much higher for those ages 65 and over (122.2 per 10,000 population) than for those under age 65 (9.5 per 10,000 population).

• The sepsis hospitalization rate for those ages 85 and over was about 30 times the rate for those under age 65, and was more than four times higher than for the 65-74 age group.

• Mortality among those greater than 85 years old is 38.4%, compared to 28.6% in the general population.

Hospitals should also consider how to adjust identification and treatment strategies for other special populations, including maternity patients, cancer patients, HIV/AIDS patients, and others with compromised immune systems.

Resources:

Professional Guidance

Severe Sepsis and Septic Shock Among the Elderly
Source: World Journal of Critical Care Medicine

Protocols, Algorithms, and Order Sets

Maternal Sepsis Screening Tool

Treatment of Sepsis in the Elderly
Source: The Association of Physicians of India

Other Resources

Q&A on Sepsis Care for the Elderly
Source: Hospital and Aged Care, Australia

Engaging Patients and Families

Successful quality improvement campaigns require a holistic approach to improving clinical processes and managing patient outcomes. Engaging patients and families in their care is critical. Doing so has the potential to:

• Enhance the patient's experience of care while at the hospital;
• Help clinicians remain focused on patient-centered care;
• Increase the likelihood that a patient will return to the hospital after discharge if his or her condition deteriorates.

HANYS compiled the following resources to assist hospitals in their effort to engage patients and families in sepsis care.
Engaging Hospital Leadership

Successful quality improvement campaigns require a comprehensive approach to improving clinical processes and managing patient outcomes. Engaging hospital leadership is critical. Doing so has the potential to:

- increase financial and other resources for managing sepsis patients;
- build hospital morale and improve motivation of clinical staff; and
- result in a long-term change in hospital culture.

HANYS compiled the following resources to assist hospitals in their effort to engage hospital leadership.

Resources:

Professional Guidance

Getting the Board on Board: Engaging Hospital Boards in Quality and Patient Safety
Source: The Joint Commission Journal on Quality and Patient Safety
A CEO Checklist for High-Value Health Care
Source: Institute of Medicine

Presentations

Administrative Buy-In
Source: Surviving Sepsis Campaign

Identifying, Managing, and Stopping Sepsis
Source: Nebraska Healthcare Quality Forum

Other Resources

Eyes on Sepsis: How a Focused Approach Improved Patient Care and the Bottom Line
Source: North Shore-Long Island Jewish Health System

Sepsis Project Implementation Plan
Source: Clinical Excellence Commission, Sydney, Australia

Sepsis Vendors

To provide members with information about the most up-to-date technology used in providing sepsis care, HANYS hosted a number of Webconferences with sepsis vendors in 2012 and 2013.

HANYS does not endorse these vendors, but encourages hospitals to consider these and other companies that offer new technologies for managing sepsis care.

Resources:

Presentations

The Joint Commission

Web Site Links

The Joint Commission Center for Transforming Health Care

B-Line Medical

Edwards Lifesciences

Institute for Healthcare Improvement (IHI)

SimSuite
Scientific Literature

There is a wealth of scientific literature related to hospital sepsis care. Hospitals may find the following articles helpful in their efforts to improve sepsis care and outcomes.

Resources:

**Early Goal-Directed Therapy in the Treatment of Severe Sepsis and Septic Shock**
Source: New England Journal of Medicine, 2001

**Epidemiology of Severe Sepsis in the United States: Analysis of Incidence, Outcome, and Associated Costs of Care**
Source: Critical Care Medicine, 2001

**The Epidemiology of Severe Sepsis in Children in the United States**
Source: American Journal of Respiratory Critical Care Medicine, 2003

**Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012**
Source: Critical Care Medicine, 2013

**Benchmarking the Incidence and Mortality of Severe Sepsis in the United States**
Source: Critical Care Medicine

**Severe Sepsis Cohorts Derived From Claims-Based Strategies Appear to be Biased Toward a More Severely Ill Patient Population**
Source: Critical Care Medicine