

State-based Strategies for Combating Sepsis

SEPT 2018

Executive Summary

Sepsis is a complex and persistent public health challenge that requires a multi-faceted response that includes working with a broad range of providers, consumers and policymakers. To learn more about how others approached sepsis, the Betsy Lehman Center completed a review of online and print resources related to existing state-based and multi-state sepsis care improvement programs as well as interviews with 12 key informants who had firsthand knowledge of state-level sepsis activities. The purpose of this summary is to provide insight into existing resources as well as an understanding of “lessons learned” from other jurisdictions.

BACKGROUND

Sepsis is a medical emergency caused by the body’s overwhelming and life-threatening response to infection, which can lead to tissue damage, organ failure, and death. The many risk factors for a person’s development and progression of sepsis include advanced age, compromised immune system response, chronic illness, broad spectrum antibiotic use, and exposure to infection associated with surgical and invasive procedures. In general, people with chronic diseases or weakened immune systems, children under the age of 1 and those older than 65 are all at higher risk of developing sepsis compared to the general population¹. Although early detection and management can significantly improve patient outcomes, sepsis can be difficult to predict, diagnose, and treat.

In the United States, sepsis kills approximately 250,000 people each year and is responsible for one third to one half of all hospital deaths². In 2013, sepsis cost the US health care system almost \$24 billion to treat³. Data on the incidence of sepsis in the Commonwealth is fragmented, but establishes sepsis as a major burden on the health care system and on patients and families. An analysis of Massachusetts claims data has found that septicemia and disseminated infections represent 4.1% of all hospital admissions statewide—making these conditions the leading cause of hospitalization after labor and newborn delivery⁴. People who contract sepsis face prolonged, costly treatment and the risk of lasting injury and death. While it is unclear whether the rate of sepsis has grown in recent years, the sheer number of Massachusetts residents affected

Key Findings

- At least 18 states have a coordinated statewide strategy to improve sepsis care in hospitals.
- Three states have adopted a regulatory approach to improving outcomes either by passing a law (Illinois) or promulgating regulations (New York and New Jersey) that require hospitals to adopt and train to sepsis protocols. Fifteen other states have opted for a voluntary, collaborative approach to sepsis care improvement.
- Much of the sepsis care improvement work at the state level has been driven by federal policy, specifically the adoption of the SEP-1 measure by CMS, and by federal grant funding for sepsis care improvement work in hospitals.
- Key informants who led hospital sepsis care improvement initiatives emphasized the importance of securing buy-in from leadership, setting measurable goals, and maintaining hospital engagement through easily accessible learning and sharing activities.

by sepsis and the human and economic cost of sepsis points to the need for a strong public health response.

THE ROLE OF HOSPITAL EMERGENCY DEPARTMENTS IN SEPSIS CARE

According to Centers for Disease Control and Prevention (CDC), approximately 80% of sepsis cases are acquired outside of a health care setting, so most patients with sepsis will first be seen in a hospital emergency department⁵. Given the critical role that hospital emergency departments play in the timely diagnosis and treatment of patients with sepsis, the emergency department is an important point of intervention for improving sepsis outcomes. In the interest of moving toward standardized sepsis management, Centers for Medicare and Medicaid Services (CMS) in 2015 released a new national care measure known as the Early Management Bundle for Severe Sepsis/Septic Shock or “SEP-1”⁶. The introduction of the SEP-1 measure has driven much of the focus in sepsis care improvement work in hospitals. In addition to requiring reporting of this new quality measure, CMS has also provided funding support for these initiatives through various CMS Innovation Center grant programs.

SUMMARY OF STATE SEPSIS INITIATIVES

Page six shows a summary table of state sepsis initiatives that have focused on improving sepsis care in hospitals. The majority of these initiatives have been voluntary in nature and have focused on establishing a learning collaborative to undertake sepsis care improvement work within state health systems. The exceptions to this strategy include New York, which passed first-in-the-nation sepsis regulations in 2013 requiring hospitals to adopt sepsis protocols; Illinois, which passed a law in 2016 to require hospitals to have sepsis protocols; and New Jersey, which approved regulations effective January 2018 that will require hospitals to use sepsis protocols⁷.

In states where there is a voluntary approach in place, the lead organizations is typically the state hospital association, which works in collaboration with association members, state agencies, advocacy organization and other partners to improve sepsis outcomes in hospitals. These projects range in duration from 1 year to several years and are structured to involve a mix of in-person and virtual meetings. To join, hospitals typically must sign a letter of commitment, designate an institutional sepsis lead, and report data regularly to the hospital association for evaluation purposes.

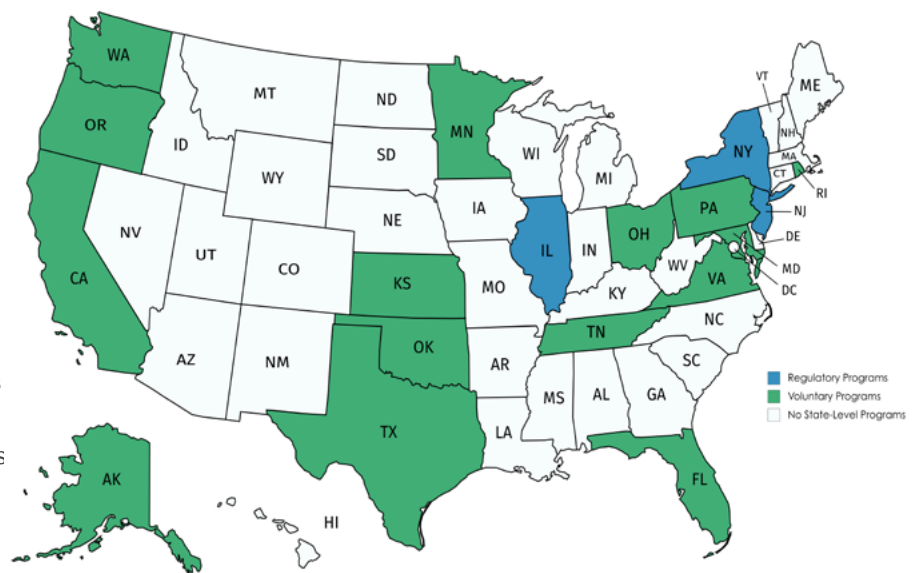


Figure 1. U.S. map

KEY INFORMANT INTERVIEWS

To supplement the literature review, Betsy Lehman Center staff conducted interviews with individuals who had firsthand knowledge of state-based sepsis care improvement programs. The interview questions focused mostly on the practical considerations of implementing a hospital-focused sepsis care improvement initiative as well as broader questions of stakeholder engagement, communications planning and lessons learned.

Q: WHAT LED YOU TO BEGIN YOUR WORK ON SEPSIS?

- Funding from CMS grant program
- State law or regulation passed
- SEP-1 measure was approved and hospitals wanted to improve performance on that measure

Q: WHO WERE THE KEY PARTNERS YOU ENGAGED?

- Nationally-recognized sepsis clinical experts
- Local Quality Improvement Network or Organization (QIN/QIO)
- Sepsis advocates, including the Sepsis Alliance and the Rory Staunton Foundation
- State hospital association
- State agencies, including the state health department
- Nursing homes, long-term care facilities, inpatient rehabilitation facilities
- EMS
- Acute care and children's hospital
- Human factors consultants
- Sepsis survivors

Q: HOW WAS YOUR INITIATIVE FUNDED?

- CMS grant funds, including the LEAPT and Partnership for Patients, among others
- Existing state appropriations
- Delivery-system reform initiative program (DSRIP) funds
- Existing organizational resources

Q: WHAT GOAL DID YOU SET?

- To reduce sepsis mortality in the state by 30%
- To reduce sepsis mortality in the state by 20% and sepsis readmissions by 12%
- To increase compliance with SEP-1 bundle
- To increase % of hospitals that have an evidence-based sepsis protocol in place

“ We gave hospitals a side-by-side look at their mortality data and that got a lot of attention among hospital leadership. There was a five-fold gap between the best performers and the worst performers. Once you see that gap, you realize that a lot of work needs to be done. ”

“ Setting up an expert advisory group was key to getting buy-in on the evidence-base and best practices in sepsis care. It helps to have a good referee in those discussions. ”

- To lower postoperative sepsis rate
- To reduce use of antibiotics while also reducing rate of sepsis mortality

Q: WHAT KEY STRATEGIES DID YOU USE TO ENGAGE HOSPITALS IN SEPSIS CARE IMPROVEMENT WORK?

- Required a signed letter of commitment prior to joining state sepsis collaborative
- Required hospitals to designate a sepsis team lead/champion and to file a sepsis improvement plan
- Provided follow-up data reports and comparisons of participating hospitals based on data submitted to the collaborative
- Offered virtual learning tools and opportunities to access tools at a time that is convenient to the participant
- Offered opportunities to share successes/challenges with others

Q: HOW DID YOU DETERMINE WHAT BEST PRACTICES TO RECOMMEND?

- Convened an expert panel to sort through evidence-base and make recommendations
- Hired a nationally-recognized sepsis expert as a consultant to provide advice and coaching
- Used Surviving Sepsis Campaign tools

Q: WHAT ARE THE KEY CHALLENGES THAT STILL NEED TO BE ADDRESSED?

- The evidence on best practices for pediatric patients is still developing
- The SEP-1 measure remains the primary way that CMS will view success, even though it may not be the most effective means of measuring high quality sepsis care
- There remains a big disparity between hospitals that are doing well and those that aren't - there needs to be a strategy to narrow the gap

“ Make your collaborative as easy to participate in as possible. If you can make the materials ‘plug and play’ so that hospitals can just implement them, then you’ll be more effective. ”

“ Engaging with our state’s long-term care association was a win-win, because they were able to offer sepsis resources to their membership and we gained a partner in preventing and recognizing the early signs of sepsis. ”

References

1. Centers for Disease Control and Prevention, Basic Information about Sepsis. Available at: <https://www.cdc.gov/sepsis/basic/index.html>.
2. Liu V, Escobar GJ, Greene JD, et al. Hospital Deaths in Patients with Sepsis From 2 Independent Cohorts. JAMA. 2014;312(1):90-92. doi:10.1001/jama.2014.5804.
3. Torio CM, Moore BJ. National inpatient hospital costs: the most expensive conditions by payer, 2013. HCUP statistical brief no. 204. Rockville, MD: Agency for Healthcare Research and Quality; May 2016. Available at: <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-Hospital-Conditions.pdf>.
4. Center for Health Information and Analysis. Hospital Profiles: FY16 Massachusetts Hospital Industry Overview. FY2016 Top Discharges Statewide, by Diagnostic Group. January 2018.
5. Novosad SA, Sapiano MR, Grigg C, et al. Vital Signs: Epidemiology of Sepsis: Prevalence of Health Care Factors and Opportunities for Prevention. MMWR Morb Mortal Wkly Rep 2016; 65: 864-869. Available at DOI: <http://dx.doi.org/10.15585/mmwr.mm6533e1>.
6. Faust JS, Weingart DS. The Past, Present and Future of the Centers for Medicare and Medicaid Services Quality Measure SEP-1. The Early Management Bundle for Severe Sepsis/Septic Shock. Emerg Med Clin N Am 35 (2017): 219-231.
7. New York Department of Health Sepsis Regulations available: https://www.health.ny.gov/regulations/public_health_law/section/405/. Illinois Public Act 099-0828, "Gabby's Law", is available at: <http://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=099-0828>. "New Jersey Sepsis Law", is available at: <http://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=099-0828>. New Jersey Sepsis Regulations, N.J.A.C. 8:43G-14.9, available at: https://nj.gov/health/legal/documents/adoption/8_43G-14.9%20Sepsis%20Protocols.pdf.



Table 1. Summary of State Sepsis Initiatives

State	Initiative Name	Coordinating Entity	Description	Regulatory or Voluntary?	Data/Evaluation
CA	Patient Safety First... a California Partnership for Health (PSF)	Hospital Council of Northern and Central California and National Health Foundation	Initiative launched in 2010 and includes 180 partner hospitals across California that participated in improvement activities across 4 outcomes, including sepsis.	Voluntary	Set a goal to reduce sepsis mortality by 10% below baseline of 2012. Achieved a 26% reduction in sepsis mortality among participating hospitals from 2010-2012.
FL	Mission to Care HIIN	Florida Hospital Association	Initiative launched in 2017 and includes 95 hospitals across Florida.	Voluntary	Set a goal to achieve a "20% reduction in sepsis" by September 2018. The HIIN partners had reached 12% reduction by 3/2018.
IL	"Gabby's Law"	Illinois Department of Public Health	State law (2016) requires hospitals to have sepsis screening and treatment protocols in place and to periodically train their staff in the protocols. Also requires collection of data related to sepsis.	Regulatory	The state has not promulgated regulations and has not collected data on the impact of the law.
KS	Kansas Sepsis Project; Followed by Hospital STOP Sepsis Plan	University of Kansas Department of Continuing Medical Education and Midwest Critical Care Collaborative	Launched in 2009, this project aims to improve treatment of Focuses on continuing education for medical professionals rather than implementation of protocols or practice changes in health care settings. DSRIP project by the University of Kansas Hospital extends their care improvement work to EMS providers, community hospitals, nursing homes and long term care.	Voluntary	Goal is to reduce mortality from severe sepsis in Kansas by 10% by the end of 2015.
MD	Sepsis Hospital Collaborative	Maryland Patient Safety Center and Maryland Hospital Association	2.5 year initiative started in 2015 that engaged 21 hospitals to improve sepsis care in MD. Conducted in 2 cohorts.	Voluntary	Goal was to reduce sepsis mortality in participating hospitals by 10%.
MN	Seeing Sepsis	MN Hospital Association (funded through the HEN)	Developed a toolkit to encourage adoption of severe sepsis early detection tools and the 3/6-hour sepsis bundles.	Voluntary	Participation hospitals reduced sepsis mortality by 49% (severe sepsis) and 64% (septic shock) since 2008.

State	Initiative Name	Coordinating Entity	Description	Regulatory or Voluntary?	Data/Evaluation
NJ	New Jersey 2015 Learning-Action Collaborative	Institute for Quality and Patient Safety of the NJ Hospital Association	State collaborative launched in late 2014 with 73 health care organizations	Voluntary followed by Regulatory Action	Non-regulatory strategy launched in 2014 with the goal of reducing sepsis deaths by 20%. By 2016, the group had achieved a 10% decrease. Also had a goal to increase bundle compliance.
	2018 State Regulations		State then decided to move forward with regulations requiring sepsis protocols.		Regulations effective 1/16/2018 require hospitals to adopt evidence-informed sepsis protocols and to train staff on protocols within 6 months.
NY	Sepsis Care Improvement Initiative (“Rory’s Regulations”)	New York State Department of Health	<p>NY DOH regulations approved in 2013 require hospitals to adopt evidence-based sepsis protocols and submit sepsis data to the state.</p> <p>NY state law (“Rory Staunton’s Law”) passed in 2017 requires health care professionals to receive training and education in sepsis. Also requires NY public schools to develop a sepsis awareness program.</p>	Regulatory	Data is reported to the state for every sepsis case, although with sufficient volume, some hospitals are allowed to sample data. Numerous data points are collected. Evaluation shows 5,000 lives saved through 2015.
OH	Sepsis Statewide Initiative	Ohio Hospital Association	Statewide initiative launched in June 2015. Goals were to improve early recognition and early intervention with the SSC’s 3-hour sepsis bundle.	Voluntary	Goal is 30% reduction in mortality by 2018; achieved 13.4% reduction in first 18 months.
OK	Oklahoma Sepsis Collaborative	Oklahoma Hospital Association	Statewide initiative funded by OHA Foundation and Telligent. Year-long collaborative for ED and intensive care units. Included 46 hospital teams.	Voluntary	Goal of the HIIN project is to reduce mortality after severe sepsis by 20% and reduce 30-day readmissions from any cause, including sepsis, by 12%. Kick-off happened in 1/2017.

State	Initiative Name	Coordinating Entity	Description	Regulatory or Voluntary?	Data/Evaluation
PA	Stopping Sepsis: Saving Lives in PA	Pennsylvania Department of Health;	Held a 1-day conference in 2016 and 2017 to highlight the issue.	Voluntary	Goal of the HIIN project is to reduce mortality after severe sepsis by 20% and reduce 30-day readmissions from any cause, including sepsis, by 12%. Kick-off happened in 1/2017.
		PA HIIN (project of the Hospital and Health System Assn. of Pennsylvania)	HIIN is a 54-hospital collaborative aimed at reducing sepsis mortality in PA.		
RI	RI Surviving Sepsis Campaign	RI ICU Collaborative (partnership of RI Quality Institute, Quality Partners of RI, Hospital Association of RI)	11 acute care hospitals in RI (23 adult ICUs) are participating. One initiative of the ICU collaborative is improved diagnosis and treatment of sepsis.	Voluntary	Set a goal to reduce mortality by 25% by 12/2009.
TN	Tennessee Hospital Association Sepsis Collaborative	TN Hospital Association; TN Center for Patient Safety	Center began outreach on sepsis to TN hospitals in 2015. The goal is to spread evidence-based Sepsis interventions. TCPS will assist hospitals in implementing early recognition Sepsis screening and standardized sepsis treatment protocols.	Voluntary	None.
TX	Sepsis Nursing Home Project	TMF Health Quality Institute	The purpose of this project is to improve early identification of sepsis in nursing homes in order to decrease the morbidity and mortality associated with severe sepsis and septic shock. The education will also assist in decreasing readmissions linked to sepsis.	Voluntary	None.
VA	VA HIIN	Virginia Hospital Association	36 hospitals in VA working collaboratively to improve safety in a number of areas, including sepsis.	Voluntary	Data has been collected, but the 2014-2016 data indicates that no progress has been made on sepsis measures.

