

# Sepsis Fact Sheet

**Definition:** Sepsis is the body's overwhelming and life-threatening response to infection, which can lead to tissue damage, organ failure, and death.

Who it Hurts: While sepsis is an equal-opportunity killer, impacting the sick, the well, and people of all ages, some groups are more likely to be affected. These include very young children, older adults, those with a weakened immune system, racial and ethnic minorities, and lower income individuals and families.

**Prevention:** The risk of sepsis can be reduced by preventing or quickly identifying and managing infections. This includes practicing good hygiene, staying current with vaccinations, and seeking treatment when infections are suspected.

**Treatment:** Sepsis is a medical emergency that requires urgent attention and rapid treatment for survival. Sepsis can be treated and, in many instances, lives are saved by using existing and proven protocols.

**Recovery:** Many individuals fully recover from sepsis, while others may have long-lasting effects, such as amputations or organ dysfunction, like kidney failure. Other aftereffects of sepsis are less obvious, such as memory loss, anxiety, or depression.

Symptoms: When it comes to sepsis, remember It's About TIMETM:

- T Temperature higher or lower than normal
- I Infection may have signs or symptoms of infection
- M Mental Decline confused, sleepy, difficult to rouse
- E Extremely ill severe pain, discomfort, shortness of breath

If you **suspect sepsis** (observe a combination of these symptoms), see your medical professional immediately, CALL 911, or go to a hospital with an advocate and say, **"I AM CONCERNED ABOUT SEPSIS."** 

## **Critical Facts:**

- Sepsis is the leading cause of death in U.S. hospitals.<sup>1</sup>
- Approximately 6% of all hospitalizations are due to sepsis and 35% of all deaths in-hospital are due to sepsis.<sup>2</sup>
- Sepsis can be caused by any infection, whether fungal, viral, parasitic, or bacterial, and not all of these pathogens can be cultured. In up to half of septic patients, no pathogen is identified.<sup>3</sup>
- Sepsis is the leading cause of readmissions to the hospital, with as many as 19% of people originally hospitalized with sepsis re-hospitalized within 30 days and about 40% rehospitalized within 90 days.<sup>4, 5, 6</sup>
- As many as 87% of sepsis cases originate in the community and not in the hospital.<sup>2</sup>
- The risk of mortality from sepsis increases by 4-9% for every hour treatment is delayed.<sup>7, 8, 9</sup> As many as 80% of septic shock patients can be saved with rapid diagnosis and treatment.<sup>7</sup>
- Viral sepsis is the most common complication in severe COVID-19, and is more commonly seen in hospitalized COVID-19 patients than hospitalized influenza patients.<sup>10, 11, 12, 13, 14</sup> Studies indicate that 78% of COVID-19 patients hospitalized in the intensive care unit have sepsis.<sup>15</sup>

## **Human Cost:**

- Sepsis affects an estimated 49 million people worldwide each year, including more than 20 million children under age 5, and nearly 5 million older children and adolescents (ages 5-19).
- Sepsis takes 11 million lives around the world each year, contributing to 20% of all deaths globally and taking more lives than cancer.<sup>16, 17</sup> This is more than 20 deaths every minute.<sup>18</sup>
- More than 1.7 million people in the U.S. are diagnosed with sepsis each year one every 20 seconds and the incidence is rising.<sup>2, 19, 20</sup>
- An estimated 350,000 adults die from sepsis every year in the U.S. one every 90 seconds. This is more than those who die from stroke, prostate cancer, breast cancer, and opioid overdose combined.<sup>2, 21, 22, 23</sup> This includes 270,000 adults who die in-hospital and an estimated 80,000 released to hospice.<sup>2</sup>
- Each year, more than 75,000 children in the U.S. develop severe sepsis and 6,800 of these children die, more than from pediatric cancers.<sup>24, 25</sup>
- Sepsis causes at least 261,000 maternal deaths every year worldwide and is driving increases in pregnancy-related deaths in the U.S.<sup>26, 27</sup>
- Sepsis in the U.S. disproportionately affects the Black community; Blacks bear nearly twice the burden of sepsis deaths, relative to the Black population, as whites.<sup>28, 29, 30</sup>
- Approximately 1% of sepsis survivors undergo one or more surgical amputations of a limb or digit
  as a result of sepsis.<sup>31, 32</sup> In 2012, there were more than 13,700 sepsis-related amputations in
  the U.S. This works out to an average of 38 amputations per day.<sup>33</sup>
- Sepsis survivors have a shortened life expectancy, are more likely to suffer from an impaired quality
  of life, and often experience worsened cognititve (mental) and physical function.<sup>6, 20, 34, 35, 36</sup>
- Missed infections are the third most common cause of diagnostic errors identified in medical malpractice cases. Sepsis is the most common condition among missed infections in diagnostic errors.<sup>37</sup>

#### **Economic Cost:**

- Sepsis is the #1 cost of hospitalization in the U.S.<sup>38</sup> Costs for acute sepsis hospitalization and skilled nursing are estimated to be \$62 billion annually.<sup>39</sup> This is only a portion of all sepsis-related costs, since there are substantial additional costs after discharge for many.
- The average cost per hospital stay for sepsis is double the average cost per stay across all other conditions.<sup>40</sup>
- Sepsis is the #1 cause of readmission to the hospital, costing more than \$3.5 billion each year. 5, 40

#### Awareness:

An estimated 34% of U.S. adults have NEVER heard of sepsis.<sup>41</sup>

# To find out more please visit Sepsis.org

### Suggested Citation:

Sepsis Alliance. Sepsis Fact Sheet. 2023. https://www.sepsis.org/education/resources/fact-sheets/

#### Sources:

- <sup>1</sup> Liu V, et al. "Hospital Deaths in Patients With Sepsis From 2 Independent Cohorts." *JAMA*. 2014;312(1):90-92. https://iamanetwork.com/journals/jama/fullarticle/1873131
- <sup>2</sup> Rhee C, et al. "Incidence and Trends of Sepsis in US Hospitals Using Clinical vs Claims Data, 2009-2014." *JAMA*. 2017;318(13):1241-1249. http://jamanetwork.com/journals/jama/fullarticle/2654187
- <sup>3</sup> Rhee C, et al. "Prevalence of Antibiotic-Resistant Pathogens in Culture-Proven Sepsis and Outcomes Associated With Inadequate and Broad-Spectrum Empiric Antibiotic Use." *JAMA Network Open.* 2020;3(4):e202899. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2764581
- <sup>4</sup> Fingar K, Washington R. "Trends in Hospital Readmissions for Four High-Volume Conditions, 2009-2013." HCUP Statistical Brief #196. November 2015. Agency for Healthcare Research and Quality, Rockville, MD. <a href="https://www.hcup-us.ahrq.gov/reports/statbriefs/sb196-Readmissions-Trends-High-Volume-Conditions.jsp">https://www.hcup-us.ahrq.gov/reports/statbriefs/sb196-Readmissions-Trends-High-Volume-Conditions.jsp</a>
- <sup>5</sup> Gadre SK, et al. "Epidemiology and Predictors of 30-Day Readmission in Patients With Sepsis." *Chest.* 2019;155(3):483-490. https://iournal.chestnet.org/article/S0012-3692(18)32895-2/abstract
- <sup>6</sup> Prescott H and Angus D. "Postsepsis Morbidity." *JAMA*. 2018;319(1):91. https://iamanetwork.com/iournals/iama/fullarticle/2667724
- <sup>7</sup> Kumar A, et al. "Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock." *Crit Care Med.* 2006;34(6):1589-1596. https://pubmed.ncbi.nlm.nih.gov/16625125/
- <sup>8</sup> Seymour CW, et al. "Time to Treatment and Mortality during Mandated Emergency Care for Sepsis." *N Engl J Med.* 2017;376(23):2235-2244. https://www.nejm.org/doi/full/10.1056/NEJMoa1703058
- <sup>9</sup> Liu VX, et al. "The Timing of Early Antibiotics and Hospital Mortality in Sepsis." *Am J Respir Crit Care Med.* 2017;196(7):856-863. https://www.atsjournals.org/doi/full/10.1164/rccm.201609-1848OC
- <sup>10</sup> Zhou F, et al. "Clinical course and risk factors for mortality of adult inpations with COVID-19 in Wuhan, China: a retrospective cohort study." *Lancet*. 2020; 395 (10229), 1054-1062. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30566-3/fulltext
- <sup>11</sup> Chen T, et al. "Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study." *BMJ*. 2020; 368:m1091. https://www.bmi.com/content/368/bmi.m1091
- <sup>12</sup> Little DA, et al. "Sepsis Mortality Rates are Higher in Patients Hospitalized for COVID-19 Than for Influenza." *Epic Health Research Network*. 19 Nov 2020. <a href="https://ehrn.org/articles/sepsis-and-mortality-rates-are-higher-in-patients-hospitalized-for-covid-19-than-for-influenza">https://ehrn.org/articles/sepsis-and-mortality-rates-are-higher-in-patients-hospitalized-for-covid-19-than-for-influenza</a> *Note: non-peer-reviewed private journal*
- <sup>13</sup> Cates J, et al. "Risk for In-Hospital Complications Associated with COVID-19 and Influenza—Veterans Health Administration, United States, October 1, 2018–May 31, 2020." Morbidity and Mortality Weekly Report. 2020 Oct 23;69(42):1528. https://www.cdc.gov/mmwr/volumes/69/wr/mm6942e3.htm
- <sup>14</sup> Xie Y, et al. "Comparative evaluation of clinical manifestations and risk of death in patients admitted to hospital with covid-19 and seasonal influenza: cohort study." *BMJ* 2020;371:m4677. https://www.bmi.com/content/371/bmi.m4677.abstract
- <sup>15</sup> Karakike E, et al. "Coronavirus Disease 2019 as Cause of Viral Sepsis: A Systematic Review and Meta-Analysis." *Crit Care Med.* 2021. https://pubmed.ncbi.nlm.nih.gov/34259663/
- <sup>16</sup> Rudd KE, et al. "Global, regional, and national sepsis incidence and mortality, 1990-2017: analysis for the Global Burden of Disease Study." *Lancet*. 2020;395(10219):200-211 <a href="https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)32989-7/fulltext">https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)32989-7/fulltext</a>
- <sup>17</sup> "Cancer." World Health Organization. 12 September 2018. Accessed June 2, 2020. <a href="https://www.who.int/health-topics/cancer#tab=tab\_1">https://www.who.int/health-topics/cancer#tab=tab\_1</a>
- <sup>18</sup> Kempker JA, Martin GS. "A global accounting of sepsis." Lancet. 2020;395(10219):168-170. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)33065-X/fulltext
- <sup>19</sup> Hall, MJ, et al. "Inpatient Care for Septicemia or Sepsis: A Challenge for Patients and Hospitals." NCHS Data Brief, No 62. Hyattsville, MD: National Center for Health Statistics. 2011. <a href="https://www.cdc.gov/nchs/data/databriefs/db62.pdf">https://www.cdc.gov/nchs/data/databriefs/db62.pdf</a>
- <sup>20</sup> Buchman TG, et al. "Sepsis Among Medicare Beneficiaries: 1. The Burdens of Sepsis, 2012-2018." Crit Care Med. 2020;48(3):276-288.
- https://iournals.lww.com/ccmiournal/fulltext/2020/03000/sepsis\_among\_medicare\_beneficiaries\_\_1\_the.2.aspx
- <sup>21</sup> "Cancer Stat Facts: Cancer of Any Site." National Cancer Institute. Accessed June 2, 2020. https://seer.cancer.gov/statfacts/html/all.html

- <sup>22</sup> "Overdose Death Rates. National Institute on Drug Abuse." March 2020. Accessed June 2, 2020. <a href="https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates">https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates</a>
- <sup>23</sup> "Leading Causes of Death." CDC National Center for Health Statistics. Jan 13, 2022.

https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm

- <sup>24</sup> Hartman ME, et al. "Trends in the epidemiology of pediatric severe sepsis." *Pediatr Crit Care Med.* 2013;14(7):686-693. https://www.ncbi.nlm.nih.gov/pubmed/23897242
- <sup>25</sup> "Cancer in Children and Adolescents." National Cancer Institute. Retrieved 3/31/20. https://www.cancer.gov/types/childhood-cancers/child-adolescent-cancers-fact-sheet
- <sup>26</sup> Say L, et al. "Global causes of maternal death: a WHO systematic analysis." Lancet Glob Health 2014;2(6):e323-333. http://www.sciencedirect.com/science/article/pii/S2214109X1470227X
- <sup>27</sup> "Pregnancy Mortality Surveillance System." CDC. February 4, 2020. http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pmss.html
- <sup>28</sup> Kempker JA, et al. "Risk factors for septicemia deaths and disparities in a longitudinal US cohort." *Open forum infectious diseases* 2018;5(12):ofy305. https://academic.oup.com/ofid/article/5/12/ofy305/5184428
- <sup>29</sup> Mayr FB, et al. "Infection rate and acute organ dysfunction risk as explanations for racial differences in severe sepsis." Jama. 2010;303(24):2495-503. https://jamanetwork.com/journals/jama/article-abstract/186129
- <sup>30</sup> Prest J, et al. "Current Trends in Sepsis-Related Mortality in the United States." Critical Care Medicine. 2021;49(8):1276-1284. https://journals.lww.com/ccmjournal/Fulltext/2021/08000/Current\_Trends\_in\_Sepsis\_Related\_Mortality\_in\_the.5.aspx
- <sup>31</sup> Reitz K, et al. "D104. Critical Care: A Fine Balance Sepsis Definitions, Outcomes and Epidemiology." *Am J Resp Crit Care Med*, AJRCCM Conference Abstracts 2019, 201: A7153. <a href="https://www.atsjournals.org/doi/abs/10.1164/ajrccm-conference.2019.199.1\_MeetingAbstracts.A7153">https://www.atsjournals.org/doi/abs/10.1164/ajrccm-conference.2019.199.1\_MeetingAbstracts.A7153</a>
- <sup>32</sup> Oh TK, Song IA. "Incidence and associated risk factors for limb amputation among sepsis survivors in South Korea." *J Anesth.* 2021;35(1):51-58. https://pubmed.ncbi.nlm.nih.gov/33025150/
- 33 Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2012. Accessed April 6, 2016
- <sup>34</sup> Winters BD, et al. "Long-term mortality and quality of life in sepsis: a systematic review." *Critical Care Medicine Journal*. 2010;38(5):8.2010. http://www.ncbi.nlm.nih.gov/pubmed/20308885
- <sup>35</sup> Lund-Sorensen H, et al. "A Nationwide Cohort Study of the Association Between Hospitalization With Infection and Risk of Death by Suicide." 2016. <a href="https://jamanetwork.com/journals/jamanesychiatry/article-abstract/2542681">https://jamanetwork.com/journals/jamanesychiatry/article-abstract/2542681</a>
- <sup>36</sup> Iwashyna TJ, et al. "Long-term Cognitive Impairment and Functional Disability Among Survivors of Severe Sepsis." JAMA. 2010;304(16):8. https://jamanetwork.com/journals/jama/fullarticle/186769
- Newman-Toker DE, et al. "Serious misdiagnosis-related harms in malpractice claims: The "Big Three" vascular events, infections, and cancers." *Diagnosis*. 2019;6(3):227-240. https://pubmed.ncbi.nlm.nih.gov/31535832/
- 38 Torio C, Moore B. "National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2013." HCUP Statistical Brief #204. May 2016. Agency for Healthcare Research and Quality, Rockville, MD. <a href="https://www.hcup-us.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-Hospital-Conditions.pdf">https://www.hcup-us.ahrq.gov/reports/statbriefs/sb204-Most-Expensive-Hospital-Conditions.pdf</a>
- <sup>39</sup> Buchman TG, Simpson SQ, Sciarretta KL, et al. "Sepsis Among Medicare Beneficiaries: 3. The Methods, Models, and Forecasts of Sepsis, 2012-2018." *Crit Care Med.* 2020;48(3):302-318. https://journals.lww.com/ccmjournal/FullText/2020/03000/Sepsis\_Among\_Medicare\_Beneficiaries\_\_3\_\_The.4.aspx
- <sup>40</sup> Pfuntner A, et al. "Costs for Hospital Stays in the United States, 2011." HCUP Statistical Brief #168. December 2013. Agency for Healthcare Research and Quality, Rockville, MD. <a href="https://www.hcup-us.ahrq.gov/reports/statbriefs/sb168-Hospital-Costs-United-States-2011.isp">https://www.hcup-us.ahrq.gov/reports/statbriefs/sb168-Hospital-Costs-United-States-2011.isp</a>
- 41 "2022 Sepsis Awareness Survey." Sepsis Alliance. 2022. https://www.sepsis.org/wp-content/uploads/2022/09/2022 Sepsis Awareness Survey-1.pdf

# **SENATE BILL 332**

J3, J1

1

2

3

4

5 6

7

8 9

10

11

12

13

14

15 16

17

18

19

20

4lr1623 CF HB 84

CF HB 84 By: Senators Lewis Young and Guzzone Introduced and read first time: January 12, 2024 Assigned to: Finance Committee Report: Favorable with amendments Senate action: Adopted Read second time: February 27, 2024 CHAPTER\_ AN ACT concerning Hospitals and Urgent Care Centers - Sepsis Protocol (Lochlin's Law) FOR the purpose of requiring, on or before a certain date, each hospital and urgent care center in the State to implement a certain protocol for the early recognition and treatment of a patient with sepsis, severe sepsis, or septic shock; requiring hospitals and urgent care centers to require periodic training in the implementation of the protocol for certain staff; and generally relating to sepsis protocols in hospitals and urgent care centers. BY adding to Article - Health - General Section 19-310.4 Annotated Code of Maryland (2023 Replacement Volume) SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows: Article - Health - General 19-310.4. (A) ON SUBJECT TO PARAGRAPHS (1) AND (2) OF THIS SUBSECTION, (1) ON OR BEFORE JANUARY 1, 2025, EACH HOSPITAL AND URGENT CARE CENTER IN

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.

[Brackets] indicate matter deleted from existing law.

Underlining indicates amendments to bill.

Strike out indicates matter stricken from the bill by amendment or deleted from the law by amendment.



31

32 CHILDREN:

THE STATE SHALL IMPLEMENT AN EVIDENCE-BASED PROTOCOL FOR THE EARLY RECOGNITION AND TREATMENT OF A PATIENT WITH SEPSIS, SEVERE SEPSIS, OR SEPTIC SHOCK THAT IS BASED ON GENERALLY ACCEPTABLE STANDARDS OF CARE. 4 (2) THE EVIDENCE-BASED PROTOCOL IMPLEMENTED FOR 5 HOSPITALS UNDER PARAGRAPH (1) OF THIS SUBSECTION SHALL COMPLY WITH THE CENTERS FOR DISEASE CONTROL AND PREVENTION SEPSIS GUIDELINES. 7 A HOSPITAL THAT IS A SPECIALTY PSYCHIATRIC HOSPITAL SHALL 8 ESTABLISH A PROCESS FOR THE SCREENING AND EARLY RECOGNITION OF A PATIENT WITH SEPSIS, SEVERE SEPSIS, OR SEPTIC SHOCK, AND PROCEDURES TO 9 TRANSFER THE PATIENT TO THE APPROPRIATE SETTING. 10 11 (2) THE PROTOCOL SHALL: 12 INCLUDE COMPONENTS SPECIFIC TO THE IDENTIFICATION, 13 CARE, AND TREATMENT OF ADULTS AND CHILDREN; AND (H) FOR A HOSPITAL, CLEARLY IDENTIFY WHERE AND WHEN 14 15 THE COMPONENTS WILL DIFFER FOR ADULTS AND CHILDREN SEEKING TREATMENT 16 IN THE EMERGENCY DEPARTMENT OR AS AN INPATIENT. THE COMPONENTS REQUIRED UNDER PARAGRAPH (2) OF THIS 17 (3)18 SUBSECTION SHALL INCLUDE: 19 A PROCESS FOR THE SCREENING AND EARLY RECOGNITION 20 OF A PATIENT WITH SEPSIS, SEVERE SEPSIS, OR SEPTIC SHOCK; (II) A PROCESS TO IDENTIFY AND DOCUMENT INDIVIDUALS 21 APPROPRIATE FOR TREATMENT THROUGH SEPSIS PROTOCOLS, INCLUDING 22 23 EXPLICIT CRITERIA DEFINING WHICH PATIENTS SHOULD BE EXCLUDED FROM THE 24 PROTOCOL SUCH AS A PATIENT WITH CERTAIN CLINICAL CONDITIONS OR A PATIENT 25 WHO HAS CHOSEN PALLIATIVE CARE: 26 (III) GUIDELINES FOR HEMODYNAMIC SUPPORT WITH EXPLICIT 27 PHYSIOLOGIC AND TREATMENT GOALS. METHODOLOGY FOR INVASIVE OR NONINVASIVE HEMODYNAMIC MONITORING, AND TIME FRAME GOALS: 28 29 (IV) FOR INFANTS AND CHILDREN, GUIDELINES FOR FLUID RESUSCITATION CONSISTENT WITH CURRENT, EVIDENCE BASED CUIDELINES FOR 30

SEVERE SEPSIS AND SEPTIC SHOCK WITH DEFINED THERAPEUTIC GOALS FOR

1	(V) IDENTIFICATION OF THE INFECTIOUS SOURCE AND
2	DELIVERY OF EARLY BROAD-SPECTRUM ANTIBIOTICS WITH TIMELY REEVALUATION
3	TO ADJUST TO NARROW-SPECTRUM ANTIBIOTICS TARGETED TO IDENTIFIED
4	INFECTIOUS SOURCES; AND
5	(VI) CRITERIA FOR USE, BASED ON ACCEPTED EVIDENCE OF
6	VASOACTIVE AGENTS.
7	(B) A HOSPITAL THAT SUBMITS SEPSIS DATA TO THE CENTERS FOR
8	MEDICARE AND MEDICAID SERVICES HOSPITAL INPATIENT QUALITY REPORTING
9	PROGRAM IS PRESUMED TO MEET THE REQUIREMENTS OF SUBSECTION (A) OF THIS
10	SECTION.
10	
11	(C) EACH HOSPITAL AND URGENT CARE CENTER SHALL:
12	(1) REQUIRE PERIODIC TRAINING IN THE IMPLEMENTATION OF THE
13	SEPSIS PROTOCOL REQUIRED UNDER SUBSECTION (A) OF THIS SECTION FOR
14	PROFESSIONAL STAFF WITH DIRECT PATIENT CARE RESPONSIBILITIES AND, AS
15	APPROPRIATE, FOR STAFF WITH INDIRECT PATIENT CARE RESPONSIBILITIES,
16	INCLUDING LABORATORY AND PHARMACY STAFF; AND
17	(2) Ensure that the staff receive updated training if the
18	HOSPITAL OR URGENT CARE CENTER MAKES A SUBSTANTIVE CHANGE TO THE
19	SEPSIS PROTOCOL.
20	(D) EACH HOSPITAL AND URGENT CARE CENTER SHALL COLLECT AND USE
21	QUALITY MEASURES RELATED TO THE RECOGNITION AND TREATMENT OF SEVERE
22	SEPSIS FOR THE PURPOSE OF INTERNAL QUALITY IMPROVEMENT.
23	(E) ON REQUEST, A HOSPITAL OR AN URGENT CARE CENTER SHALL
24	PROVIDE THE PROTOCOL REQUIRED UNDER SUBSECTION (A) OF THIS SECTION TO
25	THE DEPARTMENT.
26	SECTION 2. AND BE IT FURTHER ENACTED That this Act shall take effect

27

October 1, 2024.