



Life After Sepsis Fact Sheet

Definition: Sepsis is a life-threatening emergency that happens when your body's response to an infection damages vital organs and, often, causes 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 are left with long-lasting effects, such as amputations or organ dysfunction, like kidney failure. Other after-effects of sepsis are less obvious, such as memory loss, anxiety, or depression.

Symptoms: When it comes to sepsis, remember **It's About TIME™**:

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 – “I feel like I might die,” severe pain or discomfort

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.”**

Post-sepsis syndrome: Up to 50% of sepsis survivors are left with physical and/or psychological long-term effects, a condition known as post-sepsis syndrome.^{1,2,3,4} These effects include:

- Insomnia, difficulty getting to sleep or staying asleep
- Nightmares, vivid hallucinations and panic attacks
- Disabling muscle and joint pains
- Extreme fatigue
- Poor concentration
- Decreased mental (cognitive) functioning
- Loss of self-esteem and self-belief

Life After Sepsis in Adults

- About one-third of all sepsis survivors, and more than 40% of older sepsis survivors, have another hospitalization within three months of the initial sepsis, most commonly due to a repeat episode of sepsis or another infection.^{1,2}
- Black, Hispanic, and Native American adult sepsis survivors are more likely than white survivors to be readmitted after hospital discharge (1.3-1.5 times the risk for Black, 1.3 times the risk for Hispanic, and 2.4 times the risk for Native American survivors).^{5,6,7}
- One-half to two-thirds of all hospital readmissions after sepsis are infection-related.⁸
- The higher risk of infection following sepsis results from suppression or weakening of the immune system in the first few weeks and months following the initial bout of sepsis.^{1,8} Over 50% of severe COVID-19 cases in the U.S. develop sepsis and potentially fall into this higher risk group.⁹
- Severe sepsis survivors who do not experience a sepsis readmission within three months still remain at elevated risk of a future sepsis episode.¹⁰
- In addition to infection, other common causes of rehospitalization after sepsis are heart failure, kidney failure, and pulmonary aspiration (inhaling food into the lungs).²
- Adult sepsis survivors followed for as many as five years after hospitalization had a higher risk of death than adults who did not have sepsis during their hospitalization, even when matching on risk factors such as health status before developing sepsis.^{11,12,13} Severe sepsis was associated with 1.66 times the risk of death during the subsequent follow-up period.¹²
- Almost 60% of sepsis survivors over the age of 50 experience worsened cognitive (mental) and/or physical function.³ Among adults 45 years or older, long-term cognitive functioning declines more rapidly, on average, for sepsis survivors.¹⁴ One-sixth of sepsis survivors experience difficulties with memory, concentration, and decision making.²
- Older sepsis survivors experience on average 1 to 2 new limitations on activities of daily living (e.g. bathing, dressing, managing money) after hospitalization.³
- Older adult sepsis survivors experience more severe long-term cognitive and physical disability as compared to younger sepsis survivors,¹⁵ and are at higher risk for long-term cognitive impairment and physical problems than others their age who were treated for other illnesses.³
- Many sepsis survivors report symptoms of post-traumatic stress disorder.¹⁶ Sepsis survivors are more likely to develop symptoms of post-traumatic stress disorder than other ICU survivors.¹⁷
- Studies estimate that 1% of sepsis patients undergo one or more surgical amputations of a limb or digit as a result of sepsis.^{18, 19}
- Adult sepsis survivors of all ages are at increased risk of major cardiovascular events²⁰ including stroke and heart attack (myocardial infarction) in the first 4 weeks after hospital discharge.²¹ Sepsis survivors also face increased long-term risks of venous thromboembolism, stroke, heart attack, and congestive heart failure.^{22,23}
- Caregivers to survivors of critical illness are at risk for poor mental health outcomes. 67% of caregivers (family members or friends) report high levels of depressive symptoms.²⁴
- The average cost for a hospital readmission at 30 days after the initial sepsis hospitalization is \$16,852. This amounts to more than \$3.5 billion in annual costs.²⁵

Life After Sepsis in Children

- More than 20% of child sepsis survivors are readmitted to the hospital within three months of the initial hospitalization.²⁶
- More than half of the readmissions after a sepsis hospitalization in children are related to recurring sepsis or infection.²⁶
- The average cost of a readmission after a sepsis hospitalization for a child is \$7,385, which is 27% more than a non-sepsis readmission.²⁶
- Among pediatric sepsis survivors, almost one third (31%) are discharged from the hospital with some disability, including cognitive or physical impairments, skin graft, amputation, or hearing loss.²⁷ Children hospitalized for sepsis are 8 times more likely to undergo device placement than children hospitalized for other illnesses.²⁸
- Almost 1 in 6 pediatric severe sepsis survivors are discharged from the hospital with more disabilities than when they were admitted.²⁹ A total of 1 in 5 pediatric sepsis survivors had a new or worsening medical condition 6 months after ICU discharge.³⁰
- 60% of children who survive sepsis experience an increase in outpatient healthcare visits during the 12-month period following hospital discharge.³¹
- Survival from sepsis can be very challenging with many children requiring amputations. Many more experience a decrease in cognitive and physical function, with 34 percent of pediatric sepsis survivors (more than 1 in 3) showing a decline in their functional status at 28 days after hospital discharge.²⁹
- Some research points to problems in cognitive function (mental work) after critical illness in children. In one small study, children who had spent time in the pediatric ICU for critical illness showed deficiencies in tests of memory-related tasks compared to healthy children. Survivors of critical illness in this study also had declines in their academic performance as evaluated by teachers when compared to healthy children. In another study, 44% of children who had survived septic shock were found to have problems with cognitive function when compared to healthy children.^{32,33}
- Pediatric severe sepsis survivors who have spent time in the pediatric ICU experience post-traumatic stress disorder more often than children discharged from the general hospital ward.²⁹
- Critical illness in children takes a toll on family and caregivers. Higher rates of post-traumatic stress disorder and symptoms of deteriorating physical and mental health such as headaches, fatigue, and anxiety are reported for parents of survivors of pediatric critical illness.²⁹
- Almost 25% of pediatric sepsis survivors have a diminished health-related quality of life, a measure of the effect of health on physical, mental, emotional and social function.³⁴

To find out more please visit [Sepsis.org](https://www.sepsis.org)

Suggested Citation: Sepsis Alliance. *Life After Sepsis Fact Sheet*. 2024.

<https://www.sepsis.org/education/resources/fact-sheets/>

References

- 1 Prescott HC and Angus DC. Enhancing Recovery From Sepsis: A Review. *JAMA* 2018;319(1):62-75. <https://jamanetwork.com/journals/jama/article-abstract/2667727?redirect=true>
- 2 Prescott HC and Angus DC. Postsepsis Morbidity. *JAMA* 2018;319(1):91. <https://jamanetwork.com/journals/jama/fullarticle/2667724>
- 3 Iwashyna TJ, et al. Long-term Cognitive Impairment and Functional Disability Among Survivors of Severe Sepsis. *JAMA Network* 2010;304(16):1787-1794. <https://jamanetwork.com/journals/jama/fullarticle/186769>
- 4 Mostel Z, et al. Post-sepsis syndrome—an evolving entity that afflicts survivors of sepsis. *Molecular Medicine* 2019;26(1):1-4. <https://molmed.biomedcentral.com/articles/10.1186/s10020-019-0132-z>
- 5 Lizza BD, et al. Racial Disparities in Readmissions Following Initial Hospitalization for Sepsis. *Critical Care Medicine*. 2021; 49(3):e258-e268. https://journals.lww.com/ccmjournal/Abstract/9000/Racial_Disparities_in_Readmissions_Following.95381.aspx
- 6 Reddy AR, et al. Investigating Racial and Socioeconomic Characteristics in Pediatric Sepsis Using Electronic Health Data. *Hospital Pediatrics* 2023;13(2):138–146. <https://pubmed.ncbi.nlm.nih.gov/36691761/>
- 7 Chang DW, et al. Rehospitalizations Following Sepsis: Common and Costly. *Critical Care Medicine*. 2015; 43(10): 2085-93. <https://pubmed.ncbi.nlm.nih.gov/26131597/>
- 8 Prescott HC and Costa DK. Improving Long-Term Outcomes After Sepsis. *Critical Care Clinics* 2018;34(1):175-188. [http://www.criticalcare.theclinics.com/article/S0749-0704\(17\)30078-7/abstract](http://www.criticalcare.theclinics.com/article/S0749-0704(17)30078-7/abstract)
- 9 Murk W, et al. Diagnosis-wide analysis of COVID-19 complications: an exposure-crossover study. *Canadian Medical Association Journal*. 2021;193(1):E10-E18. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC774475/>
- 10 Shen H-N, et al. Risk of Recurrence After Surviving Severe Sepsis: A Matched Cohort Study. *Critical Care Medicine* 2016;44(10):1833-1841. https://journals.lww.com/ccmjournal/Abstract/2016/10000/Risk_of_Recurrence_After_Surviving_Severe_Sepsis_5.aspx
- 11 Prescott HC, et al. Late mortality after sepsis: propensity matched cohort study. *BMJ* 2016;353:i2375. <https://www.bmj.com/content/353/bmj.i2375>
- 12 Farrah K, et al. Sepsis-Associated Mortality, Resource Use, and Healthcare Costs: A Propensity-Matched Cohort Study. *Critical Care Medicine*. 2021;49(2):215-227. <https://pubmed.ncbi.nlm.nih.gov/33372748/>
- 13 Buchman TG, et al. Sepsis Among Medicare Beneficiaries: 1. The Burdens of Sepsis, 2012-2018. *Critical Care Medicine* 2020;48(3):276-288. https://journals.lww.com/ccmjournal/fulltext/2020/03000/sepsis_among_medicare_beneficiaries_1_the.2.aspx
- 14 Wang HE, et al. Trajectory of Cognitive Decline After Sepsis. *Critical Care Medicine* 2021;49(7):1083-1094. <https://pubmed.ncbi.nlm.nih.gov/33666392/>
- 15 Mankowski RT, et al. Older Sepsis Survivors Suffer Persistent Disability Burden and Poor Long-Term Survival. *Journal of the American Geriatrics Society*. 2020;68(9):1962-1969. <https://pubmed.ncbi.nlm.nih.gov/32294254/>
- 16 Boer KR, et al. Factors associated with posttraumatic stress symptoms in a prospective cohort of patients after abdominal sepsis: a nomogram. *Intensive Care Medicine* 2008;34(4):664-674. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2271079/>
- 17 Bienvenu OJ, et al. Post-traumatic stress disorder symptoms after acute lung injury: a 2-year prospective longitudinal study *Psychological Medicine* 2013;43(12):2657-2671. <https://pubmed.ncbi.nlm.nih.gov/23438256-post-traumatic-stress-disorder-symptoms-after-acute-lung-injury-a-2-year-prospective-longitudinal-study/>
- 18 Reitz K et al. Epidemiology of Surgical Amputation After Sepsis [abstract]. *American Journal of Respiratory and Critical Care Medicine* 2019;199:A7153. <https://doi.org/10.1164/ajrccm-conference.2019.199.1.MeetingAbstracts.A7153>
- 19 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/>
- 20 Jentzer JC., et al. Cardiovascular events among survivors of sepsis hospitalization: a retrospective cohort analysis. *Journal of the American Heart Association* 2023; 12(3):e027813. <https://pubmed.ncbi.nlm.nih.gov/36722388/>
- 21 Lai C-C, et al. Susceptible period for cardiovascular complications in patients recovering from sepsis. *Canadian Medical Association Journal* 2018;190:E1062-1069. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6131076/>
- 22 Kosyakovsky LB, et al. Association between sepsis survivorship and long-term cardiovascular outcomes in adults: a systematic review and meta-analysis. *Intensive Care Medicine* 2021;47(9):931-942. <https://link.springer.com/article/10.1007%2Fs00134-021-06479-y>
- 23 Angriman F, et al. Sepsis hospitalization and risk of subsequent cardiovascular events in adults: a population-based matched cohort study. *Intensive Care Medicine* 2022;48(4):448-57. <https://link.springer.com/article/10.1007/s00134-022-06634-z>
- 24 Cameron JI, et al. One-Year Outcomes in Caregivers of Critically Ill Patients. *New England Journal of Medicine* 2016;374(19):1831-1841. <https://www.nejm.org/doi/full/10.1056/NEJMoa1511160>

-
- 25 Gadre SK, et al. Epidemiology and Predictors of 30-Day Readmission in Patients With Sepsis. *Chest* 2019;155(3):483-490. [https://journal.chestnet.org/article/S0012-3692\(18\)32895-2/abstract](https://journal.chestnet.org/article/S0012-3692(18)32895-2/abstract)
- 26 Prout AJ, et al. Epidemiology of Readmissions After Sepsis Hospitalization in Children. *Hospital Pediatrics*. 2019;9(4):249-255. <https://hosppeds.aappublications.org/content/early/2019/02/28/hped.2018-0175>
- 27 Boeddha NP, et al. Mortality and morbidity in community-acquired sepsis in European pediatric intensive care units: a prospective cohort study from the European Childhood Life-threatening Infectious Disease Study (EUCLIDS). *Critical Care* 2018;22(1):1-13. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5984383/>
- 28 Carlton EF, et al. New Medical Device Acquisition During Pediatric Severe Sepsis Hospitalizations. *Critical Care Medicine* 2020;48(5):725-731. <https://pubmed.ncbi.nlm.nih.gov/32108704/>
- 29 Syngal P and Giuliano JS. Health-Related Quality of Life after Pediatric Severe Sepsis. *Healthcare* 2018;6(3):113. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6164000/>
- 30 Carlton EF, et al. New and Progressive Medical Conditions After Pediatric Sepsis Hospitalization Requiring Critical Care. *JAMA pediatrics*. 2022;176(11):e223554. <https://pubmed.ncbi.nlm.nih.gov/36215045/>
- 31 Carlton EF, et al. Comparison of Outpatient Health Care Use Before and After Pediatric Severe Sepsis. *JAMA Network Open* 2020;3(9):e2015214. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7489846/>
- 32 Als LC, et al. Neuropsychotic function three to six months following admission to the PICU with meningoenephalitis, sepsis, and other disorders: a prospective study of school-aged children. *Critical Care Medicine* 2013;41(4):1094-1103. <https://www.ncbi.nlm.nih.gov/pubmed/23385103>
- 33 Bronner MB, et al. An explorative study on quality of life and psychological and cognitive function in pediatric survivors of septic shock. *Pediatric Critical Care Medicine* 2009;10(6):636-642. <https://www.ncbi.nlm.nih.gov/pubmed/19581821>
- 34 Killien EY, et al. Health-Related Quality of Life Among Survivors of Pediatric Sepsis. *Pediatric Critical Care Medicine* 2019;20(6):501-509. <https://pubmed.ncbi.nlm.nih.gov/30720672-health-related-quality-of-life-among-survivors-of-pediatric-sepsis/>