# Sepsis and Children Fact Sheet

**Overview**: Sepsis is a leading cause of death for children in the U.S., taking more young lives than childhood cancers.[1] More than 18 children die from sepsis each day in the U.S.[1] and many of those lives could be saved with improved public awareness of sepsis symptoms and expanded health provider education.

**Prevention:** The risk of sepsis can be reduced by preventing infections: practicing good hygiene, staying current with vaccinations, using antibiotics as prescribed, and treating open skin wounds.

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

**Symptoms:** Sepsis symptoms can be different for children compared with adults and include a combination of the following:

- Skin abnormally cold to touch
- Bluish or very pale skin
- Fever
- Rash that does not fade when pressed on
- Very fast or rapid breathing
- Seizures
- Lethargy or difficulty waking up
- Drop in or no urine output

Additionally, for infants, symptoms may include:

- Not drinking or feeding
- Repeated vomiting
- Dry diaper

If you **suspect sepsis** (you observe two or more of these symptoms), particularly if there has been a recent illness or injury, contact/see your medical professional immediately, CALL 911, or take your child to a hospital and say, **"I AM CONCERNED ABOUT SEPSIS."**

## Global Burden of Sepsis in Children

- Sepsis affects more than 25 million children every year, representing over half of all sepsis case worldwide.[2]
- More than 80% of all pediatric sepsis cases and 40% of all sepsis cases occur in children under 5 years of age (20.3 million cases).[2]
- Globally, sepsis is the leading cause of death of children, taking nearly 3.4 million lives each year.[2,3] Approximately 85% of pediatric sepsis deaths occur in children under age 5.[2]

## Critical Facts

- Every day, more than 200 children are diagnosed with severe sepsis in the U.S. This is

more than 75,000 cases in the U.S. per year.[1]

- Mortality rates are high: each year, as many as 9% of children hospitalized with sepsis die in the U.S. (6,800 children or more than 18 on an average day).[1] That is more children than are lost to childhood cancers.[4]
- Infants, especially newborns, have the highest rates of sepsis and death from sepsis of any child age group. Sepsis-related deaths in infants account for the majority of child sepsis deaths.[1]
- More than 68% of children admitted to the hospital for sepsis have one or more chronic illnesses.[5]
- As many as 8% of pediatric sepsis cases may be missed during emergency department visits.[6]

## Life After Sepsis

- Survival from sepsis can be very challenging, with many children requiring amputations.[7] Many more experience a decrease in cognitive and physical function, with 34% of pediatric sepsis survivors (more than 1 in 3) still showing a decline in their functional status at 28 days after hospital discharge.[8]
- 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.[9] One in five developed a new or worsening medical condition.[10]
- More than 20% of child sepsis survivors are readmitted to the hospital within three months of the initial hospitalization.[5]
- More than half of the readmissions among children who were hospitalized for sepsis are related to recurring sepsis or infection.[5]
- Among children who survive hospitalization for sepsis, nearly one-quarter experience a decrease in health-related quality of life. More than half of children surviving septic shock have lower health-related quality of life even after leaving the hospital,[12] and as many as 35% fail to return to their previous quality of life one year later.[11]
- Immunocompromised children and children who require longer hospital stays are less likely to return to their previous quality of life after hospitalization than other children hospitalized for sepsis.[12]

## Economic Cost

- Caring for children with sepsis in hospitals is expensive and is estimated at $7.3 billion nationally each year, accounting for 18% of all pediatric hospitalization costs.[13]
- The median cost of acute care per sepsis hospitalization ($26,592) is nearly 12 times the median cost per hospitalization for other conditions in the U.S.[13]
- The cost of hospitalizing children for sepsis increased almost 25% between 2005 and 2016, after adjusting for inflation.[13]
- 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.[14]
- The average length of stay for sepsis patients is 31.5 days,[1] which is nearly 8 times longer

than the average stay for other childhood conditions.[15]

## Pediatric Sepsis Disparities

- Preterm infants who are Black are more than twice as likely to develop sepsis and are more likely to die than non-Black infants.[16]
- Black children are 30% more likely than white children to develop sepsis after surgery.[17]
- Black children who develop sepsis are more likely to die than white children.[18]
- Infants from lower income families are 20% more likely to die from sepsis.[19]
- Infants from families without health insurance are 3 times more likely to die from sepsis.[19]
- Children with severe sepsis or septic shock with public insurance are more likely to die than children with private or other types of insurance.[20]
- Children with severe sepsis or septic shock who are Black or Hispanic are more likely to die than non-Hispanic white children.[20]

**To find out more please visit [sepsis.org/sepsisand/children](sepsis.org/sepsisand/children)**

Suggested Citation: Sepsis Alliance. *Sepsis and Children Fact Sheet*. 2024.

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

### Sources

1 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

2 Rudd KE, et al. Global, regional, and national sepsis incidence and mortality, 1990-2017: analysis for the Global Burden of Disease Study. *Lancet*. 2020 https://www.ncbi.nlm.nih.gov/pubmed/31954465

3 Kisson N, and Carapetis J. Pediatric Sepsis in the Developing World. *J Infect.* 2015;71 Suppl 1:S21-26. https://www.journalofinfection.com/article/S0163-4453(15)00109-7/fulltext

4 Cancer in Children and Adolescents. *National Cancer Institute.* Retrieved 3/31/20. https://www.cancer.gov/types/childhood-cancers/child-adolescent-cancers-fact-sheet

5 Prout AJ, et al. Children with Chronic Disease Bear the Highest Burden of Pediatric Sepsis. *J Pediatr.* 2018;199:194-199. https://www.ncbi.nlm.nih.gov/pubmed/29753542

6 Cifra CL, et al. An Estimate of Missed Pediatric Sepsis in the Emergency Department. *Diagnosis.* 2020. https://www.ncbi.nlm.nih.gov/pubmed/32191624

7 Carlton EF, Donnelly JP, Hensley MK, Cornell TT, Prescott HC. New Medical Device Acquisition During Pediatric Severe Sepsis Hospitalizations. *Crit Care Med.* 2020;10.1097. https://pubmed.ncbi.nlm.nih.gov/32108704/

8 Farris RW, et al. *Pediatr Crit Care Med.* Functional Outcomes in Pediatric Severe Sepsis: Further Analysis of the Researching Severe Sepsis and Organ Dysfunction in Children: A Global Perspective Trial. 2013;14(9):835-842. https://www.ncbi.nlm.nih.gov/pubmed/24108117

9 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). *Crit Care.* 2018;22(1):143. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5984383/

10 Carlton EF, et al. New and Progressive Medical Conditions After Pediatric Sepsis Hospitalization Requiring Critical Care. *JAMA pediatrics* 2022;176(11): e223554-e223554.

11 Zimmerman JJ, et al. Trajectory of Mortality and Health-Related Quality of Life Morbidity Following Community-Acquired Pediatric Sepsis Shock. *Crit Care Med.* 2020;48(3):329-337. https://pubmed.ncbi.nlm.nih.gov/32058370/

12 Killien EY, et al. Health-Related Quality of Life Among Survivors of Pediatric Sepsis. *Pediatr Crit Care Med.* 2019;20(6):501-509. https://www.ncbi.nlm.nih.gov/pubmed/30720672

13 Carlton EF, et al. Cost of Pediatric Severe Sepsis Hospitalizations. *JAMA Pediatr.* 2019;173(10):986-987. https://jamanetwork.com/journals/jamapediatrics/article-abstract/2748380

14 Prout AJ, et al. Epidemiology of Readmissions After Sepsis Hospitalization in Children. *Hosp Pediatr.* 2019;9(4):249-255. https://hosppeds.aappublications.org/content/early/2019/02/28/hpeds.2018-0175

15 Weiss AJ and Elixhauser A. Overview of Hospital Stays in the United States, 2012. HCUP Statistical Brief #180. 2014. https://www.hcup-us.ahrq.gov/reports/statbriefs/sb180-Hospitalizations-United-States-2012.pdf

16 Weston EJ, et al. The Burden of Invasive Early-Onset Neonatal Sepsis in the United States, 2005-2008. *Pediatr Infect Dis J.* 2011;30(11):937-941. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3193564/

17 Nafiu, OO, et al. Race, Postoperative Complications, and Death in Apparently Healthy Children. *Pediatrics*. 2020;146(2):e20194113. https://pediatrics.aappublications.org/content/146/2/e20194113

[18] Li, Erica, et al. "Assessment of Racial and Ethnic Disparities in Outcomes of Pediatric Hospitalizations for Sepsis Across the United States." *JAMA pediatrics.* 2023. 177(2):206-208. https://jamanetwork.com/journals/jamapediatrics/fullarticle/2798891

19 Bohanan FJ, et al. Race, Income and Insurance Status Affect Neonatal Sepsis Mortality and Healthcare Resource Utilization. *Pediatr Infect Dis J.* 2017. https://www.ncbi.nlm.nih.gov/pubmed/29189608

20 Odetola FO and Gebremariam A. Resource Use and Outcomes for Children Hospitalized with Severe Sepsis or Septic Shock. *J Intensive Care Medicine.* 2019. https://www.ncbi.nlm.nih.gov/pubmed/31707898

Revised 2/2024