Sepsis and Health Equity Fact Sheet*

Introduction

In the United States, differences in health and mortality are influenced by both socio-economic status (SES) and race/ethnicity.[1] Sepsis, the body's overwhelming and life-threatening response to infection, is no exception.

Sepsis is the leading cause of death in U.S. hospitals,[2] and the #1 cost of hospitalization at $53 billion annually.[3, 4] More than 1.7 million people in the U.S. are diagnosed with sepsis each year, with an estimated 270,000 deaths every year in the U.S. alone; more than from prostate cancer, breast cancer, and opioid overdose combined.[5, 6, 7, 8] Those who survive sepsis have a shortened life expectancy, are more likely to suffer from an impaired quality of life, and often experience worsened mental and physical function.[9, 10, 11, 12, 13]

Many factors link SES and race/ethnicity to health disparities: racism; poverty; differential access to resources that promote health; unequal access to quality healthcare and treatments; different rates and types of stressors; healthiness of one's residential and neighborhood environment; and the development of preventable chronic health conditions.[14, 15]

For Sepsis Alliance, health equity means eliminating preventable disparities in sepsis incidence, morbidity, and mortality. This fact sheet looks at what is currently known about these disparities, as well as disparities in sepsis awareness and treatment.

Research on sepsis disparities to date has focused primarily on socioeconomic status and/or comparisons between Black or African American, Hispanic, and white patients. More research is also needed on smaller minority populations, such as Native American, Pacific Islander, and Asian American patients, who are often left out of health studies due to low numbers, or combined with other groups within combined racial/ethnic group designations such as "Other" or "Asian and Pacific Islander."

Racial/Ethnic Disparities in the Incidence and Mortality of Sepsis

- Black and other Non-white populations have nearly twice the incidence of sepsis as white (1.89 times the risk for Black, and 1.9 times the risk for other Non-white populations).[16]
- Black and Hispanic populations also have a higher incidence of *severe* sepsis as

compared to white (1.7 times the rate for Black, and 1.1 times the rate for Hispanic populations).[17]

- The Black community bears nearly twice the burden of sepsis deaths relative to the size of the Black population, as compared to their white counterparts.[18, 19] Sepsis deaths within American Indian/Alaskan Native and Hispanic communities are also elevated as compared to those in the white population (1.24 times the risk for American Indian/Alaskan Native and 1.14 times the risk for Hispanic populations).[20]

- Sepsis deaths among American Indian and Alaskan Native communities in the Indian Health Service area are 1.6 times higher than the national average.[21]

- Research from Hawaii finds that Native Hawaiian study participants have almost twice the burden of sepsis deaths as compared to white participants.[22]

Racial/Ethnic Disparities in Patient Care and Outcomes

- Black patients admitted to the emergency room are assigned to significantly lower priority status and experience significantly longer wait times (10.9 minutes longer on average) as compared to case-matched white patients.[23]

- Non-Hispanic Black children admitted to the emergency room are less likely to be treated for sepsis than non-Hispanic white children.[24]

- Sepsis deaths among prostate cancer patients are higher for racial and ethnic minorities. Black patients with prostate cancer have 1.9 times the risk, American-Indian patients 2.1 times the risk, and Asian and Pacific Islander patients 1.9 times the risk of sepsis death as compared to white patients with prostate cancer.[25]

- Black children are 30% more likely than white children to develop sepsis after surgery.[26]

- Research indicates more than twice the risk of severe maternal sepsis for maternal patients who are Black as compared to white maternal patients.[27]

- Preliminary research in a rural emergency department serving a Native American population found that 27.9% of admissions and transfers met sepsis criteria, higher than the 6% average for U.S. hospitals.[28, 8]

- Black patients with severe sepsis have 8% higher case fatality rates than white sepsis patients, are 4% less likely to be admitted to the ICU, and are 9% more likely to die if admitted to the ICU.[17]

- Other research also indicates that mortality among hospitalized sepsis patients

at any level of severity is significantly higher for racial and ethnic minorities compared to white patients. Hospitalized Black or Hispanic sepsis patients are 7% more likely to die than white, while those categorized as "Asian and Pacific Islander" or "Other" race are 18% or 21% more likely to die than white patients, respectively, after taking other patient characteristics into account.[29]

- Research conducted at a diverse urban medical center found that Asian sepsis patients were 57% more likely to die than their white counterparts.[30]
- Children with severe sepsis or septic shock who are Black or Hispanic are approximately 25% more likely to die than non-Hispanic white children.[31]
- Limited English proficiency is associated with an 80% higher mortality risk among sepsis patients.[30]
- In comparing Black vs. white patients, racial differences in sepsis are due to both a 39% higher rate of infection and a 29% higher rate of organ dysfunction complications in those infections.[19]
- Black and Native American patients are more likely to be readmitted following a sepsis hospitalization as compared to their white counterparts (1.29 times the risk for Black patients and 2.39 times the risk for Native American patients).[32]

Poverty and Socioeconomic Status

Adults with lower levels of education, income, and/or material resources, are at greater risk of sepsis mortality.[18] For example,

- Adults without a high school diploma have over 2.5 times the risk of dying from sepsis as those with a doctorate;
- Adults without a telephone number in the home are 1.6 times as likely to die of sepsis as those with; and
- Adults below the poverty line have over three to four times the risk of dying of sepsis as compared to adults whose family income is at least five times the poverty line.[18]
- Adult patients without health insurance are more likely to die of sepsis than privately insured patients, and are less than half as likely to be discharged to a nonhospital healthcare facility or discharged with home healthcare.[33]
- Infants and children with lower levels of income and access to insurance are at greater risk of sepsis mortality.[34, 35]
- Infants from lower income families are 20% more likely to die from sepsis.[34]

- Infants from families without health insurance are 3 times more likely to die from sepsis.[34]
- Children with severe sepsis or septic shock with public insurance are more likely to die than children with private or other types of insurance.[35]

Access to intensive care and hospitals with lower mortality rates, is related to income and minority status.

- Health care resources, including the availability of ICU beds, are more plentiful in wealthier communities. In the U.S., nearly half (49%) of the lowest income communities have no ICU beds, whereas only 3% of the highest income communities have no ICU beds.[36]
- Sepsis patients of any race/ethnicity who are treated in predominantly minority-serving hospitals have higher rates of in-hospital mortality.[37, 38, 39]

Awareness and Knowledge

- Sepsis awareness is significantly lower for Black adults than for white. In a recent survey conducted by Sepsis Alliance, only 49% of respondents identifying as Black had heard the term sepsis, as compared to 76% of white-identifying respondents.[40]
- Only 5% of Black respondents identified all four common symptoms of sepsis included in Sepsis Alliance's annual survey, as compared to 18% of white survey respondents.[40]
- White survey respondents were significantly more likely to know someone who had sepsis or had it themselves (37%), as compared to Black respondents (26%).[40]
- Income differences were also significantly related to sepsis awareness, with 15% more of the higher income respondents having heard the term 'sepsis' as compared to the lower income respondents.[40]

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