**Sepsis Qualitative Research**

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**Abstract: The objective of this research is to further understand the complexity of sepsis, factors that contribute to prevalence, forms of preventative care, populations affected, and why. I approached this research by exploring and examining past and present research done on the subject matter, as well as three phone interviews and one email interview with medical professionals that have first hand experience in treating. Unanswerable questions remain including geographic variation and disparities. This necessitates further research on how sepsis affects individuals and populations.**

**Introduction**

Sepsis is a clinical condition the body’s systemic response to a blood borne pathogen. It is also often referred to as blood poisoning. There has been much research done to explore different forms of sepsis, pertinent risk factors, causes, treatment and diagnosis and disparities in population prevalence. Sepsis is a complex condition to understand, often times leaving treatment teams with unanswered questions. Current research is investigating why sepsis is predominantly seen in the black population. There are several factors as to why this population could be more affected than the white population. Economic disparities, prevalence of neonatal sepsis, geographic variations, and availability of preventive care are among the concerns that I have examined.

As a senior in the Sociology-Health Track department, this subject matter caught my interest and spurred lots of curiosity as to why sepsis is not as widely recognized as other conditions, though it affects numerous Americans each year. Personally, I had never heard about sepsis before taking on this research task. I feel it has certainly been a value to my education to learn about such a severe condition that costs so many lives annually. I had the opportunity to interview four medical health professionals and getting their views on sepsis and what, according to them, I should know about the condition.

**Background Research**

Even minor infections (flu, UTI’s, gastroenteritis, etc.) expose the individual to sepsis. It is most likely to develop in people who are very young (premature and newborns), or the very old, due to a weakened immune system. Others may have a weakened immune system due to treatments such as chemotherapy for cancer, steroids for inflammatory disease, etc. Those that have wounds or injuries, addictive habits, such as drugs or alcohol, and receiving certain treatments or examinations (intravenous catheters, wound drainage, urinary catheters) are more prone to develop sepsis than others. Genetics factors also play a role in developing of sepsis (Abraham et al. 2003).

 The infection leading to sepsis can be acquired outside the hospital, “community-acquired” or hospital-acquired, “nosocomial”. Hospital-acquired infections are generally more difficult to manage than those acquired in the community. A reason for this is the infecting microorganism is more dangerous to the patient in the hospital. The patient is often already sick, and the microorganism may be unaffected to common treatments due to the widespread use of antibiotics in the hospital. Patients who are admitted to the hospital with serious diseases are at the highest risk for developing sepsis due to their underlying disease, and their previous use of antibiotics may make it difficult to fight the infection off. Hospitals also are not always the cleanest places. The presence of drug-resistant bacteria in the hospital puts these people at a higher risk. Another reason that patients admitted to hospitals with existing serious diseases are at high risk is because they often require an intravenous tube, urinary catheter or wound drainage (Abraham et al. 2003). Which are good sources of housing dangerous microorganisms.

One may think that going to a hospital will make you better and cure your illnesses, when in fact it could be damaging your body even more and making you become a sicker person. Sepsis is becoming more common in hospitals. This is due to medical and technological advances linked to treatments, and the increasing number of elderly or debilitated patients with underlying diseases such as cancer, who require therapy. The widespread use of antibiotics is another reason why sepsis is becoming so common in hospitals. Excessive antibiotic use encourages the growth of drug-resistant microorganisms (Abraham et al. 2003).

There are thee main forms (or stages) of sepsis: *uncomplicated, severe sepsis,* and *septic shock.* *Uncomplicated* *sepsis* is caused by “flu” and other viral infections. A majority of these people will not need hospital treatment. Gastroenteritis, or dental sores, is very common and is experienced by millions of people each year. *Severe sepsis* occurs when sepsis strikes in a combination with problems in one or more of the vital organs; heart, kidneys, lungs, or liver. It is estimated that more than 750,000 people will develop severe sepsis in North America each year, and 30-35% of cases end in mortality. The last and most threatening type of sepsis is *septic shock.* This occurs when sepsis is complicated by low blood pressure that does not respond to standard treatment, and therefore leads to problems in one or more of the vital organs. The patient does not receive enough oxygen to properly function during septic shock. These patients are very ill and need immediate emergency admission to the Intensive Care Unit. Despite the active treatment in the ICU, the death rate for septic patients is around 50% (Abraham et al. 2003).

The infection of having sepsis is confirmed by a blood test, however it may not reveal the infection in those that have been receiving antibiotics. It may be difficult for people to identify that they have sepsis, because one could just assume that the symptoms they are feeling are from flu, or other like-viruses, for example. Sepsis patients generally have difficulty breathing (hyperventilation), warm skin, rapid heartbeat (tachycardia), general weakness, and fever, often associated with shaking chills. However, in some cases there is no fever and patients may even have an abnormally low body temperature (hypothermia), especially if they are very young or old (Abraham et al. 2003).

Sepsis affects the normal biological state of our bodies, in ways such as an altered white blood cell count; these blood cells increase in sepsis, reflecting the infection-fighting properties they possess. However, in some cases the white blood cell count may be abnormally low. Bacteria or other microorganisms are found in biological fluids, such as: blood, urine, and phlegm, through laboratory testing. The major source of infection in severe sepsis (especially with hospital-acquired infections) is usually associated with pneumonia in the lungs. Another common source of infection is in the urinary tract (kidney or bladder), especially in patients needing a urinary catheter. Diabetics are at a high risk of urinary infections leading to sepsis. Peritonitis is when the outer surface of the abdominal organs is involved in the infection; appendicitis, bowel problems, and gall bladder infections. Skin is another source of sepsis in which bacteria can enter the body through wounds and skin inflammations. They can also enter through intravenous (IV) catheters, which are required for the administration of fluids or medicines. Sepsis can also enter the body through bones, as well as the central nervous system, inflammation and infections in the brain or spinal cord. It is reported that in some cases, around 20%, that the source of sepsis will never be found (Abraham et al. 2003).

People with severe sepsis are very sick and typically require ICU treatment. Antibiotics, surgery, IV catheters, and organ support are among some of the treatment methods. Antibiotic therapy is crucial to kill the infective microorganisms. For severe infections, antibiotics must be administered directly into the vein. In some cases, surgery may be required to eradicate the source of the infection in order to treat sepsis. Though, some patients may not respond to treatment and may develop further organ failure, resulting in death. Identifying the source of the infection, through clinical examinations, procedures, and laboratory analysis, aids in determining what type of antibiotic therapy should be used in treatment. The sooner the infection can be eradicated, the greater the probability of care (Abraham et al. 2003).

Alcohol abuse has been confirmed to predispose people to sepsis. Bad habits such as alcoholism, positions those addicts vulnerable to infections, which can then lead to sepsis and further create complications. Pneumonia is associated with one of the major sources of infection in severe sepsis and also correlates to alcohol abuse. Pneumonia can increase blunted cough and gag reflexes, predisposing to aspiration. Alcoholism can lead to infection, especially with a weaker immunity in the respiratory system (Kershaw et al. 2007).

Drawing from the past research done on sepsis and the prevalence rate in the young and the very old, I found myself more inquisitive about the factors relating to the young. Severe sepsis is a major health problem in children, with more than 42,000 cases and 4,400 related deaths per year in the United States, with infants being at highest risk. In children, sepsis may accompany infection of the bone (Watson et al. 2003). Neonatal sepsis is a blood infection that occurs in infants younger than 90 days old, while early-onset neonatal sepsis often appears within 24 hours of birth. Group B Streptococcus is one of the number one risk factor in mothers for early-onset neonatal sepsis. GBS can be contracted to the infant through the birthing canal during delivery. Trends in the epidemiology of early-onset sepsis show a decreasing incidence rate of GBS. This can be attributed to the implementation of a prenatal screening and treatment protocol for GBS through antibiotics (Anderson-Berry et al. 2012). Children that were mostly affected by hospital mortality had underlying diseases, surgical procedures, or human immunodeficiency virus infection (Watson et al. 2003).

There are four possible types of explanations for observed-disparities in sepsis mortality. *Quality of healthcare* can influence the type of medical attention and treatment a patient may get and can ultimately affect the medical diagnosis for the infection, negatively, if poor quality of healthcare. *People that wait until the very last minute to show up to the emergency room* is another explanation for possible disparities in sepsis mortality, because this usually indicates that these patients do not have insurance. Those that do not have insurance cannot afford regular checkups, doctor visits, or even emergency room visits unless absolutely necessary. Further, this puts the patient in an even worse stance than if they would have just been able to receive medical attention to detect the infection at an earlier time. Waiting until the very last minute creates complications and often times it may be too late to treat the infection, ultimately leading to mortality.

The *coding of death certificates* can affect statistics in such a way that medical professionals are coding deaths inaccurately, and leaving data with incorrect deaths caused by sepsis. If a person is infected with sepsis, they typically have a chronic condition that caused it, kidney failure, for example. It is likely that kidney failure would be put on the death record rather than sepsis, because the clinician completing the certificate is unlikely to be aware of the patients diagnosis, or did not believe the condition to be an important contributor to the death (Melamed et al. 2009). The last observed disparity for sepsis mortality is *ecological causes*. There may be something in the environment that is making people sick and resulting in higher hospitalization cases. Examples of environmental influences that could be explanations toward sepsis mortality are: power plants, pollution, cigarette smoke, drugs, toxic substances, etc.

There has not been any proven research done regarding these four possible explanations being concrete disparities in sepsis mortality, these are *observed* explanations that can open new doors to further the sepsis mortality analysis.

 The risk of sepsis in the black population is much greater than in the white population, especially in the younger age group. In blacks, hospitalization rates were greater in men than in women. The average age of a white patient with sepsis is 72.8 years old, whereas the average age of a black patient is 61.6 years old (Dombrovsky et al. 2007). Severe sepsis is defined as an infection complicated by acute organ dysfunction. Epidemiological studies steadily report a higher incidence of severe sepsis among black than white patients. However, it is unknown as to whether these disparities occur because of differences in susceptibility to infection, or in the risk of developing acute organ dysfunction once the infection has occurred. This distinction is imperative in developing interventions to reduce disparities. If racial differences are due to variances in the incidence of infection, then efforts to reduce disparities should be focused on community-based interventions, such as vaccinations. On the contrary, if disparities are due to the variances in the incidence of organ dysfunction, it will be necessary to improve the management of those black patients hospitalized (Mayr et al. 2010). In conclusion to the research examined on race and acute organ dysfunction risk, black patients had a 67% higher severe sepsis hospitalization rate than white patients. Higher severe sepsis rates among black patients are explained by both higher infection-related hospitalization rates and a higher risk of acute organ dysfunction (Mayr et al. 2010).

 There are several aspects to consider with the reasoning as to why the black population has reported a high rate of sepsis cases. The likelihood of having HIV infection in blacks compared to whites was significant in all age groups, in addition to diabetes, chronic renal failure, burns, and obesity (Dombrovsky et al. 2007). We can reflect back on the environmental factors contributing to sepsis mortality; black people residing in black populations that are poverty stricken may not have the means to eat nutritiously, or take care of their body’s. They least likely to have a family doctor to whom they can reach out to for sex education/protection, preventative care, and treatment to minor infections that may lead to something bigger and serious. Philadelphia and Baltimore are reported to have the highest cases of sepsis. We are not certainly sure as to why this is, but one can only assume with all of the given factors. Below is a map demonstrating this. Black patients hospitalized for infection have a higher prevalence of chronic kidney disease and diabetes. Previous studies suggest that these conditions are more common among black patients in the US population. This may explain the higher infection-related hospitalization rates among black patients. Better management of these conditions may reduce disparities (Mayr et al. 2010).

**Phone Interview with Dr. Abul-Kassim Mohamedali**

 Dr. Mohamedali was born in Zanzibar, graduated with his MD from Russia and achieved his diploma of Tropical Medicine and Hygiene in England. He moved to Pennsylvania in 1980, and worked at a private in-patient and outpatient practice where he practiced Internal Medicine. He worked as a physician for 31 years and is now newly retired since last summer.

 In our phone interview regarding sepsis, he identified sepsis as a “very vast topic”, and emphasized nursing homes and the elderly, in the majority of our conversation. Dr. Mohamedali stated that a specialist treats sepsis, however that it is identified by doctors like him; the “gatekeeper”, he called it. Most of the sepsis cases that he has come across in his field are from those 65 and above, typically in nursing homes with a history of strokes and tumors. A majority of sepsis cases he has come in contact with are associated with urinary, kidney infections. He said that the nursing home patients usually do not complain about it, until a nurse notices that they are off and makes a call to him. Their fever can be on the lower side, as well as low blood pressure. When necessary to check a patient’s urine using the dipstick, he said it is likely they have sepsis.

 He describes the typical nursing home, sepsis patient as one that has had pressure (bed) sores, and has a history of stroke(s). Because they are old and immobile, this raises the chances of them becoming septic. Even so, Dr. Mohamedali stated that after they return back to the nursing home after treatment, they are likely to end up back at square one. When I questioned his knowledge regarding community-acquired sepsis, the first topic he was quick to address was smokers with lung cancer. Even if they are getting better by boosting their immune system, they are still likely to have another episode, which includes terrible chills. Those that take part in colitis-immunal therapy (suppresses the immune system) are also prone to sepsis. It has a poor prognosis because they cannot remove whatever made the bacteria invade the blood. Another significant cause that can lead to sepsis is the use of IV catheters. Dr. Mohamedali informed me that they have protocols for IV catheters; they have to change them every 48 hours, because they tend to colonize. “Urinary catheters are notorious for Sepsis”, says Dr. Mohamedali. He gave an example that since IV’s are plastic and the bacterium stays in there because it is difficult to kill bacteria, that a pneumonia patient that uses the IV will not reap the benefits of the antibiotic since the bacteria in the tube cannot be killed by the antibiotic, and by then the bacteria is already in the system. He also informs me that people have gotten malaria through blood transfusions, not just bacteria.

 His speculations as to why the black population is more likely to be affected by sepsis than white populations is, black women tend to have more pre-mature babies, there are a significant amount of African Americans addicted to drugs, and lastly, that their Socio-economic status (SES) has a lot to do with it as well. He says that the two extremes, the old and the young, are susceptible to sepsis, because of their weakened immune systems. Among the many questions I was asking him, I brought up the concern of death certificate identification and what he had to say about it. Identifying death certificates is really a “guessing game, unless you are familiar with the patient and have been treating them, then you may know that the real cause of death was by sepsis”, he replies. He said that if a patient dies sleeping, a doctor may identify it as a stroke, but in actuality it may have been a sepsis by lung infection.

He then goes into a lengthy, detailed real-life story about a 45 year-old cerebral palsy patient that he was treating who had a toothache. The dentist gave him an examination (with no tooth extraction) and upon returning back to the outpatient home he was residing at, his nurse contacted Dr. Mohamedali and asked if she could administer a liquid diet for the patient because he would not wake up (possibly due to the valium). Dr. Mohamedali asked the nurse to take his blood pressure, which turned out to be very low. He asked her to monitor his vital signs for an hour. Before the end of her shift she called Dr. Mohamedali again and told him that his blood pressure is still very low. Dr. Mohamedali advised her to call the E.R., however the nurse did not feel this was necessary and that the patient should just sleep it off and see what the condition was in the morning. It turned out that he ended up dying that night in his sleep; there was vomit with feces in it found by his bedside. After the autopsy results came back, it proved that he in fact did not die of a stroke (which is what the medical staff “determined”). There was fecal material in his lungs, stomach, large, and small intestine. It had appeared that he had chronic constipation and the aids working the night shifts (not the nurses) were supposed to administer enemas, but were not really doing it. They would falsify the paperwork to make it seem like they were, but in actuality, they did not want to deal with the dirty work. He died from Aspiration of Gastric Content with feces, and not a stroke, which is what they originally identified until an autopsy was done and proved sepsis as the actual cause.

**Phone Interview with Dr. Ayaz Virji**

 Dr. Virji was born and raised in Florida, achieving his MD degree from Georgetown University Medical School, with an early acceptance to medical school. He completed his residence at Duke University. He works as a physician in primary care and also practices Bariatric Medicine.

 Dr. Virji begins with stating that sepsis may result in multi-organ failure, and that a majority of the people affected is 65 or older, people that are badly injured, and those who are immuno-compromised. He has primarily seen cases of sepsis in the Cardiac Care Unit (CCU). Dr. Virji has also seen sepsis while doing a spinal tap on a patient. It comes in many different forms and sources, and is very hard to treat because it is hard to identify. People can get fungal infections, which results in sepsis. He has seen this in HIV patients; the fungal infection that people can acquire sepsis is called *cryptosporidium*. When I questioned Dr. Virji about forms of treatment, he told me of a medication called Levafed that helps with care; the generic name for it is *norepinephrine.*  If a patient is far into septic shock, they usually get this medication to help raise their blood pressure.

 Sepsis patients are 99% more likely to show up in the E.R., than an outpatient clinic (like one that he works at). However he did give me an example of a real-life sepsis patient instance. He said that he had a patient 3 months ago who was in her twenties and had Lupus and Rheumatoid Arthritis. After being treated for bronchitis, she returned three days later and was a lot worse than when he had first seen her; she was septic. Dr. Virji sent her to the E.R. where she was put on a ventilator, went into respiratory failure and then went into heart failure. The infection got worse and she died three days later. Dr. Virji believes the sepsis came from Double Pneumonia.

Dr. Virji says, “patients don’t always have to have a high fever. They could have something called *Cold Sepsis*, which is when their temperature is below 96”, mostly seen in the elderly. When I asked about the other extreme group that is targeted by sepsis (premature babies), he said that he has seen sepsis in the NICU before when he was an intern. One of the number one risk factors in expectant mothers for neonatal sepsis is *Group B Streptococcus* (GBS). He says that this infection is in the mother and can get passed on and affect the child. The woman will get antibiotics for treatment, but if they do not have good prenatal care, they will not even know that they have it.

 Lastly, we addressed the labeling of the death certificates (this strikes a particular interest to me). Dr. Virji said, “this is a funny thing…” because he had to fill many of these out while interning. They are required to write a primary cause of death and a secondary cause of death. For example, the primary cause could be respiratory arrest, and secondary cause can be congestive heart failure, sepsis or even pneumonia. He said that the expectation, many times, is to write why they *initially* died and what were the events that lead to it. Before ending our phone interview, he advised me that the best person to talk to regarding sepsis is someone in the ICU or an Infectious Disease Specialist.

**Phone Interview with Nurse Practitioner Michele Bichko**

Michele earned her Bachelors of Science in Nursing at Pennsylvania State University as well as her Masters of Science in Nursing. She works at an outpatient clinic and also works as an Emergency Room Nurse-Practitioner, as well as a Clinical Instructor of Nursing.

 Michele starts off our conversation with letting me know that she primarily works as a nurse in the E.R. She says that there is more recognition in Sepsis, and it’s very important to catch it early. Her E.R. has a Sepsis Alert, with protocol for criteria for labs. It is very important to get antibiotics early. Contrary to sepsis predominantly being seen in the elderly, Michele has seen it in a lot of middle-aged people that have diabetes, obesity, and those that don’t have the best living conditions; city-based residents. Different conditions promote the prevalence rate of sepsis. I questioned her about GBS (before I delved into the research on it) and as to whether the baby is affected in the womb or after delivery; she was unsure. Though I discovered that the baby is infected in the birthing canal during delivery.

 As for treatment, she said that it is very important to begin with fluid resuscitation, “and to use clinical skills to narrow down where the infection is, and to narrow down antibiotics and get the fluids started.” Regarding preventative care and the use of catheters, Michele advises that there is proper care with them and a lot of washing of the hands. Overall, one must be in good health and take care of one self. We both agreed that this aspect relies on what people surround themselves with; bad habits, unhealthy food, etc. A lot of people catch pneumonia from the bacteria in the area; the ecological factor can definitely contribute to sepsis.

 She mentioned in the beginning of our conversation that her emergency room implements the Sepsis Alert. When I asked her about my concerns with false coding of deaths, she brought the Sepsis Alert up again, and that nurses and doctors are becoming more aware of the condition. Michele believes that we may see changes, and people will start getting accurate statistics and data on the amount of deaths caused by sepsis. She said that if her hospital is doing the Sepsis Alert, then there has to be other hospitals that are doing the same, and recognizing the severity of sepsis. I will go into a little bit more about this Sepsis Alert plan after the interviews portion, and describe the research I discovered on it. Michele lets me know that this plan started at her hospital about a year and a half to two years ago. When I asked her why they might have implemented this, she expresses that she is unsure, however it may be due to the prevalence of sepsis and the want for early recognition. “Labs take a while and don’t find out if you have the infection until later on. With the Sepsis Alert they can catch it early”, she states.

 Michele does not think that patients acquire sepsis in the E.R., but that they are already showing up sick at the hospital. She typically cares for patients who have acquired the condition from the community and that are already sick and admitted to the hospital. She stresses the importance of early recognition. Before ending our phone conversation, she confidently says that she is sure we will be seeing new (accurate) data on sepsis within the next couple of years.

**E-mail Interview with Dr. Peters**

 Dr. Peters was born and raised in New York City, completed his bachelors degree from Princeton University and achieved his MD from the University of Pennsylvania School of Medicine (these days called Perelman School of Medicine). He is board certified in internal medicine and he has been practicing on and off for the past 20 years in the greater Pittsburgh Metropolitan Area.

 I found Dr. Peter’s interview to be of great value and tremendously informative towards the contribution to my research on sepsis. To begin with, he states the basics on the word sepsis itself. “Sepsis is NOT the same thing as infection. Many people have infections, UTI, strep throat, bronchitis, and never get septic”, he writes in an e-mail. Sepsis is what happens when the body is losing the fight against an overpowering infection. To begin with it may be extremely variable, but in the advanced state the body goes into shock when, most commonly, one’s fever is high, their heart is racing but blood pressure drops, cardiac output drops, and organs may shut down.

 He addresses the death certificate aspect when asked what his take on the topic is. He states that sepsis is not a specific diagnosis, but rather it is a *process.* He informs me that physicians are generally discouraged from identifying sepsis as a cause of death on death certificates. He writes, “When I was a resident, I had to fill out a LOT of death certificates. I was specifically taught NOT to list sepsis as a cause of death. In the Commonwealth of PA, you're not supposed to list process as a cause of death, but rather, the underlying cause that led to the process.” Dr. Peters says that stating the patient died from sepsis is generally frowned upon, and from an epidemiological data-gathering point of view, that this makes sense. “It doesn't really help public health officials much to list process on the death certificate when cause is known. Technically, everyone who dies with a bad pneumonia dies with ‘sepsis’, with ‘cardiac arrest’, and also with ‘respiratory arrest’”, says Dr. Peters. In order to identify accurate statistics on sepsis, he suggests that it is better to study hospital medical records than death certificates. From his understanding, a lot of sepsis data is commonly attained from institutional data, and not from death certificates.

 Nursing home patients have proven to be the most common population affected by sepsis. It is likely that more than 90% of cases come from pneumonia, urinary tract infections, or bedsores. The condition is also most common among those who are least able to protect themselves from infection, including but not limited to the elderly, the newborn, the chronically ill of any age, and the immunosuppressed (cancer patients, HIV patients, e.g.). The risks of treatment always have to be weighed over the benefits. IV lines are certainly a possibility for acquiring sepsis. Anytime that a sharp object is entering the skin, whether it is an IV catheter or a scalpel, somebody is going to get infected. Dr. Peters says that, “you just have to work hard to make sure that it’s only 1 in 100, not 1 in 5.” Many people with catheters get infections, but not many get septic. The location of the catheter can also make a difference. If the IV in your hand gets infected, you will certainly *not* get sepsis. However if the tip of the catheter is located in your aorta, then you most certainly *will* get sepsis.

 Hospitalization can have an effect on a patient’s inclination of getting sepsis. This can be contributed by the prevalence of specific infectious organisms at any given facility. He informs me that some hospitals have a very high incidence rate of C. Difficile, while others may have more difficulty with MRSA, etc. Every hospital has its own infection control team that is responsible for monitoring specific infections. Hospitals are where the most resistant bacteria are created, because resistance always evolves first in the areas where the selection pressures are highest. That is where the most bacteria get exposed to antibiotics, making the more resistant ones develop here. He goes on to say, “So while you can develop sepsis from any infection anywhere, you are more likely to develop sepsis from an infection you got in the hospital than you are from one you acquired in the community. The skin infection you got in your kitchen will probably go away with penicillin. The skin infection you got in the emergency will probably NOT.”

 Social conditions can have a direct or indirect effect on prevalence rates in sepsis. Those that are poor, are more likely to be chronically ill, less likely to have access to good nutrition, healthy habits that promote competence, less access to medical care that would catch infections early on or ensure vaccinations, and also less likely to seek medical attention until the infection is at an advanced stage. This pertains to the elderly, because many of them are likely to be poor and/or isolated. Further, low income people are more likely to live in areas where environmental factors may come into play; toxic waste dumps, or polluting facilities.

 Addressing the issue of Group B Strep, Dr. Peters informs me that it generally colonizes the vagina, and the baby will be at risk as soon as the water breaks and contractions begin for the baby to be pushed into the vaginal canal. Inside of the birthing canal is where the risk of exposure to a defenseless newborn is very high. Just because a mother may be colonized with GBS, does not mean that the in-utero child has it. However, if the mom is septic with GBS, then the baby is going to have a very high risk of dying. Newborns are naturally at risk because of their immature immune system; newborns have never been exposed *any* bacteria before, which is what creates the great risk.

 Lastly Dr. Peters touches on prevention and that preventing sepsis, is fundamentally the same as preventing infection. He suggests keeping yourself clean, keep your surroundings clean, and if you are to get wounded, keep the wound clean. This is for the general public at large to follow, though in a hospital context, the same principles require attention to detail. Aseptic technique is for once use only disposable needles, Antiseptic technique are for soaps and hand sanitizers to be used, and the selection of antibiotics is especially important, to minimize the emergence of infectious strains. Another technique used in hospitals are isolation of infected patients; glove and gown precautions versus respiratory isolation. Basic principles are the most important. Washing your hands, especially doctors and nurses, is very important because the rates of sepsis will be far higher. He leaves me with an interesting fact that studies have shown that the stethoscopes and ties that doctors wear are also equally likely to be carrying bacteria.

**Surviving Sepsis Campaign**

Through managing and guiding my interviews, I took it upon myself to dig a little deeper and find out some more information about the Sepsis Alert program that nurse Michele described in her interview. I believe that the Surviving Sepsis Campaign for managing severe sepsis and septic shock came about in 2008 (Powers et al. 2010). The key objectives of this effort were to build awareness of sepsis, improve early detection, educate healthcare professionals caring for patients with sepsis, and increase the use of appropriate interventions. Treating patients with severe sepsis costs hospitals nearly $17 billion per year, which is a significant burden on the healthcare system. After the sepsis protocol was implemented, the median total hospital costs per patient dropped from $21, 985 to $16,103 (Powers et al. 2010). The practice guidelines recommended by the Surviving Sepsis Campaign, calls for a group or a **bundle** of related interventions. By being attentive for the signs of early sepsis and acting quickly to stop its progression, patient mortality can be reduced by as much as 16%. The Surviving Sepsis program aims to increase awareness, understanding, and knowledge of sepsis, change perceptions and behaviors, increase the pace of change in patterns of care, influence public policy, define standards of care in severe sepsis, reduce mortality associated with sepsis by 25% over the next 5 years, and to improve the management of sepsis through targeted initiatives (Society of Critical Care Medicine 2008).

**Conclusion:**

 Through careful research and analysis on sepsis, I am able to draw upon several conclusions on the condition. Sepsis is what happens when the body is losing its fight against an overbearing infection, caused by germs or bacteria invading the body. It is likely to result from an active, or preexisting, chronic illness or infection, such as liver disease, or stroke. There are several risk factors that contribute to sepsis, some of which include: addictive habits (drugs and alcohol), having wounds or injuries, minor infections, etc. We have projected four observed disparities in sepsis mortality. Quality of healthcare can affect ones likelihood of getting sepsis, patients waiting until the very last moment to show up in the E.R. with a mature infection, possibly due to no healthcare, the coding of death certificates, and environmental factors, all contribute to catching the condition.

Men and the black population are among the highest sepsis cases. This can be contributed from racial disparities. Black populations tend to have low-income or SES, less likely to have access to good nutrition, less likely to have insurance or good quality of healthcare, and environmental factors. Along with men and the black population affected, the very young (premature/newborns) and the very old have high prevalence rates of sepsis. These groups are likely to have weakened immune systems, which leads them on a more susceptible path to sepsis. A significant finding during this research, in my terms, is the discovery of the Surviving Sepsis Campaign. Michele, the nurse that I interviewed, informed me about a sepsis alert program that her hospital takes part in. The initiative tries to detect the infection early on with protocol and has a bundle of interventions to help quickly stop the progression of the infection. This has resulted in a drop in the median patient hospitalization costs, as well as having the probability of decreasing sepsis mortality by 16%.

Sepsis is an extremely vital subject matter that needs to be given more recognition. With initiatives such as the Surviving Sepsis Campaign, we are on the right track to awareness, at least within hospitals. I believe that a little bit more effort needs to be made to make the community-acquired sepsis population aware, including preventative care, and better healthcare for those that do not have it. There are hopes for future and upcoming (accurate) data and statistics, now that we are seeing and being made more aware of sepsis. Further research and fieldwork need to be made for the questions that are still unanswered. I have high hopes that this will soon happen and we will be given answers.

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**Interviewees**

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Dr. Peters, MD

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