

## Medium

# Identifying — and Preventing — a Silent Killer: Sepsis



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**If you aren't familiar with the term "sepsis," you should be. Perhaps the most potentially lethal condition facing medically compromised patients today, sepsis is hard to diagnose, fast developing — and its incidence is rising at an alarming rate.**

Sepsis results when the body's immune system cannot defeat an infection and instead turns on itself, often leading to organ failure and death. As [Sepsis Alliance](#) reports, the scope of this condition is startling: It has been estimated that sepsis affects more than 1.5 million patients nationwide each year, and is responsible for the deaths of a quarter of a million of those patients and a third of all hospital fatalities. In addition, a 2008 hospital discharge survey showed that the average length of stay (LOS) for septic patients was 75 percent longer compared to those hospitalized for other conditions. Another study indicated that among Medicare patients, septicemia (an infection of the bloodstream that can progress to sepsis) ranked second (after heart failure) as a condition with the highest 30-day hospital readmission rates.

And, of greatest concern, while many conditions are being controlled by medical advances, sepsis is not. In fact, a review of discharge data on 10 million cases from 1979 to 2000 shows that the incidence of sepsis has been increasing at annual rate of 8 percent!

A large part of the problem is that most people have only a passing understanding of what sepsis is and how to detect it; unfortunately, the answers to those questions come too late for many patients. The home-based care model employed by [VNSNY CHOICE](#), the Medicare Long-Term Care (MLTC) plan I work for, is having success in preventing sepsis through a multi-tiered strategy of comprehensive monitoring, patient education, regular patient-care manager communication, and targeted intervention.

### Constant Patient Monitoring Can Uncover Early Signs of Sepsis

Routine patient screening is the centerpiece of our approach. When sepsis develops, every minute counts, and early detection is essential. To help explain how our monitoring works, let me describe a hypothetical CHOICE MLTC member — I'll call her Margaret. Margaret was recently hospitalized for a serious urinary tract infection, and was sent home

under the care of the [Visiting Nurse Service of New York's](#) Care Management Organization (CMO), a home care program that provides intensive support services for high-risk CHOICE members. Margaret's CHOICE care manager checks in with her several times a week by phone, and then immediately updates the CMO team on Margaret's status to keep them in the loop. On every one of these phone calls, the manager runs through a checklist of potential sepsis signs with Margaret and her home health aide (HHA): Is she experiencing a fever or feeling chilled? Does she exhibit unusual confusion or sleepiness? Does she have an elevated heart rate, fast breathing or shortness of breath? Is she pale or discolored or in extreme pain? Margaret's HHA has also been trained to watch for these signs.

For the first week after discharge, all goes smoothly in this hypothetical case. Then one morning Margaret's CHOICE care manager gets a call from the aide, reporting that Margaret felt chilled and had a rapid heartbeat. The care manager immediately contacts her counterpart in VNSNY's CMO, who promptly sends a nurse practitioner to Margaret's home.

The NP gets there within the hour, confirms possible early signs of sepsis and phones Margaret's physician, who prescribes a wide-spectrum antibiotic on the spot. The NP picks up the medication at Margaret's local pharmacy and gives Margaret her first dose a few minutes later. From the HHA's initial call to administering that first pill, no more than two hours elapse. Within a half-day, Margaret is stabilized, avoiding an almost certain trip back to the hospital and possibly even saving her life.

### **Why Older Americans Are Most at Risk**

Sepsis is brought on by the body's all-hands-on-deck immune response to an infection. Any type of infection source — from a problem with a urinary catheter to a scraped elbow — can trigger it. For reasons not fully understood, in the process of fighting the infection, the overtaxed immune system can turn on itself. If untreated, or detected too late, sepsis can lead to tissue damage, organ failure, and death. And, in addition to this terrible human toll, because of the required complex treatment therapies and protracted stays in hospital Intensive Care Units (ICUs), the Agency for Healthcare Research and Quality (AHRQ) has identified sepsis as the most expensive condition treated in U.S. hospitals, costing nearly \$24 billion in 2013.

Gail Gongaware, Manager of Education and Training for VNSNY CHOICE, notes, "People at higher risk of infection that can lead to sepsis include both toddlers and seniors; those suffering from chronic illness and multiple diseases, such as cancer, HIV, and diabetes; and those with compromised immune systems." Because, as researchers believe, our immune systems become less able to fight infections as we age, the at-risk population skews to the elderly — it has been estimated that patients 65 or older, who comprise about 12 percent of the American population, account for about 65 percent of hospital-based sepsis cases.

According to the National Institutes of Health (NIH), the incidence of sepsis is increasing for a number of reasons. These include the fact that as people live longer, they are more likely to suffer from chronic diseases that can impair their immune systems. In addition, as certain infections become resistant to antibiotics, sepsis can occur. Advanced medical procedures, such as organ transplants, also may require medications that suppress the immune system. And, some studies indicate that a patient who has contracted sepsis becomes more at risk for future infections.

### **Early Diagnosis in the Home Can Lead to Targeted Interventions**

One major reason sepsis has such a high mortality rate is that it often goes undiagnosed. "Because sepsis has symptoms often found with many other common illnesses, making a firm diagnosis is a real challenge," says Gail. Early identification, in the home, of sepsis signs and symptoms by family members, HHAs, or clinicians, with communication to health care providers and the health plan, is key to early intervention. Being attentive to the following is critical:

- Symptoms and signs specific to an infectious source (for example, cough and difficulty breathing may suggest pneumonia, while pain and pus exuding from a surgical wound may suggest an underlying abscess).
- A significant drop in blood pressure, such as a systolic reading of less than 90 mmHG.
- A body temperature above 100.9 F or below 96.8 F
- A heart rate greater than 90 beats per minute (this may not always occur in older patients with sepsis, however)

- A rapid breathing rate, greater than 20 breaths per minute.
- Warm, flushed skin may be present in the early phases of sepsis.
- As sepsis progresses, the skin may become cool due to redirection of blood flow to core organs.
- Other signs of advanced sepsis include altered mental status, restlessness, reduced urine flow

New technology is helping to simplify the diagnostic process. “In addition to the telephonic sepsis screening tools being utilized routinely for VNSNYCHOICE members,” says Joan Cassano, VNSNY’s Vice President for Population Health and Care Management, “our clinicians in both VNSNY Home Care and Partners in Care are now using a face-to-face Home Care Association Sepsis Tool on every home visit for help in assessing the likelihood of sepsis.”

At CHOICE, we believe that the key to preventing or forestalling sepsis involves maintaining an ongoing dialogue that will keep the care manager familiar enough with the member’s health to notice changes and make an informed diagnosis. “We have phone contact with all members at least once a month, and much more often for high-risk patients in our CMO program,” notes Gail. The information we learn is then added to a report we maintain on member health status. The report tracks risk factors like UTIs, recent pneumonia, chemotherapy, or surgery, and those who self-catheterize. We then hold care conferences with a Nurse Practitioner and specialists, as needed, to review the report and identify members who may be susceptible to sepsis.”

Targeted interventions for those members begin with more frequent phone communications driven by scripts designed to uncover the presence of sepsis symptoms, and on-site follow-ups by VNSNY [Partners in Care](#) HHAs to assess symptoms in person. “Should symptoms suggest the potential for sepsis, we facilitate the member seeing his or her doctor as soon as possible, even arranging for transportation, if needed. The timing of that referral may determine whether the member will need to enter the hospital.”

When symptoms require a trip to the doctor’s office, practitioners might employ chest X-rays to find a respiratory infection or blood tests to identify a high white blood cell count or the presence of bacteria. In most cases, severe sepsis will land patients in an ICU, with the goal of stopping the infection, protecting the organs, and preventing decreased blood pressure, which can lead to septic shock. Treatment includes the use of antibiotic medications and fluids; for more serious cases, surgery may be needed to remove an infection.

### **Follow-Up Home Care Is Shown to Reduce Hospital Readmissions**

Studies have shown that those who have contracted sepsis are as much as two-to-three times more likely to be readmitted to the hospital than patients suffering from conditions like heart failure, pneumonia, and COPD (chronic obstructive pulmonary disease).

Recent research conducted by VNSNY’s [Center for Home Care Policy & Research](#), in collaboration with the University of Pennsylvania School of Nursing (Penn Nursing), is changing the way sepsis patients are treated upon hospital discharge. Supported by an NIH grant, the study found that [when sepsis patients were visited by a nurse in their home](#) within two days of leaving the hospital, had at least one additional home visit in their first post-discharge week, and also saw a doctor in that first week, the probability of 30-day all-cause readmissions dropped by seven percent.

“With one million sepsis patients being discharged annually in the U.S., many of whom end up being readmitted, this finding has big implications,” notes study co-author Kathryn Bowles, PhD, van Ameringen Chair in Nursing Excellence at the University of Pennsylvania and Director of VNSNY’s Research Center. “This study adds to a growing appreciation of home care’s key role in preventing infection-related hospitalizations,” adds Joan Cassano.

### **Home-Based Sepsis Education Fosters Prevention**

“The home setting can be an ideal place for at-risk members to maintain their health,” says Gail Gongaware, “because they can to some extent control their environment. But, they need guidance to make that happen.” VNSNY has instituted a two-tier awareness and education training program. Clinicians and phone-based care managers are regularly

given refresher courses regarding clinical best practices and guidelines for early detection of sepsis and managing barriers and risks. They are then charged with passing those guidelines and tips along to members and caregivers. The goal is to encourage members to be aware of their condition, monitor their health, watch for symptoms, and [avoid activities that put them at risk](#) — such as limiting contact with guests and asking for help to keep their home clean.

Patients should also receive inoculations to protect them from [flu and pneumonia](#). And, while it may seem like a fundamental precaution, thorough and frequent hand washing by patients, caregivers, and visitors significantly decreases contact with germs. Incidence of infections can also be reduced by proper care and cleaning of all wounds.

“The best defense against sepsis is patient awareness and vigilance,” adds Gail. “The biggest mistake is to downplay or delay following up on the tell-tale signs.”