Preventing Non-Ventilator Hospital-Acquired Pneumonia

In 2021 a national call to action sought to uncover the hidden harm of non-ventilator hospital-acquired pneumonia (NVHAP). This call was issued by the National Organization to Prevent Hospital-Acquired Pneumonia (NOHAP), along with a joint task force that includes the Veterans Health Administration (VHA), the Centers for Disease Control and Prevention (CDC), The Joint Commission, the American Dental Association (ADA), and several other organizations, working together to implore health care organizations to focus efforts on this preventable complication.¹

NVHAP is considered a hidden harm because many health care providers are unaware that it is one of the most common health care–associated infections (HAIs).^{1,2} In addition, its diagnosis is subjective, and frequently there are inconsistencies in documentation related to disease.^{1,3}

According to Barbara Quinn, DNP, RN, ACNS-BC, FCNS, Director of Professional Practice & Nursing Excellence at Sutter Health, "NVHAP affects almost 1 in every 100 hospitalized patients, and because of its frequency, it costs more lives and dollars than any other HAI in the United States."^{1,4} Quinn adds, "There really is no question in my mind that NVHAP deserves the same level of attention as other hospital-acquired harm, but until such requirements exist, health care systems are not going to make NVHAP a priority."

Lack of Monitoring and Reporting

NVHAP affects patient safety because it can lead to prolonged length of stay, transfer to an ICU, mechanical ventilation, discharge to a skilled nursing facility, and increased morbidity and mortality.^{1,4,5} Yet there are no national requirements or policies to ensure that health care organizations track or report their rates of NVHAP.^{1,6} For example, NVHAP is not part of the National Database of Nursing Quality Indicators.¹ In addition, the Centers for Medicare & Medicaid Services does not include NVHAP in its pay-for-reporting or performance programs, nor does it require hospitals to report NVHAP to the CDC's National Healthcare Safety Network (NHSN).^{1,6}

One reason health care organizations are not required to monitor or report NVHAP is that the size of the population at risk is overwhelming. It includes nearly every patient in the hospital who is not intubated and ventilated.³ "It's one thing to monitor patients with tubes," says Quinn, "but monitoring for NVHAP means following almost every patient in the hospital. However, the research is clear: All hospitalized patients are at some risk for NVHAP." In fact, a recent incidence study found that 51% of patients with NVHAP were younger than 66 years, 63% were in nonsurgical departments, and more than 70% were outside the ICU.⁴

In addition, conducting surveillance for NVHAP is challenging because criteria are subjective, complicated, and not standardized.^{1,3,6} Table 1 lists examples of surveillance criteria identified by the NHSN. For example, a chest x-ray is known

for high rates of interobserver variability for identification of an infiltrate or consolidation, and health care providers may not agree on what is meant by worsening oxygenation.³

Table 1. Surveillance Criteria

National Healthcare Safety Network (NHSN) <u>Criteria for Pneumonia</u> (for any age group)

New and persistent or progressive and persistent pneumonia (defined as an infiltrate, consolidation, or cavitation)

At least one of the following:

- ► Fever
- ► Leukopenia or leukocytosis
- Altered mental status in adults who are 70 years and older with no other recognized cause

At least two of the following:

- New onset of purulent sputum or change in character of sputum, or increased respiratory secretions, or increased suctioning requirements
- New onset or worsening cough, dyspnea, or tachypnea
- Rales or bronchial breath sounds
- Worsening gas exchange (for example, oxygen desaturations, increased oxygen requirements, or increased ventilator demand)

Specific surveillance definition for NVHAP that can be electronically computed using routine electronic health record (EHR) data, including the following (Ji et al.):

- Worsening oxygenation
- ▶ At least three days of new antibiotics
- ▶ Fever or abnormal white blood count
- Orders for chest imaging (either chest x-ray or CT chest)

Strategies to Prevent NVHAP

Even though surveillance is challenging, there are interventions that can help prevent and reduce NVHAP. Some are simple, but others require human resources and processes that must be developed and implemented throughout the organization, and this may not be simple.

Some basic interventions that can be implemented for all patients include ensuring consistent oral health care, mobilizing patients (if permitted by their activity orders), and elevating the head of the bed (if allowed by the patient's condition). Interventions that may require additional resources as well as additional review orders from a physician or licensed independent practitioner include minimizing acid-suppressing medications and sedatives and evaluating patients for swallow risk.^{1,5,6} A few effective strategies to reduce and prevent NVHAP are discussed below. **Educate All Staff.** Creating awareness and understanding about NVHAP is a first step. "NVHAP is caused when pathogens from the oral-pharyngeal cavity are microaspirated into the lungs of patients with reduced natural defenses," says Quinn. "Most patients in the hospital have a decreased ability to fight infection or are immunocompromised. There also is an increased risk of pharyngeal colonization with hospitalization,^[7] and the risk of aspiration can increase from medications, having a nasogastric tube in place, or simply by lying in bed." The figure below illustrates the origin and development of NVHAP and prevention efforts.



Development of Hospital-Acquired Pneumonia and Prevention Efforts

Source: Quinn B, et al. Basic Nursing Care to Prevent Nonventilator Hospital-Acquired Pneumonia. *Journal of Nursing Scholarship.* 2014 Jan;46(1):11–19. Used with permission.

Shift Perceptions. Despite growing evidence that NVHAP profoundly affects patient safety, and that there are known interventions to prevent it, there remains resistance to implementing interventions.

"Resistance is a natural response to change, and even simple interventions can be difficult to implement in a complex health care environment," says Quinn. When the VHA implemented an oral care program to reduce NVHAP, it had to shift staff perception that oral care was a patient comfort measure as opposed to an infection control intervention that is as important as hand washing.⁸ According to Quinn, some staff will interpret these interventions as meaningless tasks rather than a standard of care that should be provided for all patients.

Quinn recognized one innovative approach to making oral health care a standard of care. It involved adding a barcode to an antiseptic solution and including it in the electronic medication administration record (eMAR). This made it easy to schedule oral health care in the same manner medications are scheduled in the patient's record.

Automate the Surveillance Process. Researchers currently are testing ways to automate surveillance processes and activities for NVHAP, such as searching for the criteria described in Table 1 in a patient's EHR.^{1,3} "We know we can prevent what we focus on," says Quinn. "We can change what we put our minds to, but we have to decide that NVHAP is something we want to focus on." Automating the surveillance process for NVHAP can help organizations collect data on the incidence and prevalence of NVHAP, set goals for prevention, and implement effective interventions.

Invest in Resources. With surveillance and goal setting, health care organization leaders can better identify and invest in the supplies, education, and staff needed to implement necessary interventions for preventing NVHAP. As noted in the standards box below, The Joint Commission requires leaders to allocate resources for infection prevention and control. To implement basic oral care for all patients, Quinn recommends investing in equipment that meets standards set forth by the ADA, which include a soft-bristle toothbrush, toothpaste with fluoride, over-the-counter alcohol-free antiseptic mouth rinse (that does not contain chlorhexidine), nonpetroleum mouth or lip moisturizer, suction-based toothbrushes for patients who cannot spit, and denture cleaning equipment. Hospitals may also consider investing in equipment to help mobilize patients to perform oral care.

Educate and Involve Patients and Family Members. As with any patient safety issue, patients and family members should be educated and empowered to help with safety interventions that optimize healthy outcomes. "It is rare to find patients who are aware that a source of pneumonia is in their mouth," says Quinn. Education can consist of a handout or poster that explains the reasons patients are at risk for pneumonia and includes recommendations, such as patients should brush their teeth and get out of bed at least twice a day. Unfortunately, the ongoing COVID-19 pandemic has decreased family presence in hospitals and has made it difficult to involve families in patient care.

In the absence of family presence in hospitals, it is essential that health care organizations prioritize NVHAP as a preventable HAI. Interventions such as basic and consistent oral care, automated surveillance, and sufficient infection prevention resources—both human resources and physical supplies—can help to reduce hospital-acquired pneumonia. Joint Commission requirements related to HAIs for accredited hospitals are listed in the box below. In addition, *Quick Safety,* <u>Issue 61</u> focuses on the challenges health systems face to implement and support NVHAP prevention and includes additional actions and interventions to consider.

Joint Commission Infection Prevention and Control (IC) Standards Related to Health Care–Associated Infections for the Hospital Program

IC.01.02.01 Hospital leaders allocate needed resources for the infection prevention and control program.

IC.01.03.01 The hospital identifies risks for acquiring and transmitting infections.

IC.01.05.01 The hospital has an infection prevention and control plan.

IC.02.01.01 The hospital implements its infection prevention and control plan.

IC.03.01.01 The hospital evaluates the effectiveness of its infection prevention and control plan.

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