THE EFFECTIVE PHYSICIAN

Management of Hospital-Acquired Pneumonia

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Background

A joint committee of the Infectious Diseases Society of America and the American Thoracic Society has developed a new guideline on hospital-acquired, ventilator-associated, and health care–associated pneumonia, which was published earlier this year. This guideline highlights the changes that have occurred since the American Thoracic Society guidelines on nosocomial pneumonia were released almost 10 years ago. Mortality rates for hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) range from 30% to 70% in published studies.

Conclusions

HAP is classified as pneumonia occurring de novo 48 hours or more after hospitalization. HAP causes up to 25% of ICU infections and a majority of the antibiotic use in the ICU.

VAP is defined as that occurring 48-72 hours after endotracheal intubation. VAP occurs in 9%-27% of all intubated patients; half of these cases develop within the first 4 days of mechanical ventilation.

Health care–associated pneumonia (HCAP) refers to pneumonia in patients hospitalized within the previous 90 days in an acute care hospital; residents of long-term-care facilities; patients undergoing chemotherapy, wound care, or intravenous antibiotics within the past 30 days; and patients attending hospital-based or hemodialysis clinics.

Early-onset HAP and VAP occurs within the first 4 days of hospitalization; these infections are more likely to be caused by antibiotic-sensitive bacteria and thus they carry a better prognosis. Patients with early-onset HAP who have received prior antibiotics or who have had a prior hospitalization are at greater risk of colonization and/or infection with multidrug-resistant (MDR) bacterial pathogens and should be treated similarly to patients with late-onset HAP.

Late-onset HAP—that occurring 5 or more days after hospital admission—is more likely to be caused by MDR pathogens and to have higher morbidity, mortality, and costs.

Implementation

Effective infection-control measures, including use of alcohol-based hand disinfectants and standardized isolation protocols designed to reduce cross-contamination with MDR pathogens, should be used consistently.

Intubation and reintubation should be avoided if possible, to reduce the risk of VAP. Oral intubation and gastric decompression has a lower risk of nosocomial sinusitis and VAP than does nasotracheal intubation.

Endotracheal cuff pressures above 20 cm H_2O reduce the risk of leakage of bacterial pathogens into the lower respiratory tract. Patient positioning in a semirecumbent position (30-45 degrees), particularly during enteral feedings, reduces the risk of aspiration.

Selective digestive tract decontamination with oral antibiotics reduces the risk of ICU-acquired VAP but is not recommended routinely, particularly in patients who may be colonized by MDR pathogens. Prophylactic antibiotics at the time of emergent intubation and oral chlorhexidine to modify oral colonization have been effective in certain surgical subgroups, but additional data are needed before these techniques can be routinely recommended.

Transfusion of blood products has been shown to increase postoperative infection and pneumonia rates; as such, lower "trigger" hemoglobin levels for transfusion are warranted. Leukocyte-depleted RBC transfusion should be considered in selected patients to reduce risk of HAP.

Intensive insulin therapy in ICU patients, with glucose levels maintained at 80-110 mg/dL, has been shown to reduce nosocomial bacteremia, mortality, length of ventilation, and morbidity.

All patients with suspected HAP should undergo sampling of lower respiratory tract secretions and blood for culture before antibiotics are started or changed. If the patient is clinically unstable, antibiotic therapy should not be delayed while awaiting diagnostic studies.

Empiric intravenous antibiotic therapy for HAP should be directed by local microbiologic surveillance and resistance patterns. Suggested initial antibiotics for patients with early-onset HAP and no risk factors for MDR organisms include ceftriaxone, a fluoroquinolone, ampicillin/sulbactam, or ertapenam. Initial therapy for patients with late-onset HAP and/or risk factors for MDR organisms should include an antipseudomonal cephalosporin or a carbapenem, or piperacillin/tazobactam; plus an antipseudomonal fluoroquinolone or an aminoglycoside; plus linezolid or vancomycin.

Once culture results are available, antibiotic therapy should be narrowed to the most focused medications feasible.

Clinical findings usually indicate clearly by 3 days whether the patient is responding to the empiric regimen. Nonresponders should be evaluated thoroughly for unsuspected or drug-resistant organisms, complications of pneumonia, or extrapulmonary infection. A sterile culture of respiratory secretions in the absence of a new antibiotic in the prior 72 hours virtually excludes bacterial pneumonia, but legionella and viruses remain possible causes.

Reference

American Thoracic Society; Infectious Diseases Society of America. Guidelines for the management of adults with hospital-acquired, ventilator-associated, and healthcare-associated pneumonia. Am. J. Respir. Crit. Care Med. 2005;171:388-416.

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Adults and Teens Lag in Immunization Coverage

BY BRUCE DIXON
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Immunization coverage of teenagers and adults in 2004 fell short of the coverage achieved in children, the Centers for Disease Control and Prevention reported at a press briefing.

Data from the 2004 National Immunization Survey show that 80.9% of children aged 19-35 months received the recommended vaccinations (diphtheria and tetanus toxoids with acellular pertussis, polio, measles, *Haemophilus influenzae* type b, and hepatitis B), said Stephen Cochi, M.D., acting director of CDC's National Immunization Program. The 80.9% rate in 2004 surpassed the Healthy People 2010 goal of 80% for that age group.

David A. Neumann, Ph.D., executive director of the National Partnership for Immunization, said efforts to immunize adolescents are bearing fruit, but there's a lot of work to be done.

About 25% of U.S. adolescents have not received at least one of the vaccines recommended for them (hepatitis B, MMR, varicella, meningococcal, or the combination DTP vaccine). "Also, in recent years, we've seen an upsurge of pertussis among adolescents. We find that pertussis immunity wanes during adolescence, and [so] this year we have two new licensed vaccines that will add a pertussis booster for use by adolescents and adults," Dr. Neumann said.

The status of adult immunization in the United States is less encouraging, he said. "Despite the availability, value, and effectiveness of vaccines we have for adults, the statistics that we have are very disappointing. We are not meeting the nation's public health targets for protecting adults against vaccine-preventable diseases. For example, at best, we immunize barely 70% of adults 65 years and older against influenza each year."

Only about 48% of African-American seniors and 58% of Hispanic seniors get flu shots, while the Healthy People 2010 target is to have 90% of seniors immunized each year against influenza. Of high-risk adults, only about 37% of those aged 50-64 years and 24% of those aged 18-49 get immunized. The 2010 target for this group is 60% coverage. Finally, on an annualized basis, about 40% of health care workers are immunized against influenza.

"The bottom line seems to be that we lack an appropriate infrastructure to support adult immunization," Dr. Neumann said at the briefing.

"So how can we create an infrastructure?" he asked. "We and others in the public health community can look for increased support for the public purchase and distribution of influenza vaccine for underinsured and uninsured adults. We can look for leadership from the federal government to [ensure] that influenza and pneumococcal vaccines are part of the first dollar benefits under the federal employee health benefit program. We can work for the inclusion of beneficiary and health care worker immunization as measurable quality indicators for the Centers for Medicare and Medicaid Services. We also can encourage the CMS to pursue the inclusion of health care worker immunization as a criterion for accreditation of health care facilities throughout the nation."

Otherwise, he envisions a beefed-up adult immunization infrastructure as being a copy of that used for children. "We would see health care providers being proactive and providing immunization services to their patients just as pediatricians now do for children. Currently in the United States, public money purchases vaccines for about half of children. . . . There's little that can come close in terms of adult immunization."

Adult education also is neglected, according to Dr. Neumann. "One of my favorite ways of expressing that is that many of us in the baby boom generation think that we're immortal, and we do well for 20 or 30 years and, boom! We end up with chest pains, and we go see a cardiologist. Well, the cardiologist will take care of your cardiac issues, but the cardiologist isn't even thinking about influenza or pneumococcal immunization, even if you're in a high-risk group. So there's a lot of provider education that we need to do as well, through CME and other programs." ■

Food Safety for Pregnant Women

The Food and Drug Administration has launched a campaign to educate pregnant women about the potential risks of foodborne illness. "Food Safety for Moms-to-Be" includes a Web site offering food safety tips in English and Spanish and an educator's kit for health care professionals. For more information, visit www.cfsan.fda.gov/~pregnant/pregnant.html.