lack of insurance portends a worse outcome and is associated with increased cost of care, irrespective of the setting in which the patient is located. The question is why. Philosophical arguments regarding who should pay for insurance should be balanced with the reality that it is in our national interest to provide optimal healthcare, particularly to young and middle-aged patients such as those in this study. Doing so will lower mortality, may lower overall cost of care, and may allow patients to return to a productive life. These last points remain speculative but should form the basis for future studies in this area. Such studies require us to define quality of care outside of the traditional endpoints of tests ordered, procedures performed, and length of hospital stay and instead ask more insightful questions regarding the timely application of evidence-based interventions in those with and without insurance.

REFERENCES

Is Elderly ICU Patient More Prone To Pneumonia?*

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The elderly population—as defined as 65 years old or older—represents about 13% of the U.S. population and is expected to grow to 19% by 2030 due to increasing life expectancy (1, 2). Older age per se and increasing age within the elderly range are independent risk factor for mortality in the ICU (1). Additionally, patients’ comorbidities such as congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD), primary admission diagnoses, premorbid cognitive and functional state, and severity state at admission are major contributors of morbidity and mortality in critically ill patients (3–6).

Within nosocomial infections, pneumonia is one of the most common in the ICU setting; the prevalence may go beyond 20-fold in mechanically ventilated ICU patients compared with all other hospitalized patients (7, 8). Pneumonia is reportedly the most lethal nosocomial infection, but whether it increases mortality per se is controversial, especially when treated appropriately (9, 10). Mortality attributable to pneumonia may depend on severity status of disease at admission, premorbid conditions (11), microorganisms responsible for pneumonia (9, 12, 13), and the ICU environment (6, 14, 15). Patient-specific factors, such as age and preexisting disease (6, 16), and care-related factors, such as head-of-the-bed angle, use of standardized protocols for mechanical ventilation, oral hygiene, and selective digestive decontamination (17–19), play important roles in prognosis. Neurological status at admission adds specific risks and complicates progress. Neurological compromise often results in loss of airway protective reflexes with subsequent aspiration. Pneumonia often ensues neurological deterioration.

In this issue of Critical Care Medicine, Blot et al and the European Union Ventilator-Associated Pneumonia (EU-VAP) Study Investigators (20) reported new results on prevalence, risk factors, and mortality of ventilator-associated pneumonia (VAP) in adult patients with specific focus on the elderly. In this secondary analysis of a previous multicenter prospective

*See also p. 601.

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cohort (EU-VAP) (21), investigators did not find an increased risk of VAP in the elderly population. Neurological, cardiovascular, metabolic, and renal/hepatic organ-system failures at admission were found to be independently associated with VAP, but within those organ-system failures, CHF was definitely the strongest contributor in specifically elderly population. VAP etiology was mostly due to Gram-negative bacteria, mainly attributed to the Enterobacteriaceae family pathogens in the elderly. Both methicillin-susceptible and methicillin-resistant *Staphylococcus aureus* pneumonias were at similar frequency within the spectrum of all adult patients. Interestingly, *Streptococcus pneumoniae*–related lower respiratory tract infections were at lower rate in the elderly patient population compared with middle-aged adults. Although these lower pneumonia rates were to be related to elderly vaccination programs, data on vaccination status were not available in the EU-VAP Study database.

Blot et al (20) reported independent risk factors of mortality in patients with VAP. Older age (both 65- to 74-yr olds and ≥ 75 yr olds), septic shock, high-risk pneumonia pathogens (i.e. methicillin-resistant *S. aureus* [MRSA], *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, and *Stenotrophomonas maltophilia*), and diabetes mellitus were reported as the main contributors of mortality. Being a secondary analysis report, neither data on the resistance patterns of pathogenic bacteria nor diabetes care was known to the investigators. Similarly, the duration and management details of septic shock and pneumonia were not available.

Prevalence of CHF exacerbations in the elderly population is one of the most common causes of hospitalization due to decreased ability to respond to myocardial stressors. An early assessment of cardiac functionality and immediate treatment of CHF would improve outcomes in the intensive care management of the elderly. CHF treatment modalities, which have been delivering mortality benefits in elderly patients with left ventricular systolic dysfunction, are angiotensin-convert-

1. Contribution of admission diagnoses, functional status of the patient, and admission locations (e.g., nursing home)
2. Impact of preexisting medical conditions, their management details, and their contribution to the overall acute severity state at admission
3. Baseline vaccination state of elderly patients
4. Prevention and care bundles applied and compliance rates to such bundled care in the facilities being assessed
5. Baseline carrier status of various microorganisms (e.g., MRSA in nares) and whether such organisms have contribution to further nosocomial infections
6. Pneumonia-causing microorganisms and their resistance patterns
7. Management of antimicrobials
8. Complications of care, attributable complications to pneumonia, composite outcomes in pneumonia patients, and mortality (attributable vs general)

Answers to these questions may give us a complete understanding of the development of VAP and may guide us for better care of the elderly.

**REFERENCES**

Breathing New Life Into Pediatric Advanced Life Support Training*

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In the current era of outcomes-based research and medical education, it is high time to reevaluate the quality and outcomes associated with resuscitation training. Resuscitation training began in the 1960s and has evolved into a standard component of graduate medical education and continuing medical education of hospital staffs across the United States and around the world. In fact, training in resuscitation has become a condition of employment throughout the healthcare industry in the United States and a requirement for accreditation of hospitals by regulatory bodies (1). Yet, aside from the periodic updates to the material generated by ongoing resuscitation research, there has been little change to the structure or manner in which the training is delivered. Building on prior work, the authors present evidence indicating that there exists an opportunity to improve upon training courses in pediatric resuscitation and perhaps other resuscitation training courses as well.

The outcomes from prehospital and in-hospital cardiopulmonary arrests (CPAs) in the pediatric population are consistently poor (1). Pediatric CPAs are high-stakes yet infrequent events. Thus, the opportunity for pediatric residents, and pediatric practitioners in general, to maintain proficiency with their resuscitation skills is quite limited, especially in the absence of medical simulation. Grant et al (2) found that even immediately following traditional Pediatric Advanced Life Support (PALS) training, residents do not achieve the level of confidence consistent with true competence in leading a pediatric resuscitation.

In a study involving pediatric residents in all 3 years of training, Hunt et al (3) demonstrated that basic cardiopulmonary resuscitation (CPR) skills, including initiation of chest compressions and timely defibrillation in simulated CPAs, did not meet American Heart Association (AHA) standards. It is in the context of poor outcomes following CPAs, in both children and adults, and the frequency of errors easily observed during CPR, that the 2010 AHA resuscitation update includes a new chapter focusing on education with an emphasis on the delivery of high-quality CPR (4).