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Prevention of Hospital-acquired Geriatric Syndromes: Applying Lessons Learned from Infection Control

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Geriatric syndromes are multifactorial health conditions occurring in persons rendered vulnerable by age and multiple organ systems impairments.¹ Many geriatric syndromes, including pressure ulcers, falls, delirium, and functional decline occur with high frequency in hospitalized patients, causing significant morbidity, mortality, and resource utilization.² Hospital-acquired geriatric syndromes received heightened attention from the Centers for Medicare and Medicaid Services (CMS) following an August 2007 rulemaking that included stage 3 or 4 pressure ulcers and injurious falls as two of the eight “reasonably” preventable adverse events—referred to as hospital-acquired conditions (HACs)—targeted for reduction through the use of financial penalties levied on hospitals.³ Review of the initial HACs list revealed three categories: serious preventable events, hospital-acquired infections, and geriatric syndromes.³ In subsequent rulemakings, additional events were added.⁴ (Table 1)

When it comes to preventability, not all HACs on CMS’s list are created equal. Some events, such as blood incompatibility, are uniformly preventable and occur in the setting of major systems breakdowns. At the other extreme, the number of preventable falls in the acute care setting is probably no greater than 20%, and this figure does not refer specifically to injurious falls.⁵ This heterogeneity of preventability is disquieting. Rather than being caused by clear errors (blood delivered to wrong person), many of the HACs are caused by more subtle errors like overuse of technology (indwelling catheters), or underuse of prevention measures (deep venous thrombosis prophylaxis). In a subset of cases—those that were not preventable—no errors occur.

In this month’s issue of *JAGS*, Baumgarten et al. explore the preventability of hospital-acquired pressure ulcers (HAPU).⁶ This analysis of the Baltimore Hip Fracture Study aims to clarify the role of potentially modifiable risk factors for the development of HAPU among hip fracture patients. The authors unexpectedly found that several of the pre- and intra-operative care-related factors—studied because of their relationship to immobility—were not associated with HAPU incidence. For two care factors, the observed association was in a direction opposite to that hypothesized. These results are hard to place in the context of earlier literature which is inconsistent regarding the associations of these care factors with HAPU formation.

Given that this multi-center study was rigorously conducted, it is disconcerting that care factors with reasonable face validity are not consistently associated with HAPU formation. However, the study’s immobility-related care factors, many of which are timeframes such as duration of time in the Emergency Department (ED), are blunt measures of care. As the authors point out, the provision of evidence-based nursing care for pressure ulcer prevention might offset any additional risks conferred by prolonged time in the ED. The study occurred

at 9 different hospitals, and while clustering of cases within hospitals was accounted for, other policies and practices (such as staffing ratios) beyond use of pressure-reducing surfaces at baseline assessment, were not described or accounted for. Furthermore, the very nature of geriatric syndromes—with multiple etiologies and interacting pathogenic pathways—makes it difficult to demonstrate linear causal relationships between risk factors and the syndromes.¹ It is this complexity that may explain the difficulty in interpreting the risk factor literature. Nevertheless, the literature has consistently demonstrated that several risk factors amenable to intervention (including impaired mobility, nutritional compromise, and cognitive impairment, among others) are associated with HAPUs.¹

Few would argue that pressure ulcers are not “reasonably” preventable. In fact, recent National Pressure Ulcer Advisory Panel Consensus Conference representing 24 stakeholder organizations reached consensus that “most pressure ulcers are preventable”.⁷ Interestingly, the group was convened to establish consensus regarding the converse, that “pressure ulcers are unavoidable in certain situations”. This convening reflects a high level of frustration in the provider community that is in part a response to the CMS’s HACs non-payment policy and other policies that are perceived as punitive. In interviews I recently conducted with chief nursing officers regarding the HAC policy, pressure ulcer preventability was frequently cited as a major concern. Given provider anxiety and the fact that pressure ulcer incidence may have only improved modestly in recent years, or even plateaued in certain clinical settings,⁸ it is appropriate to rethink the paradigm for prevention of HAPU and other geriatric syndromes.

Preventability, Prevention, and HAIs

For a path forward, it is instructive to consider the experience of the infection control community regarding the preventability of the HAIs. Not unlike the geriatric syndromes, HAIs are a heterogeneous group of conditions for which there are patient, environmental, and care-related risk factors. Formal infection prevention programs have existed since the 1970’s, as have Centers for Disease Control and Prevention (CDC) guidelines for prevention of many HAIs.⁹ At that time, it was estimated that HAIs were moderately preventable (ranging from 22% for ventilator-associated pneumonia (VAP) to 38% for surgical site infections (SSI)).¹⁰ For many years, however, infection control was sidelined as quality assurance and segregated from the provision of care. Following a report from the CDC, estimating that 100,000 lives per year were lost to HAIs alone,¹¹ infection control found itself with a national platform. Evidence-based guidelines repackaged as “bundles” or checklists improved the implementation of prevention practices, and the public and Congress became aware and intolerant of the HAI problem.

In 2005 and 2006, two landmark studies showed that central line-associated bloodstream infection (CLABSI) rates could be reduced by two-thirds.^{12, 13} In a fantastic turn of events, CLABSI went from being an unfortunate cost of doing business in hospitals to an event for which there is now “zero tolerance”. This mantra (popularized in a campaign by the Association of Professionals of Infection Control (APIC))¹⁴ is intended to be motivational. It is clear that for many HAIs zero incidence is an unattainable goal, but reducing rates of HAIs to the “irreducible minimum” suddenly appears within reach.

To do so, the current infection control paradigm focuses on 4 major components: 1) the widespread implementation of bundled evidence-based practices; 2) a culture that prioritizes adherence and strives for the irreducible minimum infection rates; 3) the use of surveillance data to track outcomes and provide feedback to frontline providers; and 4) continued investment in prevention research. An important tactic is prioritization of infections that have the highest burden and highest preventability.⁹

The results are exciting. The CDC recently announced national statistics for 2010 from the National Healthcare Safety Network (NHSN) showing a 33% reduction in CLABSI, a 7% reduction in catheter-associated urinary tract infections (CAUTI), a 10% reduction in SSI, an 18% reduction in the number invasive methicillin resistant *Staphylococcus aureus* (MRSA) infections in 2010.¹⁵ These reductions have occurred in the face of skepticism about the reasonable preventability of many HAIs. Furthermore, there is more progress to be made as uniform implementation of evidence-based prevention practices is still lacking.¹⁶

Applying Lessons of HAI Prevention to Hospital-Acquired Geriatric Syndromes

To be certain, geriatric syndromes are not HAIs. In contrast to the geriatric syndromes, many HAIs have a dominant risk-factor—the dose-dependent exposure to a medical device such as an endotracheal tube or an indwelling urinary catheter. In addition to pathophysiologic differences, there are vast infrastructural differences between hospital-acquired geriatric syndromes and HAIs. HAIs have benefitted from common definitions, an increasingly sophisticated infrastructure for surveillance, and a professional group focused entirely on HAI prevention. Finally, HAI prevention has been prioritized by the Department of Health and Human Services (DHHS), which now has a central coordinating process (the HAI Action Plan), and supports basic prevention research (National Institute for Allergy and Infectious Diseases), translational research (CDC), and implementation research (Agency for Healthcare Research and Quality).

Some of these conditions already exist for the common hospital-acquired geriatric syndromes. For instance, HAPU has standardized definitions and logical stakeholder professional organizations. In addition, because of the multifactorial nature of geriatric syndromes, the need for multiple simultaneous interventions (such as the well-known Hospital Elder Life Program for delirium prevention) is both necessary and familiar to the geriatrics community.¹⁷

While it is unlikely that hospital-acquired geriatric syndromes will attain the stature or visibility of HAIs in the short term, these morbid and costly events will not be reduced to their irreducible minimum without a bold vision and coordinated plan. The HACs non-payment policy and other initiatives that have followed (e.g. the DHHS' Partnership for Patients) provide an opportunity for an innovative approach that incorporates lessons learned from the infection control paradigm. Specific strategies might include routine surveillance conducted using standardized definitions and assessment tools; reporting to centralized data repositories; development, dissemination, and maintenance of prevention guidelines based on the best available evidence; and the dissemination of prevention guidelines into practice through the creation of bundled interventions in multi-site demonstration projects.

To achieve an ambitious agenda like this, the geriatrics community would need to mobilize stakeholder organizations, set priorities, and work closely with federal partners. Ultimately, the biggest challenge would be fostering a culture that finds hospital-acquired geriatric syndromes unacceptable—not just the price of doing business in hospitals. Only with all stakeholders onboard and on the same path will the irreducible minimum of hospital-acquired geriatric syndromes be achieved.

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Table 1

Hospital-acquired Conditions

Category	Condition
Serious preventable events	Object left in place during surgery Air embolism Blood incompatibility
Hospital-acquired infections	Catheter-associated urinary tract infections Vascular catheter-associated infection Surgical site infection Mediastinitis after coronary artery surgery Select orthopedic procedures [*] Bariatric surgery [*]
Geriatric syndromes	Pressure Ulcers, stage 3 or 4 Injurious falls and other hospital-acquired injuries
Other HACs	Deep venous thrombosis/pulmonary embolism following certain orthopedic procedures [*] Manifestation of poor glycemic control [*]

^{*} added in 2008 rulemaking