

Public Reporting of Hospital-Acquired Infections

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Summary

Hospital-acquired infections are a major problem in the United States, and are one of the most common complications of hospitalization. Infections develop as a consequence of hospital factors and patient factors. Factors related to healthcare worker behavior and hospital systems can be changed, while patient factors often cannot be changed. Public reporting of hospital-acquired infections has the potential to impact infection rates by increasing awareness among healthcare workers and patients, and by increasing adherence to infection control measures. In addition, public reporting has the potential to allow comparison of infection rates between institutions if it is done properly. One of the problems with hospital-acquired infections is that the definitions currently being used by infection control are not all precise and uniformly applied. This means that comparison between institutions using current definitions may not be valid. There are infections for which definitions are more precise, and these include select surgical site infections and central catheter-related bloodstream infections. In addition to using precise definitions for infections, risk adjustment is necessary to account for different patient populations. Hospitals that serve patients with a greater severity of illness are expected to have higher infection rates due to patient factors. Risk stratification as performed by the National Nosocomial Infection Surveillance System may not be sufficient to account for the differences in patient populations.

Hospital-acquired infections are a major problem in the United States, and elsewhere throughout the world where healthcare is available. These infections constitute one of the most common complications of being hospitalized, and lead to a great deal of morbidity and mortality.^{1,2} Some of these infections are preventable, and there are steps that can be taken by both healthcare workers and patients to decrease infection rates. In recent years there has been increasing discussion about mandatory public reporting of healthcare-acquired infections. A number of states currently mandate reporting or have pending legislation regarding this issue. Should public reporting be mandated? The answer to this is an unequivocal yes. Public reporting has the potential to increase awareness and accountability, and may lead to increased attention to infection control measures by healthcare workers. It may lead to increased funding for hospital infection control personnel, and anyone working in infection control would welcome this change.

Public reporting has the potential to give patients and families important information about risks of hospitalization and surgical procedures. In an ideal world, people would be able to make informed decisions about where to get healthcare, and would be able to understand the differences between healthcare institutions. Public reporting should allow comparison between different types of hospitals, and should allow for direct comparisons of specific types of infection rates. The challenge before you is to decide how public reporting should take place so that it gives people this kind of useful information.

One of the difficulties in deciding how to proceed is determining which types of infections should be reported. Ideally, all infections would be reported in order to give the most complete picture. However, this would require standard definitions and clearly-

defined methods to adjust for patient factors that contribute to the risk of infection. In 2002, Dr. Gerberding described the following characteristics as desirable for characterizing hospital-acquired infections, “Precise and valid definitions of infection-related adverse events, standardized methods for detecting and reporting events, confidentiality protections, appropriate rate adjustments for institutional and case-mix differences, and evidence-based intervention programs...”³ All of these characteristics are desirable and would facilitate reporting of hospital-acquired infections. The problem is that precise and valid definitions and appropriate rate adjustment do not exist for all infections. Current legislation for public reporting includes language about adjusting for risk factors for infection. The Society for Healthcare Epidemiology of America states the following in their position paper on public disclosure, “Although the language in these laws may be appropriate, unfortunately, there is currently no widely agreed upon, scientifically validated method for risk adjusting healthcare-acquired infection indicators.”⁴

In order for public reporting to provide useful information, clear definitions must exist that can be followed by infection control personnel throughout the United States. The Hospital Infection Control Practices Advisory Committee (HICPAC) outlined the essential elements of a public reporting system.⁵ The first step involves identifying appropriate measures of health care performance. HICPAC recommends inclusion of process measure because these can be followed in a variety of healthcare settings, and do not depend on adjustment for patient risk factors. Examples of process measures include influenza vaccination rates, adherence to hand hygiene, adherence to surgical antibiotic prophylaxis, etc. HICPAC also recommends inclusion of outcome measures, meaning

specific types of infections. These outcome measures must have unambiguous definitions, and because of this, not all hospital-acquired infections should be included in public reporting. HICPAC recommends reporting of central catheter-related bloodstream infections and select surgical site infections. These infections have the most unambiguous definitions, and require less interpretation by infection control personnel. Standardized methods for case-finding are recommended, as well as validation methods to ensure accuracy and completeness of hospital reporting. Validation is critical to ensure that infections are comparable from hospital to hospital, and to ensure that some hospitals do not report less than others because their case-finding is less complete.

Influenza vaccination has been recommended as a process measure for hospitals. In theory this is a great idea. This should be easy to measure, and should be easy to replicate between hospitals. However, influenza vaccine availability has been a perennial problem in recent years, and promises to continue being a problem. Sanofi Pasteur, one of the major suppliers for influenza vaccine in the United States, released a statement on 2/1/06 regarding an unprecedented demand for influenza vaccine for 2006-2007, and acknowledged that it will be unable to supply influenza vaccine to all of those who are requesting it. Until sufficient influenza vaccine is available to all of those individuals for whom it is recommended, this process measure may not be useful. One of the problems in the last few years has been that influenza vaccine has arrived too late in the season to be useful. It is difficult to convince healthcare workers to get vaccinated once the annual epidemic has occurred. Influenza vaccine supply problems should be resolved prior to implementing this as a process measure.

In choosing outcome measures, infections for which clear definitions exist should be included. Hospital-acquired pneumonia is an example of an infection for which substantial problems with definitions exist. One of the problems with using healthcare-acquired pneumonia as an outcome measure, is that definitive diagnosis is difficult. According to 2005 guidelines of the American Thoracic Society and the Infectious Disease Society of America, “the diagnosis of hospital-acquired pneumonia is difficult, and most studies have involved clinical diagnosis, with sputum culture, but bronchoscopy has been used less often, making the reliability of the bacteriologic information uncertain and the specificity of the diagnosis undefined.”⁶ A number of different clinical criteria and diagnostic criteria have been proposed for the diagnosis of hospital-acquired pneumonia, and still no clear definition exists. Infection control personnel currently use a definition that includes a number of clinical criteria, and leaves too much room for interpretation. These definitions are useful to individual institutions in that they can be used to follow trends over time for an individual hospital. However, valid comparisons to other hospitals would be difficult, as individuals performing surveillance may interpret the definitions differently.

The National Nosocomial Infections Surveillance System (NNIS) is currently the method by which hospitals benchmark their hospital-acquired infection data. This system was established in order to track the incidence of hospital-acquired infections and the risk factors for these infections. NNIS does adjust for risk factors to an extent, but the risk stratification may not be sufficient. For example, NNIS publishes benchmark data for infection rates in surgical intensive care units. Surgical intensive care units may vary substantially in patient populations. These intensive care units may care for critically ill

surgical patients and for trauma patients. Trauma patients may have had a variety of injuries such as blunt trauma related to motor-vehicle accidents, industrial accidents, gunshot wounds, etc. Trauma patients with severe injuries are at higher risk for infections because the nature of the trauma itself may lead to infection, and their hospital stays are often long and include numerous procedures. The risk of infection in these patients is different than the risk of infection in a patient undergoing elective or emergent surgery, and should not be grouped together. However, the current NNIS definition for a trauma intensive care unit includes those surgical intensive care units where 80% of the bed days consist of trauma patients. The hospital that I work in is the major trauma center in Northeast Ohio. We care for critically ill trauma patients with multiple injuries, and serve as a referral center for critically ill medical and surgical patients. Our surgical intensive care unit typically has about 70% bed occupancy from trauma patients. That means that our surgical intensive care unit is compared to other surgical intensive care units that do not care for predominantly trauma patients for NNIS benchmarking purposes. Because of the severity of the injuries that our trauma patients have, comparison to other non-trauma intensive care units does not yield a valid comparison. Methods to control for this need to be instituted prior to public reporting. Case-finding methodology for NNIS is also costly and definitions are complex and may be difficult to apply.¹

Clostridium difficile colitis (C.diff) is another infection that has received a great deal of attention recently. This infection is caused by bacteria that may be part of the normal bacterial flora in the intestines, and can manifest as an infection after exposure to antibiotics. Currently there is a hypervirulent strain of this organism in hospitals

throughout the United States, Canada and Europe, and this disease has caused a great deal of morbidity and mortality. There have also been isolated cases of this disease occurring in individuals not previously exposed to antibiotics, which is unusual for this infection. C.diff can be transmitted in hospitals on the hands of healthcare workers and from contaminated surfaces. There has been demand for public reporting of this infection, and currently this is a reportable infection in the state of Ohio. The public awareness has led to increased awareness among healthcare workers, and I have seen increased attention to infection control precautions and handwashing. The problem with this infection is that currently there is no standard definition that is used by all hospitals to collect data regarding rates of infection. For public reporting to be most useful, there should be a standard definition followed by hospitals throughout the United States that would allow valid comparisons. The current definition being used in Ohio does not account for all cases of C. diff, and is different than the surveillance definitions that were previously being used by hospitals. It is often not possible to determine where C.diff originated. One of the problems is that patients may be hospitalized in several different hospitals and long-term care facilities over a period of months. While C.diff is often a healthcare-acquired infection, the location where an individual became exposed is often difficult to determine. In our institution, many of the C.diff cases that we see were acquired elsewhere. Currently there is no standard definition that allows for complete reporting of all of the cases.

There are potential adverse effects from public reporting. The process of public reporting should be carefully thought out in order to avoid these consequences. HICPAC states the following:

Conversely, as with voluntary private reporting, mandatory public reporting that doesn't incorporate sound surveillance principles and reasonable goals may divert resources to reporting infections and collecting data for risk adjustment and away from patient care and prevention; such reporting also could result in unintended disincentives to treat patients at higher risk for HAI. In addition, current standard methods for HAI surveillance were developed for voluntary use and may need to be modified for mandatory reporting. Lastly, publicly reported HAI rates can mislead stakeholders if inaccurate information is disseminated. Therefore, in a mandatory public report of HAI information, the limitations of current methods should be clearly communicated within the publicly released report.⁵

These potential adverse consequences must be carefully considered in the implementation of public reporting. A system that diverts infection control personnel from surveillance and education of healthcare workers could have the unintended consequence of increasing hospital-acquired infections.

In conclusion, public disclosure of hospital-acquired infections has the potential to make useful information available to the public, and may lead to improvement in quality of healthcare in the United States. In order for the public to get useful information that allows valid comparisons between hospitals, the process and outcome measures must be carefully considered, and it is imperative that definitions exist that can be applied at hospitals throughout the country. Further, there need to be methods to validate reported information, and adequate personnel so that reporting does not detract from current infection control responsibilities.

References

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