MISSOURI HOSPITALIST SOCIETY

PUBLISHER:
Division of Hospitalist Medicine
University of Missouri
Columbia, Missouri

EDITOR:
Ankur Jindal, MD

ASSOCIATE EDITORS:
Hariharan Regunath, MD
Fatima Khan, DO
Raghav Gupta, MD

Administrative Assistant:
Kim Shettlesworth

INSIDE this ISSUE:

MISSOURI HOSPITALIST

Issue 47 **April – June 2013**

Hospitalist Update:

Hospital-Acquired Infections

Kristin Hahn-Cover, MD, FACP
Assistant Professor of Clinical Medicine,
Department of Internal Medicine
Chief Quality Officer,
University of Missouri Health System

Hospitals in Missouri perform surveillance and external reporting for a number of hospital-acquired infections (HAI). We are required to do so variously by the state of Missouri, the Centers for Medicare and Medicaid Services (CMS) and for those of us reporting to a Patient Safety Organization (PSO). Hospital-acquired infections are recognized as typically preventable with optimal infection prevention and control practices. In the context of the National Quality Strategy required by the Affordable Care Act, reducing HAI is part of the priority of "Making care safer by reducing harm caused in the delivery of care."[1] As one piece of the growing national strategy linking payment with measures of quality and safety of care, CMS does not pay hospitals for care related to a defined list of hospital acquired conditions, and other payers are following suit in their contracts.

The focus of surveillance and prevention for hospital acquired infections has historically been on device- and procedure-related infections. These include catheter-associated urinary tract infections (CAUTI), ventilator associate pneumonia (VAP), central line-associated bloodstream infections (CLABSI) and surgical site infections (SSI). The Missouri Nosocomial Infection Control Act of 2004 established the requirement for state reporting of HAI. Infections currently reportable to the Department of Health and Senior Services are central line associated bacteremia and SSI for certain surgeries. Additional reporting is required for hospitals participating in the National Healthcare Safety Network of the Centers for Disease Control (NHSN), and includes CLABSI and CAUTI. Reporting definitions often vary from organization to organization, with particular distinction between programs using case definitions based on clinical variables versus those using administrative data with billed diagnoses.

Participation in the NHSN allows comparison of a hospital's infection rates to performance percentiles defined by all reporting hospitals.[2] These benchmarks provide comparisons by facility (acute care hospital, long-term acute care facilities, etc.) and unit (medical ICU, surgical ICU, etc.). NHSN provides detailed criteria for definitions of each condition, with revisions up to twice yearly. The most prominent recent change involves assessment of ventilator associated pneumonia. NHSN has defined a broader category consisting of "ventilator associated events," which then narrow to infections and again to pneumonia. While improving the accuracy of categorization, such definition changes do cause changes to reported rates, limiting the ability to meaningfully compare performance in an individual organization over time.

Participation in the CMS Hospital Inpatient Quality Reporting program for Federal Fiscal Year 2014 requires "Participation in a Systematic Clinical Database Registry for General Surgery." One such database is the American College of Surgeons National Surgical Quality Improvement Program (NSQIP). The database supports reporting, risk adjustment and comparisons of surgical complications based on clinical data entered by a reviewer, with SSI as one such complication.[3]

Hospitals began reporting three new measures to the NHSN as of January 2013, as required by CMS. The first of these is Healthcare Personnel Influenza Vaccination. Healthcare organizations must report the number of healthcare providers working during flu season, as well as the numbers who receive influenza vaccine from the organization or externally, and the numbers who have medical contraindication or who decline vaccination. The second new measure is laboratory identification of Methicillin-Resistant *Staphylococcus aureus* (MRSA) positive blood specimens. The final HAI measure added for reporting in 2013 is laboratory identification of toxin-positive/toxin-producing *Clostridium difficile* stool specimens. Hospital data for these three measures will be found on the public CMS Hospital Compare website in December.

Currently, the Medicare Hospital Compare website[4] presents hospital data on HAI, including CLABSI, CAUTI and SSI with colon surgery and abdominal hysterectomy. Performance is presented as Standardized Infection Ratio (SIR), which is the ratio of observed rate to the expected rate. Expected rate is defined as the NHSN median, with comparisons by unit type and facility type aggregated for a given hospital. Hospitals performing at the median would have SIR of 1. The SIR for each HAI is additionally rated as better, no different, or worse than the U.S. national benchmark based on whether the confidence interval for the SIR is less than, includes or greater than 1.

The CMS Value Based Purchasing program ties a portion of a hospital's payments to outcomes of care. For payments beginning in October 2014, CLABSI reported to NSHSN through 2013 will serve as one such outcome of care, both individually and as part of a composite measure of other indicators of patient safety and quality of care. An additional program defined by the Patient Protection and Affordable Care Act of 2010 outlines a payment adjustment of 1% for hospitals in the top quartile of hospital acquired conditions, beginning in October 2014.[5]

As Hospitalists, we need to be aware of the national focus and payment consequences for hospital acquired infections. More importantly, however, we need to know how to prevent these events in our patients. For all device-related infections, the most important decision is whether the device is truly needed for a patient's care. When it is, the continual review of whether the device is still

needed, or whether care can be provided in a safer way remains essential. The second intervention important for prevention of all HAI is hand hygiene.[6] Using the concept of the "health-care zone" and the "patient zone," performing hand hygiene protects our patients when we move from one zone to the other, as well as before a clean/aseptic procedure and after any bodily fluid exposure risk.

Specific for prevention of CLABSI, the preferred site is subclavian.[7] Skin preparation with chlorhexidine with alcohol is to be used in adults. Sterile gloves should be worn during placement, and either clean or sterile gloves should be worn during dressing changes. Full sterile barrier precautions are recommended during placement and guidewire exchange, including cap and mask, as well as sterile gown, gloves and full body drape. If catheters are expected to remain in place more than five days, use of an antimicrobial/antiseptic impregnated catheter may further contribute to CLABSI reduction when added to recommended skin preparation and use of full sterile barrier precautions.

The "ventilator bundle" is well-established in prevention of VAP.[8] Elements of this bundle have been studied in isolation and in a grouping, with the essential elements of head of bed elevation to 30 degrees or greater, breaks in sedation, peptic ulcer prophylaxis and venous thromboembolism prophylaxis. ICU teams focused on bundle adherence reported a 45% reduction in VAP.[9]

Hospitalist can have significant impact on CAUTI reduction with rigor in requiring clinical indications for catheter placement and regular review of ongoing or unresolved indications to continue bladder catheterization. As electronic health records develop to standardize optimal care, structural support to review ongoing catheter use can range from daily reminders to pre-set discontinuation orders.[10] Optimal placement techniques should be part of a hospital's nursing education. Antimicrobial/antiseptic-coated catheters may be helpful, particularly if catheterization is expected to be prolonged.

In summary, it is clear that hospital acquired infections, amongst other complications, are no longer accepted as a normal part of care. To the extent that we can reduce or prevent these infections, we must do so for our patients. There are well-established ways to do so for many of these infections, and hospitals will see reductions in infection rates with consistent adoption of practices presented in the medical literature. Hospitals face increasing financial accountability to reduce or eliminate HAI, and will look to Hospitalists for participation, expertise and leadership in initiatives to do so.

REFERENCES

1. Goodrich K, Garcia E, Conway PH. A history of and a vision for CMS quality measurement programs. Jt Comm J Qual Patient Saf. 2012 Oct;38(10):465-70.
2. Dudeck MA, Horan TC, Peterson KD, Allen-Bridson K, Morrell G, Anttila A,Pollock DA, Edwards JR. National Healthcare Safety Network report, data summary for 2011, device-associated module. Am J Infect Control. 2013 Apr;41(4):286-300.
3. http://site.acsnsqip.org/about/
4. http://medicare.gov/HospitalCompare/about/hosinfo/rcd.aspx
5. http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf

6. WHO guidelines on hand hygiene in health care: first global patient safety challenge. Clean care is safer care. World Health Organization - 2009
7. O'Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, Lipsett PA, Masur H, Mermel LA, Pearson ML, Raad II, Randolph AG, Rupp ME, Saint S; Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for the prevention of intravascular catheter-related infections. Clin Infect Dis. 2011 May;52(9):e162-93.
8. Tablan OC, Anderson LJ, Besser R, Bridges C, Hajjeh R; CDC; Healthcare Infection Control Practices Advisory Committee. Guidelines for preventing health-care--associated pneumonia, 2003: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee. MMWR Recomm Rep. 2004 Mar 26;53(RR-3):1-36.
9. Resar R, Pronovost P, Haraden C, Simmonds T, Rainey T, Nolan T. Using a bundle approach to improve ventilator care processes and reduce ventilator-associated pneumonia. Jt Comm J Qual Patient Saf. 2005 May;31(5):243-8.
10. Hooton TM, Bradley SF, Cardenas DD, Colgan R, Geerlings SE, Rice JC, Saint S, Schaeffer AJ, Tambayh PA, Tenke P, Nicolle LE; Infectious Diseases Society of America. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. Clin Infect Dis. 2010 Mar 1;50(5):625-63.

A CASE OF DRESS SYNDROME DUE TO VANCOMYCIN

Danielle Zimmerman, M4, William Steinmann, MD
University of Missouri – Columbia

BACKGROUND

Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome is a severe systemic reaction that usually begins 2-6 weeks after the introduction of the inciting agent. It is most commonly characterized by fever, rash, hematologic abnormalities (eosinophilia, atypical lymphocytosis), lymphadenopathy, HHV-6 reactivation and internal organ involvement. At least 10% of the cases are fatal. Treatment includes withdrawal of the offending medication and administration of corticosteroids, though the efficacy of the latter has not been fully evaluated.

CASE REPORT

A 64 year-old white male with past medical history of type 2 diabetes mellitus, hypertension, hyperlipidemia, COPD, coronary artery disease, gout, and a fifteen pack-year smoking history presented with complaints of fever, rash and abdominal discomfort. Patient developed a new pruritic, nontender rash on back, chest, arms associated with bilateral arm swelling and shortness of breath. Eight months prior to the admission, he had an open reduction for fracture of the left distal femur after a motor vehicle accident. He had two admissions related to this. One month previously, he was admitted with left septic knee, which was treated by arthrocentesis, screw removal, irrigation and drainage. Intravenous vancomycin was given and vancomyin beads were placed in the knee joint space. Eight days prior to the arrival, the patient was readmitted with complaints of fever, chills, left knee pain and the X-ray of the left knee was suggestive of septic arthritis, which was subsequently managed with irrigation and drainage. Vancomycin was continued and the patient was discharged two days prior to the current admission. The patient hadn't had any recent medication changes and denied any exposure to exotic pets, molds, dusts, chemicals, and drugs.

On physical exam, his temperature was 37.8 °C with a blood pressure of 98/64mmHg. The exam