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Hospitalist Update

Will mobile phone use increase the incidence of healthcare associated infections?

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Nosocomial infections are a major concern for both patients and clinicians. Hospital related infections cause significant mortality (20%) [1] and morbidity and, in the majority of cases, are preventable. In addition to the human cost, the emergence of multi-drug resistant organisms has made management of hospital acquired infections more complex and expensive. The National Health Foundation is thus working to decrease the rate of hospital associated infections in a number of ways.

Nosocomial infections not only cause significant mortality and morbidity but also significantly increase hospital costs. One study estimates that at least 2 million hospital acquired infections occur in the U.S. each year [10], resulting in at least 19,000 deaths and contributing to mortality in 80,000 other cases. [11]. Those patients that survive their infection have a longer hospital stay, increasing the cost of their care; in addition, this augments their physical and mental stress, leading to other potential complications. According to the Institute of Medicine, as many as 98,000 patients die of avoidable medical errors in American hospitals each year and result in additional annual costs totaling $11 billion; in a 1992 review, the annual cost to treat nosocomial infections was $4.5 billion in the U.S. [12] A Michigan study [13] revealed that the acquired bacteremia added $34,508 to the cost of the hospitalization. The need to identify risks for hospital acquired infection and to instill preventive measures is thus critical to safe, cost-effective care.

Over the past decade, studies have examined the healthcare setting as a potential source of contamination and risk for infection. These studies have demonstrated contamination from a variety of environmental sources including doors, bed rails, blood pressure cuffs, thermometers, stethoscopes and computers [2-7] and strict attention to preventive measures such as hand washing has been advocated [8-9]. Pagers and mobile phones have become ubiquitous among healthcare professionals and may harbor bacteria (cont)

(continued) that prove to be an important link in the transmission of nosocomial infections.

In their review [14], Brady et al found that 9-25% of mobile communication devices are contaminated with pathogenic bacteria; they recommended staff education, strict hand hygiene measures, guidelines for regular cleaning of mobile devices and the restricted use of such devices in high risk areas such a operating rooms, intensive care units and burn units. A Turkish study [9] failed to identify antimicrobial resistant bacteria on mobile devices but this is of uncertain clinical significance. Engineering modifications, such as use of keyboard covers, disinfection of computer hardware surfaces and hand washing (with or without gloving) are measures recommended to eliminate infection from medical computer equipment by Nelly et al [15].

What about the use of mobile phones by patients and their visitors? Over 84% of swabs from the mobile phones of patients were positive for microbial contamination in a recent study [16]; almost 12% grew bacteria known to cause nosocomial infection and 6.9% grew Staph aureus (as did 31.4% of nasal swabs from these patients). Another study [17] demonstrated a significantly higher contamination of patient mobile phones compared to those of healthcare workers (39.6% vs. 20.6%, p=.02). There were also more multidrug resistant pathogens on the patients' mobile phones, including MRSA, extended-spectrum beta-lactamase-producing E. coli and Klebsiella species, high-level aminoglycoside-resistant Enterococcus species and carbepenem-resistant Acinetobacter baumanii. Clearly, patients and their visitors should be educated about the regular cleaning of cell phones and hand hygiene following their use.

Mobile technology has added another avenue of nosocomial infection and these devices are increasingly being used by hospitalists, patients, visitors and other health care workers. Hospitalists should lead the effort to combat this relatively new and increasing threat, primarily by enforcement of hand hygiene before and after patient contact. Whether regular cleansing of mobile communication devices would reduce the rate of nosocomial infection awaits further study.

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CASE REPORT LEIF CHRISTIANSON, MD

CROHN'S DISEASE & ENTEROCUTANEOUS FISTULAS

CASE:

A 51 year old female with a past medical history of Crohn's disease presented from an outside hospital with complaints abdominal discomfort and swelling (initially diagnosed as a ventral hernia at an urgent care center) followed by the spontaneous drainage of feculent material. At her local hospital, a fistulogram was performed which demonstrated an 8mm wide enterocutaneous fistula associated with a 7cm wide collection of fluid in the anterior abdominal wall.

On arrival at UMHC, the patient was found to be very malnourished, underweight and deconditioned. Labs revealed electrolyte imbalances and a hemoglobin of 7.3 for which she was transfused with 2 units of PRBCs. Her initial management consisted of fluid resuscitation, electrolyte replacement, administration of TPN and skin care. Refeeding syndrome was of concern and her electrolytes were thus closely monitored during the early stages of her recovery. Gastroenterology and General Surgery were consulted for their assistance and recommendations. A CT of the abdomen/pelvis demonstrated that the fistula likely originated at the terminal ileum and that it was associated with a 2x10x10 cm intra-abdominal abscess that drained through the fistula. The patient was placed on levofloxacin and metronidazole. Gastroenterology recommended drainage of the abscess and planned to start a TNF-alpha inhibitor once the abscess resolved. General Surgery did not feel that the patient was a good surgical candidate due to her poor nutritional status as well as the early stage of the fistula; they did not recommend additional drainage procedures since the abscess was noted to be draining through the fistula on the CT scan. They plan to follow her as an outpatient and will consider surgery at a later date if conservative measures fail.

DISCUSSION:

Crohn's Disease has many complications and, of these, fistulas are among the most difficult to treat. Fistulas that arise in association with Crohn's Disease are classified as those with no evidence of active disease (type 1) and those associated with intra-abdominal abscess formation (type 2). This distinction is important since conservative management is likely to attain spontaneous closure of a type 1 fistula but not a type 2 fistula [1]. Enterocutaneous (EC) fistulas cause significant morbidity and mortality due to sepsis, malnutrition and fluid imbalance. Once developed, their treatment is often complex and difficult. EC fistulas are classified by their anatomic location (gastrocutaneous, enterocutaneous, etc), physiologic properties (low, moderate or high output) and the etiology of the fistula (malignancy, inflammatory bowel disease, post-operative, etc.). Understanding this classification gives physicians prognostic data to share with the patient [2].

The initial treatment of a patient with an EC fistula should center around 4 key aspects of treatment: nutrition, hydration and correction of electrolyte imbalances (especially hypokalemia), abscess drainage (and treatment of any associated infection) and skin care. Treatment of the underlying condition is also essential [1]. CT scan with contrast or a fistulogram should be performed to define the site of origin and the anatomy of the fistula and to determine if there is an associated abscess that might require CT-guided drainage. Despite proper care, mortality occurs in approximately 20% of cases. Spontaneous closure of EC fistulas varies, based on the severity and type of underlying condition; if the fistula does not respond to intense, conservative management, surgical closure may be required. About 30% of EC fistulas will heal spontaneously while 70% will eventually require surgical intervention [3].

Proper skin care is imperative for the resolution of an EC fistula. Use of an ostomy pouch is a common practice but this may allow skin to be in contact with the fistula output, causing local skin irritation. The use of barrier creams and artificial skin barriers can help to reduce this irritation and prevent skin breakdown. A more recent development in the management of EC fistulas is the use of vacuum-assisted closure (VAC) devices. In a study from Argentina, 97 patients were treated with VAC; of these 97 patients, 66 had presented with sepsis and the average output of the EC fistulas was over 1400 ml/day (high output category). With use of the VAC, fistula output was entirely suppressed in 40.7% and 57.1% had their output decreased to less than 500 ml/day; spontaneous closure occurred in 46.2% of patients within 90 days but 40.7% required surgical intervention. Surgical intervention resulted in successful closure of the EC fistula in 84% of those who underwent the procedure. VAC is a viable option in the treatment of EC fistulas if deemed to be appropriate; the overall mortality for this study was 16.5% [4]. Fistula output can also be significantly reduced with the use of somato–statin or octreotide and some studies have shown that they may decrease the time to spontaneous closure; however, no randomized control trials have been completed and their use remains controversial [1].

If a six month trial of conservative management for an EC fisula fails, surgical management should be considered. Immediate laparoscopy is warranted for any signs of peritonitis. Surgery is often made difficult due to dense adhesions which form as a result of the EC fistula; these adhesions are commonly referred to as "peritonitis obliterans " and usually begin to diminish after 6 weeks of medical management, thus making surgical intervention more successful by that time. Well nourished and infection-free patients are the best candidates for surgical repair; the procedure is often lengthy, involving extensive adhesiolysis, possible resection of necrotic bowel, resection of bowel at the site of fistula origination and the closure of abdominal wall defects [1,5].

In summary, the treatment of EC fistulas is complex and requires a multi-disciplinary approach for effective care. Therapy should center on nutritional support, adequate hydration, corrections of electrolytes, skin care and the treatment of infection, abscess (if present) and the underlying condition. Despite addressing all of these measures, EC fistulas are associated with significant morbidity and mortality. (**References on next page)**

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5. Up-to-Date, 2012

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FROM THE JOURNALS

LESLIE HALL, MD

Surrogate decision makers' interpretation of prognostic information: a mixed-methods study

Zier, LS et al., Ann Intern Med, March 6, 2012; 156: 360-366

http://www.annals.org/content/156/5/360.full.pdf+html

This study explored the interpretation of medical prognostic information passed along to 80 surrogate decision-makers in response to 16 different prognostic statements. Interpretations of prognostic statements indicating a low risk of death tended to be accurate whereas interpretations of statements indicating a high risk of death tended to be overly optimistic. The authors suggest that surrogates often believe that the patient has attributes unknown to the physicians which will lead to better-than-predicted outcomes.

End-of-life care discussions among patients with advanced cancer: a cohort study

Mack, JW et al., Ann Intern Med, February 7, 2012; 156: 204-210

http://www.annals.org/content/156/3.toc

Although physicians are encouraged to discuss end-of-life (EOL) care with all cancer patients with less than one year of life expectancy, this study suggests that these discussions often occur late in the course of the disease. In 2155 patients with stage IV lung or colon cancer, 73% had EOL discussions documented; however, in over half of the cases, the first EOL discussion occurred during an acute care hospitalization. Among patients who died during the study, discussions occurred a median of 33 days prior to death.

(continued)

The cost of satisfaction: a national study of patient satisfaction, health care utilization, expenditures and mortality

Fenton, JJ et al., Arch Intern Med 2012; 172(5): 405-411

http://archinte.ama-assn.org/cgi/reprint/172/5/405

Fascinating prospective cohort study of adult patients, conducted from 2000 to 2007, assessing relationship of expressed satisfaction with care and subsequent health events. After adjustments for chronic diseases, insurance status, health status and year-one health care expenditures, respondents expressing the greatest satisfaction had higher odds of inpatient admission, total health expenditures, prescription drug expenditures and mortality (odds ratio 1:26). The authors state: "While satisfaction correlates with the extent to which physicians fulfill patients' requests, patient satisfaction can be maintained in the absence of request fulfillment if physicians address patient concerns in a patient-centered way. In the ideal vision of patient-centered care, physicians deliver evidence-based care in accordance with the preferences of informed patients, thereby improving satisfaction and health outcomes."

Association of National Hospital Quality Measure adherence with long-term mortality and readmissions

Shahian, DM et al., BMJ Qual Safety 2012; 21: 325-336

http://qualitysafety.bmj.com/content/21/4/325.full.pdf+html

Performance on the National Hospital Quality Measures for patients with acute MI, pneumonia and heart failure is increasingly affecting hospital reimbursement through pay-for-performance programs and the CMS value-based purchasing program. This study, performed at Massachusetts General Hospital, analyzed outcomes in patients from these three diagnostic categories who were hospitalized from 2004-2007. Patients with acute MI and pneumonia for whom their care conformed to the quality guidelines showed improved adjusted survival and decreased readmissions compared with those whose care did not conform with guidelines. For heart failure patients, some measures, such as the use of ACE inhibitors or ARBS, were associated with improved outcomes while conformity with other guidelines did not improve outcomes. As reimbursement is increasingly linked to conformity with specified standards, increasing pressure will likely be brought to bear by hospitals and providers to ensure that the accountability standards being used are those that most influence outcomes.

ID CORNER

WILLIAM SALZER, MD

URINARY TRACT INFECTIONS

A nice *In the Clinic* from Annals on UTIs—very practical!

In the Clinic—Urinary Tract Infection, Ann Intern Med, Vol 56, ITC 3, 3/6/12

http://www.annals.org/content/156/5/ITC3-1.full.pdf+html?itcabout

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MISSOURI HOSPITALIST CALENDAR

Sepsis-related Respiratory Failure, Society of Critical Care Medicine, April 26-27, Boston; info at www.sccm.org/conferences

American Geriatrics Society Annual Meeting, May 2-5, Seattle, Washington; register via www.americangeriatrics.org

Care of the Hospitalized Patient 2012, Saturday, May 5, Eric P. Newman Education Center, Washington University Medical Center, St. Louis; register online at http://cme.wustl.edu or call 314-362-7056 **LOCAL**

Ultrasonography: Fundamentals in Critical Care, American College of Chest Physicians, June 8-10, Denver, Colorado; info at www.chestnet.org/accp/events

8th Annual Midwest Hospital Medicine Meeting, Society of Hospital Medicine, October 10-13, Northwestern University, Chicago; www.hospitalmedicine.org

Academic Hospitalist Academy, Society of Hospital Medicine, October 22-25, Atlanta; info at www.hospitalmedicine.org

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Please forward this newsletter to Hospitalists that you might know!