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ULTRASOUND HELPS REDUCE A $373 MILLION-DOLLAR RISK: MEDICARE PENALTIES FOR HOSPITAL ERRORS

Written by Haney Mallemat, MD Assistant Professor of Emergency Medicine. | March 31, 2016

Under Medicare's Hospital-Associated Conditions (HAC) Reduction Program, America's hospitals face a large financial risk that warrants the close attention of chief financial officers. In fiscal year (FY) 2015--the program's first year--721 U.S. hospitals incurred estimated penalties totaling $373 million[1] for having the highest rates of central lines-associated bloodstream infections (CLABSIs) and other patient injuries.

The program docks the 25 percent of hospitals with the worst rates of certain complications, such as the accidental puncture and collapse of the patient's lung during central-line placement (iatrogenic pneumothorax), one percent of their annual Medicare payments.

On January 1, 2015, CMS expanded reporting of CLABSIs beyond the intensive care unit to all medical surgical beds through the hospital, with the data to be used as one of the measures to determine which hospitals are penalized under the HAC program, starting in October, 2017.[2]

In this environment, it is essential for financial leaders to understand how the penalty program works and which safety practices offer the best protection against costly medical errors. Here is an overview of how ultrasound guidance can reduce--or even eliminate-- central line-complications, including those targeted by the HAC program, based on robust medical evidence and my experience as an emergency physician at a large medical center.

Ultrasound Guidance Helps Prevent $6 Million Mistakes

CLABSIs and pneumothorax are two of the most expensive and dangerous adverse events associated with central line placement. Also known as central venous catheterization (CVC), this procedure is performed more than five million times a year in U.S. hospitals[3] with reported complication rates exceeding 15 percent[4] if the needle is inserted "blindly" (using anatomical landmarks to estimate the location of the target blood vessel).

About 250,000 CLABSIs occur annually in the U.S., with an estimated attributable mortality of up to 25 percent and an estimated cost of up to $56,000 per infection, reports the Centers for Disease Control (CDC).[5] [6]Pneumothorax lengthens hospital stay by 4 to 7 days at an additional cost of up to $45,000 per case.[7] Not only does Medicare no longer reimburse these costs, but they can escalate if injured patients sue: An analysis of closed malpractice claims reported payments as high as $6.9 million for CVC complications[8].

Evidence-based guidelines from many medical organizations, including the Centers for Disease Control (CDC)[9], American College of Emergency Physicians[10], and the National Institute of Clinical Excellence (NICE),[11] recommend ultrasound-guided central line placement based on its overwhelming safety benefits.

At many leading hospitals, including the one where I practice, ultrasound-guided CVCs are now the standard practice--not just to improve safety, but also to obtain faster vascular access during emergencies, when every second counts. Many studies show that this technique is more likely to succeed on the first try, accelerating potentially life-saving treatment of critically injured or ill patients.

Best Practices to Improve Central-Line Infection Control

My hospital, like many others, uses a bundle of CVC safety practices to lower risk for CLABSIs. Drawing on robust scientific research, our bundle is comprised of these six components.

- Hand hygiene
- Maximal barrier precautions
- Chlorhexidine skin antisepsis
- Daily review of CVC line necessity, with prompt removal of unneeded lines
- Optimal catheter site selection
- Ultrasound-guided line placement

To minimize infection risk, the CDC recommends the subclavian vein in the upper chest as the safest site for CVC in adult patients. In a 2015 multicenter randomized study[12] of 3,027 patients bears this out, with the researchers reporting that rates of CLABSI and blood clots were 3.5 times higher if CVC was performed on the femoral vein, and 2.1 times higher if the jugular vein was the CVC site, compared to the subclavian vein.

Not only is the subclavian vein the optimal site for CVC, but risk for complications is further reduced--or even eliminated--with ultrasound guidance. A recent randomized, controlled study[13] of critical care patients who received subclavian CVC reported zero percent rates of pneumothorax and hemothorax, compared to rates of 4.9 percent and 4.4 percent respectively with landmark techniques. All other HACs were also reduced or eliminated with ultrasound guidance.

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The CDC's guidelines for CVC infection prevention offer this advice to clinicians: "Use ultrasound guidance to place central venous catheters (if this technology is available) to reduce the number of cannulation attempts and mechanical complications."

Using Ultrasound-Guided Peripheral IVs to Avoid Unnecessary CVCs

Increasingly, in our emergency department, patients are asking for ultrasound-guided peripheral IV (PIV). Often, they will say, "I'm a 'difficult stick' and the last time I got an IV, the doctor used ultrasound." That's because patients with difficult vascular access due to obesity, chemotherapy, IV drug abuse or other factors, have discovered that that if their PIV is inserted with ultrasound guidance, they don't have to be repeatedly jabbed with a needle.

It's easy to see why these patients are concerned. Studies have reported failure rates for emergent PIV access of up to 40 percent. And even with PIV access is ultimately achieved in patients with problematic vascular access, it can take up 30 minutes,[14] leading to potentially dangerous delays in treatment for the very people who need it most.

A recent study highlights the benefits of ultrasound-guided PIV for patients with problematic vascular access.[15] The researchers found that ultrasound-guided PIV prevented the need for a central line in 85 percent of cases, sparing those patients such dangerous CVC-associated risks as pneumothorax and CLABSI. The patients were tracked for seven days and had zero complications.

Even newer research suggests that ultrasound-guided PIV may be an option in some scenarios when a central line used to be deemed essential. For example, a September, 2015 study of 734 intensive care unit patients found that PIV access can often be safety used to administer vasoactive medication, an important treatment to help prevent secondary complications in patients with life-threatening conditions like sepsis.

Amid mounting evidence of the many benefits of ultrasound-guided vascular access for improving the safety and the quality of hospital care, it's no wonder that patients are now demanding it. As we strive to improve America's healthcare, while also reining in costs, don't we owe to patients to adopt the proven best practices that lead to optimal outcomes?