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ACS NSQIP database helps hospital identify and curb its surgical risk

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Surgical patients who are placed in contact isolation after their operations are at a particularly high risk for developing life-threatening blood clots, but ensuring they move around has helped curb the occurrence of venous thromboembolism (VTE) in one hospital. This case study on how one surgical team prevented VTEs in their patients placed in isolation was presented today by researchers from the department of surgery at Carilion Clinic Roanoke Memorial Hospital, Roanoke, VA at the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) National Conference in New York City. ACS NSQIP is the leading nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care in hospitals.

Blood clots are known to be a common complication after operations. VTE is a condition defined as a blood clot in the leg or thigh, called deep vein thrombosis, and pulmonary embolism, a blood clot in the lungs. Each year, an estimated 547,596 episodes of VTE occur during hospitalizations among adults in the U.S. according to the U.S. Centers for Disease Control and Prevention (CDC).

The surgical team at Carillion started their investigation on patients who had general or vascular surgery procedures between January and September 2011. They also looked at patients who had surgical specialty operations between July 2011 and June 2012. They then used the trauma registry to look at trauma procedures between January 2011 and December 2012.

They used the hospital's ACS NSQIP database, which tracks surgical patient data and outcomes, to determine which patients had VTE. The trauma registry was similarly used. The electronic medical record was then queried to find those patients who had been placed in postoperative isolation.

ACS NSQIP data allowed the research team to investigate whether patients in isolation were more likely to develop VTEs compared with those who were not placed in isolation. Case study results showed that:

- Patients who had general and vascular operations followed by isolation were 5.9 times more likely to develop VTE than those who were not placed in isolation.
- Isolated patients who had specialty procedures were 3.5 times more likely to develop VTEs than those who were not isolated after their procedures.
- Patients who had trauma procedures and were placed in isolation were 5.9 times more likely to develop VTEs than those who were not placed in isolation.
- All odds ratios were highly statistically significant.

"Our data demonstrates a significant predisposition for patients in isolation to develop VTE," the authors wrote.

How Can Isolation Lead to VTEs?

To figure out why isolated surgical patients were more at risk for VTEs, the researchers had to take a top-down look at other efforts to control patient complications throughout the hospital.

"When we looked at our numbers starting in 2008, the VTE rate was very low," said Sandy Fogel, MD, FACS, surgical quality officer and medical director of operating room services for Carilion Clinic. "Then,

in 2010 it went up significantly. We had a look at what changed in 2010 that affected how our patients were doing."

The change: a hospital-wide focus on Methicillin-resistant Staphylococcus aureus (MRSA), a contagious bacteria that can lead to pneumonia, as well as infections of the skin and bloodstream, sending patients back to the hospital after surgery. The hospital began a program of universal MRSA screening and isolation of patients who tested positive.

When surgical patients tested positive, they were placed in isolation after their operations. The good news is that MRSA conversions went down. However, VTE rates unexpectedly climbed. The researchers said this increase happened because patients in isolation tend to miss out on two clinical measures that can prevent VTEs: the ability to move around and lung exercises. Moving around several times a day after their operations helps prevent blood clots, especially in the legs. Lung exercises with a spirometer can help prevent blood clots as well.

"When surgical patients are in isolation, nursing interactions with the patient decrease. It simply takes more time to enter the rooms. It is less likely for those two things to be done, because nurses simply are very busy," Dr. Fogel explained. "When they get busy, ambulation and spirometer use get prioritized near the bottom, even though both of these limit VTE."

Dr. Fogel and his team used the NSQIP return-on-investment calculator to determine that blood clots in the legs were costing the hospital about $10,800 per affected patient. Blood clots in the lungs were costing about $16,600 per patient.

Next Steps to Help Patients

In response to their ACS NSQIP data analysis, Carilion established designated ambulation areas for isolated patients. They also hired a team of ambulation aides in September 2013 to ensure that patients in isolation are given an opportunity to move around and to have spirometer use. They've also hired a designated nurse specialist who is responsible for getting daily reports on VTE patients, looking for opportunities to improve care. They have begun educating patients' families about the importance and proper techniques of helping their loved ones move around after their operations.

The next step is to continue tracking ACS NSQIP data to evaluate how these new interventions are impacting VTE rates. So far, Dr. Fogel says, VTE rates are falling and MRSA rates are staying low.

As more hospitals try to curb MRSA, VTEs and other postsurgical complications, Dr. Fogel said the key for tracking success rates is through the use of accurate data.

"The NSQIP database is considered to be the best and most accurate surgical database there is," Dr. Fogel said. "But you also need someone to properly analyze the data before making plans for quality improvement."

Dr. Fogel said clinical leaders should expect some reluctance about adding new teams to combat rising VTE rates. "But when you show them the NSQIP data," he says, "it speaks volumes."

More information:
www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a1.htm

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