Solution: Meeting National Patient Safety Goal #7:
Eliminate Central Line Associated Bloodstream Infections
Development of a Self-learning Module for Radiologic Technologists

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IDENTIFICATION:
• CDC and the Health Infection Control Practices Advisory Committee issued a Class 1A recommendation for initial and ongoing education for all personnel involved in the care of patients with central venous catheters.
• An ongoing objective at Howard County General Hospital is the reduction of central line associated bloodstream infections.
• Intravenous Contrast and Radioisotopes are administered to patients by DI technologists by way of central venous access devices. Hospital (Nursing) policy indicated that only Registered Nurses could inject into central catheters.
• There was no policy or standard of practice addressing the use of central lines for contrast or radioisotope injection in Diagnostic Imaging

PROCESS:
Plan-Do-Check-Act
Define the problem:
• Intravenous Contrast and Radioisotopes are administered to patients by DI technologists by way of central venous access devices. Hospital (Nursing) policy indicates that only Registered Nurses may inject medications into central venous catheters.
• CDC and the Health Infection Control Practices Advisory Committee have made a Class 1A recommendation for initial and ongoing education for all personnel involved in the care of patients with central venous catheters.
• Requirement 7 of National Patient Safety Goals for 2009 necessitates all personnel using central venous access devices utilize best practices or evidence-based guidelines to prevent central line-associated bloodstream infections.
• There was no policy or standard of practice addressing the use of central lines for contrast or radioisotope injection.

How do you know it’s a problem? Data Sources
• DI technologists are currently injecting contrast media and radioisotopes for exams using central venous access devices.
• By interview, many of the technologists were not aware of potential complications related to central lines. Although the techs were required to complete educational requirements for peripheral IV’s, managing patients with central lines was not addressed.
SOLUTION:
What is the Strategy?
Plan:
1. Use of central catheters for contrast and radioisotope injections will be stopped.
2. Education plan for the management of central lines in DI will be developed and implemented as soon as possible.
3. Peripheral IVs will be used or the DI nurses will be notified to inject contrast using central catheters until education plan was completed.
4. DI policy concerning use of central lines for contrast and radioisotopes will be developed and implemented as soon as possible.
5. The educational piece should be completed as possible so there will be minimal interruption in the completion of patient testing.

Do-anticipate problems
1. Venous access will be peripheral whenever possible until standards of practice are established.
2. Problems will arise with patients who have difficult peripheral access.
3. Hospital nursing staff and physicians will object to the temporary restrictions on use of central lines for imaging studies (e.g., “My patient has a central line, why can’t you use it?”).
4. There is a potential for delay in exam turnaround time.

Check
How will you know if the change has worked?
1. Change in practice is permanent and is dictated by hospital policy.
2. Competency will be demonstrated and documented by each DI technologist who administers contrast or radioisotopes using central venous access devices.
3. Competency demonstration will be mandatory for all new staff in affected modalities. Modality managers will monitor compliance.

What will indicate success?
1. DI technologists will demonstrate an improved knowledge of the various types of central venous access devices.
2. DI technologists will demonstrate competency in accessing central venous access devices using aseptic technique.
3. DI technologists will notify the nurse responsible for the care of the patient if there is a problem with a central line.

ACT
How did the plan work?
1. Central line injections by DI technologists were suspended. All exams requiring contrast or radioisotope injections were performed using peripheral access. There were objections and questions from a few patients and from staff, but the plan proceeded and no serious delay in patient care occurred.
2. A self-directed educational packet with associated competency demonstration was
developed.
3. Policies concerning the use of central lines in Diagnostic Imaging were developed.
4. Following completion of the educational program, DI nurses supervised initial
competency demonstration by DI technologists. As the managers and an increasing
number of techs completed the competency, the responsibility for supervision
transitioned to the manager.
5. Central line injection of contrast and radioisotope was resumed as the techs completed
the competency.

What policies, procedures, protocols, and instructions will need to be changed to hold these
improvements?

1. Hospital policy requires all DI technologists complete the self-directed packet and
demonstrate competency in accessing and injecting central lines using aseptic technique
during orientation.
2. Modality manager is responsible for monitoring compliance with the policy.

Was there a measure of success? What measures are being taken to assure the results are
sustained over time?

Although there were no data collected with this project, other than the verification of
competency, the response from the technologist staff was surprisingly positive. Several of the
techs admitted that they did not know the design of various central venous access devices. Others
were very surprised at the mortality, morbidity and cost of central line associated blood stream
infections.

The policy and self-directed learning packet have been updated to reflect current practice and
statistics. The availability of power-injectable central venous access devices and the increasing
use of CT and MR angiography has increased the number of patients who come for diagnostic
testing to Diagnostic Imaging with central venous access devices.

The next iteration of this instructional program will appear on HealthStream, the online learning
management system used by Howard County General Hospital

Through initial training and regular updating of competency in accessing and injecting central
lines using aseptic technique, DI technologists will be an integral part of the effort at Howard
County General Hospital to reduce central line-associated bloodstream infections, and will
enhance institutional compliance with National Patient Safety Goal 7 (implement best practices
or evidence-based guidelines to prevent central line-associated bloodstream infections).