

Innovation

Reducing Contrast-Induced Injuries

The determination to exceed quality benchmarks and change outcomes served as the catalyst for reducing contrast-induced injuries among cardiac patients. Acute Kidney Injury (AKI) is defined in the Percutaneous Coronary Intervention (PCI) Registry as a 50 percent or greater increase in creatinine (cr) post PCI. MUSC voluntarily participates in this national database in an effort to improve this metric.

The incidence of AKI at MUSC was nearly 4 percent higher than 50 percent of institutions in the fall of 2009. As a result, more patients were experiencing Contrast-Induced Nephropathy (CIN), an injury to the kidney occurring after exposure to intravascular contrast media resulting in either brief or long lasting effects including mortality. Hospitals spend \$11,812 to treat each incidence of CIN during one year, according to Critical Care Medicine.

The Heart and Vascular Center's doctors, nurses, radiologic technologists, cardiovascular technicians and pharmacy representatives began collaborating in July 2010 to work on an IMPROVE Project, MUSC's management philosophy for continuous improvement. The project was led by Natalie Ankney, MSN, BSN, NE-BC, Medicine Acute Critical Care and Surgery Acute Critical Care Director, Jennette Freund, BSN, RN, Cath Lab Coordinator, Carla Morton, ADN, RN, HVC Quality Nurse, Melissa Southard, BSN, RN, Prep and Recovery Coordinator, and Chris Nielsen, M.D., Cath Lab Director. The project scope defined an evidence-based process for best practice while also achieving the 50th percentile ranking in the PCI Registry.

Project initiatives included review of research concerning how contrast affects kidneys in consideration with comorbidities, educating staff and doctors about low osmolality contrast selection, implementing standing orders, reviewing monthly contrast usage reports, reviewing protocols and their reasoning, as well as monthly meetings to review cases, find trends and identify opportunities. Initially, patients with abnormal creatinine levels were the only ones being hydrated; however, the Hydration Protocol was developed to ensure all patients received hydration since research shows this is the best prevention of kidney damage. Sodium bicarbonate intravenous therapy infusions were being used, but once there were national shortages, alternatives were considered. After a cost analysis was performed, saline was utilized as the replacement since it is equally effective. With saline being readily available, this removed an additional barrier due to the pharmacy no longer preparing sodium bicarbonate.



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