Renal Insufficiency and Imaging Contrast: Leveraging Nursing & EMR  
Minesh Patel, MD  
University of Texas-Southwestern Medical Center  
Travis Browning, Kristen Bishop, Michael Estabrooks, Julie Champine

**Problem:** Our large, urban medical center had no standardized protective criterion for renal insufficiency patients requiring iodinated contrast for imaging.

**Evidence:** Patients with impaired glomerular filtration rate (GFR) receiving iodinated contrast are at risk for contrast-induced nephropathy (CIN). CIN is 25% increase in GFR and/or 0.5 mg/dL increase in serum creatinine (sCr) within 48 hours of administration.[1,2] Various renal protective protocols exist including hydration,[3] acetylcysteine,[4,5] sodium bicarbonate,[6] or use of iodixanol.[7]

**Strategy:** After literature review, a radiologist governance team selected a standardized IV hydration protocol. The EMR and IT was leveraged to implement the protocol and support nursing and technologist workflows.

**Practice Change:** Use of the standardized protocol was defaulted in imaging protocoling processes. An order set was created for use by nursing to ensure accurate IV hydration administration. Use of this order set was uniquely identifiable in the EMR, which was utilized to track use and outcomes. Input from nursing and technologists created the use of colored wristbands to identify these patients. The order set included 48-hour repeat sCr, which mimicked an existing process for patients on metformin.[8] Rise in sCr >25% was reported to the radiologist who communicated to the ordering provider.

**Evaluation:** Paper protocol forms were used initially to confirm electronic tracking. Use rates, protocol adherence, demographics, follow-up rates, and outcomes were evaluated.

**Results:** After one year, 402 outpatients underwent the protocol. Successful repeat sCr (345, 85.8%), GFR increase >100% (0, 0%), 25-100% (7, 2.0%), 0-25% (143, 41.5%), and <0% rise (195, 56.5%).

**Recommendations:** The project focused mainly on abdominal imaging, but our data will provide support for other divisions. Our leveraging of involved parties has established a baseline for future interventions. Use of the EMR can allow for tracking of new initiatives.

**Lessons Learned:** Nursing and technologist education and their acceptance of the process were very important. Must involve all staff to achieve efficiency in a busy department. Timely staff feedback regarding impact was important.

**Bibliography:**


