Reducing the Prevalence of Acute Kidney Injury Post Percutaneous Coronary Intervention: How We Are Doing It

Dawn C. Crumpton, RN, BSN, CLNC, CCCC; Lisa B. Altman, RN, MSN, CPHQ
Lexington Medical Center, West Columbia, SC
Affiliations: Duke Heart Network, Durham, N.C.

Introduction
- According to the International Society of Nephrology, Acute Kidney Injury (AKI) is a spectrum of injury that, if identified early, can be reversed.
- AKI occurs abruptly, normally within 48 hours of causation and will progress to kidney failure if not treated.
- AKI is a global concern resulting in increased length of stay and cost of care, as well as, major in-hospital morbidity and mortality.
- The National Cardiovascular Data Registry® (NCDR®) 3Q 2014 CathPCI Registry® Executive Summary revealed at Lexington Medical Center that our post percutaneous coronary intervention (PCI) patients experienced AKI above the 50th percentile national benchmark of 6.31%.

Method
- After a retrospective review of our NCDR: CathPCI Registry metric data we developed a multi-disciplinary approach that:
  - Developed a universal weight based hydration protocol
  - Educated staff
  - Modified all pre and post cardiac catheterization order sets with:
    - Pre-selected addition of the weight based hydration order
    - Removal of Mucormyst
    - NSAID ‘hold’ on procedure day
    - Post procedural oral intake encouraged
    - Ambulation post bed rest encouraged
    - Morning BMET defaulted
- Performance is monitored, reported, and evaluated through our plan-do-check-act (PDCA) process. Data transparency throughout our organization is vital to sustaining initiative effectiveness.

Results
- Dramatic reduction of AKI post PCI from 13.88%, reported in our 1Q 2015 NCDR: CathPCI Registry Institutional Outcomes Report (IOR), to 4.65% as reported in our 1Q 2018 NCDR: CathPCI Registry R4Q IOR. This is better than the national 50th percentile of 5.7%.
- We attribute our success to:
  - Maintaining open/ collaborative multi-disciplinary dialog
  - Staff involvement and increased awareness
  - The standardization of our order sets
  - Weight based hydration protocols and
  - Awareness and elimination of nephrotoxic medications

Conclusion
- LMC found that elimination of nephrotoxic medications through order set standardization and the addition of weight based hydration pre- and post- PCI is key to preventing and limiting AKI.
- Our success can be attributed to an amazing collaborative dynamic staff, use of the NCDR: CathPCI Registry reports, and guidance received from our Duke Heart Network affiliation.
- A few limitations we have identified that impact our data accuracy and evaluation are registry constraints and performance drift, staffing changes/ shortages (impacting AKI awareness/ documentation), and coding. While these challenges test our effectiveness, they highlight the fact that sustainable quality change takes time, revision, and perseverance. Conversely, these challenges also revitalize our initiatives by providing opportunities for new thoughts and ideas.

References
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