

A Patient-Centered Approach to Reduce Acute Kidney Injury in Patients Undergoing PCI

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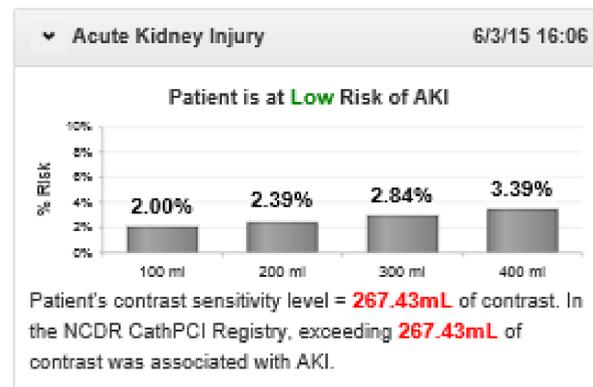
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Background

- Acute kidney injury (AKI) is a serious adverse event after percutaneous coronary intervention (PCI).
- Excessive contrast volume (CV) during PCI is a significant contributing factor to development of AKI.
- We examined if using the NCDR CathPCI Registry AKI risk model pre-PCI and recommending a 'safe contrast limit' via a health IT solution (ePRISM) was associated with a reduction in contrast volume and AKI over time.

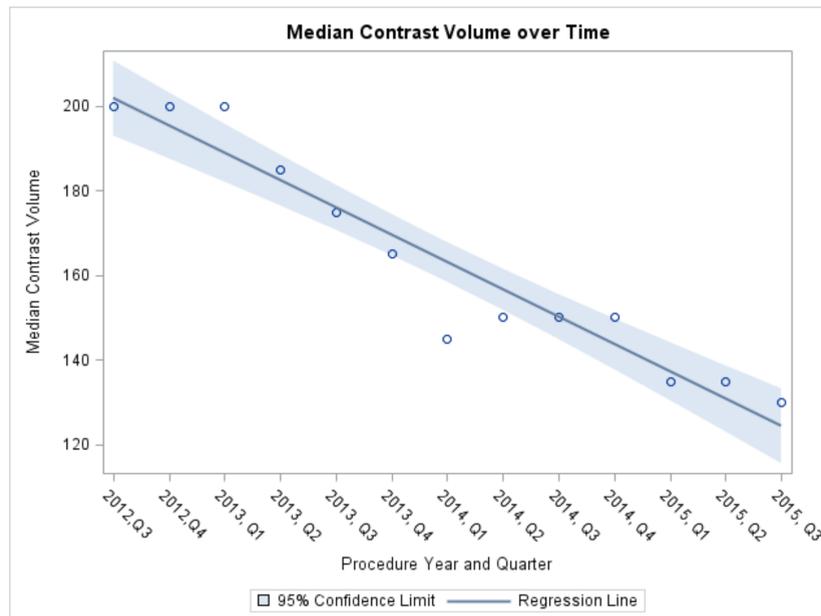
Methods

- We implemented a patient-centered, nurse-led decision-aid at Barnes-Jewish Hospital (BJH) via a health IT software (ePRISM) to translate the NCDR AKI risk model pre-procedure, to inform physicians of a patient's personalized AKI risk and 'safe contrast limit'.
- Monthly audit and feedback was conducted.
- We compared AKIs and contrast volumes over time using a quasi-experimental design using the NCDR Cath PCI data from July 2013 to September 2015.

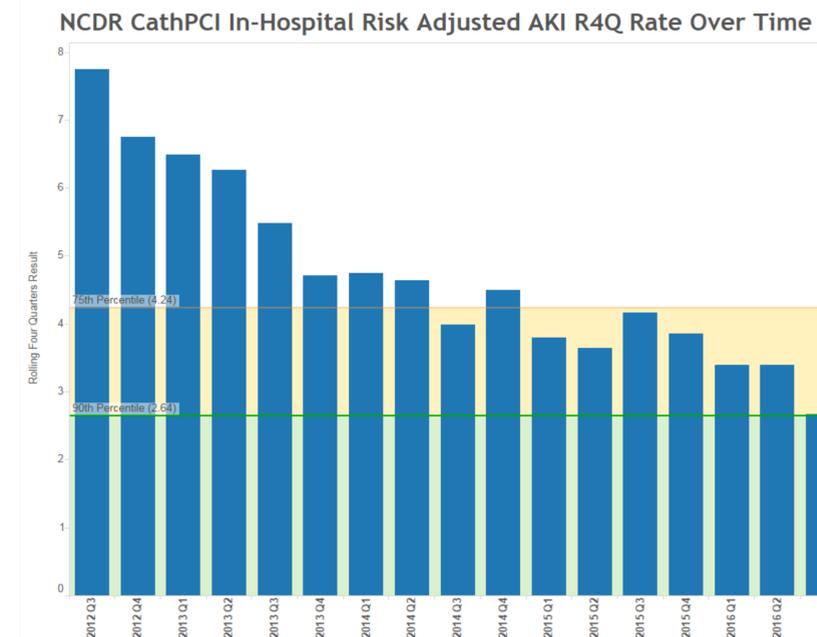
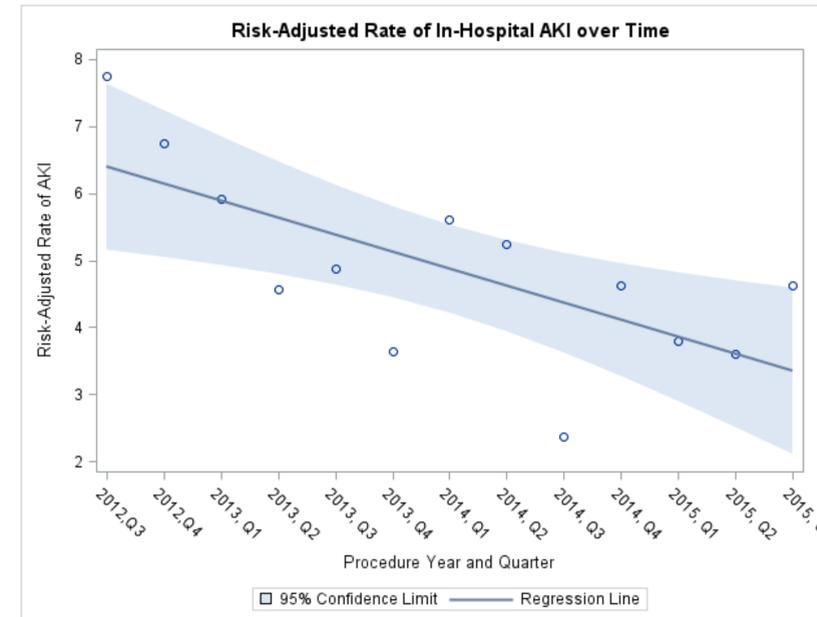


Results

- We identified 3,377 PCIs at BJH between July, 2012 and September, 2015 from the ACC NCDR CathPCI registry.
- Of these PCI cases, 227 resulted in AKI (7%) according to the CathPCI Registry's definition (0.3 mg/dl absolute or a 50% relative increase in creatinine over baseline).
- After implementation, we observed a median contrast volume decrease over time ($p < 0.001$; see Figure) and the rate of AKI decrease over time ($p < 0.001$; see Figure).
- There was also a strong correlation between the median contrast volume and the risk-adjusted rate of in-hospital AKI (Pearson's $r = 0.663$; $p = 0.014$).
- We also observed a dramatic improvement in our risk-adjusted AKI rate from the 25th to >75th percentile (see Figure).



Results Continued



Conclusion

- We have used a 'patient-centered' approach that utilizes the NCDR CathPCI Registry AKI risk model to predict a 'safe contrast limit' in routine practice to effectively reduce the contrast volume and AKI event rate.
- Our study highlights the importance of NCDR risk models and patient-centered decision-making to reduce AKI after PCI.
- Further research is needed on the implementation of such an approach to larger systems and hospitals.

Disclosures

Amit Amin, MD, MSc: National Cancer Institute of the NIH; AHRQ; Medicines Company; Terumo; AstraZeneca, Volcano.
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