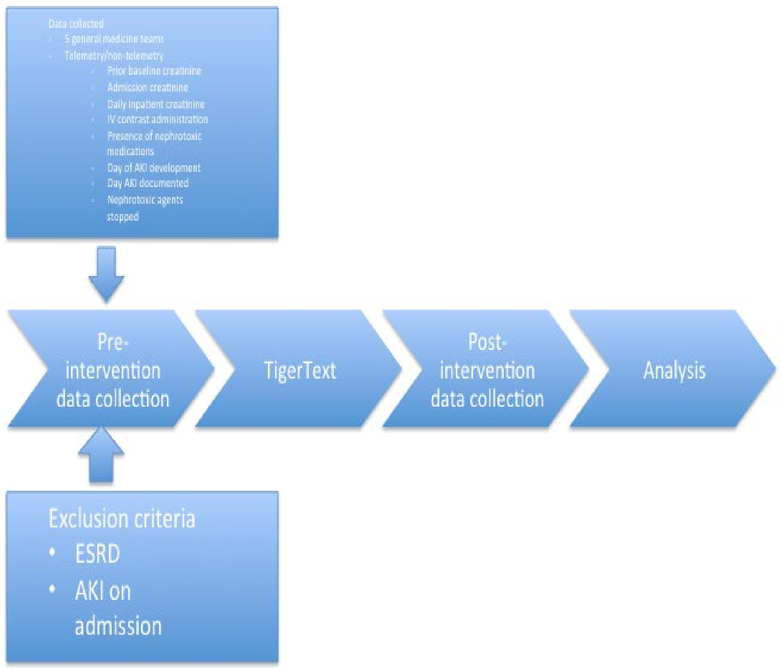
Analysis of Alert Based Intervention on Management of Hospital-Acquired Acute Kidney Injury: A Prospective Study

Amisha Ahuja, MD, Sonia Bharel, MD, Phil Durney, MD, Goni Katz, MD, Nicholas Tarangelo, MD, James Uricheck, MD, Randi Zukas, MD.

Introduction

The development of acute kidney injury (AKI) during hospitalizations has become a widespread problem that leads to prolonged hospital stays and an increased risk of the development of renal failure. Several national prospective studies have been conducted to identify the most common causes of hospital acquired acute kidney injury (HAAKI) including contrast-induced, drug-induced, sepsis with hypotension, and comorbid organ dysfunction. To attempt to reduce HAAKI and its long-term consequences both to patients and the healthcare system, our study aimed to review creatinine changes among patients admitted to five general medicine teams. Our study goal was to see whether spreading awareness of the common causes of HAAKI through an alert-intervention to providers decreased the rate of occurrence of HAAKI in our hospital system.

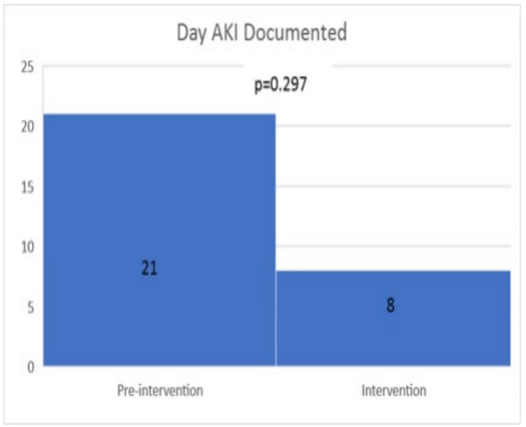
Methods



Smart Aim

We aim to decrease the severity of HAAKI on five general medicine teams at TJUH by 20% through a texting alert-based intervention.

Results



Our study showed that medicine residents in our hospital system are sensitive to the development of HAAKI and promptly document and address the issue. There were few opportunities to utilize the alert-based intervention. We found no significant difference in the time-to-document HAAKI or time-to-cessation for nephrotoxic agents between the two groups. A large portion of patients in our hospital system have complicated health needs, including ESRD and AKI on admission or transfer from another non-medicine service.

Discussion

While HAAKI is an important national problem, our data did not show high rates at our institution on the general medicine services. Moreover, our data did not show a significant difference in practice behaviors with an alert-based intervention. This is partly due to the fact that so few HAAKI's occurred pre-intervention. One possible reason for this is sampling bias due to the limited time we gathered information from general medicine teams. It is also possible that the teaching medical teams may be more attuned to the development of HAAKI and the necessary steps to ameliorate it compared to non-teaching services or non-medical services.

Future Directions

There might be benefit to repeating this study among non-teaching services at TJUH and non-internal medicine services, including primary surgical teams. While we feel our alert-based intervention may have circumvented "alert-fatigue" by working outside the EMR, it would be difficult to implement in practice due to the man-hours required. In considering future avenues for intervention, it may be important to integrate an alert or education-based system into normal hospital operating procedures. Since so many of our patients had an AKI on admission or transfer, future studies could expand upon our results by including these patients and tracking whether an intervention like ours could limit the duration and severity of these AKIs.