A NINJA Initiative at Children's Mercy

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A NINJA Initiative at Children’s Mercy

Richard K. Ogden Jr, PharmD, MBA, BCPS, Bradley A. Warady, MD, Vimal Chadha, MD, Wendy Hoebing, RPh

**Background**

Nephrotoxic medication (NTM) exposure is a common cause of acute kidney injury (AKI) in hospitalized children. A single-center safety initiative was able to demonstrate a decrease in nephrotoxin-associated AKI by 62%. Subsequently, a multicenter pediatric institutional collaborative (NINJA: Nephrotoxic Injury Negated by Just-in-time Action) was instituted at nine centers, including Children’s Mercy.

**Methods**

A key driver diagram was developed by the CMH NINJA team members. This was added to a “NINJA Roadshow” in which each participating medical division was informed about the metrics being measured (including % patients receiving 3 or more NTM medications or an IV aminoglycoside for more than 3 days [“exposed”], and rate of exposed patients developing AKI on non-ICU patients). Six divisions were selected for the initial phase of implementation (Pulmonology, Cardiology, BMT, Nephrology, GI, NINJA). Daily trigger reports were generated by the EMR and emailed to the clinical pharmacist on the respective medical services. The clinical pharmacist reviewed the list for NTM exposure. If exposed, the pharmacist recommended a daily Scr and alternative, non-nephrotoxic medications, if available.

**AIM STATEMENT**

Reduce AKI related to nephrotoxic medications in critically ill children by 25%.

**SECONDARY DRIVERS**

Pip/Tazo medications or an IV aminoglycoside for more than 3 days [“exposed”], and rate of exposed patients developing AKI on non-ICU patients.

**CONCLUSIONS**

By participating in a collaborative effort of NINJA leadership, medical divisions, and clinical pharmacists focused on limiting the use of nephrotoxic medications and reducing the risk of medication-related impairment of kidney function, we successfully decreased nephrotoxic medication exposure and the rate of AKI in non-ICU patients.

**RESULTS**

**Distribution of Medications involved in Exposure and AKI (%)**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Exposure Rate</th>
<th>Percent with AKI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancomycin</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Aminoglycosides</td>
<td>25%</td>
<td>62%</td>
</tr>
<tr>
<td>Antimicrobial</td>
<td>15%</td>
<td>57%</td>
</tr>
<tr>
<td>Anti-Psoriasis</td>
<td>10%</td>
<td>40%</td>
</tr>
<tr>
<td>Anti-Inflammatory</td>
<td>5%</td>
<td>30%</td>
</tr>
<tr>
<td>Anti-Infective</td>
<td>2%</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication</th>
<th>Exposure Rate</th>
<th>Percent with AKI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTMx</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>CMH</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>JH</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>70%</td>
<td>70%</td>
</tr>
</tbody>
</table>

**Daily monitoring report generated and emailed to clinical pharmacist on selected medical service**

**Clinical pharmacist reviews patient list and communicates any potential exposures to multidisciplinary team**

**If patient has been exposed, clinical pharmacist notify providers of need for Scr and alternative, non-nephrotoxic medications, if available.**

**Results transferred into collaborative spreadsheet**

**Dataset review by pharmacist for patients with exposure to monitor for AKI**

**Data shared with medical services**

The authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.