The Outcome of Rolling Out a New System of Care for Children

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Medical Director, Denver Paramedics
Only one disclosure

• I’m a little bit passionate

• I have no relationship to HandTevy
Implementation of a Comprehensive Pediatric System

• Why?
• What?
• What happened?
WHY?

- We should really be angry
WHO WE WERE TAUGHT TO BE
WHO WE WANT TO BE
WHO WE WERE TAUGHT TO BE
WHO WE WANT TO BE
WHAT?

- Culture change – Meet Vernita
Culture change is NOT:

Luggage

Guidebook
WHAT ELSE?

• Training
  • Didactic Education
  • Garage Time
• Know your data
WHAT HAPPENED?

• Happy paramedics

• Double anaphylaxis

• Bad Cases – good feedback
WHAT HAPPENED?

• Fentanyl – with pain complaint
  • 5 & Under: 91% increase

• Versed – seizure
  • 5 & Under: 33% increase
Use of Fentanyl in Pediatric Trauma Patients Post Implementation of the Handtevy™ Field Guide

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**WHAT WE LEARNED**

Introduction of a field guide with pre-calculated doses of medication resulted in a substantial increase in prehospital analgesia to young patients

**BACKGROUND**

- Multiple barriers to prehospital analgesia administration to children exist, including fear of dosing error and difficulty obtaining intravenous (IV) access
- A field guide with customized dosing recommendations for IV and intranasal (IN) opioid delivery may improve treatment of pain in the prehospital setting

**OBJECTIVE**

- To evaluate the change in prehospital fentanyl administration to children after the introduction of the Handtevy™ field guide in our hospital-based EMS system

**METHODS**

- Design: quasi-experimental before-after study
- Setting: Denver Paramedic Division, Denver, Colorado
- Inclusion: trauma patients <14 years of age and transported by EMS
- Study period: July 2014 – July 2016 (12 months before and 12 months after implementation of the Handtevy™ system)
- Data source: prehospital patient care data
- Primary analysis: Comparison of difference in treatment proportions between the two time periods, with age and route of administration as subgroups

**RESULTS**

- 3,419 total patients
  - 1,649 patients pre Handtevy
  - 1,770 patients post Handtevy
  - Groups similar with regard to age, gender
  - Increase in the proportion of patients receiving pain medications (13% vs 18%, p<0.05)
  - Patients were more likely to receive fentanyl in the 0-5 years of age group after the intervention (5 % vs. 11%, p<0.05)
  - 4 fold increase in IN fentanyl administration in 0-5 year of age
  - The intranasal route was more widely used in all ages 0-14

<table>
<thead>
<tr>
<th>Fentanyl use</th>
<th>All ages</th>
<th>Age 6-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Handtevy n=1649</td>
<td>Post Handtevy, n=1770</td>
<td>Pre n=506</td>
</tr>
<tr>
<td>13.2% (217)</td>
<td>17.9 (317)*</td>
<td>19.4% (98)</td>
</tr>
<tr>
<td>Age stratification</td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Age &lt;5 years</td>
<td>2.2 (1.2, 4.0)</td>
<td>2.2 (1.2, 4.0)</td>
</tr>
<tr>
<td>IV</td>
<td>2.0% (7)</td>
<td>1.6% (6)</td>
</tr>
<tr>
<td>IN</td>
<td>2.5% (9)</td>
<td>9.5% (36)</td>
</tr>
</tbody>
</table>

**LIMITATIONS**

- Administrative data
- Not adjusted for other potential confounders, including pain severity

**CONCLUSIONS**

- The introduction of the Handtevy™ field guide with pre-calculated doses of fentanyl resulted in an overall increase in analgesia administration
- Among age and route of administration subgroups there was a substantial increase in the provision of analgesia, including specifically in those <5 years of age
- Patients were more likely to receive fentanyl IN in all ages
WHAT HAPPENED?

• Errors reduced from 35% to 5%
• This doesn't happen to me
What’s My Advice?

• Culture change
  • “Dumbing it down?”
  • Follow up – even free donuts go uneaten

• Training is about thinking

• Two books