Applying the behaviour change wheel to patient safety events to enhance evidence-based practice in a pediatric tertiary care centre

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Background

- 10-18% of patients experience an adverse event during their hospital stay (de Vries et al., 2008; WHO, 2021)

- Incident reporting systems identify, monitor and respond to safety events

- Little change in patient safety in past 20 years (Pierre et al., 2022)

Need to understand how patient safety interventions are implemented & whether they target underlying behaviour
1) To categorize moderate-level patient safety events & recommendations using a behaviour change framework

2) Examine whether the types of recommendations are implemented with an evidence-based behaviour change strategy
Methods

Setting & Population:

- Women & children’s hospital, serving patients from 3 Canadian provinces
- 58 moderate-level safety events reported between 2020 and 2022
  - Across all departments & populations
## Methods

### Data Extraction & Analysis

- Safety events reported as description of event & recommendations
- Data extracted & entered into excel, then coded using the behaviour change wheel (BCW) (Michie et al., 2011)

### Team Review

<table>
<thead>
<tr>
<th>Incident Reporting System</th>
<th>Description of Event</th>
<th>Recommendation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Pt has remote Hx of childhood rash to penicillin. Ampicillin was ordered &amp; given during delivery for a maternal fever. Pt did not get a rash or any other side effect. Vitals signs stable and pt was in birth unit for 4 hours post administration”</td>
<td>&quot;When units are extremely busy or patients’ statuses are rapidly changing, human errors happen&quot;</td>
<td>&quot;Imperative that error prevention techniques be used at busy, overwhelming times. All staff require Error Prevention Training to minimize instances of human error (training offered monthly)&quot;</td>
</tr>
</tbody>
</table>

**Safety Event Occurs** ➔ **Team Review**
Methods

**COM-B:**
Source of behaviour

**TDF:** Specific factors influencing behaviour

Description of event

**Intervention Functions:**
Types of interventions

**Recommendations**
When units are extremely busy or patients' statuses are rapidly changing, human errors happen.

Psychological Capability
Memory, attention, decision making processes

Recommendation(s)
Intervention Function Code

"Imperative that error prevention techniques be used at busy, overwhelming times. All staff require Error Prevention Training to minimize instances of human error (training offered monthly)"

Error Prevention Training

Map to BCW

Training Code

Recommendations (IF’s)
## Results

### Safety Event Descriptions

<table>
<thead>
<tr>
<th>COM - BTDF Domain</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Opportunity</td>
<td>29 (26.0)</td>
</tr>
<tr>
<td>Enviro context</td>
<td>N/A</td>
</tr>
<tr>
<td>Psych. Capability</td>
<td>22 (20.0)</td>
</tr>
<tr>
<td>N/A</td>
<td>24 (22.0)</td>
</tr>
</tbody>
</table>

### Safety Event Recommendations

<table>
<thead>
<tr>
<th>Intervention Function</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>83 (45.0)</td>
</tr>
<tr>
<td>Enviro restructuring</td>
<td>48 (26.0)</td>
</tr>
<tr>
<td>N/A</td>
<td>16 (9.0)</td>
</tr>
</tbody>
</table>
## Results

### Mapping Behaviour Change to Recommendation Data:

- 69% of safety events were addressed with interventions that would not affect the identified behavioural issue.
- 31% of safety events were addressed with interventions that would affect the identified behavioural issue.

<table>
<thead>
<tr>
<th>TDF Domain</th>
<th>Intervention Functions</th>
<th>Education</th>
<th>Persuasion</th>
<th>Enviro Restructuring</th>
<th>No Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive Interpersonal skills</strong></td>
<td></td>
<td>15</td>
<td>1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td>15</td>
<td></td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Memory, attention, decisions</strong></td>
<td></td>
<td>18</td>
<td>3</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>
Limits

- Self-reported data, multiple reporters
- Some data could not be coded
  - Inconsistent approach to describing safety events/recommendations
  - Not using behavioural terms
Conclusions

Majority of safety events were not addressed with implementation strategies that could bring about change, according to an evidence-based behaviour change tool.

- Need consistent reporting approach across hospital
- Need behaviour change taxonomy to identify & address underlying behavioural issue(s)