Using the COM-B model for mixed-methods research to understand barriers to influenza vaccination of children

Samantha Carlson
School of Public Health
The University of Sydney
samantha.carlson@sydney.edu.au
@samicarlson
Burden of influenza in young children in Australia

- Influenza:
  - Hospitalises more children than any other VPD\(^1\)
    - 50-60% ≠ medical comorbidities\(^2,3\)
    - ~90% not vaccinated\(^2,3\)
  - ED visits and hospitalisation highest in <5 years\(^4,5\)
  - Most common VPD to cause child deaths\(^6\)

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\(^1\)Brotherton et al CDI 2007
\(^2\)Blyth et al CID 2019
\(^3\)Blyth et al Euro Surveill 2016
\(^4\)Muscatello et al WPSAR 2017
\(^5\)Li-Kim-Moy et al CDI 2016
\(^6\)Phillips et al J Paediatr Child Health 2018
## Influenza vaccine funding and uptake

**Children aged 6 months - <5 years**

<table>
<thead>
<tr>
<th>Year</th>
<th>Comorbidities</th>
<th>Aboriginal and/or Torres Strait Islander</th>
<th>All other children</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>25.7%&lt;sup&gt;1&lt;/sup&gt;</td>
<td>14.9%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>5.0%&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>x2</td>
<td>x2</td>
<td>x5</td>
</tr>
<tr>
<td>2018</td>
<td>50.7%&lt;sup&gt;1&lt;/sup&gt;</td>
<td>29.5%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>25.3%&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

1. Blyth et al *In press*
2. Beard et al *MJA 2019*
3. Hendry (personal communication, July 16, 2019)
What are the barriers to influenza vaccination of children in Australia?
**Strength:** systematic, thorough, and tailored

**Weakness:** subjective categorisation

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Barriers to influenza vaccination in 2017

Method:

Cohort:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total children</td>
<td>20 (100)</td>
</tr>
<tr>
<td>Age at admission</td>
<td></td>
</tr>
<tr>
<td>6 months - &lt;5 years</td>
<td>10 (50)</td>
</tr>
<tr>
<td>5 years - &lt;16 years</td>
<td>10 (50)</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>11 (55)</td>
</tr>
<tr>
<td>Vaccination before hospitalisation</td>
<td>4 (20)</td>
</tr>
</tbody>
</table>

Case example: Susan’s* daughter, Tamara*, wasn’t vaccinated. Why?

- **Limited Capability**
  - **Misinterpretations and Knowledge Gaps:** certain that the vaccine causes influenza

- **Missing Motivation**
  - **Hierarchy of Perceived Seriousness:** “I’m pro vaccination for everything else.”
  - **Safety Concerns:** Concerned about damaging Tamara’s* immune system
  - **Preference For ‘Natural’ Ways:** “I’m sort of sitting on the fence thinking ‘okay, do I really want to get it or do I just let nature take its course?’”

- **Lack of Opportunity**
  - **The Social Norm:** friends discuss negative experiences with influenza vaccination
  - **Missing Recommendations:** could not recall ever receiving a recommendation from a HCP to vaccinate
  - **(In)Convenient Vaccination Pathway:** frequent interaction with health system due to Tamara’s* comorbidities
  - **(Absence of) promotion:** communication materials only relevant to those with comorbidities

Predictors of influenza vaccination of children in Australia in 2019

- Capability
- Motivation
- Opportunity

Influenza vaccine uptake
## Intervention options

<table>
<thead>
<tr>
<th>COM-B Components</th>
<th>Intervention functions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td>Capability</td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td></td>
</tr>
<tr>
<td>Psychological</td>
<td>X</td>
</tr>
<tr>
<td>Opportunity</td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
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<tr>
<td>Automatic</td>
<td>X</td>
</tr>
<tr>
<td>Reflective</td>
<td>X</td>
</tr>
</tbody>
</table>

Capability

Motivation

Opportunity

Influenza vaccine uptake
• Research participants

Supervisors:
  – Professor Julie Leask
  – Professor Kristine Macartney
  – Dr Helen Quinn

Colleagues:
  – Dr Camilla Scanlan
  – Associate Professor Christopher Blyth
  – Professor Helen Marshall
  – Dr Joshua Francis
  – Professor Jim Buttery
  – Associate Professor Julia Clark

• PAEDS surveillance nurses

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  – NSW Ministry of Health under the NSW Health PhD Scholarship Program
References