Operationalising ‘dose’ in public health interventions
A scoping review

Presented by
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Background

- Understanding intervention delivery is a key concern for implementation

- Key aspect is ‘dose’ → ‘how much’ intervention needed to achieve desired effects

- Medical concept → *quantity of drug* administered

- BUT may be problematic in non-medical interventions, e.g. health promotion/prevention (population-level; multi-component), e.g. *built environment intervention*:

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<table>
<thead>
<tr>
<th>Drug Bottle</th>
<th>Bicycle</th>
<th>Tree</th>
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The problem

• Dose conceptualised in different ways
  • Across different types of interventions
  • What aspects? Dose delivered vs. dose received
  • Conflation of terms: Dose = reach; Dose = intensity
  • ‘Population dose’ = Reach x Effect size (Cheadle, 2014)

• Need to understand what is (and what is not) being considered
  and how this influences implementation and outcomes

Aim: Scoping review to identify how ‘dose’ has been defined in
relation to health promotion/disease prevention interventions
Methods

Scoping Review (Arksey & O’Malley, 2005)

Search terms
Intervention OR innovation OR strateg* OR program OR policy
AND
Dos* OR reach OR exposure OR integrity
OR fidelity OR implementation OR uptake OR adoption
AND
Measur* OR defin* OR concept* OR performance monitoring OR process evaluation OR program evaluation
AND
Health education/ OR Health promotion/

Search limits
Published between 2000-2015
English Language; Human
## Preliminary findings

### Quantitative summary

<table>
<thead>
<tr>
<th>Domain</th>
<th>Details</th>
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<tr>
<td><strong>Paper type</strong></td>
<td>Process evaluation ($n = 16$)</td>
</tr>
<tr>
<td></td>
<td>Outcomes ($n = 22$)</td>
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<td></td>
<td>Process &amp; Outcomes ($n = 4$)</td>
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<tr>
<td><strong>Intervention targets</strong></td>
<td>Diet/nutrition ($n = 15$); Physical activity ($n = 12$); Obesity ($n = 9$); Smoking ($n = 3$)</td>
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<td><strong>Intervention settings</strong></td>
<td>School ($n = 10$); Community ($n = 9$) Workplace ($n = 6$) Online ($n = 5$)</td>
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<td><strong>Intervention components</strong></td>
<td>Exercise classes, newsletters, telephone calls/visits, posters, resource availability (e.g. healthy food choices, sports equipment), educational sessions/lessons, social marketing, promotional activities and events</td>
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<tr>
<td><strong>Dose terms</strong></td>
<td>Dose/dosage ($n = 14$), dose delivered ($n = 13$), dose received ($n = 7$), dose–response ($n = 5$), minimum dose sample, exposure dose ($n = 2$), dose of service ($n = 1$), population dose ($n = 1$)</td>
</tr>
</tbody>
</table>
Preliminary findings

Some definitions and uses of ‘dose’

Dose

Dose delivered

Dose received

Attendance
- Number of sessions attended (sometimes as % of sessions delivered)
- Participants present for whole session, part of session, or not present

Activities
- Number of activities completed (sometimes as % of activities delivered)
- Number of activities remembered
- Number of activities delivered
- Activity duration

Materials
- Number of materials delivered
- Number of materials received

Exposure
- Awareness of program/intervention components
- Frequency of exposure

Engagement/acceptability
- Materials appreciated, interesting and useful
- Enjoyment and engagement
Preliminary findings

Other (often overlapping) terms

- **DOSE**
- **INTENSITY**
- **EXPOSURE**
- **ADHERENCE**
- **FREQUENCY**
- **REACH**
- **FIDELITY**
Policy implications

• Preliminary analyses suggest considerable variation in how dose is defined and used across studies

• How ‘dose’ is conceptualised and measured has implications for how interventions are understood and resourced.

• This review will inform new ways of defining and capturing ‘dose’ in population health interventions in order to better monitor such interventions and influence their effectiveness.