Using the Concept of "Population Dose" in Planning and Evaluating Community-level Obesity Prevention Initiatives

Center for Community Health and Evaluation
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Key Questions

- **Planning**: What strategies maximize impact?
- **Evaluation**: How to evaluate the individual and collective impact of strategies?
How to pick strategies?

Need to be feasible, supported by the community, sustainable, evidence informed

AND also have an impact

We call estimated strategy-level impact "population dose"
A strategy is high-dose if …

… many people in the community change their lifestyle in a significant way as a result of its implementation

We need to be clear what we mean by:

“many people”

“change their lifestyle”

“significant way”
“Population” because it applies to the whole community

- **Dose**
- **Reach**
- **Strength**

Reach: Number of people exposed

Strength: Impact (i.e., change in lifestyle) for each person reached
Examples
Low reach, high strength
High reach, (potentially) low strength
High reach, high strength
Measuring reach
Reach is measured by …

… the percent of the people in your community who are exposed to the strategy

Reach = \frac{\text{Number of people exposed}}{\text{Target population size}}
What is high reach?
Defining “Exposure”
Reach example: West Modesto

- 37,000 people
- 7 grocery stores with 5,000 regular shoppers
- Reach = $\frac{5,000}{37,000} = 14\%$
Measuring strength
Strength is measured by …

… the percent improvement in lifestyle behaviors (more minutes, more F&V servings)

Day-to-day lifestyle changes that increase activity or improve diet from baseline levels
Strength = average strength

Average = 20%

Percent increase in minutes

- Person 1
- Person 2
- Person 3
Population dose
Population dose

Combination of reach and strength

Multiply them together = Average strength across everyone in the target community
Strength = average strength

Average = 20%

Percent increase in minutes
Average strength across whole community

90% not reached

Average = 2%

Percent increase in minutes
Examples of strategies by dose

<table>
<thead>
<tr>
<th>Strength</th>
<th>Reach</th>
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</thead>
<tbody>
<tr>
<td>High</td>
<td>Programs (e.g., walking clubs)</td>
</tr>
<tr>
<td>Low</td>
<td>One-time cooking class</td>
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</tbody>
</table>
Creating high dose strategies
Getting to high reach

CSA Program

Outreach
Getting to high strength

CSA Program

Cooking classes
Sequence of strategies

Walking group

Walkability audits

Built environment changes
Summary

- **Now:** Population dose concept can lead to the right conversations
- **Future:** Provides a framework for using quantitative evidence effectively

www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm    www.nap.edu/catalog/12674.html
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