Developing Sustainable Models of Dementia Behavioral Interventions

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What is COPE-CT?

• Care of Patients with Dementia in Connecticut (COPE-CT) is a 12-month in-home supportive behavioral intervention aimed at delaying nursing home admission through a set of services available as an add-on to the existing Connecticut Medicaid program.

• Consists of occupational therapists and nurses working with the PwD and CG in the PwD’s home over 4 months to increase the PwD’s physical ability as well as teach the CG skills to manage the PwD’s dementia symptoms.

• COPE-CT RCT aims to determine whether adding these services improves the QOL of the PwD and the CG, and to evaluate their confidence in using these strategies.
  – RCT includes a cost-benefit analysis from the Connecticut Medicaid (payer) perspective to determine if COPE-CT yields a net financial benefit to the Connecticut Medicaid program.
<table>
<thead>
<tr>
<th>Dementia Behavioral Intervention</th>
<th>Study Type</th>
<th>Cost Analysis Type</th>
<th>Location(s)</th>
<th>Lead Behavioral Scientist(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tailored Activity Program (TAP)</td>
<td>Pilot</td>
<td>Post Hoc Intervention Costs</td>
<td>Philadelphia</td>
<td>Gitlin</td>
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<tr>
<td>Customized Activity Program (CAP)</td>
<td>Efficacy</td>
<td>Prospective Cost Effectiveness</td>
<td>Baltimore, Sydney</td>
<td>Gitlin, Clemson</td>
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<tr>
<td>Caring for Older Persons in their Environment (COPE)</td>
<td>Translational</td>
<td>Prospective Cost Benefit</td>
<td>Connecticut (statewide)</td>
<td>Fortinsky</td>
</tr>
<tr>
<td>Maximizing Independence (MInd) at Home</td>
<td>Efficacy</td>
<td>Prospective Cost Benefit</td>
<td>Baltimore</td>
<td>Samus</td>
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<tr>
<td>Adult Day Services Plus (ADS+)</td>
<td>Effectiveness</td>
<td>Prospective Cost Effectiveness</td>
<td>US (nationwide)</td>
<td>Gaugler and Gitlin (Co-PIs)</td>
</tr>
</tbody>
</table>
What is “net financial benefit”?

- A measure in cost benefit analysis
- Net benefit = \( b - c \)
  - \( b \) is the total financial benefits of the treatment, in $ vs. comparison group (incremental)
  - \( c \) is the total cost of the treatment, in $, vs. comparison group (incremental)
  - Implement the treatment if net benefit > 0$ AND purchaser is willing to pay (WTP) for it

\[
\text{Net Benefit} = \sum_{t=1}^{n} \frac{b_i(t) - c_i(t)}{(1+r)^{t-1}}
\]

Where:
- \( b_i(t) \) = benefits (in $US) derived in COPE study year \( t \)
- \( c_i(t) \) = costs (in $US) during COPE study year \( t \)
- \( 1/(1+r) \) = discount factor at annual interest rate \( r \)
- \( n \) = lifetime of the study

- Calculating \( b \) and \( c \) typically involves summation of many cost variables in both the treatment and control groups
- WTP is measured separately using contingent valuation method
OBJECTIVES OF PROJECT EXAMPLE

1. Share COPE intervention costs for occupational therapist (OT) and nurse (RN) components

2. Report willingness to pay (WTP) for a dementia support program at baseline

3. Explain linkage between intervention costs and WTP as components of a sustainable financing strategy
FINANCING COPE: A CONCEPTUAL ILLUSTRATION

Objective 1: COPE Intervention Cost

- $ Person with dementia +/- Caregiver Cost Sharing
- $ Other funding source

Payers

Objective 2: WTP

- Provider

Total COPE Intervention Cost + overhead + profit
METHODS
1. COPE INTERVENTION COSTS

• Costs considered include:
  – One RN initial in-home assessment and follow-up telephone call
  – Up to 10 in-home OT visits per participant in the intervention arm

• Data sources:
  – RN and OT time records
  – Mileage reimbursement records

• Assumptions:
  – RN wage rate $37.18/hr¹
  – OT wage rate $41.66/hr¹
  – Fringe benefits rate 30.2%²
  – Travel speed assumed to be 50 miles per hour
  – Mileage reimbursement $0.575/mile³
  – Costs are $US 2015

2. WILLINGNESS TO PAY

- WTP was asked of caregiver using a contingent valuation method
- WTP scenario was developed with investigator input
- Baseline sample
  - Date of data cut: 06/22/2017
  - Available sample: 220 caregivers at baseline
- Data analyzed for the full sample as well as by Connecticut Home Care Program for the Elderly (CHCPE) category
BASELINE WTP SCENARIO

How much would you be willing to pay per session for a program with up to 10 home sessions over 4 months, and was delivered by healthcare professionals who provided you with ways of managing symptoms of persons with dementia that might cause you difficulty, taught you things you could do to help keep your relative healthy and safe at home, and taught you stress reducing techniques?

- $0/session
- $25/session
- $50/session
- $75/session
- $100/session
- $125/session
- $150/session
- $175/session
- $200/session
- Other price/session: ________
RESULTS
1. COPE INTERVENTION COSTS

- Available sample = 85 participants
- 12 interventionists (3 RN, 9 OT)
- Overall results (comprising RN and OT visits):

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total visit time (hours)</td>
<td>11.02</td>
<td>5.81</td>
<td>0.58</td>
<td>24.92</td>
<td>936.93</td>
</tr>
<tr>
<td>Total visit cost</td>
<td>$590.27</td>
<td>$314.58</td>
<td>$28.24</td>
<td>$1,338.87</td>
<td>$50,173.14</td>
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<tr>
<td>Total round-trip mileage</td>
<td>241.97</td>
<td>180.26</td>
<td>14.00</td>
<td>1157.60</td>
<td>20567.20</td>
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<tr>
<td>Total mileage cost</td>
<td>$139.13</td>
<td>$103.65</td>
<td>$8.05</td>
<td>$665.62</td>
<td>$11,826.14</td>
</tr>
<tr>
<td>Total travel time (hours)</td>
<td>4.84</td>
<td>3.61</td>
<td>0.28</td>
<td>23.15</td>
<td>411.34</td>
</tr>
<tr>
<td>Total travel time cost</td>
<td>$257.39</td>
<td>$194.98</td>
<td>$13.55</td>
<td>$1,253.74</td>
<td>$21,878.23</td>
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<tr>
<td><strong>Total intervention cost</strong></td>
<td><strong>$986.79</strong></td>
<td><strong>$538.77</strong></td>
<td><strong>$55.71</strong></td>
<td><strong>$2,530.29</strong></td>
<td><strong>$83,877.51</strong></td>
</tr>
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</table>
2. WILLINGNESS TO PAY

- Baseline WTP per session, comprising all CHCPE categories:

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean$^a$</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>220</td>
<td>$56.05</td>
<td>$55.13</td>
<td>$0</td>
<td>$200</td>
</tr>
</tbody>
</table>

- Baseline WTP per session, by CHCPE category:

<table>
<thead>
<tr>
<th>CHCPE Category</th>
<th>n</th>
<th>Mean$^b$</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>$87.50</td>
<td>$25.00</td>
<td>$50</td>
<td>$100</td>
</tr>
<tr>
<td>2</td>
<td>66</td>
<td>$57.58</td>
<td>$56.50</td>
<td>$0</td>
<td>$200</td>
</tr>
<tr>
<td>3</td>
<td>150</td>
<td>$54.53</td>
<td>$55.07</td>
<td>$0</td>
<td>$200</td>
</tr>
</tbody>
</table>

Pairwise differences in means not statistically significant at BL (p > 0.05 for all three pairs)
Distribution of Baseline WTP (n=220)

Not willing to pay for program (24%)
KEY LEARNINGS SO FAR

1. Intervention costs:
   - Intervention delivery accounts for 60% of total costs
   - Travel (mileage reimbursement + travel time) accounts for 40% of total costs
     • There is an opportunity to increase efficiency

2. WTP:
   - 24% not WTP but 76% are WTP
   - Mean WTP/session = $56
   - No detectable difference in WTP by CHCPE category
LIMITATIONS

1. Intervention costs do not yet include:
   - Time cost of OT telephone calls
   - Telephone charges
   - Supply costs (e.g., activity supplies, documentation forms)
   - Program supervision / fidelity monitoring

2. WTP:
   - May change after receiving COPE
   - “Willingness” to pay does not necessarily equate to ability to pay or affordability
   - Group assignment was not considered in this analysis
WE ARE STARTING TO PAINT A PICTURE...

IF WTP = $56/session

- $ Person with dementia +/- Caregiver Cost Sharing
- $ Other funding source

\[ \text{IF Total COPE Intervention Cost} = \frac{987}{10 \text{ sessions}} = 98/\text{session} \]

Add 20\% overhead
Add 5\% profit
TOTAL \[= \frac{123}{\text{session}} \]

THEN other funding would need to be \[= \frac{67}{\text{session}} \]

CAUTION:
THESE NUMBERS ARE FOR ILLUSTRATION PURPOSES ONLY
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