Cost-Effectiveness Analysis of a Randomized Study of Depression Treatment Options in Primary Care Suggests Stepped-Care Treatment may Have Economic Benefits

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Presentation Outline

• Background
• Objectives
• Analytic model
• Results
• Lessons/conclusions:
  - While more work is required to identify the most clinically effective versions of a stepped-care pathway (SCP), our findings suggest that the SCP for depression may have substantial potential to improve healthcare system value.
Some studies suggested that a stepped-care pathway (SCP) is an effective approach to depression management in primary care.

- The SCP model starts from self-identification of depression risk and severity.
- Treatment guidelines are then given based on the screening results
  - both antidepressant medication and psychosocial interventions

However, there is little information regarding the cost-effectiveness of a specific SCP.
• a RCT conducted in Alberta to assess the impact of a SCP, compared to other treatment options
  – 1,400 patients
  – 12-week follow-up
  – 4 treatment arms:
    1. a standard care (SC);
    2. a treatment-as-usual (TAU);
    3. an online cognitive behavioural therapy (CBT);
    4. a stepped-care pathway (SCP).
  – Outcomes: PHQ-9, EQ-5D
  – The SCP was developed in Calgary

• Trial registration: This trial was registered with Clinical Trials database.
  – Identifier: NCT01975207
Objective

• We conducted an economic analysis to:
  – To estimate medical costs of depression, and
  – To determine whether the SCP was cost-effective

• Study population:
  – The adults who visited their primary care physicians and were screened for depression;
  – Subgroup: screened positive for depression symptoms (PHQ-9 score over 10 at baseline)

• Interventions:
  – The analysis compared SCP with other 3 treatments
Methods: data collection

• EQ-5D
  – Baseline, and
  – 12 weeks post-randomization

• Costs of physician, outpatient, and inpatient services:
  – 12 weeks pre-randomization,
  – 12 weeks post-randomization, and
  – from 12 weeks to 1-year post-randomization.

– Data sources:
  • provincial healthcare administrative databases
Methods: statistical analysis

• Intention-to-treat (ITT) approach was used
  – helps avoid bias
• multiple imputation:
  – Handle Missing data;
• OLS regression and generalized linear model (GLM):
  – Adjust for imbalances in baseline characteristics
• one-way ANOVA test:
  – Test the difference between intervention arms
• pairwise comparison of mean:
  – Test the difference between each pair of intervention arms
• mean-comparison t-test:
  – Test the difference between baseline and 12-week post randomisation for each intervention arm
Results: effectiveness

• Significant improvement in PHQ-9 and EQ-5D from baseline to 12-week post randomisation in all arms
  – In all participants, the mean change
    • 0.72 (95% CI 0.61– 0.82) in PHQ-9 and
    • 0.024 (95% CI 0.021 – 0.027) in EQ-5D
  – In depressed participants (PHQ-9 > 10 at baseline), the mean change
    • 4.8 (95% CI 4.58– 5.02) in PHQ-9 and
    • 0.103 (95% CI 0.092 – 0.115) in EQ-5D
• However, there was no significant difference between groups.
In all participants, SCP (Arm 4) had highest probability being cost-effective
CE Results: In depressed subgroup

SCP (Arm4) had highest probability being cost-effective when WTP > $50,000; when WTP < $50,000, iCBT (Arm3) better.
### Number of participants receiving physician, outpatient, and/or inpatient services

| Arm     | No services | Physician only | Physician + outpatient | Physician + inpatient | Physician + outpatient + inpatient | Total |
|---------|-------------|----------------|------------------------|-----------------------|------------------------------------|-------|
| All participants |             |                |                        |                       |                                    |       |
| Arm 1 (SC) | 4 (1.0%)    | 179 (43.4%)    | 176 (41.99%)           | 3 (0.73%)             | 53 (12.9%)                        | 412   |
| Arm 2 (TAU)  | 8 (2.0%)    | 160 (40.3%)    | 160 (39.80%)           | 2 (0.5%)              | 69 (17.4%)                        | 397   |
| Arm 3 (iCBT) | 4 (1.0%)    | 188 (45.3%)    | 164 (37.83%)           | 7 (1.69%)             | 59 (14.2%)                        | 415   |
| Arm 4 (SCP)   | 3 (1.6%)    | 75 (41.0%)     | 88 (48.08%)            | na                   | 17 (9.3%)                         | 183   |
| **Depressed subgroup** |             |                |                        |                       |                                    |       |
| Arm 1 (SC)   | 0 (0%)      | 21 (37.5%)     | 28 (50%)               | na                   | 7 (12.5%)                         | 56    |
| Arm 2 (TAU)  | 2 (3%)      | 21 (31.8%)     | 35 (53%)               | na                   | 8 (12.1%)                         | 66    |
| Arm 3 (iCBT) | 0 (0%)      | 22 (44%)       | 23 (46%)               | na                   | 5 (10%)                           | 50    |
| Arm 4 (SCP)  | 0 (0%)      | 12 (35.3%)     | 18 (52.9%)             | na                   | 4 (11.8%)                         | 34    |
Discussion

• Our study found no significant difference between SCP, SC, TAU and iCBT in terms of depression symptom reduction and EQ-5D improvement.

• Interestingly, our CEA revealed SCP is more cost-effective than the other alternatives.

• A relatively small portion of patients received hospital stays in SCP group.
  – Our finding may be driven by this, given that hospital costs are
    • 8 times outpatient costs and
    • 12 times physician costs

• While more work is required to identify the most clinically effective versions of a SCP, our findings suggest
  – that the care pathway may have substantial potential to improve healthcare system value.
Limitations

• The sample size was much smaller in the particular SCP group than the others.

• The effectiveness data was derived from 12-week trial and then assumed the observed quality of life at 12-week would be maintained until one year.

• The set-up costs SCP were not included in the economic analysis.
