Can an Education Module Encourage Obstetrics/Gynecology Resident Physicians to Include Cost Awareness in their Decision-Making?

Report of a Randomized Controlled Trial

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Disclosures

The authors have no actual or potential conflict of interest in relation to this topic or presentation.
Background

- Canada (and other countries) spend a lot on health care!
- Residents (and physicians) lack knowledge about cost
  - Demonstrated by research in Canada and elsewhere
- Choosing Wisely - need to decrease healthcare waste and unnecessary interventions
- Residents are often the first point of contact for patients so they could make a difference
  - CANMEDS Leader Role states they should “engage in stewardship of health care resources”
- Neither CANMEDS nor Choosing Wisely provide guidance
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Rationale

- Can education in residency make a difference?

- Our educational module
  - Cost of common investigations and medications
  - Focus on unnecessary interventions
  - Evidence-based cost-effective management plans

- Objective
  - To determine if our educational module could reduce health care spending by Canadian Ob Gyne Residents in hypothetical clinical scenarios
Method - Education module

- Educational module – brief video of 30-slide PPT presentation (no audio)
  - Information on **costs and evidence** relevant to the cases:
  - For common **investigations** ordered by an Ob Gyn resident eg hematology, chemistry, coagulation and urine studies
  - For common **medications** ordered by an Ob Gyn resident eg antiemetics, DVT prophylaxis, postpartum hemorrhage, urinary tract infection
  - Encouraged to think **clinically and reflectively** about the clinical utility of the tests and medications eg what antibiotics would be most cost-effective in preterm labour, which tests are really needed
  - Could be completed in under 10 mins
Method – Hypothetical cases

4 hypothetical obstetrical cases - described cases typically encountered by residents:

**Case 1** - Investigation of a patient with headache and hypertension at 29 weeks

**Case 2** - Investigation and management of a patient with mild postpartum hemorrhage

**Case 3** - Routine term elective cesarean section, preop investigations and the choice of medication for DVT prophylaxis and nausea

**Case 4** - Investigation of a patient with threatened preterm labour and sterile urine dip, choice of antibiotic for patient with simple UTI at 30 weeks
Study Design

Primary Outcome: Difference in mean total expenditure between the two groups

Clinical Cases

<table>
<thead>
<tr>
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<th>Clinical Cases</th>
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<tbody>
<tr>
<td>1</td>
<td>Pre-eclampsia</td>
</tr>
<tr>
<td>2</td>
<td>Postpartum hemorrhage</td>
</tr>
<tr>
<td>3</td>
<td>Cesarean Section</td>
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<tr>
<td>4</td>
<td>UTI</td>
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</table>
Method

- We approached Ob Gyn residency programs
- Residency programs distributed e-mail
  - Including study description interested residents respond to “us” by e-mail
- Residents responded to REDCap
- REDCap randomized residents to Intervention or Control, provides module and cases/questions in the appropriate order
- Interested residents completed the module and cases/questions and submit data online (to REDCap)
Recruitment email to all Canadian Ob Gyne Programs

Enrolled (n=85)

Randomized (n=85)

Allocation

Control (n=43)

Intervention (n=42)

Follow Up

Lost to follow up (n=10) *did not submit module

Lost to follow up (n=12) *did not submit module

Analysis (n=63)

Completed intervention module (n=33)

Completed control module (n=30)
## Results

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Control n = 33</th>
<th>Intervention n = 30</th>
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<tbody>
<tr>
<td><strong>Level of Training</strong></td>
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</tr>
<tr>
<td>Junior Resident (PGY1-2)</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Senior Resident (PGY3-5)</td>
<td>16</td>
<td>16</td>
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<tr>
<td><strong>Site of Training</strong></td>
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<tr>
<td>Western Universities</td>
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<tr>
<td>Eastern Universities</td>
<td>11</td>
<td>11</td>
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Results

- **Control**
  - Mean $291.03 (SD 89.25)
  - Range $120.46 - $574.81

- **Intervention**
  - Mean $192.98 (SD 59.75)
  - Range $76.36 - $313.55

- $98.05 reduction (33.69%)

- Student’s t-test
  - p = 0.0001
Results

Mean expenditure

- **Juniors**
  - Control: $304.41 (SD 99.12)
  - Intervention: $193.71 (SD 70.32)
  - Difference: $110.70 (p = 0.002)

- **Seniors**
  - Control: $276.81 (SD 78.08)
  - Intervention: $192.34 (SD 51.14)
  - Difference: $84.47 (p = 0.001)
Results

Median expenditure by case

- **Case 1**: $99.00 (Control), $61.00 (Intervention)
- **Case 2**: $116.43 (Control), $75.62 (Intervention)
- **Case 3**: $63.38 (Control), $15.90 (Intervention)
- **Case 4**: $21.56 (Control), $10.57 (Intervention)
Discussion

● Our educational module significantly reduce health care expenditure by Canadian Ob Gyne residents in hypothetical clinical scenarios

● Consistent with previous research in this area
  ○ Stammen et al. 2015 JAMA Systematic Review
  ○ Teaching physicians to deliver high value cost conscious care is facilitated by
    ■ Knowledge transmission
    ■ Reflective practice
    ■ Supportive environment

● Educational modules could be one strategy to reduce unnecessary use of health care resources
Discussion

Study strengths:

- High quality randomized controlled trial
- National study including residents from 13 programs
- First study on cost-awareness specific to obstetrics and gynecology

Study limitations:

- Low enrollment (response bias)
- Reporting and social desirability biases
- Findings may not be generalizable to all specialties or real practice
Future Directions

● Further research
  ○ Effectiveness of module in real practice
  ○ Multi-centre randomized cluster trial

● Curriculum development
  ○ Knowledge dissemination of health care costs
  ○ Evidence based medicine
  ○ Reflective practice
References

Acknowledgments

- This research has been funded by generous supporters of the Lois Hole Hospital for Women through the Women and Children’s Health Research Institute

- Special thanks to:
  - Dr. Sue Ross
  - Dr. Maryna Yaskina
  - Pamela Marples (REDCap)
  - Dr. Rahim Janmohamed
  - All residents who participated!