Systems modeling of Perinatal Psychiatry Access and Referral Programs

April 13, 2021

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Boston University School of Public Health, Boston, MA
Objective

• Understand the effectiveness of the Access and Referral programs within the context of specific state-level service systems

• Discuss how simulation modeling may assist in understanding how these programs operate within states

• Request your insights about what we need to know to understand your program and how we can help
A glimpse into the mind of a researcher...

These access programs are so important! I wish I could help.

But what would be most helpful?

I don’t know.

I suppose I’ll just do what I know best.
# Patient Health Questionnaire - 9

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**Psychometric properties of screening questionnaires**

- e.g., sensitivity & specificity

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Patient's name: ___________________________ Date: ____________
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PhQ9P

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Patient's name:  
Date:
Women screened

Screen positive

Screen negative

Referred

Not referred

Complete

Declined

Wait for tx

Hires

Tx

Tx

Providers

Quit

Sensitivity of a screening questionnaire

Trust?

Disclose?

Screen positive?
Why do we ask?

• We create simulation models

• The purpose of simulation models is to use existing evidence to help us all understand your system

• But...
There are all kinds models...

• “All models are wrong...
  but some are useful.”

Attributed to
George E.P. Box
Models

• ...designed to achieve a specific purpose or solve a particular problem
What kind of model would be most helpful for you?

Here is an example...
We can create models to answer questions

**Women w/depression (process sensitivity)**
- Women screened each month
- Screen positive
- Screen negative
- Referred
- Not referred
- Complete
- Declined
- Wait for tx
- Tx
- Hires
- Providers
- Tx
- Quit

**Women w/o depression (process specificity)**
- Women screened each month
- Screen positive
- Screen negative
- Referred
- Not referred
- Complete
- Declined
- Wait for tx
- Tx
- Hires
- Providers
- Tx
- Quit

Prevalence=1 in 7
14.4% screen + Sensitivity
~25% referred
~25% complete

~25% referred
~25% complete
What can you do with models like this?

1. demand for tx

![Graph showing supply and demand for treatment across different scenarios]

- **Scenario A: Baseline** (generic behavioral screening process)
- **Scenario B: Lower demand** (based on Selvaraj et al., 2019)
- **Scenario C: Higher demand** (inspired by Kia-Keating et al., 2019)

**Supply**: # of treatment appointments available

**Demand**: # of treatment appointments needed for new patients
4. Reconsider screening thresholds

“What we looked at is we said where would we need to draw the line, literally draw the line…”
–Child Welfare

Threshold: Where to set the “cut-score?”

Research threshold:

Higher threshold:
What can you do with models like this?

5. anticipate, investigate, and avoid implementation pitfalls

- Feedback loops
  - “the often counterintuitive behavior of complex systems that arises from the interactions of the agents over time.”

- Dynamic resistance
  - “when seemingly obvious solution do not work as well as intended, or even make the problem worse”
What can you do with models like this?

6. Facilitate dialog about systems of care (e.g., to align metrics, analyses, improvement initiatives, advocacy, etc)

“...this is the kind of thing that you in hindsight wish that the people with the good intentions had had in front of them...Rather than just saying well, this is the right thing to do so, you know, we're just going to do it and deal with the consequences, actually having a ... more technical conversation about the expected implications”

–Child Welfare
Thoughts?
Questions?

What questions should we ask about your access program?

What details are important to understand?

What about the bigger context?