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Funding recovery housing: Preliminary cost-effectiveness findings from Project HOMES

J. Michael Wilkerson, PhD, MPH, MCHES
H. Shelton Brown, PhD

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Disclosures

- Attribution Statement: This project is supported by Texas Targeted Opioid Response, a public health initiative operated by the Texas Health and Human Services Commission through federal funding from the Substance Abuse and Mental Health Services Administration grant award HHS000563200001.

- Disclaimer Statement: The views expressed do not necessarily reflect the official policies of the Department of Health and Human Services or Texas Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. or Texas Government.

PROJECT HOMES

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Project HOMES Components

Component 1: MAR Recovery Residences

Component 2: Certification and Technical Assistan

Component 3: Program Evaluation

Locations

15 homes

- 3 in Midland, TX
- 4 in Austin, TX
- 2 in San Angelo, TX
- 5 in Houston, TX
- 2 in El Paso, TX

PROJECT HOMES

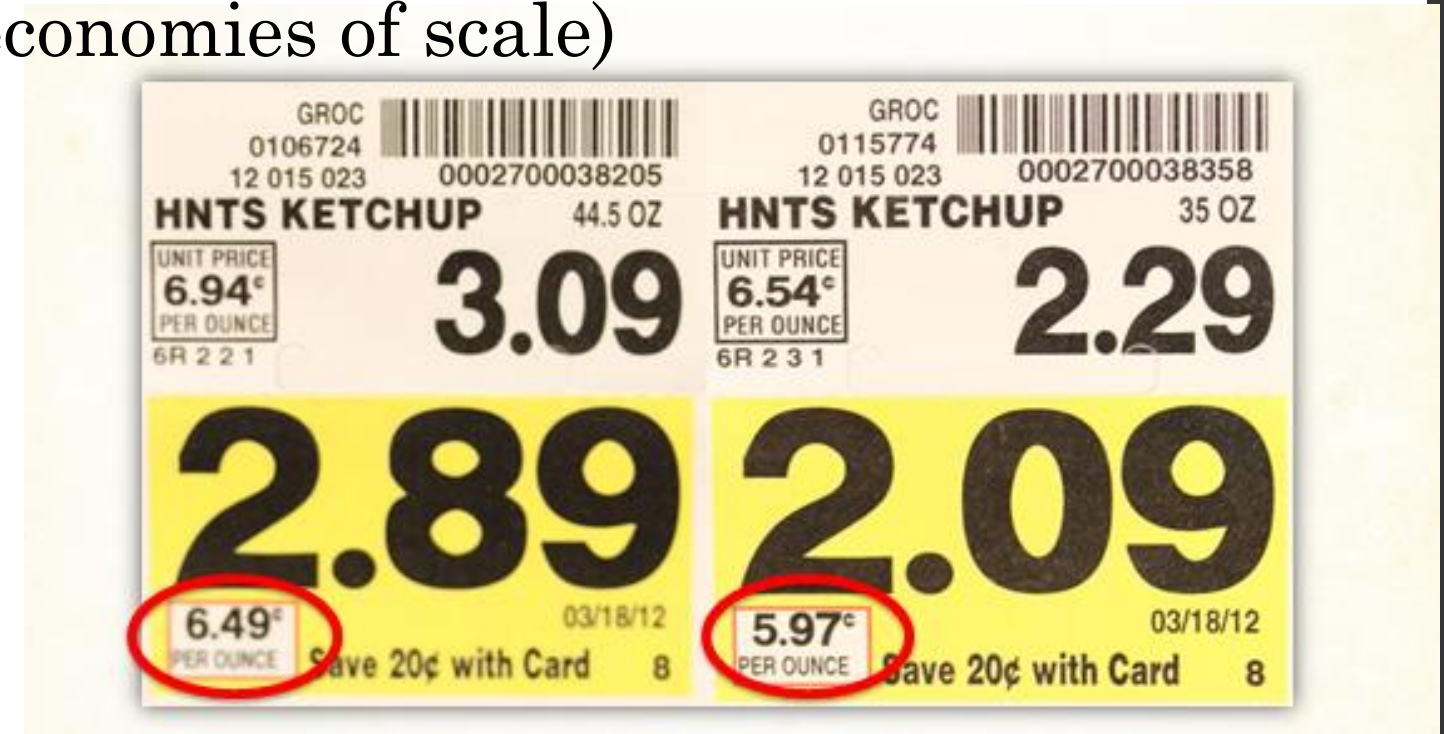
Cost-Effectiveness

Grocery store metaphor:

Compare sticker prices, but packaging or product is not identical, so we can compare price per ounce (or other unit).

The same exact product, but different sizes (economies of scale)

Cost-Effectiveness



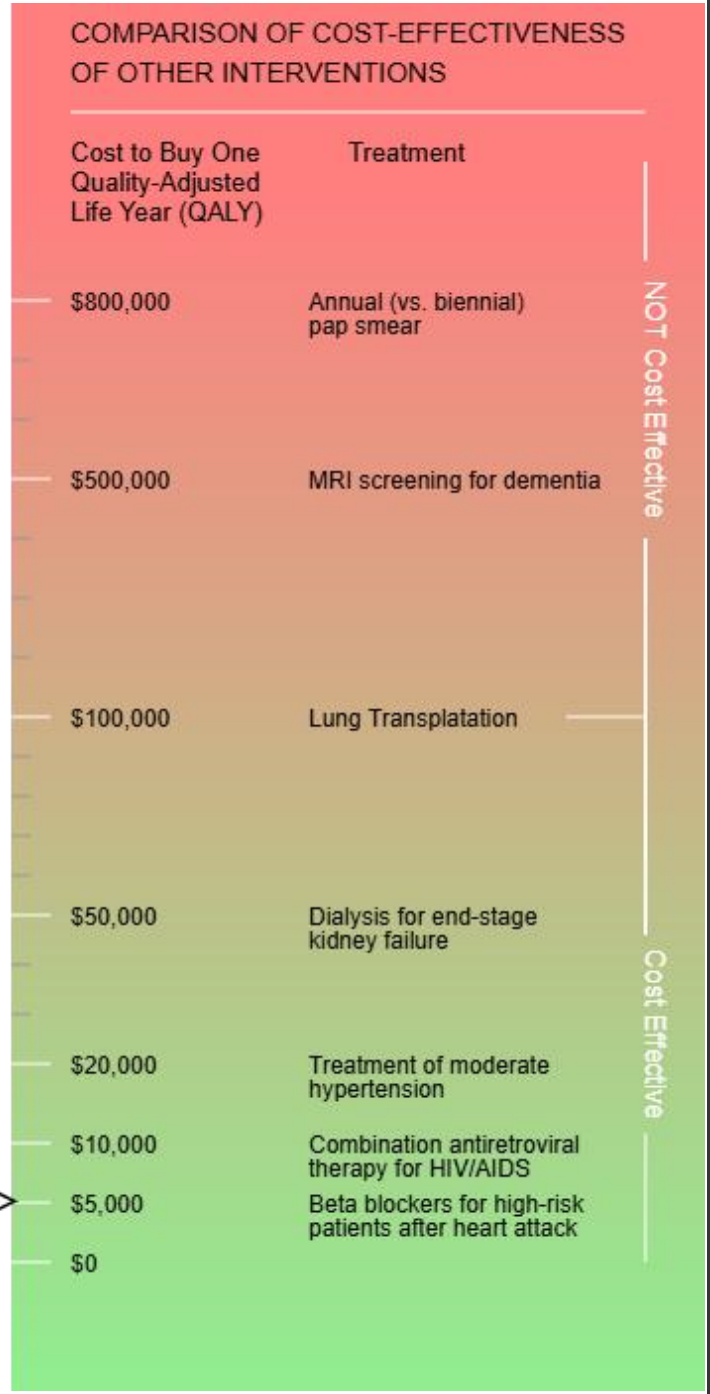
Cost-Effectiveness

$$\frac{Cost\ of\ Intervention - Cost\ of\ Treatment\ as\ Usual}{Intervention\ Effect - Treatment\ as\ Usual\ Effect}$$

- The result is expressed as "$X per unit of good stuff" kind of like price per ounce.
- So a result might be $100 per person quitting tobacco, or $500 per quality-adjusted year of life added.
- Health system and societal perspectives
- You put a dollar value to the top part, but you don't try to put a dollar value to the "good stuff" which makes this method a little easier with something like recovery and SUD.

Cost Effectiveness

- While having positive effects on SUD outcomes is a necessary condition, the magnitude of the benefits related to costs can be put in context with cost-effectiveness analysis
  - Cost effectiveness can rank cost per 'benefit' (incremental cost effectiveness ratio (ICER)) with the lowest being the best.
    - Quality-adjusted life years (QALYs)



Our benefits are QALYs

- QALYs are quality adjusted life years
  - Bounded by zero and one, with one indicating perfect health with no limitations, and zero indicating death or near death.
  - 0.714 for people in recovery (Castedo de Martell 2023)
  - 0.586 for SUD, averaged across SUD types (Whiteford et al. 2013)

How do we estimate life years? Example: Musical Chairs Markov Chain

Musical Chairs TAU

Round	"Mortality"		Life Years	LY Discounted
1	0.143	1/7	6.5	6.280
2	0.167	1/6	5.5	5.134
3	0.200	1/5	4.5	4.059
4	0.250	1/4	3.5	3.050
5	0.333	1/3	2.5	2.105
6	0.500	1/2	1.5	1.220
Sum				21.848
Life Years gained				

NIH Grant 'Project Chair'—Add a chair in round 2

Round	"Mortality"		Life Years	LY Discounted
1	0.143	1/7	6.5	6.280
2	0.000	0/7	6	5.601
3	0.167	1/6	5.5	4.961
4	0.200	1/5	4.5	3.921
5	0.250	1/4	3.5	2.947
6	0.333	1/3	2.5	2.034
7	0.5	1/5	1.5	1.179
Sum				26.923
				5.075

The Markov Chain

- Three states: *OUD, Recovered or Deceased*
  - If you are deceased, you are out of the 'game' permanently
  - People with OUD can transition to the recovery state without help with a low probability; Those in recovery can transition back to OUD, but the likelihood of that occurring falls with the length of time in recovery
- The average resident is in their late 30s
  - We ran the model from 36 until 82
- QALYs and averted costs are discounted at 3%

The Markov Chain

- We simulate an artificial control known as treatment as usual, *TAU*
  - Start with two sets of 1,000 people in recovery. One group gets the recovery residence, and TAU gets no further treatment.
    - Many are receiving MOUD treatment in each group
- Whether they are in recovery or not, people in the model can enter the deceased state for reasons not attributable to OUD
  - We have mortality rates by age and additional mortality rates attributable to OUD by age for those in the OUD state.
    - OUD mortality was from the literature which pooled addiction research studies by age
- Recurrence rates stabilize after three periods

The Markov Chain, transition matrices for the first three periods

HOMES

	Active OUD	Recovery	Dead
Active OUD	0.97	0.020	0.015
Recovery	0.273	0.712	0.015
Dead	0.000	0.000	1.000

Active OUD	0.97	0.02	0.015
Recovery	0.199	0.786	0.015
Dead	0	0	1

TAU

	Active OUD	Recovery	Dead
Active OUD	0.97	0.02	0.015
Recovery	0.485	0.500	0.015
Dead	0	0	1

Active SUD	0.97	0.02	0.015
Recovery	0.325	0.660	0.015
Dead	0	0	1

	Active OUD	Recovery	Dead
Active OUD	0.965	0.020	0.015
Recovery	0.125	0.860	0.015
Dead	0.000	0.000	1.000

The Markov Chain, first three periods, but …

HOMES

Age	Active OUD	Recovery	Dead	QALY
36	0	1000	0	
37	272.712	712.402	14.8	735.685
38	494.849	475.640	29.5	675.913
39	537.164	418.947	43.8	654.906

TAU

Age	Active OUD	Recovery	Dead	QALY
36	0	1000	0	
37	485.114	500.000	14.8	690.231
38	630.816	339.702	29.5	646.493
39	651.400	304.760	43.8	630.277

Results—Program costs per resident

- Rent
  - The BLS reported “gross rent”, which includes utilities, for 4-bedroom houses in Texas in 2023. We assumed two residents per bedroom for four months
    - For most people in HOMES, they were housed before, so this is not a new “incremental” cost. However, states may have to pay the rent (like HOMES), and perhaps insurance in the future.
- Housing manager
  - The four month portion of the manager’s salary per resident
- Resident time is four month’s wages at 40 hours
  - Some residents work
  - Not a cost borne by the state

Results—Program costs per resident

- Peer recovery coaching was offered in over half of the residences. We calculated the hourly cost per session for those houses.

- *Still working on the education part, but the additional costs would be low.

- Omitting food and travel costs. Food isn't an incremental cost, and the travel costs were trivial

Results--Averted costs

- Averted costs from the medical perspective come from a recent paper looking at costs in employer sponsored insurance. They match people with OUD or other SUDs and those without and focused only on OUD attributable costs
  - $11,871 annually
    - Note that a potential weakness with this is that people in recovery and people who never had OUD are pooled, but may have different costs
      - Help—there may be a better estimate
- Societal costs include averted justice system involvement
  - $7,690.77 annually

Results—QALYs added

- 0.1997 QALYs added per person
- $10,600.4 in averted medical costs
- $6867.57 in averted societal costs

Results—ICER

- ICER Medical perspective--~$44,000 per QALY added
- ICER Societal perspective--~$97,000 per QALY added

- With no resident time included
- ICER Medical perspective
  - Cost saving
- ICER Societal perspective
  - Cost saving

Summary

- HOMES is cost effective with or without resident time costs
  - Societal Perspective
  - Medical Perspective
- Without resident time costs included, it is cost saving

Next steps

- Address OUD costs for people in recovery
- Sensitivity analysis
- Perhaps create a calculator with our STTR proposal (with Kim Wilson and Patrick Hibbard)
  - Special thanks to Sierra Castedo de Martell for her help with the R24 grnt which helped with HOMES

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Thank you!

Many thanks to all the:

- Residents
- Staff
- Owners and Operators
- Recovery Support Peer Specialist

Project HOMES serves people who otherwise would not have access to recovery residences

PROJECT HOMES

Questions?

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