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UIC

Cost-Effectiveness of a Low-Threshold Mobile Medical Unit Providing Opioid Use Disorder Care in an Urban Setting

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INTRODUCTION

- Mobile units provide medications to treat opioid use disorder (MOUD) with a low-threshold to treatment entry by addressing transportation, scheduling, stigma, and treatment program barriers.
- The University of Illinois Chicago (UIC) Community Outreach Intervention Projects (COIP) established a mobile unit that provides opioid use disorder (OUD) treatment, including MOUD, to Chicago neighborhoods with high need.
- Cost analyses have documented investments required for mobile unit operation, but there is a need for a cost-effectiveness analyses to inform continuation and/or expansion of the mobile unit.

OBJECTIVE

Evaluate the addition of a mobile unit to traditional channels for delivering MOUD to patients with OUD from the US healthcare-sector perspective.

METHOD

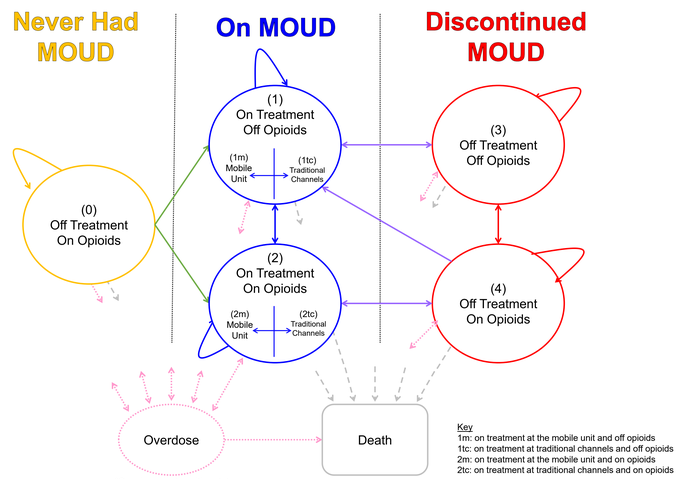
- Markov model, informed by published literature, national surveys, and previous models
- Study Arms:
  - Intervention: MOUD access through mobile medical unit + traditional channels
  - Comparator: MOUD access through traditional channels alone
    **Traditional Channels = brick-and-mortar clinics and emergency department visits
- "Treatment Effect"
  - Assumed mobile units reach an additional 2.2% of the population per year with OUD who otherwise would not receive treatment through traditional channels
- Population
  - Individuals with OUD who have and have not used MOUD
  - Individuals entered model either on or off treatment based on MOUD prevalence rates (from national survey data)
  - Patient lifetime horizon, with one-month cycles, and a 3% discount rate
- Outcomes
  - Total costs, life-years (LYs), quality-adjusted life-years (QALYs), years on MOUD

Table 1: Key Inputs

Input	Input Value (Base Case)	Source
Starting Age	25 Years	Vasilenko 2017
Sex Distribution	62% Male	
Transition Probabilities (monthly)		
Transition matrix based on recovery pathways of individuals with substance use disorder		Scott 2005
Prevalence of MOUD Use (with traditional channels)*	25.1%	Dowell 2022 (CDC)
Treatment Effect (those who wanted, but did not receive MOUD)*	2.2%	
Probability of Using Opioids while on MOUD	61%	Gossop 2003
Overdose Rates (per month)		
Fatal Overdose Rate	0.0013	CDC SUDORS 2023
Nonfatal Overdose Rate	0.0026	CDC DOSE-DIS 2023
Costs		
Cost of MOUD at Mobile Unit (monthly, per-person)	$636	Shah 2026
Cost of MOUD at Traditional Channels (monthly, per-person)	$712	Schackman 2012
Cost of Overdose (monthly, per event)	$7,238	Florence 2021
Utilities by Health State (monthly)		
On Treatment, Not Using Opioids (State 1)	0.073	Patton 2024
On Treatment, Using Opioids (State 2)	0.068	
Off Treatment, Not Using Opioids (State 3)	0.073	
Off Treatment, Using Opioids (State 0 and State 4)	0.066	
Non-fatal Overdose Event	-0.0099	Wong 2016

*among those with OUD
MOUD: Medications for Opioid Use Disorder; OUD: Opioid Use Disorder; CDC: Center for Disease Control and Prevention

MARKOV MODEL SCHEMATIC:



RESULTS:

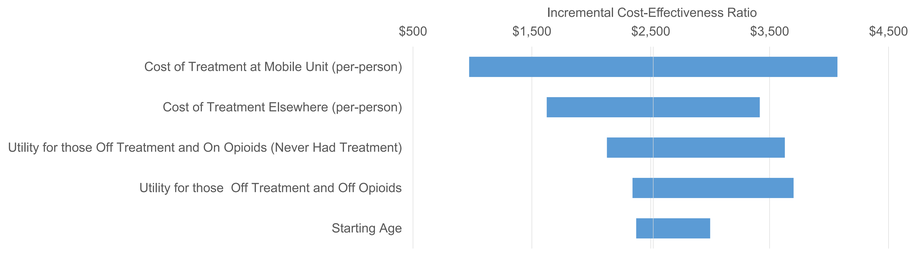
- Compared with traditional clinics alone, the addition of a mobile unit to traditional channels resulted in an incremental total cost of $7,600 and 3.0 QALYs gained, attributed to medication and healthcare costs associated with increased access to MOUD. (Table 2)
- In one-way sensitivity analyses, the results were most sensitive to cost and utility inputs. (Figure 1)
- In probabilistic sensitivity analyses, the addition of a mobile unit was cost-effective in 100% of scenarios at common willingness-to-pay thresholds. (Figure 2 and 3).

Table 2: Cost, Outcomes, and ICER Results

Study Arm	Total Costs*	QALYs	Life Years	Years on MOUD	Incremental Cost-Effectiveness Ratio (ICER)
Mobile Unit + Traditional Channels	$57,300	22.0	26.6	6.6	$2,500 / QALY
Traditional Channels Alone	$49,700	19.0	22.9	5.6	
Incremental	$7,600	3	3.7	1.0	

*Including treatment and overdose costs, excluding mobile unit implementation costs

Figure 1: One-Way Sensitivity Analysis Tornado Diagram



DISCUSSION

- Increasing MOUD access through mobile units, in addition to traditional clinics, was cost-effective at commonly accepted willingness-to-pay thresholds, compared to traditional clinics alone.
- In budgeting and resource allocation decision-making, these findings support the operation of mobile units for OUD treatment.
- Limitations included uncertainties in input values, especially given the limited published evidence on OUD progression and overdose events.

DISTRIBUTIONAL COST-EFFECTIVENESS ANALYSIS (DCEA)

- A DCEA estimated the differential impact of the mobile unit among equity-relevant subgroups.
- Subgroups were defined by income, which correlates to OUD outcomes and overdoses:
  1. Income below the poverty threshold
  2. Income between 100%-200% of the poverty threshold
  3. Income >200% of the poverty threshold
- Findings: The greatest net health benefit from the mobile unit providing increased access to MOUD was among those with an income below the poverty threshold.

Figure 2: Incremental Cost-Effectiveness Plane

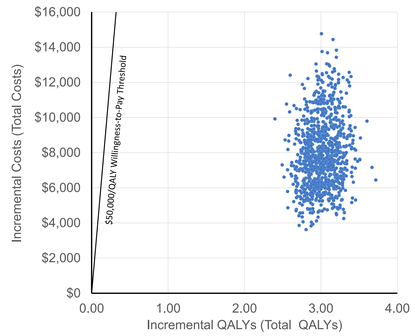
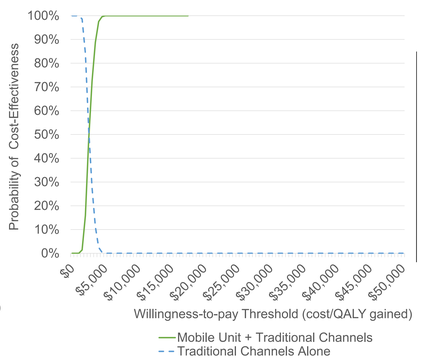


Figure 3: Cost-Effectiveness Acceptability Curve



REFERENCES and ADDITIONAL INFORMATION

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