



# Understanding stakeholder perspectives about a fentanyl vaccine and the need for precision vaccine promotion

Elissa R. Weitzman, ScD MSc<sup>1,2,3</sup> Laura Blakemore<sup>1</sup> Sydney Pierce<sup>4</sup> Rachele Cox, MPH<sup>1</sup> David Dowling, PhD<sup>3,5,6</sup> Ofer Levy, MD, PhD<sup>3,5,6,7</sup> Sharon Levy, MD, MPH<sup>3,4</sup>

<sup>1</sup>Division of Adolescent/Young Adult Medicine, Boston Children's Hospital, Boston, MA, <sup>2</sup>Computational Health Informatics Program, Boston Children's Hospital, Boston, MA, <sup>3</sup>Department of Pediatrics, Harvard Medical School, Boston, MA,

<sup>4</sup>Adolescent Substance Use and Addiction Program, Division of Developmental Medicine, Boston Children's Hospital, Boston, MA, <sup>5</sup>Precision Vaccines Program, Boston Children's Hospital, Boston, MA,

<sup>6</sup>Division of Infectious Diseases, Boston Children's Hospital, Boston, MA, <sup>7</sup>Broad Institute of MIT & Harvard, Cambridge, MA



## Background

Fatal overdoses have soared during the COVID-19 pandemic, with more than 100,000 overdose deaths (OD) from 2020-2021,<sup>1</sup> and fentanyl overdose has become the leading cause of death for US adults ages 18-45 years.<sup>2</sup> Efforts to address the overdose crisis have been complicated by the pandemic's effect on public health and healthcare systems. Rising OD mortality indicates new efforts to reduce overdose are needed, to complement existing controls.

## Objectives

A vaccine that blocks fentanyl from reaching the brain to prevent overdose death is under development<sup>3</sup> and insight is needed into its implementation.

## Methods

Using a semi-structured interview guide, participants were asked about their attitudes toward use of a fentanyl vaccine to prevent overdose mortality.

**Participant Selection:** Participants (≥15 years) were recruited from the community ("controls") and an adolescent substance use clinic ("cases"). Participants included individuals with OUD, parents of people with OUD, community stakeholders, and the general public.

**Data Collection:** 60–90-minute interviews were conducted in English by trained researchers. With participant consent, interviews were recorded and transcribed using a HIPAA-compliant service. The interview involved open-ended questions, non-judgmental probes, and brief, standardized explanations about vaccines, the opioid epidemic, and a potential vaccine to prevent fentanyl overdose.

**Data Analysis:** Members of the study team (ERW, LB, SP, RC) created a coding framework, coded interview data using NVivo software, and identified major themes. Working within and across transcripts, textual responses were grouped into themes and subthemes. All coding was done by two analysts working independently and compared, differences resolved by discussion. Identifiers were removed from study data, quoted data are annotated with gender and age in years.

## Results

Table 1. Sample characteristics

	Total	(%)	Case <sup>a</sup>	(%)	Community <sup>b</sup>	(%)
<b>N</b>	<b>65</b>		<b>12</b>	(18.4)	<b>53</b>	(81.5)
<b>Biological Sex</b>						
Male	19	(29.2)	9	(75.0)	10	(18.9)
Female <sup>c</sup>	46	(70.8)	3	(25.0)	43	(81.1)
<b>Gender</b>						
Male	20	(30.8)	9	(75.0)	11	(20.8)
Female	43	(66.2)	2	(16.7)	41	(77.4)
Non-Binary	2	(3.1)	1	(8.3)	1	(1.9)
<b>Age in Years</b>						
Mean (SD)	32.7	(14.8)	20.3	(3.7)	33.3	(15.3)
15-24	30	(46.2)	11	(91.7)	19	(35.8)
25-34	15	(23.1)	1	(8.3)	14	(26.4)
35-44	6	(9.2)	0	(0)	6	(11.3)
45+	14	(21.5)	0	(0)	14	(26.4)
<b>Recruitment Source</b>						
Substance use and addiction program	20	(30.8)	12	(100)	8 <sup>d</sup>	(15.1)
Professional contact	11	(16.9)	0	(0)	10	(20.8)
Flyer	9	(13.8)	0	(0)	9	(17.0)
Facebook	13	(20.0)	0	(0)	13	(24.5)
Direct email to organization	2	(3.1)	0	(0)	2	(3.8)
Other BCH studies	10	(15.4)	0	(0)	10	(18.9)
<b>Medical Exposure to Opioids</b>	14	(21.5)	3	(25.0)	11	(20.8)
<b>Friend/Family with OUD or OD</b>	34	(52.3)	8	(66.7)	26	(49.1)

<sup>a</sup>Diagnosed with an Opioid Use Disorder (OUD).

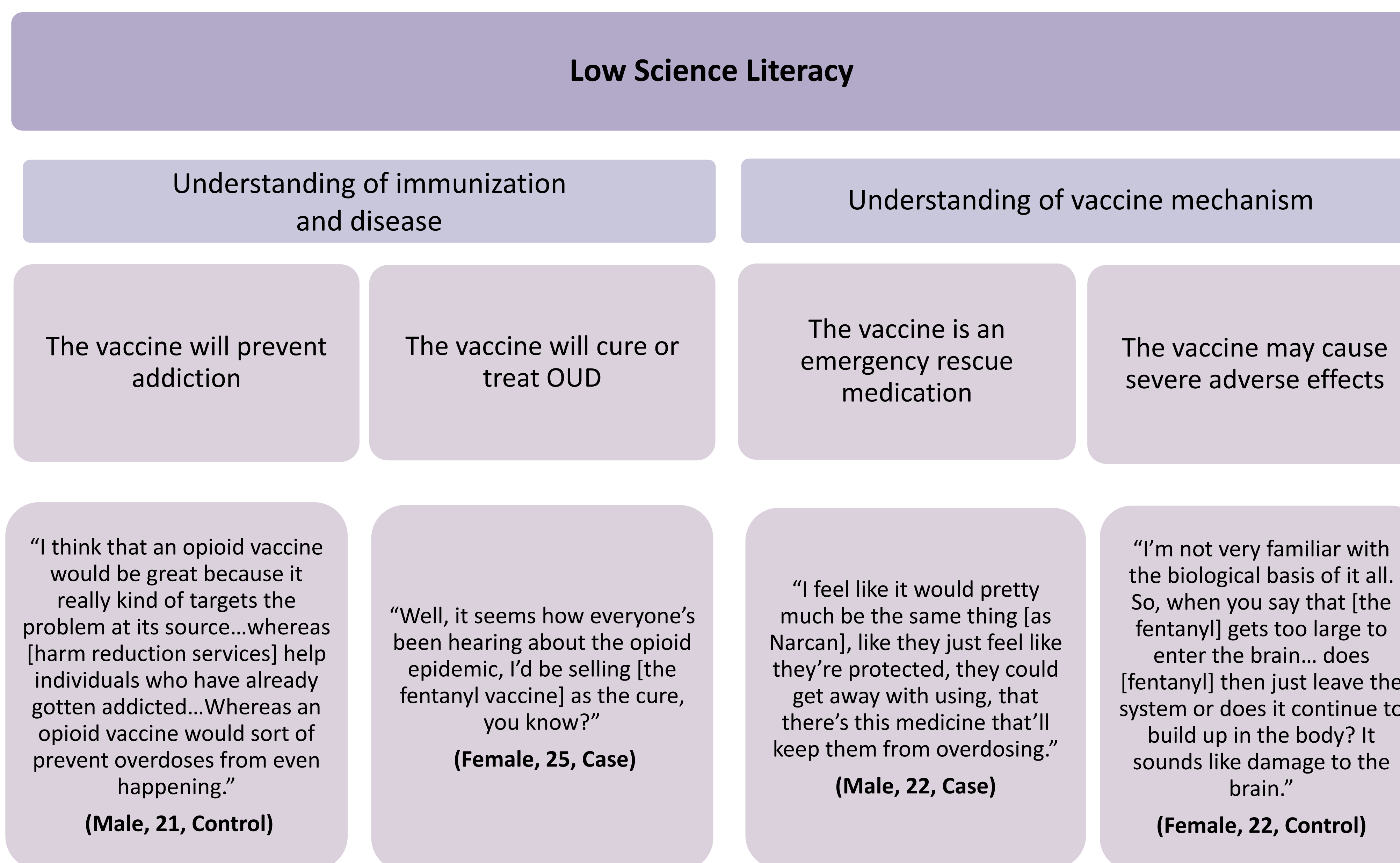
<sup>b</sup>Stakeholder community cohort

<sup>c</sup>1 person missing biological sex indicated that their gender was female. Their biological sex has been classified as female.

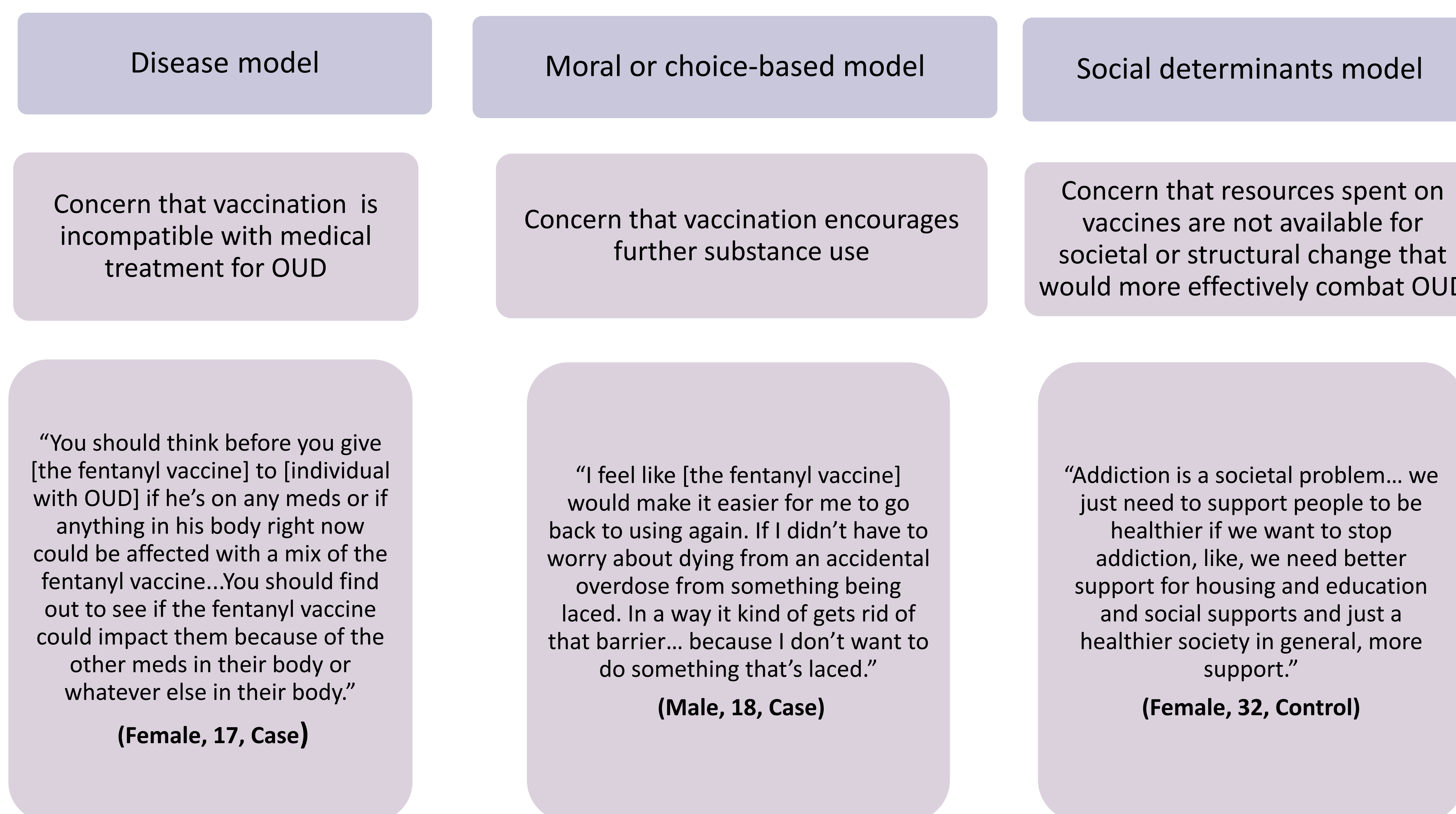
<sup>d</sup>Parent, grandparent, or sibling of person with OUD.

## Figure 1. Opioid vaccine misconceptions

Some participants expressed concerns about the vaccine that reflected either confusion or low science literacy about immunology and how vaccines work (see exemplary quotes). Other concerns stemmed from perceived tensions between participants' understanding of addiction and treatment and how an overdose-preventing vaccine might fit into that model.



## Potential Barriers to Vaccine Uptake Based on Models of Addiction and Treatment



## Figure 2. Need to integrate a vaccine into a comprehensive strategy to address addiction and overdose

Participants emphasized the importance of a layered interdisciplinary approach that engages diverse stakeholders and employs tailored and targeted promotion.



## Discussion

Attending to the complexity of attitudes and beliefs is central to the success of introducing a novel strategy, i.e., vaccine, to address behavioral health disorders. The models of addiction and treatment are not value-neutral, and the ultimate acceptability of a vaccine will hinge, in part, on responding and being sensitive to diverse points of view and assumptions about addiction treatment and people who use drugs.

Advancing a fentanyl vaccine will require speaking to existing beliefs about immunology, vaccinology, and addiction. Indications of important gaps in knowledge are going to impact the ultimate rollout, and a health education strategy will need to be developed that effectively addresses misconceptions, gaps, and responds to concerns.

## Implications and Limitations

Advancing a fentanyl vaccine to prevent OD will require attention to a broad range of assumptions, beliefs, and implementation factors. A successful vaccine strategy will build from understanding these factors and taking a "precision" health promotion approach.

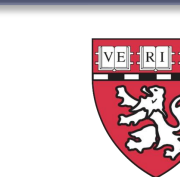
This exploratory study was undertaken on an opt-in sample, with limited geographic diversity.

## Contact Information



Elissa.Weitzman@childrens.harvard.edu

@elissa\_weitzman



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