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Measuring benefits of opioid misuse treatment for economic evaluation: health related quality of life of opioid dependent individuals and their spouses as assessed by a sample of the US population

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Abstract

Aims—To understand how the general public views the quality of life effects of opioid misuse and opioid use disorder on an individual and his/her spouse, measured in terms used in economic evaluations.

Design—Cross-sectional internet survey of a US-population-representative respondent panel conducted December 2013-January 2014.

Setting—USA.

Participants—2,054 randomly-selected adults; 51% male (before weighting).

Measurements—Mean (95% CI) and median health “utility” for 6 opioid misuse and treatment outcomes: active injection misuse; active prescription misuse; methadone maintenance therapy at initiation, and when stabilized in treatment; and buprenorphine therapy at initiation, and when stabilized. Utility is a numerical representation of health-related quality of life used in economic evaluations to “adjust” estimated survival to include peoples' preferences for health states. Utilities are determined by surveying the general population to estimate the *value* they assign to particular health states—on a scale where 0=the value of being dead, and 1.0=the value of being in perfect

health. Spouse spillover utility is assigned to a *spouse* of an individual who is in a particular health state.

Findings—Mean individual utility ranged from 0.574 (95%CI: 0.538, 0.611) for active injection opioid misuse to 0.766 for stabilized buprenorphine therapy (95%CI: 0.738, 0.795), with other states in between. Female respondents assigned higher utility to the active prescription misuse and buprenorphine therapy at initiation states than did males ($p<0.05$); all other states did not differ by respondent gender. Mean spousal utilities were significantly lower than 1.0 but mostly higher than individual utility, and were similar between male and female respondents.

Conclusions—In the opinion of the US public, injection opioid misuse results in worse health-related quality of life than prescription misuse, and methadone therapy results in worse health-related quality of life than buprenorphine therapy. Spouses are negatively affected by their partner's opioid misuse and early treatment.

Introduction

Opioid misuse is a pervasive public health problem worldwide: there were an estimated 28.6-38.0 million heroin or prescription opioid past-year users globally in 2012¹, and approximately 69,000 deaths from opioid-related overdose.² In 2013 in the U.S. alone, there were an estimated 4.5 million past-month non-medical users of prescription opioids, and 289,000 heroin users³, with 16,235 and 8,257 deaths, respectively.⁴

Economic evaluation can determine costs and benefits to guide prioritization—i.e., what are the best values for our dollars to reduce disease burden.⁵ Economic evaluation measures benefits through Quality Adjusted Life Years (“QALYs”), an outcome measure that encapsulates longevity and quality of life.⁶ QALYs are the outcome of choice for health economic evaluations conducted in the US, the UK, Canada, and Australia, among other countries.⁷⁻¹⁰ The inclusion of substance use disorders in benefits mandated by the Affordable Care Act brings substance misuse treatment on par with other medical conditions—and requires that outcomes be evaluated similarly.¹¹

To date, QALYs have focused primarily on the patient, and excluded caregivers and family members.¹² There is a growing call to include family effects in economic evaluation, to more accurately capture the entirety of benefits.^{13,14} Both individuals' and others' outcomes have historically been considered in substance misuse.¹⁵ In medicine, however, concern has generally been focused on the patient alone (despite evidence of the collateral effects of health^{16,17}). In this study we assessed the health-related quality of life of opioid misuse and treatment on individuals to enable the calculation of QALYs for opioid misuse, and on spouses to inform knowledge of effects beyond the individual.

QALYs represent the *value* people place on life in a certain health state—whether that is life in methadone maintenance therapy or life with diabetes. For resource allocation decisions, we need to know how society as a whole values life in a health state, meaning what the general population *feels* about a particular state of health, and this is usually accomplished through a general population survey.⁶ Health economists use these values to assign a weight to each year of life that is gained by a health intervention, to compare among gains afforded

by different interventions for different conditions. Health state *utility* is the metric that represents this weight, and was the focus of this research. Our aims were as follows:

1. To estimate mean population utilities for opioid misuse and opioid use disorder treatment;
2. To estimate mean population utilities for spouses of opioid dependent/in treatment individuals;
3. To explore the scope of effects that should be included in these measurements.

Methods

Measurements

We measured utilities for 6 of opioid misuse and treatment states, selected to represent a spectrum of states that would be useful for future cost-effectiveness analyses: active injection opioid misuse (“active injection misuse”); active prescription opioid misuse (“active prescription misuse”); methadone maintenance therapy at the initiation stage (“initiation methadone”), and when the user is considered stabilized in treatment (“stabilized methadone”); and buprenorphine therapy at the initiation stage (“initiation buprenorphine”), and when the user is considered stabilized in treatment (“stabilized buprenorphine”). Utilities are defined on a scale of 0-1.0, where zero=the value of being dead and 1.0=the value of being in perfect health, and all health states are valued relative to these endpoints. Utility is thus a universal metric that allows comparisons across diseases.

Utilities can be measured in a variety of ways: the “direct” method is to describe a health condition to someone in the general population – with or without personal experience with it--and have him/her assign it a number between 0 and 1.0. The “indirect” method is to have a person who has a condition report on his/her symptoms, health status, and functioning using a structured questionnaire (a “generic” utility instrument), and then to assign a utility value to this report using a pre-existing set of values collected from the general population.¹⁸ Broadly speaking, direct methods are considered theoretically superior but more administratively burdensome to implement than indirect methods; indirect methods are more convenient and can easily be integrated into clinical trials, but have practical limitations in their sensitivity to effects.^{19,20} Both methods produce theoretically equivalent results, although in practice differences across methods have been observed.²¹

We used a direct method in this study, the “standard gamble” (SG).¹⁸ The SG asks a respondent to consider the risk of death s/he would be willing to take in order to avoid living in a particular health state, and assigns value to health on the 0-1.0 scale described above.¹⁸ For example, if someone would take 10% risk of death to avoid living with diabetes, the SG for diabetes would be 0.90, or 90% of the value of perfect health. The SG is considered the theoretically optimal method for estimating utilities for societal-perspective economic evaluation.⁶

Study design

We conducted a cross-sectional, on-line survey of a US-population-representative respondent panel. We administered two survey versions (Figure 1): an “individual-focused” version, in which respondents assessed the utility of living in each of 6 opioid misuse or treatment health states, and a “spouse-spillover” version, in which respondents assessed the utility of the *spouse* of an individual in these states. We developed a hypothetical descriptive vignette for each state following established practice²², incorporating the literature, input from clinical experts, and qualitative data from people experienced with the condition (i.e., interviews with persons currently in methadone maintenance or buprenorphine therapy; n=10). Both versions employed conventional practice for the SG technique¹⁸: for the individual-focused version, each respondent was asked to imagine him/herself living as an individual described in a vignette; for the spouse-spillover version, each respondent was asked to imagine that s/he was the *spouse* of a person living as described in a vignette, but was otherwise healthy.²³

We developed two sets of vignettes to explore the scope of effects that should optimally be included in descriptions. Health state vignettes traditionally include descriptions of physical and emotional health, based on the premise that health-related quality of life is a function of health-related domains.⁶ We developed one set of vignettes in this traditional manner (“physical/emotional health descriptors”), and another set with additional descriptors commonly included in substance use disorder outcomes (employment, family relationships, and criminal justice involvement; “expanded descriptors”).²⁴ We intentionally excluded co-morbid conditions from our vignettes because our goal was to assess the independent utility of opioid misuse.²⁵ A “remission” health state was included in the expanded descriptors set to assess the utility of prior misuse. We used a randomized, split sample design to compare utilities for each set of vignettes: each respondent was assigned vignettes from one set only to avoid contamination across assessments. A sample vignette is presented in Figure 2; all vignettes are in the appendix.

The spouse-spillover version assessed the active misuse and initiation treatment vignettes, described with the physical/emotional descriptors (to maintain comparability with utilities as they are commonly measured^{6,23}). Spousal utility was estimated as a paired, “couple” utility, wherein the respondent provided a single utility value for the couple as a unit, and as a spouse-only utility, wherein the respondent provided a utility solely for the effect on an otherwise healthy individual of having a spouse living as described in the vignette. This spouse-only viewpoint represents the actual spillover utility of the opioid misuse or treatment state on a spouse; we included the couple viewpoint as a thought exercise and confirmation measure because of the potential conceptual difficulty of valuing the spouse-only perspective.²³ Respondents in the spouse-spillover survey version also assessed the utility of each vignette from the perspective of an individual living as in the vignette--“self” viewpoint, as in the individual-focused version--to provide both a thought exercise before the spouse-spillover viewpoint questions and to supplement the data collected in individual-focused version.

Survey procedure

Respondents completed practice 0-100 point rating scale (RS) questions and SG questions assessing their own current health before the hypothetical vignettes. We randomly assigned vignettes to respondents to achieve a balanced sample across vignettes and a balanced respondent burden. Each respondent received 3-6 vignettes in the individual-focused version and 1-2 in the spouse-spillover version (in which each vignette was described using three viewpoints --self, couple, and spouse-only). Each vignette was assessed by RS prior to the SG evaluations, as a warm-up exercise.¹⁸

The standard gamble questions used the “magic pill” convention to present the evaluation scenario²³ (see Appendix for sample questions), and visual aids developed by Prosser et al.²³ Error screens were used to alert respondents to illogical answers and offer reconsideration.²⁶ Demographic characteristics were collected at the end of the survey or provided from previously-collected panel data. The survey was pre-tested on a convenience sample of respondents in paper form (n=8), and with members of the on-line panel in programmed form (n=54).

Sample

We used the GfK “KnowledgePanel”²⁷ for our sample. Panel members are recruited using address-based sampling via postal mail. Participants are provided with internet access and/or computer equipment or vouchers redeemable for cash in exchange for survey participation. GfK maintains sampling weights based on the US census demographic data to correct for sampling biases and to approximate population responses; the final sample is effectively considered random.

The sample size for the survey was designed to detect meaningful differences in mean values between vignettes based on existing estimates of values for similar health states using similar measures.²⁸ Minimally important differences in utilities across measurement techniques and conditions range from 0.03-0.07.²⁹⁻³³ We sought a sample of approximately 425-475 responses per vignette to detect these differences based on conservative assumptions about variation in our observed means.

Analysis

We excluded responses that failed invariance criteria--defined as those in which all SG responses from a respondent including the practice question were the same and equal to 0 (the minimum), 0.5 (the starting point for the exercise) or 1.0 (the maximum).²⁶ We calculated means, confidence intervals, medians, percentiles, minimum values, and maximum values for all vignettes; sample responses were weighted to reflect the US population using weights provided by GfK. We compared mean utilities across vignettes with simple linear regression models of utilities on health states to identify significant differences overall and in pairwise comparisons (at a significance level of $p < 0.05$). Analyses were conducted in Stata version 12 (Stata Corporation, College Park, TX). The study was approved by the Harvard T.H. Chan School of Public Health and Weill Cornell Medical College institutional review boards.

Results

Data were collected from 2,054 respondents from December, 2013-January, 2014: 1,178 in the individual-focused version and 876 in the spouse-spillover version (57% overall participation rate; Figure 1). The total number of completed SG responses varied from 370-555 across vignettes due to the randomization pattern and missing data (Table 1). After weighting, the sample reflected the US population (Table 2). Invariant responses totaled 1,383 utilities (16.8% of total sample) and were excluded from the analysis (Figure 1)²⁶; there were no significant demographic differences between respondents who provided invariant and non-invariant responses (results not shown).

Utilities for all vignettes are presented in Table 3. Mean utilities were significantly lower than 1.0 (i.e., perfect health) for all of the vignettes for an individual and for a spouse, for both sets of vignette descriptors. For the vignettes described with physical/emotional health descriptors, mean individual and spousal utility was statistically significantly lowest (i.e., worst) for active injection misuse compared with other states ($p < 0.001$, except for spousal initiation buprenorphine: $p = 0.053$; Table 3). Mean individual utility for methadone therapy was significantly lower than buprenorphine therapy at both initiation and stabilized stages ($p < 0.01$ for both), but did not significantly differ between states for the same treatment: $p = 0.13$ for initiation vs. stabilized methadone, $p = 0.76$ for initiation vs. stabilized buprenorphine. There was no statistically significant difference in mean spousal utility among the active prescription misuse, initiation methadone, and buprenorphine stages (active prescription vs. initiation methadone: $p = 0.62$, vs. initiation buprenorphine: $p = 0.81$; initiation methadone vs. buprenorphine: $p = 0.51$). Mean utilities were significantly lower for vignettes described using the expanded descriptors for both active misuse and both initiation treatment stages, but differences were non-significant for the stabilized treatment stages.

Discussion

The US population values misusing opioids and being in opioid use disorder treatment substantially worse than being in perfect health, for both the individual user and for his/her spouse. These values quantify the health-related quality of life of opioid misuse and treatment, and allow them to be compared on equal footing to other health conditions and treatments. They can be used to calculate QALYs, the accepted metric of benefit in economic analysis in many countries, and as such can be incorporated into cost-effectiveness analyses-- of different opioid use disorder treatments, and comparison with other health interventions. Emerging techniques allow effects on spouses to also be included in cost-effectiveness analyses, as an additional loss in QALYs.¹⁴ The population also places value on effects of opioid misuse that extend beyond what is usually included in economic assessments of benefits, suggesting that the benefits of opioid use disorder treatment may be underestimated with traditional economic methods.

Our results indicate a general population preference for prescription over injection opioid misuse, and for treatment with buprenorphine over methadone. These results are not surprising because of the stigma attached to injection drug use and methadone³⁴; prescription opioids are more socially acceptable than heroin³⁵, and office-based

buprenorphine therapy in the U.S is closer to other chronic disease management practices than methadone maintenance treatment, especially in the early stages of treatment.³⁶ The implications of these preferences creates a paradox in that, all else equal, conditions with lower burden offer commensurately less benefit from cure—so *treatment* of one prescription opioid misuser for one year provides less social benefit than *treatment* of one injection opioid misuser for one year, just as treatment for one case of the flu, for example, would provide less social benefit than treatment for one case of meningitis. What we choose to spend resources on is a function of both the social benefit derived and many other factors, such as risk, cost, and longevity, but societal preferences indicate one piece of this equation. Our results also suggest population preferences for treatments: initial treatment on buprenorphine therapy is preferred to initial treatment on methadone, so each year lived in the early stages of buprenorphine therapy provides more social benefit than a similar year on methadone, separate of differences in cost or effectiveness or both. These differences disappear in the later stages of treatment when benefits are equal. Finally, we found that the early stage of methadone therapy was valued worse than active prescription opioid misuse (although any treatment is better than injection misuse). This finding is somewhat disturbing but not implausible—early methadone therapy is marked by users' general displeasure with programs and high levels of drop-outs.³⁷ Until a user transitions to a more stable state in treatment the negatives may outweigh the positives. It is important, therefore, for evaluations of opioid use disorder treatments to consider and capture differences in outcomes across the stages of treatment, and the impact of keeping users in treatment until the stable-stage benefits are realized. When additional aspects of life are considered in preferences, stabilized treatment is preferred even more—suggesting that benefits of treatment are greater than economic valuation using current standard techniques would suggest. There is a need for additional research into the role of health-related quality of life and societal preferences in retaining individuals in treatment.

Our results also speak to the effects of opioid misuse on spouses. A compelling case has been made in the literature for the inclusion of family spillover effects in economic evaluation^{6,12} and our findings offer support for these considerations in the opioid use context. Our results showed that utility losses for spouses of opioid users are roughly similar to those for other chronic conditions.²³ Interestingly, we found that active injection misuse was somewhat worse on spouses than other stages, but the other stages were valued equally-- there may be a threshold of effect for a spouse once treatment is initiated. Our spousal utility data are very limited however and point to the need for additional research in this area.

Our utilities for opioid misuse are similar to the few that have been previously reported in the literature but offer some methodological advantages. Cost-effectiveness analysis of opioid treatments require utilities elicited from a *representative sample* -- of the general population when direct methods are used, and of the opioid misusing population when an indirect method is used. Existing utility estimates for opioid treatment have relied on indirect methods, using clinical trial samples that run the risk of selection bias. Reported mean utilities in the literature include 0.67 for opioid dependent individuals in HIV treatment³⁸, 0.67-0.70 for injection opioid users in treatment³⁹, and 0.58-0.68 for lifetime and current substance misuse of any kind.^{40,41} These utilities represent very specific health states and

select samples of individuals—those participating in clinical trials with specific eligibility criteria. Our values are based on vignettes that describe a more universal experience of opioid misuse and treatment. Nevertheless, the similarity in values between these studies and ours confirms the general magnitude of utility for opioid misuse and treatment. Our values are useful in circumstances when generality is sought, while utilities from clinical trial populations offer specificity in population and experience that may be useful in other circumstances. All meet criteria of population values and all can be used in cost-effectiveness analysis.

As with all utility surveys, there are limitations to our results. Our primary caveat concerns our vignettes. Although carefully constructed using primary data and expert input, our vignettes are by definition limited to a subset of all possible experiences with opioid misuse and treatment. We attempted to include a set of health states sufficiently generic and encompassing to be useful for economic evaluation, but acknowledge the inherent simplification required. Moreover, our expanded descriptors vignettes contain only some of the many potential dimensions of life affected by opioid misuse, and were intended as a test of methodological design, *not* for use in cost effectiveness analysis—for that we recommend the physical/emotional descriptor utilities, to ensure comparability to cost-effectiveness analyses conducted for other health conditions.⁶ Similarly, we did not include co-occurring conditions or poly-substance use in our vignettes, despite their prevalence with opioid misuse.⁴²⁻⁴⁵ When conducting a cost-effectiveness analysis of treating co-occurring conditions, each individual condition has an associated utility, and any two in tandem have a “joint” utility that is a distinct value. Joint utilities can be assessed as a distinct health state, or as a combination in their components, using recently-developed methods.²⁵ Our utility estimates apply only to opioid misuse states on their own, and hence are a first set of estimates for use in cost-effectiveness analyses. Finally, the SG is a cognitively complex task and while it was preferred for our purposes, we did find some evidence of “protest” (i.e., invariant) responses in our data--respondents who refuse to engage in the valuation task and provide the same answer across questions.²⁶ Our rate of invariant responses was commensurate with those observed in other utility surveys so do not raise particular concerns for this study.²⁶ Measurement of family effects is particularly challenging and methods are still under development^{12,46}; we used current and tested methods of elicitation²³ yet acknowledge the potential for measurement error in our data.

In conclusion, these results represent the first directly-elicited, population-based utilities for opioid misuse, and can be used in economic evaluations of opioid use disorder treatments as well as to compare the value of these interventions to other health interventions. They assist in bringing opioid treatment into the mainstream of health economic resource allocation decision-making methods by providing a basis for the calculation of QALYs, the outcome measure most-frequently used in cost-effectiveness analysis. Numerous areas for further research are indicated by our results. First, opioid misuse rarely exists in isolation from other health conditions, and the dual nature of substance misuse with other conditions raises measurement questions for utilities and QALYs.⁴⁷ Ongoing work is exploring the effect of opioid misuse in the presence of co-occurring conditions.⁴⁸ Second, the inclusion of spillover effects in economic evaluation is moving toward greater acceptance and data are needed to facilitate this development. Our estimates of spousal effects are the first evidence

of QALYs associated with opioid treatment beyond the individual, and go far to improving our understanding of the full value of resources allocated to this condition.¹⁵ Finally, the trajectory of individuals from misuse to remission is well-known to be non-linear and often circular. More knowledge is needed on the values assigned to different pathways. Larger population studies that can evaluate more health states, as well as longitudinal studies of individuals progressing along these pathways will be useful in this regard. Further work on the value of opioid use disorder treatment will improve our ability to critically assess the best investments of our health resources, to improve population well-being across health all conditions.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.

Survey schema: two survey versions, some data combined for analysis.

Initiation stage methadone maintenance therapy—physical/emotional descriptors	Initiation stage methadone maintenance therapy—expanded descriptors
<ul style="list-style-type: none"> • In the past you were taking drugs to make it through each day. Now you go to a clinic every day to get medicine that you must take while being watched by a nurse. You spend 1-2 hours going to and from the clinic for daily visits. You cannot skip any visits and you have to be there every day to get your medicine. • You feel calm and get a mild high shortly after taking your medicine. If you miss a clinic visit you risk feeling extremely sick, like you have a bad case of the flu. You need to take drugs again or get to the clinic to avoid feeling sick. • You have a low sex drive and sometimes you feel constipated from taking the medicine. You often feel nervous and restless. You feel very embarrassed and ashamed about going to the clinic. You are terrified that people will see you there and discover that you are in treatment for drug use. You miss the thrill of taking drugs. • You worry about going back to taking drugs. You occasionally drink and smoke some other drugs, but this does not cause problems for you. 	<ul style="list-style-type: none"> • In the past you were taking drugs to make it through each day. Now you go to a clinic every day to get medicine that you must take while being watched by a nurse. You spend 1-2 hours going to and from the clinic for daily visits. You cannot skip any visits and you have to be there every day to get your medicine. • You feel calm and get a mild high shortly after taking your medicine. If you miss a clinic visit you risk feeling extremely sick, like you have a bad case of the flu. You need to take drugs again or get to the clinic to avoid feeling sick. • You have a low sex drive and sometimes you feel constipated from taking the medicine. You often feel nervous and restless. You feel very embarrassed and ashamed about going to the clinic. You are terrified that people will see you there and discover that you are in treatment for drug use. You miss the thrill of taking drugs. • You worry about going back to taking drugs. You occasionally drink and smoke some other drugs, but this does not cause problems for you. • You have a temporary job but you earn very little money. You are alienated from your family and have no contact with them. You no longer see your old friends because they are still using drugs, and you sometimes feel lonely. • You can't travel anywhere because you have to be at the clinic every day. Your living situation is unstable—sometimes you stay with other people, sometimes you find short-term housing.

Figure 2.

Sample vignettes for initiation stage of methadone therapy, using physical/emotional health descriptors and expanded descriptors.

Table 1
Number of responses by survey version, type of descriptors used in vignette, health state, and frame of reference (i.e., viewpoint), before exclusion of invariant responses*

	Individual-focused version		Spouse-spillover version	
	Physical/emotional health descriptors	Expanded descriptors	Physical/emotional health descriptors	
<i>Frame of reference: Health state</i>	<i>“self”[†]</i>	<i>“self”</i>	<i>“self”[†]</i>	<i>“spouse only”</i>
Active injection misuse	145	517	367	372
Active prescription misuse	139	504	378	385
Initiation stage of methadone therapy	131	518	372	374
Initiation stage of buprenorphine therapy	140	520	365	370
Stabilized methadone therapy	555	512	NC	NC
Stabilized buprenorphine therapy	553	536	NC	NC
Remission	NC	503	NC	NC

* Invariant responses were defined as those in which all standard gamble responses provided by a respondent, across vignettes and viewpoint, were the same and equal to 0, 0.5 or 1.0, including the practice value for respondent's current health.

[†]“Self” responses for vignettes described with physical/emotional health descriptors were combined across versions for purposes of analysis.

NC=not collected

Table 2
Sample characteristics: full sample and analytic sample, number of respondents and percentages unweighted and weighted to the US population

	Full sample (n=2,054)			Analytic sample (n=1,689)		
	n	% un-weighted	% weighted	n	% un-weighted	% weighted
Age						
18-24	202	9.8	11.9	167	9.9	12.1
25-44	622	30.3	34.8	493	29.2	33.2
45-64	801	39.0	35.8	663	39.3	36.6
65+	429	20.9	17.5	366	21.7	18.1
Education						
Less than high school	192	9.3	12.6	158	9.4	12.5
High school	675	32.9	29.6	550	32.6	29.5
Some college	554	27.0	28.8	452	26.8	28.4
Bachelor's degree or higher	633	30.8	28.9	529	31.3	29.7
Race/Ethnicity						
White NH	1522	74.1	66.4	1266	75.0	67.2
Black NH	172	8.4	11.6	139	8.2	11.0
Other NH	128	6.2	7.2	98	5.8	7.0
Hispanic	232	11.3	14.8	186	11.0	14.8
Gender: male	1049	51.1	48.3	847	50.2	48.0
Marital Status						
Widowed/Separated/Divorced/Never married	798	38.9	41.3	661	39.1	42.9
Married/living with partner	1256	61.1	58.7	1028	60.9	58.1
Household size						
1	395	19.2	19.1	325	19.2	19.1
2	782	38.1	36.2	643	38.1	36.1
3+	877	42.7	44.7	721	42.7	44.9
Household Annual Income (US \$)						

	Full sample (n=2,054)			Analytic sample (n=1,689)		
	n	%	% un-weighted	n	% un-weighted	% weighted
<\$25,000	379	18.5	18.6	299	17.7	17.8
\$25,000-\$49,999	467	22.7	22.8	379	22.4	22.7
\$50,000-\$99,999	657	32.0	32.3	545	32.3	32.4
\$100,000+	551	26.8	26.3	466	27.6	27.1
Currently employed	1157	56.3	57.0	955	56.5	57.2

%s may not sum to 100 due to rounding
NH=non-Hispanic

Table 3

Standard gamble utilities for stages of opioid misuse and treatment for individuals and spouses, by type of descriptors used in hypothetical vignettes: mean, 95% CI, and 25th percentile, median, and 75th percentile^{*}; after exclusion of invariant responses.

INDIVIDUALS		Physical/emotional descriptors for vignettes				
<i>Health state</i>	n	Mean	95% CI	25 th %	Median	75 th %
Active injection misuse	418	0.574	0.538, 0.611 [†]	0.450	0.510	0.890
Active prescription misuse	415	0.694	0.660, 0.727 [‡]	0.500	0.750	0.970
Initiation stage of methadone therapy	412	0.689	0.657, 0.721 [†]	0.500	0.740	0.950
Initiation stage of buprenorphine therapy	401	0.761	0.732, 0.789	0.580	0.860	0.980
Stabilized methadone therapy	459	0.722	0.690, 0.753 [†]	0.500	0.760	0.980
Stabilized buprenorphine therapy	457	0.766	0.738, 0.795	0.570	0.860	0.99
SPOUSES		Physical/emotional descriptors for vignettes				
<i>Health state</i>	n	Mean	95% CI	25 th %	Median	75 th %
Active injection misuse	305	0.743	0.708, 0.778 ^{§‡}	0.510	0.830	1.0
Active prescription misuse	310	0.793	0.763, 0.823	0.610	0.890	1.0
Initiation stage of methadone therapy	311	0.803	0.771, 0.834	0.670	0.890	1.0
Initiation stage of buprenorphine therapy	288	0.788	0.754, 0.822	0.580	0.900	0.955
Stabilized methadone therapy	NC					
Stabilized buprenorphine therapy	NC					
NC=not collected						
INDIVIDUALS		Expanded descriptors for vignettes				
<i>Health state</i>	n	Mean	95% CI	25 th %	Median	75 th %
Active injection misuse	450	0.512	0.475, 0.549 [†]	0.200	0.500	0.840
Active prescription misuse	430	0.626	0.591, 0.661 [‡]	0.450	0.680	0.930
Initiation stage of methadone therapy	436	0.617	0.582, 0.653 [†]	0.460	0.640	0.920
Initiation stage of buprenorphine therapy	449	0.710	0.678, 0.743 [†]	0.500	0.770	0.980
Stabilized methadone therapy	440	0.758	0.731, 0.784 [‡]	0.540	0.830	0.980
Stabilized buprenorphine therapy	460	0.774	0.748, 0.801 [§]	0.610	0.880	0.990

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INDIVIDUALS		Physical/emotional descriptors for vignettes				
Health state	n	Mean	95% CI	25 th %	Median	75 th %
Remission	432	0.807	0.780, 0.834	0.680	0.930	1.0

* Minimum and maximum were 0 and 1.0 for all stages, all descriptors, individuals and spouses.
§ mean significantly lower than state on row below at p<0.05
‡ mean significantly lower than state on row below at p<0.01
‡ mean significantly lower than state on two rows below at p<0.01