

# Issues Panel: Health economists want to maximize QALYs, but do patients?

ISPOR 2024

May 6, 2024

**Moderator: Shelby Reed**, PhD, Professor in Population Health Sciences at Duke University School of Medicine and Faculty at the Duke Clinical Research Institute

**Panelist: Marco Boeri**, PhD, Director of Preference Research at Open Health

**Panelist: Juan Marcos Gonzalez**, PhD, Associate Professor in Population Health Sciences at Duke University School of Medicine and Faculty at the Duke Clinical Research Institute

**Panelist: Brett Hauber**, PhD, Senior Director, Patient Preference Expert at Pfizer and Affiliate Associate Professor at the University of Washington School of Pharmacy



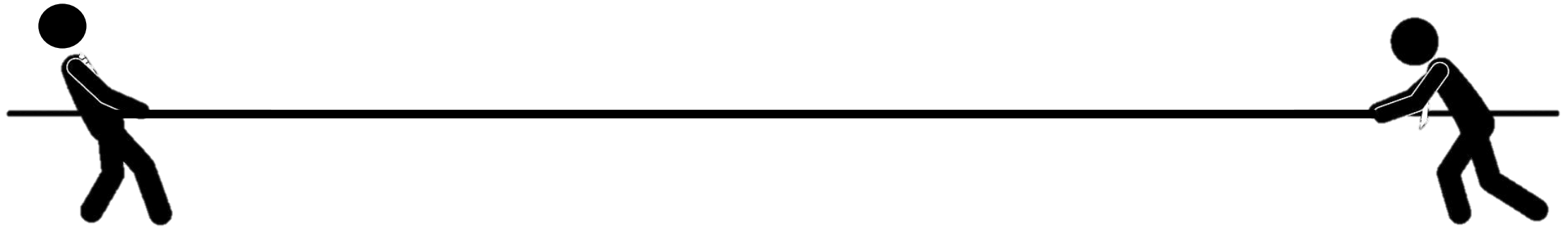
# What level of decision making?

- Population-level HTA decisions

- Society and insurance beneficiaries bear costs through taxes and premiums
- CEA objective: Maximize health outcomes and survival (i.e. QALYs) given a budget constraint

- Individual-level treatment decisions

- Patients experience the health and non-health impacts of treatment
- Utility maximization



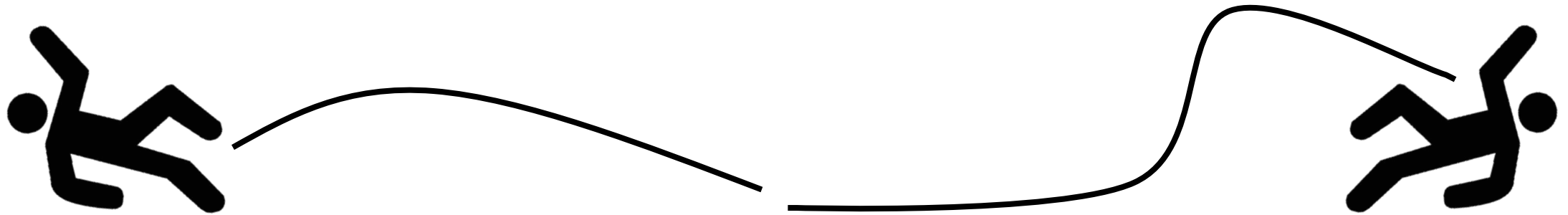
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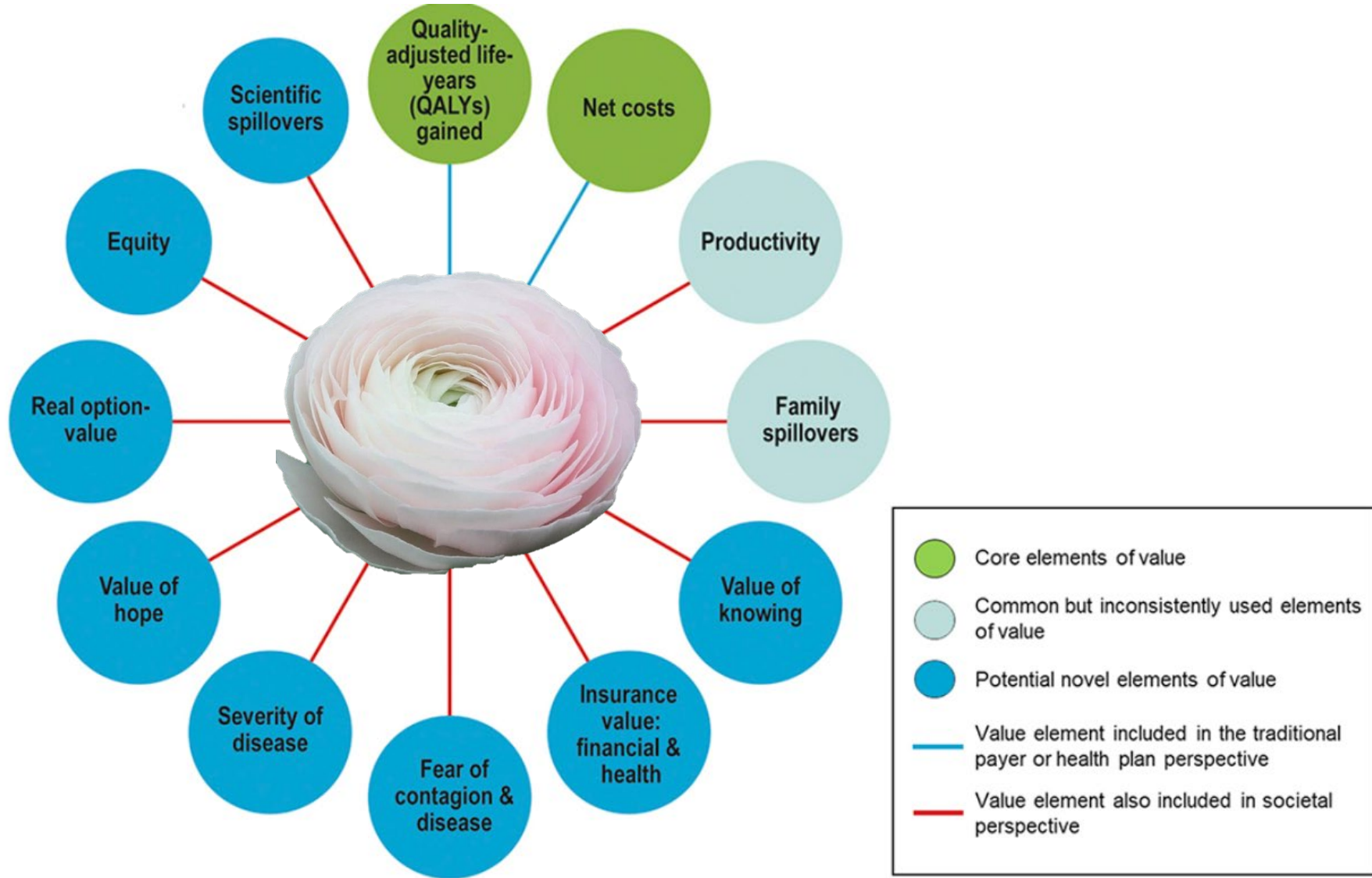
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- Utility maximization



# ISPOR's Special Task Force on US Value Frameworks



Adapted from Lakdawalla et al.<sup>2</sup> QALY indicates quality-adjusted life-year.



# Why Don't Patients Always Choose What's Best for Them?

The Well-being Paradox

Monday, 6 May 2024

**Marco Boeri**

Director of Preference Research and Scientific Office Lead for Patient Centered Outcomes  
OPEN Health HEOR & Market Access

ISPOR 2024; May 5-8, 2024 - Atlanta, GA, USA

...  
Do we really know what's  
best for them?

A marble statue of Socrates, depicted in a classic 'The Thinker' pose. He is seated, leaning forward with his right hand resting on his chin and his left hand tucked into his voluminous, draped robe. The statue is set against a solid, light blue background. The lighting highlights the texture of the marble and the folds of the clothing.

The only true wisdom is in  
knowing you know nothing

Socrates

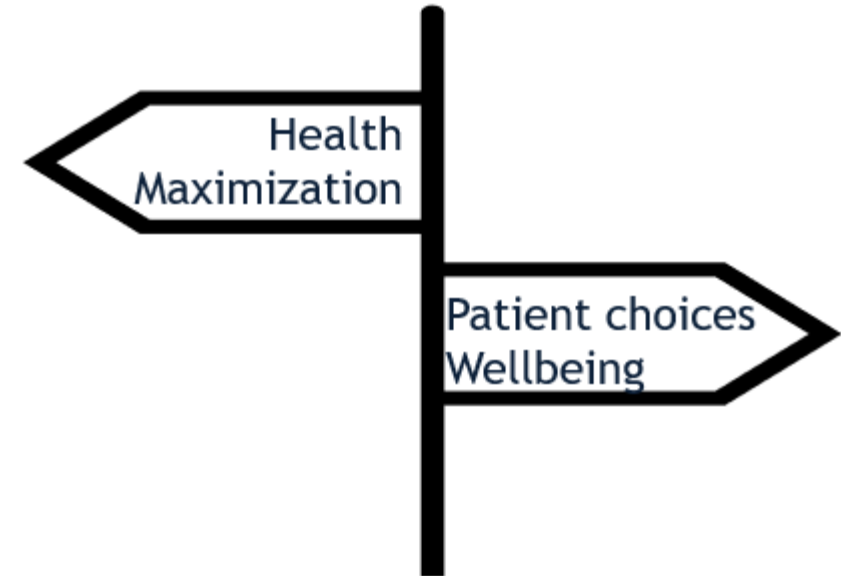
# Acknowledgements and disclaimers

- Financial disclosure:
  - No funding were obtained.
- **Disclaimer:**
  - The views and opinions expressed in this presentation (and all possible mistakes 😊) are those of the presenting author and do not necessarily represent those of the institution of affiliation.

# Introduction

## The Well-being Paradox

- We assume that treatments aligned with preferences lead to **improved health outcomes and well-being**
- However, incorporating preferences in patient-centered care might conflict with **cost effectiveness analysis**, which aims to maximize gains in health-related quality-adjusted survival within a **budget constraint**.
  - Patients (and other stakeholders) might place a different **value** to treatment than regulators and society
  - The **assumptions** we make to elicit and explore preferences might not be aligned to how the patients (other stakeholders) think/act







# Value is much more than just money...

- Cost effectiveness is a comparative approach to assess new technologies
  - Key outcome measure used is the quality adjusted life year (QALY)

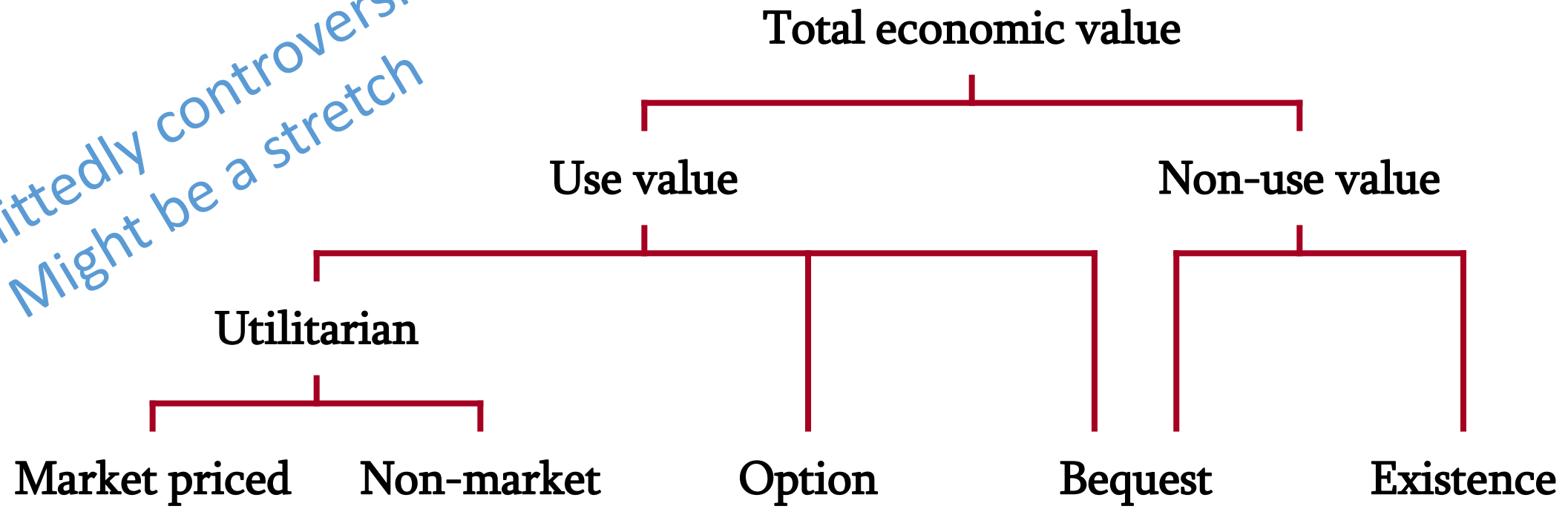
*“A measure of health outcome which assigns to each period of time a weight, ranging from 0 to 1, corresponding to the health-related quality of life during that period, where a weight of 1 corresponds to optimal health, and a weight of 0 corresponds to health state judged to be equivalent to death”*

(Gold et al 1996, p405)
- We can consider QALY the value we attach to a treatment or a device measure when we aim to maximize gains in health-related quality-adjusted survival within a budget constraint
  - In this sense QALY only measures the direct value under certain assumptions
  - Are we missing anything?



# Types of “economic values” (from Environmental Economics)

*Admittedly controversial.  
Might be a stretch*



**Total economic value = Use value + Non-use value**

# Assumptions in preference elicitation

- Preference elicitation is based on random utility maximization (RUM) theory
  - RUM assumes that a person will select the treatment (device) that gives them the highest level of utility, given the other available options and the characteristics of each treatment (device). Patient are assumed to **maximize their utility**.
- However, individual choice behavior
  - Often involve complex decision-making process
  - is context-dependent (i.e., varying levels of interest in alternatives in different times)
  - reflects the influence of others, and the fact that the individual has
    - limited information
    - limited processing ability

# More to observe than just utility maximization

- RUM assumes fully compensatory decision-making (Swait and Adamowicz, 2001).
  - Compensatory rule: I selected the treatment that came out best when I balanced all efficacy, safety, tolerability and convenience attributes
  - Non-compensatory/semi-compensatory rule (conjunctive rule): I selected that has low risk of adverse event and is a pill
    - Compromise effect: Alternatives with an 'in-between' performance on all attributes, relative to the other alternatives in the choice set, are favoured by choice-makers over alternatives with a poor performance on some attributes and a strong performance on others (Chorus, C., Bierlaire, M., 2013 ).

# Conclusion


- The Well-being Paradox highlights the disconnect between health and well-being in HEOR
  - Searching for better health outcomes might not result in higher well-being
  - Health is one component of well-being and could compete with non-health priorities.
- The link between value, preferences and behaviors is not always clear to researchers and practitioners
  - QALYs and the assumptions behind RUM theory might not capture the full picture
- Should/Can we capture and incorporate these different health behaviors and values in population-level decision making?
  - Not always possible or needed
  - Not always useful (the answers and the needs depend on the questions asked...)
  - It is important to be aware they exist!

Thanks for your attention

Any questions?



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# Tradeoffs Reflect Rational Utility-Maximizing Behavior

**Brett Hauber, PhD**

**Senior Director, Patient Preference**

Global Medical Patient Impact Assessment  
Worldwide Medical and Safety  
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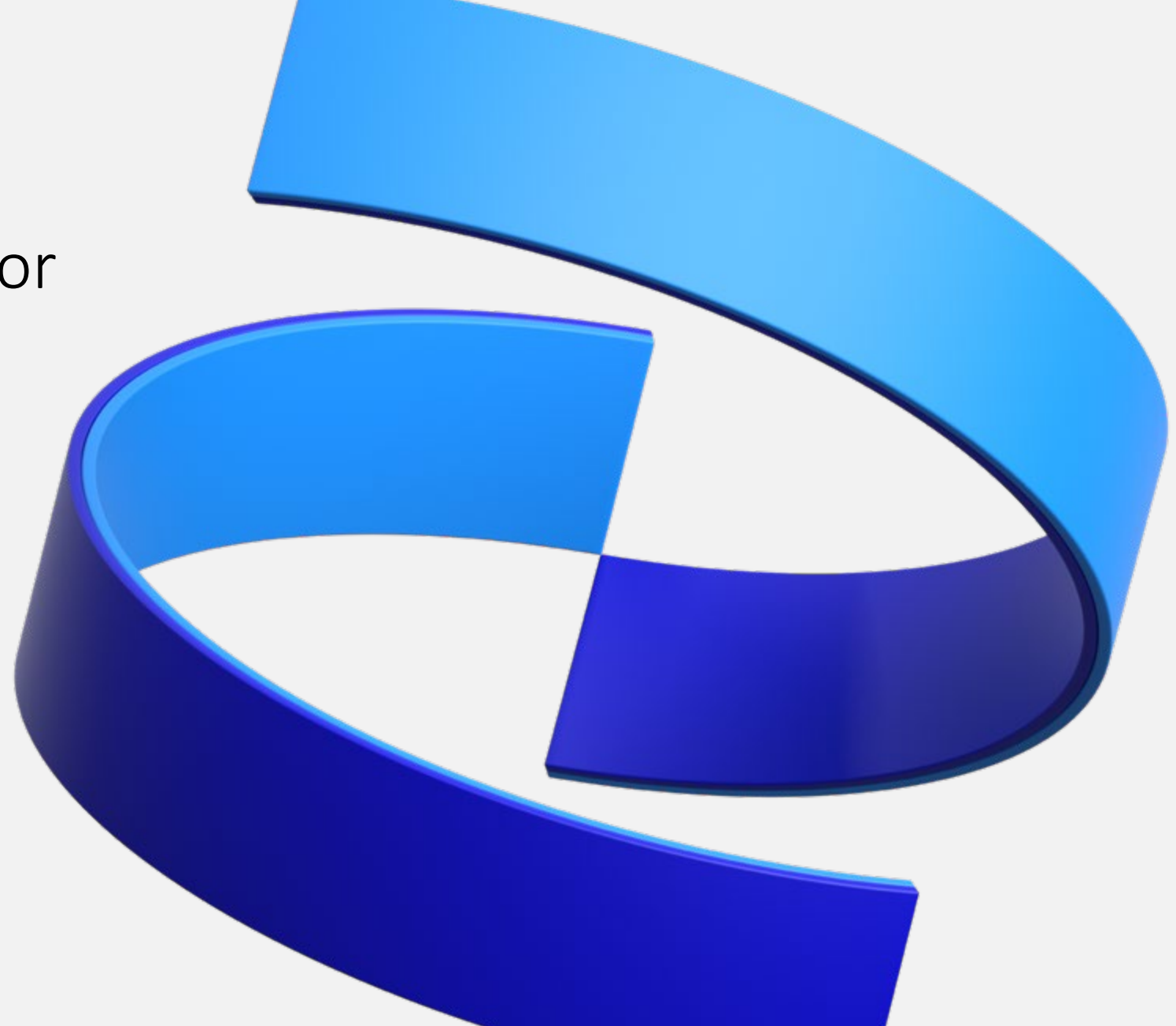
**Affiliate Associate Professor**

CHOICE Institute  
University of Washington School of Pharmacy

ISPOR 2024, Atlanta

Health Economists Want to Maximize QALYs, but Do Patients?

06 May 2024, 10:15AM-11:15AM EDT



Take Your Medicine



Don't Miss or Skip Doses



...If only it were  
that simple

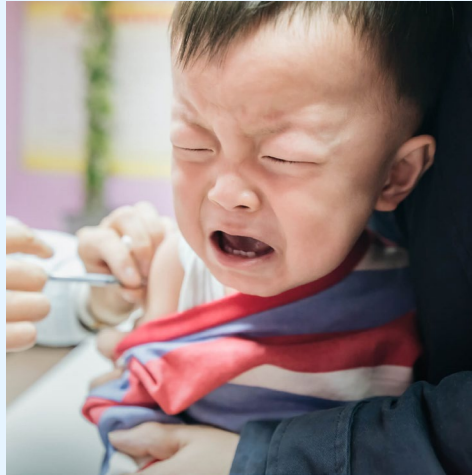


# Medication Taking: An Economic Bad?

The process of acquiring and taking more is worse (or at least not better) and therefore yields disutility



Pill Burden



Injection Aversion



Medication Management



Prescription Acquisition

# Sub-Optimal Adherence is a Rational, Utility

## Maximizing Patient Behavior

Epidemiology/Health Services/Psychosocial Research  
BRIEF REPORT

### Risking Health to Avoid Injections

Preferences of Canadians with type 2 diabetes

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F. REED JOHNSON, PhD<sup>1</sup>

LUC SAUBIK<sup>2</sup>  
BENEDICTE LESCRUWAET<sup>3</sup>

Improved glycemic control reduces the risk of long-term diabetes complications (1–3). However, subcutaneous insulin injections represent a barrier to achieving “optimal” blood glucose levels, particularly among type 2 diabetic patients (4). Indeed, some patients even delay initiation of therapy to avoid injections (5). This study used conjoint analysis to quantify the relative importance that Canadian patients with type 2 diabetes place on short-term treatment outcomes and on the frequency of insulin injections.

#### RESEARCH DESIGN AND METHODS

A total of 1,886 patients enrolled in a Canadian consumer panel (n = 70,000) were mailed a questionnaire. Study entry criteria were age ≥18 years and self-reported type 2 diabetes.

The choice format conjoint questionnaire was designed to reveal the relative importance patients place on various health outcomes and treatment attributes associated with insulin therapy. This format offers advantages over other methods of quantifying health care preferences (6–11). The questions comprised 12 hypothetical treatment choices, including varying numbers of daily insulin injections using an insulin pen (one to three injections), levels of glucose control (optimal, suboptimal, and poor as fasting plasma glucose levels of 4–7, 7.1–10, and >10 mmol/L, respectively), HbA<sub>1c</sub> (A1C) levels <7, 7–8.4, and >8.4%, and numbers of mild-to-moderate hypoglycemic events per month (<1, 1–2, >2). Insulin

pens were chosen over other methods of subcutaneous insulin delivery because they are the predominant method used in Canada (12). One alternative in each question was a constant reference condition. For patients using insulin, all attributes of the constant reference condition were set to the patient’s current treatment; for insulin-naïve patients, the reference condition represented standard treatment for patients new to insulin (one injection per day of insulin plus oral antidiabetic agents and 1–2 hypoglycemic events per month) and the patient’s current level of glucose control.

Conditional logit analysis (13) was used to estimate absolute importance weights for improvements in attribute levels, namely reducing injection frequency from three times a day twice a day, reducing injection frequency from twice a day to once a day, improving glucose control from “poor” to “suboptimal,” and improving glucose control from “suboptimal” to “optimal.” Importance weights were expressed relative to the largest estimated mean importance weight difference, which was assigned a value of 1. The level of significance was set at P < 0.05.

**RESULTS**— We obtained and analyzed a regionally and culturally representative sample of 936 eligible Canadian diabetic patients. Approximately half (49.64%) of the mailed surveys were returned. The sample included 179 French-language surveys, 45 English-language surveys from Quebec, and 712 English-

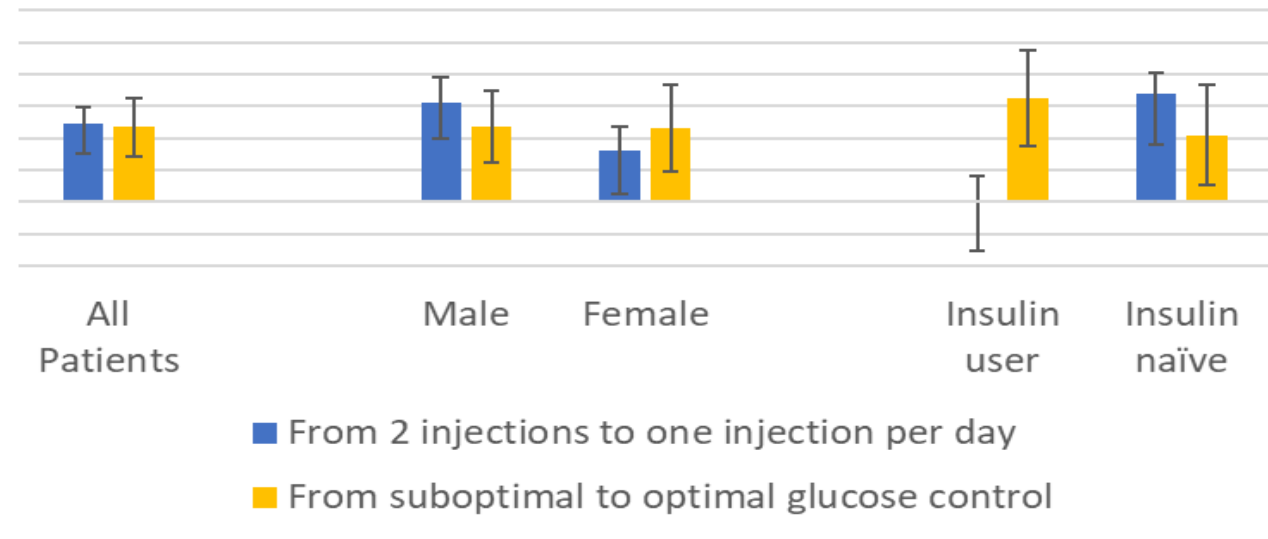
language surveys from other provinces. Patient characteristics are shown in Table 1.

For determination of relative importance weights, patient data were stratified according to insulin use (naïve versus experienced), sex, and age (Table 1). The largest importance weight (set to 1) was for improving glucose control from “suboptimal” to “optimal” among patients aged 18–44 years. For all patients (P = 0.0298), on average, and all subgroups, the relative importance weight for improving glucose control from “poor” to “suboptimal” was greater than the relative importance weight for improving glucose control from “suboptimal” to “optimal” (P values for the subgroups are as follows, corresponding to the order of the subgroups in Table 1: 0.0890, 0.1347, 0.2277, 0.3468, 0.5095, 0.6220, 0.1909, 0.0779, and 0.2114). For all patients, on average, and for most subgroups, the relative importance weight for reducing the number of injections from twice a day to once a day was greater than the relative importance weight for reducing the number of injections from three times a day to twice a day. The reverse was true for patients using insulin and for patients aged 18–44 years.

A comparison of the relative importance weights for reducing the number of injections from twice a day to once a day with those for improving glucose control from “suboptimal” to “optimal” levels showed that, on average, reducing the number of injections was as important as improving glucose control for all patients. Both improvements are equally important among male and female patients, although the mean value for reducing the number of injections from twice a day to once a day is greater for men than for women.

Among insulin-experienced patients, the mean relative importance weight for improving glucose control was positive and significant (P < 0.0001 for both improvements), while the relative importance weight for reducing the number of injections was zero (P = 0.0159 for reducing from three times a day to twice a day, 0.9436 for reducing from twice a day to once a day). In contrast, among insulin-

Relative Importance of Reducing Injections Compared with Relative Importance of Improving Glucose Control



In this study, the only patients who were not willing to accept worsening glucose control to reduce the number of daily injections were current insulin users

From <sup>1</sup>RTI Health Solutions, Research Triangle Institute, Research Triangle Park, North Carolina; <sup>2</sup>Avenis Pharma, Sanofi-Aventis Pharmaceutica, Quebec, Canada; and <sup>3</sup>Pfizer Canada, Quebec, Canada. Address correspondence and reprint requests to A. Brett Hauber, PhD, RTI Health Solutions, Research Triangle Institute, Research Triangle Park, NC. E-mail: abhauber@rti.org Received for publication 15 April 2005 and accepted in revised form 13 May 2005. A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances. © 2005 by the American Diabetes Association. The costs of publication of this article were defrayed in part by the payment of page charges. This article must therefore be hereby marked “advertisement” in accordance with 18 U.S.C. Section 1734 solely to indicate this fact.

# Accepting Lower Efficacy for Preferred Mode

JOURNAL OF DERMATOLOGICAL TREATMENT  
<https://doi.org/10.1080/09544634.2020.1892185>

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## Quantifying patient preferences for systemic atopic dermatitis treatments using a discrete-choice experiment

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**ABSTRACT**  
**Objectives:** To identify meaningful treatment attributes and quantify patient preferences for attributes of systemic atopic dermatitis (AD) treatments.  
**Materials and methods:** Qualitative interviews were conducted with adults with moderate-to-severe AD (N=21) to identify AD treatment attributes that patients consider most important and inform attribute selection for an online discrete-choice experiment (DCE) survey administered to patients in the United States with moderate-to-severe AD. Participants identified probability of clear/almost clear skin at 16 weeks, time to itch relief, mode of administration, and safety risks as very important. DCE data were analyzed using a random-parameters logit model to estimate the relative importance of treatment attributes and maximum acceptable risk.  
**Results:** A total of 320 respondents completed the DCE survey (74% female; mean age, 35 years). Annual risk of malignancy was the most important attribute, followed by mode of administration, probability of clear skin at 16 weeks, and time to onset of itch relief. Respondents preferred daily oral treatment over injectable treatment. Respondents were willing to accept increases in adverse event risks for improvements in efficacy and mode of administration.  
**Conclusion:** The findings of this study can help inform joint patient-physician decision making in managing moderate-to-severe AD.

**ARTICLE HISTORY**  
 Received 27 July 2020  
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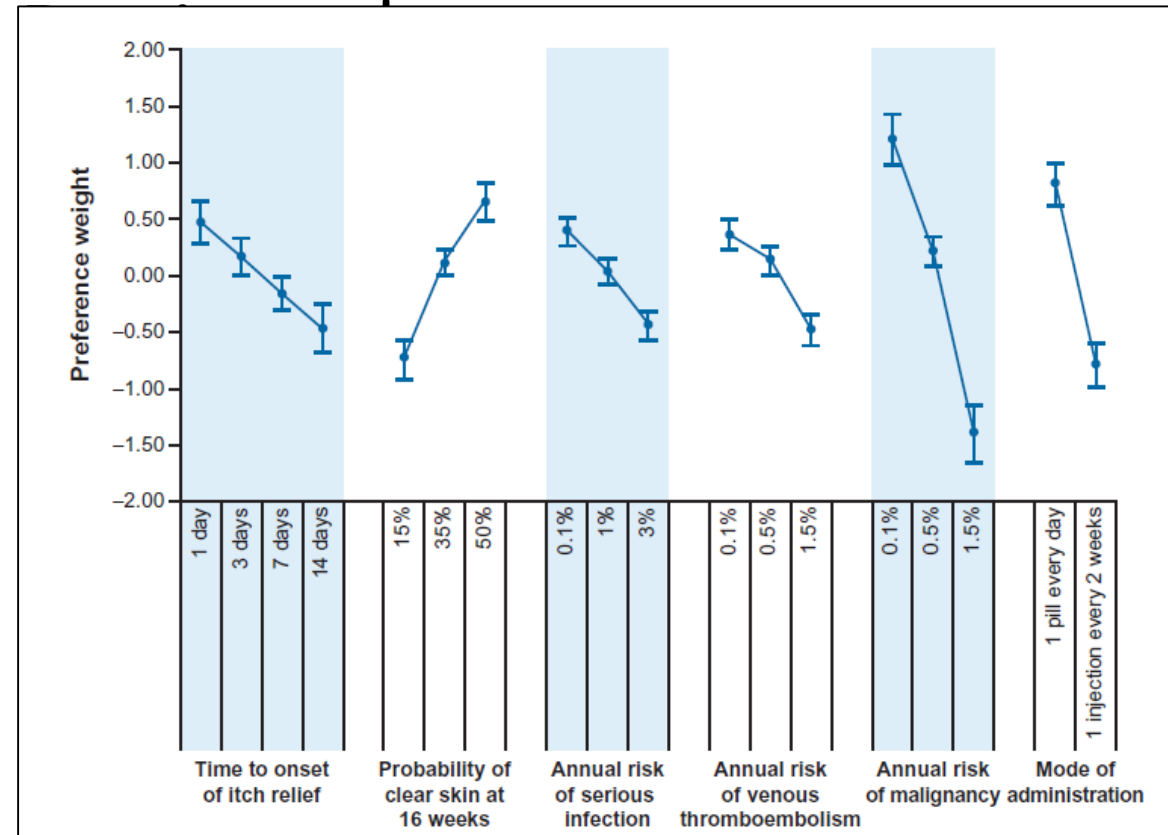
**KEYWORDS**  
 Atopic dermatitis; discrete-choice experiment; maximum acceptable risk; patient preference

**Introduction**  
 Atopic dermatitis (AD) is a chronic inflammatory skin disease that is characterized by intense itching (pruritus), dry skin, redness, exudation, and pain [1–5]. AD is common, affecting up to approximately 20% of children and adolescents and approximately 5–10% of adults (6–9), and is associated with a substantial economic and quality-of-life burden [10,11].  
 Treatments for AD include emollients (e.g. creams, lotions, ointments), topical corticosteroids (e.g. hydrocortisone, triamcinolone acetonide), topical calcineurin inhibitors (e.g. tacrolimus, pimecrolimus), phosphodiesterase-4 inhibitors (crisaborole), systemic oral and injectable treatments, and phototherapy [1,12–14]. Despite conventional systemic immunomodulators being recommended for the management of moderate-to-severe AD, only a few are licensed for this indication (i.e. systemic corticosteroids in the United States and cyclosporine in Europe) [1,15,16]. Dupilumab, an interleukin (IL)-4 receptor alpha antagonist [1], is a relatively new systemic therapy (licensed by the US Food and Drug Administration in March 2017 and the European Medicines Agency in September 2017) available as a subcutaneous injection. Several systemic treatments are currently being developed to expand the armamentarium for moderate-to-severe AD, including oral Janus kinase (JAK) inhibitors

(i.e. abrocitinib, baricitinib, and upadacitinib) and injectable anti-IL-13 antibodies (i.e. tralokinumab and lebrikizumab) that have shown promise in early-phase clinical studies [17–22].  
 With this potential influx of additional systemic treatment options, it is important to understand how and to what degree the attributes of systemic treatments are valued by patients to improve patient-physician decision making. Unfortunately, no data exist on patient preferences for systemic AD treatments in the United States and Europe. One study was conducted in Japan, which reported that the top 3 attributes for the patients are risk of mild side effects, time until response, and efficacy of reducing itching; however, this study focused more on the differences between the top attributes for patients and physicians for injection treatments [23].  
 This study, the first of its kind in the United States and the United Kingdom, was designed to address this gap in the literature with 2 objectives. The first objective was to conduct qualitative interviews to identify the AD treatment attributes that patients with moderate-to-severe AD consider most important when making treatment decisions. The second objective was to quantify patient preferences for the systemic AD treatment attributes that emerged from these qualitative interviews and differentiate between systemic treatments using a discrete-choice experiment (DCE).

**CONTACT** Marco Di Bonaventura [marco.dibonaventura@pfizer.com](mailto:marco.dibonaventura@pfizer.com) Pfizer Inc, 235 East 42nd Street, New York, NY, USA  
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is



In this study, switching from a bi-weekly injection to a daily pill was as important than efficacy to patients with moderate-to-severe atopic dermatitis

# Trading Life-Years for Preferred Mode of Rational Too



Article

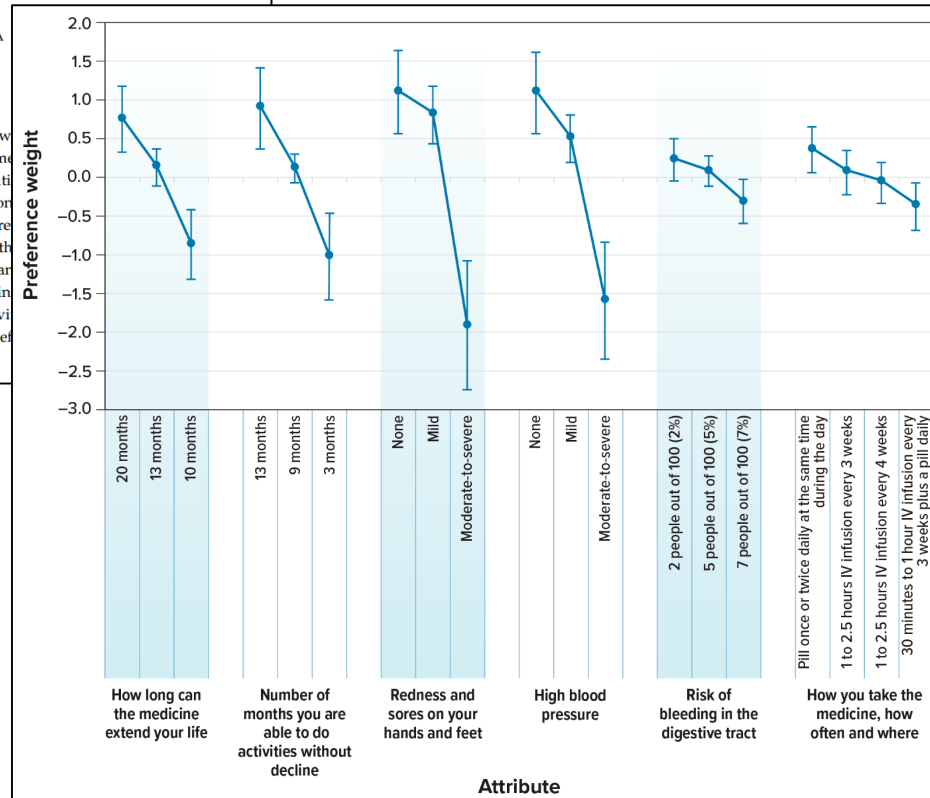
## Patient Preferences for Unresectable Hepatocellular Carcinoma Treatments: A Discrete-Choice Experiment

Daneng Li <sup>1,\*</sup>, Ruoding Tan <sup>2</sup>, Sairy Hernandez <sup>2</sup>, Norelle Reilly <sup>2</sup>, Cooper Bussberg <sup>3</sup> and Carol Mansfield <sup>3</sup>

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- <sup>3</sup> RTI Health Solutions, Research Triangle Park, NC 27709, USA
- \* Correspondence: danli@coh.org

**Simple Summary:** Several treatments are available for patients with hepatocellular carcinoma (HCC), and it is important to understand patients' treatment preferences. In a survey study, we explored 200 patients' preferences for HCC treatments: months of additional survival, months of hand-foot syndrome, severity of high blood pressure, severity of hand-foot syndrome, severity of high blood pressure, severity of hand-foot syndrome, severity of high blood pressure, and how the medicine is taken. Of the features included in the survey, respondents considered 10 additional months of survival to be more important than 10 additional months of survival. Respondents considered 10 additional months of survival to be more important than 10 additional months of survival. Respondents considered 10 additional months of survival to be more important than 10 additional months of survival.

[Mansfield et al., 2023](#)



For patients in this study, eliminating the need for a 30-minute to 1-hour infusion every 3 weeks was nearly as important as extending life by 7 months (from 13-20 months)

# Trading Life-Years for Preferred Mode of

The Patient - Patient-Centered Outcomes Research (2024) 17:229–237  
<https://doi.org/10.1007/s40271-024-00676-9>

## PRACTICAL APPLICATION



### Using Patient Preferences in Health Technology Assessment: Evaluating Quality-Adjusted Survival Equivalents (QASE) for the Quantification of Non-health Benefits

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#### Abstract

Interest in using patient preference (PP) data alongside traditional economic models in health technology assessment is growing, including using PP data to quantify non-health benefits. However, this is limited by a lack of standardisation among HTA agencies. In this article, we describe a method for using discrete choice experiment (DCE) data to estimate the value of non-health benefits in terms of quality-adjusted survival equivalents (QASE), which is consistent with the concept of quality-adjusted life years (QALYs) among HTA agencies. We describe how PP data can be used to estimate QASE, assess the ability to test for the validity of QASE estimates of changes in mode of administration calculated from five published DCE oncology studies and discuss methodological and normative considerations associated with using QASE to support HTA. We conclude that DCEs have some methodological advantages over alternative methods, but this requires DCEs to estimate second-order trade-offs between length and quality of life. In addition, empirical work has yet to be undertaken to substantiate this approach and demonstrate the validity of QASE. Further work is also required to align QASE with normative objectives of HTA. Estimating QASE would also have implications for the conduct of DCEs, including standardising and defining attribute definitions.

[Marsh et al., 2024](#)

Providing an oral alternative to SC every three weeks yielded the same utility as extending overall survival by more than >1 month

Providing an oral alternative to IV 5 days a week for 1m + SC 3 days a week for 1y yielded the same utility as extending overall survival by more than 7 months

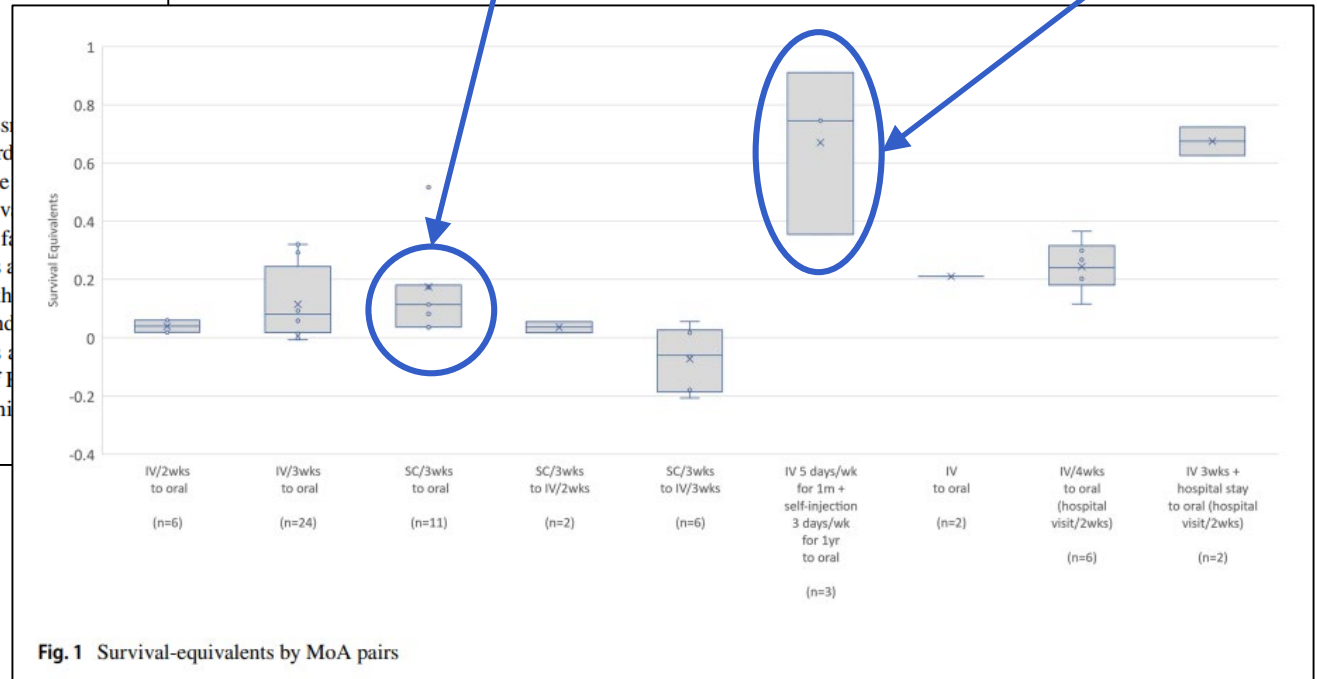


Fig. 1 Survival-equivalents by MoA pairs

# Administration Burden and Information May Increase Vaccine Coverage

PCR9

## Role of Video vs Text Information in Willingness to be Vaccinated for Invasive Meningococcal Disease Among US Adolescents/Young Adults and Parents

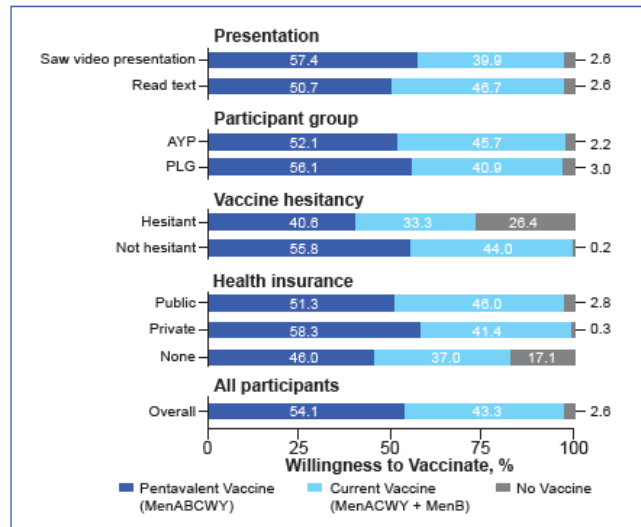
Katharina Schley,<sup>1</sup> Chiara Whichello,<sup>2</sup> Brett Hauber,<sup>3\*</sup> Nicolas Krucien,<sup>2</sup> Joseph C. Cappelleri,<sup>4</sup> Paula Peyrani,<sup>5</sup> Jessica Vespa Presa,<sup>5</sup> Joshua Coulter,<sup>3</sup> Sebastian Heidenreich<sup>2</sup>

<sup>1</sup>Pfizer Pharma GmbH, Berlin, Germany; <sup>2</sup>Evidera, London, UK; <sup>3</sup>Pfizer Inc, New York, NY, USA; <sup>4</sup>Pfizer Inc, Groton, CT, USA; <sup>5</sup>Pfizer Inc, Collegeville, PA, USA

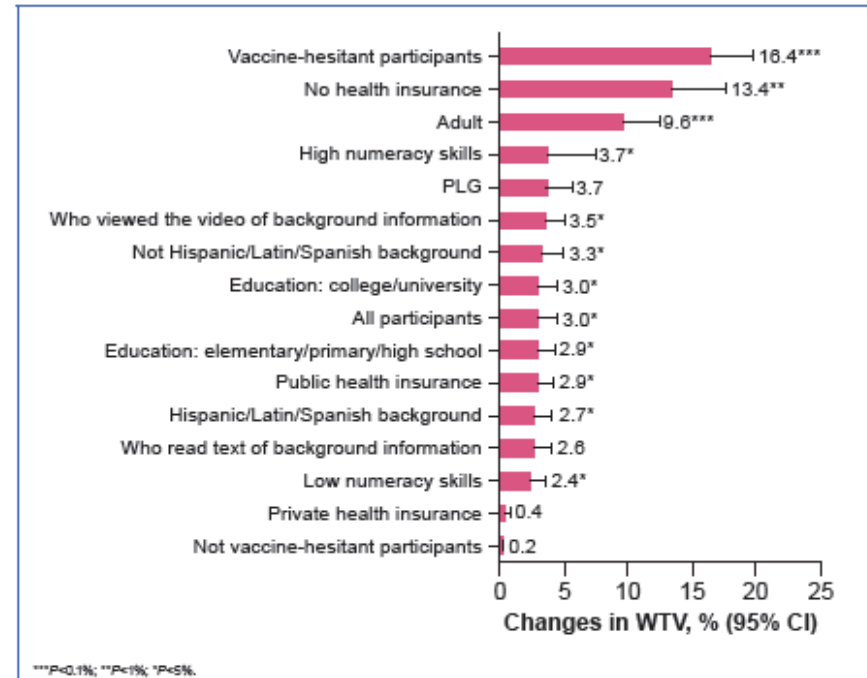
### RESULTS

- Of the 801 participants, 407 were AYP and 394 were PLG.
- Respondents were 49% female and identified as White (78%), Black (13%), and/or Hispanic (17%).

WTV with the pentavalent vaccine was higher among participants who saw the video vs text on background information, who were not vaccine-hesitant vs vaccine-hesitant, and who had private health insurance vs public or no health insurance.



WTV increased when access to a pentavalent (MenABCWY) vaccine was available, although this varied by subgroup.

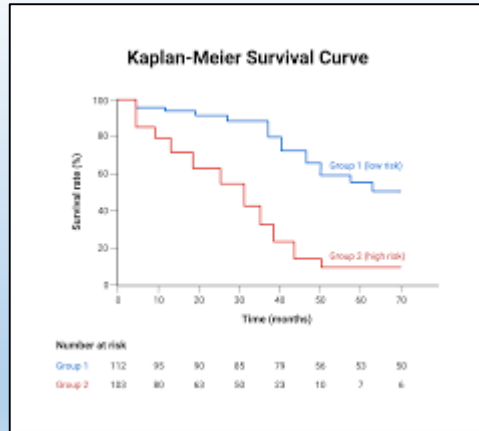


\*\*\*P<0.1%; \*\*P<1%; \*P<5%.

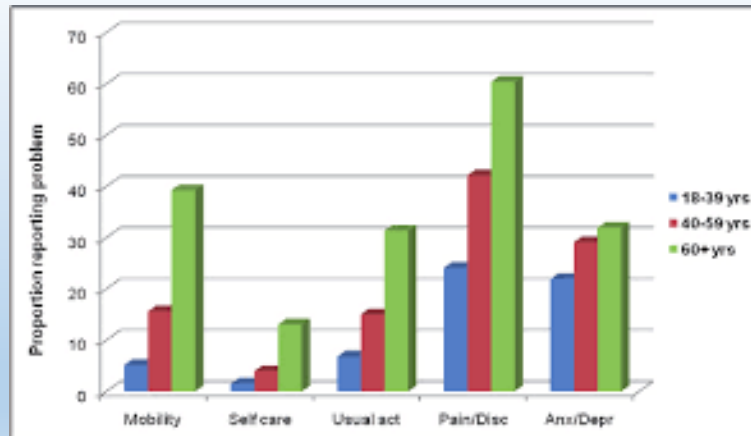
The introduction of a pentavalent meningococcal vaccine, increased participants' willingness to be vaccinated.

Participants receiving background information through video vs text placed higher significance of the number of doses and greater willingness to be vaccinated.

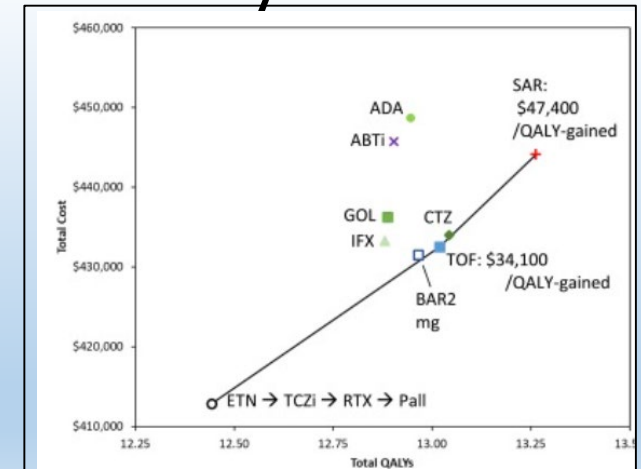
# Utility in a Cost-Utility Model is Health Utility



Source: [Biorender](#)

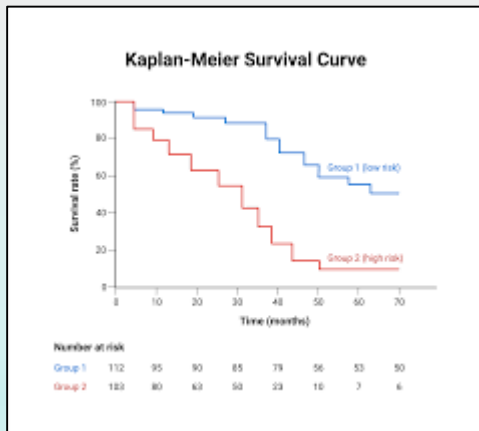


Source: [EuroQoL](#)



Source: [CADTH](#)

## But Patient Utility Encompasses More than Health Utility



Source: [Biorender](#)





Thank

You!







# Health Behaviors – A Microeconomic Framework

- **Health outcomes**

Represent complex relationships that involve the specifics of the disease, treatment mechanism of action, pharmacokinetics, titration effects, baseline patient conditions, and more

- **Health decisions**

Often based on limited information about the outcomes that patients can experience

Charles Muiruri, Eline M. van den Broek-Altenburg, Hayden B. Bosworth, Crystal W. Cené, and Juan Marcos Gonzalez. "A Quantitative Framework for Medication Non-Adherence: Integrating Patient Treatment Expectations and Preferences." *Patient preference and adherence* (2023): 3135-3145.



# Health Production Function

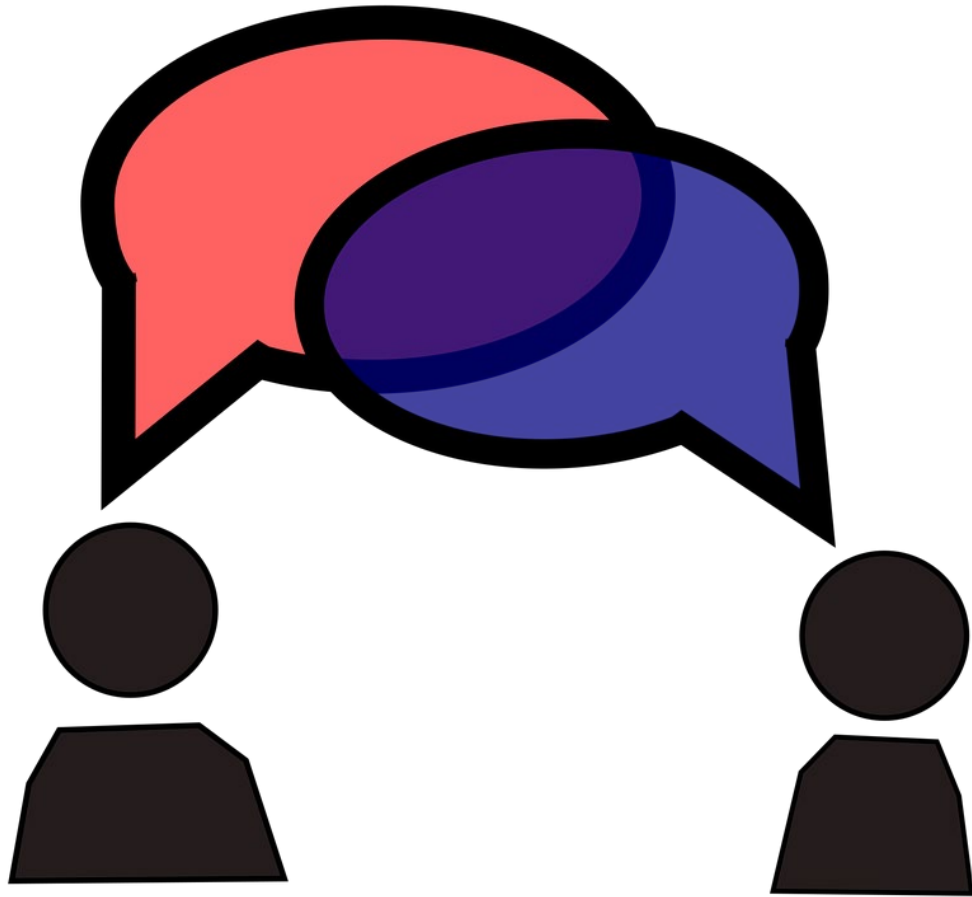
- Patients craft a mental model of health production under scenarios that are not covered by interactions with their physicians or by the clinical evidence available to them



Charles Muiruri, Eline M. van den Broek-Altenburg, Hayden B. Bosworth, Crystal W. Cené, and Juan Marcos Gonzalez. "A Quantitative Framework for Medication Non-Adherence: Integrating Patient Treatment Expectations and Preferences." *Patient preference and adherence* (2023): 3135-3145.



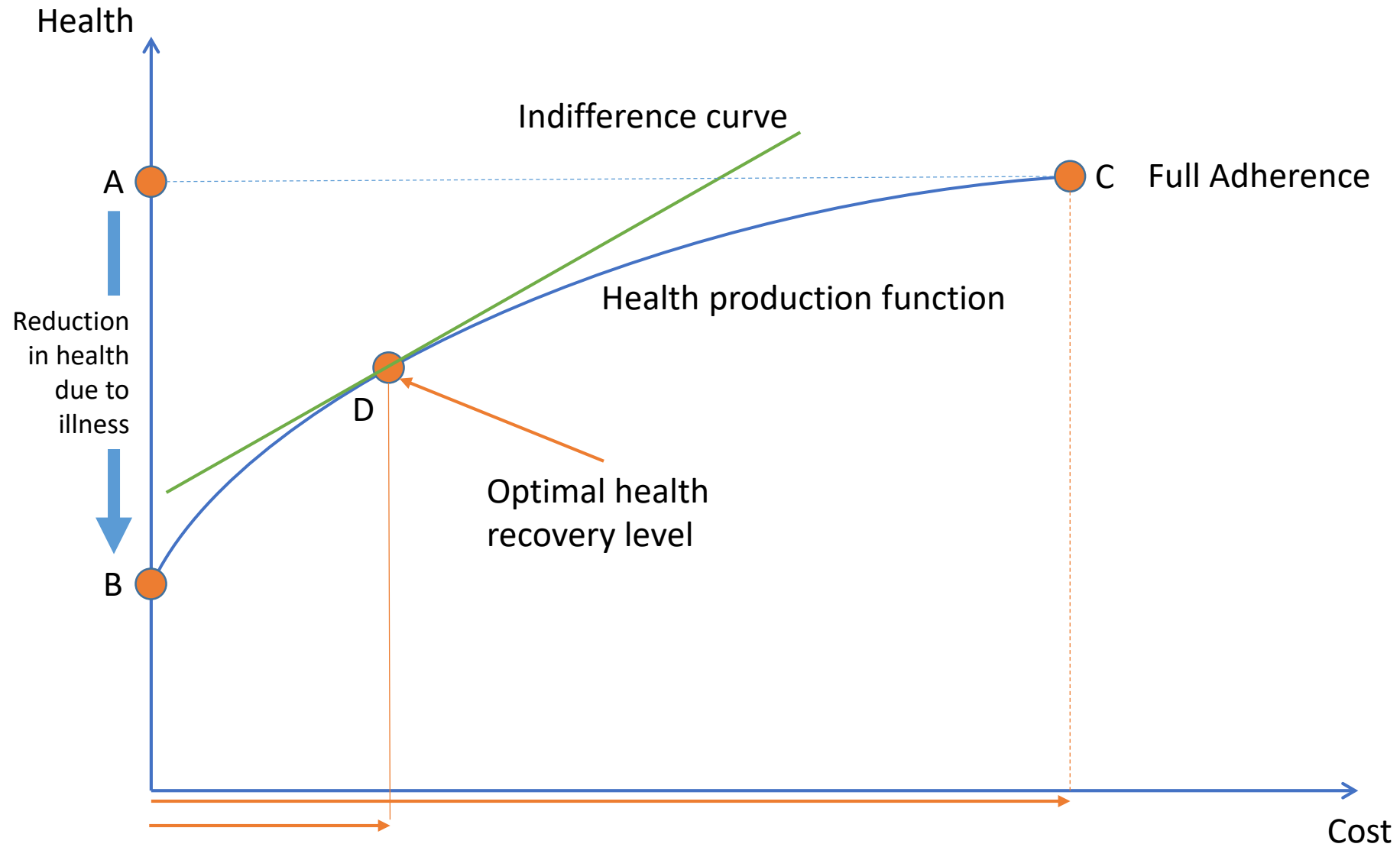
# Health Production Function



- Relates the benefits of health behaviors and the costs associated with achieving such benefits
  - May be informed by clinical evidence, but corresponds to patients' perception of the implications of clinical evidence in the real world
  - Potentially related to patients' experiences with treatment and the information they receive from others around them

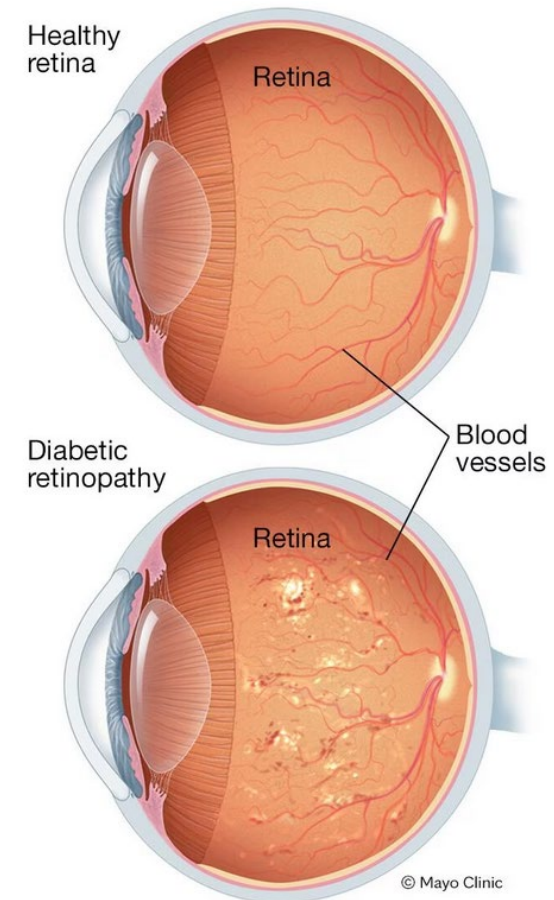
Charles Muiruri, Eline M. van den Broek-Altenburg, Hayden B. Bosworth, Crystal W. Cené, and Juan Marcos Gonzalez. "A Quantitative Framework for Medication Non-Adherence: Integrating Patient Treatment Expectations and Preferences." *Patient preference and adherence* (2023): 3135-3145.





# The Case of Diabetic Retinopathy

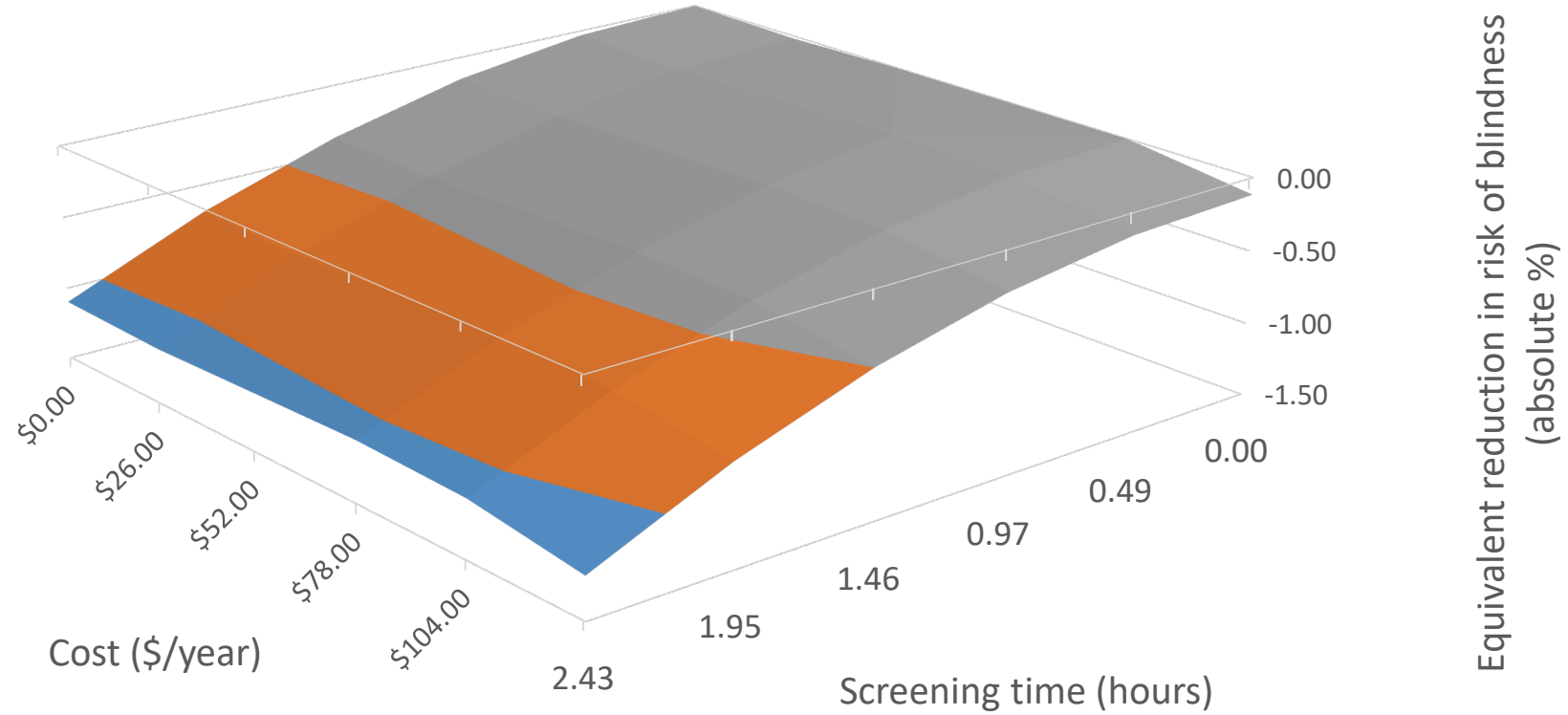
- Diabetic retinopathy (DR) affects blood vessels in the retina of individuals with diabetes
- Leading cause of blindness among American adults
- Early initiation of treatment has the potential to reduce severe vision loss by up to 95%
- Yet the annual screening rates for people with diabetes in the US remain below the 70% target



Office of Disease Prevention and Health Promotion. Increase the proportion of adults with diabetes who have a yearly eye exam — D-04. <https://health.gov/healthypeople/objectives-and-data/browse-objectives/diabetes/increase-proportion-adults-diabetes-who-have-yearly-eye-exam-d-04>



# Utility Surface



# Eliciting Patients' Expectations About Efficacy

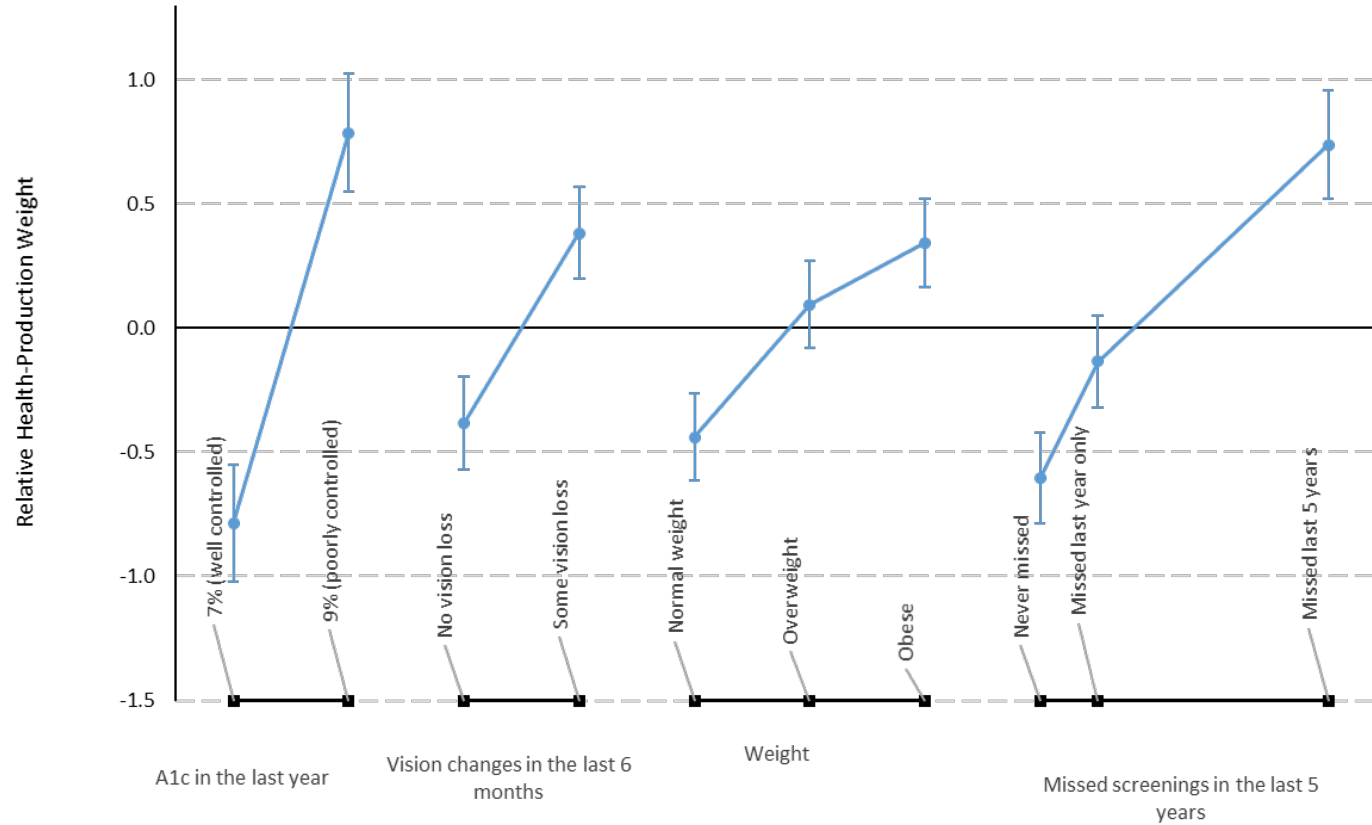
Please consider these two patients.

	Patient A		Patient B		
A1c level in the last year	7% (well controlled)		9% (poorly controlled)		
Vision changes in the last 6 months	Some vision loss		Some vision loss		
Fitness level	Overweight		Obese		
Missed screenings in the last 5 years	Missed last 4 years		Missed last year only		
Which patient is more likely to experience blindness from diabetic retinopathy in 5 years?	Definitely Patient A <input type="radio"/>	Likely Patient A <input type="radio"/>	Both patients are equally likely <input type="radio"/>	Likely Patient B <input type="radio"/>	Definitely Patient B <input type="radio"/>

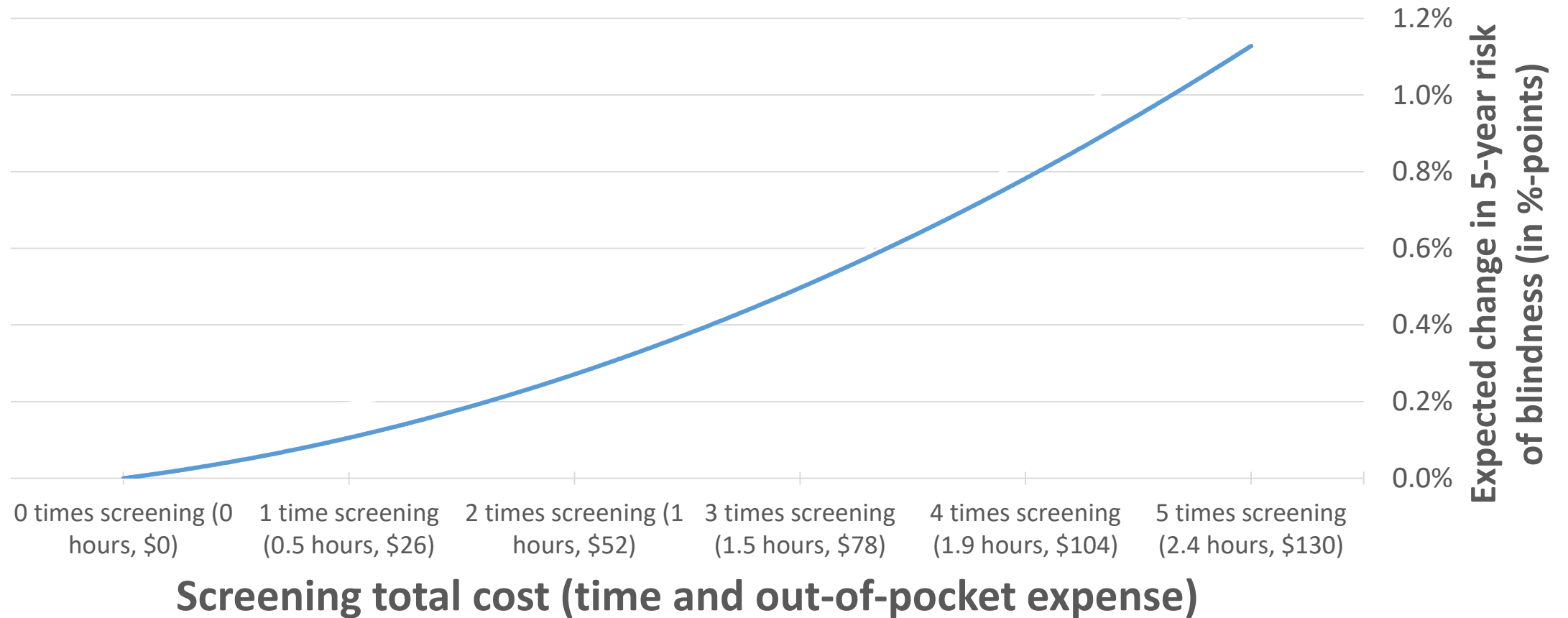




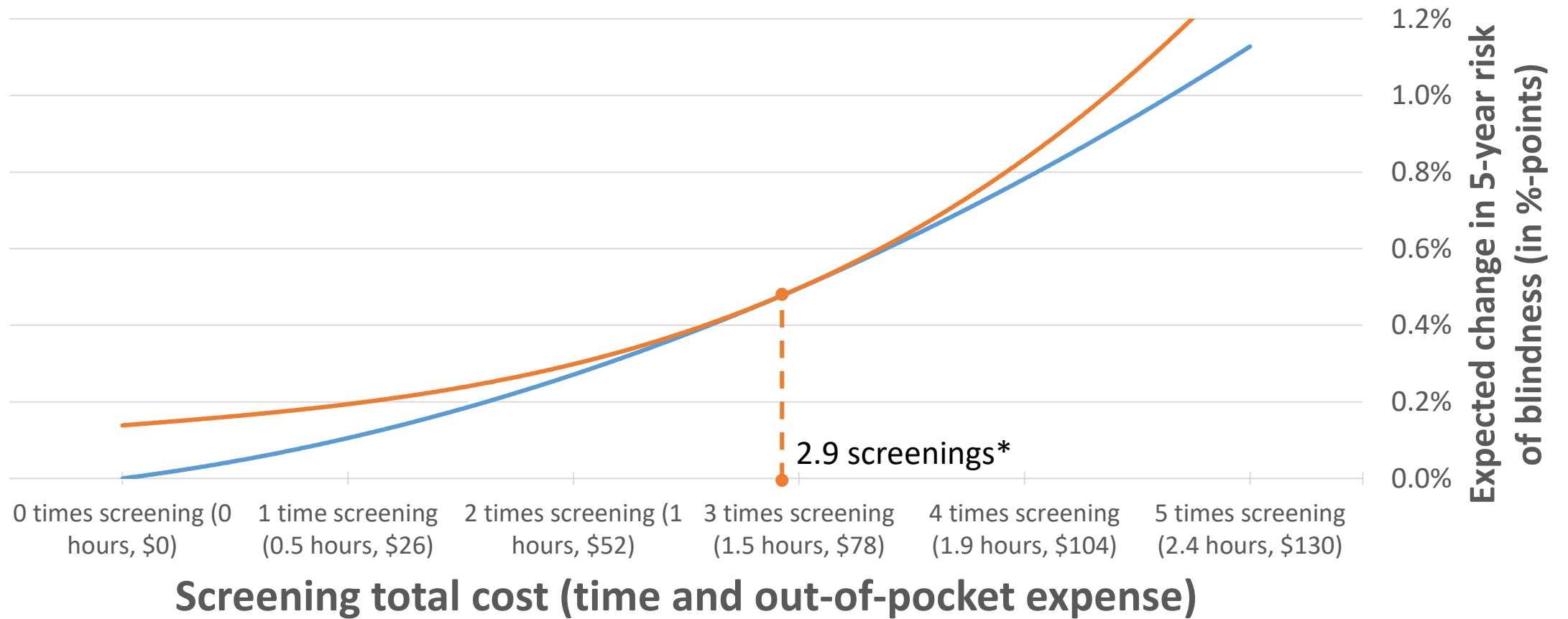
# Changes in Efficacy



# Implied Health Production Function



# Point of Tangency





# Conclusions

- Reductions in the 5-year blindness risk from DR were very valuable to patients
- Patients did not expect screening to actually produce large reductions in blindness risk
- Patients believed that controlling their A1c level would be slightly more effective at reducing blindness risk from DR than yearly screening
- It would take a significant reduction in time commitment and out-of-pocket expenses for patients to consider screening to be “cost effective”





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June 11-25, 2024



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# Broadening valuation of outcomes

## Standard approach

Maximize population-level preference-weighted health benefits (i.e. QALYs) per dollar spent

## More expansive approach

Maximize individualized preference-weighted benefits per dollar spent

- Offer **more** treatment options. **More** patients maximize individualized preference-weighted benefits.



- Potential to improve adherence and other behaviors that may impact use of other health resources.



- Unknown impact on:
  - total costs
  - health benefits
  - well-being

Thank YOU for your attention.

