Findings from a Roundtable Discussion with US Stakeholders on Valuation of the EQ-5D-Y-3L

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ABSTRACT

Objectives: The International Valuation Protocol for the valuation of the EQ-5D-Y-3L provides baseline guidance, but country-specific context is also important. Obtaining input from local/national stakeholders can provide valuable insights on study design relevant to policy makers and end-users. This study aimed to obtain US stakeholders' input on key considerations for youth valuation in the US.
Methods: Stakeholders were identified via a purposeful sample of the investigators' network in 1) pediatric clinicians and researchers, 2) HTA related think-tanks, 3) third-party payers, 4) laypersons and 5) HEOR researchers from consulting, pharmaceutical, and medical device companies. Prior to the meeting, participants were provided with reading materials and a five-item survey to assess their baseline familiarity and views on valuing children's health. A 2-hour, online roundtable discussion was conducted on April 7, 2022, consisting of 30-minutes of introduction and study overview, followed by 90-minutes of semi-structured discussion on various topics including the need for child-specific utilities, assigning premiums to children health, sampling strategies, framing perspective of tasks and other challenges. The session was recorded, transcribed, and summarized. Post-meeting reflections were also provided by most participants.
Results: Of 14 participants, 13 completed surveys were returned indicating: 10/13 (77%) of participants had experience using HRQoL measures; 7/13 (54%) use health utility measures and/or estimate QALYs in their work; 8/13 (62%) were "very" or "extremely" familiar with HTA; and 7/12 (58%) thought willingness-to-pay for treatments for children should be greater than for the adults. A number of stakeholders supported paying for premiums for children in lieu of their potential future contributions to society, to avoid potential undervaluation, and to promote access to innovative treatments, especially for rare childhood diseases. Others were concerned about double counting, lack of data suggesting premiums produce long-term benefits, and dangers of valuing segments of the population differently. Most stakeholders though adolescents ought to be considered for the study sample, as they felt that adolescents were capable of self-completing valuation tasks and may be more readily able to relate to a 10-year-old's perspective compared to adults. Support was mixed in terms of proportion of sampling from the adolescents versus adults. There were concerns that adults would be inconsistent in their views about a 10-year-old, partly dependent on their status as a parent.
Conclusions: US stakeholders provided valuable insights relevant to youth valuation in a US context and were open to continued dialogue. In the US, HTA has a distinct purpose, as it guides pricing rather than reimbursement, and patients and payers have an important role in policy. Methodologically, there was general support for including adolescents, specifically weighted in proportion to the general population. The approach taken for this study may be useful to investigators seeking stakeholder input on other measures or valuation studies in children.

Statements and Declarations:

- Jonathan Nazari is a health economics and outcomes (HEOR)research fellow sponsored by the University of Illinois at Chicago and Pfizer inc.
- Simon Pickard is a professor at the University of Illinois at Chicago, a partner at Maths in Health and Second City Outcomes Research consulting, and a member of the EuroQol Research Foundation.
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INTRODUCTION

The EQ-5D-Y-3L is a generic preference-based health related quality of life (HRQoL) instrument for children, developed by the EuroQol Research Foundation in 2009 (1). Similar to the adult version of the EQ-5D-3L, the EQ-5D-Y-3L includes five dimensions describing health in terms of 1) mobility, 2) looking after myself, 3) doing usual activities, 4) having pain or discomfort, and 5) feeling worried, sad, or unhappy, using more child-friendly language. Each dimension has three levels of severity, ranging from no problems to a lot of problems. In 2020, an international protocol for conducting valuation tasks and producing value sets for the EQ-5D-Y-3L was published, serving as baseline guidance to investigators pursuing valuation studies (2). This protocol recommends elicitation of health preferences from adults from the general population who represent a societal perspective (e.g., voters, taxpayers) through discrete choice experiments (DCE) and composite time-trade off (cTTO) tasks. These tasks are framed from the perspective of a hypothetical 10-year-old child (e.g., "considering a 10-year-old child, which health state do you prefer?"). This approach allows for the estimation of the relative importance of dimensions and levels using DCE and anchoring the latent scale DCE responses onto a health utilities scale from cTTO results, resulting in estimated utility weights for each of the 243 health states described by the EQ-5D-Y-3L. To date, EQ-5D-Y-3L valuation studies have been completed and published by teams from Japan(3), Slovenia(4), Spain(5) and Germany (6) by adapting guidance from the international protocol. Additional valuation studies are underway in approximately a dozen countries, including the United States (US).

While the published International Valuation Protocol for the EQ-5D-Y-3L provided guidance, youth valuation is associated with unique challenges compared to adult valuation tasks (7, 8). Several of these challenges have been brought to light by early valuation efforts, and additional research to address remaining normative and methodological questions is ongoing. For example, adult respondents to cTTO tasks from a 10-year-old framing perspective showed reluctance to trade-off life years for children, even for poor health states, thus resulting in compressed utility scales and QALY gains for health interventions for children compared to adults.(9) Two central questions related to these observations are: whose preferences should be used in valuation studies for children, and how should valuation tasks be framed (10)? Recent research has explored these questions in depth, using a mixture of quantitative and qualitative methods to assess impacts of using adult or child (including varying ages) framing perspectives for valuation tasks (9, 11-14). As these are largely normative considerations, there is no

clear, emerging methodological solution, and it is possible that there is no uniform guidance that can be taken for all future EQ-5D-Y-3L valuation studies. (7)

In light of the challenges in youth valuation, health technology assessment (HTA) stakeholders may provide insights that can fill the gaps. However, currently no HTA agencies provide standardized guidance on how to measure HRQoL in youth(7). As such, it may be especially important to engage local stakeholders to inform country-specific youth valuation studies. However, when we met with principal investigators of EQ-5D-Y-3L valuation studies in 2021 in order to begin preparations for a US valuation study, we learned that they had limited contact with their local HTA agencies regarding youth valuation in their countries. In the US, HTA plays a distinct function in informing health technology pricing rather than reimbursement decisions, and third-party payers and patients play a more prominent role in guiding health policy. Towards preparation for a US valuation study of a child-friendly measure of health, this paper reports an approach to stakeholder engagement and summarizes the resulting discussion in terms of input on key considerations that could help to augment guidance in the international protocol for the US context.

METHODS

Key stakeholders were identified from investigators' networks and purposively sampled to represent varied viewpoints and expertise. Stakeholders from the following backgrounds were determined to be relevant to the discussion: 1) pediatric clinicians and researchers, 2) health technology assessment (HTA) agencies, 3) third-party payers, 4) laypersons and 5) Health Economics and Outcomes (HEOR) researchers from consulting, pharmaceutical, and medical device companies. Fourteen stakeholders were invited to participate, and were provided informed consent, videos summarizing the EQ-5D descriptive systems, and relevant published literature (12, 15). A five-item survey assessing baseline familiarity and views on valuing children's health was distributed prior to the meeting (Figure 1).

A 2-hour, online roundtable discussion was conducted on April 7, 2022. The first 30 minutes were devoted to providing background information, including (1) an overview of quality-of-life measurement, (2) the EQ-5D-Y-3L instrument, (3) valuation study methodology, and (4) select challenges in youth health valuation, especially related to preference source (who is asked to participate in the valuation exercises), and framing-perspective (whose health is being valued in valuation exercises). The remaining

90-minutes were devoted to semi-structured discussions around eight pre-specified questions related to the need for child-specific utilities, assigning premiums to children health, sampling strategies, framing perspective of tasks, and other general challenges (Table 2).

The discussion questions were not written with the intent of reaching a consensus among those participating, but rather to stimulate an exploration of contemporary topics by nationally recognized stakeholders. To maintain meeting flow and give all participants an opportunity to speak, select stakeholders were designated to respond to each posed discussion question before opening the discussion to the larger group. In addition, given the online format, participants were encouraged to post additional thoughts in the chat box and submit post-meeting reflections via email to the investigators. The 90-minute discussion was recorded and transcribed. Investigators convened to summarize major themes stemming from the discussion and written feedback.

Each stakeholder was compensated $500 for their participation, with the expectation that stakeholders will be open to further engagement during the course of the valuation study. Approval for the study was obtained from the University of San Francisco IRB (#1702).

RESULTS

In total, 14 stakeholders agreed to participate in the discussion (Table 1). Additionally, two members of the EuroQol youth working group were present to provide additional input and points of clarification during the discussion; with the three investigators serving as moderators, a total of 19 people were present for the roundtable discussion. Of the stakeholders present, 13/14 returned completed pre-meeting surveys. Survey results indicated that 10/13 (77%) of participants had experience using HRQoL measures and 7/13 (54%) use health utility measures and/or estimate QALYs in their work. Further, 8/13 (62%) were “very” or “extremely” familiar with HTA and 7/12 (58%) thought willingness-to-pay for treatments for children should be greater than for treatments for adults.

The ensuing conversations centered around several interconnected themes. The first was whether premiums should be assigned when considering children’s health and willingness to pay for health technologies for children. The second theme related to who should be included in the study as sources

of preferences, and the framing-perspective valuation tasks should take. Lastly, stakeholders discussed approaches to quota sampling respondents for the valuation study, and how they would foresee using a resulting EQ-5D-Y-3L value set.

Assigning a premium when valuing children's health

In the pre-meeting survey, 7/12 (58%) thought willingness-to-pay for treatments for children should be greater than for treatments for adults. Those in favor of premiums for children described support based on children's future contribution to society over their prospective lifetime. Most respondents qualified their answers by recognizing that this is a difficult question and that there is an innate emotional response to support valuing the health of children. However, stakeholders against premiums for children's health, especially those with HTA and health economics backgrounds, expressed concern that use of QALYs in cost effectiveness may already account for the additional years of life children will live, effectively leading to double counting if additional premiums were applied. Others brought up the lack of data to suggest that premiums would produce long-term benefits, as well as the dangers of valuing some segments of the population more highly than others (for example, assigning premiums for children but not the elderly).

Sources of preferences and framing-perspective of valuation tasks

A substantial portion of the discussion was devoted to debating the selection of the choice of participants for a US valuation study (sources of preferences) and how DCE and cTTO tasks would be described to participants in terms of whose health they would imagine (framing perspective). The international protocol recommends that tasks be framed in terms of a 10-year-old child. Stakeholders identified several challenges with this approach: first, older adults may lack the capacity to identify with a 10-year-old child in order to provide meaningful responses to valuation exercises. Stakeholders also questioned whether adult preferences for a 10-year-old would be systematically impacted by certain characteristics, such as whether respondents had children, and the number, ages, and health status of those children. As such, a solution supported by many stakeholders was to approach children or adolescents directly for the valuation study. Stakeholders in support of this possibility suggested that, while 10-year-old children may be too young to participate in valuation tasks to match the framing-perspective, adolescents would be closer in age and experience to a 10-year-old and would have more

informed preferences. Additionally, they felt that adolescents would be capable of providing valid responses to valuation tasks. Stakeholders also thought about how adolescent preferences would more closely align with end users of the EQ-5D-Y-3L. However, there was confusion expressed by some participants in reconciling these viewpoints with the intention of producing a US value set representing a societal, rather than individual patient-level, viewpoint. Those stakeholders more familiar with HTA and the intentions of producing a value set for use in cost effectiveness were more inclined to favor adult respondents. They emphasized that children and adolescents do not vote or pay taxes, and that adults ages 18 years and older make decisions on their behalf in terms of healthcare. Thus, these stakeholders were more inclined to limit respondents to adults, with tasks either framed from their own perspective, or from a 10-year-old child perspective (with recognition of the potential challenges this framing perspective could pose).

Sampling approach and value set selection

Building off the discussion about sources of preferences and framing-perspectives, stakeholders offered insight into potential methodological guidance for the US valuation study. The majority of stakeholders thought inclusion of adolescent preferences, either alone or in addition to adult preferences, to be important. For example, a few stakeholders suggested weighting the proportion of adolescent respondents to their representativeness of the US population, though responses to this suggestion were mixed. Select stakeholders also highlighted the importance of collecting information from adult respondents as to whether they were parents of children, and how that role may have influenced their responses to valuation exercises. They also suggested that experiences caring for ill children or high levels of religiosity may also influence valuation of children's health. However, stakeholders recognized that it may be infeasible to quota sample based on these characteristics. Despite a lack of agreement on who to include and what framing-perspective to take for the valuation study, stakeholders generally did not support producing multiple US EQ-5D-Y-3L value sets out of concern that end-users may be confused on proper selection, or may default to using whichever value set would produce most favorable QALY gains for their purpose.

Table 1: Stakeholder Backgrounds

Stakeholder Number	Background
001	Health services research in children's health
002	Health services research in children's health
003	Pediatric clinician and health services research
004	Health services research in children's health
005	HTA Agency
006	HEOR in academia
007	HEOR consulting
008	HEOR in pharmaceutical industry
009	HEOR in pharmaceutical industry
010	HEOR in pharmaceutical industry
011	Medical device industry
012	Third party payer
013	Layperson – caregiver of child with rare disease
014	Layperson – early childhood educator

HEOR – Health Economics and Outcomes Research
HTA – Health Technology Assessment

Figure 1: Pre-Meeting Survey Questions

1) Do you have experience using health or quality-of-life measures?
   - ☐ Yes
   - ☐ No
2) Does your work involve using health utility measures and/or estimating quality adjusted life years (QALYs)?
   - ☐ Yes
   - ☐ No
3) How would you rate your familiarity with Health Technology Assessment (HTA)?
   - ☐ Not familiar
   - ☐ Somewhat familiar
   - ☐ Very familiar
   - ☐ Extremely familiar
4) Do you think willingness to pay for treatments for children should be greater than for treatments for adults?
   - ☐ Yes
   - ☐ No
5) Do you have any comments and questions for the meeting? [optional]

   _____

Table 2: Roundtable Discussion Questions

Discussion Question
1. Need assessment: *Based on the pre-survey information, some of you use QALYs in your work. In the US context, is it useful to have a measure that can generate health utilities specifically for children?*
2. Willingness to pay: *In allocating healthcare resources (e.g., taxpayer dollars) based on HTA evidence, should children's health be assigned a premium (be willing to pay more to extend one year of life/QALY) compared to adults?*
3. Who should we ask: *Typically, we ask the general adult population (taxpayers) when valuing measures of health for adults. In valuing measures of children's health, who should we engage from the general population as respondents?* ▪ *Children/Adolescents* ▪ *Adults* ▪ *A Combination*
4. Which Perspective: *When valuing health states that vary in severity, general population respondents are typically asked to imagine themselves in those health states. Adults tend to value health states differently when trading off life years and quality of life associated with child's health (for example, a 10-year-old child). In your view, which perspective is most appropriate in terms of framing a valuation exercise:* ▪ *Adult (own) perspective?* ▪ *10-year-old child perspective?*
5. Multiple value sets: *There is the potential to produce multiple value sets as opposed to only one value set for all children. This may pose issues:* ▪ *Transitioning between measures for different age groups* ▪ *Selection/gaming of value sets* *How should we navigate these issues? Should we designate a "reference case"; which source and which perspective?*
6. Sampling approach: *In terms of our sampling strategy for this study, we plan to conduct quota-based sampling based on racial/ethnic groups, age, gender to have a nationally representative sample.* *Are there other considerations regarding the quota-based sampling strategy?* ▪ *e.g., Adolescents*
7. Whose child: *Some respondents indicate they would answer differently if it were their child vs someone else's child. What is the appropriate perspective to take?*
8. Additional Challenges: *What are the challenges you foresee in utilizing health preference values specifically for children? Are there any other points you wish to bring up for further discussion?*

DISCUSSION

US stakeholders provided valuable insights relevant to youth valuation in a US context. Stakeholders offered multiple perspectives surrounding premiums for healthcare decisions in children compared to adults and the questions of whose preferences matter and how valuation tasks should be framed. Of note, most stakeholders were in favor of including a subset of adolescent respondents directly in the valuation task and felt them capable of providing valid responses. On the other hand, those with greater familiarity with valuation conventions and HTA experience favored inclusion of exclusively adult respondents to capture the voter or taxpayer perspective. Research has shown that adolescents provide valid responses to DCE tasks from their own perspectives, and that their results differ from adults considering a hypothetical 10-year-old child's perspective (16). Conventionally, studies have avoided inclusion of children or adolescents in cTTO exercises given both the greater complexity of these tasks and the potential difficulty of receiving ethical approval. Adolescent DCE responses would only allow for latent values without anchoring utility values from 0 (death) to 1(full health) as required for QALY estimation. Thus, the implications of how adolescents' DCE responses would be used, including in combination with adult responses, in modeling of a final US EQ-5D-Y-3L value set remains unclear.

The fact that opinions on the path forward for a US EQ-5D-Y-3L valuation study among stakeholders was mixed was not surprising. Inclusion of US stakeholders of diverse backgrounds and the interests they serve may have precluded any possibility of reaching consensus, as each had their own priorities and considerations. However, this discussion was constructive both to stimulate a dialogue around the degree of understanding and misunderstanding regarding methodological considerations in child health valuation, as well as to educate ourselves and each other with respect to the multiple players involved in healthcare decision-making in the US context, which contrasts with many other countries. Methods such as multi-criteria decision analysis (MCDA) could have been explored to establish relative importance weights related to the discussion points and reach a more concrete decision, though this would have been contrary to the aims of this stakeholder engagement; the intent of the discussion was not to reach a consensus, but rather to stimulate a qualitative exploration of feasibility, validity, and prioritization related to valuing children's health.

Stakeholder engagement without the intention of reaching a consensus is not without its weaknesses. The diversity of opinions about the "correct" approach to youth health valuation highlights the different expectations that stakeholders hold when ultimately evaluating the results of the valuation study and

determining their 'buy-in' for the resulting value set. Our discussion exposed stakeholders to potential study options with which they may not have been otherwise familiar, heightening awareness for possibilities that may meet some of their needs better than others. Ultimately, given stakeholders' different needs and opinions about child health valuation, it will be impossible to meet everyone's expectations with one study in a single setting.

Still, this study highlights the importance of engaging local stakeholders in valuation studies to heighten the relevance and applicability of a preference-based measure, especially for its intended purpose of capturing societal perspective preferences for use in cost effectiveness analysis. US stakeholders indicated that they would be open to continued dialogue with investigators, and were interested in a future, follow-up meeting. Notably, this also emphasizes the role of an international protocol in valuation studies as a baseline guidance, rather than a recipe for conducting a successful study. The shortcomings of a one-size-fits-all international protocol are that it does not accommodate country-specific contextual factors, which should be considered by investigators with input from national stakeholders.

The valuation of children's health has revealed limitations in methodologies used by instrument developers. There is need to advance the field in various ways, including deciding whose preferences and which preference elicitation methods are best fit for purpose. As there is limited empirical work in many of these areas with no right or wrong answer, the process of stakeholder engagement as a source of insight can assist instrument developers in improving methodology and enhancing the relevance of their work. Stakeholder engagement initiatives are currently underway by investigators of the EQ-5D-Y-3L valuation studies in the United Kingdom and Canada, where HTA agencies have a substantial role in reimbursement decisions. The results of this study may be used as a reference to the types of stakeholders to engage and questions that may be asked to elicit insightful responses in consideration of the valuation of children's health.

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