How wrong can it be?
The impact of using inappropriate adult-specific value set for EQ-5D-Y in cost-effectiveness estimates

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Background

- EQ-5D-Y is commonly used in clinical trials to measure health-related quality of life in interventions involving children and/or young people (CYP).
- However, it is frequently observed that the EQ-5D adult-specific value set is used to generate utility scores for EQ-5D-Y, despite recommendations against this practice from the instrument developer.

Objective

- **This study aims to investigate the impact of using adult-specific vs. youth-specific value sets for EQ-5D-Y on cost-effectiveness estimates.**

Methods

- Data were obtained from a randomized control trial in England, which investigated the effectiveness and cost-effectiveness of LEGO®-based therapy compared to usual support in 248 CYP aged 7-15 years with autism spectrum disorder (ASD).[1] The original results are presented in **Table 1**.
- Proxy-version EQ-5D-Y-3L data were collected. In the original trial analysis, the UK adult-specific value set was utilized due to the absence of a UK youth-specific value set.[2]
- Base case analysis: average costs based on NHS and personal social services perspective and quality adjusted life years (QALYs) measured by EQ-5D-Y-3L over time horizon of one year were used to calculate the incremental cost-effectiveness ratio (ICER). Non-parametric bootstrapping was conducted.
- Scenario analyses: include costs from various perspectives and QALYs measured using CHU-9D.[3]
- To assess the impact of value sets used on QALY gains, the Dutch and Germany value sets (both for adult[4,5] and youth[6,7]) were applied to the original trial data to calculate ICER estimates.

Table 1. Original estimates

LEGO®-based therapy vs. usual support	Incremental costs (£), (95% CI)	Incremental QALYs (95% CI)	ICER (£/QALY gained), (95% CI)
EQ-5D-Y (UK adult tariff)			
Base case: CUA from NHS perspective	-251 (-268 to 752)	0.009 (-0.008 to 0.028)	Dominant
Scenario 1: Complete case analysis from NHS perspective	-1,280 (-4,578 to 2,081)	0.011 (-0.017 to 0.040)	Dominant
Scenario 2: CUA from NHS and education perspective	-511 (-1,452 to 392)	0.009 (-0.008 to 0.028)	Dominant
Scenario 3: CUA from societal perspective	-376 (-1,377 to 595)	0.009 (-0.008, 0.028)	Dominant
CHU-9D			
Scenario 4: Assume outcomes were measured using CHU-9D	-246 (-719 to 246)	0.029 (0.009 to 0.049)	Dominant

Source: Wang et al. [3]

Results

- The estimated QALY gains were 0.015 (95% CI: -0.022 to 0.055) and 0.039 (95% CI: -0.057 to 0.143) when applying Dutch adult and youth-specific value sets, respectively (**Table 2**).
- Similarly, the QALY gains were 0.003 (95% CI: -0.031 to 0.038) and 0.037 (95% CI: -0.072 to 0.148) when using Germany adult and youth-specific value sets, respectively (**Table 2**).
- A substantial two to twelve-fold difference was observed between the use of youth- and adult-specific value sets.
- Despite varying value sets, the conclusion of study findings remains unchanged – compared to usual support, LEGO® based therapy resulted in a marginal reduction in costs and improvement in QALYs.

Table 2. Results of ICER estimates

LEGO®-based therapy vs. usual support	Incremental costs (£), (95% CI)	Incremental QALYs (95% CI)	ICER (£/QALY gained), (95% CI)
EQ-5D-Y (NL youth tariff)			
Scenario 5: CUA from NHS perspective	-310 (-786 to 136)	0.039 (-0.057 to 0.143)	Dominant
EQ-5D-Y (GM youth tariff)			
Scenario 8: CUA from NHS perspective	-297 (-810 to 202)	0.037 (-0.072 to 0.148)	Dominant
EQ-5D-Y (NL adult tariff)			
Scenario 11: CUA from NHS perspective	-271 (-781 to 166)	0.015 (-0.022 to 0.055)	Dominant
EQ-5D-Y (GM adult tariff)			
Scenario 14: CUA from NHS perspective	-316 (-831 to 172)	0.003 (-0.031 to 0.038)	Dominant

Discussion

- The results showed significant differences in QALY gain estimates, particularly between the use of adult- and youth-specific value sets.
- Several sources contributing to differences between adult and youth-specific value sets:
  - Valuation methods: the time trade-off (TTO) was used for deriving the German and Dutch adult value sets, while their youth value sets mainly based on discrete choice experiments, with TTO employed for anchoring.
  - Perspectives: the adult version instructed participants to envision themselves, while the youth version required them to imagine being a 10-year-old child.
  - Modelling methods: different modelling specifications (w/wo constant and interaction terms) and techniques were used.
- As youth-specific value sets for EQ-5D-Y become more readily available, researchers may consider sets from other jurisdictions if their own lacks the necessary value set for cost-effectiveness analyses.

Conclusions

- **This study highlights a substantial difference in QALY gain estimations between adult-specific versus youth-specific value sets for EQ-5D-Y. The findings strongly endorse the use of youth-specific value sets for EQ-5D-Y in CYP with ASD.**

References

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