A Preliminary Analysis of Hemophilia Patient Utility Study of Treatment Administration Impact: A Discrete Choice Experiment (DCE) using Time Trade-Off (TTO) Methodology

PO070

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INTRODUCTION

- Hemophilia A (HA) is a bleeding disorder characterized by factor VIII (FVIII) deficiency.
- HA treatments differ in administration and outcomes.
- This study aims to elicit preferences of adult males (≥18 years) with HA and quantify the incremental impact of treatment attribute changes on health utility with DCE-TTO methodology.
- This study summarized preliminary results in a pilot phase (full study targets to enroll >80 participants)

Table 1. Treatment characteristics and their levels considered in the DCE-TTO survey

Treatment characteristic		Levels
Treatment	Frequency and mode of treatment	• One-time IV infusion, works for 5yrs, followed by regular hemophilia treatment • One-time IV infusion, works for 10yrs, followed by regular hemophilia treatment • 2-3 times IV infusion per week • 1-2 times SQ injection per month
Mental Health	Ability to perform normal activities	• Always concerned your hemophilia • Occasionally concerned about your hemophilia • No concern about your hemophilia
Chronic Pain	Pain from a persistent cause	• Yes • No
Bleeding	Number of bleeds per year	• None • 1-4 times • 5 or more
Life Duration	Remaining Years of Life	• 10 years • 15 years • 20 years

*IV intravenous, ** SQ Subcutaneous

Table 3. Burden of hemophilia treatment, n (%) Adult Patients (n=25)

No burden	• 7 (0.28%)
Slight burden	• 10 (0.40%)
Moderate burden	• 6 (0.24%)
Severe burden	• 2 (0.08%)

Table 4. DCE-TTO Annualized Utility Decrement (n=25)

10yr Durability (multiple IV weekly infusions)	0.024
5yr Durability (multiple IV weekly infusions)	0.021
10yr Durability (multiple SQ monthly injections)	0.012
5yr Durability (multiple SQ monthly injections)	0.009

Table 5. DCE-TTO Survey Example

Attribute	Treatment A	Treatment B
Treatment	2-3 IV Infusions Per Week	1-2 times SQ injection per month
Mental Health	Always Concerned	Never Concerned
Chronic Pain	Yes	No
Bleeding	None	• 1-4 times
Life Duration	10 years	• 20 years

ACKNOWLEDGEMENTS

Hemophilia patients and their families, Tulane University School of Public Health and Tropical Medicine, The Louisiana Center for Bleeding and Clotting Disorders, Tulane University School of Medicine, McMaster University, Institute for Policy Advancement, University of Washington, BioMarin

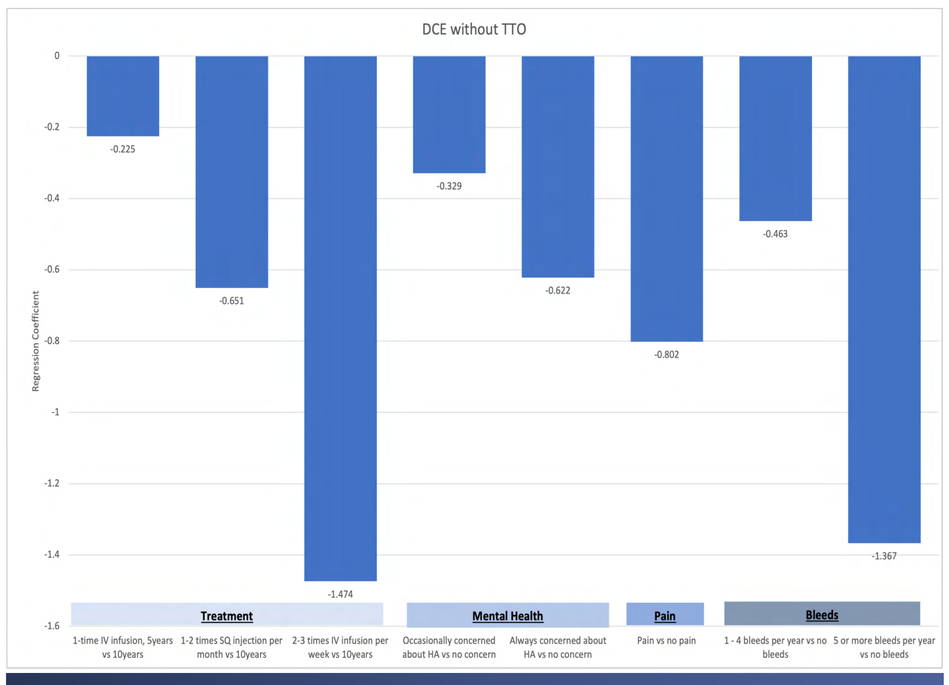
METHODS

- HA patients (aged ≥18y) were recruited from the Louisiana Center for Bleeding and Clotting Disorders at Tulane University to participate in a web or in-clinic survey. **Table 5**
- The DCE-TTO survey was developed based on the core outcome set for hemophilia gene therapy (coreHEM), including method and frequency of administration, mental health, chronic pain, and annual bleeding rate.
- Patients completed a DCE-TTO instrument with 20 randomly generated hypothetical choice sets to choose their preferred treatment. **Table 1**
- Treatment characteristics were analyzed with TTO of 10, 15 and 20 years using conditional logistic models.
- Socio-demographic data and clinical characteristics, were obtained from medical records or self-reports. **Table 2**

RESULTS

- The coreHEM outcomes are important for patients with HA, **Graph 1**
- 25 HA patients completed the survey (mean age 34, range 18-58; 72% with severe hemophilia A). Demographic and clinical characteristics are described in **Table 2**.
- 72% reported their current treatment was at least slightly burdensome **Table 3** (56% treat > once/week).
- Average EQ-5D-5L VAS for participants was 74.4; EQ-5D-5L utility score was 0.81
- All coreHEM outcomes were statistically significant attributes, **Table 4**
  - With TTO component was added, compared with a one-time IV treatment with a 10-year or 5-year durability, treatment with multiple IV infusions weekly was associated with an annualized utility decrement (0.024 vs. 10-year durability, p-value=0.012; and 0.021 vs. 5-year durability, p-value=0.018).
  - Treatment with multiple SQ injections monthly was also associated with an annualized utility decrement (0.012 vs. 10-year durability, p-value=0.214; and 0.009 vs. 5-year durability, p-value=0.334).

Graph 1. Regression Coefficient*-DCE on coreHEM attributes (n=25)



*Patient preferences based on magnitude of the regression coefficient, is statistically significant when comparing at least one level of that attribute with the reference level

DISCUSSIONS

- DCE attributes leveraged coreHEM framework for gene therapy, which was developed by a multi-stakeholder patient-led task force.
- The use of DCE-TTOs is an innovation in measuring the health utility of hemophilia treatment administration. Future studies will compare this approach with other approaches such as standard health utility measures and vignette-based utility measures.
- The small study sample was recruited from a single hemophilia treatment center in Louisiana. We can not generalize the results to other study settings.

CONCLUSIONS

- A one-time IV treatment can improve the health utility over repeated prophylactic administration.
- Durability of the one-time IV treatment impacts the incremental utility improvement; patients with hemophilia are willing to trade life years to reduce treatment burden.

Results are preliminary. As more participants complete the survey, statistical power will be greater to test the direction and strength of patient preferences. These results need to be assessed upon completion of the full study.

Table 2. Demographic and clinical characteristics of respondents (n=25)

Characteristic	Adult patients* (n=25)
Age, years, Mean (SD)	34 (11.57)
Race, Ethnicity n (%)	
White	20 (0.80%)
Black	4 (0.16%)
Asian	1 (0.04%)
Hispanic or Latino/a	2 (0.08%)
Non-Hispanic or Latino/a	23 (0.92%)
Health insurance, n (%)	
Private‖	16 (0.64%)
Public¶	9 (0.36%)
Employment status, n (%) ~	
Full-time/Part-time	17 (0.68%)
Long Term Sick/Disability, Unemployed, Retired	7 (0.28%)
Full-Time/Part-time Student	3 (0.12%)
Annual Income, n (%) [a]	
< $USD 25,000	11 (0.44%)
>$USD 25,000	14 (0.56%)
Education level, n (%)	
High school or less&	10 (0.40%)
>4y, 4y college or others#	15 (0.60%)
Disease severity, n (%)	
Mild/moderate	7 (0.28%)
Severe	18 (0.72%)
ABR, n (%)	
No bleeds [b]	8 (0.32%)
1 to 4 bleeds	12 (0.48%)
> 5 bleeds	5 (0.20%)
FVIII inhibitors in the past, n (%)	7 (0.28%)
Current treatment (at time of consent), n (%)	
On-demand	6 (0.24%)
Prophylaxis‡‡	18 (0.72%)
Type of treatment (at time of consent), n (%)§§	
Short-acting FVIII	2 (0.08%)
Long-acting FVIII	12 (0.48%)
Others¶¶	11 (0.44%)
Frequency of Treatment, n (%)	
> than once a week (2,3,4 times a week)	14 (5.3%)
Once every 2-4 weeks	2 (0.08%)
< than 4 weeks (once every 5 or 6 weeks) [c]	9 (0.36%)
Previous/current use of central device, n (%)	4 (0.16%)
Previous/Current Joint Procedure	8 (0.32%)
Previous/Current Joint Problems	19 (0.76%)
History of HIV	5 (0.20%)
History of Hepatitis C	7 (0.28%)
General health over the past 4 weeks, n (%)	
Very good to Excellent	10 (0.40%)
Fair to Good	15 (0.60%)

SD, standard deviation; ABR, annualized bleed rate; Adult patients aged ≥18 years *All were male HA, ‖Includes employer/group sponsored or individual commercial insurance plans; ¶Includes Medicare, Medicaid or other federal insurance; & includes prefer not to answer, #Includes 2-year, vocational or technical degrees; ‡‡Those reporting no treatment/don't know; §§Respondents could report more than one; none not shown, ¶¶Includes bypassing agents, non-factor products (e.g. emicizumab), or none, ~Two patients are full-time students and work part-time, [a] Includes don't know/prefer not to answer, [b]Includes don't know, [c]Includes don't know

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