BASELINE CHARACTERISTICS IN HEMOPHILIA UTILIZATION GROUP STUDIES PART VI (HUGS VI): AN ADHERENCE STUDY AMONG PARTICIPANTS WITH HEMOPHILIA

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INTRODUCTION

- Extended half-life factor concentrates are expected to reduce the hemophilia treatment burden by decreasing infusion frequency as compared to standard factor concentrates. However, data on patients' adherence to treatment regimens using the new products are scant.

- Hemophilia Utilization Group Study Part VI (HUGS VI) is an observational, non-interventional study that investigates adherence to factor replacement therapy among persons with hemophilia A and B in the U.S.

OBJECTIVE

- To describe the study design, procedures, and preliminary baseline characteristics among persons with hemophilia A (HA) and hemophilia B (HB) in the HUGS VI study.

METHODS

- Study participants with factor VIII or IX deficiency are enrolled from seven geographically diverse, federally supported U.S. Hemophilia Treatment Centers.

- Patients ≥6 years using standard products, or using extended half-life products for less than 6 weeks, are eligible for enrollment.

- Of 91 individuals enrolled between May 2015 and June 2016, data from 79 individuals with completed initial interview are included in the analyses.

- The study observes whether patients convert from a standard product to an extended half-life product during the nine-month study period using a difference-in-difference study design.

- Standardized surveys including an initial interview and three quarterly follow-up surveys are administered to parents of pediatric patients (<18 years) or to adult patients.

- The Validated Hemophilia Regimen Treatment Adherence Scale - Prophylaxis (VERITAS-Pro) and Validated Hemophilia Regimen Treatment Adherence Scale – On-Demand (VERITAS-PRN) are utilized for patients using prophylaxis and those treating on-demand, respectively.

- Health-related quality of life (HRQoL) instruments employed include the PedsQL for parents of pediatric participants and the Short Form-12 (SF-12) for adults. HRQoL scores were calculated using standard algorithms.

- Additional data measuring disease severity, factor dispensed, treatment regimen, bleeding frequency, disease burden, self-reported joint pain and limitation in joint range of motion (JROM) are collected through surveys and clinical chart review.

Table 1: Sociodemographic and Clinical Characteristics

Characteristics	Age Group		Treatment Pattern	
	Adults (N=62)	Children (N=17)	Prophylaxis (N=70)	On-Demand (N=9)
Age (Mean±SD)	29.4±10.3	13.0±3.4	25.2±10.4	31.6±17.3
Hemophilia Type, N (%)				
Hemophilia A	56 (90.3)	17 (100)	67 (95.7)	6 (66.7)
Hemophilia B	6 (9.7)	0 (0)	3 (4.3)	3 (33.3)
Marital Status, N (%) †£				
Married/with a partner	26 (42.6)	10 (62.5)	31 (45.6)	5 (55.6)
Non-married	35 (57.4)	6 (37.5)	37 (54.4)	4 (44.4)
Race/Ethnicity, N (%) £				
White/non-Hispanic	35 (56.6)	10 (62.4)	37 (53.6)	8 (88.9)
Black/non-Hispanic	6 (9.7)	1 (6.3)	6 (8.7)	1 (11.1)
Hispanic	14 (22.6)	4 (25.0)	18 (26.1)	0 (0)
Asian/Pacific Islander	7 (11.3)	0 (0)	7 (10.4)	0 (0)
Others ‡	0 (0)	1 (6.3)	1 (1.5)	0 (0)
Education (>12 yrs), N (%) †£	31 (96.9)	9 (100)	33 (97.1)	7 (100)
Employment, N (%) †£				
Full-time	33 (53.2)	6 (40.0)	34 (50.0)	5 (55.6)
Part-time	12 (19.4)	6 (40.0)	15 (22.1)	3 (33.3)
Unemployed/Retired	17 (27.4)	3 (20.0)	19 (27.9)	1 (11.1)
Household Income, N (%) £				
≤ $25,000	15 (27.3)	3 (21.4)	17 (28.2)	1 (11.1)
$25,001 to $50,000	11 (20.0)	5 (35.7)	13 (21.7)	3 (33.3)
$50,001 to $75,000	11 (20.0)	2 (14.3)	13 (21.7)	0 (0)
$75,001 to $100,000	7 (12.7)	2 (14.3)	7 (11.7)	2 (22.2)
> $100,000	11 (20.0)	2 (14.3)	10 (16.7)	3 (33.3)
Hemophilia Severity, N (%)				
Severe	57 (91.9)	14 (82.4)	66 (94.3)	5 (55.6)
Moderate/Mild	5 (8.1)	3 (17.6)	4 (5.7)	4 (44.4)

Data are presented as frequency (column percentage) for categorical variables and mean ± standard deviation (SD) for continuous variables;
† For participants or parents of children age<18;
£ Data do not add up to N=79 because of missing data;
‡ Others include: American Indian, Alaskan Native and others

Table 2a: VERITAS-Pro Scores in Prophylactic Patients

Scales £	Adults (n=55)		Children (n=15)		Whole Sample (n=70)	
	Mean±SD	Range	Mean±SD	Range	Mean±SD	Range
Total Scale	45.5±11.8	27-72	40.8±11.7	27-62	44.5±11.8	27-72
Time	8.5±3.3	4-17	6.6±2.5*	4-12	8.1±3.2	4-17
Dose	5.5±2.0	4-12	6.3±3.1	4-13	5.6±2.3	4-13
Plan	6.5±3.2	4-20	6.6±3.1	4-14	6.5±3.1	4-20
Remember	8.5±3.1	4-16	7.9±2.7	4-14	8.4±3.0	4-16
Skip	7.6±3.3	4-16	6.5±2.9	4-13	7.4±3.2	4-16
Communicate	9.0±4.3	4-20	6.9±2.8	4-13	8.6±4.1	4-20

Data are presented as mean ± standard deviation (SD) and range; * p<0.05, comparing between self-report and parent-report scores;
£ subscale score ranges from 4 ("most adherent") to 20 ("least adherent"); Total scale score ranges from 24 ("most adherent") to 120 ("least adherent")

Table 2b: VERITAS-PRN Scores in On-demand Patients

Scales £	Adults (n=7)		Children (n=2)		Whole Sample (n=9)	
	Mean±SD	Range	Mean±SD	Range	Mean±SD	Range
Total Scale	47.7±7.1	35-56	35.5±7.8	30-41	45.0±8.6	30-56
Treat	5.6±2.3	4-10	4.5±0.7	4-5	5.3±2.1	4-10
Time	9.4±2.4	6-13	8.5±4.9	5-12	9.2±2.7	5-13
Dose	7.1±1.6	4-19	5.0±0.0	5-5	6.7±1.7	4-9
Plan	5.6±2.4	4-11	4.5±0.7	4-5	5.3±2.2	4-11
Remember	6.7±2.6	4-11	6.0±2.8	4-8	6.6±2.5	4-11
Communicate	13.3±2.6	8-16	7.0±0.0	7-7	11.9±3.6	7-16

Data are presented as mean ± standard deviation (SD) and range;
£ subscale score ranges from 4 ("most adherent") to 20 ("least adherent"); Total scale score ranges from 24 ("most adherent") to 120 ("least adherent")

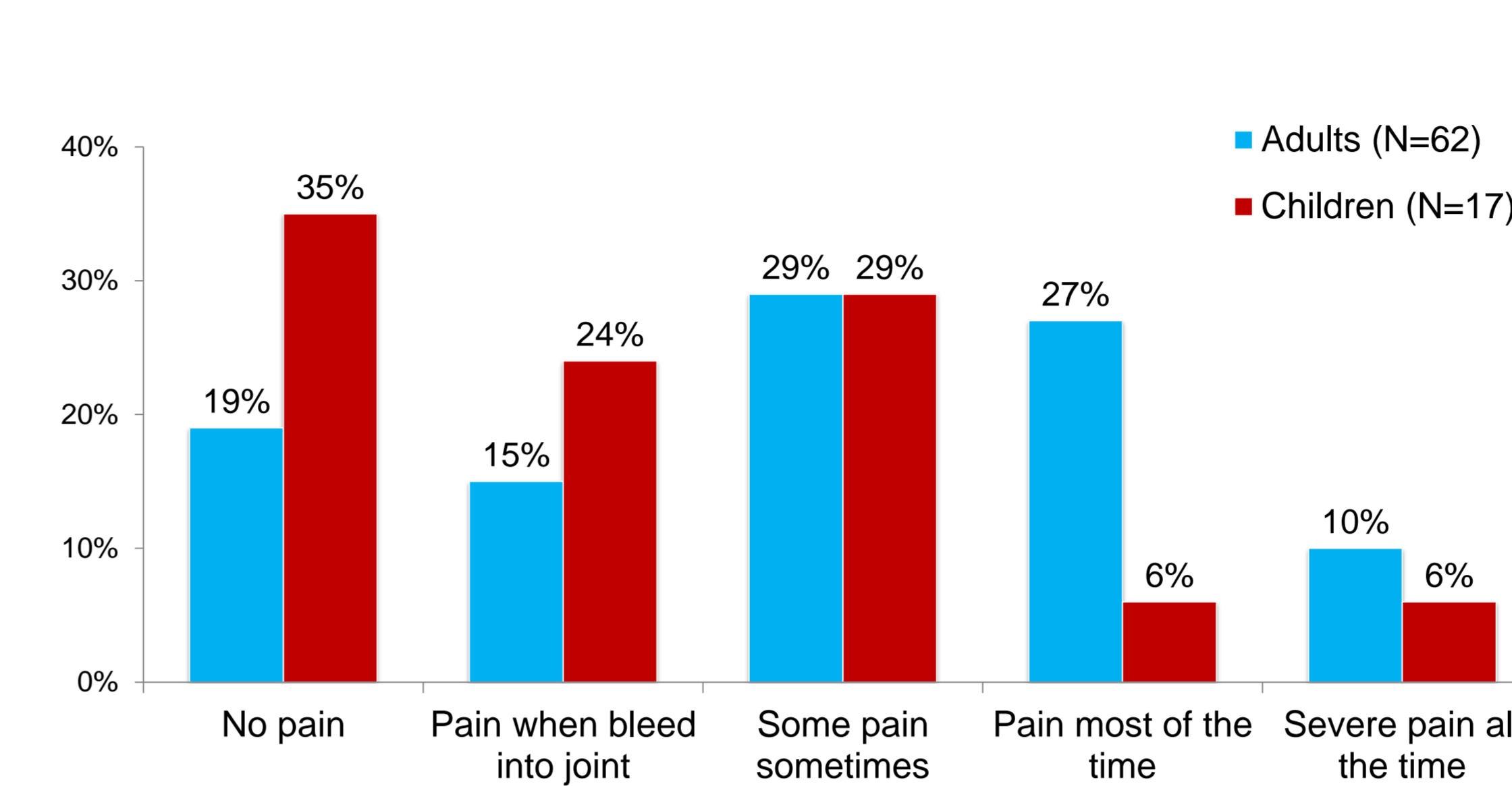### Figure 2a: Self-reported Joint Pain

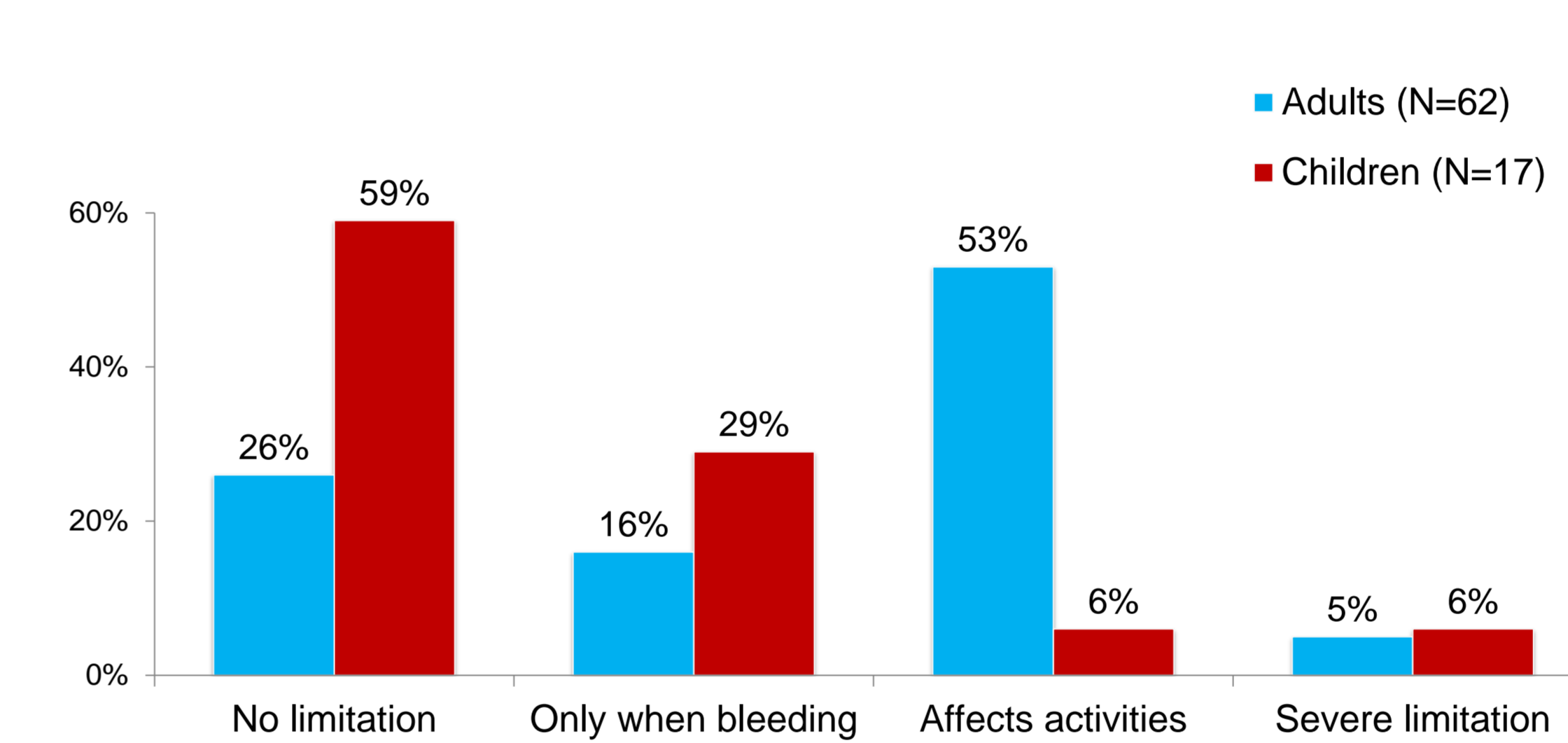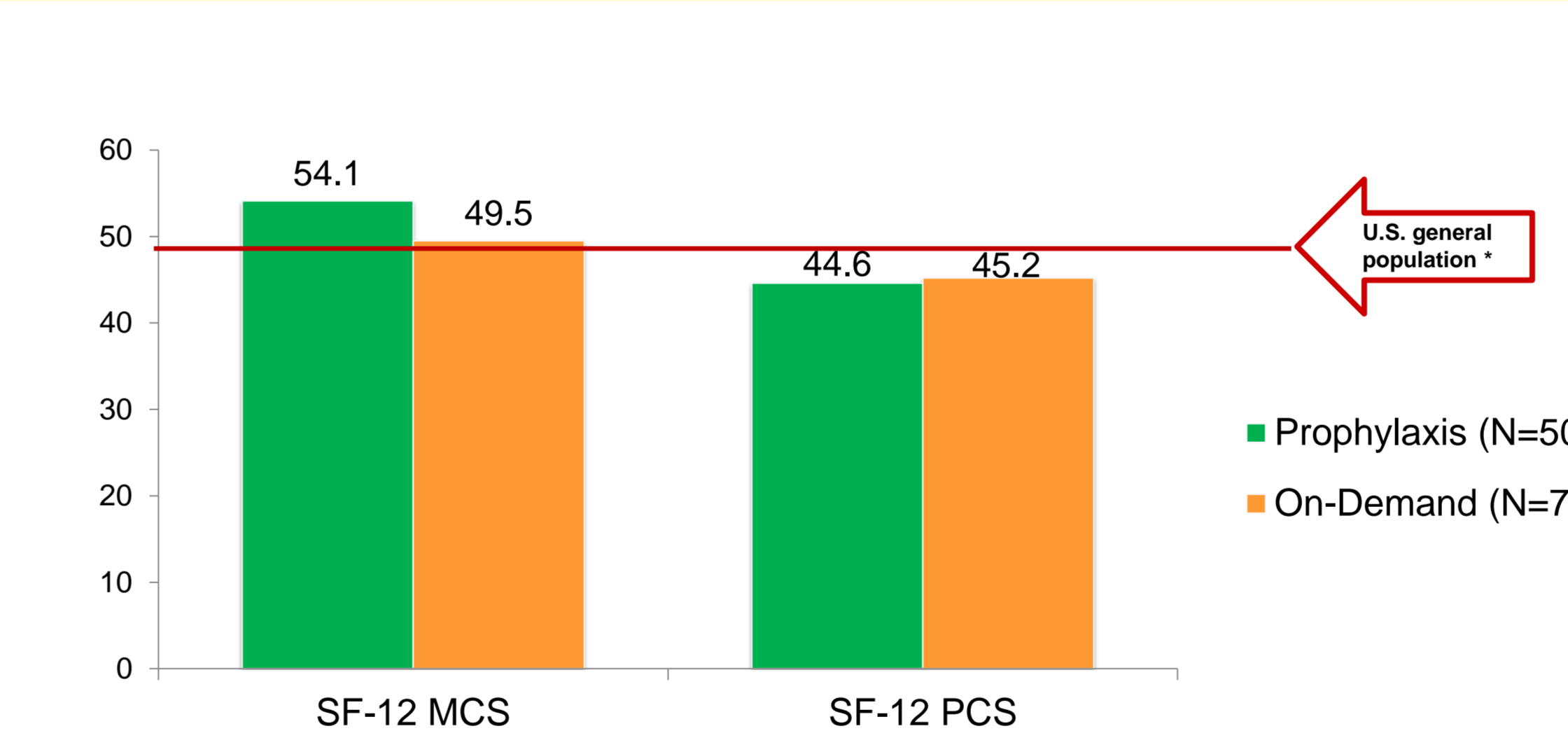### Figure 2b: Self-reported Limitation in Joint Range of Motion

Figure 3. HRQoL Stratified by Treatment Pattern - Adults

Abbreviations: MCS - Mental component score; PCS - Physical component score
* SF12 score has been normalized to a mean score of 50 and a standard deviation of 10 in the U.S. general population. The higher value represents better health status;
Reference values: Ware, J., Jr., Kosinski, M., & Keller, S. D. (1996). A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. Med Care, 34(3), 220-233.

Table 3. HRQoL Stratified by Treatment Pattern - Children

Variables	Whole Sample (N=17)	Treatment Pattern	
		Prophylaxis (N=15)	On-Demand (N=2)
Children £			
Total PedsQL score^	80.6±22.6	79.8±24.0	86.4±6.9
Physical summary	84.7±26.2	83.3±27.6	95.3±6.6
Psychosocial summary	78.4±22.4	78.0±23.6	81.7±14.1
Emotional function	76.2±27.2	75.3±28.3	82.5±24.7
Social function	86.5±20.9	86.7±22.3	85.0±0.1
School function	72.6±23.7	72.0±24.8	77.5±17.7

Data are presented as mean ± standard deviation (SD);
£ PedsQL Scores range from 0–100. 0 represents the poorest health status; 100 represents the best health status;
^ Mean of total PedsQL scores for healthy children in U.S. is 82.7

RESULTS

- Of 79 individuals in the analyses, 92% had HA and 78% were adults, with similar socio-demographic characteristics (Table 1).

- Among 89% of persons who were prescribed a prophylactic treatment regimen, 61% infused factor twice or three times a week, 26% infused every other day, and 40% reported missing at least one infusion in a previous month.

- The most frequently cited reasons for missing infusions included "difficulty with infusion", "not enough time/inconvenient" and "forgot to infuse".

- The mean total and subtotal VERITAS-Pro scores are reported in Table 2a; a lower score indicates the greater adherence. Parents (6.6, range 4-12) reported greater adherence in administering factor at the correct time than adults (8.5, range 4-17), while adults reported the least adherence in the area of communicating with the treatment center (9.0, range 4-20).

- The mean total VERITAS-PRN was 45.0 (range 30-56), of whom only 9 (11%) individuals were prescribed an episodic treatment regimen (Table 2b).

- Adults reported significantly more limitation in JROM (p<0.01) than children, but no difference between adults and children in self-reported joint pain was observed (Figure 2a & 2b).

- Children's mean PedsQL total score was 80.6 (Table 3), slightly below the mean PedsQL total scores for healthy children (82.7).

- The lowest adherence was correlated with worst possible chronic pain measured by Visual Analog Scale for pain, as well as with more frequent use of extra prophylactic doses before participating in special events.

CONCLUSIONS

- Recruitment into HUGS VI is ongoing. The study will provide detailed information on participants' adherence to prescribed treatment regimens using different factor products and on associations with hemophilia-specific health outcomes.

ACKNOWLEDGEMENTS