Lower-Limb Prosthetics Outcome Measures: A Retrospective Chart Review

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INTRODUCTION

Outcome measures can provide valuable insights to help improve patient care in prosthetics. Additionally, these measures can help justify advanced technologies to third-party payers and other stakeholders. However, standardized outcome measures are still underutilized in prosthetic clinics. This study is a retrospective review of outcome measure data collected over a period of two years from patients with lower-limb loss at two prosthetic clinics.

METHODS

Outcome measures routinely administered since the beginning of 2015 at both clinic sites included the following: Timed Up and Go (TUG), Fast Walking Speed (FWS), Self-Selected Walking Speed (SSWS), the Amputee Mobility Predictor (AMP), and the Prosthetic Limb User Survey of Mobility (PLUS-M). Outcomes were assessed at baseline at least once prior to definitive prosthetic fitting and at follow-up visits within a few weeks after the fitting (initial assessment), six months post-fitting, and annually after that. Data from 2015 through July of 2017 were extracted from the OPIE database for analysis. Cut-off values for the changes considered clinically meaningful for each outcome were established.

RESULTS

Outcomes data were collected from a total of 1,568 lower-limb subjects, average age 56 years (2 to 97); 308 subjects had replacement sockets only. Median follow-up time post-fitting was 203 days with a maximum of 777 days. 1,398 subjects had K-Level assessments: 45 (3%) were K0; 78 (6%) were K1; 289 (21%) were K2; 793 (57%) were K3; and 193 (14%) were K4. Subjects with outcomes measures at both baseline and follow up are included in the table below.

	n	B/L	F/U (mean chg)
SSWS	122	0.94 m/s	0.06
FWS	107	1.26 m/s	0.03
TUG	64	11.60 s	-0.14
AMP	143	38.99	0.87
PLUS-M	166	43.75	5.87

Table 1. Baseline (BL) scores and mean changes at follow up by outcome score.

The percentage of subjects with clinically meaningful improvements are shown for each outcome in the table below for all subjects, socket replacements only, and those getting changes in the prosthesis and/or system.

	Cut-off	All	Socket Only	Pro
SSWS	0.1 m/s	30%	23%	32%
FWS	0.1 m/s	29%	18%	32%
TUG	-3 s	19%	14%	20%
AMP	4	17%	9%	19%
PLUS-M	4	48%	47%	50%

Table 2. Cut off values and percent of subjects with clinically meaningful changes in scores. Pro=change in prosthesis or system.

Overall, 38 percent of subjects had clinically meaningful improvements in at least one outcome measure.

DISCUSSION

The population studied was skewed toward K3 and K4, representing over 70 percent of the study group. Nearly half of subjects showed clinically meaningful improvements in PLUS-M scores. Analysis of K-Levels revealed that K1 and K2 subjects showed greater improvements in AMP and PLUS-M scores compared with K3 and K4 subjects. Transfemoral K3/K4 subjects showed greater improvements in walking speed and TUG times and less improvement in AMP and PLUS-M scores compared with transtibial K3/K4 subjects.

CONCLUSION

Routine outcome measurements in a prosthetic clinic are feasible and can provide valuable information that is useful for improving patient care and for justifying the use of technology to third-party payers.

CLINICAL APPLICATIONS

This data may also provide important insights for the industry regarding the types of clinical improvements that can be demonstrated with prosthetic fittings.

REFERENCES

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