Powered exoskeletons for Veterans with Spinal Cord Injury and Disorders: clinical prescriptions 2014 to 2020

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BACKGROUND:
- Powered exoskeletons for personal use (PEP) were FDA-approved in 2014 (ReWalk, **Figure 1**) and 2016 (Indego, **Figure 2**).
- In 2014, the Veterans Health Administration adopted a standard operating procedure to provide PEPs and training to eligible Veterans with SCI/D at no cost.

OBJECTIVES:
- To report the number of PEP prescriptions amongst Veterans with SCI/D between 2014 and 2020.
- To describe PEP users' demographic characteristics.
- To report user health resource utilization costs (HRUC) before and after the PEP prescription.

DESIGN: Retrospective registry review

METHODS:

Demographic characteristics (age and duration of injury, DOI), and HRUC (1 year pre- and post- PEP prescription) were extracted from the Veterans with SCI/D using the VA Informatics and Computing Infrastructure (VINCI) registry by querying purchases of PEP devices "Indego" and "ReWalk".

Data was extracted from January 1, 2014, through August 9, 2020.

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RESULTS:
- 17,841 Veterans with SCI/D were identified in the SCI/D Registry
- 40 were prescribed a PEP device. (**Table 1**)
- 18 received a ReWalk (age: 43 ±12 years, DOI: 8.7±6.7 years).
- 22 an Indego (age: 53±15 years, DOI: 9.8±11 years).
- 35 were males and 5 females
- 38 had paraplegia (22 Indego); 2 had tetraplegia (both ReWalk)
- 25 were motor-complete (16 ReWalk); 15 motor-incomplete (13 Indego).
- Average monthly HRUC pre-prescription for the total group were $1927±1823, versus $1512±1320 post-prescription. (**Figure 3**)
- No difference in HRUC were found between ReWalk and Indego
- 65% of PEP users had lower HRUC after 1 year of PEP.

Figure 1. ReWalk

Figure 2. Indego

	ReWalk (n=18)		Indego (n=22)		Chi Sq P value
Age (y)	53 ± 15		43 ± 12		0.0253
DOI (y)	8.8 ± 6.7		9.8 ± 11.0		0.7373
	n	%	n	%	
Male	17	94%	17	77%	0.2297
Female	1	6%	4	18%	
Para	16	89%	22	100%	0.1087
Tetra	2	11%	0	0%	
Complete	16	89%	9	41%	0.0018
Incomplete	2	11%	13	59%	
AIS A	11	61%	6	27%	0.0351
AIS B	5	28%	4	18%	
AIS C	2	11%	10	45%	
AIS D	0	0%	2	9%	

Table 1. Prescribed an exoskeleton (ReWalk or Indego); y, years; DOI, duration of spinal cord injury; Complete, motor-complete SCI; Incomplete, motor-incomplete; AIS, American Spinal Cord Injury International Standards.

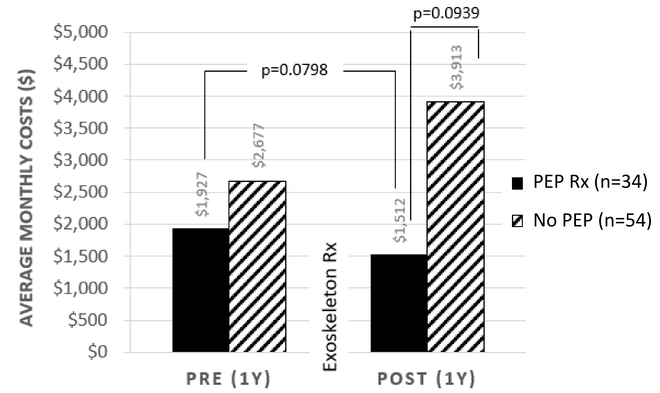

Figure 3. Group Comparisons of the Average Monthly Costs by Subgroup. Dollar amounts expressed above the columns represent the average monthly costs for each group by subgroup. Y, year; n, number of cases; Rx, prescription of a device; black solid bars, PEP cases; diagonal bars, No PEP cases. P values less than 0.1999 are listed to represent a trend, but non-significant findings.

CONCLUSIONS: A small proportion of SCI/D Veterans received a PEP prescription. It is unknown how many were screened for eligibility. The majority of PEP users demonstrated a decrease in HRUC. Further data extraction is warranted to determine groups comparison, comorbidities and utilization of the devices in order to explain change in HRUC.

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