



**American Orthotic &
Prosthetic Association**

White Paper
**Medicare Data Presents A True Savings Scenario and Confirms
Mobility Saves – Not Costs**

Whether you're a patient, a payer or a healthcare provider, it pays to know the facts when making decisions, especially when you can bank those facts.

The Amputee Coalition, the advocacy group for those with limb loss, wanted to make sure their members had every opportunity to regain their mobility after limb loss. Their own research had demonstrated that quality of life depends on the quality of mobility. Active people can pursue their careers, special interests and contribute so much to the world around them. A loss of mobility robs them of that opportunity.

That's also true of people with limb impairment who through disease or traumatic injury have suffered a change, often dramatic, in how much they can do and where. Pain may be a constant companion. Simple tasks may be a difficult challenge. Inactivity contributes to a host of other health problems such as heart disease, diabetes, high blood pressure and emotional distress.

Dobson-DaVanzo Cost Effectiveness Study

Key Findings: Taxpayers end up paying more over the long term in most cases when Medicare patients are not provided with replacement lower limbs, spinal orthotics, and hip/knee/ankle orthotics, according to major new study commissioned by the Amputee Coalition and conducted by Dr. Allen Dobson, health economist and former director of the Office of Research at CMS (then the Health Care Financing Administration).

Yet, supplying bracing or support (an orthosis) where needed or a new artificial limb (prosthesis) when necessary saves our healthcare system significant future costs.

That's what Medicare's own data shows to be the case. Timely treatment that preserves or helps regain mobility not only makes sense, it saves dollars.

Here's why Medicare's own data clearly demonstrates mobility saves.

NOT YOUR USUAL RESEARCH PROJECT

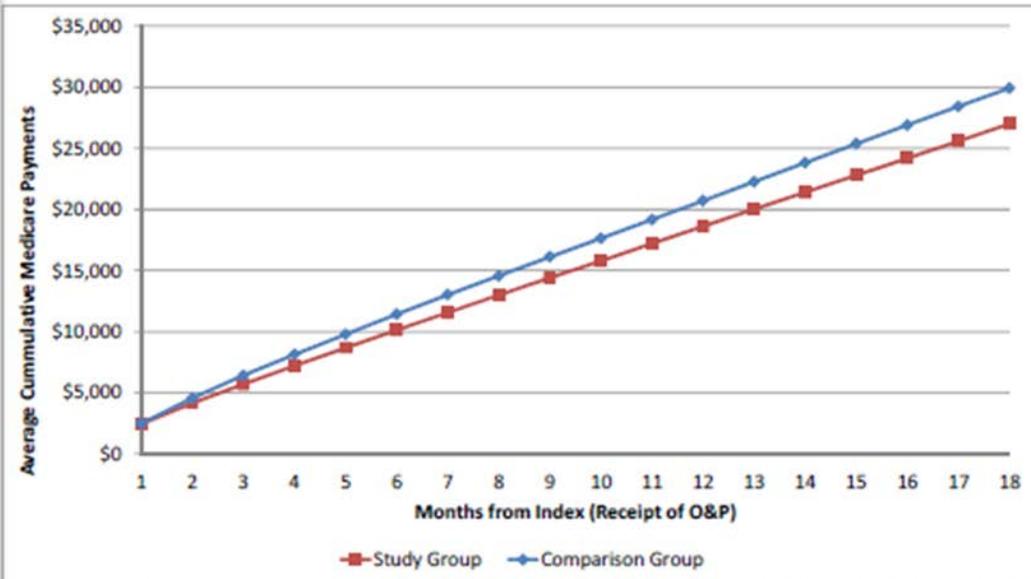
Dobson DaVanzo, one of our nation's most highly respected healthcare experts, was commissioned by the Amputee Coalition to obtain four years of Medicare data that tracked the costs incurred for each beneficiary's treatment program. Millions of records were searched to find comparison groups who had the same diagnoses and other characteristics with the only difference being whether they received a needed artificial limb or appropriate body bracing.

The study used the Medicare Claims database for all Medicare claims data for patients with conditions that justified the provision of lower limb orthoses, spinal orthoses, and lower limb prostheses. The research design separated patients with similar etiologies (that is, triggering conditions, diseases or health events) into two groups for each of the three therapies (studying equal comparative groups of those receiving these therapies, vs. those who did not). This coupled with the study's unprecedented access, via special permission from Medicare, to have access to every Medicare payment for these patients over 4 years permitted the researchers to determine their cost history for medical care following their O&P intervention.

Three different treatment programs were tracked. One group received bracing to relieve chronic lower back pain and other movement issues. Another group received bracing support for their leg or lower extremity. A third group received an artificial limb. The comparison groups were matched by age, medical condition(s) and other demographics so that the only significant difference would be that the patients did not receive orthotic or prosthetic interventions. This group received none of these relief options but of course incurred other health care costs from conditions that may have been avoided had there been timely restoration of mobility via the orthotic or prosthetic intervention.

Without question, the orthotic solutions reduced costs in the eighteen months that followed treatment as compared with healthcare costs incurred by the untreated comparison group.

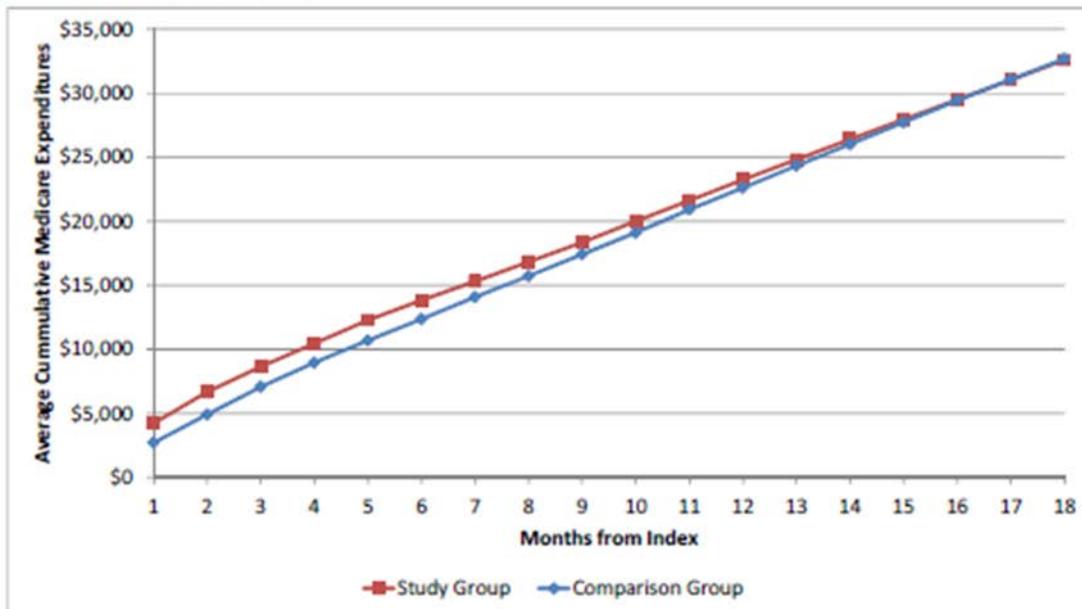
Exhibit 4.3: Lower Extremity Orthoses: Cumulative Medicare Episode Payment by Cohort (18 Month Episodes from 2008-2010)



Source: Dobson | DaVanzo analysis of custom cohort Standard Analytic Files (2007-2010) for Medicare beneficiaries who received O&P services from January 1, 2008 through June 30, 2009 (and matched comparisons), according to custom cohort database definition.

Summary of Findings: Based on the rigorous propensity score matching used to develop the two patient cohorts, we are able to conclude from this analysis that patients who received lower extremity orthoses had better outcomes, defined as fewer acute care hospitalizations and emergency room admissions, and reduced overall cost to Medicare. Study group patients achieved better outcomes with Medicare episode payments that were \$2,920 – or 10 percent – less than the comparison group (including the price of the orthotic). Additionally, these patients were able to sustain more rehabilitation, and were able to remain in their homes as opposed to needing placement in facility-based settings.

Exhibit 4.6: Spinal Orthoses: Cumulative Medicare Episode Payment by Cohort (18 Month Episodes from 2008-2010)



Source: Dobson | DaVanzo analysis of custom cohort Standard Analytic Files (2007-2010) for Medicare beneficiaries who received O&P services from January 1, 2008 through June 30, 2009 (and matched comparisons), according to custom cohort database definition.

Summary of Findings: Our analytic results indicated that patients who received spinal orthoses had comparable cumulative Medicare payments over 18 months to those who did not receive the orthotic. Furthermore, these patients had a higher rate of ambulatory and home-based care (as opposed to facility-based care), which could suggest that the use of spinal orthoses allows patients to be less bedbound and remain independent in their homes. These patients had a slightly higher prevalence of fractures and falls, which may have been due to their increased ambulation and independence. By Month 18, study group patients had Medicare episode payments that were \$93 (or 0.3 percent) lower than comparison group patients.

Prosthetics are typically a higher cost item, yet the data analysis between the two comparison groups showed that in the ensuing twelve months those not receiving prosthesis incurred almost as much total healthcare expense as those who did receive prosthesis. The trend line suggests that the costs associated with providing prosthesis might also reflect savings to the Medicare program if a slightly longer term were measured.

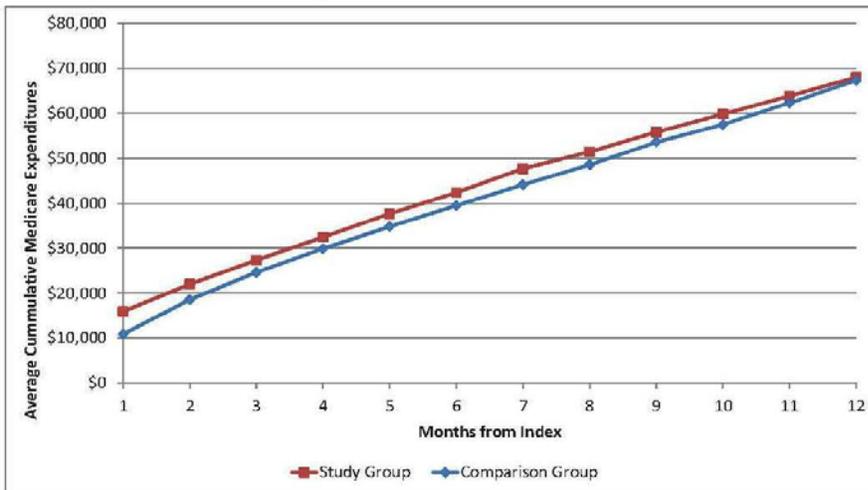
Exhibit 4.8: Lower Extremity Prostheses: Average Use of Inpatient and Outpatient Therapy and Patient Outcomes by Cohort (18 Month Episodes from 2008-2010)

Therapy Use and Outcomes	Comparison		Difference
	Study Group	Group	
Average Number of IRF Days	1.61	1.19	0.42
Average Number of OP Therapy Visits	56.1	28.9	27.18*
Average Number of Fractures and Falls	0.90	0.72	0.18
Average Number of ER Admissions	1.55	2.10	-0.55*
Total Average Medicare Episode Payments	\$68,040	\$67,312	\$728

Source: Dobson | DaVanzo analysis of custom cohort Standard Analytic Files (2007-2010) for Medicare beneficiaries who received O&P services from January 1, 2008 through June 30, 2009 (and matched comparisons), according to custom cohort database definition.

Exhibit 4.9 presents the cumulative episode payment for the study and comparison group by episode month. This chart indicates that the cost of the prosthetic in Month 1 was slowly amortized over time; by the end of Month 12, the cumulative Medicare episode payment for the study group was \$728 (1 percent) higher than the comparison group patient, indicating that the cost of the prosthetic was nearly fully amortized. Due to the correlation between the monthly payments each month after the receipt of the prosthetic, we were unable to draw conclusions beyond Month 12.

Exhibit 4.9: Lower Extremity Prostheses: Cumulative Medicare Episode Payment by Cohort (18 Month Episodes from 2008-2010)



Source: Dobson | DaVanzo analysis of custom cohort Standard Analytic Files (2007-2010) for Medicare beneficiaries who received O&P services from January 1, 2008 through June 30, 2009 (and matched comparisons), according to custom cohort database definition.

Of course the data does not reflect the more powerful aspect of appropriate care solutions in terms of quality of life and the happiness level enjoyed by beneficiaries in both groups.

Another question revolves around the technology level of the prosthesis. Several years ago an informal standard emerged in an effort to guide providers and payers as to the appropriate technology for various patient needs. Those needs related to ambulatory ability and other issues such as age, general health and likelihood of resuming certain levels of mobility. For the patient that may not truly benefit from the highest technology because of other conditions, that patient may be classified as a K-1 or K-2. A perhaps

healthier, more robust patient may be classified as K-3 or K-4. The increased costs for a higher K level had to be balanced with the patient benefit and many payers perceived the higher cost K-3/K-4 prostheses as an unnecessary expense outlay and tried to avoid providing them in the name of savings. Now the facts are out which rebut that thinking. Data shows K-1/K-2 patients have higher total healthcare costs, more occupational and physical therapy and a larger reliance on SNF and home health care compared to K-3/K-4 patients (despite the higher prosthetic costs of K-3/K-4s).

Dobson-DaVanzo Findings (Comparing Costs of K1/K2 Amputees with K3/K4 Amputees)

As shown in Exhibit 4.10, patients fit with K1/K2 devices had a comparable average Medicare PMPM payment to K3/K4 patients (\$5,460 PMPM compared to \$5,233). Despite the comparable Medicare PMPM payment, K1/K2 patients had more SNF admissions suggesting that patients with lower level devices were more likely to use facility-based care (2.02 SNF admissions for K1/K2 patients compared to 0.84 SNF admissions for K3/K4 patients; p<0.05). However, the number of acute care hospitalizations was comparable across K1/K2 and K3/K4 patients (1.25 admissions compared to 1.12 admissions).

The fact that patients who received a K3/K4 prosthetic had comparable Medicare PMPM payments despite significantly higher DME payments (\$1,660 PMPM compared to \$1,153, p<0.05) suggests that patients who should receive a K1/K2 prosthetic due to lower functional status are not being fit with K3/K4 prosthetics. If K1/K2-level patients were receiving K3/K4-level prosthetics, we would expect to see higher PMPM payments among the K3/K4 cohort in the use of facility-based care, and would expect to see overall higher PMPM payments due to the higher DME costs for the prosthetic.

Exhibit 4.10: K-Level Analysis for Lower Extremity Prostheses: Distribution of Claims and PMPM Payments by Care Settings by K-Level Cohort** (12 Month Episodes from 2008-2010)

Care Setting	K1-K2 (n=173)		K3-K4 (n=173)		Difference	
	Average Number of Claims	Average PMPM	Average Number of Claims	Average PMPM	Number of Claims	Average PMPM
Physician	54.54	\$570	55.24	\$576	-0.71	-\$5
DME	12.64	\$1,153	15.42	\$1,660	-2.79*	-\$506*
Outpatient	12.05	\$625	11.21	\$760	0.84	-\$135
SNF	2.02	\$817	0.84	\$416	1.17*	\$401*
Home Health	1.44	\$548	1.21	\$371	0.23	\$176*
Acute Care Hospital	1.25	\$1,400	1.12	\$1,133	0.13	\$266
Hospice	0.21	\$41	0.11	\$35	0.10	\$6
Inpatient Rehabilitation	0.10	\$155	0.12	\$166	-0.02	-\$10
Long Term Care, Other						
Inpatient	0.05	\$150	0.03	\$116	0.02	\$34
Total	84.31	\$5,460	85.31	\$5,233	-1.01	\$227

Source: Dobson | DaVanzo analysis of custom cohort Standard Analytic Firm (2007-2010) for Medicare beneficiaries who received DAP services from January 1, 2008 through June 30, 2009 (and matched comparisons), according to custom cohort database definitions.
* Statistically significant at p<0.05
** Analysis does not include all 428 lower extremity prostheses study group patients as not all prostheses were billed with a K-level.

Study Conclusions

The conclusions for both orthotics cases show the cumulative Medicare costs over the 18 months following receipt of the orthotic intervention were less than the population that did not receive the treatment. With respect to the prosthetic intervention, the cumulative cost comparison demonstrated that in the initial 12 months, the cohort that received the prosthesis had about 1% higher costs compared to the population that did not receive the device. This means that prosthetic patients could experience better quality of life and increased independence compared to patients who did not receive the prosthesis at essentially no additional cost to Medicare or to the patient. These results should logically apply to private insurance patients as well.

A detailed Summary of the Study/Research is available online at <http://www.amputee-coalition.org/content/documents/dobson-davanzo-report.pdf> or

The unprecedented study looks at nearly 42,000 paired sets of Medicare beneficiaries with claims from 2007-2010. The paired patients either received full orthotic and prosthetic care or they did not get such care. Lower extremity and spinal orthotic and

prosthetic devices and related clinical services are designed to provide stability and mobility to patients with lower limb loss or impairment and spinal injury.

The study's key finding: Patients who received orthotic or prosthetic services have lower or comparable Medicare costs than patients who need, but do not receive, these services. According to the study, Medicare could experience 10 percent savings (\$2,920 less) for those receiving lower extremity orthoses and more modest cost efficiencies for patients receiving spinal orthoses and lower extremity prostheses.

What offsets the initially high cost of some orthotic and prosthetic devices? These devices are associated with higher rates of physical therapy and rehabilitation, allowing patients benefiting from them to remain in the community and avoid costly facility-based care. Patients are generally able to become less bedbound and more independent, which may be associated with fewer emergency room (ER) admissions and acute care hospital admissions. The reduced use of hospital services and facility-based care offsets the cost of the devices, producing Medicare savings and better quality-of-life outcomes for patients.

Report author Dr. Allen Dobson said: **“Looking at full costs and other outcomes (including use of out-patient therapy, number of falls, ER admissions, and acute hospitalizations) over a 12-18 month period, our study concludes that patients who received the orthotic and prosthetic services experienced greater independence than patients who do not, with better or comparable health outcomes and generally lower Medicare payments.”**

Susan Stout, interim president & CEO, Amputee Coalition, said: **“Every person who has suffered limb loss, and who has received a prosthetic device appropriate for their needs, knows the value of the device for them personally. This study provides nationwide data which helps to corroborate this patient experience, and also points us to the need for more research regarding the value of prosthetics from both a quality of life and a financial perspective.”**

Lower extremity orthoses for the hip, knee, or ankle are typically used to prevent deformities, enhance walking, alleviate pain and protect limbs. A spinal orthotic device is an external apparatus that is applied to the body to limit the motion of, correct deformity in, reduce loading on, or improve the function of a particular spinal segment of the body. Examples include soft cervical collars, halo vests, and lumbar vests. Lower extremity prosthetics are artificially replaced limbs located at the hip level or lower.

This is a clear win for patients and a win for taxpayers, the Medicare system and private payers. Not only do patients who get full orthotic and prosthetic (O&P) treatment benefit the most, but it also ends up costing taxpayers and insurers less in most cases. Medicare and other payers' preconception that prosthetic limbs and bracing cost money have been disproven by the real story from Medicare data. For the first time actual data demonstrate that orthotic and prosthetic devices save health care dollars, confirming the value of an O&P intervention based on economic criteria. The goal of restoring function

is emphasized in many of Medicare's covered services, and therefore supports the targeted use of O&P services for patients who are able to benefit from and receive the requisite therapy. The increased physical therapy among O&P users allowed patients to become less bedbound and more independent, which may be associated with higher rates of falls and fractures, but fewer emergency room admissions and acute care hospital admissions. This reduction in health care utilization ultimately makes O&P services cost-effective for payers and the Medicare program plus increasing the quality of life and independence of the patient.