

## Introduction

Anterior cervical discectomy and fusion (ACDF) is a standard treatment for cervical spondylosis with radiculopathy or myelopathy refractory to conservative care. i-Factor™ Peptide Enhanced Bone Graft (CeraPedics, Inc., Westminster, CO), a novel synthetic 15-amino acid polypeptide, has been demonstrated efficacious and non-inferior to autograft for single-level ACDF from C3-C7. We evaluated the cost-effectiveness of i-Factor compared to autograft in ACDF for patients with degenerative cervical disc disease.

## Methods

Data was from a prospective, randomized, controlled, multi-center clinical trial in North America that investigated the safety and efficacy of i-Factor compared to autograft. Subjects received either i-Factor or autograft in a cortical allograft ring implanted into the interspace before plate placement. SF6D health utilities were used to calculate area under curve, representing total QALY experienced. Change in QALY compared to baseline projection represented QALY gain. Probability of reoperation was estimated using Kaplan-Meier product limit estimates at 6 years. Gross cost estimates were based on 140% Medicare reimbursement

## Results

### Direct Treatment Costs of Anterior Cervical Discectomy and Fusion (ACDF)

	Code	Description	Cost	% of Cost
<b>Hospital Fee</b>				
	DRG-473	Cervical spinal fusion without CC/MCC	\$13,305	140%
<b>Provider Fee</b>				
	CPT 22551	Fusion of spine bones with removal of disc at upper spinal column, anterior approach (ARTHRO ANT INTERBODY DECOMPRESS CERVICAL BELW C2)	\$1,823.26	\$2,370.24
	CPT 22845	Application of intervertebral biomechanical device(s) (e.g., synthetic cage(s), methylmethacrylate) to vertebral defect or interspace	\$782.89	\$1,017.76
	CPT 22851	Insertion of spinal instrumentation for spinal stabilization	\$435.64	\$566.33
<b>Total</b>				\$22,581.33

### Patient Demographics and Baseline Information for the Patient Sample (N=319)

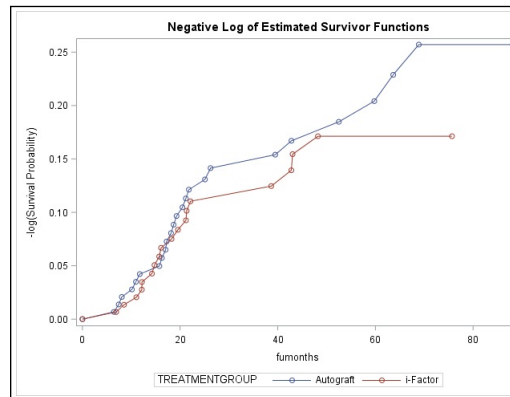
Characteristic	(N=319)
Age, years (SD)	46.75 (9.63)
<b>Age Group</b>	
Younger than or equal to 50 years (%)	211 (66.14%)
Between 50 and 65 years (%)	99 (31.03%)
Older than 65 years (%)	9 (2.82%)
Body Mass Index (SD)	28.84 (5.85)
Symptom Duration, months (mean)	21.77 (30.23)
Gender, male (%)	127 (39.81%)
Current tobacco Use (%)	76 (23.82%)
<b>Clinical</b>	
VAS - Neck (SD)	6.97 (1.99)
VAS - Arm and Shoulder (SD)	6.6 (2.41)
<b>Functional</b>	
NDI (SD)	51.83 (13.96)
SF36 (PCS) (SD)	34.72 (7.24)
SF36 (MCS) (SD)	40.63 (13.01)
<b>Utility</b>	
SF-6D (SD)	0.54 (0.10)
<b>Surgical Level</b>	
C3-C4 (%)	9 (2.82%)
C4-C5 (%)	32 (10.03%)
C5-C6 (%)	147 (46.08%)
C6-C7 (%)	131 (41.07%)

## Results Cont.

### Quality-adjusted Life Years (QALY) Gained by Year after Single-level Anterior Cervical Discectomy and Fusion (ACDF)

Year	Annual QALY Gain <sup>a</sup>	Cumulative QALY Gain <sup>a</sup>
1	0.1181	0.1181
2	0.1517	0.2698
3	0.1471	0.4169
4	0.1427	0.5596
5	0.1384	0.6981
6	0.1343	0.8323

# Years 2 to 6 discounted for 3%



## Learning Objectives

We evaluated the cost-effectiveness of i-Factor compared to autograft in ACDF for patients with degenerative cervical disc disease.

## Conclusions

ACDF is a cost-effective method to treat cervical spondylosis causing radiculopathy or myelopathy. ACDF with either i-FACTOR or autograft remains a cost-effective option. i-FACTOR appears to be a more cost-effective option due to the lower risk of subsequent surgery. Longer-term studies are needed to re-evaluate clinical and QALY outcomes between the 2 treatment groups.