Trends Impacting Today's Surgical Spine Cases

White Paper Prepared and Presented By

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Trends in Surgical Spine Key Indicators

There continues to be an upward trend in the number of people who have some spine related symptoms for which they seek medical care. Although relatively few of these patients require surgical intervention, the impact of these cases on the musculoskeletal service line is substantial. Surgical spine cases accounted for 20% of the inpatient musculoskeletal cases and 9% of the outpatient musculoskeletal cases in the 2008 Accelero Health Partners OrthoVal Comparative Database. Even more compelling is that those cases accounted for 30% of the total musculoskeletal case contribution margin and 16% of the total outpatient musculoskeletal case contribution margin.

The data for this analysis was compiled from Accelero Health Partners during January-December 2002 and January-December 2008. The data includes over 15,000 inpatient and outpatient surgical spine cases for 2002 and nearly 30,000 inpatient and outpatient surgical spine cases for 2008. Outpatient spine surgery data included those cases performed at hospital-based ambulatory surgery centers and those with less than a 24 hour stay coded as an outpatient case.

Changes in procedure type and setting

The table below compares the change in case type and setting between 2002 and 2008. One of the most significant trends in surgical spine care is the continued migration of cases to an outpatient setting. The data displays a 10% relative increase in the amount of outpatient spine cases between the two time periods with a relative decrease in the inpatient non-fusion procedures. Complex fusions are defined as both anterior/posterior fusion cases and multi-level fusion cases (i.e. tumor-based or scoliosis correction)

Grouping	2002	2008	Variance
Back/neck procedures except spinal fusion (IP)	37%	28%	-9%
Outpatient spine surgery	17%	27%	10%
Lumbar fusion (IP)	24%	22%	-2%
Cervical spinal fusion (IP)	19%	19%	0%
Complex fusion (IP)	3%	4%	1%

The table below represents the outpatient surgical procedure distribution for the two comparison years. While excision of the intervertebral disc remains the most prevalent procedure, there continues to be an increase in the amount of cervical fusion cases performed in an outpatient setting.

Outpatient surgical procedure	2002	2008
Excision of intervertebral disc	69%	53%
Cervical fusion	10%	14%
Other exploration and decompression of spinal canal	10%	11%
Kyphoplasty/vertebroplasty	0%	7%
Lumbar fusion	1%	2%
Other	10%	13%

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Based on the information above, it will be critical for hospitals to create an efficient perioperative experience for spine surgeons knowing that is some cases, these surgical procedures can be performed at non-hospital ambulatory surgery centers.

Key financial indicators

Overall, the contribution margin for surgical spine cases has increased by over 50% in the last four years. A comparison of the key financial indicators (net revenue (NR), variable cost (VC), contribution margin (CM)) for surgical spine cases demonstrates considerable variability by procedure type. Outpatient spine cases and non-fusion inpatient cases have the lowest contribution margin per case with cervical fusion and lumbar fusion cases having considerably higher contribution margin per case. Complex fusion cases represent the lowest overall volume of surgical spine cases and have the highest contribution margin per case. While the contribution margin per case looks advantageous for complex fusion cases, the overhead required to perform these types of cases and the specialization of them need to be considered.

Grouping	NR/case	VC/case	CM/case
Back/neck procedures except spinal fusion(IP)	$ 8,433	$ 4,177	$ 4,256
Outpatient spine surgery	$ 7,912	$ 3,628	$ 4,284
Lumbar fusion (IP)	$ 31,380	$ 17,496	$ 13,884
Cervical spinal fusion (IP)	$ 17,178	$ 9,312	$ 7,866
Complex fusion (IP)	$ 66,044	$ 31,874	$ 34,170
Total	**$ 17,438**	**$ 9,074**	**$ 8,364**

It is important to understand the financial implications of the migration of some surgical spine procedures to an outpatient basis. While the average contribution margin per case shown above for inpatient non-fusion cases and outpatient cases is not dramatically different, the net revenue per case and the variable cost per case are significantly different. In addition, on a hospital by hospital basis, there can be a considerable decrease in contribution margin per case when comparing the same non-fusion procedure when performed in an inpatient compared to an outpatient setting.

Inpatient care trends

Over the past six years, inpatient surgical spine cases have following the trend of most of the other inpatient musculoskeletal surgical procedures with regard to an overall decrease in the hospital length of stay. When reviewing the chart below, it is important to consider that the average length of stay variances for non-fusion procedures and cervical spine procedures did not substantially reduce as compared to other groupings. This is most likely due to the shift of some of these cases to an outpatient setting with the most complex patient cases remaining an inpatient event.

Inpatient grouping	2002	2008	Variance
Back/neck procedures except spinal fusion	2.55	2.32	-0.23
Cervical spinal fusion	2.19	2.16	-0.03
Complex fusion	5.67	7.62	1.95
Lumbar fusion	4.81	3.89	-0.92
Total	**3.24**	**3.09**	**-0.15**

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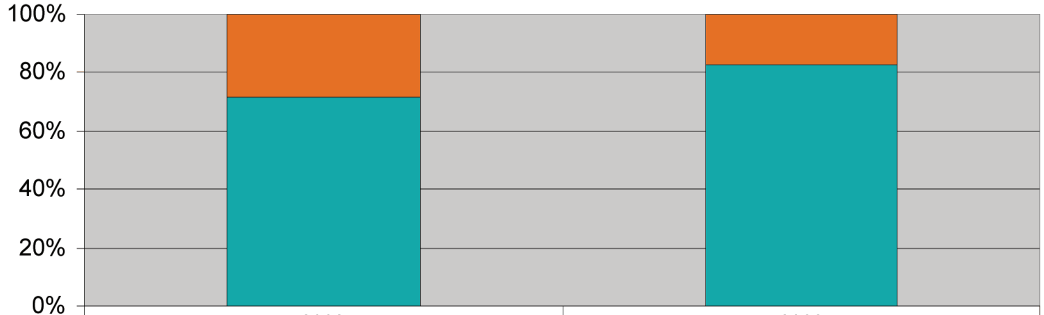
In addition to length of stay, the discharge disposition of surgical spine cases has also changed in the past six years. While the overall discharge to home rate for surgical spine patients has always traditionally been significantly greater than that of total joint replacement patients, the trend toward more home discharges has continued over the past six years.

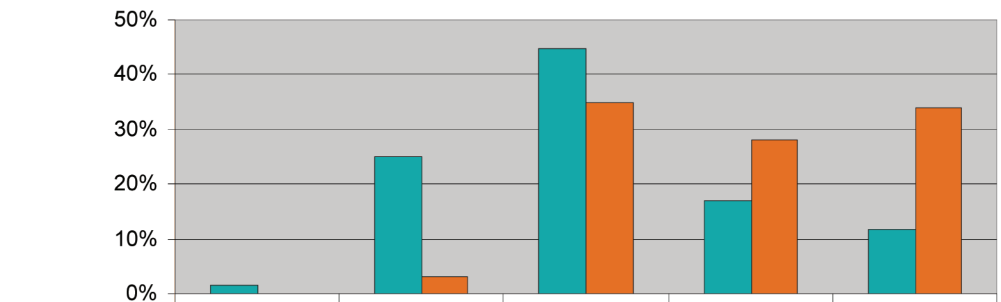


	2002	2008
Other	28.5%	17.0%
Home	71.5%	83.0%

Both the decrease in average length of stay and increase in home discharge provide further support for the need to have organized inpatient pathways for common surgical procedures with targeted lengths of stay that are clinically appropriate and financially positive. To achieve success in the management of inpatient surgical spine patients, education as to the patient's role in their care and their understanding of the hospital stay and discharge process will continue to increase in importance.

Current patient profile

Overall, the age of the surgical spine patient is significantly less than that of the joint replacement patient with the highest age demographic being the 45-64 year old age group.



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Spine	2%	25%	45%	17%	12%
Joint replacement	0%	3%	35%	28%	34%

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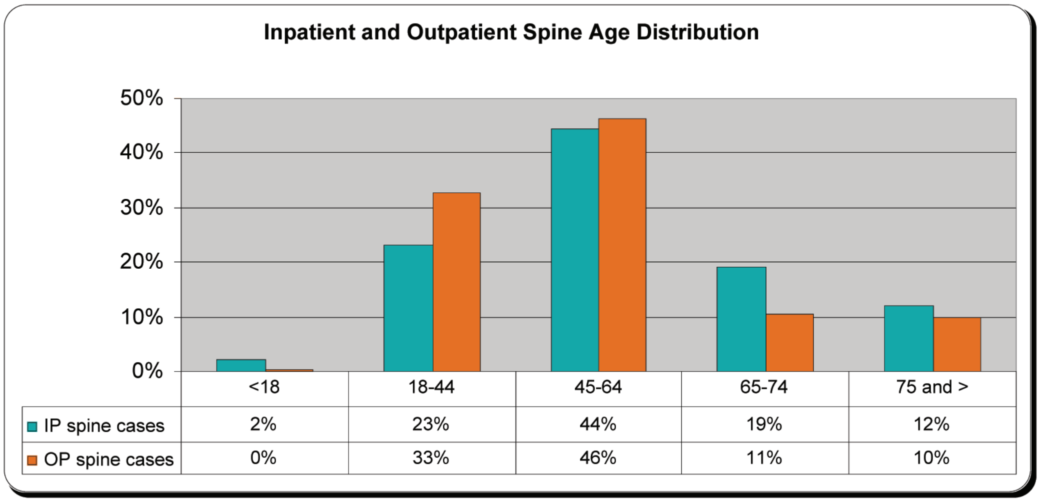
As expected, a relatively larger of amount of outpatient surgical spine cases fall in the 18-44 and 45-64 year old age groups as compared to inpatient cases.



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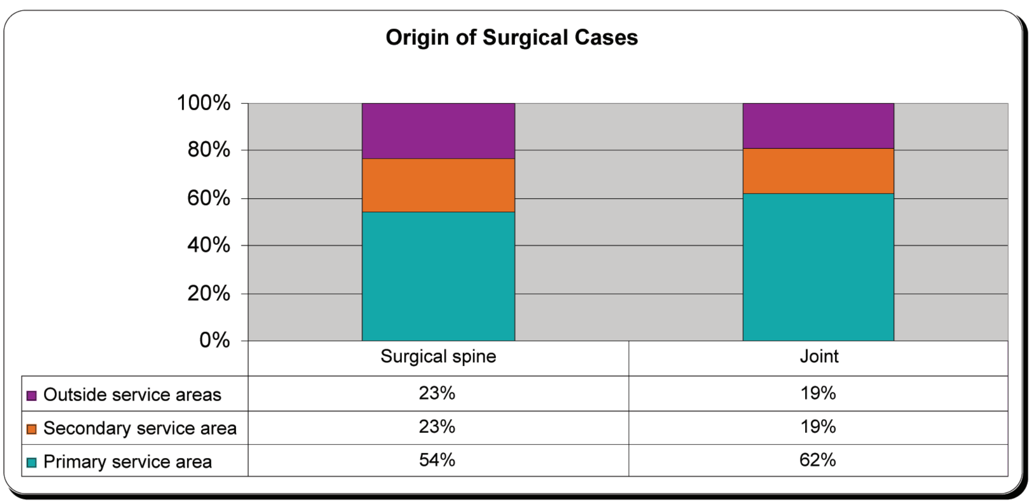
IP spine cases	2%	23%	44%	19%	12%
OP spine cases	0%	33%	46%	11%	10%

In addition to a broader age demographic than joint replacement patients, there is also a difference in the origin of the surgical spine patients. The chart below uses each partner hospital's service area definition. Because each hospital's demographics and geography vary considerably, we opted to use their service area definitions for this comparison. The most important consideration is that a hospital that performs surgical spine cases draws a relatively higher amount of patients from outside the primary service area as compared to joint replacement. The most likely reason for this is the relatively smaller number of hospitals that perform spine surgery as compared to those hospitals performing joint replacement surgery.



	Surgical spine	Joint
Outside service areas	23%	19%
Secondary service area	23%	19%
Primary service area	54%	62%

Several insights need to be considered when hospitals promote their spine programs based upon the information above. Because the age demographics of patients having spine surgery is broad, a hospital's marketing strategy must reach a broad range of age groups. Key initiatives include first and foremost having an organized non-surgical component to the spine program. The vast majority of patients undergoing spine surgery will have an array of non-surgical care initially before surgery becomes an option. A substantial part of the marketing effort should be placed in effectively informing and integrat-

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ing key referral sources such as primary care physicians as to the features and benefits of the hospital's spine program. A patient's primary care physician is usually the first person they contact for medical help during their initial incident of back or neck pain. In addition to referral source integration, a hospital will also need to perform direct to consumer advertising and programming to educate potential patients as to the hospital's spine services. These programs are usually better attended by older populations so the focus should be areas such as spinal stenosis and spine arthritis along with the impact of osteoporosis on the spine. Because a large amount of a hospital's spine surgeries come from outside the primary service area, it will be crucial for their marketing and referral source strategies to reach into targeted secondary service area markets and beyond.

For more information:

Accelero Health Partners works with its hospital partners to create sustainable service line competitive advantages. Organization's have benefited from our in-depth operational experience gained from working with over 165 of health care facilities across the country.If you have questions about or want more information about our services, please contact us at www.accelerohealth.com or by phone at 724-743-3760.

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