

Orthopedics: The Forecast for the Next Five Years

*7th Annual Orthopedic, Spine and Pain Management –
Driven ASC Conference*



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Agenda

Orthopedics and Spine Landscape

Appetite for Technology

“Pre-Crisis” Forecast

Economic Reality

Drivers of Change

Musculoskeletal Medicine Is a Key Component of Health Care

- More than 1 in 4 Americans has a condition requiring medical attention.
- Annual direct and indirect costs for bone and joint health in the U.S. are \$850 billion.
- MSK medicine is the leading cause of disability in the U.S.
- MSK costs consume 7.7% of the national gross domestic product.
- The demand will escalate in the next 10-20 years largely driven by aging population and sedentary lifestyles.
- Accounts for more than half of all chronic conditions in people over 50 years of age in developing countries.

The burden of musculoskeletal disease is significant

Spine Care Demand is in the Spotlight

- As much as 80% of the population will experience back pain at some point in their lifetimes.
- Back pain is the third most expensive health problem in the US.
- Back symptoms are the leading cause of job-related disability.
- Patients with back pain incur 65% higher health care costs than individuals without back pain.
- Concerns regarding over treatment grow.



Source: Sg2 Analysis, 2008.

Ortho and Neuro Have Traditionally Been Lucrative Specialties for Providers

Key Service Lines For Hospital Revenue

- **Cardiology**
- **Radiology**
- **Orthopedic Surgery**
- **Neurosciences**
- **Oncology**

This is technology driven and needs to be properly managed

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There Is No Shortage of Orthopedic Technology

- **398**—orthopedic 510(k) devices approved in 2007
- **6**—original orthopedic PMAs, 34 orthopedic supplements in 2007
- **477**—orthopedic 510(k) devices approved in 2005
- **13**—orthopedic PMA amendments approved in 2005
- **33**—orthopedic PMAs approved between 2000 and 2005

In scientific knowledge and advancement, we are exceeding by 4 times the rate of change of the last 25 years.

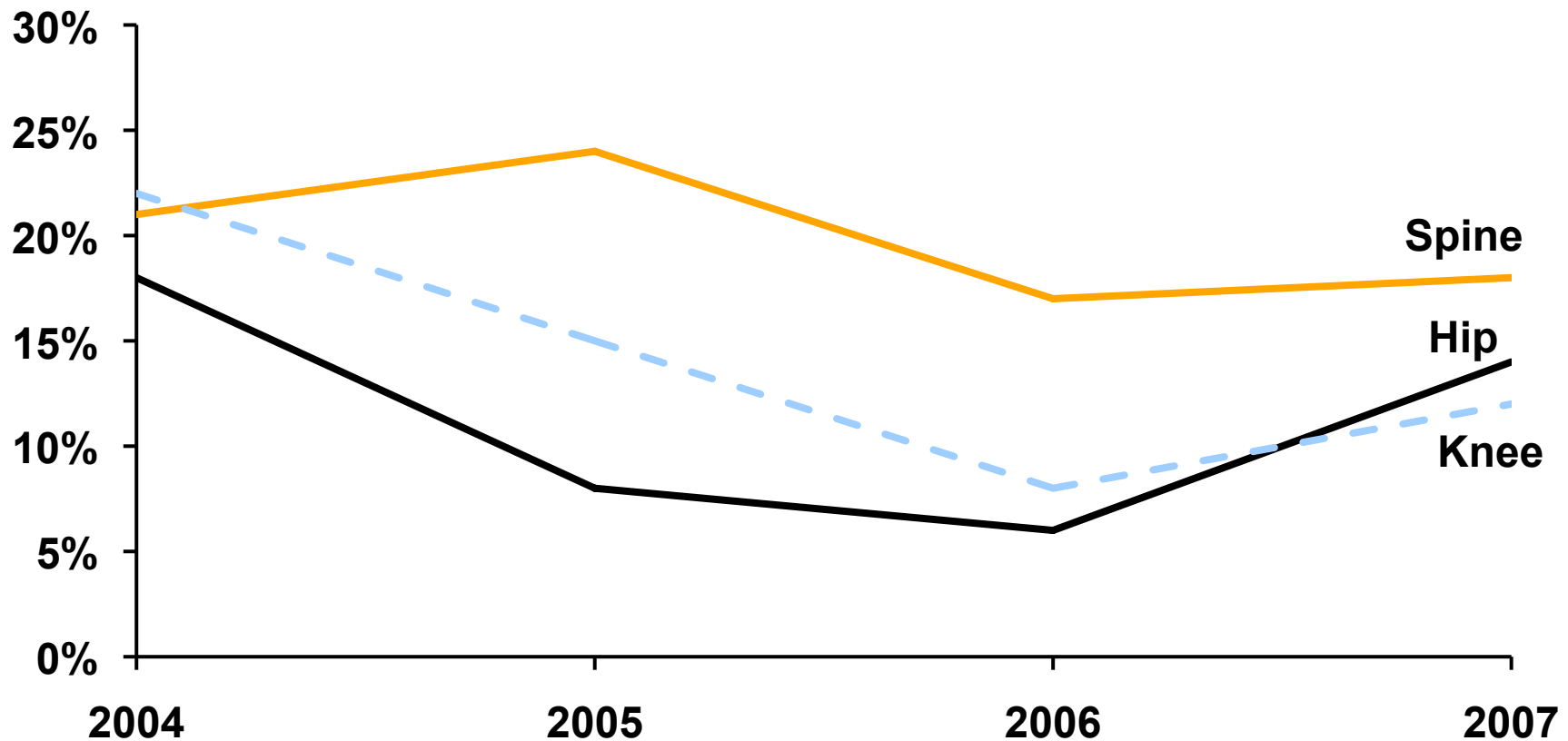


Courtesy of Smith & Nephew, Inc.

PMA = premarket approval.

Growth in Spine Device Industry Rivals Hips and Knees

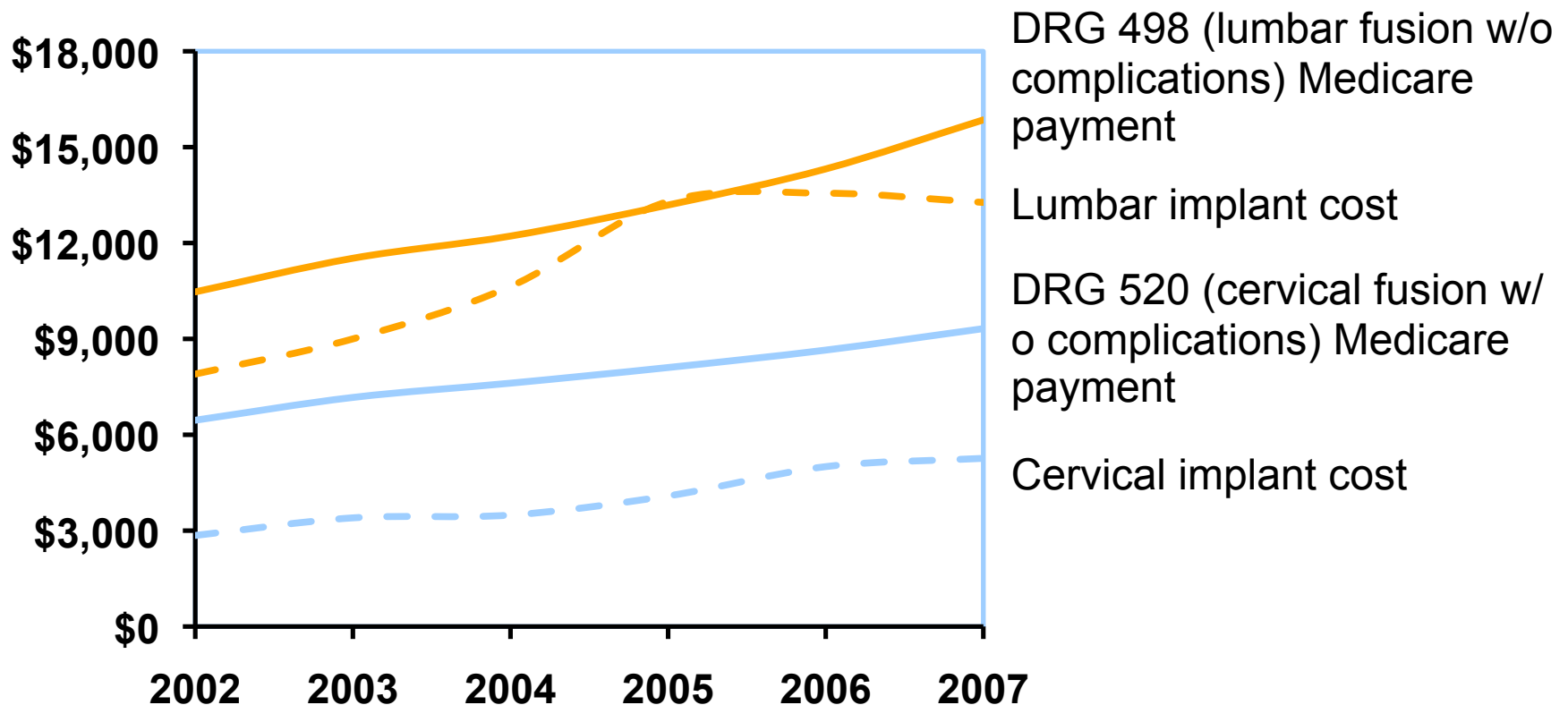
Growth in Spine and Joint Device Sales, US Market, 2004–2007



Sources: Wachovia Capital. *Ortho and Spine Q1 2008 Review*; SG Cowen & Co.

Price Increases Present an Unsustainable Trend

Implant Costs* and Reimbursement per Case US Market, 2002–2007



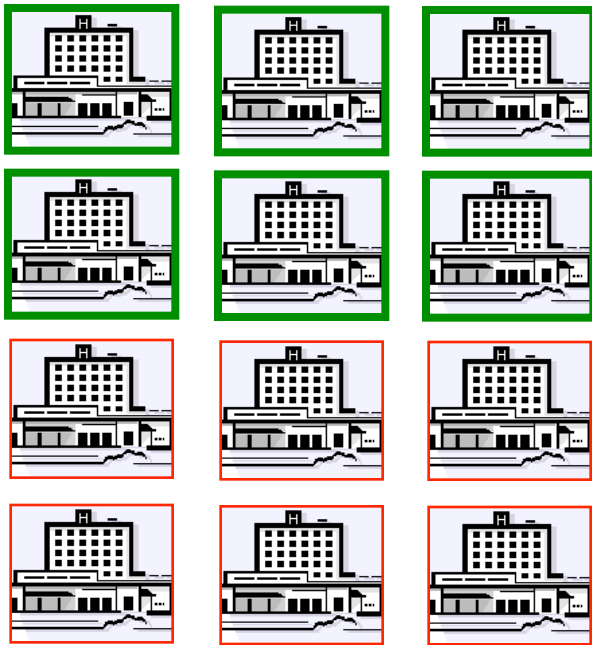
*Fusion implant costs include metals, bone graft, autograft, interbody fusion devices and BMP.

DRG = diagnosis-related groups.

Source: *Orthopedic Network News* 2007;18(4).

Are Hospitals Profitable in Orthopedics?

Medicare Cases
Sg2U Participants, 2008



6/12 profitable

Non-Medicare Cases
Sg2U Participants, 2008



9/12 profitable

Source: Sg2 Analysis, 2008.

Consolidation Creates Strong Supplier Power

Company	Hips	Knees	Spine	Trauma	Sales (\$M)
Stryker	22.5%	20.6%	7.2%	15.7%	5,331
Zimmer	28.1%	29.5%	2.9%	5.0%	4,191
J&J DePuy	22.2%	21.9%	13.3%	5.5%	3,727
Biomet	10.4%	12.0%	2.9%	5.4%	2,372
Smith & Nephew	12.0%	13.0%	1.1%	10.1%	1,491
Wright Medical	3.0%	1.9%	–	–	399
Synthes	–	–	11.1%	45.8%	2,720
Medtronic	–	–	51.3%	–	3,636
NuVasive	–	–	2.9%	–	204
Other	1.8%	1.2%	7.3%	12.5%	
US Market Size (M)	\$4,885	\$6,058	\$7,082	\$4,016	

72.8% (sum of Hips and Knees)
72.0% (sum of Spine and Trauma)

Source: William Blair & Company Forecasts, 2008.

Technology Innovation Creates Challenging Economics

Established Technology



Emerging Technology



Polyethylene-on-Metal Hip Implants
\$4,624

→
54% higher device cost

Ceramic-on-Ceramic Hip Implants
\$7,125

Metal-on-Metal Hip Implants
\$6,031

→
76% higher device cost

Hip Resurfacing Implant
\$10,625

Cemented Total Knee Implants
\$5,139

→
36% higher device cost

Bicompartmental Knee Implant
\$7,000

Total Knee Arthroplasty

→
\$150,000 to \$250,000 capital investment

Computer-Assisted MIS Knee Arthroplasty

Courtesy of Smith & Nephew, Inc.



Printed with permission of BrainLAB.

MIS = minimally invasive surgery.

Sources: *Orthopedic Network News* 2007; Sg2 Analysis, 2008.

But Who Picks? Who Pays?

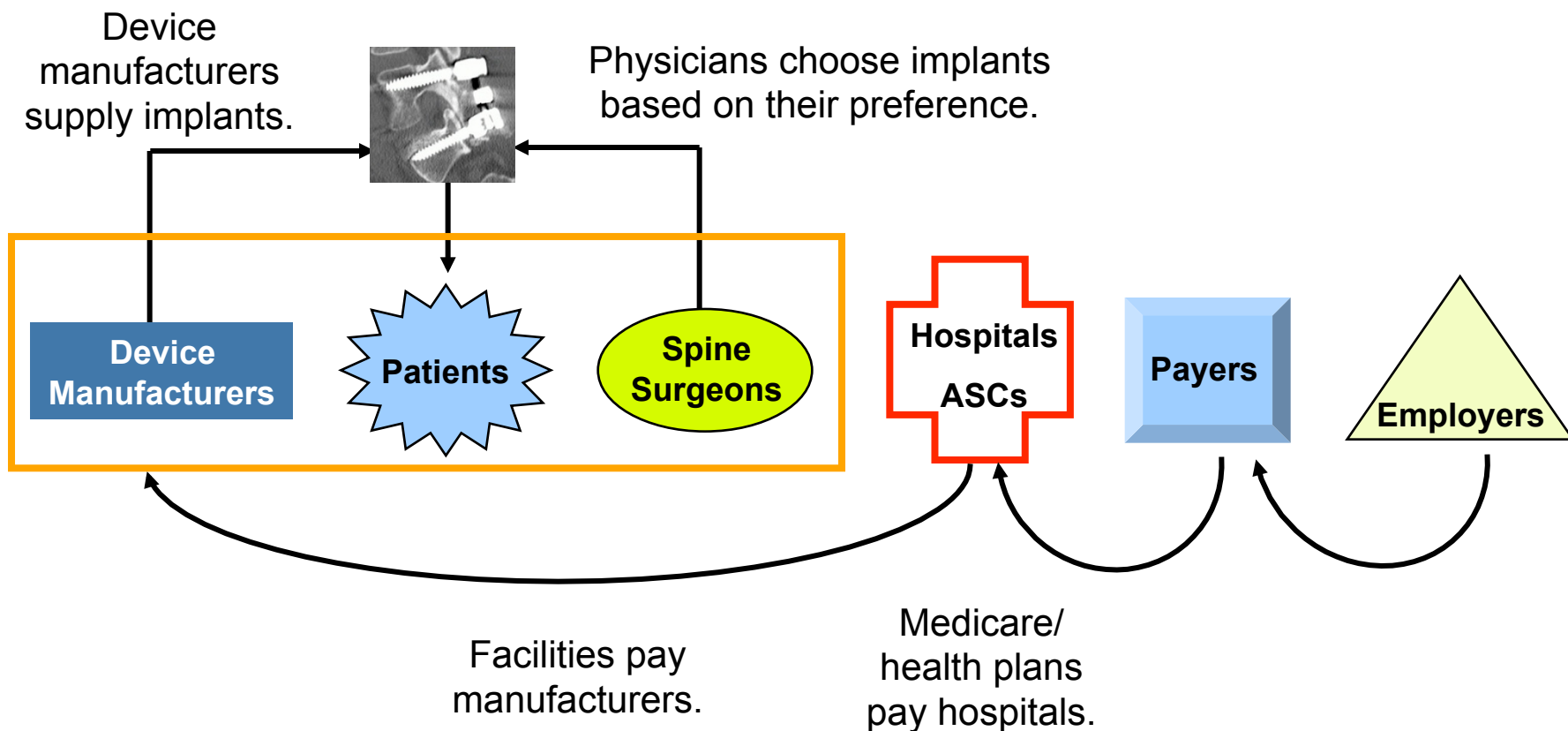


Image printed with permission of Toshiba America Medical Systems.
ASC = ambulatory surgery center.

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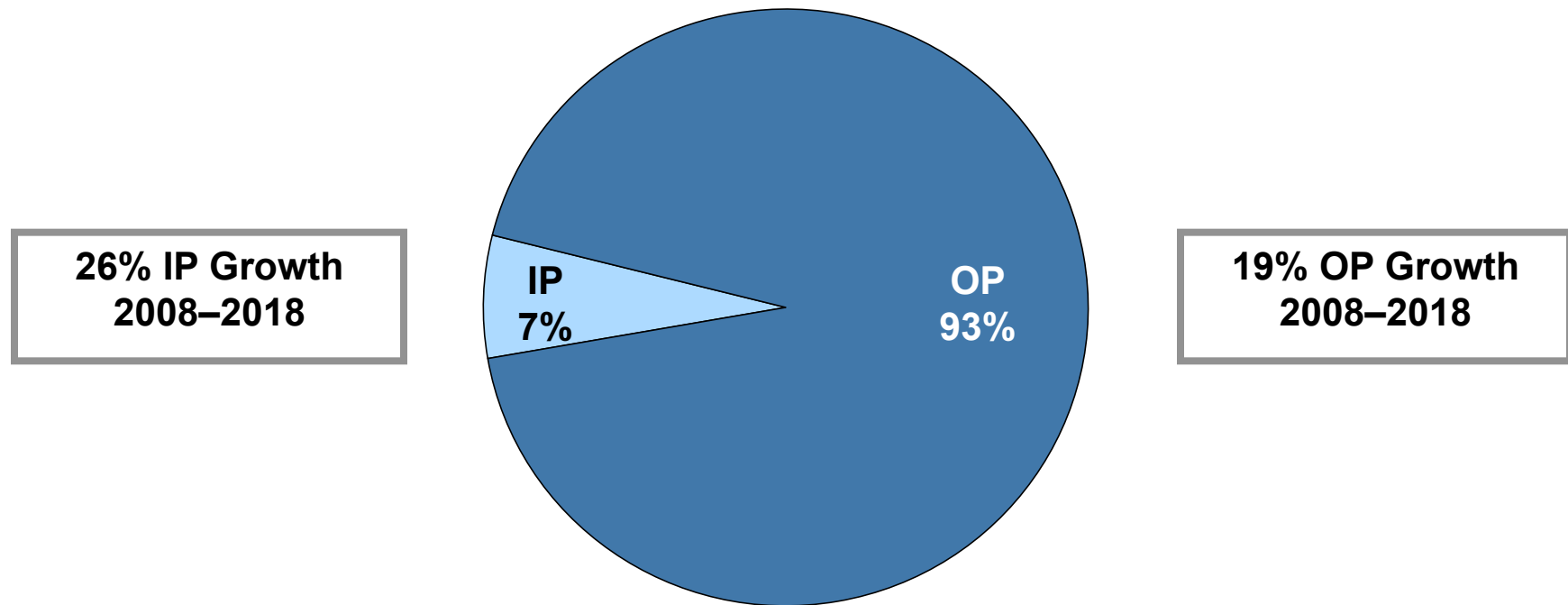
Economic Reality

Drivers of Change

Nationally, Orthopedic Growth Creates Potential Opportunities

**Inpatient Orthopedics Distribution
US Market, 2008
Total Volume: 3.2 Million**

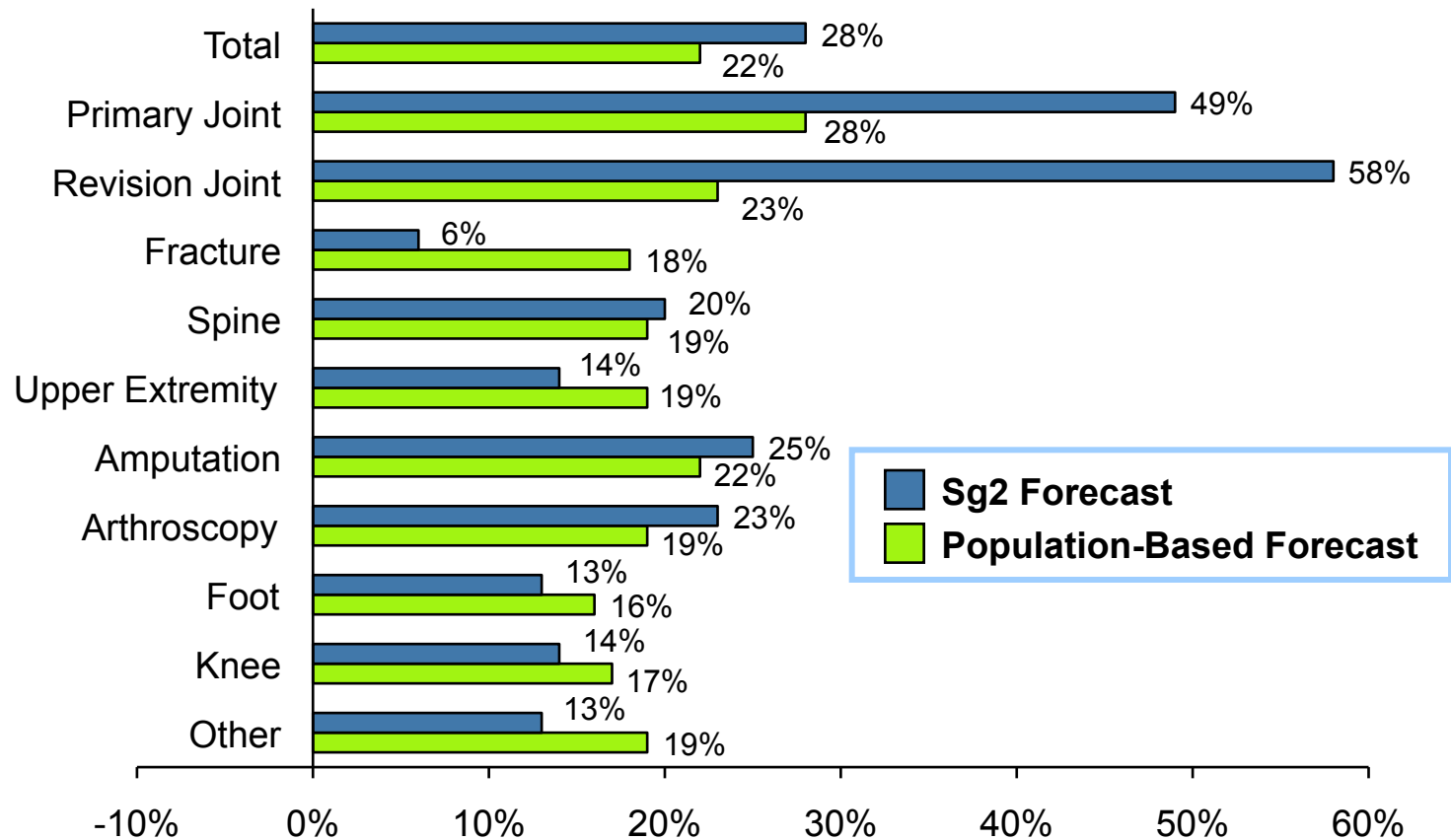
**Outpatient Orthopedic Procedures
US Market, 2008
Total Volume: 39.7 Million**



IP = inpatient; OP = outpatient.
Sources: Impact of Change® v7.0; NIS; Sg2 Analysis, 2008.

Inpatient Orthopedic Procedures Will Experience Significant Growth

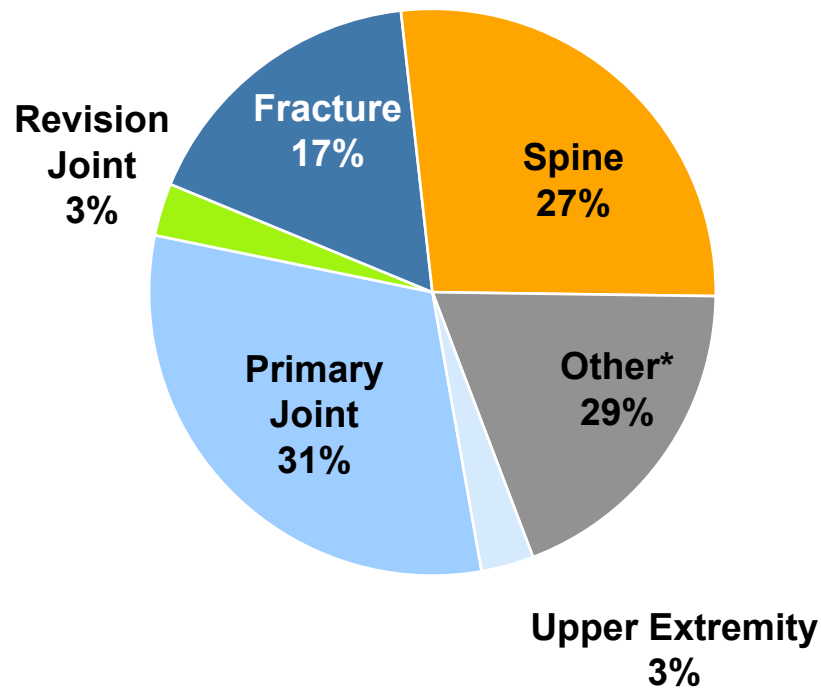
Inpatient Surgical Orthopedics Growth Forecast US Market, 2008–2018



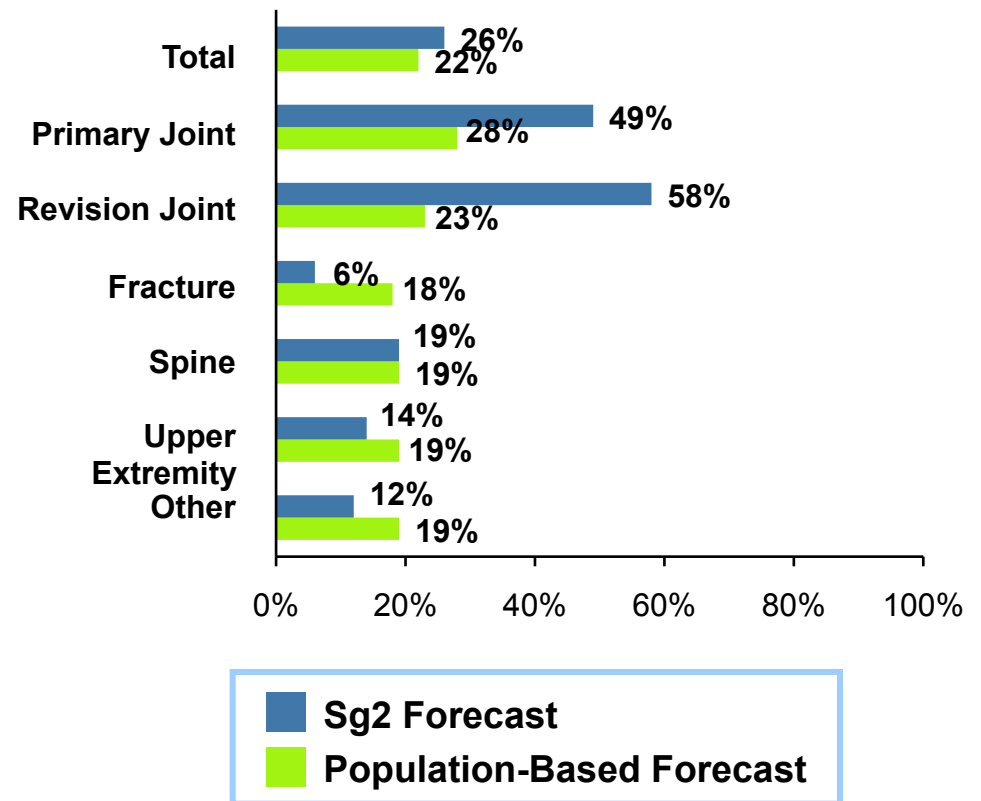
Note: Numbers do not add up to 100% due to rounding.
Sources: Impact of Change® v7.0; Sg2 Analysis, 2008.

Joint Replacement and Spine Care Drive Inpatient Orthopedics Volumes

**Inpatient Orthopedics Distribution
US Market, 2008**
Total Volume: 3.2 Million



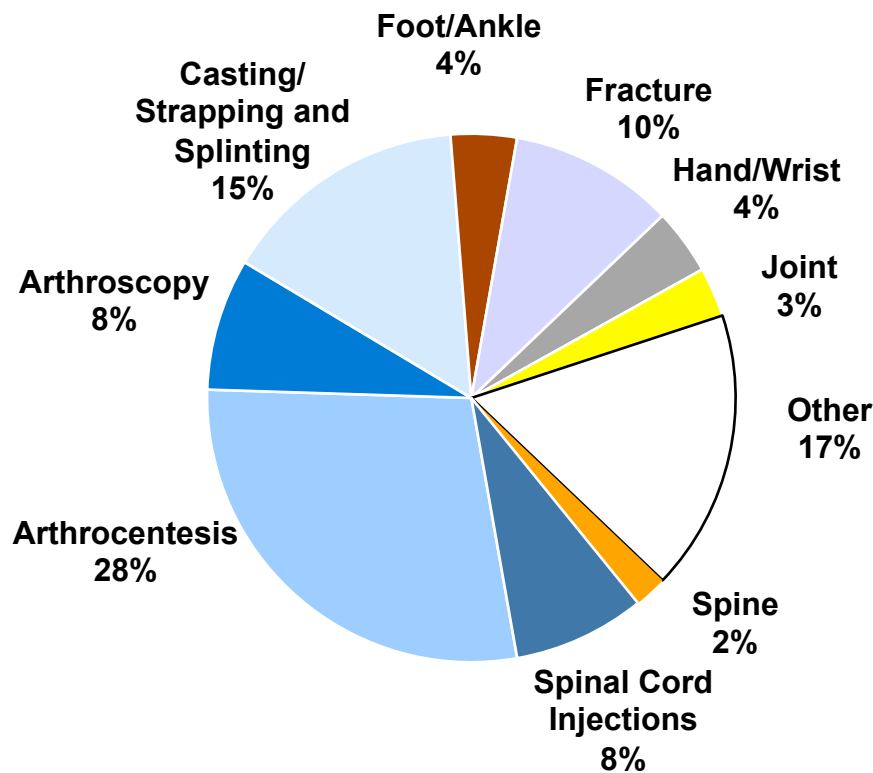
**Inpatient Orthopedics Growth
Forecast, US Market, 2008–2018**



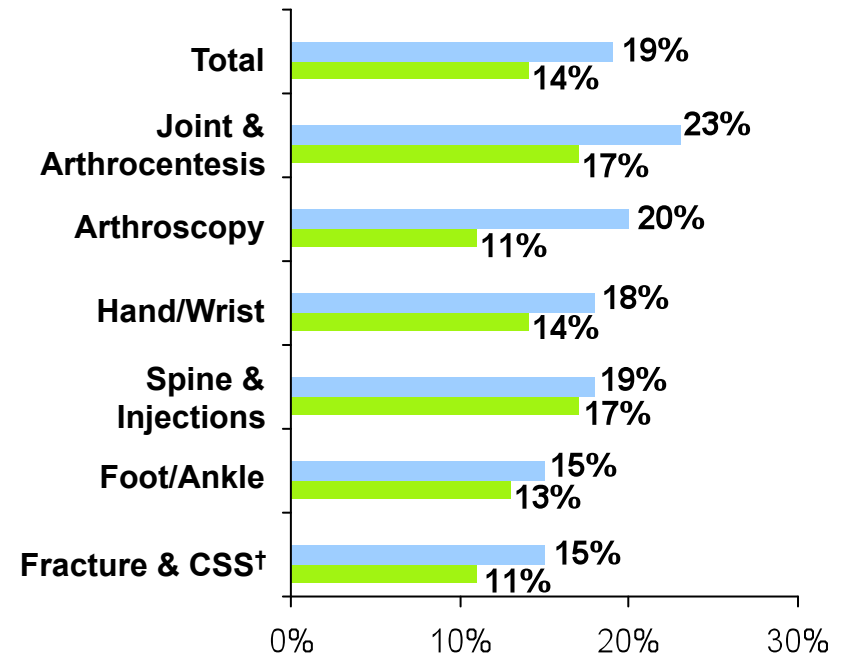
*Note: Other includes Amputation, Arthroscopy, Foot, Fracture – Medical, Orthopedics – Other medical, Orthopedics- Other surgical, and Other Knee.
Sources: Impact of Change® v7.0; NHDS; Sg2 Analysis, 2008.

Outpatient Growth Varies by Orthopedic Subspecialty

Outpatient Orthopedic Procedures*
US Market, 2008
Total Volume: 39.7 Million



Outpatient Orthopedic Growth Forecast, US Market, 2008–2018



*Numbers do not add up to 100% due to rounding. †CSS = casting, strapping and splinting.
 Sources: Impact of Change® v7.0; Pharmedics; HCUP; CMS; CDC; Sg2 Analysis, 2008.

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The Myth: Health Care Is a Recession-Proof Industry

Conventional wisdom holds that health care is a “recession-proof” industry, somehow immune to economic cycles.

Assumption	Reality
<p>People always get sick, in good economic times and bad.</p>	<ul style="list-style-type: none"> ▪ People can and do defer health care in difficult economic times. ▪ Primary, preventive and elective services are usually the first to be delayed or dropped.
<p>People don't pay for health care, so a downturn shouldn't affect demand.</p>	<ul style="list-style-type: none"> ▪ Employers pay the majority of the bill, but increasingly employees do as well. ▪ Premiums, deductibles and co-payments have been rising for the past few years.
<p>The government will always be there.</p>	<ul style="list-style-type: none"> ▪ State revenues and expenditures are affected by economic downturns, which in turn affects Medicaid spending. ▪ CMS will increasingly resort to cost controls to reduce Medicare spending.

CMS = Centers for Medicare & Medicaid Services.

Reality: The Economy Affects Providers Through Many Channels

Corporate Profits

- As profits fall, companies reduce their workforce and scale back health benefits.

Consumer Confidence

- Consumers hold back on primary and discretionary care, thus reducing utilization.

Unemployment

- Job losses lead to increased Medicaid enrollment and the number of uninsured, increasing hospital bad debt.

Industry Structure

- An increase in part-time and service occupations is often associated with reduced benefits.

Equity/Debt Markets

- Difficulties accessing capital constrain the ability of hospitals to finance new projects.

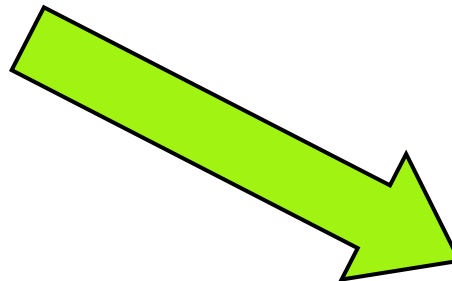
Tax Revenue

- Pressure will increase to cut Medicare and Medicaid spending on hospital services.

Recessions Pack a One-Two Punch on Health Care

Punch 1

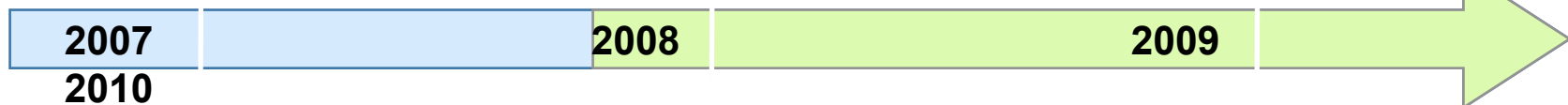
- Cost of capital/
access to capital
- Nonoperating
(investment)
income
- Discretionary
service volumes



Punch 2

- Discretionary service
volumes (cont'd)
- Bad debt
- Medicaid eligibility/
payment rates
- Charitable giving

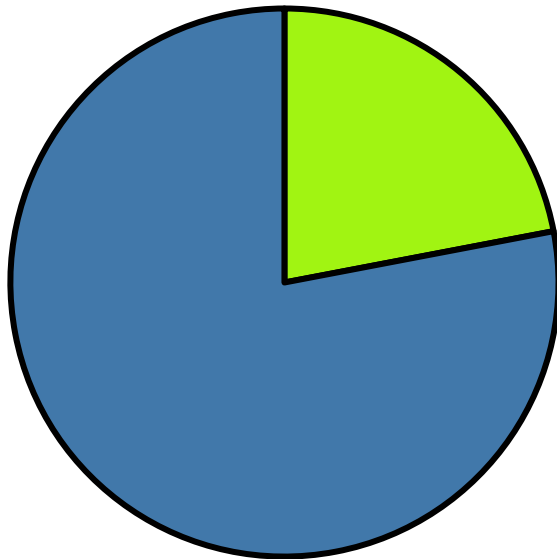
Health care is a lagging indicator of the economy.



Economic Pressures Slow Demand for Physician Visits

Reduction in Health Care Utilization, 2008

22% of Americans Cut Back on Physician Office Visits



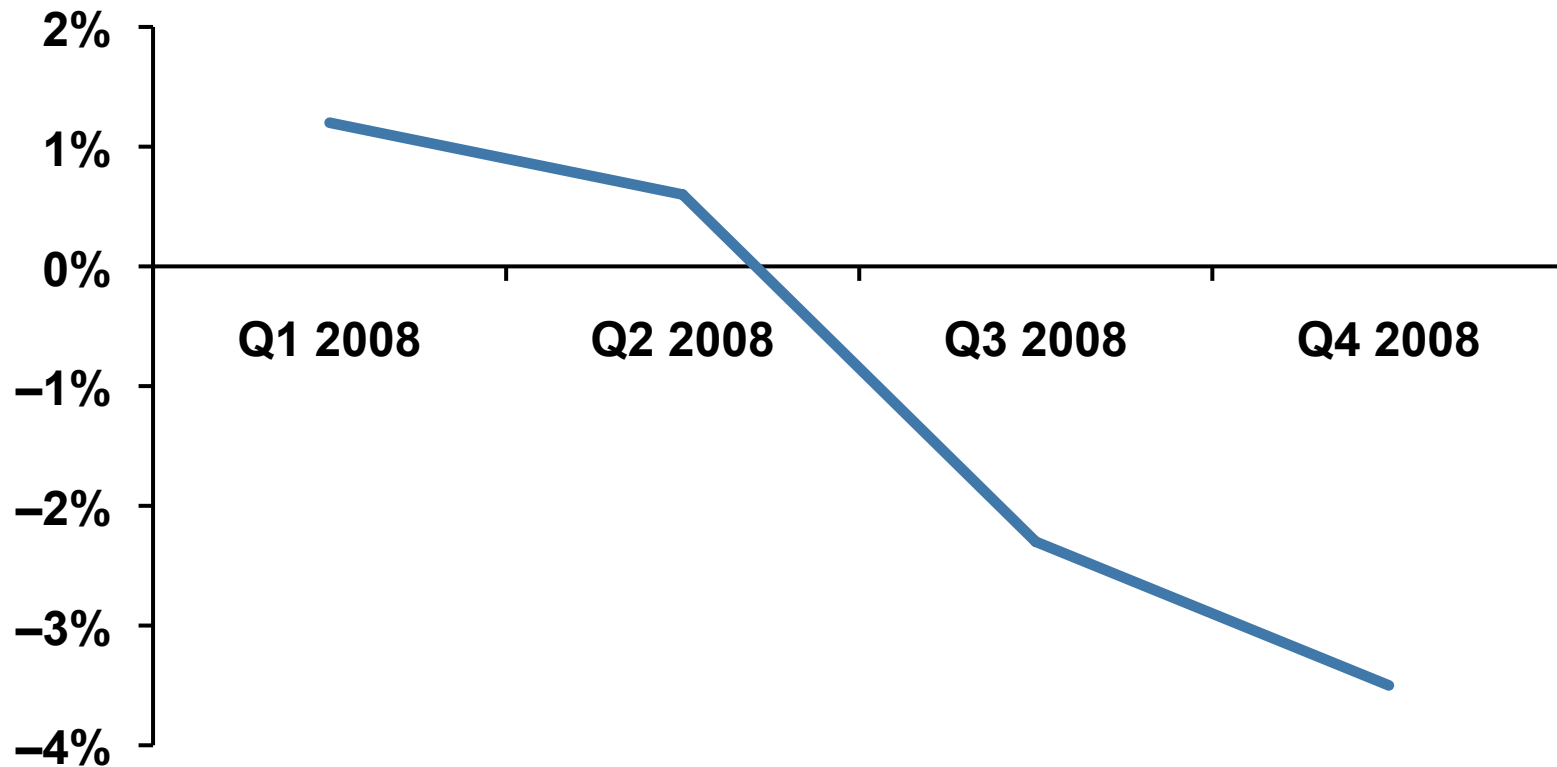
National Consumer Surveys

- 29% report that a household member put off or postponed getting needed care.
- 24% skipped a recommended medical test or treatment—up from 17% in 2005.
- 23% did not fill a prescription.

Sources: Kaiser Family Foundation, 2008; National Association of Insurance Commissioners, 2008.

Inpatient Volumes Began Falling Midyear 2008

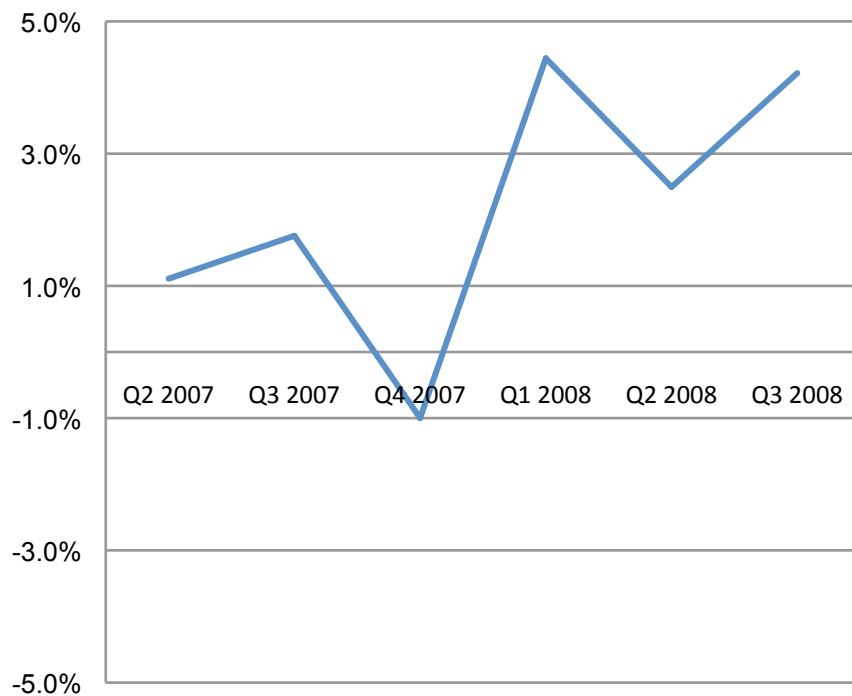
Year-Over-Year Change in Inpatient Admissions—US Hospitals



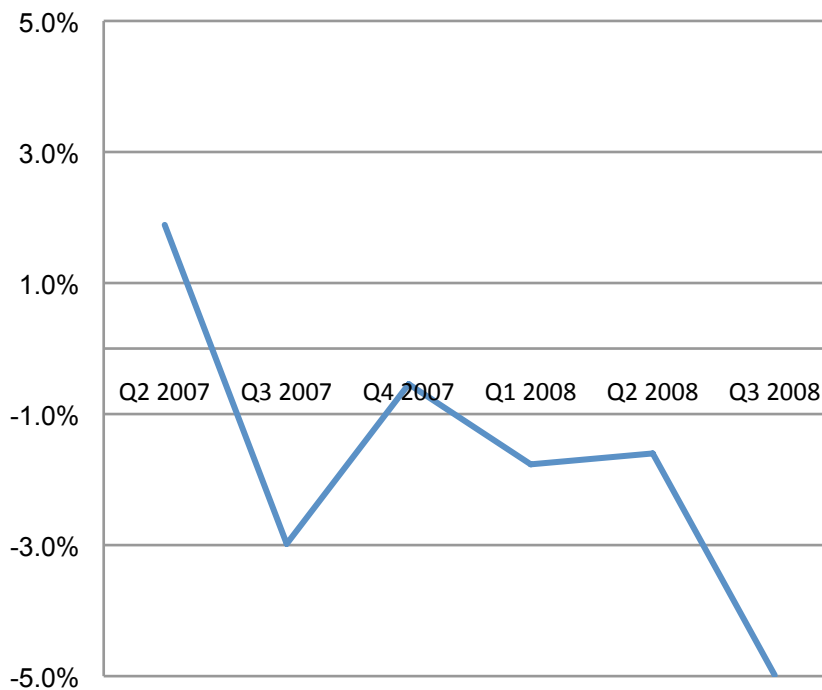
Source: Citigroup, 2008.

ED Visits Up, Outpatient Surgeries Down

Emergency Department Visits (% Change)



Outpatient Surgeries (% Change)

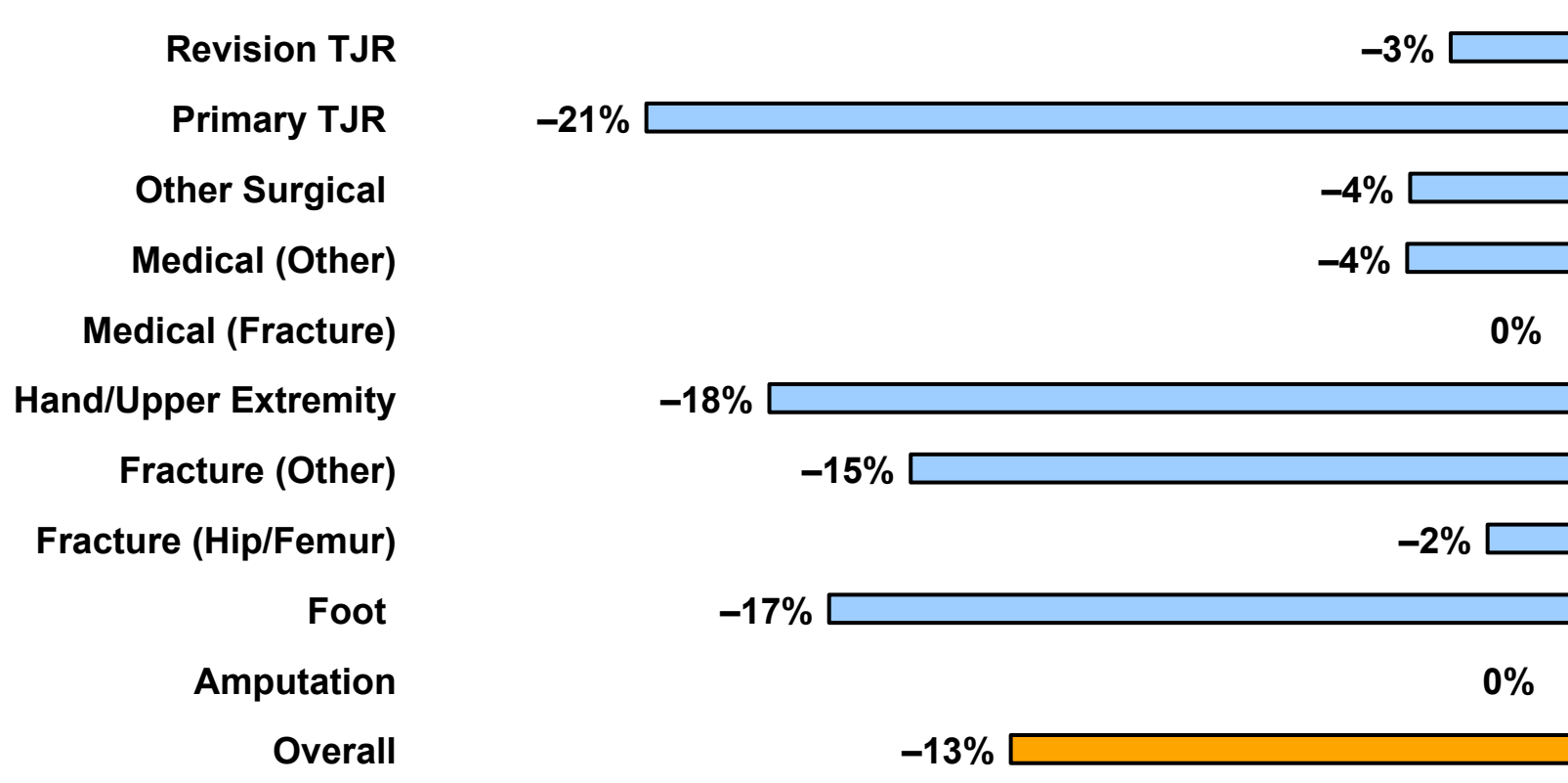


ED = emergency department.

Source: Sg2 Interviews and Analysis of 15 Diverse Hospitals and Health Systems, 2009.

Elective Orthopedic Procedure Volumes Will Decline in 2009

Orthopedic Volumes—Change in Discharges, 2008–2009



TJR = total joint replacement.

Sources: Nationwide Inpatient Sample, 2008; Sg2 Economic Impact Calculator, 2008.

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Providing Value – *The New Metric*

Where Is the System Going Next?



1983 to 2000
Reimbursement

2000 to 2008
Payment

2008 to 2016
Purchasing Based on Outcomes

Photo: comstock.com; ©iStockphoto.com/Kaye Veazey/Tom McNemar.

Competition on “Value” Will Increase: Focus on Quality and Cost

- All patients will ask 2 questions before traveling for care:
 - How much does it cost?
 - What is the quality of care?



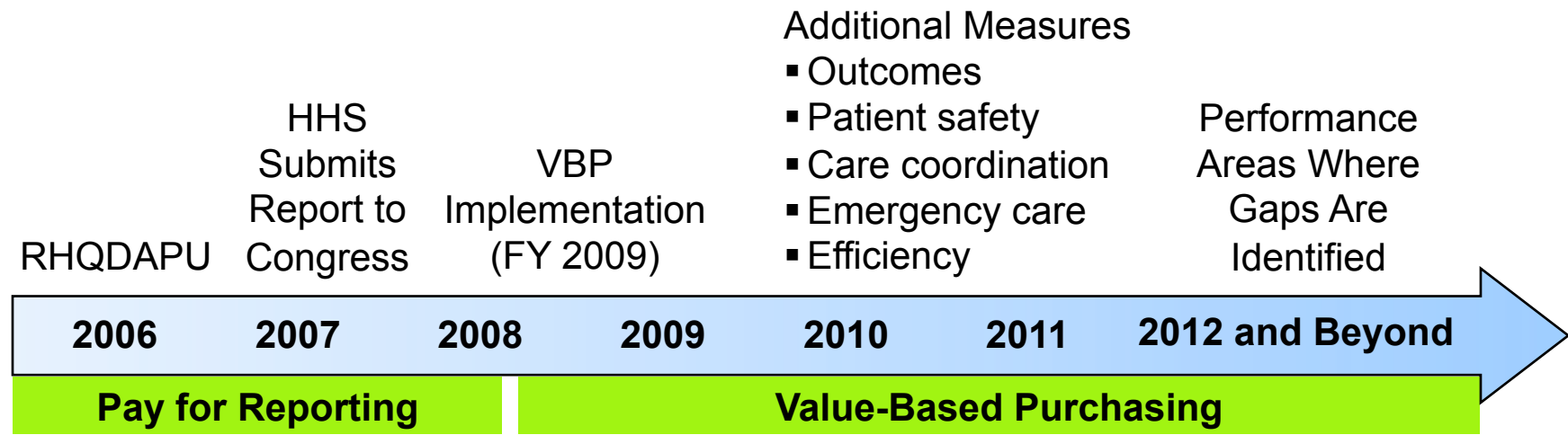
Value = Quality/Cost

Source: Sg2 Analysis, 2008.

The Evolution of Medicare Pay for Performance: Value-Based Purchasing

Pay for Performance v2.0

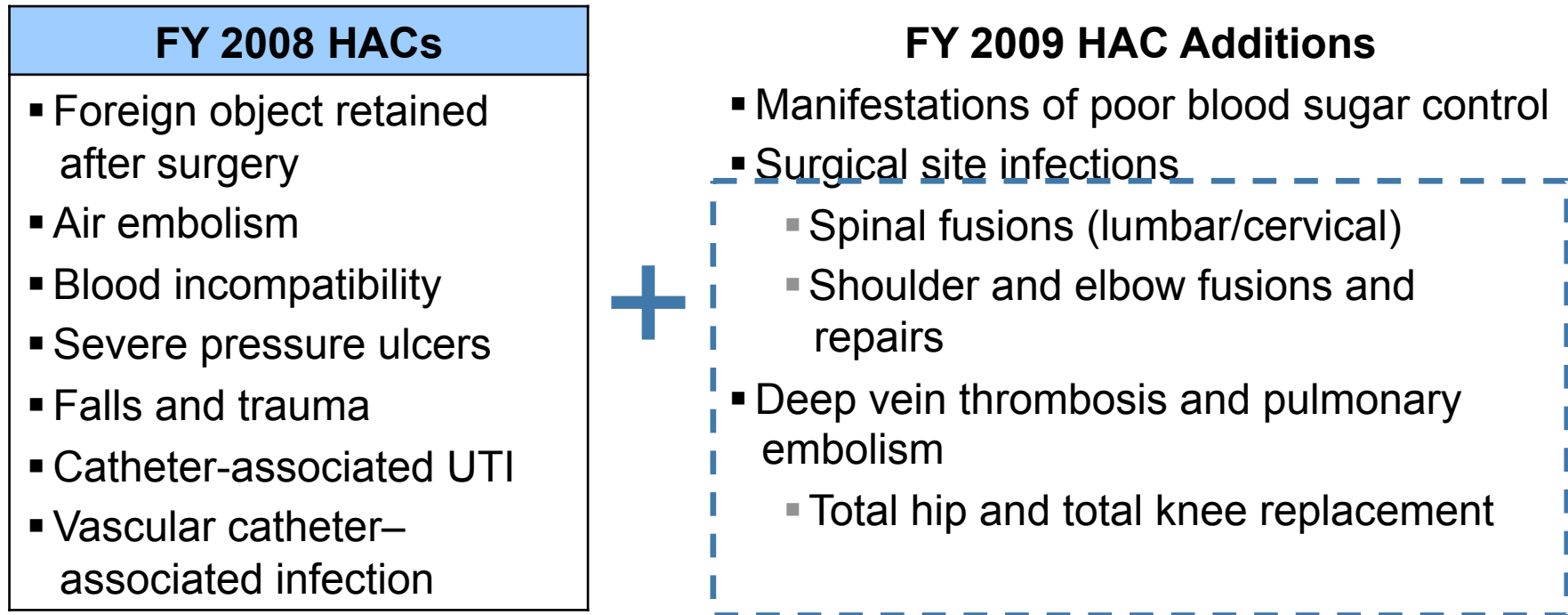
Transforming CMS from a passive payer to an active purchaser of high-quality, efficient care



RHQDAPU = Reporting Hospital Quality Data for Annual Payment Update; HHS = US Department of Health and Human Services; VBP = value-based purchasing; FY = fiscal year.
 Source: Medicare Hospital Value-Based Purchasing Plan. Senate Finance Committee Roundtable, March 6, 2008.

2009: CMS Pays Less for Hospital-Acquired Conditions and Never Events

CMS will pay the lower DRG if the following conditions were not present on admission, or presence on admission cannot be determined based on documented clinical judgment.



*Following CABG, certain orthopedic procedures and bariatric surgery for obesity.

DRG = diagnosis-related group; FY = fiscal year; UTI = urinary tract infection;

CABG = coronary artery bypass graft..

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A Call For Transparency – *Balancing Quality, Value and Cost*

Transparency Creates Opportunities and Challenges



Blue Cross
Blue Shield



Don't wait for others to profile you: Take control of your data.

Outcomes and Costs Are Becoming More Transparent

Disc Surgery at Hospitals Within 40 Miles of Chicago, July 2006

Institution	Overall Rank	Volumes/ Year	Complications	ALOS	Cost
Neurologic & Orthopedic	1st	9th	1st	2nd	10th
Loyola University	2nd	4th	2nd	6th	1st
Northwest Community	3rd	10th	3rd	8th	1st
Good Samaritan	4th	7th	4th	10th	6th
Evanston	5th	3rd	5th	8th	6th
Northwestern Memorial	6th	6th	6th	6th	6th
Elmhurst Memorial	7th	5th	7th	4th	5th
Hinsdale	8th	2nd	8th	1st	1st
Rush-Presbyterian-St. Lukes	9th	6th	9th	3rd	6th
Edwards	10th	8th	10th	5th	1st

Source: BlueCross BlueShield of Illinois, 2006.

Price Information Is Becoming More Common

Spectrum Health, Michigan
 Cost and Payment for Spine Procedures, 2008

	Cost and Payment	
Spinal Fusion, Cervical	Cost	\$13,950
	Medicare Avg Payment	\$12,828.61
	Medicaid Avg Payment	\$8,082.03
	Private Insurance Avg Payment	\$11,464.27
Spine MRI, Cervical w/ out Contrast	Cost: Spectrum Health IP	\$1,130.59
	Cost: OP Facility	\$983.13
	Medicare Avg Payment	\$346.55
	Medicaid Avg Payment	\$209.21
	Private Insurance Avg Payment	\$792.28

What's Included:

- Spectrum Health equipment fees, staff time and supplies

What's NOT Included:

- Physicians' fees, such as those for your surgeon, anesthesiologist, pathologist or radiologist

Avg = average; MRI = magnetic resonance imaging; IP = inpatient; OP = outpatient.
 Sources: Spectrum Health, 2008; Sg2 Analysis, 2008.

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Physician-Industry Relationships – *Under Fire*

Medical Device Industry's Practices Are Under Attack

A “whistle-blower” reported that the Tennessee division of Medtronic had provided kickbacks to doctors, including payments and other services; US Department of Justice (DoJ) subpoenaed the company.

A voluntary new code of ethics was adapted by AdvaMed.

5 major orthopedic device manufacturers were subpoenaed by the DoJ regarding consulting relationships with physicians; Medtronic is the only in-class member excluded.



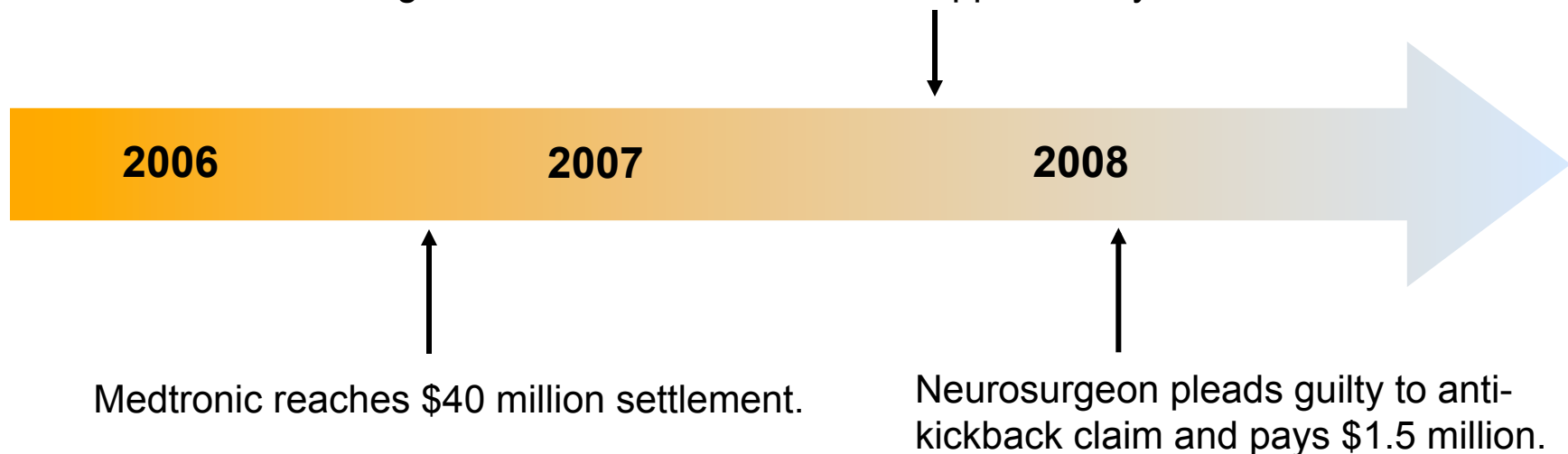
Medtronic reformed its ethics code and claimed the reasoning was unrelated to the subpoena; it imposed strict sanctions, limiting meals, travel and lodging inducements, and prohibited resort locations.

3 major cardiac device manufacturers were subpoenaed by the DoJ regarding consulting relationships with physicians.

The Beginning of New “Relationships”

In 2007, the New Jersey US Attorney’s investigation into improper consulting agreements with orthopedic surgeons settled with Deferred Prosecution Agreements for Biomet, DePuy, Smith & Nephew and Zimmer, and a Non-Prosecution Agreement for Stryker.

- Total of \$311 million in penalties
- A new standard of conduct—5-year Corporate Integrity Agreement
- Federal oversight—18-month federal monitor appointed by DoJ

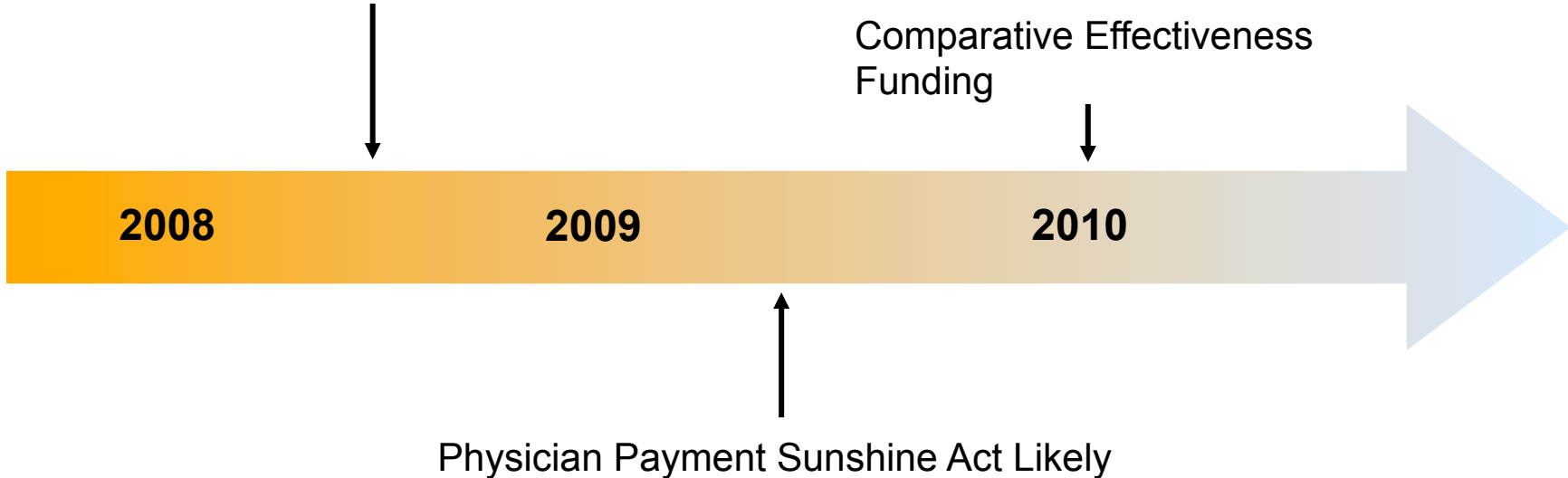


Sg2 Analysis, 2008.

The End Game is Transparency (and Less Money For Physicians)

The New Jersey US Attorney's investigation expands to smaller device companies and physicians

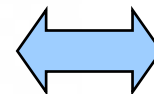
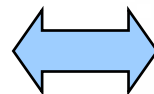
Comparative Effectiveness Funding



Sg2 Analysis, 2008.

Traditional Alliances May Shift

**Governmental
Forces**



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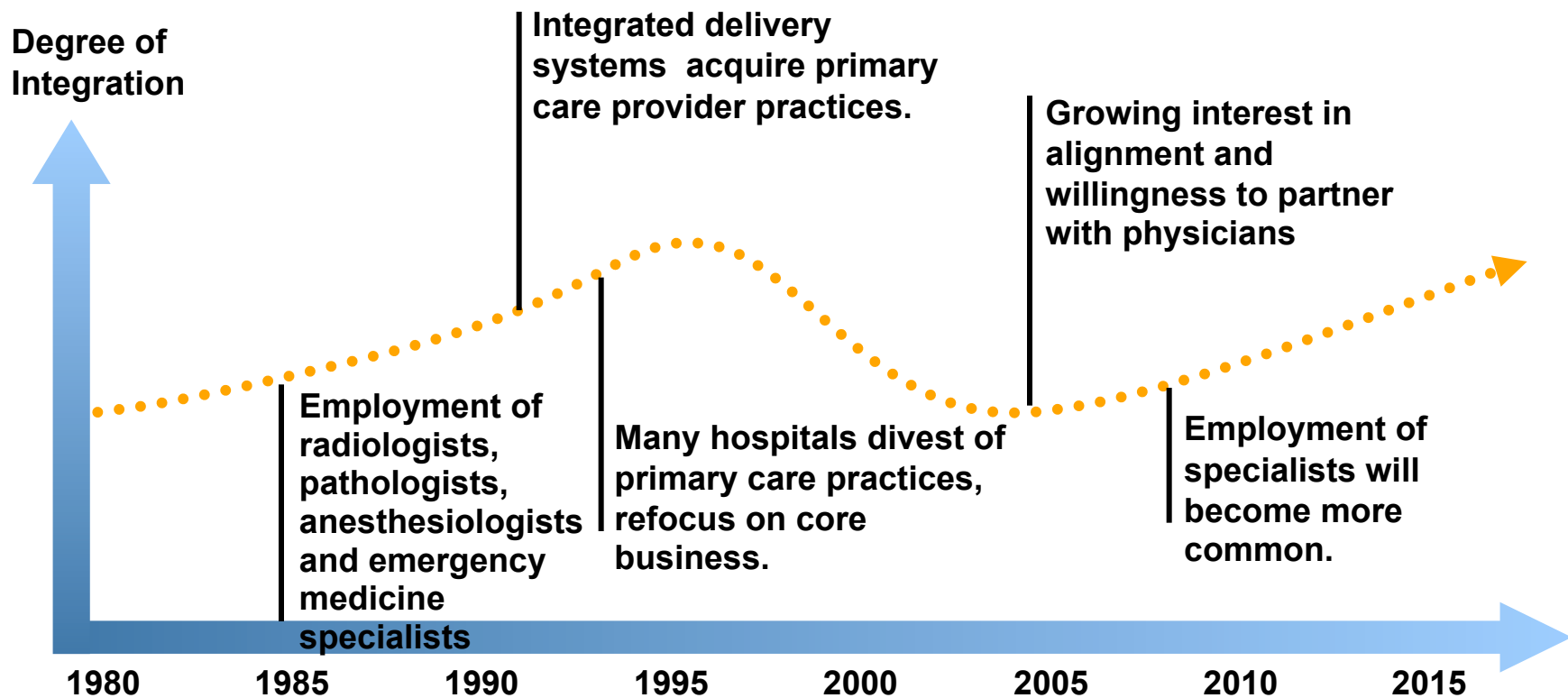
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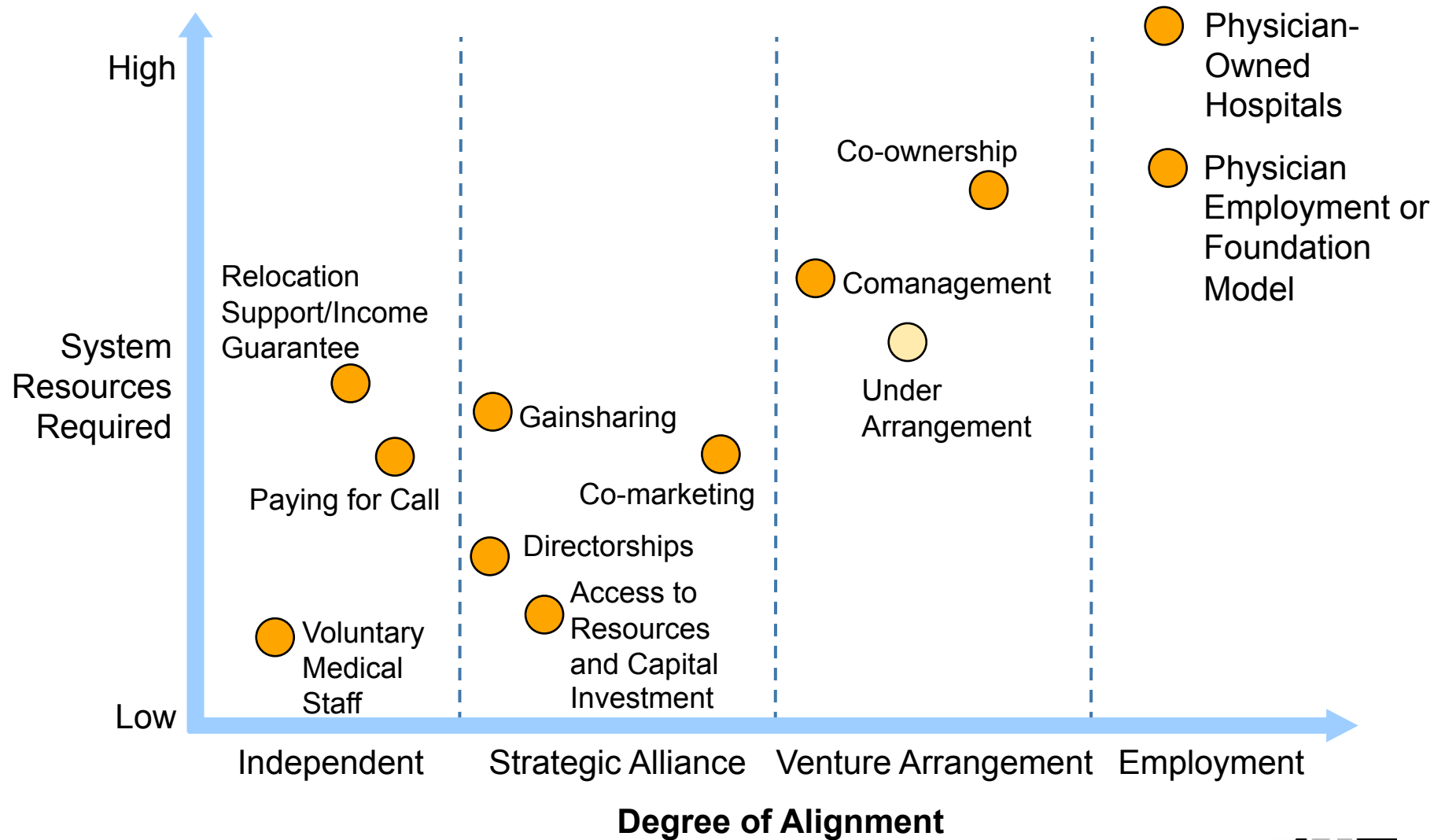
Provider Collaboration – *Alignment and Integration*

Physician Integration Is Reemerging



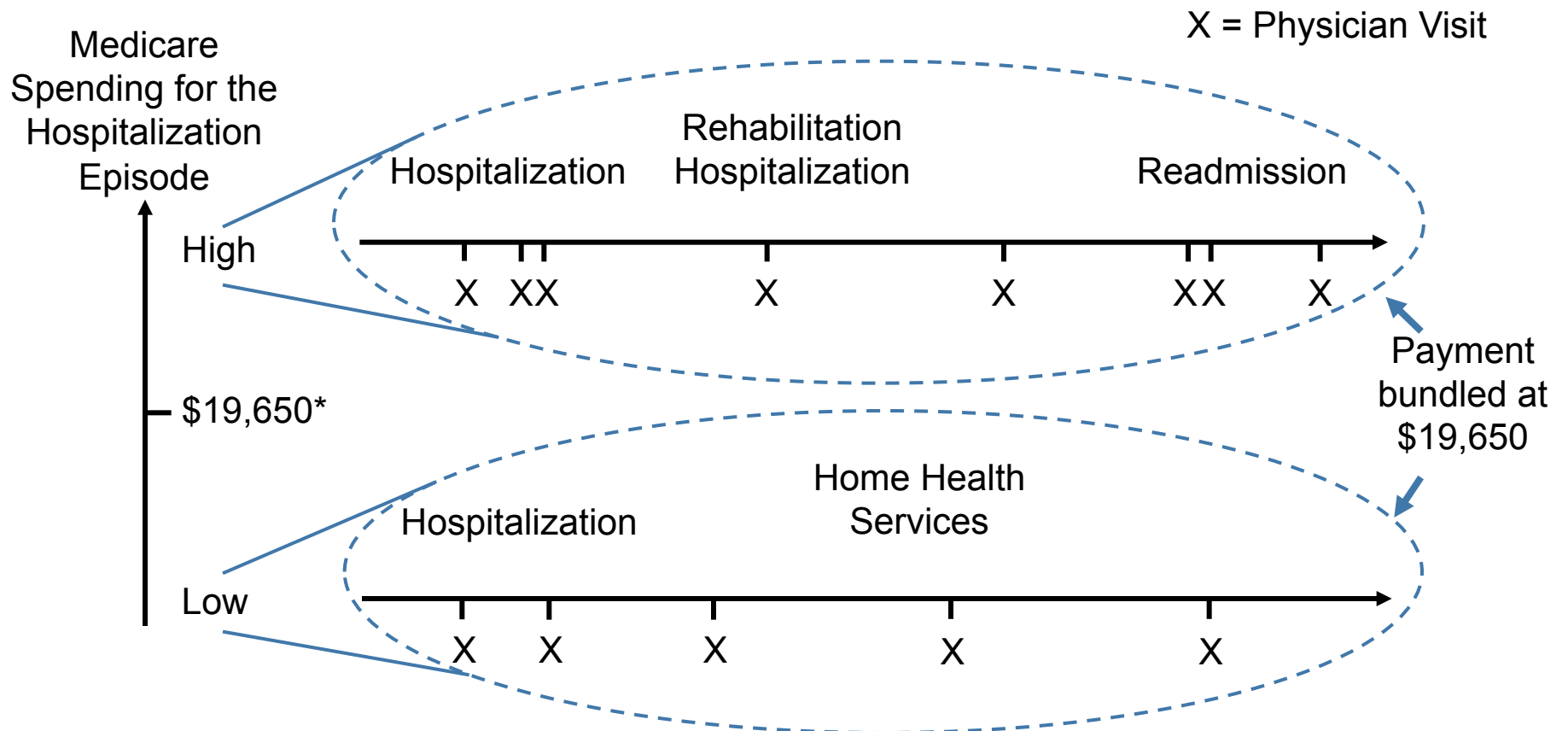
Sg2 Analysis, 2008.

Hospital Ownership and Physician Employment Achieve Tight Alignment



Bundled Payment Will Encourage Increased Provider Coordination

By 2020, CMS will encourage increased coordination among providers.



*2009 Medicare payment for MS-DRG 460.

Source: Moving toward bundled payments around hospitalizations. MedPAC, November 8, 2007.

What to Expect From the Government

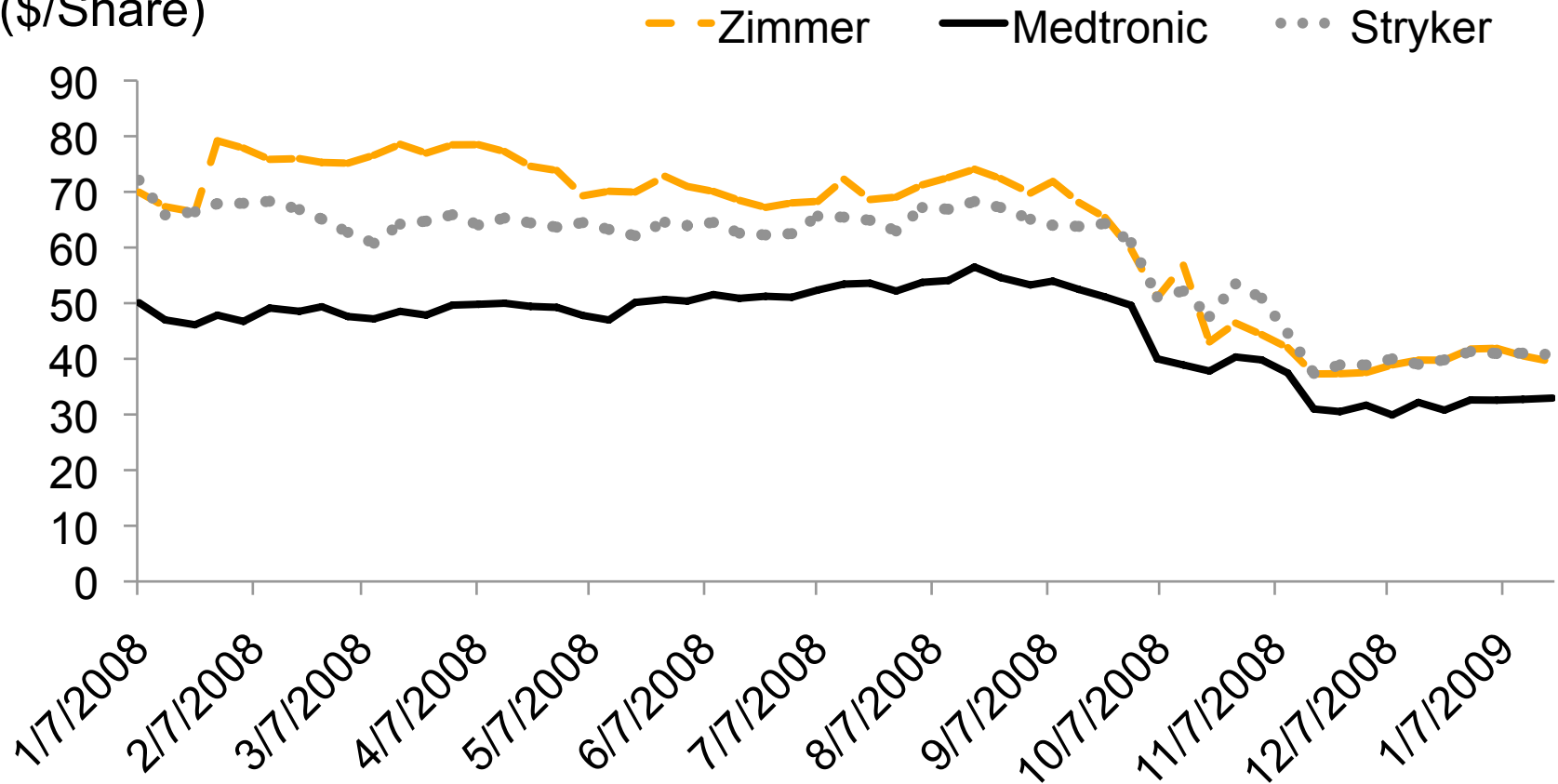
- Health care will be on the 2009 agenda.
- Economic recession, credit crisis and war will remain top priorities for Congress.
- Policies likely to pass during the next term include:
 - SCHIP funding expansion
 - Physician payment fix
 - Legislation on physician-owned specialty hospitals
 - Comparative effectiveness funding
 - FDA and NIH funding increases
 - IT initiative
- Due to cost constraints, an incremental approach or phased-in approach to comprehensive reform is likely.



SCHIP = State Children's Health Insurance Program; FDA = US Food and Drug Administration;
NIH = National Institutes of Health.

Device Manufacturers Are Impacted by the Recession

Stock Prices
(\$/Share)



Sources: New York Stock Exchange, 2008–2009; Sg2 Analysis, 2009.

Impacts

- Neuromusculoskeletal services are a large component of our health cares system.
- These service lines are technologically driven.
- The current economic landscape is constricting utilization for neuromusculoskeletal services.
- Transparency and the demand for value will reduce pricing power of ortho / neuro suppliers.
- Conflict of interest concerns regarding industry and physicians are being aggressively managed.
- The government is “encouraging” physician-hospital collaboration
- Most neuromusculoskeletal disorders are not reversible.

Many patients delaying treatment today will require treatment in the future.

Thank You

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