2016 Orthopedics Landscape

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Director, Orthopedic Intelligence
Sg2
How does the Sg2 forecast work?

Can we expect continued growth in Orthopedics over the next decade?

Sg2 Forecast Overview

• What are we thinking about?
• 10-year overview for Orthopedics
• Procedure Highlights

Total Joint Replacement

Spine Care

Rehabilitation
Sg2’s Impact of Change® Forecasts

Sg2’s Impact of Change® Forecasts

Days, LOS, Volumes, System of CARE

Sg2 Impact Factors

Sg2 Impact Factors

Population
Epidemiology
Economics
Policy
Innovation & Technology
Systems of CARE
What are we thinking about?

ORTHOPEDICS
- Total Joint Replacement
- Hip Fx
- Foot & Ankle
- Upper Extremity
- Sports Med

Rehab

Ortho Spine

SPINE
- Neuro Spine
- Pain
- PM&R

ASC  Urgent Care  Post Acute  Virtual Health
Orthopedics Experiences Outpatient Shift

**Inpatient Orthopedics Forecast**
US Market, 2016–2026

<table>
<thead>
<tr>
<th>Year</th>
<th>Discharges</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
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<tbody>
<tr>
<td>2016</td>
<td>2.0</td>
<td></td>
<td></td>
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<tr>
<td>2021</td>
<td>2.2</td>
<td>+11%</td>
<td></td>
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<tr>
<td>2026</td>
<td>2.4</td>
<td>+21%</td>
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</table>

**Outpatient Orthopedics Forecast**
US Market, 2016–2026

<table>
<thead>
<tr>
<th>Year</th>
<th>Volumes</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>440</td>
<td>+7%</td>
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<tr>
<td>2026</td>
<td>480</td>
<td>+14%</td>
<td>+12%</td>
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</table>

Note: Analysis excludes 0–17 age group and includes orthopedics service line only.
Orthopedic Procedures: 10-Year Growth Projections

**Shoulder Replacement**
- IP: 29% (103% Sg2 IP Forecast)
- OP: 11% (82% Population-Based Forecast)

**Cervical Spinal Fusion**
- IP: -31% (13% Sg2 IP Forecast, 13% Population-Based Forecast)
- OP: 4% (595% Sg2 OP Forecast)

**Hip Fracture**
- IP: 3% (21% Sg2 IP Forecast)

**Lumbar Spinal Fusion**
- IP: -4% (19% Sg2 IP Forecast, 19% Population-Based Forecast)
- OP: 6% (136% Sg2 OP Forecast)


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TJR Procedures will continue to transition to the OP Setting

**Inpatient Hip/Knee Replacement**
US Market, 2016–2026

<table>
<thead>
<tr>
<th></th>
<th>Discharges</th>
<th>Volumes</th>
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<tbody>
<tr>
<td></td>
<td>Millions</td>
<td>Thousands</td>
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<tr>
<td>2016</td>
<td>0.8</td>
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<tr>
<td>2021</td>
<td>1.0</td>
<td>200</td>
</tr>
<tr>
<td>2026</td>
<td>1.6</td>
<td>300</td>
</tr>
</tbody>
</table>

**Outpatient Hip/Knee Replacement**
US Market, 2016–2026

**Note:** Analysis excludes 0–17 age group.

**Sources:** Impact of Change® v16.0; HCUP National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP), 2012. Agency for Healthcare Research and Quality, Rockville, MD; IMS LifeLink® PharMetrics Health Plan Claims Database, 2011, 2013; The following 2013 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; The Nielsen Company, LLC, 2015; Sg2 Analysis, 2016.

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Big changes are coming!

By 2026, more than half of all total joint replacements will occur in the outpatient setting.

Note: Analysis excludes 0–17 age group.

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Adoption of Outpatient Joint Replacement Varies Substantially by Region…And Market

Sources: Sg2 Ambulatory Market Strategist; Health Intelligence Company, LLC; Sg2 Analysis, 2016.
Which Risk Factors Will Accelerate the Shift?

- My TJR surgeons are independent and/or own an ASC.
- Local payers have set a precedent in the market.
- A significant % of my IP TJR volume has an LOS ≤ 2 days.
- Direct-to-employer ortho bundled payments exist in my market.
- State law allows overnight stays.
Process Needs to Be Seamlessly Executed

Changes in Pathways and Protocols

- **Patient education**: 54%
- Prehab: 35%
- Pain protocols: 43%
- Physical therapy: 47%
- Anesthesia technique: 38%
- Virtual health software: 8%
- Navigators: 36%

✓ Indicates presence at XYZ Hospital

Source: Sg2 Survey of Members 2016; Sg2 Interviews and Analysis 2016
# Additional Analysis That May Benefit Future TJR Opportunity Assessments

<table>
<thead>
<tr>
<th>Key Questions to Inform Your TJR Strategy</th>
<th>Supporting Analysis</th>
</tr>
</thead>
</table>
| Who are the patients in my market today and how will their needs change over time? | • Patient acuity/comorbidity analysis  
• Consumer segmentation  
• Demographic and LOS analysis |
| What are the current strengths and gaps in my System of CARE that would help or hinder the development of a bundled payment program? | • Organizational or market System of CARE gap analysis  
• In-migration/out-migration analysis |
| How can I strengthen alignment with physicians and other partners to prevent leakage and mitigate risk? | • Physician referral patterns (eg, Patient Flow mapping)  
• Sg2 cost analysis  
• Physician supply/demand |

CARE = clinical alignment and resource effectiveness; TJR = total joint replacement.
How can we optimize our growth in Spine?

What will the role of OP Rehab evolve in a value-based environment?

Sg2 Forecast Overview

Total Joint Replacement

Spine Care

• Maximizing your local System of CARE
• Preparing for Value-based Reimbursement
• Changing role of PM&R
• The essential nature of OP Rehab
Utilization Shifts Redefine Growth Opportunities

**IP Spine Forecast**
US Market, 2016–2026

<table>
<thead>
<tr>
<th>Discharges</th>
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<th>10-Year</th>
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<tbody>
<tr>
<td>Millions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>+9%</td>
<td>+17%</td>
</tr>
<tr>
<td>2026</td>
<td>+8%</td>
<td>-7%</td>
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</tbody>
</table>

**OP Spine Forecast**
US Market, 2016–2026

<table>
<thead>
<tr>
<th>Volumes</th>
<th>5-Year</th>
<th>10-Year</th>
</tr>
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<tr>
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<td></td>
</tr>
<tr>
<td>2021</td>
<td>+7%</td>
<td>+5%</td>
</tr>
<tr>
<td>2026</td>
<td>+16%</td>
<td>+10%</td>
</tr>
</tbody>
</table>

**Note:** Analysis excludes 0–17 age group. **Sources:** Impact of Change® v16.0; HCUP National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP), 2013. Agency for Healthcare Research and Quality, Rockville, MD; OptumInsight, 2014; The following 2014 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; The Nielsen Company, LLC, 2016; Sg2 Analysis, 2016.

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What Is the Episodic Cost?

- Chiropractic Care
- MRI
- Nerve Conduction Testing
- Surgeon Evaluation
- Surgery
- PCP Evaluation
- X-Ray
- Physiatrist Evaluation
- Rehab
- Psych
- Acupuncture
- Injections

PCP = primary care physician.
Understanding the Flow of Patients Is Getting Easier

CHIROPRACTIC CARE → PCP EVALUATION → MRI

SURGEON EVALUATION ← MRI ← PCP EVALUATION

PHYSIATRIST EVALUATION → NCV TESTING → INJECTIONS

COST = $10,000

NCV = nerve conduction velocity.
What Do PM&R Physicians Do?

PM&R = physical medicine and rehabilitation physician.
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Rehab May Be The Answer

5-Year Spine Rehab Growth, US Market, 2016–2021

Note: Excludes 0-17. Includes Spine Service Line. PT = physical therapy. Sources: Impact of Change® v16.0; OptumInsight, 2014; The following 2014 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; The Nielsen Company, LLC, 2016; Sg2 Analysis, 2016. Confidential and Proprietary © 2016 Sg2
Growing Demand for Rehabilitation Across Outpatient Settings

Sg2 Rehabilitation Forecast
US Market, 2016–2021

Traditional OP Rehab (667M)
- Forecasted growth: 7%
- 82% of all OP rehab visits
- Independent PT clinics
- Hospital OP therapy centers
- Chiropractors and other licensed therapy providers

In-home OP Rehab (114M)
- Forecasted growth: 11%
- 14% of all OP rehab visits
- Licensed home health providers
- Growth driven by episode-based reimbursement models and consumer demand

Virtual Visits
- An emerging segment of the industry
- Online patient engagement, education and outcomes tracking
- Personalized at-home rehabilitation exercises and remote monitoring

Hospital Bedside (33K)
- Forecasted growth: -2%
  for in-hospital rehab as primary service
- Significant growth expected for bedside rehab for same day, post-operative care

Skilled Nursing (3M)
- Forecasted growth: 13%
- Primarily Ortho and Neuro Rehab
- Expect narrow-networks and increased tiering of facilities

Other (27M)
- Forecasted growth: 7%
- 3% of all OP rehab visits
- Physician clinics, Rural clinics, ASCs, ED and Urgent Care

Inpatient Rehab Facilities (392K)
- Forecasted growth: -4%
- Declines due to episode-based reimbursement, IMPACT and general payer scrutiny

Note: Forecast excludes 0–17 age group. Forecast includes all service lines. "Traditional OP Rehab" includes services provided in Clinic, Hospital Outpatient, and OP Rehab sites of care; “Other” includes services provided by clinic, rural clinic, urgent care, ED, ASC and “Other” sites of care including community mental health centers, residential services, corrections facilities, schools and several other nontraditional sites; Skilled Nursing includes all SNF procedures/admissions; Inpatient rehab facilities include all IP Rehab admissions; Hospital OP, home and other sites exclude partial hospitalization services.

ASC = Ambulatory Surgery Center; Sources: Impact of Change® v16.0; NIS; PharMetrics; CMS; Sg2 Analysis, 2016.
Post-Acute Care Volumes Are Shifting

SNF = skilled nursing facility.
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## Narrow Your Network of Post-Acute Providers

<table>
<thead>
<tr>
<th><strong>SNF</strong></th>
<th><strong>OP Rehab</strong></th>
<th><strong>Virtual</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier networks based on performance metrics</td>
<td>Build OP networks through acquisition or partnership</td>
<td>Emphasize surgeon participation</td>
</tr>
<tr>
<td>Educate surgeons on value of preferred facilities</td>
<td>Emphasize access (geography and availability)</td>
<td>Promote patient engagement</td>
</tr>
<tr>
<td>Promote Tier 1 facilities to patients</td>
<td>Establish protocols</td>
<td>Track reduction in PAC utilization</td>
</tr>
<tr>
<td></td>
<td>Track clinical outcomes</td>
<td>Track clinical outcomes</td>
</tr>
</tbody>
</table>
Outpatient Rehabilitation Plays an Increasingly Critical Role in Access and Value

**Build**
- Staff specialization and physician input are critical.
- Co-location with other MSK providers builds collaboration.
- Urgent care often untapped opportunity.
- Expansion of bundled payment impacts market dynamics.
- “Private practice mentality” necessary for success.

**Partner**
- Staff specialization and physician input are critical.
- Joint venture opportunities are prevalent.
- Well-established providers contribute to immediate brand recognition.
- Staff recruitment efforts are complete.
- “Private practice mentality” already exists.
Action Steps

- Recognize the **unique local factors** that will impact your orthopedic forecast.
- Leverage analytics to **understand the flow of patients** within your market.
- Build and manage your orthopedic portfolio to **prepare for the shift** of surgical procedures to the outpatient setting.
- Engage with your surgeons to develop **physician alignment models** to bolster your System of Care and support larger orthopedic strategy.
- Engage with **nonoperative providers** (Rehab, Chiro and PAC providers) to guarantee value throughout the continuum of care.
Questions
Sg2 is the health care industry’s premier provider of market data and information. Our analytics and expertise help hospitals and health systems understand market dynamics and capitalize on opportunities for growth.

Sg2.com     847.779.5300