Benchmarking Orthopedic Construct Costs

December 3, 2013
Road Map

1. Background
2. Benchmarking Methodology
3. Benchmarks & Analysis
4. Best Practices
Top Performers Manage Factors Beyond Pricing

Construct benchmarks help to identify opportunity across these three key factors:

**Pricing**
- Compare functionally equivalent groups of implants
- Identify opportunities for supply cost reduction across vendors providing the same constructs

**Clinical Practice Variance**
- Quantify the cost of physician preference across vendors within your organization
- Understand the true cost of an implant, not just the product cost
  - Identify variance in factors such as outcomes and length of stay for vendors providing the same construct

**New Technology Adoption**
- Shift discussions away from “premium” versus “standard” constructs to focus on functionality and outcomes
- Ensure proper Value Analysis process is in place to determine the viability of new technologies
Background

In 2012, the average selling price (ASP) of hip and knee implants decreased 1.6% from 2011.

- The ASP of Total Hips and Primary Knees decreased 3.1% and 4.0% respectively from 2011 to 2012, while remaining the most widely used constructs by procedure volume.
- 2012 showed an increase in the number of revision cases as a percentage of the total.
- In aggregate, the ASP of hip constructs decreased 1.2% from $5,573 in 2011 to $5,504 in 2013.
- In aggregate, the ASP of knee constructs decreased 2.0% from $5,754 in 2011 to $5,641 in 2012.

Background - Hips

While the overall ASP of hip constructs decreased in 2012, significant market shifts create future uncertainty

<table>
<thead>
<tr>
<th>Construct</th>
<th>2012 ASP</th>
<th>% Change (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Bearing w/ Ceramic Head</td>
<td>$6,920</td>
<td>+ 3.7%</td>
</tr>
<tr>
<td>Coated Femur/Ceramic Head/Poly Liner</td>
<td>$6,156</td>
<td>(4.1%)</td>
</tr>
<tr>
<td>Mobile Bearing w/ Metal Head</td>
<td>$6,039</td>
<td>+ 4.2%</td>
</tr>
<tr>
<td>Coated Femur/Poly Liner</td>
<td>$5,595</td>
<td>(4.8%)</td>
</tr>
<tr>
<td>Uncoated Femur/Poly Liner</td>
<td>$5,334</td>
<td>+ 0.1%</td>
</tr>
</tbody>
</table>

- Acetabular shell (fixation surface)
- Acetabular liner (bearing surface)
- Femoral head (bearing surface)
- Femoral stem (fixation surface)

- Hard-on-Hard (HoH) constructs which represented 37% of all total hip procedures in 2007 represented only 2% of all total hip procedures in 2012
- Constructs containing ceramic heads have become more readily used as the market has moved away from metal-on-metal hip constructs due to their complications
- Over the past two years, the advent of mobile bearing hips has led to a large increase in the usage of this new technology, coupled with an increase in the price of these constructs from 2011 to 2012

Background - Knees

The overall ASP of knee constructs decreased in 2012 with the Uncoated Knee remaining the primary construct.

- The majority of knee constructs utilized in the market continues to be the Uncoated Knee, which consists of an uncoated femur and an uncoated tibia.
- Tibial inserts and acetabular liners have seen an increase in the use of Vitamin E and cross-linked poly-ethylene.

% of Cases by Construct Type

- Uncoated Femur/Uncoated Tibia: 7.0%
- Hybrid: 1.6%
- Coated Femur/Coated Tibia: 4.5%
- Unicondylar: 4.1%
- Other: 82.9%

<table>
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<tr>
<th>Construct</th>
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<th>% Change (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid</td>
<td>$6,764</td>
<td>(15%)</td>
</tr>
<tr>
<td>Coated Femur/Coated Tibia</td>
<td>$5,908</td>
<td>(1%)</td>
</tr>
<tr>
<td>Uncoated Femur/Uncoated Tibia</td>
<td>$5,005</td>
<td>(6%)</td>
</tr>
<tr>
<td>Unicondylar</td>
<td>$5,017</td>
<td>(2%)</td>
</tr>
</tbody>
</table>

Benchmarking Methodology
Benchmarking constructs allows for functionally equivalent comparisons that give members more control over the two levers affecting supply cost reduction—utilization and pricing.

**Process:**

1. Identified 32 leading hospitals and health systems with item-level cost allocation for hip and knee constructs.

2. Grouped purchases by construct and then by vendor to isolate comparable price points.

3. Removed outliers based on item quantity and cost.

4. Isolated 75th and 50th percentile prices for each vendor with a minimum of 300 constructs purchased.
# Utilizing the Mendenhall Equivalency Database

<table>
<thead>
<tr>
<th>VPN</th>
<th>Item</th>
<th>GIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC-1</td>
<td>COMP FEM POST STAB LT SZ4</td>
<td>Knee Femur, Uncoated</td>
</tr>
<tr>
<td>ABC-2</td>
<td>BASEPLATE TIB UNIV SZ4 TRIATHLON</td>
<td>Knee Tibia, Uncoated</td>
</tr>
<tr>
<td>ABC-3</td>
<td>INSERT TIB POST STAB 4X9 X3</td>
<td>Tibial Insert</td>
</tr>
<tr>
<td>ABC-4</td>
<td>PATL ASYM 32X10 5551-G-320</td>
<td>Patella</td>
</tr>
<tr>
<td>ABC-5</td>
<td>PIN HEADLESS FLUT STRL 0.13X3.5</td>
<td>Instruments</td>
</tr>
</tbody>
</table>

Mendenhall assigns a GIC code to each item based on VPN.

Mendenhall categorizes POs into constructs based on the GIC codes contained in that PO.

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**Knee Construct**

**Coated Knee**
- Knee Femur, Coated
- Knee Tibia, Coated

**Uncoated Knee**
- Knee Femur, Uncoated
- Knee Tibia, Uncoated

**Revision Knee**
- Revision/Oncology Knee

PO # 12345678 is an Uncoated Knee.
Sample Group

We sampled 32 members with the most applicable hip and knee construct data to create construct-level benchmarks

Members by Region

32 Total Members

- Midwest: 31%
- Northeast: 34%
- South: 31%
- West: 3%

Members by Type

32 Total Members

- Academic: 13
- Community: 9
- System: 10

Sample Group Demographics

- The sample group was proportionately spread between the Northeast, Midwest, and South, with few members residing in the West.

- Slightly more of the sample group was comprised of community hospitals with a relatively equal number of academic and system hospitals represented.

- The total spend across all constructs benchmarked and all vendors exceeded $163M.

- No members included in the sample group are “sole-source”.
Benchmarks & Analysis
## Knee Benchmarks & Analysis

### Uncoated Knee

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Construct Quantity</th>
<th>Total Spend</th>
<th>75&lt;sup&gt;th&lt;/sup&gt;</th>
<th>50&lt;sup&gt;th&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZIMMER INC</td>
<td>4,671</td>
<td>$20,395,203</td>
<td>$3,050</td>
<td>$3,708</td>
</tr>
<tr>
<td>STRYKER CORP</td>
<td>7,809</td>
<td>$35,169,101</td>
<td>$3,293</td>
<td>$4,000</td>
</tr>
<tr>
<td>WRIGHT MEDICAL TECHNOLOGY INC</td>
<td>405</td>
<td>$1,312,834</td>
<td>$3,627</td>
<td>$4,152</td>
</tr>
<tr>
<td>DEPUY</td>
<td>4,408</td>
<td>$19,222,866</td>
<td>$3,663</td>
<td>$3,900</td>
</tr>
<tr>
<td>SMITH &amp; NEPHEW INC</td>
<td>1,915</td>
<td>$8,742,486</td>
<td>$3,900</td>
<td>$4,500</td>
</tr>
<tr>
<td>BIOMET INC</td>
<td>2,191</td>
<td>$10,011,803</td>
<td>$4,125</td>
<td>$4,450</td>
</tr>
</tbody>
</table>

As we saw in the ONN data, Coated Knees have declined to only 4.5% total knee constructs

- Across all 32 hospitals and health systems, no vendor had more than 300 Coated Knees purchased

For a knee construct to be considered an Uncoated Knee it must have an uncoated femur and an uncoated tibia

Uncoated Knees are typically less expensive than coated knees

- Uncoated knees require the use of bone cement while Coated Knees are cemented, or “press-fit"
Porous coatings on hip stems increase the surface area of the implant which allows for bone to grow into the device thereby increasing the fixation of the joint.

The use of ceramic femoral heads has risen over the past year as studies have begun to show that metal femoral heads generate more wear and subsequently require more revision procedures than ceramic heads.
While there has been a movement away from metal components, hip constructs with a porous stem, metal head, and polyethylene liner still represented the largest percentage of hip construct in 2012 according to ONN.

Metal heads are generally less expensive than their ceramic counterparts, thus explaining the price variance between hip constructs with either a metal or ceramic head and a porous stem.
Stryker represented over 95% of the overall marketshare for this construct amongst the 32 hospitals and heath systems surveyed.

Porous hip stems accounted for 75% of the market for hip stems in 2012 according to ONN:

- Across the 32 hospitals and health systems, $53.8M was spent on primary hips with a porous stem versus $13.8M on primary hips with an uncoated stem.
Hip Benchmarks & Analysis

Primary Hip – Uncoated Stem/Metal Head/Polyethylene Liner

Stryker represented over 78% of the overall marketshare for this construct amongst the 32 hospitals and health systems surveyed

Porous hip stems accounted for 75% of the market for hip stems in 2012 according to ONN
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<th>50th</th>
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</thead>
<tbody>
<tr>
<td>STRYKER CORP</td>
<td>991</td>
<td>$4,624,763</td>
<td>$4,151</td>
<td>$4,300</td>
</tr>
</tbody>
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  - Across the 32 hospitals and health systems, $53.8M was spent on primary hips with a porous stem versus $13.8M on primary hips with an uncoated stem
Best Practices
Top Performers Manage Factors Beyond Pricing

Construct benchmarks help to identify opportunity across these three key factors

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If you have an opportunity in…

Pricing

Review spend, volume, and marketshare by vendor
Identify which vendors are giving the most favorable pricing in a given construct and compare current pricing to construct-level benchmarks

Review current contracts and item-level pricing
Understand current threshold requirements and item-level pricing to identify areas of opportunity under existing agreements

Evaluate opportunity for physician support through contracting process
Ensure alignment with physicians prior to vendor conversations
If you have an opportunity in… Clinical Utilization

Identify surgeon preferences within constructs
Understand which surgeons are driving up the cost of preference in order to identify areas of potential standardization

Consider functional equivalency
Aggregate outcome data such as Length of Stay and Case Duration for each surgeon utilizing the construct to identify the true difference between each vendor’s offering

Take a holistic view of your construct groups
Aggregate and inspect your spend across all constructs in a joint category to understand your spend with each vendor for all constructs within a given joint category (i.e. hips, knees, etc.)

Evaluate opportunity to standardize versus setting a capitated model
In scenarios where the preservation of physician preference is a key factor, capitation is the preferred solution
Review current contracts to ensure alignment with surgeon utilization
Make sure that only items that are on-contract are being brought into your facility and used on patients—nothing bypasses Value Analysis

Review Value Analysis process
Our most progressive members have a strong value analysis process for trialing new technologies before committing to incorporating them into existing agreements

Ensure new products are in line with current agreements
Based on constructs, ensure that any new products brought into the OR fall within current contractual agreements