



# Using Analytics to Understand & Control Physician Preference Item Spend

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## EXECUTIVE SUMMARY

Cardiac, orthopedic, and spinal implants are among the most important medical innovations of the era. These implants are collectively referred to as Physician Preference Items (PPIs), making light of the central role that physicians play in selecting these implants, and by extension, the vendors who manufacture and market these implants. Continued advancements in materials and design, coupled with an aging demographic living physically active lifestyles, is expected to increase the demand for these implants at a double-digit rate for the foreseeable future. While implant vendors currently enjoy outsized profit margins, major insurers led by Medicare are decreasing reimbursement rates, placing a growing financial burden on hospitals and patients.

With opportunities for revenue growth severely constrained by the current credit crisis and rising unemployment, hospital administrators are increasingly focusing on supply chain management to grow their bottom line. Ranking among the costliest hospital supplies, PPIs present a viable target for administrators looking to extract price concessions from vendors. This paper explores PPI cost containment strategies and the pivotal role that a robust analytical platform plays in reducing costs, negotiating fair prices with vendors, and standardizing PPI inventory.

### AN AGING DEMOGRAPHIC ENSURES INCREASING PPI DEMAND

Industry analysts forecast that U.S. demand for cardiac implants will increase 8.8 percent annually to \$16.4 billion by 2012. Based on demographic trends, the number of people afflicted with one or more heart conditions is forecast to reach 73 million in 2012, up 1.7 percent per year from 2007.

Clinicians generally regard implants to be more effective than pharmaceuticals in combating cardiovascular disorders such as arrhythmias, congestive heart failure,

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myocardial infarction, peripheral artery disease, stroke and valvular heart disease (ReportLinker 2008). According to the American Academy of Orthopedic Surgeons, the majority of knee and hip implant surgeries are performed on patients over age 65, although the number of such procedures performed on younger adults continues to grow each year due to sports injuries and degenerative diseases. Highlighting this demographic trend, in 2006, 193,000 Americans age 45 to 64 underwent knee replacement surgery, 39 percent of all such surgeries nationally, up from 35 percent in 2002. Hip replacements saw a similar uptrend, with 39 percent of the surgeries in 2006 performed on patients age 45 to 64, compared with 34 percent in 2002 (Winerip 2009).

**PHYSICIAN PREFERENCE ITEM STAKEHOLDERS: SUPPLIERS** In addition to developing, manufacturing, and distributing PPI's, suppliers play an active role engaging and educating physicians on the benefits of their respective product offerings. Some suppliers provide their expertise directly in the OR, acting as advisors to surgical teams, while others maintain an on-site presence to manage inventory and instrumentation. The close physical and social proximity of supplier representatives to the physicians responsible for selecting their products is often cited as a major obstacle toward PPI standardization and cost containment (Schneller and Wilson 2008). Vendors are increasingly seeking to prevent the sharing and dissemination of pricing data between hospitals and benchmarking data vendors. Recent lawsuits brought on by medical device manufacturers have set legal precedent that has led to a marked decrease in pricing transparency. Hospitals seeking to reign in PPI costs rely on benchmarking data to compare themselves to peers and competitors (Lerner et al. 2008).

Industry analysts point out that one unintended consequence of diminished pricing transparency might be an increase in medical tourism, where U.S. citizens in need of an expensive implant procedure travel abroad to seek cheaper venues for surgery. At current exchange rates, prospective patients can travel to India for a hip transplant and pay less than the U.S. cost of the implant alone. This trend would lead to less revenue for U.S. healthcare providers (DeJohn 2008).

**PATIENTS** Direct-to-consumer advertising (DTCA) for medical devices and implants grew to nearly \$50 million in 2005, with more than 25 percent of medical device manufacturers utilizing DTCA campaigns. According to Kevin Bozic, M.D., a professor of orthopedic surgery at the University of California, San Francisco, "Proponents of DTCA say it educates healthcare consumers and allows them to be more active participants in their healthcare." But research conducted by Bozic found that 77 percent of doctors felt that patients exposed to DTCA for orthopedic implants were misinformed, and another 84 percent felt the patients had unrealistic expectations. Only 5 percent of physicians perceived their DTCA-targeted patients as being truly better educated, particularly when it came to understanding risks and benefits of arthroplasty surgery (Knowledge@W.P.Carey 2008a).

Although orthopedic implants have traditionally been associated with senior citizens, a growing source of demand for implants and replacements are much younger patients who view these operations as performance enhancing. Driven largely by DTCA, patient preferences for particular procedures, physicians and facilities increasingly impacts admission volumes. By attempting to curb PPI spend, hospitals risk losing business by alienating popular surgeons and consequently their patient pool.

**PHYSICIANS** Past experience with particular vendors, perhaps starting in medical school, vendor-physician consulting relationships, and the pre-operational patient condition are some of the factors that explain the "Preference" in Physician Preference Item. Although physicians do not purchase supplies and PPIs directly, they traditionally have been the sole decision makers regarding which items to purchase and which vendors to form alliances with. Typically, physicians are neither employees nor financial stakeholders in the hospitals in which they practice. With the freedom to admit patients at any hospital where they maintain credentials, physicians can shift allegiances and admitting volumes to those organizations that allow them to practice medicine with minimal encumbrance, especially in urban areas where several hospitals may compete for admissions. With no direct stake in the bottom line of the hospitals where they perform surgeries, physicians have little financial incentive to adhere to the pricing and vendor guidelines imposed on them by supply chain administrators.

**HOSPITALS** Supplies currently account for 30 percent of hospital costs and are growing faster than any other expense category. In the majority of admissions involving orthopedic or cardiac related surgery, a single PPI can comprise the majority of the total procedure cost. Among the organizations that have achieved success with disciplined and well orchestrated cost reduction campaigns, significant savings of up to 10 percent of total PPI spend have been reported. Researchers report that many hospitals experience significant difficulty or even failure in their attempts to reign in PPI spends. Lack of physician compliance with product standardization initiatives and aggressive efforts by manufacturers to influence PPI selection present the two largest obstacles to controlling costs. Due to a lack of analytical capability, hospitals also report an inability to adequately identify and quantify potential savings (Schneller and Wilson 2008).

Most hospitals ended their 2008 fiscal year with less cash on hand than one year earlier, highlighting the need for spending cuts and an increased focus on wringing significant savings from their supply chain spend. Applying Just In Time (JIT) inventory management principles, hospital supply chain managers are keeping fewer supplies on hand, particularly big ticket items such as PPIs (AP 2008). PPIs present hospital billing managers with a unique challenge. Due to the non-commodity nature of PPIs and their frequent technological upgrades, hospital chargemasters often contain missing

or erroneous charge codes for PPIs. It is not uncommon for PPIs to be upgraded twice in one year, and if the latest prices and model identifiers are not accurately reflected in the chargemaster, erroneous billing results. Given the high prices associated with most PPIs, miscoded PPIs can result in a significant loss of revenue for hospitals. If the error is eventually discovered, billing departments are forced to adjudicate the charge, which can prove to be an embarrassment for hospitals and an unpleasant experience for patients, especially if their insurer refuses to pay the corrected charge.

**PAYERS** Manufacturers' prices for knee and hip implants have risen an average of 8 percent annually over the past 5 years, and the average cost of the implantable device itself has consumed between 40 and 80 percent of the total per-operation reimbursement payment. Medicare's per-case payments to hospitals for hip implant procedures (DRG 209) fell by more than 9 percent over this same period, with legislative proposals currently under discussion for reducing reimbursements for hip and knee replacements by an additional 10 percent (Montgomery 2007). Currently, Medicare pays for 50 - 60 percent of U.S. hip replacements, a number that is likely to climb significantly with the coming wave of aging baby boomers. (Knowledge@W.P.Carey 2008a).

**PPI COST CONTAINMENT MODELS AND BEST PRACTICES** Montgomery and Schneller propose two PPI cost containment models, with differing approaches and degrees of success. The "formulary" model seeks to establish an exclusive supplier relationship in the hope that guaranteeing increased volume to the sole PPI vendor will result in greater leverage for the hospital when negotiating terms and prices. This model places the burden of compromise and conformance on physicians, who have to potentially adapt to a vendor not of their choosing. However, with only one vendor, standardization and staff familiarity both benefit. In addition, The LeapFrog Group notes that achieving higher levels of standardization has the potential to significantly improve patient outcomes.

In contrast to the formulary model, the "payment-cap" model encourages competition between multiple vendors by imposing a price ceiling on each PPI. This model forces suppliers to discount their prices, but does not necessarily restrict physician choice, unless a particular vendor chooses not to compete under the new pricing structure. Montgomery and Schneller note that currently, the majority of hospitals actively attempting to contain PPI costs use this model.

NewYork-Presbyterian (NYP), The University Hospital of Columbia and Cornell, has emerged as an industry leader in PPI cost control. NYP has published a "Strategic Sourcing Toolbox" illustrating three proven best practices.

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**CROSS-WALKING** compares the true cost of a particular PPI across all competing vendors. As an example, for sophisticated, multi-component hip-replacements the total cost would include rods, screws and any other item required in addition to the actual artificial hip joint. Besides providing a realistic picture of cost, physicians benefit by seeing non-cost related information such as average operating time for each insert, overall insert complexity, and inventory availability.

When presented with the results of a detailed cross-walk, physicians often voluntarily subscribe to cost containment initiatives depending on patient age and other pre-operational conditions. NYP found that cardiac surgeons are more willing to place a standard priced heart valve in an 80-year-old patient, but would opt for the priciest, most technologically advanced valve for a patient in their forties given the higher probability of a longer life span in the younger patient. Once engaged, physicians help provide critical information to supply chain analysts regarding ease of operability for particular PPIs and other intangibles that could significantly impact the true cost of a PPI (Knowledge@W.P.Carey 2008b).



**SCENARIO-BASED SOURCING** affords supply chain managers a direct comparison between standardization and choice-based purchasing strategies. Scenarios provide prospective PPI vendors a fair amount of latitude in creating pricing levels and value-added services that would be considered for purchase by a hospital. By incorporating scenarios directly into an RFP, each responding vendor can be compared to their competitors from the outset of the PPI acquisition process.

**COUNTER-DETAILING** relies on compiling publically available pricing and market share information on prospective PPI vendors so that hospital SCM administrators are well armed with vendor cost data prior to entering into negotiations with vendors. Potential sources of information such as corporate annual reports and SEC 10-K filings provide insight into profit margins by product line, changes in market share, and new product offerings. Skilled hospital supply chain negotiators should be able to convert increases in vendor profit margins and manufacturing cost decreases into decreased PPI purchase prices.

**USING ANALYTICS TO UNDERSTAND AND CONTROL PPI SPEND** A robust analytical platform is central to quantifying PPI spend, benchmarking against peers and competitors, analyzing PPI cost variance, and monitoring outcomes and quality indicators to ensure that selected PPIs are delivering superior patient satisfaction at a reasonable price. Available as both a hosted service and an on-premise configuration, Dimensional Insight's The Diver Solution for Healthcare is an end-to-end dashboard, reporting and analytics application for hospitals with a proven track record of providing solutions to the complex problems confronting healthcare providers.

Based on supply chain management best practices, Dimensional Insight's roadmap for PPI cost control delivers a proven methodology that will help your organization:

- Integrate and analyze disparate data from all of your sources, both internal and external, to create an accurate view of PPI costs.
- Benchmark your cost structures against peers and competitors using both a regional and national perspective.
- Engage key stakeholders by disseminating cost, quality, and outcome measures using visually intuitive dashboards.
- Provide fact-based criteria for selecting a preferred group of PPI suppliers and negotiating pricing contracts.
- Monitor PPI purchase patterns to ensure compliance with purchasing guidelines, patient outcomes and satisfaction scores and identify additional opportunities for cost containment.
- Ensure that patient and payer billing accurately reflect PPI costs.
- Conduct ongoing evaluation of PPI suppliers and devices.

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**INTEGRATE AND ANALYZE DISPARATE DATA** Many hospitals attempting to implement a PPI cost control process report significant difficulty assigning a true cost to PPIs and comparing vendor pricing structures (Ketcham et al 2008). This is largely a data integration challenge, requiring disparate data from billing, cost accounting, materials management, clinical, and OR systems to be merged and integrated into a cohesive data view.

The Diver Solution's powerful Data Integrator component interfaces with virtually any healthcare system, data provider, or file format to extract the data needed for analysis. Some of the data feeds that Data Integrator accesses and extracts include:

**CASE LEVEL** Admit and Discharge, Financial (Charges, Costs, Payments), and Demographic Information

**CHARGE DETAIL** Charge Items, Revenue Codes, Quantities, Charges and Costs

**PURCHASING** Case level implant purchases

**BENCHMARKING** Expected Mortality, Complications, Readmissions and Lengths of Stay

**PATIENT SATISFACTION** Survey Responses related to the hospital stay

**SURGERY** Surgery Start and Stop Times, Pre-op, Intra-op and Post-op

**CORE MEASURE** Case Level information on SCIP Measures compliance

Once raw data has been integrated, a highly indexed multi-dimensional data Model is constructed. The Model serves as the foundation for all user-based PPI spend analysis, usage patterns, outcome tracking, and physician compliance monitoring.

**BENCHMARK YOUR COST STRUCTURES** Benchmarking helps your organization compare your PPI cost structures to those of your peers and competitors (Kowalski 2007). Comparisons can also be conducted on a regional or national level. Integrating external benchmarking data into your PPI analysis is easily accomplished with The Diver Solution's Data Integrator. Benchmarking provides insight into the magnitude of potential cost savings and helps establish whether your organization's current vendors are pricing above or below your peers.

**ENGAGE KEY STAKEHOLDERS** Building consensus for cost control and vendor standardization initiatives can be a highly contentious and politicized process. By presenting information based on a thorough analysis of PPI spend and usage patterns, key stakeholders are more likely to become integral members of the process and lend credibility to the outcome.

The Diver Solution's DivePort Web Portal allows stakeholders to view information and conduct further analysis using visually intuitive dashboards. Value analysis teams, service line profitability committees, physicians, and supply chain managers can all access information relevant to their specific roles, ranging from high level summaries to detailed line item reports. All stakeholders view "one version of the truth", unlike spreadsheet based analysis which is subject to potential version control and data modification issues.

Diver provides flexible security and licensing services allowing data views to be customized on a need-to-know basis. The Diver Solution sets the standard for true ad-hoc analysis, allowing fine-grained data to be viewed at the patient, physician, or procedure level without pre-defined drill paths or complex SQL queries.

**PROVIDE FACT-BASED CRITERIA FOR SELECTING A PREFERRED GROUP OF PPI SUPPLIERS** Whether your organization chooses to pursue PPI cost containment using the formulary or payment-cap model, analysis of historical data is imperative to understanding your supply costs. Use The Diver Solution to analyze case volumes, total costs per case, supply costs per case, and length of stay by entity, procedure group, PPI Supplier, financial class, payer and surgeon. These reports help narrow down the list of potential suppliers by answering the following questions:

- What implants are being used in your procedures?
- Which surgeons are performing the most procedures and what implants are they using?
- How is implant selection impacting cost and profitability per case?
- How do your costs per case vary between entities?
- How do your costs per case compare to benchmark data?
- How do reimbursements vary between payers for these procedures?

**MONITOR PPI PURCHASE PATTERNS** Once product and vendor standardization guidelines have been implemented, physician compliance must be monitored on an ongoing basis in addition to cost, quality and safety trends to ensure that cost cutting objectives are being met without impacting patient satisfaction.

Use The Diver Solution to analyze the impact of PPI supplier selection on your key outcome measures, including LOS, mortality, Surgical Care Improvement Project (SCIP) Core Measure compliance, and revision readmission rates. Analyze inventory and usage patterns using Diver to maintain optimal stocking levels of expensive PPIs. Diver's exception reports provide visibility into cases where implant supply charges fall below a minimum amount for the associated DRG. This can help spot invalid charge items, missing charges and coding errors. For healthcare organization with multiple hospitals that have instituted a corporate patient identifier, Diver generates a single view of patient information across all hospitals.

#### ENSURE THAT PATIENT AND PAYER BILLING ACCURATELY REFLECT PPI

**COSTS** An erroneously coded procedure or missing charge code in your hospital's chargemaster can result in thousands of dollars in losses for a single procedure (Handlon et al 2007). The Diver Solution helps billing administrators validate their chargemaster against CMS's Addendum B for the hospital outpatient payment system and discover missing, mispriced, out of date, or erroneous CPT®/HCPCS codes. Using The Diver Solution's extensive automation capabilities, this process can be scheduled to run periodically, ensuring that your organization's billing accurately reflects the true cost of an implant procedure.

**CONDUCT ONGOING EVALUATION OF PPI SUPPLIERS AND DEVICES** Create a process to approve new devices as they become available. Charging a premium for new devices that aren't included on a contract is one of the ways that suppliers can subvert contract terms. However, technologies constantly evolve and using new devices may be appropriate in many cases. Maintaining physician support and giving the physician community ownership and responsibility in this process is critical to achieving positive results.

#### SUMMARY

Hospitals seeking to contain Physician Preference Item spend require a solid, fact-based foundation from which to launch a PPI standardization campaign and engage in constructive price negotiations with PPI suppliers. Dimensional Insight's The Diver Solution for Healthcare provides the robust, end-to-end analytical and reporting platform needed to build that foundation. Diver's powerful data integration capabilities generate a seamless, synchronized view of PPI spend and usage patterns. Role-based, visually intuitive dashboards disseminate spend, usage, and compliance data, allowing decision makers to negotiate with vendors from a position of strength. Finally, ongoing monitoring of implemented PPI standardization initiatives ensure that your cost containment goals are met without impacting patient satisfaction.

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