

# Inefficiencies in Orthopedic Care Costs Hospital Millions



## Total Joint Partnership Program to decrease costs while improving care

### ■ AT A GLANCE

- Large, acute care hospital
- Member of hospital network
- 27 operating rooms and over 650 in-patient beds
- 1,500+ joint replacements per year

### ■ ISSUES

- Limited growth of elective joint replacements
- Cost containment is critical to protect profitability
- Hospital-wide length of stay concerns
- High census impacting bed availability

### ■ RESULTS

Identified a financial gain of \$2.0 million for the hospital.

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## INTRODUCTION

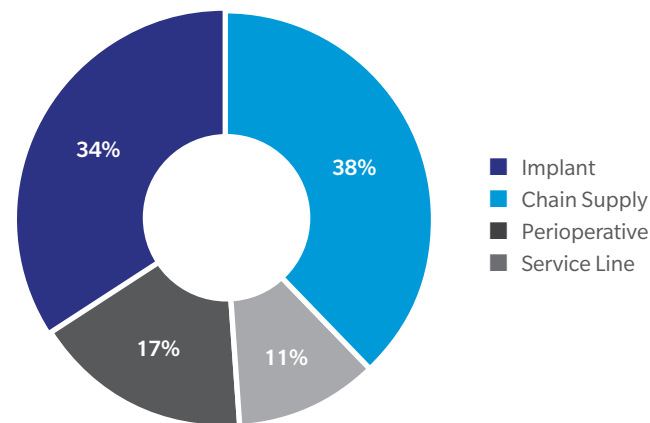
Accelerero Health Partners teamed with a full service, acute care hospital in the Northeastern United States to introduce The Total Joint Partnership – an offering designed to help hospitals improve outcomes, decrease costs, and grow their joint replacement programs. The focal hospital is a member of a two-hospital system, has over 650 beds, 27 operating rooms, and conducted 1,582 joint replacements in the past year.

## CHALLENGES

Although the contribution margin for total hip and joint procedures was satisfactory, the hospital projected little to no growth, and feared eroding payments and greater competition would diminish their profitability.

## SOLUTION

As part of the program, Accelero Health Partners completed an in-depth review of the total knee and total hip replacement product lines, including a comprehensive analysis of procedural data, onsite observation, and in-house interviews. **FIGURE 1** depicts the total cost of total knee and total hip replacements to the hospital. Although the price of the implant is significant, the greatest opportunity for cost savings involves operational and procedural improvements – which represent 62% of the overall cost.



**FIGURE 1** | Hospital cost for total knee and total hip replacements. Source: Accelero Health Partners database, 2013.

## KEY FINDINGS

Accelero Health Partners identified opportunities to dramatically improve the hospital's financial performance and reduce the total cost to the payer. These benefits are grouped into three categories – perioperative, supply chain and service line.

### Perioperative Time

In general, perioperative indicators were found to be favorable. **TABLE 1** illustrates the actual combined average times of all total hip and knee replacement surgeries compared to benchmark data from the Accelero Health Partners database. This data shows an opportunity to reduce direct procedural time by 24 minutes or 22%.

Time (minutes)	'Patient in' to 'incision'	'Cut' to 'close'	'Close' to 'patient out'	Total time
Hospital	32	63	13	108
Benchmark	26	53	5	84
Variance	6	10	8	24

**TABLE 1** | Hospital key indicators vs. benchmark data.

Room turnover time was not a significant issue because most of the surgeons were using parallel rooms to perform cases. One high volume joint replacement surgeon that did not use parallel rooms, however, had a turnover time of 31 minutes. Meeting the benchmark of 15 minutes would allow that surgeon to perform one additional joint replacement case per operating room day.

For those areas where room turnover was an issue, significant time savings could be gained by performing tasks in a parallel fashion. For example, the room set-up could be done while the patient is in the room being prepped for surgery, instead of in advance.

On the preoperative side, it was found that the hospital did not utilize a standard anesthesia protocol for total hip and knee replacements. Anesthesia was determined on the day of surgery. The result was a lower percentage of on-time starts, and more importantly, a 31% higher 'patient in' to 'incision' time.

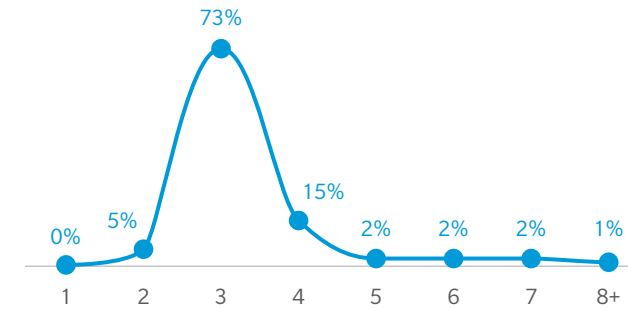
### Supply Chain

At the time of the observations, two surgeons were able to eliminate two instrument trays for total hip replacements and four instrument trays for total knee replacements by using digital templating. If all of the surgeons were able to decrease their instrument trays in a similar fashion, the projected savings would yield \$182,240 annually. The reduction in trays was also identified as the prevailing reason these surgeons averaged lower times to incision and turnover compared to the other surgeons.

### Service Line

The term 'service line' is used to describe activities across the hospital necessary to treat the patient. It does not include the perioperative process, which is treated as a separate category.

The cost of care is directly related to the average length of stay. **FIGURE 2** shows the percentage of orthopedic patients with a length of stay of two days or less (5%) and three days or less (78%). In both cases, the hospital's length of stay falls between the 25th and 50th percentile of hospitals in the Accelero Health Partner database.

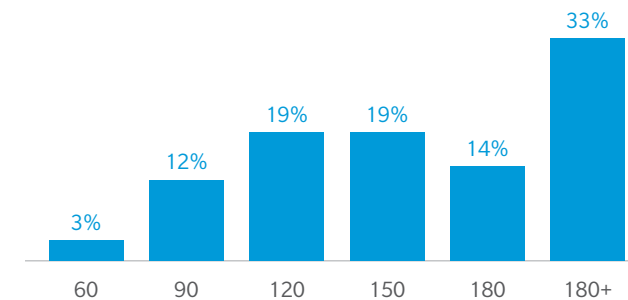


**FIGURE 2** | Dispersion of hospital length of stay by day.

Considerations that affect the length of stay at the hospital include preadmission education, post-acute care and extended PACU times.

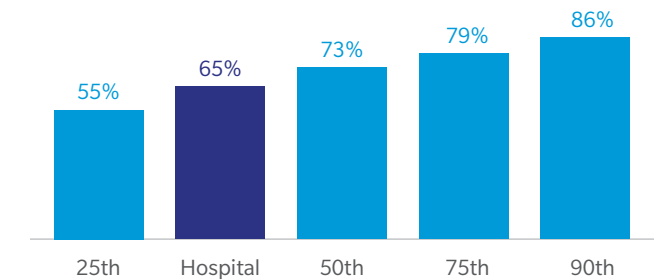
Less than 60% of the total hip and knee replacement patients attended the hospital pre-admission class. For those that did attend, the class materials did not consistently set patient expectations for length of stay. To be effective, goals need to be established and communicated throughout the continuum of care.

A significant back up in the PACU was discovered for most hip and joint replacement cases (**FIGURE 3**) due to a lack of beds on the nursing unit. On average, patients should be in the PACU for an average of 60 minutes following a total hip or knee replacement. Extended time in the PACU increases the length of stay by delaying the start of recovery and rehabilitation.



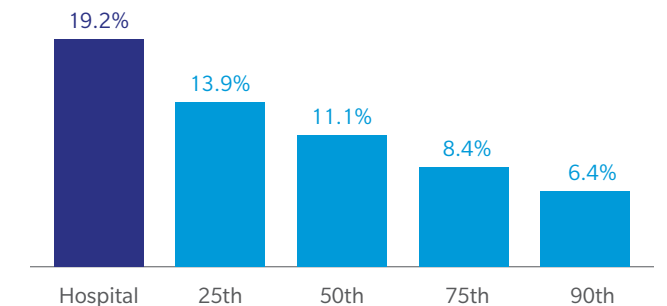
**FIGURE 3** | PACU time in minutes for total hip and knee replacements.

A lack of communication of discharge expectations adversely affects the coordination of care and transportation, resulting in a longer stay. Discharge issues not only affected the length of stay but increased the cost to payers. The cost of post-acute care varies greatly depending on where it occurs. The hospital currently discharges only 65% of their total hip and knee replacement patients to home with either self-care or home care. Increasing that percentage to the benchmark of 86% would save payers approximately \$1.8 million per year in total post-acute care costs.



**FIGURE 4** | Hospital discharge to home rate.

And finally, the hospital was found to have a coded complication rate of 19.2% for total hip and knee replacement procedures (**FIGURE 5**).



**FIGURE 5** | Coded complication rates for total hip and knee replacements.

Secondary diagnosis codes were collected to understand this high rate. The vast majority of these complications did not impact length of stay. However, in cases where there was an increased length of stay, there were substantial co-morbidities noted at admission and the hospital did not have a risk reduction program for these patients.

## SUMMARY

A thorough analysis of the current processes at the hospital revealed the opportunity for a combined financial impact of \$3.9 million annually; with more than half going directly to the hospital. A breakdown of this impact can be seen in [TABLE 2](#).

Impact Area	Financial Impact
Procedure time (OR utilization)	\$759,360 savings
One additional case/week	\$437,715 new margin
Tray reductions	\$182,240 savings
LOS reduction	\$610,068 savings
<b>Total impact to hospital</b>	<b>\$1,989,383 benefit</b>

**TABLE 2** | Financial impact to the hospital.

Time savings in the OR would enable one surgeon to conduct an additional procedure in the same amount of time, resulting in new revenue of \$437,715. The remaining benefit of \$1.6 million would be obtained by increasing perioperative efficiency, improving the planning process, reducing sterilization costs, and reducing or correcting coding issues. Of these savings, meeting identified length of stay benchmarks would provide the biggest gain to the health system by freeing up 1,017 bed days for a yearly savings of \$610,068. The resulting effect on the census would also help to eliminate extended PACU stays and make beds available for new patients.