

 **QUANTITATIVE ANALYSIS**
for U.S. health care leaders

Understanding How Procedures Shift Out of the Inpatient setting

National speed and trajectory of outpatient shift

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An increasing number of procedures are moving out of the inpatient setting. To understand how to invest for the future, health care leaders need a clear view into the state of this outpatient shift.

This report provides leaders with data showing how much certain procedures have shifted to the outpatient setting. We used national data to understand how and when procedures shift, especially in the years following regulatory approval.

Overall, we found that volumes for most procedures shift to the outpatient setting slowly. However, there are exceptions—which suggests that procedures can shift quickly if regulatory and market forces align.



Table of contents

Overview.	pg. 4
What we did	pg. 5
What we found	pg. 6
1. Regulatory change can trigger rapid shifts—sometimes in unexpected ways	pg. 7
2. Market forces dictate the pace of shift.	pg. 10
3. Commercial volumes can shift first, but Medicare volumes catch up over time.	pg. 13
What this means for you.	pg. 16
Additional thoughts	pg. 17
Related content	pg. 19

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What is outpatient shift?

The movement of patient volumes away from the inpatient hospital and toward outpatient care settings.

In the context of procedure shift, these volumes most often shift to the HOPD (hospital outpatient department), an ambulatory surgical center, or the physician's office.

Overview

Research question: How do procedures shift out of the inpatient hospital?

Problem: Health care leaders lack the data to understand the timing and magnitude of shift from inpatient to outpatient. Without this information, leaders struggle to make the right investments for current and future care settings.

What we did: We analyzed deidentified national claims data to explore how procedure volumes shift across care settings. Analyses included outpatient shift trajectory and pace of shift, especially in response to national-level reimbursement changes.

We focused the analysis on 27 procedures identified by Advisory Board researchers and members as current candidates for shift; for example, total knee arthroplasty (TKA), percutaneous coronary intervention (PCI), and cervical spinal fusion.

What we found: While many procedures analyzed are actively shifting between settings of care, shift out of the hospital remains slow—even among non-Medicare volumes. By 2019, over 80% of cases analyzed were still performed in hospital settings.¹

However, regulatory changes, such as removal from CMS’ Inpatient Only List or addition to the ASC payable list can spark rapid shift, especially to the HOPD setting. Furthermore, procedures can shift quickly out of the hospital to freestanding settings when regulatory change aligns with favorable market characteristics, such as a low-risk patient population, a high degree of specialist independence from health systems, or preexisting ambulatory infrastructure.

1. Calculation of volumes in Optum’s Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

Source: Medicare Physician/Supplier Procedure Summary file; Optum’s de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.

What we did

We analyzed claims data sourced from CMS’ Physician/Supplier Procedure Summary file and Optum’s de-identified Clinformatics® Data Mart Database to observe how a subset of procedures shifted out of the inpatient hospital setting to three different outpatient settings: hospital outpatient department (HOPD), ambulatory surgery center (ASC), and the physician’s office.¹ We focused the analyses on 27 procedures identified by Advisory Board researchers and members as current or likely candidates for setting-of-care shift.

We used both data sets to track how annual site-of-care volume distribution changed across time for Medicare and Clinformatics® patients. We also investigated the common pathways procedures followed when shifting, as well as how quickly procedures shifted their site of care in response to regulatory events. To explore the role of other market forces in accelerating—or preventing—outpatient shift, we compared these trends across procedures and service lines.

Procedures included in analyses

Service line	Procedure		
Cardiovascular	Foot amputation	Pacemaker implant	Transcatheter peripheral thrombolysis
	Arterial thrombectomy	Percutaneous coronary intervention (PCI)	Vascular ligation
	Arterial vascular catheterization	Percutaneous transluminal peripheral artery and venous procedures	Venous catheterization
	Implantable cardioverter defibrillator (ICD) implant		Venous thrombectomy
General surgery	Appendectomy	Cholecystectomy	Transcatheter embolization
			Ventral hernia repair
Gynecology	Laparoscopic assisted vaginal hysterectomy (LAVH)	Laparoscopic supracervical hysterectomy (LSH)	Total laparoscopic hysterectomy
			Vaginal hysterectomy
Orthopedics	Total knee arthroplasty	Sacroiliac (SI) joint fusion	Spinal cord stimulation: generator insertion
	Cervical spinal fusion	Lumbar spinal fusion	
Urology	Percutaneous kidney stone removal	Prostatectomy	Stone destruction/removal

1. The physician office category in Optum’s Clinformatics® Data Mart (CDM) data base includes volumes attributed to independent clinics, federally qualified health centers, and public health clinics. These three facility types contribute approximately 0.2% of volumes to the physician office category.

Source: Medicare Physician/Supplier Procedure Summary file; Optum’s de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.

What we found

Across both data sets, we found large variation in how procedures shift their site of care, even between procedures that fall under the same service line or treat similar patient populations. Despite this variation, most procedures shift to the outpatient setting gradually.

However, there were instances where a confluence of regulatory and market forces accelerated the trajectory of a procedure's shift to outpatient. These exceptions suggest that while historically slow, outpatient shift may accelerate in the future as the payer, employer, and physician landscapes evolve.

Summary of findings

- 1 Regulatory change can trigger rapid shifts—sometimes in unexpected ways**
- 2 Market forces dictate the pace of shift**
- 3 Commercial volumes can shift first, but Medicare volumes catch up over time**



WHAT WE FOUND

1. Regulatory change can trigger rapid shifts—sometimes in unexpected ways

For most of the procedures we examined, the percentage of annual volumes treated in the outpatient setting grew marginally from 2014 to 2019. As shown in the data spotlight below, this was the case even for procedures that shifted to outpatient relatively quickly. Of the 27 procedures we studied, those at the 75th percentile of outpatient market share growth still saw an increase of just 12% to 15% over five years.

Surprisingly, the median rate of change was nearly even across both data sets despite the difference in patient population. While the Medicare data set includes only Medicare FFS patients, who are largely over 65 years old, Optum’s Clinformatics® Data Mart data set includes patients of all ages and skews younger.

For example, the percentage of total laparoscopic hysterectomy Medicare volumes treated in the outpatient setting increased by 11 percentage points, from 75% in 2014 to 86% in 2019. We observed a similar trend in the Clinformatics® data, with outpatient market share growing by 10 percentage points, from 83% in 2014 to 93% in 2019. We explore the similarity between data sets in greater detail in finding three of this document (p. 13.)^{1,2}



DATA SPOTLIGHT

5-year outpatient market share growth, by data set

Medicare

0% 25th percentile **5%** Median **15%** 75th percentile

Clinformatics®

1% 25th percentile **4%** Median **12%** 75th percentile

1. Volume calculation in Medicare Physician/Supplier Procedure Summary file represents count of CPT codes assigned to each procedure grouping. Calculation of volumes in Optum’s Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

2. Figures may not add accurately due to rounding.

Source: Medicare Physician/Supplier Procedure Summary file; Optum’s de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



WHAT WE FOUND

However, a subset of procedures did experience rapid changes to the distribution of their setting of care from 2014 to 2019. We investigated the market and regulatory changes for those procedures that might explain the difference.

Most notably, CMS either removed these procedures from the Inpatient Only List or added them to the ASC payable list during the analysis period, positioning regulation as a precondition for rapid change. While we limited our time frame to 2014, it is possible that earlier procedure approvals triggered similar shifts, after which the setting-of-care distribution broadly stabilized for the period we investigated.

The table below shows the five-year increase in percentage of volumes treated in the outpatient setting for each of the fastest-shifting procedures.¹

Procedures with highest five-year increase in outpatient market share, by data set

Medicare Fee-for-Service; Optum’s de-identified Clinformatics® Data Mart Database; data represents 5-year percentage point change in market share attributed to outpatient care settings

Procedure	Medicare	Clinformatics®	Care site receiving CMS reimbursement approval (year)
SI joint fusion	48%	34%	ASC (2015)
Prostatectomy	44%	30%	HOPD (2018)
Vaginal hysterectomy	25%	24%	ASC (2016)
Total knee arthroplasty (TKA)	25%	33%	HOPD (2018)
Cervical spinal fusion	31%	18%	HOPD (2012) ASC (2015)

1. Volume calculation in Medicare Physician/Supplier Procedure Summary file represents count of CPT codes assigned to each procedure grouping. Calculation of volumes in Optum’s Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

Source: Medicare Physician/Supplier Procedure Summary file; Optum’s de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



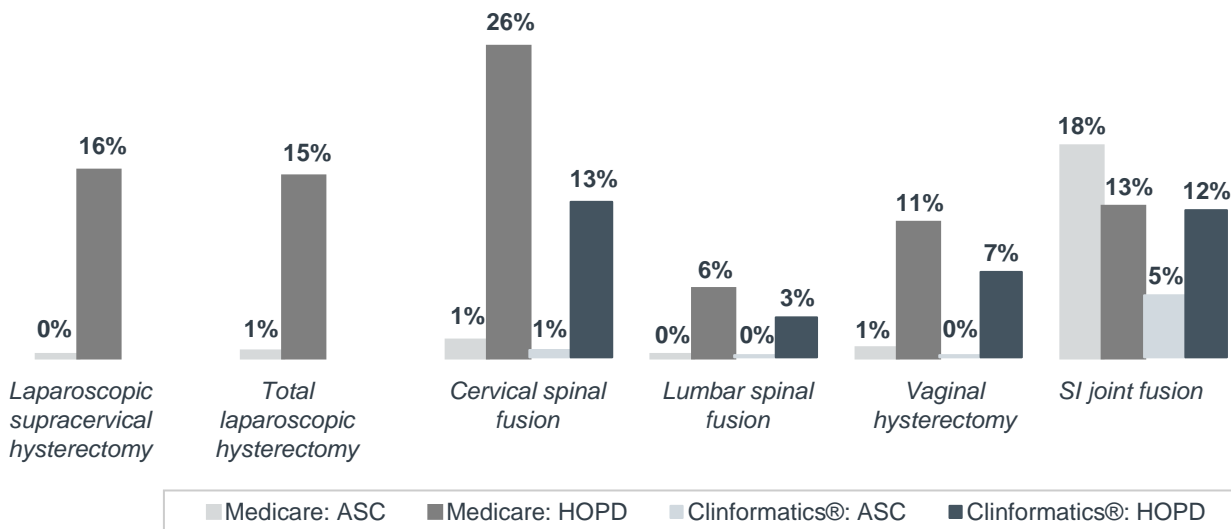
WHAT WE FOUND

Surprisingly, both removal from the Inpatient Only List and addition to the ASC payable list had a greater impact on shift to the HOPD than to freestanding settings. We analyzed the six procedures added to the ASC payable list during our years of interest (shown in the chart below.) For all but one, approval increased HOPD utilization instead of driving volumes to the ASC. At the median across both data sets, ASC utilization grew by 1% in the four years after regulatory approval, compared to 12% for the HOPD.

The graph below shows four-year changes in utilization, with HOPD growth represented by the darker columns.

Impact of ASC approval on ASC and HOPD market share, by procedure

Medicare Fee-for-Service; Optum's de-identified Clinformatics® Data Mart Database; data represents increase in HOPD and ASC share of annual volumes in four years following ASC reimbursement approval from CMS¹



1. Volume calculation in Medicare Physician/Supplier Procedure Summary file represents count of CPT codes assigned to each procedure grouping. Calculation of volumes in Optum's Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

Source: Medicare Physician/Supplier Procedure Summary file; Optum's de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



WHAT WE FOUND

2. Market forces dictate the pace of shift

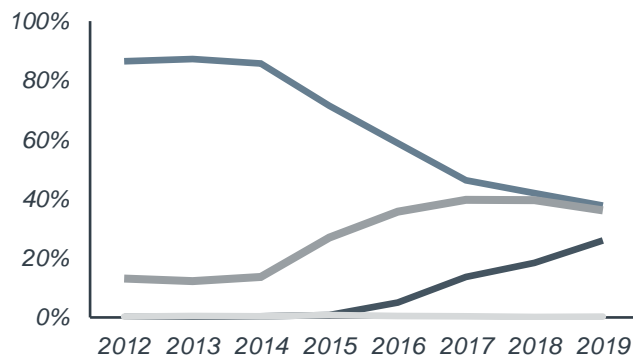
There are variations in what percentage of a procedure shifts to an ASC following regulatory approval for the change. This suggests that there are factors other than regulation impacting the speed of outpatient shift.

One example is the unique swing in Medicare SI joint fusion volumes after receiving approval for ASC reimbursement. Orthopedic specialists have a higher degree of independence from health systems and more frequently own stakes in ASCs than physicians in other service lines. This combination creates financial incentives for orthopedic specialists to treat patients outside of the hospital. Furthermore, many SI joint fusions carry fewer clinical risks than spinal fusion procedures, which did not see a similarly dramatic drop in inpatient volume share from 2014 to 2019. Lastly, SI joint fusions likely required few additional investments in procedural infrastructure in the ASC.

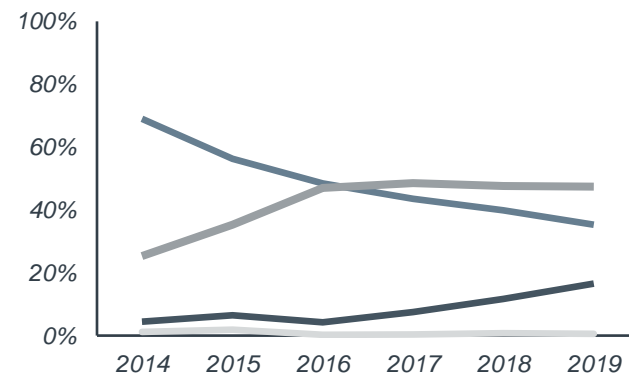
SI joint fusion outpatient shift curve, by data set

Medicare Fee-for-Service; Optum's de-identified Clinformatics® Data Mart Database; data represents share of annual volumes treated at each major care site^{1,2}

Medicare



Clinformatics®



1. Volume calculation in Medicare Physician/Supplier Procedure Summary file represents count of CPT codes assigned to each procedure grouping. Calculation of volumes in Optum's Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.
 2. Due to Optum's Clinformatics® Data Mart (CDM) data set time frame of 2014-2019, four-year impact is not available for either laparoscopic supracervical hysterectomy or total laparoscopic hysterectomy.

Source: Medicare Physician/Supplier Procedure Summary file; Optum's de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



WHAT WE FOUND

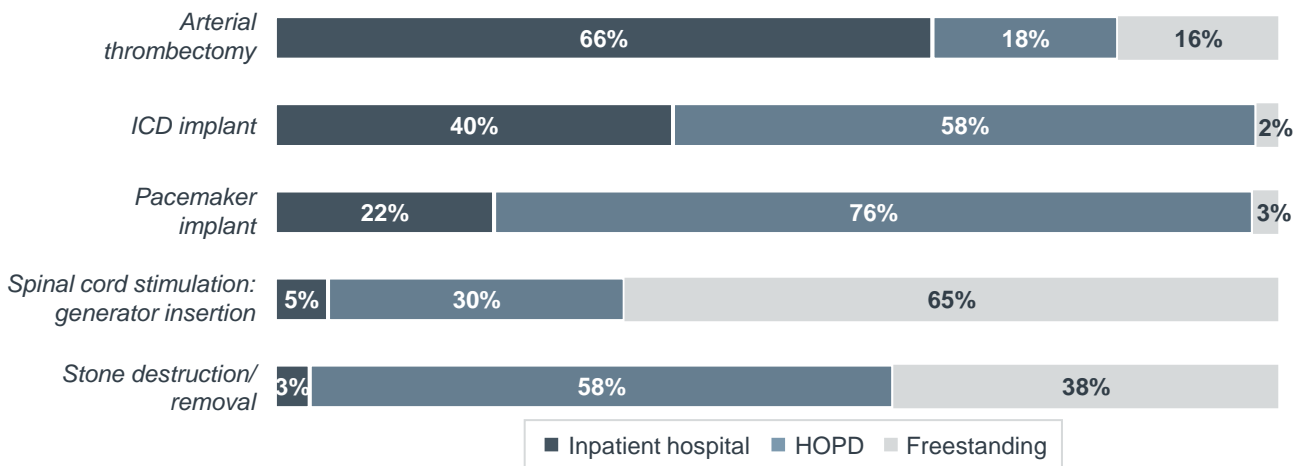
The factors that set SI joint fusion apart—including physician independence and ASC ownership, clinical appropriateness, and sufficient ASC infrastructure—predated regulatory approval for moving the procedure to outpatient. So, the approval may have triggered the (relatively simple) shift to the ASC. But not all procedures share these factors.

The minimal short-term impact of regulatory approval on ASC growth for most procedures raises the question of whether regulation alone enables long-term shift.

To answer that question, we isolated procedures eligible for Medicare ASC reimbursement before 2013. Of the five procedures with early ASC approval (in the chart below), two (spinal cord stimulation: generator insertion and stone destruction/removal) had seen at least a third of volumes move out of the hospital by 2019, one (arterial thrombectomy) had seen some volume erosion, and two (ICD and pacemaker implant) remained almost entirely in the hospital domain. The graph below shows the 2019 distribution of Clinformatics® volumes for each procedure.¹

Share of 2019 Clinformatics® volumes across care settings, by procedure

Procedures approved for ASC before 2013; Optum’s de-identified Clinformatics® Data Mart Database^{2,3}



1. Calculation of volumes in Optum’s Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.
 2. ASC and physician office volumes combined into one ‘freestanding’ category. The physician office category in Optum’s Clinformatics® Data Mart (CDM) data base includes volumes attributed to independent clinics, federally qualified health centers, and public health clinics. These three facility types contribute approximately 0.2% of volumes to the physician office category.
 3. Rows may not add to 100 due to rounding.

Source: Medicare Physician/Supplier Procedure Summary file; Optum’s de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.

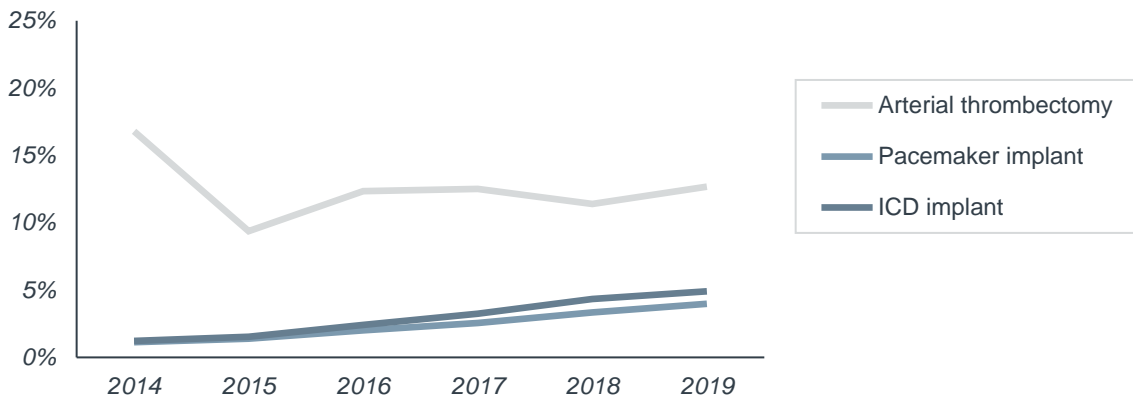


WHAT WE FOUND

Freestanding share of volumes remained low for the three cardiovascular procedures in the graph above, despite at least seven years of ASC eligibility by 2019. That slow pace of procedure shift may be a result of high costs in cardiac catheterization lab infrastructure, the need for specialized staff, and the strong degree of physician employment and affiliation with hospital-based systems. Reinvigorated freestanding shift would require a change in one or more of these market conditions.

Share of annual Medicare volumes attributed to freestanding care settings

Medicare Fee-for-Service^{1,2}



But when market and regulatory forces do align to shift cases to the freestanding setting, hospitals stand to lose significant share. While spinal cord stimulation: generator insertion and stone destruction/removal did not see large changes in setting-of-care distribution from 2014 to 2019, each shows significant freestanding volume share. So, while it's possible that volumes may not shift to outpatient, hospitals shouldn't be complacent and treat their share as guaranteed.

1. Volume calculation in Medicare Physician/Supplier Procedure Summary file represents count of CPT codes assigned to each procedure grouping.
 2. ASC and physician office volumes combined into one 'freestanding' category. The physician office category in Optum's Clinformatics® Data Mart (CDM) data base includes volumes attributed to independent clinics, federally qualified health centers, and public health clinics. These three facility types contribute approximately 0.2% of volumes to the physician office category.

Source: Medicare Physician/Supplier Procedure Summary file; Optum's de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



WHAT WE FOUND

3. Commercial volumes can shift first, but Medicare volumes catch up over time

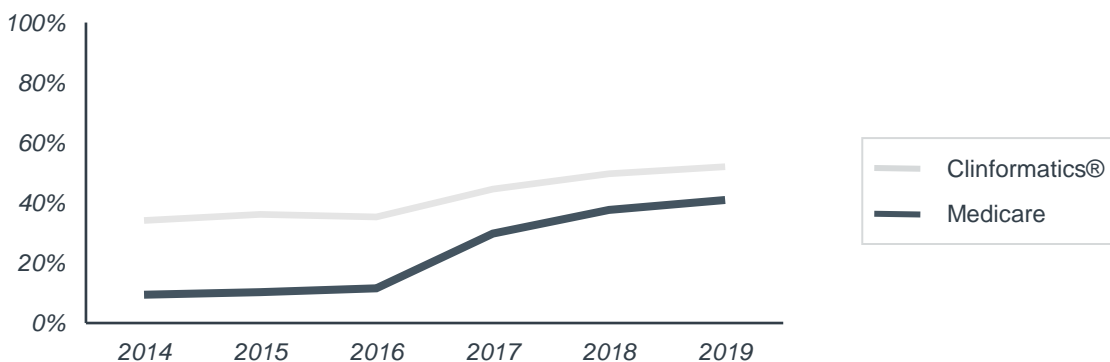
Removal from the Inpatient Only List or approval for ambulatory reimbursement needs to happen before site-of-care shift for Medicare patients. But CMS regulations don't necessarily limit shift for commercial volumes. Nevertheless, in the previous three analyses, site-of-care shifts for Clinformatics® volumes broadly mirror Medicare trends.¹

To compare shifts between data sets, we identified each procedure's outpatient market share in both the Medicare and Clinformatics® data for 2014. For each procedure, we then measured the difference between the two data points.

Using cervical spinal fusion as an example, approximately one-third of volumes in the Clinformatics® data set occurred in the outpatient setting in 2014, compared to 9% of Medicare volumes, all of which occurred in the HOPD. Earlier movement in the Clinformatics® data shows the importance of market forces in site-of-care shift independent of regulatory change.

Cervical spinal fusion outpatient shift curve, by data set

Medicare Fee-for-Service; Optum's de-identified Clinformatics® Data Mart Database; data represents outpatient share of annual volumes treated at the HOPD, ASC, or physician's office²



1. Calculation of volumes in Optum's Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

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Source: Medicare Physician/Supplier Procedure Summary file; Optum's de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



WHAT WE FOUND

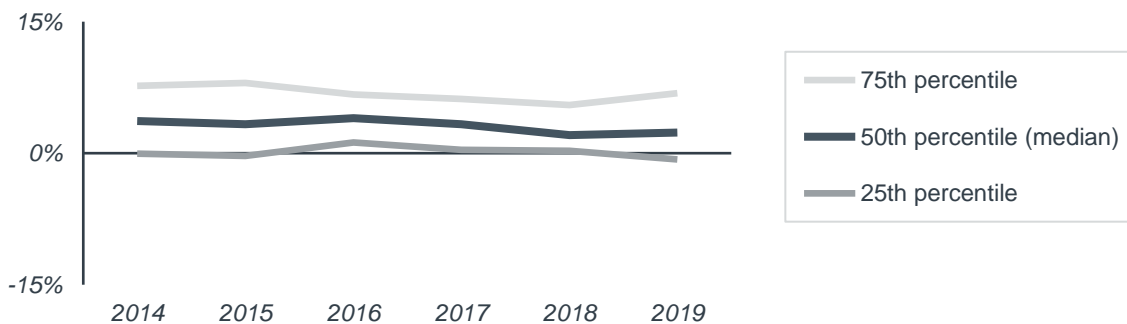
Once CMS approved cervical spinal fusion for the ASC in 2015, Medicare volumes increased dramatically, with volumes shifting closer to the market-driven site-of-care distribution shown in the Clinformatics® data. However, CMS approval also increased the share of volumes in the Clinformatics® data that were performed in the outpatient setting, indicating the importance of CMS regulation for all populations.¹

To generalize our findings, we repeated that analysis for each procedure, finding the difference between the percentage of outpatient share in the Clinformatics® and Medicare data sets for each year. We then found the distribution of differences.

The graph below shows that difference in outpatient volume share between data sets for the procedure positioned at the 75th, 50th, and 25th percentile. When a line is above the x-axis, it means that the Clinformatics® data showed higher outpatient share for that procedure in that year. When it intersects the x-axis, it shows that there is no difference in outpatient share between data sets for that procedure in that year.

Difference in outpatient share variation across data sets, by year

Medicare Fee-for-Service; Optum’s de-identified Clinformatics® Data Mart Database; data represents percentage point difference between commercial and Medicare outpatient share across procedure cohort, by percentile



1. Volume calculation in Medicare Physician/Supplier Procedure Summary file represents count of CPT codes assigned to each procedure grouping. Calculation of volumes in Optum’s Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

Source: Medicare Physician/Supplier Procedure Summary file; Optum’s de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.



WHAT WE FOUND

The graph on the previous page shows that outpatient share of Clinformatics® volumes was higher than Medicare in 2014, with all three lines at or above the x-axis. That suggests earlier movement of commercial volumes to freestanding settings before CMS policy implementation. But not only was the difference between payers narrower than expected, it reduced over time; the difference at the 50th percentile dropped from 4% to 2% in 2019. The narrowing trendline suggests outpatient market share for a given procedure will converge across the long term.¹

1. Calculation of volumes in Optum's Clinformatics® Data Mart (CDM) data set represents a distinct count of patients who are assigned one of the CPT codes that are categorized into each procedure grouping. Distinct assignments of CPT codes are made at the level of procedure grouping, care setting, and fiscal quarter.

Source: Medicare Physician/Supplier Procedure Summary file; Optum's de-identified Clinformatics® Data Mart Database; Advisory Board research and analysis.

What this means for you

At the national level, procedures usually shift gradually from inpatient to outpatient. Shift from the hospital to freestanding settings were especially rare in both data sets. However, change can happen quickly when regulatory and market factors converge.

Health care leaders need to act accordingly

Stakeholders looking to maintain their share of procedure volumes should monitor local market forces to anticipate change. And stakeholders looking to spark shift to lower-cost care settings should take an active role in shaping the market forces that (along with regulation) enable and sustain outpatient shift.

- **Health system providers** hold strong procedure market share despite regulatory changes, but this trend won't necessarily continue indefinitely. To preserve current market share, systems need to incorporate freestanding ownership or partnership options into investment conversations.
- **Independent providers** are driving volumes to the freestanding setting. To further capitalize on this trend, independent providers need to lead the market in offering consumers more access points for procedure care.
- **Payers** have traditionally relied on payment incentives to drive volumes to the freestanding setting. But slow growth for most procedures shows that this lever alone isn't enough. To accelerate the site-of-care shift, payers must preserve specialist independence and partner with operators to build the necessary infrastructure.
- **Suppliers and service providers** have new potential clients in the form of physicians and ambulatory operators who can provide procedural care independent of hospital partners. When evaluating new capital investments, physicians and ambulatory providers are more likely to prioritize cost containment and throughput efficiency than traditional providers.

Additional thoughts

Below are summaries of some of the discussions we've had with members and Advisory Board staff to address their most frequent questions about this research.

How should these national findings inform market-specific investment decisions?

Any care setting investment decision will benefit from both national findings and market-specific information. To assess the current state of site-of-care shift for your market, include both quantitative and qualitative information—for example, current and projected market size, influence of payer steerage policies, and certificate of need (CON) laws.

To help leaders make these decisions, we're creating two follow-up resources. The first will show, at the procedure level, historical and projected outpatient shift curves, degree of market variation, and the specific market forces accelerating or hindering each procedure's shift trajectory. The second will provide insight into geographic variation for site of care distributions. Both will be available on [advisory.com](https://www.advisory.com).


Are procedures in some service lines shifting outpatient faster than others?

Procedures in the orthopedics service line were, in general, shifting outpatient faster than others. We think this service line is unique, at least for now, because of the aligned and strong financial incentives pushing payers, providers, and patients toward freestanding sites. Given that regulatory approval is a necessary condition for volumes to start shifting in earnest, CMS reimbursement changes will be the first signal that other service lines could follow suit.



ADDITIONAL THOUGHTS

Do we expect Covid-19 to have lasting changes on outpatient shift patterns for procedures?

Covid-19 opened up new and renewed pathways of shifting procedures to outpatient settings. Given the size and breadth of these changes, we expect the pace of outpatient shift to accelerate. For example, the pandemic led many patients to access care differently—either in new settings or using telehealth technology. This rise in consumerism could translate into long-term behavior changes that favor the outpatient setting. In addition, Covid-19 increased payer flexibility in support of alternative sites of care. 

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