



Factors Influencing the Growth in Treatments per Claim

It is widely recognized that in recent years workers compensation medical costs have grown dramatically. For example, over the last half of the 1990s, medical severity grew at more than three times the rate of medical price inflation (over 70% vs. 21%, respectively, from 1996/97 to 2001/02). In a study published in 2007,¹ NCCI sought to identify the factors that contributed to this growth. That study found that:

- An increase in treatments per claim contributed a little more than half
- An increase in average cost per service generated a little more than a quarter
- A shift to more costly injuries accounted for about a fifth of the increase in medical severity

In this paper, we will update the data through AY 2002/03² and examine the components of the significant increase in treatments per claim because that was identified as the key driver of the increase in severity in the late 1990s. We pursued two approaches:

1. Investigate claims with and without surgery.
2. Separate the overall increase in treatments per claim into its components.

Key Findings

- The increase in the share of claims with surgery accounted for about one quarter of the overall increase in treatments per claim. Surgical claims involved more than twice the number of treatments per claim, particularly physical therapy and drug treatments.
- The primary drivers of the increases in treatments per claim varied by service group.
- Treatments per claim overall were significantly impacted by physical therapy treatments, which constituted approximately 50% of all treatments per claim.
- Overall, the most significant increases in treatments per claim occurred in 2000 and 2001, and have slowed in the most recent years. However, many of the more cost-intensive service groups have continued to increase.

¹ See ncci.com for the study "Measuring the Factors Driving Medical Severity: Price, Utilization, Mix," published in January 2007.

² As in the 2007 study, this study is based on lost-time claims closed within 24 months of date of injury. Throughout the text, the accident year period 1996/97 includes data on claims for injuries that occurred from January 1, 1996 to December 31, 1997. This study is based on data licensed to NCCI by insurers for purposes of this study for the eight accident years from 1996–2003. This study covers lost-time claims. Countrywide, losses from lost-time claims comprise 94% of total losses; medical-only claims cover only 6% of losses.

Overall Increase in Treatments per Claim

Exhibit 1 extends our data through 2002/03 and shows that, overall in AY 1996/97, a claim averaged almost 40 treatments versus over 57 in AY 2002/03, an increase of 43%. This increase is the focus of this study. Notice that complex surgery and anesthesia (67%), complex diagnostic testing (62%), and physical therapy (61%), experienced above average increases in the average number of treatments per claim.

Overall Severity Increase 1996/97–2002/03: 78%	Average Treatments per Claim		
	1996/ 1997	2002/ 2003	% Difference
Treatment Service Group			
Complex Surgery and Anesthesia	0.9	1.5	67%
Complex Diagnostic Testing	0.4	0.7	62%
Physical Therapy	18.9	30.4	61%
Drugs, Supplies, and DME	5.2	7.2	40%
Surgical Treatments	0.6	0.8	34%
Other	3.9	5.0	29%
Emergency Services	0.7	0.9	27%
Pathology	1.0	1.2	25%
Diagnostic Radiology	2.4	2.8	17%
Hospital Services	0.7	0.8	14%
Office Visits	5.4	6.0	11%
Total Treatments	39.9	57.2	43%

Exhibit 1. Average Number of Treatments per Claim, AY 1996/97 and AY 2002/03, NCCI.

Why the Dramatic Increase in Treatments per Claim?

In this paper, we develop a more in-depth look at the factors driving the 43% increase in overall treatments per claim, with particular attention paid to the three service groups with above average increases in treatments per claim.

- First, we look at the increase in the share of claims with surgery and the impact it has on the increase in treatments per claim
- Second, we separate the increase in the number of treatments by service category into its two major components:
 - The change in the share of claims receiving the service
 - The change in the number of treatments per claim for claims receiving the indicated service, which can be further broken down for certain service categories to:
 - The change in encounters³ per claim with the indicated service
 - The change in treatments per encounter with the indicated service

³ An encounter is a common way to think of a set of treatments in the healthcare field. In our data, treatments for several of the service categories could be grouped together into encounters. For example, all treatments making up a surgery on a particular day can be grouped together into one encounter. Similarly, multiple physical therapy sessions billed in 15-minute increments on the same day or multiple MRIs or X-ray views of the same body part on the same day can be considered an encounter. Grouping these individual treatments into encounters allows us to see if the increase in the number of treatments per claim for claims receiving the indicated service is due to an increase in encounters per claim with the indicated service (the number of times the patient goes to physical therapy, for example) or an increase in the number of treatments per encounter with the indicated service (the number of treatments administered in a single physical therapy visit).

Impact of Surgery on the Increase in Treatments per Claim

Exhibit 2 shows the shares of claims receiving each indicated service and are arranged in descending order by the percentage increase in the share of claims receiving each service (in parentheses next to each service category). Overall, the share of claims with complex surgery and anesthesia increased 29% and was the service group with the second largest increase in the share of claims receiving that type of treatment. The 29% increase in the share of claims with complex surgery and anesthesia was from a 29.5% share of claims with complex surgery and anesthesia in AY 1996/97 to a 38.1% share in AY 2002/03, or an increase of 8.6 percentage points.

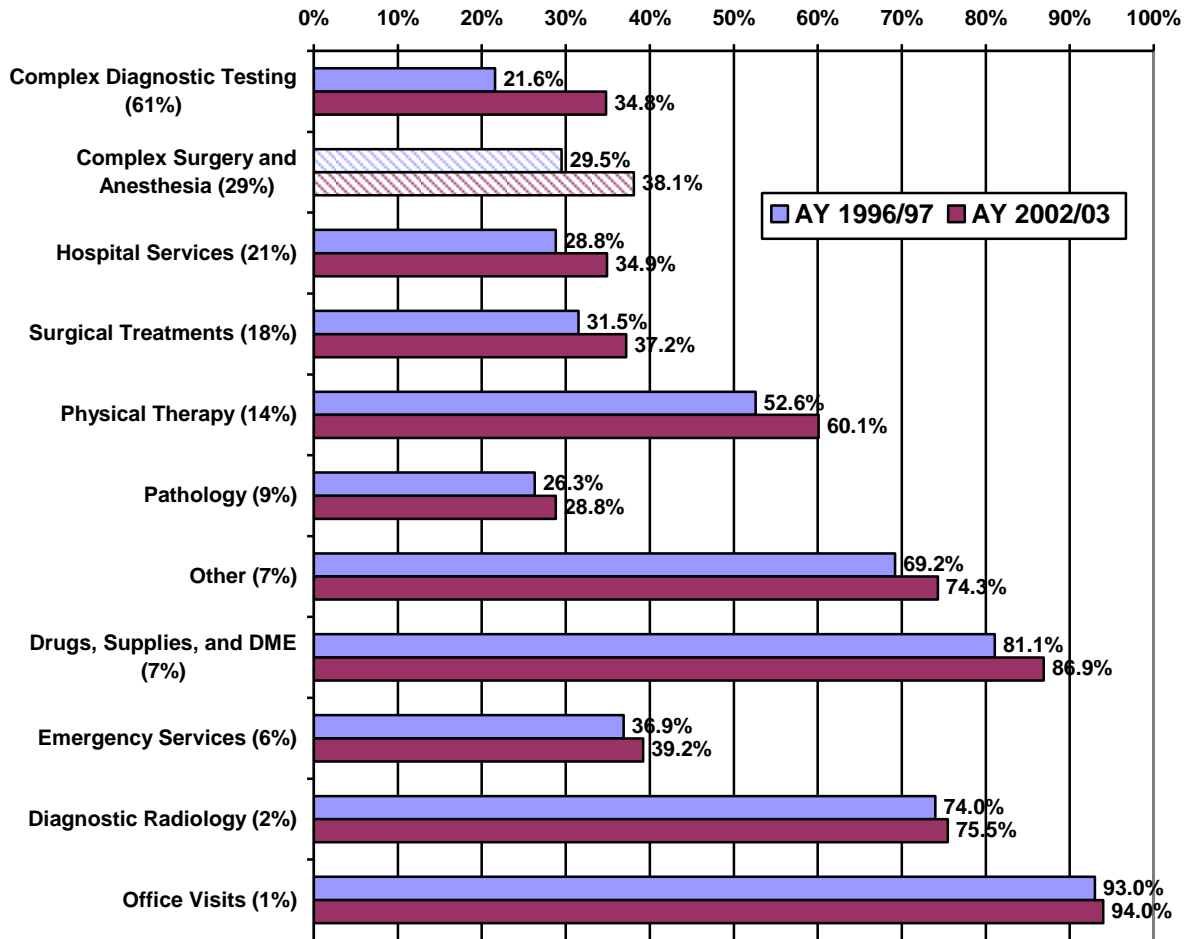


Exhibit 2. Shares of Claims Receiving the Indicated Service, AY 2002/03 vs. AY 1996/97, NCCI (parentheses contain the percent increase).

Exhibit 3 shows the share of claims receiving complex surgery and anesthesia for the leading diagnoses in AY 1996/97 and AY 2002/03. The diagnoses are arranged in descending order by the percentage increase in the share of surgical claims (shown in parentheses next to each diagnosis). The share increased for most leading diagnoses. Although the percentage increase is often large, the increase in percentage points can be much lower. For example, the share of claims with surgery for sprain of neck increased 101%, but increased by only 3.5 percentage points, from 3.5% to 7.0%.

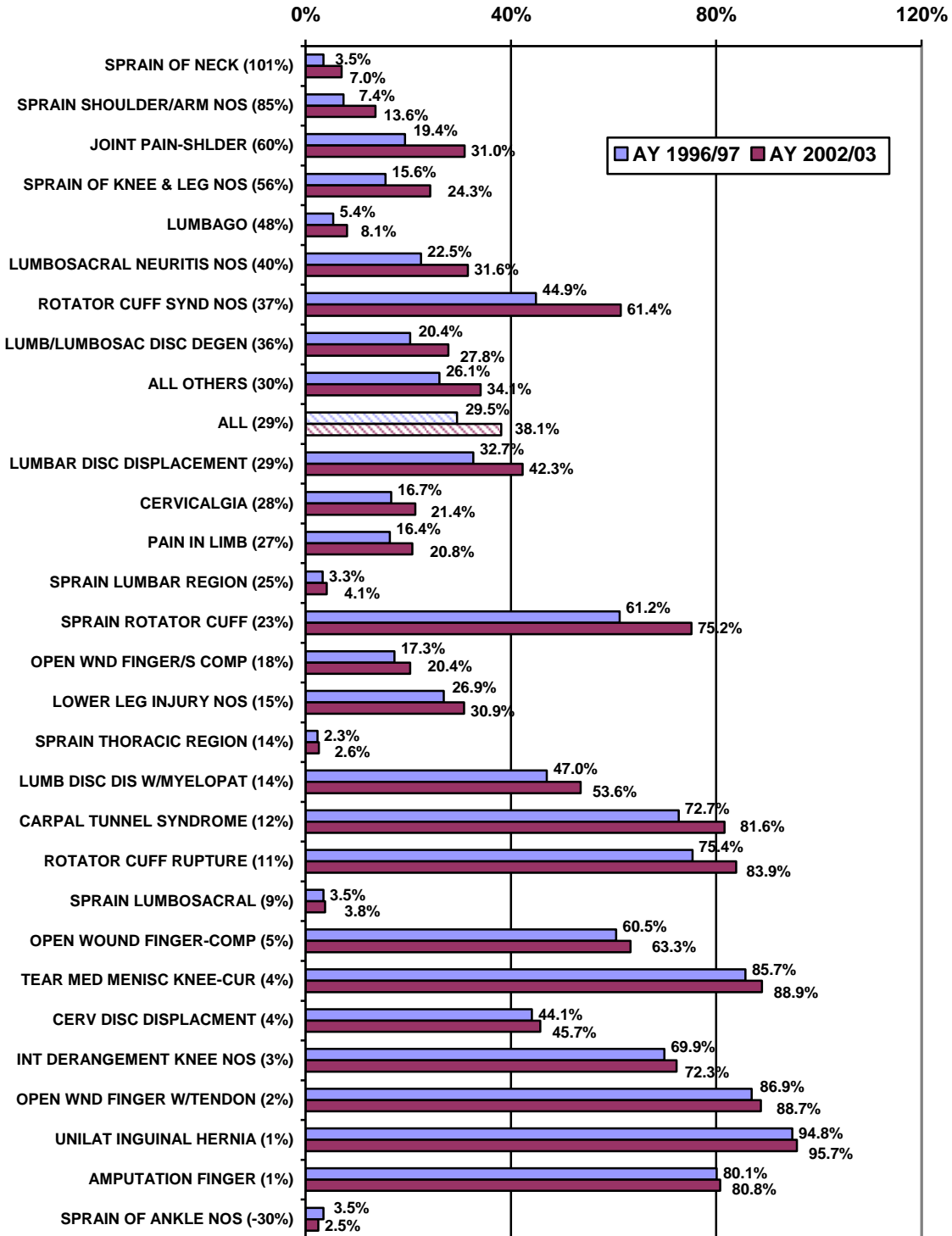


Exhibit 3. Share of Claims Receiving Complex Surgery and Anesthesia by Diagnosis, AY 2002/03 vs. AY 1996/97, NCCI (parentheses contain the percentage increase).

In both AY 1996/97 and AY 2002/03, claims with surgery had more than twice the number of treatments per claim than claims without surgery. In AY 1996/97, claims without surgery averaged 30.4 treatments per claim versus 62.7 treatments per claim for claims with surgery. In AY 2002/03, those numbers had risen to 39.6 and 85.7 treatments per claim for claims without and with surgery, respectively (see Exhibit 4).

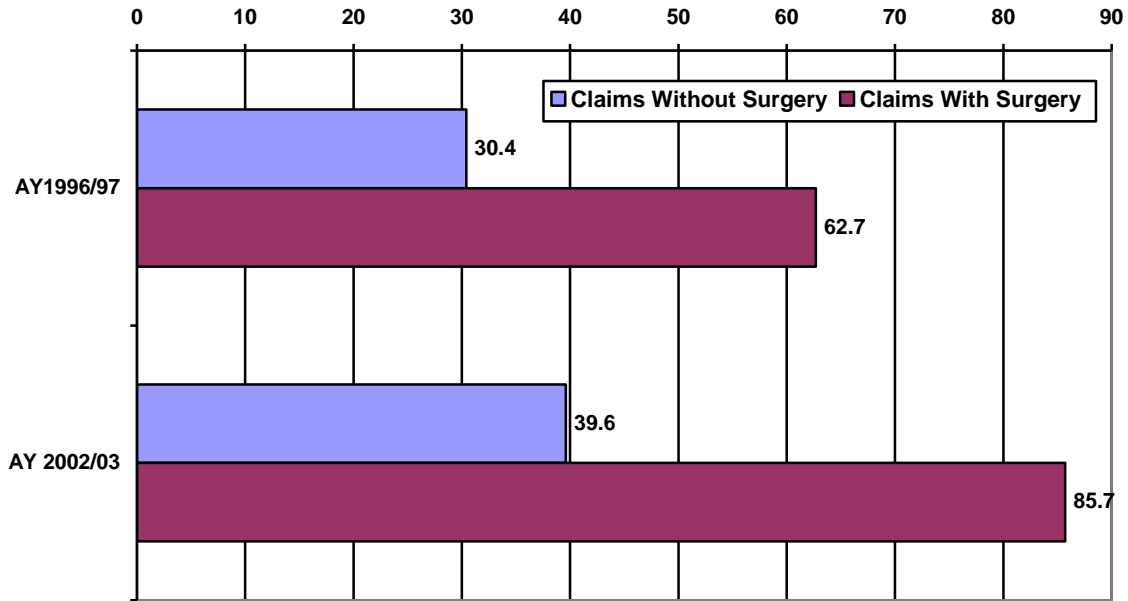


Exhibit 4. Number of Treatments per Claim for Claims Without and With Complex Surgery, AY 1996/97 and AY 2002/03, NCCI.

In addition to the actual surgery that makes up part of the higher number of treatments per claim for claims with complex surgery, there are particularly more physical therapy and drug treatments per claim. Physical therapy treatments per claim averaged 21.6 in AY 2002/03 for claims without surgery versus 44.7 for claims with surgery. Drugs, supplies, and durable medical equipment treatments per claim averaged 4.6 for claims without surgery and 11.3 for claims with surgery (see Exhibit 5).

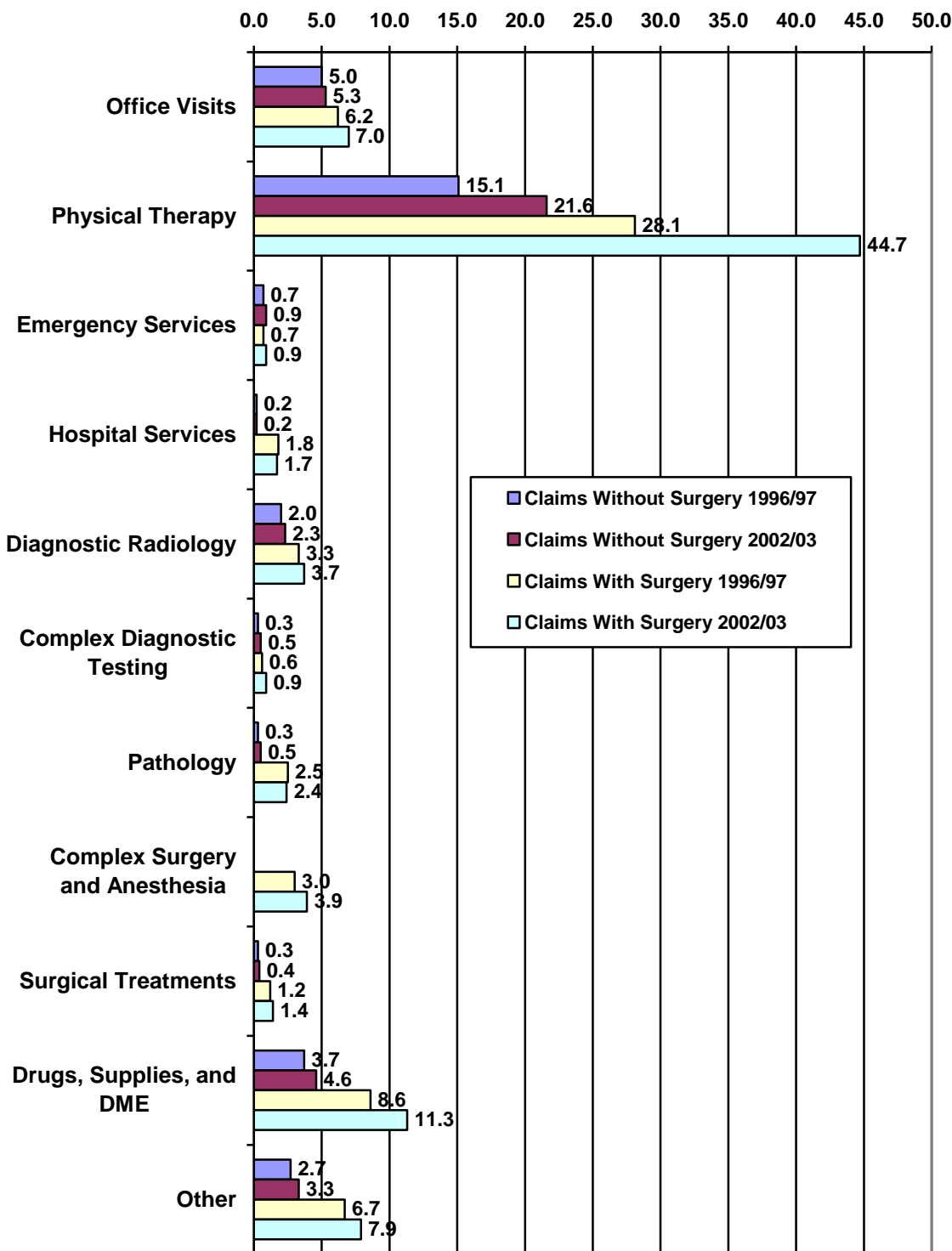


Exhibit 5. Number of Treatments per Claim for Claims Without and With Complex Surgery by Service Group, AY 1996/97 and AY 2002/03, NCCI.

Because treatments per claim are so much higher for claims with complex surgery than for claims without complex surgery, we recalculated what the overall increase in treatments per claim would have been had there been no increase in the share of claims receiving complex surgery. That is, we held the share of claims with complex surgery constant at 29.5% and recalculated what the average treatment per claim would have been. The results are shown in Exhibit 6.

As shown in Exhibit 1, overall treatments per claim in AY 1996/97 averaged 39.9. In AY 2002/03, treatments per claim averaged 57.2. This results in the 43% increase in treatments per claim. If we were to hold constant the share of claims with complex surgery at the AY 1996/97 level, then the AY 2002/03 treatments per claim would have been 53.2 for an increase of 33%. This suggests that the increase in the share of claims with complex surgery and anesthesia accounted for a 10-point increase in treatments per claim from the estimated 33% to the observed 43%⁴. Therefore, the increase in the share of claims with complex surgery and anesthesia accounts for about one quarter of the overall increase in treatments per claim.

Clearly, the increase in surgery was not the only key driver.

Treatments per Claim	AY 1996/97	AY 2002/03	Change
Actual: Share of Claims with Surgery Increased 29% from 1996/97 to 2002/03	39.9	57.2	43%
If the Share of Claims with Surgery Remained Unchanged at the 1996/97 Level	39.9	53.2	33%

Exhibit 6. Change in Treatments per Claim, Holding the Share of Claims with Complex Surgery and Anesthesia Constant at the 1996/97 Level, NCCI.

⁴ This analysis recognized the differences in the increases in treatments per claim for surgical and nonsurgical claims for each major service category.

Breaking the Overall Increase in Treatments per Claim Into Its Components

As a more comprehensive alternative, we next separate the increase in the overall treatments per claim into its components by service group:

1. Increase in the share of claims receiving a specific service
2. Increase in encounters per claim receiving that service
3. Increase in treatments per encounter for claims receiving the service

Exhibit 7⁵ contains results for the three service groups with above average increases in treatments per claim (complex surgery and anesthesia, complex diagnostic testing, and physical therapy). The questions at the top of each column serve to explain what each is measuring. The primary drivers of the increase for each service group are highlighted in the table.

Service Group	(A) How much has the number of treatments per claim grown? (from Exhibit 1)	(B) How much is due to more claims receiving the service? (from Exhibit 2)	(C) How much is due to more treatments per claim for claims receiving the service? (Col A/Col B)	(D) Was the increase in treatments per claim for claims receiving the service (Col C) due to more visits (encounters)?	(E) Or was it because there were more treatments per visit? (Col C/Col D)
Complex Surgery and Anesthesia	1.67	1.29	1.29	1.04	1.24
Complex Diagnostic Testing	1.62	1.61	1.01	1.00	1.01
Physical Therapy	1.61	1.14	1.41	1.32	1.07

Exhibit 7. Breakdown of the Increase in Treatments per Claim by Service Group, AY 2002/03 vs. AY 1996/97, Displayed as Ratios, Differences Due to Rounding, NCCI.

The 67% increase in the number of complex surgery and anesthesia treatments per claim is primarily due to a 29% increase in the share of claims with complex surgery (more claims are having surgery). Secondly, it is due to a 24% increase in the number of treatments per encounter (more treatments done within a single surgery). Arthroscopic knee and shoulder surgeries are some of the most common surgeries performed, and they increased significantly.

The 62% increase in complex diagnostic testing treatments per claim is due entirely to a 61% increase in the share of claims receiving complex diagnostic testing. For example, many more claims are now receiving MRIs.

The 61% increase in physical therapy treatments per claim is primarily due to a 32% increase in the number of encounters per claim with physical therapy (going to physical therapy more days) and, to a lesser extent, to a 14% increase in the share of claims receiving physical therapy. Top physical therapy treatments that have increased significantly include neuromuscular reeducation, manual therapy techniques, therapeutic exercises, and electrical stimulation.

⁵ The results in the table are presented as ratios, so the columns are multiplicative (that is, column (A) equals column (B) times column (C); and column (C) equals column (D) times column (E)). Percentage changes can be obtained by subtracting 1.00 from each cell and multiplying by 100.

Exhibit 8 graphically shows the data in the previous table. It helps to illustrate the primary driver of the increase in treatments per claim for the three service groups with an above average increase in treatments per claim. The bars graph the percentage increase in each of the factors, while the numbers in parentheses next to the service group name are the share of claims with each indicated service in AY 1996/97. A key observation is that the patterns differ between these top three categories, so there is no simple explanation.

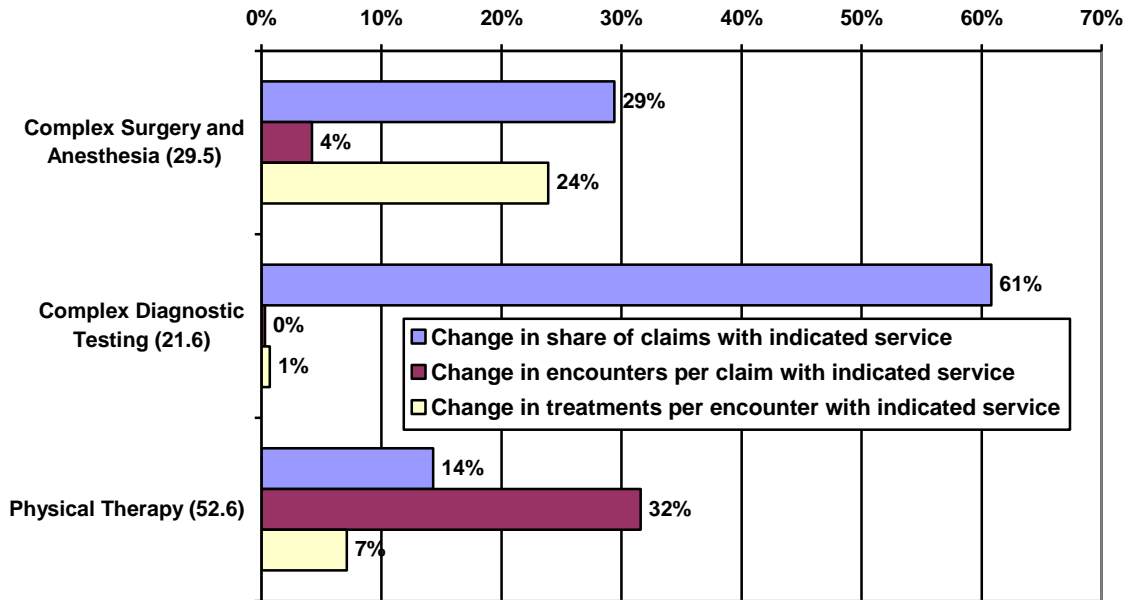


Exhibit 8. Breakdown of the Increase in Treatments per Claim by Service Group, AY 2002/03 vs. AY 1996/97, NCCI (parentheses contain the share of claims with each indicated service in AY 1996/97).

Appendix A contains considerable additional detail on the decomposition of the overall change in treatments per claim. It explores the breakdown step-by-step and shows results for all 11 service groups.

Physical Therapy Is a Primary Factor in the Changes in Treatments per Claim

Exhibit 9 shows the number of treatments per claim over time. The increase has slowed in the most recent years; the most significant increases occurred in 2000 and 2001. Treatments per claim overall are significantly impacted by physical therapy treatments, the largest component of overall treatments per claim. But these have leveled off in the most recent years. Physical therapy is the big chunk of the number of treatments and a primary factor in the movement in the total. This is also true for the major diagnoses that we looked at.

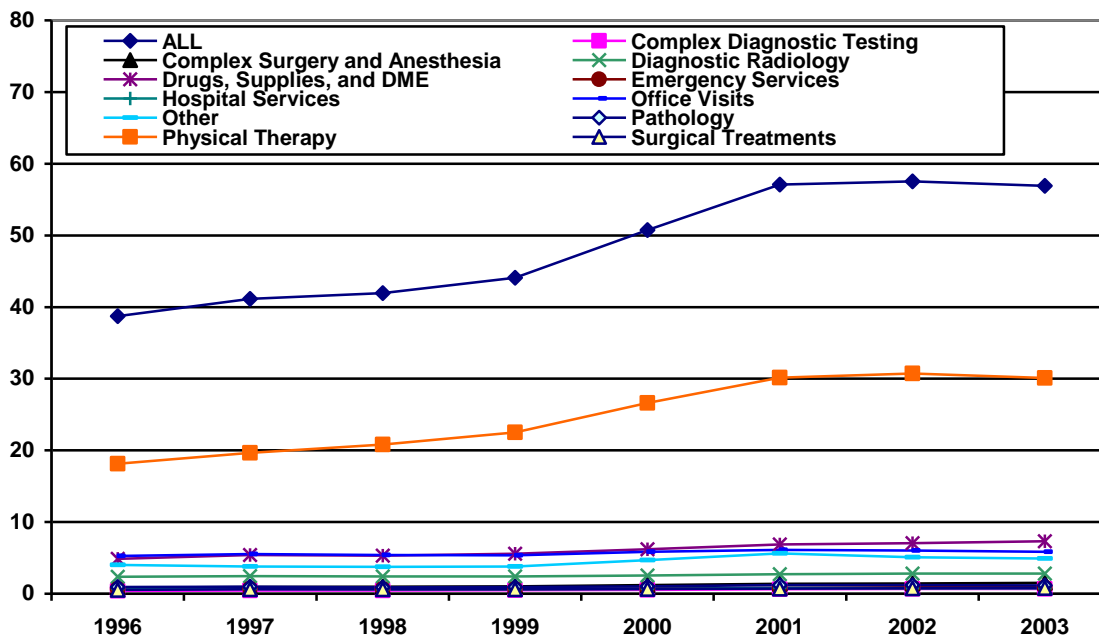


Exhibit 9. Treatments per Claim Overall and by Service Group, AY 1996 to AY 2003, NCCI.

Exhibit 10 contains the same information as Exhibit 9, but excludes both all service groups combined and physical therapy, so the changes can be seen in more detail for the service groups with treatments per claim below 10. Other service groups that have seen a leveling off or decline in the most recent years include hospital services, office visits, other, and pathology. Complex diagnostic testing; complex surgery and anesthesia; diagnostic radiology; drugs, supplies, and durable medical equipment; emergency services; and surgical treatments have continued to increase.

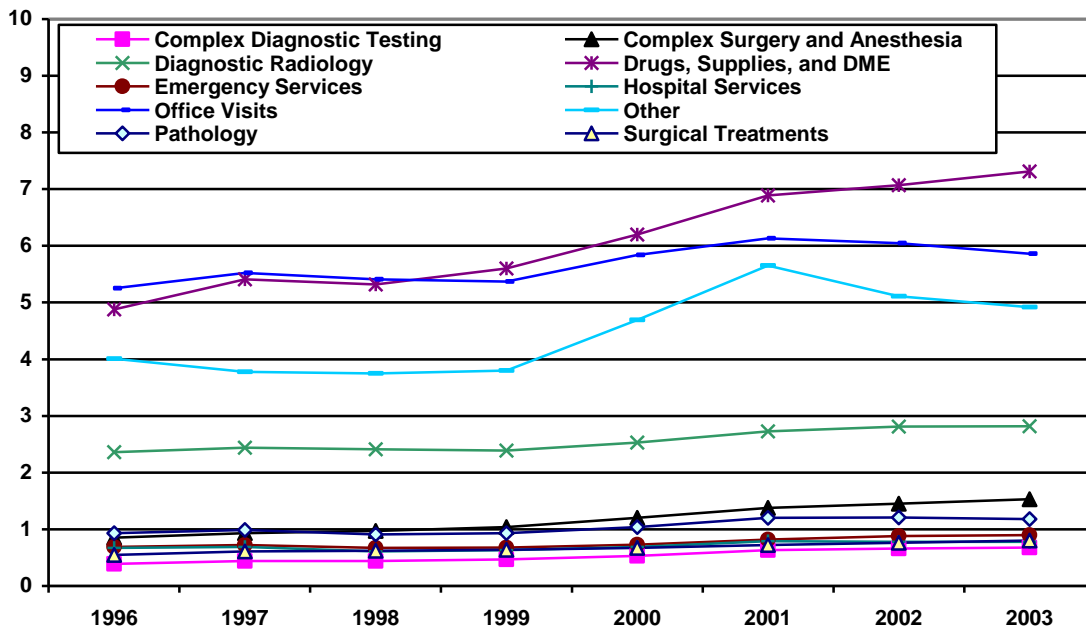


Exhibit 10. Treatments per Claim by Service Group (Except Physical Therapy), AY 1996 to AY 2003, NCCI.

Conclusions

Research published in 2007 found that the significant increase in treatments per claim from AY 1996/97 to AY 2001/02 explained more than half of the overall increase in medical severity over that period. This paper has focused on examining the factors driving the significant increase in treatments per claim from AY 1996/97 to AY 2002/03.

To some extent, the increase in treatments per claim is due to the increase in the share of claims with surgery. Because surgical claims involve more than twice the number of treatments per claim (particularly physical therapy and drug treatments), the increase in the share of claims with surgery accounts for about one quarter of the overall increase in treatments per claim.

The increase in treatments per claim was divided by service group into its components. We particularly focused on the three service groups with above average increases in treatments per claim over the period studied (complex surgery and anesthesia, complex diagnostic testing, and physical therapy). The primary driver of the increase varied by service group:

- For complex surgery and anesthesia, the primary drivers are an increase in the share of claims with surgery and an increase in the number of treatments per encounter
- For complex diagnostic testing, the increase in the share of claims receiving complex diagnostic testing is the sole driver of the overall increase
- For physical therapy, the primary driver is an increase in the number of encounters per claim with physical therapy (more visits); the secondary driver is the increase in the share of claims receiving physical therapy

The most significant increases in treatments per claim occurred in 2000 and 2001, and have slowed in the most recent years. Treatments per claim overall are significantly impacted by physical therapy treatments, the largest component of overall treatments per claim. These also have leveled off in the most recent years.

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Appendix A

Breakdown of the Increase in Treatments per Claim by Service Group

As mentioned in the body of this paper, to gain a better understanding of the overall increase in treatments per claim, we separated the increase into its components by service group. First, we broke it down into its two major components:

1. The change in the share of claims receiving the service
2. The change in the number of treatments per claim for claims receiving the indicated service

For certain service groups, number 2 above was further divided into its components:

1. The change in encounters⁶ per claim with the indicated service
2. The change in treatments per encounter with the indicated service

This appendix contains considerable detail on the decomposition of the overall change in treatments per claim. It explores the breakdown step-by-step and shows results for all 11 service groups.

⁶ As mentioned in the body of this paper, an encounter is a common way to think of a set of treatments in the healthcare field. In our data, treatments for several of the service categories could be grouped together into encounters. For example, all treatments making up a surgery on a particular day can be grouped together into one encounter. Similarly, multiple physical therapy sessions billed in 15-minute increments on the same day or multiple MRIs or X-ray views of the same body part on the same day can be considered an encounter. Grouping these individual treatments into encounters allows us to determine if the increase in the number of treatments per claim for claims receiving the indicated service is due to an increase in encounters per claim with the indicated service (the number of times the patient goes to physical therapy, for example) or an increase in the number of treatments per encounter with the indicated service (the number of treatments administered in a single physical therapy visit).

Changes in Shares of Claims Receiving Each Service

Exhibit A1 shows the share of claims receiving each service in AY 1996/97 and AY 2002/03. In AY 1996/97, this ranged from a high of 93% of claims receiving an office visit down to 22% of claims receiving complex diagnostic testing.

Exhibit A2 shows that the share of claims receiving the indicated service increased for all service groups. In Exhibit A2, the service groups are sorted by their increase in the share of claims receiving that service. They ranged from a high of a 61% increase in complex diagnostic testing down to a 1% increase in office visits. Complex diagnostic testing was the service group with the lowest share of claims in AY 1996/97 at 22%. However, it increased to 35% because complex diagnostic testing includes MRIs, which have become a much more widely used diagnostic procedure in the recent past⁷.

Note that there was little change in the share of claims with office visits since it was already greater than 90%.

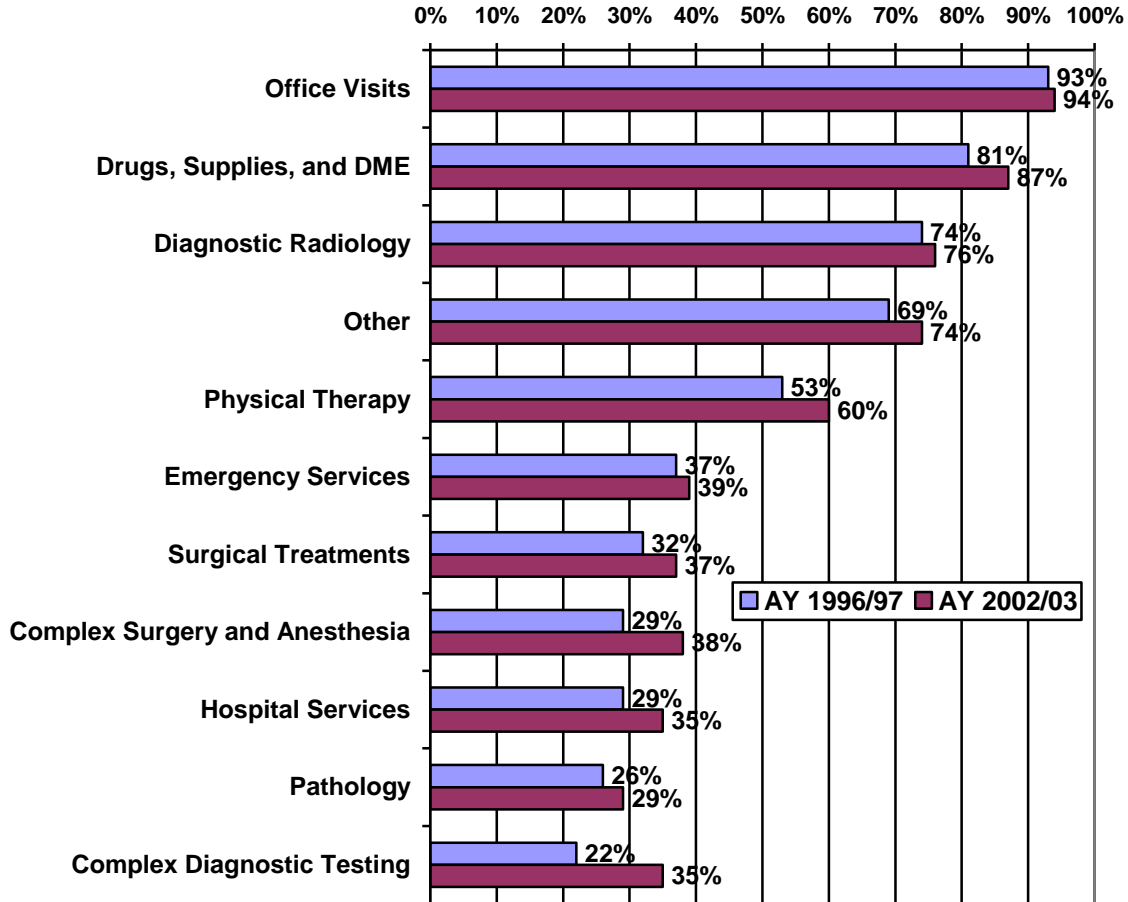


Exhibit A1. Shares of Claims Receiving the Indicated Service, AY 1996/97 and AY 2002/03, NCCI.⁸

⁷ The 2003 Nobel Prize in Physiology and Medicine was awarded to Paul C. Lauterbur and Peter Mansfield for their discoveries concerning magnetic resonance imaging. According to the press release, “the medical use of magnetic resonance imaging has developed rapidly. The first MRI equipment in health was available at the beginning of the 1980s. In 2002, approximately 22,000 MRI cameras were in use worldwide, and more than 60 million MRI examinations were performed.” See the Web site http://nobelprize.org/nobel_prizes/medicine/laureates/2003/press.html.

⁸ The other category includes treatments such as psychological, burn, acupuncture, dental, other diagnostic, home services, ophthalmology, and dermatology. Surgical treatments differ from complex surgery and anesthesia in that they are typically noninvasive surgical procedures that are often performed in a doctor’s office or emergency room. Complex surgery and anesthesia treatments are invasive and often require hospitalization.

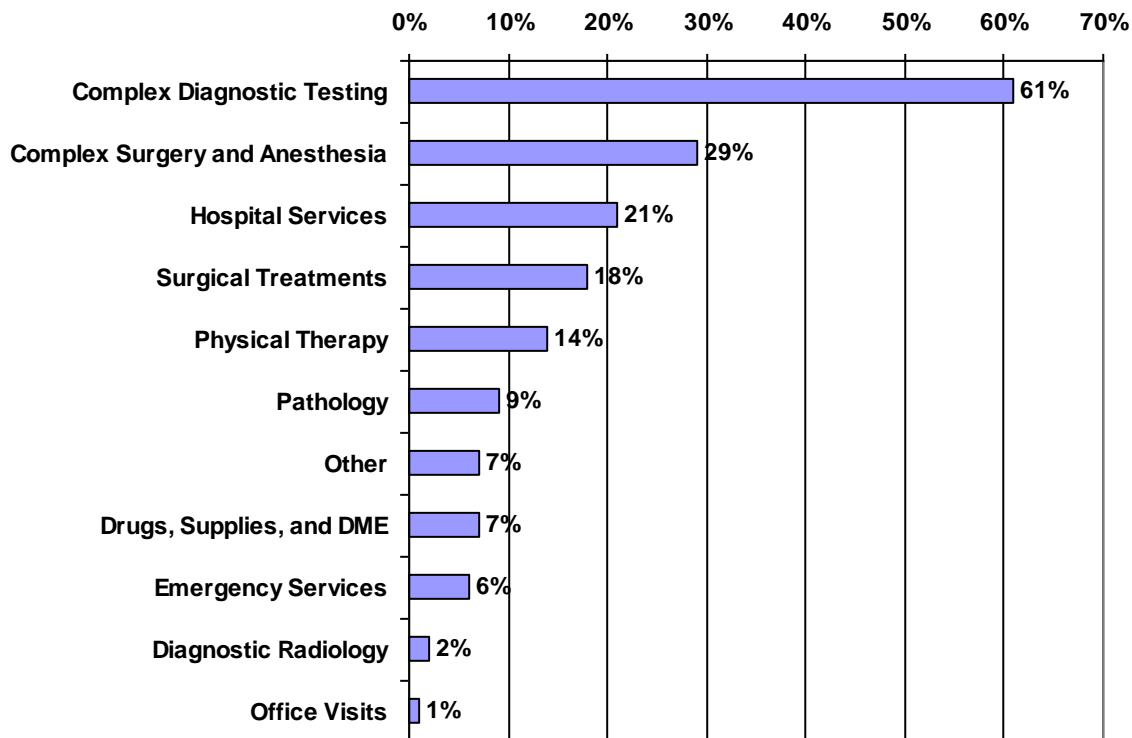


Exhibit A2. Percentage Increase in the Shares of Claims Receiving the Indicated Service, AY 2002/03 vs. AY 1996/97, NCCI.

Changes in the Number of Treatments per Claim Receiving the Indicated Service

Exhibit A3 shows the number of treatments per claim receiving the indicated service, sorted from the most to the least treatments in AY 1996/97. In AY 1996/97, claims receiving physical therapy had about 36 physical therapy treatments, but that increased to almost 51 treatments in AY 2002/03.

Exhibit A4 shows the percentage increases for each service group sorted from highest to lowest. Physical therapy had the largest increase, followed by drugs, supplies, and durable medical equipment, then complex surgery and anesthesia. The graph shows that from AY 1996/97 to AY 2002/03, the number of treatments per claim receiving the indicated service increased for most service categories. The exceptions are complex diagnostic testing, which was essentially unchanged, and hospital services, which declined. The decline in hospital treatments per claim receiving hospital services could be due in part to a decline in the length of hospital stays over this period.⁹

⁹ According to *Hospital Statistics*, published by the American Hospital Association, for US healthcare, generally the average length of a hospital stay (excluding nursing homes) declined 7% over this period, from 5.5 days in 1996 to 5.1 days in 2003.

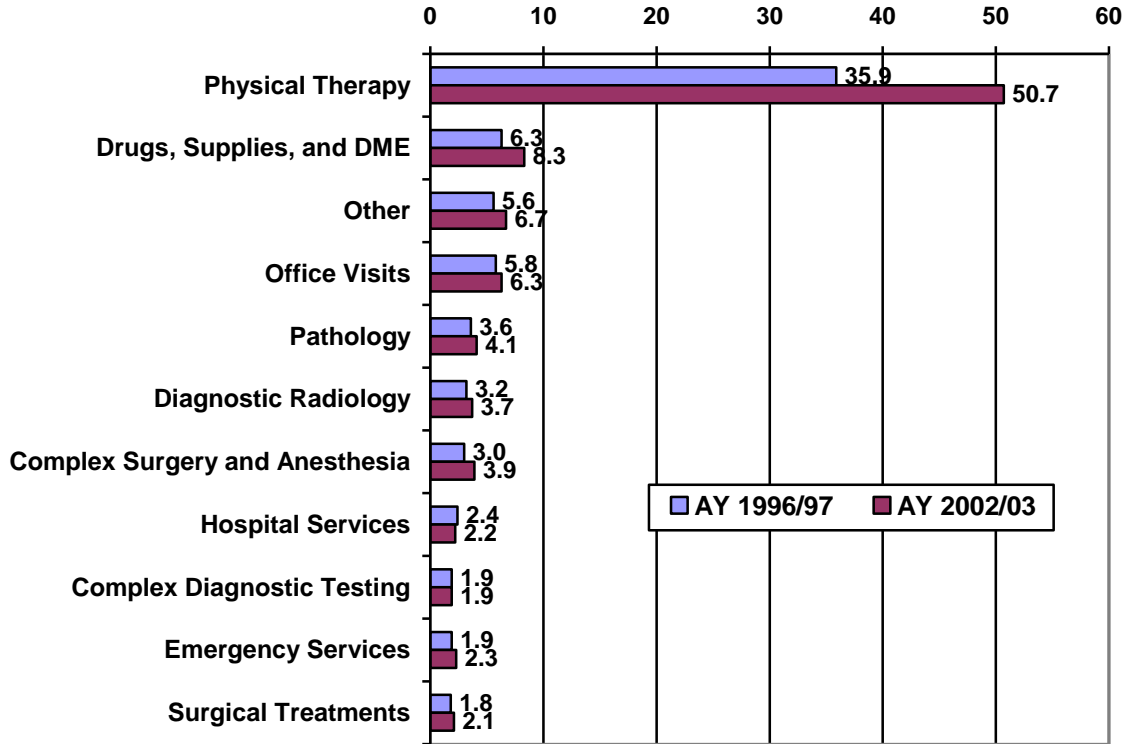


Exhibit A3. Number of Treatments per Claim Receiving Indicated Service, AY 1996/97 and AY 2002/03, NCCI.

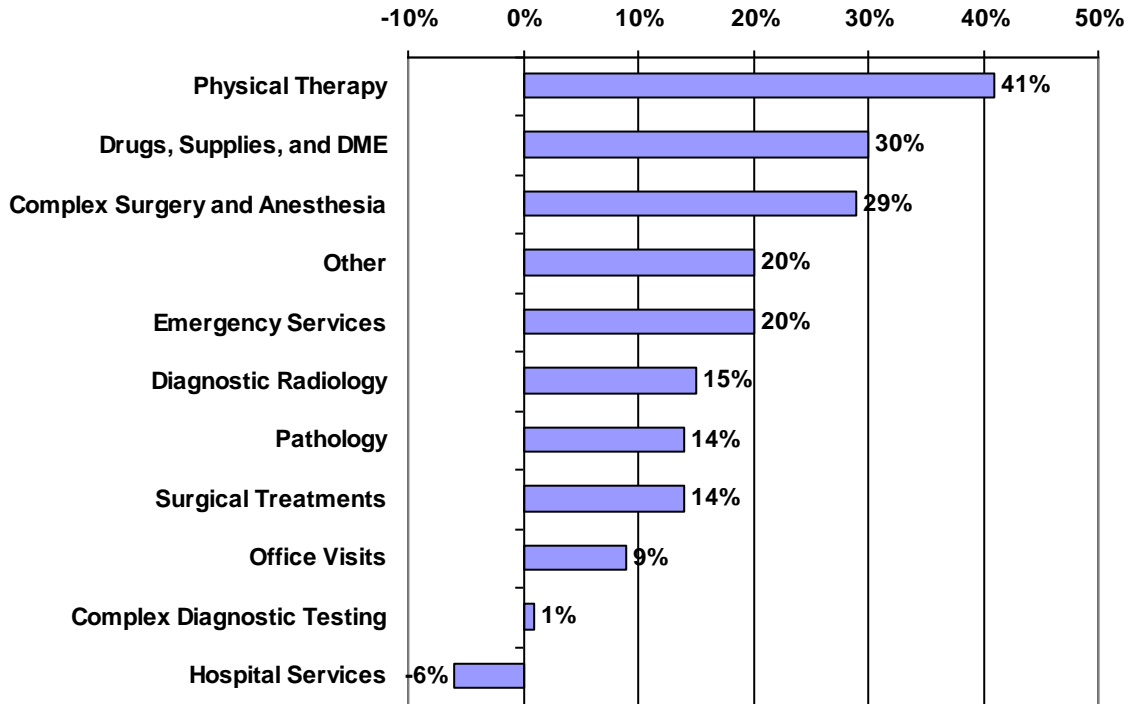


Exhibit A4. Percentage Change in the Number of Treatments per Claim Receiving Indicated Service, AY 2002/03 vs. AY 1996/97, NCCI.

Exhibit A5 shows the components of the overall increase in treatments per claim by service group from AY 1996/97 to AY 2002/03. Column B contains the changes in the shares of claims receiving the indicated service from Exhibit A2 (but shown in ratio format instead of percentage). And Column C contains the change in the number of treatments per claim receiving the indicated service from Exhibit A4, again stated as a ratio. The product of the two equals the overall increase in treatments per claim by service group, shown in Column A. The table is sorted by the overall change in treatments per claim in Column A.

We have divided the service categories into three groups, depending on what is driving the overall increase in treatments per claim. Each is colored differently in Exhibit A5.

- The first group contains complex surgery and anesthesia, surgical treatments, and pathology where the overall increase in treatments per claim is a mix of both an increase in the share of claims with that service and an increase in treatments per claim with that service. These are the service categories where the ratio of Column B to C falls between 0.95 and 1.05.
- The second group contains the service categories where the increase in treatments per claim primarily comes from an increase in the share of claims receiving that service. These include complex diagnostic testing and hospital services and are the ones where the ratio of Column B to C is greater than 1.05.
- The third group contains the remaining service categories where the overall increase in treatments per claim is driven by an increase in treatments per claim with that service. Physical therapy is the leading service category in this group, but it also includes drugs, supplies, and durable medical equipment; other; emergency services; diagnostic radiology; and office visits. These are the service categories where the ratio of Column B to C is less than 0.95.

Service Group	(A)=(B)*(C) Ratio of Treatments per Claim AY 2002/03 vs. AY 1996/97	(B) Ratio of Shares of Claims With Indicated Service AY 2002/03 vs. AY 1996/97	(C) Ratio of Treatments per Claim With Indicated Service AY 2002/03 vs. AY 1996/97	Ratio of (B) to (C)
Complex Surgery and Anesthesia	1.67	1.29	1.29	1.00
Complex Diagnostic Testing	1.62	1.61	1.01	1.59
Physical Therapy	1.61	1.14	1.41	0.81
All Service Groups	1.43	-	-	-
Drugs, Supplies, and DME	1.40	1.07	1.30	0.82
Surgical Treatments	1.34	1.18	1.14	1.04
Other	1.29	1.07	1.20	0.89
Emergency Services	1.27	1.06	1.20	0.88
Pathology	1.25	1.09	1.14	0.96
Diagnostic Radiology	1.17	1.02	1.15	0.89
Hospital Services	1.14	1.21	0.94	1.29
Office Visits	1.11	1.01	1.09	0.93

Exhibit A5. Components of the Change in Treatments per Claim, AY 2002/03 vs. AY 1996/97, Differences Due to Rounding, NCCI.

Exhibit A6 graphically shows the changes in Columns B and C of Exhibit A5 (but stated as a percentage) and is again sorted by the overall change in treatments per claim. Focusing on the top three service groups with above average increases in the number of treatments per claim shows that each is driven by differing combinations of these two factors:

- The overall 67% increase in complex surgery and anesthesia (seen in Column A of Exhibit A5) is equally due to a 29% increase in the share of claims receiving complex surgery and anesthesia, and a 29% increase in the number of treatments per claim with complex surgery and anesthesia.
- The 62% increase in complex diagnostic testing is almost entirely due to a 61% increase in the share of claims receiving complex diagnostic testing. Treatments per claim with complex diagnostic testing increased only 1%.
- The 61% increase in physical therapy treatments per claim is primarily due to a 41% increase in the number of treatments per claim with physical therapy and secondarily due to a 14% increase in the share of claims receiving physical therapy.

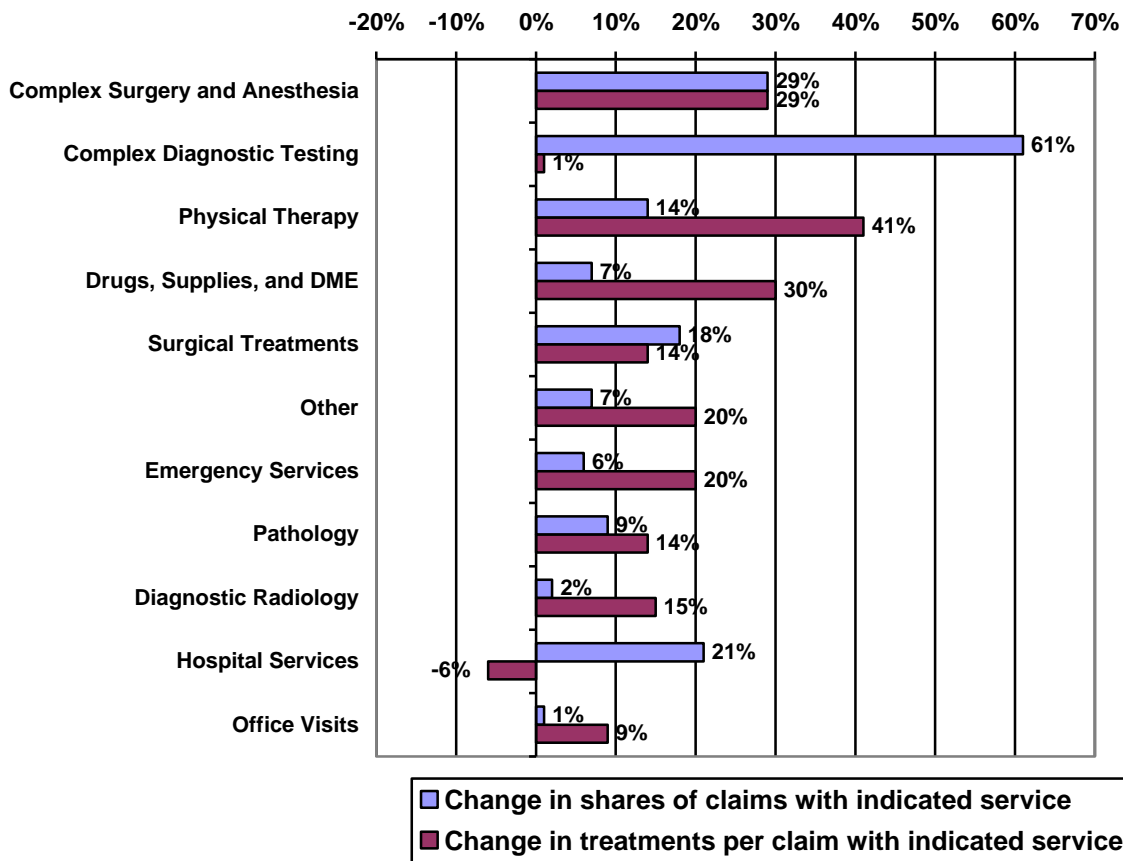


Exhibit A6. Components of the Change in Treatments per Claim, AY 2002/03 vs. AY 1996/97, NCCI.

Drivers of the Increase in Treatments per Claim With Indicated Service

In this section, we will focus on two service groups—physical therapy and complex surgery and anesthesia. Of the top three service groups in terms of the overall increase in treatments per claim, these two had the largest increases in treatments per claim with the indicated service. The increase in treatments per claim with physical therapy was the largest at 41%, while the increase in treatments per claim with complex surgery and anesthesia was 29%. The next two tables identify the most common physical therapy and complex surgery procedure codes in AY 2002/03 and the change in those codes over the AY 1996/97 to AY 2002/03 period.

Physical Therapy

Rank in AY 2002/03	Physical Therapy Treatment	Change in Treatments per Claim With Physical Therapy AY 2002/03 vs. AY 1996/97
1	THERAPEUTIC PROCEDURE, ONE OR MORE AREAS, EACH 15 MINUTES; THERAPEUTIC EXERCISES TO DEVELOP STRENGTH AND ENDURANCE, RANGE OF MOTION AND FLEXIBILITY	105%
2	MANUAL THERAPY TECHNIQUES (MOBILIZATION/ MANIPULATION, MANUAL LYMPHATIC DRAINAGE, MANUAL TRACTION), ONE OR MORE REGIONS, EACH 15 MINUTES	106%
3	APPLICATION OF A MODALITY TO ONE OR MORE AREAS; ELECTRICAL STIMULATION (UNATTENDED)	56%
4	APPLICATION OF A MODALITY TO ONE OR MORE AREAS; HOT OR COLD PACKS	-9%
5	THERAPEUTIC ACTIVITIES, DIRECT (ONE-ON-ONE) PATIENT CONTACT BY THE PROVIDER (USE OF DYNAMIC ACTIVITIES TO IMPROVE FUNCTIONAL PERFORMANCE)	-14%
6	APPLICATION OF A MODALITY TO ONE OR MORE AREAS; ULTRASOUND, EACH 15 MINUTES	31%
7	THERAPEUTIC PROCEDURE, ONE OR MORE AREAS, EACH 15 MINUTES; NEUROMUSCULAR REEDUCATION OF MOVEMENT, BALANCE, COORDINATION, KINESTHETIC SENSE, POSTURE, AND PROPRIOCEPTION	260%
8	APPLICATION OF A MODALITY TO ONE OR MORE AREAS; ELECTRICAL STIMULATION (MANUAL), EACH 15 MINUTES	85%
9	PHYSICAL THERAPY GENERAL REVENUE CODE	28%
10	THERAPEUTIC PROCEDURE, ONE OR MORE AREAS, EACH 15 MINUTES; MASSAGE, INCLUDING EFFLEURAGE, PETRISSAGE AND/OR TAPOTEMENT (STROKING, COMPRESSION, PERCUSSION)	-6%

Exhibit A7. Ten Most Common Physical Therapy Treatment Codes in AY 2002/03 and the Change in Treatments per Claim with Physical Therapy, AY 2002/03 vs. AY 1996/97, NCCI.

Exhibit A7 shows that the codes leading to the large increase in physical therapy treatments per claim include neuromuscular reeducation, manual therapy techniques (such as mobilization/manipulation, manual lymphatic drainage, and manual traction), therapeutic exercises, and electrical stimulation (both attended and unattended).

On average, the number of treatments per claim with physical therapy increased 41% over the period. Five of the 10 most common physical therapy treatments in AY 2002/03 showed above average increases and are highlighted in Exhibit A7. Neuromuscular reeducation, the seventh most common, showed the largest increase of 260%, followed by manual therapy techniques (ranked second), with an increase of 106%, and therapeutic exercises (ranked first), with an increase of 105%. Electrical stimulation-manual (meaning attended) increased 85%, and electrical stimulation-unattended increased 56%.

Codes in the top 10 with below average increases include ultrasound, with an increase of 31%, and the physical therapy general revenue code sometimes used by hospitals¹⁰, with a 28% increase. The application of hot or cold packs, massage, and the use of dynamic activities to improve functional performance with direct contact by the provider showed slight declines in treatments per claim with physical therapy.

Complex Surgery and Anesthesia

Arthroscopic knee and shoulder surgeries are some of the most common complex surgeries and are leading the increase in treatments per claim with complex surgery. Treatments per claim with complex surgery and anesthesia have increased 29% from AY 1996/97 to AY 2002/03. Breaking the service group into its components shows similar increases—a 27% increase in surgery and a 31% increase in anesthesia. Exhibit A8 contains the 10 most common surgeries in AY 2002/03 and the increase in each over the AY 1996/97 to AY 2002/03 period.

Rank in AY 2002/03	Surgery	Change in Treatments per Claim With Complex Surgery and Anesthesia AY 2002/03 vs. AY 1996/97
1	ARTHROSCOPY, KNEE, SURGICAL; WITH MENISCECTOMY (MEDIAL OR LATERAL, INCLUDING ANY MENISCAL SHAVING)	29%
2	NEUROPLASTY AND/OR TRANSPOSITION; MEDIAN NERVE AT CARPAL TUNNEL	22%
3	ARTHROSCOPY, SHOULDER, SURGICAL; DECOMPRESSION OF SUBACROMIAL SPACE WITH PARTIAL ACROMIOPLASTY, WITH OR WITHOUT CORACOACROMIA	175%
4	REPAIR INITIAL INGUINAL HERNIA, AGE 5 YEARS OR OVER; REDUCIBLE	-17%
5	ARTHROSCOPY, KNEE, SURGICAL; DEBRIDEMENT/SHAVING OF ARTICULAR CARTILAGE (CHONDROPLASTY)	29%
6	ARTHROSCOPY, KNEE, SURGICAL; WITH MENISCECTOMY (MEDIAL AND LATERAL, INCLUDING ANY MENISCAL SHAVING)	108%
7	LAMINOTOMY (HEMILAMINECTOMY), WITH DECOMPRESSION OF NERVE ROOT(S), INCLUDING PARTIAL FACETECTOMY, FORAMINOTOMY, AND/OR EXCISION OF HERNIATED INTERVERTEBRAL DISK; ONE INTERSPACE, LUMBAR (INCLUDING OPEN OR ENDOSCOPICALLY ASSISTED APPROACH)	-15%
8	ARTHROSCOPICALLY AIDED ANTERIOR CRUCIATE LIGAMENT REPAIR/AUGMENTATION OR RECONSTRUCTION (KNEE)	51%
9	ARTHROSCOPY, SHOULDER, SURGICAL; DISTAL CLAVICULECTOMY INCLUDING DISTAL ARTICULAR SURFACE (MUMFORD PROCEDURE)	N/A
10	ARTHROSCOPY, SHOULDER, SURGICAL; DEBRIDEMENT, EXTENSIVE	200%

Exhibit A8. Ten Most Common Surgeries in AY 2002/03 and the Change in Treatments per Claim with Complex Surgery and Anesthesia, AY 2002/03 vs. AY 1996/97, NCCI.

Four arthroscopic knee surgeries appear in the top 10 (ranked 1, 5, 6, and 8), and they increased 29%, 29%, 108%, and 51%—all either an average or well above average increase. Three arthroscopic shoulder surgeries are in the top 10 (ranked 3, 9, and 10). Two of those increased at significantly above average paces of 175% and 200%. The third was a new code in 2002, so the percentage increase is not available. These seven knee and shoulder codes are highlighted in Exhibit A8. Carpal tunnel surgery was the second most common in AY 2002/03, and increased at a slightly below average pace of 22%. Two of the 10 most common surgeries decreased (hernia repair and low-back disc surgery).

¹⁰ Whether the general revenue code can be used or not depends on a state’s fee schedule guidelines and rules.

Changes in Encounters per Claim With the Indicated Service

For several of the service groups, the change in treatments per claim with the indicated service can be further broken down into its two components:

1. The change in encounters per claim with the indicated service
2. The change in treatments per encounter with the indicated service

Grouping individual treatments into encounters for these service categories is informative. It allows us to see if the increase in the number of treatments per claim for claims receiving the indicated service is due to an increase in encounters per claim with the indicated service (the number of times the patient goes to physical therapy, for example) or an increase in the number of treatments per encounter with the indicated service (the number of treatments administered in a single physical therapy visit).

Exhibit A9 expands on Exhibit A5 to show in Columns D and E these components of the change in treatments per claim with the indicated service. Column E is derived by dividing Column C by Column D. The four service categories with encounter data are shown.

- Before, we saw in Exhibit A5 that the overall 67% increase in complex surgery and anesthesia is equally due to a 29% increase in the share of claims receiving complex surgery and anesthesia, and a 29% increase in the number of treatments per claim with complex surgery and anesthesia. The 29% increase in the number of treatments per claim with complex surgery and anesthesia can be further broken down. There was a 24% increase in the number of treatments per encounter with surgery (meaning more treatments are being performed within an individual surgery) and a 4% increase in the number of encounters per claim with surgery (more individual surgeries being performed).
- Exhibit A5 showed that the 62% increase in complex diagnostic testing is almost entirely due to a 61% increase in the share of claims receiving complex diagnostic testing. Treatments per claim with complex diagnostic testing increased only 1%, so there is nothing material to be gained by breaking it down into its components.
- Exhibit A5 showed that the 61% increase in physical therapy treatments per claim is primarily due to a 41% increase in the number of treatments per claim with physical therapy, and secondarily due to a 14% increase in the share of claims receiving physical therapy. The 41% increase in the number of treatments per claim with physical therapy can be broken down to a 32% increase in encounters per claim with physical therapy (going to physical therapy more days), and a 7% increase in the number of treatments per encounter (more individual physical therapy treatments on a given day).
- The 17% increase in diagnostic radiology is primarily driven by an 11% increase in encounters per claim with diagnostic radiology (having more X-ray sessions).

Service Group	$(A)=(B)*(D)*(E)$ $(A)=(B)*(C)$ Ratio of Treatments per Claim AY 2002/03 vs. AY 1996/97	(B) Ratio of Shares of Claims With Indicated Service AY 2002/03 vs. AY 1996/97	$(C)=(D)*(E)$ Ratio of Treatments per Claim With Indicated Service AY 2002/03 vs. AY 1996/97	(D) Ratio of Encounters per Claim With Indicated Service AY 2002/03 vs. AY 1996/97	$(E)=(C)/(D)$ Derived Ratio of Treatments per Encounter With Indicated Service AY 2002/03 vs. AY 1996/97
Complex Surgery and Anesthesia	1.67	1.29	1.29	1.04	1.24
Complex Diagnostic Testing	1.62	1.61	1.01	1.00	1.01
Physical Therapy	1.61	1.14	1.41	1.32	1.07
Diagnostic Radiology	1.17	1.02	1.15	1.11	1.04

Exhibit A9. Components of the Change in Treatments per Claim, AY 2002/03 vs. AY 1996/97, Differences Due to Rounding, NCCI.

Exhibit A10 builds on Exhibit A6 for the four service groups with encounter data. It replaces the change in treatments per claim with the indicated service with its components in Columns D and E of Exhibit A9 (but stated as a percentage).

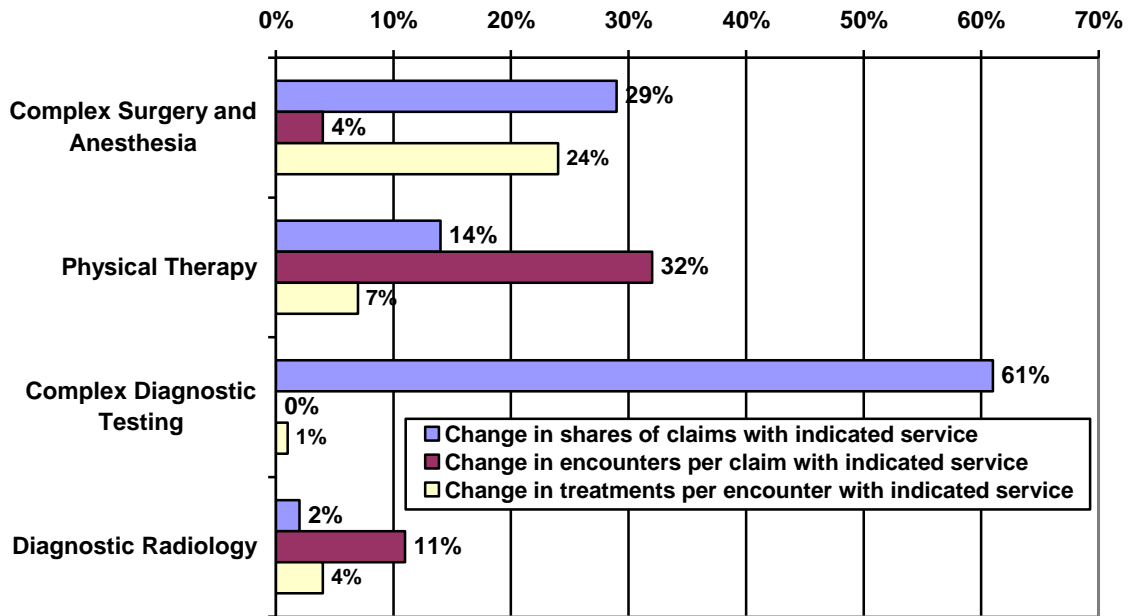


Exhibit A10. Components of the Change in Treatments per Claim, AY 2002/03 vs. AY 1996/97, NCCI.

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