VARIATION IN TREATMENTS FOR KNEE OSTEOARTHRITIS

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INTRODUCTION

Many medical conditions have several treatment options, and the best approach can be unclear, sometimes resulting in variation in the rates of procedures or other treatments. These practice variations pose questions about value and patient experience, particularly when a high-cost invasive treatment is comparatively as effective as lower-cost treatment options.

Osteoarthritis is the deterioration of cartilage in the joint, resulting in pain, stiffness, and dysfunction. Knee osteoarthritis is an example of a condition where there are multiple treatment options, including several non-surgical treatment options. Lifestyle modification, physical therapy (PT), and medical management are often sufficient to manage symptoms.[1]

Guidelines support PT prior to joint replacement and discourage surgical arthroscopy as it provides no additional benefit relative to other non-surgical treatments.[2] For some, the potential downsides of knee replacement outweigh the benefits, even if they are suitable candidates.

OBJECTIVES

Identifying practice variation for a condition with multiple treatment options is a way to explore the "grey areas" of care – where there is less evidence to support a treatment path, services may be delivered to the wrong patients, or patients are not properly informed of all their treatment options. Variation may also stem from the provider, where local medical opinion or environments may influence practice patterns.[3]

Knee replacements are one of the most common orthopedic surgical procedures, though the threshold for intervention in knee osteoarthritis is not well defined.[4] By exploring and highlighting variation in treatment options for knee osteoarthritis, this study aims to identify opportunities for health care savings and improvements to quality of care.

STUDY DESIGN

Medical claims data from the Center for Health Information and Analysis (CHIA) Massachusetts All-Payer Claims Database (APCD), v2022, were used to identify individuals with knee osteoarthritis and treatments. Potential treatments and treatment courses were identified based on a review of literature and guidelines on orthopedic care. Guidelines indicate that PT and medical management can be as effective in relieving symptoms as surgery. The treatments studied were knee arthroplasty (replacement), knee arthroscopy, and PT, which were identified using Current Procedural Terminology (CPT) codes.

Members with knee osteoarthritis were sorted into the following groups: those that had a knee replacement, those who had a knee arthroscopy only, those who had PT only, and those who had none of these treatments. Encounters for each of these treatments were explored by provider organization on a per 1,000-member basis. Because the number of PT sessions can be variable from patient to patient, only the first PT encounter was counted per member in the evaluation of provider organization variation.

Of those with knee replacements, members were then identified by whether they had PT within one year prior to their replacement.

The population studied included commercially-insured Massachusetts residents aged 18 to 64 with 12 months of medical coverage and a knee osteoarthritis diagnosis in 2022 who received their care within a major provider organization. For information on methodology attributing members to a provider organization, see the Health Policy Commission's 2023 Cost Trends Report technical appendix 9: POPV Chartpack. A lookback period of one year was added to identify any physical therapy before surgeries performed in 2022.

RESULTS

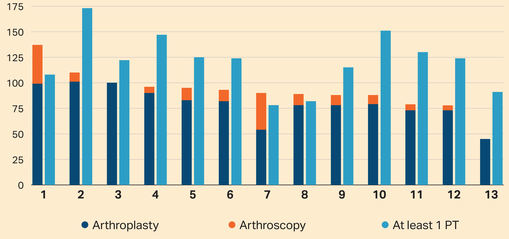
TABLE 1. Treatment groups for members with knee osteoarthritis

	N	%
MEMBERS WITH OSTEOARTHRITIS		
No PT or surgery	14,333	84%
PT only	1,394	8%
Arthroscopy	132	1%
Arthroplasty (replacement)	1,305	8%
Total	**17,164**	**100%**
MEMBERS WITH KNEE REPLACEMENTS		
Replacement without PT prior	1,002	77%
With PT prior	303	23%
Total replacements	**1,305**	**100%**

Notes: Treatment groups are mutually exclusive. Members in the "With PT prior" group had PT within one year of their knee replacement. Sample is restricted to members aged 18-64 with a full year of commercial coverage and that could be attributed to a provider organization. Treatments are for the year 2022, with a 1-year lookback period to identify PT before a knee replacement.

Source: HPC Analysis of Center for Health Information and Analysis (CHIA) All Payer Claims Database (APCD), v2022

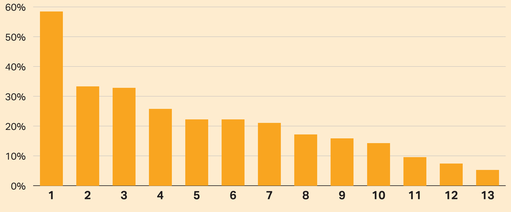
EXHIBIT 1. Treatment encounters per 1,000 members with knee osteoarthritis by provider organization, 2022



Notes: Only the first PT encounter per individual member was counted. Sample is restricted to members aged 18-64 with a full year of commercial coverage and that could be attributed to a provider organization. Each number on the x-axis represents a distinct provider organization.

Source: HPC Analysis of Center for Health Information and Analysis (CHIA) All Payer Claims Database (APCD), v2022

EXHIBIT 2. Share of members with knee replacements that had PT within 1 year prior by provider organization, 2022



Notes: The denominator in this share is all members with a knee replacement. The numerator is all members with a knee replacement that also had PT within 1 year prior to their replacement date. Sample is restricted to members aged 18-64 with a full year of commercial coverage and that could be attributed to a provider organization. Each number on the x-axis represents a distinct provider organization.

Source: HPC Analysis of Center for Health Information and Analysis (CHIA) All Payer Claims Database (APCD), v2022

Of the 17,164 attributed members with a diagnosis of knee osteoarthritis, 83.5% (n=14,333) did not have any PT, a replacement, or an arthroscopy in 2022. Members who had PT as their only treatment were 8.1% (n=1,394) of those with knee osteoarthritis, while 8.4% (n=1,437) had a surgical procedure. Of the members who had surgery, 1,305 had replacements and 132 had arthroscopies. Of those who had a knee replacement, only 23.2% (n=303) had any physical therapy that could be identified in the claims within a year prior to the replacement. **(Table 1)**

Across the 13 provider organizations studied, the average number of first PT encounters per 1,000 attributed members was 120.8, compared to 79.6 per 1,000 for knee replacements and 11.8 per 1,000 for knee arthroscopy. Encounters for these treatments varied by 56.2 per 1,000 members for knee replacement, 94.4 for at least one PT encounter, and 37.6 for knee arthroscopy. **(Exhibit 1)**

There was considerable variation in both the total number of patients receiving knee replacements as well as the number of patients who had PT before their knee replacement across provider groups. **(Exhibit 2)** The share of members that had PT within a year prior to their replacement varied by 53.2 percentage points among provider groups.

In 2022, nearly all PT and arthroscopy encounters for knee osteoarthritis occurred in an outpatient setting, as did about three-quarters of knee replacements. In outpatient settings alone, knee replacements and arthroscopies totaled nearly $40.7 million, compared to about $1.2 million spent on PT for members with knee osteoarthritis.

CONCLUSIONS

Determining appropriateness of care using medical claims is limited by a lack of complete information about patients, including their medical history or other information in their EHR that may be used to decide on an appropriate treatment plan. However, despite literature and guidelines advising against having surgery before physical therapy for those with knee osteoarthritis, some patients appear to move straight to a high-cost, high intensity treatment option. Although much smaller than the treatment rates for PT or arthroplasty, the rate of knee arthroscopies for knee osteoarthritis suggests the use of a potentially low value treatment. Finally, the variation of treatment rates across provider organizations signifies potentially unnecessary utilization of high-cost and invasive treatments.

POLICY IMPLICATIONS

The variation in these practice patterns indicates there is opportunity not only for health care savings, but also to standardize treatment of knee osteoarthritis in a way that centers patient experience and value of care. More research needs to be done to understand potential barriers to lower-cost care, including lack of providers, cost-sharing, patient preference, or provider preference.

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