PTJ: Physical Therapy & Rehabilitation Journal | *Physical Therapy*, 2025;105:pzaf129
https://doi.org/10.1093/ptj/pzaf129
Advance access publication date October 28, 2025
Original Research

Episode of Care Characteristics Following Implementation of a No Copay Physical Therapy Program for Musculoskeletal Conditions

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ABSTRACT

Importance: New care models promoting early access to physical therapy by reducing or eliminating copays are emerging. Few studies have compared health care use in these programs to other care pathways across musculoskeletal conditions.
Objective: The objective of this study was to describe episode-level musculoskeletal health care use across different care pathway options, including a no-copay physical therapy program.
Design: This study was a descriptive retrospective analysis of claims data.
Setting and Participants: This study included health care beneficiaries of a self-insured employer with ~52,000 covered lives.
Interventions or Exposures: The study included musculoskeletal care episodes from October 2019 to September 2020 categorized as no copay physical therapy, traditional physical therapy, or other management.
Main Outcomes: Rates of surgery/injection, imaging, inpatient services, physician services, emergency services, physical therapy, and other services by episode type, overall and stratified by body region: upper extremity, lower extremity, and spine.
Results: Of 9696 total episodes, 886 (9.1%) were no copay physical therapy, 1261 (13%) were traditional physical therapy, and 7549 (77.9%) were other management. No copay physical therapy episodes had lower imaging rates (38%) compared to traditional physical therapy (47%) and other management (45%) episodes. Inpatient services were similar for no copay (16%) and traditional (12%) physical therapy, both lower than other management episodes (23%). Physician services were higher in other management (100%) and traditional physical therapy (81%) episodes compared to no copay physical therapy episodes (43%). Surgery/injection rates were similar for no copay (11%) and traditional (8%) physical therapy, both lower than other management episodes (27%). Differences by pathway were more pronounced for extremity conditions than for spine conditions.
Conclusions: Rates of no copay program use were modest with those who used the program having lower rates of advanced imaging, injection, and surgery.
Relevance: Findings may be most relevant for employers, health systems, and payors planning resource allocation and benefit design for similar programs.

Key words: Copay; Episodes; Health Plan Implementation; Musculoskeletal Pain; Pain; Pain Management.

Received: November 26, 2024; **Revised:** September 9, 2025; **Accepted:** September 17, 2025

INTRODUCTION

Musculoskeletal conditions account for the highest amount of annual health care spending in the United States,[1] and are the second most common cause of years lived with disability in the world.[2] Clinical practice guidelines for many musculoskeletal conditions recommend non-pharmacologic management as first line care.[3–5] Early management decisions can significantly influence the volume and type of future health care use,[6–9] with studies showing limited value of early pharmacologic treatment and advanced imaging for most conditions.[10–16] As a result, health care systems and payers have taken a strong interest in high value care models that promote early and initial use of non-pharmacologic treatments, including those commonly provided by physical therapists.[17–21] Exposure to these treatments early in an episode of care has demonstrated potential to shift downstream care away from opioids[22] and procedures like advanced imaging, injection, and surgery,[8,22–28] often resulting in similar or slightly higher costs but better outcomes.[23,29,30]

Studies consistently support the benefits of early non-pharmacologic treatment but a major challenge for many health systems and payors is understanding how to encourage its use. One method is through the use of value-based insurance designs that reduce or eliminate visit copays for non-pharmacologic services like physical therapy since financial barriers are a common reason why patients do not use these services.[31–34] Programs that lower cost-sharing are gaining popularity but few studies have assessed real-world outcomes when patients are offered a no copay physical therapy option. Existing studies on these or similar programs focus exclusively on spine conditions rather than the broader range of musculoskeletal conditions commonly managed by physical therapists.[32,34–38] Expanding analyses to include non-spine musculoskeletal conditions is essential for refining and scaling these models.

Despite the expected impact of removing out-of-pocket costs for consumers, reducing or eliminating cost sharing doesn't always lead to changes in health care use or a shift to more guideline-concordant use of services.[39–42] Accordingly, the aim of this descriptive study was to report on rates of health care use across different musculoskeletal care pathway options available to beneficiaries of a self-insured employer, including a program that eliminates physical therapy copays to encourage its use as an early or initial treatment. We expected to observe that rates of health care will differ across care pathways, with the lowest rates of imaging, injection, and surgery among those in the no copay program. We are particularly interested in health care use metrics as an outcome because inconsistent reimbursement rates and carve-outs in programs like these make cost analyses less generalizable.

METHODS

Overview of No Copay Physical Therapy Program

Beginning in fall of 2018, ATI Physical Therapy, one of the largest providers of physical therapist services in the United States, partnered with a self-insured employer to offer physical therapy as the preferred, but not exclusive, provider for their ~52,000 beneficiaries. The program aims to encourage adult beneficiaries to choose physical therapy as an early or first line of treatment for musculoskeletal conditions by removing copay/coinsurance requirements for physical therapist services. The benefit exists fully outside of other employed-sponsored health benefits (ie, a benefit carve-out) meaning that use of physical therapy has no impact on the health plan deductible and is delivered at no cost to the beneficiary. The third-party administrator is not involved with the ATI-employer claims. The employer has a fully self-funded benefits platform, paying claims through a direct bill contract with ATI. ATI submits claims directly to the employer, who then self-adjudicates all ATI claims.

Although the program was facilitated by state-level direct access privileges and encouraged physical therapy as an initial treatment, it should not be considered a "physical therapy first" or exclusively direct access program, as the benefit is not contingent upon seeing a physical therapist first or directly without a physician referral. To date, the program has been provided at 252 ATI clinics, with beneficiaries primarily located in Illinois (74%) and Indiana (24%). Beneficiaries do not have to choose this benefit and instead could choose other management options like physical therapist treatment outside of ATI, chiropractic care, and/or care led by a physician that might include treatments like medications, injections, or surgery. Participation in the no copay program would not disqualify them from using any other type of care, nor would use of other treatments disqualify them from using the no copay program at any time.

Beneficiaries are made aware of the program through promotional materials jointly developed between ATI and the employer. This includes a vendor card with information about the program provided to all beneficiaries with their insurance cards. Information on the program is also provided during regular employer-sponsored benefit fairs, in member newsletters, as part of the new member benefit packet, through onsite primary care clinics, and on the employer benefits website under "free services."

Data Sources

Analysis data were extracted from the employer claims dataset and ATI databases. The employer claims dataset includes typical commercial claims data such as claim/beneficiary IDs; dates (Start/Stop/Paid); provider name and state; diagnoses and billed procedure codes; and billed amount/paid amount. Total adjudicated claims were acquired for all beneficiaries that had received care. Beneficiary IDs in the claims dataset were linked to unique patient IDs in the ATI administrative database to extract geographic (patient/provider address) and visit & billing information. This linkage allowed for the identification of all beneficiaries participating in the program. The Duke University Institutional Review Board approved this study.

Analytic Sample

To create the full analytic dataset, we extracted all health care claims for all beneficiaries between October 1, 2018, and September 30, 2020, which was the range of dates from program initiation to the latest date that data were available at the beginning of this analysis. Criteria used for developing the final analytic sample are depicted in Figure 1 and the development process is described below.

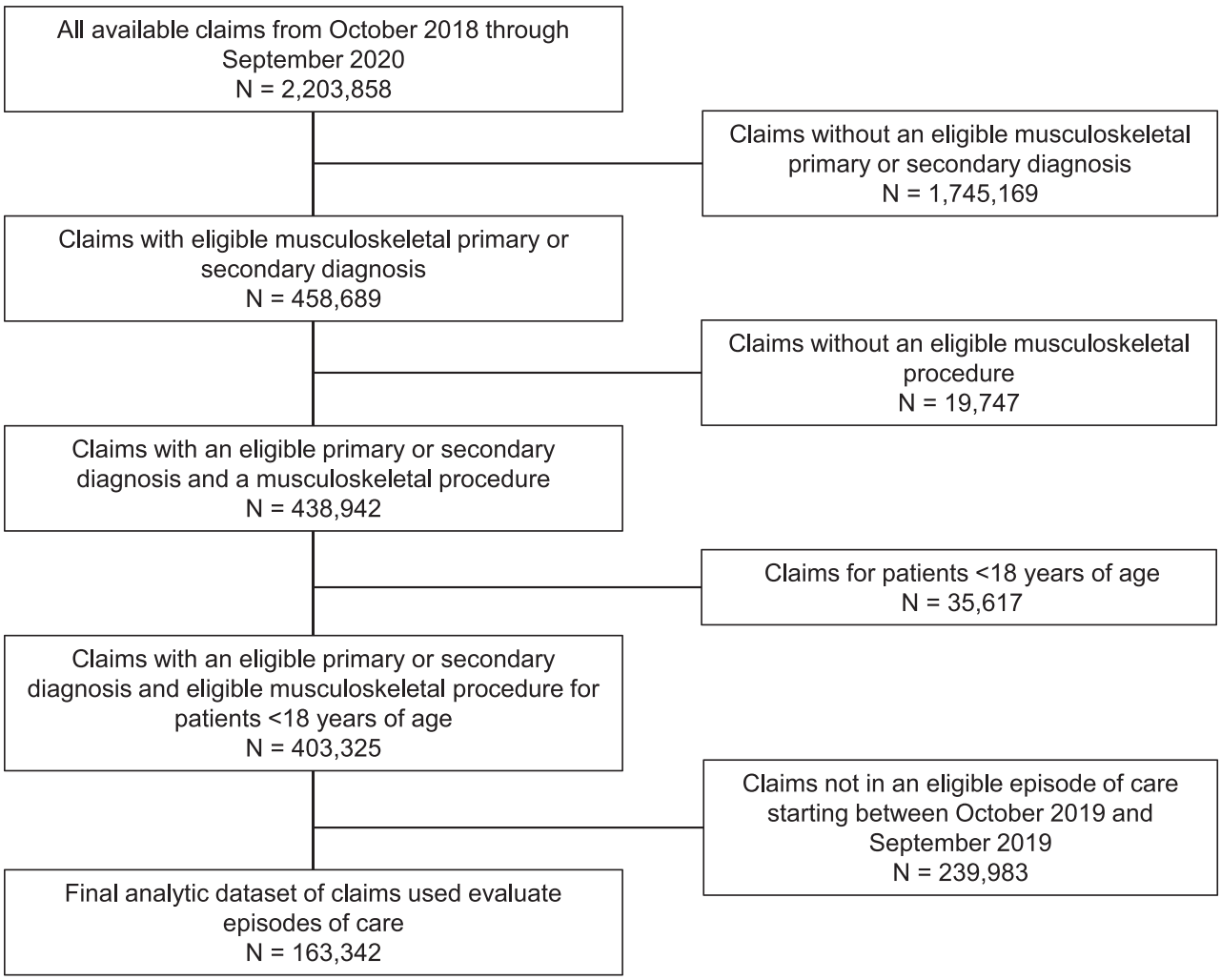

Figure 1. Inclusion and Exclusion Criteria.

Establishing Eligible Diagnoses and Procedures

Episodes are comprised of one or more claims, and claims are comprised of one or more procedures (ie, claim line item). We first established eligible diagnoses for inclusion. All procedures have one or more associated ICD-10 diagnosis code. Our goal was to measure musculoskeletal-related health care use following implementation of a program aimed at improving early access to physical therapists. As a result, we limited eligible musculoskeletal diagnoses to those that would be generally appropriate for early and initial treatment by physical therapists. For example, we excluded musculoskeletal diagnoses such as fracture, laceration, amputation, spinal cord injury, congenital abnormalities and others that would require treatment by physicians or other health care providers. We established the list of diagnoses through an iterative consensus-building process. The process started with an initial list of all ICD-10 codes present within any diagnosis field in the claims dataset. The lead author (T.L.) reviewed this list and classified each diagnosis as included or excluded based on expertise, experience, and review of diagnostic code and/or musculoskeletal literature, as needed. The preliminary classifications were then reviewed by 4 other musculoskeletal physical therapist experts (A.L., C.C., S.G., C.T.) with experience in health services research and clinical care. Disagreements were discussed and final decisions made by consensus.

Next, we selected all procedures that included an eligible ICD-10 code (Suppl. Table 1) as the primary or secondary diagnosis. We then reviewed the pool of procedures linked to eligible diagnosis codes and excluded those that were clearly not related to musculoskeletal treatment. Ineligible procedures were determined by the same iterative consensus-building process as previously outlined for selection of diagnosis codes. The presence of musculoskeletal diagnoses on non-musculoskeletal procedures (eg, prostate cancer screening, vaccinations, mammography) often occurs in claims data when patients are seen at the same visit for multiple diagnoses, or when using pre-populated problem lists. This method ensured we only analyzed procedures that are likely to be for musculoskeletal management. The eligible procedures were then grouped into 1 of the following musculoskeletal utilization groupings: surgery/injection, imaging, inpatient, physician services, emergency services, physical therapy, and other services. Other services would be those not fitting the aforementioned groupings and commonly included services like acupuncture, chiropractic care, and durable medical equipment. It also included codes for pain-relieving modalities like transcutaneous electrical nerve stimulation

used and billed for by a variety of different health care providers.

Grouping Diagnosis Codes

Because the same musculoskeletal condition could be documented with slightly different ICD-10 codes across different settings, we developed a diagnosis grouping schema for all eligible ICD-10 codes. Diagnosis code groups included: wrist/hand, elbow, shoulder, spine, hip, knee, foot/ankle, and other (eg, generalized osteoarthritis, polyarthritis). Each procedure was required to have a primary diagnosis code or a secondary diagnosis code (or both) in the list of eligible musculoskeletal ICD-10 codes and therefore could have up to 2 diagnosis group allocations. We include primary and secondary diagnoses because although secondary diagnosis codes are less commonly used in outpatient settings,[43] we were trying to attribute procedures to conditions across a variety of different services (eg, inpatient, emergency department, outpatient) that use slightly different coding conventions. For this reason, we took a more inclusive approach to ensure we include all musculoskeletal services delivered for the index condition.[44–46]

Defining Episodes of Care

All analyses were at the episode level. We took a sequence of steps (described below) to define episodes and identify which were eligible for inclusion in the final analyses.

Setting Start and End Date

Using the pool of eligible procedures, we next assembled musculoskeletal episodes of care. The first step in this process was to identify evaluation and management (E&M) procedures to establish an index, or start date, of the episode. We limited episode initiation to outpatient physician/chiropractor and physical therapist visits (ie, no episodes beginning with ED or inpatient visit). Eligible index procedures were identified by physician evaluation and management (E&M) CPT codes (99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215) or physical therapist evaluation CPT codes (97161, 97162, 97163, 97001), hereafter all referred to as "evaluation procedures."

We then examined the 90 days prior to each evaluation procedure date to determine if other evaluation procedures were present with a primary or secondary ICD-10 code in the same diagnosis group. If no other procedures were present, we would use that evaluation to set the episode index date. Otherwise, we would find the earliest evaluation procedure with the same diagnosis group to set as the episode index date. The diagnosis code group(s) associated with the evaluation procedure on the index date was considered as the "index condition." The episode would then run until that patient had no procedures or treatments for the index condition for 90 days or until the episode length reached 365 days, whichever was sooner.[47,48] For episodes not censored at 1 year, the episode end date was assigned as the last procedure date before the 90-day window with no procedures for the index condition.

Identifying Procedures That Belong to an Episode

All procedures on or after the index date, and on or before the end date, were considered part of the episode if their primary or secondary diagnosis group matched the primary or secondary diagnosis group of the evaluation procedure. Episodes for different conditions could run concurrently for the same person if initiated by different evaluation procedures. Procedures where the primary diagnosis group matched the index condition of 1 episode and the secondary diagnosis group matched the index condition of another episode running concurrently were attributed based on their primary diagnosis. The algorithm for defining episodes of care is depicted in Figure 2.

Classifying Episodes

Episodes were classified into mutually exclusive categories that reflect distinct pathways of musculoskeletal care. We first determined whether the episode included a physical therapist evaluation. Episodes that did not include a physical therapist evaluation were classified as "*other management*" (Figure 3, decision node A). Of the episodes that included physical therapy, we determined whether physical therapy was a primary management strategy. We operationally defined physical therapy as a "primary management strategy" if it was received prior to other services like advanced imaging, injection, or surgery, if those occurred in the episode, or if it was the only care received (Figure 3, decision node B). We were interested in distinguishing these episode types (regardless of where physical therapy was received) because the care sequence would be considered guideline concordant. If physical therapy was received only after receiving surgery, injection, or advanced imaging, these episodes would also be classified as other management. In summary, other management episodes either excluded physical therapy altogether or included it (at ATI or elsewhere) only after injection, surgery, or advanced imaging. The intention of the no copay benefit is that beneficiaries would access physical therapy relatively early in their care episode. Our primary interest in this analysis was to describe episode level care for those that used the benefit as intended. Therefore, with the remaining episodes, we identified those that included physical therapy delivered through the no copay program and classified those that initiated physical therapy within 90 days of the episode index date as no copay physical therapy (Figure 3, decision node C). We chose 90 days as this is a reasonable timeframe in which we would expect most patients to seek physical therapy for their condition and take advantage of the no copay benefit. Episodes that included physical therapy in the no copay program but initiated after 90 days from the episode index date were classified as traditional physical therapy. Traditional physical therapy also included episodes that used physical therapy outside of ATI as a primary management strategy, regardless of when it started in the episode. A summary of these classifications and examples episodes are provided in Suppl. Figure 1.

Statistical Analysis

Health care use was summarized by episode classification and for all episodes regardless of classification. We report counts of unique patients, total number of procedures, and total number of episodes as well as mean (SD) and median (25th, 75th) number of procedures per episode. Number of visits per episode was determined by the number of distinct dates of service at the procedure level. We report results by overall sample and stratified by primary body region: upper extremity, lower extremity, and spine. As described, the program did not require beneficiaries to access physical therapy first (ie, before other services) or directly without a physician referral. Direct access and "physical therapy first"

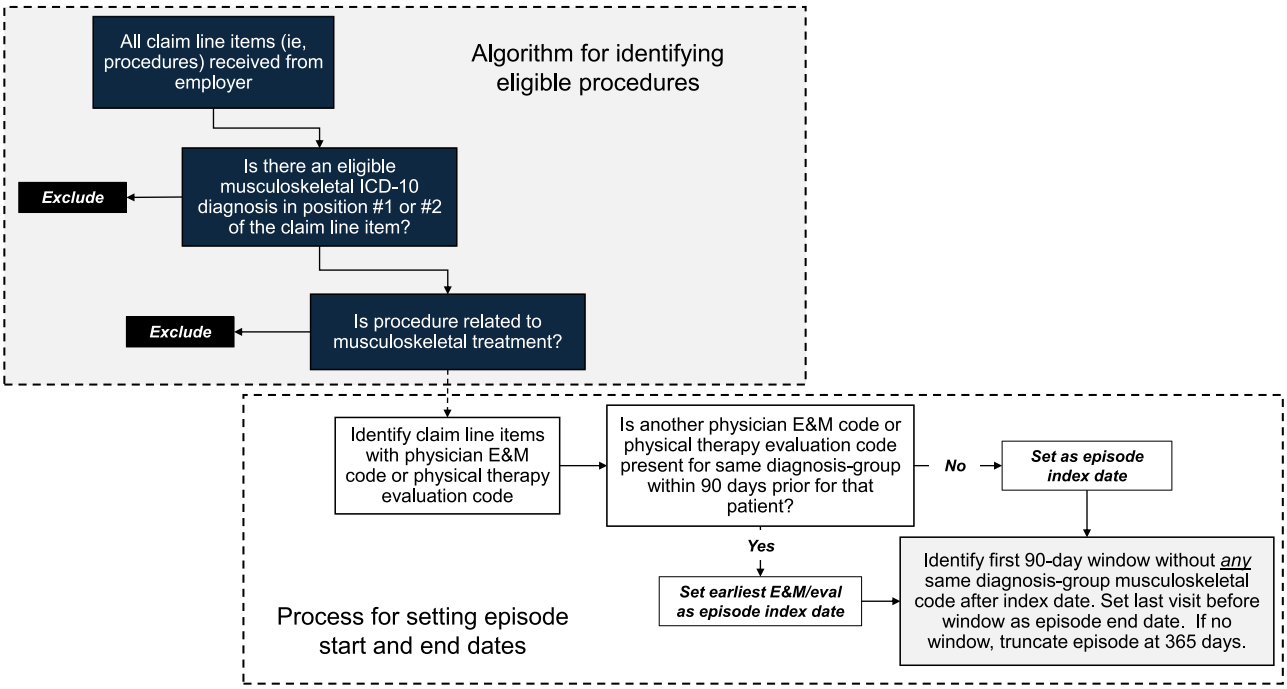

Figure 2. Algorithm for Eligible Procedures and Process for Setting Episode Start and End Date. Abbreviation: E&M = evaluation and management.

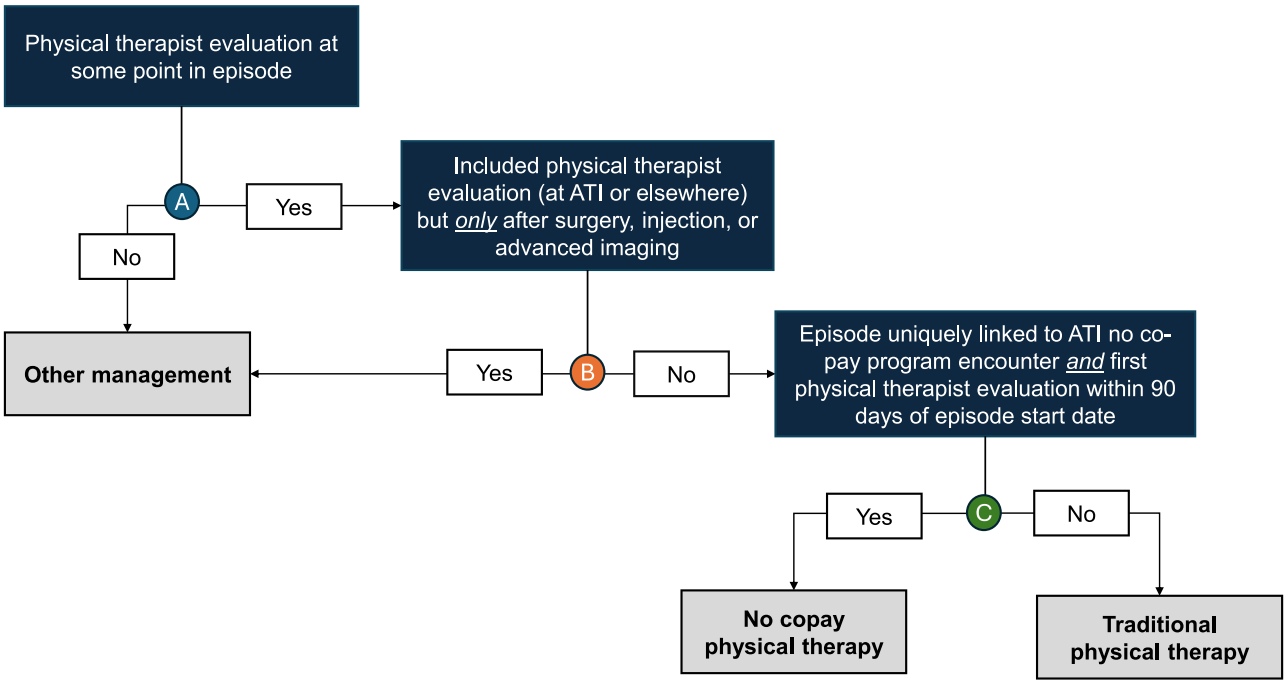

Figure 3. Algorithm for Assigning Musculoskeletal Episodes to a Care Pathway. Episodes that did not include a physical therapist evaluation were classified as "other management" (decision node A). Of the episodes that included physical therapy, we determined whether physical therapy was a primary management strategy. We operationally defined physical therapy as a "primary management strategy" if it was received prior to other services like advanced imaging, injection, or surgery, if those occurred in the episode, or if it was the only care received (decision node B). For the remaining episodes, we identified those that included physical therapy delivered through the no copay program and classified those that initiated physical therapy within 90 days of the episode index date as no copay physical therapy (Figure 2, decision node C). Episodes that included physical therapy outside of ATI or in the no copay program but initiated after 90 days from the episode index date were classified as traditional physical therapy.

are distinct characteristics of physical therapy use that can confer their own potential benefits beyond accessing physical therapy "early" in the care episode.[18] While we could not determine if beneficiaries accessed physical therapy directly without physician referral, we could examine episode characteristics among beneficiaries that accessed the program at the beginning of their episode versus later. Therefore, in an exploratory analysis, we separately described health care use among no copay physical therapy episodes where beneficiaries (1) accessed physical therapy on or within 1 day of the index date and (2) accessed physical therapy later. The intent of this analysis was to explore differences based on timing of physical

therapy initiation among those who used the program as intended. All analyses were performed using SAS (Version 9.4, SAS Institute Inc., Cary, NC, United States).

Role of the Funding Source

The funding source, ATI Holdings, LLC, provided all data and input on the research question and study design. ATI reviewed the manuscript only to ensure accuracy of the program description and Duke investigators had full scientific freedom to publish results.

RESULTS

Health Care Use by Episode Classification—Overall Sample

The analysis included unique 7349 patients undergoing 9696 episodes of care. Distribution of patients (number of episodes, % of total episodes) by classification were: 849 (886, 9.1%) in no copay physical therapy, 1208 (1261, 13.0%) in traditional physical therapy, and 5888 (7549, 77.9%) in other management (Table 1). Among the no copay physical therapy episodes, 636 (71.8%) included physical therapy on the first (index) day of the episode, 207 (23.4%) had physical therapy starting between 1 and 30 days of the episode index date, 26 (2.9%) had physical therapy starting between 31 and 60 days of the episode index date, and the remaining 17 (1.9%) had physical therapy starting between 61 and 90 days of the episode index date. There were 48 ATI-linked episodes where physical therapy was initiated after 90 days and these were included in the traditional physical therapy cohort. Across the entire sample, ~8.1% of episodes for different conditions ran concurrently. The median number (interquartile range) of days per episode were 43 (28–78) for no copay physical therapy, 47 (20–104) for traditional physical therapy, and 1 (1–51) for other management. The median number (interquartile range) of visits per episode was 12 (8–16) for no copay physical therapy, 8 (4–16) for traditional physical therapy, and 1 (1–4) for other management.

No copay physical therapy episodes had lower rates of imaging and physician services compared to other pathways (Table 1 and Suppl. Figure 2). No copay physical therapy episodes and traditional physical therapy had similar rates of surgery/injection and inpatient visits that were both lower than observed rates in other management episodes. Use of physical therapy and other services was highest in both physical therapy groups, while emergency service use was similar across all pathways.

In a post-hoc exploratory analysis of no copay physical therapy episodes, we assessed health care use by whether physical therapy was initiated on the first or second day (n = 654 episodes) versus later in the episode (n = 226) (Suppl. Table 2). The most notable difference in this exploratory analysis was for imaging, where 26.3% of early physical therapy episodes included imaging procedures compared to 72.0% of later physical therapy episodes. Approximately 23% of early physical therapy episodes included physician services compared to 100% of episodes where physical therapy was initiated later.

Health Care Use by Episode Classification—Stratification by Body Region

Upper Extremity

Of the 1688 upper extremity episodes during the observation period, 1388 (82%) were other management, 171 (10%) were no copay physical therapy, and 129 (8%) were traditional physical therapy (Table 2). Rates of imaging (52%), inpatient care (25%), physician services (100%), and surgery/injection (40%) were higher in other management episodes compared to episodes in either physical therapy care pathway, while both physical therapy pathways had higher rates of physical therapy and other services. Comparing the 2 physical therapy pathways, rates of imaging (46%) and surgery/injection (18%) were higher for no copay physical therapy, while use of physician services was lower (42%). Rates of emergency service use were similar across pathways, around 2% to 5%. Differences in proportion of episode-level health care use compared to no copay physical therapy stratified by body region are provided in Table 3.

Lower Extremity

Of the 3221 lower extremity episodes during the observation period, 2462 (83%) were other management, 262 (8%) were no copay physical therapy, and 197 (6%) were traditional physical therapy (Table 2). Rates of imaging (56%), inpatient care (24%), physician services (100%), and surgery/injection (33%) were higher in other management episodes than in both physical therapy pathways, while both physical therapy pathways had higher rates of physical therapy and other services use (96%–100%). Comparing the 2 physical therapy pathways, rates of imaging (51%), surgery/injection (17%), and physician services (67%) were higher in traditional physical therapy episodes. Rates of emergency service use were higher in traditional physical therapy episodes (11%) compared to both other pathways (4%–6%).

Spine

Of the 4027 spine episodes during the observation period, 2839 (70%) were other management, 812 (20%) were traditional physical therapy, and 376 (9%) were no copay physical therapy (Table 2). Rates of inpatient services (11%) and surgery/injection (5%) were lowest among traditional physical therapy episodes, while traditional physical therapy had higher rates of imaging (49%) compared to no copay physical therapy (32%) and other management (33%). Episodes in both physical therapy pathways had higher rates of physical therapy (100%) and other services (98%–100%) and lower rates of physician services (no copay: 41%; traditional physical therapy: 90%) than other management episodes. Rates of emergency service use were similar across pathways (4%–5%).

DISCUSSION

This study examined episode-level health care use following the launch of a no copay program aimed at promoting early treatment by physical therapists. During the observation period, 9% of episodes were classified as no copay physical therapy. When including episodes in the traditional physical therapy group, ~22% of all episodes used physical therapy as a primary management approach. Historically, use of physical therapy for musculoskeletal conditions has been low, ranging from 3% to 24%,[33,49–52] with even lower rates for early intervention.[23] Our findings are consistent with these rates. When assessing program uptake, it is worth highlighting that 41% of the beneficiaries selecting physical therapy as a primary management strategy did so through the no copay program. The optimal rate of program use is difficult to determine, but readers should consider that this was a newly implemented

Table 1. Distribution of Musculoskeletal (MSK) Services by Care Pathway

Health Care Service	Overall	No Copay Physical Therapy	Traditional Physical Therapy	Other Management
All MSK services				
Number of unique patients	7349	849	1208	5888
Episode procedures				
Total number procedures	163,342	39,482	42,596	81,264
Mean number of procedures per episode (SD)	17 (29)	45 (34)	34 (35)	11 (23)
Median number of procedures per episode (25th, 75th)	5 (2–19)	38 (24–55)	22 (10–46)	3 (1–8)
Episodes of care				
Total number of episodes of care	9696	886	1261	7549
Mean number of days per episode (SD)		68 (71)	81 (91)	42 (76)
Median number of days per episode (25th, 75th)		43 (28–78)	47 (20–104)	1 (1–51)
Mean number of visits per episode (SD)		14 (10)	12 (11)	5 (8)
Median number of visits per episode (25th, 75th)		12 (8–16)	8 (4–16)	1 (1–4)
MSK service groups				
Emergency services				
Number of unique patients	461	34	64	364
Episode procedures				
Total number procedures	992	66	124	802
Mean number of procedures per episode (SD)	0 (1)	0 (1)	0 (1)	0 (1)
Median number of procedures per episode (25th, 75th)	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)
Episodes of care				
Total number of episodes of care	486 (5.0%)	35 (4.0%)	64 (5.1%)	387 (5.1%)
Imaging				
Number of unique patients	3758	330	585	3012
Episode procedures				
Total number procedures	9707	1055	1664	6988
Mean number of procedures per episode (SD)	1 (2)	1 (3)	1 (3)	1 (2)
Median number of procedures per episode (25th, 75th)	0 (0–1)	0 (0–1)	0 (0–2)	0 (0–1)
Episodes of care				
Total number of episodes of care	4342 (44.8%)	339 (38.3%)	592 (46.9%)	3411 (45.2%)
Inpatient				
Number of unique patients	1795	137	144	1563
Episode procedures				
Total number procedures	15,573	1072	850	13,651
Mean number of procedures per episode (SD)	2 (6)	1 (5)	1 (3)	2 (7)
Median number of procedures per episode (25th, 75th)	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)
Episodes of care				
Total number of episodes of care	1991 (20.5%)	139 (15.7%)	146 (11.6%)	1706 (22.6%)
Other services				
Number of unique patients	3960	849	1178	2171
Episode procedures				
Total number procedures	66,980	21,059	20,597	25,324
Mean number of procedures per episode (SD)	7 (14)	24 (17)	16 (19)	3 (10)
Median number of procedures per episode (25th, 75th)	0 (0–7)	21 (13–29)	10 (4–22)	0 (0–1)
Episodes of care				
Total number of episodes of care	4473 (46.1%)	886 (100%)	1229 (97.5%)	2358 (31.2%)
Physical therapy				
Number of unique patients	2533	849	1208	598
Episode procedures				
Total number procedures	43,466	14,821	16,157	12,488
Mean number of procedures per episode (SD)	4 (12)	17 (15)	13 (16)	2 (8)
Median number of procedures per episode (25th, 75th)	0 (0–2)	13 (8–21)	7 (2–17)	0 (0–0)
Episodes of care				
Total number of episodes of care	2759 (28.5%)	886 (100%)	1261 (100%)	612 (8.1%)
Physician services				
Number of unique patients	6870	372	986	5888
Episode procedures				
Total number procedures	19,903	1064	2758	16,081
Mean number of procedures per episode (SD)	2 (3)	1 (2)	2 (3)	2 (3)
Median number of procedures per episode (25th, 75th)	1 (1–2)	0 (0–1)	1 (1–2)	1 (1–2)
Episodes of care				
Total number of episodes of care	8950 (92.3%)	383 (43.2%)	1018 (80.7%)	7549 (100%)
Surgery/injection				
Number of unique patients	1935	100	106	1763
Episode procedures				
Total number procedures	6721	345	446	5930
Mean number of procedures per episode (SD)	1 (2)	0 (2)	0 (2)	1 (2)
Median number of procedures per episode (25th, 75th)	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–1)
Episodes of care				
Total number of episodes of care	2252 (23.2%)	101 (11.4%)	106 (8.4%)	2045 (27.1%)

Table 2. Distribution of Musculoskeletal Services for Each Care Pathway Stratified by Body Region

Health Care Service	Total			Upper Extremity			Lower Extremity			Spine		
	No Copay Physical Therapy	Traditional Physical Therapy	Other Management	No Copay Physical Therapy	Traditional Physical Therapy	Other Management	No Copay Physical Therapy	Traditional Physical Therapy	Other Management	No Copay Physical Therapy	Traditional Physical Therapy	Other Management
Sample size (n)	886	1261	7549	171	129	1388	262	197	2762	376	812	2839
Emergency services	4%	5%	5%	3%	2%	5%	4%	11%	6%	4%	4%	5%
Imaging	38%	47%	45%	46%	40%	52%	44%	51%	56%	32%	49%	33%
Inpatient	16%	12%	23%	15%	13%	25%	14%	16%	24%	18%	11%	20%
Other services	100%	97%	31%	100%	95%	22%	100%	96%	26%	100%	98%	42%
Physical therapy	100%	100%	8%	100%	100%	13%	100%	100%	9%	100%	100%	5%
Physician services	43%	81%	100%	42%	61%	100%	44%	67%	100%	44%	90%	100%
Surgery/injection	11%	8%	27%	18%	13%	40%	10%	17%	33%	10%	5%	16%

Table 3. Differences in Episode-Level Health Care Use Compared to the No Copay Program Stratified by Body Region

Health Care Service	Total		Upper extremity		Lower extremity		Spine	
	Traditional physical therapy	Other management	Traditional physical therapy	Other management	Traditional physical therapy	Other management	Traditional physical therapy	Other management
Emergency services	1%	1%	−1%	2%	7%	2%	0%	1%
Imaging	9%	7%	−6%	6%	7%	12%	17%	1%
Inpatient	−4%	7%	−2%	10%	2%	10%	−7%	2%
Other services	−3%	−69%	−5%	−78%	−4%	−74%	−2%	−58%
Physical therapy	0%	−92%	0%	−87%	0%	−91%	0%	−95%
Physician services	38%	57%	19%	58%	23%	56%	46%	56%
Surgery/injection	−3%	16%	−5%	22%	7%	23%	−5%	6%

program. Changing patient and clinician beliefs and behaviors around physical therapy can take time. As an observational study, we could not determine why some patients who sought physical therapy did not use the no-copay option. Possible reasons include a preference for a known therapist outside the program, lack of access to participating clinics (eg, too far from home), or limited awareness of the benefit despite promotional efforts. Given that the program targeted conditions well-suited for early physical therapy management, there are clear opportunities to expand its reach and impact. Strengthening direct-to-consumer marketing around the value and accessibility of physical therapy as a first-line treatment for common musculoskeletal issues could prompt more people to use this benefit.

Approximately 95% of beneficiaries in the program accessed physical therapy within 30 days of starting care, and over half did so on the episode index date. These results suggest the benefit successfully promoted early engagement with physical therapy, as intended. Our exploratory analysis showed that beneficiaries in the program who began therapy on the first or second day of the episode had even lower rates of imaging, surgery/injections, and physician services. These findings should be interpreted with caution due to the small sample, but are consistent with other studies showing similar trends.[6–9] No copay physical therapy episodes had a higher median number of physical therapist procedures (13) compared to traditional physical therapy episodes (7) suggesting that removal of this financial barrier may have encouraged greater use of physical therapy for those who selected it as a primary management approach. Total visits were also concentrated within a slightly shorter period of time, consistent with findings from a systematic review showing shorter episode length for earlier versus later initiation of physical therapy.[53] These insights are particularly relevant for employers, health systems, and payors planning resource allocation and benefit design for similar programs. Specifically, a no copay benefit may result in higher intensity physical therapy use and modestly shorter episode lengths compared to traditional models of physical therapy delivery.

This study was observational and used claims data that lacked patient- and clinic-level characteristics. Beneficiaries in this study chose their care rather than being randomly assigned, resulting in selection bias that could not be addressed with our design or available data. As a result, we cannot attribute differences in health care use solely to the absence of a copay. Prior research has clearly demonstrated that people who choose to access physical therapy early differ from those who choose other types of initial care or forgo physical therapy altogether. For example, people who prefer conservative approaches like physical therapy tend to be younger, have better mental and physical health, higher income, and better health-related quality of life.[54] Marrache et al found that patients who receive early physical therapy are more likely to be female, younger, and have fewer comorbid conditions than those who do not receive early physical therapy.[26] Fritz and colleagues reported that a history of spine surgery, comorbid hypertension, and receiving opioid prescription medication were associated with lower odds of initiating physical therapy within 14 days of a primary care visit for low back pain.[55] Similarly, Magel et al found that

patients with opioid use disorder were less likely to begin physical therapy after a primary care visit.[56] Together, these studies suggest that people who choose physical therapy as a primary or early treatment tend to be younger and healthier, characteristics that can independently drive lower use of injection, surgery, and advanced imaging. Two key implications follow. First, we cannot infer with our study design who is most likely to benefit from being offered a no copay physical therapy option. This will require further investigation. Second, policies that require all beneficiaries, regardless of care preference, to use such a program would likely produce different results than those presented here.

We report differences in use rates but leave it to the reader to determine whether the magnitude of difference is meaningful or not since meaningfulness thresholds are likely to differ by stakeholder. Compared to no copay physical therapy, other management episodes had higher rates of imaging, inpatient care, physician services, and surgery/injection, and lower rates of physical therapy and other services. These differences were especially prominent for upper and lower extremity conditions and less so for spine conditions. Our design also allows for comparisons of 2 models that include exposure to physical therapists. Traditional physical therapy had higher rates of imaging and physician services, but health care use rates varied considerably by body region. Collectively, these findings suggest the potential value of a no copay model may be dependent on the body region being treated, a finding which is novel considering most other studies on this topic have not assessed differences in health care use by body region.

One final important contribution of this work is its description of episode composition. We saw the highest number of procedures per episode for no copay physical therapy. The greater number of per-episode procedures and visits observed for no copay physical therapy could be due to a few factors. The most obvious is that physical therapy commonly involves multiple procedures (eg, exercise, manual therapy) over numerous visits in contrast to other forms of care (eg, medical management) that tend to be more episodic. Another reason could be that individuals might overconsume services when they no longer bear any out-of-pocket expenses, a so-called moral hazard problem.[57] It is also plausible that higher intensity health care users may be more inclined to access program with no out of pocket costs. Episode composition and length are highly relevant for health systems and payors interested in implementing similar models because these metrics are used to set benchmarks and design benefit plans. This program was structured as a benefit carve-out, with preferred provider negotiated rates that kept the per visit rate at a feasible level, even though the out-of-pocket portion was waived. The scalability of similar initiatives depends heavily on effective benefit design and the extent to which they generate downstream cost savings for patients and payors yet sustainable clinical margins.

Limitations

Our findings should be interpreted in the context of a few considerations. The most important consideration is that this study is descriptive and not analytic. Our intention was to describe health care use across different pathway options when a no copay option is available, but we cannot attribute our findings to the specific effects of the no copay benefit. We also did not have patient-reported outcomes related to pain, disability, and quality of life. This is important because a major value proposition of models that promote early exposure to physical therapy is that patient-reported outcomes are similar or better than if physical therapy is delayed or not received.[53] This is 1 of many studies that will be required to understand the benefits of no copay physical therapy models, and future analyses should incorporate patient-reported outcomes.

Claims data offer valuable insights into how care is delivered in real-world settings[58] but readers should consider common limitations associated with any study that uses claims in research. We had to make assumptions about how the data reflect actual care received. We took a liberal approach to include diagnoses appropriate for early and initial treatment by physical therapists. This strategy created a diverse pool of diagnoses that could theoretically be managed through any of the 3 pathways. We also selected procedures that could be considered musculoskeletal-focused. Expanding or reducing the eligible code lists or considering more or fewer diagnosis fields at the procedure level could influence our findings. Narrower diagnostic categories, more refined procedure lists, and use of more or fewer diagnosis fields (ie, considering primary diagnosis field only) could provide more precise estimates of use for specific conditions but could make findings less generalizable.

Defining episodes of care also comes with an inherent amount of error. We used flexible diagnosis code grouping by body region to build episodes, which was necessary to overcome variability in how different providers assign diagnostic codes for treatment of the same condition or injury. A drawback of this approach is that we could erroneously group treatments of dissimilar conditions within the same body region (eg, ankle sprain and ankle osteoarthritis) into the same episode. In developing the methodology for our project, we manually reviewed hundreds of episodes and anecdotally found this scenario to be very rare. Nevertheless, this methodological decision could result in some episodes that include concurrent or consecutive treatment of different conditions in the same body region.

A few additional limitations are worth noting. First, we did not have prescription data, which could be 1 reason for shorter episode lengths in the medically focused group. If a beneficiary was treated exclusively with prescription medication, it is likely their episode length would be underestimated in our analysis. Second, our study population included beneficiaries (employees and their families) of a self-ensured employer, which may limit generalizability to other populations or health systems. While using multiple providers and systems is a strength, it may also introduce variability and potential sources of error. Third, due to the nature of claims data we could not evaluate some diagnostic details that can influence health care use, like symptom acuity or severity. These should be considered in future analyses of no copay programs. Fourth, we grouped a variety of care options into the other management category. Our intent was not to compare every possible care strategy, but to contrast the no-copay program with traditional physical therapy and non-physical therapy alternatives. Readers should review how comparison groups were defined when interpreting results. Notably, chiropractic care is another form of non-pharmacologic musculoskeletal treatment that shares similar care pathway characteristics with physical therapy,[9,22] and may serve as a useful comparator in future studies.

Finally, our analysis included health care delivered during the COVID-19 pandemic. We considered modifying eligible episode start dates or excluding this period but doing so

would have resulted in too short a window to evaluate care pathways. In this and other analyses that used the same dataset, we observed reductions in health care use during COVID that impacted all services similarly. Readers should note that to be eligible for this analysis, beneficiaries had to start their care (index date) on or before September 30, 2019, so the pandemic would not have been a factor in selection of a care pathway. However, it may have affected subsequent care decisions, which should be considered a potential limitation.

CONCLUSION

No-copay physical therapy programs for musculoskeletal conditions are proposed to enhance value by promoting early use of non-pharmacologic care options and reducing exposure to advanced imaging, injection, and surgery. This study described episode of care characteristics among beneficiaries who were offered a no copay physical therapy option, with ~9% of beneficiaries selecting this option over other care options. We observed lower use of services like advanced imaging, surgery/injection and physician visits among those who chose the no copay option, however we could not control selection bias which prohibits establishment of a causal link between benefit design and health care use. We also did not have access to patient-reported outcomes, which makes future research necessary to fully assess the value of these programs.

CRediT—CONTRIBUTOR ROLES

Trevor A. Lentz (Conceptualization [lead], Funding acquisition [lead], Investigation [equal], Methodology [equal], Project administration [lead], Resources [equal], Supervision [lead], Validation [equal], Writing—original draft [lead], Writing—review & editing [lead]), Adam Lutz (Conceptualization [equal], Data curation [lead], Investigation [equal], Methodology [equal], Project administration [equal], Resources [equal], Validation [equal], Writing—original draft [supporting], Writing—review & editing [supporting]), Uchechukwu Ikeaba (Conceptualization [equal], Formal Analysis [equal], Investigation [equal], Methodology [equal], Validation [equal], Visualization [equal], Writing—original draft [supporting], Writing—review & editing [supporting]), Brooke Alhanti (Conceptualization [equal], Formal Analysis [lead], Investigation [equal], Methodology [equal], Software [equal], Supervision [equal], Validation [equal], Visualization [equal], Writing—original draft [equal], Writing—review & editing [supporting]), Steven Z. George (Conceptualization [equal], Investigation [equal], Methodology [equal], Resources [equal], Writing—original draft [equal], Writing—review & editing [equal]), Chad E. Cook (Conceptualization [equal], Investigation [equal], Writing—original draft [equal], Writing—review & editing [equal]), and Charles Thigpen (Conceptualization [equal], Data curation [equal], Methodology [equal], Writing—original draft [supporting], Writing—review & editing [supporting]).

SUPPLEMENTARY MATERIAL

Suppl. material is available online.

FUNDING

ATI Holdings, LLC provided funding for this analysis. ATI provided all data and input on the research question and study design. Duke University investigators designed the study, conducted the analysis, and were responsible for all reporting of this study, including development of the manuscript. ATI reviewed the manuscript only to ensure accuracy of the program description and Duke investigators had full scientific freedom to publish results.

ETHICS APPROVAL

The Duke University Institutional Review Board approved this study.

DISCLOSURE

The authors completed the ICMJE Form for Disclosure of Potential Conflicts of Interest and reported no conflicts of interest.

Steven George is the Editor-in-Chief of PTJ. Trevor Lentz is an unpaid Advisory Board member for the Institute for Musculoskeletal Advancement (iMSKA)

DATA AVAILABILITY

Data are not publicly available.

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