Independent review of TailorCare's model for estimating musculoskeletal medical cost impacts in the United States

Commissioned by TailorCare

June 2024
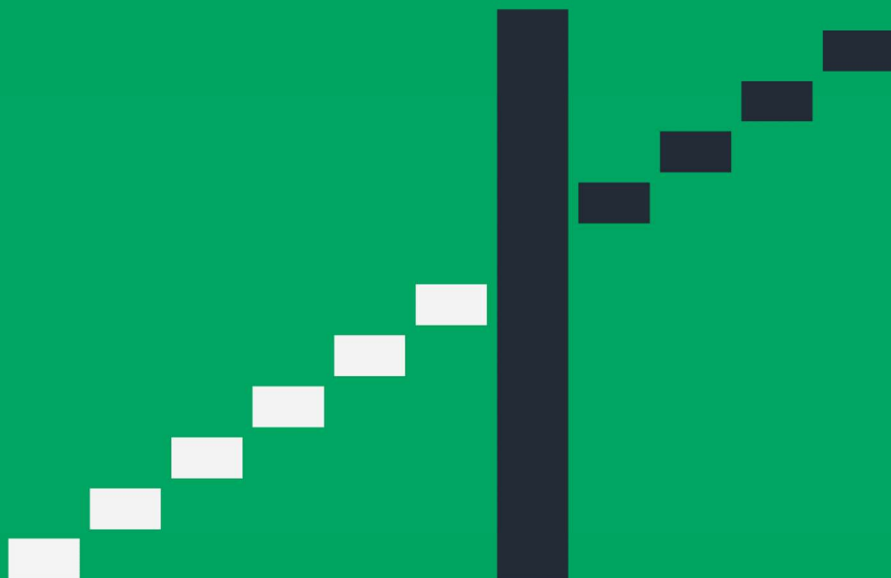
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Executive summary

TailorCare has developed a model that estimates the healthcare cost impacts of the interventions operationalized within its musculoskeletal (MSK) care model. TailorCare commissioned Milliman to conduct a review of its model methodology to determine its consistency with industry practices. This report:

1. describes TailorCare's approach to determining the model's input values;

2. outlines TailorCare's approach for estimating healthcare cost impacts;

3. discusses our assessment of TailorCare's MSK cost impacts model and conclusion that the model methodology is in line with common industry practices;

4. discusses potential limitations of the methodology used by TailorCare; and

5. outlines important caveats and limitations relevant to our review of the TailorCare model.

Our review is based on the model provided on April 26, 2024 by TailorCare named *MSK Savings Model.xlsx* which is specific to MSK interventions operationalized as of November 14, 2023. This report is intended to summarize our review of TailorCare's model for its consistency with typical practices for estimating cost impacts of a healthcare intervention. It should not be used for other purposes. Actual experience may differ between users, and results obtained through the model will vary due to factors that are unique to each user, population distribution, and condition prevalence. Our review is only commenting on the general approach represented by the model and not any specific output or estimated result. This report is not an endorsement or recommendation of TailorCare's services, nor does this report serve as an endorsement of any output of the model.

We conclude that TailorCare's cost impacts model methodology for its MSK solution is in line with common industry practices for estimating the explicit healthcare cost impacts of healthcare interventions, including avoidance of surgeries related to degenerative arthritis (DA) and the spine as well as referrals of specific MSK care to an orthopedic provider within TailorCare's preferred network, subject to the following potential limitations:

- A composite engagement assumption is used as opposed to explicitly exposing the variation in engagement rate by method of engagement.

- Physical therapy (PT) is the only category of offsetting utilization. If the program's model of care affects the use of other services, they should be captured in the model.

- TailorCare program experience should be used for the graduation rate assumption as soon as sufficient data is available.

- The DA category captures several surgical MS-DRGs that are not clearly related to DA.

- Selection bias due to voluntary participation in a care management program, and plausibility and attribution of results.

Any user of TailorCare's model methodology must possess a certain level of expertise in areas relevant to healthcare cost impact estimations to evaluate the significance and reasonability of the assumptions and the influence of these assumptions on the estimated results output from the model. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing this report.

Background

Milliman was commissioned by TailorCare to review and assess its MSK cost impacts model for the purpose of estimating the medical cost impacts of its MSK interventions and whether or not the model methodology is in line with common industry practices.

According to information provided by TailorCare:

> TailorCare is a risk-based care navigation company that takes a deeply personal, data-driven approach to improving patient outcomes for joint, back, and muscle conditions. By carefully combining a patient's clinical assessment, health history, preferences and goals with predictive data and the latest evidence-based guidelines, TailorCare helps patients choose – and navigate – the most effective treatment pathway.

TailorCare's care navigation services include clinical assessments, patient education, provider matching, and ongoing communication.

Objective

Our review was limited to the TailorCare MSK cost impacts model designed to estimate the medical cost impacts of two specific MSK interventions operationalized as of November 14, 2023. These interventions are spinal and DA reduction of unnecessary surgical utilization, and referrals of MSK care to an orthopedic provider within TailorCare's preferred provider network. The scope of this report is strictly limited to the review of the methodology used in this cost impacts model, not the accuracy or applicability of results generated from the model. Our review does not apply to any other methodologies that TailorCare may use to evaluate its market offerings. Any changes made to the methodology by TailorCare after our review are outside the scope of this report.

Results and discussion

We believe TailorCare's methodology for estimating the cost impacts of its MSK program is consistent with industry practices. Notwithstanding this general conclusion, each party relying on estimates based on TailorCare's cost impacts model should review the relevance of the assumptions and methodology used in the analysis as it applies to each population of interest and should consider the extent to which benefit design, retention, and other contractual terms affect modeled cost impacts.

There are limitations that no cost impact estimation methodology outside of a randomized controlled trial can completely control for, which also apply:

- **Selection bias due to voluntary participation in a care management program**. It is generally the case that individuals who opt to participate in a care management program have behaviors and clinical risk that differ materially from individuals who do not.[1,2] This selection bias could result in higher or lower expected costs and utilization compared to average overall population costs and utilization.
  - For example, if individuals who opt into the TailorCare program are more willing to engage in activities that will improve their healthcare outcomes and have been taking steps to manage their own care in the absence of the program, this could drive a reduction in the likelihood of a surgery that is difficult to control for in the program impact methodology (thus overstating the impact of the TailorCare program interventions).
  - As another example, if individuals who opt into the TailorCare program are drawn to participate due to their higher level of clinical risk or difficulty managing their own care or costs due to its complicated nature, this could drive an increase in the likelihood of a surgery that is difficult to control for in the program impact methodology (thus understating the impact of the TailorCare program interventions).
  - There is no adjustment for or consideration of other care management programs that may influence cost and utilization in the measurement period.
- **Plausibility and attribution of results**. Many factors impact healthcare costs, utilization, and outcomes, and impacts may not be fully attributable to the TailorCare program's interventions. For that reason, the TailorCare program's cost impact estimates should be evaluated alongside other metrics to help validate the plausibility of results. The following types of metrics may provide additional insight on the cost impacts of the program:
  - Existence of a dose-response relationship – whether groups with higher use of the TailorCare program have better risk-adjusted financial results than groups with lower use of the program.
  - Whether total cost of care results improve after increasing TailorCare program engagement, and whether this improvement is better than the results of groups that are not increasing the programs engagement.

Our review of TailorCare's MSK cost impact model involved a thorough examination of the model's inputs, assumptions, and methodology. We evaluated the appropriateness of the data used, the validity of the assumptions made, and the robustness of the methodology applied. Our review did not include a verification of the results produced by the model. Our review is based on the methodology inherent in the model provided by TailorCare at the

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3760982/
[2] https://academic.oup.com/jrsssa/article/183/1/3/7056419

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time of the review. Any changes made to the methodology by TailorCare after our review are outside the scope of this report.

We reviewed TailorCare's definition of MSK in-scope costs, TailorCare eligibility criteria and exclusions, the division of costs and utilization between the spinal and DA categories, annual trend, engagement rates, credibility factor development, literature-based program graduation rates from qualitative studies, avoided post-surgical cost development and the length of time used to capture such costs, and the application of each of these assumptions to generate an estimate of the cost impacts of the TailorCare interventions. There are several limitations that any party relying on the results from the MSK cost impact model should consider:

1. **Precision of the engagement assumptions.**

    i. Engagement rates vary widely based on the method of engagement and are notably higher for populations referred to TailorCare by other orthopedic providers compared to other methods of engagement, but this differential is not exposed within the model. A composite engagement rate estimate is used.

    ii. This assumption has a considerable impact on the estimated MSK cost impact. To the extent that methods of engagement or the distribution of methods of engagement differ from the TailorCare defaults, the composite engagement assumption used in the model may not accurately reflect projected engagement.

    iii. The user should consider if the engagement percentage used in the model accurately reflects the methods through which members are engaged.

2. **Consideration of additional categories of offsetting utilization.**

    i. The MSK cost impact model currently assumes an increase in PT utilization will offset a portion of the impact achieved through avoiding MSK surgeries.

    ii. If the TailorCare model of care demonstrates an increase on the utilization of other types of healthcare services, now or in the future, these should be included as additional categories of offsetting utilization in the MSK cost impact model. Similarly, if the program demonstrates a reduction in utilization in a category other than what is currently captured with the reduction of unnecessary surgical utilization and preferred provider referral interventions, this should also be captured in the MSK cost impact model.

3. **Consideration of TailorCare-specific studies for the graduation rate assumption.**

    i. The graduation rate assumption, which represents the percentage of members who complete the TailorCare program and avoid an MSK surgery, is currently derived from qualitative studies found in literature.

    ii. We recommend performing a case-control matched observational study on which to base this material assumption.

    iii. We recommend including an assumption to explicitly adjust the estimated cost impacts for those who have successful recoveries from surgeries.

4. **Implementation of high-cost claim thresholds to limit exposure to outlier events.**

    i. The model currently does not apply high-cost claim thresholds at either a per-member or per-claim level.

    ii. We recommend considering implementing high-cost claim thresholds, such as the 95th or 99th percentile of per-member MSK cost, to insulate the model's estimates from skewness caused by potential outlier events.

    iii. We have confirmed the lack of outlier handling in the model aligns with the contractual terms specifying the cost on which TailorCare is taking risk. If high-cost exclusions are considered in the future, the model should also incorporate high-cost exclusions. These exclusions should apply to both the data used to develop average cost per episode and for the costs that TailorCare is contractually at risk.

Methods

OVERVIEW OF THE MSK COST IMPACT MODEL

TailorCare's MSK cost impact model estimates the medical cost impacts focusing on two primary interventions, reduction of unnecessary surgical utilization and preferred orthopedist referrals, as well as offsetting PT utilization.

- **Reduction of unnecessary surgical utilization:** TailorCare anticipates that increasing referrals to PT and self-care will reduce surgical utilization and post-surgical costs. The model uses an internal definition of MSK surgeries that are likely to be impactable through PT, defined based on HCPCS and MS-DRG codes, to estimate the utilization and cost impact potential. There is currently no episode grouper logic employed; instead, TailorCare uses a 180-day post-surgical window to estimate the total cost per surgical episode. This is broken out by spinal and DA categories in inpatient (IP), outpatient (OP), and ambulatory surgical center (ASC) settings. A portion of those identified for reduction of unnecessary surgical utilization are engaged and only a portion of engaged members are considered to have avoided a surgery.

- **Preferred provider referrals:** TailorCare refers members to a list of preferred orthopedic providers expected to provide higher quality, lower-cost care. The model uses a 15 percentile decrease in the risk-standardized MSK surgical case rate from two baseline values for members referred to a preferred orthopedic provider, broken out by spinal and DA categories. A portion of those identified for preferred provider referrals are engaged and only a portion of engaged members are considered to have graduated.

- **Offsetting PT utilization:** TailorCare expects that graduation from its programs will result in increased PT utilization and associated costs. The model reduces the overall cost impacts by including the average PT cost per PT claimant for each graduated member.

The cost impacts estimated for each of these interventions and offsets are based on TailorCare customer experience data and are credibility blended with the same estimations performed on benchmark data, trended to 2023, summed, and converted to a per member per month cost impact value.

REDUCTION OF UNNECESSARY SURGICAL UTILIZATION

The model estimates the total reduction in cost for reduction of unnecessary surgical utilization by multiplying the total cost of the episode through 180 days post-surgery, for a particular service category and dual status (members with both Medicare and Medicaid eligibility), with the total number of impacted surgeries. The number of impacted surgeries is determined by the identification, engagement, and graduation rate assumptions. The graduation rate estimates the percentage of members engaged with the program who will successfully avoid a surgery. The model then takes the product of that expression and divides it by the number of utilizing members under the same MSK criteria.

The output of the MSK cost impact model is credibility-adjusted using the Centers for Medicare and Medicaid Services (CMS) credibility guidelines for Medicare Advantage non-ESRD subjects with full credibility achieved at 24,000 member months. The manual rate blended with partially credible customer experience data is developed from the CMS limited data set representing a 5% sample of Original Medicare for MSK claims incurred in 2022 for the customer's specific geographic region.

PREFERRED PROVIDER REFERRALS

The model estimates preferred orthopedic referral cost impacts by measuring the difference in the CMS-HCC risk-standardized MSK surgical case rate (based on the cost of the surgery and two additional months of MSK claims) between the 65th percentile and the 50th percentile along with the difference between the 50th percentile and the 35th percentile. These two differences are averaged to create a composite estimated cost impact per provider referral, assuming that half of members are considering a provider at the 65th percentile of costs and would be referred to a provider at the 50th percentile of costs and the other half of members are considering a provider at the 50th percentile of costs and would be referred to a provider at the 35th percentile of costs. The user should consider if the distribution of cost per episode aligns with the orthopedic providers their members currently see, and how this may impact the output of the model. This estimation is performed separately for members in the spine category and those in the DA category. This is allocated by facility unit cost across the three types of service (IP, OP, and ASC).

Preferred orthopedic provider referral cost impacts are also credibility-blended with the CMS 5% sample using CMS credibility guidelines for Medicare Advantage non-ESRD subjects with full credibility achieved at 24,000 member months and the 5% sample FFS dataset. The manual rate estimate of provider savings per referral is developed from the CMS 5% sample using the above methodology.

MODEL ASSUMPTIONS

The MSK cost impact model incorporates aggregations of client-specific claim and membership data as the primary inputs to the model. The assumptions used in the model include:

- TailorCare's internal definition of MSK claims at risk is used to analyze historical data for a given population and develop projected cost impacts for the customer's specific region. These claims are identified based on ICD-10 diagnosis codes, HCPCS codes, and DRG codes.
- Members attributed to TailorCare in each month must meet the following eligibility criteria:
  - Age at least 18.
  - Address is located withing the designated county service area.
  - Not enrolled in hospice care.
  - No hemophilia diagnosis.
  - No osteomyelitis diagnosis.
  - No orthopedic-related tumor.
  - Has not received a transplant.
  - Attributed to a payer or full-risk medical group that is participating in the TailorCare program.
- Impactable episodes are grouped into spine or DA based on MS-DRG and HCPCS codes.
- Offsetting PT utilization claims categorization is based on HCPCS codes.

Caveats, limitations, and qualifications

Austin Barrington and Erin Birkeland are members of the American Academy of Actuaries and meet the qualification standards to render the actuarial opinion contained herein. To the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices.

This report is intended to summarize our opinion of the TailorCare cost impacts model for quantifying the estimated direct medical cost impacts of its MSK program. It should not be used for other purposes. We did not assess the effectiveness or calculate the impact of TailorCare's program and make no statement about the effectiveness or impact of this program. Milliman does not endorse TailorCare's intervention.

Milliman does not intend this information to benefit and assumes no duty or liability to any other parties who review this work. Those reviewing TailorCare's model outputs should take full responsibility for interpreting the results, which should be reviewed by someone knowledgeable in the areas of healthcare data and cost impact estimations. We understand that TailorCare intends to provide public access to this report, and therefore it could be viewed by its prospective customers, competitors, potential investors, or other interested parties. We consent to this distribution if the work is distributed in its entirety.

In completing this review, we relied on information provided by TailorCare between November 2023 and May 2024, which we reviewed for reasonableness, but accepted without audit. If any of this information is inaccurate or incomplete, the contents of this report along with many of our conclusions may likewise be inaccurate or incomplete. TailorCare customers' actual results may differ from the projections output by the TailorCare model due to factors such as population health status, variations in healthcare spending per year, changes in TailorCare's programs, changing regulations, and random variation. It is important that TailorCare and its customers monitor actual experience and make adjustments to assumptions and the model, as appropriate.

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