



Assessment of Medical Cost Savings from Sword's MSK Interventions

Summary of Study Results on Medical Cost Savings Conducted by Risk Strategies Consulting, June 2024[†]

[†] Summary of Study Results focused examination on untruncated medical costs, as part of a broader retrospective cohort study.

Executive Summary

#1. Background and Objective:

Risk Strategies Consulting (RSC) constructed a study to validate Phase 1 findings with a broader Sword Health population data set. The population study was limited to the population with at least one (1) MSK treatment event in standard-of-care settings* (traditional Physical Therapy (PT), Occupational Therapy (OT), Chiropractor, or PT Evaluation).

#2. Study Overview:

Employed a retrospective cohort analysis on 2,815 Sword members and 5,441 controls, utilizing propensity score matching and difference-in-difference calculation. The study spans 18 months, analyzing continuous engagement nine (9) months pre- and nine (9) months post-enrollment, adjusted for 2024 inflation, COVID-19 impact, and chronic conditions. Savings were annualized.

#3. Results:

Through propensity score matching and assessment of key covariates with sub-group analysis and validation, RSC identified the following Gross Savings‡ using untruncated total cost:

- Total Cost of Care (TCOC) Gross Savings: \$4,720 PPPY†, 3.77 Net Savings Ratio§
- Musculoskeletal and Physical Inactivity-Related Chronic Condition events accounted for Gross Savings of **\$3,012 PPPY, 2.05 Net Savings Ratio**
 - Musculoskeletal (MSK) Gross Savings: \$2,813 PPPY
 - Physical Inactivity-Related Chronic Conditions (PICC) Gross Savings: \$199 PPPY

Savings for Musculoskeletal and Physical Inactivity-related Chronic Condition Events*

\$3,012

Gross Savings (PPPY***)

\$2,024

Net Savings (PPPY***)

3.05

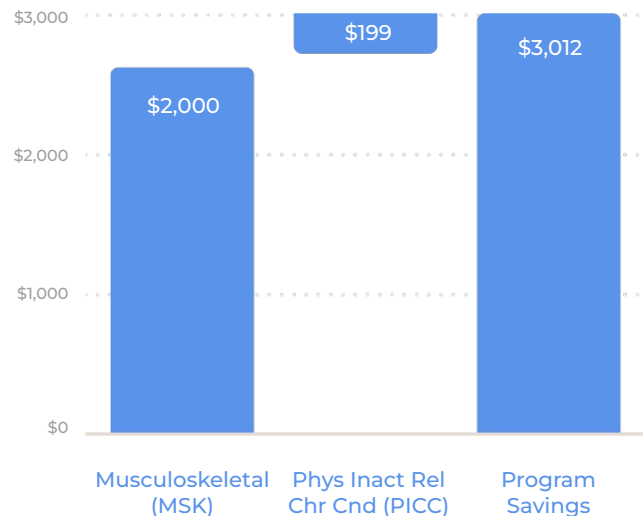
Gross Savings Ratio

2.05

Net Savings Ratio

Sword Program Gross Savings by Condition Category

Savings Per Engaged Participant Per Year (PPPY)



* Physical Inactivity-Related Chronic Conditions (PICC) include obesity, depression, hyperlipidemia, diabetes, hypertension, sleep disorder, and osteoporosis. Gross PPPY: MSK Gross Savings (\$2,813) + PICC Gross Savings (\$199) Net PPPY: (MSK Gross Savings + PICC Gross Savings) - Total Fees Gross Savings Ratio = Total Gross Savings/Total Fees (Gross ratios result in overestimated savings as management population's program fees are not considered.) Net Savings Ratio = (Total Gross Savings - Total Fees)/Total Fees (Preferred Approach) Results reflect untruncated costs. See study limitations in the Appendix.

Summary

This analysis assessed potential savings resulting from participation in Sword services. A counterfactual approach utilizing the Difference-in-Differences (DID) was used to compare medical costs between the two matched cohorts, Engaged Treated Members (N=2,815) and Controls (N=5,441).

Definitions

Index date:

The control group did not receive Sword services and did not have a reference enrollment date. The index date for the control group was assigned using the standard-of-care qualifying MSK treatment dates on which they received traditional Physical Therapy (PT), Occupational Therapy (OT), Chiropractor, or PT Evaluation.

Treatment:

Treatment refers to participation in the Sword program.

Engaged:

A member who completed at least three (3) sessions in the Sword program.

Propensity Score (PS):

The estimated score resulting from a statistical model, indicating the likelihood that a person is a treated member conditional on observed baseline characteristics.

PS Matching:

This process entails forming matched sets in the selected ratio (e.g., 1:2) of treated and control subjects with similar propensity score values.

Continuous Enrollment

is defined as uninterrupted medical coverage for specified time before and after the enrollment date for Treated or the index date for Controls.

Approach and Methods

Inclusion Criteria

To be included in the study, participants had to be 18 years old or older, have continuous enrollment for at least nine (9) months pre- and nine (9) months post-index date, and have a musculoskeletal (MSK) condition. Participants in the treated group had to complete at least three (3) Sword treatment sessions. Controls had to have at least one (1) claim related to MSK and one of the following treatment events: traditional Physical Therapy (PT), Occupational Therapy (OT), Chiropractor, or PT Evaluation.

Data sources

This analysis utilized medical claims data, medical benefit eligibility data, and Sword program data provided by Sword. The provided data sets were sourced from four (4) of Sword's largest clients. Claims and program data spanned time between January 2019 and September 2023.

Comorbid conditions related to reduced physical activity

Seven chronic conditions related to reduced physical activity were included in the analysis: depression, diabetes, hyperlipidemia, hypertension, obesity, osteoporosis, and sleep disorders. A separate savings analysis was performed for these conditions to assess the effect of participation in the Sword program. Literature on physical inactivity-related comorbidities and MSK physical therapy can be provided.

Covariates used for Treated and Controls matching

Two (2) study groups were matched on total cost, MSK-related cost, and healthcare utilization prior to enrollment/index date, as well as age, region, gender, chronic comorbid conditions, COVID-19 treatment, cancer treatment, type of care progression, MSK program type (joint), client and carrier.

Study Limitations

1) Pharmacy Data – Pharmacy data was not included in this analysis.

2) Population – All members included in the study had MSK treatment, and all controls had at least one (1) of the following MSK events: PT, OT, Chiropractor, or PT evaluation.

a) Less savings may be realized if engaged Sword members that fell outside of these criteria were included.

b) Savings were not measured for 2,601 engaged members who did not meet inclusion criteria; 97% of these members were missing continuous coverage nine months before and after enrollment. The total program fees for these members were \$2,562,813.85.

3) Neoplasms – Members with Neoplasms are not excluded from this study. The presence of neoplasms was used for propensity score matching. Type, stage, or treatment exposure of the neoplasms were not considered in propensity score matching.

4) Concurrent Physical Therapy – Over 36% of the SWORD population rendered traditional PT, OT, or chiropractic services in addition to the SWORD program.

5) Cost distribution - Costs are right-skewed, but average cost values were used for all calculations.

6) Diagnoses for MSK and comorbidities were grouped using limited sets of ICD codes.

7) For client 2, payer 2, and client 3 paid amounts were provided instead of the allowed amounts. Multiplier = 1.25 was used to adjust the cost.

8) Untruncated values – high-cost claimants (TCOC > \$150k and MSK > \$75k) make up <2% of the population and account for 25-29% of untruncated savings.