

# Finding 63% Savings (\$42 PMPM) in Musculoskeletal Costs in a Medicare Advantage Population

Line of Business:	Medicare Advantage
Use Case:	Disease Management (Congestive Heart Failure)
Focus:	Program Measurement; Optimization

Uncovering previously hidden cost and utilization reduction opportunities using granular program evaluation

## The Challenge

The costs associated with hospitalization for Medicare beneficiaries with congestive heart failure (“CHF”) are substantial and are compounded by a high rate of readmission. According to a study published in Risk Management Healthcare Policy<sup>1</sup>, the mean per-patient cost of a CHF-related hospitalization was \$14,631. A large regional Blue Cross Blue Shield health plan, like many other health plans, was struggling to better manage both CHF costs and associated outcomes for their Medicare Advantage population.

To try to tackle these issues, the company began to offer a chronic CHF management program in which members were supported by a registered nurse and a customized care plan. The goal was to promote self-management of the disease by patients and to optimize clinical outcomes and spend. Participants were referred to the program via claims mining and member services, and could choose to opt-in. They would complete a telephonic clinical assessment which would drive their care plan. Members would be contacted regularly by an RN to gauge their progress and suggest additional actions.

The health plan wanted to understand the program’s impact on total cost of care for this Medicare Advantage population. However, given resource constraints from all the other initiatives that were in the queue for evaluation, the analytics team had previously been limited to a basic analysis of cost impact vs. a deeper dive into the specifics of what actions to take next.

## The Solution and Takeaways

### 1. Scale and Granularity

NextHealth Technologies’ machine learning and AI-powered platform was already deployed at the health plan and being used to evaluate multiple other initiatives across various lines of business. To evaluate the CHF program, analytics leaders simply logged into the platform and utilized the integrated program setup feature.

<sup>1</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5436769/>

The first step in the process was to define the key performance indicators. Typically, given resource or timing constraints, only those KPIs that would contribute to answering the basic business questions (i.e., “How does the program impact total cost of care?” or “How does the program impact ER utilization”) could be evaluated by the analytics team. However, because NextHealth’s advanced analytics platform offered hundreds of additional KPIs “out of the box” as well as almost instantaneous measurement, the plan’s analytics team chose to include three times their typical number of KPIs in the program setup. In adding this level of analytic granularity, they would be able to review a full “symphony of evidence” in a fraction of the time with a click of a mouse.

#	Initial KPIs	#	Additional KPIs	#	Additional KPIs
1	Total Cost of Care	11	Breast Cancer Screening	21	Home Health Visits
2	Total Medical Cost	12	Cervical Cancer Screening	22	IP Costs
3	Attrition	13	Colorrectal Cancer Screening	23	IP Admits
4	Avoidable ER Costs	14	Flu Vaccine	24	Diabetes Diagnoses
5	Avoidable ER Visits	15	High Cost Imaging Visits	25	Unstable Angina Diagnoses
6	ER Cost	16	ER Cost MSK Events	26	Opioid Costs
7	ER visits	17	High Cost MSK Costs	27	Opioid Visits
8	Urgent Care Visits	18	High Cost Procedure Events	28	Total Rx Paid
9	Urgent Care Costs	19	High Cost Procedure Events	29	Specialty Rx Cost
10	Well Visits	20	Home Health Costs	30	Severe Diabetes Diagnoses

Figure 1 - KPI selection table

**TAKEAWAY:** With the platform’s scale, built-in KPIs, and integrated setup feature, adding new programs for evaluation and multiple levels of measurement granularity became as simple as clicking a mouse.

## 2. Trust the Results

Within the program setup feature of the platform, there are several options for measurement methodologies because balancing precise decision-making with operational realities requires a spectrum of analytic tools. In order to ensure trust in the outcomes of the CHF program evaluation, the plan wanted to balance practicality (for ease and breadth of application) with certainty (to maintain a suitable level of statistical rigor and defensibility).

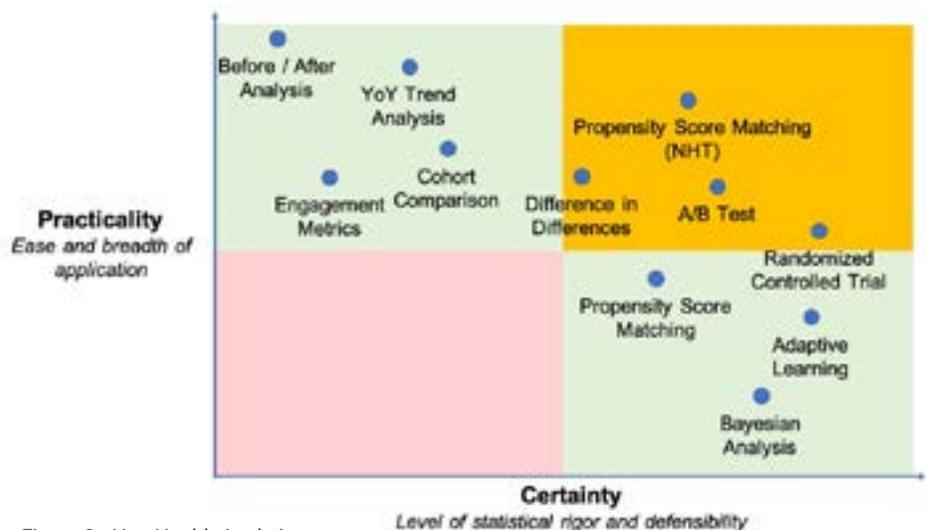


Figure 2 - NextHealth Analytics Methodology Options

The health plan chose to utilize a retrospective cohort analysis combined with NextHealth’s propensity score matching capability to identify a well-matched control group. Keeping the standardized difference of means (SDM) at  $\leq 10\%$ , 132 of 200 covariates closely matched. Previously, the analytics team required 5-7 days per program to find appropriate controls, but with the platform, it took only minutes.

Covariate examples	SDM%
Inpatient cost – 1 Qtr ago	1.9%
High cost procedure visits – 1 Qtr ago	2.9%
Doctor visits – 1 Qtr ago	4.1%
ER visits – 1 Qtr ago	5.1%
Rx Out of Pocket – 1 Qtr ago	3.0%
Lab specialist visits – 1 Qtr ago	2.8%
HCC 85 (CHF) – Ever	7.1%
Current smoker	0.2%
BMI = Obese	3.2%
Gender	6.7%
Age	4.6%

Figure 3 – Covariate examples w/Propensity Score Matching

**TAKEAWAY:** For many health plans, organizational trust in the analytic reporting outputs may not always be a given. By utilizing the NextHealth platform’s integrated and scientifically rigorous study design choices, propensity score matching for control group selection, and outlier treatments, the client instilled confidence in the process and the outcomes.

### 3. Speed and Depth of Insights

Once the KPIs were chosen, study design determined, and target/control population selections were completed, it took only minutes for the platform to measure the results. The primary goal of the evaluation – understanding the impact of the CHF management program on total cost of care – delivered a positive outcome. Participating members cost \$143 PMPM less than controls. In addition, given the greatly expanded number of KPIs that the team was able to evaluate using the platform, a more granular picture emerged as to other impacts of the program and potential next steps.

The evaluation team noticed a particularly interesting correlation that they had not anticipated – costs for the trial group rose by \$39 PMPM in regard to high cost musculoskeletal events. A hypothesis was formed that along with better management of chronic CHF, members may have improved their overall health (i.e., weight loss, smoking cessation, etc.) and now qualified for previously unavailable MSK procedures such as hip or knee surgeries.

KPI	Impact	Insight
Total cost of care	-\$143.88 PMPM	Program had positive ROI
Total Rx paid	-\$52 PMPM	Program helping better manage Rx
High cost imaging visits	-\$174 1kPY	Program helping decrease emergent procedures
High cost procedure costs	-\$97 PMPM	
High cost MSK cost	+\$39 PMPM	With better CHF management, more opportunity to address other health issues (?)
Avoidable ER cost	-\$3 PMPM	Program helping decrease avoidable ER and encouraging appropriate ER use
ER cost	+\$10 PMPM	
Inpatient cost	-\$21 PMPM	Program contributing to decrease in readmissions
Home health cost	+\$16 PMPM	Program contributing to more home health (and less inpatient)
Home health visits	+878 1kPY	

Figure 4 - Granularity of Program Insights

**TAKEAWAY:** Utilizing a scalable platform enabled the health plan to not only evaluate significantly more potential drivers of program performance and outcomes than previously possible, but in a fraction of the time. It also uncovered previously unseen opportunities to further impact cost reduction.

#### 4. Outcome Optimization

The plan utilized the insights to make several business decisions:

- a. Expand the program over the next 12 months**  
Given the positive impact on total cost of care (\$143 PMPM) and other KPIs, the trial group would be expanded
- b. Update the care manager (RN) script to further encourage members to utilize home health**  
Expand home health offering to continue trend in reduced inpatient admissions and avoidable ER
- c. Deploy MSK predictive model into workflow / CRM**  
Expand care management outreach to drive identified members to in-network surgeons and Blue Distinction Centers



Lift = -\$42 PMPM = **63% improvement**



Lift = -36 events P1kMY = **60% improvement**

Figure 5 - MSK lift charts (6 months)

In just six months, the platform tracked a decline in both MSK events (-36 events per 1k members/year) and MSK costs (-\$42 PMPM) in the targeted trial population.

**TAKEAWAY:** These were outcomes that, without the speed to insights and more granular evaluation of program impacts, would not have materialized or might have taken months or years to identify.

## Conclusion

Utilizing NextHealth’s analytics platform, the health plan not only achieved its goal of evaluating the impact of their chronic CHF management program on total cost of care for participating members in a fraction of the time it previously required, but given the level of granularity available in the platform, it also rapidly identified and implemented other opportunities to further reduce costs and improve outcomes.

Key platform value drivers:

- 1. Speed:** Identify insights and drivers of initiative ROI in a fraction of the previously required time
- 2. Optimization:** Uncover opportunities to amplify outcomes for even greater value
- 3. Scale:** Automated measurement of any and all clinical initiatives using a platform vs. manual evaluation
- 4. Granularity:** Using dozens of key performance indicators built-into the platform (or custom KPIs), dig deeply into each use case to identify what works for whom, why, and what to do next
- 5. Trust:** A range of scientifically rigorous options for program measurement are integrated into the platform

*“Within six months, the platform’s machine learning effectively identified which intervention had an impact – and which didn’t. Finding one signal isn’t enough to move the needle in a meaningful way – a platform allows us to continually test and learn. The journey continues, expanding the application of the platform across new and different use cases.”*

- CHIEF ANALYTICS OFFICER, BCBS HEALTH PLAN

Would you like to learn how NextHealth’s platform can help you reduce your healthcare costs and improve outcomes? Please email us at [hello@nexthealthtechnologies.com](mailto:hello@nexthealthtechnologies.com) to schedule a time to connect.



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