It's All about Impactability! Optimizing Targeting for Care Management of Complex Patients

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KEY POINTS FROM THIS BRIEF:

- Return on investment for care management interventions is highly dependent on intelligent targeting of patients who are most likely to benefit.
- High cost/high risk does not mean highly impactable.
- CCNC's vast experience with complex care management has led to the development of an empirical approach to predicting impactability, or identifying patients for whom complex care management will yield the greatest benefit
- A targeting strategy that uses CCNC's Complex Care Management Impactability Scores™ will likely yield twice the savings of simply targeting high cost/high risk patients, and three times the savings compared to less discriminant deployment of care management resources.

Background

Care management of patients with complex care needs has become an important strategy of payers, employers, government agencies, and provider groups who strive to improve outcomes and lower costs of care. Most commonly, programs target patients for care management based on specific patterns of care (such as high emergency department or inpatient utilization, or a pattern of visiting multiple providers over a short time period); by referrals from providers or other community resources; by the presence of chronic conditions or other risk factors associated with high preventable costs; or by community (underserved areas).[1-5] Other methods use clinical risk groupers for segmentation of a population into risk categories, and deploy statistical methods to identify patients at highest predicted risk of future costs, admission, or readmission.

With over two decades of experience in community-based population health management and over 1.5 million members, Community Care of North Carolina (CCNC) has actively evaluated and evolved its strategic approach to complex care management over time, from a focus on "high risk" to a focus on "highly impactable." Unlike risk scores, which aim to predict who is most likely to have an event, CCNC's Impactability Scores predict which patients are most likely to benefit from an intervention.

With the advantage of several years of real-world care management experience, combined with a longitudinal view of cost and utilization outcomes, CCNC is uniquely advantaged to examine "impactability" empirically: what works and what doesn't, when, and for whom? The Complex Care Management Impactability Score™ encapsulates those learnings for the context of intelligently deploying care management teams to outreach to patients with complex care needs, supporting those patients with an individualized care plan, and optimizing return on investment in the face of limited care management resources.

Figure 1: Impactability versus Traditional Risk Scores
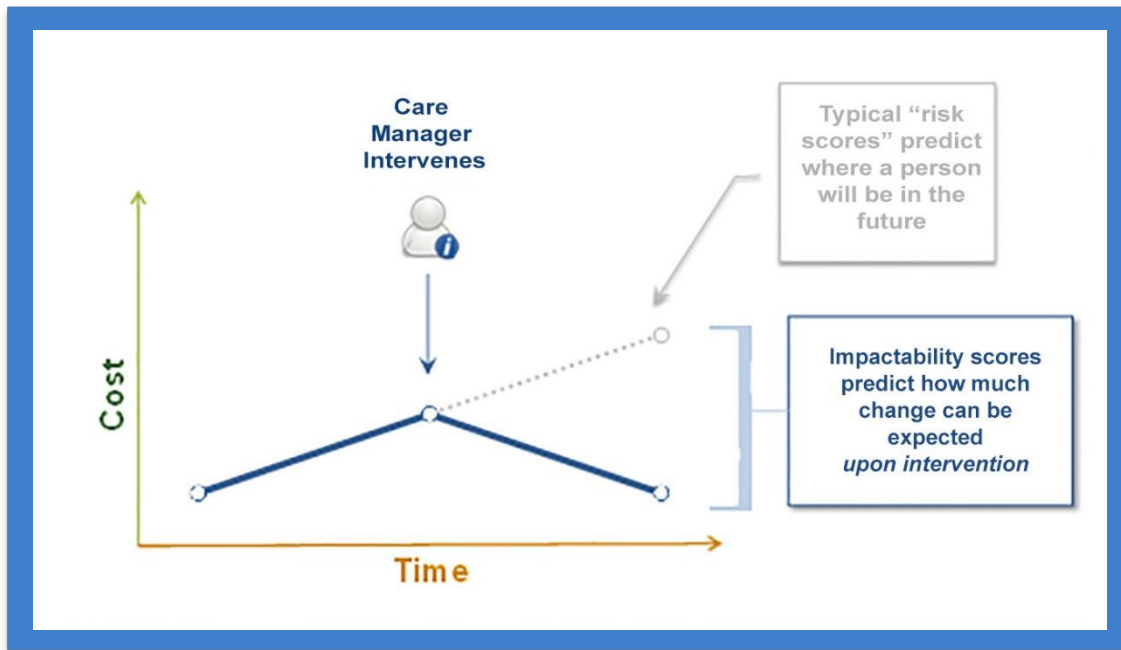
Development and Application of Complex Care Management Impactability Score™

Since 2011, CCNC has conducted a series of rigorous evaluations of its complex care management program, determining spending and utilization trends for those who received care management compared to matched cohorts of patients that did not receive care management. In 2014, CCNC began consolidating all of this knowledge into the creation of a single score to help prioritize patients for complex care management. Key drivers of the Impactability Score are shown in Figure 2 on the next page.

Figure 2: Key Drivers of Impactability

Complex Care Management Impactability Score™			

Complex Care Management Impactability Score™	A score from 0-1000 reflecting likely cost savings, per month (over 6 months following care management).
	
	CCNC prioritizes patients with a Complex CM Impactability Score above 200.
		Clinical characteristics and utilization pattern indicate a high likelihood of benefitting from care management	Claims-derived measures including:
			• Above-expected Potentially Preventable Hospital Costs
			  o 3M Clinical Risk Groups
			  o 3M Potentially Preventable Flags
			• Clinical Characteristics
			• Utilization Patterns
			• Demographics

One of the key ingredients of this model is the measurement of "above-expected potentially preventable hospital costs." This isolates the portion of total costs that may be preventable through better management of chronic conditions or use of lower cost settings of care, and identifies patients who are outliers *after* taking disease burden and clinical complexity into account. One of the pitfalls of simply targeting high cost/high risk patients is that the costs incurred by those patients are not likely to change, regardless of care management efforts. By examining an individual's pattern of preventable spend relative to clinically similar patients, we are able to identify pockets of opportunity that would have been missed with traditional approaches. See Figure 3 below.

**Figure 3: Impactability versus High-Risk**
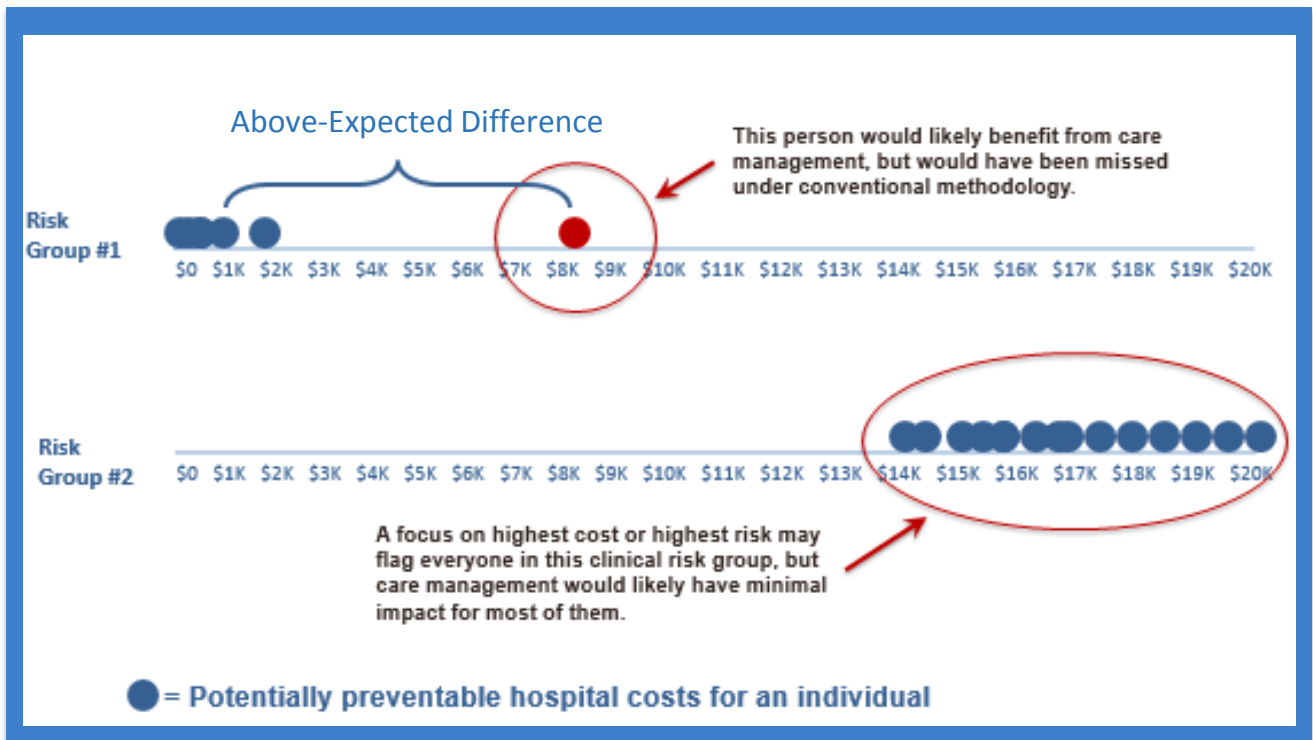
The Complex Care Management Impactability Score relates directly to the achievable cost savings after a care management intervention. The score is a number ranging from 0-1,000 reflecting the expected average gross cost savings per patient per month over the next six months, for patients who receive care management. This dollar amount is based on observed savings to Medicaid determined through real-world evaluations of patient spending trends attributable to care management, controlling for normal trends in matched controls. Through "Impact Segmentation" of a population (in contrast to "risk segmentation") – whereby every member is assigned an impactability score –program planners can judiciously determine the optimal allocation of care management resources, with much greater certainty around anticipated return on investment.

Characteristics of Highly Impactable Patients

Importantly, high risk is not the same thing as highly impactable. Within the NC Medicaid population, we see only a 53% overlap between the top 5,000 patients with highest impactability scores and the top 5,000 patients with highest risk of inpatient admission, using a validated risk prediction model (see Figure 4). This example translates to 2,327 patients being targeted by CCNC's Complex Care Management Impactability Score that would be missed by more traditional approaches of prioritizing based on risk alone. Estimated six-month savings from care management interventions for this missed population are nearly $7,500,000.

Figure 4: High Risk Does Not Mean High Impactability
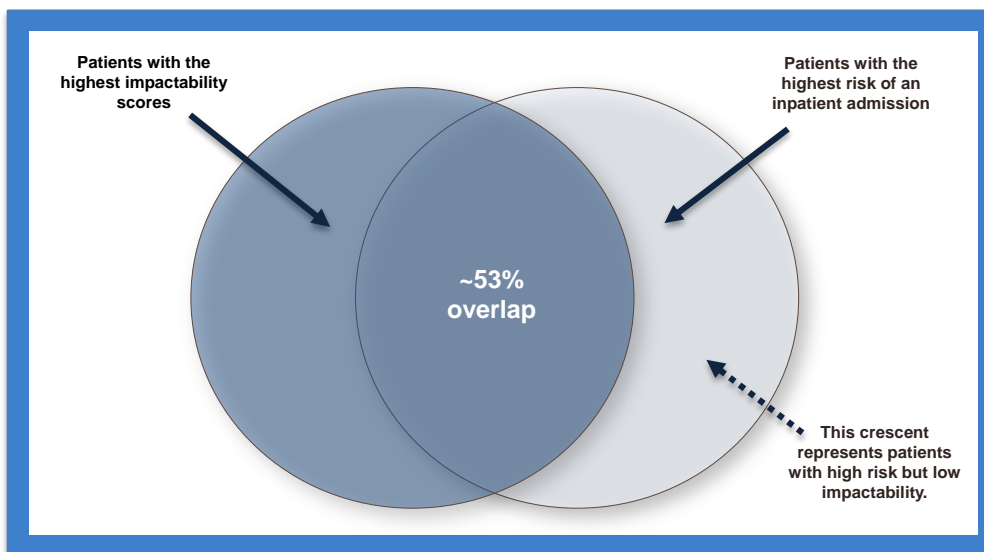
Highly impactable patients are characterized by both clinical complexity and abnormal utilization patterns. Among patients who CCNC targets for complex care management based on impactability scores, 80% have 3 or more chronic conditions and 70% have mental illness. The presence of any given chronic disease, however, is not enough to generate a high impactability score: typically fewer than 6% of patients in any diagnostic group receive an impactability score meeting CCNC's priority criteria for complex care management outreach.

How Does this Approach Compare to Other Strategies?

To validate the performance of the Complex Care Management Impactability Score™, we examined spending trends in a retrospective cohort of 38,294 non-dual CCNC-enrolled Medicaid beneficiaries with at least one inpatient or ED visit during a time period that preceded the introduction of the impactability score targeting strategy. From that group we selected the 5,000 patients who would have had the highest impactability score, 5,000 patients with the highest number of ED visits ("ED superutilizers"), 5,000 with the highest number of inpatient visits ("Inpatient superutilizers"), and a random sample of 5,000 patients. See Figure 5.

Figure 5: Validation of Spending Trends

Total Sample = 38,294 CCNC Enrollees w/ history of inpatient and/or ED utilization
Baseline spending among Random sample of 5,000 patients = $1,095 PMPM
Mean number of ED = 2.8, IP = 0.4

5,000 Patients w/ highest Complex Care Management Impactability Scores™
Baseline spending = $2,754 PMPM
Mean number of ED = 10.1, IP = 1.0

5,000 highest Inpatient "Superutilizers"
Baseline spending = $4,024 PMPM
Mean number of ED = 6.2, IP = 2.7

5,000 highest ED "Superutilizers"
Baseline spending = $2,547 PMPM
Mean number of ED = 13.8, IP = 1.0

Within each group, we compared the difference in total Medicaid spending 6 months before and after intervention, among those who received care management vs. those who did not (See Figure 6).In all 4 scenarios, patients who received care management experienced a reduction in spend that was greater than the change in spend observed in their respective comparison groups. Among ED and Inpatient Superutilizers, downward spending trends were notable even for those who did not receive care management, reflecting a natural "regression to the mean." This phenomenon has been noted elsewhere as a potential pitfall in the evaluation of programs that target superutilizers: many of these patients will

have lower costs and utilization over time regardless of care management intervention.[6] By contrast, the patients with highest impactability scores continued to have high costs in the absence of intervention; and the net benefit of care management was greatest in this group.

Over the 6-month follow-up period, care management of patients with the highest Complex Care Management Impactability Scores™ yielded an average savings of $4,488 relative to similar patients who did not receive care management. This savings was roughly twice as much as the average savings achieved through management of inpatient or ED super-utilizers, and almost three times as much as average savings achieved through care management of the broader pool of patients with any prior inpatient or ED visit. See Figure 7.

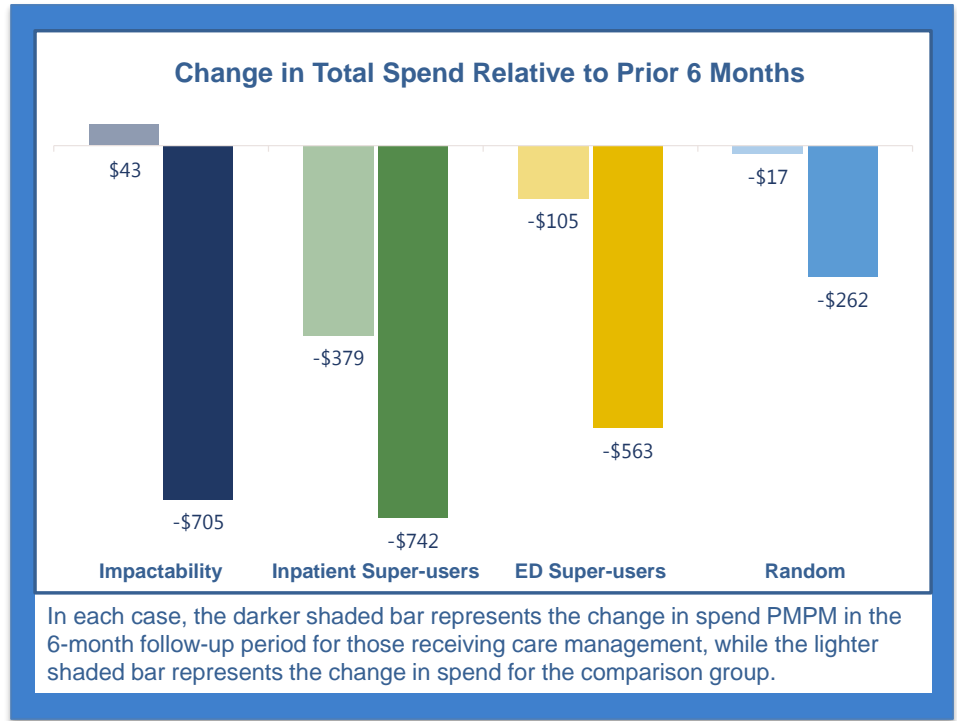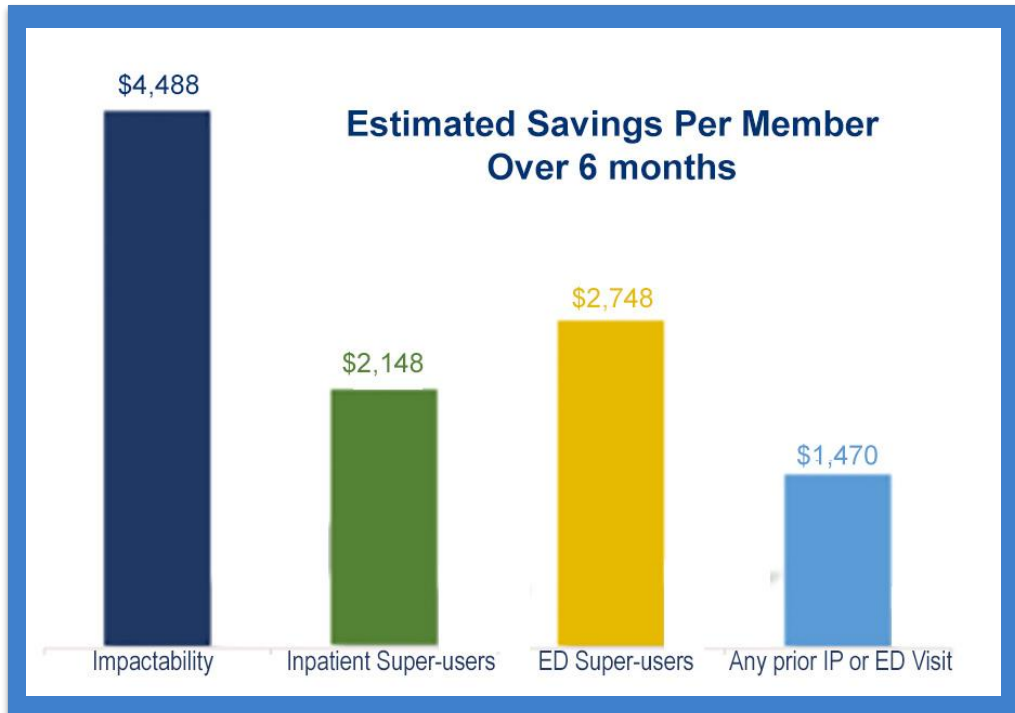**Figure 6: Relative Change by Target Group, Control vs Intervention**

Change in Total Spend Relative to Prior 6 Months

$43   -$379   -$105   -$17   -$262   -$705   -$742   -$563

Impactability   Inpatient Super-users   ED Super-users   Random

In each case, the darker shaded bar represents the change in spend PMPM in the 6-month follow-up period for those receiving care management, while the lighter shaded bar represents the change in spend for the comparison group.

Figure 7: Net Savings over Six Months, by Targeting Strategy

Estimated Savings Per Member Over 6 months

$4,488 $2,148 $2,748 $1,470

Impactability   Inpatient Super-users   ED Super-users   Any prior IP or ED Visit

Data Sources and Methodology

Data on total Medicaid spending, utilization, diagnoses, enrollment and eligibility came from NC Medicaid paid claims and administrative files. Information about whether patients received care management came from CCNC's Care Management Information System.

For the validation study, intervention subjects were selected from a pool of 23,455 non-dual, continuously eligible, CCNC-enrolled Medicaid beneficiaries who received care management between October 2011 and September 2012, and had at least one inpatient or ED visit in the year prior to initiation of care management. To mitigate against selection bias, control subjects were selected from a historical period, January-December 2010, during which CCNC's complex care management program was not yet fully to scale. Control subjects were selected from the pool of 14,839 continuously eligible, CCNC-enrolled Medicaid beneficiaries who had at least one inpatient or ED visit during the year but did not receive care management during that year or through six months of follow-up, to June 2011. Baseline year utilization determined assignment into the four study groups (5,000 highest impactability score; 5,000 highest ED use; 5,000 highest inpatient use; and 5,000 randomly selected).For intervention subjects, the baseline year was the year prior to each individual's intervention start date. For control subjects, the baseline year was calendar year 2010.

For measurement of total costs of care, the pre-period for patients in the intervention group was defined as the 6 months prior to the initiation of care management, and the post-period was the 6 months after the intervention began. For control subjects, January 1, 2011 was considered the start date for pre-post evaluation. Patients were considered to have received care management if they had, at a minimum, a direct encounter between the care manager and the patient that was either by phone or face-to-face. The components and duration of care management received varied widely across subjects, according to the needs of the individual. Subjects in the control groups were similar to subjects in the intervention groups with the exception that they were not approached for care management. The difference-in-difference analysis helps to control for unmeasured external factors that may influence spending trends. In the absence of a randomized controlled trial, the possibility of selection bias remains, but any remaining biases should be similar across the four study groups, preserving our ability to draw conclusions about relative effects.

Conclusions

With increasingly aligned incentives to improve patient experience and outcomes while lowering costs of care, providers and payers need tools to help them identify which patients are likely to benefit from care management support. Programs typically utilize tools that either target those who currently have high cost or utilization, or those with the highest predicted risk of those outcomes. Those approaches have merit, and are likely to yield greater benefit than less discriminant use of care management. Optimizing return on investment, however, requires more intelligent deployment of resources toward those who are most likely to benefit. CCNC's analytic methods effectively use administrative data for an efficient and informed first pass at identifying "highly impactable" patients, allowing for more productive use of the care team's time, for the greatest benefit across the population.

References

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Suggested Citation

Jackson CT, DuBard CA (October 2015). *It's All about Impactability! Optimizing Targeting Strategies for Care Management of Complex Patients*. CCNC Data Brief, No. 4. Community Care of North Carolina, Inc.: Raleigh NC.

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