PHS’ Case Management Risk Stratification algorithm is a mechanism used to identify patients who might most benefit from case management support services.

The Essentials

- The case management risk stratification algorithm is a composite score based on PHP member data from Facets, patient data from Epic, and proprietary risk calculations received from Truven.

- This algorithm is used to identify patients who might benefit from PMG case management services - it is not a measure of how sick a patient is nor does it affect the direct clinical care a patient receives. The Health Plan uses different algorithms for underwriting, Health Risk Assessment scores, and member program enrollment (e.g., Centennial Care).

- The algorithm is currently only used to identify case management opportunities for PMG capitated patient populations.

Program Success

The Case Management Risk Stratification scoring system went live on June 1, 2016.

What We Know About Case Management Risk Stratification

Case management is expensive and labor intensive, and case management services are not designed for the needs of all patients; well and low-risk patients are often better and more affordably served through their primary care provider and Patient Centered Medical Home (PCMH).

Case management has the greatest impact on patients and organizations when the service is targeted at high-risk and rising-risk patients in a population. Organizations benefit from a consistent and proactive way to identify and engage the patients most likely to benefit from the service.

Traditionally managed through provider referrals, identifying Case Management candidates can be difficult. Complex patients who visit their providers and proactively engage in their healthcare may be referred to a case management program, but many patients who would benefit from case management don’t visit or engage their provider enough to be referred. Provider awareness of the program or preference may also affect whether a patient is enrolled in case management. And too often, patients are referred to case management AFTER they have a health incident, rather than before, further limiting the value of the service.

Points of Contact:

Juanita Venable
Executive Director Case Management
jvenable@phs.org
505.923.7561

Jeremy Stock
Population Health Project Coordinator
jstock@phs.org
505.923.2831
How Population Health’s Case Management Risk Stratification Works

To address the need for a more proactive case management intake process, PHS has developed a data-driven enrollment model for Case Management that leverages a case management risk stratification algorithm.

Each month, Population Health receives a file from Decision Support with information about all PMG capitated patients, including the following risk factor statistics:

- Truven Likelihood of Hospitalization (LOH) score (current rolling year and previous rolling year)
- Truven Prospective Risk score (current rolling year)
- Number of ED visits patient has had in the last year (rolling)
- Last LACE score, if recently hospitalized
- Number of inpatient admissions patient has had in the last year (rolling)

The Population Health team normalizes each of these scores and combines them, based on a weighted value, to create a composite value for each patient. The data are weighted as follows:

- Current LOH: 17.5%
- Prospective Risk score: 60%
- Number of ED visits in the last year: 5%
- Last LACE score: 12.5%
- Change in LOH between current and last month scores (delta): 5%

Patients are then ranked by their Case Management Risk Stratification score and the top 1800 are stratified as “high risk.” The list of these high-risk patients is then sorted by Primary Care Physician (PCP) and Case Managers are assigned.

Each month, Case Managers meet with the PCPs for all newly identified patients to discuss whether or not each patient would benefit from Case Management services and, if so, to collaborate on a care plan. The Case Management Risk Stratification data is a key intake component for the PMG Complex Care Case Management program.

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<th>SERVICES</th>
<th>TECHNOLOGY</th>
<th>PEOPLE</th>
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| Rank patients in the PMG capitated population based on utilization and risk data to identify patients with most potential benefit from case management services. | **Truven**: 3rd party healthcare analytics service used by PHP  
**Facets**: Claims processing and benefit management system used by PHP  
**Epic**: Electronic Health Record used by the Presbyterian Delivery System | **Process Owner(s):** Juanita Venable, Executive Director Case Management  
Aleka Fahlbusch, Analytics Analyst  
Jeremy Stock, Population Health Project Coordinator |
**Measures of Success**

Risk stratification is not an end of its own; the success of the stratification process and algorithm is embedded in the success of the PMG Complex Case Management program’s intake process. That said, initial stratification tests show high levels of consistency between members that PHP referred for Case Management and the patients identified by the algorithm. Case Managers, after meeting with providers and speaking with patients, have also anecdotally confirmed that the identified patients are, in fact, good candidates for the program.

**Process and Responsibilities**

![Diagram](image)

**Future Work**

Based on feedback from the Case Management team, the Data and Analytics and Population Health teams are currently fine-tuning the algorithm; once the algorithm is refined, the teams will automate the data manipulation process into a report that Data and Analytics can run for Case Management automatically.

**Glossary**

**Normalization** A way to reduce the risk for comparing composite indices made up of different values (and value ranges). Normalization serves the purpose of bringing the indicators into the same unit. [http://howto.commetrics.com/methodology/statistics/normalization/]
At Risk

A payment model in which a payor or group of providers receive a fixed payment per member per month to provide all covered services to some defined population. Providers assume utilization and actuarial risks along with the risks assumed under other reimbursement method. Payors and/or physician payments may also be held “at risk” if certain contractual goals are not met, such as hospitalization rates exceeding agreed upon thresholds. Risk sharing is often employed as a utilization control mechanism.