POLICY AND PROCEDURE

DEPARTMENT: Case Management	**DOCUMENT NAME:** Predictive Modeling Methodology
PAGE: 1 of 5	**REPLACES DOCUMENT:**
APPROVED DATE:	**RETIRED:**
EFFECTIVE DATE:	**REVIEWED/REVISED:**
PRODUCT TYPE: Medicaid	**REFERENCE NUMBER:** LA.CM.06

SCOPE:
Louisiana Healthcare Connections (LHCC) Medical Management Department

PURPOSE:
A standard predictive modeling methodology used at LHCC to identify and stratify members for disease and care management services.

POLICY:
LHCC uses predictive modeling to routinely identify members that may benefit from disease and care management services. The enterprise data warehouse (EDW) will be the primary source of data for predictive modeling to include, but not limited to, eligibility, medical, behavioral and pharmacy claims data (as applicable), demographic data, and lab test results to calculate and continuously update each member's risk score.

PROCEDURE:
LHCC uses a state-of-the-art multi-dimensional, episode-based predictive modeling and care management analytics tool that will allow the Care Management (CM) team to use clinical, risk, and administrative profile information obtained from historical data to identify members who may be at risk for high future utilization.

1. **Development and Validation - As part of development, the predictive modeling application undergoes a significant amount of internal testing to assess the clinical validity and accuracy of the predictive models. This validation guides both model specification and model improvement prior to general release.**
    a. **Predictive modeling uses cost and utilization experience from a large population, including more than 13 million lives. This database and experience supports validation of the different model components, including the individual markers of risk used in the models and the risk weight assigned to each marker.**
    b. **The application uses markers of risk to differentiate patients within and across conditions. The risk weights describe the incremental contribution of a marker to overall risk. Using the large database to test the risk markers and weights supports the empirical validation of the importance of each marker and**

development of a robust set of risk weights that customer applications apply.

c. **In addition to empirical testing, the system validates risk markers from a clinical perspective. A key component of the clinical validity of the application is its reliance on Episode Treatment Groups® (ETG®) as a foundation for the creation of these risk markers. The proven clinical validity of the Symmetry ETG methodology enhances both the scope and accuracy of predictive modeling and also the clinical understanding of the key drivers of risk.**

d. **External studies provide an additional source of validation for predictive models and also support the comparison of results across models. The Society of Actuaries (SOA) published (2007) a comparison of predictive models that provides measures of the relative accuracy of different approaches.**

2. **The application leverages outputs from two products, Episode Treatment Groups® (ETG®) and Evidence Based Medicine (EBM Connect).**

   a. **ETG provides a clinical context for healthcare analytics by creating unique episodes of care for each recipient. Within the predictive modeling application, ETG episodes describe each clinical condition for an individual and the services involved in diagnosing, managing and treating the condition. ETG episodes also serve as a key determinant of a patient's markers of risk in the predictive modeling application.**

   b. **The outputs from the EBM Connect solution support the assessment of the care delivered for an individual against evidence-based medicine, care guidelines, the identification of care opportunities and gaps in care.**

   In addition to the Symmetry tools, the application includes a series of rigorous proprietary algorithms, including predictive risk models, each utilizing diagnostic, procedural, and pharmaceutical information available from claims data and lab results.

3. **Identifying members and measuring their risk involves the following key steps:**

   - **Identification of the clinical risk markers observed for a patient. Clinical risk markers describe a patient's array of**

clinical conditions (based on Symmetry Episode Treatment Groups established from claims data) and their use of health care services in the context of those conditions. Risk markers are important in defining a member's clinical profile and how that clinical profile can be used in differentiating their risk versus the risk of other members.

- **Assignment of risk weights to each clinical risk marker. The risk weights describe the incremental contribution to risk of having a clinical marker. Different risk outcomes use different risk weights. A risk weight is assigned to each marker of risk for the member.**
- **Calculation of patient risk. A patient's risk score for an outcome is the risk weights for all their markers of risk observed.**

4. **There are a number of criteria to consider when assessing the performance of a predictive model. These criteria match closely the objectives used– predictive ability, clinical relevance, and administrative practicality. Predictive modeling has been and continues to be validated by a number of different organizations. There are a number of measures that can be used to assess the relative accuracy of a predictive model. Measures commonly used include:**
    - **Individual R-squared Values—Percentage of variation in the outcome being predicted that can be explained by a model**
    - **Mean Absolute Prediction Error (MAPE)—The mean of the absolute difference between the predicted and actual outcome, expressed as a percent**
    - **Predictive Ratios—The mean of the ratio of the predicted to actual outcome, expressed as a percent**
    - **Specificity—Percentage of all members without the outcome identified correctly**
    - **Positive Predicted Value—Percentage of all members predicted with an outcome that did have the outcomes**
    - **Members assigned a health category based on risk and claims history that can assist with CM assignment**
    - **Care gaps and alerts are noted for immediate attention**

5. **Optimizing the Model. Customizable, able to create custom measures, i.e. pregnancy risk indicators.**

6. **Measuring Clinical Outcomes. The predictive modeling program is measured in the following ways:**
    - **Improved process for Care Management identification**
    - **Improved Reporting capability**
    - **Improved Health Outcomes**
    - **Improved Medical Cost Savings**
7. **Annual Reporting**
    a. **LHCC shall submit specification of its Predictive Modeling methodology, including its risk scoring, stratum, and healthcare guidelines annually and prior to any changes (Emergency Contract 6.43.2). These specifications shall include but are not limited to:**
        i. **A brief history of the tool's development and historical and current uses (Emergency Contract 6.43.2.1)**
        ii. **Medicaid data elements to be used for predictors and dependent measure(s) (Emergency Contract 6.43.2.2)**
        iii. **Assessments of data reliability and model validity (Emergency Contract 6.43.2.3)**
        iv. **A description of the rules and strategy to achieve projected clinical outcomes and how clinical outcomes shall be measured (Emergency Contract 6.43.2.4)**
        v. **A description of how the model has been optimized on these type interventions and the constraints on intervention to the Medicaid program and population (Emergency Contract 6.43.2.5)**

REFERENCES:

ATTACHMENTS:

DEFINITIONS:

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REVISIONS:	**DATE**
Converted corporate to local policy	**09/2020**
Added contract references for annual reporting (6.43.2 - 6.43.2.5)	**03/2021**

POLICY AND PROCEDURE APPROVAL

The electronic approval retained in Archer is considered equivalent to a signature.