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The Hilltop Institute

About the Project

Purpose: Identify factors found in clinical and functional assessment tools that increase the risk of a future nursing home (NH) admission and apply those risk-scoring coefficients to individuals on Maryland's Home and Community-Based Services (HCBS) waiting list. These factors could then be used to change the current prioritization of individuals on the waiting list from time-based (people waiting longest are next to receive services) to risk-based (people at highest risk of institutionalization are next).

Study Cohort: Individuals on the waiting list for Maryland's Community Options Waiver in October 2018 who had valid results for the Level One screening tool (n=14,745).

Method: We used waiting list and screening data from *LTSSMaryland* to identify individuals waiting for HCBS and added Maryland Minimum Data Set (MDS) data to flag those who had a subsequent NH stay longer than 100 days. We ran a proportional hazards regression model on the resulting data set, using NH admission as the event and the results of each screening item as covariates. These items included age, activity of daily living (ADL)/instrumental activity of daily living (IADL) performance and ability, health status, diagnoses, service use, living arrangements, and status of informal supports. We then applied the resulting risk-scoring algorithm to the entire waiting list and—using four different methodologies—simulated the effect of moving prioritization from time-based to risk-based.

Model Findings

The proportional hazards model found these characteristics associated with increased risk of NH admission:

- Increased age
- Needing assistance with ADLs and IADLs
- Diagnosis of chronic conditions
- Unstable living arrangements
- Inadequate informal supports

The results were statistically significant to a level that could reasonably be used in redetermining each individual's priority on the HCBS waiting list. However, a key barrier was that over 25 percent of the active registry was omitted due to missing screen information, leading to a null risk score.

Simulation

To simulate the impact of this triaging method, we:

- Determined ranking based solely on the risk profile of the person's most recent screen response

We tested two methods:

- Full-Risk: an individual's risk of NH admission was the only factor in prioritization
- Split-Wave: hypothetical waves of 300 individuals were split with 80 percent risk-based and 20 percent time-based



Risk-Based Waiting List Prioritization

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Determined each person's current priority rank

Calculated the difference between these ranks to determine how far each person would move in order of precedence





Implementation

Reordering based on risk would lead to significant changes in individuals' priority rankings. Individuals would move an average of 5,300 spots/places—or about a third of the waiting list—under the "full-risk" model. Slightly more individuals would move downward than would move upward, but those who move upward would do so more places, on average, than those who move downward. Splitting each outreach effort across both date-based and risk-based groups would limit the impact of the change for people on the registry the longest.



In order to implement this solution, we provided an XML-based file containing the scored regression coefficients to the web programming organization developing LTSSMaryland. These coefficients will be applied to the responses of each newly completed screen, producing a risk score for that individual. These scores will be used in conjunction with the date each individual was added to the registry to compute the order in which they will be moved onto an outreach wave. We plan to do periodic retraining of the regression model in order to update the coefficients used, reflecting the most recent experience for our population.

Outcome

After multiple presentations to the relevant stakeholder groups, Maryland has decided to implement the risk-based triaging methodology. We hope this will lead to a more equitable allocation of HCBS waiver slots, and that simulating the effect of these changes was helpful in making the decision to move forward.