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Executive Summary

The Riverside University Health System (RUHS) contracted with the Patient-Reported Outcomes, Value, & Experience (PROVE) Center at Brigham and Women's Hospital, affiliated with Harvard Medical School, to conduct an independent validation of the Whole PERSON Health Score (WPHS). The WPHS is a holistic, patient-centered tool developed by RUHS to assess health across six domains: physical health, emotional health, resource utilization, socioeconomic, ownership, and nutrition and lifestyle. The WPHS was designed as a practical tool to measure determinants of health that influence life expectancy and well-being, as well as to identify strengths and opportunities for intervention at both the individual and population levels. Previously, the RUHS team had validated the WPHS for content and reliability and had demonstrated the tool's usability, feasibility, and acceptability among patients and providers. However, as interest in the WPHS tool grew beyond the local RUHS service area, RUHS sought a more rigorous and independent validation, which led to this project. The overarching goal of this evaluation is to evaluate the measurement performance of WPHS domain and composite scores and provide actionable recommendations for further refinement and implementation.

In collaboration with the RUHS team, the PROVE Center conducted a comprehensive evaluation of the WPHS domain and composite scores, using data provided by RUHS from electronic health records. The analytic sample included 58,055 patients who completed at least one WPHS survey between August 2019 and February 2024. The dataset included demographic and clinical characteristics, WPHS responses and scores, types of clinical visits, and diagnosis indicators of chronic health conditions.

The PROVE team first assessed the data quality of the WPHS survey, identifying potential issues related to questions and workflows of data collection. Following this, the team evaluated its measurement properties across three key areas: measurement type, reliability, and validity.

Quality of data was found to be generally good. Identified data entry and system algorithm errors were corrected and resolved before analysis was conducted. In the psychometric evaluation, the PROVE team determined that four domains (physical health, resource utilization, socioeconomic, and nutrition and lifestyle) function as indices, while two domains (emotional health and ownership) function as scales. The WPHS composite score was also found to function as a scale. The PROVE team's analysis provided evidence supporting the reliability and validity of the six domain scores, including known-group validity, floor and ceiling effects, convergent validity, structural validity (where applicable), and predictive validity.

Analysis of the physical health domain score demonstrated, for example, known-group validity in its ability to differentiate patients based on age groups, number of pre-survey clinical visits, and presence of chronic health conditions. As another example, analysis of the emotional health domain score demonstrated convergent validity with the Patient Health Questionnaire – 2 score. All six domain scores showed acceptable floor effects and trivial ceiling effects and were predictive of three-month post-survey clinical visits. Similarly, the WPHS composite score, constructed using the six domains, showed acceptable measurement properties.

The evaluation also identified areas for further improvement. First, additional validity analyses using external variables would strengthen the conclusions. Second, adjustments to the implementation and data collection processes would improve data quality and enhance the reliability and validity of WPHS domain and composite scores. Finally, instrument refinements based on this evaluation report could further optimize the performance of the WPHS.

In conclusion, this one-year evaluation provides preliminary evidence supporting the validity and reliability of the WPHS to measure determinants of health. Moving

forward, the PROVE team recommends addressing identified issues related to data quality and measurement to optimize performance. Further evaluation is encouraged to ensure the WPHS continues to evolve as a valuable tool for patient-centered care and quality improvement within and beyond RUHS.