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TECHNICAL REPORT

A Prototype Interactive Mapping Tool to Target Low Health Literacy in Missouri

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Sponsored by the Missouri Foundation for Health

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Summary

Over the past decade, providers and policymakers alike have recognized the need to shift from documenting the existence of gaps in quality of care and health outcomes to doing something about them. Numerous efforts have identified characteristics of individuals who are deemed to be "at risk" for poor health outcomes and lower-quality care, such as belonging to certain minority groups or having low income or low education. In addition, health literacy has emerged as a potentially critical pathway through which education, income, and other fundamental determinants impact healthcare quality and disparities. Health literacy is "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Ratzan and Parker 2000). Individuals with low health literacy (LHL) have difficulty with tasks ranging from understanding directions for taking medication to navigating the healthcare system.

Many stakeholders recognize that achieving equity in the U.S. healthcare system requires addressing challenges related to LHL. However, efforts to translate such evidence into cost-effective actions and interventions have been only marginally successful. Identifying *geographic areas* with large numbers of people with LHL can help stakeholders target interventions more efficiently and cost-effectively. Such a population-based approach is especially attractive in view of the recent acceleration of interest in public health literacy, defined as "the degree to which individuals and groups can obtain, process, understand, evaluate, and act on information needed to make public health decisions that benefit the community" (Freedman et al. 2009), and the concomitant need to develop more multifaceted and population-based approaches to improving health. The feasibility and success of a population-based approach to addressing LHL and resulting health disparities, however, relies in part on the ability to identify geographic areas where large numbers of at-risk people live in order to determine effective types of interventions and optimal locations for implementation.

A Prototype Interactive Web-Based Tool to Target LHL

Stakeholders are in need of a tool to help them maximize the impact of limited resources available to address LHL and to target those resources toward communities at greatest need. In response, RAND developed a prototype interactive web-based mapping tool to help healthcare decisionmakers in Missouri identify community-level "hot spots" of suboptimal health or healthcare that may be due to LHL. This work is part of a multiphase project, sponsored by the Missouri Foundation for Health, to develop a predictive model of health literacy and to estimate levels of health literacy in small geographic areas (e.g., census tracts). The resulting tool incorporates the following data:

- ***Estimates of community-level health literacy.*** In an earlier phase of this project, we developed predictive models of health literacy using data from the National Assessment of Adult Literacy (NAAL) (Lurie et al. 2010; Martin et al. 2009). These models, when applied to census-derived variables for small geographic areas, provide an estimate of the percentage of individuals within that region with "basic" or "below basic" health literacy skills, as well as their mean NAAL scores.

Additional information on the NAAL and the development of the models can be found in Appendix B.

- ***Health outcomes and care quality***, including breast and colon cancer screening and quality of diabetes care. These were obtained from Missouri's County Level Study (CLS).
- ***Neighborhood sociodemographic characteristics*** were obtained from the 2000 U.S. Census and the 2007 American Community Survey (ACS).
- ***Neighborhood health services data*** including medically underserved areas (MUAs), health professional shortage areas (HPSAs), and the locations of hospitals and federally qualified health centers (FQHCs), obtained from the American Hospital Association (AHA) and the Health Resources and Services Administration (HRSA).

Using GIS technology, this prototype tool presents the above data in the form of color-coded maps that quickly show stakeholders where individuals with different characteristics reside and where health or healthcare is suboptimal. This GIS mapping tool is part of RAND's Q-DART project, which applies emerging analytic and decision tools to better target gaps in the quality of care and health outcomes in diverse populations, helping decisionmakers more wisely allocate scarce resources.

By simultaneously mapping neighborhood levels of health literacy and low-quality care, stakeholders obtain a more empirically based understanding of the geographic distribution of these problems in and around their communities, helping to reverse the "inverse care law," which states that the availability of quality medical care tends to vary inversely with the need among the population served (Schillinger 2007; Tudor-Hart 1971). As such, this tool may not only help stakeholders target population health interventions in communities of greatest need (Lalonde 1974) but also support the development of tailored approaches to improving health among vulnerable populations (Frolich and Potvin 2008).

The interactive mapping tool allows stakeholders to select the level of geography (e.g., census tract, county), obtain information for and map specific regions of interest, select the characteristics to be mapped, generate tables and reports on the regions and characteristics of interest, import their own data, export data from the tool, and save and print their projects.

The prototype tool is housed on a dedicated RAND website, making it possible for a range of stakeholders, from health plans to community organizations, to access and use the tool to help address healthcare disparities in their communities.