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**A Web-Based Staffing and Quality Simulation Tool  
to Improve Nursing Home Care  
University of Pittsburgh  
Nicholas Castle, Ph.D.  
\$252,644 for 2 years (5/1/08–4/30/10)**

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**A nursing home resident's experience depends, in large measure, on the facility's staff. Certain staffing characteristics in particular have been shown to affect overall quality: staffing levels, turnover and long-term retention, and use of agency staff. Drawing from several large data sets, a research team from the University of Pittsburgh and RAND will examine how quality of nursing home care changes as different aspects of staffing are altered, either singly or in combination. From these results, the team will then create and test the usefulness of a set of tables and a Web-based simulation tool that will allow nursing home administrators to see how manipulating different staffing characteristics affects quality measures. The investigators will present their findings to providers through trade association conferences, industry newsletters, and the Web sites of the Nursing Home Quality Campaign and the Pioneer Network.**

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**Background:** Researchers investigating the relationship between nursing home staffing and quality of resident care have focused primarily on staffing levels. While maintaining sufficient staffing is certainly important, other staffing characteristics—such as the ability to retain staff for five years or more, limit year-to-year turnover, and limit the use of agency staff—are also vital to the ideal of resident-centered care. Nursing home providers, however, do not have a reliable way to anticipate the impact of these characteristics on quality measures and costs. The ability to project the effects of changes in these other staffing characteristics would allow facilities to manage more strategically, improve quality, and control costs.

**The Project:** Under the direction of Nicholas Castle, Ph.D., associate professor in the Department of Health Policy and Management at the University of Pittsburgh Graduate School of Public Health, and in collaboration with John Engberg, Ph.D., senior economist at RAND, the project team will use simulation analysis to understand how staffing characteristics influence quality indicators.<sup>1</sup> Using 2004 and 2005 data from the

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<sup>1</sup> Dr. Castle has conducted extensive research on nursing home staffing and quality-related issues under grants from the National Institutes of Health and the Agency for Healthcare Research and Quality. In 2001, he was the American College of Health Care Administrator's Long-Term Care Researcher of the Year.

University of Pittsburgh's National Nursing Home Staffing Study, the federal Online Survey Certification and Recording (OSCAR) system, and Nursing Home Compare (a Web site created by the Center for Medicare and Medicaid Services), the researchers will analyze the annual performance of approximately 3,000 nursing homes. The team will then create a model that will allow nursing home providers to see how changes in staffing characteristics—either singly or in combination—would affect measures of quality.

The team will test the new model in two forms—a set of data tables and an online tool—and disseminate it to administrators of the nation's 16,000 nursing homes through a University of Pittsburgh Web site and through mailings. In addition to preparing manuscripts for journal submission, the investigators will present their findings and information about the simulator to providers through trade association conferences, industry newsletters, and the Web sites of the Nursing Home Quality Campaign and the Pioneer Network.

**Expected Outcomes, Risk, and Staff Effort:** With an easy-to-use tool for identifying how changes in various staffing characteristics can affect quality, nursing home administrators will be better able to make strategic decisions that will improve care and control costs. The project findings also will demonstrate to policymakers and providers the profound effect staffing characteristics have on quality.