



Use of Data Mining to Improve Cardiovascular Disease Risk and Veteran Health Outcomes

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Problem Statement: The Veterans Health Administration (VHA) was one of the first to use an electronic health record. This strong infrastructure and ongoing improvements in this technology provide opportunities for clinicians and researchers to track and improve the care of Veterans longitudinally. **Methods:** Data extraction from the Computerized Patient Record System (CPRS) at the Department of Veterans Affairs Medical Center in Salem, Virginia was used to evaluate the care provided for 1,865 Veterans over a five year time period. Data mining was used to determine cardiovascular disease risk trends, patterns, and treatment effectiveness. This retrospective, longitudinal study reviewed Veteran health outcomes following use of a collaborative goal setting tool and motivational interviewing (MI) skills. The association among patient adherence, goal setting, and decision support on body mass index (BMI), glycated hemoglobin (HbA1c), and low-density lipoprotein (LDL) was examined using generalized estimating equations with exponential regression. There were three equations in the analysis, each containing nine independent variables and one dependent variable. **Results:** The highest risk category for cardiovascular disease declined from 42.9% to 24.2% during the course of the study. Use of collaborative goal setting and MI was a significant predictor of lower HbA1c and LDL. HbA1c values for the sample population remained close to the American Diabetes Association goal of ≤ 7.0 during the entire study (mean 7.12). BMI remained essentially unchanged. The study showed that use of collaborative goal setting and consistent care was effective in improving diabetes control and cholesterol status. **Significance:** Findings included significant sustained reduction in LDL and improvement in diabetic control over the 5 year study period. Motivational interviewing and collaborative goal setting are valuable tools in patient engagement with an impact on lifestyle behaviors and adherence. Nursing informatics enhances the quality of patient care and evaluation of data over time validates clinical practice and practitioner decision making.