

Stroke

INDIANAPOLIS, INDIANA

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Background

Stroke is the fourth leading cause of death in the United States, accounting for more than 1 out of every 18 deaths. More than 795,000 persons experience a new or recurrent stroke each year, resulting in direct and indirect costs of more than \$40 billion. On average, an American has a stroke every 40 seconds, and every four minutes someone dies of stroke; ultimately, 15%–30% of stroke survivors have serious, long-term disability. Approximately 6,000 VA admissions are for acute ischemic stroke, with new strokes costing an estimated \$111 million for acute inpatient care, \$75 million for post-acute inpatient care, and \$88 million for follow-up care in the first six months post-stroke.

Stroke Quality Enhancement Research Initiative (QUERI)

Stroke-QUERI is committed to improving VA stroke care across the clinical continuum from prevention (primary and secondary) to in-hospital care, to recovery – and to supporting VA operational partners with analyses that inform stroke-related policy decisions and system-level stroke care. Consistent with this overarching commitment is Stroke-QUERI's stated mission: to improve care and outcomes for Veterans at risk of ischemic stroke and those who have sustained an ischemic stroke. Activities in support of this mission focus on three major goals:

- Improving in-hospital management of stroke to reduce stroke mortality and morbidity;
- Improving risk factor control among Veterans at high risk of stroke; and

Supporting VA stroke policy decisions by

collecting and reporting VA patient- and system-level data.

Across these goals, Stroke-QUERI uses national data sources to conduct gap analyses to identify high-yield areas for implementation projects. Beginning with the Office of Quality and Performance (OQP) Stroke Special Project in 2009, Stroke-QUERI has led VA in assessing quality of inpatient stroke care, quality of post-stroke risk factor management, and most recently, the quality of care for Veterans with transient ischemic attack (TIA). Stroke-QUERI engages front-line VA providers in evaluating and responding to these analyses via participation in their national Stroke Quality Improvement Network (SQUINT), and in planning and conducting multi-site active improvement projects.

Stroke-QUERI projects and Findings

In-Hospital Management

Stroke-QUERI's work to improve in-hospital management of ischemic stroke targets two main areas:

- Developing systems to document, measure, and improve inpatient stroke care processes and quality; and
- Conducting active implementation projects to foster ongoing inpatient stroke quality improvement activities and improve VA stroke care.

In FY13, Stroke-QUERI made significant progress in both of these areas with the completion or continuation of key projects and the initiation of new implementation projects. In their multi-site study "Intervention for Stroke Performance Improvement using Redesign Engineering (INPSIRE)," Stroke-QUERI investigators tested

About QUERI

VA/HSR&D's Quality Enhancement Research Initiative (QUERI) currently focuses on ten areas of great importance related to healthcare for Veterans: Chronic Heart Failure, Diabetes, eHealth, HIV/Hepatitis, Ischemic Heart Disease, Mental Health, Polytrauma and Blast-Related Injuries, Spinal Cord Injury, Stroke, and Substance Use Disorder.

Working with health system partners to develop research that speeds improvements in Veterans' healthcare, QUERI utilizes a six-step process to diagnose gaps in performance and identify and implement interventions to address them.

- Identify priority conditions and opportunities for improving the health of Veterans.
- Identify effective practices for improving outcomes for priority conditions.
- Examine variations in existing practices, the sources of variation, and their relation to health outcomes.
- Identify and test interventions to improve the delivery of best practices.
- Evaluate the feasibility, adoption, and impact of coordinated improvement programs to spread best practices.
- Evaluate the effects of improvement programs on Veterans' health outcomes, including quality of life.

a Systems Redesign (SR)-based intervention with quality indicator feedback vs. quality indicator feedback *alone* to improve two inpatient process measures. The study showed that SR training accelerated improvement rates during the intervention phase, but that in the year after the intervention the sites receiving only indicator feedback reached similar levels of improvement. This ongoing study is yielding important information about variation in stroke team organization and roles and how this variation relates to sustained care quality.

Following the November 2011 release of the VA Acute Ischemic Stroke (AIS) Directive, Stroke QUERI led a project to evaluate facility response to this evidence-based reorganization of stroke care.

Conducting interviews with 38 VAMC stroke teams, Stroke-QUERI investigators elicited key barriers and facilitators to responding to the Directive. One key finding is that sites that had a “reluctant” clinical champion often struggled to implement and coordinate protocols across all of the clinical services involved in acute stroke care. In addition, VA Stroke Centers identified the importance of an effective nurse champion to link the different services and people to promote change and measure results.

New Stroke-QUERI projects include projects to:

- Develop electronic clinical quality measures for inpatient stroke care (a partnership with the VA Office for Clinical Analytics and Reporting);
- Use natural language processing to identify key elements related to symptom onset timing for thrombolysis eligibility; and
- Test a nurse-Speech Language Pathologist dyad approach to improve dysphagia screening for stroke patients in VA Emergency Department settings.

Risk Factor Management

Stroke-QUERI's work in the area of risk factor management is focused on Veterans at high risk of stroke, including patients with a history of stroke and transient ischemic attack (TIA) and patients with multiple, poorly-controlled risk factors. In addition, Stroke-QUERI investigators

continue to evaluate the quality of care for Veterans with transient ischemic attack (TIA) and minor stroke.

New projects include work to identify Veterans who are at high risk of stroke; the products of these projects will be used to target risk factor management programs. For example, Stroke-QUERI investigators demonstrated that Veterans who are discharged with stroke have worse vascular risk factor control (e.g., hypertension) than Veterans who are discharged with acute myocardial infarction. These data are being used to plan a future intervention project to address gaps in post-stroke risk factor management. Another project to improve anticoagulation management quality in VISN 1 continues, and findings have already identified characteristics of local anticoagulation clinic that are associated with improved processes of care and patient outcomes.

Stroke Policy

Stroke-QUERI has organized policy work in two related areas:

- Evaluating stroke performance metrics for VA that were proposed by Centers for Medicare and Medicaid Services (CMS) for the Medicare program; and
- Developing and evaluating models of stroke care structures, costs, and outcomes to inform VA stroke care organization.

For example, Stroke-QUERI evaluated whether 30-day stroke mortality and readmission could be used to compare VAMC performance using data from one year. Investigators found that the statistical models currently being used may not result in a facility-level measure that is useful to identify superior stroke care. In a separate analysis, QUERI investigators used three years of data to determine if a larger volume would allow identification of outliers. With a large cohort, two facilities were identified as outliers based on 30-day mortality. A quality metric that only identifies two facilities as outliers, again, is probably not the metric for VA hospital profiling.

As part of Stroke-QUERI's goal to evaluate models of stroke care costs, investigators developed a stroke Make/Buy Model to compare costs of in-house

stroke care versus care that is contracted to other non-VA facilities. Findings show that for at least 55 VA facilities that have both 24/7 head CT availability and intensive care units, in-house care is probably more cost-effective, even with further investments in personnel costs.

Stroke-QUERI, in tandem with the national Choosing Wisely campaign, also is evaluating low-value stroke care. Two metrics under investigation are inappropriate dual antiplatelet therapy in patients with a history of stroke, and transient ischemic attack and inappropriate use of carotid artery imaging. Early results demonstrate that at least 1 out of 5 carotid images are ordered for indications currently not supported by any evidence.

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The Stroke-QUERI Executive Committee

Each QUERI Center is led by a research expert and a clinician. The Research Coordinator for Stroke-QUERI is **Linda Williams, M.D.**; the Clinical Coordinator is **Dawn Bravata, M.D.**, the co-Clinical Coordinator is **Glenn Graham, M.D.**, and the Implementation Research Coordinators are **Teresa Damush, Ph.D.** and **Edward Miech, EdD.** Members of the Stroke-QUERI Executive Committee include: **Barbara Vickrey, M.D., M.P.H.** (Chair); Laura Damschroder, M.S., M.P.H.; Pamela Duncan, Ph.D.; Daniel Federman, M.D.; Thomas Kent, M.D.; Salomeh Keyhani, M.D.; Brian Mittman, Ph.D.; Mathew Reeves, Ph.D.; Robert Ruff, M.D. and Anne Sales, Ph.D., RN.

QUERI web link:
www.hsrdr.research.va.gov/queri