

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, every 40 seconds an American has a stroke 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

The mission of the VA HSR&D Stroke Quality Enhancement Research Initiative (Stroke-QUERI) is to reduce the risk of stroke and to foster system, provider and patient processes that result in the best possible outcomes for Veterans with stroke. This mission is accomplished by focusing on three goals:

- Improve in-hospital management of stroke to reduce stroke mortality and morbidity;
- Develop, evaluate and integrate prevention strategies to reduce the risk of stroke among Veterans at high risk of stroke; and
- Support VA stroke policy decisions by collecting and reporting VA patient- and system-level data.

Across these three goals, Stroke-QUERI

uses data from the Office of Quality and Performance's (OQP) Stroke Special Project and other national data sources to conduct gap analyses to identify high-yield areas for implementation projects. The OQP Stroke Special Project was the first national benchmarking project of stroke care quality in the VA. Conducted as a collaborative project between OQP and Stroke-QUERI, it entailed an electronic medical record review of 5,000 Veterans admitted to any VAMC with ischemic stroke. Stroke-QUERI investigators assessed the quality of inpatient stroke care, led facility-level data feedback to the field with corrections of 14 indicators, and developed a stroke improvement toolkit linked to each of the indicators. This toolkit continues to be accessed on the Stroke-QUERI website (more than 12,000 visits in FY10) and disseminated via the national Stroke Quality Improvement Network (SQUINT)—and during recent national acute ischemic stroke training, which was conducted as part of the roll-out of the new Acute Ischemic Stroke Directive.

Stroke-QUERI projects and Findings

In-Hospital Management

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

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

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.

In FY11, Stroke-QUERI made significant progress in both 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,” researchers completed onsite interviews with more than 100 VA staff engaged in stroke care at 12 VAMCs. These data are actively being analyzed to answer questions about the impact of the OQP Stroke Special Project data and about systems of care related to ongoing stroke care improvements. Stroke-QUERI investigators also completed System Redesign (SR)-based quality improvement training for stroke teams at six of the facilities, and have completed the six-month coaching intervention. Currently, they are providing data feedback on stroke quality indicators to all facilities in order to compare the SR-based intervention plus data feedback versus data feedback alone for improving dysphagia screening and DVT prophylaxis in Veterans with acute ischemic stroke.

In FY11, Stroke-QUERI also continued development of the Stroke Quality Improvement Decision Support System (SQUIDSS) software tool development, in partnership with the Indianapolis VAMC Software Development team.

The SQUIDSS system prompts guideline-adherent practice for acute ischemic stroke evaluation and treatment, and also documents key stroke processes to aid ongoing facility-level review and quality improvement. The Emergency Department Information Systems (EDIS) team has selected SQUIDSS for inclusion as its first clinical pathway to be embedded in the ED software, and programming of this integration is ongoing in FY12. Stroke-QUERI anticipates conducting future work to evaluate the implementation of the SQUIDSS tool in the EDIS system in FY13.

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. For example, Stroke-QUERI completed a series of targeted analyses of the OQP Stroke Special Project data to identify current practices and gaps in vascular risk-factor management during the first six months post-stroke. Investigators are actively engaged in implementing improvement programs that address the following key findings, including:

- Although hypertension is the most common vascular risk factor among Veterans with stroke, most Veterans with stroke have multiple vascular risk factors. For example, the specific combination of coexisting diabetes, hypertension, and hyperlipidemia is present in one in five Veterans with stroke.
- The majority of Veterans have their risk factors measured in the 6-months post-stroke, but just a minority has their risk factors treated to goals during this period.

Stroke Policy

Stroke QUERI’s planning process and extensive partner discussions in FY11 led to more focus on the policy-relevant nature of some of the ongoing work. Thus, Stroke-QUERI has organized the policy work in two related areas: 1) evaluating stroke performance metrics for the VA that is proposed by Centers for Medicare and Medicaid Services (CMS) for the Medicare program; and 2) 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 could be used to compare VAMC performance. Investigators found that given the narrow range of 30-day stroke mortality rates across VAMCs that the statistical models currently being used by CMS to measure and publicly report 30-day mortality rates may not

result in a facility-level 30-day mortality rate measure that is useful to identify VAMCs that provide superior stroke care compared to other VAMCs.

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, which 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.

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The Stroke-QUERI Executive Committee

Each QUERI Executive Committee 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 Coordinator is **Teresa Damush, Ph.D.** Members of the Stroke-QUERI Executive Committee include: **Barbara Vickrey, M.D., M.P.H.** (Chair); Pamela Duncan, Ph.D.; Thomas Kent, M.D.; Sarah Krein, Ph.D., R.N.; David Matchar, M.D.; Brian Mittman, Ph.D.; Don and Jan Prether; Mathew Reeves, Ph.D.; and Robert Ruff, M.D.

QUERI web link:
www.hsr.d.research.va.gov/queri