

Stroke QUERI

Strategic Plan and Goal Development

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Outline

- Background
 - Stroke facts, VA and non-VA
- Current stroke quality improvement activities
 - Joint Commission/Get With the Guidelines
 - VA OQP Stroke Special Project
 - VA Stroke Task Force
- Our process for setting clinical goals
 - Existing work, partner interviews, modeling
- Planned FY11-14 goals and rationale

Audience response question:

- With what organization or group are you most closely affiliated?
 - VA QUERI
 - VA HSR&D
 - VA clinical service
 - VA operations/managerial service
 - VA other
 - Non-VA researcher
 - Non-VA clinician

Stroke Epidemiology in US

AHA Heart and Stroke Facts 2009

- **Incidence:** 795,000 strokes annually
- **Prevalence:** 6.5M stroke survivors
- **Cost:** \$69B direct and indirect cost in 2009
- **3rd leading cause of death**
 - CMS 30-day risk standardized mortality:
 - 15.3% in stroke
 - 15.9% in MI
 - Mortality decreased overall 1995-2005 by 30%
 - Still a strong marker of 1-year mortality risk:
 - Age 49-69: 14-20%
 - Age ≥ 70 : 24-27%

Stroke Epidemiology in VA

- Stroke incidence and prevalence rates among veterans are unknown
- In FY2007, more than 6000 veterans were admitted to a VAMC for an acute ischemic stroke
 - Does not include patients with TIA (approximately 5,000 diagnosed annually), those admitted with stroke and another acute medical condition, or in-hospital strokes
- In FY07 national VA cohort with ischemic stroke:
 - In-hospital mortality was 4%
 - 6-month mortality was 8%
 - 6-month readmission (VA only) was 27%
- In FY05, the total VA cost of stroke treatment was \$315M, with cost per veteran of 3.4x the average VA healthcare cost

Current VA Stroke Performance Measures

- **Stroke-specific measures:**
 - None
 - FIM (functional) screening of inpatients with stroke, amputation, or spinal cord injury transitioned to a “quality indicator without benchmark” in FY08
- **Stroke-relevant measures:**
 - Outpatient:
 - BP, lipids, DM, smoking; none reported in stroke cohort
 - Inpatient:
 - DVT prophylaxis (IPEC measure, stroke not included in high risk group that makes up the denominator)
 - Smoking cessation counseling (not reported for stroke patients specifically)

Stroke Improvement Activities:

Joint Commission Primary Stroke Center Certification

- Collaboration with the American Stroke Association and the Brain Attack Coalition
- Process of data collection and review
 - Registry of patients
 - Staff, including core stroke team, and training
 - 4 months of data on eight core measures
 - Action plans for performance improvement
- One-year certification, then bi-annual review
- More than 600 PSCs as of October 2009

JC Primary Stroke Center Data Elements

- Thrombolytic therapy
- DVT prophylaxis
- Antithrombotic therapy by day 2
- Assessed for rehabilitation
- Stroke education
- Discharge on statin
- Discharged on antithrombotic therapy
- Anticoagulation for atrial fibrillation

Two former measures recently excluded:

- Dysphagia screening before oral intake
- Smoking cessation counseling

Stroke Improvement Activities:

AHA/ASA Get With the Guidelines-Stroke

- Hospital-based quality improvement program
- Online data collection and sharing with other program participants
- Harmonized achievement measures with JC PSC plus:
 - Other measures (e.g., dysphagia screening)
 - Other processes (e.g., door to CT time)
 - Other outcomes (e.g., in-hospital mortality)

Current VA Participation in National Stroke QI programs

- JC PSC certified or pending: Bay Pines, Houston, Miami, ? others
- GWTG certified: Bay Pines, ? others
- Other VA facilities have or are pursuing various state certifications
 - Some states are requiring certification for EMS transport of patients with suspected stroke

Stroke Measurement Activities:

Centers for Medicare & Medicaid Services (CMS)

- Current proposal for two national facility-level stroke quality indicators:
 - Adjusted 30-day mortality rate
 - Adjusted 30-day readmission rate
- Public comment period recently closed
- Awaiting CMS decision about these 2 measures

Stroke Improvement Activities:

OQP/Stroke QUERI Stroke Special Project

- **Background**
 - Stroke is a high volume, high acuity, high impact condition with no current VA performance assessment
 - To improve stroke care across the VA system, we must measure stroke care quality, to identify gaps in care that will serve as targets for future improvement projects
- **Objectives**
 - Assess the quality of inpatient VA stroke care
 - Assess post-stroke risk factor management
 - Feedback data to VAMCs
 - Provide a toolkit of improvement strategies and tools

OQP Stroke Study: Methods

- **Sample**

- 5000 veterans admitted to a VA facility with discharge diagnosis of ischemic stroke, FY07
- Excluded: hemorrhagic stroke and elective carotid endarterectomy, in-hospital stroke
- 100% of veterans at small volume centers (≤ 55 in FY07)
- 80% of veterans at high volume centers (> 55 in FY07)

- **Chart review**

- Chart review based on electronic medical records only (not paper) by EPRP abstractors
- VAMCs provided opportunity to review and correct inpatient data

14 Inpatient Processes of Care

Early Hospitalization

- Dysphagia screening before oral intake
- NIH Stroke scale completed
- Thrombolysis (tPA) given


In-Hospital Period

- Antithrombotic therapy, HD2
- DVT prophylaxis
- Early ambulation
- Fall risk assessment (Morse Scale)
- Pressure ulcer risk assessment (Braden scale)
- Rehab consultation/FIM results

Hospital Discharge

- Antithrombotic therapy, D/C
- Lipid management
- Atrial fibrillation management
- Smoking cessation counseling
- Stroke education

 Joint Commission based

 VA-specific

- Among 5000 patients, 3936 were eligible for at least one quality indicator
- Among 131 VAMCs, 129 facilities cared for veterans who were eligible for at least one quality indicator

Final National In-Patient Data Summary

Process of Care	Eligible Patients N=3936	Process Present %
Antithrombotic therapy, DC	3514	96.4
Antithrombotic therapy, HD2	3523	95.6
Smoking cessation counseling	1268	94.9
Pressure ulcer risk assessment	3789	91.8
Early ambulation	3009	86.1
Rehabilitation consultation	2796	86.0
Lipid management	3009	82.1
Fall risk assessment	3673	79.3
DVT prophylaxis	1018	78.2
Anticoagulation for atrial fibrillation	409	75.3
NIH Stroke Scale documented	3640	27.7
Dysphagia screening	3591	23.4
Stroke education	2524	18.1
Thrombolysis (tPA) given	227	8.4

National In-Patient VA Data vs. Non-VA

Process of Care	Eligible Patients N=3936	Process Present %	Non-VA %
Antithrombotic therapy, DC	3514	96.4	67.4-97.8
Antithrombotic therapy, HD2	3523	95.6	88.2-88.7
Smoking cessation counseling	1268	94.9	36.5-38.8
Pressure ulcer risk assessment	3789	91.8	-
Early ambulation	3009	86.1	-
Rehabilitation consultation	2796	86.0	-
Lipid management	3009	82.1	58.7
Fall risk assessment	3673	79.3	-
DVT prophylaxis	1018	78.2	62.3-75.4
Anticoag for atrial fibrillation	409	75.3	9.7-100.0
NIH Stroke Scale documented	3640	27.7	14.5
Dysphagia screening	3591	23.4	-
Stroke education	2524	18.1	-
Thrombolysis (tPA) given	227	8.4	23.5

Stroke Improvement Activities: VA National Stroke Task Force

- Based on OQP results and ED survey of stroke care, VA assembled a multidisciplinary team to make recommendations about improving acute stroke care
 - ED, Neurology, Primary Care, Nursing, Allied Health, Operations
- Recommendations in four areas:
 - Templates/measures
 - Facility requirements
 - Consent
 - Education

VA Stroke Task Force Recommendations:

- **Each facility will assess and report its capabilities for acute stroke care as:**
 - VHA Primary Stroke Center (24/7 acute stroke care)
 - VHA Limited-hours Stroke facility (acute stroke care at some times)
 - VHA Supporting Stroke facility (cannot provide acute stroke care)
- **For Primary and Limited Hours Stroke facilities:**
 - Stroke clinical pathway/protocol
 - Radiology coverage
 - Stroke team
 - tPA provision for eligible patients
 - Measurement of acute care quality indicators
- **All facilities:**
 - Treatment or transfer policy
 - Patient and staff education

How do these ongoing activities relate to and inform our clinical goals?

- Existing work:
 - Where have we been?
- Partner interviews:
 - Where should we be?
- Systems Dynamics modeling:
 - If we go there, what will happen?

Stroke QUERI Existing Work Across the Continuum of Care

Stroke Risk Factor Management

In-hospital Management

Recovery

Acute Treatment

Hospital Care

Rehab

- Hypertension control

- Self-management of multiple vascular risk factors

- Identification of high-risk patients

- Developing systems to document inpatient care processes

- Implementation of QI interventions aimed at various inpatient processes

- Rehabilitation structure and outcomes

- Telerehab interventions

- Depression management

Cross-cutting projects:

- OQP Stroke Special Project (national quality assessment)
- Systems Dynamics modeling of VHA stroke care

Process for Goal Setting: Partner Interviews

- **Purpose:** to solicit opinions from various partners related to how the Stroke QUERI could maximize its efforts to reduce the burden of stroke within VHA
- **Process:** drafted series of questions, spoke directly with partners, summarized findings for executive committee
 - *“Should we focus on multiple risk factor management projects or individual risk factor projects?”*
 - *“Should we focus on low volume/high impact or high volume/low impact indicators?”*
 - *“If we could do one thing to improve VA stroke care, what would you want the Stroke QUERI to do?”*
- **Partners:** leaders from patient care services (primary care, neurology, rehabilitation, SLP, etc.), HSRD, operations (IPEC), OQP, veteran stroke survivors

Partner Interviews Summary

- **Single vs. multiple vascular risk:**
 - Consensus that HTN is a key stroke risk factor
 - Many entities in VHA are working on HTN so Stroke QUERI should focus on specific targets within HTN
 - Veterans with HTN have multiple vascular risk factors
- **Gaps in clinical areas:**
 - No other national VA groups have major focus on improving thrombolysis, atrial fibrillation management, or carotid stenosis
- **Access to rehabilitation services:**
 - More important than evaluation of specific rehabilitation interventions
 - Many unknowns about provision of rehab post-stroke
- **Measurement:**
 - Consensus on need for improved systematic measurement of key processes and outcomes post-stroke
 - Assumptions about stroke volume not always consistent with data

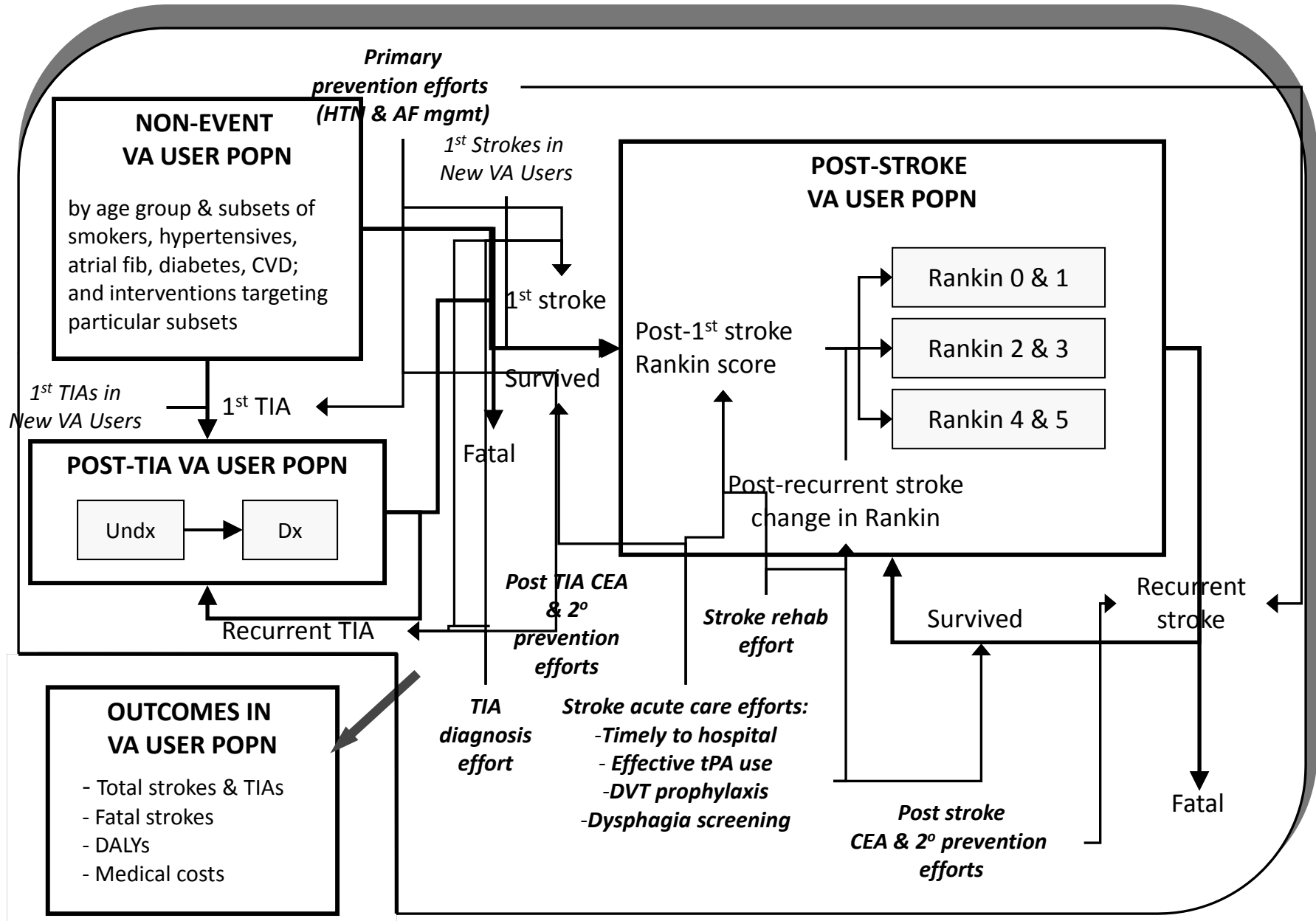
Veteran stakeholder input

- Conducted 4 focus groups of 17 veteran stroke survivors from two VAMCs (Indy, Houston)
- Presented clinical goals and asked for feedback on importance to veterans
- All groups unanimously chose acute stroke care as the most important priority area
 - Access to tPA
 - Cost concern in going to community hospital first
 - Remaining NPO while waiting for dysphagia screen
- Most felt VA was doing a good job emphasizing prevention in Primary Care
- Most reported being satisfied with the level of rehabilitation services

Process for Goal Setting: Systems Dynamics Modeling

- **Problem:** Many possible interventions exist for improving stroke prevention, acute care and rehabilitation, but it is difficult to compare their relative effectiveness
- **Approach:** System Dynamics methodology to consider VA system factors, patient factors, and intervention effects to compare various intervention
 - Model VA care over 5, 10, and 20 year intervals
 - Include degree of intervention implementation, heterogeneous treatment effects, aging population, and trends in health risk behavior
 - Outcomes: disability adjusted life years (DALYs) and stroke-related fatalities

VA Stroke Systems Dynamics Model



Systems Dynamics Model Outcomes

- Outcomes: Disability-adjusted Life Years (DALYs) and stroke-related deaths
- 20-year base case scenario predicted total of 2.55M DALYs lost and 98,099 stroke-related deaths
- Evaluate relative effect of single interventions or combinations of interventions at 5, 10, and 20-year time horizons
 - Theoretical maximum benefit: 300,000 fewer DALYs lost and 15,201 fewer stroke-related deaths
- **CyberSeminar on this modeling work planned for later this year**

Planned Goals for 2011-2014

- **Goal 1.** Improve in-hospital management of stroke to reduce stroke mortality and morbidity
 - Stroke decision support systems
 - Active implementation projects
- **Goal 2.** Develop, test, and integrate strategies to improve control of stroke risk factors in veterans at high risk of stroke
 - Uncontrolled hypertension
 - Post-stroke and Transient Ischemic Attack (TIA)
- **Goal 3.** Support VA stroke policy decisions by collecting and reporting VA patient- and system-level data
 - Risk-adjusted mortality tracking
 - Access and systems data

Goal 1. In-Hospital Management

- Improve in-hospital management of stroke to reduce stroke mortality and morbidity
 - **Goal 1A:** Develop systems to document, measure, and improve inpatient stroke care processes and quality
 - **Goal 1B:** Conduct active implementation projects to foster ongoing inpatient stroke quality improvement activities and improve stroke care

In-Hospital Management Activities

Systems to document, measure and improve processes and quality

- **SQUIDSS SDP:** acute stroke decision support and documentation tool that interfaces with CPRS
 - Mock ups and end-user input complete, beta-test in FY11 (Tom Kent, MD; Jane Anderson, PhD)
- **RRP:** testing administratively-derived subacute inpatient quality indicators
 - DVT prophylaxis, Lipid management, Atrial fibrillation management (Neale Chumbler, PhD)
- **Planned work:** SQUIDSS 2.0 SDP, Inpatient administrative QI SDP
 - Implementation in multiple high-volume VAMCs

In-Hospital Management Activities

Active QI projects

- **INSPIRE SDP:** 12-site randomized trial of Systems Redesign-based improvement collaborative vs. data feedback alone
 - Site interviews and baseline data collection ongoing, intervention phase begins FY11
- **REINSPIRE SDP:** pending; rich-context evaluation of local contextual elements and their relationship to improvement in intervention and control sites in INSPIRE (Edward Miech, EdD)
- **Planned RRP:** characterize responses to VA national acute stroke directive
 - Identify and spread successful strategies to address acute stroke treatment needs

In-Hospital Rationale

Strength of existing work	Partner interest	Model support (Y/N)
Strong	Strong	Y

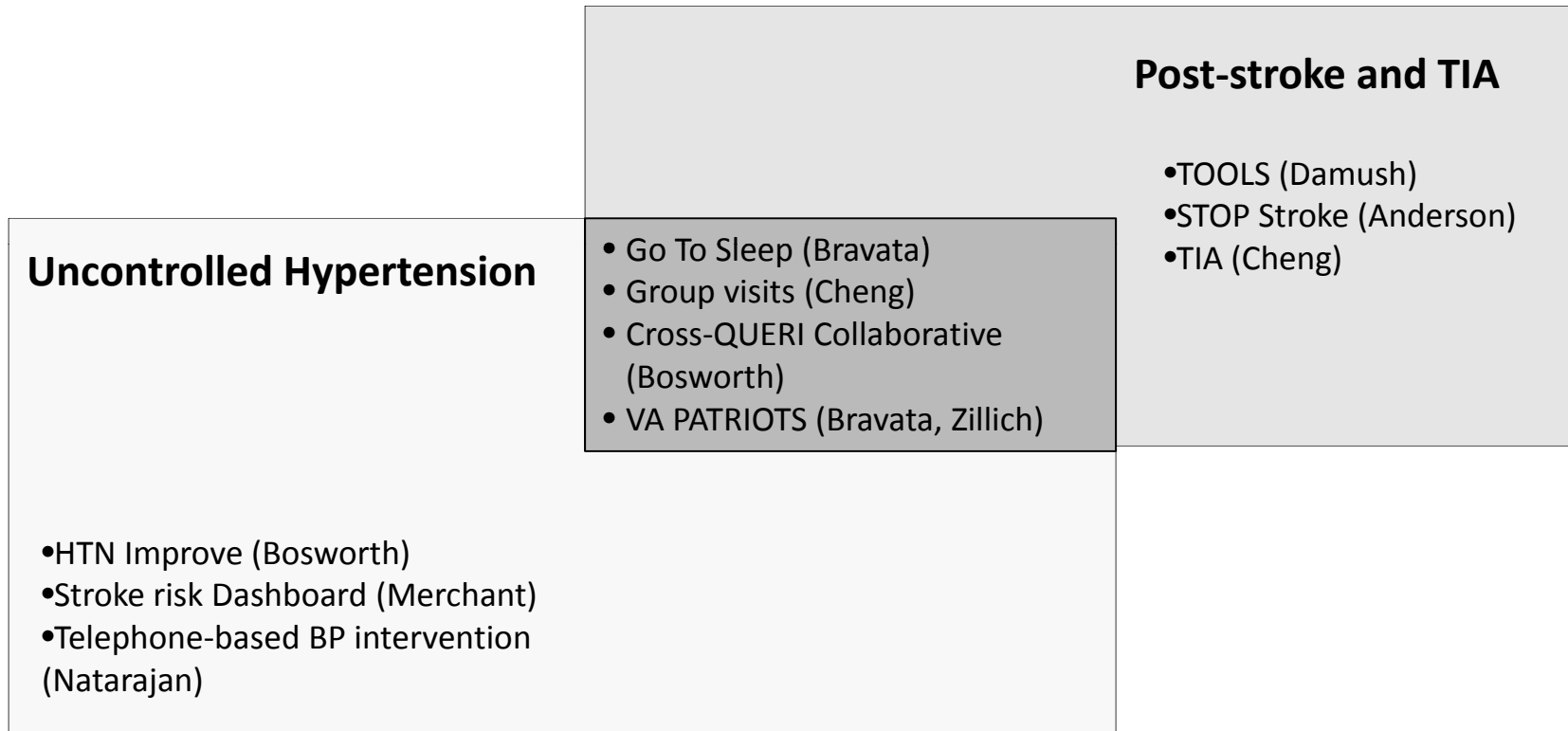
Evidence Summary:

- GWTG-Stroke programs associated with significant improvement in in-hospital stroke process measures
- Organized inpatient care has similar benefit on improving outcomes as tPA
- Approximately 1/3 of patients arrive in ED at US academic hospitals within 2 hours of symptom onset (stable 2001-2004) but % receiving tPA increased from 14% to 37.5%
- Systems to structure transport to stroke-ready hospitals increase proportion receiving tPA fourfold (9.5% to 23.4%)
Toronto pre-hospital project)
- Telestroke consultation and radiology can improve access to tPA and can be done safely

Goal 2. Patients at High Risk of Stroke

- Develop, test, and integrate strategies to improve control of stroke risk factors in veterans at high risk of stroke
- **Goal 2A:** Develop and evaluate strategies to improve blood pressure control among veterans with uncontrolled hypertension
- **Goal 2B:** Develop and test approaches to improve risk factor management among veterans post-stroke and TIA

Risk Factor Management Activities



National Outpatient Data Summary

Veterans with follow-up within 6 months post-stroke

Process of Care	Eligible Patients	Process Present %
Blood pressure measured	2031	98.1
INR measured	271	86.3
Hemoglobin A1c measured	641	68.6
LDL measured	1426	58.1
<u>BP measured and meets goal</u>	2031	<u>55.4</u>
<u>Hemoglobin A1c measured and at goal</u>	641	<u>46.6</u>
<u>INR measured and meets goal</u>	271	<u>43.2</u>
<u>LDL measured and meets goal</u>	1426	<u>35.0</u>

Risk Factor Management Rationale

Strength of existing work	Partner interest	Model support (Y/N)
Strong	Strong (debate on specifics)	Y

Evidence Summary:

- HTN: highest population attributable risk of any stroke risk factor
- 10mm reduction in blood pressure associated with 30% reduction in stroke risk
- Approximately 80% of veterans with stroke have hypertension
- Despite VA system-wide attention to HTN performance, veterans with stroke commonly have uncontrolled HTN
 - More than half uncontrolled at discharge from VAMC
 - One-third uncontrolled at 6-months post-discharge
- Among 5135 veterans with TIA (FY09), 29% had a recurrent vascular event or died in first 90-days post-TIA
- Rapid TIA management has been associated with large reductions in post-TIA event rates

Goal 3. Support VA Stroke Policy

- Support VA stroke policy decisions by collecting and reporting VA patient-level and system-level data
 - **Goal 3A:** Develop and implement a national VA risk-adjusted stroke mortality tracking and reporting system
 - **Goal 3B:** Develop and evaluate models of stroke care systems to inform VA stroke care organization

Policy Rationale

Strength of existing work	Partner interest	Model support (Y/N)
Moderate	Moderate	N/A

Evidence Summary:

- Data are fundamental to informed decision-making
 - Unknowns: VA stroke prevalence, incidence, mortality, patterns of rehabilitation use
 - Emerging data suggest that inpatient rehabilitation is cost-effective compared to short-term nursing home based rehab
- CMS is evaluating risk-adjusted mortality and readmission as facility-level stroke quality indicators
- Organized stroke care improves outcomes
 - VA needs VA-specific patient and system data to support decisions about how stroke care organization should exist in VA

Policy-Relevant Activities

Stroke mortality assessment

- OQP Stroke Special Project
 - FY07 inpatient and outpatient (post-stroke) quality data for 5000 veterans admitted to VA for ischemic stroke
 - Risk-adjustment and quality-mortality analyses ongoing
- Planned project: SDP to develop ischemic stroke identification and risk-adjusted mortality assessment system

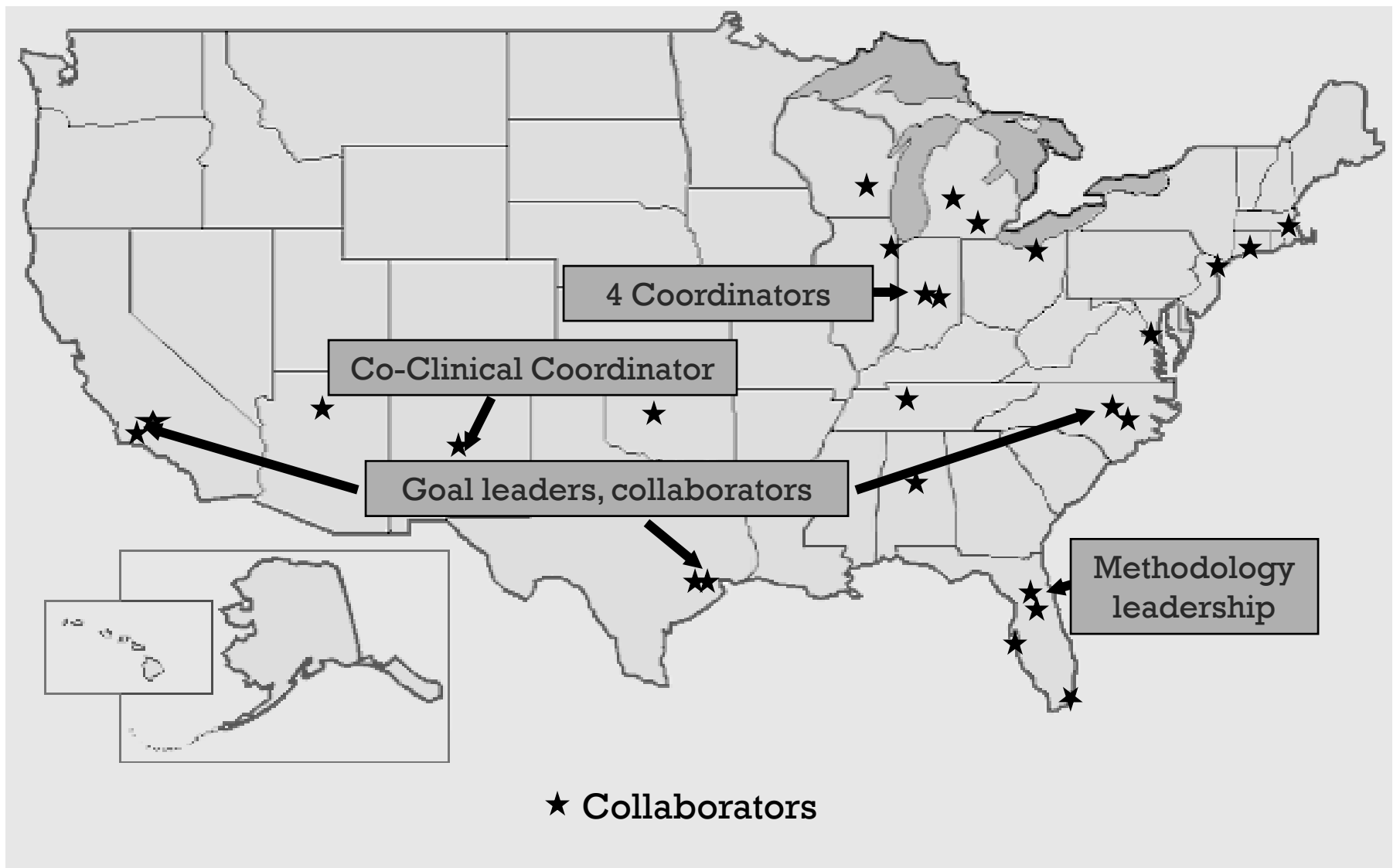
Policy-Relevant Activities

Models of stroke care systems

- Systems Dynamics modeling RRP (Kristen Hasmyler-Lich, PhD, Hayden Bosworth, PhD)
- tPA mapping RRP (Glenn Graham, MD, PhD)
 - Veteran access to VAMCs capable of giving tPA
- Rehabilitation structure, cost, and outcomes analysis (Bruce Vogel, PhD)
- Telerehabilitation model to increase access to rehabilitation (Neale Chumbler, PhD)

Other Clinical Goals Considered

- **Emerging Areas of Activity:**
 - Anticoagulation for atrial fibrillation
 - Some projects ongoing in partnership but not a stand-alone focus (Adam Rose, MD; RRP)
 - Carotid stenosis management
 - RRP examining patterns of use in symptomatic patients (Salomeh Keyhani, MD; RRP)
 - Readmission
 - Gathering more data about prevalence and associated factors (Salomeh Keyhani, MD; IIR submission)



Stroke QUERI's collaborators