

Patient and Facility Characteristics Related to Hypertension Control after a Transient Ischemic Attack

Sigma Theta Tau International's 28th International Nursing Research Congress

Dublin, IE July 2017

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Learning Objectives and Disclosure

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Objectives:

- Identify issues in hypertension control after a transient ischemic attack (TIA).
- Describe health care facility characteristics that are associated with better hypertension control after discharge from a TIA.

No disclosures

Acknowledgement and Funding

Dawn M. Bravata, MD, Principal Investigator of the CARETime Study

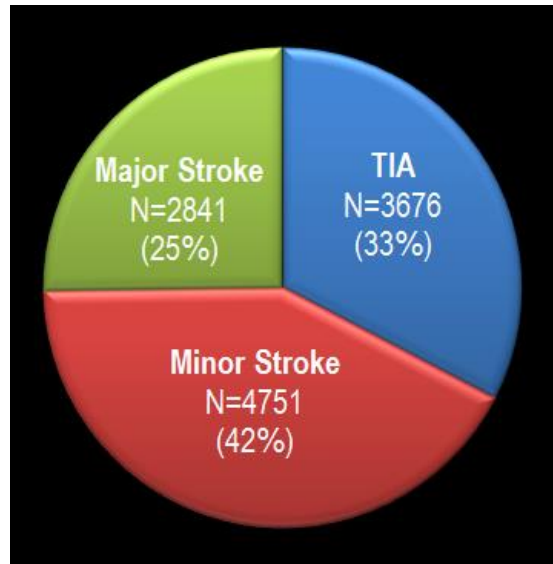
Supported by Department of Veterans Affairs (VA), Health Services Research & Development Service (HSRD), Stroke Quality Enhancement Research Initiative (QUERI) Service Directed Project (SDP 12-178)

Dr. Sico is supported by a VA HSRD Career Development Award (HX001388-01A1)

United States Veteran's Health Administration (VHA)

- Largest healthcare system in the US
- 168 VHA Medical Centers
- 1,053 outpatient clinics of varying complexity
- Serving more than 8.9 million Veterans each year

TIA and Minor Stroke in the VHA



~11,000 Veterans with TIA or any stroke are cared for in a VA Emergency Department or ward annually

~ 8500 with TIA or minor stroke

In general US population:

TIA prevalence: > 5 million Americans have had a TIA

Stroke prevalence: 6.6 million Americans have had a stroke

Timely Preventative Care After a TIA

- Patients with TIA have high risk of repeat TIAs, stroke and death
- Timely delivery of hypertension management and other preventive care can dramatically reduce risk of recurrent events
- Little is known about patient or facility factors affecting hypertension management in the VHA
- The VHA has no guidelines or quality metrics for TIA
- TIA patients are likely to be viewed with less urgency than stroke patients and thus “fall through the cracks”

CARETime Study of VHA Patients

- Administrative data for 8,000 patients with TIA or minor stroke in any VHA ED or inpatient ward (FY2011)
 - Review of 800 charts from 45 large volume VA Medical Centers
 - Case study interviews with staff from 14 diverse VAMCs
- Develop and test TIA and minor stroke quality indicators
- Identify barriers and facilitators of providing high quality TIA care

Quality of VA TIA and Minor Stroke Care (FY2014)

Process of Care		Eligible	Pass
		N	%
Brain imaging	By day 2	7563	88.9
Antithrombotics	By day 2	7477	83.8
HbA1c measurement	By discharge or within 120 days, diabetes patients	3464	82.5
Anticoagulation for atrial fibrillation	By discharge	1222	82.1
Deep Vein Thrombosis (DVT) prophylaxis	By day 2	4346	74.9
Hypertension control	Mean BP over 90 days post-discharge <140/90 mmHg	5979	71.8
Neurology consult	Within 1 day	7823	70.6
Electrocardiography	By day 2 or within prior 1 day	7570	67.0
Carotid artery imaging	By day 2 or within prior 6 months	7685	64.1
High or moderate potency statin	By discharge	7054	47.2
Oral hypoglycemic intensification	Within 30 days of discharge if HbA1c >7%	706	37.5
Carotid stenosis intervention	Within 14 day of event among patients with CEA or stent within 1 year of event	222	35.1
Antihypertensive intensification	Within 7 days of discharge if >140/90 at discharge	2997	28.3
Substance abuse treatment for alcohol abuse	By discharge	775	9.2
Polysomnography	Within 1 year	5962	3.8

Aims of this Study

- Identify patient and facility characteristics associated with hypertension control for TIA patients in the 90 days following discharge from an ED or inpatient setting.
- Apply information gained from the study to improve hypertension management by:
 - Targeting patients for interventions
 - Guiding system-level changes to improve care

Study Sample

3676 TIA patients with a TIA (ICD-9 of 435.x as primary discharge code)

- Admitted to ED or inpatient setting
- 132 VHA facilities
- 12 month period from October 2010 to September 2011

168 excluded patients

- Died during the index ED visit/hospitalization or within 90 days
- Discharged to hospice or transferred to a non-VA acute care facility

3508 patients in final analysis sample

Data Sources

VHA inpatient and outpatient data and Medicare claim files

- Past medical history
- Presenting symptoms
- Healthcare utilization (e.g., inpatient admission or ED only)

Pharmacy Benefits Management (PBM)

- Medications during the ED visit or inpatient stay

Corporate Data Warehouse (CDW) data

- Vital signs
- Consultations

Variables: Hypertension

Hypertension control

- BP control at 90 days post-discharge from the index ED or inpatient admission
- Control was defined as mean systolic BP <140 mmHg and mean diastolic BP <90 mmHg from values measured within 90 days after discharge

Additional hypertension variables

- History of hypertension
- BP control at discharge after the TIA event

Variables: Patient and Facility

- Inpatient admission or discharge directly from the ED
- Neurologist consult during initial ED visit or inpatient stay
- History of hypertension, hyperlipidemia, sleep apnea, dialysis, or depression
- Facility Characteristics:
 - VHA stroke center designation of primary stroke center
 - FTE internal medicine staff
 - Rate of BP control for overall patient population

Analysis

Binary outcome: BP control at 90 days (1=yes, 0=no)

Model

- Hierarchical general linear model (HGLM) with a logit link function
- Facility random effect to address patient clustering within facilities

Independent variables

- BP control at discharge
- Patient characteristics
- Facility characteristics

Sample Characteristics

BP Control at Discharge from Index TIA	58%
BP Control at 90 Days after Discharge	78%
Male	95%
Mean Age (SD)	69 (12)
History of Hypertension	82%
History of Hyperlipidemia	76%
History of Sleep apnea	19%
Dialysis	3%
History of Depression	40%
Inpatient admission (vs. ED only)	68%
Neurologist consult	63%
Facility: VA Stroke Center	59%
Facility: > 25 stroke admissions per year	62%
Facility: FTE internal medicine staff / 100k patient visits	1.0

Modeling Results: Significant Predictors of BP Control at 90 Days

	Adj. Odds Ratio [95% CI]
<u>Patient Characteristics</u>	
Uncontrolled BP at discharge	.36 [.30-.44]
History of hypertension	.45 [.30-.44]
Dialysis	.57 [.34-.96]
History of hyperlipidemia	1.37 [1.09-1.72]
Sleep apnea	1.29 [1.00-1.64]
Depression	1.27 [1.04-1.54]
<u>Facility Characteristics</u>	
Stroke center designation	1.45 [1.08-1.94]
Top quintile of FTE internal medicine staff	1.45 [1.08-1.95]
Percentage of all patients with BP control	1.14 [1.03-1.25]

Findings and Implications

Finding: Inpatient admission and neurologist consult had no relationship to post-discharge BP control.

Implications: BP control is an ongoing process requiring risk factor management in the outpatient setting after the TIA event.

Findings and Implications

Finding:

TIA patients with a history of hypertension and uncontrolled BP at discharge had poorer BP control at 90 days.

Implications:

TIA patient with a history of uncontrolled BP should be targeted for intensive risk factor management after discharge.

Findings and Implications

Finding:

Patients with a history of hyperlipidemia, sleep apnea, or depression, had better BP control.

Implications:

Effectively treating these comorbidities should contribute to BP control. On the other hand, If the they are undiagnosed or untreated these comorbidities could make BP control more difficult.

Findings and Implications

Finding:

TIA patients had better BP control in facilities with a designated stroke center, more FTE internal medicine staff, and better record of BP control.

Implications:

Better BP control can be achieved in VA Medical Centers through better coordination of TIA care, more primary care resources, and better overall hypertension management.

The Key to TIA Care Coordination: Nurses

We conducted interviews with health care providers at 14 high-volume VHA Medical Centers to inquire about successes and barriers to good TIA care.

A major contributor to risk factor management was the presence of an RN stroke/TIA coordinator who

- Bridged the care transition with neurology, radiology and vascular surgery.
- Was pivotal in arranging for follow-up care in the stroke clinic, if available, and with the primary care provider.

Translation of Project Findings: PREVENT Intervention

New project in progress

Aimed at better preventive care for TIA

Follow up to CARETime Study

Address identified barriers to TIA Care

Targeted at high volume VA medical centers

BARRIERS

KNOWLEDGE GAPS

- About clinical urgency to treat TIA/minor stroke patients who are asymptomatic
- About guideline-recommended care

LACK OF PERFORMANCE DATA

- Belief that all patients are being admitted
- Misinformation about patient volume
- Lack of performance or outcome data
- Consequences of missed processes of care not evident across specialties or settings

QUALITY IMPROVEMENT UNCERTAINTY

- Lack of experience with QI
- Patient-focused versus facility-focused: distinguishing providing care from improving care
- No collaborations with systems redesign staff

INADEQUATE CARE COORDINATION

- Across settings
- Across specialties

IT BARRIERS

- How to find patients to provide care
- How to facilitate identifying gaps in care

PREVENT INTERVENTION

PROFESSIONAL EDUCATION

- Multi-media: presentations, video, publications, posters, checklists, pocket-cards
- Targeted: nursing, neurology, ED, pharmacy

DATA FEEDBACK

- Monthly performance data
- Quarterly outcome data
- CAC support to customize site-specific data

QUALITY IMPROVEMENT SUPPORT

- Strategic planning support tool
- Help sites use data for ongoing QI
- Systems redesign virtual collaborative
- Web-based hub for sharing QI plans, lessons learned, and resource library

CLINICAL PROGRAMS

- Pharmacy protocol
- Post-discharge nursing follow-up protocol
- Acute telehealth HTN disease management supplement

EHR TOOLS

- Patient identification tool
- Templated notes and order menus











Medication	Indication	Targeted Therapy	Targeted Therapy	Targeted Therapy
Aspirin	Primary prevention of stroke	81 mg daily	7	7
Atorvastatin	Secondary prevention of stroke	40 mg daily	10	10
Warfarin	Secondary prevention of stroke	2.5-3.0 INR	13	13
Diuretic	Management of hypertension	160/90 mmHg	16	16
ACE Inhibitor	Management of hypertension	160/90 mmHg	21	21

THE HIGHEST RISK PERIOD AFTER A TRANSIENT ISCHEMIC ATTACK OR ISCHEMIC STROKE IS THE FIRST MONTH. INTERVENTIONS THAT ADDRESS RISK FACTORS EARLY AFTER A TRANSIENT ISCHEMIC ATTACK OR ISCHEMIC STROKE HAVE BEEN SHOWN TO REDUCE THE RISK OF RECURRENT VASCULAR EVENTS (STROKE, MI, DEATH) BY OVER 50%. THEREFORE, THE GOAL OF TREATMENT TARGETS RISK FACTORS AS EARLY AS POSSIBLE AFTER THE ONSET OF VASCULAR DISEASE.



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