MINNESOTA ACUTE STROKE SYSTEM

Planning and implementing a statewide acute stroke system

Justin Bell, JD
American Heart Association

Albert W. Tsai, PhD, MPH
Minnesota Department of Health
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OVERVIEW

- Why stroke?
- What is a stroke system?
- Why a stroke system?
- Planning
- Next steps

STROKE: ANNUAL STATISTICS

- More than 2,000 deaths
- 11,000 Minnesotans hospitalized
- 12th leading cause of hospitalization
- $362 million, inpatient charges

Cause of Death*	N
1. Cancer	9,599
2. Heart Disease	7,144
3. Stroke	**2,154**
4. Accidents	2,087
5. Chronic Lower Respiratory Disease	2,012
6. Alzheimer's Disease	1,450
7. Diabetes	1,036
8. Nephritis	895
9. Suicide	599
10. Pneumonia and Influenza	591

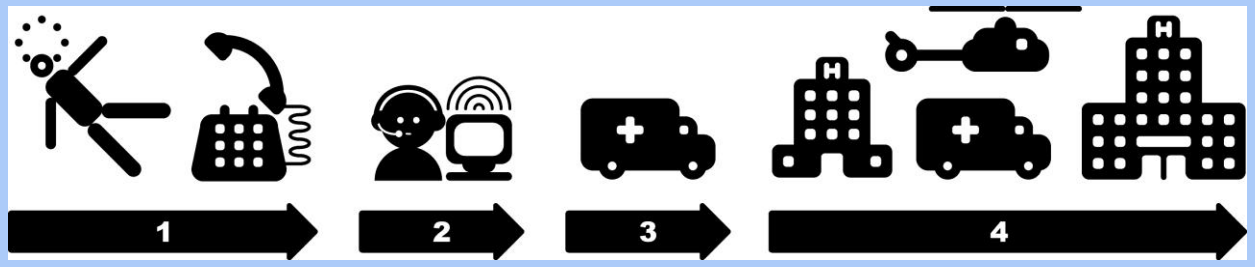
*2010, Minnesota Center for Health Statistics, Minnesota Department of Health

WHAT IS AN "ACUTE STROKE SYSTEM"?

- EMS
  - Dispatch – streamlined, rapid dispatch
  - Triage and stabilization – adoption of protocol
  - Transport –pre-notification; destination protocol
  - Performance improvement
- Hospitals
  - Clear categorizations for stroke care capabilities
  - Use of written, evidence-based protocols
  - Performance improvement
- MDH + statewide stroke committee
  - Coordination and monitoring

Goal: Stroke Onset to Treatment < 180 minutes

60 minutes	60 minutes	60 minutes
Onset to recognition + 9-1-1: ASAP	On Scene to Dx: ASAP	Door to Image: 25 min
EMS to Scene	On Scene to Hospital: 60 min	Door to Needle: 60 min
RECOGNITION & EMS TO SCENE	TRIAGE & TRANSPORT	DIAGNOSIS & TREATMENT

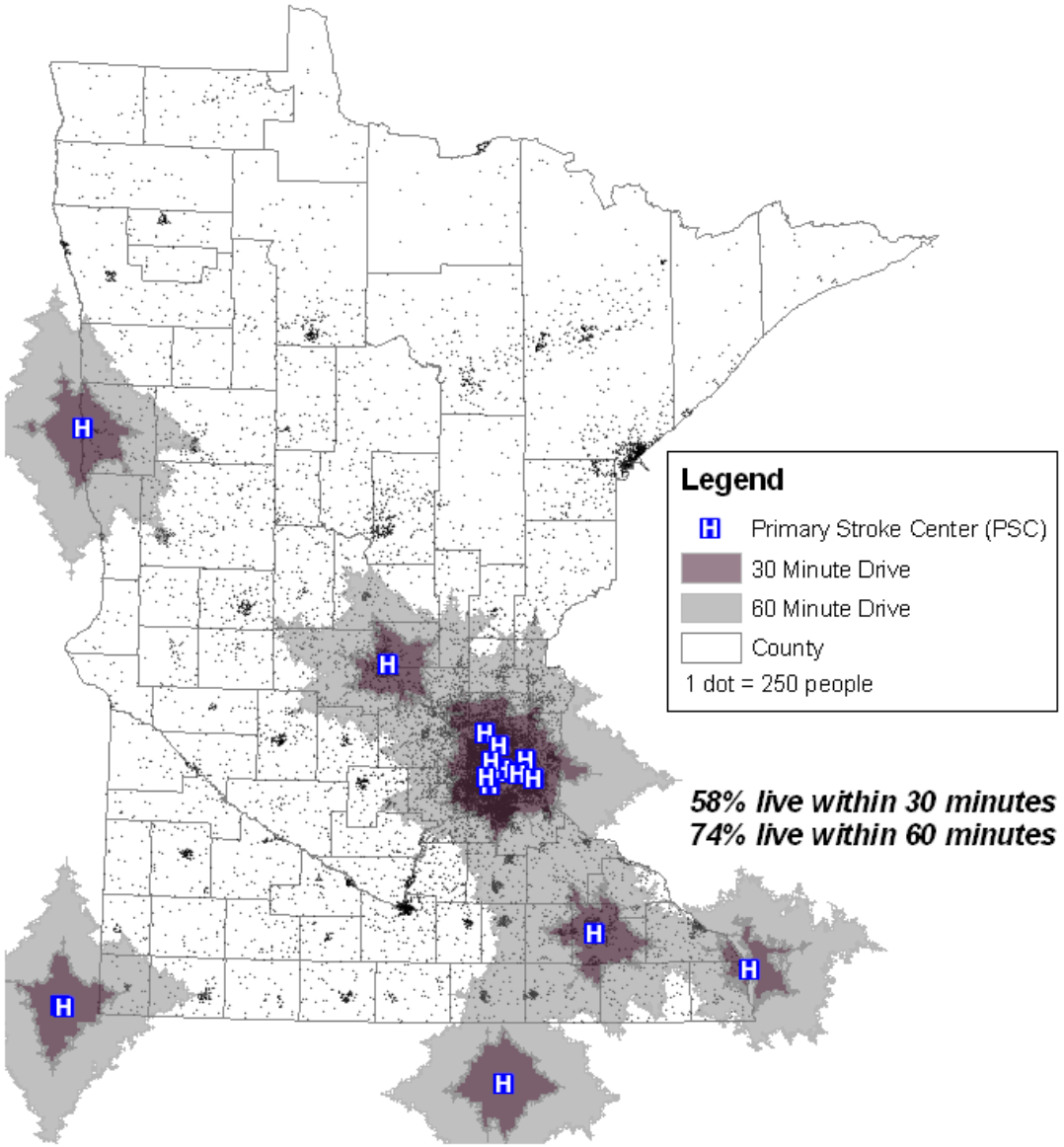


EVIDENCE AND SUPPORT

- The Ontario experience (Lewis, 2003)
- AHA Recommendations: Stroke Systems of Care (Schwamm, 2005)
- AHA Policy statement: Stroke and EMS (Acker, 2007)
- American Academy of Neurology: Position statement (2009)
- Brain Attack Coalition: Primary Stroke Centers (Alberts, 2011)
- MN Heart Disease and Stroke Prevention Plan 2020

WHY A STROKE SYSTEM?

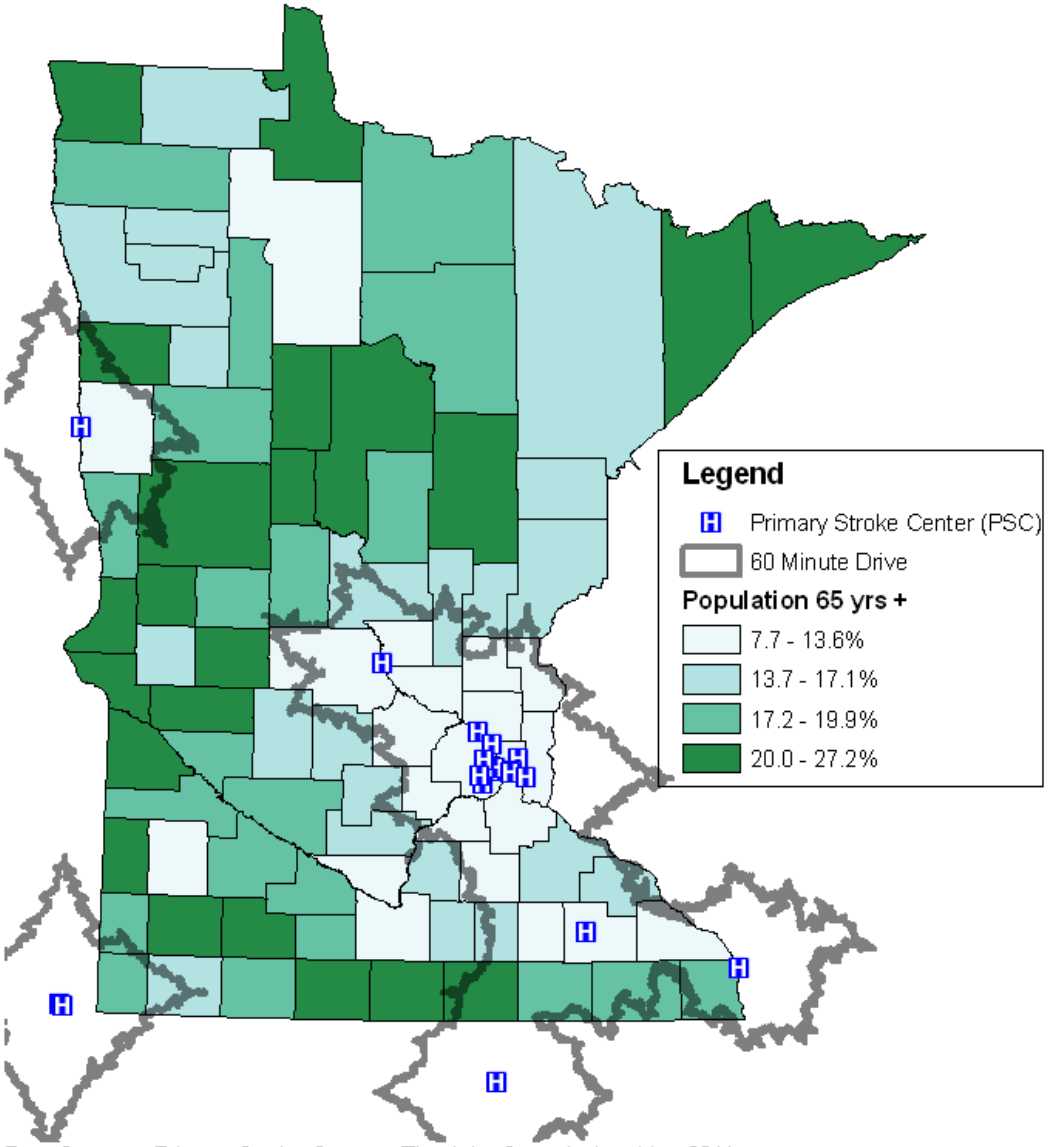
- **Drive times to Primary Stroke Centers**
- Geographic location of strokes
- Lack of standardization and coordination



Data Sources: Primary Stroke Centers, The Joint Commission, May 2011;
2010 US Census Redistricting Data P.L. 94-171

Map by MDH Heart Disease & Stroke Prevention Unit, May 2011

30 and 60 minute drive time surrounding Joint Commission-Certified Primary Stroke Centers in Minnesota



Data Sources: Primary Stroke Centers, The Joint Commission, May 2011;
2010 US Census Demographic Profiles

Map by MDH Heart Disease & Stroke Prevention Unit, June 2011

Most Minnesota counties with higher percentage of the population older than 65 years of age are greater than 60 minutes away from a Joint Commission certified Primary Stroke Center

WHY A STROKE SYSTEM?

- Drive times to Primary Stroke Centers
- **Geographic location of strokes**
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STROKE PATIENTS: INITIAL DESTINATION

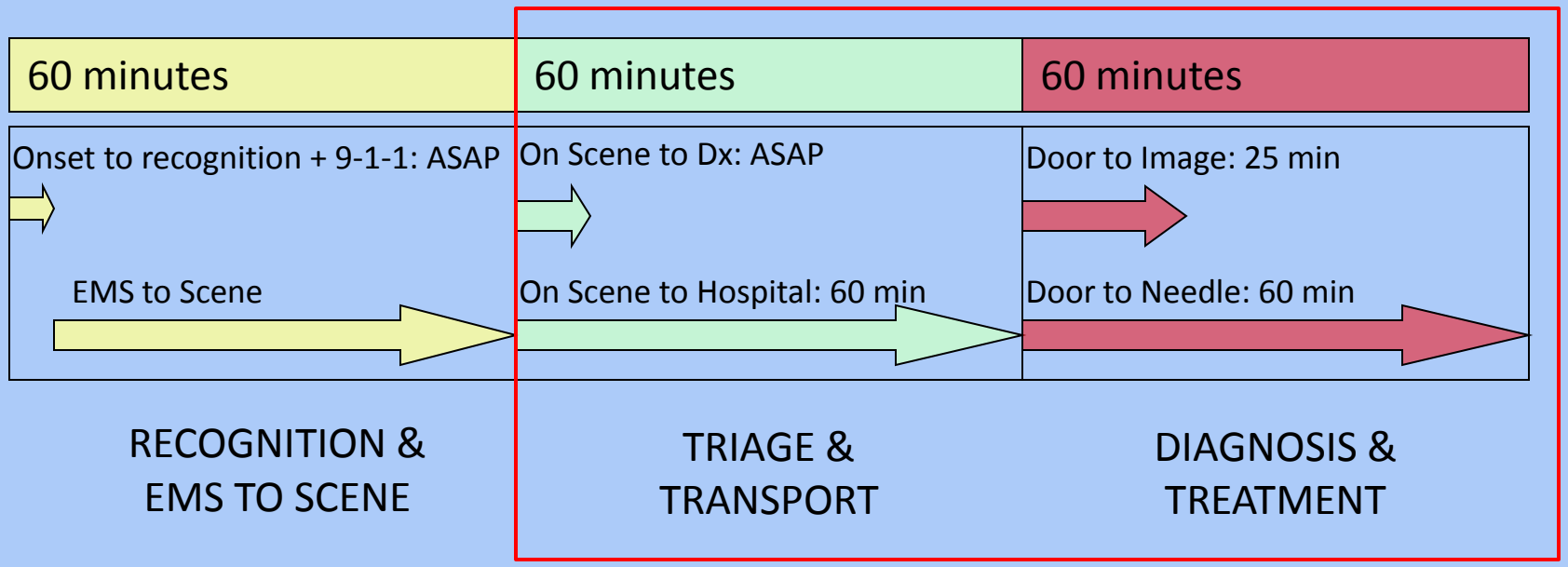
- Annually, at small or rural Minnesota hospitals…
  - 1,686 strokes patients arrive and are admitted (17%)
  - 1,625 stroke patients are transferred (16%)
  - Bottom Line: **one in three strokes** arrive first at a small or rural hospital in Minnesota
  - All hospitals need to be stroke-ready!

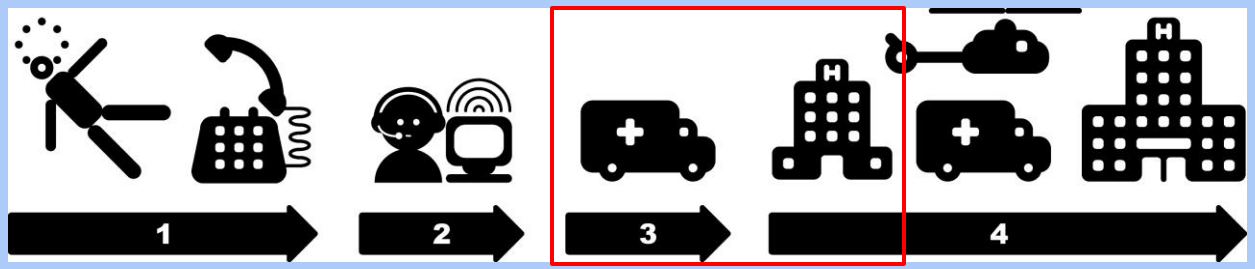
Source: Minnesota hospital discharge dataset, Minnesota Department of Health, 2009

WHY A STROKE SYSTEM?

- Drive times to stroke centers
- Geographic location of strokes
- **Lack of standardization and coordination**

Focus of MN Acute Stroke System: EMS and Hospitals





PLANNING AND DEVELOPMENT

- Planning principles:
  - In the best interests of the patient
  - Inclusive, not exclusive system
  - Simple
  - Designed to fit Minnesota's needs
  - Based on current national recommendations
  - Data collection is a necessity
  - Performance improvement is important
  - Coordinated with other efforts (e.g., Trauma System)

- Implementation includes:
  - Monitoring
  - Evaluation
  - Reporting

MINNESOTA ACUTE STROKE SYSTEM COUNCIL

- Hospitals (N=54)
  - Primary Stroke Centers (15)
  - Rural hospitals (non-CAH)/Other (12)
  - Critical Access Hospitals (27)
- Minnesota Hospital Association
- EMS regional medical directors
- EMS ambulance medical directors
- American Heart Association
- American Academy of Neurology
- MN Chapter, American College of Emergency Physicians
- MDH State Trauma System

PROGRESS TO DATE

- MN Acute Stroke System Council (March 2011-present)
- Consensus to date:
  - Hospital designation criteria
  - EMS stroke triage and destination protocol

INFORMING AUDIENCES, SEEKING INPUT

- MDH Rural Flex Grant Advisory Council (April 2011)
- Minnesota Rural Health Conference (June 2011)
- Minnesota Stroke Conference (June 2011)
- EMS Medical Directors Conference (Sept 2011)
- MN Hospital Association Physician Leadership Council (Oct 2011)
- American Heart Association Board of Directors (Nov 2011)
- MHA Small, Rural Hospital Committee (March 2012)
- Minnesota Rural Hospital Association (March 2012)
- MN Chapter, ACEP (March 2012)
- Minnesota Stroke Conference (June 2012)

EXPECTATIONS (DRAFT)

- EMS:
  - Adopting a stroke protocol for triage and transport
    - Consistent with a consensus-based general protocol developed and approved by the MN Acute Stroke System Council
  - Working with hospitals on pre-notification and feedback

- Hospitals:
  - Becoming designated by the state as a stroke-ready hospital
    - Meeting minimum standards for structure, capacity, and performance improvement
    - Data collection for monitoring and performance improvement
    - Working with EMS on pre-notification and feedback

ACUTE STROKE READY HOSPITALS (1)

1. Acute stroke team available 24/7 within 15 minutes
2. ED personnel trained in acute stroke diagnosis and treatment; education = one hour/year
3. CT scan available 24/7
4. ECG and chest X-ray
5. Lab or point-of-care testing 24/7
6. Medical director or medical advisor
7. Neurologist or MD with stroke care experience available 24/7 on site or via telemedicine within 20 minutes

ACUTE STROKE READY HOSPITALS (2)

8. CT available to be read within 45 minutes
9. IV tPA protocol
10. Written stroke protocols
11. Stroke unit for admitted patients
12. Organizational support
13. Integration with EM
14. Transfer protocol for stroke patients
15. Community education (once per year)

NEXT STEPS (2012-2013)

- Finalizing system components
  - Council meetings: July, September, November
- Identifying challenges (gathering feedback)
- Seek Endorsements
  - Statewide agencies
  - Trade associations

NEXT STEPS

Launching system: phased approach

1. Voluntary designation
2. EMS protocol adoption
3. Technical assistance and Training
4. Data collection and Monitoring
5. Reporting and Performance improvement

QUESTIONS AND COMMENTS

- Albert Tsai, PhD, MPH:
  albert.tsai@state.mn.us
  (651) 201-5413
- Jim Peacock, PhD, MPH:
  james.peacock@state.mn.us
  (651) 201-5405
- Justin Bell, JD (American Heart Association):
  justin.bell@heart.org
  (952) 278-7921

- MN Acute Stroke System: www.health.state.mn.us/cvh
  (keyword: stroke)
- Minnesota Stroke Partnership: www.mnstrokepartnership.org