

Formation and Certification of Acute Stroke Ready Hospitals in a Stroke System of Care

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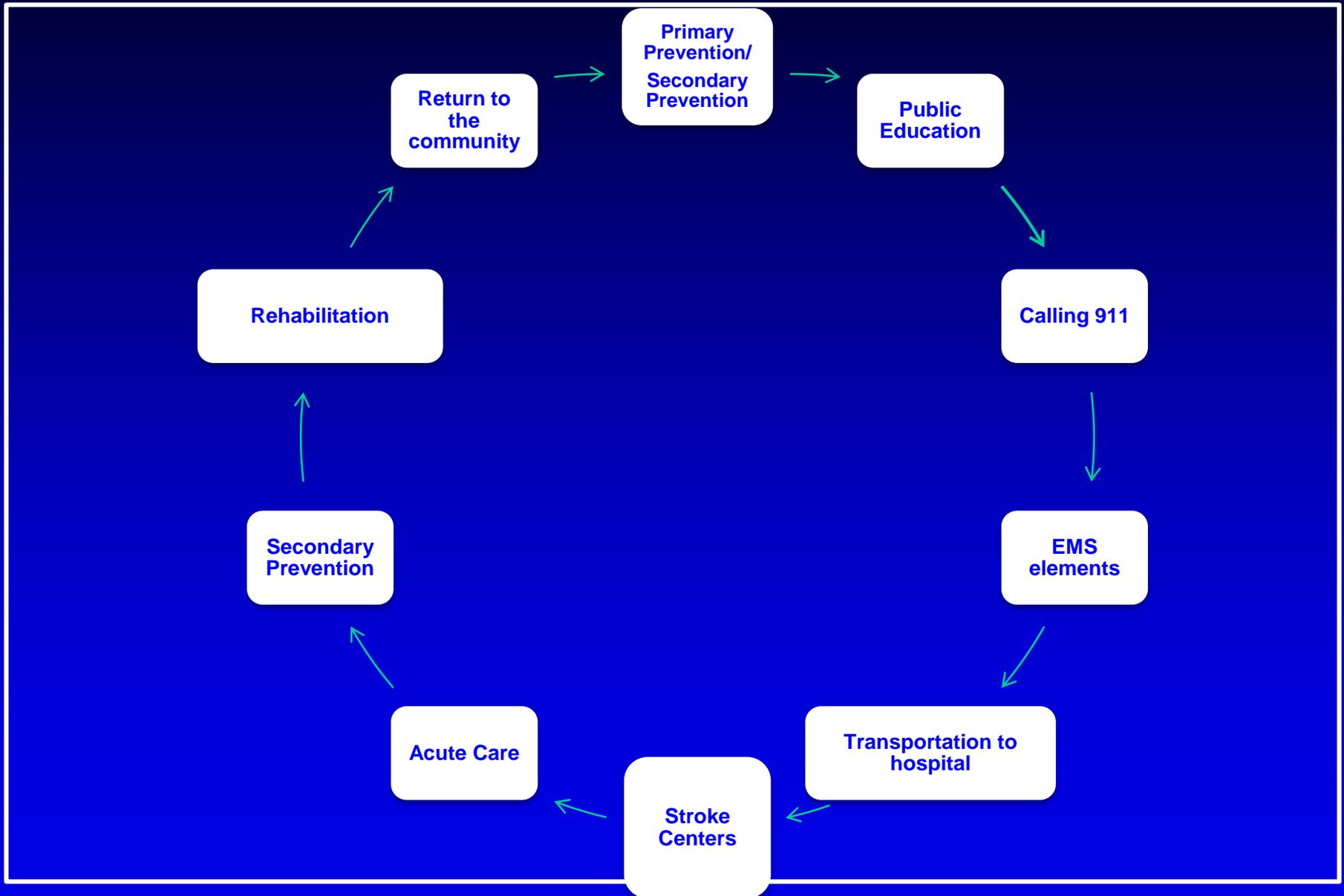
UNLABELED/UNAPPROVED USES DISCLOSURE:

None

What is a Stroke System of Care?

- **A comprehensive, diverse, longitudinal system that address all aspects of stroke care in an organized and coordinated manner**
- **Spans the spectrum of stroke care from primary prevention, calling 9-1-1, acute care, secondary prevention, rehabilitation, return to the community**
- **As with any system, it is only as strong as its weakest link**
- **This talk will focus ASRHs, but all elements are important**

Pictorial Stroke System of Care



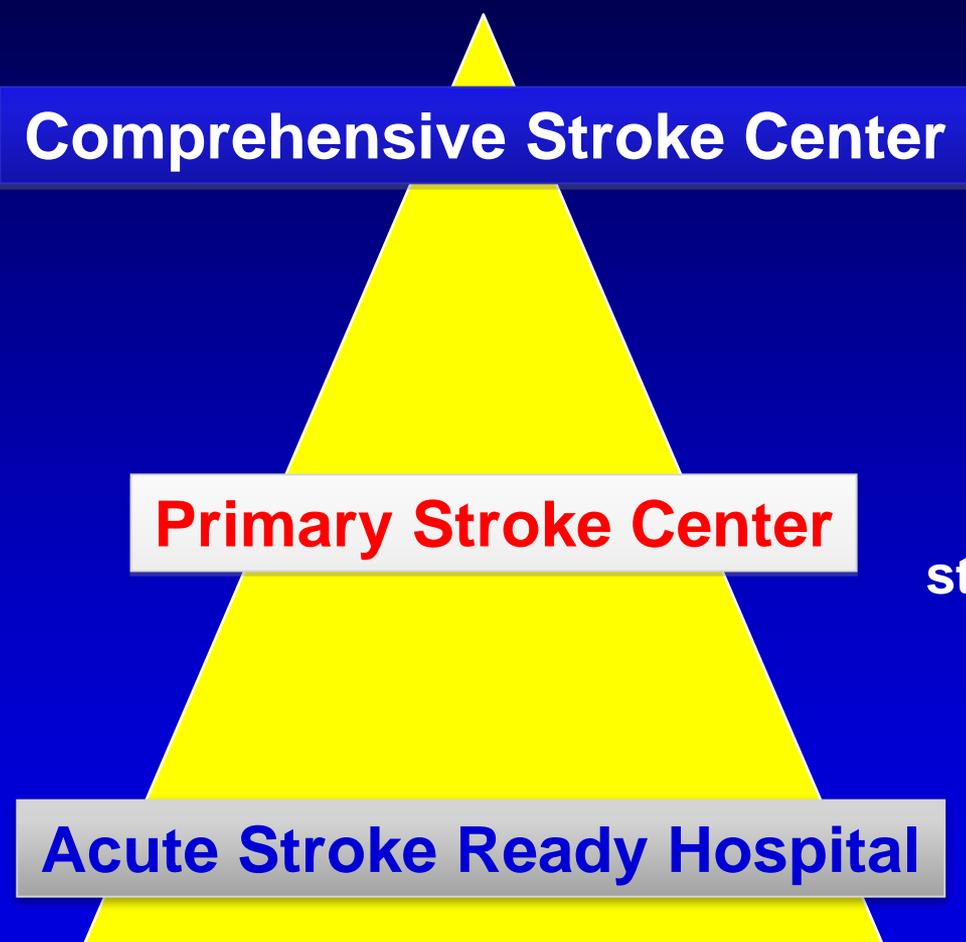
EMS Plays a Key Role in a Stroke System

- Is typically the first medical professionals with direct patient contact
- Their initial assessments, actions, treatments, and decisions will have significant consequences in the patient's subsequent care
- *Their role in patient triage, diversion, and routing cannot be under-estimated*

Medical Impact of Stroke

- Recent study of 91,134 patients admitted to 625 hospitals with acute stroke (all Medicare patients)
- Average age = 79 years
- 58% female
- 82% Caucasian
- Overall, 62% of these patients were dead or re-admitted after just 1 year

Characteristics of Different Stroke Centers



Comprehensive Stroke Center

Academic Medical Center
Tertiary Care facility

Primary Stroke Center

Wide range of hospitals;
standard stroke care; stroke unit;
use TPA

Acute Stroke Ready Hospital

Rural hospitals; basic care;
drip and ship;
use tele-technologies

Numbers of Various Types of Stroke Centers

> 5000 total acute care hospitals in the U.S.

Comprehensive Stroke Center

150-220 total

Primary Stroke Center

Final count 1200-1300

Acute Stroke Ready Hospital

Perhaps 1200-1800

Acute Stroke Ready Hospitals

“The New Kid on the Block”

- Typically small facilities
- Located remotely away from a PSC or CSC
- Typically serve small cities or rural populations
- Stroke population small; likely 1 patient a week on average
- Limited staffing and bed availability
- Concept: EMS would take patient to nearest ASRH for:
 - 1. initial diagnosis
 - 2. acute stabilization
 - 3. acute treatments
 - 4. then send patient to nearest PSC or CSC

ASRH—State Status

- **Many states have developed or are developing their own definitions of ASRH**
- **These vary greatly by state and region**
- **To date there is no central certifying body or organization**
- **Some states have adopted a ‘postcard’ certification process**
- **There is a need for uniform criteria and certification**

ASRHs and Other Hospitals

- ASRHs would have some type of relationship with one or more CSCs and PSCs
- Protocols for transfers and referrals
- Tele-stroke link to another facility
- Educational programs
- Transfer agreements (informal)
- Track transfers and outcomes

Key Elements of a ASRH

Element	Comment
Acute Stroke Team	At least 2 members; staffed 24/7; at bedside within 15 minutes
EMS and ED Care Protocols	Annual training and education
Able to do rapid brain imaging and lab testing	45 minute turn around time
IV TPA protocol	60 minute door to needle time
Written transfer protocols	To a CSC \pm PSC
Telemedicine link within 20 minutes	Procedures set up beforehand

Examples of Acute Care at an ASRH

<u>Acute Intervention</u>	<u>Comment</u>
IV TPA	60 minute DTN time
Reversal of coagulopathy	ICH and SAH patients
Treatment of increased ICP	ICH, SAH patients
Treatment of seizures	All patients
Blood pressure control	Variable depending on clinical scenario

Possible Performance Metrics at an ASRH

- Evaluation of stroke severity
- Time to first brain imaging
- DTN time for IV TPA
- Time to initiation of anticoagulation reversal therapy
- Time to initiation of telemedicine link
- Time to transfer of patient to PSC or CSC
- Protocol violations

Certification Process for ASRH

- Formal certification is important to ensure requirements, standards, and performance are met
- Certification must be done by an outside, independent organization
 - *Self-certification is not acceptable*
- Must include an assessment of facilities, personnel, protocols, and outcomes
- Must include a site visit
- Some information submitted on-line
- ½ day visit every 2-3 years envisioned
- Costs = \$5000-\$7500 every 2-3 years

Where to Locate these Hospitals??

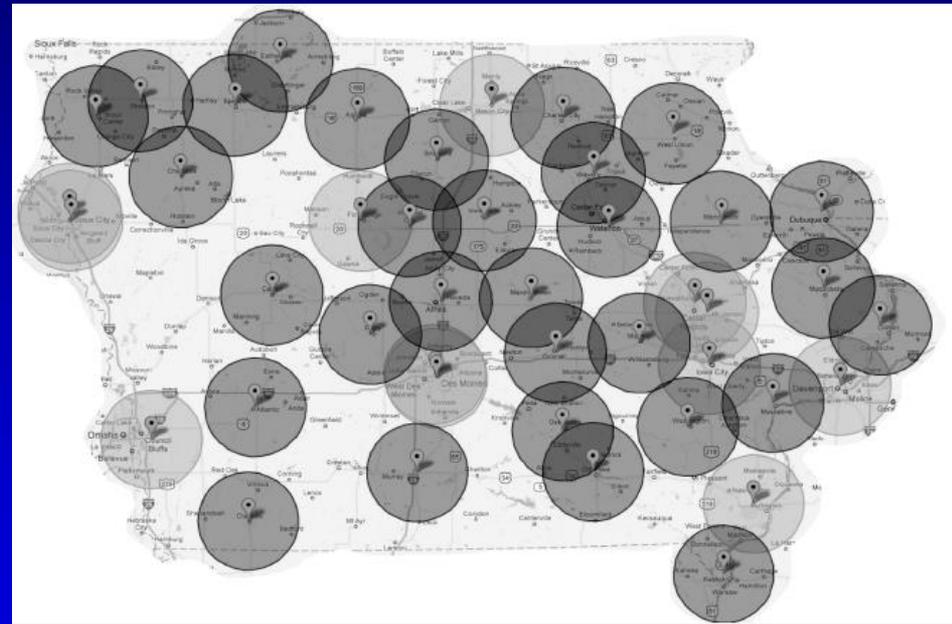
Currently 12 PSCs in Iowa; total hospitals = 120

12 PSCs cover 37% of the population

31 PSCs could cover 75%
if forced location

Or 54 could also cover 75%

Who should direct PSC location??



Need for dialogue and coordination

Stroke Care—A System (Network) Approach

- An increasing number of hospitals are forming care networks
- Maximizing the efficiency of care and resources
 - Centralize some procedures and facilities
 - Improving outcomes by increasing volumes
 - Sharing protocols and expertise
- Have patient return to their community as soon as feasible
- ***Stroke is a particular challenge due to the emergent nature of the disease and time limitations***
- ***Similar to trauma and trauma centers!!!***

By-passing Hospitals in a Stroke System of Care

With multiple hospitals of various capabilities in a geographic area (or Stroke System), how can we properly triage and divert patients to the most appropriate facility?

Guiding Principles # 1

If all are close, go to the highest level Stroke Center initially

WHY?

- Do not know the type of stroke
- Patients can deteriorate
- Unclear what tests and treatments will be needed.

By-passing Hospitals in a Stroke System of Care

Besides the level of Stroke Center, what are other considerations for field triage?

Guiding Principle # 2

Time is more important than distance, because time is brain

- Factors to consider include:
 - ❖ Weather
 - ❖ Traffic
 - ❖ Local geography
 - ❖ Mode of transportation

By-passing Hospitals

Other considerations—Know Your Hospitals

Guiding Principle # 3

To make the best decision, personnel must know the actual capabilities of their local hospitals as well as the EMS system

- Not every hospital that claims to be a PSC or CSC will have those capabilities
- EMS triage and routing skills may vary by city and region
- **Bed availability and Who is on diversion**
- All politics are local!!!

Challenges with Field Triage of Stroke Patients

- EMS personnel are correct with field Dx in about 50% of cases
- There are assessment tools for stroke severity
- Field Dx of ischemic vs hemorrhagic stroke still evolving
- Pilot studies of head CT in ambulances
- Patients might still stop at local ASRH to be stabilized before going to CSC or PSC
- ***EMS is typically very fragmented and localized***
 - ***Challenge to get uniform adoption of protocols***

Conclusions

- **ASRHs offer rural access to acute Dx, Rx, and stabilization pending transfer to a PSC or CSC**
- **EMS must evolve to meet these challenges**
- **Looking to the future, the key challenges of a Stroke System of Care will relate more to EMS triage and diversion**
- **THE GOOD NEWS.....All of the problems are solvable!!!!**
 - **Good will**
 - **Hard work**
 - **Common sense**

**DO WHAT IS BEST FOR THE
PATIENT!!!**