

# Extending the Reach of Acute Stroke Expertise

*Using Stroke Telemedicine to Strengthen  
Stroke Systems of Care*

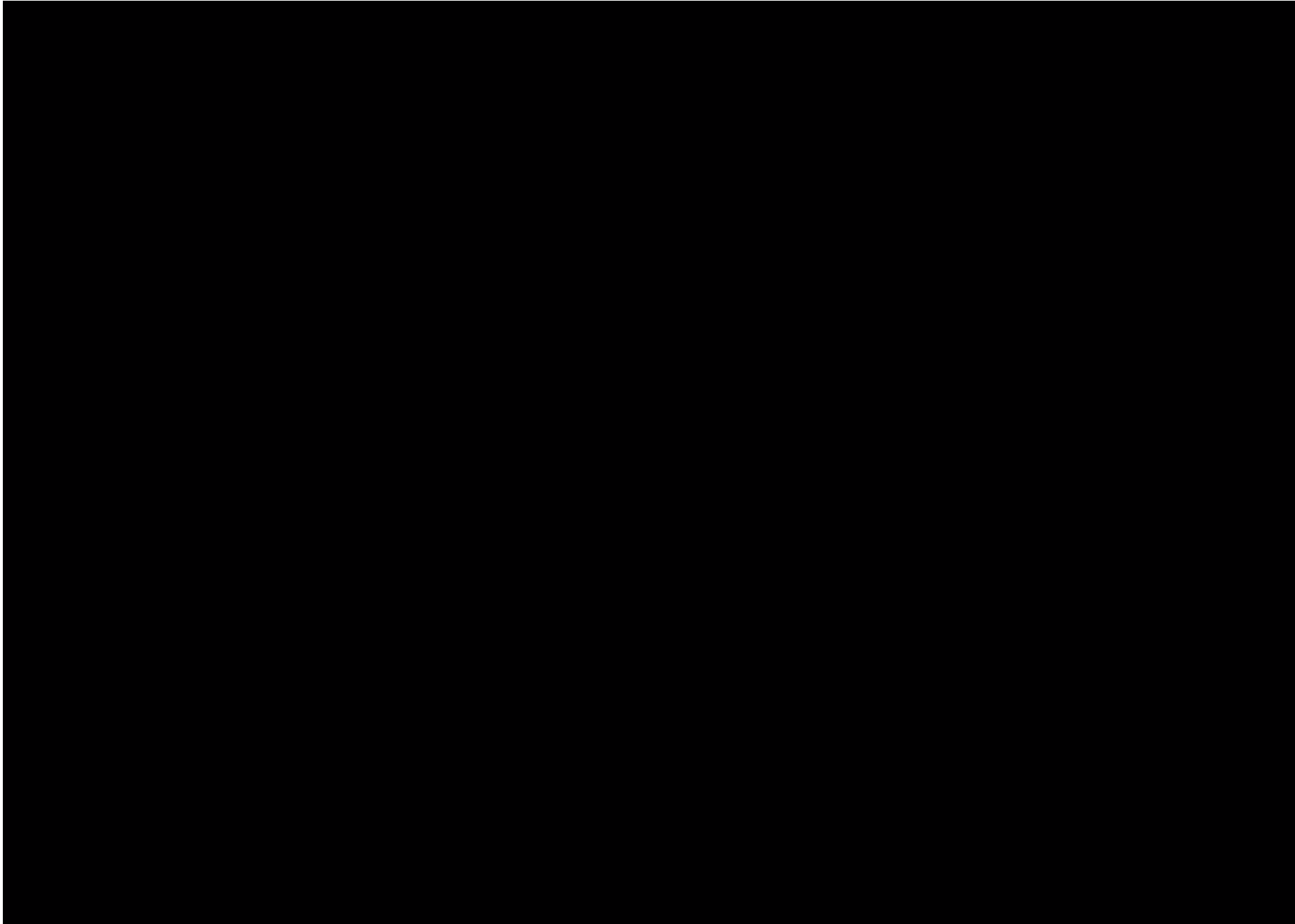
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**MGH Neurology**  
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Virginia Telehealth Network  
**Strategies for Using Technology to Improve  
Statewide Stroke Systems of Care**  
Reston VA  
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Affiliate of the  
Harvard Medical School





# Background

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- Stroke is third leading cause of death in US and the leading cause of adult disability.
- Total US costs associated with ischemic stroke estimated to exceed \$2 trillion for period 2005 to 2050 <sup>1</sup>.
- Administration of t-PA presents an opportunity to improve patient outcomes and reduce overall costs to the US health system <sup>2</sup>.
- Emergency room physicians are often reluctant to administer t-PA without the guidance of a neurologist.
- Many community hospitals do not have access to important stroke related resources.
  - ✓ Few have access to a general neurologist
  - ✓ Even fewer have access to a highly skilled stroke neurologist

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1. Brown, Devin, et al. Projected costs of ischemic stroke in the United States, *Neurology*, published ahead of print on August 16, 2006 on [www.neurology.org](http://www.neurology.org)

2. Fagan SC, Morgenstern LB, Petitta A, et al. Cost-effectiveness of tissue plasminogen activator for acute ischemic stroke. NINDS rt-PA Stroke Study Group. *Neurology* 1998;50:883–890.

# Stroke Systems of Care

*National Recommendations 2005*

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## **ASA Policy Recommendations**

### **Recommendations for the Establishment of Stroke Systems of Care**

#### **Recommendations From the American Stroke Association's Task Force on the Development of Stroke Systems**

##### **Task Force Members**

Lee H. Schwamm, MD; Arthur Pancioli, MD; Joe E. Acker III, EMT-P, MPH, MS;  
Larry B. Goldstein, MD; Richard D. Zorowitz, MD; Timothy J. Shephard, PhD(c), CNRN, CNS;  
Peter Moyer, MD, MPH; Mark Gorman, MD; S. Claiborne Johnston, MPH, MD, PhD;  
Pamela W. Duncan, PhD; Phil Gorelick, MD; Jeffery Frank, MD; Steven K. Stranne, MD, JD;  
Renee Smith, MPA; William Federspiel, BA; Katie B. Horton, RN, JD;  
Ellen Magnis, MBA; Robert J. Adams, MD

# A Good Stroke System of Care Should . . .

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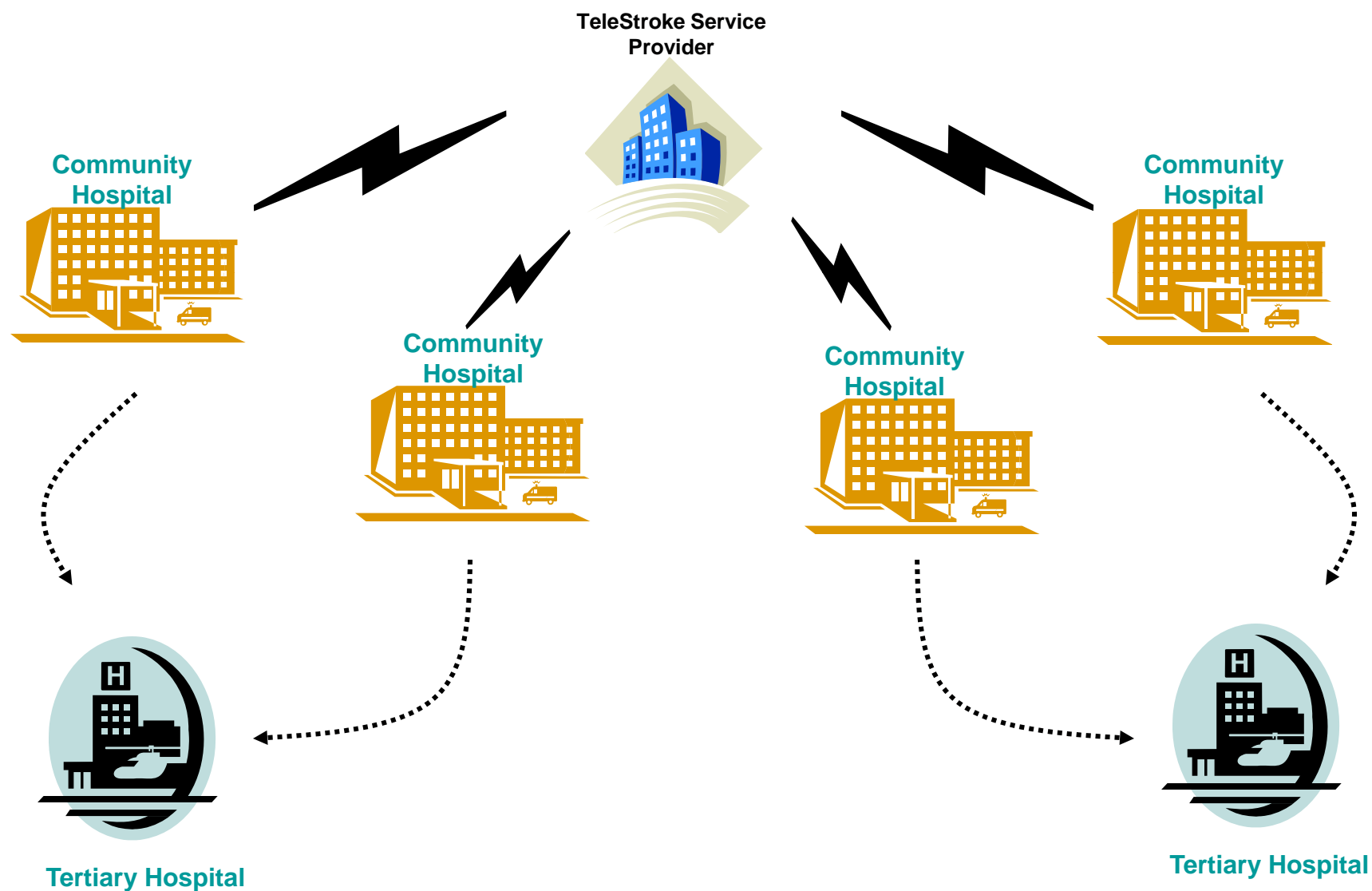
- Ensure effective interaction and **collaboration**
- Promote the use of an organized, **standardized approach**
- Provide both patients and providers with the **tools** necessary to promote effective stroke prevention, treatment, and rehabilitation
- Ensure that the right patients get the right care from the right providers in the right amount of time
- Be standardized **regionally** but **customized** locally
- Address the needs of **neurologically underserved** areas
- *Incorporate **telemedicine**, and ground or air transport, to help facilitate linkages between hospitals and patients*

# Providers and Policymakers Respond

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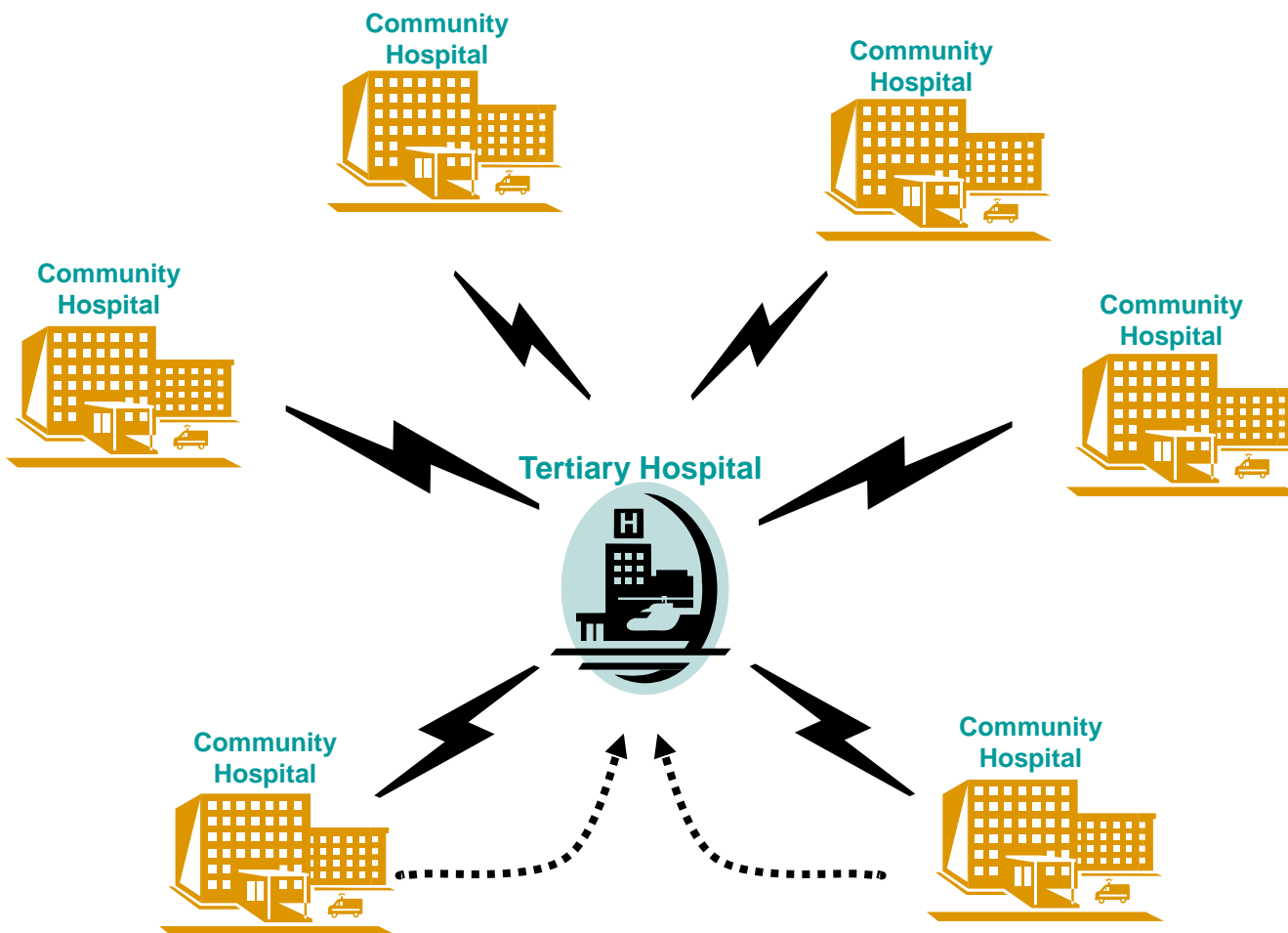
- Providers now understand that access to cost-effective, immediate consultation by trained stroke neurologists results in improved care for ischemic stroke patients
- We see the development of Stroke Center certification programs
  - ✓ State and National (JCAHO) level
- But how do community hospitals meet those certification requirements?
  - ✓ 'Make' versus 'Buy' Decision
  - ✓ What community hospitals really need is **shared access** to a pool of **highly skilled specialists immediately available** for **low frequency** but **high impact** evaluations

# The TeleStroke “Third Party Consult” Model



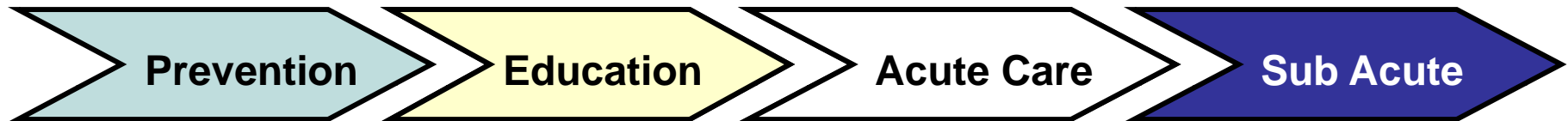
# The TeleStroke “Hub and Spoke” Model

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# Stroke System of Care Components

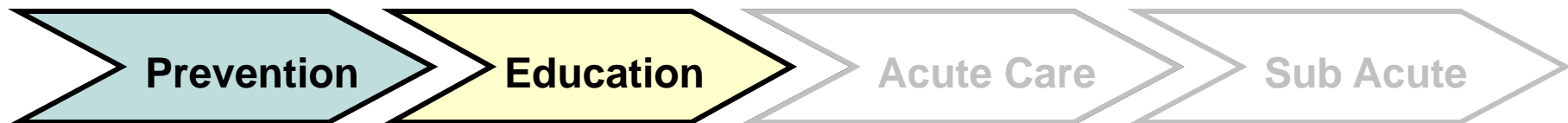
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The basic elements of a good stroke telemedicine program will support all four stroke system components

# Stroke Telemedicine Should Enable Education and Prevention

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A good stroke telemedicine program is not just about technology. Hub hospitals must take a regional leadership role in education and prevention at the community level.

## Program Support

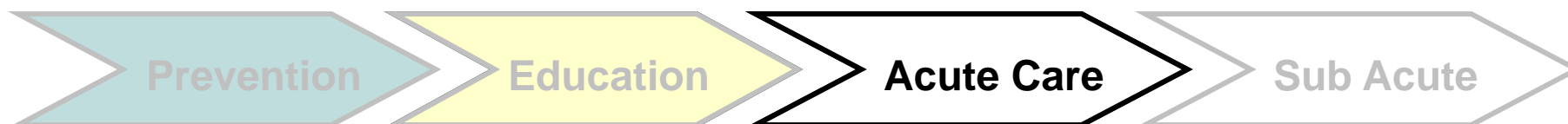
- ✓ Leverage hub expertise to educate spoke providers (CME events)
- ✓ Engage in community education events/PSAs
- ✓ Providers and patients can engage in primordial and primary prevention
- ✓ Acute stroke trainee education

## Technology

- ✓ Flexible, open-architecture to support training activities
- ✓ Multipoint conferencing capability supports group learning

# Stroke Telemedicine Should Enable Robust Acute Stroke Care

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All stroke telemedicine technologies will support the acute phase of stroke care. Hubs and spokes should look for programs and approaches that support the entire process of acute care.

## Program Support

- ✓ Educate comm. hospital ED staff to become acute stroke teams
- ✓ Standardize treatment protocols
- ✓ Simplify the care process for both hub and spoke providers
- ✓ Integrate decision support whenever possible (NIH stroke scale, alerts, reminders, calculators, etc.)
- ✓ Document the consult in a report and distribute to all med records

## Technology

- ✓ Cost and complexity match the hospital's resources
- ✓ Easy to use / maintain
- ✓ Does not disrupt the flow in the ED
- ✓ Capable of multipoint conferencing
- ✓ Flexibility to support other specialty consultations

# Good Programs Should Also Support the Sub-Acute Phase of Care

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The sub-acute phase of stroke care is critical to optimizing patient outcomes. A good stroke telemedicine program will focus attention and resources on this important area.

## Program Support

- ✓ Standardize treatment protocols for sub-acute phase of care
- ✓ Maintain provider continuity of care in sub-acute hospital setting
- ✓ Document all inpatient care and make it available upon discharge to family and subsequent treating providers

## Technology

- ✓ Flexibility and mobility to support consults in non-ED inpatient or outpatient setting

# MGH “Hub and Spoke” TeleStroke Program

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- Began in 1996 at MGH
- Two Partners tertiary hospitals (MGH and BWH) serving as hubs
- Now have 23 spoke hospitals in the TeleStroke network
  - ✓ Most are outside of the Partners HealthCare system
  - ✓ Five are in neighboring states (NH and Maine)
- Distributed cost model is completely financially sustainable
- Low barrier to entry and ongoing cost for spoke hospitals
  - Only 1 spoke hospital has dropped out
- Offer scheduled live CME/CEU opportunities + developing stored, on-demand streaming content
- Offer spoke hospitals access to clinical trials
- Have assisted several other AMCs and hospital networks across US to create their own program



# Summary

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The “Hub and Spoke” approach of stroke telemedicine is best positioned to support the Stroke “Systems of Care” model.

- ✓ It supports the development of regional solutions that will have a greater likelihood of success in improving the process of care and patient outcomes.
- ✓ Its about more than just buying or selling technology! It’s about people: cultivating relationships, developing trust, and supporting each other.
- ✓ A tertiary or AMC hub-based program allows both community and tertiary hospitals to better manage the demand for their beds.
- ✓ Never underestimate the power of public relations and the press. A TeleStroke program can be a wonderful, free marketing vehicle.
- ✓ Establishes the basic infrastructure and knowledge base to deliver other telemedicine services.