

EMS PRE-HOSPITAL CARE, MOBILE INTEGRATED HEALTHCARE AND COMMUNITY PARAMEDICINE: CHALLENGES AND OPPORTUNITIES WITH TELEHEALTH

April 10 – 12, 2016

MATRC 2016

Hyatt Regency Chesapeake Bay
Golf Resort Spa and Marina
Cambridge, MD

Panelists:

- Robert J. McCaughan, BS, EMT-P
- Kathleen Sharp, CPC, CMM, LBB
- Jack Cote, MPA, NR-P
- Jean R. Sumner, MD
- Sherita N. Chapman-Smith, MD

Moderator:

- David Glendenning, EMT-P

USE YOUR MOBILE APP FOR Q&A

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MATRC 2016

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- Go to: <http://eventmobi.com/matrc2016/>
(can be accessed via laptop, tablet, or smartphone)
- Add the app to your home screen or bookmark it...content will download for offline and online use.
- To customize, log in with your email address (top right corner).
- From the agenda, click on the session you are in to access bios, handouts, ask a question or provide session feedback.



Allegheny Health Network

Mobile Integrated Healthcare & Community Paramedicine

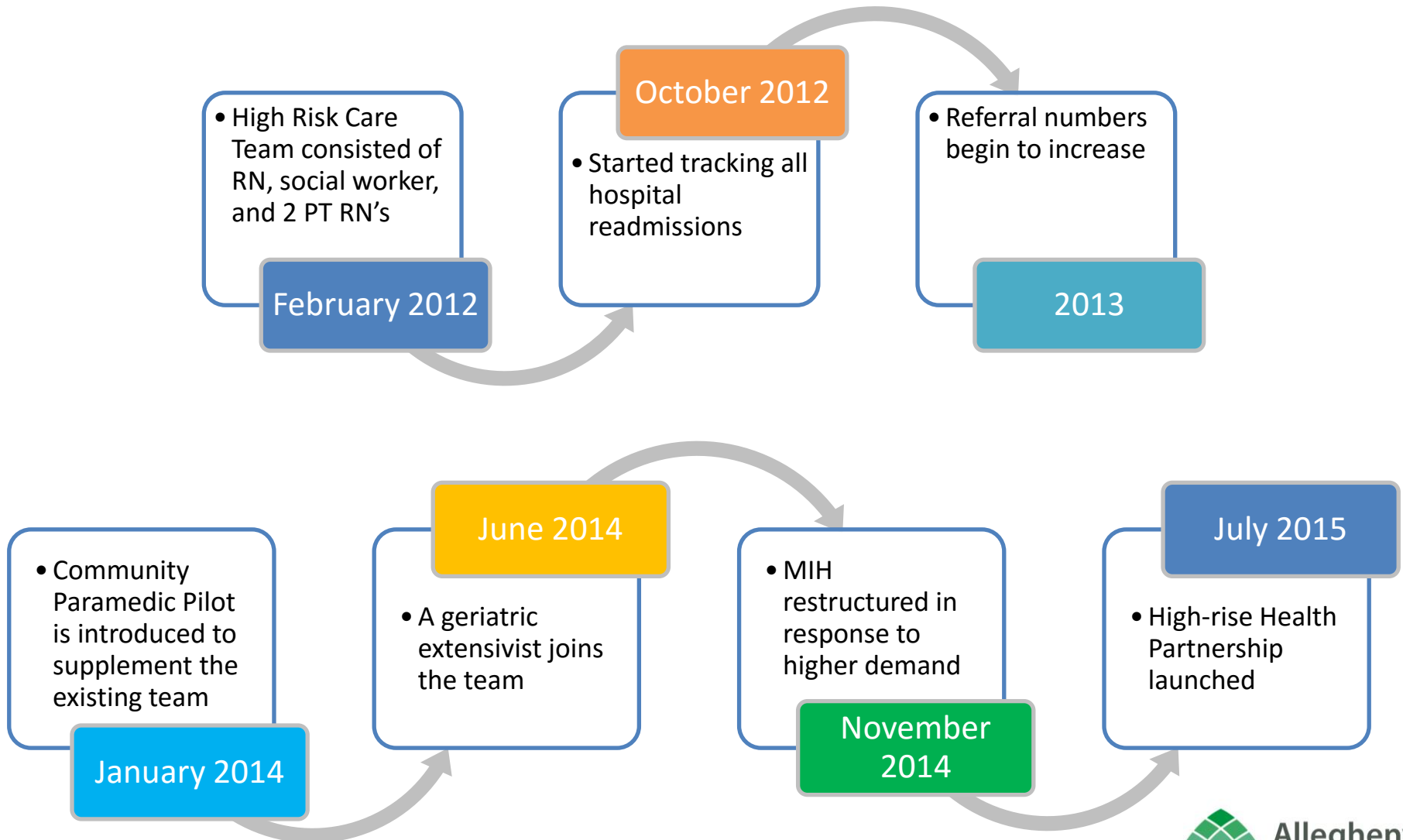
Robert J. McCaughan, BS, EMT-P

Vice President

Prehospital Care Services

MATRC 2016 Telehealth Summit: Sunday, April 10, 2016

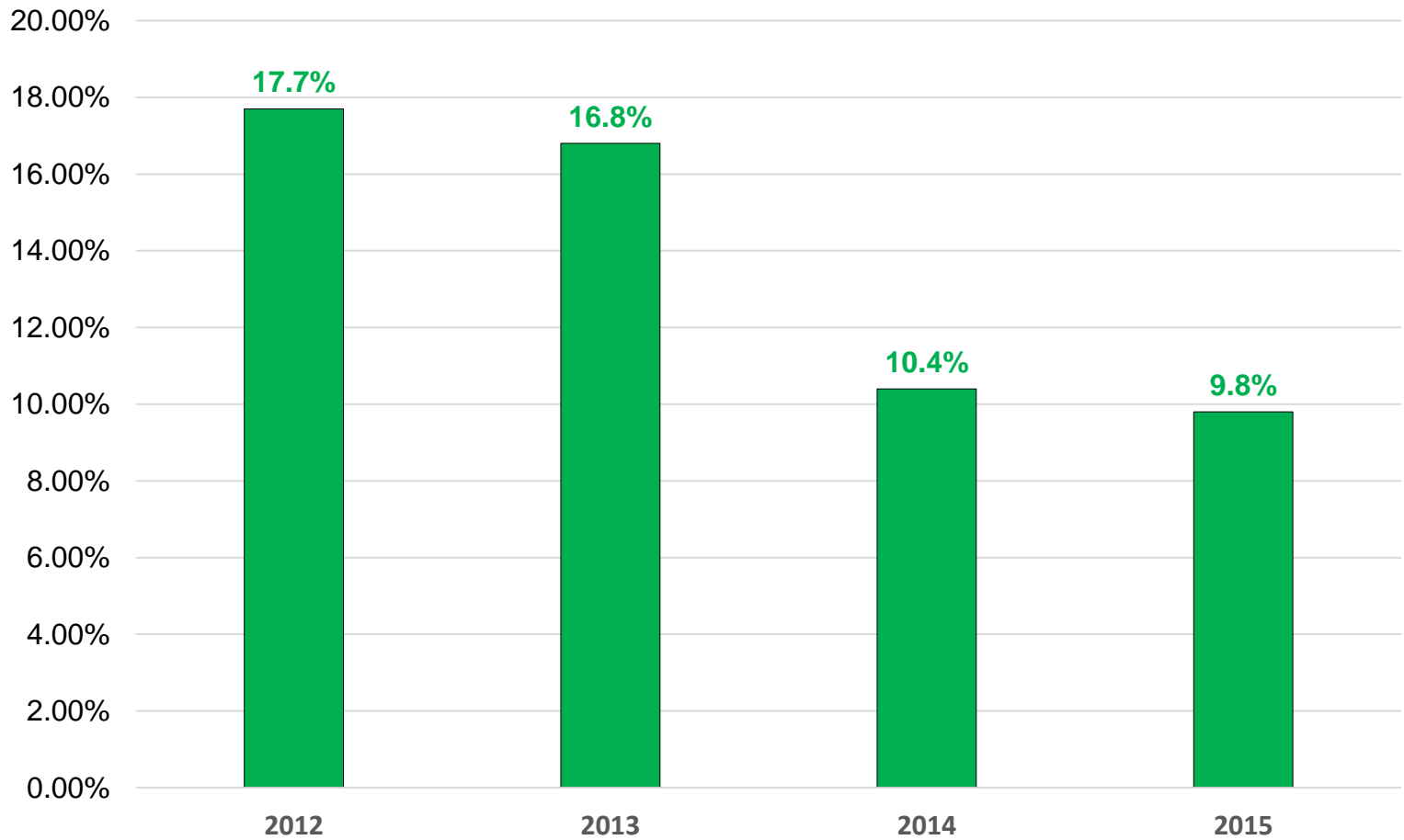
History of Community Paramedic Program at Allegheny Valley Hospital



How Does This Work?

- Patient referred to the program by case managers
- Meet and educate all referrals prior to discharge and provide them with the contact number for the Team
- Member receives the first call within 48 hours of discharge
- 31 day plan of care created for each patient
- Root cause analysis on all readmissions

Readmissions



Benefits of MIH

- Often times prevents: a call to / or transport by EMS; a visit to the ED; and, in many cases, an admission or readmission to the hospital
- Helps patient maintain wellness / higher quality of life
- Early recognition of decline leading to early intervention
- Thorough medication reconciliation
- Reduces the cost of healthcare



Challenges

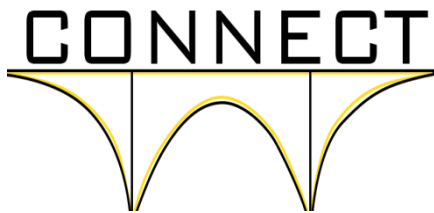


- Financial impact on community ambulance services
- Staffing
- 24/7 availability
- Patient compliance
- Changing the culture in healthcare

CONNECT



COMMUNITY[®]
PARAMEDIC



Partners

Funders

Program

History of the CONNECT Program

- A \$600K collaborative pilot, funded equally by Highmark and the University of Pittsburgh Medical Center (UPMC)
- Administered through the Congress of Neighboring Communities (CONNECT), the Allegheny County EMS Council, and the Center for Emergency Medicine
- Selection criteria based on the 36 municipalities that comprise the urban core of Allegheny County and “CONNECT” to the City of Pittsburgh.
- EMS providers as **PARTNERS**: 10-20 local providers trained as Community Paramedics

History of the CONNECT Program (Con't.)

- 15 E.D.'s from Allegheny Health Network and UPMC referring patients along with the EMS provider community
- The CONNECT pilot program aimed to:
 - Reduce 30 day hospital readmission rates for CHF and other chronic diseases;
 - Increase the number of patients actively enrolled in social service programs;
 - Increase patients receiving care from a PCP;
 - Decrease avoidable healthcare utilization and 911 calls; and,
 - Improve health-related quality of life and patient satisfaction



Allegheny Health Network

**Prehospital Telemedicine:
The First Pennsylvania Experience**

Overview

- Emergency departments have been using the technology within the hospital for years
- Paramedics have been using telemedicine for years...just now adding the video component
- Recent advances in mobile data networks have made this more applicable in the field setting
- Involves emergency physicians and specialists in patient care at an earlier stage
- Basic technology – iPad, secure transmission, HIPAA compliant

First Telemedicine Experience

Situation

- 911 call dispatched for a diabetic emergency
- Patient alert and oriented upon arrival, borderline hypoglycemic, treated accordingly
- Patient did not want to be transported but agreed to telemedicine consult with E.D. physician
- E.D. physician conducted a patient assessment with the assistance of the paramedic
- Patient given instructions and remained at home

First Telemedicine Experience

Benefits

- Decreased cost of healthcare: avoided EMS transport / E.D. visit
- Ambulance returned to service in their community
- Patient had an exceptional experience and followed up with her PCP. “I can’t believe I just had a doctor in my living room!”

Another Success

Situation

- EMS dispatched to a local church where a woman received steam burns while making pierogies for fundraiser
- Paramedic finds patient with second degree burns to her face but refusing treatment and transport
- Patient finally agrees to go to the hospital but only local community hospital: not burn center where she should go
- Paramedic knows destination is inappropriate and asked the patient to participate in a telemedicine consult (enroute)
- Patient & E.D. physician consult. Patient agrees – with input from the physician and paramedic – that a burn center is the appropriate destination.

Another Success

Benefits

- Decreased cost of healthcare: Patient transported to the appropriate hospital rather than community hospital then transfer to burn center
- Physician – along with the Paramedic – was able to convince patient of need for burn center (viewed her injury via video)
- Patient received the care she needed without significant delay



Allegheny Health Network

Mobile Integrated Healthcare & Community Paramedicine

Robert J. McCaughan, BS, EMT-P

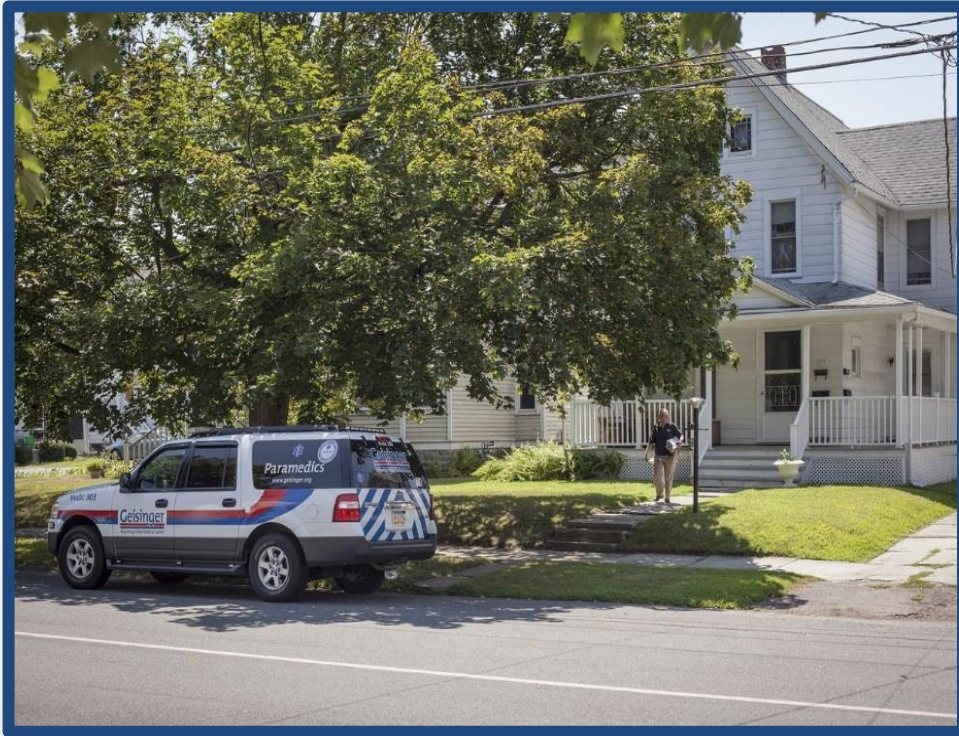
Vice President

Prehospital Care Services

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Community Based Care

Mobile Health Paramedic/Mobile Integrated Health



Kathleen Sharp, MBOE, LBB
Senior Performance Innovation Consultant

MATRC Conference
Sunday, April 10, 2016

Mobile Integrated Health Pilot

Project Goal:

Under the umbrella of Community Based Care (CBC), develop a delivery model to provide the right care in the right location using Mobile Health Paramedics.

This program will not compete with existing programs like visiting nursing, but will augment these programs by caring for those who do not meet criteria for existing programs or will fill existing program gaps.

Patient-centered selection criterion is based on acuity, proximity, and condition:

- High utilizers of ED
- Medically Complex Patients
- Heart Failure patients

Mobile Health Paramedic Program Background

Pilot Attributes:

- Mobile equipment Technology for care providers
- Integration with Nurse Navigator or Case Manager
- Direct link to Primary Care Providers
- Address gaps in care

Mobile Health Paramedic

Expanded **“Role”**

NOT Expanded **“Scope”**



Mobile Health Paramedic Services

- Medical Home Support
- Heart Failure Clinic
- HF ProvenCare Follow-up
- Home Diuresis
- Medically Complex Medical Home Support
- Discharge PLUS (ED)
- ED call backs
- End of Life (POLST)

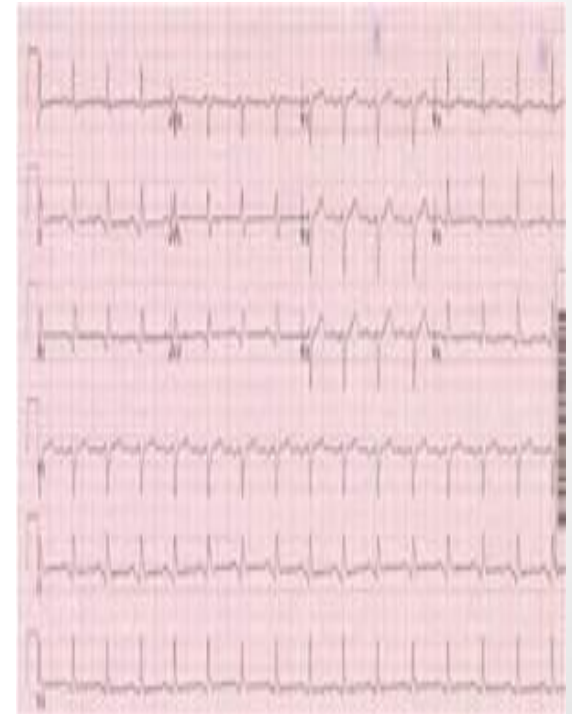
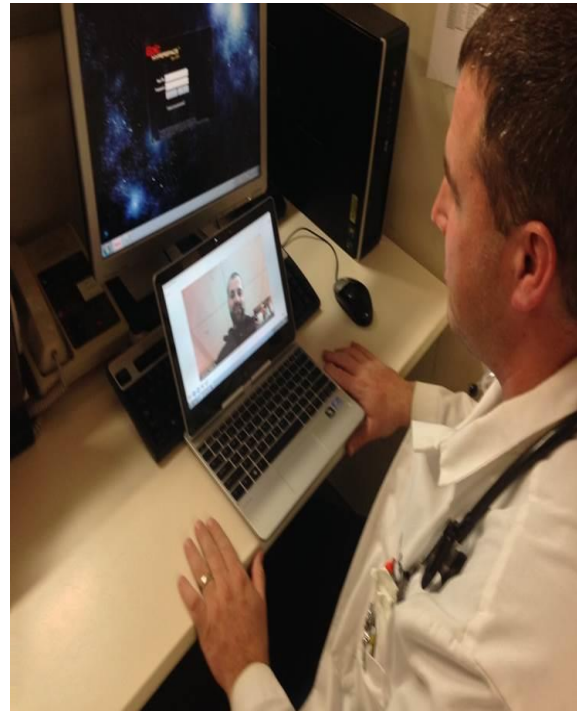


MHP Technology in the Field

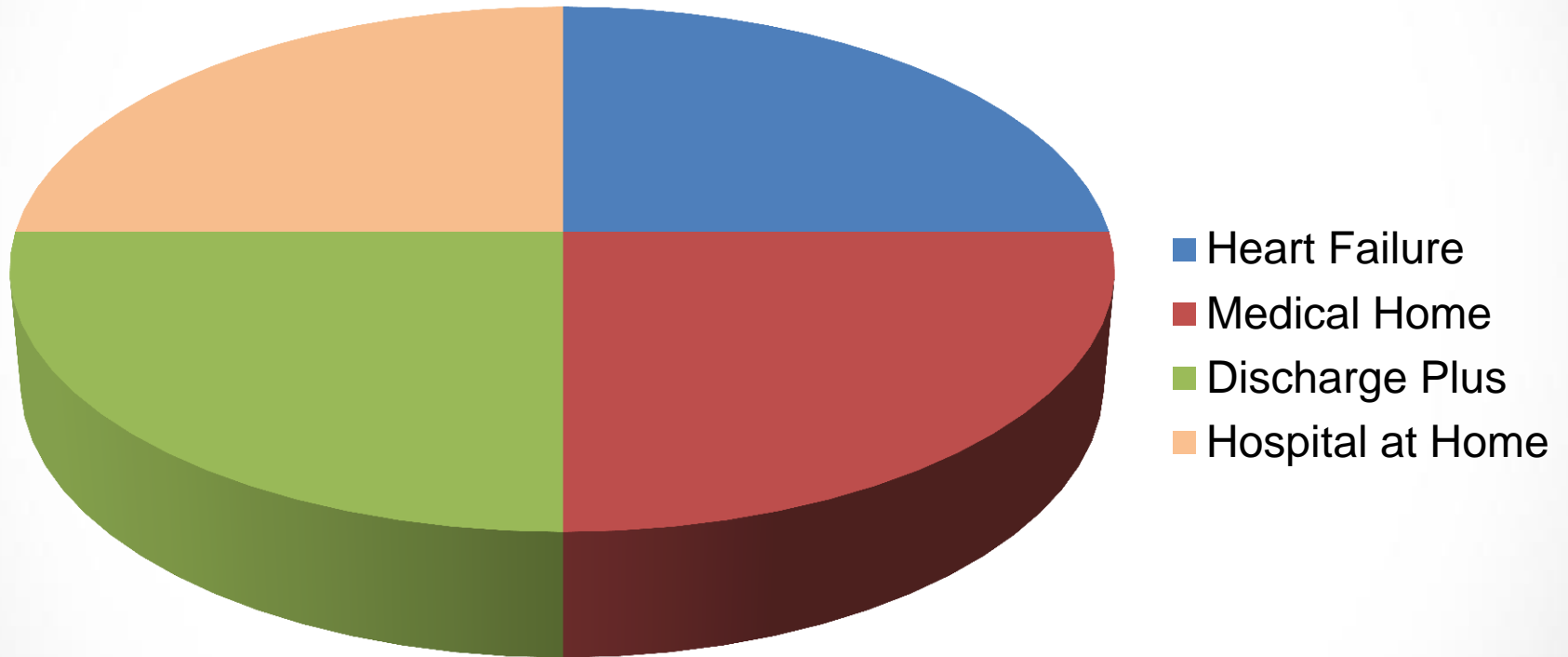
Tele-Connectivity



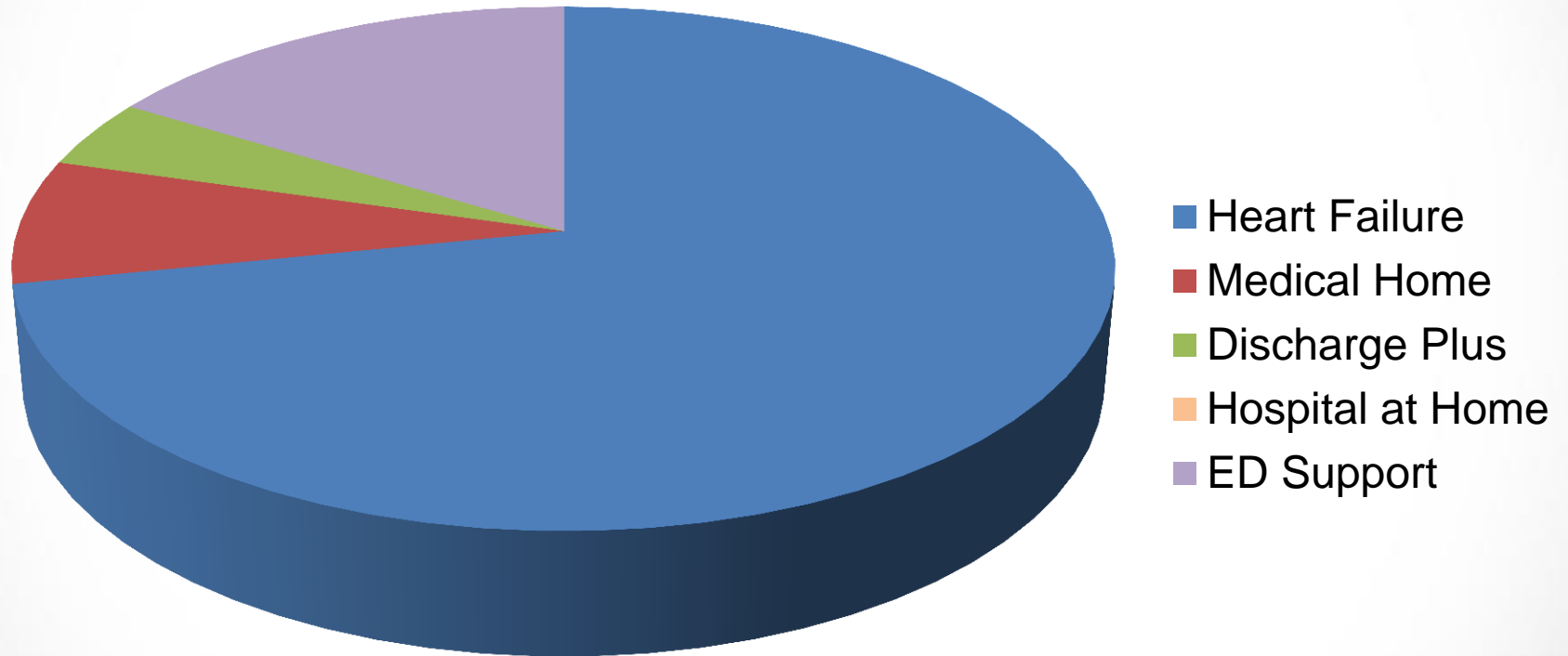
12 Lead EKG



Mobile Health Paramedic Anticipated Utilization



Mobile Health Paramedic Actual Utilization



MHP Pilot Results

(704 patients 3/2014 – 6/2015)

Quality

Prevented Hospitalizations	42 (+ ED)
Inpatient Days Prevented (estimated)	168
Prevented Emergency Depart Visits	33 (ED only)

Patient Satisfaction (71.7% RR)

100% of our patients are surveyed



360 Satisfaction

*“In a word -
Wonderful!”*

*“I didn’t have to go
to Emergency and
wait an eternity.”*

*“Robin showed me
what was bad for
me.”*

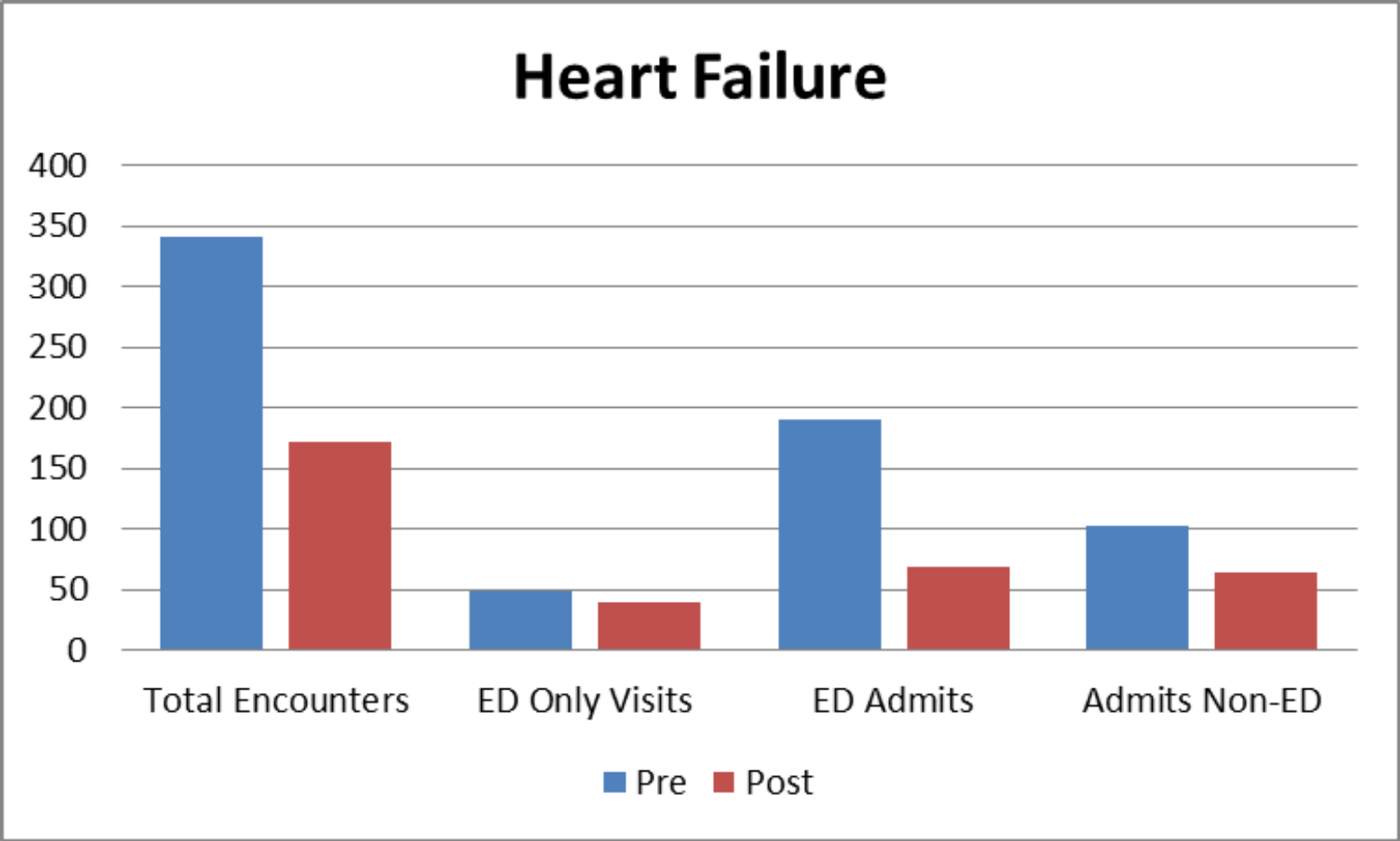
“Robert routinely sees our heart failure patients on home visits, doing both assessment and treatment (including IV diuresis). Many of these have severe cardiomyopathies and require high level assessment skills to manage.

The patients I have had contact with are uniformly very impressed and comfortable with his care.

His notes are always consistent with my findings at office visits. “

*Lorick Fox, MPAS, PA-C, AACC
Cardiology*

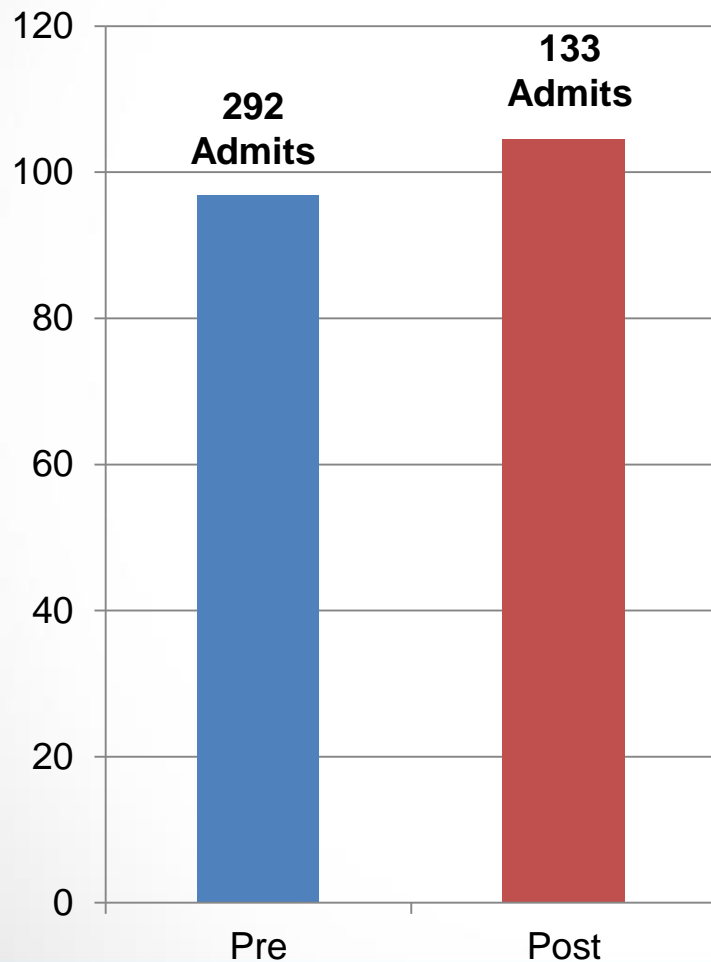
Program Integration w Heart Failure Reduced Encounters 90d Pre-Post (202 Patients)



Heart Failure Care Saved Days

(202 Patients)

Avg LOS in Hours



I/P LOS in Hours



Recognitions



Emergency Care Innovation of the Year

There's No Place Like Home: Paramedic Home Care for Cardiac Patients



THE WALL STREET JOURNAL

www.wsj.com PERSONAL JOURNAL Tuesday, August 18, 2015

A 'No Emergency' Paramedic

by Laura Lando

In a new role, paramedics schedule visits to patients at home for checkups and post-hospital care

Paramedics, who race to emergencies and transport victims to the nearest ER, are taking on a new role: keeping patients out of the hospital.

An initiative, called community paramedicine, is training the fast responders in chronic disease management, medication compliance and home safety. Paramedics are then sent on scheduled house calls to frail and elderly patients or those who have trouble managing chronic conditions like heart failure and diabetes.

Community paramedics take vital signs, administer IV medications, and perform lab tests as well as help patients understand follow-up instructions after being discharged from a hospital.



Mobile paramedic Veronica Knox discusses her scheduled house calls for the day in Pennsylvania. Watch a video about how more programs like this are providing basic, non-emergency services to patients in their homes. Photo: Benjamin Noveck for The Wall Street Journal

They check for risks such as where patients could fall in their homes and whether they understand their medical regimens. They also work with doctors, nurses, dentists and physical therapists to coordinate future care.

In this new role, paramedics augment existing programs like visiting nurse services and home care. They also treat patients who don't meet home-care criteria or don't want someone in their home all the time but still have complex needs, says David Schoenwetter, an emergency physician and head of the mobile health paramedic pilot program at Geisinger Wyoming Valley Medical Center in Wilkes-Barre, Pa., part of Danville, Pa.-based Geisinger Health System.

"Paramedics are a readily deployable, nimble, clinically trained resource who can help close a gap in American health care," Dr. Schoenwetter says.



IH Executive Names 10 Integrated Delivery Networks to Watch

This special section of the publication's September/October issue profiles organizations that are innovating across a variety of care types and settings to help transform the U.S. healthcare system. Each organization was named for demonstrating leadership in a unique and exciting way, partnering with local communities, collaborating with other providers, creating new pathways of care, embracing new reimbursement structures and more.

Here are the organizations profiled and a description of the achievements for which they were selected.

- **Burcham Hills, East Lansing, MI; and Great Lakes Caring Home Health & Hospice, Jackson, MI:** Innovative Collaboration for Continuity of Care
- **Carroll Hospital, Westminster, MD:** Population Health in a Value-Based Environment
- **Community Care Collaborative, Austin, TX:** Integrating Care for the Uninsured/Underinsured
- **Geisinger Health System Mobile Paramedic Program, Wilkes Barre, PA:** Technologically Integrated Mobile Health (Rural)
- **Intermountain Healthcare, Salt Lake City, UT:** Deep Data Analysis for Population Health
- **North Shore LJ Center for EMS, Syosset, NY:** Technologically Integrated Mobile Health (Urban/Suburban)
- **OSF HealthCare, Peoria, IL:** Embracing the Shift to Shared-Risk Arrangements
- **Regional Emergency Medical Services Authority (REMSA), Reno, NV:** Creating New Pathways for 9-1-1 Patients
- **Symphony Post-Acute Network, Chicago:** Partnering to Optimize Patient Experience, From Hospital to Home

MHP Interventions: March, 2014 – March, 2016

	Encounters	Unique Patients
Home Visits	304	950
Heart Failure Visits	281	
Phone	3,012	
Total	3,597	

Mobile Health Paramedic Team



Metrics

Process Metrics

- Patient Volumes of Service by Patient Type (Heart Failure, Medical Home, Discharge PLUS):
 - Visit Encounters,
 - Phone Encounters,
 - Diuresis
- Service Duration/Turn Around Time (TAT) by Patient Type (Heart Failure, Medical Home, Discharge PLUS)
 - Visit Encounters,
 - Phone Encounters,
 - Diuresis
- Daily Completion of Metrics

Outcome Metrics

- Avoided ED visits, Admissions, Readmissions
- Pre-Post Analysis
 - Patient ED Visits
 - Patient ED LOS/Boarding Hrs
 - Patient Days between ED Visits
 - Patient Admissions
 - Patient ALOS/ Bed Days
 - Patient Readmissions
 - Bed Days Saved
 - Patient Days between Admissions
- Patient Satisfaction

An Introduction to the ITREAT Project



Jack Cote, MPA, NR-P
MATRC Prehospital Session
April 10, 2016



Impact of Stroke

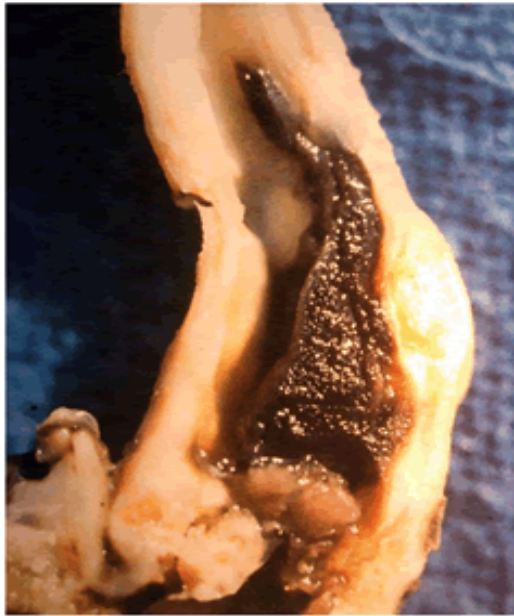
- Each year, about 800,000 Americans suffer a new or recurrent stroke
- Fourth leading cause of death in the U.S. and 2nd leading causes of death in the world
- Leading cause of long term adult disability in the world
 - Stroke occurs every 40-45 seconds
 - Every 3-4 minutes, someone dies from stroke

Types of Stroke

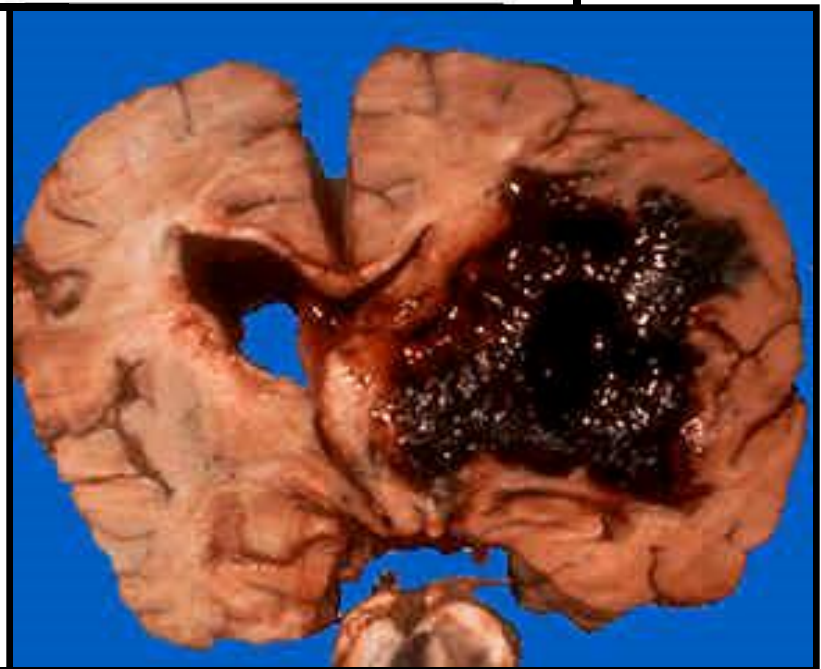
Ischemic stroke

Hemorrhagic stroke

Internal
Carotid
Artery
(ICA) clot

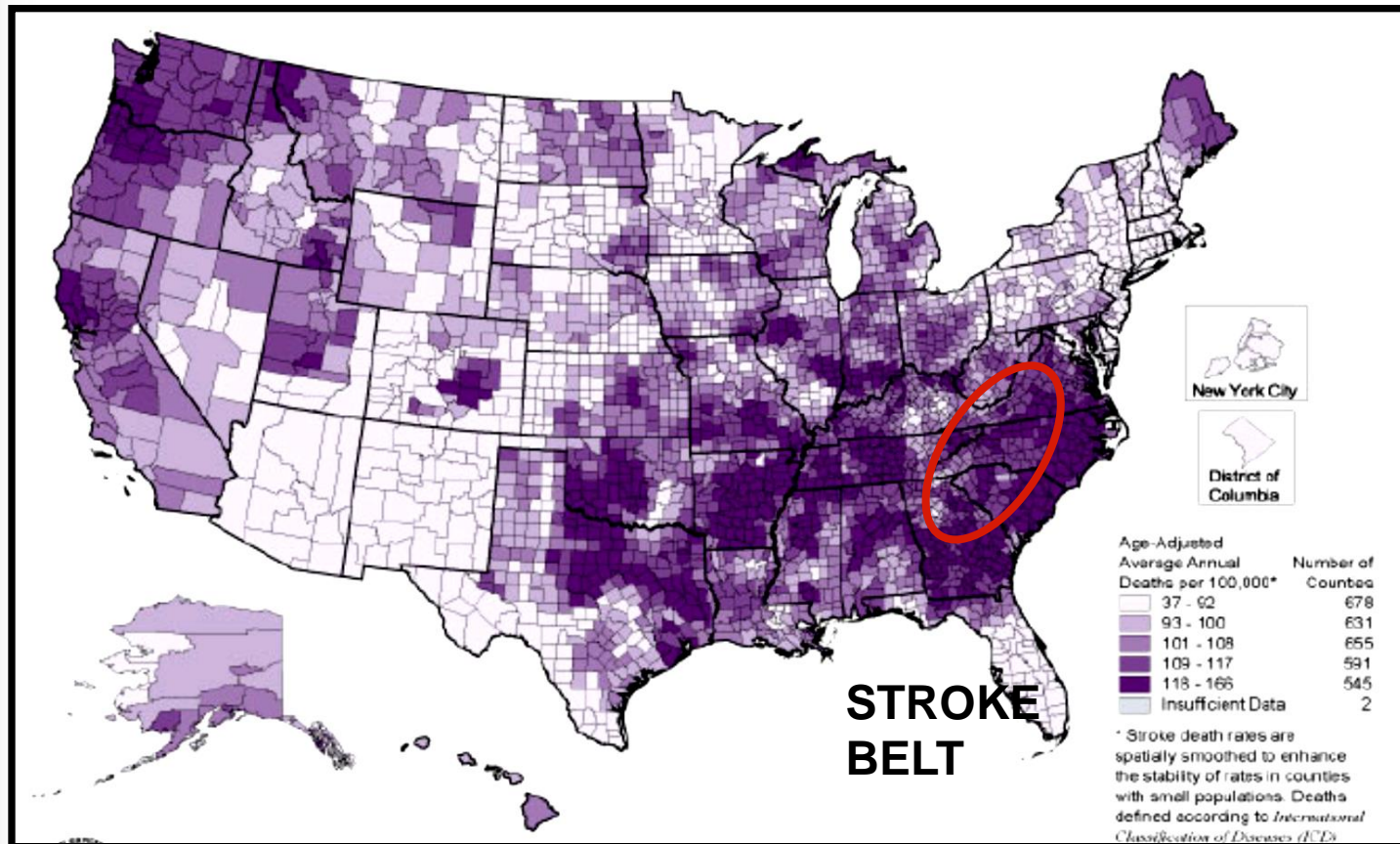


A clot blocks blood flow
to an area of the brain

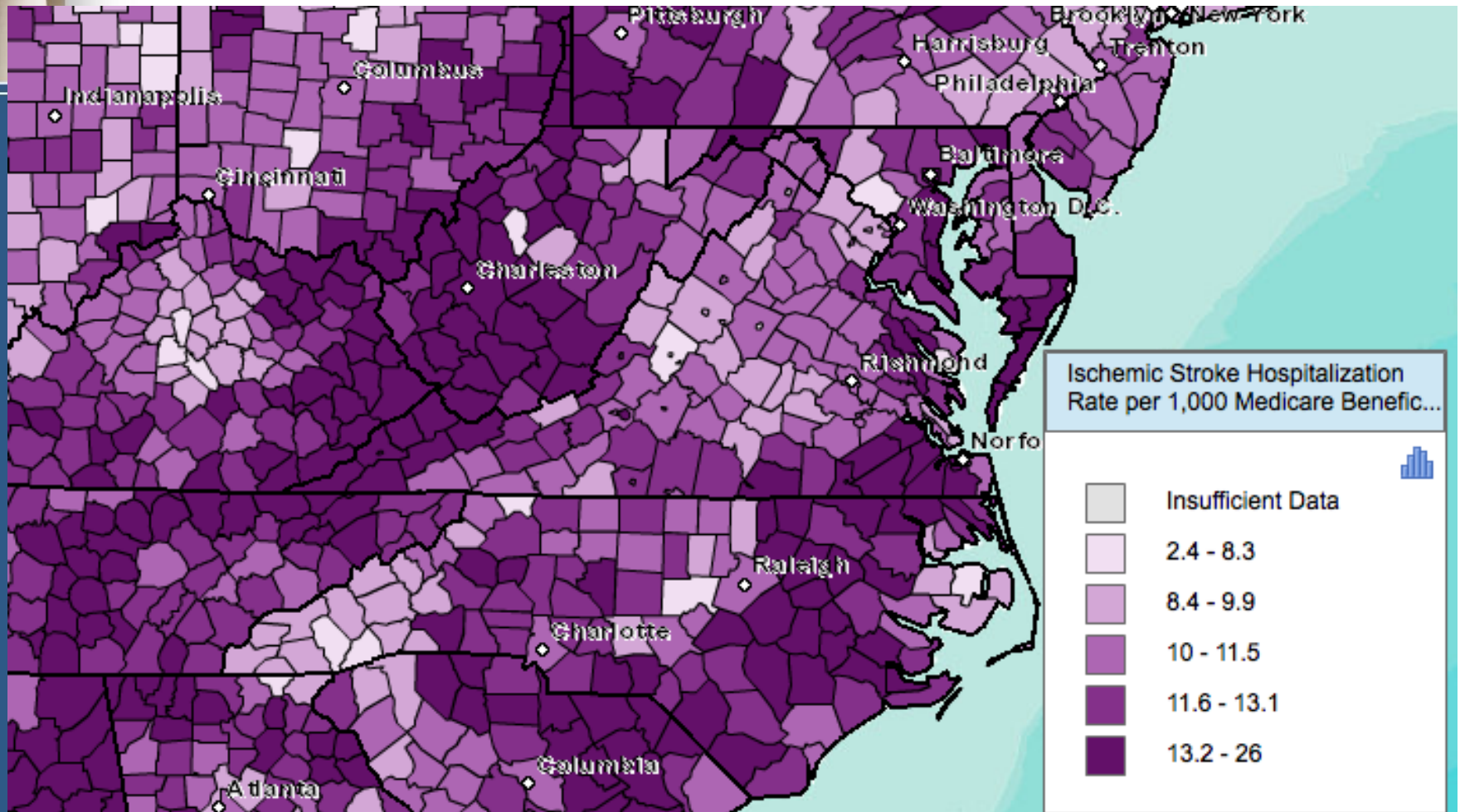


Bleeding occurs inside or
around brain tissue

Epidemiology



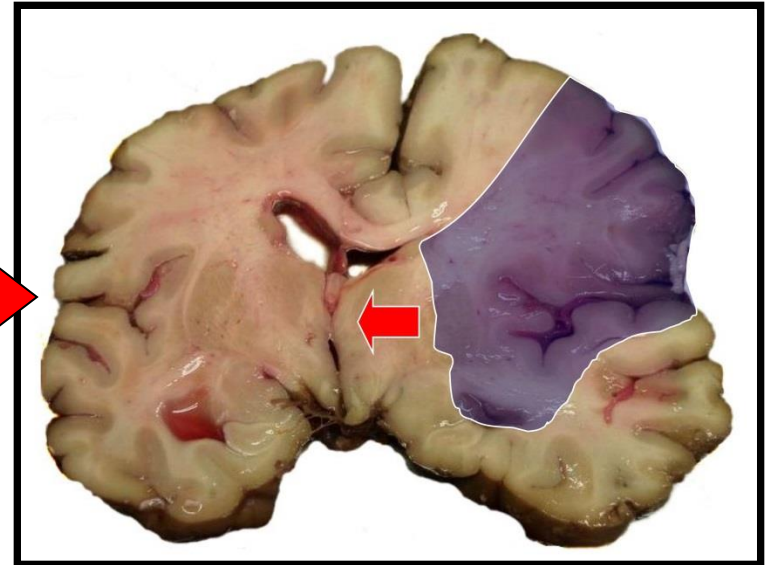
Ischemic Stroke Hospitalizations in Virginia



Acute Stroke Care



“TIME IS BRAIN”





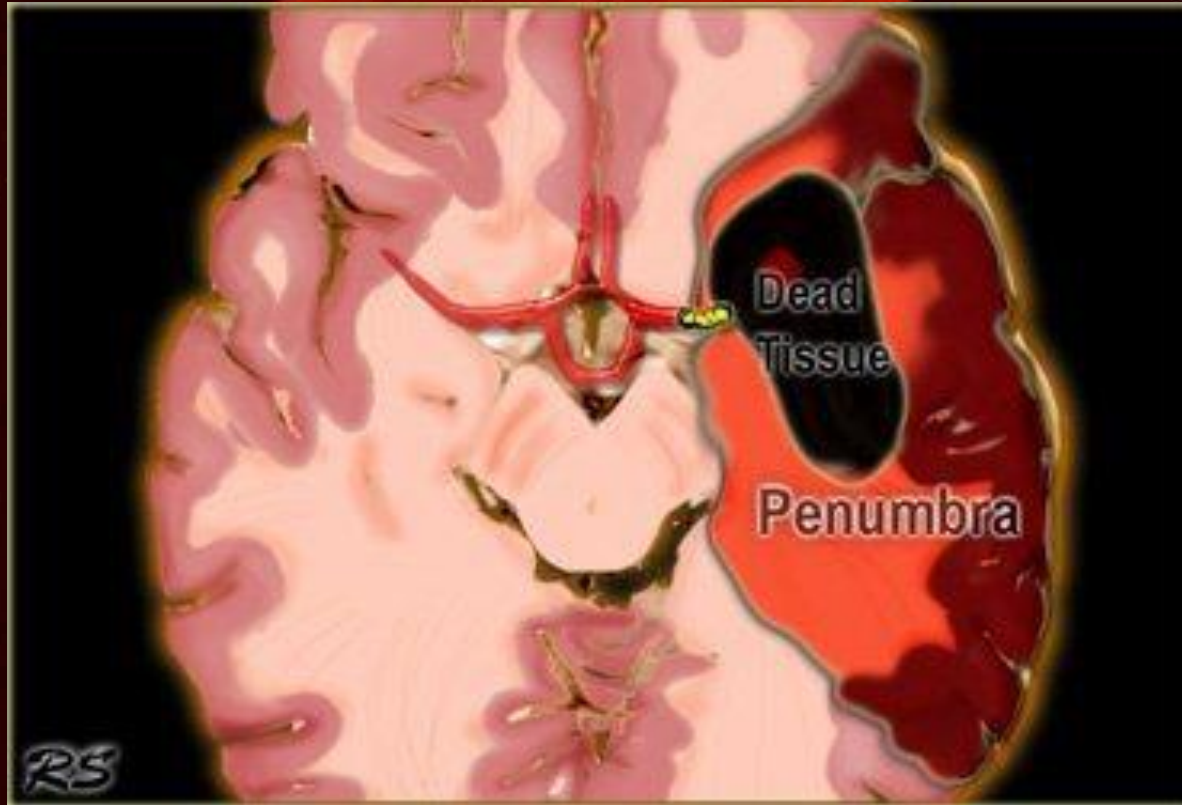
Interventions

- Currently, the only FDA-approved medical therapy for acute ischemic stroke is IV tissue plasminogen activator (tPA) within 3 hours...4.5 hours?
- Nationally, less than 4% of acute ischemic stroke patients are given thrombolytics, only 1/3 are treated within 60 minutes DTN
- Every minute a large vessel ischemic stroke is untreated, the average patient loses
 - 1.9 million neurons
 - 13.8 billion synapses
 - 12 km (7 miles) of axonal fibers
- Each hour treatment of delay, the brain loses as many neurons as it does in almost 3.6 years of normal aging.

Acute Stroke Treatment Windows

- IV TPA < 3-4.5 hrs
- Mechanical thrombectomy:
groin puncture < 6 hrs
- IV tPA + mechanical thrombectomy?
 - Five recent positive trials
 - New guidelines





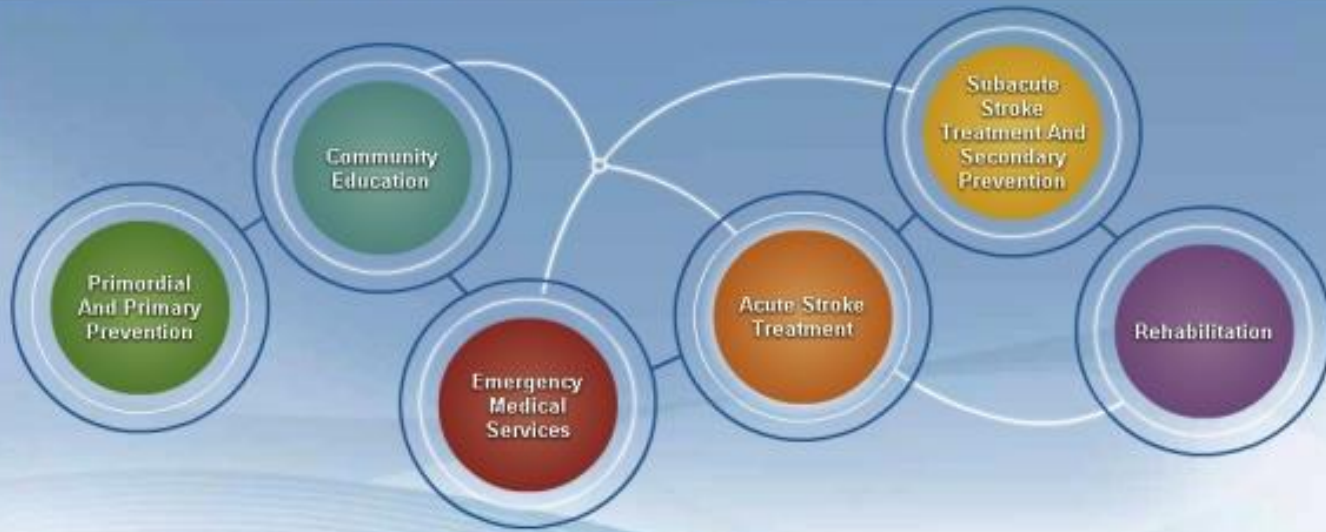


Where do we go from here?





BUILDING STROKE SYSTEMS OF CARE



:: SELECT A SYSTEM COMPONENT ::

NEWS	CALENDAR OF EVENTS	MONTHLY FEATURE
<p>Virginia Stroke Systems Coordinator's Consortium (VSSCC) Community Education Tue, 20 Jul 2010 01:00:00 -0600</p> <p>One of the primary objectives of the VSSCC is to inform the community about stroke signs and symptoms and prevention. Members of the VSSCC submit Partner Activity Reports on a quarterly basis to document the community education performed across the state.</p>	<p>Virginia Stroke Systems Task Force Meetings NEXT VSSTF MEETING OCTOBER 20, 2010</p> <p>The Virginia Stroke Systems Task Force will hold its next quarterly meeting on October 20, from 10 a.m. to 3 p.m. (Location for the October 20 meeting to be announced at a later date). Meetings are open to the</p>	<p>Farewell to Keltcie Delamar - Forceful Advocate for the VSSTF Wed, 25 Aug 2010 00:00:00 -0600</p> <p>It was with very mixed emotions that the VSSTF bid farewell to Keltcie Delamar at the July meeting. While we wish Keltcie well in her new position with the AHA, she will be sorely missed. Keltcie's vision, organizational skills and boundless energy have been invaluable in the development and growth of the VSSTF. In honor of her dedication to the Task Force, she was awarded the Outstanding Achievement Commendation for her tenacious</p>

UVA Stroke Telemedicine and Tele-education Program (STAT)

Spoke Centers

- Culpeper Regional Hospital
- Augusta Health Medical Center
- Bath Community Hospital
- SOC[©] ~50 rural hospitals in VA

Acute stroke intervention (since 2011)

- > 300 patient encounters
- 20% treated with IV tPA



Va Senate Bill 675: April 2010

§ 38.2-3418.16. Coverage for telemedicine services.



UNIVERSITY OF VIRGINIA
TELESTROKE CENTER



STROKE TELEMEDICINE
& TELE-EDUCATION

Prehospital Stroke Care – *No Time to Wait*

Numerous initiatives calling for innovative approaches to prehospital stroke care

- American Heart Association/American Stroke Association (AHA/ASA) *Target:Stroke*



Patients living in rural and underserved areas suffer a *geographic disparity* of distance to primary stroke centers and access to neurological expertise

- Prolonged transport times
- Variability in EMS training
- Accuracy of prehospital stroke screening



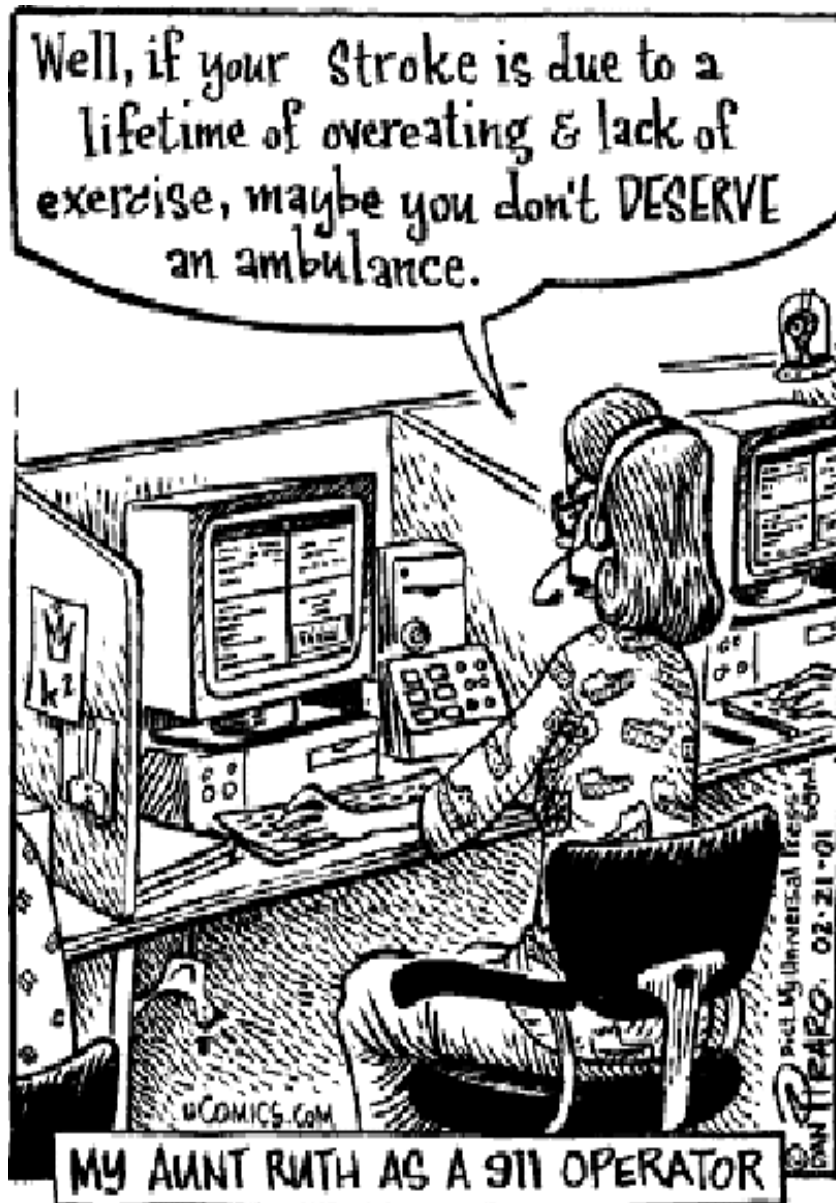
Prenotification shown to improve acute treatment



Emergency Medical Dispatchers and Stroke

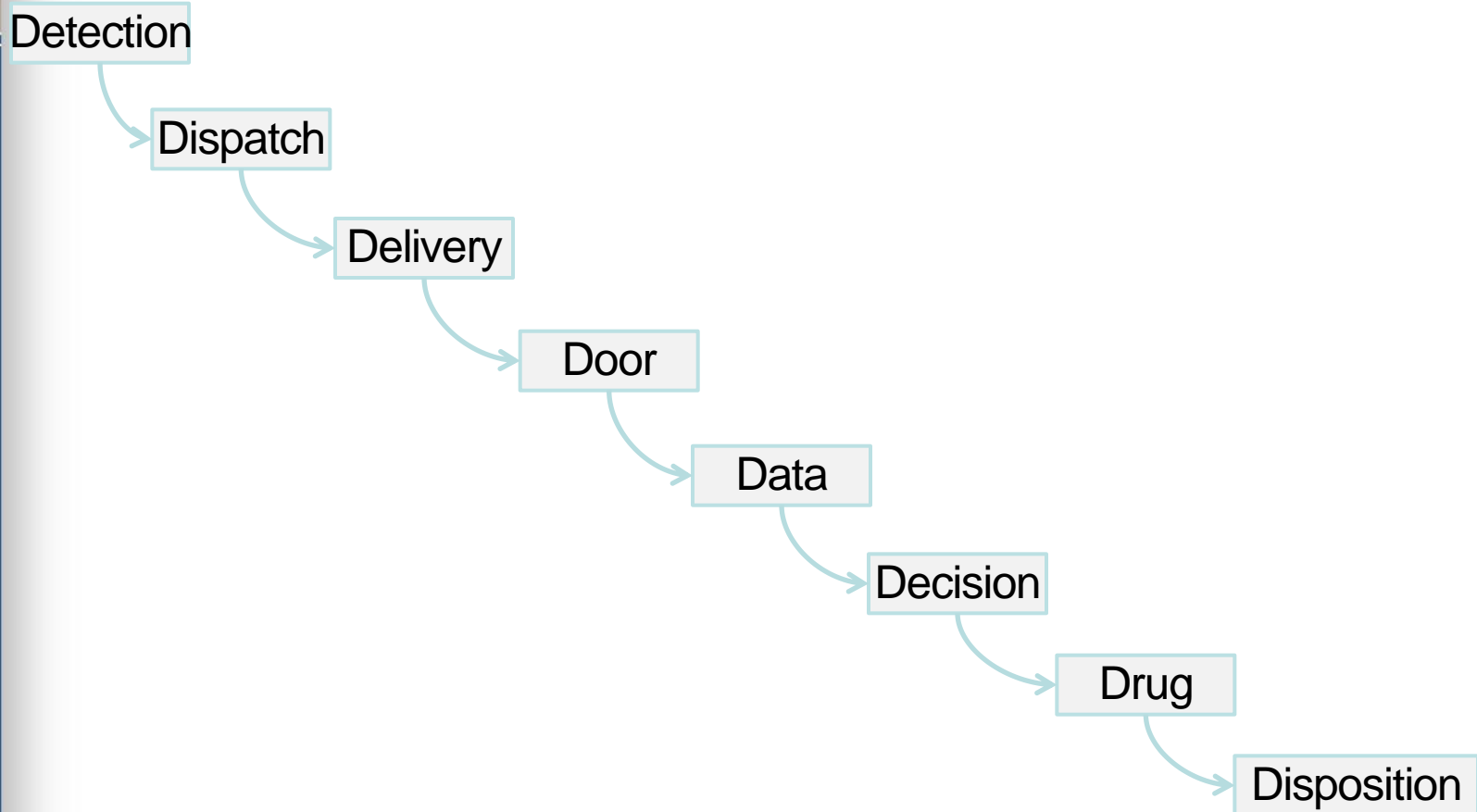
The true “first medical contact.”

- Identification of stroke by EMDs → *10-minute reduction* in scene-to-hospital-arrival time
- EMD recognize stroke in less than 50% of calls for stroke
- Using key words, may be able to identify up to 80% of strokes
- Dispatcher is usually correct when they identify stroke over the phone



Timely Care is Systems-Dependent

Stroke Chain of Survival



Target: Stroke

- 11 best practice strategies



1. EMS prenotification
2. Stroke tools (protocols, order sets, NIHSS)
3. Rapid triage protocol and stroke team notification
4. Single call activation system
5. Transfer directly to CT scanner
6. Rapid acquisition & interpretation of brain imaging
7. Rapid laboratory testing (POC)
8. Mix tPA ahead of time
9. Rapid access & administration of IV tPA
10. Team-based approach
11. Prompt data feedback



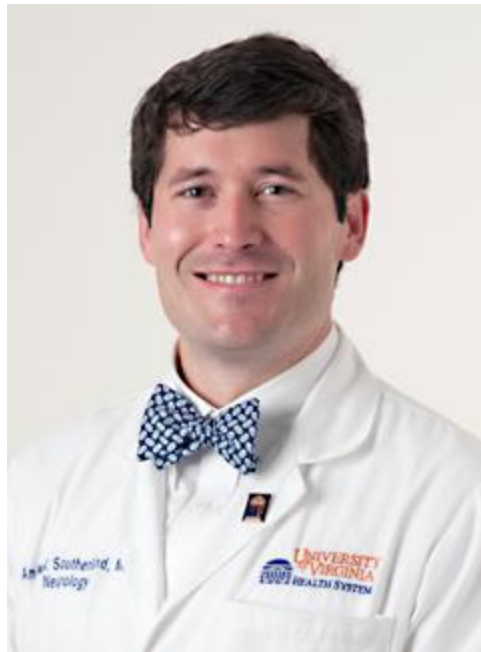
iTREAT

Improving Treatment through Rapid Evaluation of Acute stroke via mobile Telemedicine

1. STEMI and Trauma Systems Models
2. Early notification to receiving ED
3. Reduction of Door to CT Interval
4. Reduction of Door to Needle



Our intrepid leader



Dr. Andrew Southerland
UVA Department of Neurology
Principal Investigator for iTREAT

A low-cost, tablet-based option for prehospital neurological assessment: the iTREAT Study



- Mobile, real-time video
- 4G cellular wireless
- > 50 test runs completed w/o major technical interruption
- Intraclass correlation NIHSS 0.96
- Phase II study open for enrollment

Lippman et al. J Telemedicine and e-Health – accepted
Govindarajan, Chapman Neurology – under review

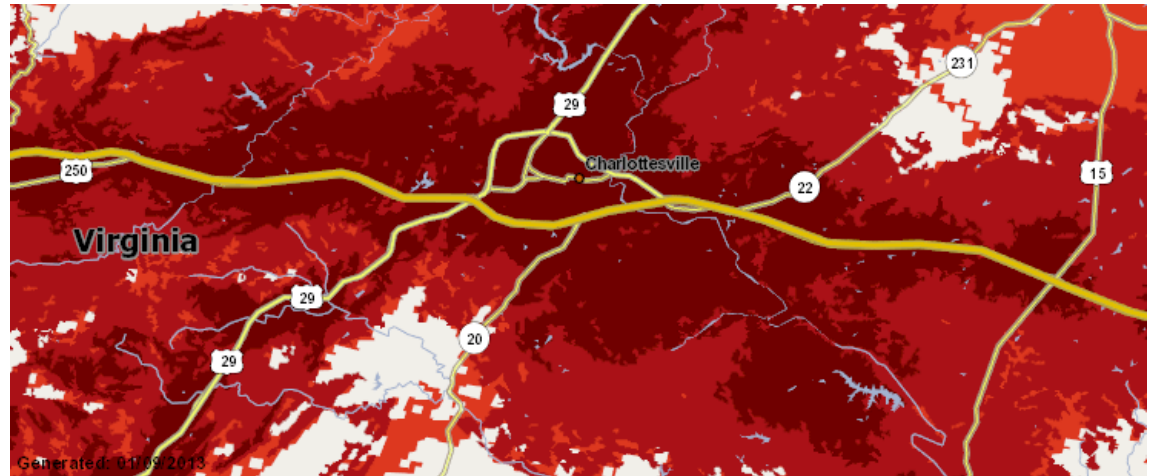
– Fluvanna, Greene,
Louisa, Western
Albemarle

**UNIVERSITY
of VIRGINIA**
HEALTH SYSTEM

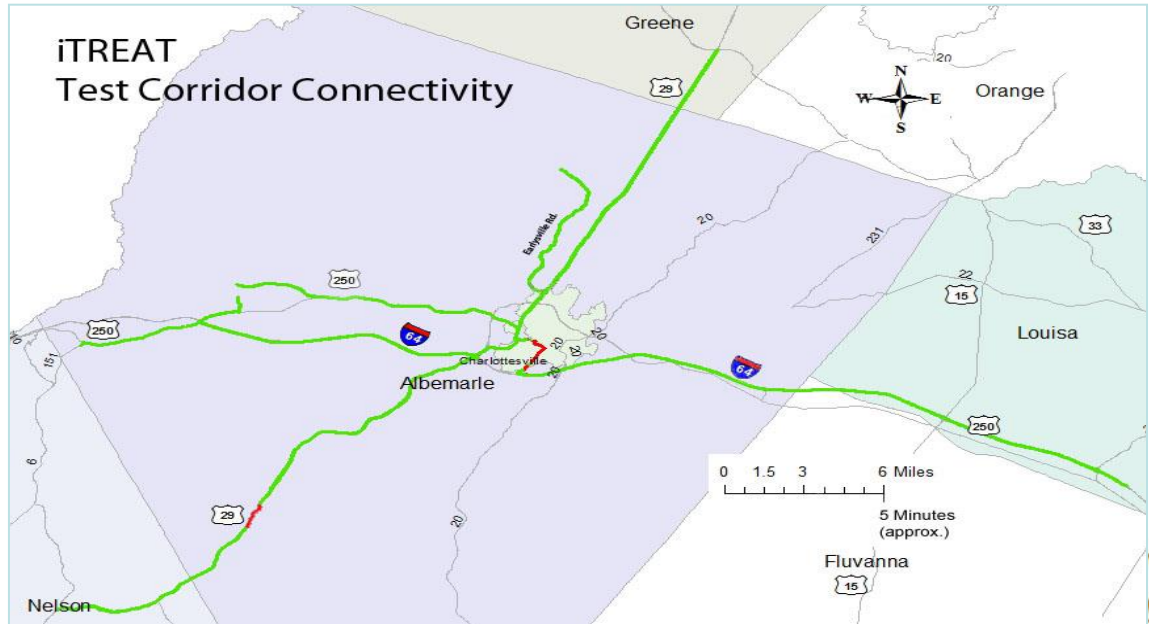


Connectivity Mapping – Feasibility Aim

Verizon© Map



Connectivity Map





Cincinnati Prehospital Stroke Scale (FAST)

- **Facial Droop**

- Normal: Both sides of face move equally
- Abnormal: One side of face does not move at all

- **Arm Drift**

- Normal: Both arms move equally or not at all
- Abnormal: One arm drifts compared to the other

- **Speech**

- Normal: Patient uses correct words with no slurring
- Abnormal: Slurred or inappropriate words or mute

- **Time**

- Normal: the last time the patient was last seen and known to be ok

Expanded Enrollment Criteria

- When was the patient **LAST SEEN WELL**?
- What was the dispatch information?
- Who and where are the witnesses?
- What are the symptoms?
- On anticoagulants?
- History of stroke or TIA?
- Recent surgery, head trauma?



The iPad and Mounting Bracket



iPad in case



Cradle and Mount



Suction mount lock

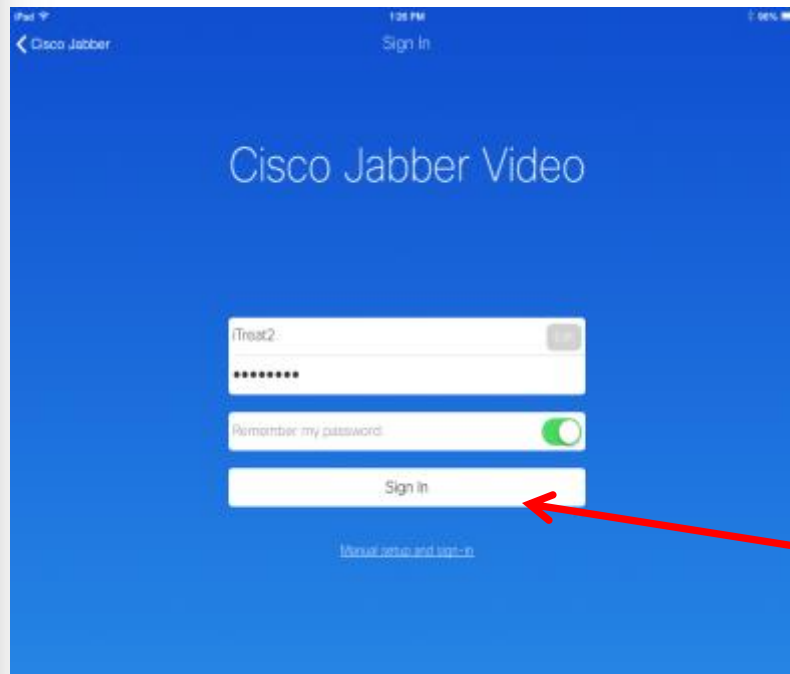
The iTREAT Platform

- Designed around the iPad 2.
- Attaches using a suction mount and tablet cradle
- Wifi provided by an IBR 600 Cradle Point modem
- Modem is attached to two external antennae (provides both LTE connectivity and local wifi environment)
- Power supply is direct AC or 12V



When you have internet connection you'll see this icon in the top left corner.

This is the icon for the videoconferencing app. Touch it to start the app.



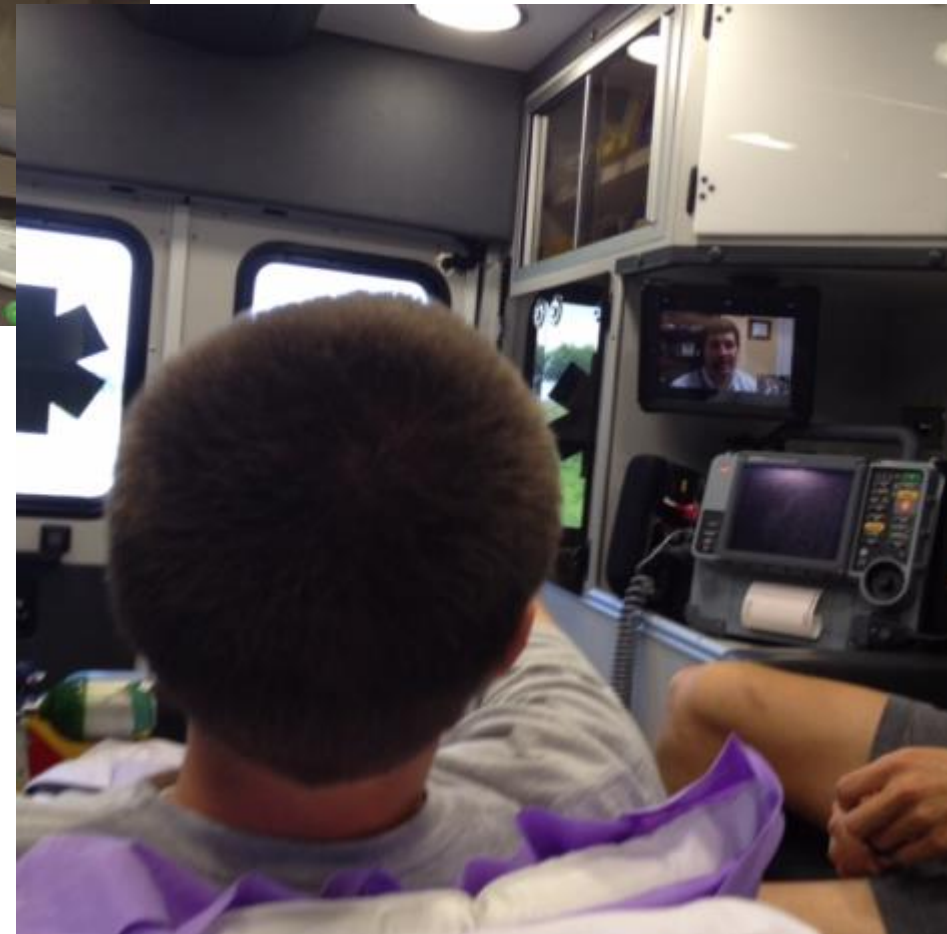
Once you select the Jabber app, the login screen (shown here) will appear.

In most cases, it will automatically login. However, you may need to press "Sign In."

Here's the iPad in place in a Greene County ambulance.



Any clean smooth surface along the 90 degrees on the driver side corner can suffice.





The EMTs' role

Many parts of the NIH Stroke Scale are handled by the neurologist. *Specific elements that require the input of the EMT caring for the patient include:*

- **Eye movement and visual field testing**
- **Assistance with motor testing**
- **Coordination testing**
- **Sensation testing**
- **Naming, reading, and description of official picture cards**



Tips and Frequently Asked Questions

Protocol notes

Patient Care remains the priority; *disregard the study if any hemodynamic instability, airway compromise, or serious trauma is present.*

Medical Direction *is only available from established mechanisms*; the iTREAT neurologists **CANNOT** provide online medical direction to EMS. You must still contact an ED physician for orders.

ACKNOWLEDGEMENTS

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Sponsors:

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NINDS CTMC

VAEMR

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Andy Southerland

David McCollum

Brad Worrall

Andy Schomer

Nicole Chiota-McCollum

Heather Turner

UVA Emergency Medicine

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Stanford

- Prasha Govindajaran

UVA Center for Telehealth

- Karen Rheuban
- David Cattell-Gordon
- Brian Gunnell
- Charles Lewis
- Richard Rose
- Virginia Burke
- Kathy Wibberly
- Lara Otkay
- Regina Carlson



Telehealth: Building Sustainable Care Through EMS Services

MATRC Annual Conference
April 9, 2016

Jean R. Sumner M.D.
Associate Dean of Rural Health
Mercer University School of Medicine

Georgia and Telehealth

Georgia Partnership for Telehealth

Strong Reimbursement Laws

Rules by Board of Medicine

Large Medically Underserved Rural Areas

Severe Shortage of Primary Care Physicians

EMS Service in 158 of 159 Counties

Mercer University School of Medicine

State Government Focused on Rural Health



Telehealth EMS Projects

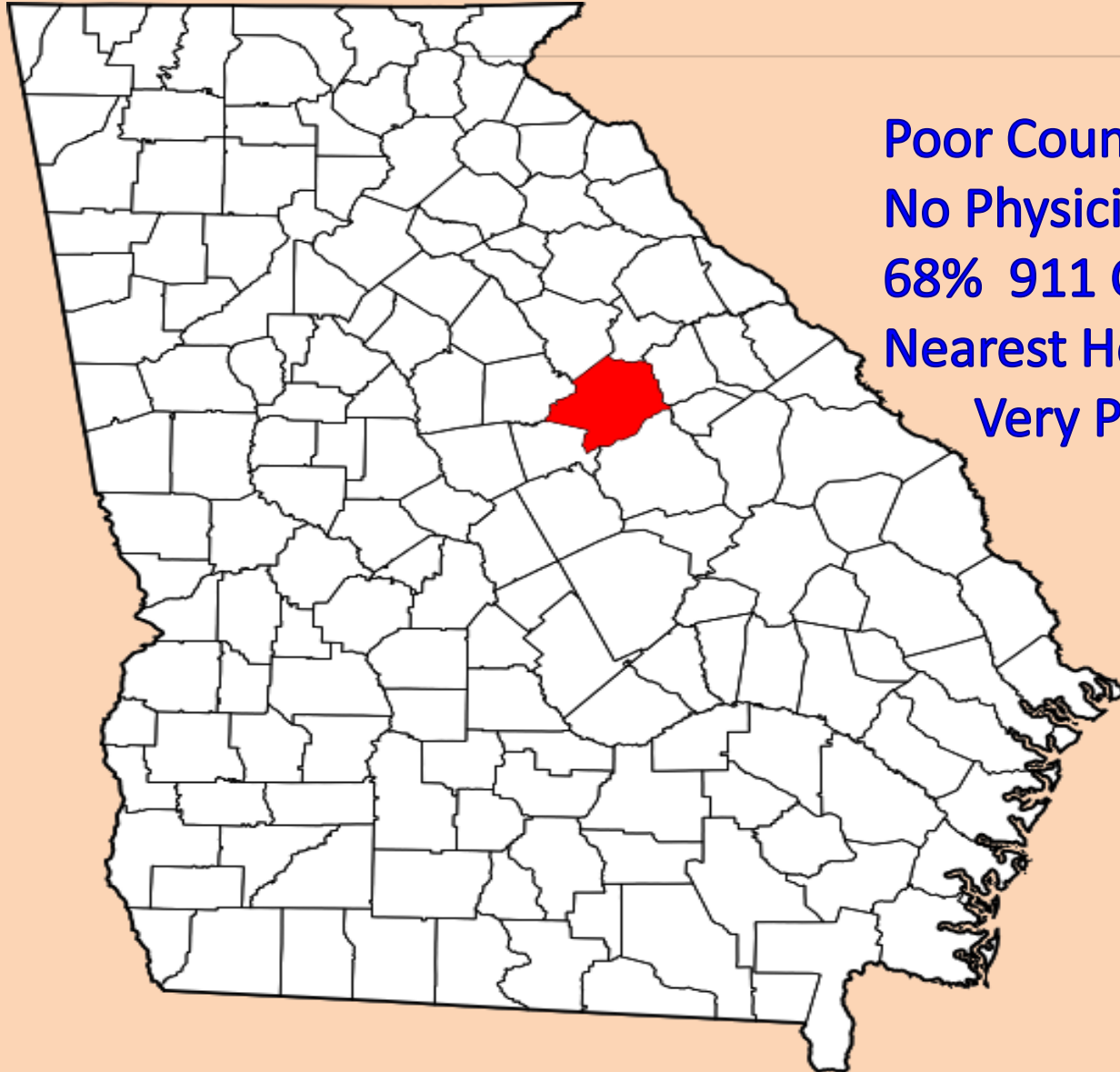
Twiggs County Access Project:

Federally Qualified
Community HealthCenter

Regional Hospital System

Hancock County Healthcare Initiative

Hancock Healthcare Initiative



Poor County
No Physicians
68% 911 Calls are Nonemergent
Nearest Hospital is 25 miles
Very Poor Health Status

Hancock Healthcare Access Project

Enhance Community Emergency Services

Decrease Inappropriate Transport and Support in
Transit Provision of Care

Provide In County Access to Evaluation and
Treatment for Urgent and Chronic Care

Support Development of County PCMH

Sustainable Business Model

Hancock County Healthcare Access Project

Phase 1.

Evaluation of Patients requesting emergency transport to area hospitals

Phase 2.

Request for in home evaluation for urgent or minor illness with primary care follow-up

Phase 3.

Scheduled post hospital visit with care follow up by discharging facility or primary care physician

Hancock Healthcare Initiative Goals

Access

Improved quality of emergency services

Evaluation and treatment without transfer

Decrease inappropriate use of emergency services

Decrease non-emergent transportation

Decrease re-hospitalization

Urgent care services in county

Improved chronic disease management

Data Collection

Cost

Utilization

Savings

Outcomes

Patient Acceptance

Physician Acceptance

Institutional
Acceptance

Infrastructure



Challenges

Reimbursement

Leadership and Politics

Physicians

911 Rules



Summary

Workforce Development

Quality Care

Data Collection

Sustainable Systems to
Replicate



PANEL DISCUSSION

April 10 – 12, 2016

MATRC 2016

Hyatt Regency Chesapeake Bay
Golf Resort Spa and Marina
Cambridge, MD

Panelists:

- Robert J. McCaughan, BS, EMT-P
- Kathleen Sharp, CPC, CMM, LBB
- Jack Cote, MPA, NR-P
- Jean R. Sumner, MD
- Sherita N. Chapman-Smith, MD

Moderator:

- David Glendenning, EMT-P

Advice and Lessons Learned

Engage Sponsors Early and Often



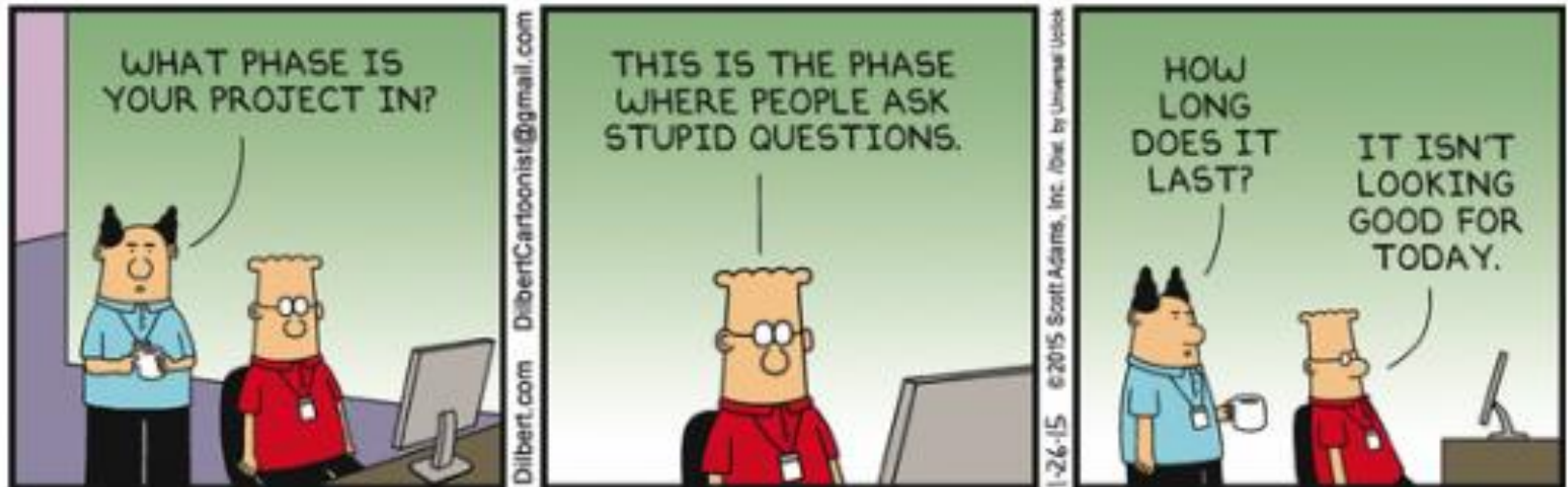
Advice and Lessons Learned

EHR Integration & Telehealth connectivity supported the activation of patients



Advice and Lessons Learned

You cannot over communicate!



Advice and Lessons Learned

"In God we trust, all others bring data."

~ W. Edwards Deming



Advice and Lessons Learned

It takes a village



AUDIENCE Q&A

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