AveraeCARE™

Virtual Care: Wired to Save Lives

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Rural

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South Dakota - USA

Reasons to Stay Awake

- Discuss challenges faced
- Define the role telemedicine plays in acute care medicine
- Overview of a successful deployment
- Discuss how these programs apply to both rural and urban settings

The Headlines

- "Small, rural hospitals show poorer results on measures of quality of care, patient outcomes..."

Science Daily

- "Healthcare access lagging in rural U.S."

Reuters

South America

- More than 345,600,000 people
- Nearly 70,000,000 live in rural and geographically isolated locations
- Urban overpopulation is a health care problem

http://www.geohive.com/earth/pop_urban.aspx

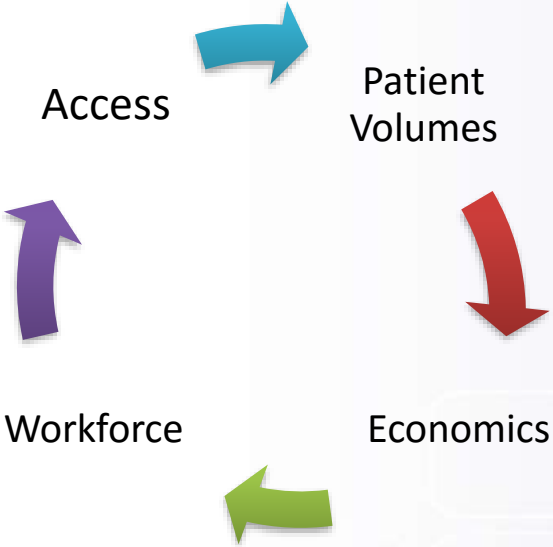
Rural Healthcare

- Rural inhabitants are more likely to suffer from:
  - *Chronic Health Conditions*
  - *Heart Problems*
  - *Cancer*
  - ***Limited Access to Specialists***

Rural Healthy People 2010—*"Healthy People 2010: A Companion Document for Rural Areas"*

Challenges for Healthcare

- Workforce shortages
- Geographic isolation
- Diminishing community economics
- Increasing reliance on specialists and expensive technologies
- Demand for quality



Physician Demand

- 14,000 Diagnoses
- 6,000 Medications
- 4,000 Procedures
- 25% – 50% of the time **On**

Physician 2015 Job Description

Know It All, No Mistakes

Challenges for Urban Medicine

- Large volume of people for few specialists
- Primary care needs not met
- Lack of timely, adequate follow-up
- Long wait times in primary ED
- Inpatient bed shortages --- full beds but with the wrong patients

Telemedicine for Sick People?

Can it work when people are sick?
Let's do it in ICU!

What is tele-ICU or eICU®?

- New model of care – focuses on collaboration

"The purpose of the tele-ICU is not to replace bedside clinicians or bedside care, but to provide improved safety and to enhance outcomes through standardization."

"The tele-ICU is a 'second set of eyes' that provides additional clinical surveillance and support."

Goran, Sue (2010). A Second Set of Eyes: An Introduction to Tele-ICU. Critical Care Nurse, 30 (4), 46-55

eICU is a registered trademark of VISICU, Inc.

Telemedicine for Sick People?

- Thomas and the Gang:
- University of Texas Health Science Center at Houston
  - Remote monitoring of ICU patients was not associated with an overall improvement in mortality or LOS
  - Only 31.1% of patients were treated by doctors that allowed the eICU to intervene

–JAMA. 2009 Dec 23:302(24):2671-8

New England Healthcare Institute

Study Overview

- Independent study of clinical and financial performance of UMMMC's Tele-ICU program
- Results independently validated by Price Waterhouse Coopers
- Published December 2010

Key findings / recommendations

- Mortality rates decreased 20%
- LOS decreased 30%
- Significant gains in ICU volume
- Improved best practice compliance
- $1,000 - $4,000 improvement in margin per case

Recommended Adoption for Hospitals with 10 + ICU Beds

Does Telemedicine Work?

- Telemedicine Improves Outcomes – "In the Heartland"
  - Pre-Post
  - Community hospital 17 bed, "open" ICU
  - 52.5% Level 1 vs. 47.5% full intervention allowed
  - Pre (630 pts – 6 months) and Post (2,193 pts – 15 months)
    - Mortality decreased from 7.9% to 3.8%
    - LOS decrease from 2.7 days to 2.2 days

F. Sadaka et al, Critical Care Research and Practice; Vol. 2013, Article ID 456389

What About in the ED?

- Dr. Robert Galli and team:
- Department of EM, University of Mississippi Medical Center; Jackson, Mississippi
- 40,000 patients seen
- High satisfaction rates; good overall adoption

Annals of Emergency Medicine; March 2008; 275-285

What About in the ED?

- Tele-Stroke Programs
- Virtual stroke care appears cost-effective
- Cost of tele-stroke over a person's lifetime is less than $2,500 per quality-adjusted life year
- Threshold of $50,000 is commonly cited as the cut-off for cost-effectiveness

Neurology, September 14, 2011

What About in the ED?

- Children in rural ED's
- 5 ED's connected to pediatric emergency medicine
- 226 patients
- Referring ED physicians reported when consultations were provided using telemedicine rather than phone
  - Changing their diagnosis (47.8% vs. 13.3%)
  - Therapeutic interventions (55.2% vs. 7.1%)

Dharmar M. et al, Critical Care Medicine; 2013 August

Telemedicine Applications

- Regional prehospital ECG network
  - ECG's sent to a centralized hub with cardiologist on duty 24/7/365
  - 233,657 patients who activated "9-1-1"
  - Interpretation of ECG and instructions to crew
  - PCI vs. fibrinolysis directed from hub
  - Reduced door to treatment times and treatment protocol variation

Brunetti, N. et al; Telemedicine and e-Health; Vol 17, No 9, November 2011 – Pg 727-733

Telemedicine Applications

- Teledermatology via social networking
- Providers posted non-protected, non-identifiable photos to social media site
- Specialist can review and post additional questions and treatment plans
- 75% needed no additional referral or travel, and improved with one-time treatment recommendations

Garcia-Romero, M. et al, "Teledermatology via a social networking web site; Telemedicine and e-Health Vol 17, No. 8, October 2011. pg 652-655

What Are Others Doing In EM?

- Romania – SMURD Network
  - 150+ ambulances equipped with telemedicine
  - Virtually connected into ED service centers with MD's waiting for the call
  - Nearly 90 rural facilities also monitored with this network
  - 3 hub sites throughout the country

SMURD – Critical Care MD

SMURD Hub Site - Romania

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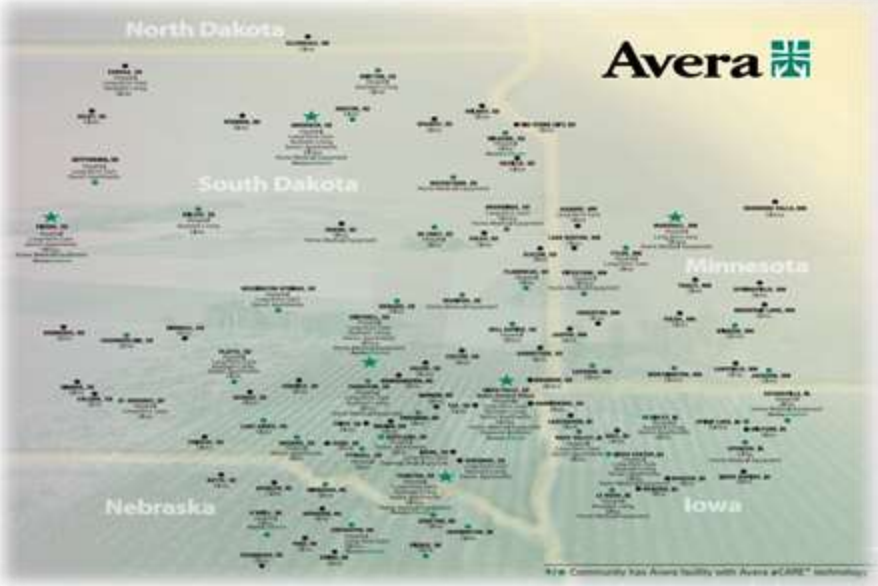
31 Hospitals

21 Nursing Homes

2.5 M Outpatient & Clinic Visits

1,000,000 People Covered

$3.5 Billion in Revenue



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Purpose

- Better Access to Care
- Better Care & Better Outcomes
- Lower Costs
- Workforce Sustainability

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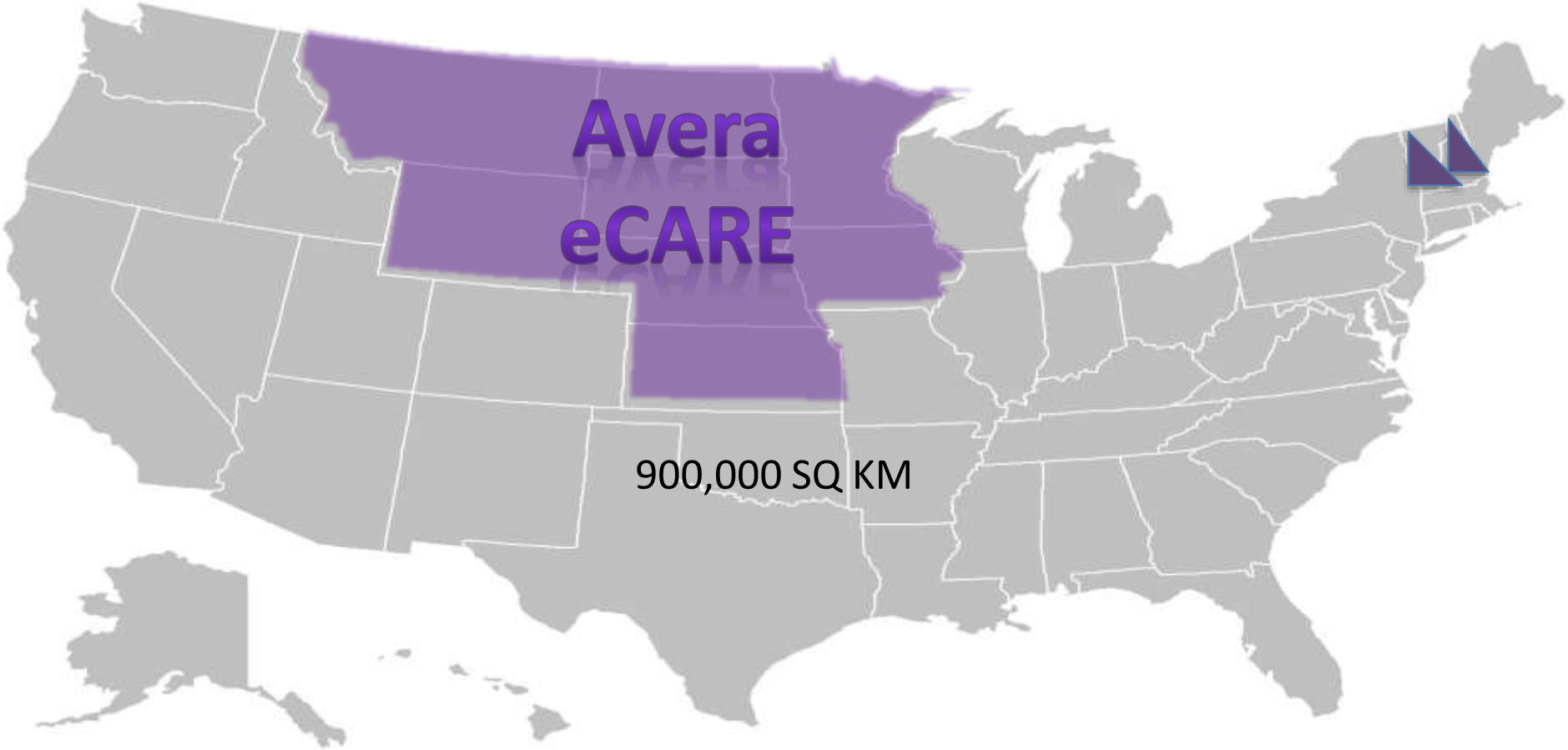
YOUR VIRTUAL HOSPITAL PARTNER

- Six service lines
- 24/7 staffing solutions
- Improved quality and patient outcomes
- Reduced service delivery costs
- Support for your local team


Avera
eCARE
900,000 SQ KM

Avera eCARE™

Telehealth Network

Virtual Hospital

Avera eCARE

eConsult	Avera eICU CARE	ePharmacy	eEmergency	eAccess / Long Term Care	eAccess / Correctional Facilities
140 Sites	28 Sites	67 Sites	110 Sites	35 Sites	4 Sites
Nov 1993	Aug 2004	Nov 2008	Oct 2009	Jan 2012	Apr 2012

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eConsult

10,300 Consults Annually

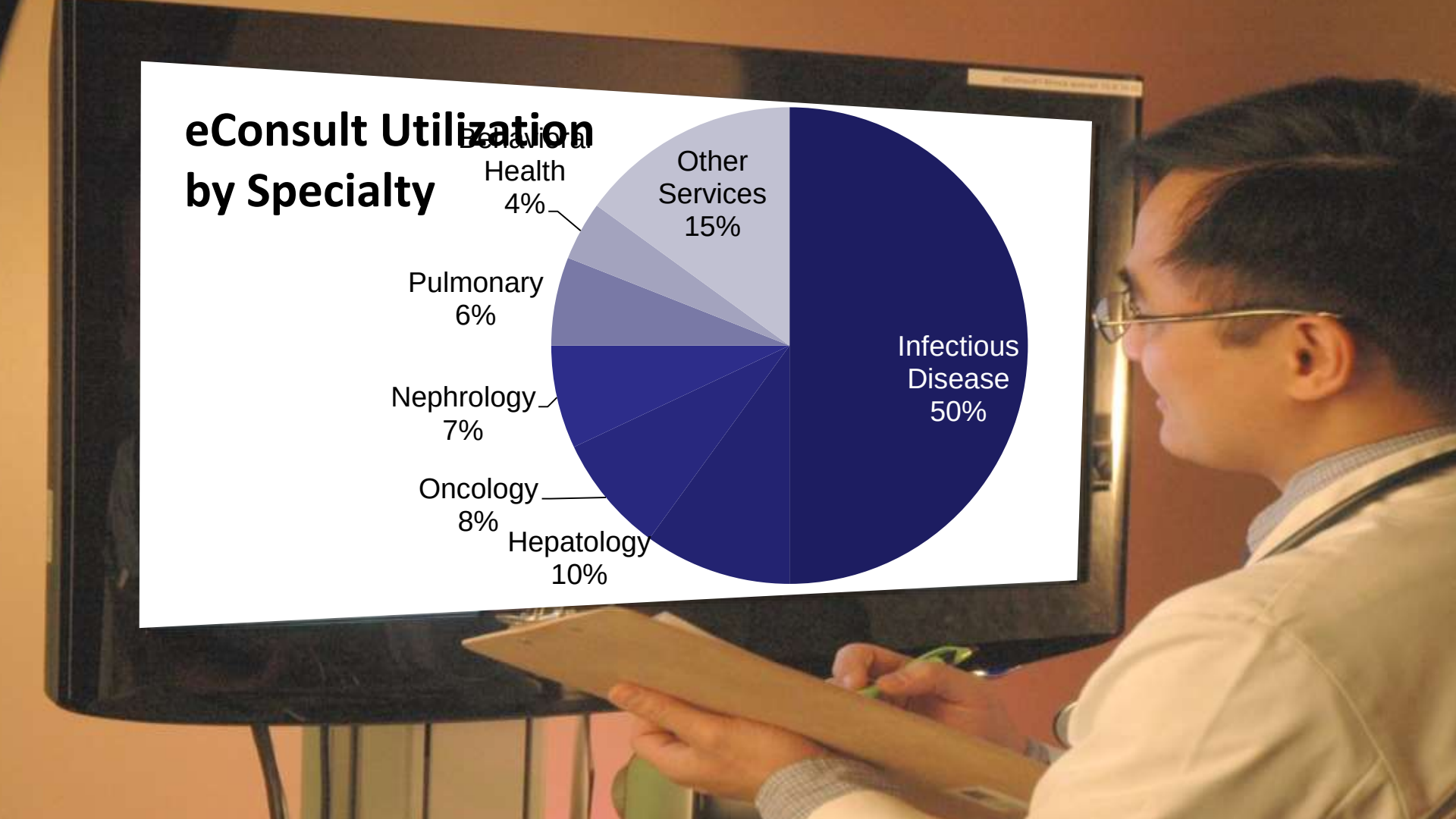
(Reimbursed equal to face to face)

Annual Patient Savings:

$1,184,600 in travel

4,012,800 Miles

(16+ trips to the moon)


eConsult Utilization by Specialty
Behavioral Health 4%
Other Services 15%
Pulmonary 6%
Infectious Disease 50%
Nephrology 7%
Oncology 8%
Hepatology 10%

eICU CARE

24 hour monitoring of critically ill patients by an Intensivist and Critical Care Nurses

BENEFITS INCLUDE

- Support for local, onsite medical staff
- Continuous analysis of patients allowing for early interventions
- Overall decrease in length of hospital stay and decreased mortality
- Reduced transfers

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eICU

= Air Traffic Control

Clinician
Provides around-the-clock, remote intensive care monitoring of critically ill patients

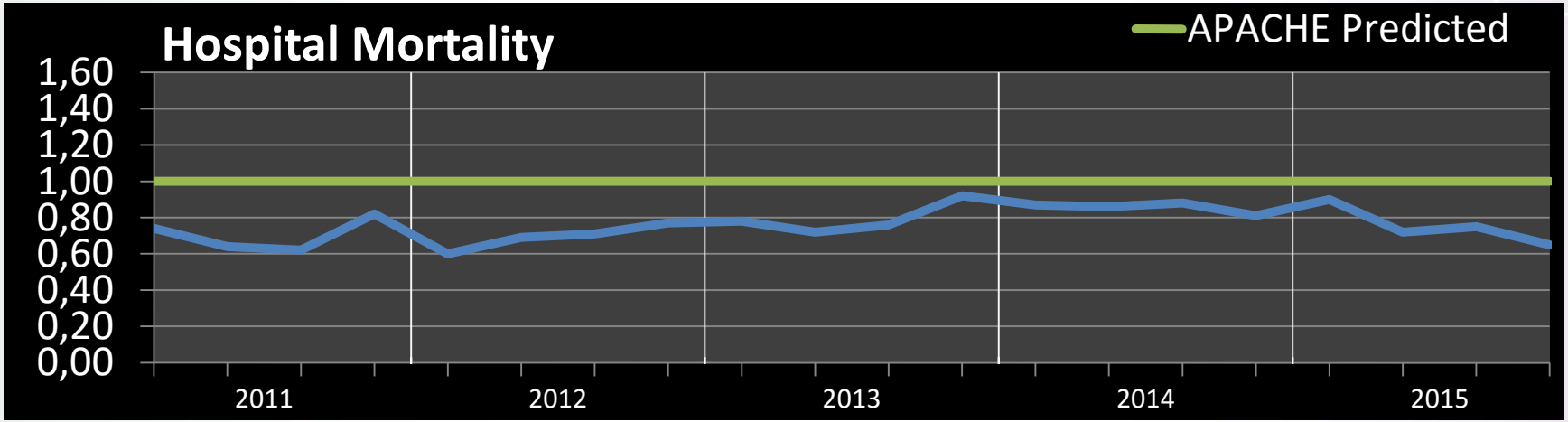
28 Hospitals
49,000 ICU days saved

Enabling Technology
- Intelligent Monitoring
- Continual Surveillance
  - Smart Alerts

eICU

Meets Leapfrog requirements	Throughput	Quality
• Immediate physician consultant • Allows for additional coverage	• Reduce LOS/Mortality • Reduce ED wait for admit • Triage support • Staffing costs	• Ensures compliance • APACHE • Documentation support increases ICU CMI

Decreasing Mortality



ePharmacy

24 Hour access to residency trained hospital pharmacists

7 Years of providing services

140,000 Patients impacted

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ePharmacy

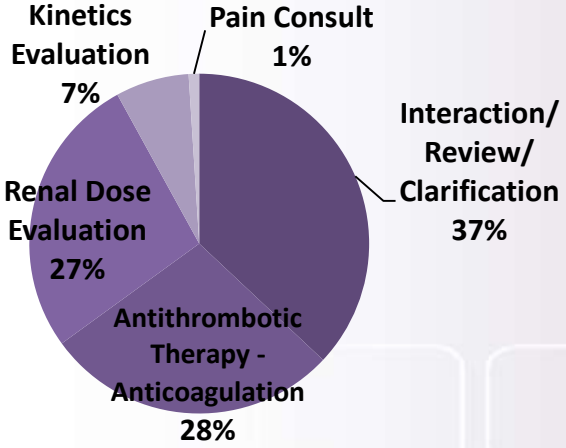
2,350,000 Orders Reviewed

32,000 Avoided Serious Safety Events

$68,250,000 Saved/Avoided

Avoidance of Serious Safety Events

(Since Inception)



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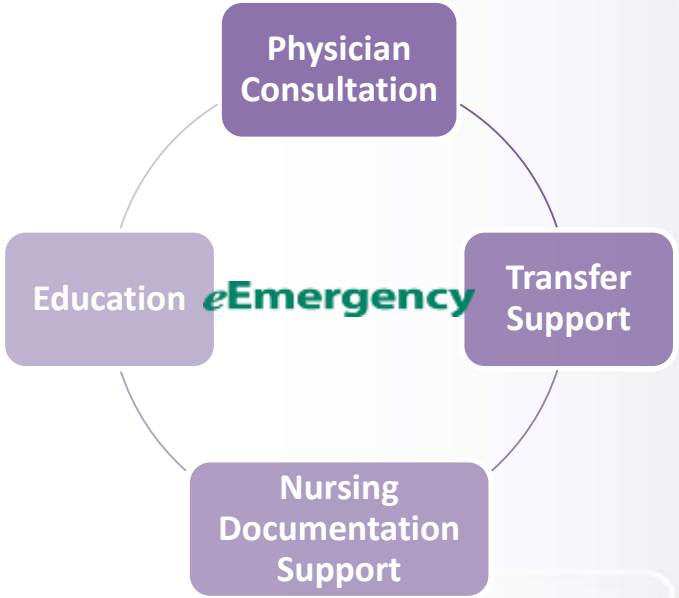
eEmergency

24 Hour access to board certified Physicians and Critical Care Nurses

110 Partner Hospitals

6 Years of providing Services



eEmergency

Recruitment/Retention

✓Successful utilization of APPs

Stable workforce

✓ Cost of provider
✓ Cost of reputation
✓Cost of care – all transfers out

20,000 Video Encounters

20% Avoided Transfers

$24,000,00 Savings

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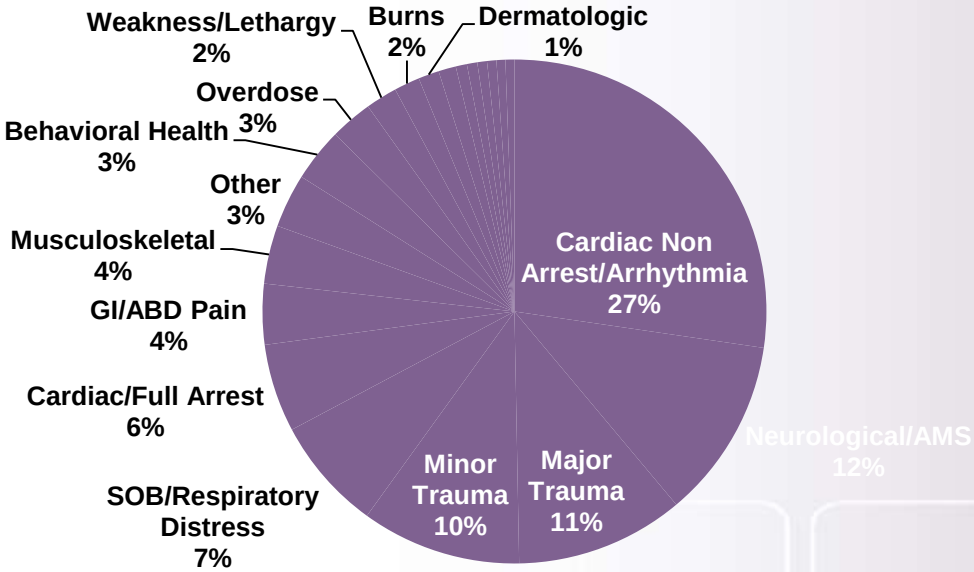
eEmergency

Encounters by Chief Complaint

(Last 12 Months)



Transformative: Workforce Support

Rural-and-Remote-Health

The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy

Original Research

Effect of tele-emergency services on recruitment and retention of US rural physicians

Submitted: 13 August 2013
Revised: 3 December 2013
Accepted: 3 December 2013
Published: 13 August 2014

Full text: View a printable version.

Author(s) : Potter AJ, Mueller KJ, Mackinney AC, Ward MM.

Citation: Potter AJ, Mueller KJ, Mackinney AC, Ward MM. Effect of tele-emergency services on recruitment and retention of US rural physicians. *Rural and Remote Health* **14: 2787**. (Online) 2014. Available: http://www.rrh.org.au

rupri
rural policy research institute

Conclusion: Results indicate that, all other factors being equal, tele-emergency increases the likelihood of physicians entering and remaining in rural practice.

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Outcomes: Faster Care

Clinical Quality Impact – Cardiac

Aspirin Compliance

2X

Door to ECG

33%

Door to TPA

18 Min

Door In – Door Out

36 Min

Right treatment, right transfer, right time

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Clinical Quality Impact – Stroke

Door to Doctor

15 Min

Door to CT 45 min

27 Min

TPA Eligible

100%

Door In – Door Out

23 Min

Avera *e*Emergency

"It's a pretty cold, lonely place to be," Malm told TIME. "One minute a young person is healthy and alive, and the next you have to tell the family you've done everything you can, but their daughter or son is dead. ... I had these young, well-trained savvy doctors (helping from Sioux Falls). I felt way less isolated. I knew there had been no stone unturned."

It was the first time he had slept through the night after losing a patient, Malm said.

Dr. John Malm, Rural FP in Gregory, SD;

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eAccess
FOR CORRECTIONAL FACILITIES

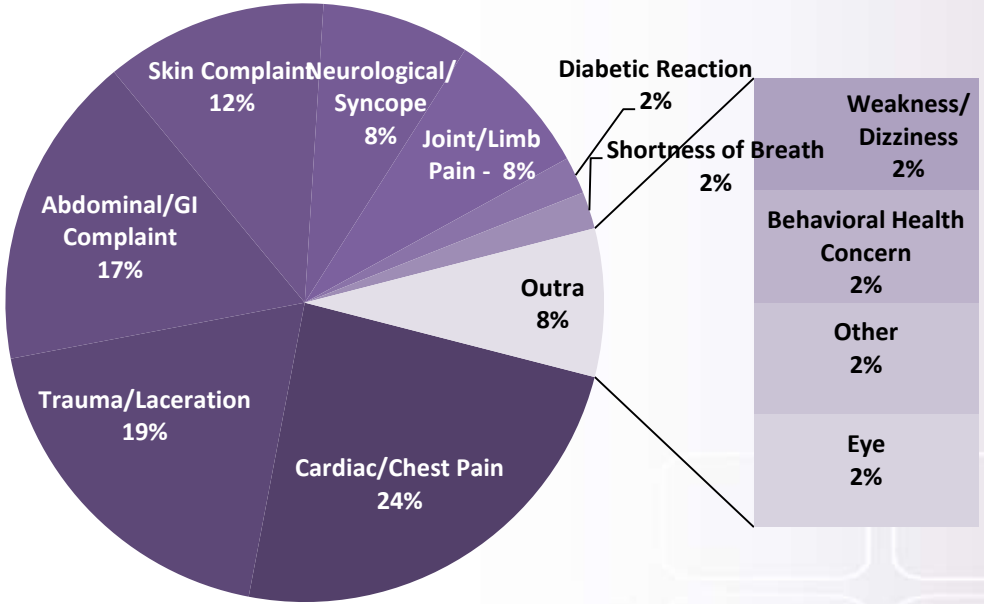
4 Sites Live

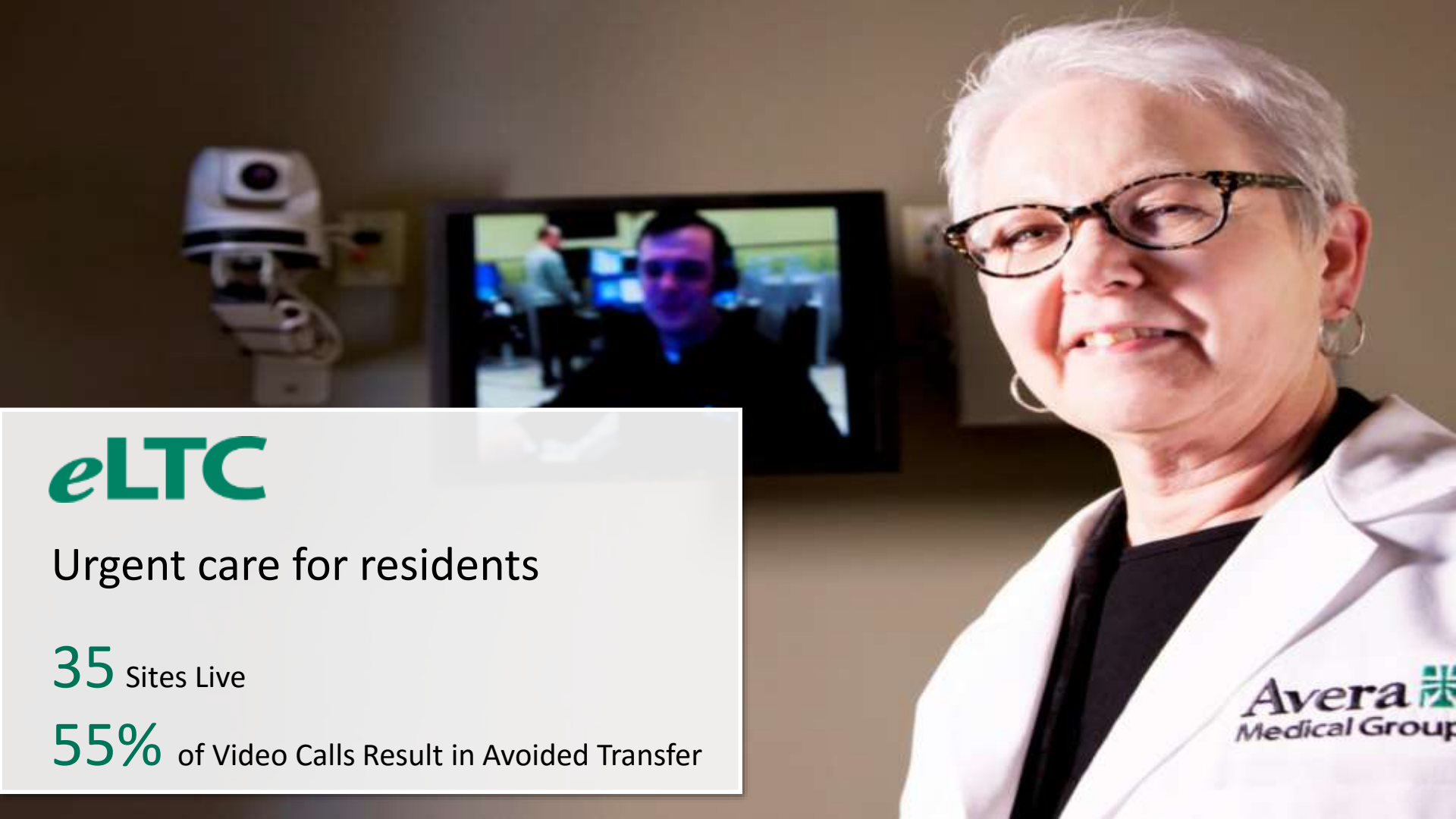
1000+ Inmates Served

40% of Calls Result in Avoided Transfer

$1,100,000+ in Transfer Savings

Encounters by Chief Complaint
(Since Inception)





eLTC

Urgent care for residents

35 Sites Live

55% of Video Calls Result in Avoided Transfer

eLong Term Care

HRSA

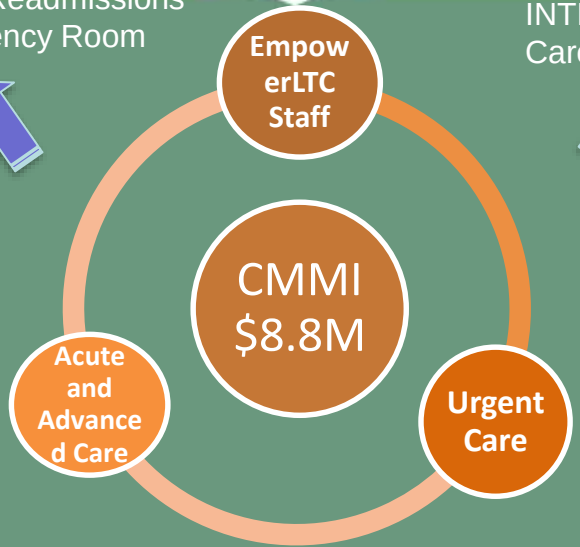
2012-2015

Hospital Readmissions & Emergency Room Visits

INTERACT/Advance Care Planning

CMMI Award

2014-2017



Education

- Interactive Video Education
  - Thousands educated
  - CME and CEU granted

Direct to Consumer

Telehealth Station

- Enclosed, private unit
- Brand-able exterior panels
- External touchscreen tablet
- Air purifier/white noise

Room Console

- Designed for use in rooms
- Same interface and devices as Station
- Brand-able front panel

Portable Console

- Compact, light version
- Easy transportation
- Practice extension

Telemed Tablet

- Portable, Surface Pro tablet
- Designed for in-patient/intra-system use
- Secure visits - tap into live and on-call clinician pool

Seamless for the Patient

Online Care
Exit
AveraeCARE™
Jeff Robinson
Family Physician
More Info
Select Another Provider
Back
Start Conversation

A Seamless Experience

AveraeCARE™ Innovation

Innovation Cycle

- Structured 90-day intake & evaluation
- Dedicated resources for rapid prototyping and evaluation

Long Term Vision

Higher quality, more efficient care delivered in lower cost settings

AveraeCARE™

eHelm

Our Differentiator

800,000+ patients touched

235 hospitals and clinics served

2,200 providers impacted

900,000 square kilometers covered

$170M in health care costs saved

Proven, **Predictable**, and **Sustainable** Results

AveraeCARE™

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