

# Telemedicine: Revolutionizing Pediatric Care in Rural Communities

*January 25, 2017 at 3:00 PM EST*



# Featured Presenters

## Pediatric Critical Care in a Hospital Setting



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*Assistant Professor, Pediatric Critical Care Medicine*

## Primary Care in a School-Based Health Center



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*Director of Patient Experience*

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# Pediatric Critical Care Telemedicine



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Associate Professor, Pediatric Critical Care Medicine

# DISCLOSURES

- I have no financial disclosures





# Telemedicine Gives Rural Patients Access to Care

**The Ideal:** Health services should be available everywhere at all times.

**The reality:** Access to care is a challenge across the country

- › The majority of pediatric specialty care providers are concentrated in metropolitan areas
- › Simply getting to a healthcare provider can be challenging
  - › Geography
  - › Transportation
  - › Weather
  - › Traffic
  - › Limited resources



# Time Sensitive Pediatric Critical Care

Only 3% of pediatric critical care physicians practice in rural areas.

The vast majority of ED visits by children are made to general hospitals.<sup>1</sup>

Children make up 27% of all ED visits nationwide.

Only 6% of ED's in the US have all the necessary pediatric supplies.

Only half have even 85% of necessary supplies.

Critically ill patients transferred from outlying facilities have worse outcomes (mechanical ventilation, inotropes, PICU length of stay) compared to patients admitted from the same facility.<sup>2</sup>



1. Institute of Medicine. 2006. *Academic Emergency Medicine*. 13(10)
2. Gregory *et al.* 2009. *Pediatrics*. 121(4): e906-e911

# The Need for Telemedicine

Hours can elapse from the time a community facility calls for assistance and the time a subspecialist sees a critically ill child.

Assessing the acuity of injury or illness and determining appropriate pre-transfer interventions in a child over the telephone is at times extremely difficult.

This can create an extraordinarily stressful experience for the patient, patient's family, and the involved providers.



# The Opportunity Telemedicine Brings

Video and communication technology has advanced greatly in recent years

- › High-definition cameras
- › High-resolution displays
- › Wireless communication
- › 4G cellular networks
- › BlueTooth connectivity
- › Cloud storage

Use telemedicine technology to provide access to subspecialists in community hospitals and emergency departments.





# What is Telemedicine?

The use of medical information about a patient that is exchanged from one site to another via electronic communications to provide medical care to a patient in circumstances in which face-to-face contact is not necessary.

## **Variety of Methods**

- Real-time audio/video
- Store-and-forward
- Mobile applications (mHealth)
- Health Information Exchange



# Applications for Pediatric Care

## **Variety of Patient/Provider Settings**

- Hospital Emergency Rooms
- Critical Care
- Pediatric Transport
- Community Clinics/Urgent Care
- Schools
- Home/Mobile

# Examples of Telemedicine in the ER

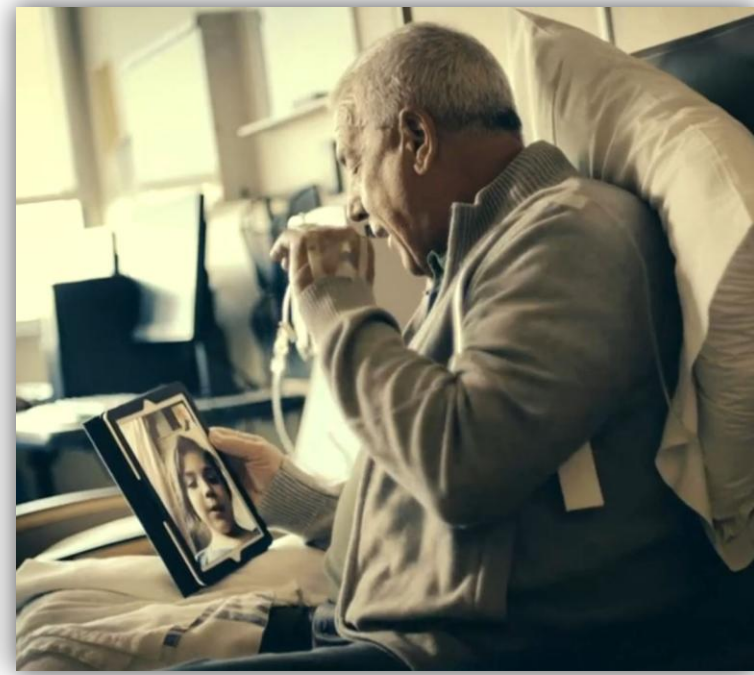




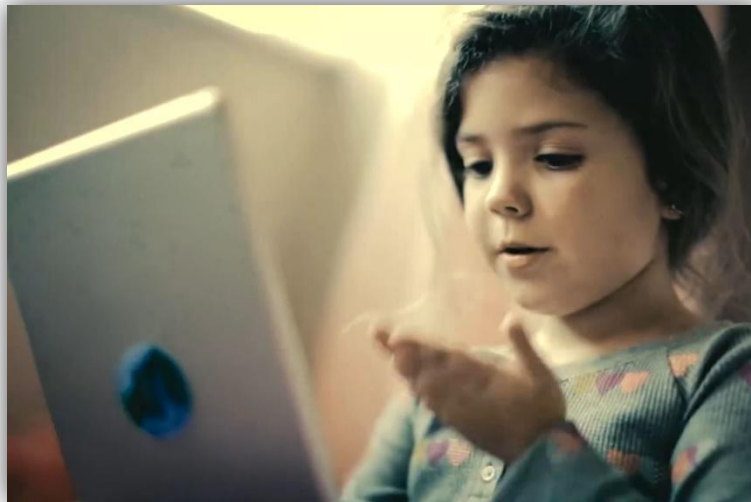
# Examples of Telemedicine in the ER

- University of California, Davis
- University of Vermont
- Doernbecher Children's Hospital, Oregon Health Sciences University





## MUSC Pediatric Critical Care Teleconsultation



# MUSC Pediatric Emergency and Critical Care Telemedicine Program (PECCT)

\$525,943 Duke Endowment grant for three years

Pediatric emergency medicine and critical care subspecialist coverage available 24/7 in community emergency departments

Program designed to serve as foundation for future telemedicine programs

- › Utilizes standard communication platforms to maximize adaptability
- › Focusing on integrating existing telemedicine programs at MUSC into a unified system
- › Goal is to optimize the ease of implementation for new and developing programs



# Benefits

Expedite management and transfer decisions

Reduce the use of unnecessary therapies

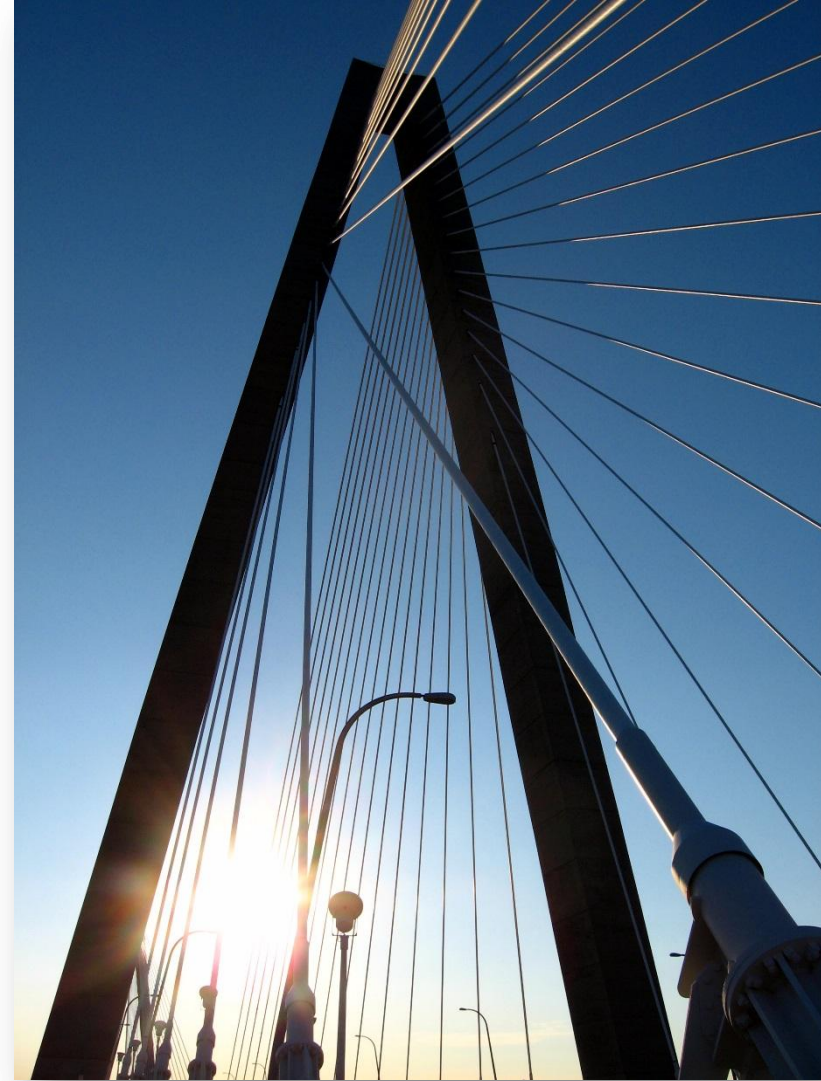
Allow suitable patients to stay at their local facility

Ensure appropriate mode of transportation

Improve triage to appropriate location

Lower the cost of care

Improve the comfort level of community physicians in dealing with severely ill/injured children





# TECHNOLOGY









# Telemedicine Units



## A collage of various medical devices. The top row includes a black stethoscope with a digital display, a digital blood pressure monitor with a black face and white numbers, a pulse oximeter with a black probe and a small digital screen, a blue and white SpiroPerfect Spirometer with a USB cable, and a handheld ultrasound device with a small screen showing a red image. The bottom row features a dental X-ray machine with a black control panel and a silver X-ray tube, a dental handpiece with a black handle and a silver tip, a blue dental curing light, and a dental ultrasonic scaler with a black handle and a silver tip.

# Peripherals





# OUTCOMES



# Pediatric Critical Care Telemedicine - Impact on Costs

## UC – Davis Pediatric Critical Care Teleconsultation service

- 135 children < 18 years old presenting in highest triage category
  - 71 telemedicine consults
  - 64 telephone consults
- Eight rural emergency departments
- 2003 – 2009

Amount saved from telemedicine consultations (\$ per child/ED/year)	\$4662
Cost of telemedicine consultations (\$ per child/ED/year)	\$3641
ROI	1.28



# BUILDING ON SUCCESS





# Inpatient and Emergency Teleconsultation at MUSC

## Currently Available

- › Telestroke
- › Pediatric Critical Care
- › Pediatric Emergency Medicine
- › Neurology
- › Pediatric Burn
- › Pediatric GI
- › Neonatology

## In Development

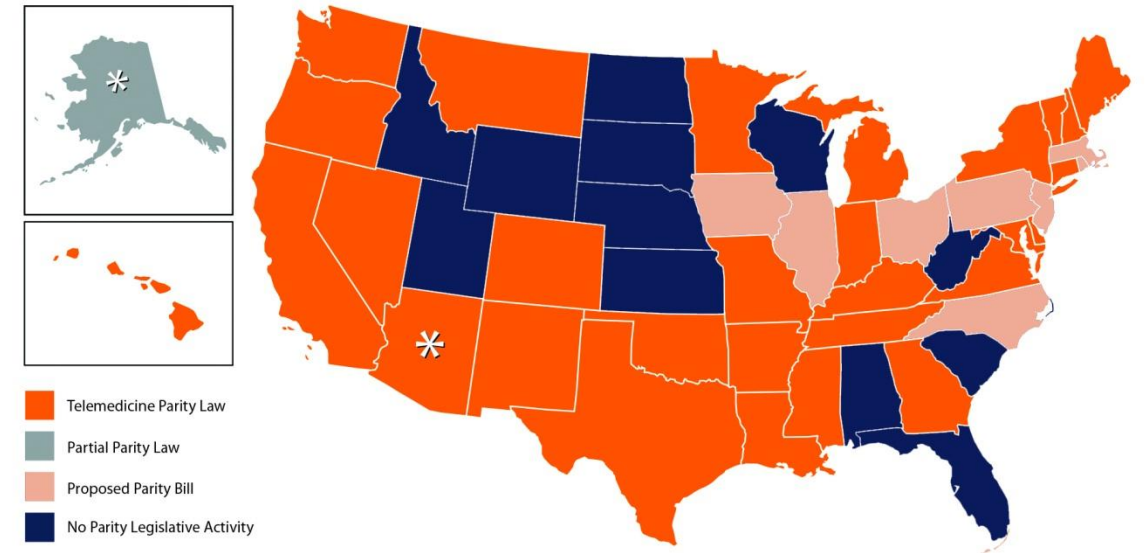
- › Sickle Cell
- › Orthopedics
- › Trauma
- › Infectious Disease
- › Acute Asthma
- › Palliative Care
- › Rheumatology
- › Pulmonary/Critical Care
- › Sleep Medicine



# Funding and Reimbursement

- Grant funding
- Contracted services with partnering hospitals
- Government funding
- Billing for services
  - Increasing acceptance of telemedicine as a cost-saving measure by private payers
- Federal and state parity legislation

States with Parity Laws for Private Insurance Coverage of Telemedicine (2016)



**States with the year of enactment:** Alaska (2016)\*, Arizona (2013)\*, Arkansas (2015), California (1996), Colorado (2001), Connecticut (2015), Delaware (2015), Georgia (2006), Hawaii (1999), Indiana (2015), Kentucky (2000), Louisiana (1995), Maine (2009), Maryland (2012), Michigan (2012), Minnesota (2015), Mississippi (2013), Missouri (2013), Montana (2013), Nevada (2015), New Hampshire (2009), New Mexico (2013), New York (2014), Oklahoma (1997), Oregon (2009), Rhode Island (2016), Tennessee (2014), Texas (1997), Vermont (2012), Virginia (2010), Washington (2015) and the District of Columbia (2013)

**States with proposed/pending legislation:** In 2016, Illinois, Iowa, Massachusetts, New Jersey, North Carolina, Ohio, and Pennsylvania

\*Coverage applies to certain health services.

# The Future Is Wide Open...





Community Health Center  
*of Branch County*

# Community Health Center of Branch County

## School Tele-health Program



**Kristin Smith, RN, BSN**

*Director of Patient Experience*

**Community Health Center of Branch County**

**MEDICAL EXCELLENCE. COMMUNITY COMMITMENT.**



# Primary Care in a School-Based Health Center:

Reaching pediatrics in their own communities for outpatient consultation.





# Presentation Outline

- Community Health Center of Branch County background
- Community needs assessment
- Finding the RIGHT tele-health solution
- Collaboration and feasibility studies
- Steps to implementation
- Results and progress

# Community Health Center of Branch County Background



- 87 licensed beds
- 14 outpatient clinics
- HPSA designation
- RHC in 3 clinics
- Branch county population – 43,664





# In 2012...

## CDC Recommendation:

- 1 nurse to 750 students
- 54% of Michigan schools had no nurses
- None of the Branch County schools had nurses.

## Issues Identified:

- Student health at risk
- Liability issues for schools
- Rural challenges of access to care

# Tele-health Equipment Selection Process

- Video telephone - Simple
- Universal kiosk - Complex
- All in one tele-med ED cart:
  - Cost – affordable
  - All inclusive
  - Portable cart



# What is School Tele-Health?



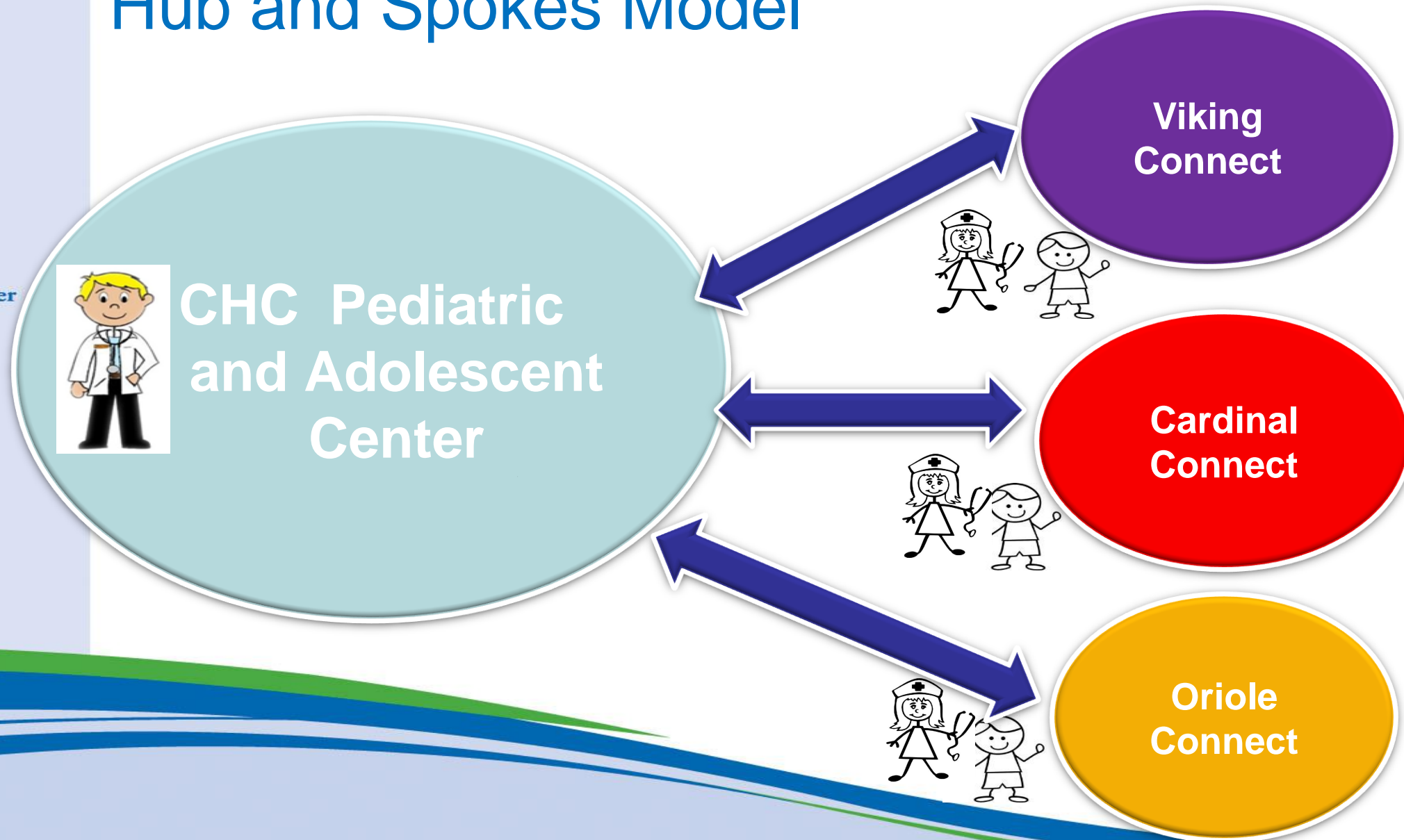


# School Tele-Health:

Tele-health connects student to primary care providers while student is at school.

- Secure, two-way audio/ video link.
- Student and school nurse on one end and a mid-level practitioner on the other end.
- Screened, examined, diagnosed, treated and monitored
- Consistent EMR at both sites

# Hub and Spokes Model



# Clinic Staffing

- RN model
- Benefits
- School nurse





# Services Provided

- Tele-health visits
  - Acute care visits
  - Re-checks
  - Mental health services
- CLIA Waived testing
- Over the counter medications
- Immunizations
- Health education
- Insurance enrollment

# Collaboration

- Community Health Center of Branch County
- Branch Intermediate School District
- Bronson, Coldwater, and Quincy Community Schools
- Branch-Hillsdale-St. Joseph Community Health Agency



# Feasibility Surveys

- ✓ School personnel
- ✓ Parents
- ✓ Students





# Implementation

January, 2014



September, 2014



# Training

Telehealth equipment – ease of use

- Software easy to navigate
- Self-taught with the assistance of IT and brief demo

Clinical assessment preferences

- Nurses shadowed physicians for some examinations (hernia, palpation of abdominal, lymph node assessment)

# Results and Progress

**3** school tele-health clinics opened

**2300** students served

**52%** of students are enrolled in program

**1076** tele-health visits in 2016

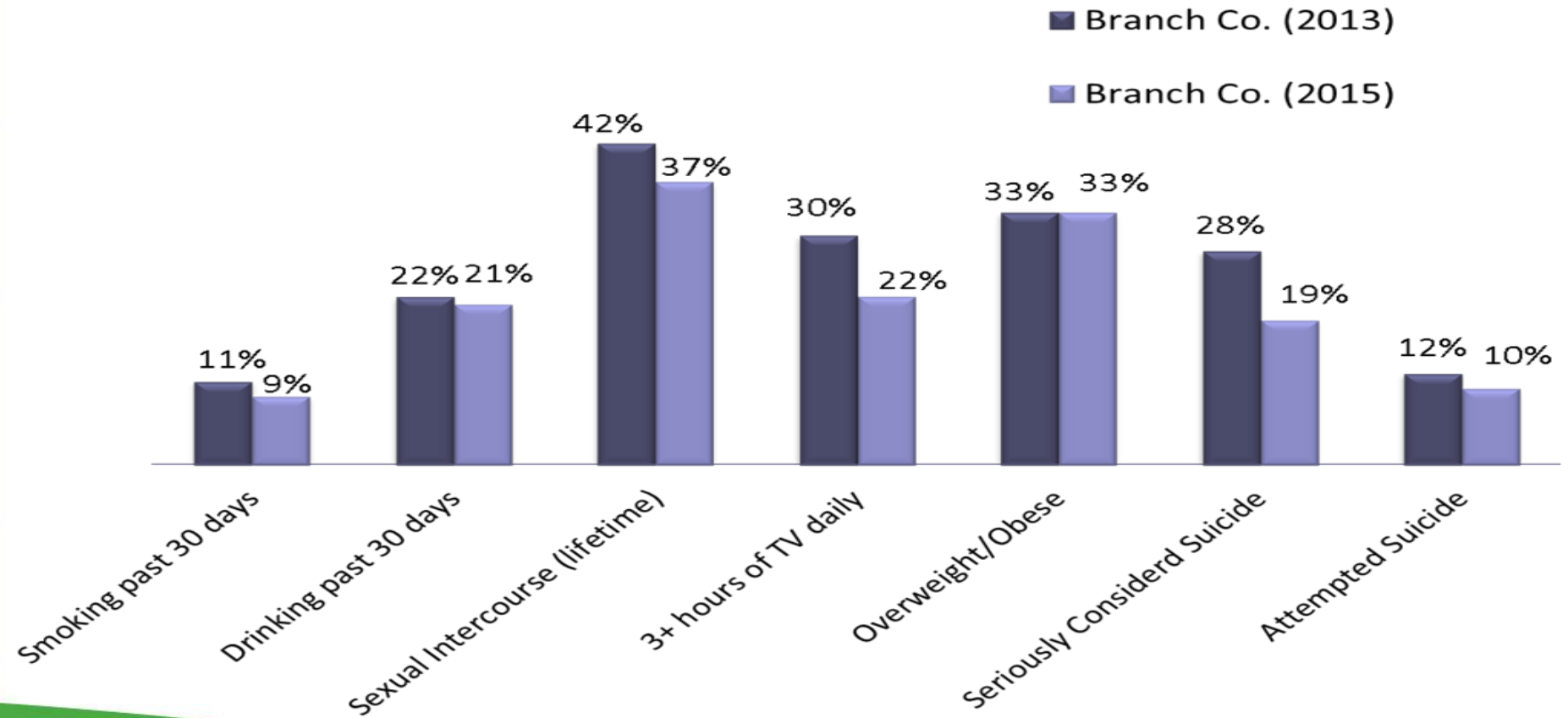
**3735** nursing visits in 2016



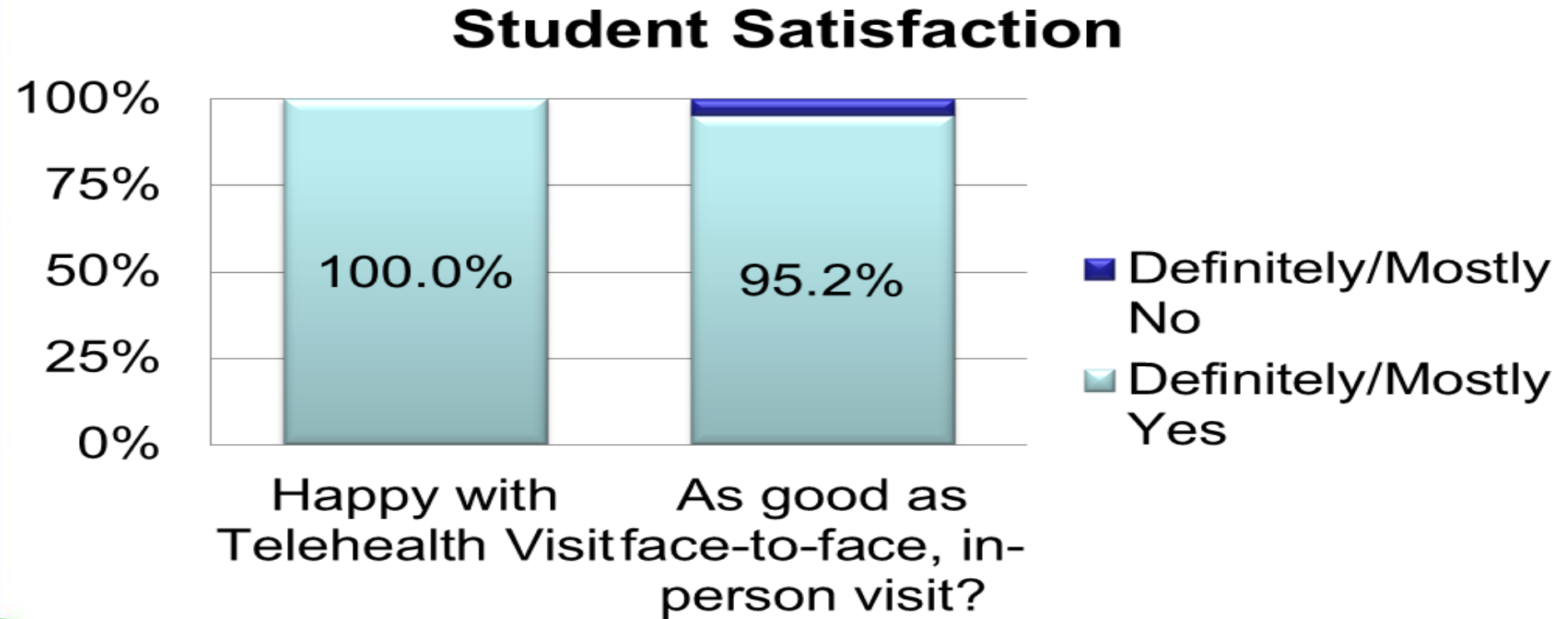
# Budget and Sustainability Considerations

- Tele-health originating/distant site reimbursements – where they go
- Cost of equipment
- IT support and connectivity
- Consider requesting salary support from schools
- RN model – higher scope of care
- Additional funding sources - Grants

# MIPhy Comparison



# Student Satisfaction





# Impact of Telemedicine



Community Health Center  
of Branch County

MEDICAL EXCELLENCE. COMMUNITY COMMITMENT.

## CHS treats student athletes for contagious, mild rash

By Jennifer Coe-Harris  
Jharris@thedailyreporter.com

COLDWATER — Twenty football players attending Coldwater High School were diagnosed with impetigo this week. The athletes were assessed by nurses at the Cardinal Clinic at the high school, medication was prescribed by the nurses that day, and the students were sent home.

Coldwater High School Principal Bill Milnes said the students have returned to school, and no other students have presented with signs or symptoms.

According to the Center for Disease Control and Prevention, impetigo is a



Impetigo can affect any area of the body. COURTESY PHOTO

common, superficial bacterial infection primarily caused by *Staphylococcus aureus*. It is the fourth most common dermatologic

condition among children seen in general practice.

Although most infections are mild, outbreaks have a considerable negative effect because infected children may be barred from attending schools and nurseries.

Impetigo is transmitted through direct person-to-person contact with someone who has the infection, and can also be picked up indirectly through contact with an item such as a wrestling mat, towel, razor or cell phone, according to the CDC.

Symptoms of impetigo\

■ Symptoms usually begin one to three days after infection.

■ Sores begin as small

red spots, usually on the face, but can appear anywhere on the body.

■ The sores are often itchy, but not painful.

■ The sores develop into blisters, which can break open and ooze fluid. The fluid is infectious and can infect others if they come in contact with it.

■ After a few days, the ruptured blisters form a flat, thick, honey-colored crust that eventually disappears, which leaves red marks that heal without scarring.

■ There may be enlarged lymph nodes (swollen glands), but usually no fever.



# Contact information

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# Telemedicine Equipment & Technology Preparation





# 6 Key Elements to Consider:

1.

Communication  
Platform



2.

Medical  
Devices &  
Equipment



3.

Packaging



4.

Connectivity



5.

Support



6.

Training



Telemedicine has revolutionized pediatric care  
in rural communities





## Contact Information

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# Thank You for Attending

- ❖ Archived presentation will be available in next few days.
- ❖ Follow up email will include link

