

Breaking Down Physical Barriers: Turning inpatient telemedicine ideas into reality

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Disclosures

- ▶ No financial disclosures
- ▶ Proprietary systems will be discussed, but we are not recommending these systems over others

Objectives

- ▶ Develop an understanding of telemedicine's potential for PHM to safely keep patients closer to home
 - ▶ supporting complex & critically ill inpatients at community/ satellite hospitals
- ▶ Gain familiarity with examples of telemedicine technology & processes from both the community/ satellite hospital and tertiary care perspectives
- ▶ Understand current barriers to telemedicine care and learn practical ways around these obstacles
- ▶ Work through the steps needed to translate a telemedicine idea into patient care at your institution

Background - Definitions

- ▶ Telemedicine: patient care using telecom technology
- ▶ Telehealth: health care using telecom technology; includes patient care, health education & public health

- ▶ Originating Site: patient location
- ▶ Distant Site: provider location

- ▶ Store-and-forward/ asynchronous: non-real-time data transfer
 - ▶ Example: echocardiogram interpretation at a distant site, child abuse evaluations

Background: Current Environment - Medicolegal

- ▶ All regulations (licensing, credentialing, etc) based on physical location of PATIENT
 - ▶ Provider-to-provider can occasionally bypass this standard...slippery slope!
- ▶ Ensure malpractice plan covers telemedicine care at patient location
- ▶ Very few lawsuits so minimal legal precedent
- ▶ **Telehealth standard of care = in-person standard of care**

Background: Current Environment - Reimbursement

- ▶ Reimbursement highly state & payer dependent
 - ▶ Fee-for-service payment most successful if live video connection with patient at a health care facility (clinic, hospital, etc.)
 - ▶ Contracts are alternate to fee-for-service
 - ▶ Look at hidden benefits in cost analysis (e.g. ↑referrals, ↓transfers)
 - ▶ Tech fee sometimes billable by originating site (\$20-50). No facility fees.
 - ▶ Improving every year
 - ▶ Great target for advocacy: hesitations often overcome with education

Background: Technology

- ▶ HIPAA requires encryption & tech controls
 - ▶ FaceTime & Skype almost never meet this standard
- ▶ National tech standards on American Telemedicine Association (ATA) website
- ▶ Must have bi-directional tech compatibility & processes
- ▶ High speed internet usually needed
 - ▶ Connection speed requirements dependent on clinical goals
 - ▶ How good does the exam need to be?
 - ▶ Cellular data sometimes better than broadband outside the U.S.

Background: Technology

- ▶ Several vendors
- ▶ Basic: iPad or PC with webcam/ speakers
- ▶ Advanced: camera with remote control, room mic'd with stereo speakers, and peripherals such as digital stethoscope
- ▶ Many different types of set ups, plan for what you will use the equipment for
 - ▶ Do you need a command center (centralized PICU)?
 - ▶ Peripheral use – high or low?
 - ▶ Handheld access for all providers?
 - ▶ All sites within same health system/ IT umbrella?
 - ▶ Cost considerations

Importance in PHM

- ▶ Ensure children have access to high quality care at the right time and right place, regardless of where they live
 - ▶ Acuity
 - ▶ Complexity
 - ▶ Ancillary Services
- ▶ Three perspectives – what are the potential benefits for:
 - ▶ Rural/ regional hospitals
 - ▶ Suburban satellite hospitals affiliated with children's hospitals
 - ▶ Tertiary & quaternary hospitals

Importance in PHM

- ▶ Rural/ regional community hospitals:
 - ▶ Limited or no pediatric subspecialists on-site
 - ▶ Minimal pediatric emergency & critical care support for the unexpected
 - ▶ RNs & support staff might have variable pediatric experience
 - ▶ Complex patients may drive to tertiary care facilities for outpatient care, but go to a local hospital for ED/ inpatient care
 - ▶ Transfers might not be medically necessary, geographically split up families & lose revenue for the hospital
 - ▶ Attendings can feel isolated, subspecialty consults and/or call support help

Importance in PHM

- ▶ Suburban satellite hospitals affiliated with children's hospitals
 - ▶ Subspecialty/ critical care resources may be limited (esp. after hours)
 - ▶ Complex chronic patients may view these sites as extensions of the parent hospital with similar capabilities, patient centeredness
 - ▶ Increasing bed space at urban hospitals may be more expensive than new construction in the suburbs. Transport is also expensive.
 - ▶ Keeping kids close to home helps families (esp. lower income, single parent, dual working parent, and large families)

Importance in PHM

- ▶ Tertiary & quaternary hospitals:
 - ▶ Increased referrals and community integration, reputation
 - ▶ Transferred patients may be more stable & better-known on arrival
 - ▶ Improved care coordination => lower readmit rate or LOS?
 - ▶ Contract (a.k.a. income) opportunities with smaller hospitals

Launching a New Telemedicine Project

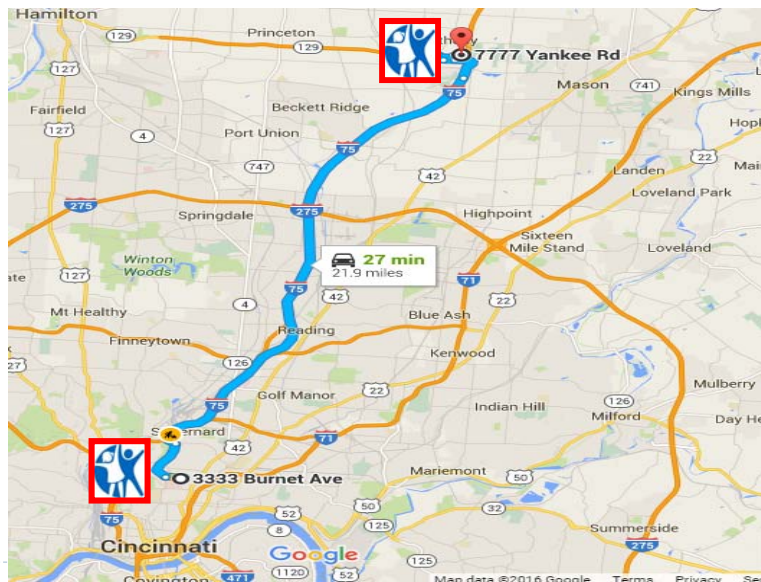
- ▶ Internal: originating & distant sites are in the same health system. Discussion focus will be clinical care.
- ▶ External: originating & distant sites are independent. Discussion focus will be regulatory & contracting topics.
- ▶ **Common Key Points:**
 - ▶ work within existing processes as much as possible...
telemedicine is a new way of providing care, not a new type of care.
 - ▶ the technology is more available/ less expensive than the processes & staffing needed for high quality telemedicine care
 - ▶ telemedicine works best as a part of a hospital/ health system strategy rather than as ad hoc projects

Potential Patient Served

- ▶ 8 month old bronchiolitic
- ▶ Admitted to satellite campus of tertiary care children's hospital
 - ▶ Family lives close to this hospital and only has one car
 - ▶ Mom is breastfeeding but also has other children at home and little social supports
- ▶ Patient deteriorates and it's clear they will require HFNC
 - ▶ Previously, patient would have to be transported to main campus (27 miles away)

Example: CCHMC Internal Project: What was needed and why?

- ▶ CCHMC expanded the Liberty Campus (23 miles north of base campus) from 12 to 42 inpatient beds
 - ▶ No PICU on-site
 - ▶ All patients admitted to Hospital Medicine or Surgical services
- ▶ Strategic plan included increasing both acuity and complexity
- ▶ PICU support was needed in some form



Internal: Questions we answered

- ▶ We defined patient population (inclusion & exclusion criteria for service)
 - ▶ Acute/critical care needs (PICU)
 - ▶ Specialty consultation
- ▶ Need/ availability of specialists? Do all need to be trained on telemedicine use?
 - ▶ Some services are on site 5 days/week, others are just available for telemedicine consults
- ▶ Does Hospitalist/ APRN need to be at bedside during tele-consults/ rounds?
 - ▶ Yes-helps facilitate continuity of care (may not be best practice at other sites, e.g. if Hospitalist driving in from home)

New Care Model was Necessary

- ▶ PICU-HM co-management for high acuity patients
- ▶ PICU support for both Rapid Response Team (RRT) and Code Team
 - ▶ Neither existed pre-expansion, deteriorating patients were brought to Liberty ED as needed
- ▶ **Goal:** develop robust, reliable responses and processes for Codes & RRTs, and incorporate PICU support to allow higher acuity patients remain at the Liberty Inpatient unit.
 - ▶ Patient safety & quality of care at least equivalent to Base Hospital, if not better
- ▶ Telemedicine was the obvious answer
 - ▶ 4-6 bed PICU would not be cost effective

What Did We Do?

- ▶ Utilized a multi-disciplinary approach
- ▶ Utilized simulation scenarios for help answering critical questions and defined clear protocols:
 - ▶ Development of optimal team structure
 - ▶ Who leads the RRT/Code?
 - ▶ Can this be done remotely?
 - ▶ Development of Telemedicine Processes
 - ▶ Needed to be timely, effective, and efficient
 - ▶ Development of appropriate and effective communications through telemedicine

Project Overview

- ▶ **Code Team:** Identified team members, roles, structure for ICU response, integrated transport to Base Campus (if necessary), prior to opening unit extensive simulation was performed
- ▶ **RRT:** Identified Team members and roles, indications for activation, who and where at RRT system could be activated, response times, and how to emulate some of practices at base (ie pre-huddle)
- ▶ **PICU/HM Co-management:** for selected 'intermediate care' patients, developed rounding protocol with ICU attending level support, and twice daily rounding structure

RRT/ Code Simulations

Prior to opening the unit:

- All clinical fellows & faculty participated in telemedicine simulation involving code and RRT scenarios at Liberty

Since opening the unit:

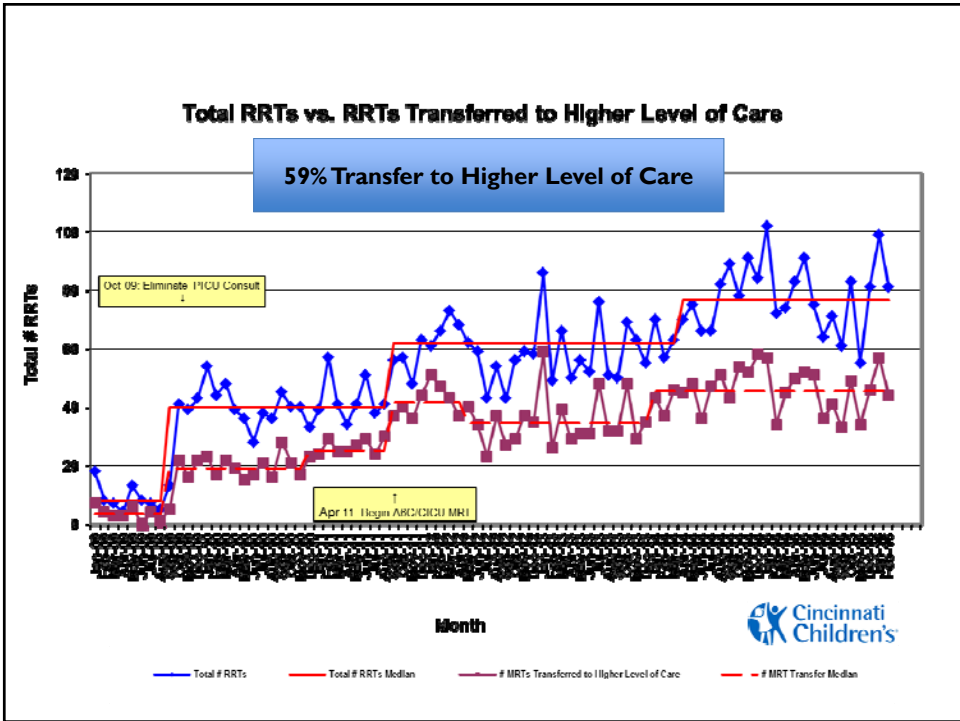
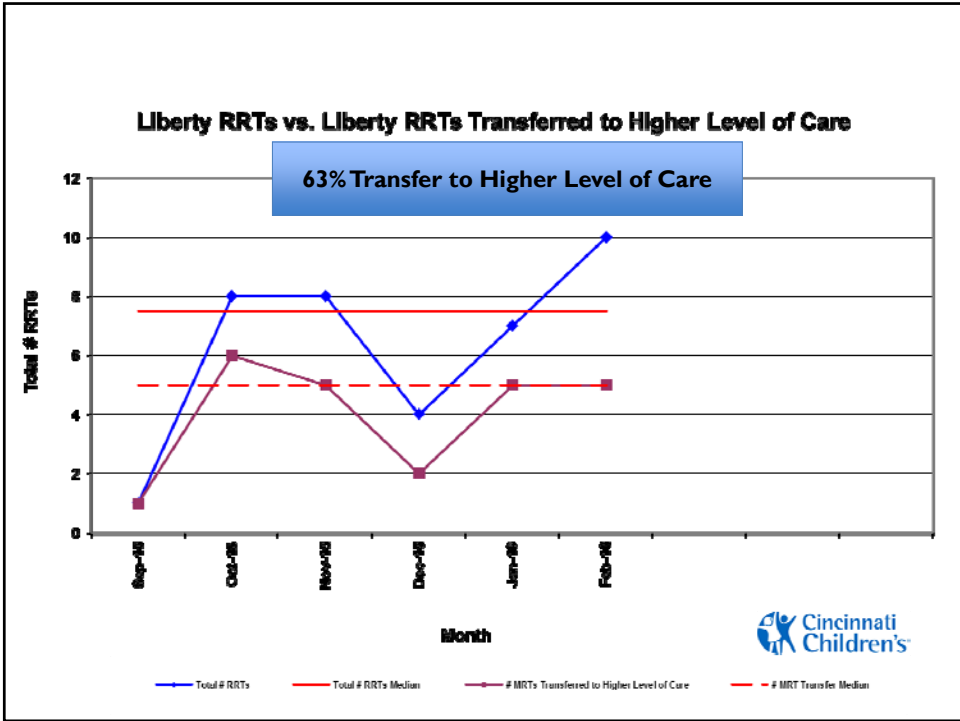
- In situ simulation continues with the Liberty & PICU staff at least weekly, plus 2 half day intensive simulation sessions for Liberty staff



2 rooms designated for simulation but mock scenarios can occur anywhere

PICU/HM Co-Management

- ▶ New model for CCHMC → “Intermediate Care Patients”
 - ▶ Our bronchiolitis patient is able to stay at satellite!
- ▶ Intermediate Care Patients on Hospital Medicine team
- ▶ PICU and HM perform twice daily telemedicine bedside rounds (10 am, 8 pm)
- ▶ Similar transfer rates to the PICU as Base beds
 - ▶ Approximately 60% of patients get transferred to the PICU after an RRT call



Lessons Learned-RRT/Code



- ▶ Ask/answer critical questions – who, what, where, when, and how?
- ▶ Physical placement of team might differ
- ▶ Environmental noise and communication
- ▶ Patient & family experience
- ▶ Staff satisfaction
- ▶ Continued learning with simulations

Lessons Learned-Overall

- ▶ Change is difficult- takes time- and a champion
 - ▶ Identified key lead in 8 anchor divisions
 - ▶ Engaged with family advisory board—key feedback we would have not considered otherwise
- ▶ Culture shift to providing telemedicine care
 - ▶ Provider surveys reflect that
 - ▶ “I used the TELEHEALTH with the ICU from the LIB ED. The fellows are amazing. Fast response time, great collaboration”
- ▶ Training is key- but a big endeavor
 - ▶ Online required document/policy review
 - ▶ Existing learning modules
 - ▶ Hands-on-training– standardization key
 - ▶ Simulation
 - ▶ Interactive job aids

Potential Patient Served

- ▶ 15yo previously healthy surgical patient scheduled for post-op floor admission
- ▶ Admitted to regional Level II trauma center
 - ▶ The nearest PICU is >200 miles away. Transport can be limited or unavailable during winter storms
 - ▶ ICU with adult intensivists, but no pediatric intensivists. The intensivists would consider managing certain teens <18yo if they had pediatric critical care support via telemedicine
- ▶ Patient is difficult to extubate following the surgery
 - ▶ The anesthesiologist thinks he will be extubatable tomorrow, but wants him to stay in the ICU on a vent overnight

Launching a New Project: External

- ▶ A small group of pediatric anesthesiologists can support emergent procedures, but they aren't staffed to be primary attendings outside the OR/ PACU.
- ▶ The pediatric intensivists at your referral hospital would offer telemedicine consults to help teen ICU patients stay local if there are agreed-upon patient population/ transfer criteria, and they are paid for the service

External: Initial questions to ask

- ▶ Define patient population & transfer criteria
 - ▶ Diagnoses/ treatment modalities
 - ▶ Age range
 - ▶ Medical complexity
- ▶ Anticipated patient volume
 - ▶ Can existing staffing on both ends support this volume?
- ▶ Ancillary & RN capability for high acuity peds patients
- ▶ Availability of pediatric-sized supplies

External: Initial questions to ask

- ▶ Hours of telemedicine consult availability
- ▶ Provider-to-provider or provider-to-patient model
- ▶ Who can request a consult?
 - ▶ Primary attending only?
 - ▶ Consultants?
 - ▶ Residents?
- ▶ Who will do the consult?
 - ▶ MD or NP/ PA?
 - ▶ Attending or fellow?
- ▶ Existing hardware, software & EMR on both ends
- ▶ A site visit is essential!

External: Regulatory Issues

- ▶ State licensure & hospital credentialing for everyone who will do the consults
 - ▶ 24/7 coverage: license & credential entire PICU group vs. set up a smaller telemedicine call group?
- ▶ Credentialing & privileging by proxy:
 - ▶ Essentially, an originating hospital accepts the decisions of the distant hospital
 - ▶ Can be for credentialing, privileging, or both
 - ▶ May need med staff bylaws change at originating site
 - ▶ Approved by TJC & CMS for telemedicine if both sites are TJC & CMS approved, and there is a written agreement between the two sites to use credentialing by proxy
- ▶ Malpractice/ Legal: ensure malpractice plan & parent organizations' lawyers agree to the project

External: The Paper Trail

- ▶ Full EMR integration is unlikely
- ▶ Consultant will need clinical info from patient's EMR (H&P, labs, rads, vitals, etc).
- ▶ Both ends need to see the consult note
- ▶ Patient tracking for QI & billing purposes
- ▶ Primary options:
 - ▶ Consultants have full remote access to the patient's EMR and write notes there.
 - ▶ Consultant charts in own EMR and is given patient info during video consult. Consult note faxed or emailed to patient's hospital which has responsibility for getting it into patient's EMR.
 - ▶ Consultant charts in own EMR and has limited/ read-only access into patient's EMR (e.g. Epic Care Everywhere). Consult note sent to patient's hospital or viewable via a system like Care Everywhere.

External: Financial Aspects

- ▶ What is the benefit for each institution – it needs to be “worth it” for everyone (aim for a “win-win”)
- ▶ What is the ROI?
 - ▶ Anticipated payment for the consults
 - ▶ Increased revenue for originating hospital & decreased revenue for distant hospital if patient doesn’t transfer
 - ▶ Building a relationship that is mutually beneficial (future referrals, reputation building, support other initiatives between the institutions)
 - ▶ Are grants available to support start-up costs?

External: Financial Aspects

- ▶ Third Party Payers
 - ▶ Telemedicine billing using critical care codes is tricky
 - ▶ Two people cannot bill a payer for the same service, even if at different locations
- ▶ Contracts:
 - ▶ Per patient or per encounter
 - ▶ Monthly fee for service availability?
- ▶ Costs associated with new tech needs (if applicable)
- ▶ Credentialing/ licensing fees & additional malpractice costs to support telemedicine (if applicable)

Children's Colorado (CHCO): Current ED/ Inpatient telehealth services

- ▶ Assessment & disposition for behavioral health patients at 5 satellite EDs/UCs without psych staff
- ▶ Video visits between long-distance family members & patients in the NICU & PICU. Expanding to CICU.
- ▶ Video-based handoffs to remote PCPs before discharging complex NICU patients, including abnormal baseline exam findings, dressing changes, and/or medical devices
- ▶ Long-distance PCP or family member presence at ethics & care conferences, when requested
- ▶ Video link for transport teams requesting advice from medical control physicians
- ▶ Pediatric critical care & neonatology consults to keep patients at regional hospitals (near future, projects in development)

* Majority of existing telehealth services are outpatient subspecialty care; expanding ED/inpatient services with several projects on the 1-2 year horizon.

External: Lessons Learned

- ▶ Both sides must agree on patient population & scope of service
- ▶ Buy-in from physicians and hospital leadership with physician champions on both ends
- ▶ If RNs & ancillary services aren't willing to care for these patients, it won't work.
- ▶ Share clinical care guidelines & increase RN education on pediatric topics

External: Lessons Learned

- ▶ Reluctant staff may be nervous...solicit, listen to, & address fears
- ▶ Consider a ramped-up launch or pilot study, and starting in the “slow” season. The stakes are high => do the up-front work to ensure success.
- ▶ Mutual respect is essential. Walk in each other’s shoes...you’ll be amazed what you can learn!

Cincinnati – Hardwired Solution

Liberty Patient Room during an RRT



Cincinnati - Hardwired Solution

PICU Command Center (Main Campus)

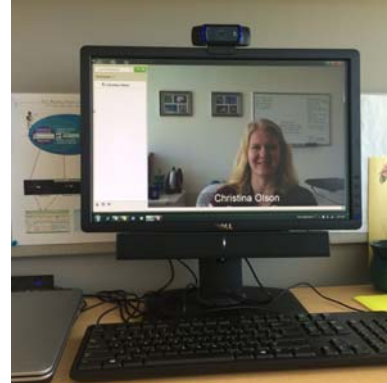


- Telemedicine (EX90)
- EPIC Monitor
- GE CIC with Sitelink (to view Vitals)
- EPIC Hyperspace (PC access)
- Software client

CHCO - Modular Solution (Originating Site)



CHCO – Modular Solution (Distant Site)



Breakout sessions: New Project Ideas

- ▶ Break into groups to discuss your ideas
- ▶ What are the initial questions to ask?
- ▶ What barriers do you anticipate?
- ▶ What are potential solutions to these barriers?
- ▶ How will you gauge success?

Take Home Points

- ▶ ROI (return on investment) might not make sense if administrators look only at dollars-in vs. dollars-out, but...
 - ▶ Telemedicine builds inter-hospital relationships
 - ▶ Telemedicine safely keeps more patients at community/ satellite hospitals & may improve referral rates in competitive markets
 - ▶ Community hospital: “One non-transferred patient pays for a lot of telemedicine.”
 - ▶ Satellite hospital: “With telemedicine, we can keep patients in lower-cost beds at suburban sites.”
 - ▶ Tertiary care: “One congenital heart or brain tumor referral pays for a lot of telemedicine.”
- ▶ Telemedicine is good for patients & families
- ▶ There is a learning curve, but it’s shorter than you’d expect
- ▶ You can do this!

Resources

- ▶ AAP SOTC listserv (American Academy of Pediatrics Section on Telehealth Care)
- ▶ ATA PedsSIG listserv (American Telemedicine Association Pediatric Special Interest Group)
- ▶ ATA website (American Telemedicine Association)
- ▶ CTel website (Center for Telehealth & eHealth Law)

- ▶ FYI...SPROUT is a new pediatric telehealth research network (Standardized Pediatric Research on Outcomes & Utilization of Telehealth)
 - ▶ If your institution wants to participate in the first study (a survey of pediatric telehealth practices & infrastructure across the country - both established and new programs), please use the “Contact Us” link on the SPROUT website. The survey will likely be sent out in August. If multiple people are on the mailing list from an institution, the study investigators will request that only one person complete the survey on behalf of your institution.
 - ▶ www.sproutresearch.org