



# Pediatric Critical Care Telemedicine

## Doernbecher Children's – Sacred Heart Medical Center

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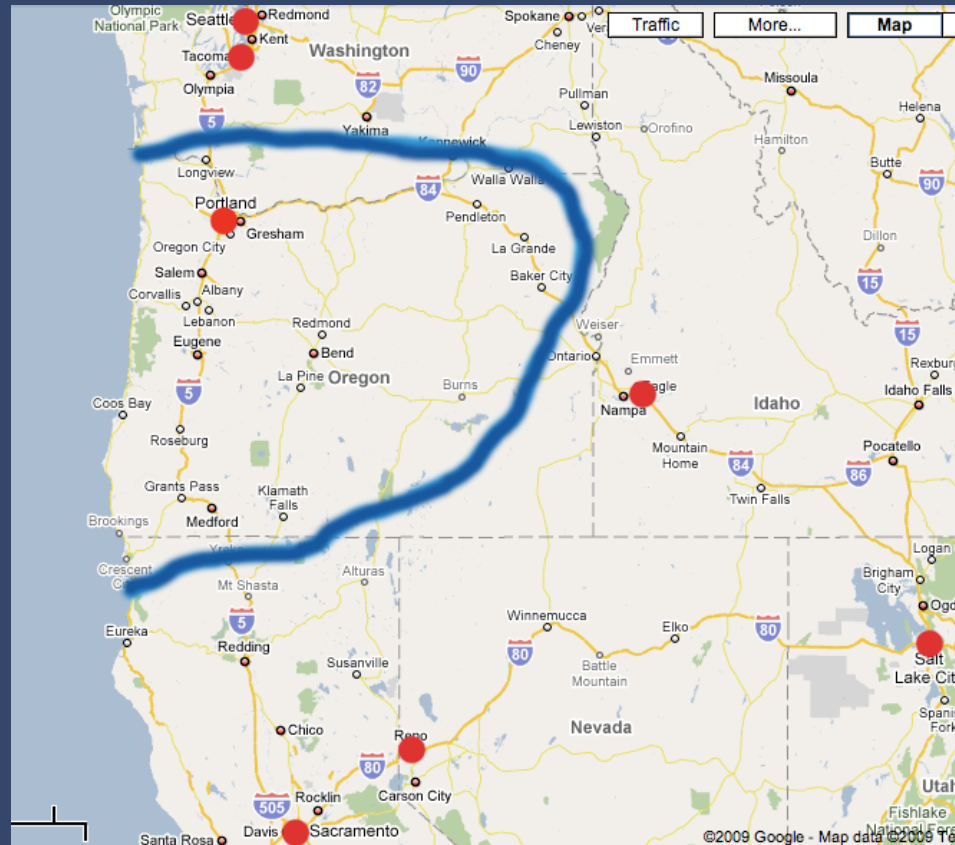
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OHSU Doernbecher Children's Hospital

# Oregon & Pediatric Intensive Care

- 2 Pediatric ICUs, 13 Intensivists & 36 PICU beds
- Both located within 5 miles of each other



- Creates a large geographic referral area
- > 800 transports per year to Doernbecher

# Role of Pediatric Intensivist – Triage

- Consult calls received throughout the day & night

- The Dilemma

*Whether to transport...*

*How to transport...*

*all based on verbal report & our comfort*

- Who is impacted by the Decision?

Child

Parents

Transport Team

Financial Impacts to Healthcare System, Family, & Local Economy

PANDA to Eugene (by ground ambulance): \$6,322

PANDA to Klamath Falls (fixed wing plane): \$21,572

# Solution – Telemedicine

## Interactive Healthcare over Distance

- Using telecommunication technology (aka video-conferencing equipment)
- Improves
  - Quality of Care
  - Access to Care
  - Provider & Patient Satisfaction
- Reduces Cost



# Telemedicine



In Other Words...

*Telephone Call:*

*Helpful*

*Picture:*

*A Thousand Words*

*Live Interactive Video:*

*Priceless*

# PICU Telemed Scenarios

- Unnecessary Transports
  - Toddler with a Febrile Seizure, intubated & requiring mechanical ventilation for a few hours
  - Asthmatic on continuous albuterol nebs
  - Known Diabetic in DKA with normal mental status on an insulin drip
- Waiting for PANDA Transport Team?
  - Pre-transport management
- Bad weather - can't transport
- Capacity issues

# Telemedicine Demo



Governor Arnold Schwarzenegger with Dr. Jim Marcin  
2007 Pediatric Telehealth Colloquium, San Francisco, CA

# DCH – SHMC Timeline

- Mid '05 Idea
- 10/05 Site visit to UC Davis & Redding
- 2006 multiple conference calls, demos, etc.
- 8/06 SHMC Executive Team approval
- 10/06 OHSU MD's privileged to provide TM
- 1/07 Equipment received / configured
- 2/07 Contract signed, In-services done
- 3/07 OHSU MD's credentialed at SHMC
- 4/07 Pilot begins



# DCH – SHMC Telemed Experience: 4/07-present

- 56 Critical Care Consults (55 patients)
  - 39 Transported to Doernbecher
  - 16 stayed in Eugene for their hospitalization
- Case Mix – 55 patients
  - Average age 4.4 years 22 patients < 1yo
  - 30 - respiratory illness 10 - neuro dx (seizures, infectious)
  - 5 – sepsis 2 – cardiac
  - 6 – general (ingestions, DKA, dehydration) 2 – trauma
- Illustrative Cases
  - Faux Pneumothorax Mild meningococemia
  - Asthmatic not intubated Remote Code

# Telemedicine Benefits

- Improves patient care
  - Improves access to care – removes Distance Barrier
  - Specialist involvement earlier – Time Barrier
  - Improves communication - Primary MD & Specialist
- Avoids risky, expensive, & unnecessary transports
- Reduces healthcare costs
- Reduces costs to family
- Healthcare dollars stay in local community
- Improves provider & patient satisfaction
- Supports rural provider, decreases isolation

# Potential Locations

- Inpatient
  - ER, OR, ICU
- Outpatient
  - primary & specialty care clinics
  - skilled nursing facilities
  - prisons
- Patient homes – hospice
- Daycare centers – camps
- Emergency Medical Services
  - accident scenes, during medical transport
  - airplanes, mass casualty scenarios

# Equipment Evolution



90's



00's



??'s

# Medical Peripherals

General Exam Camera



Fundoscope

Nasopharyngoscope



Otoscope



Ultrasound



Colposcope

# Lessons Learned

- Change Takes Time
- Identify “Champions” - MD, RN leaders, Administrators
- Identify & Engage other Stakeholders
  - Technical Support (internal or external source)
  - Contracting, Risk Management
  - Credentialing
  - Billing Coders and Insurers
- Roadblocks - Legislative, Rules, etc.
- Significant Initial Capital Needs
- Reimbursement is necessary for Sustainability
  - Senate Bill 24 passed by ‘09 OR legislature

# Impact: DCH – SHMC First Case

- 8 mo infant with
  - Hypotonia & Lethargy
  - “Cross-eyed” & Loss of Head Control
- Workup initiated at Sacred Heart:
  - Head CT & MRI - normal
  - Lumbar Puncture – signs of infection
- Telemedicine consult performed
  - quick agreement for transport based on worsening mental status & concern for loss of airway protection skills
- PANDA transport team dispatched by ground
- Urgent cell phone call from Sacred Heart RN’s
  - neuro exam had worsened
  - MD had departed & local phone lines down
  - requesting emergent rotor transport

# Impact:

## DCH – SHMC First Case

- Unable to reach Sacred Heart by telephone
- Telemedicine equipment worked flawlessly
  - Led RN's through repeat neuro exam
  - Resolution allowed detailed exam including pupils
  - Neuro exam was unchanged from previous
- What had changed? RN change of shift
- Telemedicine saved rotor transport
  - both \$'s saved & risk averted
- Outcome
  - hospitalized 16 days @ DCH
  - full recovery from meningo-encephalitis



Click image to start video.  
This will launch a Quicktime player.  
Free player at [www.apple.com/quicktime](http://www.apple.com/quicktime)



# Regional Resources

- Telehealth Alliance of Oregon  
[www.ortelehealth.org](http://www.ortelehealth.org)
- Oregon Health Network  
[www.oregonhealthnet.org](http://www.oregonhealthnet.org)
  - FCC program – creates infrastructure
  - \$20+ million over 3 years
  - Reimburses at 85% for constructing the network
- Northwest Regional Telehealth Resource Center – Spokane, WA  
[www.nrtrc.org](http://www.nrtrc.org)

# National Resources

- American Telemedicine Association  
[www.atmeda.org](http://www.atmeda.org)
- Center for Telehealth & E-Health Law  
[www.telehealthlawcenter.org](http://www.telehealthlawcenter.org)
- Office for the Advancement of Telehealth (OAT)  
[www.telehealth.hrsa.gov](http://www.telehealth.hrsa.gov)



Doernbecher Children's  
Hospital

Pediatric Critical Care  
Telemedicine  
Consults



Sacred Heart Medical Center -  
Riverbend



# Pediatric Critical Care Telemedicine

Doernbecher Children's –  
Sacred Heart Medical Center

THANK YOU