

The New Dynamics of **Pediatric Care**

Thomas Phelps, M.D.



Collaborative
Disruptive Innovation
Healthcare
Partnership
Integrated
Compassionate
Culturally-effective
Medical
Continuous
Management
Acute Care components
Accessible
Comprehensive
Patient-Centered
PCMH
Coordinated
Preventive
Primary Care Delivery
Care
Family-centered



Past Use of TeleHealth

- Physician Hands On
- Labor Intensive
- Expense
- Poor Documentation
- After Hours Pager Driven







Key trends shaping the future of pediatric health care



The Use of Telehealth to Improve Children's Access to Health Care



BACKGROUND

Telehealth is the use of technology to provide and coordinate health care at a distance. It is used to facilitate the diagnosis, consultation, treatment, education, and care management of a patient's health care while a health care provider is at a distant site from the patient. Telehealth helps to deliver care or services to patients through:

- ▲ Live video conferencing (live, two-way interaction between a person and provider)
- ▲ Store-and-forward (transmission of recorded health history to a provider)
- ▲ Remote patient monitoring (information is collected in one location via a phone or wearable device and sent to a provider)
- ▲ Mobile health (the use of mobile devices such as phones or tablets to promote health care and education)

In California, the enactment of the Telehealth Advancement Act of 2011 (AB 415) helped to break down barriers in the delivery of health care services by including all California-licensed professionals as telehealth providers, removing the need for providers to document that there was a barrier to providing care in-person before using telehealth, and allowing for oral or written consent from patients to use telehealth. While this legislation marked a stride forward in recognizing how telehealth could improve the quality of and access to care through the rapid growing technology, the full benefits cannot be realized without taking into account a sensible payment mechanism.



TeleHealth

- Tele-education
- Teleconsult
- Telepractice
- Teleresearch



Present Use of TeleHealth

- Initial cost, but low daily cost for provider
- Multiple caregiver use
- Easy access and 24/7 access
- Better documentation
- Less travel time for patients/family
- Lower cost patients/family
- Less day missed of school and work





Why Telemedicine?

- Regionalized services
- Disparities in access
- Children's Hospitals
**16,810,409 (22.7%)
children >60 minutes
from children's hospital**




UC DAVIS

UC DAVIS
CHILDREN'S HOSPITAL

2018 Healthcare Focus

“Don’t think population health, think population management and the tools necessary to manage the health of those individuals.”

*Brian Sanderson
National Managing Principle
Healthcare Services - Crowe*

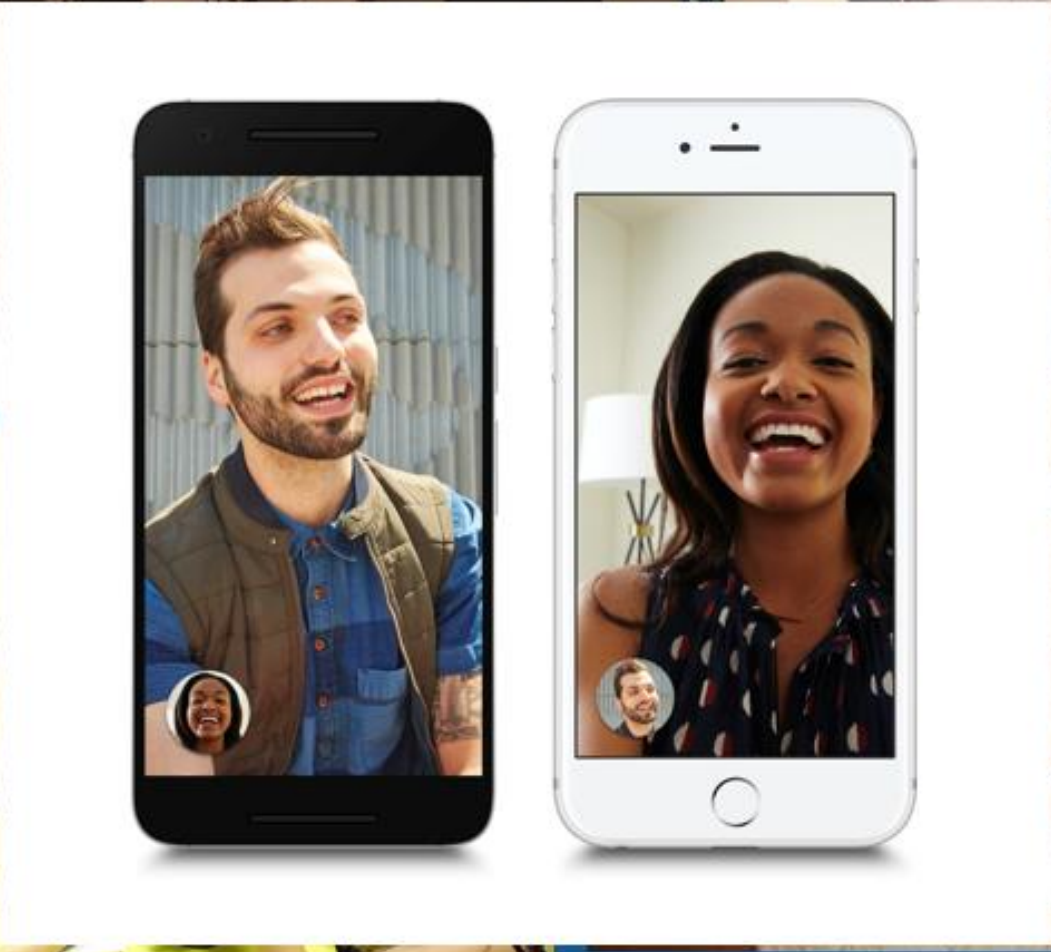
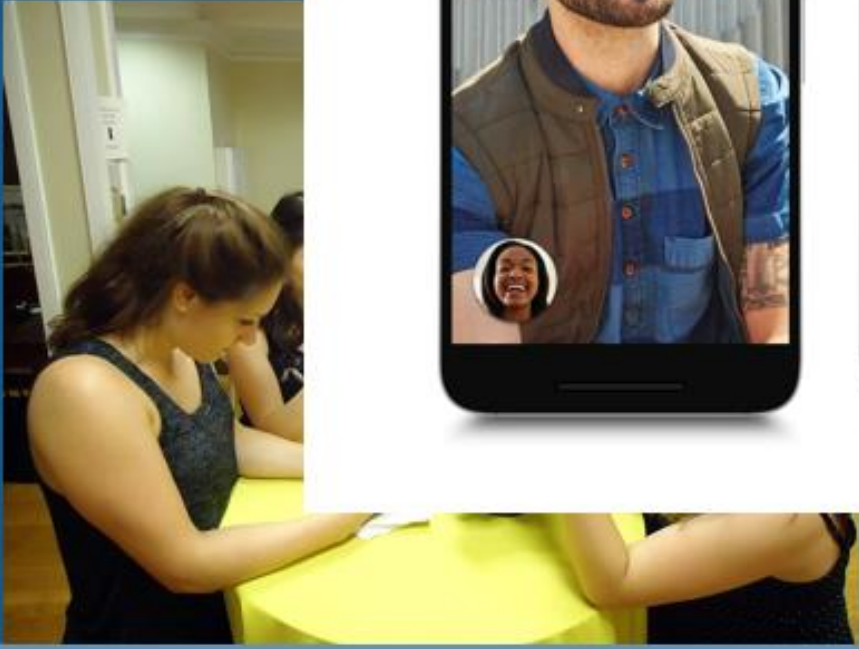


Children's
Hospital
LOS ANGELES

We Treat Kids.



© You Tube/Nerdist



Advances in Pediatrics 64 (2017) 347–370

ADVANCES IN PEDIATRICS

Telehealth No Longer an Idea for the Future

Christina A. Olson, MD*, John F. Thomas, PhD

Telehealth Department, Children's Hospital Colorado, B720, 13123 East 16th Avenue, Aurora, CO 80045, USA

Keywords


• Telehealth • Telemedicine • eHealth • Pediatric • Subspecialty • Access to care

Key points

• Patient demands, new payment models, and better technology are rapidly increasing telehealth usage across the United States and around the world.



Direct to Consumer Telehealth

 UnitedHealthcare

 amwell


TELADOC



 CVS
pharmacy

Walgreens


 Cigna

The Future of
Healthcare is Here

See a doctor or therapist
anytime, anywhere.

[Get Started](#)



 Anthem

Humana

 RITE
AID

 Dr DOCTOR
ON DEMAND

 MDLIVE



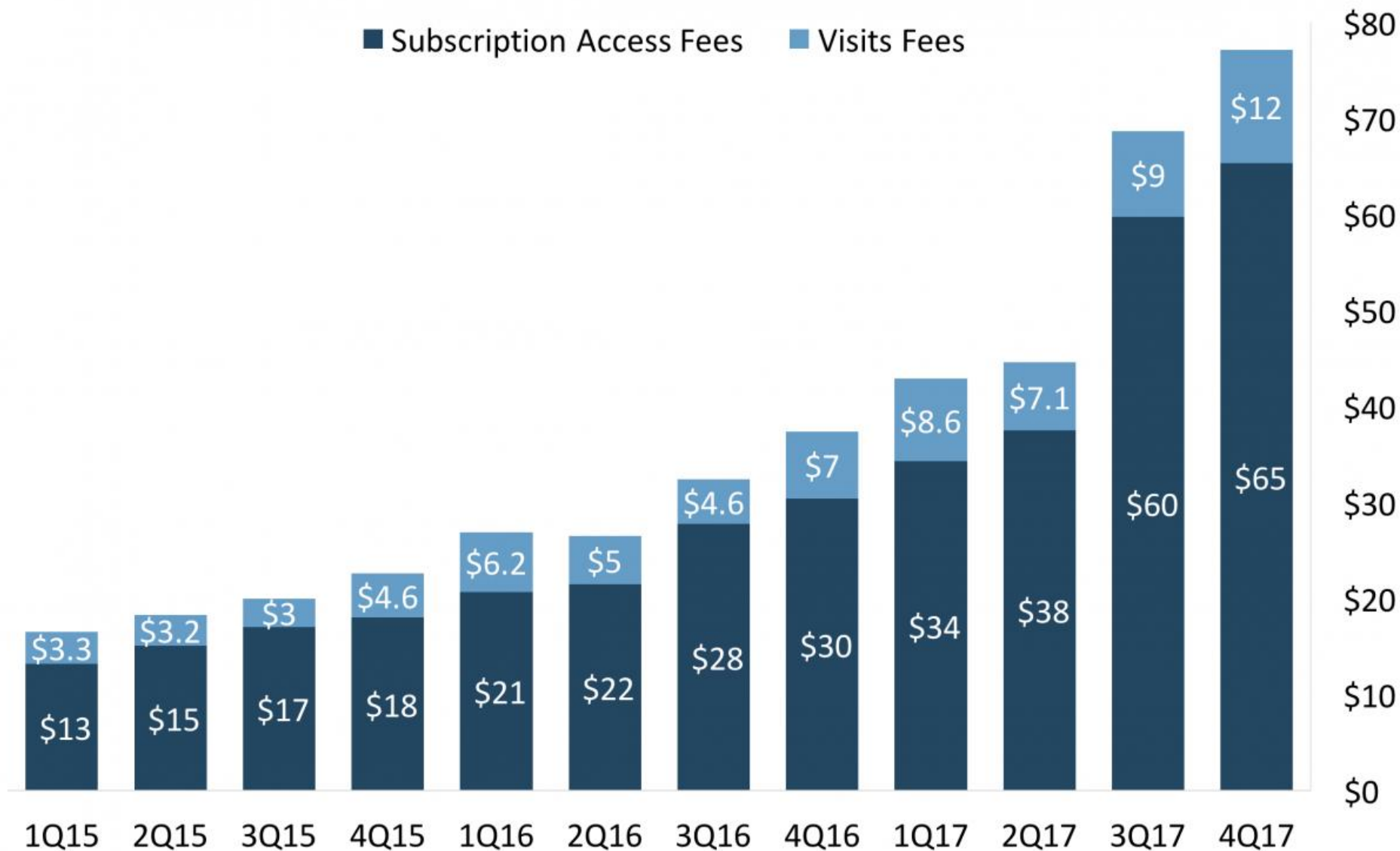
 Aetna

 Walmart

 LiveHealth
ONLINE

Teladoc Global Quarterly Revenue, By Segment

Millions (\$)



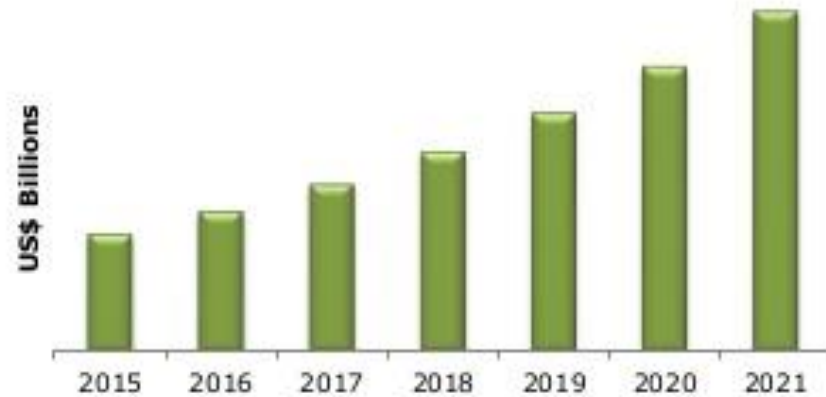
Source: Company filings

BI INTELLIGENCE



Global Telemedicine Market: Regional Overview

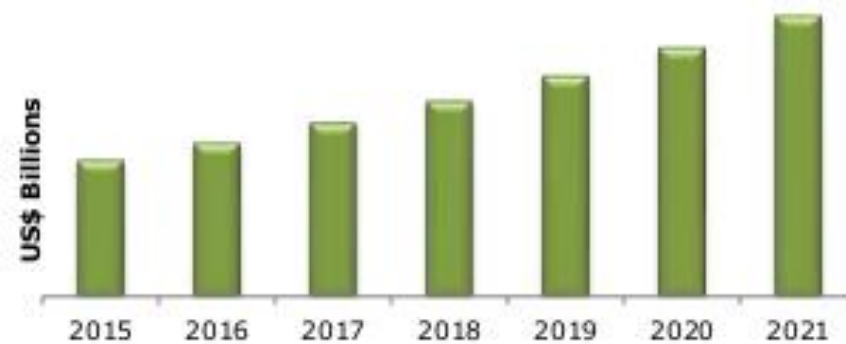
North America Telemedicine Market By Value; 2015-2021 (US\$ Billion)



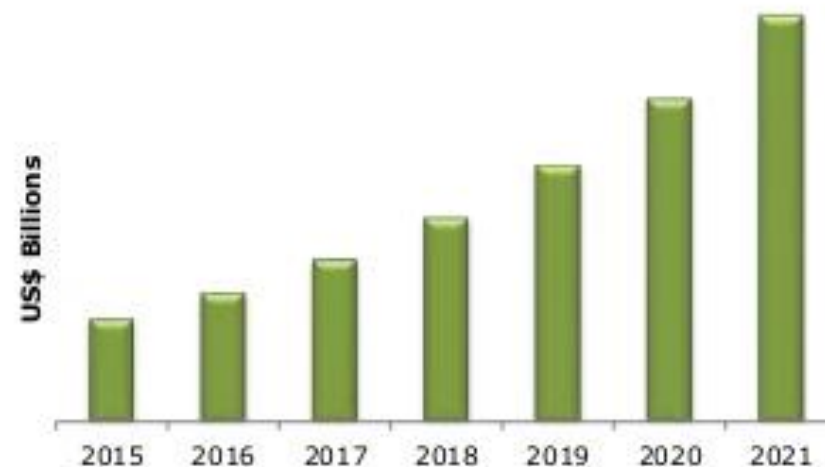
The North America telemedicine market estimated to reach US\$... billion in 2021, as compared to US\$... billion in 2016. The market is projected to grow at a CAGR of ...% over the year 2017 to 2021. The Europe telemedicine market is expected to reach US\$... billion in 2021, incremented from US\$... billion in 2016. The telemedicine market is expected to expand at a CAGR of ...% over the year 2017 to 2021. The Asia Pacific telemedicine market is anticipated to reach US\$... billion in 2021 incremented from US\$... billion in 2016. The market is forecasted to grow at a CAGR of ...% over the year 2017 to 2021.

The factor responsible for the growth are

Europe Telemedicine Market By Value; 2015-2021 (US\$ Billion)



Asia Pacific Telemedicine Market By Value; 2015-2021 (US\$ Billion)



La Maestra's TeleHealth Program

- ENT TeleHealth Visits
- Asthma TeleHealth
- Medical Management
- Teleradiology
- Telemental Health

La Maestra TeleHealth Visits for 2017 **138 Visits** for ENT and Asthma Telemedicine

TeleHealth Medication Manager **106 Visits**



SUCCESS STORY

➤ Outcomes

- Decrease No-shows to specialty appointments 50% to 13.3%
- Increased patient and staff satisfaction – Patient satisfaction surveys after each visit
- Better utilization of resources – lower no show rate and better utilization of specialty appointment



Success Story

➤ Sustainable if

- Both visits billed on the same day could be reimbursable
- Connection and/or technology fees would be billable
- Originating site get some kind of reimbursement without PCP present



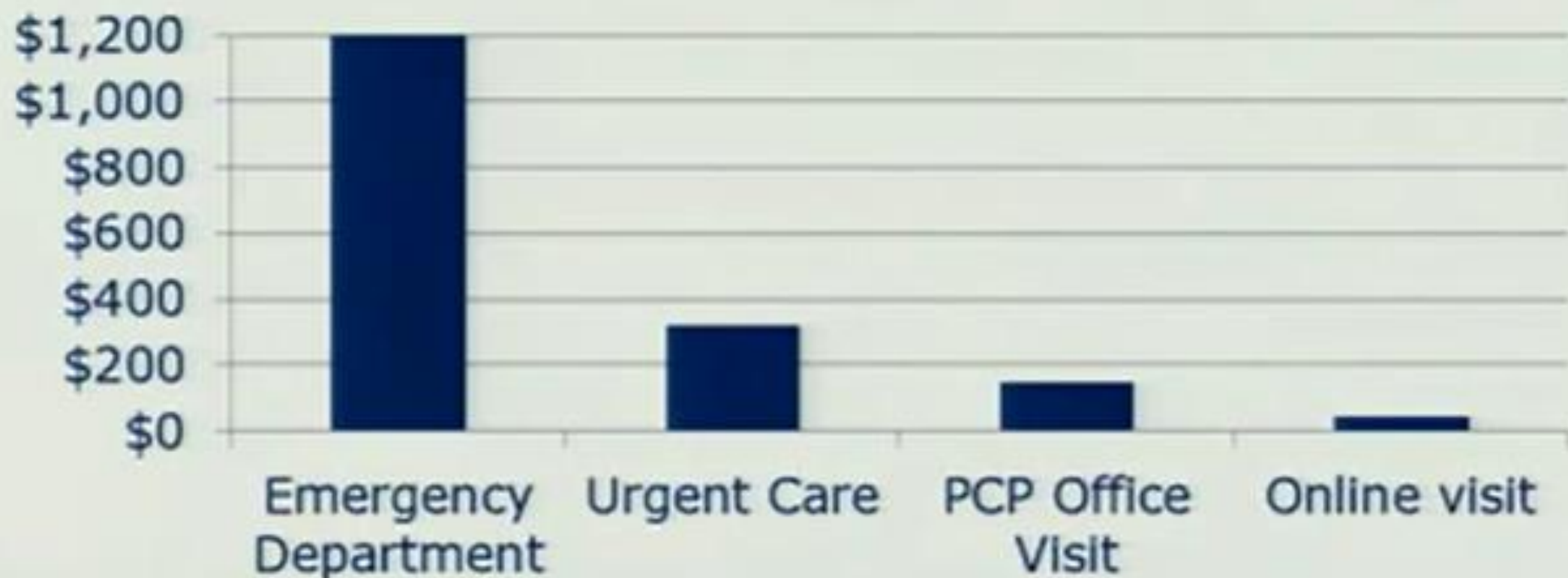
Challenges for TeleHealth in Pediatrics

- Laws
- Reimbursement
- Workflow
- Liability
- Cross State Issues
- Cost
- Quality





It's all about cost savings...



18 Pediatric Referral Guidelines

UC Davis Health System Clinical Telehealth Program Referral Guidelines

Pediatric NEPHROLOGY, TRANSPLANT & HYPERTENSION Clinical Telehealth Consultations

The following is a listing of clinical conditions appropriate for clinical telehealth pediatric nephrology, transplant and hypertension consultations. If you would like to refer a patient with a condition which is not listed below, please send your request with the patient's chart notes to the telehealth coordinator for the specialist's consideration.

Clinical Conditions

Hematuria
Proteinuria
Kidney and bladder stones
Renal failure
Systemic Lupus Erythematosus
Nephrotic Syndrome
Glomerulonephritis
Urinary Tract Infections
Hypertension
Renal Tubular Acidosis
Electrolyte abnormalities
Diabetes
Renal transplantation
Renovascular renal ultrasound
Renal cysts
Hypertrophic cardiomyopathy
Renovascular renal ultrasound
Stroke

Required Data

Urea Nitrogen
Height, weight, blood pressure on day of the consultation

Consent: [Laura Baker, MD](#)
[Laura N. Campbell, MD](#)
[Christopher G. Cannon, MD](#)
[Lisa S. Gruneir, MD](#)

Appointment Scheduling

New: 45 minutes
F/U: 20 minutes

Level of Provider Required

Direct introduction from the primary care provider at home

Video Equipment Required

1. Videoconferencing unit
2. General patient exam camera

The following information must be received prior to scheduling an appointment:

1. [Consent, Release, Waiver, and Assent](#) form
2. Recent HGT and all applicable clinical information from the patient's chart
3. Relevant laboratory data

The following must be received before the consult begins:

1. Signed [Videoconferencing and Remote Patient Examination Consent](#) form (see patient's chart)
2. Documented verbal consent from patient for participation in telehealth consultation

© 2009 Clinical Telehealth Program
Tel: Fax: (530) 438-4332
Referral Fax: (530) 432-4344
[http://www.ucdavis.edu/telehealth](#)

UC Davis Health System Clinical Telehealth Program Referral Guidelines

Pediatric INFECTIOUS DISEASE Clinical Telehealth Consultations

The following is a listing of clinical conditions appropriate for clinical telehealth pediatric infectious disease consultations. If you would like to refer a patient with a condition which is not listed below, please send your request with the patient's chart notes to the telehealth coordinator for the specialist's consideration.

Clinical Conditions

All infection at any stage
Chlamydia
Hepatitis
Chronic pneumonia
Tuberculosis
Coccidioides infections
Sepsis and Tick Borne Infections
Meningitis
Toxin: Botulism, PVL, Pertussis
Lymphadenopathy
Respiratory Syncytial Virus
Human Adenovirus Infection

Required Information

All relevant laboratory results
All relevant imaging studies

Diagnoses with vague symptoms (fevers, fatigue, symptoms, chronic pain, etc.) are not included in general. Appropriate conditions would include those patients for whom a listing is added to an examination. We do not include or treat sexually transmitted diseases in telehealth.

Consent: [Laura Baker, MD](#)
[Laura N. Campbell, MD](#)
[Christopher G. Cannon, MD](#)
[Lisa S. Gruneir, MD](#)
[Lisa S. Gruneir, MD](#)

Appointment Scheduling

New: 45 minutes
F/U: 20 minutes

Level of Provider Required

May include a brief introduction from the primary care provider when appropriate

Video Equipment Required

1. Videoconferencing unit
2. General patient exam camera

The following information must be received prior to scheduling an appointment:

1. [Consent, Release, Waiver, and Assent](#) form
2. Recent HGT and all applicable clinical information from patient's chart
3. Other notes, per request additional data, patient data in a patient history form per to appointment

The following must be received before the consult begins:

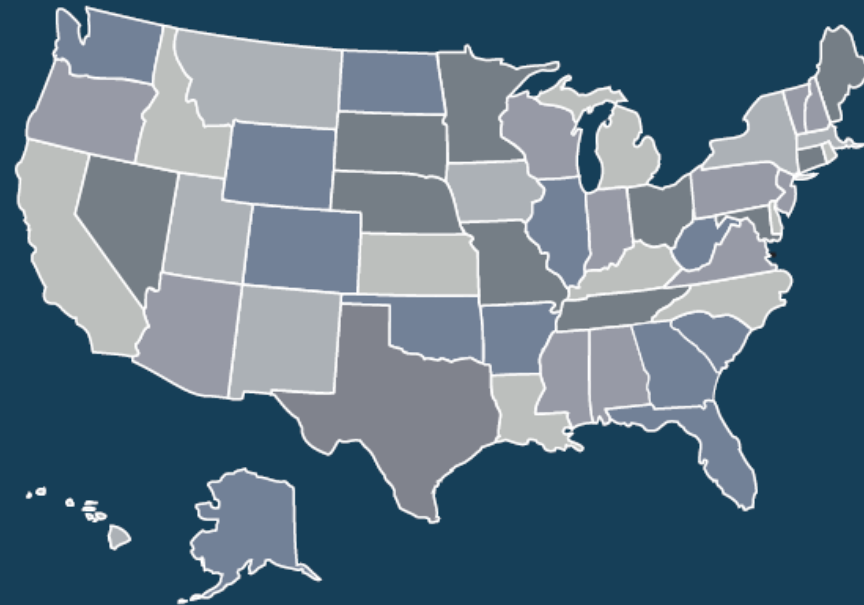
1. Signed [Videoconferencing and Remote Patient Examination Consent](#) form (see patient's chart)
2. Documented verbal consent from patient for participation in telehealth consultation

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Tel: Fax: (530) 438-4332
Referral Fax: (530) 432-4344
[http://www.ucdavis.edu/telehealth](#)





Center for
**Connected
Health Policy**
The National Telehealth Policy Resource Center



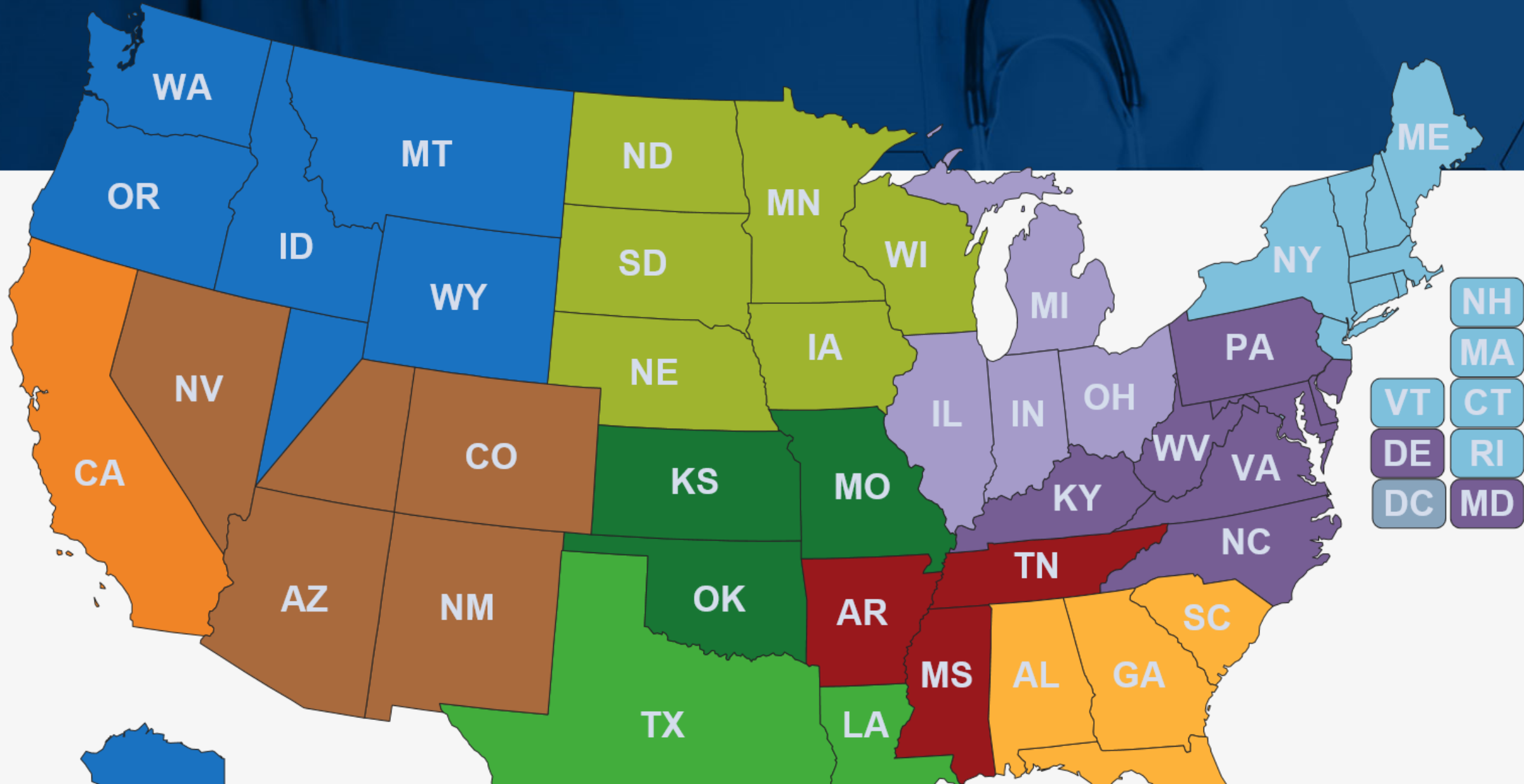
STATE TELEHEALTH LAWS AND REIMBURSEMENT POLICIES

A COMPREHENSIVE SCAN OF THE 50 STATES AND DISTRICT OF COLUMBIA

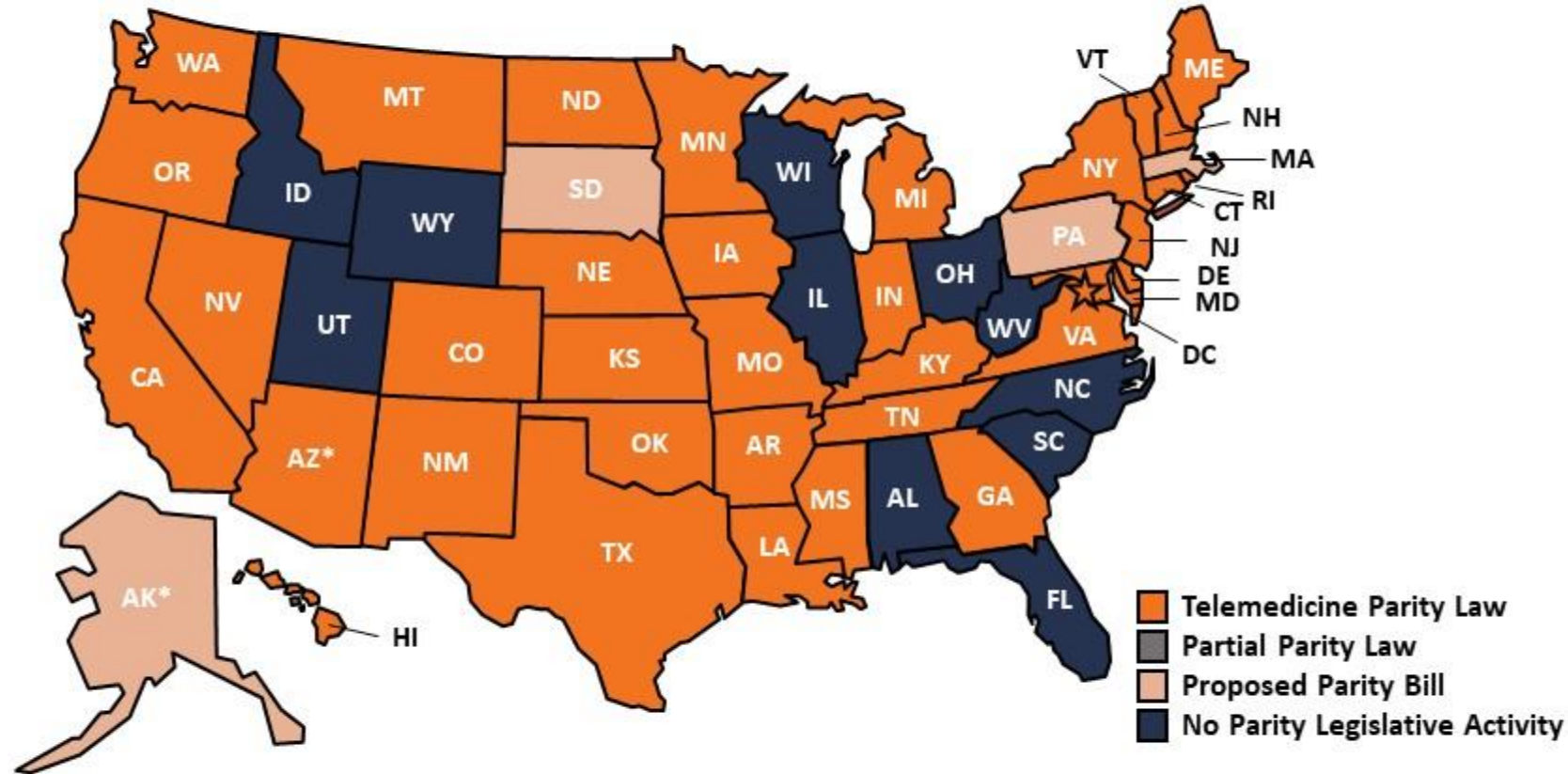


SPRING 2018





States with Parity Laws for Private Insurance Coverage of Telemedicine (2018)

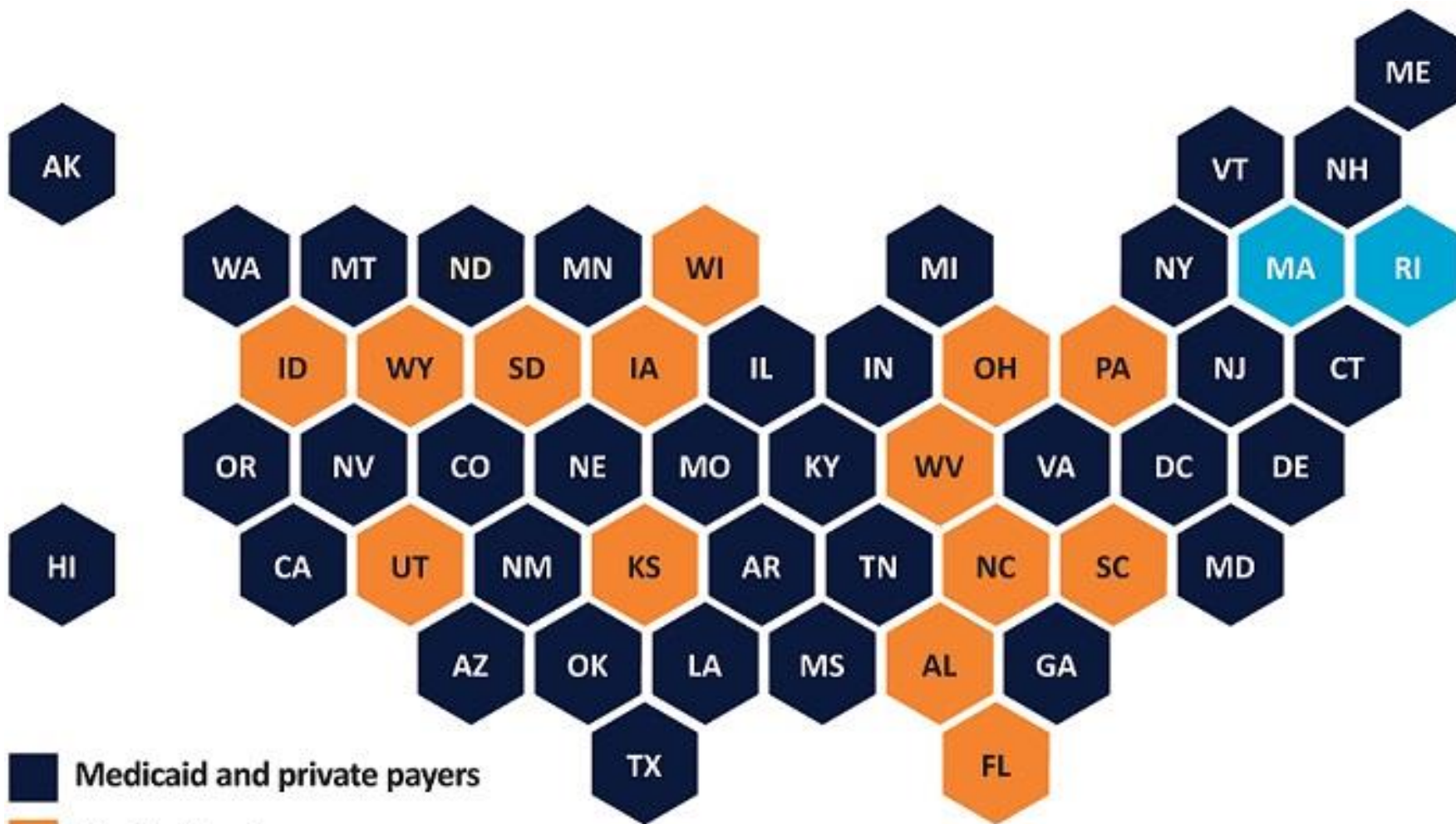


States with the year of enactment: Alaska (2016)*, Arizona (2013)*, Arkansas (2015), California (1996), Colorado (2001), Connecticut (2015), Delaware (2015), Georgia (2006), Hawaii (1999), Indiana (2015), Iowa (2018), Kentucky (2000), Louisiana (1995), Maine (2009), Maryland (2012), Michigan (2012), Minnesota (2015), Mississippi (2013), Missouri (2013), Montana (2013), Nebraska (2017), Nevada (2015), New Hampshire (2009), New Jersey (2017), New Mexico (2013), New York (2014), North Dakota (2017), 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 legislation: In 2018, Alaska, Massachusetts, Pennsylvania, and South Dakota

*Coverage applies to certain health services.





- Medicaid and private payers
- Medicaid only
- Private payers only
- No information

AS GU MP PR VI

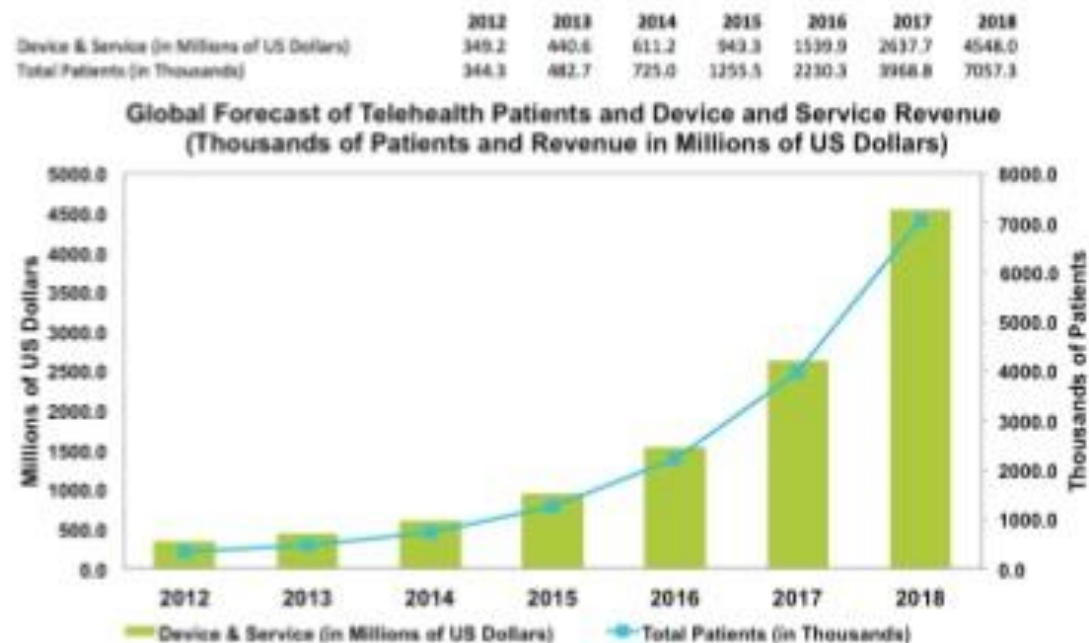
Note: Rhode Island's law will go into effect January 2018.

Source: NCSL, Center for Connected Health Policy, 2017



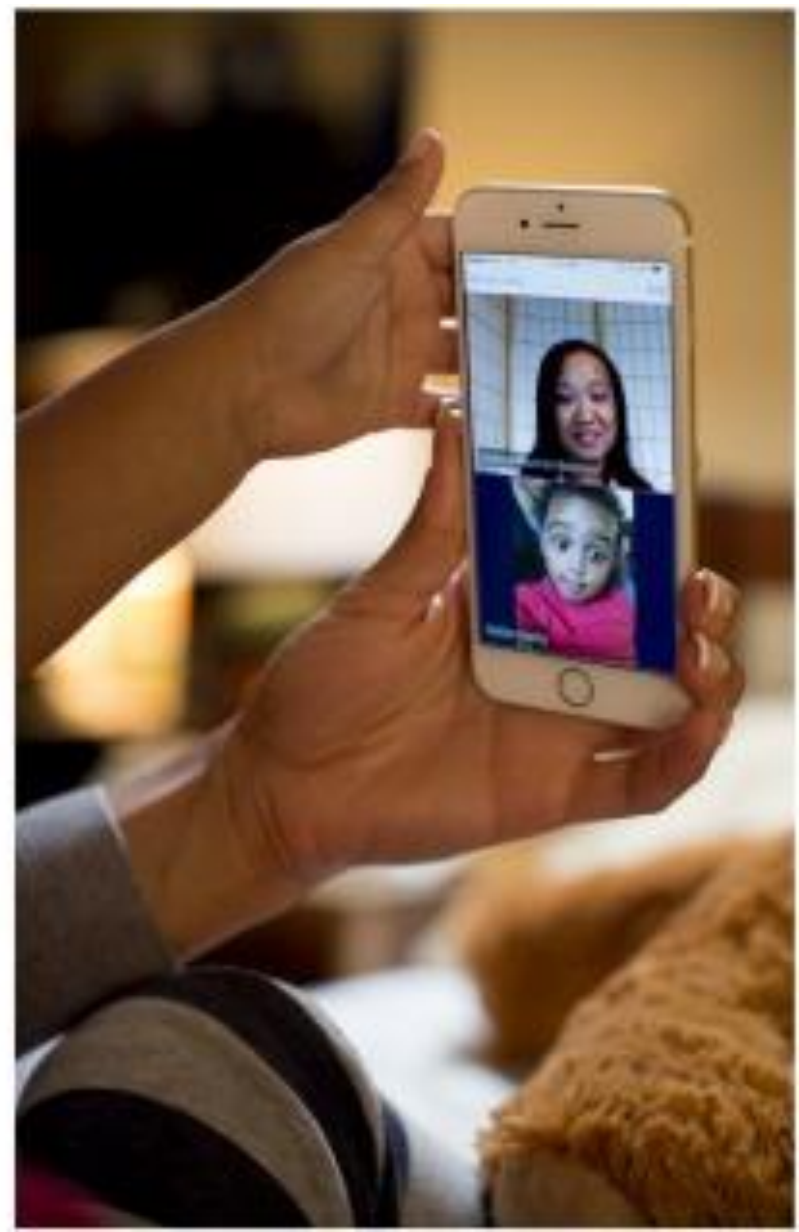
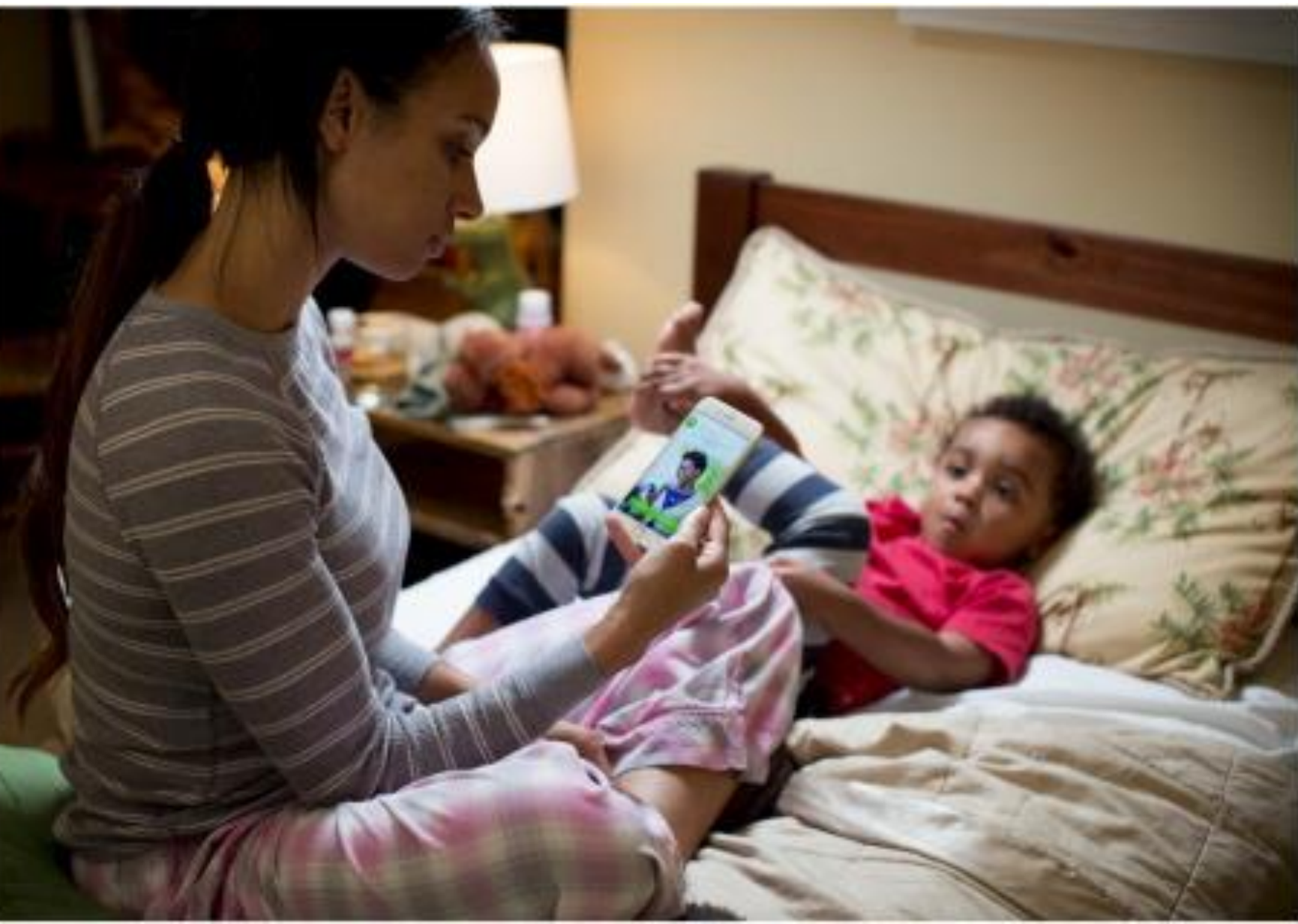
7 Global Key Trends Impacting Telehealth

1. Shift Away from reimbursement model to operational
2. It will be seen as the Standard of Care
3. More remote clinics
4. An exponential rise to virtual medical centers
5. mHealth ideas will expand
6. Individual Programs will diminish, but Networks of Experts will increase
7. Increase in Internet Bandwidth will open borders globally



4.5 Billion Globally by 2018







Courtesy Sarah Pack, University of South Carolina





July 27, 2018

Hailie Sensor Gets FDA Clearance for Additional Asthma Inhalers





Small Patients, Big Technology: Leading Children's Hospitals Are Transforming Pediatric Care with Telemedicine

This is Part III of a three-part series on telemedicine in care delivery. For more on telemedicine, see the [May](#) and [June](#) issues of Industry Edge.

By Audrey Doyle

Children's health problems—from autism and depression to chronic illnesses and life-threatening diseases—are on the rise in the United States. And so is the number of pediatric hospitals and health systems that are turning to telemedicine to help diagnose, treat and monitor these issues.

Through telemedicine, these facilities are extending the reach of their expertise into other hospitals, specialty clinics and the homes of patients in their communities and beyond. In doing so, they're facilitating access to safe, high-quality care, filling physician shortages,

AT A GLANCE

- The demand for pediatric physicians and specialists qualified to diagnose, treat and manage the myriad health conditions plaguing children today far outstrips the supply.
- To help address the multifaceted health



Jacob's Story

- Plumas Lake (Yuba Co) = 120 miles one way
- 2 bridges and 4 hours+ of travel for each visit
- One of 4 children, son of Caleb and Kami
- Generous soul, joke teller, Star Wars fan with a fear of heights (including bridges)
- *“Tele-med made our life much more peaceful towards the end when it became obvious that spending quality time was more important than driving and Dr's offices”*
- Died 10/11/17 at 14 years old.



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Telemedicine Helps Pediatricians Better Identify Mental Illness in Children



Rutgers partners with Essex County pediatricians to improve care for emotional, behavioral disorders

By [Patti Verbanas](#) | January 22, 2018



PUBLIC RELEASE: 15-SEP-2017

Telemedicine visits save families time and money

Study of sports medicine care highlights benefits of telemedicine

NEMOURS

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407-650-7676

<http://www.nemours.org> 



Outpatient Telemedicine

- Patient centered
- Increased quality
- Increased capacity
 - Project ECHO
- Reduced costs



Retail Based Clinics

- Retail Clinic Visits For Low-Acuity Conditions Increase Utilization And Spending
- 13.3 million Aetna enrollees in twenty-two cities; 2010–12 data
- 58% represented new utilization
- 42% represented substitution
- 7% replaced ED visits
- Associated with increased costs





4

To launch or scale up telehealth usage, prioritize video

Video adds significant value to all the top telehealth uses

Remote Patient Monitoring



Video allows patients to ask questions so small issues don't become major complications.

Virtual Interaction



Video builds personal connections between patients, families and care team members.

Mobile Health



Mobile video gives patients access to virtual care from any place, at any time.

Store and Forward



Video allows collaboration between care providers on complex cases.

**percentages of HDOs that are using video for telehealth or planning to use soon*



Please note that the Spring location is temporarily closed for remodeling.



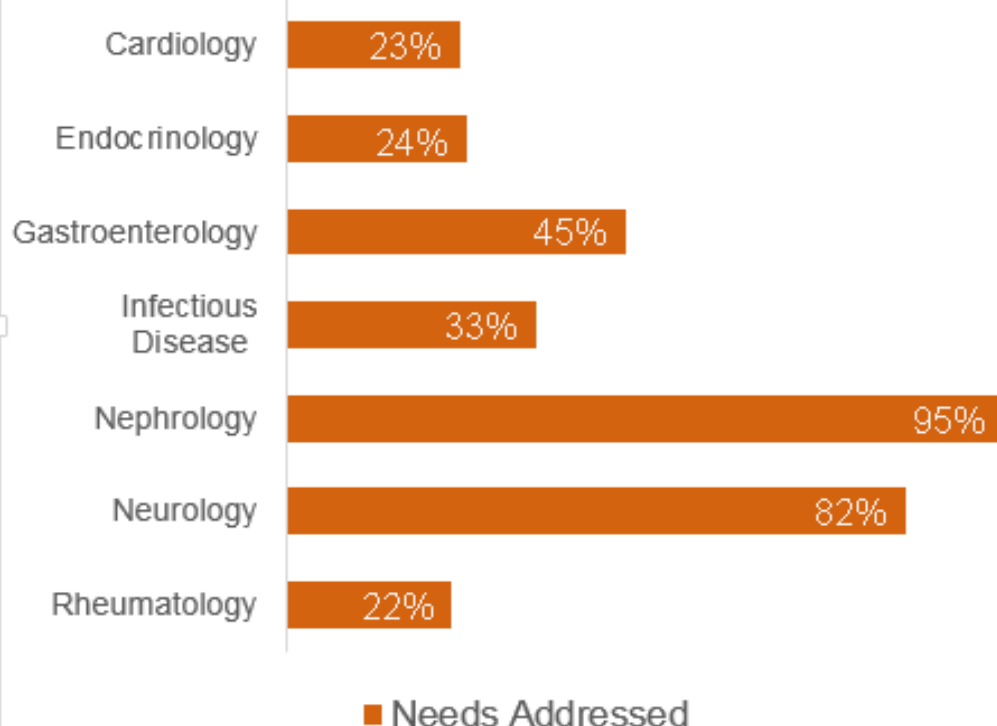
Virtual Pediatrics

Meet our Pediatric Providers Online within Minutes

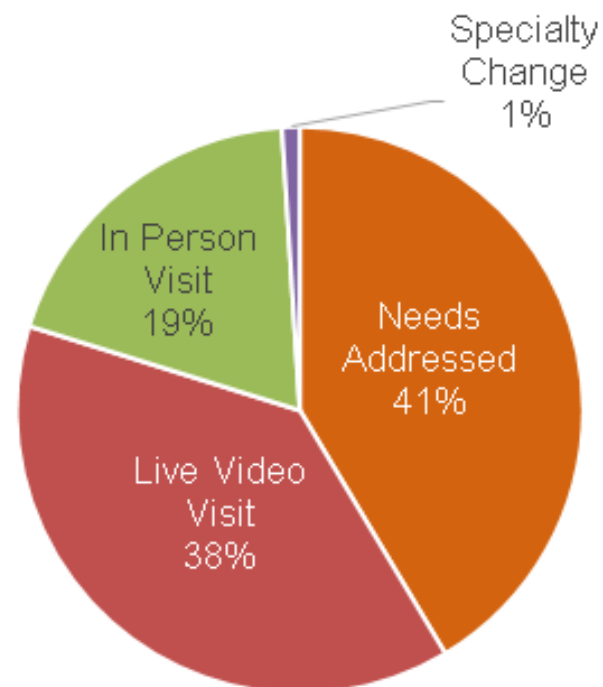


California Health & Wellness Telehealth Program

Percent of Cases Closed without Specialty Visit Needed

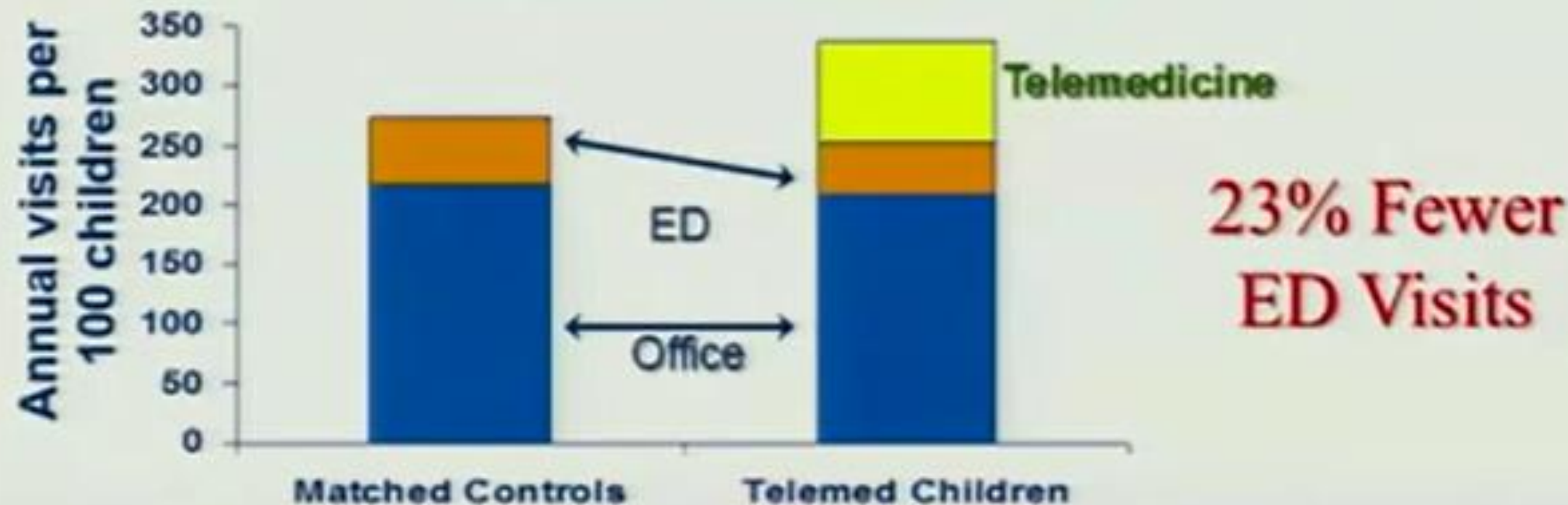


Outcomes by Type



Impact of School Based Telehealth

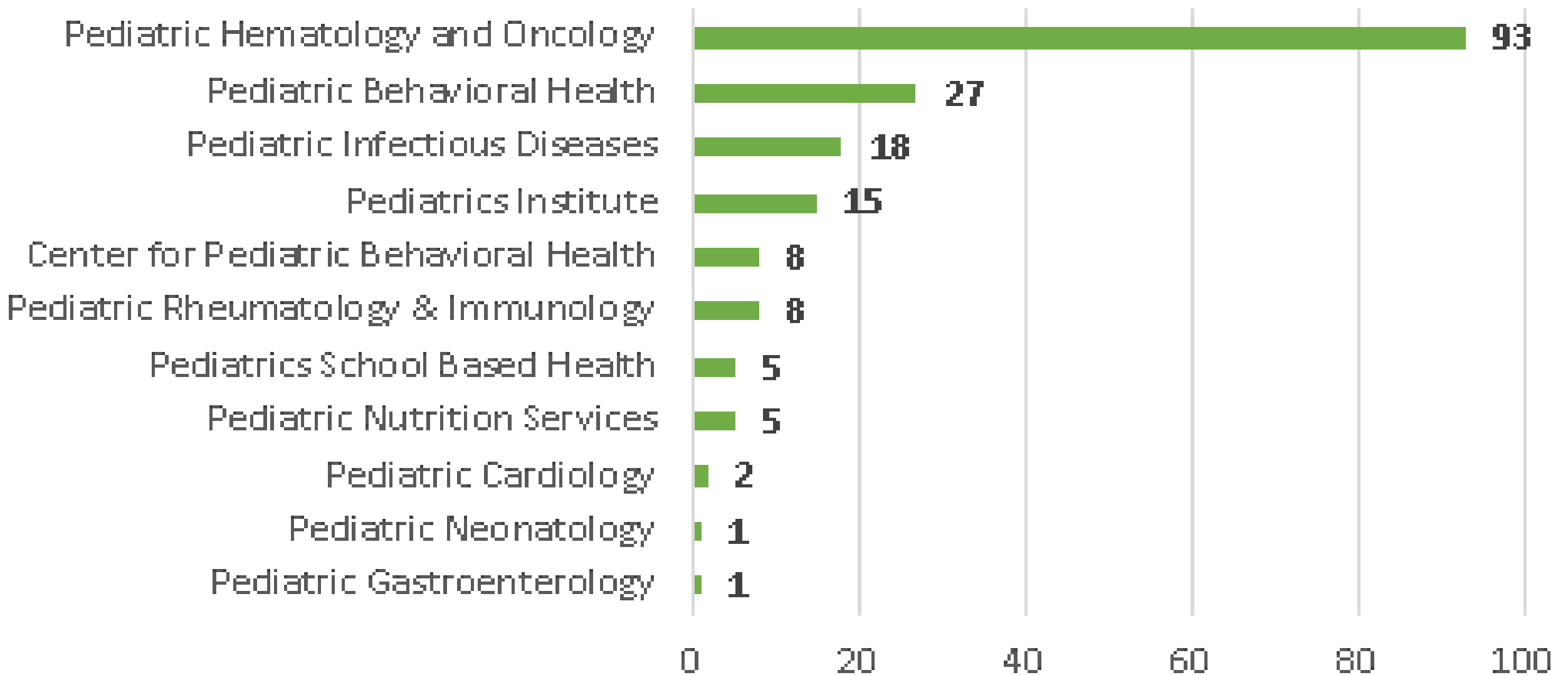
- 63% reduction in missed school days



McConnochie KM: Telemedicine reduces absence resulting from illness in urban child care: evaluation of an innovation. *Pediatrics*. 2005 May;115:1273-82.
McConnochie KM: Acute illness care patterns change with use of telemedicine. *Pediatrics*. 2009 Jun;123(6):e989-95.

Virtual Visit Volume YTD 2018

by Virtual Visit Practice





CoYoT1

Colorado Young Adults with T1D

- Team Clinic model
 - Individual time with doc
 - Group session
 - But needed new approach...
- Technology-driven + delivered
- Home telemedicine



Summary of CoYoT1 Outcomes

- Increased frequency follow up + engagement in care
- Improved psychosocial outcomes*
 - Strengths and resilience
 - Self efficacy
 - Communication
 - Distress
- Decreased cost
- High satisfaction - intervention and technology*

Space, Resources, Access, Efficiency

Traditional Clinic

- Space
 - 2 clinic rooms
 - Provider work room
- Resources
 - Scheduling
 - 2 medical assistants
 - Other prn
- Access
 - Clinic availability
 - Parking
- Efficiency
 - Check in + check out

Home Telehealth

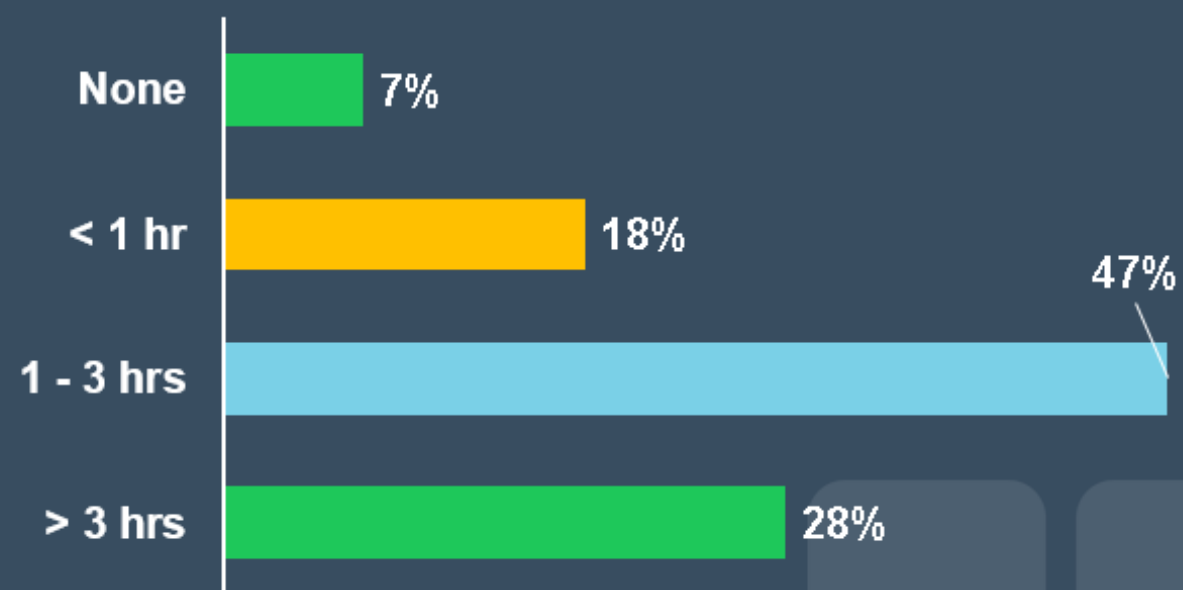
- Space
 - My office (patient home)
- Resources
 - Scheduling
 - Others prn
- Access
 - My schedule
- Efficiency
 - Golden!

Virtual Visits

Overall, were you satisfied with your visit on Express Care Online?



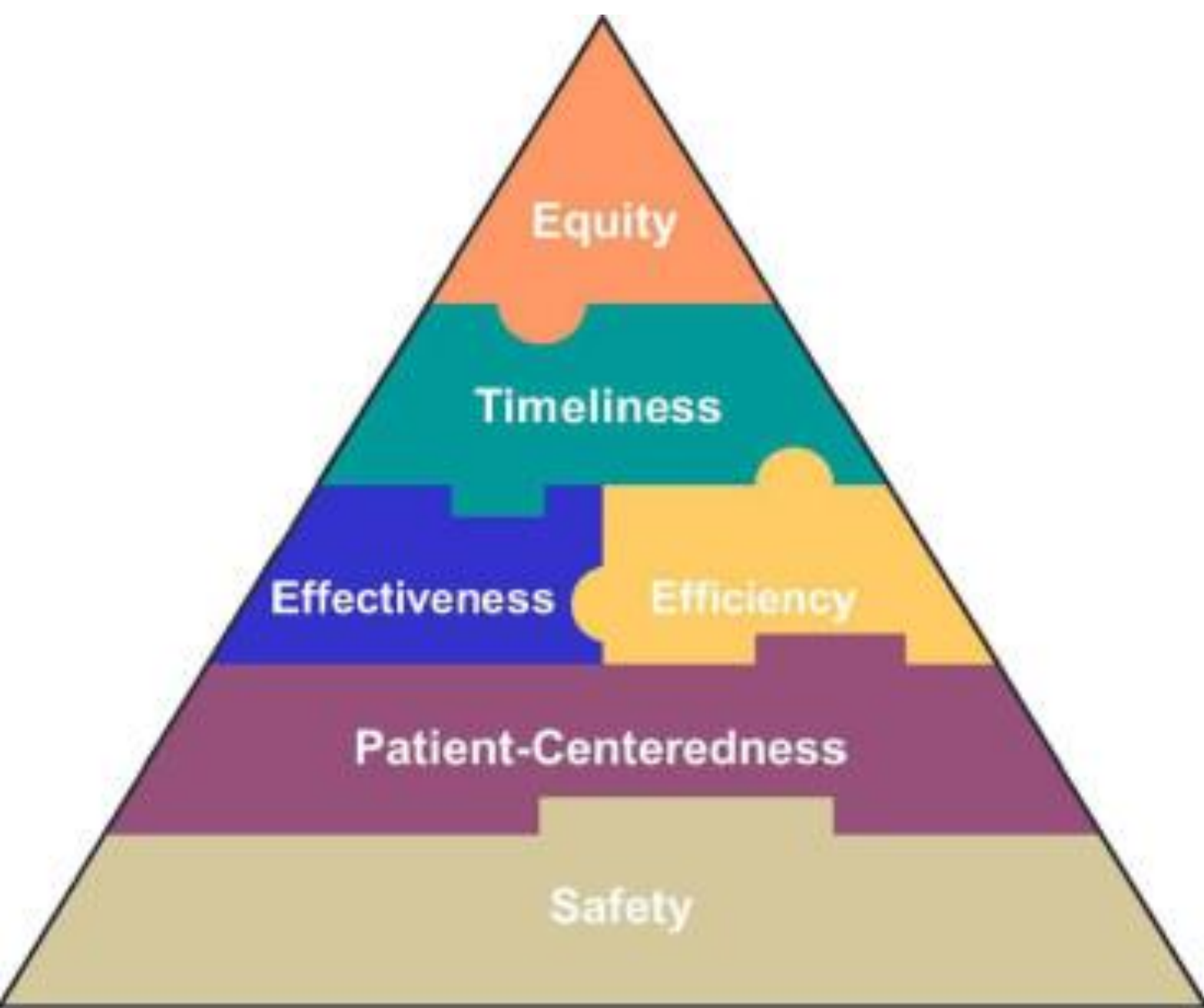
How much time did your online visit save you?



The Future of Pediatric TeleHealth

- Greater acceptance – Patient and Providers value payments vs volume cost savings for all
- Nurse-On-Call phone transition to Video Quality Monitoring with Big Data Access 24/7 & Holidays
- ED/Urgent Care/Office overflow programs
- Regionalization improves efficiency and quality
- Face to face vs face to computer
- Medical Home seamless data/record flow





The following definitions of each component adapted for the OPTIC study

Equity - no bias associated with access to continuum of care.

Timeliness – actions resulting in no unnecessary or unwanted delay.

Effectiveness - actions that align best available evidence with optimal outcome

Efficiency - actions which cause no overuse or underuse of resources, e.g. investigations, treatments, etc.

Resident Centered - actions informed by knowledge of and respect for diversity, values, choices, and needs of residents. Emphasizes care coordination, continuity, communication, education, and shared decision-making (Coleman)

Safety - actions that cause no unnecessary harm



Digital technology
will allow us to deliver
smarter, **more affordable**,
and **more accessible** care.

Tom Mihaljevic, MD





A drawing by a 7-year old showed the doctor with his back to his patient taking notes on the computer. WSJ Health Expert Robert Wachter says with technology there's a better way. PHOTO: THOMAS MURPHY, MD 2010





GIF



Cleveland Clinic Children's