Pediatric Telemedicine during COVID-19 and Beyond

Janna R. Gewirtz O'Brien, MD, MPH
Shawn Mahmud, MD, PhD

UNIVERSITY OF MINNESOTA
Driven to Discover®
Crookston Duluth Morris Rochester Twin Cities

Disclosures

No financial disclosures.

No off-label use of products.

We are not telemedicine researchers.

Learning Objectives

1. Describe the evolution of telemedicine practice before and since COVID in pediatric ambulatory settings.
2. Describe elements of best practice for effective telemedicine visits for common physical and mental health concerns.
3. Discuss advantages and disadvantages of telemedicine in Pediatrics.
4. Discuss strategies for creating a human connection via telehealth.
5. Propose applications for telemedicine after the COVID-19 pandemic in your practice.

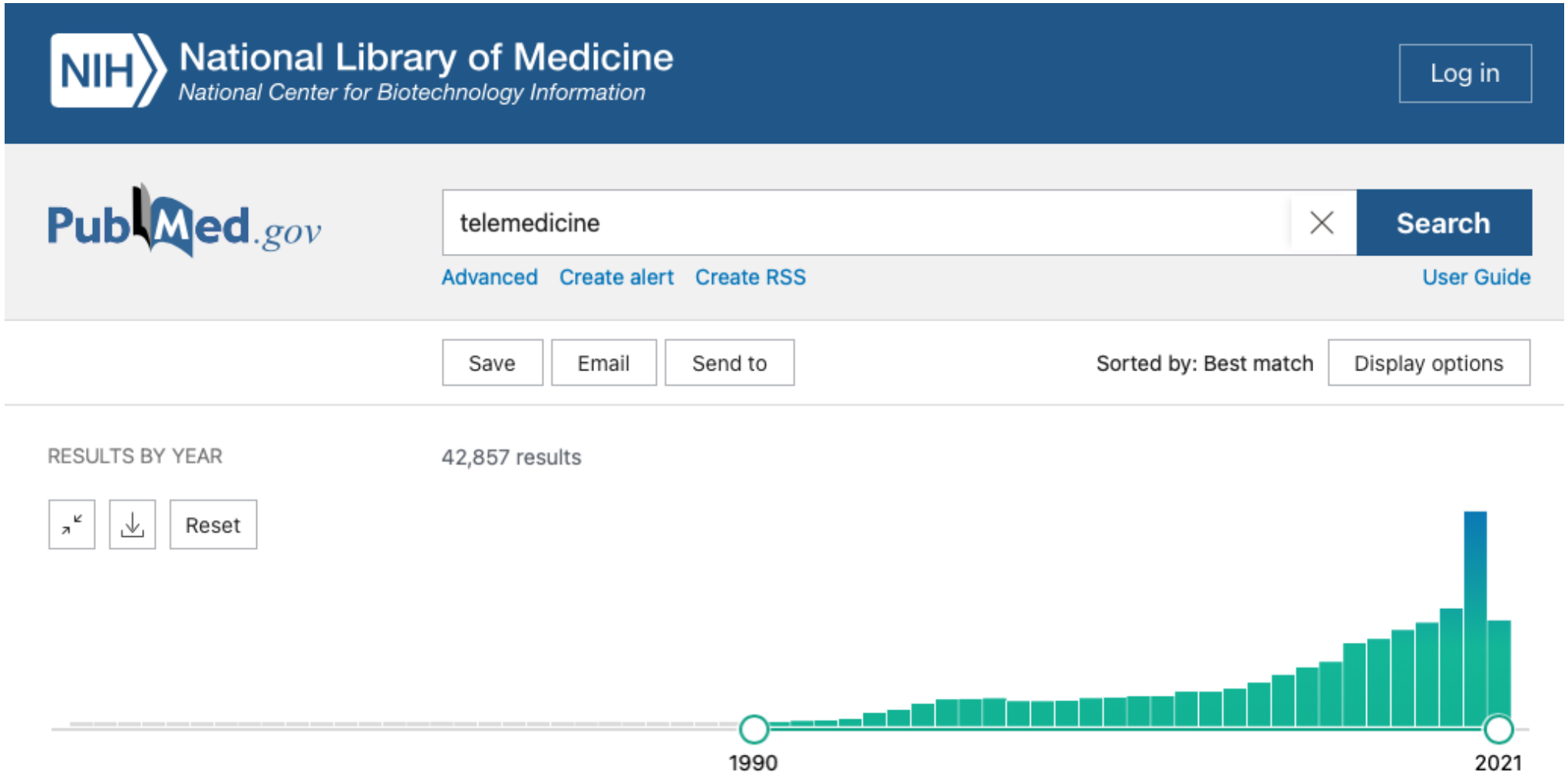
Photo by Daniel Gonzalez on Unsplash

Roadmap for our discussion

1. The pediatric telemedicine landscape
2. Pediatric telemedicine: How do we do it well?
3. Practical applications of telemedicine in pediatrics
4. The future of pediatric telemedicine
5. Questions and discussion

Telemedicine: Evolution Before and Since Covid-19

”Telemedicine” in Medical Literature




CAREVAN
MEDICAL
SYSTEMS
835-5955

?

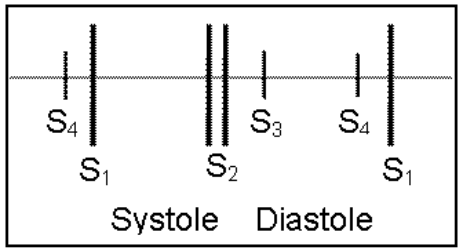

S4
S1
S2
S3
S4
S1
Systole
Diastole

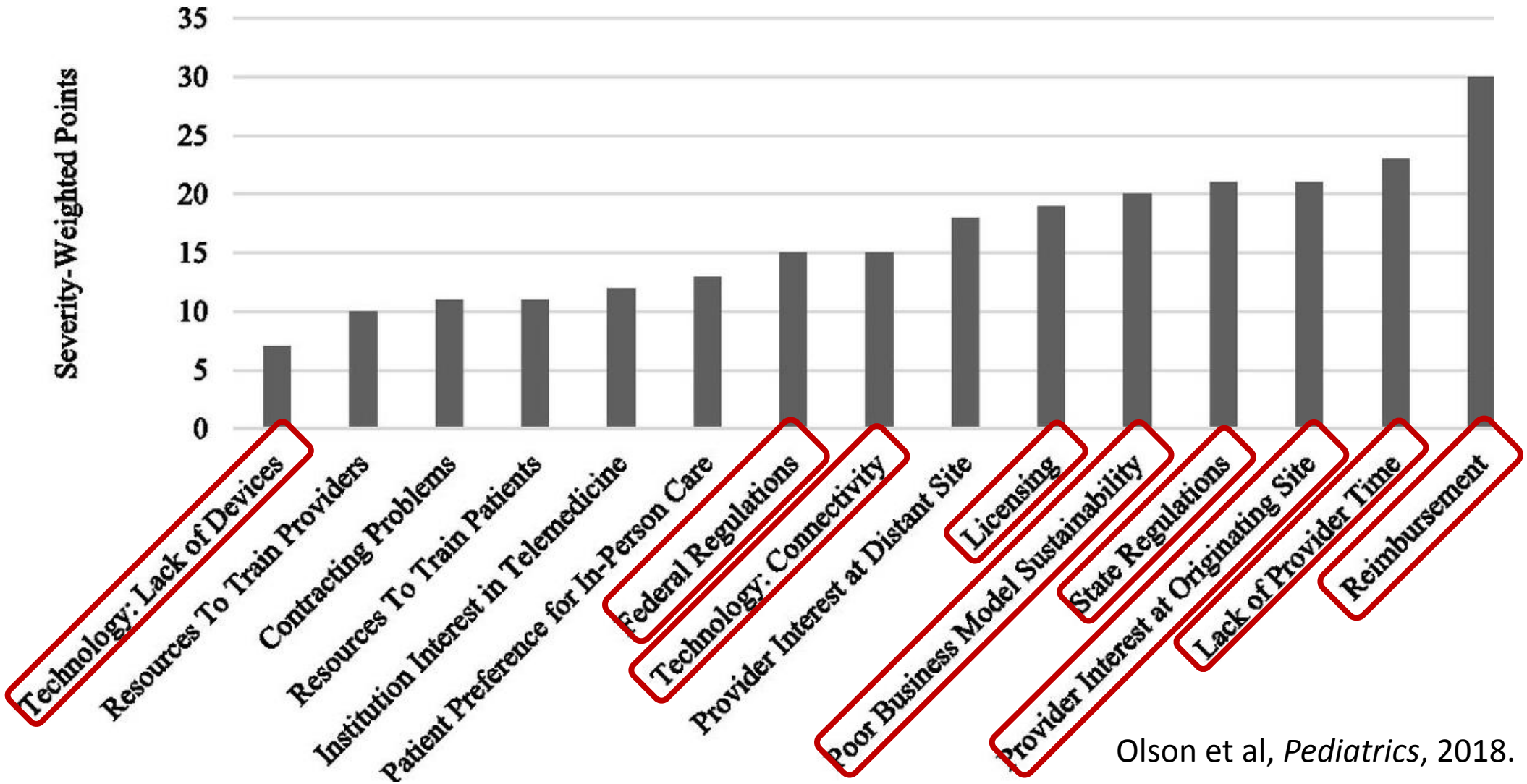
Fig 1. The personal telemedicine unit.

Pediatric Telemedicine: The Past

- Rural health
- School health
- Teleconsultation (subspecialty care)
- Certain specialties: Psych, ICU*, cardiology, neuro, endo, OBGYN, derm
- Times of emergency (Australia, Asia)

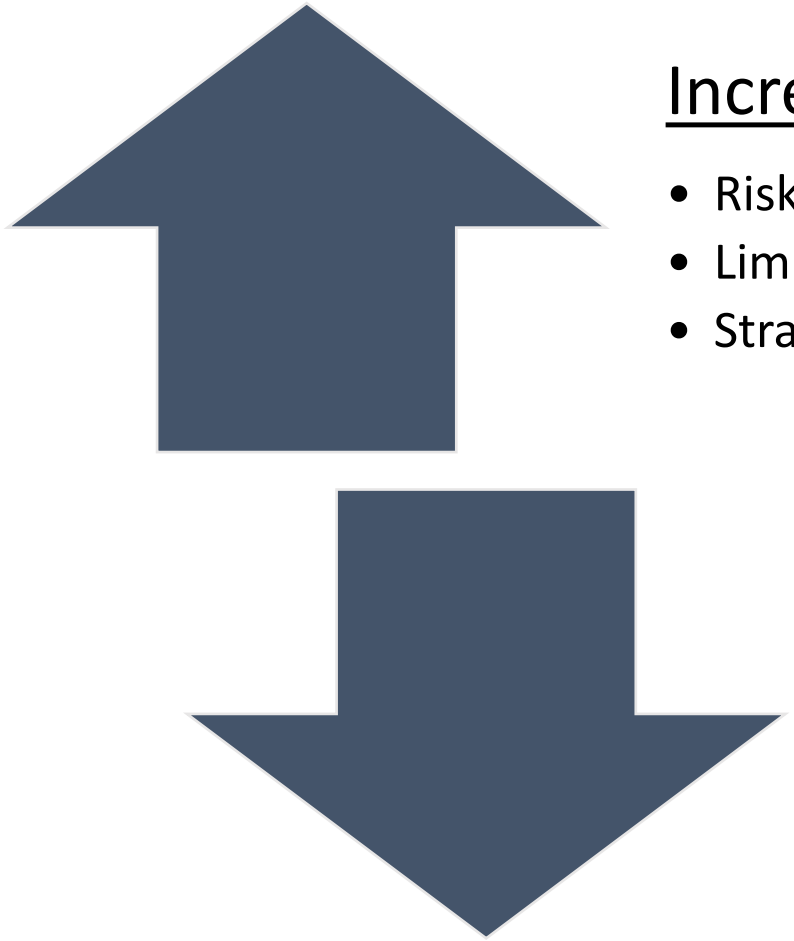
Bian et al, *JAMA Pediatrics,* 2019; Olson et al, *Pediatrics*, 2018; Donohue et al, *Children (Basel)*, 2019.

Barriers to Telehealth: The System View



Olson et al, *Pediatrics*, 2018.

Telemedicine: the present



Increased need:

- Risk of COVID-19 exposure for patients and providers
- Limited availability of PPE
- Strained systems

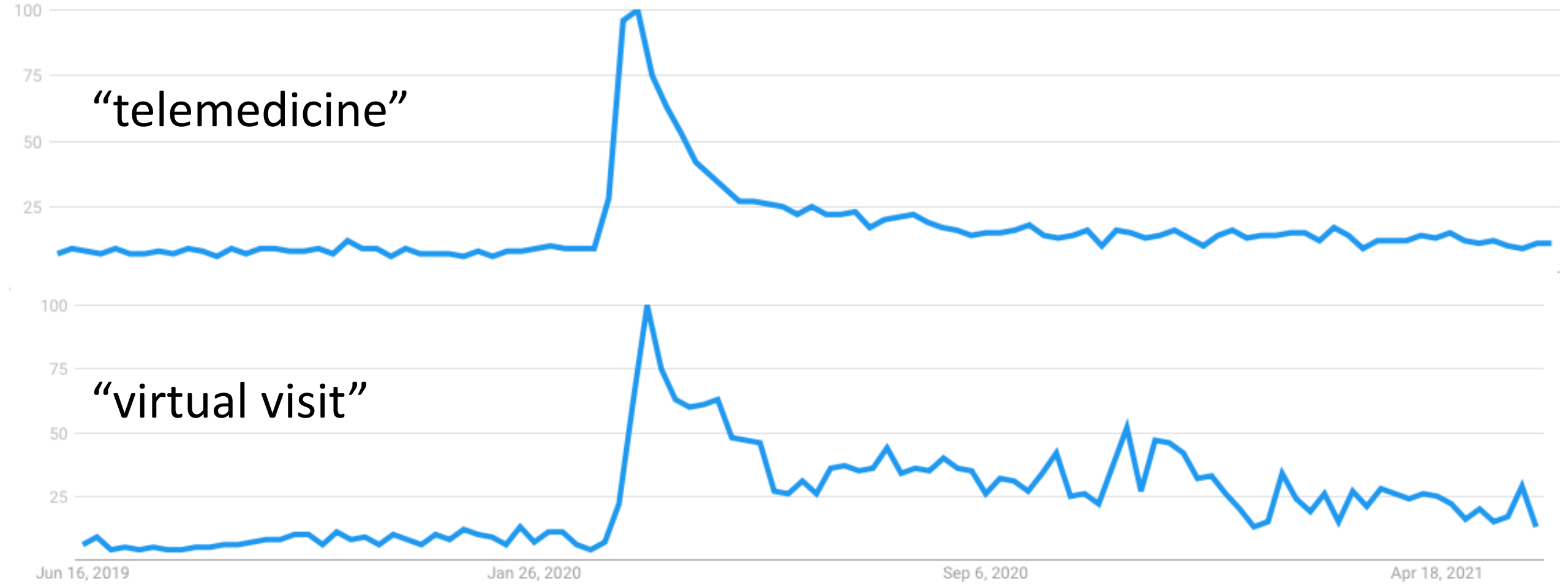
Reduced barriers:

- Reimbursement for video and audio
- Loosened technology restrictions
- Increased access (accept new patients, all providers)
- Rapid integration of technology
- Institutional and professional organization resources

[AAP Guidance on Telehealth Payer Policy in Response to COVID-19]

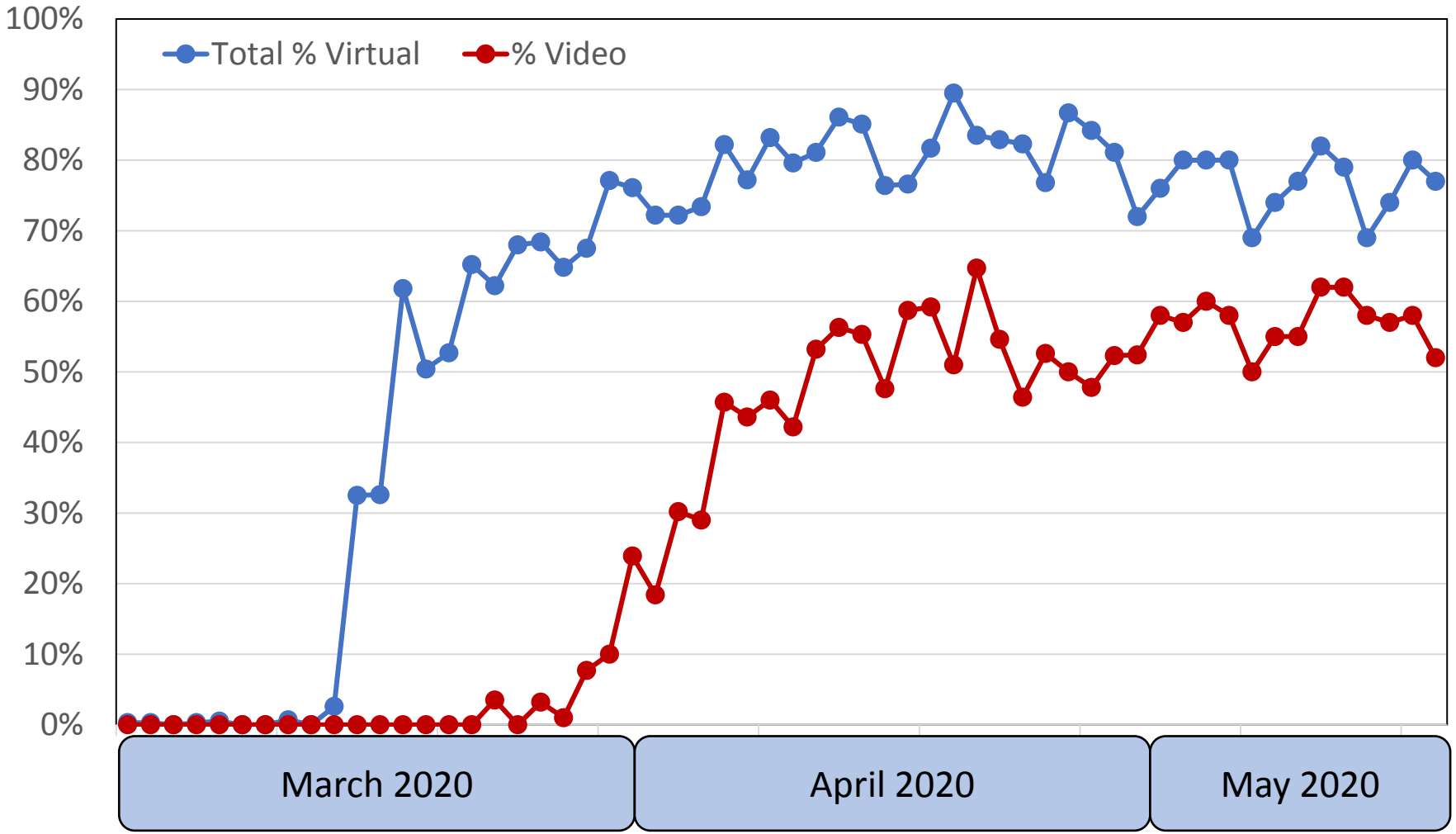
→ Explosion of telemedicine

Trends in Internet Searches (Jun 2019-present)



Google Trends | Explore

Virtual Care in our Ambulatory Pediatric Clinics



Discovery, Explorer, Journey, Ridges, Voyager, Woodbury

Confidence in the Overall Encounter

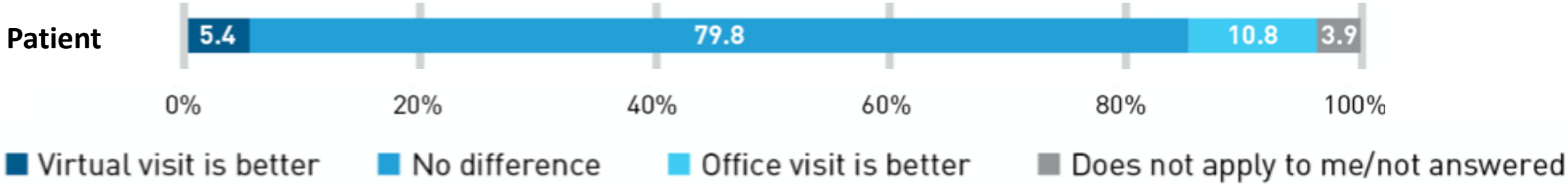
Physicians in cardiology, neurology, psychiatry, oncology, and primary care trained in conducting virtual visits

→

Virtual visits offered to established patients for follow-up of chronic medical problems

→

Surveys completed:
- patients (n=254, 26% pediatric)
- providers (n=61)



MASSACHUSETTS GENERAL HOSPITAL
TELEHEALTH

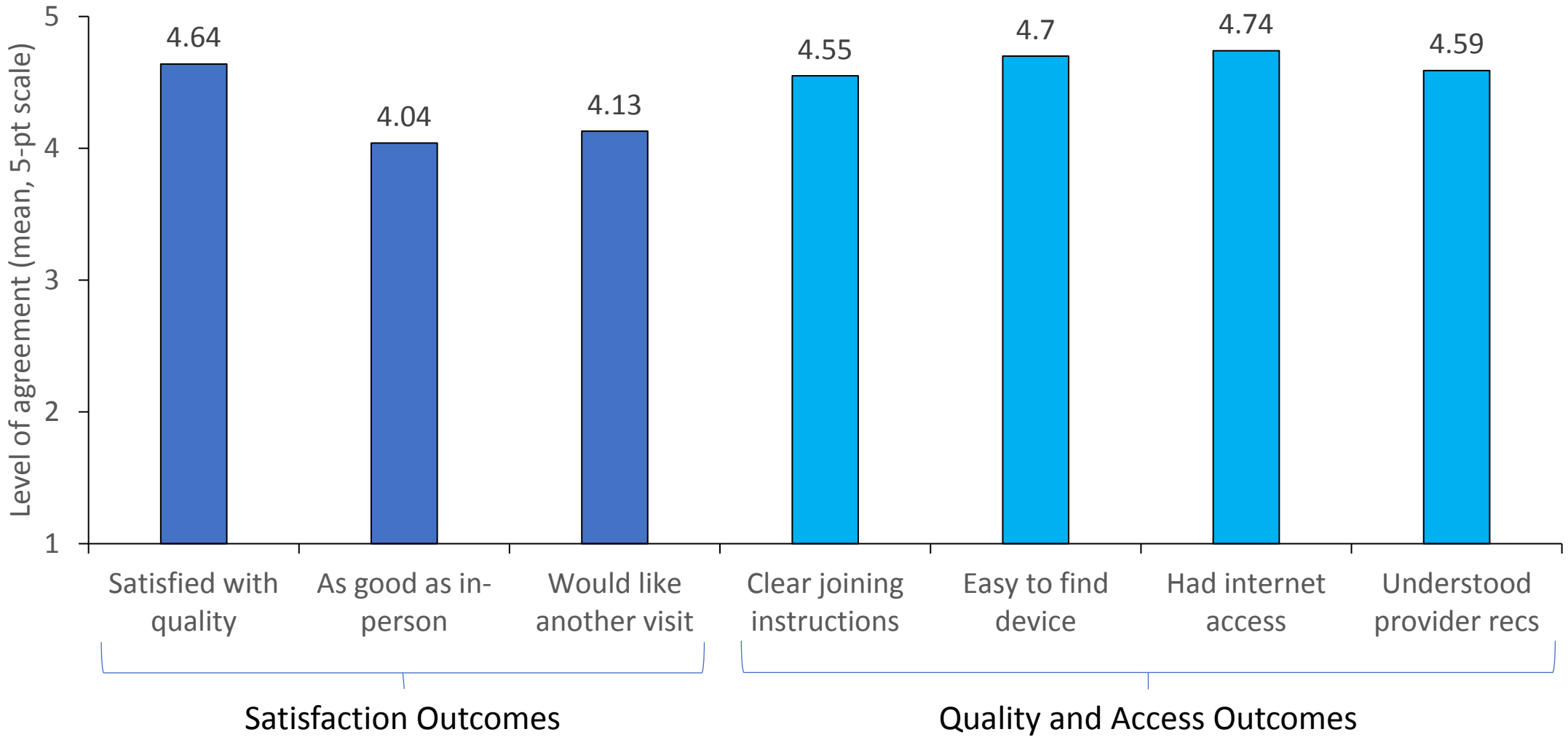
Pediatric Patient and Provider Satisfaction During Covid-19

- Integrative review of 108 articles featuring questionnaire-based data surrounding patient satisfaction with telemedicine during Covid-19
- 18 articles met basic criteria for review
- In 16 of 18 articles, the majority of patients were “highly satisfied” with telemedicine experiences and would consider its use going forward
- In 4 of 5 articles that addressed provider satisfaction, most were satisfied

Int J Nurs Stud Adv. 2020 Nov;2:100008.

The Adolescent Experience

(n=71 youth, ages 12-21)



Telehealth: The Patient's View

What went well?

They took good care of us.

as much as I like the in-person

It was very helpful to be able to help my son at home.

connecting better with the provider - increased listening of the provider, more focused on the patient

doctor will be more attentive to the patient and appreciate the time together

can focus more on the health and health concerns rather than transportation, illness, etc.

better when connecting between doctor and patient - just need to make sure you are attentive of the time you have in your appointment

The doctor was very diligent with time and letting me come late if I needed to. She cared about us and would like to thank her.

Easier to schedule appointments

My mom liked that she got to do the telemedicine visit as well.

Zoom was convenient - I hope it continues

you do not have to go anywhere!

Accessible

Having a faster response from the system. Having the option to talk with a provider faster.

convenient in the middle of work, can make it happen even 5 minutes before the appointment

Nice not having to worry about safety

Felt safer

Safer, no need to drive to the hospital

a much better and safer option as an immunocompromised person

Saves time

Zoom is a great resource. Save lots of time. There's times you can't go to the doctor. I would like zoom calls to continue past the pandemic. Our doctor is great. We would like to continue seeing our doctor via zoom.

video, quick and easy

Appointment was shorter than usual

We got attention fast.

Having a URL in a text message was super nice and easy

What could have gone better?

It would have been better to have done it in person.

not in a good spot to talk about things

cultural barriers that may be more "white centered"

Confusing. Sometimes the communication is rough

Doesn't have contact information to figure out an issue

"A little bit awkward"

Harder to have a more private conversation, touch deeper

Poor follow up and check-in on patients

Possible connection issues, but none on our side.

hard to make a personal connection

Not as personal as if I were talking to them in person

"I think its important to always have interpreters, always."

internet connection issue, doctor did not get the full information

If theres something physical, like a lab, have to go separate.

The physical exam is more effective in person.

Being in person was good because I felt like, if there's things the doctor needed to check out, its easier. Better if in person and have examples.

the interpreters made us wait a few times

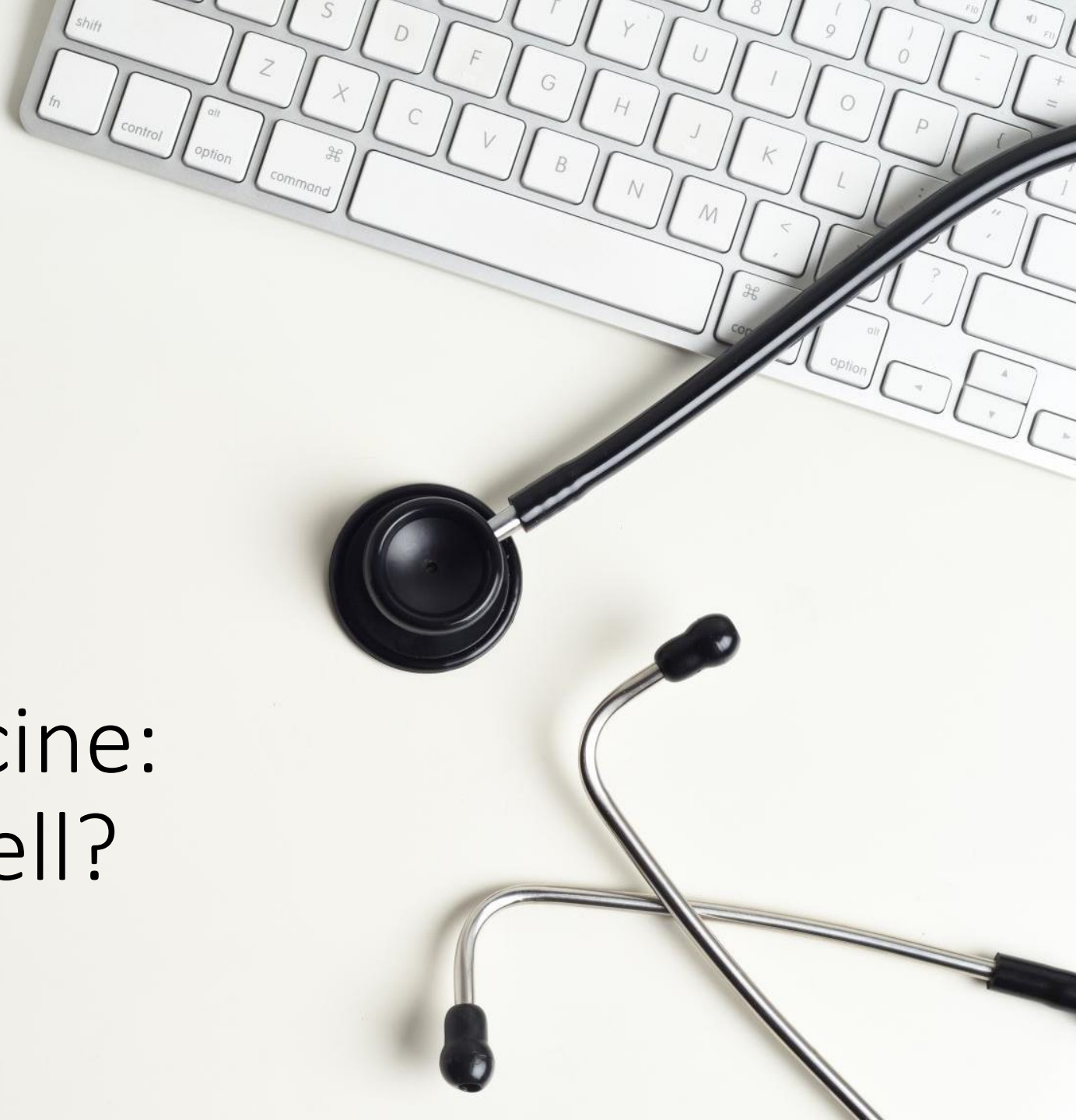
Sometimes we had a bad wifi connection.

Reflection on Telehealth

What has gone well with your clinical practice? Consider patient, family and provider perspectives.

- Please respond in the chat

Pediatric Telemedicine: How do we do it well?



Core Best Practices for all Virtual Encounters

Ensure patient consent, privacy, and confidentiality. The “site” is the *patient’s* physical location.

Have an appropriate triage plan in place and ensure patients that a face-to-face consultation can be arranged if needed.

Ensure that the virtual visit follows the relevant standards of care for the diagnosis and management of any condition addressed.

<u>An addition:</u> Ensure equity in telehealth access and delivery.

Olson et al, *Pediatrics*, 2018.

Photo by Perry Grone on Unsplash

Centering Equity

The potential? Improved access to care

The risk? Further perpetuating inequities

- Digital literacy and access
- Limited health literacy
- Language barriers
- Discrimination during telehealth care

Nouri et al, *NEJM Calalyst*, 2020.

Barriers to Telehealth: The Patient View

Device access

Wifi/broadband access

Overly complex systems

Lack of private space for visit

Limits to virtual care (exam, labs)

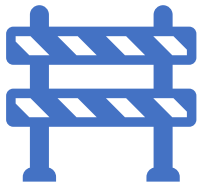
Language barriers/interpreter access

Unclear provider communication

Financial barriers

Katzow et al, Pediatrics, 2020; Gewirtz O'Brien et al, unpublished, 2021

Promoting Equity in Telehealth

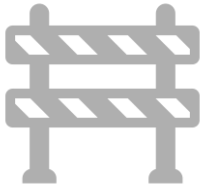


Recognizing and navigating barriers to access

“ I think an important step to take moving forward would be to make sure that it’s accessible to more people…ensuring that people who people who want to use telemedicine are able to get connected and have right devices and can actually access telemedicine so they are able to participate as well”

– Somali adolescent

Promoting Equity in Telehealth



Recognizing and navigating barriers to access

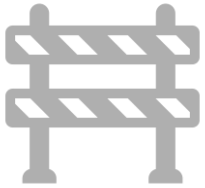
Universal precautions for health and digital literacy

"I think helping parents who might not understand how zoom works get adjusted to that before having [telehealth] appointments would help, and also kind of informing them about how the process goes…those kind of things would help a lot with improving the experience"

- Somali adolescent patient

Promoting Equity in Telehealth

“ It’s very important for me to have an interpreter present during an appointment…It is important to me to be able to understand my doctor, and for me to be able to express my needs to the doctor.”



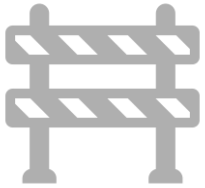
Recognizing and navigating barriers to access

Universal precautions for health and digital literacy

Access to quality interpreters

Promoting Equity in Telehealth

“ It’s important for providers to respect their patients as people , their patient's beliefs and who they are.”
– Adolescent patient



Recognizing and navigating barriers to access

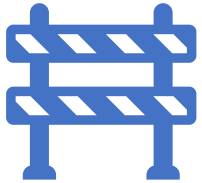
Universal precautions for health and digital literacy

Access to quality interpreters

Culturally competent care

“ Having providers be more culturally aware might help reduce experiences where people feel discriminated against”
- Somali adolescent patient

Promoting Equity in Telehealth



Recognizing and navigating barriers to access

Universal precautions for health and digital literacy

Access to quality interpreters

Culturally competent care

Katzow et al, Pediatrics, 2020; Gewirtz O'Brien et al, unpublished, 2021; Nouri et al, *NEJM Calalyst*, 2020.

Virtual Visit Communication: Tips for Creating a Connection

Photo by Jackson David on Unsplash

Virtual Visit Communication: Tips for Creating a Connection

Tip 1:
Orient the patient and family.

Virtual Visit Communication: Tips for Creating a Connection

Tip 2:
Ensure privacy.

Virtual Visit Communication: Tips for Creating a Connection

Tip 3:

Tell them where you are and what you're doing.

Virtual Visit Communication: Tips for Creating a Connection

Tip 4:

Communicate clearly and confirm understanding.

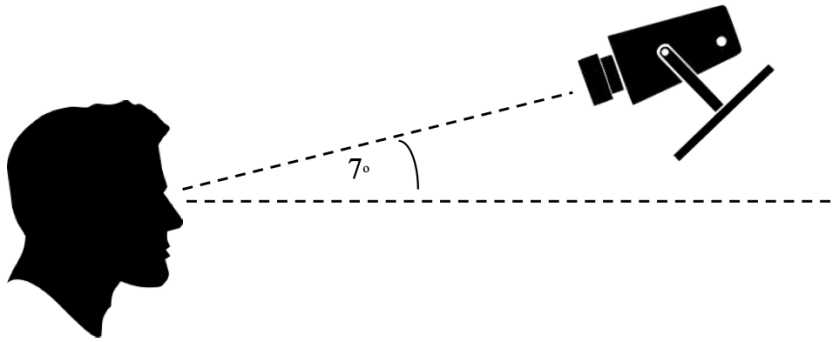
Considerations for Teen Telehealth

1. Get to know them & their space.
2. Prompt time alone in private place.
3. Assure confidentiality.
4. Ask permission for sensitive topics.
5. Engage with parents and family.

Photo by Sharon McCutcheon on Unsplash

Technical Tips

Technical Tip: Webcam Position & Eye Contact

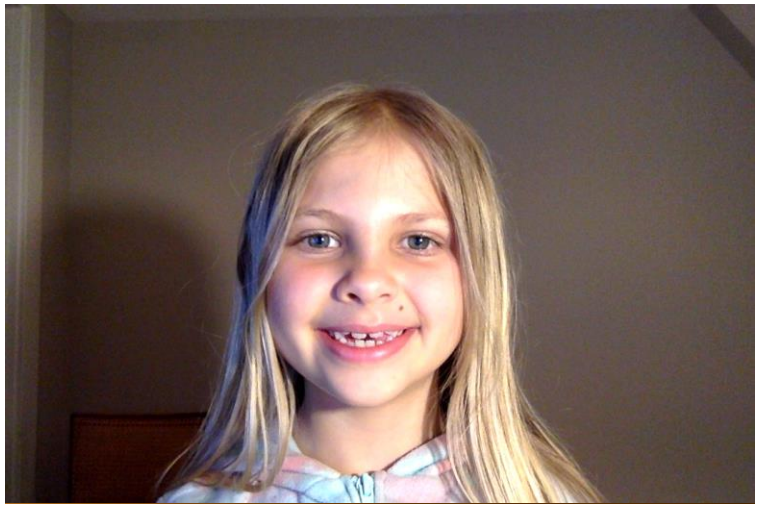


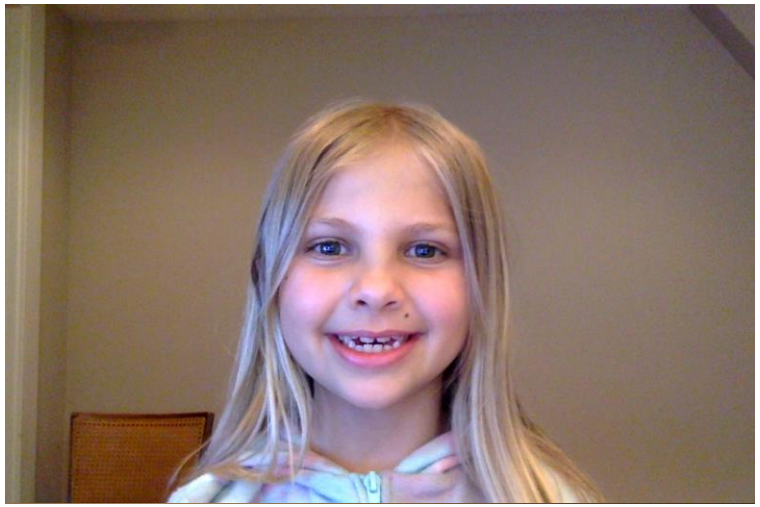
Tam T. *et al*. (2007) *J Telemed Telecare*

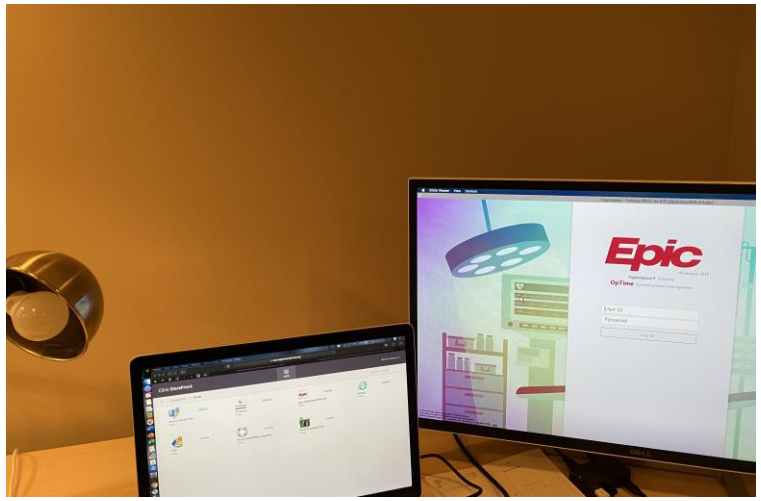
Technical Tips: Home Office Set Up

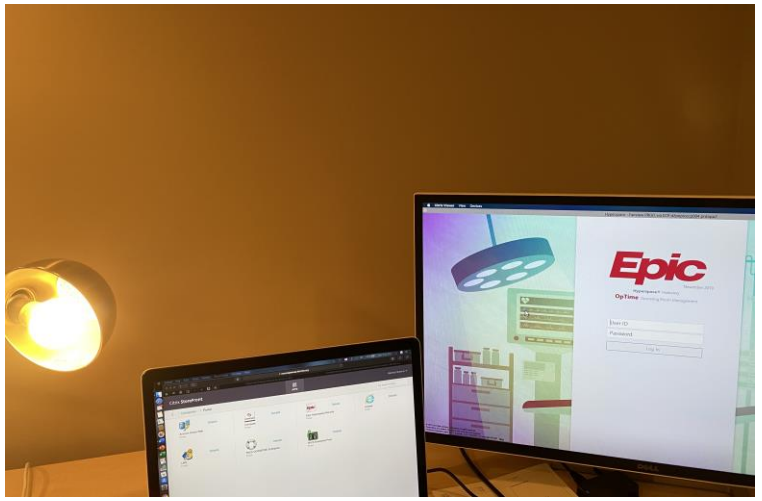
Ideal	Avoid
Well-lit room	Open door in background
Indirect natural light	Moving objects (curtains, nearby trees)
Neutral wall colors	

Technical Tip: Indirect Lighting

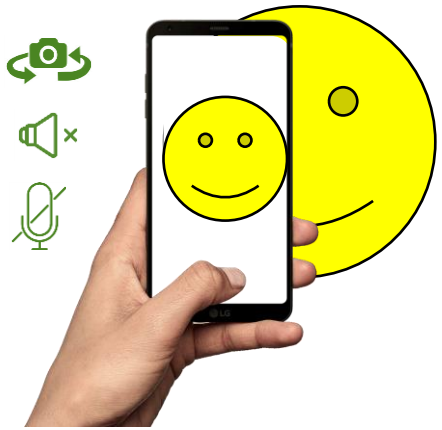


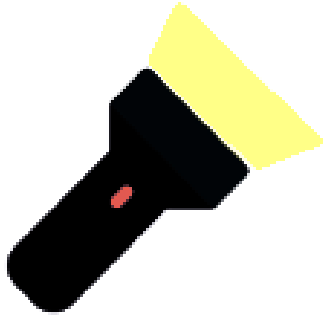


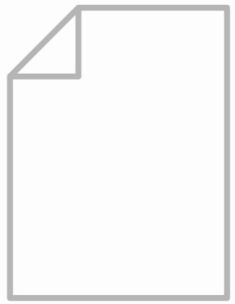




Tools to Enhance the Virtual Exam







Technical Tips: Connectivity and Platforms

- Optimize internet connection
  - Speed and stability (minimum 3 Mbps)
  - Hard-wired connections may be more stable if available

- AmWell
  - Send a text invite to yourself at the start of the call for quick reconnect
  - Dual monitor set-up with Epic works well

- Doximity
  - Handheld devices only. Both users need an app.
  - Good, simple backup

- doxy.me
  - Web-based; No app required

Example Virtual Exam

- GENERAL: Well developed and well appearing
- HEAD: Appears normocephalic, atraumatic
- EYES: PERRL, EOMI, gaze conjugate
- NOSE: Nares unobstructed, breathing through nose
- MOUTH: Membranes moist, no visible oral lesions, pharynx normal
- NECK/LYMPHATIC: [Patient reports no tenderness or swelling in the regions of the anterior/posterior cervical chains]
- RESPIRATORY: Comfortably breathing room air, no audible breath sounds, equal chest rise, speaking in complete sentences
- CARDIOVASCULAR: [Parent-reported pulse 90]. Capillary refill 2-3 seconds in fingers. Easily does 15 jumping jacks.
- ABDOMINAL: Non-distended. [Patient denies tenderness when palpating deeply in all quadrants].
- MUSCULOSKELETAL: Full active range of motion in all joints. Normal gait.
- NEUROLOGIC: Strength, tone, coordination and cranial nerve function grossly normal. Alert/oriented with fluent speech.
- DERMATOLOGIC: No rash visible on the face, anterior neck, forearms or hands.

Template available with .videoexamvirtual

Example Virtual Exam Limitations

- GENERAL: Complete vital signs
- HEAD: Is normocephalic, atraumatic
- EYES: PERRL, EOMI, gaze conjugate
- EARS: TMs gray/opaque bilaterally with no effusions or erythema
- NOSE: Nares unobstructed, breathing through nose. No nasal ulcerations.
- MOUTH: Membranes moist, no visible oral lesions, pharynx normal
- NECK/LYMPHATIC: No lymphadenopathy in the cervical, supraclavicular, or axillary chains.
- RESPIRATORY: Lungs clear to auscultation bilaterally with normal respiratory effort
- CARDIOVASCULAR: Regular rate/rhythm with no murmur. Capillary refill 2-3 seconds in fingers.
- ABDOMINAL: Non-distended, non-tender in all quadrants, normoactive bowel sounds.
- MUSCULOSKELETAL: Normal palpation and passive range of motion in all joints. Normal gait.
- NEUROLOGIC: Strength, tone, coordination and cranial nerve function grossly normal. Alert/oriented with fluent speech. Normal DTRs, sensory exam.
- DERMATOLOGIC: No rash visible on complete skin exam.

“Modified” Pediatric Gait-Arms-Legs-Spine (pGALS) Exam

Foster HE et al Ped Rheum (2013)

Identifying Pathology in Pediatric Rheumatology Clinic via Telemedicine

- New virtual outpatient consultations (4/6 – 5/4/2020): 32
  - *With clear abnormal exam findings*: 22 (69%)
  - *Resulting in new rheumatic Dx or planned follow-up*: 16 (50%)

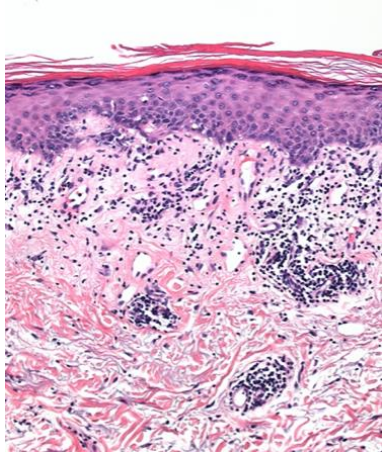
“Store and Forward” (Asynchronous) Triaging for New Dermatology Visits

- Family sends images via MyChart
- Basic health history entered by MA
- History/images reviewed by MD
- Patients triaged to in-person visits accordingly

3/27/20

4/6/20

4/9/20



Dermpedia

S. Maguiness, MD

Positive Examples in Pediatric Subspecialties

- Pulmonology: Noting benefits for patients with trach/vent dependence who must travel with a lot of equipment. Currently providing telemedicine care to a child in the hospice setting.
- Nephrology: Watching patients check BP with home cuff. Gaining insight into medication adherence. Noting benefits for those on the periphery of the large catchment area.
- Gastroenterology: Seeing benefits in intestinal rehabilitation patients: video usually sufficient for a good exam of central line and G-tube sites. Also excellent for multidisciplinary care – coordinated video visit with GI, oncology, and surgery.

“Surprise Benefits” of Telemedicine

- “The UNC Feeding Team, an interdisciplinary team within the Division of Pediatric Gastroenterology at the NC Children's Hospital in Chapel Hill, NC is made up of Pediatric Nurse Practitioners, Speech and Language Pathologists, and Registered Dietitians. In our experience, **telemedicine visits have improved communication and coordination between providers and patients, increased the range of observation to include the home environment, encouraged greater caregiver participation and broadened access to care across the state**.”

Cole, KF. J Pediatr Gastroenterol Nutr 2020 Sep;71(3):e102

Practical Applications of Telemedicine in Pediatrics

When to Consider Telemedicine Use

- Mental health: Depression, anxiety, ADHD
- Contraceptive counseling/initiation
- Routine follow up for well-controlled chronic conditions (e.g., rheumatic disease, IBD, asthma, sickle cell disease, diabetes, thyroid disease) – *vitals, labs and/or imaging may be needed*
- Dermatologic concerns

When is Telemedicine Not Appropriate

Clear Examples:

- Chest pain, shortness of breath
- Fever in an immunocompromised patient
- Immediate post-operative follow up after repair of complex CHD

More debatable:

- Well-child visits
- Acute febrile illness in otherwise well child? Initial triage, it depends?
- Eating disorder care

Safety of Telemedicine: Pediatric Urology

Table 2. *Comparison of measured results*

	Virtual Visit	In-Person Visit	p Value
Operational characteristics:			
% Appointment compliance	88.4	90.1	0.8327
Median mins waiting room time (IQR)	7 (2—13)	19 (11—30)	<0.0001
Median mins physician face time (IQR)	5 (4—7)	4 (3—7)	0.0104
Median mins total visit duration (IQR)	13 (8—21)	31 (20—44)	<0.0001
No. clinical outcomes:			
Additional in-person clinic visit	0	3	0.1110
Emergency department visit	3	3	1.0000
Readmission	0	1	0.4831

Finkelstein JB et al J Urol. 2020 Jul;204(1):144-148

A closer look at telemental health

Feasible across settings

Acceptable to providers, parents & youth

Reliable for diagnosis

Effective for treatment

Relevant to pediatricians

ATA, Practice Guidelines for Telehealth with Children and Adolescents, 2017

Teens benefit from:

Personal, safe space
Feeling of control
Less self-consciousness
More confidential (?)

ATA, Practice Guidelines for Telehealth with Children and Adolescents, 2017

Photo by Sharon McCutcheon on Unsplash

When to Consider Telemental Health

Consider telemental health:

- New evaluation of mental health concerns: anxiety, depression, ADHD
- Follow up for mental health concerns
- Follow up after medication initiation

Pursue in-person care for:

- Current suicidality or self-injury
- Suspect active substance use
- Concern for weight loss, eating disorder

ATA, Practice Guidelines for Telehealth with Children and Adolescents, 2017

Gewirtz O'Brien et al, Hennepin Healthcare Telehealth Guidelines, 2020

Tips for a safe and successful telemental health visit

Safe & private space (patient and provider)

- Who else is there?
- Do you feel safe and comfortable there?

Confidentiality assurance & potential confidentiality breaches

Emergency planning up front as part of informed consent

- Permission to contact family/community member who can support
- Consider risks to safety in the physical environment (e.g., weapons access, windows)
- Document emergency procedure/plan

ATA, Practice Guidelines for Telehealth with Children and Adolescents, 2017

Pediatric Telemedicine: Where do we go from here?

Think about the future of telemedicine?

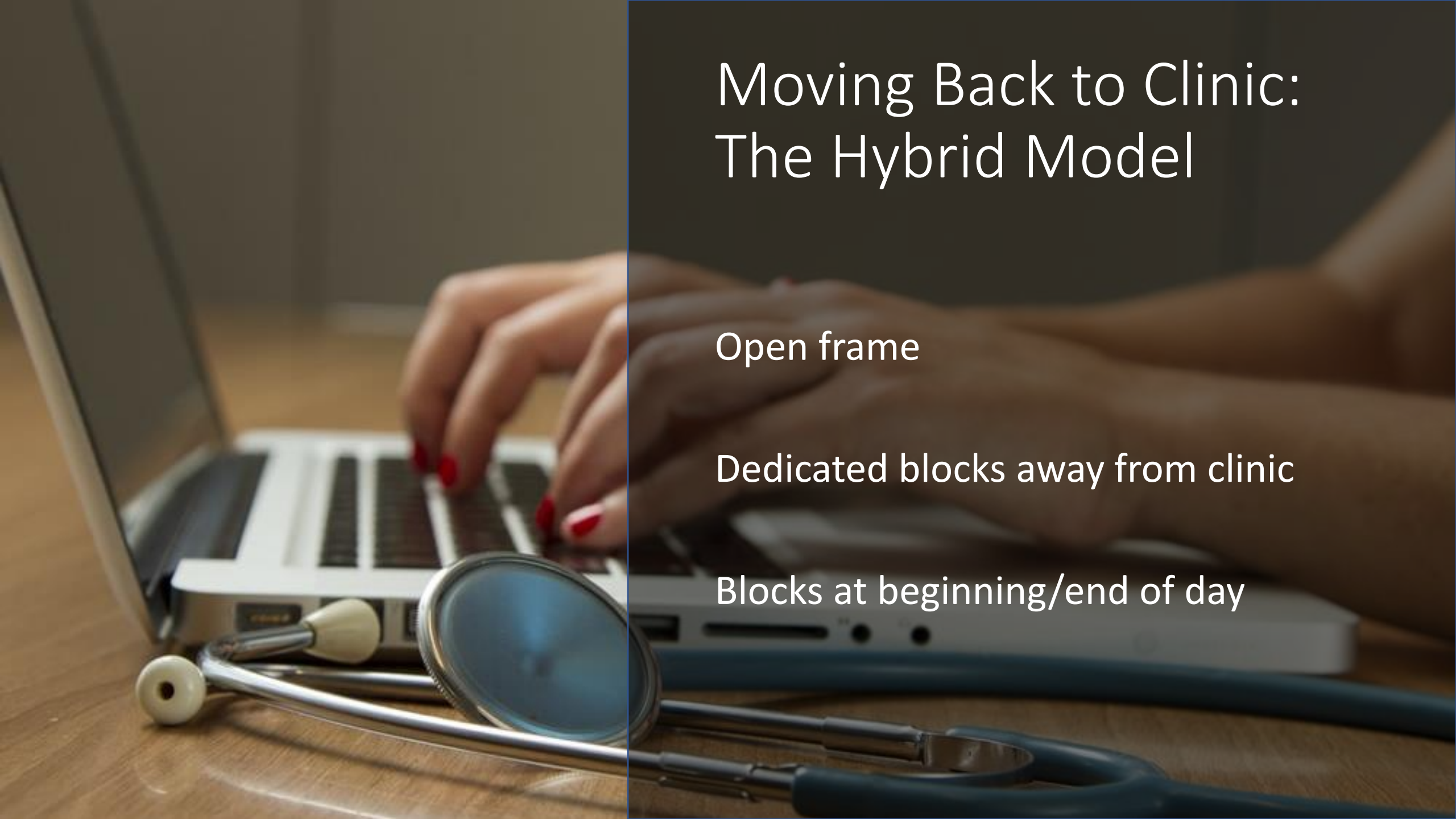
- What are you most excited about?
- What are you most nervous about?

- Please respond in the chat?

Systems and Policy Barriers

Barrier	The present	The future
Reimbursement	Parity	?
Regulations/licensing	Loosened	?
Provider skepticism/concern	Improving	Improved (hopefully?)
Technology infrastructure	Improving	Improved
Patient digital/internet access	Limited	?

AAP Guidance on Telehealth Payer Policy in Response to COVID-19

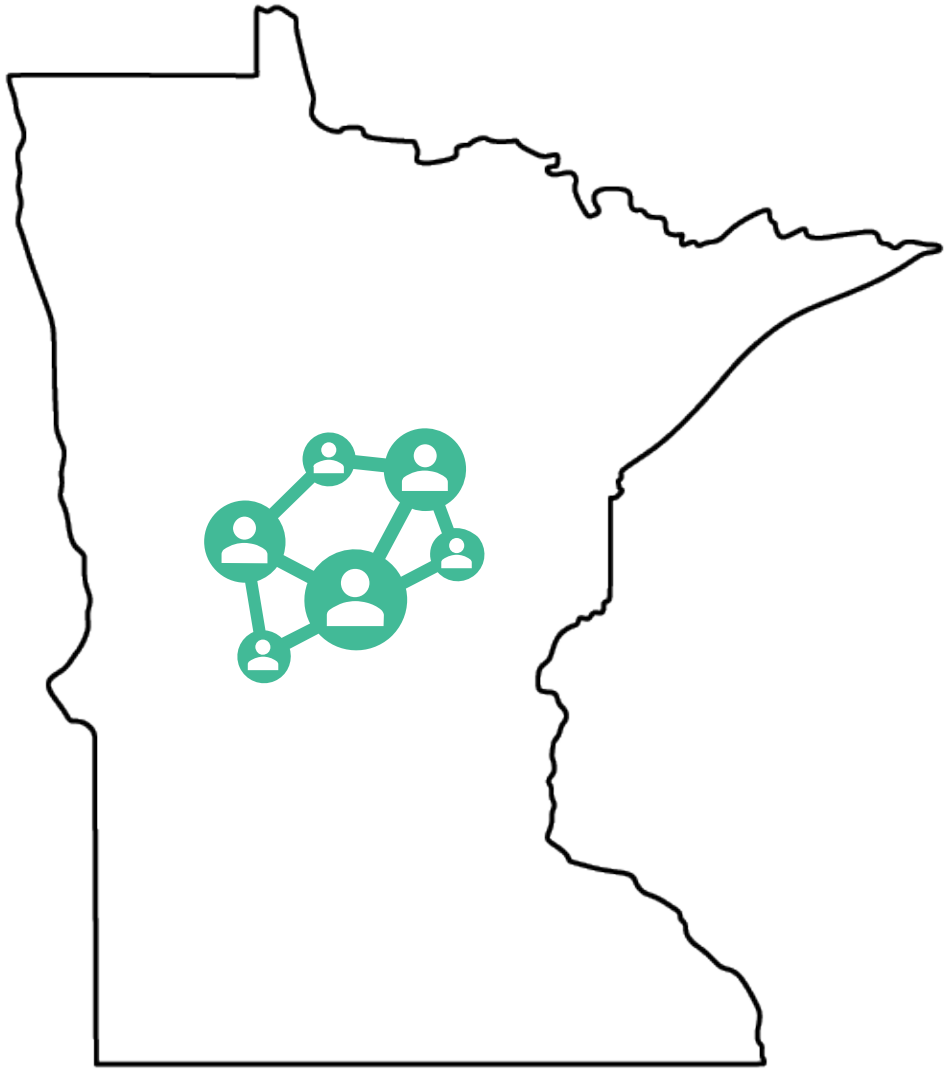


Moving Back to Clinic: The Hybrid Model

Open frame

Dedicated blocks away from clinic

Blocks at beginning/end of day



Leveraging Telemedicine to Expand Access and Equity

- Late cancels/no-shows
- Subspecialty remote consultation
- Outreach to low-resourced, rural, satellite
- Community-based/school-based care

Photo by Daniel Gonzalez on Unsplash

Recap:

- ✓The pediatric telemedicine landscape
- ✓Pediatric telemedicine: How do we do it well?
- ✓Practical applications of telemedicine in pediatrics
- ✓The future of pediatric telemedicine
- ✓Questions and discussion

Final reflection

What do you see in the future of telemedicine?

- Please enter responses in the chat

References and Resources

AAP Telehealth Resources

American Telemedicine Association

- https://www.aap.org/en-us/Documents/ATA_Pediatric_Telehealth.pdf

Questions & Discussion

Janna Gewirtz O'Brien, MD, MPH
Shawn Mahmud, MD, PhD

Acknowledgements: Dr. Brandon Nathan

Contact us:
gewir007@umn.edu / @jgewirtzobrien
mahmu004@umn.edu

UNIVERSITY OF MINNESOTA
Driven to Discover®
Crookston Duluth Morris Rochester Twin Cities