Making the Telemedicine Encounter Meaningful

Perspectives of a Practicing Physician in Pulmonary/Sleep Medicine/Critical Care

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Telemedicine is here to stay.

- Acceptance by patients
- Increase in the accessibility to care
- Convenience
- Reinventing the house call
- Addresses issues of immobility
- Addresses underserved populations
  - Elderly
  - Disabilities
  - Rural
  - Socioeconomic and ethnic maldistribution of fixed healthcare resources

Coronavirus Aid, Relief and Economic Security (CARES) Act

- Congress took swift and decisive actions to ensure that telehealth services would be available to all Medicare beneficiaries during the COVID-19 pandemic.
- Congress enacted a general waiver provision enabling the Department of Health and Human Services (HHS) to temporarily waive outdated "originating site" and geographic restrictions on Medicare's coverage of telehealth enabled services.
- Prior to this action, Medicare physicians were prohibited from offering most telehealth services outside of rural areas,
  - Medicare beneficiaries in rural areas were not able to receive most of those services in the home; they had to travel to a health care facility.
- Congress needs to act before the public health emergency ends, or coverage and payment for telehealth services will end for seniors outside rural areas and to the home.
- Now the AMA and more than 70 health care organizations and associations representing medical professionals are urging congressional leaders of both parties to “prevent the sudden unavailability of virtual health options for Medicare patients” after the national public health emergency has ended.
  - **(AMA news 7/8/20)**

- To convince Congress as well as the healthcare economic community power infrastructure to continue telehealth, we need to ask ourselves as telehealth providers:
- 1 - Are patients receiving quality healthcare, or are they just having a convenient video chat with their physician?
- 2 - How do we make the telehealth experience more meaningfull and substantive?

Is there data to demonstrate patient satisfaction?

- Gastroenterologists and Patients Report High Satisfaction Rates With Telehealth Services During the Novel Coronavirus 2019 Pandemic.
  - A survey of GI patients' and physicians' satisfaction with telehealth during the COVID-19 pandemic. A total of 13,084 patients from 2 community-based GI practices in Michigan and the Washington, DC, region who participated in a telehealth visit from March to May 2020 were sent an online satisfaction survey by e-mail.
  - Responses were received from 1492 patients as of June 17, 2020.
  - Overall, patients were highly satisfied with their telehealth visits
  - Greater than 80% indicating that the provider addressed their concern and that they were willing to participate in telehealth visits in the future.
  - High satisfaction was observed in all age groups, with the highest rates in patients older than age 85
  - Among the 86.4% of patients seen for hepatic, biliary, and pancreatic disorders who believed that the provider addressed their concern, 77.3% were willing to engage in a telehealth appointment in the future.
    - Clin Gastroenterol Hepatol. 2020 Jul 11 doi: 10.1016/j.cgh.2020.07.014 [Epub ahead of print] PMCID: PMC7352104 PMID: 32663521
- Head/Neck/ENT clinic
  - The majority of patients reported high satisfaction with telehealth visits, with average scores higher than five in the majority of components of the survey.
  - This finding echoes the results of previous telemedicine patient satisfaction studies in otolaryngology.
  - Patients noted that telemedicine increased access to health care services, saved time, and overall met their health care needs. Patients also frequently mentioned cost savings.
    - Head and Neck, Journal of the sciences and specialties of the head neck June 1, 2020 Eleanor Layfield BA Vasiliki Triantafillou MD Aman Prasad BS Jie Deng PhD, RN, OCN, FAAN Rabie M. Shanti DMD, MD Jason G. Newman MD

Do physicians accept telehealth as a viable healthcare delivery system?

Some physicians are not on board with the concept

- Forces use of an EMR.
  - Some older (and younger) physicians cannot handle the transition.
  - Most EMRs are poorly done, cumbersome, time wasting, and ineffective.
- Uncomfortable with the interface.
  - Learning the etiquette of the video encounter.
  - Application of video conference software to a forum for which it was not designed.
  - Poor quality, poorly designed video portals.
  - Passive, reactive patient population.
- Can't touch the patient
  - Unable to do procedures
  - Limited exam capabilities..... or is it really limited?

Is there physician acceptance or skepticism?

- Despite the significant increase in telemedicine services technology, its adoption and use have been quite slow in some healthcare settings.
  - Success of telemedicine services relies on users' satisfaction.
  - Perceived ease of use and perceived usefulness of telemedicine services were found to influence physicians' behavioral intentions.
  - We noted that the adoption of telemedicine services in clinical settings depends on physicians' and patients' satisfaction with the use of the service.
    - Health Informatics J . 2020 Sep;26(3):1866-1880. doi: 10.1177/1460458219892162. Epub 2019 Dec 19. Predictive factors of physicians' satisfaction with telemedicine services acceptance Jonathan Kissi, Baozhen Dai, Courage Sk Dogbe, Jonathan Banahene 1, Oyeh Ernest 2
- Physician use of telemedicine services jumped 340% between 2015 and 2018, according to an American Well survey.
  - About 22% of doctors used telemedicine services in their practice in 2018. In 2015, just 5% of doctors used such services.
  - The turn toward telemedicine is likely a response to patient demand. A 2017 survey by the Advisory Board found that 77% of patients would consider seeing a provider virtually.
- Students are receiving better telemedicine training
  - Younger physicians have grown up in a predominantly digital world. So, it's natural that the doctors of tomorrow are learning to use technology in conjunction with their traditional medical education.
  - The first program of its kind at an osteopathic medical school, the digital health track at Rocky Vista University College of Osteopathic Medicine, allows interested students to spend two semesters, plus time during clinical rotations, exploring the myriad ways to improve health care with technology.
  - "Within the digital health track, we're educating student doctors about artificial intelligence, clinical informatics—basically the wider swath of what would encapsulate telemedicine," says Dr. Stiegmann, the track's co-director.

So how can we make the telemedicine visit more meaningful?

More relevant than just talking with the doctor.

- Can we really do an intelligent physical examination on the telemedicine interface?
- Let's review what we can see on exam

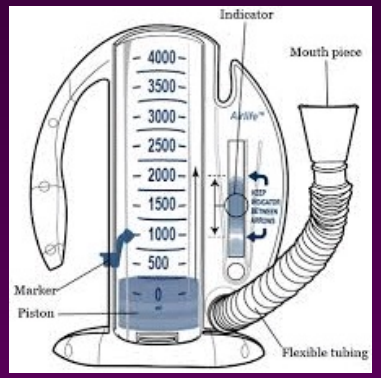
Iphones and Androids

Population of smartphones (Statista 4/23/2020)

- 275.7 million smartphone users
- 161 million smartphone shipments 2019
- Currently there are more than 100 million iPhone users in the United States, accounting for about 45 percent of all smartphone users in the United States. Overall, more than 250 million people in the United States use a smartphone, which means that roughly 80 percent of the country's population has access to a smartphone. Since 2009, Apple has sold more than 1.5 billion iPhones, making it one of the most used smartphones in the world.

What common tools do we already have?

- BP home monitoring
- Pulse oximetry
- Peak flow.
- Incentive spirometer
- Fingerstick glucose
- Urine dipstick
- Thermometer



PSMG telemedicine exam

We actually see a lot. We just forget to pay attention.

- WD/WN. Obese. Thin, muscle wasted. Appears fatigued and tired. Diaphoretic
- Eyes: lid inflammation. conjunctival injection. conjunctival discharge
- **ENT: Rhinitis. Watery nasal discharge. Purulent nasal discharge. Nasal stuffiness. Post nasal drip.
- Inflammation of pharynx/palate. Thrush. Oral lesions. Voice/Hoarseness.
- Mallampati I II III IV . Overjet . Dentition . Dentures. Dental bridge. Excess submandibular tissue. Neck size. Palpable nodes.
- **Lungs: Audible wheezes. Coughing. Speaking in full sentences. Using accessory muscles
- **Heart: No Sensation of tachycardia or irregular heartbeat is present. Rhythm.
- **Abd: soft. tenderness elicited. distended.
- Extr: Edema Varicose veins
- Skin: Rash . Induration. Cellulitis. Swelling
- Neuro: Alert/lethargic. Oriented x 3. Focal weakness. Tremor. Facial droop. Slurred speech. Cognitive is normal/impaired.
- Skeletal: Joint deformity/swelling/redness. Kyphosis. Scoliosis

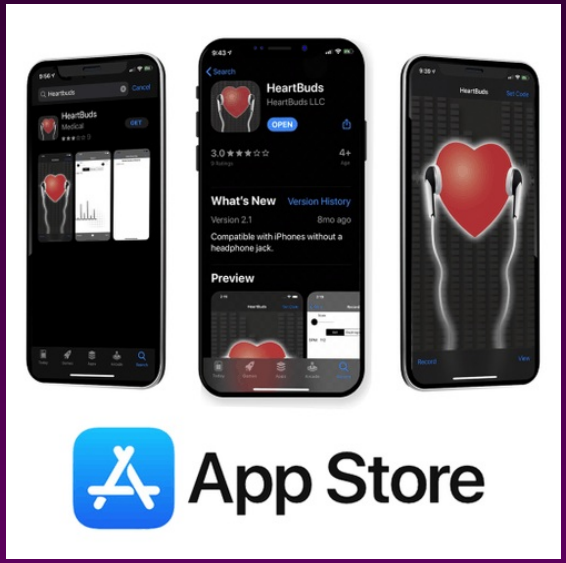
Telemedicine declaration

- The patient encounter was conducted as a telemedicine audio/video (outpatient) patient interaction with my review of electronic medical records by access to the electronic medical record system of Pulmonary and Sleep Medicine Group LLC (Kareo), as well as any relevant digital radiology record systems and/or hospital record systems, to which I may have access, based on my user privileges.
- Telemedicine portal: Zoom Skype FaceTime Doxy Kareo SleepTM.
- Remote location of the physician: New Jersey.
- Originating site (Location of the patient) : Patient's home in (city,state)
- Presenter: Patient acting as his/her own presenter.
- In attendance with patient - spouse - parent - child - friend - no one
- I personally spoke with the patient and engaged in examination within the limits of the telemedicine interface, and reviewed the pertinent medical records, laboratory data and radiographic images. The decision making process regarding this patient is as documented above, followed by creation of a treatment plan for the patient. We discussed the patient's future coordination of care and plans. Instructions were given.

Home diagnostic devices

Stethoscopes

- Home use
  - HeartBuds is a revolutionary electronic stethoscope that will allow people to be examined remotely from home through Telemedicine.
    - People will be able to transmit the sound of the heart and lungs by helping health professionals make diagnoses and treatment plans.
    - HeartBuds App allows you to send the recording by email, text message or upload it to social networks.
  - Stemoscope.
    - Bluetooth iphone stethoscope.
    - Used by physicians in China



Digital sound processing - Lungs

- Rather than just listen to the lungs, what if we could do a frequency analysis of the sound signal (Lung Sounds: An Advanced Signal Processing Perspective, Publisher: Morgan & Claypool, 2009)
  - Hearing interpretation has been the only means of appreciation of the lung sounds diagnostic information for many decades.
  - Computerized auscultation combined with signal processing techniques has boosted the diagnostic capabilities of lung sounds.
  - Advanced denoising techniques that effectively circumvent the noise presence (e.g., heart sound interference, background noise) in lung sound recordings are described, providing the physician with high-quality auscultative data.

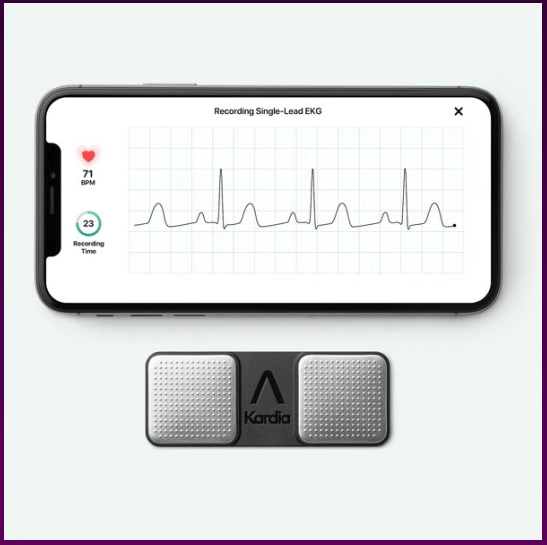
Digital sound processing - Hearts

- Eko
  - Eko's algorithms alert clinicians to the presence of heart murmurs and atrial fibrillation (AFib) during the physical exam, converting the classic stethoscope into a powerful early detection tool January 28, 2020
  - Eko's AI is able to identify heart murmurs, a leading symptom of valvular heart disease, with 87% sensitivity and 87% specificity. In comparison, a recent study revealed that using traditional stethoscopes, primary care physicians had a sensitivity of 43% and a specificity of 69% for detecting significant valvular heart disease, which affects over 5 million Americans.
  - Algorithm also reports heart rate and QRS duration and identifies tachycardia and bradycardia, abnormally fast and slow heart rates, which can be indicative of heart disease or other health conditions such as thyroid disease.
- Littman 3200
  - Transmit sounds via Bluetooth® technology (Bluetooth® adaptor included – not compatible with Apple devices)
  - Listen remotely via 3M™ Littmann® TeleSteth™ System (sold separately)
  - Eliminate 85% (on average) of ambient noise.
  - Amplify sounds up to 24x
  - Compatible with StethAssist Heart and Lung Sound Software -

EKG

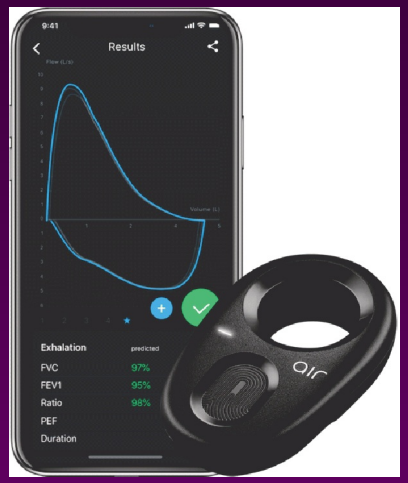
Kardia

- FDA-cleared, clinical grade personal EKG monitor. KardiaMobile captures a medical-grade EKG in 30 seconds anywhere, anytime.
- Detect Atrial Fibrillation, Bradycardia, Tachycardia or Normal heart rhythm.
- Store your EKGs on your phone, and email your EKG to your doctor with the press of a button.



Spirometry

- Mir Smart One
  - Simple handheld spirometer to measure FEV1.
  - Links with iPhone or android.
  - Also available with oximetry.
  - Ready to Connect: designed for Remote Patient Monitoring, Clinical Trials and 3rd party software integration.
- Nuvoair
  - Simple-to-use for both young and seniors, FDA cleared and CE marked.
  - Use of an asthma management plan, with regular monitoring of asthma symptoms and lung function, can detect the early signs of worsening control.1
  - In a study with the Royal Brompton Hospital in London, UK, the use of NuvoAir to run a virtual consultation service significantly reduced both booked and urgent face-to-face visits, with acceptability rated very highly by patients.



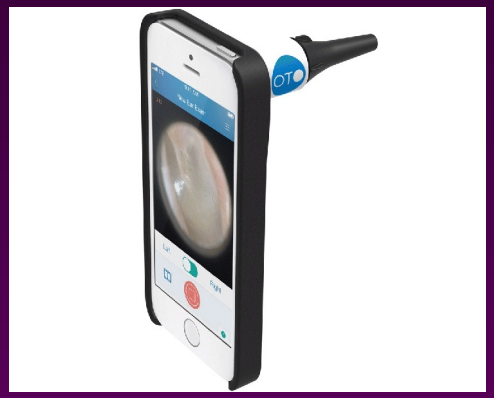
Exam kits

Tytocare

- The healthcare provider can examine heart, lungs, throat, ears, skin, abdomen, heart rate, and body temperature
- A Tyto visit provides the physician with
  - high-quality digital sounds of the heart and lungs,
  - high-quality digital images and video of the ears, throat, and skin
  - measures heart rate and body temperature.

Remote otoscope

- Firefly
- Cellscope (discontinued)
- DEPSTECH Wireless Otoscope with FDA Certification, Upgraded Ultra-Thin HD Ear Video Inspection Camera, Ear Scope with 6 Adjustable LED Lights for iPhone, iPad & Android: Camera & Photo. download APP to connect with smart phone.



Who is paying for this?

- Remote Patient Monitoring Program
  - Providers are reimbursed for the setup, hardware, and service costs, as well as ongoing review of patient data. Eligible Medicare patients receive devices at no cost to them directly, though there can be a copay for the service.
  - Medicare has long attempted to create incentives to providers to engage with elderly patients more proactively, versus traditional periodic visits when a patient's condition has escalated. To drive this initiative forward, 2019 Medicare's Remote Patient Monitoring program compensates providers for recommending and reviewing data from home patient monitoring devices
    - Blood pressure and heart rate
    - Fingerstick glucose
    - Weight
    - Spirometry
    - Pulse oximetry
  - Remote patient monitoring simply refers to the use of technology to record health data for review by a provider in a different location than the patient.
  - There is no financial obligation to the patient if he or she is a Medicare Part B enrollee and has Medigap type supplementary insurance that covers copays. Otherwise, the patient may be subject to just the copay fees.

Remote Patient Monitoring vendors

- 100 Plus. https://www.100plus.com/ System of remote patient monitoring devices for seniors on Medicare. The platform solution sends patient data to medical practitioners for review, which enables these providers to qualify for Medicare reimbursement under the new Remote Patient Monitoring program.
  - 100Plus portal contains all the information for the clinician to monitor the patients' activity.
  - BP monitor, blood glucose, weight.
  - Pending pulse oximetry.
  - Emergency watch/alert
- Kardia Pro by AliveCor https://clinicians.alivecor.com/our-solution/
- Spirometry - Mir Smart One.
- Many new vendors entering a crowded field

Cost savings of telehealth vs ER vs hospital

- Keep the patients out of the ER and out of the hospital
- Study is based on data collected from 650 patients who used the JeffConnect telemedicine platform at Philadelphia-based Jefferson Health.
- Diverting patients from emergency departments with telemedicine can save more than $1,500 per visit.
- About 16% of the JeffConnect patients surveyed said they would have "done nothing" as an alternative to a telemedicine visit—representing potential increased utilization of services.
- But cost savings outweigh possible higher utilization of services due to telemedicine's easy access, the researchers found.

Summarize

- Telemedicine is here to stay.
- Consumers want it.
- Money will be saved
- Some doctors will not be able to handle it.
- There is an installed infrastructure set up for communication - internet, home computers, public wifi access, cellular service, iPhones, Apple Watches, Androids
- There is a lot right in front of us to make the visit full of information.
  - Look at the patient.
  - Listen to the patient.
  - Remember the basics of physical diagnosis.
  - Use present simple readily available tools.
- There is technology coming.
  - Will it be designed with the end user in mind?
  - Who will pay for the technology?
  - How will it be distributed?