

Digital Assessment Tools and Remote Monitoring Devices for Allergy Practice

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Disclosures

- Consultant to Regeneron and AstraZeneca
- Research funding from Regeneron, Sanofi, AstraZeneca, Lincoln Diagnostics and Flare Diagnostics
- Scientific advisor and shared patent holder for Flare Diagnostics
- Speaking engagements for AstraZeneca and MedImmune

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Objectives

- Introduce several new digital diagnostic tools
- Understand how these devices may be used in clinical practice or telemedicine applications

Note: Management and storage of digital study results and billing opportunities for these devices will be addressed in two upcoming lectures

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Introduction

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Definition of digital medical device

- Coverts clinical signs or physiological parameters into digital format
- Hardware or software
- May be used in clinic, remotely, or at patient's home

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Example Digital Assessment Devices

- Virtual examination Kiosk
- Wireless otoscope
- AllergyScope skin test scanner
- Bluetooth spirometer
- Disposable video rhinoscope
- Electronic stethoscope
- Artificial Intelligence (AI)
- Point of care CBC analysis
- Mini CT scanner
- Dermatoscope
- Handheld ultrasound
- iPhone/Android EKG adapter
- Handheld apps for patients

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Physical Examination

“If you do not look, listen and touch, then one can not see, hear or feel”.

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Digital medical device importance

- More complete examination and accurate assessment
- Remote operations, telemedicine and portability
- Improved efficiency and throughput
- Standardization and quality improvement
- Patient satisfaction and convenience
- Additional revenue streams
- Teaching and replay options
- Incorporate into electronic medical records (EMR)

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Clinical Evidence: Digital and Remote Tools

- Remote monitoring of patients with heart failure leads to improved outcome. *Polisena et al. J Telemed Telecare. 2010*
- Automation helps reduce radiologists errors due to fatigue which occurs in approximately 4% cases. *Das R. Forbes Health. 2019*
- Widening rural-urban disparity in life expectancy can be attributed in part to a lack of access to care. *Faruque et al. CMAJ. 2017*

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Clinical Evidence: Digital and Remote Tools

- Bluetooth Spirometry group reported less anxiety, which may improve emotional well-being. *Sengpiel et al. J Prog Transplant. 2010*
- Electronic stethoscope can aid in detection of coronary artery stenosis with 70% sensitivity. *Azimpour et al. Am J Med. 2016*

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Virtual Kiosk



Amwell



Higi

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Virtual Kiosk

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Virtual Kiosk

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Digital and Remote Stethoscope



Littman



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Digital and Remote Stethoscope

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Bluetooth spirometry



EasyOne for Clinic / Telemed



MIR Smart One for home FeV1

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Bluetooth spirometry



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Digital Otoscope



Firefly



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Digital Otoscope

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Disposable Rhinoscope



Ambu



Storz

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Disposable Rhinoscope

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AllergyScope Skin Test Analysis

The worlds first
AllergyScope



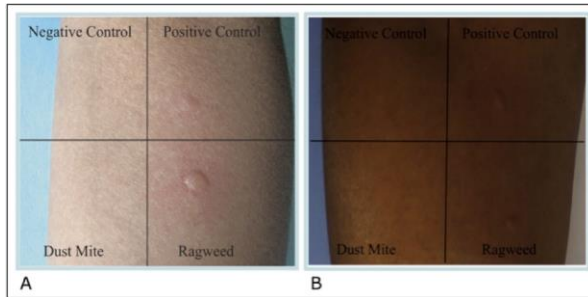
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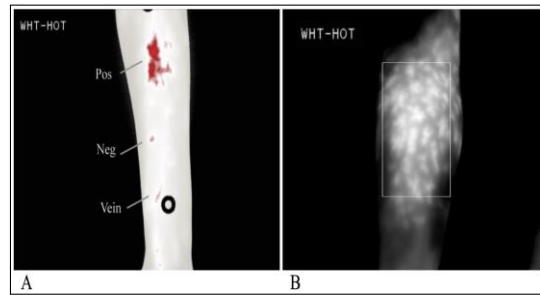
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AllergyScope (Other Technologies)

SPT (Visible Range Camera)



SPT (Infrared Camera)



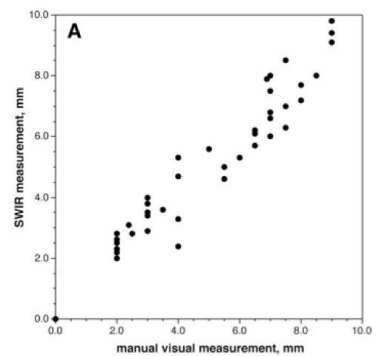
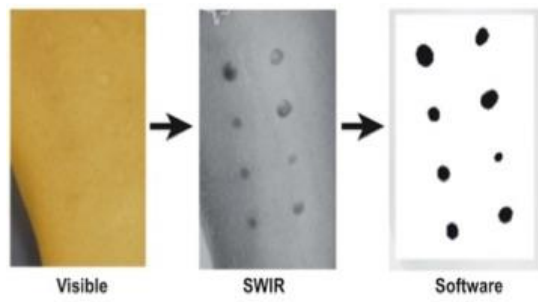
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AllergyScope Technology

SPT (AllergyScope SWIR Camera)



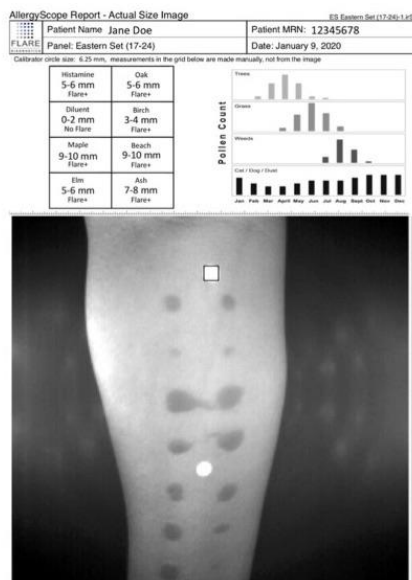
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AllergyScope

- Ignores skin color
- Point of care or remote testing
- AI wheal analysis
- No flare reading
- EMR integration and printed report
- FDA wellness exemption
- About \$9,500
- flarediagnostics.com



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AllergyScope in Practice



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Mini CT scanner



Xoran MiniCat

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Mini CT scanner

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At home and mobile kits



MedWand home



MedWand mobile kit

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At home and mobile kits

- Example Medwand: medwand.com



Otoscope



Oropharynx



Stethoscope and EKG



Pulse Ox



Skin

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Summary of Digital Medical Devices

- Digital assessment devices are live
- Increased utility for telemedicine applications

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Discussion

Digital Assessment Tools and Remote Monitoring Devices for Allergy Practice

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Digital Assessment Tools and Remote Monitoring Devices for Allergy Practice

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Associate Professor

Director of Clinical & Research Innovation, Medicine

Director of Allergy/Immunology Research, Division of Allergy/Immunology

Albert Einstein College of Medicine and Montefiore Medical Center

Chair, Health Informatics Technology & Education (HITE) Committee, AAAAI

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Disclosures: None

Current Research Support

- Federal: Agency for Healthcare Research and Quality (ASTHMAXcel Mobile Platform), NIH/NHLBI
- Institutional: NY Regional Center for Diabetes Translation Research, Einstein Global Health Center
- Industry: Sonde Health, AstraZeneca

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The Growing Digital Health Market

- Will reach \$379 billion by 2022
- 93% of physicians believe mobile health (mHealth) apps can improve patient outcomes
- 77% of the U.S. population owns a smartphone

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Digital Health Technologies: Why Now?



The NEW ENGLAND JOURNAL of MEDICINE

Perspective
JUNE 4, 2020

Covid-19 and Health Care's Digital Revolution

Sirina Keesara, M.D., Andrea Jonas, M.D., and Kevin Schulman, M.D.

amazoncare

Making healthcare easy for all

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The Evolution of Asthma Management Strategies

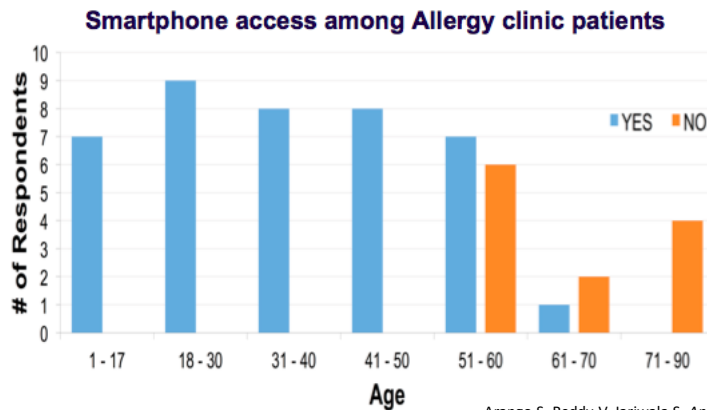


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Are Digital Technologies Accessible to Allergy Outpatients?



Arango S, Reddy V, Jariwala S. *Ann Allergy Asthma Immunol.* 2015.

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Remote Monitoring Devices

- Include electronic medication monitors, electronic peak flow meters, spirometers, and wearables
- Electronic medication monitors:



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Electronic Medication Monitors - Implementation



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Electronic Medication Monitors – Pros

- Enable care coordination
- Electronic Medication Monitors linked to:
 - Improved medication adherence
 - Increased SABA-free days
 - Improved asthma control

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Electronic Medication Monitors – Cons

- Not covered by all payers
- Potential for clinician information overload
- Technical aspects
 - Battery life
 - Inconsistent data sync from sensor to mobile app

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Patient-facing Mobile Apps for Asthma and Allergies

- AsthmaMD: Self-report peak flow rates, asthma symptoms, triggers, medication use
- Kiss myAsthma: Goal-setting, behavior change techniques
- Allergy Diary: Self-report allergy and asthma symptoms and medication use
- ASTHMAXcel: Patient education, behavior change techniques, tailored push notifications, collection of patient-reported outcomes

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Limitations of Patient-facing Mobile Apps for Asthma

- A published study identified 103 iOS and Android asthma self-management apps, and identified their comprehensiveness (capability to deliver 8 national guideline-based topics)
- Only 3 apps met the authors' criteria for comprehensiveness
- 56 of the applications were informational, while 47 provided tools for asthma management, and no applications used both types of functions
- 56% of applications delivered current guideline-based recommendations

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The Asthma Mobile Health Study and App Limitations

- Used the Apple ResearchKit mobile platform to remotely recruit, obtain consent, and enroll asthma patients entirely by smartphone
- Prospectively collected data (asthma control and quality of life, location, air quality) over 6 months
- 40,683 downloads → **173 6-month users**

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The ASTHMAXcel Mobile Platform as a 'Use Case'

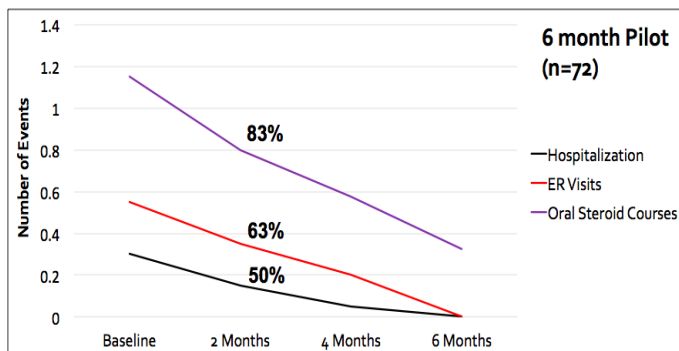
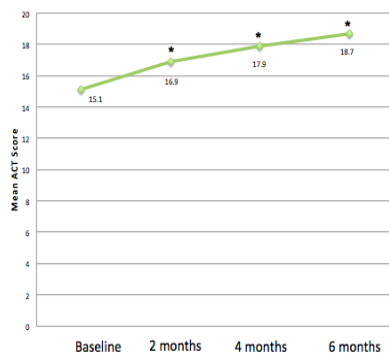


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ASTHMAXcel: Impact on Clinical Outcomes



Hsia B, Wu S, Mowrey W, Jariwala S. *Respir Care*. 2020.

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ASTHMAXcel Collects Patient-Reported Outcomes (PROs)

- PROs = Important information only the patient can provide
 - Encourage shared decision-making
 - Implications in Value-Based Care
- ASTHMAXcel embeds PROs within push notifications and games
 - PRO collection outside the traditional clinic setting
 - App-EHR integration

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App-EHR Integration Opportunities

- Patient-generated health data
 - PROs
 - Rescue medication use
 - Healthcare utilization
- 21st Century Cures, USCDI common data elements (e.g. LOINC), and FHIR
- Digital care 'pathway' – EHR app order sends app download link to the patient

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Patient-facing Mobile Apps – Pros

- Shown to improve clinical and process (e.g. patient satisfaction) outcomes
- Encourage behavior change
- Pre-visit collection of clinically meaningful patient-generated health data can save clinicians time during the visit
- Reinforce guideline-based education and adherence support between visits

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Patient-facing Mobile Apps – Cons

- Reimbursement concerns for standalone apps without remote patient monitoring
- Most apps have not been clinically validated – which is the right one to choose?
- App-EHR integration and app development can be complicated and expensive
- Issues with user attrition and lack of user-centered design principles

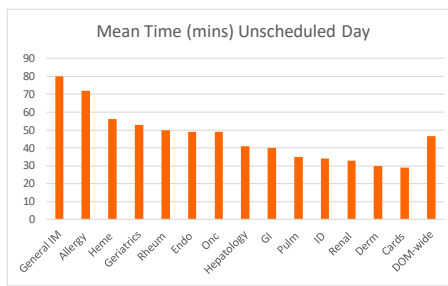
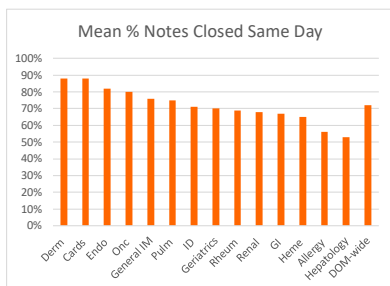
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Digital Health Tools and Clinical Transformation

Why is Clinical Transformation Necessary?



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Remote Scribes

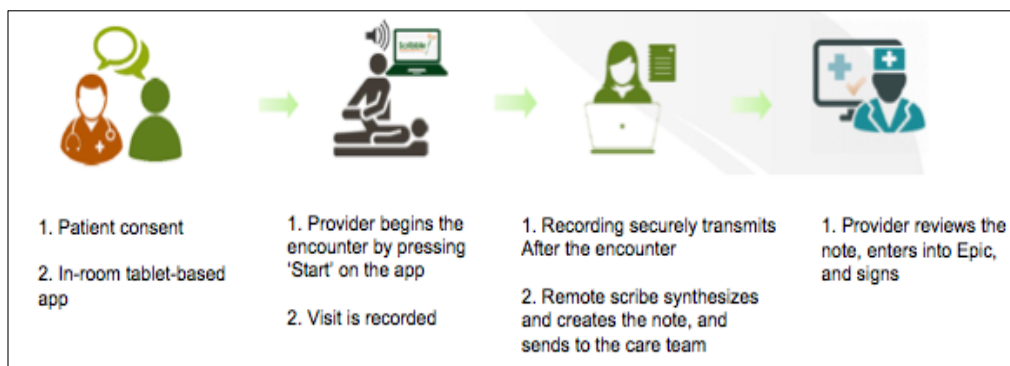
- Methods: Face mounted technology (Glass), Teleconference, Store-and-forward, AI virtual assistant
- Pros: Less intrusive than in-person scribes
- Challenges: EHR access, need for clinical validation, scribed notes might take several hours until sent to the clinician for sign off
- Impact: 2-3 additional patients seen per day; Increase RVU by 14%

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Remote Scribes (Store-and-Forward)



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EHR-Integrated Clinical Intake Solutions



- Patient intake → EHR
- Customizable templates (pre-visit questionnaires)

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EHR-Integrated Clinical Intake Solutions

Diet and Skin Contact History

Please list everything that you eat, drink or swallow at least twice a week.

Breakfast:
Foods: _____
Drinks: _____

Coffee break: Foods: _____ Drinks: _____

Lunch: Foods: _____ Drinks: _____

Dinner: Foods: _____ Drinks: _____

Desserts:

Other Snacks: Breath mints _____ Chewing gum _____
Candies _____ Chocolate _____

Sodas: _____ Powdered drinks _____

Vitamins/ Health foods/Tonics/Medicines:

Skin Contacts: Soaps _____
Lotions _____ Shampoos _____
Fabric softeners _____ Hair gels _____

ENVIRONMENTAL HISTORY

- Season: None _____ Spring _____ Summer _____ Fall _____ Winter _____
- Name: Type _____ Age of Dwelling _____ Time in Dwelling _____ Rooms _____
Moisture _____ Floor if floors in Bldg _____ Heating: HW Steam F/A A/C Window Central
- Work: Type _____ Time at workplace _____ Dust _____
Symptoms worse at work _____ Fumes _____ Other _____
- Bedroom: Rugs _____ W/W _____ Boospring _____ Separate room _____ Humidifier _____
- Pets: Cats (#) _____ Dogs (#) _____ Birds (#) _____ Other _____
Symptoms worse when exposed _____ Animals in bedroom _____ in Bed _____
- Feathers/down: Pillow _____ Comforter _____ Other _____
- Mold: Mildew in Bath _____ Mildew in bedroom _____ Leaks in home _____
Damp Basement _____ Musty smells _____ Other _____

Foods that cause/allergic symptoms:

Wine _____	Mushrooms _____
Beer _____	Tomato Sauce _____
Vinegar _____	Cheese _____
Soy Sauce _____	Soy Sauce _____
Chinese Food _____	Pickles _____

- Food allergies: Metabixite _____ Salad Bar _____ Other _____
- Drug Allergies: Aspirin _____ Penicillin _____ Sulfas _____ Other _____
- Fumes: Cigarette smoke _____ Auto Exhaust _____ Perfume _____

ASTHMA CONTROL TEST™

The ASTHMA CONTROL TEST™ is a quick test for people with asthma 12 years and older. It provides a numerical score to help assess asthma control.

INSTRUCTIONS: 1. Write the number of each answer in the score box provided.
2. Add up the score boxes to get the TOTAL.
3. Discuss your results with your doctor.

1. In the past 4 weeks, how often did your asthma keep you from getting on with daily at work, school or at home?	SCORE
Never at all [1]	Score of the box [1]
Once a day [2]	Score of the box [2]
2 to 3 times a week [3]	Score of the box [3]
4 to 6 times a week [4]	Score of the box [4]
7 to 10 times a week [5]	Score of the box [5]
Every day [6]	Score of the box [6]

2. During the past 4 weeks, how often have you had symptoms of cough?

Score	1 to 2 times per day [1]	3 to 4 times per day [2]	5 to 6 times per day [3]	7 to 10 times per day [4]
Score of the box []				

3. During the past 4 weeks, how often did your asthma symptoms (coughing, wheezing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

Score	1 or 2 times a week [1]	3 to 4 times a week [2]	5 to 6 times a week [3]	7 to 10 times a week [4]
Score of the box []				

4. During the past 4 weeks, how often have you used your rescue inhaler or medication (don't count an inhaler)?

Score	1 or 2 times per day [1]	3 or 4 times per day [2]	5 or 6 times per day [3]	7 or 10 times per day [4]
Score of the box []				

5. How would you rate your asthma control during the past 4 weeks?

Score	Not controlled at all [1]	Partly controlled [2]	Somewhat controlled [3]	Well controlled [4]	Completely controlled [5]
Score of the box []					

TOTAL: _____

If your score is 10 or less, your asthma may not be as well controlled as it could be. No matter what your score is, share the results with your healthcare provider.

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Digital Innovation and Biodesign



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Take-home Points

- Digital health technologies must be guideline-based, user-centered, and validated
- Digital tools will make clinicians' lives easier
- Digital health technologies are here to stay
- We can all contribute to the innovation ecosystem

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Questions?

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Digital Assessment Tools and Remote Monitoring Devices

Coding for the Allergist

Presented by

Teresa Thompson, CPC

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- I have nothing to disclose

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Telehealth – Benefits realized during 2020 - 2021

Convenience of care

Increased access

Improved worker productivity from not having to take time off and travel to appointments

Decreased costs

Clinician time savings

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Telehealth – Benefits realized during 2020-2021

- Employers are encouraging the use of telehealth services.
- Employees are quite comfortable using these services.
- Consumers (employees) may be motivated by the convenience and promptness of care that it offers.
- 95 percent of patients were highly satisfied with the quality of care they received, the ease with which telehealth technology was integrated into the visit, and the timeliness and convenience of their care.
- Because of remote healthcare's lower costs and increased worker productivity and satisfaction.
- Organizations will likely seek telehealth solutions.
- Payers may be lured by decreased medical expenditures.

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Telehealth Private Payers Reimbursement:

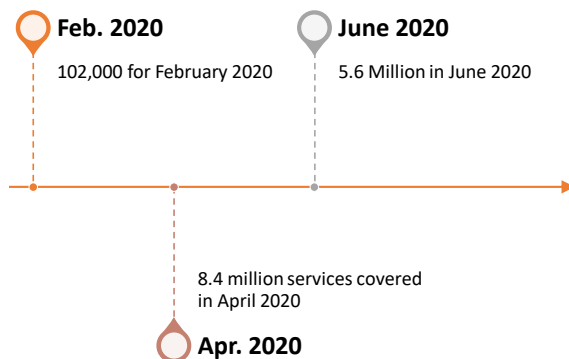
- There is no federal mandate requiring private payers to reimburse for telehealth services, but several states have enacted [telehealth parity laws](#). Parity laws compel payers to cover the same types of services provided through telehealth as those that are provided face-to-face. They also require payers to reimburse telehealth services at the same payment rate as in-clinic services.
- Payers, corporations may organize to offer digital services for their employees

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Medicare – Statistics from COVID pandemic



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Telemedicine Concerns and Safeguards

- Understand individual federal and state regulations and restrictions, temporary mandates and directives, and expiration dates:
 - Monitor for updated regulatory actions for healthcare systems and HCP.
 - Regional systems that provide services in multiple states must be particularly attentive to individual state requirements.
 - HCP should track eligibility criteria based on their specific profession.
- Maintain awareness of the Office for Civil Rights (OCR) announcements related to [HIPAA and COVID-19external icon](#)
- Train providers and staff on policies, practices, and protocols for using telehealth services, including appointment scheduling, documentation and billing, referral processes for specialty care, urgent and emergent care, laboratory services, pharmacy prescriptions, medical equipment, and follow-up visits.
- Explore the use of telehealth services in all parts of the healthcare delivery system including [FQHCs \(federally qualified health centers\)external icon](#), community clinics, pharmacies, and [school-based health centerexternal icon](#)
- Acceptance of digital devices as a standard of care for patients

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Medicare – looking forward/considerations

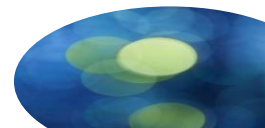
Extending coverage for a 1,2 years

Pay physicians at the facility rate

- Collect data on cost of providing services

Physician would be required to collect co-pays and deductibles for encounters.

Medicare and Medicaid are the two largest insurers



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Coding and Reimbursement During COVID-19

- Medicare will pay physicians the same rate for telehealth services as they do for in-person visits for all diagnoses, not just those related to COVID-19 (throughout national public health emergency)
- Patients can be in their home, or in any other setting, to receive telehealth services.
- No need for in person physical exam or facilitator.

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Telehealth

Two guidelines – CMS and private payers

CMS – restrictions have been lifted regarding place of service for the patient and for the provider.

Telehealth is currently defined as any device having audio and video capabilities that are used for two-way, real-time interactive communication.

Definition for telehealth applies to any services historically covered by Medicare, which are listed by CMS.

Appendix P of the CPT 2020 book also has a list of approved telehealth codes.

Patient permission for telehealth should be documented.

Document time if using time to support level of service.

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Telehealth

Private Payers:

- Following CMS Guidelines
- Have their own sets of codes that are payable
- Some have waived the co-pays for telehealth for a period of time

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Coding Changes during 2020-2021

- Telehealth has become a standard method for evaluation of patients.
- Coding for encounters for most payers are covered as if it were a face- to - face encounter.
- CPT 99202-99215 are covered for telehealth for audio and video telehealth visits.
- New patient encounters are an exception for the pandemic:
 - CMS indicates by waiver 1135 that there should be an established relationship with the patient to provide telehealth services.
 - HHS will not be conducting audits to ensure that such a prior relationship existed for claims submitted during this public health emergency.
- Digital devices – ???

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Telehealth coding

- Place of Services:
 - CMS – place of service is the same as if the patient was seen in person (11 for clinic).
 - Private payers – 11 or 02 depending on the payer. Most payers are asking for 02 to indicate it is a telehealth encounter.
 - State guidelines have been relaxed but every state may not follow CMS guidelines.
 - State and federal guidelines may change after the end of the year of the pandemic.

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Telehealth

- Modifier
 - CMS requires modifier 95 to indicate claim is a telehealth encounter.
 - GT – also indicates the encounter is a telehealth encounter.
 - As of 2021, third party payers may not require 95 or GT.
 - Private payers are using place of service 02.

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Procedure Codes:

- Face to face encounters
- Telehealth Visits
- Online digital evaluation and management services
- Telephone Calls
- Digital devices

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Telehealth Codes

Most common codes for Allergists:

- 99202-99215:
 - 2021 guidelines for E/M services only require medical decision making.
 - The history and exam obtained and performed are provider's decision and do not count toward level of service.
 - Time may be used to support the level of care – total physician time on the date of the encounter.

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Telehealth

- What is appropriate if the patient begins as an audio video encounter and it drops to audio before the encounter is finished?

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Telephone calls: CPT 99441-99443

- Telephone evaluation and management service by a physician or other qualified health care professional who may report evaluation and management services provided to an established patient, parent or guardian not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment.
- Private payers may vary in their reimbursement for telephone calls.

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Telephone Calls

- CPT 99441-99443:
 - CMS will pay for telephone calls without video capabilities as of March 30, 2020.
 - May be used for new and established patient visits during the public health emergency.
 - These are not considered telehealth codes. **Do not use 95 modifier.**
 - Interim work RVU:
 - 99441 - .25 5-10 minutes
 - 99442 - .50 11-20 minutes
 - 99443 - .75 21-30 minutes
 - These are time driven codes - time must be documented.
 - There are restrictions regarding when the patient was last seen or will be seen.

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Online digital evaluation and management

- 99421- 99423 Online digital evaluation and management services for an established patient, for up to 7 days, cumulative time during the 7 days:
 - 99421- 5-10 minutes
 - 99422 - 11-20 minutes
 - 99423 - 21 or more minutes

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Virtual Check in (CMS) – G2012

- May only be reported when the billing practice has an established relationship with the patient.
- Individual service should be agreed to by the patient; however, practitioners may educate beneficiaries on the availability of the service prior to patient agreement.

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Virtual Check in (CMS)

- G2012 – Brief communication technology-based service provided to an established patient, not originating from a related E/M service provided within the previous 7 days nor leading to an E/M within the next 24 hours or soonest available appointment – 5-10 minutes – value is comparable to 99441.
- G2010 – Remote evaluation of recorded video and/or images submitted by an established patient (E.g., store and forward) including interpretation with follow-up with the patient within 24 business hours, not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service within the next 24 hours or soonest available appointment.

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Procedure codes approved for Telehealth

CPT 94664 – MDI instruction – temporary approval during pandemic

CPT 96160 – Administration of patient-focused health risk assessment instrument with scoring and documentation per standardized instrument

CPT 96161 – Administration of caregiver focused health risk assessment instrument for the benefit of the patient, with scoring and documentation per standardized instrument.

Coding for Remote Monitoring Devices

- Electronic spirometers –
 - CPT 94014 – Patient-initiated spirometric recording per 30 day period of time; includes reinforced education, transmission of spirometric tracing, data capture, analysis of transmitted data, periodic recalibration and review and interpretation by a physician or other qualified health care professional RVU value – 1.62 CMS designation – “A”
 - CPT 94015 – recoding (includes hook-up, reinforced education, data transmission, data capture, trend analysis and periodic recalibration RVU value - .92 CMS designation “A”
 - 94016 – Review and interpretation only by a physician or other qualified health care provider RVU value.70 CMS designation “A”

Peak Flow meters- Electronic or not???

- Payers may not cover electronic peak flows – experimental (Aetna)
- CPT for Peak flow meters – 94150 “vital capacity, total (separate procedure)
 - Not payable under CMS guidelines.
- HCPCS for peak flow meters

A4614	Peak expiratory flow rate meter, hand held
A4627	Spacer, bag or reservoir, with or without mask, for use with metered dose inhaler
S8096	Portable peak flow meter
S8097	Asthma kit (including but not limited to portable peak expiratory flow meter, instructional video, brochure, and/or spacer)
S8100	Holding chamber or spacer for use with an inhaler or nebulizer; without mask
S8101	Holding chamber or spacer for use with an inhaler or nebulizer; with mask
S8110	Peak expiratory flow rate (physician services)

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Medication Monitors

- CPT 99457 – Remote physiologic monitoring treatment management services, clinical staff/physician/other qualified health care professional time in a calendar month requiring interactive communication with the patient/caregiver during the month; first 20 minutes
- 99458 – each additional 20 minutes
 - (Report only once per 30 days regardless of the number of parameters monitored)
- RVU value CMS: CPT 99457 - Non facility 1.46 facility .91
- CPT 99458 - Non facility 1.18 facility .91
- Work RVU .61

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Digitally stored data Services

- Only billable once per 30 day period
- Device must be FDA approved
- Device must be ordered by a physician or other qualified healthcare provider
- Monitoring must be for at least 16 days
- If patient is seen for an E/M services are included in the E/M
- Episode of care begins when the remote monitoring physiologic service is initiated and ends with attainment of targeted treatment goals.

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Digitally stored data Services

- CPT 99453 – Remote monitoring of physiologic parameters, initial; set up and patient education on use of device
- CPT 99454 - device supply with daily recording(s) or programmed alert(s) transmission, each 30 days
- CPT 99091 – Collection and interpretation of physiologic data digitally stored and/or transmitted by the patient and/or caregiver to the physician requiring a minimum of 30 minutes of time, each 30 days

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Digitally stored data Services

- CPT 99473 – Self measured blood pressure using a device validated for clinical accuracy; patient education/training and device calibration
- CPT 99474 – Self measured blood pressure using a device validated for clinical accuracy separate self measurements of two readings one minute apart twice daily over a 30 day period (minimum of 12 readings), collection of data reported by the patient to the physician with report of average systolic and diastolic pressures and subsequent communication of a treatment plan to the patient
- Cover as a payable service by CMS

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Other Coding Options for digital devices

- Petition AMA for a HCPCS Code
- Contact largest employer or payer for your practice for coverage
- Use of the unlisted codes
 - 94799 – unlisted pulmonary code
 - 95199 – unlisted allergy immunology code
 - 99499 - unlisted evaluation and management code
- Patient is responsible for charges as a non covered service

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Other Coding Options for digital devices

- When using an unlisted procedure code
 - Price it comparable to a paid service
 - Describe the work, overhead and malpractice involved in the use of the device or service
 - Submit the medical necessity of the device or service
 - Ask for a peer review

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Thank you for listen and participating
in the practice management workshop