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SPECIAL SECTION

TELEHEALTH: ITS EVOLUTION AND EXPANSION

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On the cover and below: Direct-to-Patient telehealth modules support a wide variety of use cases, from urgent care to behavioral health, chronic care management, and follow-up care.
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The Evolution and Expansion of Telehealth and E-Health

The February special focus section of the *Rhode Island Medical Journal* (RIMJ) examines the myriad aspects of the evolution and expansion of telehealth. Guest Editor **DANIEL HALPREN-RUDER, MD, PhD**, compiled the contributions below, which present the opportunities and challenges telehealth presents for patients, providers, insurers, information technology specialists, and healthcare organizations.

In the introductory article by Dr. Halpren-Ruder, "**E-Health and Healthcare Quality Management: Disruptive Opportunities**," E-health is defined as a term encompassing telehealth, telemedicine, digital health and remote patient monitoring. E-health is expanding logarithmically, quickly moving past the Direct-to-Consumer (DTC) Internet-demand service to embrace patient education, hundreds of apps, dozens of consult formats, patient controlled monitoring and institutional data streams. The article explores what E-health-empowered advances in quality management will mean to the clinician, the patient and society. It is proposed that the cost-lowering, clinical efficiency, patient engagement, provider and patient convenience and data-crunching capabilities of E-health, can push healthcare to new levels of value by optimizing quality while decreasing cost.

JAMES V. McDONALD, MD, MPH, in his article, "**Telehealth & E-Health in Rhode Island 2020 and Beyond**," discusses the regulations and professional standards approved by the Rhode Island Board of Medical Licensure and Discipline. He reviews the State requirements that a physician providing E-health services must be licensed in the state where the patient receives care; the provider must have a Rhode Island business address, and DEA registration. He also reinforces that the same standards of care, as if the patient were being evaluated in a traditional office setting, must be met.

AUGUSTINE MANOCCHIA, MD, in his contribution, "**Telehealth: Enhancing Care through Technology**," offers the insurer's perspective of Blue Cross & Blue Shield of Rhode Island (BCBSRI), which began covering telehealth in 2014, before coverage became mandated by the state in 2018. He shares how BCBSRI implemented its telehealth services through a partnership with American Well®, one of the leading providers of DTC telehealth services, and how patients can connect to these services, such as downloading mobile apps like Drs. Online. The article also gives an overview of the telehealth landscape in the U.S., a rapidly growing segment of the healthcare industry, expected to reach about $36 billion this year.

EMILY COOPER, MPH, et al, in their contribution, "**Use of Health Information Technology by Rhode Island Physicians and Advanced Practice Providers, 2019**," reports on the Rhode Island Dept. of Health (RIDOH) HIT survey, administered to all licensed independent practitioners in the state. Descriptive analyses examine HIT adoption and the clinician experience working with HIT. They conclude that as of 2019, the majority of Rhode Island physicians have adopted HIT, but challenges persist in integrating existing technology into practice.

DAREN R. ANDERSON, MD, in his contribution, "**Electronic Consults: Lessons From a Neighboring State**," offers an overview of the electronic consultation (eConsult) telehealth tool implemented by a large federally qualified health center (FQHC) in Connecticut, which obtained a grant to develop an electronic platform that allowed primary care providers (PCPs) and specialists to exchange clinical information about specific cases using a secure electronic platform. The platform is now used nationwide. He describes pilot programs in Connecticut and Rhode Island for dermatology and cardiology referrals, with Figures, which summarize the consultations between subspecialists and the PCP.

JIANI YU, PhD, in her article, "**Emerging Opportunities for Telemedicine Research in Rhode Island**," delves into the nuances of telemedicine coverage, and provides a summary of the Rhode Island Telemedicine Coverage Act of 2016, which went into effect in 2018. She also offers an overview of provider restrictions, and examines data of telemedicine usage in the state and the opportunities it could provide to increase access to healthcare services to the underserved population, especially in the mental health area.

DENISE ANTHONY, PhD, and **CELESTE CAMPOS-CASTILLO, PhD**, in their article, "**Why Most of Your Patients Aren't Using an Online Portal, and What You Can Do About It**," relate that despite significant federal investments to encourage portal adoption, most patients are probably not using them. They identify usage demographics; for example, some studies have found that older patients are less likely than

younger patients to use a portal. Other studies show that racial and ethnic minorities, patients with lower income or less education, as well as those with public insurance, use portals less often than privately insured, higher income, more educated, and white patients. The article also examines the reasons why patients may not be using portals, such as privacy concerns or access to technology. The article argues for changes required of technology designers and policymakers, in order for portals to be used effectively to improve healthcare among diverse and underserved populations.

VANESSA A. DIAZ, MD, MSCR, and **MARTY S. PLAYER, MD, MSCR**, in their contribution, "**Direct-to-Patient Telehealth: Opportunities and Challenges**," conclude that the use of Direct-to-Patient (DTP) telemedicine will expand, and suggest it will be used most effectively in the care of chronic conditions and for preventive care provision. They also conclude that DTP use will require continued improvement in reimbursements for the care provided; and that challenges also include overcoming patient and provider barriers in the implementation and use of new technology.

E-Health and Healthcare Quality Management: Disruptive Opportunities

DANIEL HALPREN-RUDER, MD, PhD

INTRODUCTION

E-health will disrupt healthcare delivery. This disruption will benefit all of healthcare's stakeholders, from providers to patients, and from insurers to enterprises. E-health is a unifying term encompassing telehealth, telemedicine, digital health and remote patient monitoring. E-health is not new medicine; it is new delivery. Furthermore, all elements of the Triple or the Quadruple Aim[1] are addressed by the opportunities present within E-health. Here we move beyond the early iterations of E-health, with its "doc on a screen." We explore what E-health-empowered advances in quality management will mean to the clinician, the patient and society.

Early on in my E-health journey, a friend said, "If all we do with E-health is use e-tools to do what we have always done, we will have wasted a great opportunity." That is to say, if we only replace an office visit with a virtual visit, we will just have scratched the surface. The cost-lowering, clinical efficiency, patient engagement, provider and patient convenience and data-crunching capabilities of E-health can push healthcare to new levels of value (quality AND cost). Over the past 30 years, technology has outstripped imagination. Frequently heard: "It cannot get any faster, more competent, or cheaper than this," but it always does. The healthcare challenge is to push problem solving into areas where technology will likely advance and consider what clinicians will need to do to be "just in time." This parallel track planning is what we need to do to diminish the 17-year gap between innovation and common practice.[3] We cannot say, "Hey, look at this new technology – let's figure how we can use it." We need to be ready when technologies are in development to predict the application and be able to step up with clinical data, quickly close the loop and advocate for implementation.

Technology is evolving to answer the following three questions:

1. Can Augmented Intelligence (AI) and Natural Language Processing (NLP) process a patient encounter (voicing both the clinician and the patient) and produce a structured, parsed visit note in real time? Can we take the visit note and use AI to hold it to expected metrics, indicators and outcomes?
2. Can telehealth create a patient learning environment to capitalize on the innovation most likely to have the greatest impact on value: the engaged patient?
3. Finally, is there a new diagnostic tool (adding to history, physical exam, lab / imaging and genetics) present in remote patient-monitored data?

THE TOOLS OF HEALTHCARE QUALITY MANAGEMENT (HCQM)

Visit notes machine-generated in real time and scanned for quality metrics

The tools of healthcare quality management (HCQM) are applied in every aspect of healthcare from the provider-patient encounter to entire institutions. The heartbeat of these tools is an assessment of the process by which healthcare is provided. At the level of the provider-patient encounter, the tool is chart review. Generally, chart review involves a healthcare professional reviewing a single chart and abstracting data. This is an extremely time-intensive endeavor, so chart review is generally conducted on a small percentage of cases thought to be representative of sought-after quality management data. Data analytics are now run on electronic medical records (EMRs) which depend on specific, named data fields such as in HL7. This has forced the input to be discrete. A free-ranging, dictated history is not "mineable" with this technology and is discouraged. The clinician is forced to acquiesce to the structured, barren landscape of field input or frustrate the data analysts with dictations. E-health can fix this dichotomy.

First, we should consider the enormity of the chart review problem. The Medical Record Review Guidelines of the California Department of Health Services, Medi-Cal Managed Care Division, asks that 10 records of each provider be abstracted on an annual basis.[4] If the average provider sees 3,000 visits annually, this is a chart review rate of 0.33%. During 2017, there were 880 million hospital outpatient visits in the U.S.[5] If 5% were evaluated, the cost would be $293 million (8 minutes per review at a personnel cost of $50/hr). On the hospital side, there were 36.5 million admissions to U.S. hospitals in 2017.[6] If there were an average of 10 healthcare provider visits per hospitalized patient, a 5% review would cost $122 million. Even if the one-time investment in developing automated, real-time chart preparation and review were $250 million (less than the cost of one-year review of 5% of out- and in-patient charts), the resultant tools would decrease risk and steer a more efficient

course to patient-formulated outcomes. It is likely that far less than 0.5% of encounters are being evaluated. This represents a major failure of HCQM although, given the tools and resources, it is probably the best we can do until technical tools are created with IT and clinical input.

NATURAL LANGUAGE PROCESSING (NLP)

This is what will likely evolve: A provider-patient encounter is recorded and is digitized by Natural Language Processing (NLP). The provider will likely have to cue the system as to the problem list item under consideration. Subjective input, currently available only as interpreted by the clinician, will be in the patient's voice, parsed for efficiency. Objective data will be inserted into its appropriate HL7 slot and shared with the patient. The exam will be dictated by the clinician. Assessment and plan will be a conversation between patient and provider, processed and parsed. A patient-voiced summary will be included with documented teach-back. Many clinicians already do some of this, although universal structure is lacking, and the resulting note lacks original patient input. By some estimates, as much as 50% of a clinician's time is relegated to information processing. Preparation of the clinical record may be responsible for 30% of that. Saving 5 minutes 20 times a day for 200 days yields a staggering 333 hours saved annually. This time is added back to the visit, allowing much more time for the critical provider role of teaching and understanding the patient's goals. It also eliminates the keyboard between the patient and provider. A structured record, digitally produced, becomes available for quality management processing 100% of the time. And in real time.[7] The note so prepared can be reviewed as the capstone of the visit, corrected or appended as the team decides.

In the value-based world, it is likely that Current Procedural Technology (CPT) evaluation and management coding will be put aside. The structure of the CPT code which yields purposeless repetitive entries will have to give way to accounting for case-specific metrics and Patient Centered Outcomes (PCOs). Also, in an environment where most healthcare providers will be employed by large practices or institutions, there will need to be tools to track provider efficiency and results. To ensure their organizations are meeting their quality targets and subsequent reimbursement, administrators will need to be able to process visit records for metrics and PCOs.

ROLE OF INFORMATION TECHNOLOGY

Accomplishing this level of chart preparation and review requires that thousands of digitized encounters be made available to the Information Technology (IT) professionals.[2] Identifying process metrics and individualized outcomes requires a kind of successive approximations using learning algorithms to become increasingly accurate. Each approximation is evaluated by a clinician; its success or failure discussed with IT and the process recycles. The E-health asset that can make this happen is the video-conferenced encounter both as Direct To Consumer (DTC) and scheduled patient-provider encounters. This is a bountiful resource, unique to telemedicine and the reason this advance will be an E-health development. Getting it right will require an investment of significant clinician time, most likely as a part of a research grant. This research will start with a single clinical entity (such as DMII) and grow to involve a significant percentage of problem-list entries. If we care about efficiency (value) and engagement, this is the investment that the clinical community should see as the answer to endless hours spent documenting and not enough time with the patient.

UNIVERSAL CHART REVIEWS

The Institute of Medicine defines health care quality as "the degree to which healthcare services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."[8] I propose that (1) data for individuals generates data for populations, (2) even for the same diagnosis, patient-centered, insurer, and societal outcomes will vary, and (3) the extent of the application of "current professional knowledge" will also vary from case to case (based on patient preference, the patient's underlying physiology and societal resources). Each case is unique. It follows that the goal must be universal chart review wherein every encounter is measured for (1) that encounter's progress to one or more outcomes and (2) situationally sculpted best-practice care. Universal chart review for progress to outcomes that are centered on the patient are technologically in sight. The provider community has already spent significant time in defining metrics, indicators and outcomes.[8] This work will need to be sculpted to operate within the parameters needed by the IT community. This work will likely be done by clinicians working within a grant. Getting it right is, after all, a process of successive approximations. There are commercial applications similar to the HCQM tools needed to accomplish this.[9] Forming provider / corporate partnerships will accelerate the progress as corporations recognize the extent to which HCQM improvements will positively affect their bottom line.

THE ENGAGED PATIENT

Physicians have been experimenting with coached patient autonomy (aka: guided self-determination,[10] self-management,[11] and shared decision-making[12]) for some time. Conceptually, a patient and their support group are educated on aspects of their condition that are consistent with independent management. E-health is a natural partner in developing a program of patient education focused on structured and documented acquisition of knowledge leading to guided patient autonomy. Expecting patients to understand and participate in their healthcare will engage and empower patients.[13] Patients who are individually responsible for their actions in an environment of coached autonomy are

engaged patients. An all-encompassing presentation of many aspects of engagement is presented by Catalyst.[14]

Coached patient autonomy is not for everybody. The clinician must consider a number of variables prior to going down this path. Historically, the culture of healthcare delivery has been parental. This must morph into relationships that are empathic, reciprocally communicative and share decision-making. Many clinicians have brought elements of these characteristics into their practice. The availability of telehealth (the educational activity of E-health) will help in advancing and strengthening reciprocal communications and shared decision-making. The clinician should titrate the introduction of these elements into their practice at rates that coincide with patient competency. Providers will find that the titration is not against a preconceived end-point but rather that the end-point expands as the process progresses.

Telehealth is the exact vehicle to help patients learn, assess their learning and come to the provider-patient encounter with an opinion. Two E-health direct-to-consumer products[15,16] lead the patient up a clinical decision-making tree to a tentative diagnosis or brief differential. These products may be white-labeled so that their patient-facing appearance is that of the practice or institution. The provider sees the patient only after they have developed a set of possible diagnoses, either as a store and forward report, as an immediate virtual visit encounter or as a scheduled face-to-face visit. First, this has the potential to streamline an encounter, saving time for both the provider and the patient. Second, these are great learning tools as they fix critical elements of a diagnosis in the patient's mind.

Currently providers are challenged by the Internet, generally unhappy with "Dr. Google"[17-19] (searching "Dr. Google" yields 5.9 billion hits). It is more productive to leverage the patient's energy and curiosity.[20] The patient who has researched a complaint is engaged. Some complain that it often takes more energy to walk the patient back from an Internet diagnosis than their presenting "de novo." If practices meet the challenge prospectively, giving their patients URLs of quality websites or providing a practice-based library to help patients learn as they surf, their patients will increasingly present with well thought-out differentials, saving significant time for the provider. Clearly, these learning modules must be aware of the patient's underlying competencies. In the ideal world (and this needs no more technology that we currently have) the patient will be expected to present with a plan. This value-producing visit structure will go a long way to optimizing patient engagement.

DIGITAL HEALTH

There are now seemingly endless arrays of mobile phone (mHealth) applications (apps) that engage the patient in tasks of self-evaluation, often associated with the capability of transmitting data to a healthcare provider's office for integration into the practice's EMR. This aspect of E-health is digital health. The commercial consolidating venture AppScript[21] serves to aggregate digital health and encourages healthcare professionals to evaluate and electronically prescribe the most useful/directed evidence-based digital health apps, devices and content to patients. As of September 2019, AppScript has reviewed and scored 688 apps. The vast majority of these apps are single-purpose (7 categories such as patient experience, lifestyle and stress, medicine minders and others) with only the category of Disease Management Devices (there are 188 entries in this category) subcategorized with entities such as diabetes, hypertension, ADHD, Alzheimer's, and others (13 total). On the non-commercial side, the American Medical Association, the Healthcare Information and Management Systems Society, the American Heart Association and the DHX group[22] have formed Xcertia, dedicated to "improving the quality, safety, and effectiveness of mobile health apps."[23] In many ways like a pharmaceutical, and in their ability to empower the patient, the healthcare provider's competency in navigating mHealth and digital health will become a highly patient-engaging clinical competency.

THE FIFTH DIAGNOSTIC HIDING IN MONITORING DATA

Anybody who has been to a hospital is accustomed to the sight of a monitor with its pattern flying by on a screen. Processing that data goes back to 1982 when Bruce Del Mar and Jeff Holter inaugurated what is still the Holter Monitor.[24] It might be considered that their instrument, with its ability to spot dangerous arrhythmias, was the initiation of E-health almost forty years ago. Remote patient monitoring with an element of processing is at the more complex extreme of the digital health spectrum. A particularly useful application is that of seizure monitoring. With published research dating back to 2010, Rosalind Picard's team at MIT developed a now commercially available wrist band device using galvanic skin data to predict a seizure with enough advance warning for the patient to stop what they are doing and prepare.[25] Over the past 10 years there have been a proliferation of non-invasive (e.g.: digital health devices such as FitBit, Apple Watch), minimally invasive (glucometers fitted with an insulin-delivery pump) and invasive monitoring devices (pulmonary pressure monitoring to detect nascent decompensation of CHF).[26]

The CHF warning system noted above alerts providers through a prediction algorithm[26] looking for divergence from the norm. The question is whether a stream of multiple, simultaneously monitored parameters might have predictive competency for many diagnoses. A patient is monitored with a multi-channel non-invasive patch (for example,[27] measuring general activity, postural classifications, vital signs and sleep metrics). The patch is polled by the patient's mobile device at set intervals with the data going to a remote processing center. The processing center would develop a profile of the patient under a variety of situations such as eating, walking, sleeping and so on. The scenario is that of a nursing home patient visited by his 16-year-old grandson who has just returned from the West Coast. The grandson

coughs a few times while in the room. Later that evening the nursing home is contacted by the data processing center and is informed that patient has a divergence of his pattern consistent with early flu. According to the patient, he feels a "slight chill" but is not concerned. The patient is moved to an isolated, reverse airflow filtered room, an IV is started, and he is given an antiflu agent and acetaminophen. He has a sick few days, but early intervention works for him and the other residents that he may have otherwise exposed. In the absence of this intervention, he may have infected other residents producing several ED visits, hospitalizations, ICU intervention, and perhaps deaths.

The work to be done involves monitoring a large number of patients and carefully looking at the records generated. With a statistically significant sampling, a number of patient records will, in retrospect, indicate nascent flu. The records are examined for common divergences from baseline. Algorithms developed are then tested for their diagnostic competency. This is the work of predictive analytics where monitoring has shown value.[28,29]

CONCLUSION

E-health in all its facets (telehealth, telemedicine, digital health, and remote patient monitoring) invites monumental advances in healthcare delivery, surveillance, insight and quality management. In order to efficiently incorporate the expected advances, the healthcare community must work closely with information technology professionals. Neither side can work effectively waiting for the other to set the table. We have painted several examples of advances that can be reasonably expected to materialize over the next few years. Innovation management teaches that advances not synched with culture will face a difficult, time consuming path to acceptance. Think the EMR that, after 40 years, has still not meshed with the reluctant medical culture that eats innovation for breakfast.[30] It is incumbent upon all healthcare providers to understand what we can expect and share their enthusiasm and vision with each other, with every other healthcare worker and with their patients. This is the behavior most likely to change the culture of healthcare and usher in advances, with less patient-provider stress and with long successful strides right out of the gate.

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Telehealth & E-Health in Rhode Island 2020 and Beyond

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Mr. Watson – come here – I want to see you.[1]
— Alexander Graham Bell

Who among us could have imagined in 1876 where telecommunications would have brought us today? The famous first telephone call, as near as I can tell, had no health implications to Mr. Watson or to the famed inventor Alexander Graham Bell, yet it did set the stage for a rather powerful technology infrastructure.

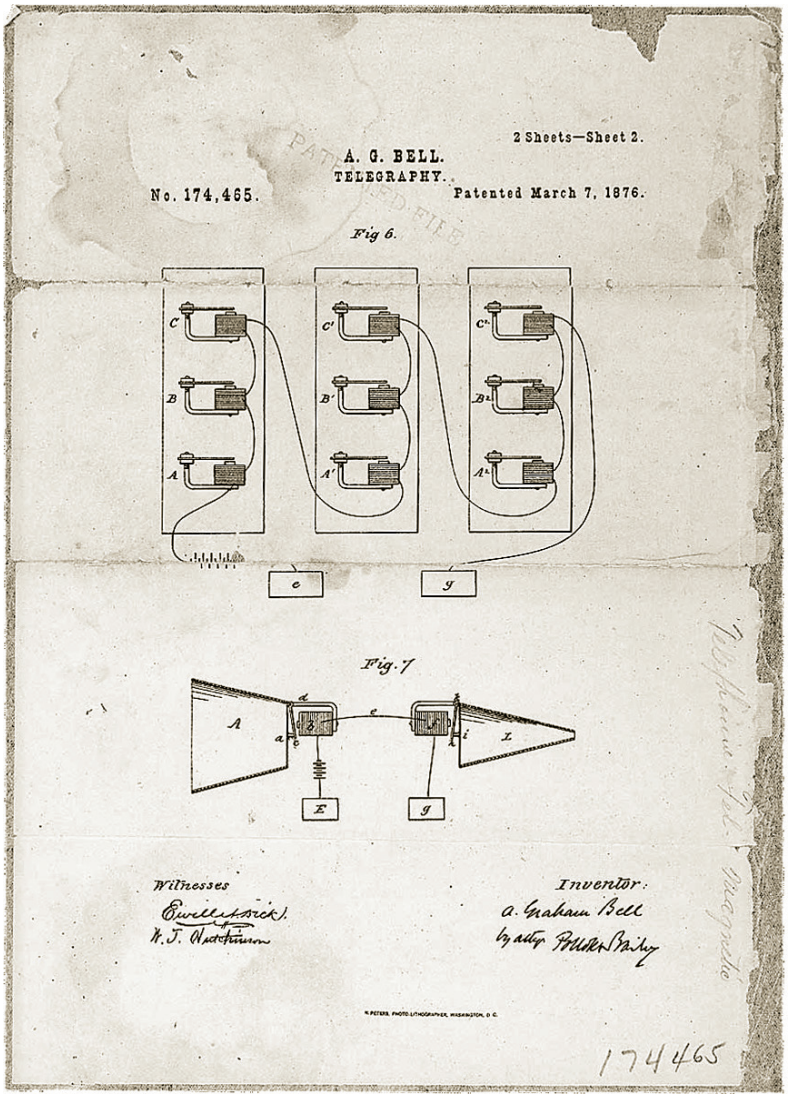
Although no one is suggesting we are ready for Dr. McCoy, from Star Trek, to utilize his tricorder to cure any ailment, we have come a long way in leveraging technology to advance healthcare. Using the Internet to power our electronic health records, to transfer digital images across the world for interpretation, and to perform robotic surgery from the corners of the globe are a few examples of how we practice medicine in 2020.

In Rhode Island, we have 5,288 actively licensed physicians, and of those, 24% (1,254) have license addresses outside Rhode Island.[2] Although not all of those physicians are practicing telemedicine, it is common place for radiologists, anatomic pathologists, and a growing number of other specialties to have licenses in many states so they can conduct telemedicine legally.

Alexander Graham Bell at the opening of the long-distance line from New York to Chicago in 1892. [PRINTS AND PHOTOGRAPHS DIVISION, LIBRARY OF CONGRESS]

There are some applicable professional standards that have been approved by the Board of Medical Licensure and Discipline that are relevant to current practice.[3] A general principle is a physician needs to be licensed in the state where the patient received care. Therefore, if the patient is in Rhode Island and the physician is in California, the physician needs a Rhode Island physician's license. It is also important that special requirements exist when prescribing a controlled substance. Physicians must have a business address in Rhode Island in order to obtain a Rhode Island Controlled Substance Registration and DEA registration.[4] It is illegal to prescribe controlled substances between states without an appropriate DEA registration.

Telemedicine also requires that the same standard of care, as if the patient were evaluated in a traditional office setting, must be met. Although conducting a physical exam remotely can be challenging, advances in technology are making this easier. It is important to note that "*Treatment, including issuing a prescription, based solely on an online questionnaire without an appropriate evaluation does not constitute an acceptable standard of care and is considered unprofessional conduct.*"[5] This requirement highlights the



Alexander Graham Bell's Telephone Patent Drawing, March 7, 1876.
[NATIONAL ARCHIVES]

importance of preserving the integrity of the profession and practicing medicine to the applicable standard.

Physicians are reminded about the appropriate privacy requirements to be evaluated prior to engaging in telemedicine or Internet medicine. It is important to use secure messaging, to appropriately document in an approved electronic medical record, and to maintain requirements relevant to HIPAA.[6]

As our profession moves more and more toward virtual healthcare, it is vital we, as professionals, remain virtuous and adhere to the high standards of our profession, while recognizing that E-health is much more than the future, it is the present.

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Telehealth: Enhancing Care through Technology

AUGUSTINE MANOCCHIA, MD

ABSTRACT

The use of telehealth – the delivery of healthcare services through the use of two-way electronic audiovisual technology – has grown significantly in the U.S. in recent years. Telehealth offers patients and providers significant benefits as a lower cost, easier way to access quality care, but the medical community is still working to perfect the balance between technology and in-person care. This article covers the current national telehealth landscape, consumer perceptions of telehealth, as well as the steps Blue Cross & Blue Shield of Rhode Island (BCBSRI) has taken to cover telehealth services for its members and implement a user-friendly mobile app to facilitate this type of care, as well as how it fits into their primary-care strategy. It discusses some existing applications for telehealth, as well as some ideal-state, practical ideas about the future of telehealth's use.

KEYWORDS: telehealth, telemedicine, healthcare access, healthcare costs

INTRODUCTION

Like just about everything else, medicine and healthcare are rapidly changing in this age of technology. One obvious example of this is telehealth (also called telemedicine), which is the delivery of healthcare services – including diagnosis, consultation, treatment, education, care management, and patient self-management – using real-time, two-way electronic audiovisual communication technology, typically video conferencing. Telehealth offers patients a convenient option for care when they need it, saving time and cost. The key is finding the balance between telehealth and traditional in-person care, and educating consumers about when to use it.

TELEHEALTH LANDSCAPE IN THE U.S.

Telehealth is a rapidly growing segment of the U.S. healthcare industry, due in large part to its convenience as well as the increased access to care it offers for many people who normally might not seek care. The U.S. telehealth market is expected to reach about $36 billion by 2020,[1] and increase to $64 billion by 2025.[2]

A unique partnership

Reinforcing the growth of telehealth in the U.S. is the recent announcement of a partnership between American Well ® and Cleveland Clinic creating a unique initiative providing broad access to comprehensive and high-acuity care services via telehealth. The two organizations will form a Cleveland-based joint venture company called The Clinic™, which will offer virtual care from Cleveland Clinic's highly specialized experts through American Well's well-established digital health technology platform. This partnership will lead the healthcare industry toward integrated, digital care delivery models that complement and are connected to traditional care settings.

Rising healthcare costs are driving the industry to shift to more cost-effective alternatives for quality care. The Centers for Medicare and Medicaid Services (CMS) forecasts that national health spending will grow at an average rate of 5.5% per year through 2027, outpacing gross domestic product (GDP) growth by nearly 20% over the same time period.[3] CMS also estimates that healthcare costs, which represented 17.9% of GDP in 2017, will constitute 19.4% by 2027.[4]

This trend has an obvious impact on employers, many of which have begun offering telehealth as a less costly alternative to traditional healthcare. In fact, 91% of employers are expected to offer telehealth by 2020.[5] However, while a vast majority of mid-size to large employers offer this benefit, less than 2% of employees have used it.[6] So the obvious question – and the biggest challenge – is why?

A recent J.D. Power study[7] offered many consumer findings around the use and perceptions of telehealth:

- 9.6% of consumers have used telehealth in lieu of a doctor's office, urgent care, or emergency room visit in the last 12 months.
- Usage is highest among patients in the West (11.1%) and lowest in the Northeast (5.7%).
- Younger adults (aged 18–24) have used telehealth more than any other age group (13.1%), while seniors (aged 65+) have used it the least (5.3%). However, 10.5% of adults aged 55–64 have used telehealth.
- 74.3% of consumers say their health system or health insurer does not offer telehealth (39.7%) or they are

unaware of it (34.6%). This is concerning in rural areas (72%) and suburban areas (70.3%), where telehealth is targeted to help increase access.

- 17.2% of consumers are aware that their health system or health insurer offers telehealth as an alternative to a doctor's office, hospital, emergency room, or urgent care clinic visit.
- 13.3% of consumers think telehealth is more expensive than a doctor's office visit.
- 48.7% believe the quality of care is lower than that of a doctor's office visit, with 6.2% perceiving quality to be higher. The remainder (45.1%) believe the quality of care is the same.

BCBSRI'S TELEHEALTH STORY: PART OF A LARGER STRATEGY

Blue Cross & Blue Shield of Rhode Island (BCBSRI) began covering telehealth in 2014, long before it became mandated by the state of Rhode Island for health insurers to cover telehealth as of January 1, 2018. As a health insurer, BCBSRI decided to cover telehealth as a means of added convenience for our members to help them meet their need for healthcare access. In fact, many of our larger customers demanded this service for their employees.

A significant and critical piece of our long-term strategic focus (along with cost leadership and comprehensive health and well-being) is to ensure that we're giving our customers the tools they need to make easier decisions about their health.

We've partnered with American Well®, one of the leading providers of telehealth services, to allow members to connect with board-certified doctors 24 hours a day using their smartphones, tablets, or computers. We've branded the service Drs. Online, and created a mobile app of the same name where members can access these services.

BCBSRI chose American Well to administer our telehealth services because of their reputation for security and safety. They monitor their participating physicians thoroughly and frequently, and provide protocols for every imaginable scenario that could arise, from a technological and protected health information (PHI) perspective. From a member/user perspective, we found it to be a seamless experience with few technological issues. Users can also see physicians' education and practice experience, as well as ratings from other users, for their own peace of mind.

Telehealth is intended to provide general healthcare services for a wide range of common, non-emergency health conditions, including allergies, respiratory infections, skin rashes, sinus problems, migraines, and many others. What it is not intended for is to replace true emergency care or to treat life-threatening conditions, such as seizures, chest pain, stroke, difficulty breathing, etc. Users are always advised to call 911 or go to the ER for any emergency or life-threatening conditions.

To date, we've had over 4,000 members register for Drs. Online, with more than 800 completed visits. The Drs. Online app has a 5-star rating on both Google Play and the Apple App Store.* Of our members who have taken the exit survey after using the service, 96% of them rate the service either 4 or 5 stars. The most common diagnoses among those 800 visits are upper respiratory infections, influenza, skin rashes, and urinary tract infections. We also recently began offering covered behavioral health services using Drs. Online, including therapy and psychiatry. This is part of our ongoing effort to increase access to these critical and much needed services – when getting care quickly is of the utmost importance – while helping to reduce some of the stigma often associated with them.

Telehealth is a covered service within BCBSRI's fully insured plans, and is a buy-up/add-on for self-insured plans. Member benefits, including cost-sharing, vary depending on specific plans.

NOT A REPLACEMENT FOR THE PCP

An important point that we emphasize with our members is that telehealth should not replace the personal relationship that we encourage our members to have with their primary care provider (PCP). We stress the importance of regular wellness visits, regular screenings and tests, and having an open, ongoing relationship with their PCP (preferably as part of a PCMH) as an optimal way to stay as healthy as possible. The PCP/PCMH is the "quarterback" of a member's care, and should be the point person for coordinating all of a patient's healthcare needs, whenever feasible.

Currently, there are no local physicians contracted with BCBSRI to provide telehealth services on Drs. Online to our members, but we're using board-certified providers who have a contract with American Well and are licensed to practice in Rhode Island. For 2020 and beyond, we're working on a comprehensive plan to begin onboarding local providers to Drs. Online, in a way that positively reinforces our primary care philosophy.

THE IDEAL STATE FOR TELEHEALTH

Telehealth is not a new concept; it's been around for a number of years. In general, our sense it that there has been both a fear and fascination about it among the physician community. The fear is that it could interfere with the physician/patient relationship; but at the same time there's a fascination and curiosity about it in this technological age. What is it? How does it work? How will it enhance my practice? Are there any technological and workflow barriers that I'd have to think about, like scheduling telehealth visits along with in-person visits, handling billing, and compensation?

*App Store is a service mark of Apple Inc. Google Play is a trademark of Google Inc.

The technology and infrastructure are in such a place that any physician who wants to do it can do it, and fairly simply. Any local physician can provide these services to their patients as long as they meet the requirements of our telehealth coverage policy, and any provider can bill for a telehealth visit according to our payment policy.

There is a great deal of opportunity for telehealth in general – ideally there are many thoughtful, practical applications for it to be used as a way to increase convenience and decrease overall cost of care, not as a way to simply generate income. Telehealth could and should also be used to help avoid or decrease costly emergency room care. Based on BCBSRI claims data, about 40% of ER visits are classified as low-acuity non-emergent (LANE) care visits according to diagnosis and evaluation and management (E/M) codes. That 40% figure equates to roughly $90 million annually in preventable ER visits for symptoms like back pain, flu symptoms, and sinus pain. Many of those visits could have been handled using telehealth, and those patients certainly could have been seen in their PCP's office for a much lower cost and in much less time.

There are also obvious linkages and opportunities for telehealth to bridge primary and specialty care, while again aiming to reduce waste, save time, and provide appropriate care at the right time, in the right setting. In a perfect world, the PCP does their best to diagnose and treat a condition or illness, but before referring a patient to a specialist, would use telehealth as a way to consult with that specialist, ideally while sitting with the patient. That consultation could be used to either expedite a follow-up visit with the specialist or to rule out the necessity for seeing them, depending on the situation.

CONCLUSION

These ideas are just scratching the surface of the types of practical applications that telehealth can provide. Working closely with physician and provider partners, insurers will be able to expand the reach of telehealth to help create healthcare that is convenient, more affordable, and creates the best experience for patients, which should always be the end goal.

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Use of Health Information Technology by Rhode Island Physicians and Advanced Practice Providers, 2019

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ABSTRACT

BACKGROUND: The Rhode Island Department of Health (RIDOH) has administered the Health Information Technology (HIT) Survey since 2009 to report clinician-level process measures relating to HIT adoption and use.

METHODS: RIDOH administers the Rhode Island HIT Survey to all licensed independent practitioners. Descriptive analyses examined HIT adoption and the clinician experience working with HIT.

RESULTS: Most physician and Advanced Practice Provider (APP) respondents report using an EHR (92.5% and 94.3%) and e-prescribing medications (84.1% and 81.6%). Less than half of physicians (40.9% or n=565) and APPs (35.4% or n=195) who prescribe controlled substances currently submit controlled substance prescriptions electronically. A higher percentage of physicians, compared to APPs, reported experiencing HIT-related stress (80.9% and 66.6%). The overall prevalence of physicians reporting symptoms of burnout was 29.7% (n=539) but varied between specialties.

DISCUSSION: As of 2019, the majority of Rhode Island physicians have adopted EHRs and e-prescribing. Adoption plateaued after 2012, and challenges persist in integrating existing technology into practice.

KEYWORDS: health information technology, e-prescribing, ,controlled substances burnout

INTRODUCTION

Most hospitals and physicians in the United States have adopted electronic health records (EHRs),[1] and recent focus has shifted from adoption and basic use to optimizing use, integrating systems with other forms of health information technology (HIT), and understanding the impact of these technologies on both patients and physicians.

While EHRs have been associated with improved documentation quality and administrative efficiency,[2] there have also been drawbacks. EHRs have been reported to reduce the quality of clinician-patient interactions and to increase the regulatory and administrative burden on clinicians.[3-5] Specifically, many Rhode Island physicians report that, while they agree that EHRs may improve the care their patients receive, EHRs impact their job satisfaction and increase their take-home workload.[6]

Recognizing the importance of HIT for both physicians and patients, the Rhode Island Department of Health (RIDOH) has administered the HIT Survey since 2009. The Rhode Island HIT Survey data provide a unique opportunity to examine longitudinal trends in EHR adoption as well as to report on emerging topics related to HIT.

METHODS

RIDOH's Healthcare Quality Reporting Program administers the Rhode Island HIT Survey to all licensed independent practitioners. This public reporting program is legislatively mandated, and HIT Survey data are used to report clinician-level process measures relating to HIT adoption and use. The survey was distributed to physicians annually from 2009 to 2015, and biennially since 2015. In 2013, RIDOH expanded the survey to advanced practice providers (APPs), including advanced practice registered nurses and physician assistants. The 2019 survey was administered to 4,266 physicians and 1,977 APPs.

To develop the 2019 survey, we collaborated with RI healthcare state agencies and other stakeholders to refine the survey tool for the 2019 survey. We piloted new questions with a small group of clinicians to obtain feedback about whether the questions were easily understood and relevant to clinical practice and then modified the questions based on their feedback.

We administer the survey electronically. We send a hard copy notification to all clinicians with a link to the electronic survey and an email notification to those with email addresses on file. Clinicians receive up to two email reminders. The 2019 survey was open between April 22, 2019 and May 10, 2019.

The HIT Survey data are used to calculate four summary measures of HIT implementation and use: (1) Licensed Independent Practitioners (**LIPs) with EHRs**, defined as the percent of LIPs with access to EHR components, including functions such as visit notes, lab orders or prescriptions[7]; (2) **LIPs who are e-prescribing**, defined as the percent of LIPs transmitting prescriptions electronically to a pharmacy[7] (this measure included only those clinicians who

reported that they prescribe medications, and hospital-based physicians were asked to only consider prescriptions sent to community-based pharmacies, versus those sent to the hospital pharmacy); (3) **LIPs who are e-prescribing controlled substances**, defined as the percent of LIPs transmitting controlled substance prescriptions electronically to the pharmacy (this measure considered only those clinicians who reported that they prescribe controlled substances and hospital-based physicians were again asked to only consider prescriptions sent to community-based pharmacies); and (4) **LIPs who are experiencing HIT-related stress**, defined as the percent of respondents reporting stress in at least one of the three HIT-related stress questions, which included whether the EHR adds to the frustration of one's day, sufficiency of time for documentation, and how they describe the amount of time spent on the EHR at home. The three HIT-related stress measures were adopted from the Mini z, which is a validated instrument that measures job satisfaction, stress, burnout, and work control, among other domains, and which was developed from the Physician Work Life Study.[8-12]

In addition to the four summary measures, the HIT Survey captured information about clinician burnout. Burnout was measured on a 5-point scale using a validated single-item measure from the Mini z.[8-12] This measure is based on clinicians' self-assessment of their experience, rather than a clinical diagnosis. Respondents were asked to select one of the following: (1) "I enjoy my work. I have no symptoms of burnout;" (2) "I am under stress, and don't always have as much energy as I did, but I don't feel burned out;" (3) "I am definitely burning out and have one or more symptoms of burnout, e.g., emotional exhaustion;" (4) "The symptoms of burnout I am experiencing won't go away. I think about work frustrations a lot;" and (5) "I feel completely burned out. I am at the point where I may need to seek help." Respondents were considered to have "one or more symptoms of burnout" (≥3 on the 5-point scale) or "no symptoms of burnout" (≤2 on the 5-point scale).

RESULTS

The physician response rate was 43% (n=1,835), and the APP response rate was 32% (n=633). Most physician and APP respondents report using an EHR (92.5% and 94.3%, respectively). Among the physician respondents, 66% (n=1,216) were office-based and 34% (n=619) were hospital-based. There has been an upward trend in EHR use among physicians and APPs since the survey was first administered in 2009, but uptake has leveled off in recent years (**Figures 1 and 2**). Among physicians who use EHRs, about a quarter (26.6%, n=448) use two different systems or vendors and 15.9% use three or more systems or vendors (n=267). Epic Systems, the most frequently used EHR vendor in Rhode Island, is used by the majority of hospital-based physicians

Figure 1. Prevalence of electronic health records (EHRs) and e-prescribing among physician respondents, 2009–2019

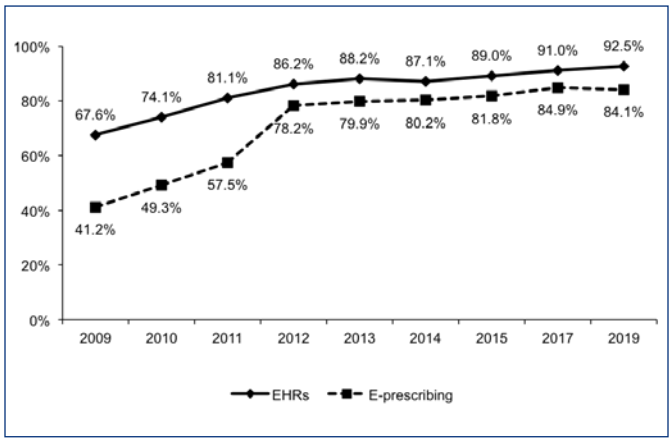
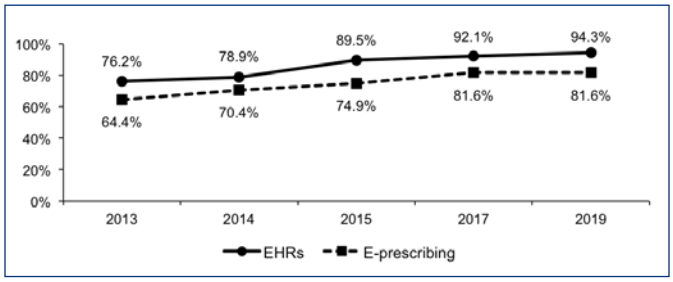


Figure 2. Prevalence of electronic health records (EHRs) and e-prescribing among advanced practice provider respondents, 2013–2019



(57.6%, n=344) and a quarter of office-based physicians (26.0%, n=289).

Similar to EHR use, the prevalence of e-prescribing increased among respondents over the past 10 years – from 41% in 2009 to 84% in 2019 – but uptake has leveled off since 2012 (**Figures 1 and 2**). The majority of office-based physicians who prescribe medications use e-prescribing (87.5% or n=1,023), with 59.2% (n=692) reporting that they "always" transmit prescriptions electronically to the pharmacy. Among office-based physicians who prescribe medications, one in ten reports that their system is unable to transmit prescriptions electronically (9.4% or n=110). Among hospital-based physicians who prescribe medications, just over three quarters (76.6% or n=321) use e-prescribing, with 28.4% (n=119) reporting they "always" transmit prescriptions electronically to a community pharmacy.

Less than half of physicians (40.9% or n=565) and APPs (35.4% or n=195) who prescribe controlled substances currently submit controlled substance prescriptions electronically. Among physicians who e-prescribe medications and prescribe controlled substances, over a third have systems that do not have the functionality to send controlled substance prescriptions electronically (37.2% of office-based and 34.7% of hospital-based physicians). About half of physicians (50.4%, n=912) were unaware of a 2017 Rhode Island

law that requires e-prescribing of all controlled substances by January 2020.

We asked physicians about their experience with HIT-related stress and burnout. A higher percentage of physicians, compared to APPs, reported experiencing HIT-related stress (80.9% and 66.6%, respectively). Nearly three-quarters of physicians (70.5% or n=1,164) "agreed" or "strongly agreed" that the EHR adds to their daily frustration. When asked about the amount of time spent on the EHR at home, 43.5% (n=718) of physicians reported that the time they spent on the EHR at home was "moderately high" or "excessive." A similar proportion of physicians (46.0% or n=760) reported their sufficiency of time for documentation as "poor" or "marginal." There is a high prevalence of HIT-related stress across the 15 most common specialties (**Figure 3**). In seven specialties, more than a quarter of physicians reported experiencing all three measures of HIT-related stress. The overall prevalence of physicians reporting symptoms of burnout was 29.7% (n=539), but varied between specialties. The highest prevalence of burnout was noted among emergency medicine physicians, with 46.1% (n=41) reporting symptoms of burnout. Orthopedic surgeons reported the lowest prevalence of burnout – 18.6% (n=11).

Figure 3. Percent of physician respondents with electronic health records (EHRs) who reported experiencing one or more measures of health information technology-related stress, by specialty, among the 15 most common specialties

DISCUSSION

Over the past ten years, Rhode Island's HIT Survey has assessed changes in the proportion of clinicians using EHRs and e-prescribing. We observed that EHR use and e-prescribing rose steadily after the passage of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009, before plateauing around 2012. While most Rhode Island clinicians have adopted EHRs, e-prescribing has hovered at around 80% among physicians who prescribe medications. The prevalence of consistent e-prescribing controlled substances is even lower, with less than half of clinicians sending these prescriptions electronically.

Rhode Island passed a law in 2017 requiring the e-prescribing of all controlled substances starting on January 2, 2020.[13] E-prescribing controlled substances has the potential to improve the safety of pain management by reducing prescription forgery, eliminating illegible handwriting, facilitating the identification of multiple prescribers before dispensing medication, and streamlining the prescription process.[14,15] A recent study found that a New York mandate to e-prescribe controlled substances was associated with a significant decrease in the number of opioid prescriptions at a tertiary-care hospital.[16] While this type of mandate has many potential positive impacts, many Rhode Island physicians are unprepared for the quickly approaching deadline. The majority of physicians who prescribe controlled substances in Rhode Island are not doing so electronically, with many citing limited system functionality as the reason. Additionally, half of physician respondents were unaware of the law altogether. Prescribers who feel that implementing the e-prescribing mandate would cause undue economic hardship may apply for a time-limited waiver. Going forward, Rhode Island should continue to publicize the new e-prescribing mandate and should consider steps to assist physician practices that are not prepared or facing undue economic hardship to incorporate this change into their workflow.

While it is important to harness HIT resources to address emerging health needs, we should also consider the role mandates for expanded HIT use play in physician stress levels. As observed in this study, the majority of Rhode Island physicians are experiencing at least one source of HIT-related stress. A previous study using the results of the 2017 HIT survey found that the presence of any one of the three HIT-related stress measures was associated with twice the odds of burnout among physicians.[17] Previous research on physician burnout found that various workplace factors were related to experiencing burnout, including loss of autonomy at work, decreased control over their work environment, and the time required for administrative tasks.[18] While previous HIT mandates have been successful in prompting the adoption and use of EHRs, it is important to consider how additional requirements will impact clinician workflows and HIT-associated stress.

There are various limitations to this data. First, all clinician data are self-reported. Second, recent survey years have had a lower response rate than previous survey years. Survey response rates between 2013 and 2015 were above 60%, whereas 2017 and 2019 rates hovered at 43%. We suspect this dip in response rate is tied to the transition to biennial survey administration in 2015. Third, the fact that RIDOH distributes the survey may influence how clinicians respond to more personal questions about HIT-related stress and burnout. Finally, distributing the survey electronically may bias the sample by not including clinicians without computer access.

These findings show that while Rhode Island has come a long way in HIT adoption, there are continued challenges in integrating existing technology into clinician workflows. Future surveys will help us to understand how HIT use is changing to meet emerging health demands and the impact it has on the clinician experience.

The results shared above represent a fraction of the findings from the 2019 HIT survey. The full report can be accessed at: https://health.ri.gov/publications/annualreports/HealthInformationTechnologyPhysicanSurveySummary.pdf

The HIT Survey data is also publicly available as a de-identified research data file. Please contact Emily Cooper, MPH at: ecooper@healthcentricadvisors.org for more information.

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Electronic Consults: Lessons From a Neighboring State

DAREN R. ANDERSON, MD

BACKGROUND

The delivery of healthcare has become increasingly complex. Primary care providers (PCPs) now collaborate with hundreds of different health professionals to coordinate and provide care to their patients.[1] Referrals from primary care to specialists have more than doubled.[2] Busy schedules and fewer opportunities for informal, "curbside" consultations mean that the face-to-face referral is often the only mechanism for a PCP to obtain guidance, advice, or input from a specialist. While technology has revolutionized communication in other industries, healthcare has been slow to adopt new tools and techniques. In the case of specialty referrals, whether the PCP is seeking input about next steps in managing a chronic condition, help identifying and treating a rash, or collaboration in managing a complex case, the face-to-face visit remains the only routinely available option. Many of these referrals still rely on fax or even paper mail to convey medical information between the collaborating providers. These antiquated communication tools combined with the increase in volume of referrals have led to poor coordination of care, patient inconvenience, long wait times, and increased cost.

Limited access to specialty care is a particular challenge for medically underserved patients such as those with state-funded Medicaid insurance, the uninsured, and those living in rural communities. Many specialists either do not accept Medicaid patients or limit access to these programs. Patients with Medicaid that do receive appointments often experience long wait times.[3,4] As a result of these barriers, medically underserved patients are less likely to be seen by specialists than patients with other insurance.[4] Delayed or deferred care due to poor access is a significant contributor to health inequality.[5]

eCONSULT OVERVIEW

The electronic consultation (eConsult) is an important new telehealth tool that provides a solution to improve communication and reduce access barriers to specialty care. eConsults allow PCPs and specialists to exchange clinical information about specific cases using a secure electronic platform. The concept was pioneered at San Francisco General Hospital, initially, as an electronic referral process that allowed specialists to triage and prioritize incoming referral requests.[6] Early experience with the system demonstrated that, in addition to improving the triage of patients into specialty care, a substantial number of consults could be fully addressed "electronically" and did not require a face-to-face visit at all.[7,8] A similar process was implemented in Los Angeles County, which has now completed over one million eConsults and reduced the overall need for face-to-face consults by 25%.[9] The use of eConsults has now spread widely in California and other states, particularly those with advanced payment models and shared-risk arrangements that support implementation of interventions providing value and cost savings.

CONNECTICUT EXPERIENCE

In Connecticut, as with many other Northeast states, fee for service remains the predominant reimbursement model. Innovations such as eConsults have been slower to take hold. However, as in other states, providing adequate access to specialty care for Medicaid patients is a significant challenge. Community Health Center, Inc. (CHCI) is Connecticut's largest Federally Qualified Health Center (FQHC), caring for over 150,000 patients in more than 200 locations across the state. Despite the presence of many large academic specialty care practices in close proximity to CHCI's locations, its patients often faced wait times of three to six months or longer for access to certain specialties, and many had to travel from locations across the state to UCONN Health in Farmington, the only state-funded medical center in Connecticut. In 2013, CHCI obtained grant funding to pilot an eConsult system to help address health inequality in specialty access. Funding allowed researchers at the Weitzman Institute, CHCI's research and education center, to partner with UCONN Health to test eConsults for cardiology referrals.[3] Primary care providers were randomized to receive access to an eConsult platform that allowed them to share relevant clinical information and a consult question with UCONN cardiologists. Use of the system was not mandatory, but was encouraged by use of a supportive workflow and frequent feedback to PCPs. Providers in the control group continued to refer to cardiology in the traditional manner by requesting face-to-face visits. The cardiology

eConsult reviewers provided advice and guidance about the case, including whether they felt a face-to-face visit was needed. Responses were returned to the PCP in two business days or less. After one year, results demonstrated a substantial improvement in access. More than half of the consults requested by PCPs in the intervention arm, 120 out of 229 (52%), were sent as eConsults and 83 (69%) did not require a face-to-face visit. The large number of consults that could be addressed via eConsults within two days led to a significant increase in overall access to cardiology due to the reduction in patients needing a face-to-face visit. In addition, patients in the intervention arm of the study had significantly fewer emergency room visits than patients cared for by providers in the control group, possibly due to the more rapid receipt of review and treatment for those patients receiving an eConsult.

A secondary economic analysis of Medicaid claims for patients in this same study demonstrated that those in the intervention group had a mean total cost of care that was $466 lower than those in the control using an intention to treat analysis that included costs of patients sent for face-to-face visits in the intervention group.[10] The higher total cost of care for patients referred for a face-to-face with cardiology accrued largely over a three-month period following the consult request, and there was a statistically significant increase in costs attributed to cardiology tests and procedures that was not seen in patients in the eConsult arm of the study.

Based largely on these findings, Connecticut's Department of Social Services (DSS), which manages the state's Medicaid program, received approval to implement a State Plan Amendment (SPA) that allowed limited reimbursement for eConsults for participating FQHCs. CHCI then expanded its eConsult program to include several other high-volume specialties including dermatology, gastroenterology, endocrinology, and orthopedics. A detailed analysis of Medicaid claims data for patients referred to these four additional specialties demonstrated that eConsults were associated with lower cost of care to Medicaid.[11] In total, patients receiving an eConsult had specialty-related costs that were $82 per member per month lower than patients who received a face-to-face appointment, yielding an estimated savings of over $600,000 for the state's Medicaid plan in one year.

On July 1, 2017, Connecticut became the first state in the U.S. to add eConsults as a covered benefit for its Medicaid program by including eConsult CPT codes in its fee schedule. Since that time, CHCI has continued to expand its eConsult program and now offers its patients access to eConsults for 30 different adult and pediatric specialties. Specialist from a wide and growing range of practices across the state now participate as eConsult reviewers. Since inception, CHCI has completed nearly 9,000 eConsults of which 80% prevented the need for a face-to-face visit. The program has benefitted providers, patients, and healthcare payers.

NATIONAL GROWTH

In 2015, CHCI created a non-profit subsidiary and began offering access to its eConsult platform to health centers in neighboring states and later, around the country. Reimbursement for the cost of the eConsult has come from a range of grant sources, commercial insurance, and Medicaid managed care plans, and increasingly, practices and health systems with value-based payment models and shared risk arrangements. As of August 2019, there were over 600 primary care providers from 146 practices in 14 states using CHCI's eConsult platform. The eConsult process minimizes changes in workflow and avoids imposing additional burdens on PCPs or their staff. Referral staff benefit in particular from the reduced need for face-to-face visits that need to be scheduled, coordinated, and tracked. A typical practice can expect an overall reduction of approximately 20-25% in the number of face-to-face referrals for its most common specialty referrals.

SPECIALISTS REVIEWERS

A wide range of specialists from Connecticut and other states now participate in the program. State regulations about telehealth are changing rapidly. Some states allow eConsults to be exchanged between clinicians in different states while others require an in-state licensure. CHCI has recruited, trained, and credentialed eConsult reviewers in 35 different medical and surgical specialties locally and regionally, while others practice across state lines. Volume of consults vary, and are adjusted to meet each specialist's needs. Specialists are reimbursed on a per consult basis. An average eConsult takes approximately ten minutes to complete. Templates can be designed to streamline responses. Specialists are expected to provide a clear, concise response first noting whether a face-to-face visit is warranted, and then outlining recommendations for further testing and treatment.

RHODE ISLAND eCONSULT PILOT

In September of 2016 Thundermist Health Center in Rhode Island began using CHCI's eConsult platform, focusing first on dermatology referrals, and later adding cardiology. While reimbursement from payers in the state is still not available, the health center chose to pay for the service on a limited basis due to the significant issues of access for its patients. Since inception, Thundermist providers have completed 351 eConsults in dermatology and cardiology. Seventy-eight percent of the consults prevented the need for a face-to-face visit. Consults cover a wide range of topics. For dermatology, the most common consult question is for assistance diagnosing an unidentified rash. The majority of these cases are found to be various forms of dermatitis. **Figure 1** shows an example of a dermatology eConsult (without photos) from

Figure 1. Dermatology eConsult Request

eConsult Request
Specialty: Dermatology
Specialist Reviewer:
Diagnosis: RASH AND OTHER NONSPECIFIC SKIN ERUPTION
ICD Code: R21
Procedure(s): interprofessional telephone/Internet assessment (99446)

To: Dermatologist
Rash on hands (L > R). See photos attached.

To: PCP
Good morning,

The clinical photos and history are definitely suggestive of dyshidrotic eczema (especially the right hand rash), but the lack of response to steroid and secondary consideration of tinea manum (or 2-foot, 1 hand) complicate the therapeutic picture. When patients present with an acral pustular eruption or palmar hand rash, it is always necessary to examine the feet as well, as this can provide a lot of help in diagnosis.

Biopsy of these rashes is usually not necessary if we can exclude/treat fungus, as the differences between dyshidrotic eczema and palmoplantar pustulosis/psoriasis are often nondiagnostic on H&E. I have the following recommendations:

1) Scraping of the left hand scale for KOH prep and fungal culture (I use a 15 blade to gently scratch away the scale onto a glass slide, then sandwich the material between another slide, tape together, and put in a sterile urine specimen cup to send to the lab). I would do this +/- a 2-week course of oral terbinafine. If the foot exam is suggestive of tinea pedis or significant onychomycosis, I would definitely do at least two weeks of oral terbinafine.

2) Once the scraping is done and specimen sent, I agree with a trial of class I topical steroid ointment, under occlusion at night if tolerated. Cost and access differ but usually either augmented betamethasone 0.05% ointment or clobetasol proprionate 0.05% ointment is affordable/covered through insurance or GoodRx.

3) If topical steroid is not effective, then we need to consider oral therapies and/or adjusting his medicines (Beta blockers can trigger/exacerbate psoriasiform eruptions). This is the point I might consider biopsy, prior to initiating oral therapy.

Thank you for the consult.

This eConsult was closed as: Patients Needs Addressed
Message submitted to provider for review.

Thundermist. For cardiology, some of the most common eConsults related to questions about abnormal EKG findings, atypical chest pain, and palpitations. **Figure 2** shows the dialogue from a cardiology eConsult.

The concept of eConsults arose out of the frustrations of front-line primary care providers struggling with limited access to specialty care for their patients. Now, with solid evidence demonstrating its clinical efficacy and a strong financial return on investment, this simple technology is reimagining the way primary care providers communicate and coordinate care with specialists in Connecticut, Rhode Island and across the country. As advanced payment models with shared risk arrangements take hold in the state, programs like eConsults will be increasingly important and sought after by payers as well as individual practices and accountable care organizations looking to control cost and improve access. In the coming years eConsults will become a routine element of the referral process, allowing PCPs and specialists to confer about cases in advance of, or in place of, a face-to-face visit, yielding tangible benefits for consumers, providers, and payers.

Figure 2. Cardiology eConsult Request

eConsult Request
Specialty: Cardiology
Specialist Reviewer:
Diagnosis: ATRIAL SEPTAL DEFECT
ICD Code: Q21.1
Procedure(s): interprofessional telephone/Internet assessment (99446)

To: Cardiologist
XX y/o with hx of interatrial septal aneurysm with PFO vs ASD seen on stress echo. Currently no cardiac sxs. Please advise on any further f/u/monitoring. Please refer to eCardiology consult.

To: PCP

XX year old with incidentally noted atrial septal aneurysm and patent foramen ovale versus small atrial septal defect on an otherwise normal stress echocardiogram. The patient is without associated symptoms. There is a statistically increased risk of embolic neurologic events from both the atrial septal aneurysm and often associated defect. Nonetheless, specific medical therapy is not indicated for primary prevention. Should a suspicious event such as a TIA occur, then consider treatment with aspirin and/or warfarin.

There is no indication to close this small, apparently hemodynamically insignificant shunt with surgery nor with a percutaneous septal occluding device.

This eConsult was closed as: Patients Needs Addressed
Message submitted to provider for review.

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Emerging Opportunities for Telemedicine Research in Rhode Island

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KEYWORDS: all-payer claims database, telemedicine, access to care

In the past few years, Rhode Island has made substantial strides towards advancing the coverage of telemedicine services.[1] Despite the state's more supportive policy environment, considerable caveats to coverage and barriers to telemedicine provision and use remain. For instance, the RI Medicaid program reimburses providers for certain telemedicine services, including live video telepsychiatry services, but does not reimburse providers for asynchronous telemedicine nor remote patient monitoring.[1-3] On the private payer side, RI joined the ranks of other states with private payer laws, with the passing of the Rhode Island Telemedicine Coverage Act in 2016.[4] This policy, implemented in 2018, represents a significant step towards supporting the growth of telemedicine services by requiring commercial insurers to provide the same coverage for telemedicine services as they do for in-person services.[4] However, certain aspects of the law have yet to be clarified.[4-6]

For instance, the Telemedicine Coverage Act does not offer specific guidelines about whether health plans may enable limits on coverage for certain telemedicine services.[6] Additionally, the law does not explicitly state that telemedicine services need to be paid at parity with in-person services.[6] Among other states with telemedicine coverage laws, some states, including Minnesota, mandate that Medicaid and private payers must reimburse telemedicine services at the same rates as in-person services.[7,8] This measure to ensure payment parity between telemedicine and in-person services may directly affect whether providers are willing to supply telemedicine visits as well as invest in resources related to telemedicine provision.[9,10]

In addition to these limits to the Telemedicine Coverage Act, there are restrictions for whether RI providers may practice medicine across borders. Currently, RI providers cannot deliver telemedicine services across state borders.[11] If patients are traveling or have moved out of state for instance, then they cannot continue seeing their existing provider via telemedicine. The Interstate Medical Licensure Compact (IMLC) is an agreement between 24 states and one territory that allows licensed physicians to practice medicine across state lines within states that are participants.[12] While several other New England states are part of the IMLC, it is unclear whether RI will join the compact.[11] In 2017, RI lawmakers established a legislative commission to advise on whether RI should be a part of the IMLC.[13] Previously, RI was a member of the Nurse Licensure Compact (NLC), allowing licensed registered nurses to see patients in other states.[11,14] However, as of 2018, RI is not a part of the NLC, and nurses in the state can no longer practice telemedicine across state borders.[11,14]

Whether these policies surrounding telemedicine in RI have impacted its use across different patient populations is unclear. In Minnesota, the Minnesota All-Payer Claims Database (MN APCD) has been used to examine the population-level patterns of telemedicine use across coverage populations.[15] Over the period 2010 to 2015, the volume of telemedicine visits increased sharply, from 11,113 to 86,238 visits, and 26 users per 10,000 enrollees to 113 users per 10,000 enrollees.[15] Nevertheless, only a small minority of the population used any telemedicine, and the majority of this growth is attributed to the increase of direct-to-consumer visits among the commercially insured population in metropolitan areas.[15] Within nonmetropolitan areas, most telemedicine visits were real-time services for mental health care, suggesting that in nonmetropolitan areas, telemedicine may have improved access for specialty care.[15]

Using the newly available HealthFacts RI Database, Rhode Island's All-Payer Claims Database, researchers may begin to track telemedicine use in the state.[16] HealthFacts RI, as a collaboration between the Rhode Island Department of Health, the Office of the Health Insurance Commissioner, the Health Benefits Exchange, and the Executive Office of Health and Human Services, collects de-identified healthcare claims from public and private payers.[16] While RI contains a relatively larger proportion of individuals living in urban areas compared to MN, telemedicine still has the capacity to improve access to care in the state.[17] According to the U.S. Census Bureau, the poverty rate in RI is 11.6%, and 9.3% of the population lives in rural region.[16,18] Additionally, the RI Department of Health reported in 2016 that transportation remains one of the biggest barriers to receiving care for rural residents.[18,19] Local RI organizations determined that 22 percent of individuals had forgone care due to transportation barriers, and for low-income individuals, transportation fares are prohibitively expensive.[19]

Similar to the analyses on the patterns of telemedicine use across privately and publicly insured patient populations completed in Minnesota, there are important questions about how different patient coverage populations use telemedicine in RI that may be explored using the HealthFacts RI. In 2017, the Medicaid program in RI served 32% of the under 65 population, and as of 2011, around 57% of all individuals are covered by private insurance.[20,21] Understanding the underlying trends in telemedicine use across these coverage populations may provide insight into whether the Telemedicine Coverage Act and other policies surrounding telemedicine in RI expanded access to care, particularly in underserved areas. Currently, the evidence in the literature about whether state telemedicine coverage policies drive the provision of telemedicine services is mixed. While several studies in the past few years have found that states with parity legislation have more telemedicine visits, others have found no associations between telemedicine use overall and statewide telemedicine policies.[9,10,22-24] In Minnesota, the Minnesota Telemedicine Act (MTA) mandated reimbursement parity for all healthcare services provided via telemedicine for Medicaid enrollees in 2016, and for commercial beneficiaries in 2017.[25] The MN APCD is being leveraged to compare the volume and breadth of telemedicine utilization across multiple payers before and after the expansion of the telemedicine parity policy.

In addition to understanding how policy changes have impacted telemedicine use in RI, there is a need for researchers to examine how telemedicine can be integrated with in-person care. For instance, the rise of the RI Accountable Entity (AE) Program in the previous few years, forming new Medicaid Accountable Care Organizations (ACO) in the state, introduces opportunities to study telemedicine within the context of a value-based care setting.[26] These ACOs, which are accountable for the quality, utilization and total cost of care for its attributed population, may use telemedicine to maintain continuity of care for high need and high cost populations.[26] Future work should examine if ACOs are increasing their use of telemedicine, and whether integrated telemedicine visits can promote the goals of AEs, including care coordination, addressing the social determinants of health, and reducing medical spending.

Telemedicine also has the potential to address the shortage of mental health providers and complement in-person mental health services, particularly for conditions such as substance use disorders (SUDs). In RI, substance use results in an age-adjusted rate of 26.9 deaths per 100,000 persons, compared to a national average rate of 14.6 deaths per 100,000 persons.[27] There may be a role, therefore, for telemedicine visits for SUD treatment, or tele-SUD, to bridge gaps in care within the state. In a recently published paper using commercial claims data, Huskamp and colleagues found that tele-SUD visits are still very low, but are currently being used to complement in-person SUD care, and have experienced rapid growth in the past decade, increasing from 0.62 visits per 1,000 people diagnosed with SUD in 2010 to 3.05 visits per 1,000 people in 2017.[28] The researchers concluded that the overall low use of tele-SUD visits may be too low given its capacity to improve patient outcomes, and more studies are needed to study the use of tele-SUD in various patient populations in order to guide future legislation surrounding tele-SUD.[28]

To date, the evidence on the use of telemedicine visits across patient populations, its impact on follow-up outcomes, and overall access to care is still limited. There are new opportunities in RI however, to examine the patterns of telemedicine use, and to achieve a better understanding of how telemedicine can support the provision of appropriate, timely, and high-quality care. Leveraging new sources of data in the state and evaluating recent advances in policies such as the RI Telemedicine Coverage Act, will be crucial for informing future legislation that aims to improve the delivery of health care services in the state.

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Why Most of Your Patients Aren't Using an Online Portal, and What You Can Do About It

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ABSTRACT

Online portals that provide patients with secure access to their medical records and provider communication can improve health care. Yet new technologies can also exacerbate existing health disparities. We analyzed information about 2,325 insured respondents to the nationally representative 2017 Health Information National Trends Survey to examine characteristics of portal nonusers and reasons for nonuse. Sixty-three percent reported not using a portal during the prior year. In multivariable analysis, we found that nonusers were more likely to be male, be on Medicaid, lack a regular provider, and have less than a college education, compared to users. Similar disparities existed in who reported being offered access to a portal, with nonwhites also less likely to report being offered access. Reasons for nonuse included privacy concerns and the desire to speak directly to providers, both of which indicate the important role of the doctor-patient relationship.

KEYWORDS: disparities, health information technologies, portals, privacy

Patient portals, the online tools that offer patients access to their medical records, test results, and online scheduling and secure messaging with their providers, have the potential to improve healthcare delivery. Previous research shows that patients become more engaged in their own health and healthcare when using a portal,[1,2] and better adhere to appointments and treatment.[3,4] Portals can also be good for providers because they can reduce workload and rescheduling time when they enable patient online scheduling.[5,6]

Yet despite significant federal investments to encourage portal adoption,[7] most of your patients are probably not using them.[8] Worse still, there is evidence of disparities in portal use. For example, some studies have found that older patients are less likely than younger patients to use a portal.[9] Other studies show that racial and ethnic minorities, patients with lower income or less education, as well as those with public insurance, all use portals less often than privately insured, higher income, more educated, and white patients.[10,11] Disparities in access to a portal risk widening existing health and healthcare disparities.

Patients may not be using portals for a variety of reasons. Some reasons for non-use are technological, like lack of access to the Internet.[12] Other patients are concerned about privacy,[13] while still others are worried that using a portal might diminish their relationship with their doctor.[14]

Another important barrier to portal use is lack of time for doctors to discuss them with patients.[15] Lack of encouragement from physicians, as well as subtle differences in provider communication that indicate lack of support, can reduce patient interest in using portals and increase disparities.[16]

Given the evidence about real benefits of portal use, and also concerns about disparities, we set out to find out who isn't using patient portals, and why not. Using data from the nationally representative 2017 Health Information National Trends Survey, we found that 63 percent of adults who were insured and made a healthcare visit during the 12 months prior to the survey said they had not used a portal during the preceding year.[17] Even more problematic, we found that nearly half of insured patients say they were not offered a portal by their provider. Nearly all of the portal users (95%) recalled being offered access, but most of those not using a portal said they were not offered access to one (59%). However, being offered access does not guarantee patients will use it; about 2 in 5 of those who were offered access did not use a portal.

Despite the overall low level of portal use, we still found evidence of disparities, by education, insurance type, and to some extent by race and ethnicity. Specifically, men, members of racial or ethnic minority groups, Medicaid recipients, and patients without a regular source of care, were all less likely than their counterparts to be offered access to a portal.

In addition to asking about portal use, the survey asked respondents who said they were not using a portal about 5 possible reasons they were not using one. Patients with Medicaid or Medicare insurance were more likely than those with private insurance to say they were not using a portal because they preferred to speak directly with their doctor. These patients may be worried about misunderstanding information online or they might be concerned that using a portal could interfere with their relationship with their doctor. The survey did not probe further about why patients gave one of the five reasons so more research is needed to understand the underlying concerns. Doctors should

reassure patients that the portal won't change anything about their relationship or their care.

Other patients said concerns about privacy and security of online portals were the reason they weren't using one. Patients who were 40 or older, and some racial and ethnic minority groups, were more likely to say privacy and security concerns were the reason they weren't using a portal. We know from other research that privacy concerns can affect patients' relationships with physicians, including limiting what they share with their doctors and their level of trust,[13,18] so these concerns are important beyond portals.

Finally, and in contrast to some previous research, there were no group differences in reporting that technological barriers were a reason for not using a portal, indicating that disparities in portal use are not because of difference in access to basic technology infrastructure. Instead, the "digital divide" between advantaged and disadvantaged groups today is likely related more to differences in knowledge, skills and comfort in using technology.[19,20]

To ensure that new tools like patient portals benefit all patients and do not exacerbate disparities, it is crucial that doctors and other healthcare providers talk about them with patients. Patients need to be offered a portal with helpful information about how to access it. But even more important, providers must be open to discussing patient concerns about privacy, and about how the portal will and will not change the vital relationship between doctor and patient.

Such interventions require recognition that providers' communication with patients takes time – an extremely scarce resource in clinical practice today. So payers must also recognize and appropriately value the time providers need to spend with patients.

In addition, federal incentives to support the uptake of new technologies like patient portals should be targeted toward supporting disadvantaged patients, instead of the current incentives, which simply require getting any 80% of the patients in your practice to use a portal. The current design of incentives can end up benefiting higher resourced patients more than others.

Finally, for patients to want to use portals, the portal tools must be secure, usable and indeed useful. That means technology designers must have patient needs at the center of their design, and policymakers must set standards for systems to be secure and usable at the same time. With such changes, portals could actually deliver on their promise to improve health care and even help to diminish existing health disparities.

Through ongoing and careful monitoring of who is and who is not using new technologies, and interventions to address why not, we can ensure that technological innovations like portals deliver care improvements while not exacerbating health disparities.

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Direct-to-Patient Telehealth: Opportunities and Challenges

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ABSTRACT

Provision of healthcare services through telehealth continues to increase. This rise is driven by the several factors, such as improved access, decreased cost, patient convenience and positive patient satisfaction. Direct-to-patient (DTP) care delivery is the most popular form of telehealth. However, barriers exist to its widespread use in practice, such as lack of reimbursement, concern that the convenience of these services may raise utilization to the point that spending increases without increasing quality of care, concern about quality of care provided and low uptake by underrepresented or at risk populations. DTP offers opportunities to improve population health and provide value-based care within integrated health systems, but requires thoughtful implementation strategies that address patient and provider barriers to its use.

KEYWORDS: telehealth, direct-to-consumer, direct-to-patient, e-visits, quality

Telehealth encompasses the provision of health services through a variety of information and communication technologies, which can be synchronous (e.g. video visits) or asynchronous (e.g. store and forward of images, remote patient monitoring). Most practices have some experience with the use of phone triage to answer patient concerns, which can also be considered a form of telehealth, although it is not generally denoted as such. Although very convenient for patients and not requiring any new technology infrastructure for practices, it is often not the preferred form of patient contact as it requires trained staff and is often not reimbursed. Current evidence from systematic reviews of telephone triage are not definitive regarding the quality of care provided, outcomes and costs.[1]

The use of telehealth continues to expand, with an estimated 61% of US healthcare institutions and 40–50% of US hospitals using telemedicine in 2016, and projections that in 2020 all large employers will provide coverage for these services.[2, 3] Multiple factors influence the increase in telehealth use, such as the potential to decrease costs and increase access to care. Consumer demand is another important driver of use. Multiple studies demonstrate patients using telehealth in general are very satisfied, and are willing to use the services again.[4, 5, 6]

Although reimbursement has been a barrier to widespread adoption of telehealth, recent changes in Centers for Medicare & Medicaid Services (CMS) payment policies that allow for reimbursements for telehealth services such as Brief Communication Technology-based Service, e.g. Virtual Check-ins (HCPCS code G2012) and Remote Evaluation of Pre-Recorded Patient Information (HCPCS code G2010) potentially herald upcoming changes that will improve reimbursement.[7] Updated codes for remote patient monitoring also have the potential to increase its use for monitoring of chronic conditions (CPT code 99453, 99454, 99457). This could further accelerate the growth of telehealth service delivery.

DIRECT-TO-PATIENT CARE DELIVERY (DTP)

One frequently used modality of telehealth is direct-to-patient care delivery (DTP), also described as direct-to-consumer, which provides care by connecting patients to providers directly. This is currently the most popular form of telehealth, with large growth occurring, and with most of the services being provided by private sector companies instead of health systems or private practices. For instance, Teladoc, a private sector company that provides these services, performed more than 1.46 million visits in 2017, showing an increase of 53% in visits over one year.[8] Similarly, American Well reports over 1.5 million downloads of their service app; MeMD reports 4.5 million users since its founding in 2010, and Doctor on Demand is predicted to reach two million video visits by summer of 2019.[9,10,11] Direct-to-patient care can happen synchronously, through chat or video technologies, or asynchronously, where patients may answer a questionnaire or send in images for the clinician to review at a later time. This asynchronous method is commonly described as e-visits, whose use has expanded due to their convenience and potential cost-saving benefits to patients and health systems.[12, 3] However, concerns remain regarding how to provide this type of care while retaining appropriate quality care, care coordination and with avoidance of unnecessary costs. For instance, a study by Usher et al suggests that direct-to-patient telehealth services increases spending by making access to care more convenient, leading to more utilization. It is unclear if this extra utilization improved quality of care for the patients.[14]

QUALITY MEASURES

When quality of care has been evaluated using claims data, direct-to-patient care providers were less likely to order diagnostic testing for strep throat and more likely to prescribe antibiotics for bronchitis than providers seeing patients in physician offices.[15] However, comparisons of antibiotic prescribing for acute sinusitis between DTP telemedicine visits and emergency department and urgent care visits showed similar adherence to choosing wisely antibiotic stewardship guidelines.[16] Similarly, Shi et al also found rates of antibiotic use, broad-spectrum antibiotic use and guideline-concordant antibiotic management between DTP telemedicine visits, primary care visits and urgent care visits were comparable.[17]

Further studies evaluating the impact, costs and quality of care of DTP telemedicine care are still needed. One common approach to evaluation involves assessing the need for follow-up visits after care is provided via an e-visit. Some studies demonstrate follow-ups ranging from 10% to 34%, with some differences probably due to heterogeneity in the populations being served and length of follow-up time assessed.[18, 19, 20] In our recent study published in Health Affairs evaluating follow-up within 2 weeks after an e-visit for the same complaint, 4.4% of 1,465 e-visits completed resulted in follow-up through an in-person visit. Of those patients who were seen in person, 81.5% did not have a change in their diagnosis.[4]

This study also looked at what type of concerns and patient demographics were associated with not being able to complete the e-visit, leading to an in-person visit being recommended by the telemedicine provider. Of 1,565 total e-visits requested, 6.4% were not completed. Men and older adults, as well as patients with diarrhea or skin problems, were more likely to have e-visits not completed. Finally, a survey after the e-visit inquired where patients would have gotten care if the e-visit was not available. Of 665 respondents, only 9% stated they would not have received care, with 49% stating they would go to a physician's office and 42% stating they would have gone to an urgent care center, ED, or retail health clinic. Although self-report of intention is subject to bias, this suggests that costs were avoided through the use of these visits. These results were found in the context of providing e-visit virtual acute care within a coordinated system of care, where e-visit, ambulatory and inpatient care providers all utilize the same electronic medical record system when providing care, allowing for seamless information exchange. It is unclear whether similar results occur when care is provided with unrelated platforms and electronic medical records, where the patient would be required to input their medical history for review. It is also unclear how often care provided through DTP telemedicine platforms is shared with the patient's primary care provider to enable care coordination.

The use of DTP telemedicine care within value-based care also warrants further evaluation. When provided without appropriate care coordination, it may be helpful if it decreases costs through avoidance of in-person visits, especially to higher cost areas such as the emergency department or an urgent care center. The increased access available through telemedicine might also facilitate care earlier during the course of an acute problem or chronic disease exacerbation, thereby avoiding more costly care due to disease progression. However, if it replaces preventive or primary care visits where preventive measures are discussed and provided (e.g. influenza and pneumonia vaccinations, cervical cancer screening, or screening for sexually transmitted infections), it could be disruptive in a way that decreases the quality of care provided. This concern is described in a study looking at use of commercial DTP telemedicine for pediatric acute visits, which found those using these services were less likely to have had preventive care visits.[21] Similarly, chronic care exacerbations might be best addressed by a provider who has a continuity relationship with the patient, in order to ensure appropriate changes are made to their medication regimen to try to avoid future exacerbations. Encouraging continuity of care when providing telemedicine services is in line with survey results from 4,345 respondents, where more than half (56%) felt it was important to have an established relationship with a provider they're having a telemedicine visit with.[23] Understanding the risks and benefits to patients and their care coordination and continuity of care might better allow for the development of telemedicine programs that enhance care more broadly without significantly decreasing continuity of care.

POPULATION HEALTH

The use of telemedicine holds great potential to improve health promotion due to its ability to reach populations that may not currently be accessing services on a regular basis (e.g. younger adults, those living in rural areas, or adults without chronic conditions). Thus, to improve population health, methods to best encourage needed preventive services when a patient's main interaction is through DTP telemedicine care should be identified and implemented.

It is also important to note that studies looking at patient demographics regarding the use of information technology and telemedicine suggest underrepresented groups are not being reached, which could expand health disparities that already exist. For instance, Anthony et al found racial disparities in patients being offered access to online patient portals, with Non-Hispanic blacks having higher odds of not being offered access when compared to non-Hispanic whites (OR: 1.73). Non-users of the portal were more likely to be on Medicaid, lack a regular provider, and have less than a college education.[23] In general, the populations using DTP telemedicine services appear to be younger adults.[4] Methods to improve uptake of services by underserved population should also be a priority as telemedicine services continue to expand.

CONCLUSION

In conclusion, DTP telemedicine provides opportunities to improve access and convenience for patients, and has the potential to provide interactions with populations that are not currently accessing health care regularly. It can be successfully implemented in ways that limit costs and improve care. However, its use will require continued improvement in reimbursements for the care provided, as well as overcoming patient and provider barriers to the uptake of new technology and modes of care. We believe its use will continue to expand, and would like to see it used more effectively in the care of chronic conditions and for preventive care provision. These use cases for DTP telemedicine might be the ones best suited to improve quality of care and decrease costs, and warrant further study to identify best practices.

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