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SmartPhone Medicine – Myth or Reality ?

1) SmartPhone Medicine is the same as Tele-Health or Tele-Medicine – Myth or Reality

Myth - Tele-Health/Tele-Medicine (TH/TM), equipped with nurse operated stethoscopes & oto/ophthalmoscopes has enabled university teaching hospital physicians to diagnose and treat serious illnesses in northern communities. What is now being sold as TH/TM is really just 'Smartphone Medicine' (SM) video-linking the user to a physician with no ability to do physical assessments.

2) 'Smartphone Medicine' can replace in person medical care – Myth or Reality

Myth – Without the ability to examine individuals, SM is limited to issues requiring no physical assessment (respiratory illnesses, urinary tract infections, abdominal pain, vomiting, diarrhea, & skin problems)¹.

3) Smartphone Medicine increases productivity - Myth or Reality

Myth – SM addresses minor issues and not those issues driving presenteeism, disability and benefits abuse;

- 1) Sick days - Any time saved using SM will still be taken as sick days
- 2) Dollar & productivity costs – Are fully costed out each year as sick days
- 3) Productivity – Equally impacted waiting in a clinic, sick at home or golfing on a sick day
- 4) Presenteeism – Drives 70% of productivity losses & causes are ongoing issues requiring diligent, in person care

4) SM has been shown to reduce US employer health costs, SM will do the same in Canada - Myth or Reality

Myth – The Rand Corporation has found that telemedicine has some effect to lower American corporate health costs, however since provincial health plans pay for employee health costs, this aspect is meaningless in Canada.

5) SM will lower absenteeism costs – Myth or Reality

Myth – Forgetting that employees will use all their sick days, even with a SM service, a 2011 to 2013 Rand Corporation study of 300,000 CalPERS (California Public Employee Retirement System) members with access to tele-medicine estimated that just 12 percent of the telemedicine visits replaced visits to doctor's offices or emergency rooms, while 88 percent represented new use of medical services².

6) SM will lower health related costs in a business – Myth or Reality

Myth – Perhaps in the US where businesses pay for the healthcare of their workers, but not in Canada. The Rand Corporation did note that net annual spending on acute respiratory illness alone increased \$45 per telehealth user.³

7) SM will lower medication claims – Myth or Reality

Myth – The Rand Corporation CalPERS study found that SM patients were more likely to be prescribed a broad-spectrum antibiotic which are more expensive and contributes to antibiotic resistance⁴.

8) SM will lower mental health claims – Myth or Reality

Myth - "A full 50 percent of our clinical encounters have been in the realm of mental health services" said Dr. Karen Rheuban, a co-founder of the University of Virginia Center for Telehealth.⁵ Combined with RAND Corporation findings that 88% of telemedicine use represents new use of medical services, it is not unreasonable to expect that the effect of SM use in Canada will be to INCREASE mental health and opaque disability claims.

9) SM will lower disability claims – Myth or Reality

Myth - SM may increase costly disability claims (especially mental health) by simplifying access to physicians by that small percentage of less than honest employees. (from the comfort of one's office or living room)

10) SM does look attractive at \$120 per employee per year – Myth or Reality

Myth – While subject to the limitations above, the per employee per month cost does not include paying for the physicians time on the call! Read the fine print carefully, buy beware, caveat emptor.

¹ Direct-To-Consumer Telehealth May Increase Access To Care But Does Not Decrease Spending, ,Published in: Health Affairs, v. 36, no. 3, March 2017, p. 485-491. doi:10.1377/hlthaff.2016.1130. Posted on RAND.org on March 28, 2017. J. Scott Ashwood, Ateev Mehrotra, David Cowling, Lori Uscher-Pines

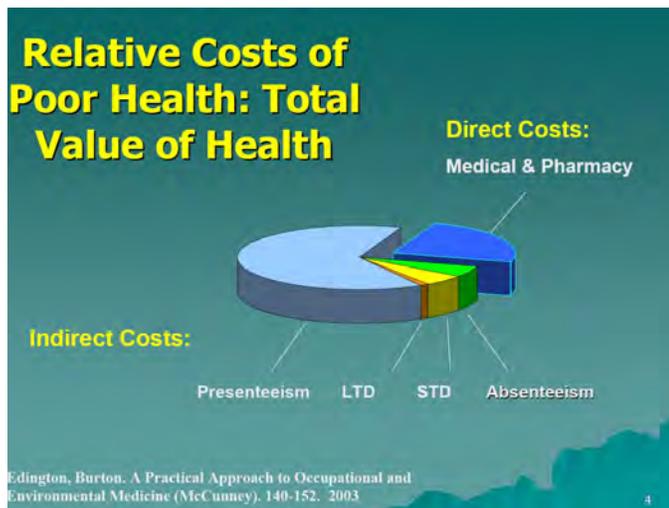
² Ibid

³ Ibid

⁴ Ibid

⁵ Professional Liability - The Promise of Telemedicine - By: Dan Reynolds | May 2, 2017 <http://riskandinsurance.com/the-promise-of-telemedicine/>

Drivers of Absenteeism Costs & Productivity Losses



Absenteeism

Cancer and cardiovascular disease - Drive Canadian Medicare costs, their incidence in the working population is relatively low, thus their impact on total corporate healthcare costs is far less than one would expect.

Self-limiting conditions (respiratory illnesses, urinary tract infections, abdominal pain, vomiting, diarrhea and skin problems) – Drive telemedicine use by the 300,000 CalPERS members in the quoted RAND Corporation study but do not drive productivity losses, absenteeism or disability.

Mental health - Now the largest contributor to disability. Unlike yesteryears objective, pathology-based disability (cancer/heart disease) with actuarial predictability and

disability guidelines manageability, mental health claims are subjective, opinion based with little/no actuarial predictability or guideline manageability.

The 88% utilization representing new SM use of medical services in the RAND Corporation CalPERS study, brings the possibility of SM simplifying the submission of questionable mental health claims and further increasing mental health disability claims.

Presenteeism⁶ - Comprise 70% of corporate healthcare costs which are the indirect largely hidden costs caused by common medical issues which are poorly diagnosed, treated and followed in our overwhelmed healthcare system. These conditions greatly impact extended benefits experience, absenteeism and STD/LTD claims.

<i>Medical Conditions Causing Presenteeism</i>	<i>Population Incidence</i>	<i>Productivity Losses⁷ Ongoing</i>
Pre Menstrual Stress	28%	15%
Skin Conditions	16%	5.2%
Musculo-Skeletal/Arthritis	15%	5.9%
Asthma - Allergies	65%	9%
G-E Reflux	15%	5.2%
Migraine Headaches	13%	4.9%
Mental Health - Depression	14%	7.6%
<i>Critical Illness</i>		<i>One Time</i>
Cancer	0.25%	100% - 1 year
Cardiovascular Disease <ul style="list-style-type: none"> Myocardial Infarct 	0.30%	100% - 3 months

However, it's the Bradford⁸ Index (BI) which really quantifies the substantial absenteeism costs caused by common medical conditions;

Cancer - ~ 3/1,000 EE's/year (0,003)

BI - 1 event² x 250 d (1 yr) = 250

Impact - 250 x 0,003 = 0,75

Respiratory infections – 2/yr for all employees

BI - 2 events² x 6 d = 24

Impact - 24 x 1,00 = 24

Migraines – 13% of employees

BI - 12 events² x 24 d (2d/mth) = 3,456

Impact - 3,456 x 0,13 = 450

Migraines are in fact 600 times more impactful than cancer and 19 times more than respiratory

infections.

Conclusion – For corporations, the major challenge today and going forward, is employee access to efficient, effective & engaged holistic care to diagnose, treat & monitor these debilitating conditions.

Despite marketing claims & US studies, SM is not designed to address these issues and therefore will not lower Canadian employer costs.

⁶ Presenteeism is the phenomena whereby employees are present at work but distracted and non productive

⁷ Presenteeism at Work – Paul Hemp, Harvard Business Review October 2004

⁸ The Bradford Factor is a simple formula that allows companies to apply a relative weighting to employee unplanned absences (sickness, Doctors appointments, emergency childcare, etc). The Bradford Factor supports the principal that repeat absences have a greater operational impact than long term sick. BI = #absenteeism events² x total # days



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Access and Quality of Care in Direct-to-Consumer Telemedicine

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Abstract

Background: Direct-to-consumer (DTC) telemedicine serves millions of patients; however, there is limited research on the care provided. This study compared the quality of care at Teladoc (www.teladoc.com), a large DTC telemedicine company, with that at physician offices and compared access to care for Teladoc users and nonusers. **Materials and Methods:** Claims from all enrollees 18–64 years of age in the California Public Employees' Retirement System health maintenance organization between April 2012 and October 2013 were analyzed. We compared the performance of Teladoc and physician offices on applicable Healthcare Effectiveness Data and Information Set measures. Using geographic information system analyses, we compared Teladoc users and nonusers with respect to rural location and available primary care physicians. **Results:** Of enrollees offered Teladoc (n = 233,915), 3,043 adults had a total of 4,657 Teladoc visits. For the pharyngitis performance measure (ordering strep test), Teladoc performed worse than physician offices (3% versus 50%, p < 0.01). For the back pain measure (not ordering imaging), Teladoc and physician offices had similar performance (88% versus 79%, p = 0.20). For the bronchitis measure (not ordering antibiotics), Teladoc performed worse than physician offices (16.7 versus 27.9%, p < 0.01). In adjusted models, Teladoc users were not more likely to be located within a healthcare professional shortage area (odds ratio = 1.12, p = 0.10) or rural location (odds ratio = 1.0, p = 0.10). **Conclusions:** Teladoc providers were less likely to order diagnostic testing and had poorer performance on appropriate antibiotic prescribing for bronchitis. Teladoc users were not preferentially located in underserved communities. Short-term needs include ongoing monitoring of quality and additional marketing and education to increase telemedicine use among underserved patients.

Key words: : telehealth, telemedicine, commercial telemedicine, emergency medicine/teletrauma

Introduction

Direct-to-consumer (DTC) telemedicine companies provide consumers around-the-clock access to care for common, nonemergency conditions through phone and live video via Webcam or smartphone applications. The industry is growing rapidly with an approximately 1 million visits in 2014.¹ DTC telemedicine physicians diagnose, recommend treatment, and, if indicated, prescribe medications. Patients and physicians do not have an established relationship, and physicians do not have access to the patient's full electronic health record.

DTC telemedicine offers patients the convenience of receiving care at home or work at any time of day. Telemedicine companies argue they can generate savings for employers, payers, and patients by substituting cheaper virtual visits (approximately \$40 dollars per visit) for costlier visits to emergency departments (EDs) or physician offices. They may also save patient time by eliminating travel and reducing time off from work to seek treatment. DTC telemedicine can also potentially increase access where there are physician shortages. Payers and employers frequently offer DTC telemedicine to improve access for underserved, rural populations.

Although DTC telemedicine has the potential to increase access, whether it does so in practice is unclear. DTC telemedicine requires patients to use potentially unfamiliar technology and embrace a different model of care. These might limit the use of DTC telemedicine by underserved populations. Furthermore, concerns about the quality of DTC telemedicine has been expressed by stakeholders such as the Federation of State Medical Boards² and the American Medical Association.³ The concerns are driven by the lack of a physician–patient relationship, limited or no access to medical records, limitations of what can be done in a virtual physical examination, and barriers to diagnostic testing. Together, these limitations could lead to misdiagnosis or poor quality of care.^{4–6}

Although there have been several studies of telemedicine services between primary care providers (PCPs) and their existing patients,^{5,7} there has been limited prior work on the quality of DTC telemedicine outside of the medical home and whether DTC telemedicine actually increases access for the underserved. In prior work we have examined antibiotic prescribing in DTC telemedicine⁸ but did not look at established quality measures or access to care.

To address this knowledge gap, we studied the care provided by Teladoc (www.teladoc.com), one of the largest DTC telemedicine providers in the United States.⁹ Using health plan claims from a large employer in California, we used geographic information system–based analyses to compare Teladoc users and nonusers with respect to location and proximity to alternative sites of care. We also compared the performance of Teladoc and physician offices on applicable Healthcare Effectiveness Data and Information Set (HEDIS) measures.

Study Data and Methods

Setting

In April 2012, the California Public Employees' Retirement System (CalPERS) first offered Teladoc as a covered benefit for approximately 370,000 members enrolled in its Blue Shield of California health maintenance organization plan. CalPERS is an agency that manages pension and health benefits for California public employees, retirees, and their families, with 1.4 million members receiving health coverage. This study describes CalPERS' experience with Teladoc in the first 19 months of the program, April 2012–October 2013.

How Teladoc Visits are Provided

Teladoc is currently offered to 10 million individuals, including members of health plans and employees of companies that have contracted with Teladoc to provide DTC telemedicine services.⁹ The vast majority of Teladoc visits occur via telephone, although patients can submit photographs and/or elect to have live video visits. To initiate a Teladoc visit, patients must first create an online account and enter information about their medical history. This information, along with data on patients' Teladoc visits, becomes part of their electronic health record housed within Teladoc. Patients then request a consult with a Teladoc physician via telephone, Internet, or mobile application when they require care. Teladoc physicians respond to requests 24 h/day, 7 days a week. The patient is assigned to an available physician licensed to practice in the patient's state of residence. The physician receives the patient's request, reviews the patient's medical history, and contacts the patient, usually within 16–20 min according to Teladoc's marketing materials. The physician diagnoses the patient's condition, discusses the diagnosis and treatment options, and, if indicated, sends a prescription to the patient's preferred pharmacy. If the patient is judged to need testing, follow-up care, or immediate medical attention, the patient is directed to contact his or her primary care physician or to visit an ED.

Data Source

CalPERS provided de-identified health plan claims data and enrollment information on all enrollees in their Blue Shield of California health maintenance organization plan. We limited the study population to those between the ages of 18 and 64 years who were continuously enrolled in the CalPERS health maintenance organization plan, and we divided the population into two groups: Teladoc users ($n = 3,043$) and nonusers ($n = 230,872$). Nonusers included those with no healthcare use during the study period. Teladoc users had at least one visit to Teladoc from April 2012 through October 2013.

Enrollee-level data included sex, age, and zip code of residence. Claim and line-level data included site of care, procedure codes, date of service, diagnoses, and medications prescribed and covered all services paid by CalPERS with dates of service between April 2011 and October 2013. We used data from just before the offer of Teladoc (April 2011–March 2012) to identify comorbidities.

Access to Alternative Sites

To determine whether enrollees were located in an underserved area and had access to alternative sites for care, we geocoded the addresses of in-network PCPs, EDs, and urgent care centers. We also geocoded each enrollee's home residence to his or her zip codes code centroid. Due to Health Insurance Portability and Accountability Act limitations on protected health information, we could not obtain their full address. Of the enrollee zip codes and provider addresses, 94.5% were geocoded with a match score of 80% or higher.

We used five variables to measure patient access: whether the enrollee's zip code fell within a primary healthcare professional shortage area (HPSA) as designated by the Health Resources and Services Administration,¹⁰ whether the enrollee's zip code was classified as rural (versus urban) using Rural-Urban Commuting Area Codes as defined by the U.S. Department of Agriculture,¹¹ and travel time in minutes from the enrollee's zip code centroid to the nearest in-network PCP, travel time to nearest ED, and travel time to nearest urgent care center. To categorize enrollees as rural versus urban, we used Rural-Urban Commuting Area Codes primary codes, defining urban as a metropolitan area or a nonmetropolitan area with 30% or more of workers commuting to a census-defined urbanized area.¹¹ To calculate travel time by car, we used the Network Analyst Tool in ArcGIS version 10.2, with ESRI's Streetmap North America data serving as the network layer.

On the five access variables we compared Teladoc users with nonusers (including both those who used healthcare and those who did not during the study period) using chi-squared tests. We also performed adjusted analyses to assess whether patient location was associated with Teladoc usage during the study

period (yes/no). In logistic regression models predicting Teladoc use, we adjusted for age, sex, relation to CalPERS primary beneficiary, healthcare spending prior to the introduction of Teladoc, average income in enrollee zip code, location within a HPSA, rural location, and travel time to the nearest PCP, ED, and urgent care center. All location variables were also assessed in separate logistic regression models to account for potential collinearity.

Performance on Hedis Measures Involving Diagnostic Testing

We compared performance on three HEDIS measures to assess quality of care provided at Teladoc. HEDIS is a widely recognized set of performance measures that has been used to measure quality in managed care plans since 1991. HEDIS measures examine processes and outcomes for high-volume acute and chronic conditions as well as preventive care.¹² We reviewed HEDIS 2014 "effectiveness of care" measures¹³ and selected all measures that addressed an acute problem managed by Teladoc. For example, we did not include measures related to preventive health screenings or management of chronic illnesses such as asthma or chronic obstructive pulmonary disease. Two of these measures involved use of diagnostic testing: use of low imaging studies for low back pain and appropriate testing for pharyngitis. One additional measure—avoidance of antibiotics in adults with acute bronchitis—assessed the extent to which adults received antibiotics in cases where it was not clinically indicated.

We hypothesized that DTC telemedicine would have higher rates of antibiotic use because of the tendency for providers to practice conservatively when lacking diagnostic information. Also, we hypothesized that Teladoc would have lower rates of diagnostic testing because testing is not available on-site, as is often the case in physician offices, and DTC telemedicine is designed to diagnose and treat patients in one interaction, and obtaining a test would require a follow-up visit.

Avoidance of antibiotics in adults with acute bronchitis captures the percentage of adults 18–64 years of age with a diagnosis of uncomplicated acute bronchitis who were not dispensed an antibiotic prescription within 3 days of the visit. A higher score indicates better performance as antibiotics are *not* recommended for this population of patients. The use of imaging studies for low back pain captures the percentage of adults 18–50 years of age with a primary diagnosis of low back pain who did not have an imaging study (plain x-ray, magnetic resonance imaging, computed tomography scan) within 28 days of the diagnosis. A higher score indicates better performance as diagnostic testing in this case is *not* recommended because low back pain is typically a self-limited condition that resolves within 30 days. Appropriate testing for pharyngitis captures the percentage of *children* who were diagnosed with only pharyngitis, dispensed an antibiotic, and received a Group A *Streptococcus* (strep) test for the episode. We modified this measure for use in adults and applied it to adults 18–64 years of age. There is some controversy on whether clinical signs alone are sufficient in adults to diagnose streptococcal pharyngitis; current Infectious Disease Society of America guidelines recommend routine testing of all adults for streptococcal pharyngitis before treatment.¹⁴ For this measure, diagnostic testing *is* indicated, and as above, a higher score indicates better performance. Pharyngitis is the only common condition among upper respiratory infections where diagnosis is frequently made via testing. It may serve as an important indicator of appropriate antibiotic use among all respiratory tract infections.

We used National Committee for Quality Assurance documentation to define these measures (e.g., identify exclusions and applicable episodes) and compared performance by Teladoc and physician offices using chi-squared tests.¹² All analyses were performed using SAS version 9.3 software (SAS Institute, Cary, NC), and values of $p < 0.05$ were considered significant.

Results

From April 2012 through October 2013, 3,043 adults used Teladoc for a total of 4,657 visits (1.5 visits per user). Compared with patients who used other sites for care, Teladoc users were more likely to be younger than 51 years of age (66% versus 58%, $p < 0.01$) and to be female (63% versus 56%, $p < 0.01$) ([Table 1](#)).

Table 1.

Characteristics of Adult Teladoc Users and Nonusers, April 2012–October 2014

	TELADOC (N=3,043)	NON-TELADOC (N=214,944)	P VALUE
Sex			
Male	1,121 (36.8)	94,530 (44.0)	<0.01
Female	1,922 (63.2)	120,414 (56.0)	
Age (years)			
18–30	476 (15.6)	38,777 (18.0)	<0.01
31–50	1,544 (50.7)	86,379 (40.2)	
51+	1,023 (33.6)	89,788 (41.8)	
Chronic illness			
0	1,544 (50.7)	109,152 (50.8)	0.96
1+	1,499 (49.3)	105,792 (49.2)	

Data are number (%). Teladoc nonusers were limited to those with at least one visit to any site for care during the study period.

Access for Underserved Populations

In unadjusted analyses, Teladoc users were slightly more likely to be located in a rural area (6.0% versus 5.8%, $p = 0.65$) and in a HPSA (22.2% versus 20.0%, $p < 0.01$) compared with Teladoc nonusers with some healthcare utilization ([Table 2](#)). When adjusting for age, sex, and other factors as described above, location within an HPSA (odds ratio = 1.12, $p = 0.10$) and rural location (odds ratio = 1.0, $p = 0.98$) were not significantly associated with Teladoc use.

Table 2.

Location Characteristics and Travel Time of Teladoc Users and Nonusers

	TELADOC NONUSERS			<i>P</i> ^a VALUE
	TELADOC USER (N= 2,744)	WITH 1+ VISITS (N= 189,055)	NO UTILIZATION (N= 19,382)	
Location characteristics				
HPSA (%)	610 (22.2)	37,923 (20.0)	4,139 (21.4)	<0.01
Rural (%)	166 (6.0)	11,055 (5.8)	1,026 (8.4)	0.64
Travel time (mean in min) to nearest				
PCP	3.2	3.1	3.0	0.45
Hospital	10.6	10.3	10.1	0.10
Urgent care	15.5	12.8	12.5	<0.01

^a*p* value compares Teladoc users and nonusers with 1+ visits.

HPSA, medical care (health) professional shortage area; PCP, primary care provider.

In unadjusted analyses, there were no differences with respect to drive time to the nearest PCP (approximately 3 min for all groups) or ED (approximately 10 min for all groups) across Teladoc users and nonusers ([Table 2](#)). However, Teladoc users were located further from an urgent care center than nonusers (15.5 versus 12.8 min, $p < 0.01$). In adjusted analyses, differences in travel time to the nearest PCP and ED remained insignificant. However, each additional minute of travel time to an urgent care center was associated with a 0.3% increase in the odds of being a Teladoc user ($p < 0.01$).

Performance on Hedis Measures

Physician offices performed notably better than Teladoc on appropriate testing for pharyngitis. Of applicable pharyngitis encounters, there was an associated strep test in 50% of physician encounters and 3.4% of Teladoc encounters ($p < 0.01$). In contrast, Teladoc performed better than physician offices on the use of imaging studies for low back pain, although differences were not significant as there were relatively few applicable low back pain episodes at Teladoc. Of applicable low back pain encounters, there was no imaging study within 28 days in 78.5% of physician office encounters and 87.9% of Teladoc encounters. Physician offices also performed significantly better than Teladoc on avoidance of antibiotics for acute bronchitis. Of applicable bronchitis encounters, antibiotics were not prescribed in 27.9% of physician office encounters compared with 16.7% of Teladoc encounters ($p < 0.01$) ([Table 3](#)).

Table 3.

Performance on Healthcare Effectiveness Data and Information Set Measures Comparing Teladoc and Physician Offices

	POPULATION APPLICATION (AGE IN YEARS)	TELADOC		PHYSICIAN OFFICE		P VALUE
		APPLICABLE EPISODES	PASS RATE (%)	APPLICABLE EPISODES	PASS RATE (%)	
Appropriate testing ^a for pharyngitis	18–64	113	3.4	4,641	49.5	<0.01
Use of imaging studies ^b for low back pain	18–50	33	87.9	17,790	78.8	0.20
Avoidance of antibiotics in adults with acute ^c bronchitis	18–64	168	16.7	7,342	27.9	<0.01

^aThe percentage of adults 18–64 years of age who were diagnosed with only pharyngitis, dispensed an antibiotic, and received a Group A *Streptococcus* (strep) test for the episode. (This is based on a Healthcare Effectiveness Data and Information Set measure for children.)

^bPercentage of adults 18–50 years of age with a primary diagnosis of low back pain who did not have an imaging study (plain x-ray, magnetic resonance imaging, computed tomography) within 28 days of the diagnosis.

^cThe percentage of adults 18–64 years of age with a diagnosis of uncomplicated acute bronchitis who were not dispensed an antibiotic prescription.

Discussion

Our results indicated that Teladoc users are not preferentially located in underserved communities. Teladoc visits are associated with less diagnostic testing and poorer performance on appropriate antibiotic prescribing for acute bronchitis compared with physician offices.

A major goal of telemedicine programs is to increase access to care to underserved populations. However, it appears that Teladoc is primarily serving those in urban areas in close proximity to a range of alternatives for acute care. This is in contrast to the Veterans Health Administration and Medicare, which have been successful in targeting telemedicine services to the underserved. Simply offering DTC telemedicine may not be sufficient because patients must be somewhat technologically savvy and willing to experiment with a new model of delivery, typically without direct support or encouragement from their regular providers. As such, DTC telemedicine companies may need to take additional steps such as aggressive marketing and education within patients' medical homes to overcome the digital divide and increase use among the patients that could most benefit from its services. Although the goal may be preferentially treat those in underserved communities, we recognize that many patients in urban areas may have barriers to timely and accessible care, including difficulty obtaining a suitable appointment. The patients who regularly use Teladoc may confront such challenges.

Teladoc visits were associated with less diagnostic testing compared with physician offices. This has different implications for quality depending on the condition, as diagnostic testing is recommended for streptococcal pharyngitis but discouraged for lower back pain. Teladoc is relatively unique in concerns about undertesting because outpatient settings are typically criticized for overtesting, which can be costly and pose a risk to patients.¹⁵ Because of lack of on-site testing, Teladoc physicians tell patients to seek testing via their primary care physician or an emergency department. Our results highlight that patients infrequently do so, and therefore treatment of conditions where testing is necessary may be inappropriate for DTC telemedicine at this time. To address this limitation, Teladoc is developing protocols for its physicians to order testing directly. In addition, the greater use of rapid home testing could address this quality concern.¹⁶

Finally, Teladoc had higher rates of antibiotic prescribing for acute bronchitis. In an earlier study, we found that Teladoc and physician offices had similar antibiotic prescribing rates for acute respiratory infections overall⁸; however, our findings here highlight significant differences in antibiotic prescribing patterns for bronchitis. Bronchitis is of particular interest because it is classified as a diagnosis for which antibiotics are never appropriate, and, as such, many initiatives focus specifically on decreasing antibiotic use in adults with this condition. Focused provider education and training could be directed to those conditions where antibiotic prescribing rates at Teladoc are higher than desired.

Our study had several limitations. First, we only described the CalPERS experience with Teladoc, so our results may not generalize to entities outside of California, to different types of patient populations (e.g., with less comprehensive insurance or a higher proportion of rural residents), or to telemedicine companies with different features. Second, we only had the zip codes of patients rather than their full postal addresses, and as a result our analyses related to access lacked some precision. Finally, the pharyngitis testing measure that we applied to adults was designed for use in children.

DTC telemedicine is growing at a rapid rate despite lack of evidence-based research on whether it is offering care of comparable quality or fulfilling its promise to reach the patients who need it most. The Texas Medical Board has worked to restrict the operation of Teladoc and similar DTC telemedicine companies in Texas, citing concerns about quality and lack of accountability to patients.¹⁷ Although additional work is needed to fully explore the impact of DTC telemedicine on access and the extent to which different features of DTC telemedicine services impact quality (e.g., telephone visits versus video visits), our research suggests that focused attention is needed on the use of antibiotics and on facilitating diagnostic testing. Studies such as this should help DTC telemedicine companies improve their services and inform ongoing policy debates in the United States on the appropriateness of different models of telemedicine for acute care.

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Disclosure Statement

No competing financial interests exist.

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Direct-to-Consumer Telehealth Prompts New Use of Medical Services; Not Likely to Decrease Health Spending



FOR RELEASE

Monday

March 6, 2017

Direct-to-consumer telehealth services—touted as a convenient and less-expensive way to get care for minor ailments—appear to prompt new use of medical services and thus may drive up medical spending rather than trim costs, according to a new RAND Corporation study.

Analyzing the behavior of more than 300,000 people who had generous medical benefits that included coverage for direct-to-consumer telemedicine, researchers estimate that just 12 percent of the telemedicine visits replaced visits to doctor's offices or emergency rooms, while 88 percent represented new use of medical services.

While direct-to-consumer telemedicine services do increase patients' access to convenient health care, researchers say new strategies such as higher co-pays or targeted marketing may be needed if telehealth is to fulfill its potential as a cost-saving strategy. The findings are published in the March edition of the journal *Health Affairs*.

“Like some other new patient care models that promise to cut costs and reduce the hassle of receiving medical care, it appears that in some cases, direct-to-consumer telehealth may increase spending rather than trim costs,” said J. Scott

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Researcher Spotlight

J. Scott Ashwood Policy Researcher



J. Scott Ashwood is a policy researcher at the RAND Corporation. He has over fifteen

years of experience with empirical studies of health care policy. His recent research focused on evaluating state and county interventions to improve behavioral health, the association between availability of...

Lori Uscher-Pines Senior Policy Researcher

Lori Uscher-Pines is a senior policy researcher at the RAND Corporation. Her research interests include innovations in healthcare delivery including telehealth,

Ashwood, lead author of the study and an associate policy researcher at RAND, a nonprofit research organization.

Several direct-to-consumer telehealth companies offer patients with minor illnesses around-the-clock access to physicians via telephone or videoconferencing on their smartphone, tablet or laptop computer. Use of such services has been growing rapidly, with more than 1.2 million visits reported in 2015. A recent survey of larger employers indicated that 90 percent expected to offer such services to their employees during 2017.

Direct-to-consumer telehealth companies argue that they save money for health plans, employers and patients by replacing costly visits to physician offices and emergency departments with a \$40 to \$50 telehealth visit. Patients also save the time and travel costs associated with in-person care.

RAND researchers examined claims information from 2011 to 2013 for 300,000 beneficiaries enrolled in a health plan through CalPERS, a larger California public employee benefit organization that began offering direct-to-consumer telehealth services to members in 2012.

Researchers focused on care for acute respiratory infections, a group of ailments such as sinus infections and bronchitis that are the most common reason people seek care from direct-to-consumer telehealth providers. They examined the records of enrollees who sought care for an acute respiratory infection from telehealth providers, as well those who sought care for the same conditions from a physician's office or a hospital emergency department. A total of 981 enrollees received care from a direct-to-consumer telehealth provider for acute respiratory infection during the study period.

The study determined whether telehealth visits represented substitute care or new use of medical services by focusing on the change in the volume of care received for acute respiratory infections through visits to physician offices and emergency departments relative to the change in telehealth visits.



maternal and child health, and emergency preparedness. Her current projects include

assessing the impact of telehealth on healthcare...

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Researchers' findings conflict with claims from operators of telehealth services, who say that surveys of telehealth patients suggest that just 10 percent of appointments represent new medical utilization. However, results from post-care surveys generally are seen as being less accurate than analysis of clinical care records, according to researchers.

The study found that for each episode of acute respiratory infection, the cost of telehealth services were about 50 percent lower than a physician office visit and less than 5 percent the cost of a visit to an emergency department.

However, the savings from substitution was outweighed by increased spending on the new use of medical services. The study estimates that net annual spending on acute respiratory illness increased by \$45 per telehealth user.

Members of the same RAND research group last year reported similar findings about retail clinics, another new venue for care that has been touted as reducing costs and increasing convenience. In that case, researchers estimated that 58 percent of visits to retail clinics for low-severity illnesses were new uses of medical services, rather than substitutes for visiting a doctor's office or emergency department.

“Given that direct-to-consumer telehealth is even more convenient than traveling to retail clinics, it may not be surprising that an even greater share of telehealth services represent new medical use,” said [Lori Uscher-Pines](#), co-author of the new report and a policy researcher at RAND. “There may be a dose response with respect to convenience and use—the more convenient the location, the lower the threshold for seeking care and the greater the use of medical services.”

Researchers suggest that if insurers want to increase the proportion of direct-to-consumer telehealth that substitutes for higher-cost care, they may want to consider raising the cost of co-pays for the service. Another strategy would be to develop better tools to encourage people who are high users

of emergency department care to use telehealth services instead.

Support for the study was provided by the California Health Care Foundation. Other authors of the study are [Dr. Ateev Mehrotra](#) of RAND and the Harvard School of Medicine, and David Cowling of the California Public Employees' Retirement System.

[RAND Health](#) is the nation's largest independent health policy research program, with a broad research portfolio that focuses on health care costs, quality and public health preparedness, among other topics.

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March 08, 2017 - Telehealth may improve patient access to healthcare services, but service over-utilization due to easier access may actually increase healthcare costs, according to a **study (<http://content.healthaffairs.org/content/36/3/485.abstract?=&right>)** published in the most recent issue of *Health Affairs*.

Telehealth access and utilization are booming, with nearly 1.25 million telehealth visits conducted in 2015. More employers are covering the service as well, with 90 percent of large employers reporting plans to add direct-to-consumer telehealth visits to 2017 health plans.

But one of the primary benefits of remote care - cutting costs - may not be showing itself.

Dig Deeper

- **What Providers Should Know to Improve Patient Access to Healthcare** (<https://patientengagementhit.com/features/what-providers-should-know-to-improve-patient-access-to-healthcare>)
- **How Telehealth, Convenient Care Improve Patient Experience** (<https://patientengagementhit.com/news/how-telehealth-convenient-care-improve-patient-experience>)
- **Patients Want More Access to Telehealth, mHealth Treatment** (<https://patientengagementhit.com/news/patients-want-more-access-to-telehealth-mhealth-treatment>)

In an assessment of 300,000 patients enrolled in CalPERS Blue Shield of California between 2011 and 2013, the researchers found that per-episode costs for telehealth are indeed lower than costs for in-person visits. However, telehealth's well-known convenience has led to over-utilization, contributing to high telehealth costs.

During the test period, 981 enrollees accessed telehealth for acute respiratory infection, the most common cause for telehealth consult. Telehealth visits totaled at about 50 percent of the cost of physician office visits, and less than five percent of the **cost of an emergency department visit (<https://healthitanalytics.com/news/retail-clinics-may-expand-access-to-care-but-dont-cut-ed-costs>)**.

However, 90 percent of telehealth visits were "new utilization," meaning these patients otherwise would have allowed their illnesses to mitigate on their own over time. The remaining visits were "substitute utilization," meaning these patients accessed telehealth in place of a necessary doctor or ED visit.

"The savings from substitution were outweighed by the increase in spending for the new utilization, and per enrollee spending on acute respiratory infection treatment was higher among telehealth users, compared to nonusers," the researchers reported.

These findings were not surprising, the researchers said.

"Because using direct-to-consumer telehealth is more convenient than traveling to a retail clinic, it may not be surprising that an even greater share of telehealth services represent new utilization," the team explained.

“There may be a dose response with respect to convenience and utilization: the more convenient the location, the lower the threshold for seeking care and the greater the utilization may be.”

These findings have considerable policy implications for health payers. According to the researchers, payers and employers should be mindful of the nuanced cost benefits associated with telehealth, and remember that they only glean cost savings if patients use the technology for substitution care.

“This could be accomplished by increasing patient **cost sharing for telehealth visits (<https://mhealthintelligence.com/news/wedi-brief-outlines-challenges-to-telehealth-reimbursement>)**, which could be justified by the savings in travel time,” the research team suggested. “Another strategy would be to focus on outreach. For example, a health plan could direct patients who are high users of ED care to direct-to-consumer telehealth.”

The researchers caution health plans and employers from eliminating telehealth service benefits altogether. Patients clearly enjoy these services, the researchers said. Offering at least some coverage to telehealth can **help boost patient satisfaction (<https://patientengagementhit.com/news/how-telehealth-convenient-care-improve-patient-experience>)**.

“Creative strategies such as increasing patient cost sharing, targeted patient outreach, and the integration of telehealth into overall care may make it possible to use this emerging and popular service as a way to increase the value of care,” the researchers concluded.

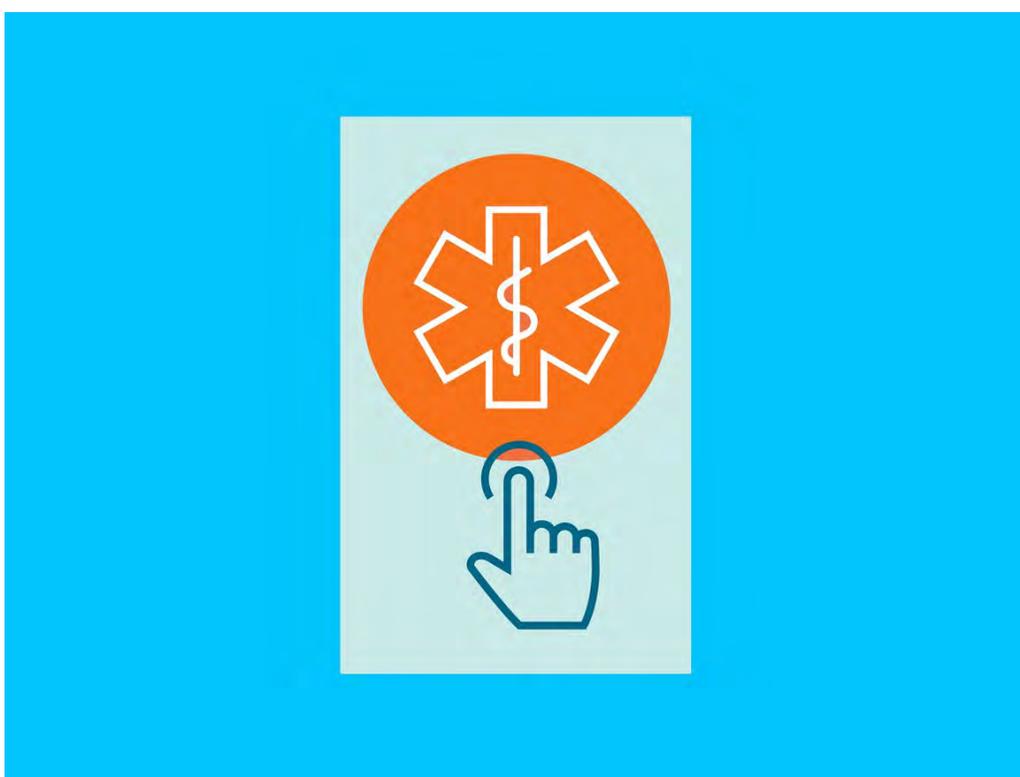
Other studies have shown a similar effect in other convenient care options known for increasing patient healthcare access. **A year-old study (<https://mhealthintelligence.com/news/do-retail-clinics-actually-increase-healthcare-costs>)** from the RAND Corporation concluded that because retail clinics are convenient for patients, those with mild illness are seeking potentially unnecessary care rather than waiting out the symptoms at home, eventually driving up costs.

“These findings suggest retail clinics do not trim medical spending, but instead may drive it up modestly because they encourage people to use more medical services,” said Dr. Ateev Mehrotra, an associate professor at Harvard Medical School and an adjunct researcher at the RAND Corporation. “Retail clinics do offer benefits such as easier access to medical care, but the widely expected cost savings may not be realized.”

Healthcare professionals should focus on educating their patients, equipping them with the knowledge necessary to appropriately make decisions about their healthcare access. Teaching patients that common cold symptoms may not constitute a retail clinic or telehealth visit will be critical in ensuring these tools serve the intended patients.

MEGAN MOLTENI | SCIENCE 03.06.17 04:20 PM

TELEMEDICINE COULD BE GREAT, IF PEOPLE STOPPED USING IT LIKE UBER



GETTY IMAGES

THESE DAYS, MORE people are working from home, shopping from home, and yes, even seeing the doctor from home. Last year more than a million people traded the waiting room for the comfort of their own couch—which sure beats thumbing through a sad collection of creased magazines.

Today, **telehealth** is touted as one of the chief ways to deal with rural residents left behind by hospital consolidation, as well as the 20 million new patients the

using phone-a-physician services *in addition* to in-person visits, not as a substitute. And the result of the Uber-ization of health care is an increase in overall costs.

In April 2012, CalPERS Blue Shield started covering telehealth visits for their 300,000 insurance enrollees. Over the next year and half, 2,943 of them came down with a respiratory infection. Two-thirds of those cough-stricken Californians went straight to the doctor. The other third picked up the phone first, using the newly covered direct-to-consumer service offered by a telehealth company called Teladoc.

This seemed like good news—using Teladoc brought down the cost of the average bronchitis episode because patients avoided unnecessary testing and imaging. But when researchers at RAND, a public policy thinktank, looked at whether those calls replaced in-person visits over those 18 months, they found that happened less than 12 percent of the time. In the long-term, spending actually went up \$45 per Teladoc patient. They weren't going to the doctor any less frequently. "If you make something easier to access, people will use it," said Lori Uscher-Pines, one of the authors of RAND's paper, published today in *Health Affairs*. "That lower threshold means that people are using this as an add-on service."

Patients who use telehealth on top of their normal health care visits add strain to an already overburdened health care system. RAND found that patients who used Teladoc tended to be younger, healthier, tech-savvy city dwellers—not the rural and elderly populations the technology is supposed to be targeting. And because the service takes place outside of the normal health care flow, the physicians on the other end of the line don't usually have access to each patient's health records, and the visit may not make it into the patient's history. Health care experts call this "fragmentation."

telehealth as an essential service, not an add-on.

Essential Telehealth

A few institutions have a jump on this. The US Veterans Administration has reduced hospital admissions by 20 percent and costs per patient by \$1,600 each year with its telehealth program. In the world of private health care, Kaiser Permanente leads the pack; last year more than half of its 110 million patient interactions happened online or over the phone.

When patients call or set up a video consultation through Kaiser's web portal, they get a few options. They can schedule a call or appointment with their primary physician (which could take a day or could take weeks), or they can talk to an on-call emergency room physician right away. If they choose that option, they might get Dennis Truong on the other end, an ER doc who also leads Kaiser's telemedicine and mobility efforts in the mid-Atlantic region.

Truong can pull up patients' health histories, and he can easily transfer them to an urgent care clinic or a specialist within the Kaiser network. "An integrated system is the backbone of what telehealth should be for patients," he says. "I can hand off their care to the next physician who sees them, whether that's later today or a year from now. It closes the loop."

Integration might be the gold standard, but not everyone in the telehealth industry is keeping up as well as Kaiser and the VA. In 2016 Teladoc recorded 952,081 virtual visits, up from 600,000 in 2015, and 300,000 the year before that. By 2020, the telehealth industry is estimated to be worth \$34 billion. It could make a big dent in America's overextended health care system, if providers and patients use it responsibly.

a doctor treating people who treated the ER as their first and last stop for health care. Their records were incomplete, fractured. It made it hard to care for them. “We couldn’t get down to the meat and bones,” he says. “That’s how I feel about a lot of these companies. There’s no closing the loop.”

To do that, policy and technology can do a lot of the heavy lifting by providing coverage and incentives in the right places. But for telehealth to fully deliver on its promise, people have to start treating their health care less like an Uber you summon in a thunderstorm, and more like a car that has to carry you the next 500,000 miles.

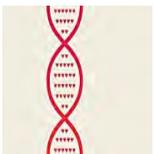
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