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## COVID19 AND THE RISE OF TELEMEDICINE

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### ABSTRACT

If you are worried you have contracted to Covid 19 that is the disease caused by Novel coronavirus. Do not just rush off and see your doctor at least not right away it seems counterintuitive but health department across the country are urging people with symptoms to call their doctors instead of heading to an emergency room or urgent care facility. This lets doctors better determine if someone is sick with coronavirus and whether they need testing. In addition, the Centers for Disease control and the World Health Organization are both encouraging people to use telemedicine options like **American well Bowie or Doctor on Demand**. Many hospitals offer virtual clinics as well the benefits of calling ahead or going online is twofold: One, it keeps anyone who is sick from spreading their illness be it flu a cold or coronavirus and Two, it can give physicians and nurses more time to devote to those with more severe symptoms. A new form of telemedicine being quickly developed and tested in Silicon Valley verily is debuting a coronavirus risk screening and testing website think of this as digital telemedicine. The online tool will triage the people and direct those who are eligible to mobile testing site. The website leverages valley's existing health data platforms and developed in partnership with the state of California. For now, the reach the project is limited but rarely intends to eventually scale the capacity as more testing kits sites become available.

**Keywords: COVID19, Telemedicine, Artificial Intelligence, Virtual Health Care, IoT**

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## INTRODUCTION

### 1. Artificial Intelligence and the advent of Telemedicine

Smart machines and artificial intelligence (AI) are taking off in a big way. IBM Watson has the capacity to read 40 million documents 15 seconds and to suggest the most fitting therapies. Global healthcare use of telemedicine is very important because your thinking in medical tourism the telemedicine is only for consultation when doctors and patient would like to just have a few words and all but it plays significant role in preoperative care and post-operative care most of the medical tourism facilitators or medical tourism doctors forget about most important component of medical tourism which is preoperative care and post-operative care you don't want patients to fly from middle East or Africa to Croatia and you before surgery you realize that his blood sugar level is high and he did not ask for any preoperative condition you did not ask for some of the basic medical conditions and you don't want also patient to go back from Croatia to Africa and without care available to him and doctors are not able to provide the care to that patient doctors are not able to understand the medical conditions or maybe the medicines only not available post-operative telemedicine play a very important

role educating not only doctor but the clinicians [1-4].

### 2. Role of Internet of Things and Telemedicine

Internet of Things is going to transform healthcare delivery completely. Asthmatic patient has the Asthma now you go to doctor prescribe you medicine, but he does not have much details than your family history what else he has may be your medical reaction but with IOT doctor can see where you are living which community you're living is the industrial area around it what it what is pollution status of that what is the family history. With these technological advances he can also track what is your humidity level at your home what is the situation. IOT can change entire way of healthcare delivery by giving massive data access to the health care physicians and how health care physicians are going to read this data (**Figure 1**).

IOT will reduce the health care cost currently no matter which part of the world you're living healthcare cost is major concern for any government any country any place. However, it is not only little health care cost involvement what is worst at this moment globally [5-8].

The health care reduced due to data will be available immediately to the government to

local people to the physicians. There will be beautiful outcomes of every treatment because your doctor has real time information and access everything. IOT also improved outcomes of treatment by access real time information. Also improved Disease management by disease is treated before they got out of hand. Accurate

collections data and automated workflows combined can reduced health error. IOT enhanced patient experience by proactive treatments improved accuracy when it comes to diagnosis. 4 million patients globally will remotely monitor their health condition by 2020.

### IoT in Healthcare: expected installations worldwide from 2015 to 2020



Figure 1: Internet of Things in Healthcare, a comparative analysis

### 3. Coronavirus Assessment

Every evaluation for the coronavirus starts with basic health question and a description of symptoms next the patient is asked for the biometric data like heart rate and temperature if one has fever and an elevated heart rate that might signal the possibility of developing respiratory distress. For the patient with low acuity symptoms physicians recommend simply monitoring and treating the symptoms. All the assessment options will help to track those suspected having coronavirus. So, agencies like state health

department and the CDC (Center for Disease Control and Prevention) can monitor the outbreak [9-12].

Many cases of coronavirus are mild or even asymptomatic making this an unfortunate. Double-edged sword an infected person shows on symptoms and thinks they probably do not need to be tested could venture out in public and infect other. That makes the need for social distancing that much more important and because the virus can circulate undetected researchers expect that many people have the virus but have not been

tested. Still not everyone needs to get tested so currently testing for the new coronavirus is not provided on request by members of public with shortages of test kits expected only those who certain criteria can be tested while promise of telemedicine is that it will keep more sick people at home and hopefully keep lot of people from panicking. There are some issues unfortunately this approach shuts out anyone who does not have the tech savvy or gear to do a virtual chat with a doctor. Those who can use telemedicine to do so to leave hospitals clinics and specialized testing center free to attend those who need it most.

#### **4. Rise of Telemedicine in COVID Times**

Telemedicine dates back to the mid-20<sup>th</sup> century when radios were used to provides medical advice on ships. In hospitals, the first usage was in the 1950s through a closed-circuit television link for psychiatric consultations. In last 30<sup>th</sup> year, telemedicine treatment has expanded to mental health, stroke, and patients with chronic diseases like asthma, diabetes, or heart failure. Several research studies have found it to be an effective alternative and satisfying for the both the patient and provider. Telehealth proponents have sold it as a solution for patients in rural areas. Now they advocate it as a low cast and convenient options for tech

savvy millennials and busy parents as well. A 2019 American Well study found that 66% of Americans are willing to use telehealth, but only 8% had already tried it. The move paved the way for private insurers and other to waive their restrictions. However, the new exceptions didn't void requirements states might have for telehealth. Telemedicine has been cast as a tool protects medical professionals from exposure to COVID19, to help reduce reliance on personal protective equipment and keep the vulnerable and healthy at home. Now coronavirus could boost telehealth interactions to one billion by the end of 2020. Telemedicine companies like Teladoc and American Well have seen big boost in users during coronavirus pandemic. They've been able to meet demand thanks to most states temporally modifying their license requirements for doctors, meaning a doctor in one state can diagnose a patient in another state. That's led credit Suisse listing Teledoc as one of their top 10 investment ideas amid COVID-19. Even tech companies are entering the telemedicine space.

Here's CNBC reporter Cristina Farr on the growing overlap between health and tech. So, all the major tech companies out in Silicon Valley have been interested in telemedicine now for years and have been studying ways

to incorporate it into their products. Microsoft, for instance, has been developing chatbots, has collaboration software like Teams. They also have video conferencing services. Same with apple, same Google. An increasingly, they're finding ways to point people to use these sorts of services

### 5. Future of health care in Telemedicine

The novel coronavirus pandemic has stretched health care system to the brink. COVID19, might be getting all the headlines, but patients are getting sick from the other disease and injuries. And that's left doctors looking for the other ways to treat them while minimizing contact. Telemedicine is broadly defined as the use of electronic

communications and software to monitor and treat patients in lieu of an inpatient visit. Over the past decade, telehealth, a broader term used to define all medical services and health education delivered digitally, has grown steadily as an industry (**Figure 2**).

According to IBIS World, the industry's revenue has grown 34.7 percent from 2014 to 2019. The market size in 2019 was around 45 billion dollars, but it's projected to grow to more than 175 billion dollars by 2026. Despite the increase in revenue, Americans have been slow to adopt the practice. According to a 2017 study, 82% of Americans do not use telemedicine. Like all the Americans life, that changed with the novel coronavirus (**Figure 3**).

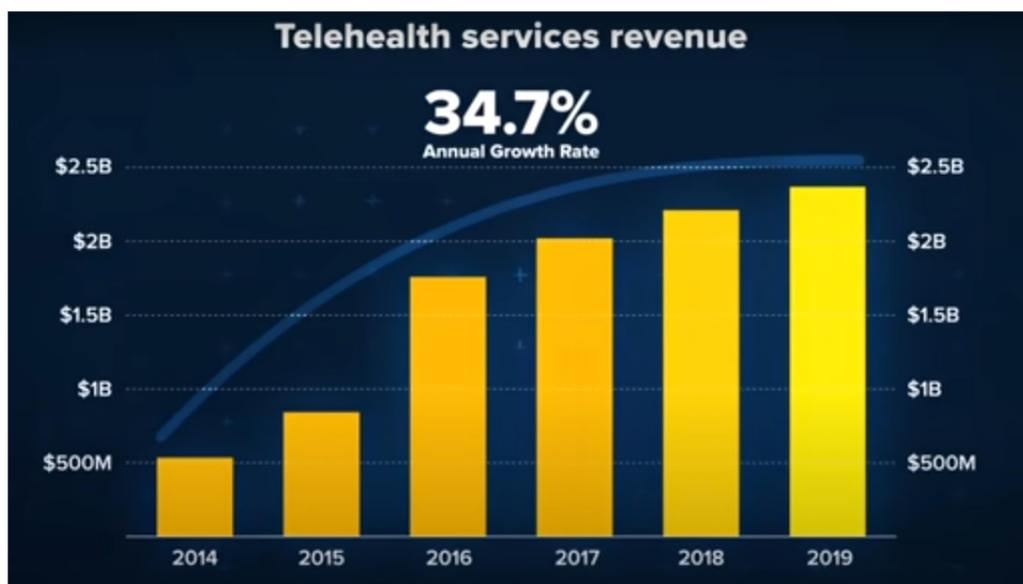


Figure 2: A comparative graph of the revenue of Telehealth services (source: IBISWORLD)

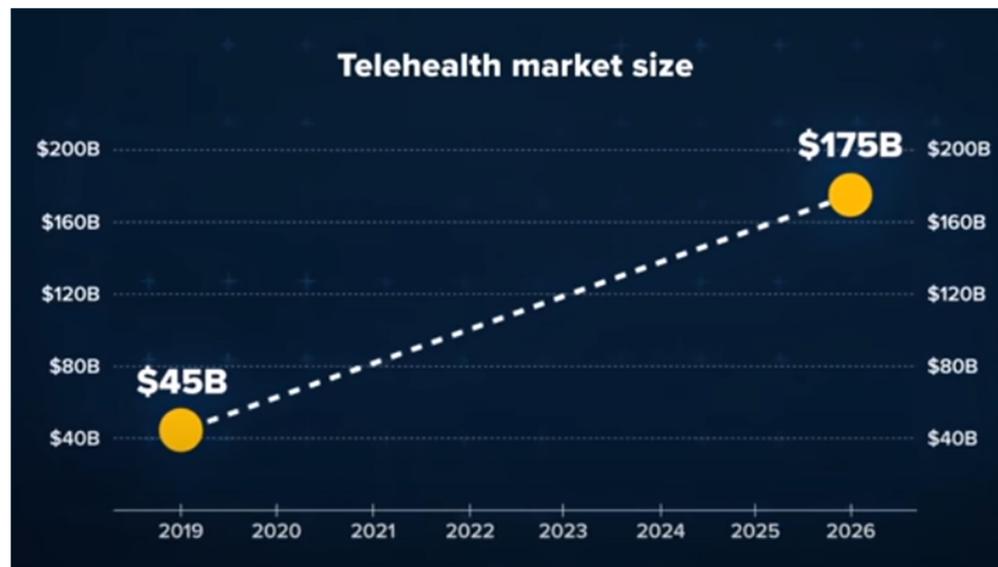


Figure 3: Market of Telemedicine (Source: Global Market Insight)

The number of Medicare patients using telehealth has increased from roughly 11,000 a week to more than 650,000 people a week. It's led to a surge in usage for telemedicine companies such **TeleDoc** and American well. And video conferencing company Zoom, whose stock is up more than 150% since the start of 2020. Shares of Microsoft, which owns video conferencing software Skype and its team's platform, are up more than 14% since the start of 2020. Telemedicine visits surged to 50% in March and are on pace to reach 200 million by end of 2020. That's up from earlier predictions of 36 million. America's health care system has skipped the test run and jumped to using telemedicine as a primary means of care during the coronavirus pandemic. Telemedicine could be the new face of health care [13].

## 6. Telemedicine Lacunas

While telemedicine on paper looks like a near perfect solution for policymakers. It isn't always the best solution for providers or patients. Telehealth is not for all issues. We want to provide the right care to the right patient at the right time. Some medical issues just cannot be resolved over the phone over video and require in-person visit. Doctors are not always paid the same amount for virtual visit as they are for an inpatient visit. As the December 2019, some states of country pay for the same amount or have what they call payment parity laws. There are number of states that have passed so-called parity laws that basically force insurers to pay the same amount of money for a telemedicine visit as an person visit. And the fact that the telemedicine pays less than in-person visit is another reason why it's been there all these requirements for whether you get paid or not,

but in many situations, doctors may not get paid as much for doing the same service. Additionally, to access telemedicine services, patients need reliable internet access. And according to a 2020 Broadband now study, 42 million don't have access to wired or wireless broadband connection. Telehealth has risk of exacerbating pre-existing inequities in health care, in either access to care or in health outcomes [14].

### **7. Telemedicine vs Pandemic**

While most health systems have been able to quickly adapt, there are still ways to improve. We're seeing hospitals start to strike these deals with telemedicine companies. That's true across many of these large hospitals that have gone from have telemedicine option that's available, but very few people know about it. To now pushing telemedicine front and center marketing it, emailing it, putting it right up on their websites for people to use, really trying to make sure that they are aware that the options exist. Massachusetts General hospitals, one of the top hospitals in united states, has been using a mix of existing and in-house platforms to meet care. In beginning of March, before COVID really came to us, maybe four weeks ago, somewhere between 0.7% and 0.8% of all visit were over telemedicine now days more than 75%. Providers also created a program where they

mounted on iPad on some specially configure hardware to attach it to an I.V. pole and turned it into an always on video intercom so that they could reduce the need for providers to put on protective equipment, which is in very short supply. But continue to engage with patients in a way that's much more compelling than just over the nursing call bell. The University of Washington Hospitals offers a number of telemedicine services for specialties. However, like most hospitals, not every service was equipped for telemedicine. The high demand for care has left hospitals and practices to retrain the physicians on how to care for patients virtually. Many hospitals have an online training that everyone who is credentialed in telehealth needs to complete, and that teaches us how, logistically, how to do telehealth. It gives some tips about setting up a space.

Telemedicine has adapted quickly during the time of coronavirus. However, the practice hasn't been a perfect transition for all forms of care, especially for doctors who are used to seeing patients every day. It's been disorienting to see so few patients in person. For a lot of doctors, this has been a learning experience, to put it mildly, because they are so used to having their priority list and how they take care of our patients dictated by who's on our schedule that day. Another

things that have become very important in this tragic crisis are serious illness conversations with patients. Talking with patients and their families about their choices and if they have chronic medical conditions, talking about whether they would want to be on a ventilator if their illness progressed rapidly due to Covid and they could not breathe. So, again, many of the things that we used to take for granted would happen in person. We've now been forced to reinvent in this video only environment. Telemedicine helped maintain some business for health care industry, but volumes of visits are still down. That could hurt the system financially over the long term. In pandemic in-person visit decrease about 80% then our telehealth visits, make up, bring them back to their prior level.

Hospitals and other providers health care providers are slated to receive about 175 billion dollars to make up for the increase costs and lost revenue as part of the Coronavirus Aid, Relief and Economic Security Act. However, it might not be enough to save them. This crisis has an enormous financial impact on hospitals. Those patients are staying in the hospitals for very long time. And so, without federal and state relief, this is an impossible burden for hospitals to carry financially [15].

## **8. The Outlook of Virtual Health Care**

After this pandemic is over, telehealth will be here to stay, and people won't go back to only in-person visits. People will want the options of telehealth visits as well. Now, they can't replace our entire healthcare systems and people still will need to come in for their pap smears and exam. But people will find a preference for this. They won't have to take off a day from work or take three busses to travel to doctor's office or find childcare. This system that we were in before was not particularly efficient. They were just massive costs. And you saw just, you know, that increase every single year. It just it wasn't sustainable. Telemedicine for a long time has been a way to bring costs down. You should see some of these patients virtually that can that way and then save the physicians time for those that really need that in-person care. Telemedicine offers that and it's likely where medicine is going. For doctors, the new rules for telemedicine and insurance means they stand to make more money from the practice, if those rules do stick around. Insurers are also going to have a very hard time clawing back this flexibility with telemedicine payments. And so, it's also going to be much easier for physicians to get paid for their time and have viable business model providing

care across the whole spectrum. The coronavirus pandemic created a clear line between the before and after for the wider health care industry. A telemedicine might to be a big part of what comes after COVID-19.

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