

# Chapter 12

## Telemedicine Trajectory in Healthcare

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### ABSTRACT

*Telemedicine has been implemented in both public and private health services and has shown a potential to improve healthcare industry. Many governments are boosting telemedicine applications through regulations to reap the benefits. The purpose of this article is to investigate the current situation revolving around telehealth and more precisely, telemedicine. This is accomplished by supplying a brief history of the technology as it has evolved. Then, an analysis of the benefits of telemedicine and its opportunities for growth. Next, the current issues and limitations of telemedicine will be examined. Finally, there is a final discussion on the future of telemedicine with some currently developing applications and conclusion.*

### INTRODUCTION

Telehealth and telemedicine have both been developing new ways to deliver health and medical care across the world using new technologies and innovations. The current distinctions that exist between telehealth and telemedicine have mostly been decided upon for administration reasons. Telehealth is commonly defined as using electronic and telecommunication devices to support and provide long distance healthcare, health related education, and support public health and administration. While at the same time, for purposes of reimbursement, telemedicine is more narrowly defined as the activities involving two-way real-time communication between the patient and healthcare providers (Chaet, Clearfield, Sabin, & Skimming, 2017; Grecu & Sharma, 2019). For the purpose of this paper, the broader term of “telehealth” and the more precise term of “telemedicine” will both be used when applicable so that more aspects of this growing field can be examined and incorporated into this analysis.

With the spread of telecommunications infrastructure, digital health has attracted the attention of the healthcare and IT industries. According to the U.S. Food and Drug Administration (FDA), digital health includes various technologies such as mobile health, telemedicine, wearable devices, and personalized medicine. The use of digital health technologies would provide us with innovative ways to treat our

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diseases, monitor our health, and give us greater access to healthcare information. Patients are expected to receive innovative medical treatment and preventive medical care, and track health and wellness related activities (Kimball, 2018; López-Coronado, Rodrigues, Saleem, Silva, & de la Torre Díez, 2015). Healthcare providers could increase the quality of services, reduce costs, improve access to healthcare information, and make medicine more personalized for patients through the progress of digital health. Since digital health has a potential to break conventional healthcare, not only primary healthcare related organizations such as pharmaceutical companies, medical equipment manufacturers, hospitals, etc., but also electronics device manufacturers, communication companies, and IT companies have been going into the digital health market. According to Thilo Kaltenbach (2016), the digital health market was 79 billion USD in 2015, but it is expected to grow to 206 billion USD in 2020 with an annual growth rate of 21%.

The constant growth of technology is consistently reflected through the methods and applications used within telehealth. The earliest report of what we would now consider telehealth dates back to November 1879, when *The Lancet* medical journal detailed the story of how a U.S. doctor was able to determine the seriousness of a baby's cough by listening to its chest over the phone. Telehealth has come a long way from merely receiving medical advice over the phone, especially now with the proliferation of the Internet, smart phones, laptops and the growth of the Internet of Things (IoT). It is becoming increasingly common to communicate with healthcare providers live via web camera, be prescribed medications remotely, use IoT devices to test, track and monitor important medical information, and more (Belchetz, 2018).

Even as telehealth improves the lives of patients, it still presents several concerns and limitations that must be addressed as adoption continues. Many services are not yet covered by Medicare and Medicaid, security concerns regarding data protection and data breaches, quality of the care provided, ethical concerns, and more. Progress has been made within these topics and they continue to be improved upon. For example – progress continues to be made on the issues of reimbursement by insurance companies, Medicare and Medicaid (Grecu & Sharma, 2019).

## **BACKGROUND**

Telemedicine is changing the lives of patients by making healthcare more accessible than ever before. The Internet is completely changing the way we look at managing our health. As technology advances, we are able to integrate telemedicine more seamlessly. For example, the Apple Watch has the capability to track your heart rate and feed it to your phone. This can be sent to your primary care physician to give them real time data on how your body is performing. Patients with chronic illnesses like diabetes and heart disease can now be monitored more closely with the help of wearable health devices and interactive patient portals.

Scheduling and completing appointments are now easier than ever before. Patients can log on and send an email rather than call and speak with someone directly. They can schedule an appointment from an automated calendar rather than do so with a medical secretary. Patients can complete a follow up health survey with questions related to their in-office visit a few weeks after the fact rather than return to the office for a follow up visit. Conversely, a physician can answer a handful of emails much faster than they can see a handful of patients. Each patient needs to come in, check in, confirm their information, make their payment, get their vitals taken, and then speak with the physician, debrief with an assistant, pay for their visit, and schedule the next one. A virtual visit is as easy as answering a few questions or

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