

Fundamentals of & Success in Telemedicine: Make It Happen!

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Abstract

Telemedicine is the future, present and past of healthcare delivery. Like many other evolutions in healthcare, telemedicine has also evolved. With it starting as early as the 1960's, the millionaires it has created is numerous. The millionaires it is about to create is endless. Business in Telemedicine is divided into industries on it's own. There are many profitable levels and opportunities. However, like any successful projects, there are also many levels of failure. Like most businesses, Telemedicine businesses also fail in majority. There are key components to embracing success. One must be knowledgeable, one must be skilled, one must have a network and one must not be one but rather have a team, an organization that works as one. There are multiple benefits created because of Telemedicine for patients, healthcare providers, governments and other companies and organizations. Telemedicine companies can operate at a specific level and assist as a solution for specific populations, or they can operate broadly and create solutions for large populations at once. Regardless of what has been or will be, it is a fact that Telemedicine is not a fad, it is a vital adjunct to our healthcare systems and with evolution, it will be a vital addition to other parts of our daily lives. There isn't much literature on the topic of Telemedicine, therefore, there are a couple of reasons for the production of this document. One is to provide an overview of what Telemedicine is and how it is being used today. The main objective of this article is how to create a successful business and the steps necessary to sustain financial goals in Telemedicine.

Introduction

What is Telemedicine?

To many people today Telemedicine is still unheard of. Other's rely on Telemedicine on a daily basis. Telemedicine is a method of health care delivery from provider(s) to patient(s). It can involve an interaction via telephone or video conferencing. It can also involve data sharing via software and other technology. Telemedicine can involve smartphone or tablet applications, satellite, internet, mobile networks or simple analog lines. There is a variety of specialties it is being used for. Psychiatry, Dermatology, Stroke consults, Neurology, Ophthalmology, Nutrition, Homecare, Burns, Surgeries, Trauma, Cardiac & Primary care are some of the programs and services offered via Telemedicine. A typical Telemedicine visit usually has at least three people involved. The patient and a caregiver or assistant are usually on one end, and the a specialist or other Physician is usually on the other end. The patient is usually prepared or triaged by the assistant and then connected to the Physician via video conferencing. The Physician normally has access to the patient's chart, important test result information, and any pictures they would need just like a regular in-person visit. From this point, the Physician is able to clearly explain to the patient the options for management. Variable method will be further discussed later in this article.

History

Although, it may seem that Telemedicine is or will be the new way of healthcare, the truth is that it has been around since the 60's. The technology was first used to monitor physical attributes for astronauts when traveling to space. Spaceships and space suits were equipped with Telemedicine that was installed by NASA. Since then, there have been many steps that has brought Telemedicine to what is is today. In 1964, there was a TV link created between Norfolk hospital and Nebraska Psychiatric Institute in order for specialists to connect with general practitioners. In 1967, the Boston airport started 24/7 services by using a microwave audio/video link to connect to the Massachusetts General Hospital for consults. In 1971, satellite was put to the test via NASA's ATS-1 as it connected 26 site in Alaska to the U.S. National Library of Medicine's Lister Hill National Center for Biomedical Communication. In 1972, multiple projects began and include remote access to Arizona's Papago Indian Reservation by NASA's STARPAHC (Space Technology Applied to Rural Papago Advanced Health Care) program via microwave transmissions and mobile paramedical vans to connect to hospitals in Tucson and Phoenix. Also, nine other Telemedicine research projects were started by The Health Care Technology division of the U.S. Department of Health, Education and Welfare (HEW). Demonstrations took place at the Illinois Mental Health Institute, Case Western Reserve University, Cambridge Hospital, Bethany/Garfield Medical Center, Lakeview Clinic, Dartmouth Medical School, Mount Sinai School of Medicine, Boston Nursing Home and Jackson Memorial Hospital. In 1975, Canada got involved by using the Canadian/U.S. Hermes satellite for distance education and care from Canada's Memorial University in Newfoundland. In 1984, the scope expanded beyond North America and the Q-Network satellite was tested to create The North-West Telemedicine project

in Australia which provided healthcare to rural towns. Finally in 1989, after the earthquake in Armenia, the U.S. offered consults via the first International Telemedicine Network between Armenia and four U.S. medical centers via the Space Bridge program. These marks in history led to millions of dollars put into research, development and education of Telemedicine in the 1990s. This served as the main platform to today's Telemedicine services and network globally (A Brief History Of Telemedicine, 2006).

Improved Quality of Care

Telemedicine has been compared to on site or in person visits in multiple but limited studies over the years. There has been a pool of results put together that are very fascinating to see. Meta-analysis have shown multiple promising results in different aspects of care. Researchers from The Cochrane Collaboration have compared results of 93 trials. When comparing studies on patients with heart failure, there was no change in mortality from Telemedicine versus on site care. However, for the same patients, the quality of life was improved with Telemedicine care. There has also been improved glucose control for Diabetics and lower cholesterol levels when comparing Telemedicine to conventional care patients receive. Also, when comparing Telemedicine to other visits for hypertensive patients, the blood pressure levels were lower. When comparing substance abuse and other mental health conditions, there was no change in the effect of therapy when delivering care via Telemedicine or on site. Similar results were shown for patients consulting specialists for dermatology conditions. Telemedicine monitoring showed improved outcomes for some respiratory conditions as well. Of the discussed studies above, only heart failure and diabetes patients are a strong indicator of actual outcomes. The rest of the conditions had limited studies available for research. Nevertheless, the above results show positive or no change in results with Telemedicine video conferencing or telephone care compared to on site or traditional care. This becomes crucial as we later discuss, in detail, the benefits of Telemedicine for patients and healthcare providers in various situations (Cochrane, 2015).

Successful Models in Telemedicine

Most Telemedicine projects fail in the operational stages. There are multiple contributing factors that cause this to happen. In this section, multiple successful models of Telemedicine businesses will be discussed. They will be divided into models in the developed world and models that have been successful in developing countries.

Developed World

- Arizona Telemedicine System, United States

This is a video conference based system for multipurpose use. Many factors contribute to the success of the Arizona Telemedicine System. Large financial contribution by the government for this model is key. Another important factor is that they offer a broad range of services that allows cost sharing for multiple applications for each site involved. The services not only include doctor-patient interactions, but also distant education for groups of patients and doctors. This

allows there to be one system for sharing information and technical support (A Review Of Telemedicine Business Models, 2013).

- Myca Nutrition, Canada

Myca Nutrition is a mobile video communication platform designed for use by nutritionists and their clients. It allows patients to have an on-demand coach while they are about to make poor decisions with their diets. It is a benefit to have before they develop the weight gain and other health concerns. For nutritionists, it is a benefit because it allows them to keep track of patients daily logs and reach more clients by offering such a service. It becomes a win-win situation as the clients get immediate feedback on eating habits, and nutritionists get a real-time look into clients' lifestyles. This approach is successful because of partnerships with Qualcomm and Google for communications and network use. Also, the revenue generated is on both sides for the use of the applications to the client and the Physician to pay a monthly membership fee as well (A Review Of Telemedicine Business Models, 2013).

- Tactive Telemedicine, The Netherlands

Tactive Telemedicine offers patients a way to recover from addictions. It is used by companies for their employees and other organizations. They have a secure, effective online treatment and counselling system for individuals or corporations to resolve addictions behaviours. The main advantage they have is it can be done discreetly by becoming an anonymous user even while participating in support groups. Partnerships with governments and a common alcohol addiction in the Netherlands allow Tactive telemedicine to be resourceful and generate revenue (A Review Of Telemedicine Business Models, 2013).

Developing Countries

- Telenor Teledoctor, Pakistan

Telenor Group of Norway is a large cellular GSM communication company that started Teledoctor. It provides its current 2.6 million user with access to one phone number for secondary medical advice. Patients are able to call this number and get personalized advice and preference to the type of doctor they want to connect with. Women can connect with female doctors. They offer multiple languages as well, so people from different villages can connect and have easy understanding of the medical expertise. This is great for remote areas and people on the go so they don't have to travel a distance to see doctors, or wait long for simple advice. Cost is limited because the platform is already owned by them, revenue is added to the patient's phone bill and paid out to the doctors as appropriate (A Review Of Telemedicine Business Models, 2013).

- Aravind Tele-Ophthalmology, India

Aravind has developed the largest eye-care system in the world. Created to prevent needless blindness initially is now able to reach many more with the telemedicine consults. They connect

primary hospitals to remote villages. The social mission they have stood for allows them to gain financial grants and volunteers that are local to villages for staffing. This is a unique model as the revenue created from paying patients is used to assist disadvantaged patients. The local hiring strategically reduces costs. They have their own hospitals allowing patients that need to be admitted to be transported directly (A Review Of Telemedicine Business Models, 2013).

Win-Win

As explained above, there are multiple groups and individuals that benefit from different Telemedicine models. Patients can benefit in many ways. People who live in cities may get decreased wait times from traditional visits. They may be able to get nutritional insight from logging in on their mobile phones. While travelling, they may get to see their regular doctor via some means of communication. Patients in remote areas may receive increased access to care. They may be able to connect to specialists and other professionals without having to travel to major cities. This can reduce a major travel expense and possibly save many more lives by providing more compliance and faster consults. Physicians and other providers can benefit as well. They can enjoy living in urban cities while still providing care to rural areas remotely. This can allow them to reach a far more number of patients while being in one place. It generates revenue and lifestyle as they can also travel and connect to their practice while on vacation. This highlights the most essential component of any successful Telemedicine system put into place. The simple fact that it must benefit everyone involved in some way.

Making It Happen

As outlined above, there are many important pieces required in a Telemedicine program to become successful. Like most businesses, the Telemedicine industry has similar guidelines to creating the right foundation. Following are the most pivotal elements that are required to make it happen.

- **Be Visionary**

Like any successful entrepreneur, it is important to have a vision. Whether it is an addition to a current organization and the vision is already in place, or it is a new venture and one needs to be created, make sure the objectives are clear. As discussed, there are multiple different models that can be created. It is important to set the overall mission of the project. It has to make sense and create volume. It is important that it fits a need and has full support and belief in the system by the key contributors. Most Telemedicine projects fail if there is no plan developed for action (10 Critical Steps for a Successful Telemedicine Program, 2016).

- **Financial Organization**

One of the most vital parts of the entire organization. Even if it is a non-profit system, financial management is essential. It is important to know short term needs, whether it is a grant or other capital for investment. Then it is important to measure revenue generation and possible long term contributions to keep the company going and growing. A solid plan from the beginning with

reasonable measures is attractive to investors (if needed) in the future. This ultimately provides long term stability and the largest gains. Make sure the entire management team is involved and clearly understands the financial goals of the company (10 Critical Steps for a Successful Telemedicine Program, 2016).

- Effective and Convenient Environment

It is important to assure that the program and system put in place is effective, functional and convenient. If it is a typical video conferencing setup then the patient side should be a typical exam room. The patient should feel as if they are in the same clinic exam room as they would have when seeing a physician on site. Same exam table and other equipment are necessary. On the physician side, it should be a quiet room or office with quick access for consultation for confidentiality. The Physician should have electronic access already set up to the patient as if the patient came in to see them in person. Any lab results, vitals recorded should be at fingertip reach. All technology and tools shall be required for increased function and ability for the visit to go on, but should not be the main focus of the consult. The less the change from a regular visit, the easier the patient accepts the process. This leads to volume generation effortlessly (10 Critical Steps for a Successful Telemedicine Program, 2016).

- Training and Education

Everyone involved at any level should have a significant amount of training prior to even the thought of actively playing a role. This layered training strategy is crucial and has proven to be most effective. The initial training should be most formal and be scheduled with an agenda provided prior to the first session. All paperwork should be provided and include training in communication technology, clinical technology, diagnostic device training for both patient and physician sites, workflow and protocols of care and procedures for use of devices, troubleshooting and access to product, and technical support. At the end of the training, there should be a certificate provided. After the initial training which is more educational, follow-up assessments are mandatory on a periodic basis (10 Critical Steps for a Successful Telemedicine Program, 2016).

- Coordinator, Manager, Supporter

In order for an effective workplace to be established and aspect of training to be enforced, these three people are vital to the program. A coordinator should be responsible for the daily operations of the job. The role of the coordinator should include making sure schedules are in place, equipment is working, and providing support to the users. This person must be passionate and have ability to serve. A manager must be an effective leader and have the ability to oversee the whole operation. From providing support to essential marketing, a clear leader should be able to make import decisions on the fly. Supporters are the frontline to your success. It is important these individuals are highly trained and able to effectively use the system and provide patients the correct direction throughout each visit (10 Critical Steps for a Successful Telemedicine Program, 2016).

- Setting Reasonable Milestones

In order to implement a new Telemedicine system, it is important to create a project plan. This plan should be followed throughout the project and include responsibilities to parties involved. The clear vision of the organization should not be obstructed by any one individual's needs. It is important to have everyone involved in the decision making at their level of expertise. The key is to use the plan for guidance, making reasonable milestones throughout and meeting them. It is important to have a balanced mindset when creating goals. Most Telemedicine projects fail if they try and grow to wide and set up multiple locations at once or if they set up only one or two locations and try to perfect them with all capabilities. It is important to have something in between, a manageable system with proper resources that isn't stretched too thin (10 Critical Steps for a Successful Telemedicine Program, 2016).

- Marketing

This goes without saying, marketing in any industry is crucial. Usually one of the major parts of the investment. A good rule to follow is that the money spent on marketing should be equal or greater than the money spent on the product or service. Marketing is not only advertising to the public and searching for new business. It is important to market within as well. Marketing to managers and giving them credit for what they have done is great. Marketing to opponents is an excellent way to neutralize their opinion. Support calls and publications are other great tools that can be used. When there is success in the business, everyone wants to be apart of it. Create the right system to show your success and your vision. Being attractive internally and externally are all important features to have (10 Critical Steps for a Successful Telemedicine Program, 2016).

Conclusion

Although it has been around since the 60's, Telemedicine is the future of healthcare delivery. It has solved multiple problems for healthcare access and has provided a convenience feature for providers and patients. Studies have shown improved effectiveness for certain conditions and treatments. There are a wide range of uses for Telemedicine. A typical doctor-patient visit via video conferencing is only one method. It has been used at the specialty level and primary care level. It benefits nutritionists, ophthalmologists, dermatologists and many more. It is available as a mobile application, computer software or a simple phone call. When looking at successful programs it is vital to have a well constructed business plan. The ones that are most successful have a realistic vision in place. They are financially organized and implement necessary training, education and support. This allows them to have key people involved in the organization to setup a convenient environment. The same team of people is able to set reasonable goals and marketing plans internally and externally to meet them. 75% of Telemedicine programs fail, creating a successful operation is challenging. It is essential to follow these fundamentals on your path to making it happen.

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