Abstract

The e-health services provides health consultancy for remote customers. The paper discusses various methods and opportunities available to patients, consumers and medical professionals. It is beneficial for both the patient and the organization providing e-health services. The medical services are already at a boom throughout the world especially with the emerging of new communication technologies. The new technologies enable the users to interact with the medical practitioners throughout the world. Applications and computer software can be used for such services effectively.

I. INTRODUCTION

E-health (Electronic health) is the remote exchange of health data or information between a patient at home and their consultant / doctor. It support in assisting diagnosis and monitoring typically used to assist patients with long term conditions. It uses landline, mobiles and PCs to measure and monitor temperatures, blood pressure and other vital signs parameters (and the answering of targeted questions) for clinical review at a remote location using phone lines or wireless technology.

The E-health service uses technology to provide services that assist in the management of long term health conditions, including Chronic Obstructive Pulmonary Disease (COPD), Chronic Heart Failure (CHF), Diabetes and Epilepsy. E-health helps individuals to manage their own health, and becomes a part of the individual’s healthcare. The health conditions are monitored regularly to flag up issues before they become ‘critical’. It works by monitoring vital signs, such as blood pressure, and transmitting the data, via a telephone line, or broadband, to a e-health monitoring centre or a health care professional, where it is monitored against parameters set by the individual’s clinician. Evidence that vital signs are outside of 'normal' parameters, which
may indicate deterioration in health, instigates an appropriate response. There is a wide range of e-health equipment that can be used to develop a service package that is tailored to an individual’s health needs.

There are real benefits for both the patient and the medical professional. The individual patient has more control and understanding of their long term health condition, and the medical practitioner’s utilizing-health as part of a profession can ensure that they are proactively involved in the ongoing wellbeing of their patient, managing timely interventions and helping to improve their patient's quality of life. E-health uses a broad variety of technologies and tactics to deliver virtual medical, health, and education services. E-health is not a specific service, but a collection of means to enhance care and education delivery. The mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care while the patient is at the originating site and the health care provider is at a distant site. E-health facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward transfers. The use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration.

II. HOW DOES E-HEALTH SERVICE WORK?

2.1 E-health Models:
E-health services commonly known four models:

2.1.1 Synchronous – Real time video:
Live real time interaction between two persons (patient or provider) and a provider using audio and visual devices. This type of synchronous service can be used by both parties, consultative, diagnostic and treatment facility services.

2.1.2 Asynchronous – Save & Send:
Sending pre-recorded audio, videos and digital images like x-rays and photos. via a secure electronic communications channel system to a specialist or a practitioner. Practitioner receives this information and uses this information to examine the case.

2.1.3 Remotely monitoring:
Individual collection of medical and health data from one location via technology and devices and remotely access of this data by practitioner for processing from different locations. With the help of remotely monitoring system practitioner can continue tracking of patient healthcare data which reduces overall cost and efforts.

2.1.4 Mobile health (mHealth): Modern technology and devices such as mobile, tablet or PDA support to practitioner for health care practice and to a patient for quick, cost effective consultation. mHealth mobile apps provides lots of features like alerts, controlling and monitoring patient health.
2.2 E-health service process:

![Diagram of E-health service process]

**Figure 1: E-health service process**

2.2.1 Patient access e-health services (Mobile, Laptop, PC):
When a patient uses e-health services, he will be talking directly with a registered e-health executive. The patient is asked to describe the symptoms and answer questions to best assess the seriousness of the problem.

2.2.2 Executive receives call and forwarded it to e-health management system:
Based on the assessment, the registered e-health executive can either advise self care or recommend to an e-health practitioner.

2.2.3 Data collection and organization:
In this next step of e-health service system, the service provider collects, organizes & dispatches patient’s data to health expert (eg. Doctor). Data is organized in the basis of city, location, medical history.

2.2.4 E-health expert provides e-prescription:
The doctor’s recommendation is provided to the patient by the e-health service provider.

2.2.5 Receipt of electronic prescription:
Patients receive prescription via SMS, Mobile app, Computer.

2.2.6 Interaction / Chat Online services:
Patient interacts with e-health expert in allotted time.
III. SOCIAL AWARENESS

Before commencing any e-health programs, the company needs to educate the society about the benefits and the working of e-health services. There are different types of patients with different ailments. They should first know whether their disease symptoms are such that they can monitor it through an e-health system. Secondly there is a need for proper counseling by the e-health service provider. The patient should take all precautions so that he/she can utilize these services in the best possible manner.

IV. ADVANTAGES

Over the current health care system this e-health service provides radical advantages, such as access to care, cost effective delivery and distribution of limited providers. Following are the advantages:

- Clinical services can be easily obtained by patients.
- Intensive and emergency care services can be provided by hospitals.
- It improves outcomes and less costly treatments due to early diagnosis of problem.
- High cost of hospital visits can be reducing because of home monitoring system.
- Using e-health technologies medical practitioners can serve to more patients.
- E-health technologies addressed the shortage of nursing services.
- With the help of e-health services, more easily can be obtain continuing education to rural medical practitioners.
- Through e-health technologies rural medical practitioners can easily consult with specialists.
- E-health services support staying in local communities, when hospitals are not near and patient can keep in touch with their family and friends.
- Inconvenience and extended travelling can be reduce to patients.
- On site available e-health services avoids absences of employee from work.
- Modern technology innovations and usage like tablet or mobile collaboration, from multiple locations patient can share and consult medical cases to the professionals.

V. DISADVANTAGES

- The medical professionals cost is high especially data management and practical training.
- The interaction between patient and healthcare professionals decreases due to virtual clinical treatment and risk of error in clinical services increases.
- The confidential medical information about patient can be leaked through faulty electronic system.
- E-health services might take longer time because of low internet speed or server problem. And patient may face difficulties in connecting virtual communication.
Low quality of health informatics records, like, X-ray or other images, clinical progress reports, etc. run the risk of faulty clinical treatment.

To prevent illegal and unauthorized service providers this system requires strict legal regulations.

VI. USING E-HEALTH COMMERCIALLY

The major focus of all the business and medical practitioners is how to use the e-health services commercially. Following points must be considered if the e-health services are to be used commercially:

- A proper registration with the relevant govt department/office
- Services of a registered medical practitioner
- Call centre with latest audio-visual aids
- Software’s to handle all the services
- Proper networking with client services and login required
- Maintenance of all the services should be done by expert
- In case of a failure in the services a proper backup plan should be kept
- Proper record of all the patients must be kept through a standard database format which should be accessible throughout the world using a secured login
- The offices should have all the personnel required for each specialized service.
- In case of patient who belongs to a rural sector the e-health service must be properly maintained. This will help the patient for timely prescription and consultation

VII. SUGGESTIONS

- Using a High resolution camera will give good results
- All the equipments must be checked before providing e-health services
- A Good Sound Equipment must be used so that the executive at call centre and also the medical practitioner both get a proper hearing of the case.
- A proper high speed internet or a broadband connection must be used for a proper uninterrupted communication.
- The patients complaint must be read beforehand. Just like any other visit, try to take a minute before starting the visit to read the patient complaint and familiarize you with the patient record. The interaction with the patient will be effective in this manner.
- In the e-Visit platform the screen must be shared when prompted. Usually your app or the browser will prompt you to do so.

VIII. CONCLUSION

E-health services are an emerging service which will be used throughout the world by hospitals, research centre and people. The government should organize the e-health
services so that these services are used legally and people providing the e-health services are accountable. Also the consumers or the patients must be made aware about the various benefits and limitations of these services. The banks and government financial institutions should provide Funding of research to improve quality and lower costs of e-health programs. It is important that standardization improves patient care and decreases the costs of healthcare practices.

IX. REFERENCES


ABOUT AUTHOR'S

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