**What is ehealth?**

A set of **technologies applied** with the help of the internet, in which **healthcare services** are provided to improve quality of life and facilitate healthcare delivery.

**World Health Organization (WHO) defines, eHealth** as “the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research.” In a broader sense, the term eHealth exemplifies/illustrates the technical progress to expand health care locally, countywide, and universal by using information and communication technology.

**What is the purpose of eHealth?**

The use of eHealth closes the gaps in terms of geographical barriers, time constraints, lack of healthcare professionals in healthcare and service delivery.

**What is the role of eHealth?**

The role of eHealth has been recognized as pivotal in attaining overarching health priorities such as universal health coverage (UHC) and the Sustainable Development Goals (SDGs).

**Past and Future Perspective**

* Traditionally, health care providers kept paper records on the history and status of their patients.
* But with rise in the health care cost and technological advancement, it has encouraged the development of electronic tracking system.
* Thus the concept of digital health or eHealth emerged to designate the use of information and communication technologies (ICT) in the healthcare sector
* eHealth is an evolving field in the area of medical informatics, public health, and business, relating to the health services and information through the internet and associated technologies.

**Who started eHealth?**

In the 1960s, Larry Weed, an American physician, researcher, educator, and entrepreneur, developed the Problem Oriented Medical Record. With this, Weed introduced the idea of electronically recording and maintaining patient data. Weed may be identified as the person who invented electronic health records themselves.

In 1972, however, the first electronic medical record (EMR) system was developed by the Regenstrief Institute, according to the [University of Scranton](https://elearning.scranton.edu/resource/health-human-services/emr_the-progress-to-100-percent-electronic-medical-records). Regenstrief’s EMR system was expensive and so was not attractive to physicians for use with their patients. The system was used, though, “by government hospitals and visionary institutions.”

**The Bill**

With 197 affirmative votes, the chamber passed House Bill 10245, otherwise referred to as the proposed “eHealth System and Services Act.”

The bill seeks to institutionalize a system of providing wide access to quality health information and services using information and communications technology.

The bill also aims to facilitate the exchange and access to secured personal health information, ensure integration, alignment, and interoperability among various eHealth initiatives, and facilitate inter-agency and inter-sectoral coordination at various levels of governance in both public and private sectors.

The approved bill also details violations of the Act and corresponding liabilities and penalties.

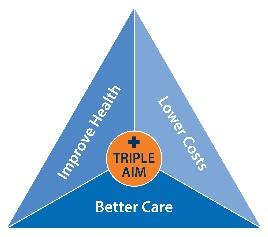
For instance, the unauthorised processing of personal information shall be penalised by imprisonment ranging from one to three years and a fine of P500,000 to P2 million. The unauthorised processing of sensitive personal information shall be punished by imprisonment of three to six years and P500,000 to P4 million.

Other violations include accessing personal information and personal sensitive information due to negligence; improper disposal of personal information and sensitive personal information; procession of personal information and personal sensitive information due to negligence for unauthorised purposes; unauthorised access or intentional breach; concealment of security breaches involving sensitive personal information; malicious disclosure; and unauthorised disclosure.

Any person who commits a combination or series of these acts shall be subject to imprisonment ranging from three years to six years and a fine of P1 million to P5 million.

AIM Dimension

Promoting the consistent and widespread use of eHealth technology is regarded as a powerful tool to improve the quality and efficiency of the healthcare system at reduced cost in alignment with the Triple Aim.



The Triple Aim is a framework that was created to optimize the performance of our healthcare system. It is based on the idea that to improve the system, we need to simultaneously pursue three dimensions:

* Improving the patient experience of care, including quality and satisfaction;
* Improving the health of populations; and
* Reducing the per capita cost of health care

The Triple Aim was developed by the Institute for Health Improvement in Cambridge Massachusetts in 2007. The concept has been adopted and adapted by governmental and commercial organizations in the efforts to improve health care

**Characteristics of Ehealth**

### **1. Efficiency**

* One of the assurances of e-health is to upturn efficiency in health care, thus reducing costs.
* It ensures efficiency in health care with reduction in cost.
* Efficiency is achieved through avoiding duplicative or unnecessary diagnostic, decreasing overhead cost in practice and involving patients for improving communication.

### **2. Enhancing the quality of care**

* Increasing efficiency refers to not only decreasing costs but also improving quality of services.
* eHealth may improve the quality of health care by allowing comparisons between diverse providers.
* It will also focus on quality assurance, aiming patient streams to the finest quality suppliers.

### **3. Evidence-based**

* E-health interventions must be evidence-based in the sense that their value and competence should not be presumed but proven by laborious scientific assessment.
* Much work is still left to be done in this sector.

### **4. Empowerment of consumers and patients**

* eHealth incorporates expanding patients knowledge and access of personal electronic records over the internet
* This unseals new opportunities for patient-centered medicine and facilitates evidence-based patient choice.

### **5. Encouragement**

* Encouragement of patients participation through more proactive care.
* E-health provides encouragement for a new link between the patient and health expert, towards a true corporation, where choices are made mutually.

### **6. Education**

* For both patient and providers it is platform to expand knowledge through researches or health care information.
* eHealth helps to educate physicians and consumers through online sources (ongoing medical education and other resources)

### **7. Enabling**

* Creation of environment for easier exchange of information and easy communication between the consumer and the service provider
* eHealth promotes information discussion and communication between health care institutions in a consistent way .

### **8. Extension**

* E-health extends opportunity of health care further than its conservative boundaries.
* This is meant in both a topographical sense along within a conceptual sense.
* E-health also facilitates consumers to effortlessly achieve health services online from international providers.
* These facilities can range from simple advice/suggestions to more compound intermediations or medications.

### **9. Ethics**

* E-health includes new forms of patient-physician communication, poses new challenges, and pressures to ethical issues
* For example: online professional practice, informed consent, privacy and equity issues.
* It is one of the pressing issue that poses threat to eHealth.

### **10. Equity**

* Despite clear gap between the ‘haves’ and ‘have not’, equity is one of the promises made by eHealth.
* To make health care further justifiable/fair is one of the assurances of e-health, but at the same time there are substantial risk that e-health might expand the gap between the “haves” and “have-nots”.
* E-health is and should be equitably accessible to all the people, irrespective of their age, race, gender, ethnicity etc.
* People, whose economic conditions are poor, people who lack skills, and access to computers and networks, cannot use computers efficiently. As a result, these patient populations (which would truly value the utmost from health information) are those who are the least expected to benefit from developments in information technology, except political trials ensure equitable access wholly. The digital gap presently runs between rural vs. urban inhabitants, rich vs. poor, young vs. old, male vs. female people, and among the neglected/rare vs. common illnesses.

**Scope of eHealth in Developing Countries**

* eHealth has been broadly regarded as an opportunity for marked improvement in the public sector in developing countries.
* As developing countries are confronted with health-related problems, eHealth can be a sector for development of whole country.
* The strategic advantage is relevant to the developing countries where the access is limited due to various reasons.
* The tools of eHealth can lead to improve the quality and efficacy of healthcare services.
* Government in the developing nations are keeping eHealth in their priorities to bring improvement in quality, accessibility and capability of health sector.
* Patients and physician are encouraged to use eHealth technologies in effective ways to improve health care.
* eHealth can reduce the cost even in the emergency where resources shortage takes place.

**Why ehealth?**

Digitally enabled care can enrich the experiences and services of clients, professionals, and health services. With ehealth, people carry their support literally in their pocket. Professionals have more possibilities to support people, for example between face to face sessions. Services and organizations can help more people and reach them more easily.

**Who is ehealth suitable for?**

Everyone with access to a smartphone, tablet, or computer can benefit from digitally enabled care.

**How does it works?**

It works to simplify the process of finding healthcare all the way to heal and recovery whether it’s a chronic disease or an acute symptom

It’s for patient themselves they download click medics, click on the disease area they’re concerned about then our system routes them either to a health coach, a nurse or primary care doctor or specialist depending on what their assessment outcomes are in terms of their health accommodation.

**What are the 7 chronic diseases?**

Chronic diseases—including, cancer, diabetes, hypertension, stroke, heart disease, respiratory diseases, arthritis, obesity, and oral diseases—can lead to hospitalization, long-term disability, reduced quality of life, and death

**How effective is it?**

Assessing someone’s health condition digitally and often symptoms need to be analyzed in a tangible, more visceral way. Do you lose anything in that process?

Medics is collecting the medically relevant data so that the physician can make an assessment on whether the patient needs to come in for a physical examination or they can be prescribed through a prescription and see if they are getting better that way as well as referring to other physicians.

**Overview to take charge of your healthcare**:

* Keep track of important health information
* Know your family's health history
* See a doctor regularly for checkups
* Be prepared for medical appointments
* Ask your doctor, nurse, or pharmacist questions
* Follow up after your appointment

**5 reasons to choose digitally enabled care**

* Always there-regardless of time and place
* Empowers people in their road to recovery
* Supporting people digitally from pre-care to aftercare
* Better efficiency in less time – produce something without wasting materials, time or energy
* Helps to prepare your service for the future

Ehealth is about using information and communication technology in the healthcare sector:

Telemedicine – this means that a doctor can monitor his patient from a distance. It’s much easier for the patient because he can recover from a surgery for example at home.

E-prescribing – prescription at a distance this will make it possible to prevent medical mistakes because of bad handwriting of doctors. This will also make it possible to prevent adverse reactions due to interaction with other medicines because the doctor will have access to the medical history of the patients

These and other ehealth solutions can really improve access to and quality of healthcare

It’s benefit of the consumer but it’s also good for healthcare system because it’s going to be more efficient and more most effective.

Telemedicine

**History of telemedicine**

In 1940s Pennsylvania, [radiology images were sent 24 miles](http://www.ncbi.nlm.nih.gov/books/NBK45445/) between two townships via telephone line in the world’s first example of an electronic medical record transfer. A Canadian doctor built upon this technology in the 1950s, constructing a teleradiology system that was used in and around Montreal. As these practices became more widespread, so did motion pictures, and with the advent of modern film technology came serious plans for video medicine. The first people to use video communication for medical purposes were clinicians at the University of Nebraska. In 1959, the university established a two-way television setup to transmit information to medical students across campus, and five years later linked with a state hospital to perform video consultations.

**What is telemedicine?**

The **delivery of healthcare** from a distance using electronic information and technology, such as computers, cameras, videoconferencing, satellites, wireless communications, and the Internet. Also called telehealth.

**Telemedicine vs. Telehealth**

Telemedicine [focuses](https://www.aafp.org/news/media-center/kits/telemedicine-and-telehealth.html) on remote clinical services provided by doctors. In contrast, telehealth is a broad term that covers remote clinical and nonclinical services provided by health professionals other than doctors. This term is frequently used interchangeably with telemedicine, but their meanings are slightly different. While **telemedicine focuses on clinical services**, **telehealth focuses on all health services**. An example would be a video-conference platform for nurse education.

Telemedicine [covers](https://www.fcc.gov/general/telehealth-telemedicine-and-telecare-whats-what) include all communication within the doctor-patient relationship, including:

* diagnostic testing
* discussing medical history
* monitoring

Meanwhile, telehealth includes various remote healthcare services beyond those a doctor offers.

Clinical services include:

* remote interpretation of diagnostic tests
* specialist review of records for expert opinion
* consultation with a nutritionist or physical therapist

[Nonclinical](https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine) services include:

* provider training
* administrative meetings
* continuing medical education

**Types of Telemedicine**

Telemedicine has [several](https://catalyst.nejm.org/doi/full/10.1056/CAT.18.0268) types, including:

* real-time video communication
* remote monitoring, which involves health data being reported, collected, and evaluated, such as:
  + [blood pressures](https://www.medicalnewstoday.com/articles/270644)
  + cardiac stats
  + [oxygen levels](https://www.medicalnewstoday.com/articles/321044)
  + [respiratory rates](https://www.medicalnewstoday.com/articles/324409)
* store-and-forward — storing and sharing medical information, such as:
  + [CAT scans](https://www.medicalnewstoday.com/articles/153201)
  + [MRIs](https://www.medicalnewstoday.com/articles/146309)
  + [X-rays](https://www.medicalnewstoday.com/articles/219970)
  + photos, videos, and text-based patient data

**Telemedicine uses**

According to the Department of Health and Human Services (HHS), there was a [63-fold](https://www.hhs.gov/about/news/2021/12/03/new-hhs-study-shows-63-fold-increase-in-medicare-telehealth-utilization-during-pandemic.html) increase in the use of Medicare visits through telehealth from 2019–2020 as a result of the COVID-19 pandemic. One-third of these are visits to behavioral health specialists.

Telemedicine amid the pandemic can help reduce a person’s contact with healthcare facilities and their risk of COVID-19. It can also help reduce staff exposure.

**Uses beyond the pandemic**

Beyond this, doctors can use telemedicine for many other purposes, including:

* general healthcare, such as wellness visits and blood pressure control
* nonemergency follow-ups
* [mental health](https://www.medicalnewstoday.com/articles/154543)counseling
* nutrition counseling
* prescription for medications
* [physical therapy exercise](https://www.medicalnewstoday.com/articles/160645)
* tele-intensive care

Experts also telemedicine used differently in various fields of medicine, [such as](https://www.jmir.org/2020/11/e20839/):

* **Telestroke:** Experts use telemedicine in emergency departments for neurologists to communicate remotely with emergency doctors, reducing the need for in-house [neurologists](https://www.medicalnewstoday.com/articles/326717). This helps deal with the shortage of neurologists in many hospitals.
* **Teleradiology:** Practitioners send images and reports from in-person or telemedicine exams to a remote [radiologist](https://www.medicalnewstoday.com/articles/327331), who then sends their report to the physician or another healthcare professional.
* [**Telepsychiatry**](https://www.medicalnewstoday.com/articles/telepsychiatry)**:** Direct interaction between a person and a [psychiatrist](https://www.medicalnewstoday.com/articles/what-is-a-psychiatrist) through telephone or video conferencing.

**Medical professionals who effectively use telemedicine**

**Remote Health Monitoring with Intelligent Edge Gateway**

**Benefits of telemedicine**

Telemedicine has several benefits for the people and the medical professionals involved.

* Comfort and convenience

With telemedicine, people can access care in the comfort and privacy of their own homes. This reduces the need to travel, arrange for child care, and leave work.

It cuts off waiting time and allows people to arrange their consultations around their busy schedules.

A [2019 study](https://thejns.org/pediatrics/view/journals/j-neurosurg-pediatr/25/2/article-p204.xml) found that telemedicine saves people and their families attending a pediatric neurosurgery telemedicine clinic substantial:

* + travel time
  + cost
  + time away from work
* Increased access to care from a distance

Telemedicine helps make healthcare accessible, especially for people living in rural areas.

A [2020 study](https://www.liebertpub.com/doi/full/10.1089/trgh.2020.0122) found that telemedicine provides some of the population access to care without potential:

* + stigma
  + marginalization
  + discrimination
* Cost-effective option

Telemedicine consultations may be [more affordable](https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2016.1130) than in-person doctor visits and admission to the emergency rooms.

A [2020 review](https://pdfs.semanticscholar.org/3311/e35b1ef971d7f2906871aa84e812638e1536.pdf) found that there was a reduction in health costs by 56% and travel costs by 94% when doctors used telemedicine in the following settings:

* intensive care unit (ICU) rooms
* pediatrics
* dermatology
* radiology
* Family support

Telemedicine allows family members and caregivers to join in the consultation, ask questions, and provide information to contribute to their family member’s care.

* Prevention of chronic diseases

A [2021 review](https://www.mdpi.com/2075-4426/11/7/658) found that telemedicine helps provide timely delivery of preventive care to people with [cardiovascular diseases](https://www.medicalnewstoday.com/articles/257484). This helps prevent acute events and the progression of these diseases.

* Controls the transmission of illnesses

Scheduling appointments and creating more efficient clinic workflows lessen people’s exposure to others who may be ill. It also helps prevent and [slowTrusted Source](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7164871/" \t "_blank) the transmission of COVID-19 and other viruses such as [flu](https://www.medicalnewstoday.com/articles/15107).

* Contextualized assessments

Telemedicine helps healthcare professionals like occupational and physical therapists observe a person in their natural environment. This allows them to perform more thorough evaluations of the person’s abilities to move around and interact with their environment.

**Possible drawbacks**

Some of the common disadvantages of telemedicine [includeTrusted Source](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7342801/" \t "_blank):

* technological glitches when using devices
* inability to physically examine people
* lack of patient-doctor rapport and trust
* lack of access to the necessary infrastructure, such as high-speed internet
* diagnosis hindrance due to the poor quality camera, images, or lighting
* challenges in ensuring electronic health records remain protected
* lack of clarity on malpractice and liability concerns
* Medicaid and private payers have inconsistent policies on reimbursements
* Medicare only covers people in some rural regions
* individuals should meet with practitioners licensed in the state where they are in at the time of the visit

**How to overcome drawbacks**

Individuals can help overcome glitches by checking their internet connection and ensuring devices work ahead of appointments. If possible, a clinic or hospital staff receives training to help people with technical difficulties.

A person may use a platform that keeps track of their expenses and documents receipts required by their payers. They should also keep up to date with their insurer’s allowable reimbursements.

Clinics and hospitals must have a [robust](https://www.elsevier.com/connect/healthcare-professionals/overcoming-challenges-faced-by-telehealth-adoption) electronic health record (EHR) system to ensure data privacy and security. Doctors and patients should also ensure that they have a secure network connection and that the mode of delivery is easy to understand.

More importantly, since doctors rely on a person’s report, they must ask more questions to gain a more comprehensive medical history of their patient.

Practitioners need to be aware of their state’s regulations since most regulations on telemedicine vary across states.

Virtual Therapy

**What is Virtual Therapy?**

Virtual therapy is therapy that takes place via the phone, an app, a video chat, or even a virtual reality device.

**Types of Virtual Therapy**

In theory, any treatment that does not require physical contact or laboratory testing can work on a virtual platform.

The most prevalent types of virtual therapy include:

**Virtual psychotherapy**

[Virtual psychotherapy](https://www.apa.org/monitor/2017/02/online-therapy), sometimes called telemental health or telepsychology, treats people with mental health issues, relationship or sexual health problems, or significant stress via video chat, email, phone, text messaging, or email.

In most virtual psychotherapy sessions, a licensed therapist provides traditional therapy through a new platform. A client might talk about their emotions, seek insight on their relationships, and ask for help implementing lifestyle changes.

[A newer form of virtual psychotherapy](https://www.liebertpub.com/doi/abs/10.1089/tmj.2015.0002) uses apps or coaching to improve mental health. This approach is not a form of traditional therapy because a person does not get care from a licensed practitioner. Instead, they might monitor their own symptoms over time, get virtual coaching from a bot, or receive daily mental health tips.

**Virtual physical therapy**

[Virtual physical therapy](https://journals.lww.com/jbjsjournal/Fulltext/2020/01150/Effects_of_Virtual_Exercise_Rehabilitation_In_Home.2.aspx?PRID=JBJS_PR_011620) offers traditional care but in an online or phone-based setting. A physical therapist might discuss recent symptoms, recommend exercises, or administer screenings.

In some cases, a therapist might ask a client to perform exercises and then use a camera to evaluate their form and progress.

Some physical therapy apps complement therapy by offering additional exercises or allowing a client to track their progress between sessions. A person can use these apps alongside virtual or in-person therapy.

**Virtual speech therapy**

[Virtual speech therapy](https://www.sciencedirect.com/science/article/pii/S0885230815000790?via%3Dihub) can treat a range of speech disorders, such as a stutter, aphasia from a stroke, or pronunciation difficulties.

In a virtual session, a therapist may evaluate a person’s speech, offer them strategies for correcting speech issues, or help them practice new speech patterns. An [emerging form of virtual speech therapy](https://www.sciencedirect.com/science/article/pii/S0885230815000790?via%3Dihub) uses bots in place of real people to improve speech.

Virtual speech therapy apps are also available to help people work toward their speech goals between sessions or track speech changes over time.

**Virtual occupational therapy**

Occupational therapy helps people master specific life skills. People often use it in conjunction with other types of treatment. For example, a person with speech issues resulting from a stroke might choose speech therapy, then use occupational therapy to help them master the motor skills necessary to use a speech assistive device.

In virtual occupational therapy, a therapist offers coaching, tips, and feedback on techniques on a virtual platform, such as via video chat. [Some forms of virtual occupational therapy](https://www.intechopen.com/books/occupational-therapy-occupation-focused-holistic-practice-in-rehabilitation/virtual-reality-and-occupational-therapy) may also use virtual reality to mimic real-world situations that the individual might face.

**Disadvantages**

Some drawbacks of virtual therapy include:

**Data concerns:** If a therapist chooses the wrong platform or does not encrypt therapy sessions, a third party might violate a client’s privacy. If a client seeks care on a public network or leaves their computer unlocked, their colleagues or housemates may be able to view their sessions.

**Relationship concerns:** Depending on the modality the client chooses, it may be harder to form a trusting relationship with the therapist. For instance, email-based therapy removes body language and voice tone cues, potentially causing communication issues.

**Technological limitations:**Slow networks, low quality video, and chat delays can make therapy more difficult.

**Technological expertise and philosophy:** People who are not comfortable with technology may feel less comfortable with or more anxious about virtual treatment.

Virtual therapy is a great option when a person does not want to leave home or cannot or should not, as in the case of the COVID-19 pandemic.

Terminologies:

Electronic Medical Record (EMR) - EMR’s allow healthcare organizations to store, retrieve, and modify patient records.

Electronic Health Record (EHR) - Often confused with an EMR, electronic health records are a collection of patient information that can be shared across healthcare settings. EHRs commonly contain billing information, vital signs, medical history, and more.

Remote Monitoring - Remote monitoring refers to the utilization of digital medical devices transferring data to practitioners and staff in real time.

Video Conferencing - The transmission of digital video images in real-time between multiple locations.

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