

Biometrics: Increasing Patients Certainty in Doctors

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Abstract: With the increasing population, improvement in technologies, intension of hurting other fraud and etc are the reasons we need security in medical field. Blunder happens in healthcare systems more and more these days. Daily news come about records being mixed up, medical charts are confused among patients; the wrong medication is given to the wrong patient. Healthcare biometrics refers to biometric applications in doctors' offices, hospitals, or for use in monitoring patients. Biometrics in health care includes access control, identification, workforce management or patient record storage. Biometrics has transformed the healthcare industry; devices can capture information about you from your eye, hand print, or thumb print and use it to identify you. That information could be used to ensure that you are who you say you are, and you have permission to be working with the healthcare information you are trying to access.

Introduction

Biometrics is the measurement and statistical analysis of people's unique physical and behavioral characteristics [1]. It is mainly used for identification and access control, or for identifying individuals who are under surveillance. The basic premise of biometric authentication is that every person can be accurately identified by his or her intrinsic physical or behavioral traits. Healthcare biometrics refers to biometric applications in doctors' offices, hospitals, or for use in monitoring patients. This can include access control, identification, workforce management or patient record storage.

Now a day's healthcare industry is using electronic health records, there is uncontrolled optimism about how digitizing health records will create tremendous efficiencies and significantly increase the quality of patient care. As more and more hospitals and healthcare systems migrate to computerized physician order entry and electronic health records, and more health information exchanges are built to coordinate care across networks, many are raising concerns about how to effectively manage data integrity to ensure it is kept free from corruption, modification, or unauthorized access [2].



Fig: Example of Biometric Traits

NEED FOR BIOMETRICS IN HEALTHCARE:

Here are several instances that show how identification plays a vital role and identity management becomes a crucial job in a healthcare facility. Unconscious patients cannot produce an ID and traditional patient tagging is also not free from flaws. It has possibility of clerical errors in tagging a patient, producing a wrong tag or a mismatch between patient tag and hospital records. Each possibility can potentially lead to improper identification, incorrect drug

administration or wrong blood transfusion, which can become life threatening for a patient. In addition to all these problems there are many other reasons for the implementation of biometrics in medical:

- Patient authentication: Patient authentication to ensure that you are who you say you are, it's also important so that right medicine is given to right person and etc.
- Privacy of patient information: Security of patient personal data is as important as giving proper medicine to them. Anyone can misuse that data.
- Web security for e-business applications
- Universal patient identification: universal patient identification number that provides positive identification of an individual using a biometric tied to a unique number.
- Data storage and retrieval management: proper storage of patient's personal and medical information is important, so that no one can wrongly use it.

HEALTHCARE OUTFITS THAT CAN MAKE USE OF BIOMETRIC IDENTIFICATION: HOSPITALS

Biometric identification can greatly benefit in hospitals due to the higher number of identification procedures performed than other healthcare setups. Emergency cases are often unconscious and cannot produce an ID. Traditional patient tagging is full of vulnerabilities and an error can lead to loss of life. Since an error in identification of a patient can cost life, keeping this process free from flaws becomes mandatory [5]. Biometric identification can help achieve this level of accuracy in patient identification.

- Once patient identity is established with biometric, there is no possibility of errors in identification.
- Patient records can be fetched immediately when they are maintained with biometric identity.
- There is no need to carry ID or papers for future visits to the hospital once the patient identity is established with his or her biometrics.
- A hospital has many areas where only doctors and staff should enter. Biometrics can also help with centralize hospital-wide access control to deter unauthorized access. Biometrics authentication to login to PCs, servers and other devices, can safeguard patient records, deter fraudsters/hackers and help stay compliant with government regulations.



FIG: Identity access at hospitals

THERAPIST

Increasing number of health issues and life-style diseases has made people to look cure in alternative medicine. Increasing awareness has also played a role in alternative therapies gaining popularity. Therapist is one of the alternative systems of healing that diagnose and treat common spinal misalignment that can occur from lifestyle or injuries causing pain, discomfort and degenerative conditions. Increasing number of patient's results in increasing number of patient records and therefore biometrics is needed for:

- Keeping track of patient records
- number of sessions provided
- next appointment dates
- Attend more patients in a day.
- Enable more people to attain wellness in a day.

BLOOD DONATION CENTERS

Blood bank is a place where blood is collected from donors, typed, separated into components, stored, and prepared for transfusion to recipients. A blood bank may be a separate free-standing facility or part of a larger laboratory in a hospital [3]. A little error in identity management of donor or receiver can pose a serious threat to a patient's life. Biometric identification can overcome challenges of a traditional identification system in a blood donation center in following ways:

- Once a donor record is created and maintained in the system with biometric identifiers, it is impossible to fake the identity.
- The record will retrieve instantly on biometric scan of the donor, without producing any ID card in the future.
- Use of biometric characteristics as unique ID instead of demographic data saves from typos and clerical errors.
- Identity management with biometrics not only cuts down chances of human errors but also makes whole system more reliable and efficient.

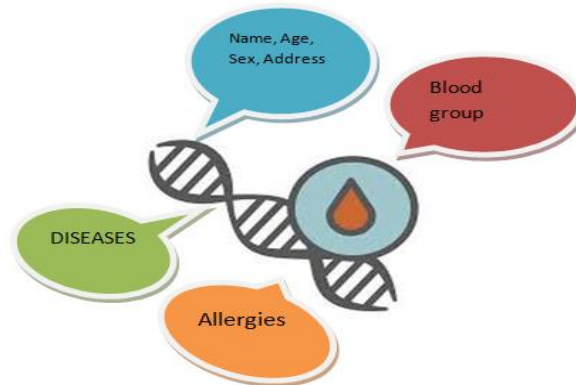


FIG: Biometrics at Blood Donation center

WELLNESS CENTERS

Wellness centers help people to regain their health with natural methods, rather than activity. Modern lifestyle has made people to stay away from nature and things that used to be naturally available, like fresh air, and food without chemicals. Rising pollution, low quality food and unhealthy habits introduces toxins in body and wellness centers can help abrupt withdrawal it. Challenges in a wellness center are more or less same as challenges in a chiropractic center like:

- They have to identify patients and maintain patient records.
- Different members/patients may be entitled to different plans or packages, these details can be linked with member biometrics and records can be instantly retrieved and updated with each visit.
- Biometrics can help lay access control to different sections of a wellness center, where only staff or specific members are allowed.



FIG: BIOMETRICS AT WELLNESS CENTER

ALLERGISTS

An allergist / immunologist (commonly referred to as an allergist) is a physician specially trained to diagnose, treat and manage allergies, asthma and immunologic disorders including primary immunodeficiency disorders [4]. There are several kinds of allergies and several of substances causing allergies, allergists have to deal with immense amount of details in which biometrics is very useful like:

- Managing patient records
- Patient medical history
- Prescription, etc. can often be challenging.

Manual recording of patient-specific information and retrieving records on future visits can be a time intensive process on manual mode.

BIOMETRIC COUNTER HEALTHCARE FRAUD:

Biometrics technologies such as fingerprint scanners, palm vein readers, facial recognition tech, iris scanners and others, have long held promise to tighten up identification of patients and employees. This help reliably verify that patients are who they say they are, guarantee caregivers are working with the proper medical and demographic information, and ensure only the proper employees have access to the right information.

The healthcare industry is not immune to fraudulent activity. Economic crime and identity theft is increasing; and with advances in technology, more and more personal information is being stored electronically on multiple databases.

Healthcare facilities and insurance companies capture in depth personal patient information, records and confidential material. Successful management of information is definitely one of the keys to effective provision of care and ultimately better health risk management.

Biometric technology implementation in the healthcare industry has many notable benefits including: achieving greater efficiency and cost saving, providing greater access to care, effective risk management, and reduction in the incidence of fraud, much more efficient administration, less debt and improved resource management

The primary aim of biometrics system for patient identification in healthcare is to increase patient safety. Using biometrics to accurately identify patients helps to [6]:

- * Prevent duplicate medical records
- * Eliminate medical identity theft and fraud at the point of service
- * Identify unconscious patients
- * Lower financial risk to medical service providers
- * Speed up the claims process
- * Overcome problems with cultural naming conventions
- * Track patients with chronic disease to help with medication adherence and mapping patterns to ensure the right care is delivered to the right patient

CONCLUSION:

Healthcare executive have to spare additional time on identification, record keeping and retrieval of patient records. This treasured time can be spent providing care and treatment to other patients. Security and access control are the other important needs in a healthcare facility. In larger healthcare units like hospitals and health clubs, access control becomes essential. Patient records are sensitive and their safety is a important requirement. Using Biometric identification can address both, physical access control for computer/server rooms and logical access control for login to the workstations and servers. Dependency over the information technology has opened doors to threats from the internet. Want to cry ransom ware attack of 2017 left world stunned. This attack brought down 70,000 devices of UK's National Health Service hospitals, including computers, MRI scanners, blood-storage refrigerators and theatre equipment. With these many threats around, healthcare sector cannot leave security to chance, can it?

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