

Blood Banks Interlinking and Patients Referral Model Using mHealth

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Abstract

Blood is the main requirement of all the hospital units for saving life. Most of patient's die due to non-availability of blood in the hospitals. Patient lost lot of blood travelling or in referring from one hospital to another. Lot of crucial time is being wasted while travelling from one hospital to another. So there is need of wireless technology in the health services like telemedicine, mHealth etc. So there is a need to develop a system in which travelling time can be used by the medical staff in the referred hospital to get ready for the coming emergency and use of wireless technology in such kind of referral health services. In this paper author focused on interconnections of all the blood banks in a district and displaying all the details online and updating it and also developed a referral model for saving lives.

Keywords

mHealth, NID, UID, EPR

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1. mHealth

There are various hard to reach areas across the world. Mobile has created a new boom in the society. The number of mobile phone subscriptions in India will reach 993 million by 2014. Nearly 80% of the world population will be having mobile handsets by the end of 2013. mHealth is a technology that can bring revolution into the field of medical service delivery but the problems associated with the current implementation of mHealth are important to be considered for improvement and better development design for future.

mHealth system will provide basic medical services to world using mobile, Tablet PC and other handheld devices. mHealth is the demand of time. Working person, elder people, physically handicapped people are not able to visit doctor for every time post operative treatments. This system will be helpful for people lying in hilly, remote, slums and other areas where there is scarcity of health workers.

While mHealth certainly has application for industrialized nations, the field has emerged in recent years as largely an application for developing countries, stemming from the rapid rise of mobile phone penetration in low-income nations. The field, then, largely emerges as a means of providing greater access to larger segments of a population in developing countries, as well as improving the capacity of health systems in such countries to provide quality healthcare.

Within the mHealth space, projects operate with a variety of objectives, including increased access to healthcare and health-related information (particularly for hard-to-reach populations) improved ability to diagnose and track diseases, more actionable public health information; and expanded access to ongoing medical education and training for health workers.

2. Blood Bank Interconnection

Blood is requirement of human body. Its type is known as blood group. There are four types of blood groups A, B, AB

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and O, with positive and negative denoting its Rh status .The consist of red blood cells (RBCs), WBC (white blood cells), antigens, antibodies etc. It transmits oxygen from lungs to the other parts of body to the other. Many patient’s dies due to non availability of blood. So a large amount of blood is required every year.

A Union health ministry official says, "India requires 10 million units of safe blood for transfusion. In 2010-11, it collected 8.01 units. Majority of the districts have well established blood banks. Besides, blood component separation units have been established in tertiary care hospitals."

Takoli Ghirthan a small village of district kangra of Himachal Pradesh. This village has a population of nearly 1500. The nearest Ayurveda PHC is Patta Jatia nearly 1 km by road, and nearest allopathic PHC is Bharmar nearly 3km .Nearest CHC is Jawali nearly 10 km District hospital is Kangra 70 km from road. [19,20]

This system will work in district hospitals. All the operators in blood banks in all CHC in a district will send the information to the operators in the district hospitals. The operators in the district hospital will upgrade the data on the main website page as shown in the table below (Figure-3). These data will be available on official website of health department can be used anywhere in the state to save the life of patients. If a patient lying Takoli Ghirthan can get all the information online. Patient can also check the status of nearby hospital blood banks as shown in figure.2.

Figure-4 will display the detail of all the health centers. Detail includes mobile number, email id and name of

operator of every hospital. So that any person can contact any hospital whenever required.

3. Referral mHealth Model

Lots of patient dies in referring patient from one hospital to other a model has been developed to cope up with such kind of problems. Suppose a patient suffering from some illness lie in village Takoli Ghirthan [19] of district Kangra of Himachal Pradesh. This village has a population of nearly 1500. The nearest allopathic primary health center is Bharmar [19,20] nearly 3 km. Nearest CHC is Jawali nearly 10 km and District hospital is Kangra 70 km by road. Patient starts his treatment from the PHC. As patient reaches PHC if doctor feel the patient cannot be treated in PHC. Patient will be referred to CHC and Operator in the PHC forwards the patient data to the CHC using mHealth model. This data include all the vitals of the patient. The CHC operator will forward the data to the emergency ward of CHC. The doctor in the emergency ward can study the case of the patient and get the time to get ready for the coming patient, else operator will send data to the concerned department of the hospital like surgeon, physician etc. In the same way if doctor feels the patient cannot be treated in CHC. Patient will be referred to district hospital Kangra with his vital characteristics using mHealth model. Using mHealth model data can be further referred to medical college i.e. IGMC Shimla or Tanda medical college, PGI Chandigarh and AIIMS Delhi if required. The detail of operators with their name, mail id and mobile number is shown in fig.4

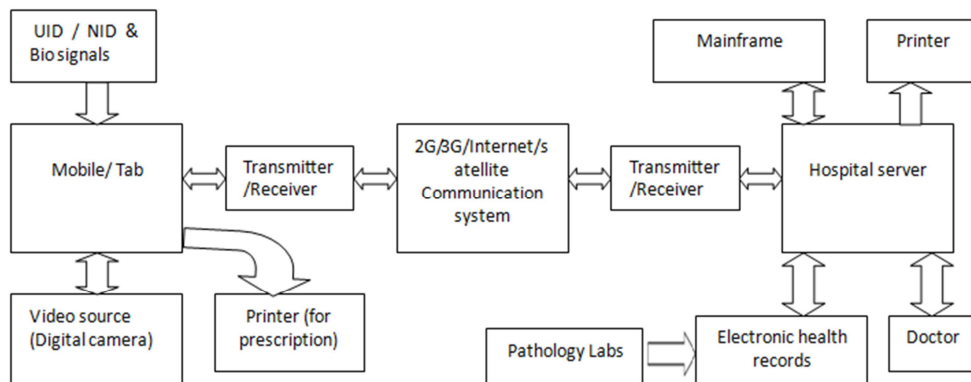


Fig. 1. mHealth model

Blood Group	CHC Rehan		CHC Fatehpur		CHC Jawali		Sub Divisional Hospital Nurpur		District Hospital Kangra		Tanda Medical College	
	P	N	P	N	P	N	P	N	P	N	P	N
A	3	2	4	5	3	3	4	4	5	4	77	3
B	3	3	5	5	4	2	5	5	45	4	76	3
AB	5	5	4	2	5	2	4	4	45	4	88	3
O	4	5	4	2	6	5	3	4	34	4	88	3

Fig. 2. Block showing blood units near Takoli Ghirthan

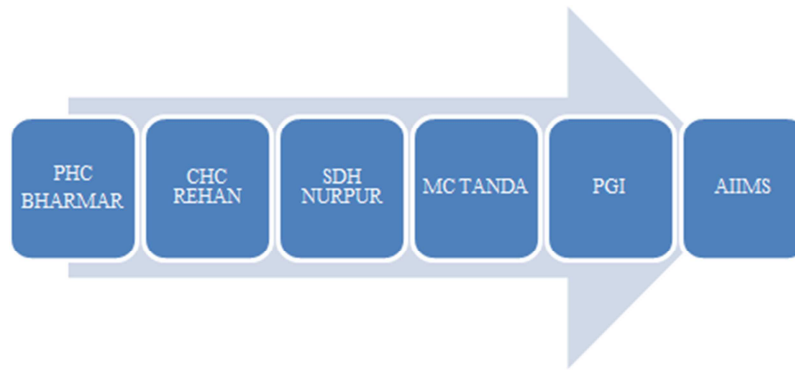


Fig. 3. Referring Process

Primary Health Center	•Mr Vishal •phc@hphealthx.com •94xxxxxx
Community Health Center	•Mr Mani •chc@hphealthx.com •94xxxxxx
District Hospital Kangra	•Mr Vishal •dh@hphealthx.com •94xxxxxx
Medical college Tanda	•Mr Raj kumar •mc@hphealthx.com •945xxxxxxxx
PGI Chandigarh	•Mr sangram •pgi@hphealthx.com •967xxxxxx
AIIMS Delhi	•Mr Raju •aiims@hphealthx.com •987xxxxxxxx

Fig. 4. Operator Details

4. Technical Specifications Required

Data Speed	3Mbps onwards
Communication Technology	2G, 3G, 4G, Wi-Fi, Wi-max
Data storage capacity	Large Servers, Clouds
Small area connectivity	Bluetooth, Zigbee
Applications	Java based
Devices	PDA, TABS, SMART PHONES, LAPTOPS, IPOD
Web portal	www.hphealthx.com

5. Realibility

Reliability is the main requirement of the system. There is lot of error in the measurement system. There is error due human interference we will make the data more reliable. We will make the system more secure so that no body can easily access or disturb the data. The data will remain secure. There will be locks for the security of the whole system. For checking the reliability model is required. Model will be developed according the equipment / instruments used in the whole system.

6. Merits

- This system will help us to provide medical facility in every

village of the country.

- This system will provide job to opportunity to local people.
- This system will help in identifying the blood requirements and solution for maintaining it.
- This system will help in decreasing the number of causalities from the world.
- Patient does not need to visit doctor
- This system will remove the chance of human error in the system

7. Demerits

- If the transmitted data is wrong then prescription will be wrong
- Technical knowledge is required to operate this system

8. Conclusion

As wireless technologies are creating a great change in the society. These technologies based models can help the society in saving lives due to deficiency of blood in the hospitals. Causalities can be reduced by reducing travelling, referring time to the hospitals. Lots of important surgeries and operations can be done in time. Nobody will die due to shortage of blood. This will make the society more safe to live.

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