CHILD HEALTH: PROJECT CHILD IMMUNITY

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Abstract: Information Communication Technology (ICT) plays a huge role in today's health industry that is why private and government sectors invest in it to support the industry in providing health services. ICT is now used to lessen child mortality which can be looked at as a result of the inability to deliver proper health; services that each citizen has the right to receive. Solving it should be a chief concern of all societies, because children are the ones who embody the future of our generation.

The study will present ane-health web-based application that givesimportance to delivering proper child health care in reducing child mortality and aims to solve the barriers that lead to the low demand for and use of services that eventually contribute to child mortality, particularly by the poor.

Keywords— Information Communication Technology (ICT), eHealth, Child Health

1. INTRODUCTION

Health is one of many possible areas where ICT can help make a significant change. For the past few years, ICT for health is continuously improving to support the delivery of health care in different locations around the globe. Through the emerging technologies of the current generation, it is seen to be a solution for most of the problems that the world is facing today. That is also the reason why it is used to support the efforts of reaching the Millennium Development Goals involving child health, maternal health and combating HIV/AIDS.

In the Philippines, ICT for health specifically tele-health and telemedicine has been identified to be a key driver in helping the delivery of basic medical services to remote areas and in increasing the availability of primary health care in the country. According to Senator Edgardo J. Angara, Chair of the Congressional Commission on Science Technology and Engineering (COMSTE), it should be a national priority to improve the health care system in our country through the said technologies.

The status of child mortality today in the global scale is utterly devastating. About 29,000 children under the age of five – 21 each minute – die every day, mainly from malnutrition, diseases and illnesses, most are neonatal infection, pneumonia, diarrhea, malaria, and measles. It wasdiscovered that over 22,000 children die every day around the world. This amount may be equivalent to one child dying every four seconds or 15 children dying every minute. It was also

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discovered that 6 million of the almost 11 million children who die each year could have been saved by low-tech, evidence-based, cost-effective measures such as vaccines, antibiotics, micro-nutrient supplementation, insecticide-treated bed nets, improved family care and breastfeeding practices.

In regards to child health care, there are several barriers in the country that prevent or delay the households specifically in rural areas of the country from seeking health care for their sick infants and children. According to the report of WHO regarding child health, the said barriers are the following, (1) geographical access or distance; (2) financial barriers; (3) sociocultural, (4) language and ethnicity-related barriers; and (5) lack of knowledge and awareness. These barriers lead to low demand for and use of services, particularly by the poor.

2. METHODOLOGY

In order to address the problems mentioned, the proponents developed a system by using the Rapid Application Development(RAD) method. It is a software development life cycle wherein it is designed to develop high quality systems within a faster timeframe, by focusing on rapid prototyping while conducting minimal planning. RAD compresses the conventional methods into an iterative process. It provides access to power tools such as CASE tools to quickly create applications. However, regardless of using afast-paced approach that includes developing and refining the data models, process modeling and prototyping; it still can fully develop a new information system from an existing functioning information system.

Since this methodology is user-friendly, the users are required to interact in discussions of the requirements, then the prototype is modified and the interactive process continues until the system is fully developed. User satisfaction is dependent on prototyping and its user environment phase, which is a unique feature in RAD. This allows the user to examine a working model as soon as possible, and for them to determine if it meets their needs and their ability to suggest whatever necessary changes they notice. This methodology is used to minimize the development time and its cost, but increase the probability of success of the new system. CASE tools are also used to build prototypes and continue its stream of documentation (Shelly, Cashman& Rosenblatt, 2009).

3. RESULTS AND DISCUSSION

Project Child Immunity (PCI) is an**e-health web-based application that is developed by four BS-Information System students** that aims to reduce the high child mortality rate and to combat diseases through proper health record management and disease prevention initiatives.

The Figure 1 is a graphical representation of how PCI works. Everything is centered on achieving the goal of having healthier children in order to reduce the child mortality rate to zero.

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The mother is given an account to access the web application so they can conduct self-reporting by giving updates on their children's health and development in terms of the physical aspects. Also, mothers will be able to consult directly to the health practitioners through online messaging where the mother can include additional media for details of her child's case such as pictures and videos to help the health practitioners give a more accurate diagnosis. Mothers could also schedule a teleconsulation via video conferencing for further analysis. All the information will be entered through the system and will be aggregated to produce accurate trends, patterns, and statistics that can be used for decision-making purposes. This information can be used by the health centers and LGUs in identifying priority areas that need to receive urgent response. With this concept, the current trend can be changed wherein mothers only report to health centers when their child is at risk. However, this all changes with PCI. Mothers themselves will be the ones constantly giving updates and reports with regard to the health status of their child.
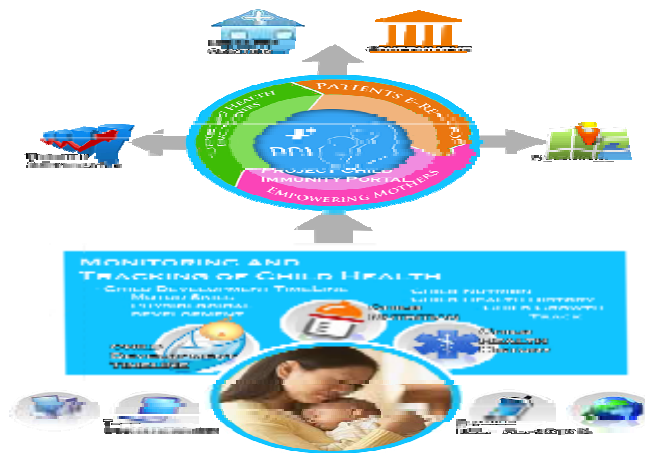

Figure **1** Project Child Immunization Framework

With the said system, the barriers previously mentioned that are faced by the mothers in seeking health care for their children can be omitted. First, mothers can access it anytime and anywhere using their smart phones or computers that has internet connectivity. With this, geographical distance will not be much of an issue. Traveling to the health center will be prevented or reduced, thus the cost for medical attention is reduced greatly as well. With the use of the internet, the system will be the medium in which information will be brought to those who are unaware since distance would not be a problem. Second, through data aggregation, the government would have cost-effective means of gathering information since the data would be provided by the mothers themselves. This would help the government in allocating resources more effectively since they can now point out the common problems that are occurring within the community.

Third, since the country has different dialects and since not everyone understands

English, the system would **p**rovide basic instructions translated into t**w**o languages, mainly Filipino and English. This **w**ould help the patients understand and em**b**race the system even more. Lastly, with the use of **t**he system, the quality of services provided **b**y health centers would be enhanced because of dat**a** aggregation which allows health centers **a**nd the government to easily track down who amo**n**g the children in the community needs ce**r**tain medication. Also, their inventory of medicine and other items will be more accurate now since the system will be able to tell how much of this item is needed for a certain period because of the patterns and trends produced using PCI.

Centralized Online Data Repository -Collated health records where the users can get the data needed for faster report generation and health tracking.

Immunization Tracking - The users will be able to keep track of which vaccines the child has taken and which ones are still pending which in turn increases the chances of children having a completed vaccination record, which keeps children equipped with proper protection against certain diseases.

Scheduling - The scheduling feature would allow health centers to keep track of all the children who will be having an immunization appointment on a certain day and thus allowing them to prepare necessary vaccines, facilities, services and personnel.

Automatic reminder/Notification - Mothers often forget their children's immunization schedule. This is because there is usually a two to three month interval in a standard immunization routine schedule hence, the schedule is not followed. With the automatic reminder feature, the mother will be encouraged to take her child to the scheduled immunization, which will result to vaccinations being timely addressed.

Teleconsultation - The system will use the store-and-forward type of telehealth where in digital images, video, audio, are captured and "stored" on the computer then transmitted or forwarded to a clinic at another location where the health center doctors study them.

Asks Mom - Ask Mom is a feature wherein mothers can ask questions, find answers and share information to other moms and health practitioners.

Mapping tool - The mapping tool will be used to give a visually representation the information obtained by the system. By knowing where and how many children contracted a certain disease will allow the municipality to cater to the needs of the children by ensuring that specific health centers are well-supplied with proper medicines or vaccines, facilities, services and personnel.

4. CONCLUSION AND RECOMMENDATION

After going through extensive research and exhaustive development of the PCI, it has been concluded that information must be handled with proper management specifically in handling health records of children in the rural communities so as to address several problems which relates and may not be limited to data recording, retrieval of records and generation of reports. Also, mothers should be well-educated and well-informed of the health of their childrenso that they may be able to take good care of them. To make this happen, the proponents used a technology-centric approach for the project to aid the health practitioners in their workload. The project makes use of technologies specifically accessed with the use of the internet for it takes advantage of various features it offers for the benefit of its end-users.

The program that the system offers is patterned out of what the government calls the "Early Childhood Development Project." This program has been proven to be effective as a structure upon which the system is operating and it is said to be spearheaded by Asian Development Bank.

With the system, health practitioners and mothers alike are given an effective information management tool that will aid them in addressing problems concerning the health of the child. The features offered were appropriate for the purpose of handling an overwhelming quantity of information and eventually reducing the U5MR. The system and its structure require heavy involvement from the health practitionersinvolved and will remain a system designed not to replace the health practitioners, rather, to act as a tool that enhances their delivery of services, equipment, and facilities.

In order to improve effectively Project Child Immunity, full evaluation from external sources should be done so that practitioners from the medical field can give further suggestions on how to improve the system. The system is also open for the opportunity to have it linked to different health centers, barangay units and community-based information systems (primary care) with hospital-based information systems (tertiary care) by digitalizing the patient's health records. Just like what other researches foresee, the proponents also acknowledge the possibility that after patient records are digitalized, the patients will have to bring their health records using a portable device to the hospital when they go to a hospital for a tertiary care due to a referral made in the health center. The PCI is going to be tested one rural and one urban health center in the Philippines.

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