COMMUNITY-BASED ELECTRONIC MEDICAL RECORDS IN SOUTH MAQUEDA BAY INTERLOCAL HEALTH ZONE

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APPROVAL SHEET

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DEDICATION

To my Mama Leah and Papa Ronald

To my Kuya Jayro and Ate Pudax

To my younger brothers Matche, Niño,and Bilikoy

To my younger sisters Ima, Carla and Cindy

To my niece and nephew Princess, Queen, Scarlet, Ken-Ken, and angels in heaven

To my aunt Dadan, Zdan, Purith and all aunties and Titos

To my Lolo /Tatay Pilo

To my late grandmas Nanay Edna and Nanay Rosing

And especially to my future Maria Elizabeth and Tyrone

This piece of work is fondly dedicated…

Love-Love

ABSTRACT

The study focused on Community-Based Electronic Medical Records in South Maqueda Bay Interlocal Health Zone. The study utilized the descriptive research design aim to determine the implementation of community-based electronic medical records in terms of profiles of the respondents. Furthermore, the study also sought the problems encountered during implementation and the suggested strategies and intervention embed to sustain the system. With a grand weighted mean of 4.3 suggested strategies and interventions to sustain the implementation of CBEMR, the health workers suggest an additional procurement of enough and functional computers or laptops to each permanent staff (weighted mean 4.5). Other suggestions include training and updates of the system (weighted mean 4.5) which should be provided to sustain the program. Moreover, hiring of qualified staff (with weighted mean of 4 or "much needed"), upgrading of internet services and strict compliance of health workers to scheduled reporting. High healthcare costs like procurement of computers, hiring of human resources and difficulty of sharing data and information to other allied health professionals almost make the system non-existent in the identified health facilities. Absence of basic facilities, equipment and supplies, the performance of certain program may be limited, constrained or compromised. Hence, management of health facilities reflects the operations of middle managers leadership at rural health facilities and support from the Local Government Unit. The presence of high level leadership is considered single most important factor contributing to successful implementation.

Together with the Municipal Health Officer and Local Chief Executive working hand in hand on formulating policies, budget for logistics and trainings for the staff are important of the functionality of the system.

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Chapter 1

PROBLEM AND SETTING

Introduction

The Philippine Health Care Delivery System Management was devolved to the Local Government Unit in 1991 and, for many reasons, health information system rapidly evolved with many challenges. One of the challenges of the Department of Health (DOH) is how the public would become more aware and exposed to different services using information and communication technology (DOH, 2013). Almost all regions, 50 percent of clients who visited the health facilities to sought medical advice or treatment, are in public health facilities of Rural Health Units (RHUs) and Barangay Health Centers (National Demographic and Health Survey, 2008). Today's main challenge in health system is access to healthcare services and access to real-time information for decision-making. Remote areas in the country is undermined with several layers of paper-based data entry. According to National Health context, at present, 13% of healthcare providers and 40% of tertiary hospitals are situated in non-urban areas, and the average time it takes to travel to health facility is usually 39 minutes (NHDS, 2008). Indeed in reality, access to health services and delayed reporting of accurate, reliable, complete health information set a burden for decision makers.

It has been estimated that 25 percent of local health workers' time is used to record and report data to a recipient agency (Lee, S. & Robey, J., 2011). It is generally paper-based and manually-driven recording and computing statistics per Department of Health program (e.g. maternal, neonatal and child health care, program on communicable and non-communicable, etc.). Health workers use tally sheets from individual logbooks weekly and monthly causing overburden and delay of reports.

The Philippines as a developing country faces challenges in the adaptation of information technology incorporating management of health information system in the field of health (Ward, R., 2008). Information technology integrated in healthcare industry including nursing, has the ability to reduce errors, cut cost, and enhance patient care. However, according to the study, 45 % of the current nurse workforce lacks adequate training in computer skills (Adam, Sharon, 2015). A human health resource status is significant in the success of implementation of community-based electronic medical record. Therefore, a demand for effectiveness and high expectation from the rural health facilities to deliver high quality of health services and resources are expected.

The vast connectivity of various electronic health information systems in the health care industry has set an era of access to deliver best quality care of health services via community-based electronic medical record. The Community-based Electronic Health Records is an integral part to the adaptation of health information system contemporary even to nursing informatics. Trends of

documentation and relaying of information from traditional paper-based are now upgraded to computer-based documentations. Community-based systems are expected to be highly significant software environment connecting diverse areas. However, there is a little study on the adaptation of this application in community setting. Recent reviews of related literatures on electronic health or computer-based health records in the rural health facilities have been taken, but at the time of this research no records of studies were found on the extent of implementation of community-based electronic medical record in Samar.

Statement of the Problem

The study focused on Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone. This study sought to answer the following questions:

1. What are the respondents' profiles in terms of:
    - 1.1 Health worker
        - 1.1.1 Age
        - 1.1.2 Sex
        - 1.1.3 Civil Status
        - 1.1.4 Educational Status
        - 1.1.5 Position
        - 1.1.6 Number of relevant trainings

1.1.7 Number of years using community-based electronic medical records

1.2 Patient

1.2.1 Age

1.2.2. Sex

1.2.3 Civil Status

1.2.4 Available Individual Treatment Record

1.3 Recipient Agency

2. What is the extent of implementation of community-based electronic medical record?

3. What are problems encountered during the implementation of community-based electronic medical record?

4. Based on the findings of the study, what interventions and strategies may be proposed to strengthen and sustain the community-based electronic medical record?

Theoretical Framework

The research study was taken from several theories that tend to lead the foundation of the research.

According to a behavioral system theory of Dorothy Johnson (Torres, 1986), the concept of human being is defined as 'man is a system which function as a whole, he strives to make continual adjustment to achieve and maintain, or

regain balance to the steady state that is adaptation'. An implementation phase of the community-based electronic medical record from traditional paper-based, a regularity and constancy of behavioral responses of a health care provider influence on the sustainability of the success of the program (Wayne, 2014). Although this model implied the seven subsystems, the interrelationship of its concepts have been explored as the focus of the behaviors that are purposeful, organized and predictable. Hence, imbalance and instability occur when stressors affect the subsystem (achievement, attachment-affiliate, aggressive-protective, dependency, ingestive, eliminative and sexual). The theory was used to explain that efficient and effective adaptation of technology incorporated in the practice of healthcare industry are influenced by internal and external environment of a person (e.g. motivation) a human factors that influence the end user on which actual performance of technology acceptance gains either desired outcomes on the success of implementation. The theory of behavioral functioning commensurate with social demands that yield modification of the behavior (Gonzalo, 2011). There are stressors that could affect the stability on the implementation and would enable the system to be functional at the community level.

Human behavior has psychological basis (Aquino, A., & Kahayon, G., 2014). It is said that when a person reacts, many forces inside and outside of the body integrates and produces action. Health workers and recipient agency are end users of the implementation of community-based electronic medical records.

In a similar study of Freudian concept of motivation, it is said that underlying forces impedes person's behavior in giving direction which developed within an individual as a result of relative attempts towards success. This is relative to the study since health services are incorporated with modern approaches, from paper-based to computerization of data, a drive to learn what they acquire through trainings gives confidence to the implementation of electronic medical records in the rural health facilities (Aquino, A, et al., 2014). In this study, the theory embeds the psychodynamic perspective that behavior is motivated by internal and external factors, problems on the implementation of technology either driven from inner forces or conflicts that are out of control on the part of the end user.

Sr. Callista Roy, on the other hand, puts emphasis on the adaptive self-concept and role function of an individual. A proper training as an intervention demonstrate effective adoptive response to a health worker towards computer-based charting as part of technological innovations incorporated in health system. According to Roy, adaptation theory is the adjustment of humans to his or her environment occurring in a continuous process that results to change, involves interactions and responses. This is relative to the study since health services are incorporated with modern approaches, from paper-based to computerization of data, a drive to learn from acquisition through trainings gives confidence to the implementation of electronic medical records in the rural health facilities. Health information has a potential to improve delivery of quality

health services, but even if it is available and not properly utilized, the extent of full implementation is then not realized.

Taking into account the theories of Dorothy Johnson's Behavioral theory, Freudian Psychodynamic Perspective, and Adaptation theory of Sr. Callista Roy, the researcher saw the applicability of the embedded concepts to the present study on the differences of individual approaches towards technological innovations in the health system. Improve healthcare delivery to people in rural areas imposed acceptance to use the system as well as it offers easy and timely access of information. Social and behavioral capability involves managing the changes while it emphasized the devolved leadership towards the organization. Further, this come to understanding on the contributing factors to the success of implementation of the system in the municipalities.

Conceptual Framework

The schematic concepts presented in figure one reflects the entirety of the study. The diagram starts at the upper block represents all about the community-based electronic medical records. Community-based electronic medical record as system and core responsive health system collecting data from the health facility. The lines connected to the health workers, patients and recipient agency pertains to the environments (extent of and problems encountered) of respondents towards of the implementation of the community-based electronic medical records.

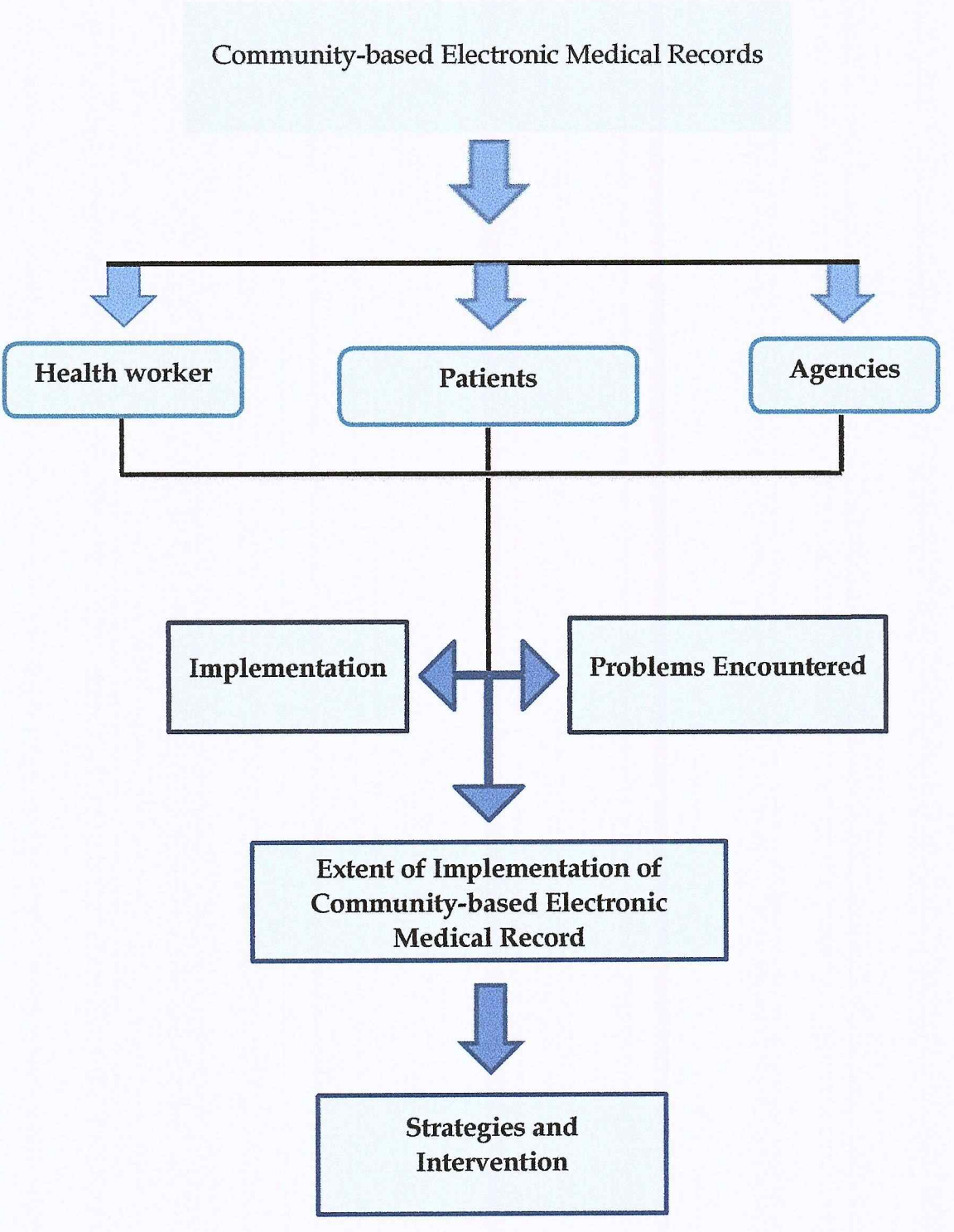

Figure 1. The Conceptual Framework of the Study

Efficiency and effectiveness of the system is influenced by the user and the recipient of the collected data. The delivery of health services rendered are reflected on the health information system. Extent of implementation of the end user and patients towards computer based electronic medical record is affected by behavioral technology adaptation of a person who will use to it as presented in the fourth blocks.

The most lower blocks as strategies and interventions are being studied to sustain the program incorporating technology into clinical practice, are then necessary to view its purpose on health information system stipulated to provides more responsive health system and easily shared and exchange in providing information.

Significance of the Study

The baseline information that can be drawn from this study is necessary towards implementation of community-based electronic medical record that the investigators will pursue and hopes that the result of the findings of the study would be beneficial and useful to the following individuals and organizations that are involved in this study. To healthcare workers, Local Chief Executives, Rural Health Unit, Department of Health, Patient and client, students and future researcher, and community.

Healthcare worker. The information can be used to provide are trainings for health worker as its benefits in quality improvement of health care

provided for the patient. Accuracy, completeness of documentation, better organization of information, data access in different places, and support in decision making and innovation.

Local Chief Executive. The devolution of management of health information system to the Local Government Unit (LGU) is better understood and responded on the needs of system user towards successful implementation of the national health program. Therefore, the significance of study on community-based electronic medical record offers easy assessment on community health status and better understanding on the importance of incorporating technology that enables local head of office in planning and decision-making.

Rural Health Unit. Application of community-based electronic medical record is necessary for accurate database and timely document processing at the grassroots level. The study will provide an increase in information exchange between health worker and the Department of Health on the trends and updates of the impact of the innovation of health information system in the community. This study also offers status on implementing necessary actions to fill the gaps and address the problems encountered during the implementation of community-based electronic medical record.

Department of Health. The findings of the study will be very useful on the ability to exchanged high quality, accurate, up-to-date and complete health information electronically. Access to real-time data through enhanced exchange

of health information in the community can prompt delivery of accurate health intervention.

Patient and Client. Efficient use of information technology on the application of community-based electronic management record ensures patient safety in receiving appropriate and quality health services.

Students and Future Researcher. An open access to the educational medical records resources can help the students explore application of computer-based generated health information system and provide them data that are accurate and complete. This study will guide and help them to further enhance the study and compare with the results of the evidences and give range of opportunities and better understanding with medical information efficacy through computer based generated data that are on sound and accurate. Hence, further study is highly recommended for the researcher.

Community. Access to electronic health information system generates information of the status of the community as a whole. Thus, it aides in decision making, program planning and health interventions towards community.

Scope and Delimitation

This study focuses on the implementation of community-based electronic medical record in South Maqueda Bay Inter-local Health Zone, Western Samar. The participants of the study are 76 health worker-respondents consist of municipal health officers, nurses, and midwives with limited or no experience in

the implementation of community-based electronic medical record. A total of 73 registered patients with electronic medical records are included in the respondents aged 19 years old and above who are present in every Monday morning consultation. Since afternoon, health facilities hold rural health unit staff meeting. Hence, 10 to 11 volunteered adult patient-respondents in every municipality who are having facility visit or consultations are expected to participate. Respondents from recipient agency are 5 (two respondents from PhilHealth office and three from the Department of Health office). The study includes rural health facilities from the municipality of South Maqueda Bay health net which are; Daram, Calbiga, Pinabacdao, San Sebastian, Talalora, and Villareal.

Thus, the study should not be generalized because of the limitation on the willingness of the target-respondents to participate in the data gathering. Respondents are focused on permanent and contractual health workers with exemption of pharmacist, medical technologist, and data encoder of the rural health unit since health workers assigned in the Barangay Health Stations are the main user and implementer of community-based electronic medical records. Participation was voluntary, limited to functional and non-functional facilities currently adopting electronic medical records, still on paper-based recording and reporting. The principal instrument used for the health workers and patient-respondents are self-structured questionnaire made by the researcher. Whereas, a self-structured questionnaire and interviews made by the researcher with guided

pointers of indicator from government eHealth strategic framework were utilized. Target data gathering is from November 2017 to February 2018.

Definition of Terms

The terms used in the study consist of conceptual and operational definition of terms.

Community Health Information Tracking System or CHITS. An electronic health information system in the health centers of the Philippines (The Journal Information System Evaluation, 2012). In this study, it refers to the community-based electronic medical system used in the municipal health facilities.

Community-based Electronic Medical Record or CBEMR. This is composed of variety of electronic health system that is used in the primary care settings where computerized charting of patients record and other health related information are being documented electronically (Fundamentals of Nursing 5th Edition, Page 147). In this study it is also refer to CHITS, WAH and Iclinicsys electronic system.

Computer literacy. The level of familiarity with the basic hardware and software (now internet) concepts that allows one to use personal computers for data entry, word processing, spreadsheets, and electronic communications (www.bussinessdictionary.com, 2018). In this study, it is the ability to use computers and the system with a range of skills.

Contractual Staff. This means a contract employee that is hired for a specific job at a specific rate of pay (www.bussinessdictionary.com). In this study it refers to nurses, midwife, and physician health worker with temporary designation.

Data. There refer to computer symbols or signals that are input, stored, and processed by the computer, for output as usable information. This are systems facts and statistics generated through electronic medical record.

Electronic Medical Record. According to the definition, "The Electronic Medical Record is an electronic record of health-related data or information of an individual done in the primary care setting. Its function includes patient registration and recording, medical record management, doctor's order and management/ laboratory/diagnostic request and results entry, e-prescription, drug dispensing, schedule of next visits/appointments, notifications through short messaging system (SMS) and RxBox Integration. This system is provided for by the accredited EMR providers such as I-clinics (Integrated Clinic Information System) of the Department of Health (DOH), CHITS (Community Health Information Tracking System), WAH (Wireless Access for Health) (PhilHealth, 2014). This definitions refers to a digital version of a paper chart that contains all the patients' medical history from one practice.

Health Care Delivery System. The Philippine primary care partnership approach for effective provision of essential health services that are community-based, accessible, acceptable, sustainable and affordable. In this study, it means

electronic innovations of documentation of health services rendered to the community.

Health information system. It refers to any system that captures, stores, manages or transmit information related to health of individuals or the activities of the organizations that work within the health sector (Pacific Health Information Network). Refers to the system that collects and store health related data as a whole. It is also refer to community-based electronic medical records that generate a set of consolidated health related information in the community.

eHealth. It is the use of information and communication technology for health (World Health Organizations). In this study, this is refers to community-based electronic record.

Health Regulatory Agency. It is the executive agency of the Department of Health responsible for regulating health and safety in the work premises (Health and Safety Authority). This refers to the recipient agency respondent which are the Provincial Department of Health and Philippine Health Corporation or PhilHealth.

Health care workers. These are people whose job is to protect and improved the health of the communities (www.bussinessdictionary.com). In this study, this refers to the permanent and contractual health worker, consisting nurses, midwife and physicians working in the rural health centers.

Electronic Individual treatment record. It is a personal medical record maintained in an electronic medical record system e.g. an electronic system

framework that integrates data from multiple sources, captures data at the point of care, and support caregiver decision making (World Health Organization). This refers to the computerized based charting of patients health information.

Integrated Clinical System or Iclinicsys. It is a system funded by Department of Health and a community-based electronic medical record used in rural health facility accredited in PhilHealth (PhilHealth Advisory). In this study it means the electronic medical record used in the community.

Inter-local Health Zone. It is a form of local government unit cooperation established in order to coordinate the operations of an array of hierarchy of health providers and facilities. This Municipalities are consist of; Daram, Calbiga, Pinabacdao, San Sebastian, Talalora, and Villareal.

Morbidity. It refers to the incidence of disease or the rate of iilness as in a specified population or group (Meriam-Webster). In the study, it means a collection of electronic database reports being submitted to the recipient agency.

Mortality. It is the number of death in a given time or place (meriam-webster). This means in this study as the death reports generated electronically from the system in the municipality.

Patient. He/She is in the individual level of care in the community health, where health workers provide various conditions of health and illness (World Health Organizations). In this study, this refers to the specific individual were health related information are electronically documented in the system.

Permanent Staff. He/She is a full-time employee who is covered by state laws including benefits, termination procedures and taxes (Chron, 2018). This refers to regular nurses, physicians and midwife working in the facilities.

Stakeholders Linkage. This means relationship and interactions between tasks, functions, departments and organization that promotes information and achievement of common objectives (www. business dictionary.com). In this study, it refers to the government agencies such as the local government, PhilHealth Corporation, Department of Health and non-government agencies.

South Maqueda Bay Inter-local Health Zone. This refers to the Local municipalities located at South Coastal Area of Samar consisting 6 municipalities namely: Calbiga, Daram, Pinabacdao, San Sebastian, Talalora, Villareal.

PhilHealth. Philippine Health Insurance Corporation or commonly known as PhilHealth, is a government owned agency (PhilHealth). In this study, it means recipient of electronic medical record and accredit health facilities with system providers.

Wireless Access for Health or WAH. A community-based electronic medical record used in rural health facility accredited by PhilHealth and owned by Non-Government Office (PhilHealth). In this study, it means a system provider and a community-based electronic medical record system.

Chapter 2

REVIEW OF RELATED LITERATURE AND RELATED STUDIES

Related Literature

The Department of Health, combined with various programs and services, continues to improve and innovate approaches adopting technology in the health care industry.

Previously, Field Health Service Information System (FHSIS) is a major component of the network of information sources developed by the Department of Health (DOH) that enable the agency to better manage nationwide health service delivery activities (FHSIS, 2014). This system is an important source of data for the regular health status monitoring and evaluation along with other sources such as Hospital Services Information System, Financial Information System, Physical Resources Information System and Human Resources Information System. The systems responsible for the collection of data particularly health statistics (FHSIS E.O 352). With the wide range of connectivity nowadays, the community-based electronic management of data is still limited as to input data reporting from rural health municipalities.

In 2004, the first electronic medical record system that was widely used even without national policy, was called Community Health Information Tracking System or CHITS (Amoranto, 2016). CHITS was developed through a collaborative and participative user strategies to increase the efficiency,

improved data quality, streamlined records and improved morale among government health workers. However there are challenges in keeping this system functional. Such as the implementation of community-based electronic medical record wherein the strict compliance of implementation has setbacks based on the mandate of the Department of Health on electronic medical record.

In December 2015, the new version of Community Health Information Tracking System has been disseminated to 230 health facilities nationwide through support of various government and non-government agencies. In a PhilHealth Advisory 2015, the PhilHealth and Department of Health recently certified CHITS, along with the five other electronic medical record to be platforms that can electronically provide documentation of primary care benefits services rendered by a Rural Health Unit (Ongkiko, A., Jr. Et. la). Thus, implementation on electronic medical records are expected to be widely used. In one study using the CHITS, it has been found out that retrieval time of paper record was decreased by 2.41 minutes to less than 5 seconds, compared to the previous average of 4 to 5 minutes, depending on the availability of the records (Sy. M. 2012).Though the municipalities are adapting the electronic system, manual recording and data encoding every after service rendered still exist.

Furthermore, in a study on the problems encountered with CHITS, it was found out that one of the major problem is financial resources for information, communication and technology, since CHITS hardware is expensive. It was discovered that CHITS has disadvantages such as, improper shutting down,

when it is not use continually, and health workers are not properly trained, it results to systems failure.

Wireless Access for Health or WAH initiative on the other hand is a public-private partnership that was put together in 2009 to improve access to quality health data and improve local health governance. Towards this goal, the initiative helped develop and replicate an open-source electronic medical record Wireless Access for Health – Electronic Medical Record in the Province of Tarlac (WAH, 2009). The WAH eHealth platform now boasts of added features such as messaging system patient alerts and the use of mobile devices for data recording and reporting at the point of care. Starting with four pilot clinics in 2010, WAH is now present in 38 clinics and 22 city and municipalities covering Metro Manila, Luzon, Visayas and Mindanao (Corciega, J. et al, 2010). WAH is usually provide by Non-Government Organizations and recently added on the accredited electronic medical record approved by the PhilHealth Agency (PhilHealth Advisory, 2017).

According to the data gathered, as of March 2014 Wireless Access for Health system is now a repository to over 503,627 patient records and 2,002,090 consultations in the country (Cacdac, et al., 2016). Data show the success of implementation corresponds to the number of individual patient information collected in the system once the system is fully implemented.

On October 2016, the Department of Health implemented Integrated Information Clinic System (Iclinicsys) to introduce effective and efficient

monitoring of patient cases on the rural health units (Iclinisys version 2 user manual.pdf). As of this time most of rural health units of south maqueda bay are still using it.

IclinicSys is a system provided by the Department of Health as a leading agency in the delivery and monitoring of health services rendered to patients at the rural health unit. The services are then reflected in electronic medical records, cite for an example in mortality reports are send to a centralized system that is viewed by the DOH and PhilHealth for reimbursement of the primary care benefit package.

Iclinicsys electronic medical record can be use online and offline versions, but online version is highly recommended. Online version store the data directly to the DOH central office, providing real time information of data stored whereas, offline version are design for facilities with limited access or no access at all with internet connection. The system can be operated by the health worker even without the access of internet.

Electronic medical report that is transmitted to the recipient are the following examples; Primary Care Benefit Package, PhilHealth Membership Updates/profiling. Primary Care Benefit Package main provisions are; primary preventive services, diagnostic examinations, and drugs and medicines dispensing for certain disease (PhilHealth Board resolution number 1587, series of 2012). Government facilities such as rural health centers are Primary Care Benefit Package providers and headed by the Municipal Mayor or Municipal

Health officer (PhilHealth circular no. 10 series of 2012. Provider of PCB is then paid quarterly Per Family Payment Rate (PFPR). Each enlisted member is paid 50 pesos and additional 75 pesos for SP members and it's dependent. 40% of PFPR are charge to annual membership of SP; 20% intended for honorarium for ancillary and health staff depending on the agreed in writing and approved by local health board. Electronic Reporting only PCB Providers who have contracted with HITP (Health Information Technology Provider) and who have been submitting reports electronically through HITP are then being paid (PhilHealth advisory No. 2017-0020). This indicates that the electronic medical system approved by PhilHealth and the government are those that are registered and accredited, being paid in accordance to the health services rendered. Whereas, the PhilHealth Membership Updates/profiling an official master list from PhilHealth office of Sponsored Program under PCB Providers assigned to the facilities are constantly updated and enlisted for members and beneficiaries wherein commonly known as profiling done quarterly. SP are under Local Government Unit identified under NHTS-PR (National Household Targeting System-Prevalence Rate).

Lately, in a study on health information system called the Automated Barangay Health Record System or AutoBaHRS give rise, healthcare services are delayed, making healthcare delivery system difficult to manage due to poor management of records and inefficient communication (Manulat, D., Jr. 2017). A system community-based electronic medical record in terms of electronic

software, was designed to provide real-time uploading of health records, as well as updating data and viewing the mortality and morbidity rate and communicable and non-communicable diseases from different barangays of Iligan City. The system can be implemented using smartphones, tablets, or any portable computers from the field and a server can be installed in the City Health Office that will serve as the monitoring and database management unit. In using the system, the data on health among remote and urban barangays will be analyzed in real time, which is significant in the quick health response and management by government and other health care providers.

One of the study on the factors identified as significant in the introduction of information technology into health practice is the attitude of the staff that will be required to use it (Brentnal, B., et.al. 2008). In a comparison between professional groups, it was found out that nurses were most enthusiastic about implementation of Information Technology, while junior physicians was the least and resented the system as they had to enter most of the data, whereas nurses view the positive impact of electronic medical records on improving patient care (Porteous, et.al, 2008). This study were similar to the features of system where nurses do the initial assessment and data entries are then viewed by the physician to make a final diagnoses and treatment making physician order entry and among others.

In one of the study conducted, it was found out that management of health information system is at best rudimentary and ministerial because data

collectors perform their work as a matter of compliance without regards for the information usefulness for decision making at all levels (Marcelo, A. & Cañero, 2010). This includes reporting from a grassroots level, wherein midwives and nurses form a largest category of health workers granted autonomy and responsibilities for health services as decentralization was takes into place and given to the Local Government Units.

In a cross sectional survey conducted among perception of physicians, result showed that 71.2 percent appreciated by majority the improved quality of practice using electronic medical record system. African primary setting, health facilities, health workers computer knowledge and attitudes have an important bearing on the uptake of utilization of computer systems in the workplace (Blank, A., Mensah, N., & Sukums, F., 2014). This is somehow similar on the positive attitude of the health workers on the implementation in the community setting wherein the healthcare worker foresee the importance and convenience of using community-based electronic medical record in the locality. Although, the performance gains the intended outcome the system fails if the users fail to adopt (Shaker, H., et. AL, 2009). Health worker as a front line in the data recording and reporting need to assess the gaps hindering adaptation of technology. A shared decision making study towards patients, companions and health care providers that are invoked through practices encourages participation by bringing the patient towards rapport and understanding. A shared decision making is generally a good practice of social interaction (Land, L., Parry, R., Seymour, J.,

2017). Health related information of patient and clear plans towards wellness is an intervention that the health worker needs to be recorded, complete and accurate data entry in patient's electronic individual treatment record. Implementation of health information technology was found out on the effect of resistance caused by variety of reasons of system fails, which includes the lack of attention to the needs of the end user and the significant flow changes induced by the system (Carayon, P., et al, 2011). Hence, the implementer of information technology in the health industry is critical towards adaptation of the system.

A patient registered in an electronic medical records, shows that 65-85 percent indicated by patient that their medical information was complete, accurate and understandable (Hassol, 2004). A database system prevent less error towards patient information if done electronically. Moreover, on computerized patient's medical record system using iterative life cycle model a result shows that although its use show excellent feedback the study recommended a use of Local Area Network instead of Wireless Local Network for functionality (Del Rosario, R. Jr., Salvatuz, R., & Vispo, N., 2011). Other area needs an internet connectivity to make the electronic system be functional. Whereas, some system do not necessarily need as long as there is Local Area Network. This is somehow similar to the system being implemented in some rural health facilities. A system where can be use through offline and online application is also being assessed in the study. In a research made using programming language on online patient management information system

results show it benefit the client in terms of handling information, adding data to patients record and as well as retrieving data (Agustin, L., Barba. M., Barraquio, C. Ocfemia, G., 2015). Community-based electronic medical record are beneficial in retrieving data and reducing patients waiting time.

In a study conducted regarding online inventory and monitoring system of medical supplies, it was found out that the system provides an efficient, convenient, and it generate accurate reports that facilitate transactions fast and believed that the system will improve healthcare services of the city health office down to barangay health centers (Calma, J.,et al 2012). This is somehow similar to the study where a system has a features for logistics management. In a study of impact of quality and safety of eHealth, a conclusion draw a lack of robust research on the risks of implementing these technologies and their cost-effectiveness has yet to be demonstrated, despite being frequently promoted by policymakers and "techno-enthusiasts" (Black, A., et. Al 2011). This is similar in the research being conducted as to mandates of departments in implementation of electronic medical record in the rural health unit.

Chapter 3

METHODOLOGY

This chapter presents a discussion on the procedures utilized in the conduct of the research study such as the research design, instrumentation, validation of the instrument, sampling procedure, data gathering procedure, and statistical treatment.

Research Design

The study used the descriptive research design aimed to answer the research questions.

The above cited research design was utilized to described the demographic profile of the health workers, patients and recipient agency respondents. The descriptive method was used to explain the personal characteristics of the respondents in terms of age, sex, civil status, educational attainment, position in the government, relevant trainings, and number of years using community-based electronic medical records used, presence of individual treatment records and among others.

To describe the status of the extent of implementation of community-based electronic medical record, structured checklist questionnaire for health worker respondents and five point Likert scale with corresponding statistical interpretation for patients and recipient agency respondents were the methods used.

This study also utilized descriptive method using a five point Likert type scaling and structured questionnaire to obtain the degree felt by the health workers and recipient agency towards problem encountered during implementation community-based electronic medical record.

Suggestive strategies and interventions were also listed and answerable by checklist form using a five point Likert scaling to determine the priority need for interventions as solutions to the problems encountered by the health worker and recipient respondents.

The statistical measures used were as follows; frequency count, weighted mean, standard deviation and percentage. To determine the statistical magnitude of occurrence results are described according to corresponding statistical interpretations.

Instrumentation

To obtain the needed data for the research, a self-administered survey questionnaire as the principal data gathering instrument has been prepared corresponding to the research problem. Three separate questionnaires were developed to conduct the needed data from the following respondents: health worker, patients and recipient agency.

Questionnaire for Health Worker Respondents. This consists of four parts answerable by checklist and a Likert type scaling for third to fourth part of the questionnaire. The first part solicited demographic information of

respondents in terms of age, sex, marital status, educational status, position, number of relevant trainings and number of years using community-based electronic medical record. The second part consist of extent of implementation, wherein information with regards to the following are needed; current community-based electronic medical record use in the facility, how to use the system, frequency of usage, computer know-how of the user and data commonly entered in the system. The following areas of implementation has a corresponding percentage and interpretations. The third part contain the statements intended to solicit information about the sensitivity of the problem with regards to facilities or equipment and manpower problems. The fourth part of the questionnaire is to gather the degree of respondent suggestive strategies and intervention to sustain the community-based electronic medical record implementation.

Questionnaire for Patient-respondents. This is consist of 2 parts. The first part is demographic profile which consist of age, sex, civil status and availability of electronic individual treatment records. The second part, consist of statements solicited information about the sensitivity of the implementation of community-based electronic medical record. Each statement was responded in a 5 Likert- type scaling and weighted means of each indicator are presented by corresponding interpretation.

Recipient Agency Respondents. This is consists of four parts. The first part is the demographic profile of the recipient agency respondents in terms of

their age, sex, marital status, educational status, designation, and number of relevant trainings, Electronic Medical Records received, frequency and number of trainings conducted by agency. The remaining second to third part in a form of checklist is also according to 5 point Likert type scaling. The second part is the extent of implementation by receiving agency according to the areas for health consumer, health care providers and health care managers, policy makers and researchers. The third part was the checklist of degree to problems encountered and lastly, the suggestive strategies and intervention.

Validation of the Instrument

The questionnaire for demographic profile, problems encountered by health workers and recipient agency and suggestive strategies and intervention by respondents are formulated by researcher drawn from respondent's information. Whereas, for extent of implementation except for the recipient agencies, questionnaire are derived from monitoring and evaluation of electronic health strategic framework set by the government. For patient questionnaire instrument is translated in "Waray-Waray" for better understanding of respondents.

The questionnaire was then presented to the adviser for comments and suggestions of improvement, to determine the validity of the instrument. Moreover, specifically, all set of final instrument was then given to nurses, midwives, municipal health officers, patients and receiving agency.

Sampling Procedure

The study involved three groups of respondents: health workers, patients and the receiving agency.

This investigation about the implementation of community-based electronic medical record in South Maqueda Bay Inter-local health zone involved the rural health unit of the following municipality; Calbiga, Daram, Pinabacdao, San Sebastian, Talalora, Villareal wherein the municipal health officers, nurses, and midwives are respondents. The study did not include the data encoders in the sense that all health care providers are main front liners and implementers of the health services in the municipality. Out of 101 health workers, 76 were taken as health worker respondents. Selected patient-respondents were those who were in the health facility during the Monday consultation, as mostly of the afternoon schedule of the rural health unit devoted to staff meeting, hence a total of 73 patients from six municipalities are selected with aged range 18 years old and above. Recipient agency respondents are limited to representative of two to three whom are task are to receive data from the subject municipalities.

Data Gathering Procedure

In order to acquire the necessary information about the study, the researcher used interviews and questionnaires as the main instruments. These were supported with actual observations on the flow of consultation in the rural health facilities, electronic verification of some patient's information and

validation of existence of electronic information received by the recipient agencies.

To come up with a good answer to the research question on Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone, the researcher determined and analyzed the results of the interviews and questionnaires given by the respondents and associate with initial information obtained from observations and validations.

The researcher used several instruments and techniques to gather data and information needed in the study. Interview, guided by questionnaire, was utilized as the main instrument in data gathering because it is easy to conduct follow-up queries of information on demographic profile of respondents, the extent of implementation, the problems encountered during implementation and strategies or intervention to sustain the community-based electronic medical record.

Questionnaire. This was the main instrument that was used in data gathering needed in the study. In order to come up with answer to the research questions three set of different questionnaires were constructed and were given to health worker, patients and receiving agency respondents in a form of checklist. Information drawn from health worker and patient-respondentss were formulated to questionnaire by the researcher. Whereas, for recipient agencies the areas of extent of implementation, questionnaire were derived from monitoring and evaluation of electronic health strategic framework set by the

government. The questionnaires were divided into four parts; the first part consist of the demographic profiles of the respondents, second part is the extent of implementation base on the respondents, third the problems encountered and lastly, the strategies and intervention suggested by health workers and recipient agencies.

Interview. This method was used to conduct interview to the health workers and patients in the rural health facilities of South Maqueda Bay Health Net. Hence, this was also used to gather relevant information from the recipient agencies. The purpose of this instrument is to obtain additional information and validations of data to have a reliable information on the implementation of community-based electronic medical records.

Observation. This method was used by the researcher to personally gather information on the actual flow of consultation and the implementation of community-based electronic medical record in rural health facilities of South Maqueda Bay Inter-local Health Zone. This source of collecting data was employed to obtain first-hand information wherein, the researcher will observe the behavior of every respondent in the implementation of community-based electronic medical record.

Validation. This method was used to obtain the actual existence of electronic reports received by agencies from rural health facilities submitted reports through transmittal of community-based electronic medical record such as the primary care package, maternal care package, PhilHealth membership

updates, Tuberculosis Direct Observed Treatment Short course chemotherapy, morbidity and mortality reports, FHSIS and TSEKAP reports. This method was also used to validate patient respondent's existence of electronic individual treatment record in rural health facilities of South Maqueda Bay Inter-local Health Zone. This method is relevant to evaluate the actual initial information of the existence of the implementation of the program.

Statistical Treatment of Data

The data gathered from this study were tallied, tabulated, organized, analysed, interpreted and presented into table with the use of descriptive statistical tools, including, frequency count, weighted mean, standard deviation and percentage and interpretations.

Frequency Count. This descriptive statistical tool was used to present the health workers' demographic profile such as age, sex, marital status, educational status, position, number of relevant trainings, and number of using community-based electronic medical records. This was also used to employ patient respondent's age, sex, marital status and electronic individual treatment record. Whereas, for recipient agency it was used to described age, sex, marital status, educational status, designation, number of relevant trainings, electronic medical records received, frequency of electronic medical records received from municipalities and frequency of trainings being conducted by the receiving

agency. This statistical tool was also utilized to present the health workers extent of implementation of community-based electronic medical records.

Mean or Weighted Mean. This tool was employed to get the average result measure for determining (a) extent of implementation of community-based electronic medical record. (b) Problems encountered by health workers and receiving agency and (c) the suggestive strategies and intervention by health workers and receiving agency to sustain the community-based electronic medical record. The computed weighted mean data has interpretation based on the scale.

Standard Deviation. This measured the spread of dispersion of each variants from the mean distribution.

Percentage. This was used in the analysis and interpretation of data such as, age, sex, civil status, among others as to their magnitude of occurrence.

Chapter 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the result of the study in tables, the analysis undertaken and interpretation of the data gathered according to specified statement of the problems. This includes the profile of the respondents-the health worker, clients, and recipient agency. This chapter also discusses the data obtained on respondent's extent of implementation of community-based electronic medical record, the problems encountered during the implementation and interventions and strategies that could possibly be proposed to strengthen and sustain the community-based electronic medical record.

Profile of the Respondents

This section presents the demographic profile of the health worker respondents' in the rural health facilities such as age, sex, civil, status, educational status, position, number of relevant trainings, and number of years using community-based electronic medical records. Patient-respondents' profile such as age, sex, civil status and available individual treatment record were also presented and discussed. A profile from recipient agency respondents in the PhilHealth office and Department of Health employed during series of interviews and served in survey questionnaires was presented in a table and discussed in a narrative form.

Table 1

Demographic Profile of Health Worker – Respondents

Profile	Frequency	Percentage
Age		
52-59	2	2.6
44-51	7	9.2
36-43	3	3.9
28-35	26	34.2
20-27	38	50.0
Total	**76**	**100.0**
Mean	**29.93**	-
SD	**8.13**	-
Sex		
Male	18	23.7
Female	58	76.3
Total	**76**	**100**
Civil Status		
Single	44	57.9
Married	28	36.8
Separated	3	3.9
Widower	1	1.3
Total	**76**	**100**
Educational Status		
College Graduate	73	96.1
Master's Level	2	2.6
Master's Graduate	1	1.3
Total	**76**	**100**
Position		
Permanent Nurses	9	11.8
Permanent Midwives	15	19.7
Municipal Health Officers	2	2.6
Contractual Nurses	48	63.2
Contractual Midwives	2	2.6
Total	**76**	**100**
Number of Relevant Trainings		
None	18	23.7
1-2	47	61.8
3-4	9	11.8
5 or more	2	2.6
Total	**76**	**100**
No. of Years Using CBEMR		
Less than 6 months	8	10.5
6 mos - 1 year	34	44.7
1 year - 2 years	13	17.1
2 years - 3 years	4	5.3
3 years - 4 years	1	1.3
None	16	21.1
Total	**76**	**100**

Table 1 shows that 74 percent or 76 out of 101 participated in data gathering. As shown in the table, respondents belonged to the age range of 20-27 years old with a highest frequency of 38 or 50 percent. The mean age of the health worker respondents was 29.93 with a standard deviations of 8. 13. The table further show that the range of health worker respondents is 20 to 35 years old. According to the study, with a technological advancement and age barriers a steep learning curve for some professional like health providers is a contributory factors in the implementation of electronic health record (Robinsons, 2017).

As to gender, majority of health worker respondents are female with result yields to a frequency of 58 or 76. 3 percent, compare to a male group with a lowest of frequency of 18 or 24 percent. In a Canadian Society study, results concluded that there is a general perception of that nursing is more suitable career for women than men and the societal perception stereotypes towards male nurses (Barfly, W., et al, 2010). According to gender and development, in the Philippines both males and females both considered an asset to the workforce either positively or negatively and organization has to exert effort in empowering its workforce (Omas-as, et al, 2003).

As to marital status out of 76 respondents, 44 or 76.3 percent are single, while 28 respondents or 36.8 percent are married. This is an indication that most of health workers being single can meet the needed demand time in learning and exploring electronic medical records in the community.

Regarding the educational status, all of 76 respondents have bachelor's degree in their related field. The finding shows that all of the health workers are graduate from their respective profession ensuring the standards of application of health related services. In a study conducted, it emphasized the importance of contributors to the function and implementation of a Health Information Technology system expected to better understand how it is applicable to the profession (Carayon et al., 2011).

As to position or employment status, majority of the respondents are contractual nurses in the community with a result of 48 or 63.2 percent. In a study conducted, where 45 percent in the health workforce before the proliferation of technology is largely composed by nurses even in the community (Furst et al., 2013).

As to the number of relevant trainings, 47 or 61.8 percent of health workers respondents attended 1 to 2 trainings. Indicating that they have knowledge in the implementation of the system. A lack of training and/or preparation with computer skills hinder the adoption of technology and lead to cognitive and attitudinal barriers (Furst et al., 2013). In a similar study, it was found out that no difference in an attitude with nursing experience and educational level on positive attitudes towards computer of nurses, but had found out that experience with computers is significant (Scarpa and Smeltzer, 2008).

Based on the number of years using community-based electronic medical record 34 or 44. 7 percent has been using it for 6 months to 1 year. In a study conducted on the perception of health workers on the use of electronic health record found out, that a high percentage of health workers experience used of electronic medical record ranging 1 to 10 years with percentage of 47 percent aged from 25 to 39 years old (Robinson, 2017).

Patient-Respondents' Profile. It presents the profile of patient respondents in terms of age, sex, civil status, and available individual treatment records.

Table 2

Demographic Profile of Patient – Respondents

Profile	Frequency	Percent
Age		
67-78	6	8.2
55-66	8	11.0
43-54	12	16.4
31-42	13	17.8
19-30	34	46.6
Total	**73**	**100.0**
Mean	**38.53 years**	-
SD	**17.10 years**	-
Sex		
Male	48	65.8
Female	25	34.2
Total	**73**	**100.0**
Civil Status		
Single	33	45.2
Married	37	50.7
Separated	3	4.1
Total	**73**	**100.0**
Available Individual Treatment Record		
Yes	56	76.7
No	17	23.3
Total	**73**	**100.0**

As shown in the table, the patient respondents belonged to age range 19 to 30 years old with frequency of 34 or 46.6 percent. The table further show the mean age of patient respondents is 38.53 years old with a standard deviation of 17.10 years.

As to marital status, among 73 patient who are in the health facility are males with 65 .8 percent. Whereas, majority of patient respondents are married with a 50.7 percent.

Among 73 patient respondents, 56 or 76.6 percent have been validated with presence of Electronic Medical Record commonly in IclinicSys and WAH system. Whereas, 17 or 23.3 percent of patient does not have electronic medical record. In a Columbia university study, published in 2010 reviewed electronic medical records from 100 randomly selected patient admission found out that 54 percent and 74 percent of the words used were identical and in chart after chart (Dillion, J., 2011). This is somehow similar in the paper-based individual treatment record of patient used by other rural health units in community.

The table 3 shows the demographic profile of the recipient agency respondents in terms of their age, sex, civil status, educational status, agency, number of relevant trainings, Electronic Medical Records received, frequency and number of trainings conducted by agency.

As to age, majority of the respondents belonged to 36 years old with a total of 40 percent with mean average of 34.6 and standard deviation of 5.81.

Table 3

Profile of the Recipient Agency

Profile	f	Percent
Age (mean = 34.6; SD = 5.81)		
42	1	1.3
36	2	2.6
33	1	1.3
26	1	1.3
Mean	**34.6 years**	-
SD	**5.81 years**	-
Total	**5**	**6.6**
Sex		
Male	2	23.7
Female	3	76.3
Total	**5**	**100**
Civil Status		
Single	3	57.9
Married	2	36.8
Total	**5**	**100**
Educational Status		
College Graduate	2	96.1
Master's Level	2	2.6
Doctoral Degree Holder	1	1.3
Total	**5**	**100**
Position		
PAMO	1	11.8
LHW Head	1	19.7
DOH-Nurses	1	2.6
PHO-Nurse	1	63.2
UHCI	1	2.6
Total	**5**	**100**
Number of Relevant Trainings		
3	1	23.7
1	2	61.8
None	2	11.8
Total	**5**	**100**
EMR Reports Received		
PCB	3	60.0
MCP	4	80.0
Philhealth Membership Updates	3	60.0
TB DOTS	3	60.0
Morbidity	4	80.0
Mortality	3	60.0
FSHIS/TSEK	3	60.0

Table 3 continued

Profile	f	Percent
frequency of EMR Received from Municipalities		
Annual	3	42.9
Quarterly	4	57.1
Monthly	1	14.3
As Needed	1	14.3
Frquency of Trainings Conducted by the Agency		
Quarterly	3	60.0
As Needed	2	40.0
Total	**5**	**100.0**

Majority are female respondents with 60 percent and with regards to marital status mostly are single with 60 percent.

For the educational attainment, majority are college graduate with 96 percent, and among 5 respondents two attain master's level while the other one is a doctorate holder. Furthermore, majority of recipient respondents are working in the Department of Health with 60 percent. With regards to number of relevant trainings attended either most of respondents doesn't have or 1 trainings attended.

Whereas, commonly electronic medical records received by the majority of respondents are Phihealth Membership Updates and Morbidity Report with both an 80 percent of result. Recipient agency received quarterly reports with a 57.1 percent. Whereas trainings conducted by agency are done quarterly with 60 percent.

Extent of Implementation of the Community-Based Electronic Medical Record

Table 4 presents the Extent of Implementation of the Community-Based Electronic Medical Record by health worker respondents.

Table 4

Extent of Implementation of the Community-Based Electronic Medical Records as Perceived by the Health Worker

Areas of Implementation	f	Percent	Interpretation
Current community-based electronic medical record use in health facility			
IclinicSys	48	65.8	HI
WAH	22	30.1	PI
CHITS	4	5.5	NI
The system can be used both online and offline	32	43.8	MI
The system is used every office hours	42	57.5	MI
Health Care Provider knowledge in Using Computer			
Computer for patient data entry	66	90.4	FI
Internet	65	89.0	FI
Send through e-mail	67	91.8	FI
CBEMR Services			
Individual patient's record	54	74.0	HI
Diagnosis and Treatment	49	67.1	HI
Medications	35	47.9	MI
Phil Health Profiling	59	80.8	FI
Logistics	25	34.2	PI
Others (*Vital signs, Patient's ITR update, etc.*)	21	28.8	PI
Overall MPS	-	**57.6**	**MI**

Legend:
80-100 Fully Implemented
60-79 Highly Implemented
40-59 Moderately Implemented
20-39 Poorly Implemented
1-19 Not implemented

IclinicSys is among highly implemented (65.8 percent) currently used community-based electronic medical record in the health facilities, compare to Wireless Access for health (WAH) which is moderately implemented with a

result of 30.1 percent and a Community Health Information Tracking System which is not implemented (5.5 percent).

The result also obtained that the community-based electronic medical record used by the health worker are both useful either offline or online with a result of 44 percent. The result also shows that 57.5 percent of the respondents used the system commonly during office hours is moderately implemented.

The result also shows that in terms of knowledge in computer usage, mostly health workers are knowledgeable in using computer for sending reports through e-mail with a result of 91.8 percent. This is followed by health workers knowledge on patient data entry with 90.4 result or fully implemented, whereas to computer knowledge with regards to internet usage is 98 percent. In a study conducted to attitude of health staff to information technology facilitating training and adequate information to make effective use of web-based sources, both technology skills and confidence in using those skill are essential (Polhamus, et al.2008).

The entries of the table 4 also shows that among six common community-based electronic medical reports, Phihealth Profiling is fully implemented with a result of 80.8 percent. These features of the community-based electronic medical record are of minimum data set that document the data service provided which are the following: patient, provider, service provided, time and location (Canero, J. 2010).

Furthermore, a statistical result of total mean probability of 57.6 with an interpretation of "Moderately Implemented" towards extent of implementation by health worker respondents obtained. This is supported during an observations and interviews that among six municipalities, three rural health facilities are using IclinicSys electronic medical records, two municipalities are currently using Wireless access for health and the remaining health facility was formerly using CHITS. This are all implemented with an intervals every office hours. Every municipalities are conducting PhilHealth updates to PhilHealth members. Hence, PhilHealth profiling is widely entries done by health workers. Concerns on time taken for data entry, using e-mail, potential for loss of data, and maintaining patient confidentiality are significant impacts identified (Briddon., J., et al, 2008). Some respondents believed that electronic charting lead to safety and improved patient care as it clearly communicates with other health workers than hand written documents.

Table 5 shows the statement of indicator on extent of implementation of community-based electronic medical records by patient respondents. The mean weighted ratings by of the patient's respondent's results are 3.9 with a statistical interpretation of "Highly Implemented". These are the top three indicators that the respondents rated. The following are; Electronic medical information is complete, accurate and understandable, Computerization of health related data are important to improve quality care, and electronic medical record decreases waiting time in retrieving record. On the study of effects of local health

Table 5

Extent of Implementation of the Community-Based Electronic Medical Records by the Patient

Indicators	Weighted Mean	Interpretation
1. Computerization of health related data are important to improve quality care.	3.93	H
2. Electronic medical record decreases waiting time in retrieving my record.	3.88	H
3. Electronic medical record easily retrievable	3.85	H
4. Awareness on the importance of electronic medical record are explained by staff	3.84	H
5. Medical record is applicable in my area.	3.84	H
6. Electronic medical information is complete, accurate and understandable.	3.96	H
Grand Total	23.3	-
Grand Mean	3.9	H

Legend:

4.51-5.00	=	Fully Implemented	(FI)
3.51-4.50	=	Highly Implemented	(H)
2.51-3.50	=	Moderately Implemented	(FM)
1.51-2.50	=	Poorly Implemented	(PM)
1.00-1.50	=	Not implemented	(NI)

management and patient care on electronic recording and reporting, Electronic Medical Record reduces time spent by clinicians on manual health information management and increases time spent by health workers on consultation and improve patient care (Canlas, F. et al, 2018).

Table 6 shows the extent of implementation of community-based electronic medical records by receiving agency towards health consumers, health care providers, and health care managers, policy makers and researchers.

As seen in the table, a grand weighted mean of 3.7 has reached from receiving agency respondents which indicates a statistical interpretation on community-

based electronic medical record as "Highly Implemented". Among three sub-indicators of implementations, towards health consumers, the healthcare managers, policy maker and researcher are all "highly Implemented" by the receiving agency. Whereas, community-based electronic medical records for the health care providers is "Moderately Implemented" by the recipient agency.

The table reveals that for health consumers' indicator, a receiving agency has full implementation in terms of access and management to electronic health records (weighted mean of 4.8) opposite to poor implementation to high speed broadband connectivity (weighted mean of 2.4). This is noticeable as the problems also commonly verbalized during an interview to health workers that poor internet connectivity to the municipalities hinders transmittal of electronic reports to the receiving agency.

Table 6 also revealed the implementation for health care providers by receiving agency with the following top four indicators which are highly implemented are the following; national health care provider identifier; access to quality and reliable health information (weighted mean of 4.4); collaboration or coordination with other health care providers, and interaction with health consumers (weighted mean of 4.2); lastly, Secured sharing and exchanging of health information (weighted mean of 3.6). Health workers and patient create a team that promotes supportive environment and communication is vital in sharing information that growing issue on computerized records created dilemma in maintaining confidentiality (Robb, M., 2013). Health care records is a

Table 6

Extent of Implementation of the Community-Based Electronic Medical Records as Perceived by the Agency

Indicators		Xw/Interpretation	
Health Consumers (Safer and Quality Health Care)			
1.	National health identifier that is unique for each person.	4.2	A
2.	Access to quality and reliable health information	3.4	U
3.	Access to individual electronic health records	3.4	U
4.	Access and management of personal health records	4.8	SA
5.	Interactions with health care providers	4.2	SA
6.	Health information can be shared and exchanged	4.2	SA
7.	Use of electronic consultations or telehealth capabilities in remote areas	3.4	A
8.	High speed broadband connectivity	2.4	D
9.	Online health reporting systems	3.2	U
	Sub-Mean	**3.7**	**A/HI**
Health Care Providers (Make More Informed Decisions)			
1.	National health care provider identifier	4.4	A
2.	Access to quality and reliable health information	4.0	A
3.	Access to an integrated/single view of the patients' health information at the point of care	3.4	U
4.	Access to health information like clinical decision support tools, medications, clinical knowledge, skills development , and others	3.0	U
5.	Collaboration/coordination with other health care providers, and interaction with health consumers.	4.2	A
6.	Secured sharing and exchanging of health information	3.6	A
7.	Electronic consultations or telehealth services	3.0	U
8.	Online test/examination ordering system and results reporting, referrals, and prescriptions	2.2	D
9.	High speed broadband connectivity	3.0	U
	Sub-Mean	**3.4**	**U/MI**
1.	Access to quality and reliable health information for improved analysis, utilization, policy making, decision making and research purposes	4.4	A
2.	Availability of tools to support the monitoring of health system activities and outcomes	4.0	A
3.	Defined health data standards and processes for eHealth solutions' development and compliance	4.4	A
4.	Most Health facilities of South Maqueda Bay Inter-local Health are certified EMRs	3.6	A
5.	Health facilities communicate in writing to conform in the delay of submission of reports	3.6	A
	Sub-Mean	**4.0**	**A/HI**
	Grand Total	**11.1**	**-**
	Grand Mean	**3.7**	**A/HI**

Legend:

4.51-5.00 Strongly Agree (SA)/Fully Implemented
3.51-4.50 Agree (A)/Highly Implemented
2.51-3.50 Undecided (U)/Moderately Implemented
1.51-2.50 Disagree (D)/Poorly Implemnted
1.00-1.50 Strongly Disagree (DA)/Not implemented

privilege communications comprises all patient information to health care personnel that must be kept confidential, properly maintained and retained for an amount of time. For this reason, many health care providers are creating safeguards to maintain computer confidentiality like limiting personnel who have access to such records and codes or passwords to access specific information.

Health care managers, policy makers, and researcher's top three indicators of areas highly implemented by receiving agency results revealed are; Access to quality and reliable health information for improved analysis, utilization, policy making, decision making and research purposes (with a weighted mean of 4.4); defined health data standards and processes for eHealth solutions' development and compliance (with a weighted mean of 4.4);lastly, availability of tools to support the monitoring of health system activities and outcomes (with a weighted mean of 4) . Responsibility of middle managers and head of office are possibly handle with responsibilities on the implementation and monitoring of programs, policies, work requirements of managements, health and safety of consumers to human resource (Lu, Jinky, 2014).

Problems Encountered by the Respondents

Table 7 enumerates the list of the problems commonly encountered and the degree of the problems felt during the implementation of the community-based electronic medical records.

The result shows, problems on facilities and equipment are Moderately Felt with the following order corresponding to their weighted means: facilities lack computers and laptops (4.27), facility with no back-up power supply in case of power shortage (4.26), without or slow internet connection (4.22), the system is not user friendly (4.19) and lastly, a problem of difficulty retrieving patient record (4.14).

Table 7

Problems Encountered by Health Workers

Indicators	Weighted Mean	Interpretation
Facilities/Equipment		
Our facilities lack computers and laptops	4.27	MF
The system is not user friendly	4.19	MF
No or slow in internet connection in the area	4.22	MF
The facilities has no backup power supply in case of power shortage	4.26	MF
Difficult in retrieving patient record	4.14	MF
Problems on Manpower		
Healthcare personnel has lack or inadequate training	4.14	MF
Permanent staff does not apply the system in clinical setting	4.21	MF
Staff has little technological know how	4.14	MF
It double the work as paper-based is still used before encoding to the system in every consultations	4.14	MF
Grand Total	37.7	MF
Grand Mean	4.2	

Legend:

4.51-5.00	=	Very Much Felt	(VMF)
3.51-4.50	=	Much Felt	(MF)
2.51-3.50	=	Moderately Felt	(MoF)
1.51-2.50	=	Slightly Felt	(SF)
1.00-1.50	=	Not Felt	(NF)

Furthermore, problems on manpower are also perceived by respondents as Moderately Felt with corresponding from highest to lowest weighted means

which follows: permanent staff does not apply the system in clinical setting (4.21), whereas, all same weighted mean of 4. 14 for health care worker are the lack or inadequate training, staff has little technological know-how, and application of the community-based electronic medical record is burdensome as it perceived as the double work for the staff.

The data obtain shows that a grand weighted mean of 4.2 or problems toward implementation of community-based electronic medical record to both facility, equipment and manpower is perceived as Moderately Felt. Leung, et al., 2008, identified two types of barriers to the implementation of information technology system and this are, the cost related (both financial and time/effort) and the knowledge/attitude of health workers.

Table 8

Problems Encountered by Recipient Agency

Indicators	Weighted Mean	Interpretation
Poor internet connection	4.2	MF
Lack of technical staff for troubleshooting of the system	4.0	MF
Delayed in transmitting electronic medical reports	3.6	MF
Incomplete electronic data	3.6	MF
Grand Total	15.4	MF
Grand Mean	3.85	

Legend:

4.51-5.00	=	Very Much Felt	(VMF)
3.51-4.50	=	Much Felt	(MF)
2.51-3.50	=	Moderately Felt	(MoF)
1.51-2.50	=	Slightly Felt	(SF)
1.00-1.50	=	Not Felt	(NF)

The table above presents the problems encountered during implementation by the recipient agency respondents. As a result shown, the top most "Much Felt" problems encountered are the poor internet connection (with a weighted mean of 4.2), second is the lack of technical staff for troubleshooting of the system (with a weighted mean of 4), followed by delayed in transmitting electronic reports and problems with regards to incomplete electronic data (both with a weighted mean of 3.6).

A grand weighted mean of 3.85 with a statistical interpretation of "Much Felt" indicates the need to address the gaps as hindering factors toward full implementation of the system.

Suggestive Strategies and Interventions

Table 9 present the data obtained base on the suggestive strategies and interventions by health workers respondents to sustain the implementation of community-based electronic medical records.

A grand weighted mean of 4.3 with a statistical interpretation of "Much Needed" suggestive strategies and interventions was obtained.

The following are yield according from highest to lowest weighted mean; first, enough and functional computers or laptops availability for each permanent staff (weighted mean of 4.5) and also training and updates of the system should be done often (weighted mean of 4.5). Second, permanent staff should be the front lines of implementation of electronic community-based

medical records (weighted mean of 4.3), a plantilla position for healthcare providers not just for data encode (weighted mean of 4.3) was also suggested, and a policy for implementation should be formulated for strict compliance not just for contractual staff but especially to permanent staff for sustainability of the system (weighted mean of 4.3). Lastly, data encoding should be done during or every after consultations (weighted mean of 4.2).

Table 9

Suggestive Interventions and Strategies by Health Workers

Areas of Implementation	Weighted Mean	Interpretation
1. Computerization of patients data should be done during or every after consultations	4.2	MN
2. Permanent staff should be the front liners in the implementation of the electronic medical records in the facility	4.3	MN
3. There should have a Plantilla position for healthcare provider NOT just for encoder	4.3	MN
4. A policy for implementation should be formulated for strict compliance not just for contractual staff but especially to permanent staff for sustainability of the system	4.3	MN
5. Others		
6. Enough and functional computers or laptops should be available for each permanent health staff	4.5	MN
7. Training and updates of the system should be done often	4.5	MN
Grand Total	26.1	MN
Grand Mean	4.3	

Legend:

4.51-5.00	=	Very Much Needed	(VMN)
3.51-4.50	=	Much Needed	(MN)
2.51-3.50	=	Moderately Needed	(MoN)
1.51-2.50	=	Slightly Needed	(SN)
1.00-1.50	=	Not Needed	(NN)

Table 10 shows the data obtained based on the suggestive strategies and interventions by recipient agency respondents to sustain the implementation of community-based electronic medical records.

Table 10

Suggestive Interventions and Strategies by Recipient Agency

Indicators	Weighted Mean	Interpretation
Upgrade internet connections	4.2	MN
Hiring of additional manpower	4.4	MN
Strict compliance to schedule of reporting	3.4	MN
Grand Total	**12**	**MN**
Grand Mean	**4.0**	

Legend:

4.51-5.00	=	Very Much Needed	(VMN)
3.51-4.50	=	Much Needed	(MN)
2.51-3.50	=	Moderately Needed	(MoN)
1.51-2.50	=	Slightly Needed	(SN)
1.00-1.50	=	Not Needed	(NN)

With a grand weighted mean of 4 and statistical interpretation of "Much Needed", the following are identified results of suggestive strategies and interventions arranged from top most weighted means ; hiring of additional manpower (weighted means 4.4) ; upgrade of internet connections (weighted means 4.2); and strict compliance to schedule of reporting (weighted means 3.4).

The implication that can be derived from this study is that health workers implementation towards community-based electronic medical records are affected by external environmental factors that hinders the full implementation of the programs. Based on the study on the profiles of health workers contractual nurses are mostly the implementers in the health facilities, system is used only during office hours, logistics, medications and other electronic data entries are often moderately implemented. Health workers are the grassroots implementers for the success of the programs and interventions. Monitoring and evaluation of

the system implementation by middle managers are important aspects of responsibilities in health service delivery. It can be seen from this study through the indicators of problems encountered on the part of health workers and recipient agency the similarity of hindering factors towards manpower and internet connectivity.

Chapter 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary findings of the study that sought to answer the research questions. This also includes conclusions drawn and the recommendations that were formulated based on the result of the study.

Summary of Findings

The study attempted to review the status of the community-based electronic medical record of Inter-local Health Zone South Maqueda Bay, Western Samar.

The following were the findings revealed by this study:

1. Majority of health worker respondents belonged to the age group of 20-27 years old, the mean age of health worker respondents was 29.93 and standard deviation of 8.13 and, majority of them are female, single, college graduates and with a position in the rural health unit as contractual nurses. Majority of the health workers also attended a 1 to 2 trainings relevant to the study and are practicing community-based electronic medical records for length of 6 months to 1 year. For patient respondents out of 73 patients majority of them belonged to the age group of 19-30 years old, encompasses 44.7 percent. The mean average is 38.53 or 39 and standard deviation is 17.10 years. Majority of patient respondents are male which account to 63.2 percent. Majority of them are

married with 48.7 percent, only few were single and separated. The patient-respondent revealed also that the majority of them have available electronic individual treatment record with a result of 73.7 percent. And during interview, some patients are having their first facility visit. Though the providers are still using manual paper-based then transferring data after every consultation to their respective EMR this is still an implication that the implementation of community-based electronic medical records exist.

2. On the extent of implementation of community-based electronic medical record, the result shows the mean percentage score of 57.6 percent or health worker respondents perceived that Community-based Electronic Medical Record is "Moderately Implemented". 65.8 percent of health workers uses IclinicSys as community-based electronic medical records. 43. 8 percent used the system both online and offline. 57.5 percent of the respondent health worker uses the system during office hours. Majority of the health worker respondents uses computer for patient data entry with a total result of 90.4 percent. The result also revealed that 80.8 percent of respondents uses community-based electronic medical record for PhilHealth profiling. On the part of patient-respondents a statistical result a weighted means is 3.9 or patient respondents perceived as community-based electronic medical record is "Highly Implemented", wherein majority of the patient perceived that through community-based electronic medical record their medical information is complete, accurate and understandable.

3. Problems encountered by health workers during the implementation of community-based electronic medical record, with a grand weighted mean of 4.2 (much felt), are focused more on availability of logistics in the health facilities. Manpower problem with a weighted mean of 4.21, indicates that permanent health workers do not use the CBEMR system in clinical setting. Even with availability of electronic individual records of patients, some municipalities are still using manual paper documentation resulting to more work on the part of health workers and data encoder.

4. With a grand weighted mean of 4. 3 suggested strategies and interventions to sustain the implementation of CBEMR, the health workers suggest an additional procurement of enough and functional computers or laptops to each permanent staff (weighted mean 4.5). Other suggestions includes are trainings and updates of the system (weighted mean 4.5) which should be provided to sustain the program. Moreover, hiring of qualified staff (with weighted mean of 4 or "much needed"), upgrading of internet services and strict compliance of health workers to scheduled reporting.

Conclusions

Based on the findings, the researcher therefore concluded the following:

1. The designation of contractual nurses and the length of majority of the respondents practicing community-based electronic medical record can hinder the sustainability of the system since majority of the implementers are

with temporary designation in the rural health unit. Addressing the gap on health workforce is beneficial, but the sustainability of the use of system and the cost of re-training or orientation of new personnel still poses a problem. Based on the demographic profile of the health workers respondents are in the era of technological adaptation with knowledge on computer usage. All of the patient respondents are adults, personal information and health related information needed for data entry to their respective electronic individual treatment record can provide an accurate and complete information to the system.

2. In terms of the extent of implementation, there were significant difference in the perception of the health workers and patient-respondents. A further assessment on the gaps and issue to which area needs to address since the probability of implementation is possible to be functional in every health facility. A factor on health workers resistance could affect the full implementation of the system, it could either be through minimizing on the use of the system or criticism of the system leading to refusal of implementations. A strong determinant to use the system is demonstrated by willingness and identifying that the system is job relevant.

3. Health worker respondents have difficulty in the implementation of community-based electronic medical record due to the unavailabity of laptop and computers and the policy of strict implementation. Planning is necessary in terms of the preparation of provisions of logistics and the readiness of the staff to embrace computerization before facilitating training. Since the ultimate

satisfaction of the success of information technology incorporated through electronic medical record the cost of process are outweighed with the benefits towards health consumers. Despite of areas with high implementations, skills and adequate knowledge of the system are still hindering health workers from implementation.

4. High health care cost like procurement of computers, hiring of human resource and difficulty of sharing data and information's to other allied health professionals almost make the system nonexistent in the identified health facilities. Absence of basic facilities, equipment and supplies, the performance of certain program may be limited, constrained or compromised. Hence, management of health facilities reflects the operations of middle managers leadership at rural health facilities and support from the Local Government Unit.

Recommendations

Based on the conclusion of the study, the following were made:

1. The Philippine health agenda pillars include the use of technology in health information system the implementation of community-based electronic medical record from manual paper-based documentation to computer based reporting of physician, nurses, midwives and other allied health professionals are relevant in achieving quality health for all. For the organic staff the adaptation of modern ways of incorporating technology is significant in the health programs set by DOH, sustainability of implementation of community-

based electronic medical record is in their hands. Since the system can generate a complete and accurate computerized data if timely used it is less burdensome in time and cost of money on reporting and more specifically decision-making is easily achieved. The preparation and competence of implementers could affect the job performance of health workers and established policy to have fairness with roles and responsibilities between permanent and contractual health workers is necessary as well as constant trainings and updates from the recipient agencies.

2. During annual operational planning, part of the financial support from the Local Chief Executive includes the budget for the provisions of logistics and hiring of qualified healthcare workers with a permanent designation for the sustainability and improvement of the system of community-based electronic medical records in the rural health unit. It is important to assess the implementation of community-based electronic medical records and the impact of the end-users such as the health workers and the receiver of electronic health services- the patients. Once the local chief executive saw the benefit of the innovation the social intervention will ensure adaptation to workflow. Acquiring skills and access to adequate technology using online information, research education and proper trainings instill confidence and positivity with the system.

3. The presence of high level leadership is considered single most important factor contributing to successful implementation. Together with the Municipal Health Officer and Local Chief Executive working hand in hand on

formulating policies, budget for logistics and trainings for the staff are important of the functionality of the system. Since the positive impact to the patients is high, addressing gaps by the heads of office is significant.

4. Inter-agency collaboration with the system ownership, health care providers and administrators considered factors in ramification in adopting the system. A partnership with different stakeholders can be of help in the upgrade of a quality electronic medical system so as with the internet connectivity and ways to improve more the system. A constant monitoring and validation of implementation by the health facilities are relevant to the entire Health Information System. Providing assistance from the Local Government Unit are necessary to uplift the welfare of the community by providing needs of the health facilities. Provisions of policies of agencies employ duties and responsibilities of health workers.

Chapter 6

A Proposed Three Years Implementation of Community-Based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone

Rationale

The proposed plan are derived from the result of the study to address the hindering factors that impedes full implementation of the system.

a. In support to the Aquino Health Agenda to provide universal Health care for all Filipinos or the Kalusugang Pangkalahatan (KP), the Philippine Health Insurance aims to ensure that all Filipinos have quality health that are efficiently delivered, equally distributed, fairly financed and appropriately utilized (PhilHealth circular No. 10, Series of 2012). Philippine health insurance corporation or otherwise referred PHIC or PhilHealth is a government owned and controlled corporation (Republic Act No. 9241). Hence, constant PhilHealth profiling in the rural health unit through community-based electronic medical record is more of the data encoded.

b. In areas where there are existing information systems, the burden is placed on the health worker in using several information systems to address various health concerns services rendered to patients. Documentation in the rural health facilities manually, transmitting consolidated reports through paper-based and scarcity of manpower to sustain the program exist. There is only one PhilHealth office in Catbalogan, Samar. An agency that received and fedback

electronic reports specifically claims of municipal health facilities in South Maqueda Bay with their corresponding services rendered and offered PhilHealth members and beneficiaries covered. The Department of Health where monitoring, evaluating and implementers of various health programs received the reports and consolidated before transmitting to the regional office, however the existing paper-based reports as legal file copy is being submitted.

c. Municipalities in South Maqueda Bay consist of Geographically Isolated and Disadvantage Areas (GIDA) hence, access to real-time health information is also undermined by several layers of paper-based data entry, hence lack of logistic, like computers, hinders the health worker to implement the system.

d. Transmitting and receiving reports embedded with problems on internet connectivity specifically to remotes areas connote that majority of respondents seen hindering factors and alternative strategies to sustain the program is necessary. Establishing connectivity in different remote areas give rise to the database timely reporting.

e. Since the Rural Health Unit are positively implementing community-based electronic medical records ("Moderately Implemented") and a relevant effect towards patient on the implementation as they rated the system "Highly Implemented" , a further assessment on the gaps and issues to which area needs to address since the probability of implementation is possible to be functional in every health facility.

Proposed Three Years Implementation Strategy of Community-based Electronic Medical Record

The proposal is intended to draw up long term strategic plan for the development, improvement and implementation of electronic medical record in support to the Philippine eHealth strategic vision that by 2020, "a widespread access to eHealth services, health information and securely share and exchange patient information to a safer, quality health care, more equitable and responsive health care system for all Filipino people by transforming the way the information is used to plan, manage, deliver, and monitor health services." Further, initiatives and investment recommended in this paper can lower the cost and accelerate electronic medical record adaptation through public-private partnership, as well as facilitating achievement on the national standards for clinical data.

Financing Scheme. The financing of the proposal shall be responsibility of the Department of Health, Local Government Unit, and other Non-Government Units that monitor and help through funding in the implementation of health programs of the government.

Objective of the study

1. To address the gaps that hinder full implementation of community-based electronic medical record.

2. To increase electronic medical record data entry not just by focusing on PhilHealth Profiling such as timely encoding of patient information every consultation

3. To strengthen and improve the implementation of community-based electronic medical record to be fully operational among all health facilities

4. To build and established linkages among other stakeholders that will assist the local government in establishing quality service providers

Implementation Strategy. The strategy to sustain the implementation of community-based electronic medical record is guided by the World Health Organizational Health System Frameworks, where 5 building blocks was included. Furthermore, a linkage with different stakeholders, be it in the government or private organization in terms of finances, is significant. Hence, further development of plan is recommended.

Table 11

Proposed Three Years Implementation Strategy of Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar

System Building Blocks	Justification	Action lines and Activities	Strategy	Budgetary requirements		Time Frame	Desired Outcome Indicators
				Unit Cost	Source		
Leadership and Governance	Health regulatory Agency such as Department of Health, PhilHealth Corpporation and the Local Chief Executive are among government linkages	Call up Meetings to all head of offices in the Province and South Maqueda Bay Interloval Health Zone	consultative Meeting and workshop	100,000	DOH	January 2019	Atten-dance, result of workshop and agreements

Table 11 continued

System Building Blocks	Justification	Action lines and Activities	Strategy	Budgetary requirements		Time Frame	Desired Outcome Indicators
				Unit Cost	Source		
Health care Financing	Well-functioning access to technology that is cost effective	Meetings	Meetings and subject financial proposals, MOA	100,000	DOH	January 2019	Well established financial Plan, MOA
Health Workforce	Human resource manpower	Hiring of permanent staff from National with counterparts from Local Government Unit	Memorandum of Agreement from both parties	Depends on the propodes budget for the program set by the government	DOH LGU	January 2019	Permanent staff is prevalent in the rural areas; existing MOA
Medical Products and Technology	Scarcity of computer supplies	Proposed annual budgeting and planning	Consultative meeting and presentations of health financial plan for the following year	100,000	DOH LGU	January 2019	With functional logistics for EMR implementation
Information and Research	Presence existing of Electronic system	Sustain the program by conducting monitoring of timely information being received	Linkages to NGOs	100,000	DOH NGO	January 2019	Health Program datas

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APPENDICES

APPENDIX A

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

January 16, 2018

ARRIANE KRISNA ROSE T. TUAZON, MD
MHO-OIC/DTTB
RHU-San Sebastian
San Sebastian, Western Samar

Ma'am;

The undersigned is presently working on research study " **Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar**" as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net, done by health care providers specifically nurses and midwives in your locality and the feedback of patients or clients. The result that will yield from the study will be beneficial and useful for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and so as in formulating policy.

In this connection, I would like to ask permission from your good office to allow me or my representative (DOH-HRH) to distribute questionnaires, conduct survey and interview in your vicinity. Rest assured that the data gathered will remain confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Recommending Approval:

(SGD) FELISA E. GOMBA, PhD
Acting Dean, College of Graduate Studies

Approved By:

(SGD) ARRIANE KRISNA ROSE T. TUAZON, MD
MHO-OIC/DTTB

APPENDIX B

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

JAS-ANZ
Certificate No.: AJA17 1013

January 16, 2018

CORNELIO A. SOLIS, MD, MCHM
Municipal Health Officer
RHU-Pinabacdao
Pinabacdao, Western Samar

Ma'am;

The undersigned is presently working on research study " **Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar"** as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net, done by health care providers specifically nurses and midwives in your locality and the feedback of patients or clients. The result that will yield from the study will be beneficial and useful for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and so as in formulating policy.

In this connection, I would like to ask permission from your good office to allow me or my representative (DOH-HRH) to distribute questionnaires, conduct survey and interview in your vicinity. Rest assured that the data gathered will remain confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Recommending Approval:

(SGD) FELISA E. GOMBA, PhD
Acting Dean, College of Graduate Studies

Approved By:

(SGD) CORNELIO A. SOLIS, MD, MCHM
Municipal Health Officer

APPENDIX C

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

JAS-ANZ
Certificate No.: AJA17 1013

January 16, 2018

MERRY CHRIS VENUS LAGADO, MD
Municipal Health Officer
RHU-Daram
Daram, Western Samar

Ma'am;

The undersigned is presently working on research study " **Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar"** as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net, done by health care providers specifically nurses and midwives in your locality and the feedback of patients or clients. The result that will yield from the study will be beneficial and useful for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and so as in formulating policy.

In this connection, I would like to ask permission from your good office to allow me or my representative (DOH-HRH) to distribute questionnaires, conduct survey and interview in your vicinity. Rest assured that the data gathered will remain confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Recommending Approval:

(SGD) FELISA E. GOMBA, PhD
Acting Dean, College of Graduate Studies

Approved By:

(SGD) MERRY CHRIS VENUS LAGADO, MD
Municipal Health Officer

APPENDIX D

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

Certificate No. AJA17 1013

January 16, 2018

MARK IVAN S. JADOC, MD
Municipal Health Officer
RHU-Talalora
Talalora, Western Samar,

Ma'am;

The undersigned is presently working on research study " **Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar"** as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net, done by health care providers specifically nurses and midwives in your locality and the feedback of patients or clients. The result that will yield from the study will be beneficial and useful for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and so as in formulating policy.

In this connection, I would like to ask permission from your good office to allow me or my representative (DOH-HRH) to distribute questionnaires, conduct survey and interview in your vicinity. Rest assured that the data gathered will remain confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Recommending Approval:

(SGD) FELISA E. GOMBA, PhD
Acting Dean, College of Graduate Studies

Approved By:

(SGD) MARK IVAN S. JADOC, MD
Municipal Health Officer

APPENDIX E

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

January 16, 2018

CRISTINA C. ABAIGAR, MD
Municipal Health Officer
RHU-Calbiga
Calbiga, Western Samar

Ma'am;

The undersigned is presently working on research study " **Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar"** as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net, done by health care providers specifically nurses and midwives in your locality and the feedback of patients or clients. The result that will yield from the study will be beneficial and useful for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and so as in formulating policy.

In this connection, I would like to ask permission from your good office to allow me or my representative (DOH-HRH) to distribute questionnaires, conduct survey and interview in your vicinity. Rest assured that the data gathered will remain confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Recommending Approval:

(SGD) FELISA E. GOMBA, PhD
Acting Dean, College of Graduate Studies

Approved By:

(SGD) CRISTINA C. ABAIGAR, MD
Municipal Health Officer

APPENDIX F

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

JAS-ANZ
AJA
Certificate No.: AJA17.1013

January 16, 2018

LORIZA M. SORIANO, MD
Municipal Health Officer
RHU-Villareal
Villareal, Western Samar

Ma'am;

The undersigned is presently working on research study **" Community-based Electronic Medical Record in South Maqueda Bay Inter-local Health Zone in, Western Samar"** as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net, done by health care providers specifically nurses and midwives in your locality and the feedback of patients or clients. The result that will yield from the study will be beneficial and useful for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and so as in formulating policy.

In this connection, I would like to ask permission from your good office to allow me or my representative (DOH-HRH) to distribute questionnaires, conduct survey and interview in your vicinity. Rest assured that the data gathered will remain confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Recommending Approval:

(SGD) FELISA E. GOMBA, PhD
Acting Dean, College of Graduate Studies

Approved By:

(SGD) LORIZA M. SORIANO, MD
MHO-OIC/DTTB

APPENDIX G

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

Certificate No. AJA17 1013

February 20, 2018

_____
_____
_____
_____

Ma'am/Sir,

The undersigned is presently working on research study **'Community-based Electronic Medical Record South Maqueda Bay Inter-local Health Zone in, Western Samar"** as a final requirement for thesis in Master of Science in Nursing (MSN).

The purpose of the study is to assess the implementation of Computer-based Electronic Medical Record in SMB health net. The result that will be yield from the study will be beneficial and useful information for the head of office in addressing gaps, identify ways to improve health information system through electronic data gathering and reporting, identify strategies to improve and deliver best quality care services to recipients and in formulating policy.

In this connection, I would like to ask permission from your good office to allow me in conducting survey and interview in your good office. Rest assured that the data gathered will remain absolutely confidential and to be used for academic purposes only.

Respectfully yours,

(SGD) ANA LOVELLA M. GEQUILLANA, RN
Researcher

Noted By:

(SGD) BEGONIA C. YBOA, RN, MAN
Thesis adviser, CONHS

Approved By

_____
Respondents

APPENDIX H

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

JAS-ANZ
Certificate No.: AJA17 1013

INFORMED CONSENT

Dear Ma'am /Sir,

Thank you for agreeing to be part of the research. This data collection is done as part of the partial requirements for Master of Science in Nursing, which include in the research study **"Community-based Electronic Medical Record South Maqueda Bay Inter-local Health Zone in, Western Samar".**

The purpose of this study is to assess the implementation and extent of community-based electronic medical records in the health facility. Please be assured that the data will be in strictly confidential and you are not be named during presentation of data. Information gathered are for research study only.

With regards,

ANA LOVELLA M. GEQUILLANA, RN
Researcher

CONSENT

I, _____ **(Name)** _____ **(Age)** _____ **(Address)** in sound mind hereby give my consent to partake in the research study conducted by the above signed researcher, to which questionnaires and interviews will be conducted. I am aware that the data gathered is will be in strictly confidential and I am not being named during presentation of data. Information gathered is for research study and academic purposes only.

_____
Name and Signature

APPENDIX I

Republic of the Philippines
SAMAR STATE UNIVERSITY
Office of the Dean | College of Graduate Studies

JAS-ANZ
Certificate No.: AJA17 1013

INFORMED CONSENT

Ako hi **(ngaran)** _____, _____ anyos **(edad)**, residente ha barangay _____ naghahatag permiso maging parte hini nga pag-aadman:

TITLE OF THE STUDY: 'IMPLEMENTATION OF COMMUNITY-BASED ELECTRONIC MEDICAL RECORDS IN INTER-LOCAL HEALTH ZONE SOUTH MAQUEDA BAY, WESTERN SAMAR"

1. Hi ako naghahatag kasayuran nga nagka may-ada ako panahon basahon ngan paminsaron hin maupay han mga guin kikinahanglan nga personal ko nga impormasyon para hini nga pag-aradman.
2. Hi ako naghahatag kasayuran nga nagka may-ada ako opurtunidad nga mag-pakiana ug masayuran han mga baton nga iguin hatag ha akon.
3. Ako in naghahatag permiso nga makita an akon Medical Records han researcher.
4. Naiintindihan ko nga an akon pagpartisipar in buluntaryo ngan puydi ako diri magpadayon magpartisipar ngan waray bisan ano nga magiging epekto ha akon serbisyo panlawas ngan akon katungod kumo usa nga tawo.
5. Naghahatag katungod na magpartisipar hini nga pag-aadman.
6. Naghahatag impormasyon nga an akon pamilya ug doctor maaram hini nga akon partisipasyon.

_____
Pirma han Pasyente/Petsa

APPENDIX J

Sampling Frame of the Study

Municipality	Total Population (N)	Positions					Total Sample (n)
		MHO	PHN	Midwife	DOH-Nurse	RHMPP	
Calbiga		1	1	5	9	2	18
Daram		1	1	5	8	1	16
Pinabacdao		1	2	5	10	2	20
San Sebastian		1	1	2	8	0	12
Talalora		1	0	5	8	1	15
Villareal		1	2	8	8	1	20
TOTAL		6	7	30	51	7	101

APPENDIX K

QUESTIONAIRE FOR HEALTHCARE PROVIDER

COMMUNITY-BASED ELECTRONIC MEDICAL RECORD SOUTH MAQUEDA BAY INTER-LOCAL HEALTH ZONE

PART I. Demographic Profile

Direction: Please fill in the needed data and put appropriate check-mark ☐ inside the box that best described your personal information.

1. **Age** _____

2. **Sex** Male ☐ ☐ Female

3. **Civil Status** Single ☐ ☐ Married

   Separated ☐ ☐ Widower

   Annulled/Divorce ☐

4. **Educational Status**

   College Graduate ☐ Master's Level ☐

   Master's Graduate ☐ Doctorate Level ☐

   Doctorate Holder ☐

5. **Position**

   PHN ☐ DOH- ☐ Nurses

   Midwife ☐ RHMPP ☐

   MHO ☐

6. **Number of relevant trainings**

   1 to 2 ☐

   3 to 4 ☐

   5 or more ☐

   None ☐

7. **Number of years or months** using Community-based Electronic Medical Records

   Less than 6 months ☐

2 years to 3 years ☐
6 months to 1year ☐
3 years to 4 year ☐
1 Year to 2 years ☐
none ☐

Part II. Extent of Implementation of community-based electronic medical record as perceived by Respondents

Direction: Please put appropriate check-mark inside the box on item provided that best described extent of implementation of community-based electronic medical record.

1. Current community-based electronic medical record use in health facility assigned

   IclinicSys ☐ WAH ☐ CHITS ☐ None ☐

2. The system can be use

   Online only ☐ Offline only ☐ ☐ both ☐ none

3. How often is the system use

   Every office hours ☐ Often times ☐ Never ☐

4. For computer usage I know how to use

Computer for patient data entry	YES	☐	NO	☐
Internet	YES	☐	NO	☐
Send through e-mail	YES	☐	NO	☐

5. data I entered are/is

Individual patient record	YES	☐	NO	☐
Diagnosis and treatment	YES	☐	NO	☐
Medications	YES	☐	NO	☐
Phil Health profiling	YES	☐	NO	☐
Logistics YES NO				
Others _____				

Part III. Problems encountered during implementation of community-based electronic medical record

Direction: Please put appropriate check-mark inside the box ☐ on each item provided indicating your sensitivity to the problem

Problems	Sensitivity to the Problem				
	5	4	3	2	1
	V	MF	Mod	SF	NF
A. Facilities/Equipment					
1. Our facilities lack computers and laptops					
2. The system is not user friendly					
3. No or slow in internet connection in the area					
4. The facilities has no backup power supply in case of power shortage					
5. Difficult in retrieving patient record					
B. Problems on Manpower					
1. Healthcare personnel has lack or inadequate training					
2. Permanent staff does not apply the system in clinical setting					
3. Staff has little technological know how					
4. It double the work as paper-based is still used before encoding to the system in every consultations					

Legend:

V - Very Much Felt Mod - Moderately Felt NF - Not Felt
MF - Much Felt SF - Slightly Felt

Part IV. Suggested interventions and strategies Assessed by The Respondents

Problems	Assessment				
	5	4	3	2	1
	SA	A	U	D	SD
1. Computerization of patients data should be done during or every after consultations					
2. Permanent staff should be the front liners in the implementation of the electronic medical records in the facility					
3. There should have a Plantilla position for healthcare provider NOT just for encoder					
4. A policy for implementation should be formulated for strict compliance not just for contractual staff but especially to permanent staff for sustainability of the system					
5. Others					
1. Enough and functional computers or laptops should be available for each permanent health staff					
2. training and updates of the system should be done often					

Legend:

SA - Strongly Agree **U** - Undecided
A - Agree **SD** - Strongly Disagree
D - Disagree

APPENDIX L
QUESTIONAIRE FOR PATIENTS

COMMUNITY-BASED ELECTRONIC MEDICAL RECORD SOUTH MAQUEDA BAY INTER-LOCAL HEALTH ZONE

PART I. Demographic Profile
Direction: Please fill in the needed data and put appropriate check-mark ☐ inside the box that best described your personal information.

1. **Age** _____
2. **Sex** Male ☐ Female ☐
3. **Civil Status** Single ☐ Married ☐
   Separated ☐ Widower ☐

Available Electronic Medical Record Yes ☐ No ☐ None ☐

Part II. Client and patient perception on Community-based Electronic Medical Records

Instruction: Please put only one check mark (/) on corresponding statement which you believed you felt.

No	Statement	Sensitivity to the statement				
		SA	A	N	D	SD
		5	4	3	2	1
1	Computerization of my health related data are important to improve quality care					
2	Computerized electronic medical record *decreases my waiting time* in retrieving my record					
3	Computerized electronic medical record *EASILY* retrieve my medical records					
4	*I am aware* about the importance of my electronic medical record as explain by staff thus It is easy to use					
5	Computerization of my medical record is applicable in my area					
6	My medical information is complete, accurate and understandable					

Legend: **SA** - Strongly Agree **U** - Undecided
A - Agree **D** - Disagree
SD - Strongly Disagree

APPENDIX M

QUESTIONAIRE FOR **RECEIVIGNG AGENCY (PhilHealth/DOH)**

PART I. Demographic Profile

Direction: Please fill in the needed data and put appropriate check-mark ☐ inside the box that best described your personal information.

1. **Age** _____

2. **Sex** Male ☐ ☐ Female

3. **Civil Status** Single ☐ ☐ Married
   Separated ☐ ☐ Widower
   Annulled/Divorce ☐

4. **Educational Status**

College Graduate	☐	Master's Level	☐
Master's Graduate	☐	Doctorate Level	☐
Doctorate Holder	☐		

5. **Designation**_____

6. **No. of relevant trainings on Electronic Medical Records**_____

7. **Electronic Reports Received from Rural Health Unit**

	YES	NO
PCB	☐	☐
MCP	☐	☐
PHILHEALTH MEMBERSHIP UPDATES	☐	☐
TB DOTS	☐	☐
MORBIDITY	☐	☐
MORTALITY	☐	☐
OTHERS_____	☐	

8. **Base on the Electronic Medical records submitted Put check Mark on How often Municipalities Submit Reports**

Munucipality	How often Does the following Municipality Submits					Remarks
	Monthly	**Quarterly**	**Semi-Annual**	**Annual**	**None**	
Calbiga						
Daram						
Pinabacdao						
San Sebastian						
Villareal						
Talalora						

9. **Does the agency conducted trainings or orientation to the rural health facilities or facility coordinator?**

YES ☐ NO ☐

10. **How often?**

Monthly ☐ semi-annual ☐
Quarterly ☐ Annual ☐
None ☐ as needed ☐

PART II. Extent of Implementation of Electronic Medical Record in Receiving Agency (DOH/PhilHealth). Please put check mark on appropriate statement which you perceived.

Legend: **HI**- Highly Implemented **ModI**- Moderately Implemented
VMI- Very Much Implemented **SI**- Slightly Implemented
NI- Not Implemented

Statement	Perception				
	5 (HI)	4 (VI)	3 (ModI)	2 (SI)	1 (NI)
Health Consumers (Safer and Quality Health Care)					
1. National health identifier that is unique for each person					
2. Access to quality and reliable health information					
3. Access to individual electronic health records					
4. Access and management of personal health records					
5. Interactions with health care providers					
6. Health information can be shared and exchanged					
7. Use of electronic consultations or telehealth capabilities in remote areas					
8. High speed broadband connectivity					
9. Online health reporting systems					
Health Care Providers (Make More Informed Decisions)					
1. National health care provider identifier					
2. Access to quality and reliable health information					
3. Access to an integrated/single view of the patients' health information at the point of care					
4. Access to health information like clinical decision support tools, medications, clinical knowledge, skills development , and others					
5. Collaboration/coordination with other health care providers, and interaction with health consumers.					
6. Secured sharing and exchanging of health information					
7. Electronic consultations or telehealth services					
8. Online test/examination ordering system and results reporting, referrals, and prescriptions					
9. High speed broadband connectivity					
Health Care Managers, Policy Makers and Researchers (Effective Program/Research Development, Policy Making, Implementation & Monitoring)					
1. Access to quality and reliable health information for improved analysis, utilization, policy making, decision making and research purposes					
2. Availability of tools to support the monitoring of health system activities and outcomes					
3. Defined health data standards and processes for eHealth solutions' development and compliance					
Others					
4. Most Health facilities of South Maqueda Bay Inter-local Health are certified EMRs					
5. Health facilities communicate in writing to conform in the delay of submission of reports					

PART III. Problems encountered on the implementation of electronic medical record and strategies or interventions proposed.

No	Statement	Sensitivity to the statement				
		SA	A	N	D	SD
		5	4	3	2	1
1	Poor internet connection					
2	Lack of technical staff for troubleshooting of the system					
3	Delayed in transmitting electronic medical reports					
4	Incomplete electronic data					

Legend: **SA** - Strongly Agree **U** - Undecided
A - Agree **D** - Disagree
SD - Strongly Disagree

Part IV. Suggested interventions and strategies Assessed by The Respondents

No	Statement	Sensitivity to the statement				
		SA	A	N	D	SD
		5	4	3	2	1
1	Upgrade internet connections					
2	Hiring of additional manpower					
3	Strict compliance to schedule of reporting					

Legend: **SA** - Strongly Agree **U** - Undecided
A - Agree **D** - Disagree
SD - Strongly Disagree

_____

Respondents Signature/Date

CURRICULUM VITAE

CURRICULUM VITAE

PERSONAL INFORMATION

Name	:	**ANA LOVELLA M. GQUILLANA, RN**
Birthday	:	December 27, 1989
Place of Birth	:	Hinabangan, Samar
Civil Status	:	Single
Position	:	Department of Health- Nurse
Office :		Provincial DOH Office, Catbalogan City, Samar
Mother	:	Leah M. Gequillana
Father	:	Ronald A. Gequillana

EDUCATIONAL BACKGROUND

College	:	Bachelor of Science in Nursing Eastern Samar State University Batch 2006-2010
Secondary	:	Bagacay National High School Batch 2002-2006
Elementary	:	Bagacay Elementary School Batch 1996-2002

CAREER SERVICE ELIGIBILITY

Board of Nursing
Manila, Philippines
December 18-19, 2010

WORK EXPERIENCE

Department of Health-Nurse
2018-present

Universal Health Care Implementer
Department of Health
January 23, 2017- December 31, 2017

Department of Health-Nurse
2014-2016

Nurse Volunteer Trainee
Divine Word Hospital-Tacloban City
May-October 2013

RN-Heals
EVRMC-Tacloban City
2011-2012

ORGANIZATION

Philippine Nurses Association
2010-present

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