Barangay Health Services and Certificate Issuance Management System

A System Proposal presented to the
Faculty of the College of Computer and Information Sciences,
Polytechnic University of the Philippines, Sta. Mesa, Manila

In partial fulfillment for the course
INTE 3043 – Systems Analysis and Design

Canada, Kenneth H.
Castaño, Kyzer Allen B.
Dueñas, Stephen "Efi" Miguel C.
Samonte, Ryan Joseph R.
Proponents

March 27, 2018

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CHAPTER 1 – INTRODUCTION

1.1. PROJECT CONTEXT

The Barangay Sipac-Almacen is one of the fourteen barangays at the City of Navotas, this barangay belongs to the 1st district of the said city. Based on the 2015 Census done by the Philippine Statistics Authority this barangay has 8,635 residents and listed as 8th highest in population count among the 14 barangays.

At the present times, Barangay Sipac-Almacen residents primarily depending on the fishing industry. As the Navotas is called as "The Fishing Capital of the Philippines", it is not overwhelming to know that the fishing industry at the Sipac-Almacen is the most common source of income at the said barangay. And most importantly, this barangay can also be seen improving in terms of business or economic capabilities, it's because of newly built food chains, supermarkets and other business establishments that mirrors the continuous uprising of the Barangay Sipac-Almacen.

1.2. TECHNICAL BACKGROUND

1.2.1. Equipment/Hardware

At this moment, the barangay employees have using a total of 5 computers. 1 for the barangay secretary office, 1 for the barangay treasurer's office and 3 for the health center. They also have 4 printers that can be used in printing needed documents. 1 for the barangay secretary office, 1 for the barangay treasurer's office and 2 for the health center.

1.2.2. Software

In terms of computer software or application, the barangay uses some productivity tools such as Microsoft word, Microsoft excel and the likes. They use it in typing documents needed by the resident and in encoding the services rendered by the health center.

1.2.3. Peopleware/Manpower

The barangay has currently assigned a clerk to help the secretary in rendering service the said clerk is knowledgeable in using computer, most specifically in using productivity tools software. He/she help the secretary by interviewing the resident who is requesting a document and sometimes, when the secretary wasn't around he/she may also allow to type the needed documents. The barangay also has barangay

treasurer that is responsible on the payment transactions, the barangay secretary has modest knowledge in using computer. For the peace and order, the barangay have a lupon and barangay police or *tanod* that ensures that the barangay will maintain its peacefulness and orderliness, they also responsible in recording blotter or complaint reports. On the health center, the barangay has 3 nurses, 2 doctors and 13 Barangay Health Workers (BHW) that is responsible in rendering health services likewise in recording such rendered service to be used upon health report generation and some of the staffs at the health center is knowledgeable in using computer.

1.2.4. Network Infrastructure/Architecture

As of now, the barangay doesn't have a local area network, and they depend on the internet connectivity.

1.2.5. Storage, Backup and Recovery Procedure

The barangay uses file cabinets and their computers' internal hard drive to store documents of past transactions and resident information. And, they don't have any backup and recovery procedures.

1.2.6. Policies and Procedures

Business Requirement

In Barangay Sipac, in the section of documents and reports, Residents must provide all information needed in requesting documents and reports. Also, Residents must submit all the requirements needed in order to get the clearance. In the section of health clinic, bonafide residents must be prioritized, health staff must record and update residents' health information after each and every consultation check-up. Moreover, Health center must generate FHSIS reports every month and send it to City Health Department. In the section of blotter and complaints, the respondent must be a bonafide resident of Barangay Sipac. And, the complainant must have a valid reason to report a blotter or complaint. Also, the incident must be within the jurisdiction of Barangay Sipac.

Data Flow Diagram

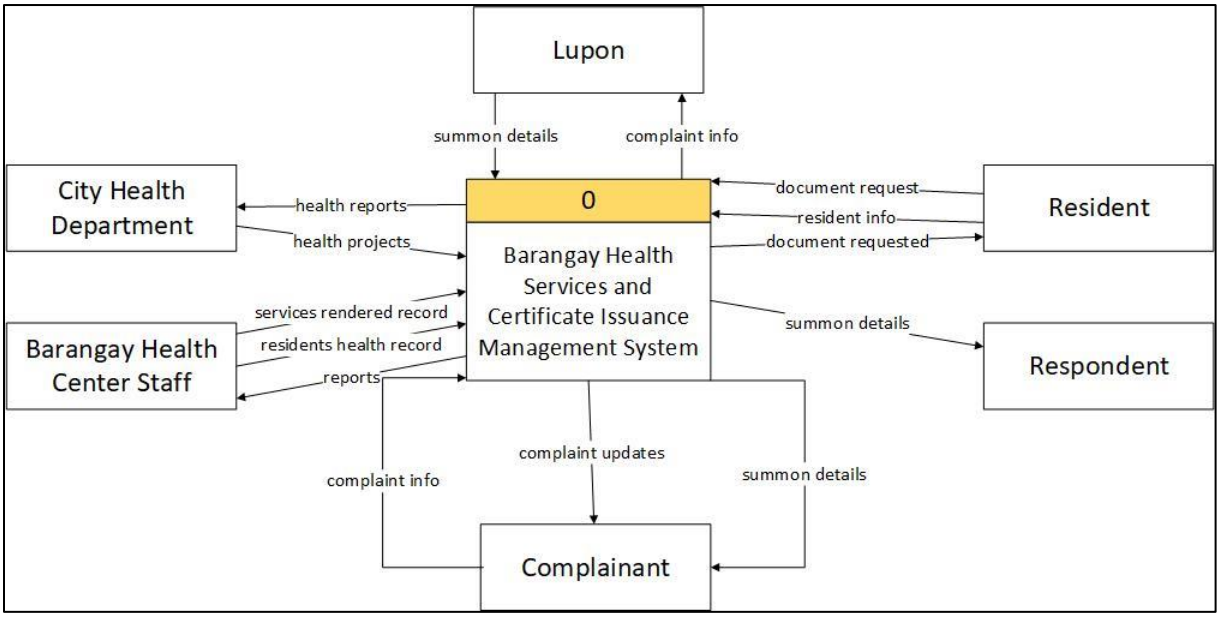

Figure 1: **Barangay Health Services and Certificate Issuance Management System (Context Diagram)**

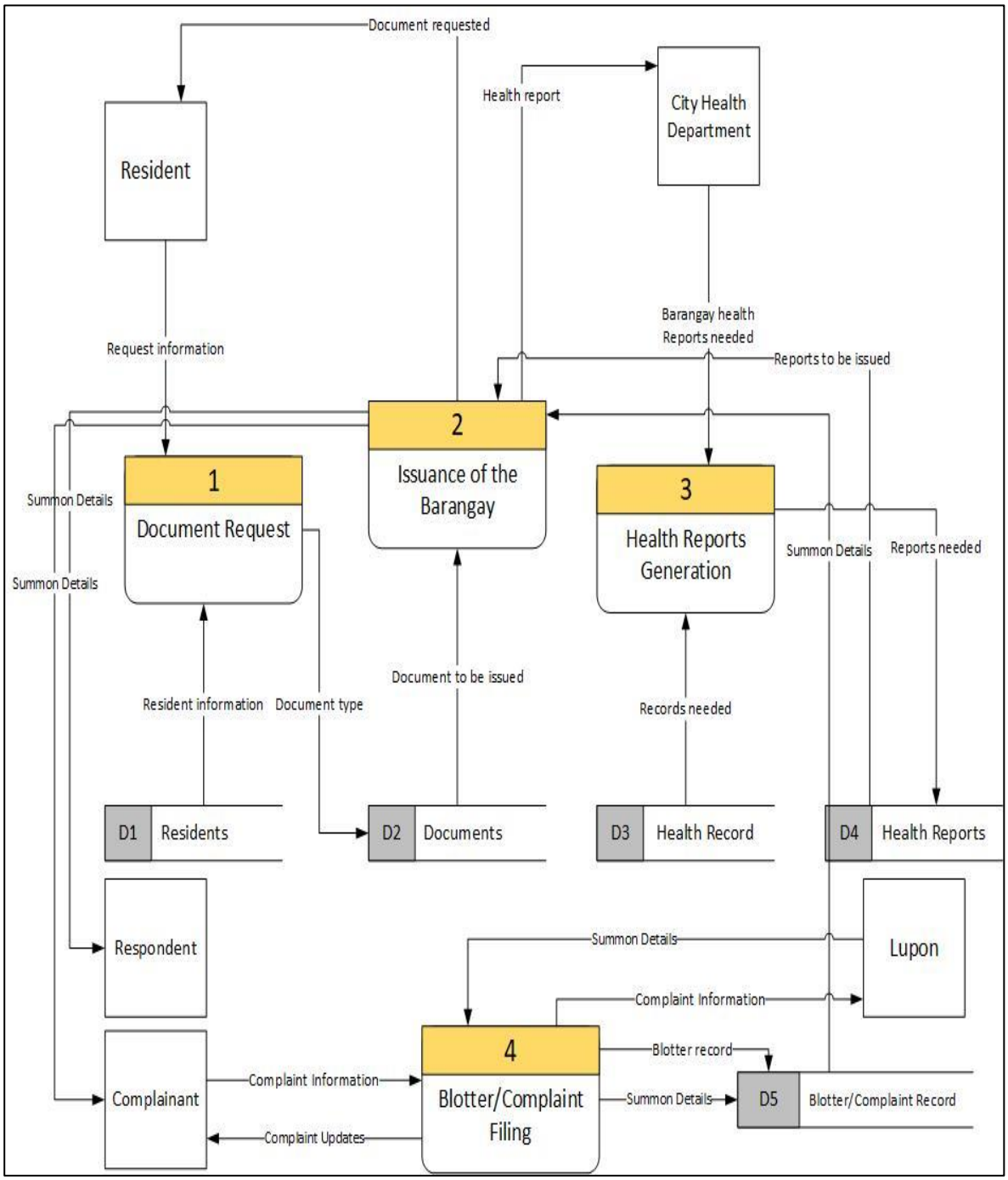

Figure 2: **Barangay Health Services and Certificate Issuance Management System (Level 1 Data Flow Diagram)**

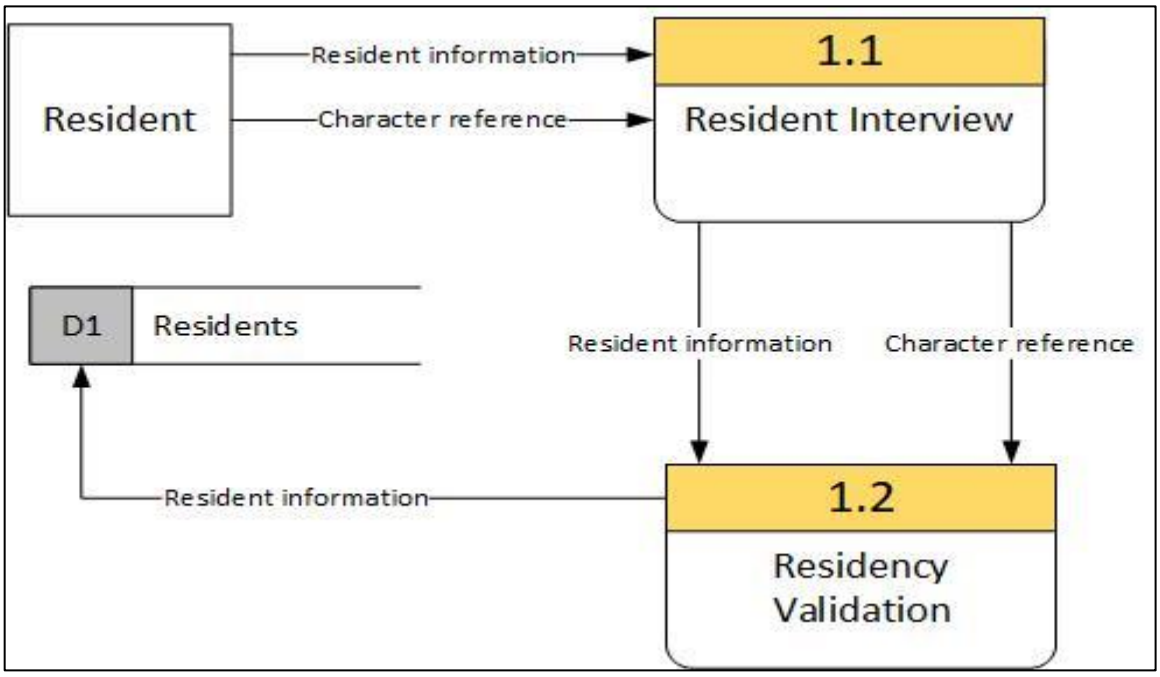

Figure 3: **Barangay Health Services and Certificate Issuance Management System (Level 2 Process 1)**

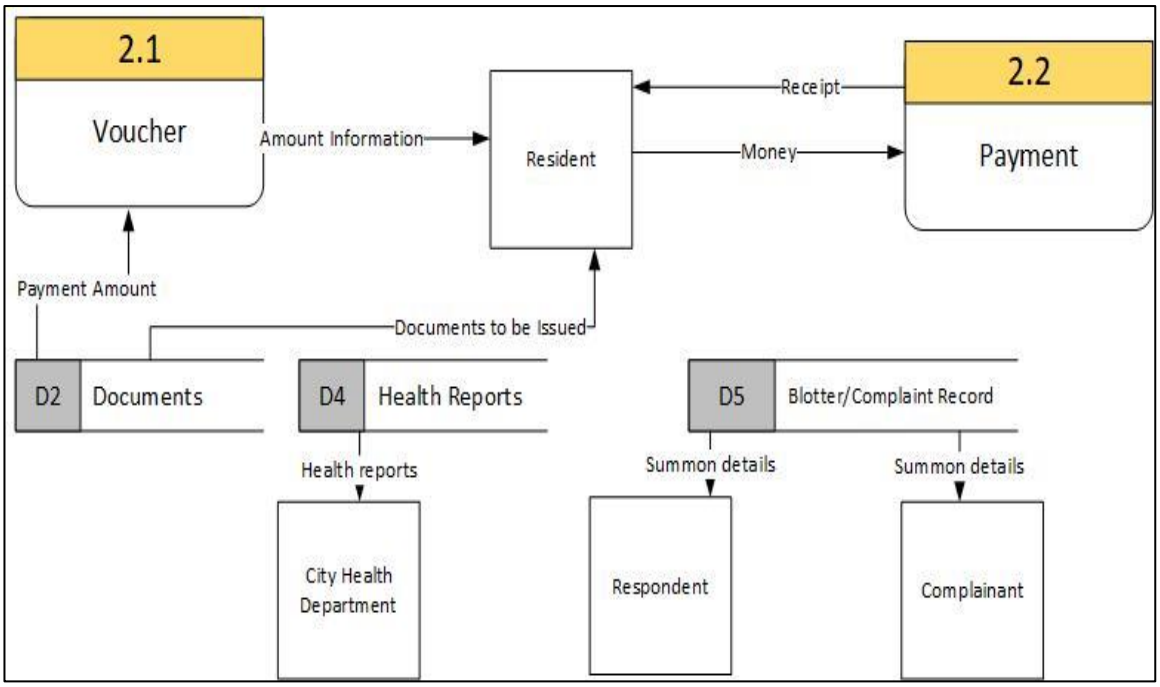

Figure 4: **Barangay Health Services and Certificate Issuance Management System (Level 2 Process 2)**

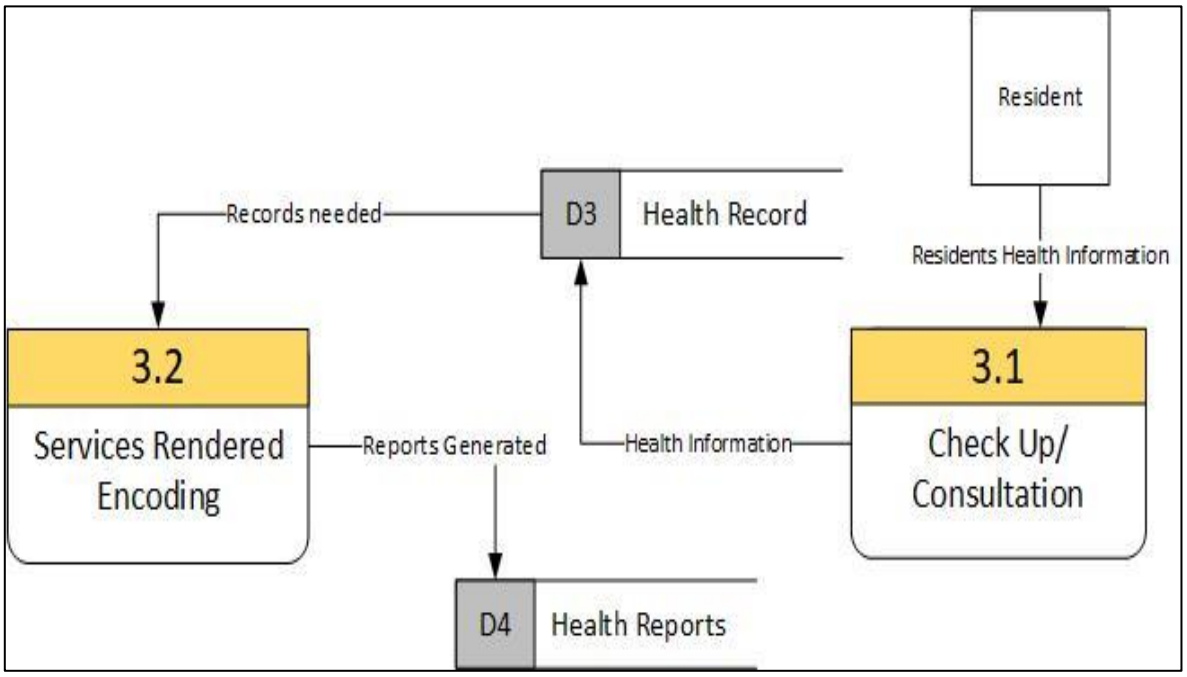

Figure 5: **Barangay Health Services and Certificate Issuance Management System (Level 2 Process 3)**

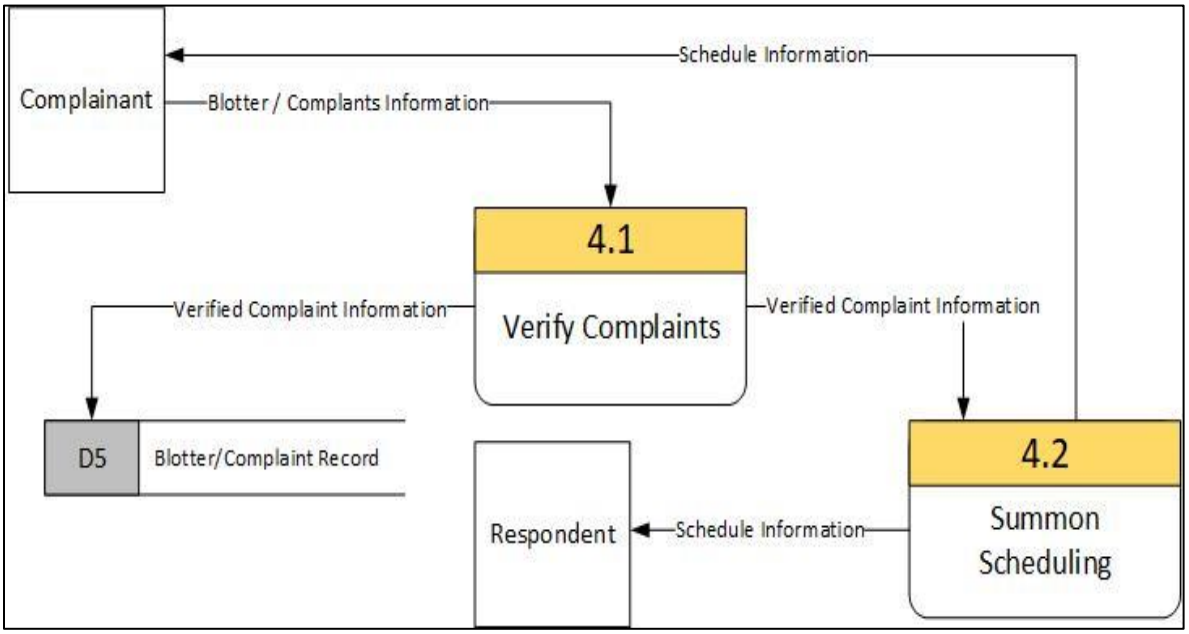

Figure 6: **Barangay Health Services and Certificate Issuance Management System (Level 2 Process 4)**

1.3 PROBLEM ANALYSIS

1.3.1 Fishbone Diagram

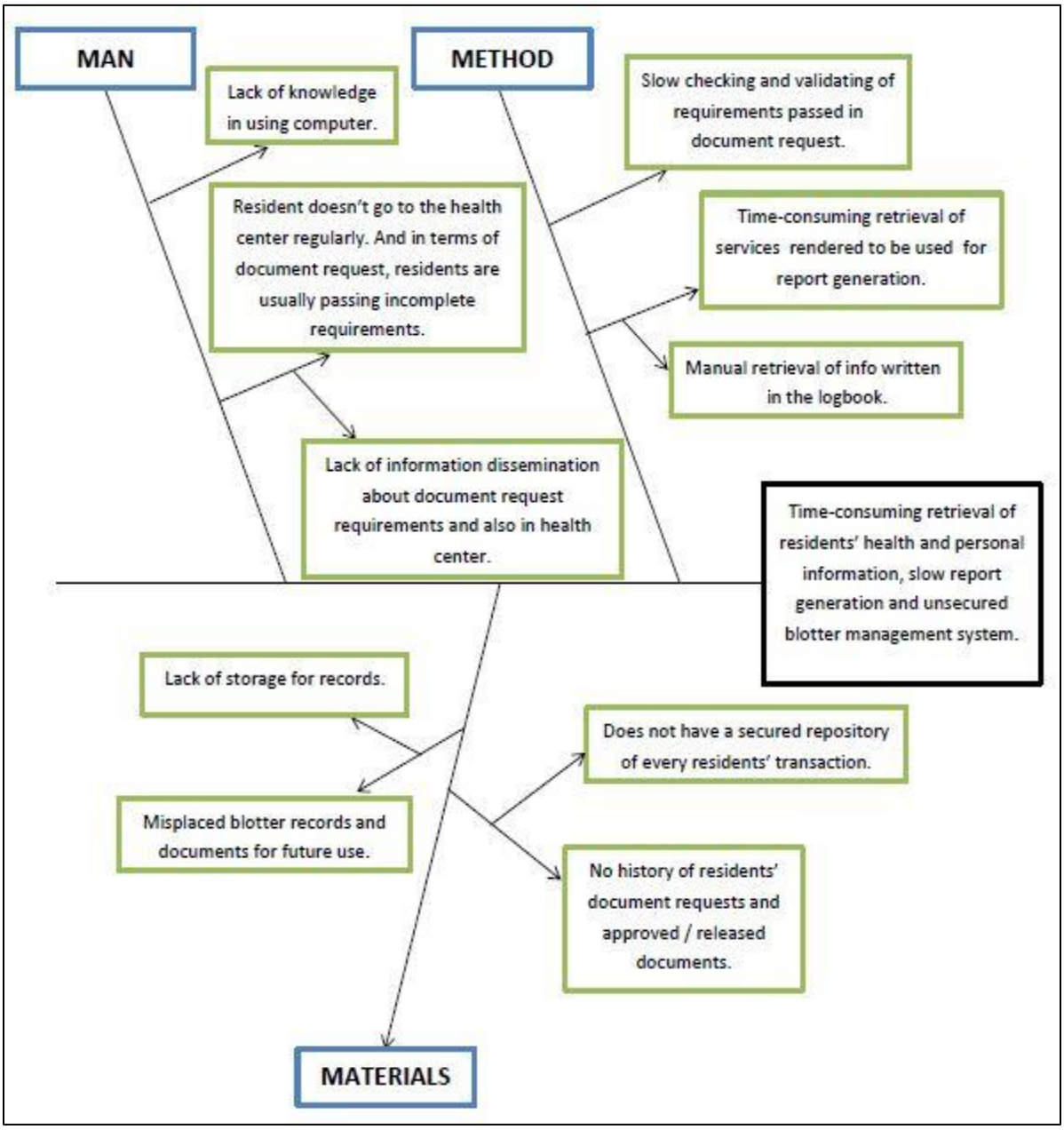

Figure 7: **Barangay Health Services and Certificate Issuance Management System (Fishbone Diagram)**

Based on the requirement gathering techniques used by the proponents, they came up with this fishbone diagram, it is finding the root cause of the problem "**Time-consuming retrieval of residents' health and personal information, slow report generation and unsecured blotter management system**". They divided the main causes to Method, Man and Material.

1.3.2 Problem and Solution Statement

Based on the fishbone diagram illustrated by the proponents, they distinguished that their retrieval of residents' health and personal information is time consuming, also it is slow to generate a report and their blotter management system is unsecured. These are the three main causes of this problem classified as Method, Materials, and Man. Under the classification method states that they are slow in checking and validating of requirements that is passed in document request, also it is retrieval of services rendered to be used for report generation is time consuming it is because they are doing manual retrieval from what is written in the logbook. Next one is under Materials classification, they got no history of residents document requests, approved or released documents it is because they got no secured repository of every residents' transaction. They also misplaced some blotter records or documents that could possibly use in the future because they lack for storage records. Lastly, under Man classification, some of the workers lack knowledge in using computers, also residents don't go to health center regularly and usually passes an incomplete requirement because they lack the information about document request requirements.

After figuring out the main problem/s and its root and sub root causes, the proponents have come up with an IT-related solution proposal to help them ease their jobs. First one is to provide a computer usage orientation for them to understand more about the technology that would help them generate reports, also to provide a module that can quickly and easily access some document processing system. A module that will create graphs and charts needed for reports. We will also provide a record storage for them to store files that is retrieved later on. Also notice of information about the needed requirements needed for every document being requested.

1.3.3 Problem – Requirements Matrix

Table 4

Time-consuming retrieval of residents' health and personal information, slow report generation and unsecured blotter management system.

Ref. Page	No.	Problem	Requirements
	1	No history of residents' document request and approved / released documents.	Capability of having history records that can be used for future reference.
	2	Misplaced blotter records and documents for future use.	Ability to have good management in documents and records.
	3	Lack of storage for records.	Proficiency of having big storage to handle voluminous amount of data.
	4	Slow checking and validation of requirements passed in document request.	Capability of creating a system that will provide a much quicker way of checking requirements, residency validation.
	5	Time-consuming retrieval of services rendered to be used for report generation.	Capability of having a computerized system that will fasten the process of information retrieval.
	6	Lack of information dissemination about document request requirements and also in health center.	Ability to post announcement online.
	7	Lack of knowledge in using computer.	Capability of creating a system that is user-friendly and will be quickly understand by the user.
	8	Does not have a secured repository of every residents' transactions.	Ability to have secured storage of transactions and other records.

1.4. PURPOSE AND DESCRIPTION

To propose a solution to the Barangay Sipac's problems like slow retrieving of requested information, issuing of residents' documents, lack of health monitoring that is preventing them to provide good service to the people of the said barangay. That's why the proponents propose a project that can provide better management of documents that can help employees to retrieve information easily and can ease the difficulty of issuance of residents' requested document and for the barangay to monitor the health of residents that can help non-government organizations to provide appropriate health services.

1.5. SPECIFIC OBJECTIVES

1. To enumerate the problems of the barangay's current system and other processes that may be solve by computerization, such as manual retrieval of residents' information and lack of health monitoring of residents.
2. To evaluate the existing system and processes of the barangay that may need improvement or preventing them from giving the residents better services.
3. To propose a project that will help the Barangay Sipac to have better management of documents and especially for the barangay to have health monitoring for their residents to take care of their health and also for NGO's to provide appropriate health services for the residents.
4. To identify the requirements of the proposed project that can provide which the current system is lacking of.

1.6. SCOPE AND LIMITATIONS

The system covers the following, first the management of document requests by the residents of the barangay, the issuance of documents (i.e. barangay clearance, certificate of indigency, certificate of residency, barangay business permit etc.), the system will also cater barangay ID application of the residents and the validation, confirmation of the said ID. In terms of the blotter management the system will cover the filing of blotter report, summon scheduling and summon report generation. Finally, in terms of health services, the system covers the recording of residents' information including their health information and health history. Moreover, the system covers the generation of needed reports at the health center like TB Patients-Daily Report, PhilHealth Members Data Record, all services rendered by health center for the whole week report and the Field Health

Service Information System (FHSIS)- Monthly Report together with health project recommendations and graphs in order to interpret and analyze data easily.

But, this system does not cover the equipment and facility monitoring. Likewise, the reservation of such equipment and facility.

CHAPTER 2 – REVIEW OF RELATED LITERATURE/SYSTEMS

This chapter presents the related literature and studies after the thorough and in-depth search done by the project team, to fully understand the project to be done.

Related Literature

Health

Health is the more important than wealth because as long as you're healthy, you can be more productive. (World Health Organization, 1946) stated that : (1)Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.(2) The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.(3) The health of all peoples is fundamental to the attainment of peace and security and is dependent on the fullest co-operation of individuals and States.(4) The achievement of any State in the promotion and protection of health is of value to all.(5) Unequal development in different countries in the promotion of health and control of diseases, especially communicable disease, is a common danger.(6) Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.(7) The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health.(8) Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people.(9) Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures. That's why it is important to monitor health and be aware of it just like what (ATSAKA, 2017) stated, it is the process of enabling people to increase control over, and to improve their health. This essentially means to reach a state of complete physical, mental and social well-being. The community needs to realize a desire to satisfy needs and to adapt to the environment. They also stated the benefits of it: (1) Healthier eating and regular exercise increases health and productivity. There is also a decrease in absences in the workplace which in turn boosts the economy. (2) Water makes up a massive part in a healthy diet so access to clean water is cardinal. Awareness of hygiene and water sanitation lowers the risk of spreading diseases throughout the community drastically. (3) Awareness of a healthier diet and regular exercise lowers the risk of cardiovascular problems and high blood pressure. This lessens the need for regular doctor's

appointments and medical treatments which in turn lowers a person's financial pressure. (4) A healthier lifestyle and environment increases general optimism and contentment.

Information System

Nowadays, having an IS in a company, barangay, office, school etc., is very helpful to manage records and retrieve it in the easy way. That's what (MIT Press, 2005) pointed out, information systems have become the backbone of most organizations. Banks could not process payments, governments could not collect taxes, hospitals could not treat patients, and supermarkets could not stock their shelves without the support of information systems. In almost every sector—education, finance, government, health care, manufacturing, and businesses large and small—information systems play a prominent role. An information system is a software system to capture, transmit, store, retrieve, manipulate, or display information, thereby supporting people, organizations, or other software systems**.** (Adeoti-Adekeye, 1997) stated that every aspect of management in the modern age relies heavily on information to thrive. Nothing moves without information and it is generally believed that information is power and that he who has it has power. It is an important resource needed to develop other resources. Changing circumstances and environments have necessitated the need for the proper dissemination of information at various levels of management. The development and use of information management systems (MIS) is a modern phenomenon concerned with the use of appropriate information that will lead to better planning, better decision making and better results. Information management has been defined as the organization-wide capability of creating, maintaining, retrieving and making immediately available the right information, in the right place, at the right time, in hands of the right people, at the lowest cost, in the best media, for use in decision making (Langemo, 1980). In the same vein, Best (1988) defines information management as the economic, efficient and effective co-ordination of the production, control, storage and retrieval and dissemination of information from external and internal sources, in order to improve the performance of the organization. (Arturo M. Ongkeko, 2016) stated that eHealth is the use of information and communications technology (ICT) for health, recognized as an enabling tool to help meet service delivery objectives. This paper describes an electronic medical record system (EMR) for government primary care health centers in the Philippines, more specifically, the Community Health Information and Tracking System (CHITS), whose longevity – through peer and policy adoption – speaks of an eHealth technology built for and by the people.

Health Information System

Monitoring health and managing health documents / records is important but takes a lot of procedures and time but it can be fasten by the use of health information system just like what (Marcelo & Cañero, 2010) stated, E-health is a relatively new term for an emerging field in the intersection of medical informatics , public health and business, referring to health services and information delivered or enhanced through the internet and related technologies. It currently encompasses several fields: (1) Electronic Medical Record – a computerized legal medical record used within a facility. (2) Electronic Health Record – a collection of electronic medical records which refer to a single patient. (3) Patient Health Records – a patient controlled electronic medical record. (4)Telemedicine – the delivery of health care to a remote site through the use of telecommunications technologies.(5)Telehealth - the delivery of health services to a remote site through the use of telecommunications technologies.(6)Health informatics – resources , devices and methods required to optimize the collection, storage, retrieval and use of health information.(7)Consumer Health Informatics – analysis, study and implementation accessible to consumers /patients.(8)E-learning – provision of educational materials and virtual classroom interaction through telecommunications technologies. (Romualdez Jr. & Dela Rosa, 2011) also have their statement about health information system, HiT profiles seek to provide relevant information to support policy-makers and analysts in the development of health systems. They can be used: (1) to learn in detail about different approaches to the organization, financing and delivery of health services and the role of the main actors in health systems; (2)to describe the institutional framework, the process, content and implementation of health care reform programs; (3)to highlight challenges and areas that require more in-depth analysis; (4) to provide a tool for the dissemination of information on health systems and the exchange of experiences between policymakers and analysts in different countries implementing reform strategies; and (5)to assist other researchers in more in-depth comparative health policy analysis. Another example of health information system, this (Asia-Pacific Economic Corporation, 2016) pointed out a system that focuses on mental health. The first-ever integrated mental health information system in the country is now rolled out in 14 government and private hospitals and facilities in eight regions nationwide. This came about with the development of the Value of the Philippine Health Information System on Mental Health Conditions Among Users, a system that would help generate much-needed information to help properly understand and address issues surrounding mental health. Aptly called “Into the Light,” the development of PHIS-MH has been realized through the collaboration and partnership of the Department of Health, a Technical Working

Group of Psychiatrists, the Philippine Psychiatric Association, University of the Philippines Manila National Institute of Health-Institute of Clinical Epidemiology, Foundation for the Advancement of Clinical Epidemiology Inc., and grant provided by Pharmaceutical firm Janssen Philippines to address the need for individual case support and monitoring in mental health across the country. The Philippine Health Information System on Mental Health Conditions (PHIS-MH) will hold a database of information on mental health cases, primarily schizophrenia, which can be accessed by hospitals even offline. The software includes functions such as in/out patient records and hospital statistical reports.

Related Systems

(Bytes2Bits, 2017). "Barangay Records and Information Management System". This system aims to provide storage for all information of residents in a barangay and the barangay itself. It also serves as main data source of a barangay records and to offer a barangay a convenient way of record and report management through easy and fast way of saving and retrieving records. It can also manage property information, permit, events held in the barangay, revenue, budget and incident management. Furthermore, this system does not include the health services management.

(Eneteria, 2015). "Barangay Management Information System". It aims to provide storage that keeps records and can update information of barangay and barangay residents with the support of Short Message Services (SMS) to provide more effective method in delivering information as well as in keeping useful records and giving good services. It can also manage information about population in a barangay, land area, household, education and officials. In addition, this system does not include report generation and management of health services of the barangay.

(Sarne, n.d.)." Barangay Profiling System". This system focuses on the information of residents. Moreover, it can record and manage transaction of files of residents and it let the residents to avail a copy of their profiles easily any time they want. It can also manage, have announcements and record duties and responsibilities of each personnel. But this system is not able to generate any reports and manage property information and also not able to make graphs and manage health information of residents.

(Lapes & Ligason, 2015).” Barangay Lubogan Management System”. This is a system that focuses on the population of each purok. It has statistics and graph of total population per purok and it can also manage resident information. It can also manage family member of each residents. Moreover, this system can also generate reports and blotter reports and also has barangay clearance issuance. However, it does not manage health information of residents.

(CMVSDC, 2015). “iBRGY”. It aims to manage resident information and give them Barangay ID for fast retrieval of information, issuance of clearance and other forms and for fast resolution of blotter and disputes. It can also manage barangay activities information, legislation information, payments, business record information and barangay official information. It also has report generation. Moreover, this system doesn’t have statistics and graphs and not able to manage health information of residents.

(Mapile Jr., 2011). ” Automation Software System”. This system prepares and prints the barangay permits and certificates with photo capture. It can also manage the information of residents. It also has storage for incident reports happening within the barangay, clearance issuance and different forms like accounting forms, barangay justice forms and administrative forms. However, this system is not able to create statistics of population and manage health information of residents.

(Soriano, 2017). “Barangay Payatas Blotter and Clearance Management System”. This system aimed to improve the current system of Barangay Payatas, by building a computer system that would the cater the needs of a much faster way of incident reporting, analyzing, clearance management and the likes. This study also presents the possible problems encountered by the current system applied by the barangay in entertaining residents’ incident report and clearance issuance. By using fishbone diagrams, a problem solution matrix etc. The said system covers the blotter, incident and clearance issuance. Moreover, this system not includes the equipment and facility reservation, registration of sponsorship and the management of medical or health services provided by the barangay.

(Arturo M. Ongkeko, 2016). “Community Health Information and Tracking System (CHITS): Lessons from Eight Years Implementation of a Pioneer Electronic Medical Record System in the Philippines” this system can be considered as an Electronic Medical Record (EMR) system, that is currently implemented at almost 200 spots in our country. This software allows storage, retrieval and modifications of data’s regarding medical services. Moreover, this software is also capable to generate some reports, but not includes the interpretation of such reports using graphs, charts and the likes.

CHAPTER 3 – METHODOLOGY

3.1. REQUIREMENTS ANALYSIS

3.1.1. Requirements – Features Matrix

Feature / Requirement	Document Request process	Blotter/Complaint Validation process	Summon Scheduling	Retrieving of data	Report Generation	Analyzing Data	Announcement **dissemination**
Fast document request process	Strong						
Fast blotter/complaint updates & summon scheduling		Strong	Strong				
Automated way of retrieving data				Strong			
On-time and accurate health reports					Strong		

Automated creation of graph and charts to analyze data						Strong	
Accurate information dissemination about document request requirements and also in health center.							Strong

3.1.2. Use Case Diagram

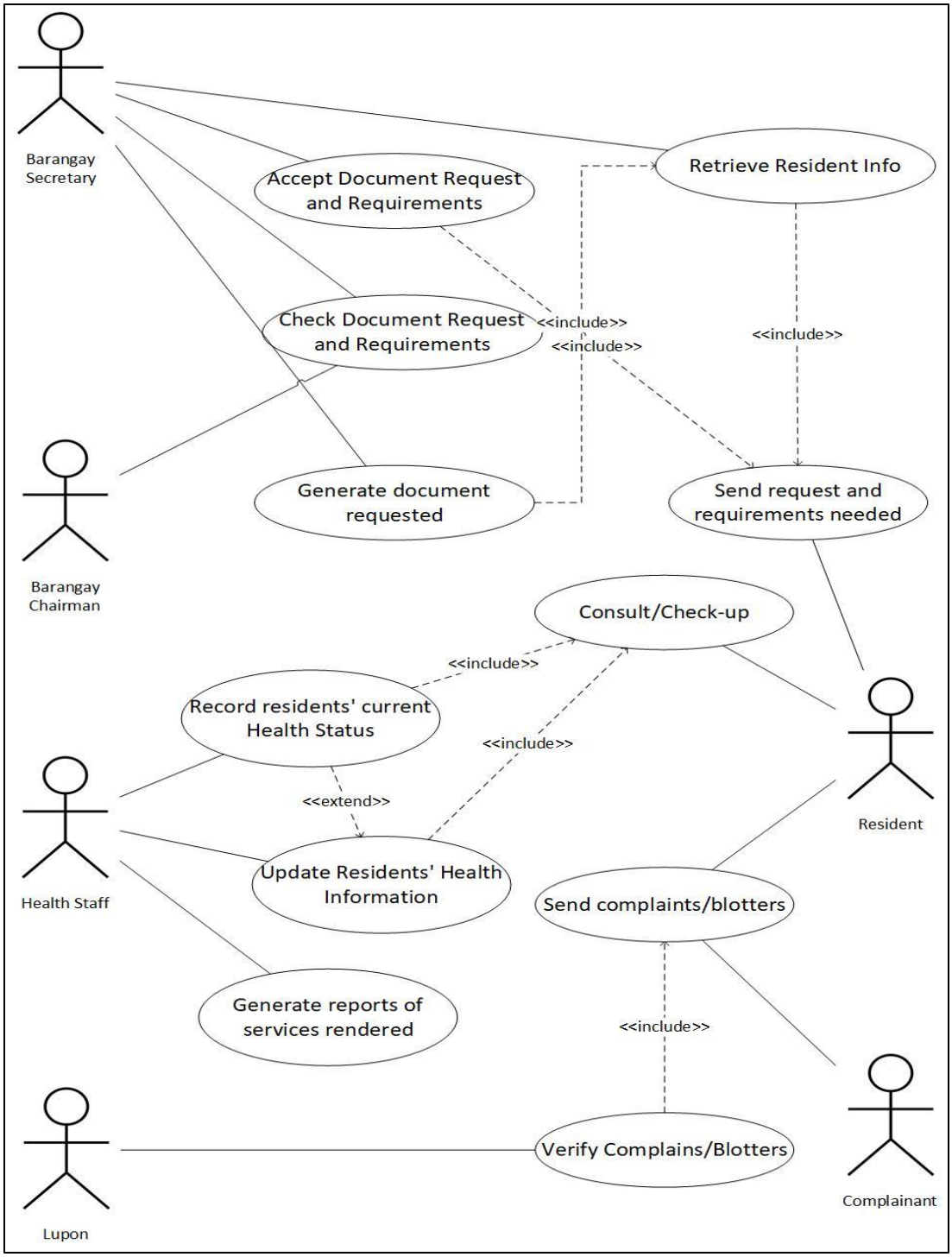

Figure 8: **Barangay Health Services and Certificate Issuance Management System (Use Case Diagram)**

3.1.3. Use Case Report

Table 5
Send Request and Requirements Needed

Use – Case Name	SEND REQUEST AND REQUIREMENTS NEEDED	Use – Case Type: Service Type
Use – Case ID	UC001	
Description	This use case is about how the residents request documents and requirements to the barangay.	
Priority	High	
Primary Business Actor	Resident	
Other Participating Actors	Barangay Secretary, Barangay Captain	
Pre - Condition	The sender must be a resident on the barangay	
Typical Course of Events	Actor Action 1. This use case begins when the user sends request or requirements needed.	System Response 2. Keeps track / records the request and requirements sent by the user.
Alternate Course	When the information that is sent by the user is incomplete, the system indicates an error and the human continues his current activity	
Conclusion	The user must be a resident to send a request and to send requirements needed for a certain request. The system will indicate an error regarding the unfilled information when the user sends a request incomplete.	
Post Condition	The request sent by the resident is recorded for future purposes.	
Business Rules	-The resident must provide the complete info about the request. -The resident must provide the complete requirements needed.	
Included Use Case	None	
Extended Use Case	None	

Table 6
Retrieve Resident Info

Use – Case Name	Retrieve Resident Information	Use – Case Type: Service Type
Use – Case ID	UC002	
Description	The Barangay's record keeper retrieves the requested information by the resident.	
Priority	High	
Primary Business Actor	Record Keeper	
Other Participating Actors	Barangay Secretary, Barangay Captain	
Pre - Condition	The record keeper checks if the resident already has a record stored, if the resident doesn't have a record.	
Typical Course of Events	Actor Action 1 This use case begins when the record keeper needs resident information	System Response 2 Will find the resident record/s stored.
Alternate Course	When the resident doesn't have a record, the system will indicate an error	
Conclusion	The record keeper seeks residents' information, the system will find if there is a record if there is no record the system will indicate error	
Post Condition	The system will store new residents' information, request sent by the resident is recorded for future purposes.	
Business Rules	-The person who requested must be verified first if he/she is a bonafide resident, before proceeding to retrieval of information.	
Included Use Case	- Send Request and Requirements Needed	
Extended Use Case	None	

Table 7
Accept Document Request and Requirements

Use – Case Name	Accept Document Request and Requirements	Use – Case Type: Service Type
Use – Case ID	UC003	
Description	When residents send their requests or give their requirements, barangay secretary will receive/accept it.	
Priority	High	
Primary Business Actor	Barangay Secretary	
Other Participating Actors	Barangay Captain	
Pre - Condition	Accepts all request and requirements	
Typical Course of Events	Actor Action 1 Accepts all request and requirements	System Response 2 Records the requests and requirements
Alternate Course	None	
Conclusion	The barangay secretary accepts all request and requirements then the system will record all requests	
Post Condition	Records all request	
Business Rules	-The secretary must check the document request/requirement he/she received.	
Included Use Case	- Send Request and Requirements Needed	
Extended Use Case	None	

Table 8
Check Document Request and Requirements

Use – Case Name:	Check Document Request and Requirements	Use – Case Type: Service Type
Use – Case ID:	UC004	
Description	After receiving the requested documents or requirements, Barangay Secretary will check and confirm if the request is valid.	
Priority	High	
Primary Business Actor:	Barangay Secretary	
Other Participating Actors:	Barangay Captain	
Pre - Condition	Checks and validates all requests and requirements to be approved	
Typical Course of Events	Actor Action 1 Checks and validates all request and requirements	System Response 2 Records all approved and disapproved requests and requirements
Alternate Course	-When the request is decline, the system notifies the resident. -The resident could create another request if their request is declined	
Conclusion	The Barangay secretary accepts all request and requirements then the system will record all requests	
Post Condition	Records all Approved and Disapproved requests	
Business Rules	-The secretary must check all of the requirements. -The secretary must need to verify if the person who requested is a bonafide resident.	
Included Use Case	- Accept Document Request and Requirements	
Extended Use Case	None	

Table 9
Generate Document Requested

Use – Case Name:	Generate Document Requested	Use – Case Type: Service Type
Use – Case ID:	UC005	
Description	This use case showcase how the Barangay Secretary generate the requested document after the request passed the validation.	
Priority	High	
Primary Business Actor:	Barangay Secretary, Barangay Treasurer	
Other Participating Actors:	Barangay Captain	
Pre - Condition	Generates all approved requests with or without payment	
Typical Course of Events	Actor Action 1 This use case starts when the barangay secretary selects the generate document action 3. The secretary can now process the needed document	System Response 2 The system will show the types of documents that can be generated
Alternate Course	When there is an information left blank by the secretary the system will indicate the error and the secretary will continue its current activity.	
Conclusion	The Barangay secretary generates all documents from approved requests with or without payment	
Post Condition	Records all Generated Document	
Business Rules	-The document generated must be signed by the barangay captain, before releasing it. -The information about the released document, must be put into the released document history.	
Included Use Case	- Check Document Request and Requirements	
Extended Use Case	None	

Table 10
Record Residents' Current Health Status

Use – Case Name:	Record Residents Current Health Status	Use – Case Type: Service Type
Use – Case ID:	UC006	
Description	After every consultation, Health Staff will record the current residents' health status.	
Priority	High	
Primary Business Actor:	Health Staff	
Other Participating Actors:	Residents	
Pre - Condition	Consultation/Check-up	
Typical Course of Events	Actor Action 1 The residents go to health center for their current health status. 2 The Health Staff will get residents current health information	System Response 3 Will record and store health status of the residents
Alternate Course	None	
Conclusion	The residents go to health centers, for the health staff to get their current health status information to be stored in the system.	
Post Condition	Record or stores the current health status of the residents	
Business Rules	-The patient must be verified first if a bonafide resident. -Resident must be prioritized. -The health center staff must record the info about the consultation/check-up	
Included Use Case	- Consultation/Check-up	
Extended Use Case	- Update Residents Health Information	

Table 11
Update Residents' Health Information

Use – Case Name:	Update Residents Health Information	Use – Case Type: Service Type
Use – Case ID:	UC007	
Description	After recording the Residents' Health Status, the Health Staff will update the residents' information.	
Priority	High	
Primary Business Actor:	Health Staff	
Other Participating Actors:	Residents	
Pre - Condition	Check if there is already a record for the resident.	
Typical Course of Events	Actor Action 1 Residents goes to a check-up or consultation. 2 Health staff will record the findings about the residents' health	System Response 3 Updates residents current Health status
Alternate Course	When there is no record for a certain resident the system will indicate an error.	
Conclusion	The residents go to a check-up or consultation so that their current health status can be updated.	
Post Condition	Updates current health record from check-up and consultation information.	
Business Rules	-The patient must be verified first if a bonafide resident. -Resident must be prioritized. -The health center staff must update the info about the consultation/check-up	
Included Use Case	- Consultation/Check-up	
Extended Use Case	None	

Table 12
Consultation/Check-up

Use – Case Name:	Consultation/Check-up	Use – Case Type: Service Type
Use – Case ID:	UC008	
Description	This use case show how Residents take consultation from Health Staff	
Priority	High	
Primary Business Actor:	Health Staff, Resident	
Other Participating Actors:	None	
Pre - Condition	Resident must be present on Check-up or consultation	
Typical Course of Events	Actor Action 1 Residents goes to the venue of check-up or consultation 2 Health staff will record the findings about the residents' health	System Response 3 Records/Updates residents current Health status
Alternate Course	None	
Conclusion	The residents go to a check-up or consultation so that their current health status can be recorded or updated.	
Post Condition	Records or updates residents that have taken the check-up or consultation	
Business Rules	-The patient must be verified first if a bonafide resident. -Resident must be prioritized. -The health center staff must record/update the info about the consultation/check-up	
Included Use Case	- Records Residents Current Health Status	
Extended Use Case	None	

Table 13
Send Complaints/Blotters

Use – Case Name:	Send Complaints/Blotters	Use – Case Type: Service Type
Use – Case ID:	UC009	
Description	Residents send their complaints and blotter reports to the Lupon.	
Priority	High	
Primary Business Actor:	Resident	
Other Participating Actors:	Lupon	
Pre - Condition	Must complete all needed information on filing a Complaint/Blotter	
Typical Course of Events	Actor Action 1. State the incident type then describe what happened	System Response 2. Records complaints and blotters
Alternate Course	None	
Conclusion	The residents choose the type of incident they are to complaint or to blotter and describes it further, The system will store complaints and blotters sent by the residents	
Post Condition	Records all complaints and blotters	
Business Rules	-The complainant must give the complete details about the complaint/blotter. -The respondent must be a bonafide resident of the barangay. -The incident must be inside the jurisdiction of Barangay Sipac.	
Included Use Case	None	
Extended Use Case	None	

Table 14
Verify Complaints/Blotters

Use – Case Name:	Verify Complaints/Blotters	Use – Case Type: Service Type
Use – Case ID:	UC010	
Description	After the lupon receive the reports, it will go through verification process.	
Priority	High	
Primary Business Actor:	Lupon	
Other Participating Actors:	Resident	
Pre - Condition	Accepts all complaints and blotters sent by the residents	
Typical Course of Events	Actor Action 1 The Lupon upon receiving the blotter and complaints information it will go to their verification process. 2 The Lupon will set schedules for the complainant and respondent to be called for hearing	System Response 3 Will notify the complainant and respondent. 4 Stores the information about the verified complaints and blotters also the schedule of hearing
Alternate Course	When there is no record of the resident being complained the said barangay will search personally for the person complained	
Conclusion	The lupon are the ones who verifies the complaints and blotter that is sent through the system they are also the ones who sets the schedule of hearings to reconcile the respondent and complainant	
Post Condition	Records Verified complaints	
Business Rules	-The complainant must give the complete details about the complaint/blotter. -The respondent must be a bonafide resident of the barangay. -The incident must be inside the jurisdiction of Barangay Sipac.	
Included Use Case	- Send Complaints/Blotters	
Extended Use Case	None	

Table 15
Generate reports of services rendered

Use – Case Name:	Generate Reports of Services Rendered	Use – Case Type: Service Type
Use – Case ID:	UC011	
Description	This use case showcase how the Barangay health center staff generate the requested report by the city health department and other connected government health departments.	
Priority	High	
Primary Business Actor:	Health Center Staff	
Other Participating Actors:	Resident	
Pre - Condition	Record all services rendered, per day, week and month	
Typical Course of Events	Actor Action 1 Chooses reports to be generated 2 Inputs needed information	System Response 3 Generates report chosen
Alternate Course	When there is no record of the resident being complained the said barangay will search personally for the person complained	
Conclusion	The Health center staff chooses reports needed and inputs the needed information about the report so that the system can generate the chosen report	
Post Condition	Records Generated Reports	
Business Rules	-The health center must generate report every month. -The generated report must be sign first by the barangay captain before it can be released.	
Included Use Case	None	
Extended Use Case	None	

3.2. DESIGN SPECIFICATIONS

3.2.1. Activity Diagram

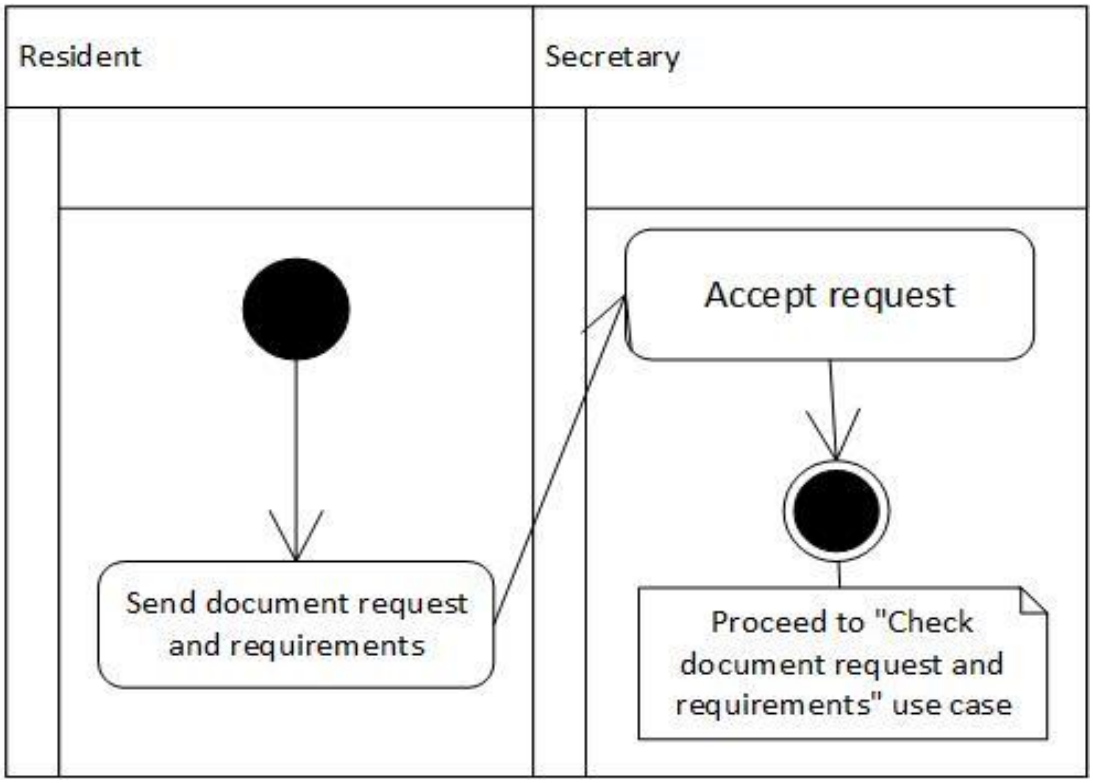

Figure 9: **Barangay Health Services and Certificate Issuance Management System (Use Case: SEND REQUEST AND REQUIREMENTS NEEDED)**

The resident will submit document request together with the requirements, then the secretary will accept it and will proceed to the “Check document request and requirements” use case.

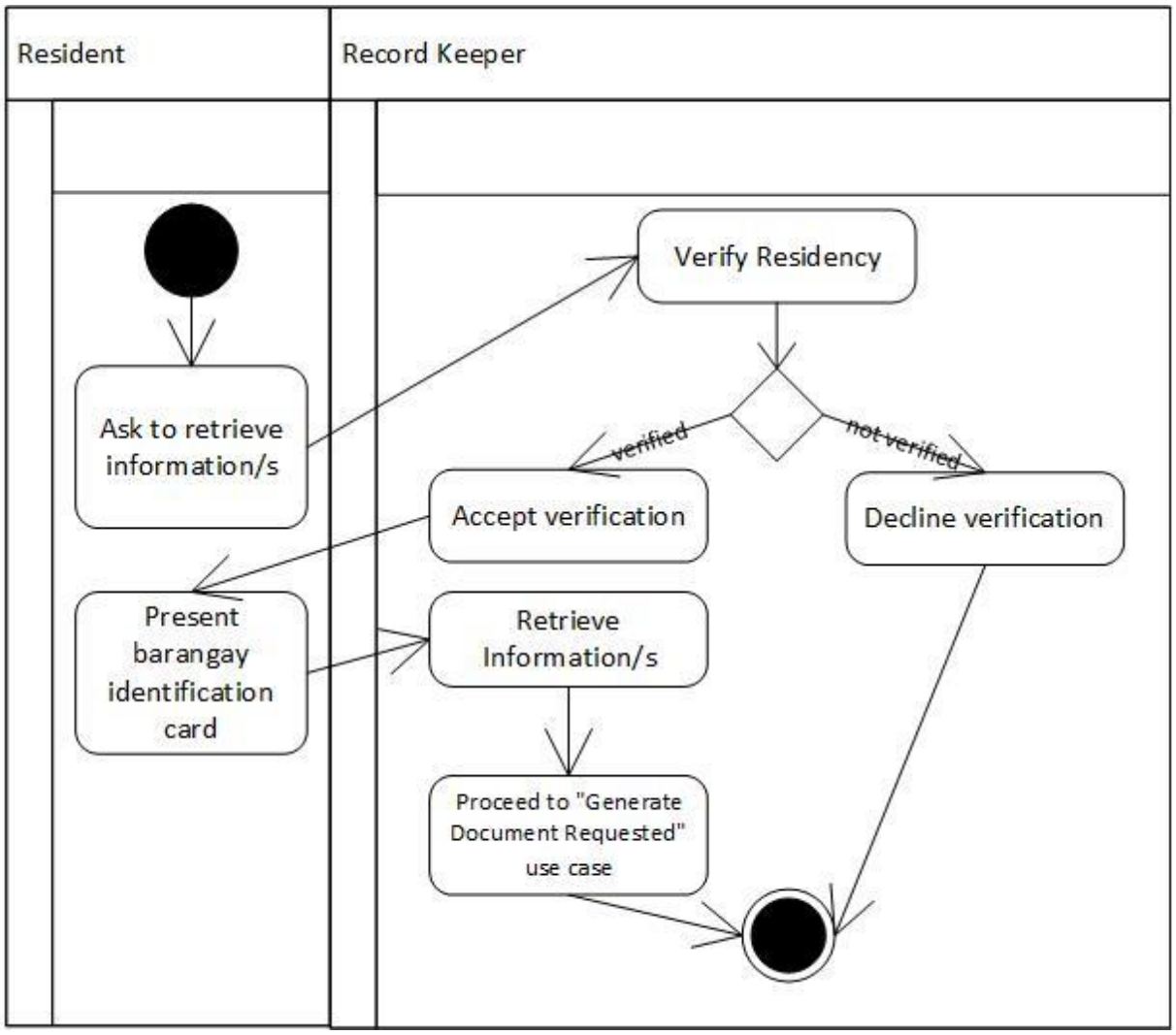

Figure 10: **Barangay Health Services and Certificate Issuance Management System (Use Case: RETRIEVE RESIDENT INFO)**

Due to resident's request, the record keeper will verify the residency of the resident, if not verified the record keeper will decline verification. On the other hand, the record keeper will accept the barangay ID by the resident to be used on retrieving resident's information, and after retrieving this activity will now proceed to the "Generate Document Requested" use case.

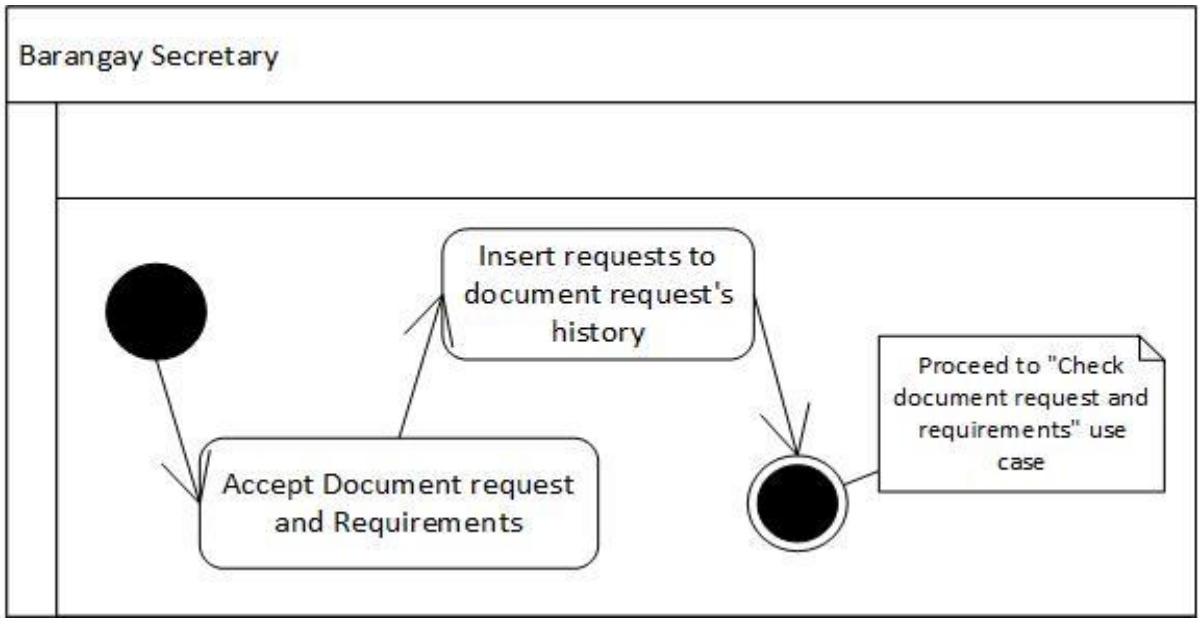

Figure 11: **Barangay Health Services and Certificate Issuance Management System (Use Case: ACCEPT DOCUMENT REQUEST AND REQUIREMENTS)**

After accepting the resident's document request and requirements, the secretary will put it into the document request's history. And proceed to "Check document request and requirements" use case.

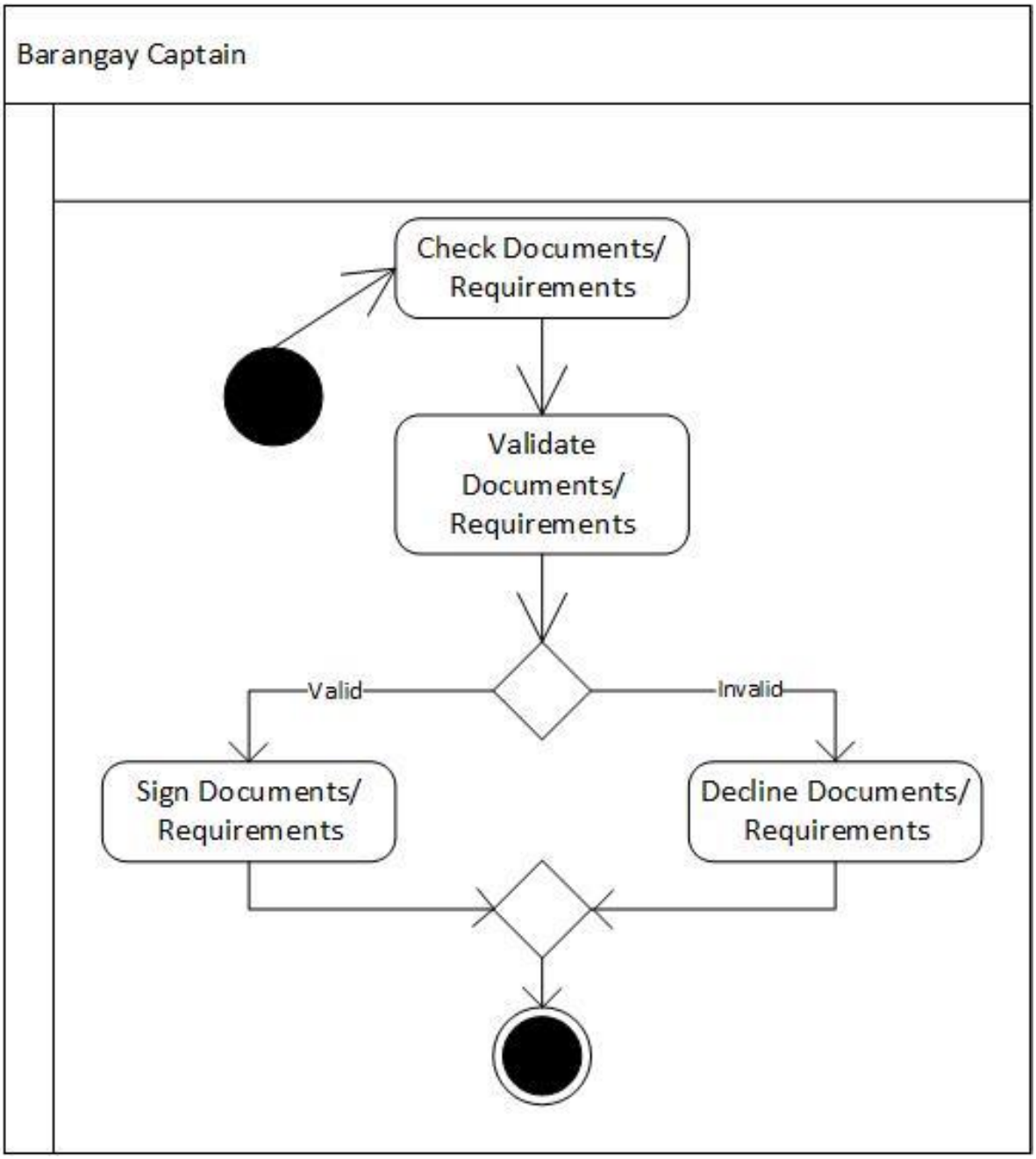

Figure 12: **Barangay Health Services and Certificate Issuance Management System (Use Case: CHECK DOCUMENT REQUEST AND REQUIREMENTS)**

After the validation, if the request is valid the barangay captain will sign it, and if not, the barangay captain will decline the request.

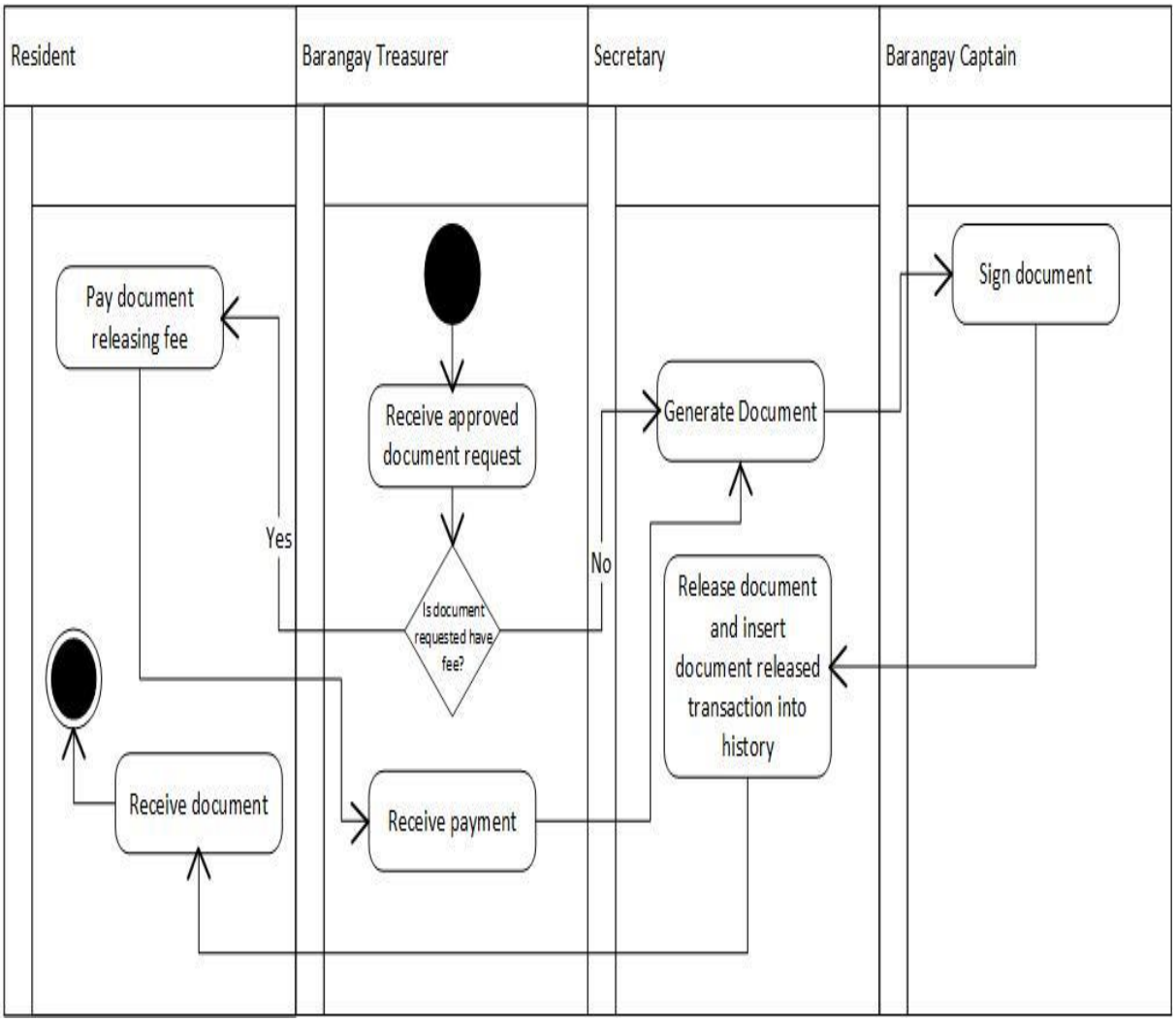

Figure 13: **Barangay Health Services and Certificate Issuance Management System (Use Case: GENERATE DOCUMENT REQUESTED)**

The treasurer will receive the approved request, he/she will check if the requested document has fee, if no, the secretary will immediately generate the document, and the barangay captain will sign it, after signing the document, it will return to the secretary to put the releasing info to the document released transaction history, and finally the resident will receive the document. But if the requested document has fee, the resident must pay first, after paying the said fee. That's the only time to generate the requested document.

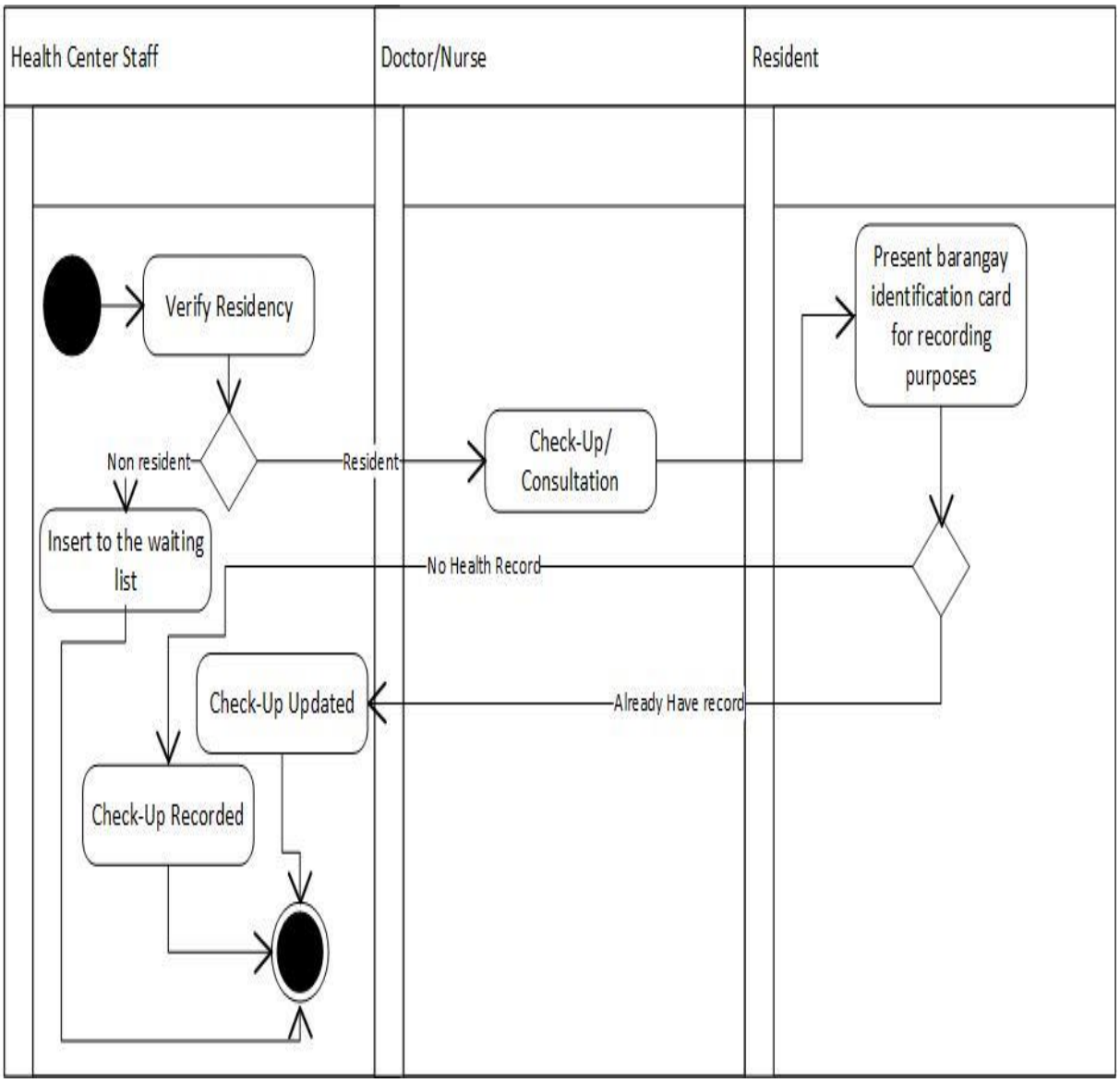

Figure 14: **Barangay Health Services and Certificate Issuance Management System (Use Case: RECORD RESIDENTS' CURRENT HEALTH STATUS)**

The health center staff will verify the residency of the patient, if non-resident, the patient will be put into the waiting list. But if resident, the doctor/nurse will exercise the check-up/consultation. After the consultation, the resident will present his/her barangay ID for recording purposes. If the resident does not have any record yet, his/her record will be recorded, but if he/she has already check-up/consultation record, his/ her record will be updated.

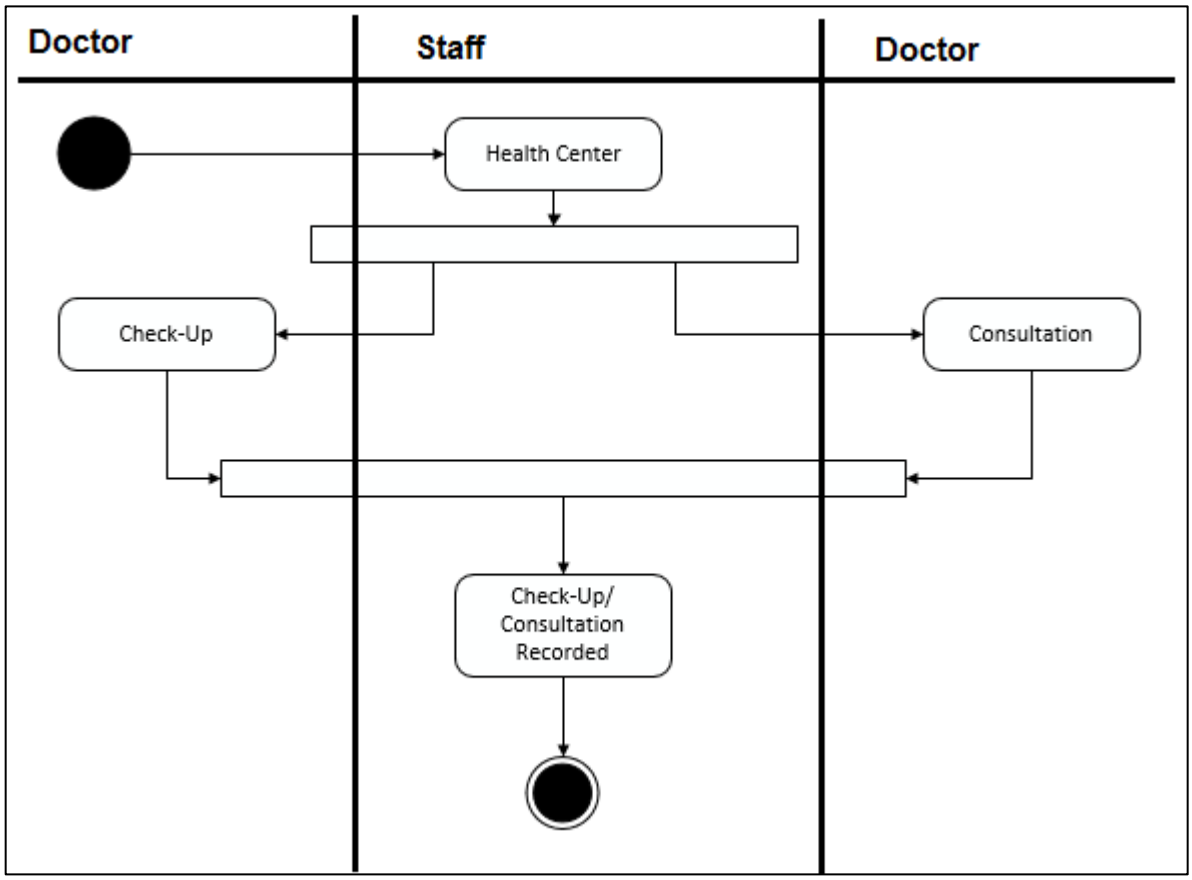

Figure 15: **Barangay Health Services and Certificate Issuance Management System (Use Case: UPDATE RESIDENTS' HEALTH INFORMATION)**

The doctor/nurse will exercise the check-up/consultation. After the consultation, the resident will present his/her barangay ID for recording purposes. Finally, his/ her record will be updated.

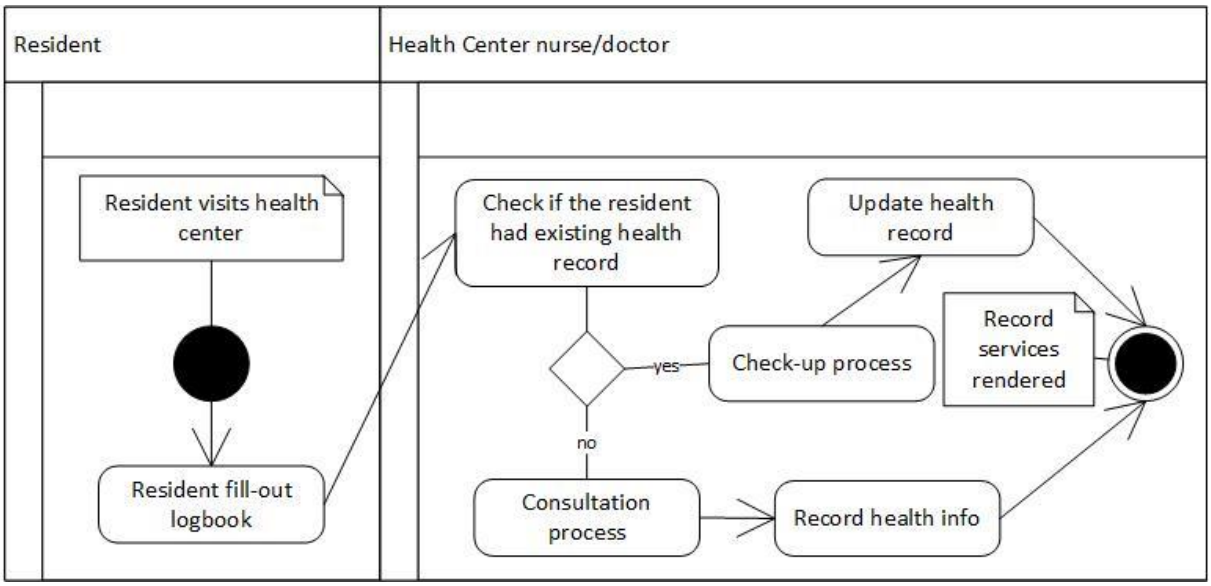

Figure 16: **Barangay Health Services and Certificate Issuance Management System (Use Case: CONSULTATION)**

The resident will visit the health center, fill-out the logbook. Then the nurse/doctor will check if the resident has existing health record, if yes, he/she will proceed to the check-up process, if no, he/she will proceed to the consultation process. And after, the process the nurse/doctor will record the whole info about the check-up or consultation, together with the services rendered by the health center.

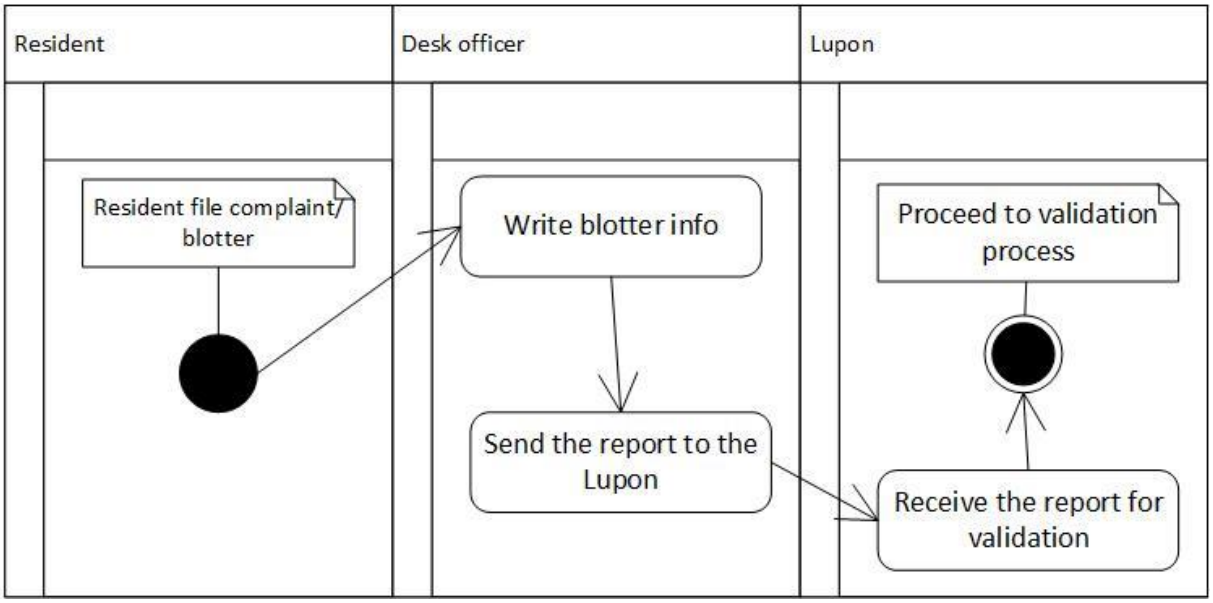

Figure 17: **Barangay Health Services and Certificate Issuance Management System (Use Case: SEND COMPLAINTS/BLOTTERS)**

The resident will file a blotter or complaint, then the desk officer will encode the blotter info, send it to the lupon. And after receiving the report, the lupon will now proceed to the validation process or the "Verify Complaints/Blotter" use case.

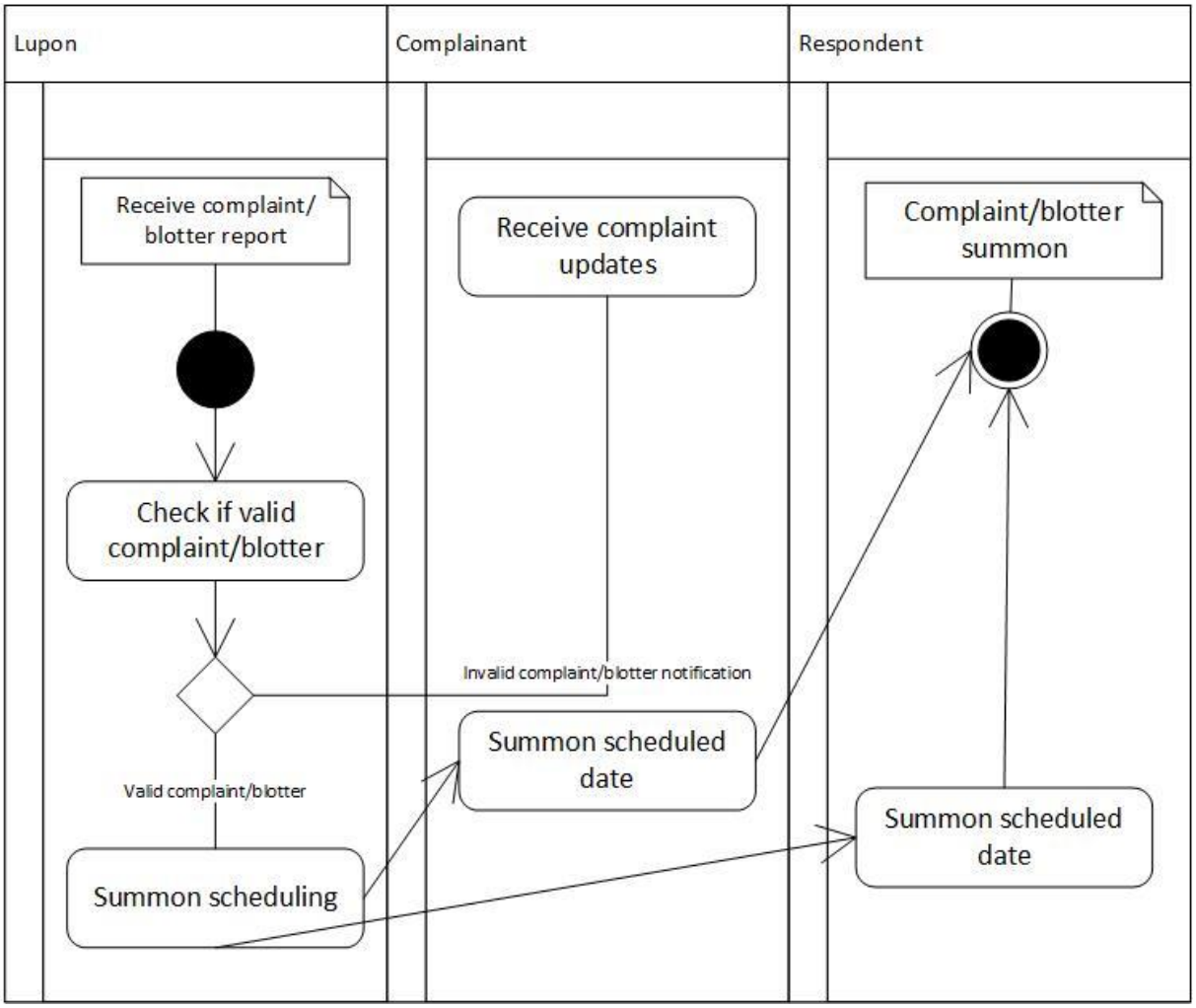

Figure 18: **Barangay Health Services and Certificate Issuance Management System (Use Case: VERIFY COMPLAINTS/BLOTTERS)**

After receiving the blotter/complaint report the lupon will check the validity of the report, if it is not valid the lupon will inform the complainant. And if it is valid the lupon will schedule the summon. Finally, after scheduling the summon, the lupon will notify the complainant and the respondent by giving them summon report.

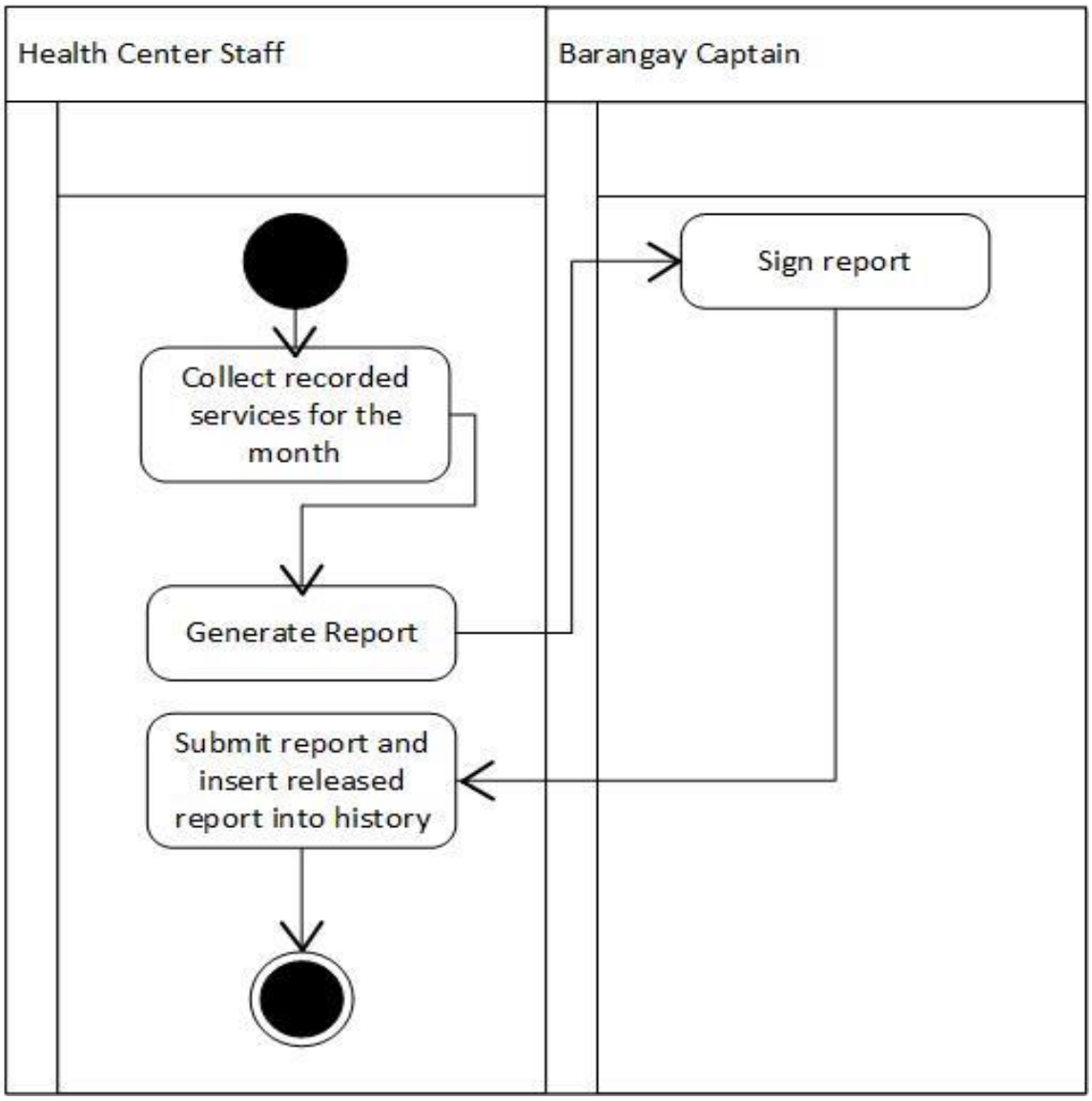

Figure 19: **Barangay Health Services and Certificate Issuance Management System (Use Case: GENERATE REPORTS OF SERVICES RENDERED)**

The health center staff will collect all of the recorded services for the month, then by using the system he/she will generate the report and submit it to the barangay captain for approval. And after signing it, the captain will return it to the staff, to put the generated report into released report history.

3.2.2. Entity Relationship Diagram

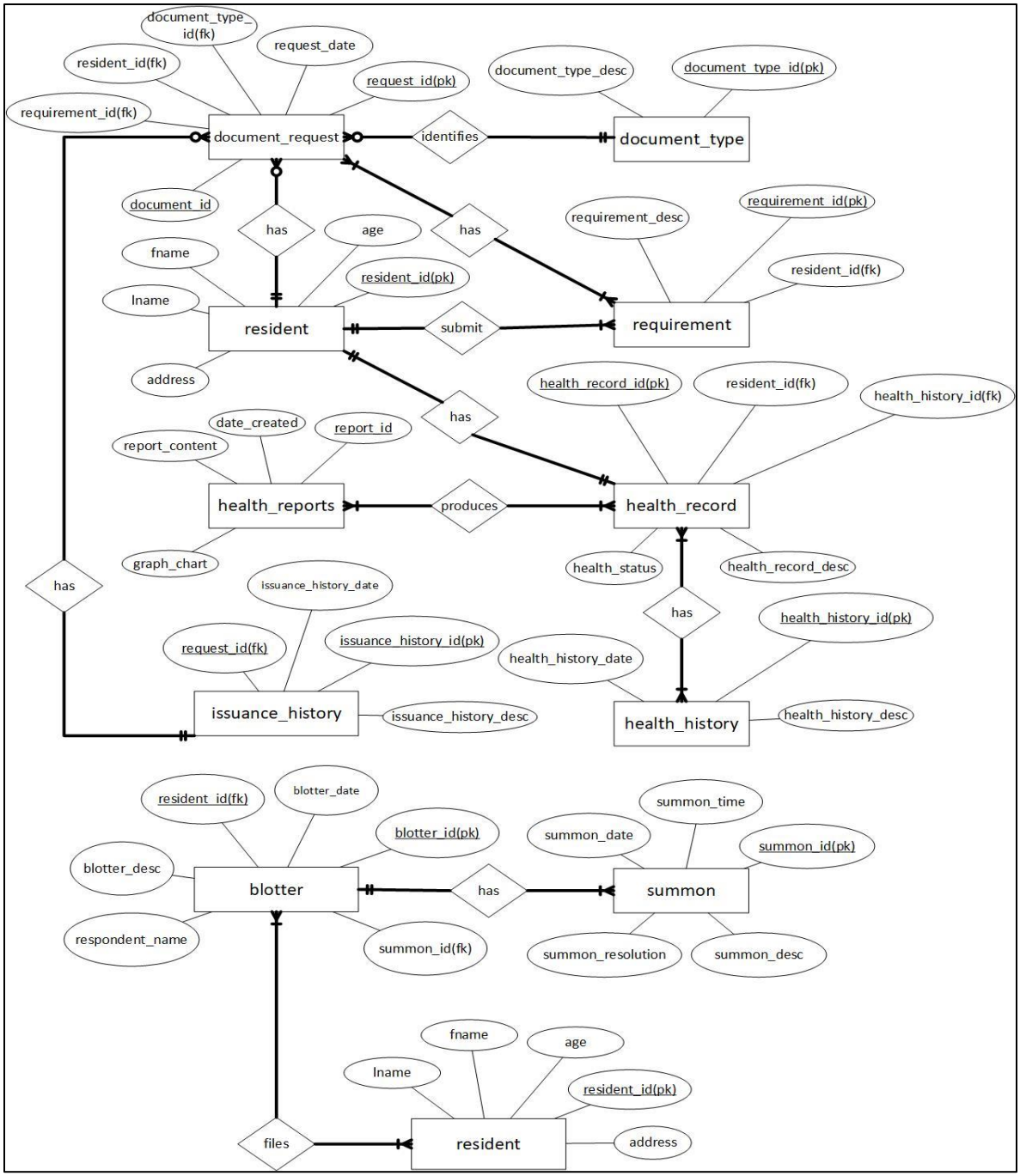

Figure 20: **Barangay Health Services and Certificate Issuance Management System (Entity Relationship Diagram)**

3.2.3. GUI Design

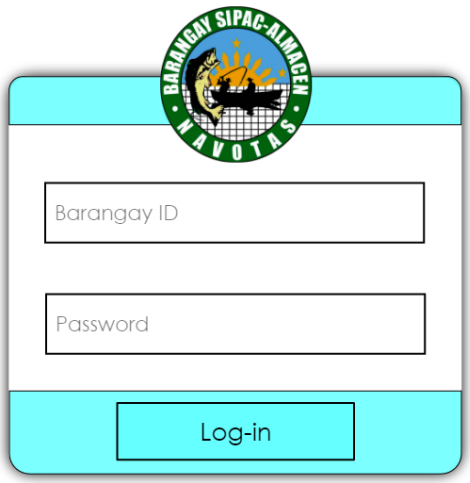

Figure 21: **Barangay Health Services and Certificate Issuance Management System (Login Page- Resident)**

This shows the user interface of the login modal for the residents of the barangay. It contains the logo of the Barangay Sipac-Almacen, they will provide their barangay ID and password enable to access their account.

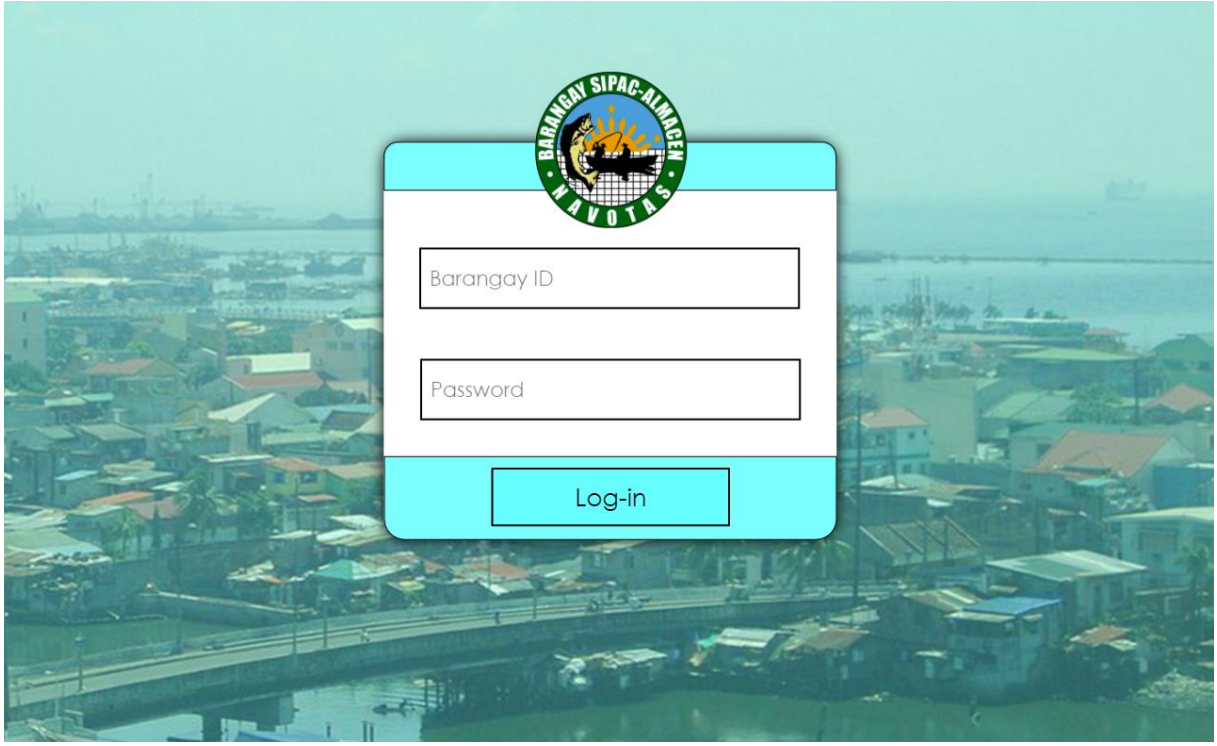

Figure 22: **Barangay Health Services and Certificate Issuance Management System (Login Page- Employee)**

This shows the user interface of the login page for the barangay employees. It contains the logo of the Barangay Sipac-Almacen, and with the background image of the Navaotas' City aerial view photo. They will provide their barangay ID, position and password enable to access their account.

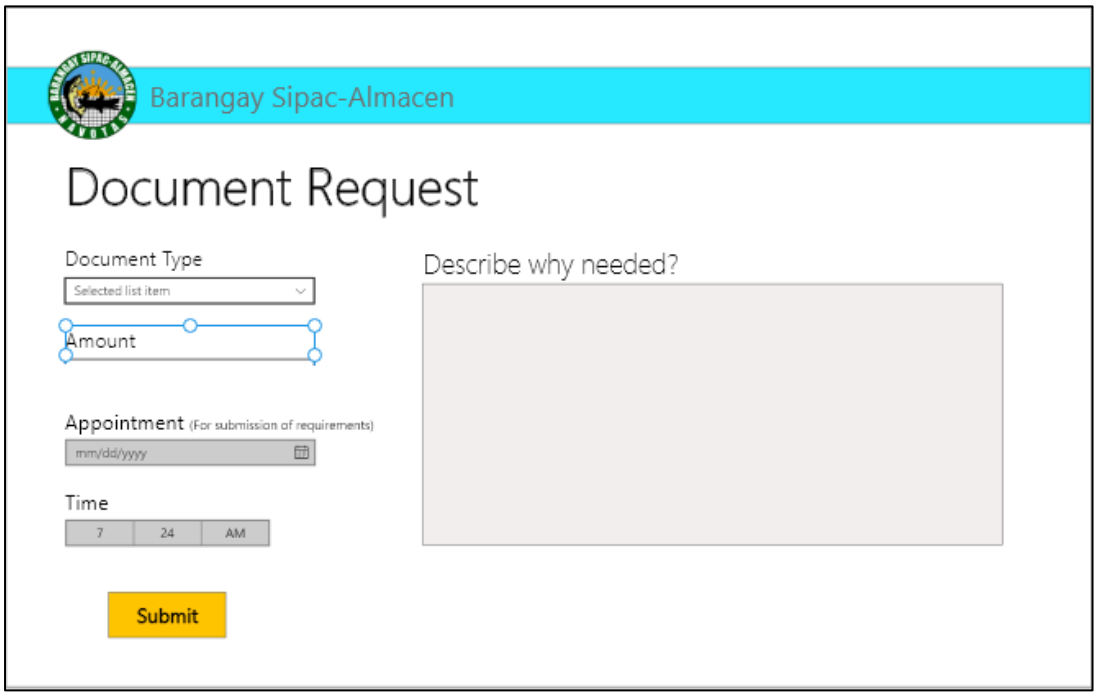

Figure 23: **Barangay Health Services and Certificate Issuance Management System (Document Request Page)**

This shows the user interface of the document request page for the residents of the barangay. At this page, the resident can file a request regarding the document they needed. They will provide the document type, appointment date for their requirement submission or interview, if needed and a detailed reason why they needed that certain document.

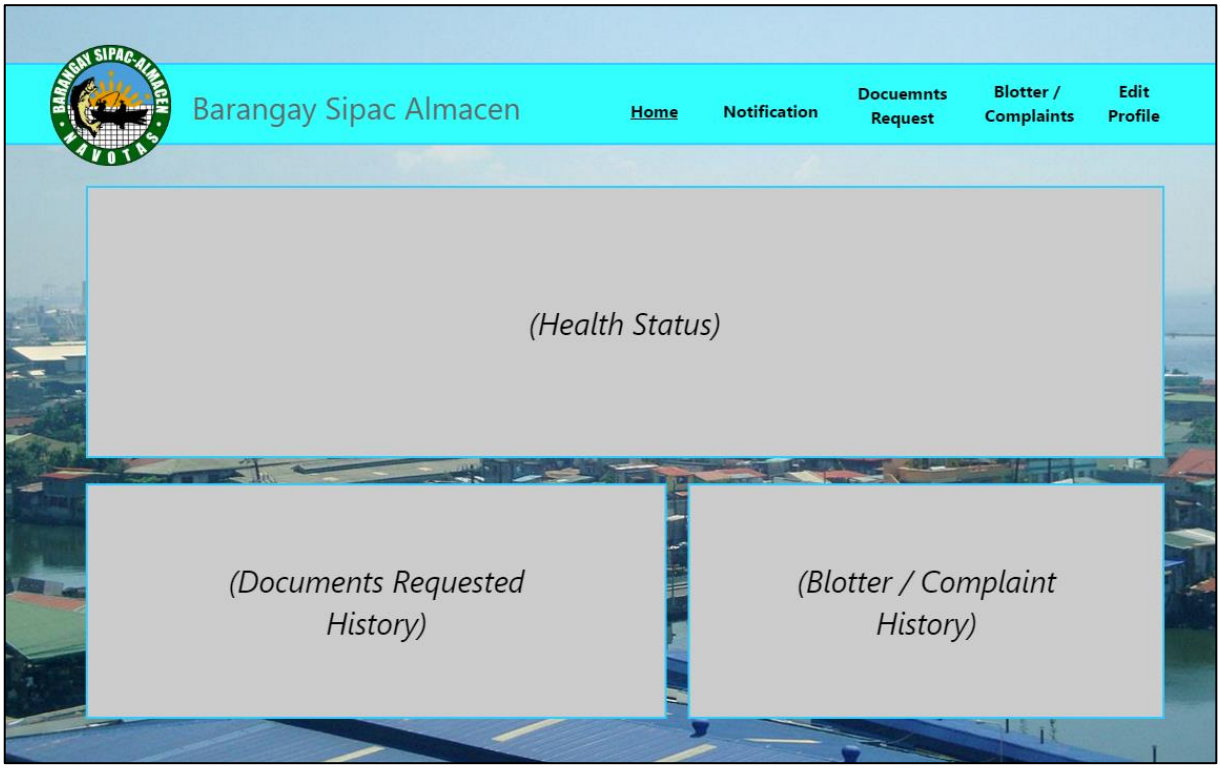

Figure 24: **Barangay Health Services and Certificate Issuance Management System (Resident Home Page)**

This is the home page of the residents' account. You can see here the Health Status of the logged resident where you will know how the barangay is doing regarding health issues and also, you can see here the History of Documents requested by the residents to track who currently appealed documents. Lastly, you can see here the History of the logged residents' blotter/complaint records. You will be put here if you click the "Home" button at the top middle area.

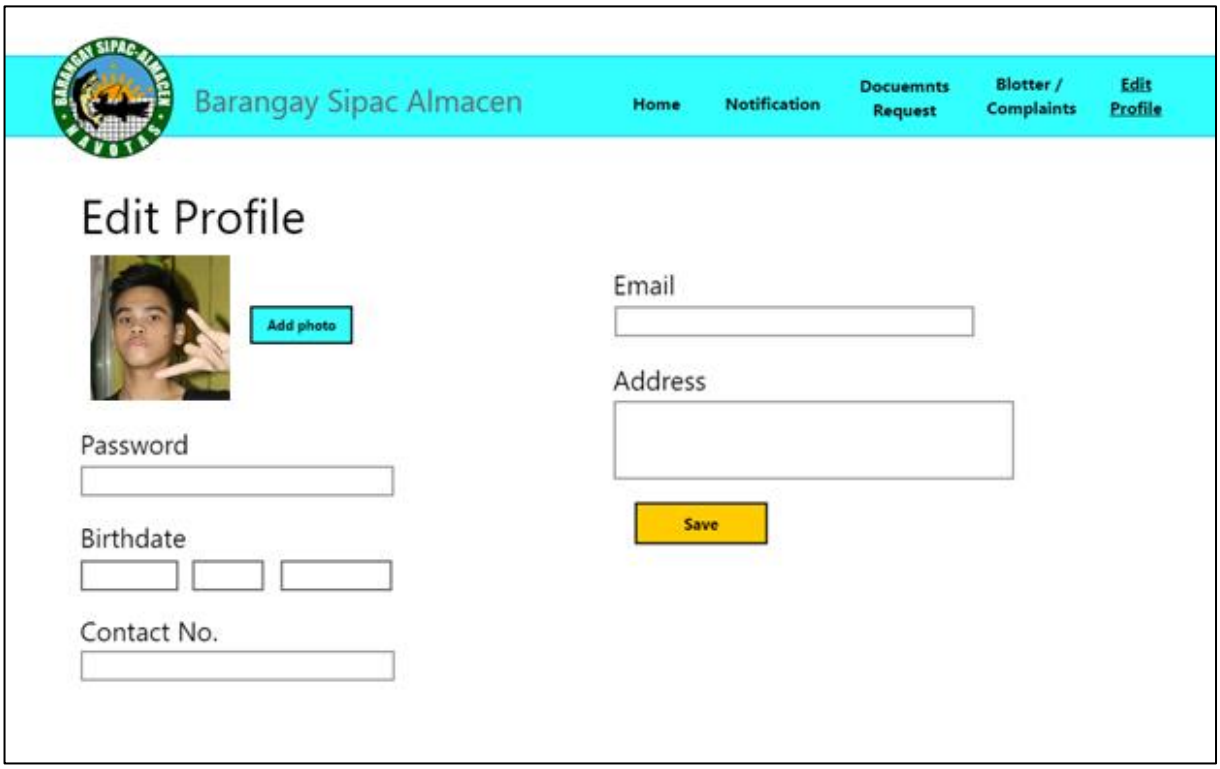

Figure 25: **Barangay Health Services and Certificate Issuance Management System (Edit Profile Page)**

In the Edit Profile section, you will see all personal information that a admin or user can change. You can be put in this section if you click the "Edit Profile" button at the top right corner.

Figure 26: **Barangay Health Services and Certificate Issuance Management System (Blotter Filing Page for Resident)**

If you click the blotter button at the top left corner, you will see all the pending blotters that has been filed by the residents. Also, if you click one of the pending blotters that has been filed, you will see the full details of the resident's blotter. Also, this page can be used by the logged residents when they want to file a complaint.

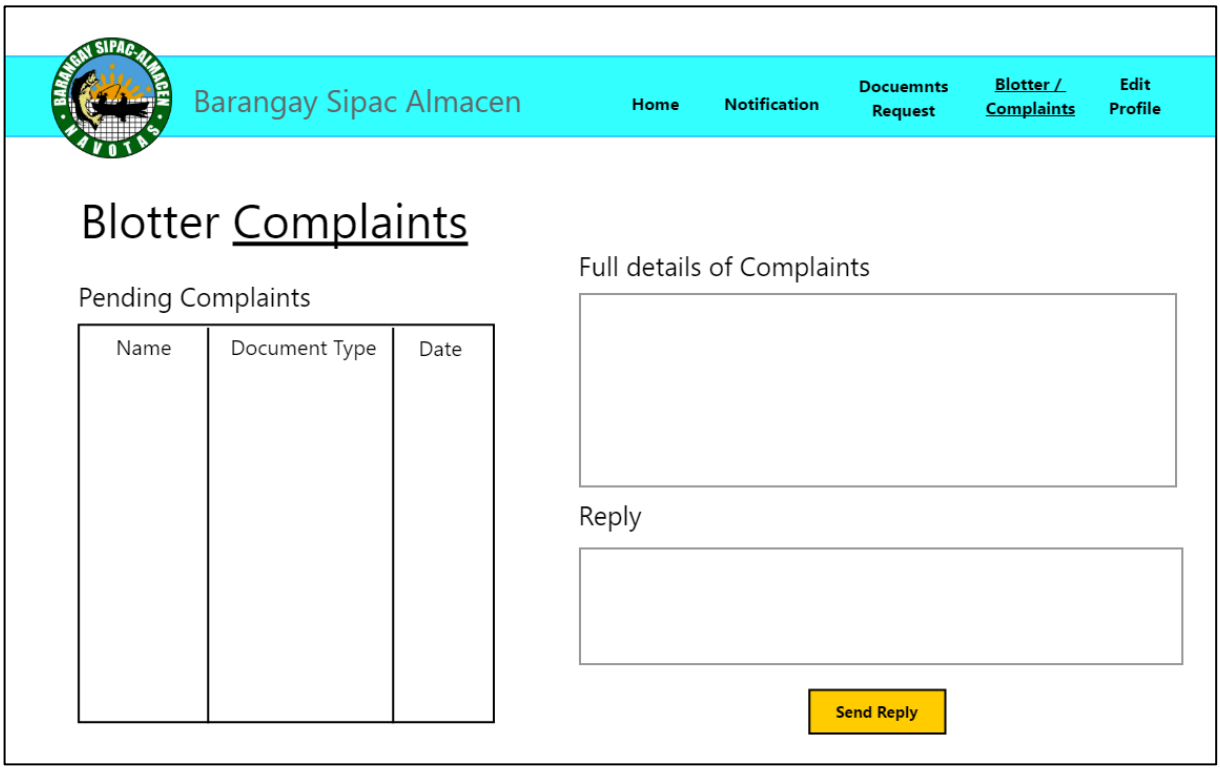

Figure 27: **Barangay Health Services and Certificate Issuance Management System (Complaint Filing Page for Resident)**

If you click the complaint button at the top left corner, you will see all the pending complaints that has been filed by the residents. Also, if you click one of the pending complaints that has been filed, you will see the full details of the resident's complaint.

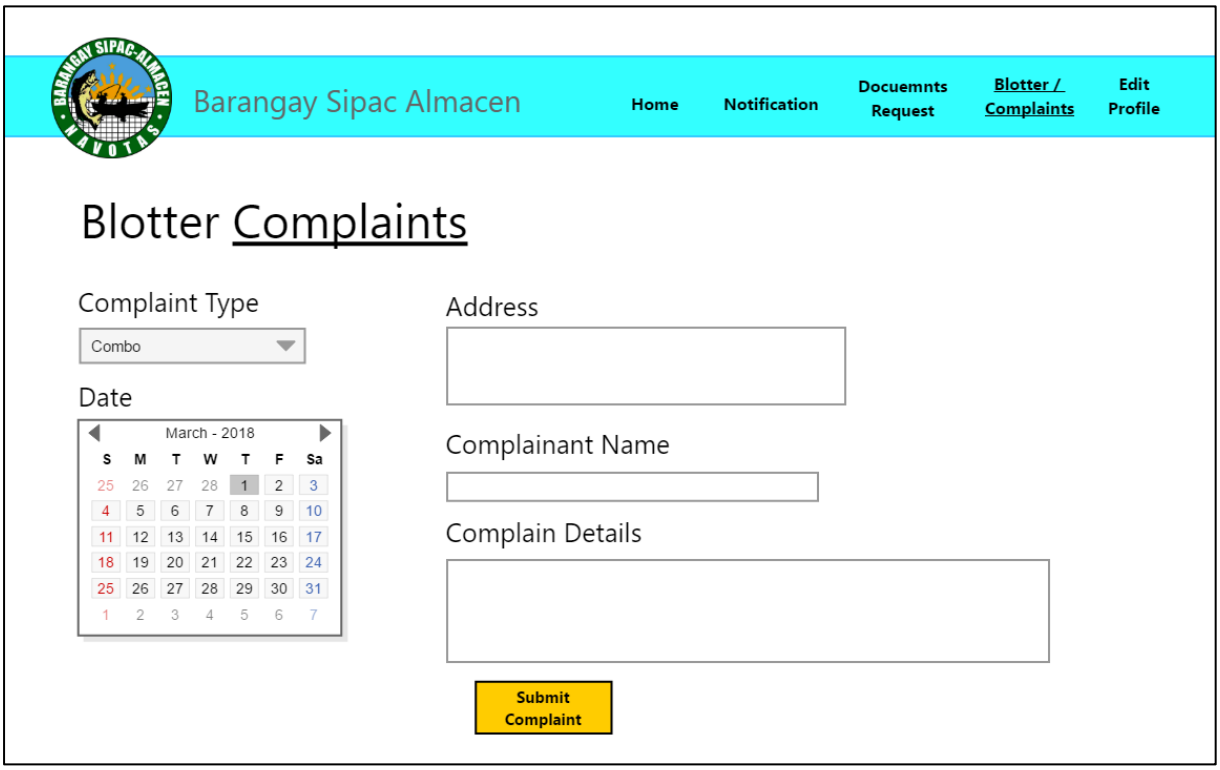

Figure 28: **Barangay Health Services and Certificate Issuance Management System (Blotter and Complaint Filing Next Page for Resident)**

If you click the complaint button at the top left corner, you will see all the information that is needed for a resident to complain.

Figure 29: **Barangay Health Services and Certificate Issuance Management System (Document Request and Issuance Dashboard)**

This page displays the current statistics about the document and issuance subsystem, it shows the number of residents, requests, pending requests and approved requests.

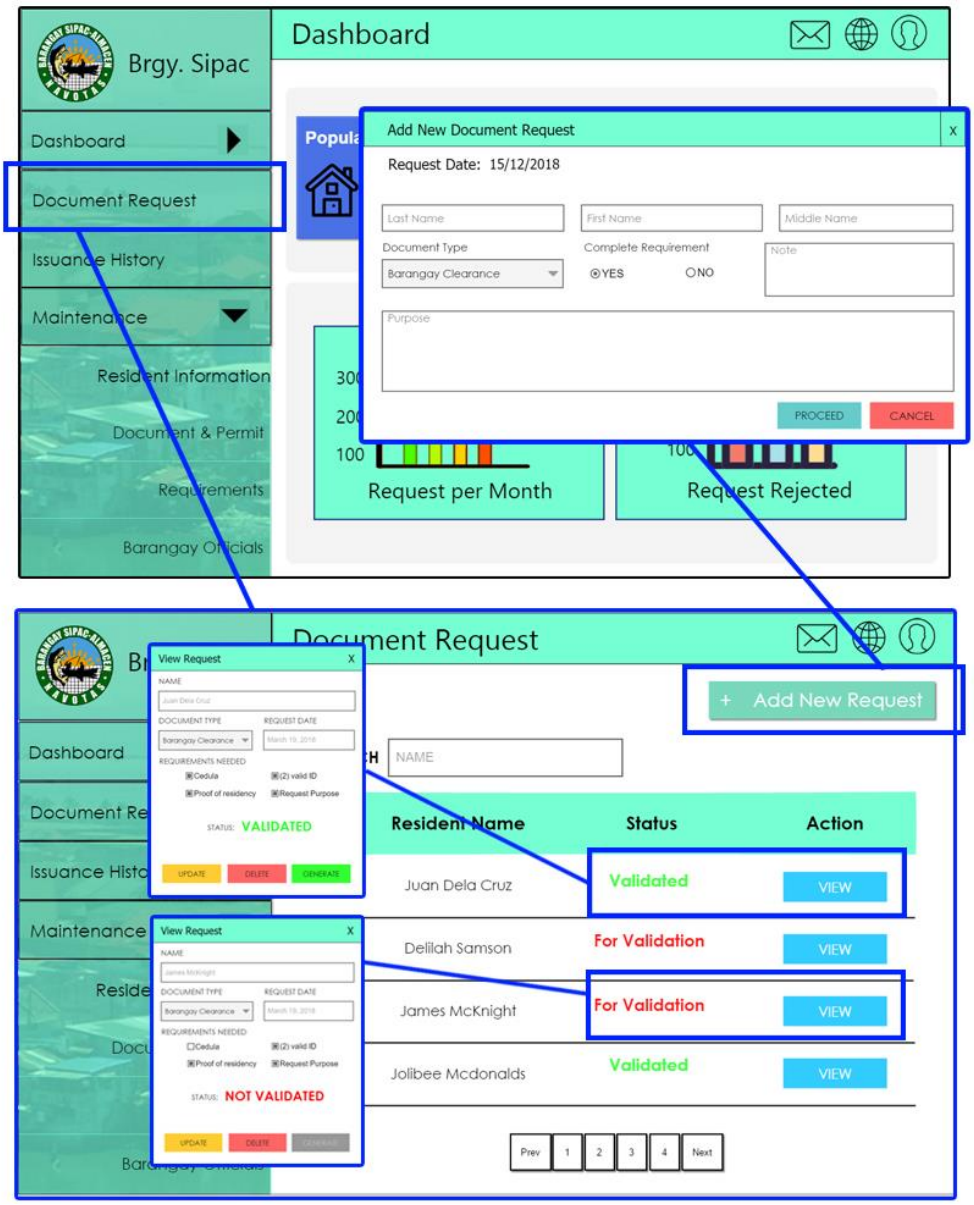

Figure 30: **Barangay Health Services and Certificate Issuance Management System (Document Request Page)**

At this page, the admin can add new request by clicking the add new request button. And if the request is valid and verified the admin can also use this page to generate the resident's requested document, after the generation of the document's preview, the admin can now decide if he/she wants to print the document generated.

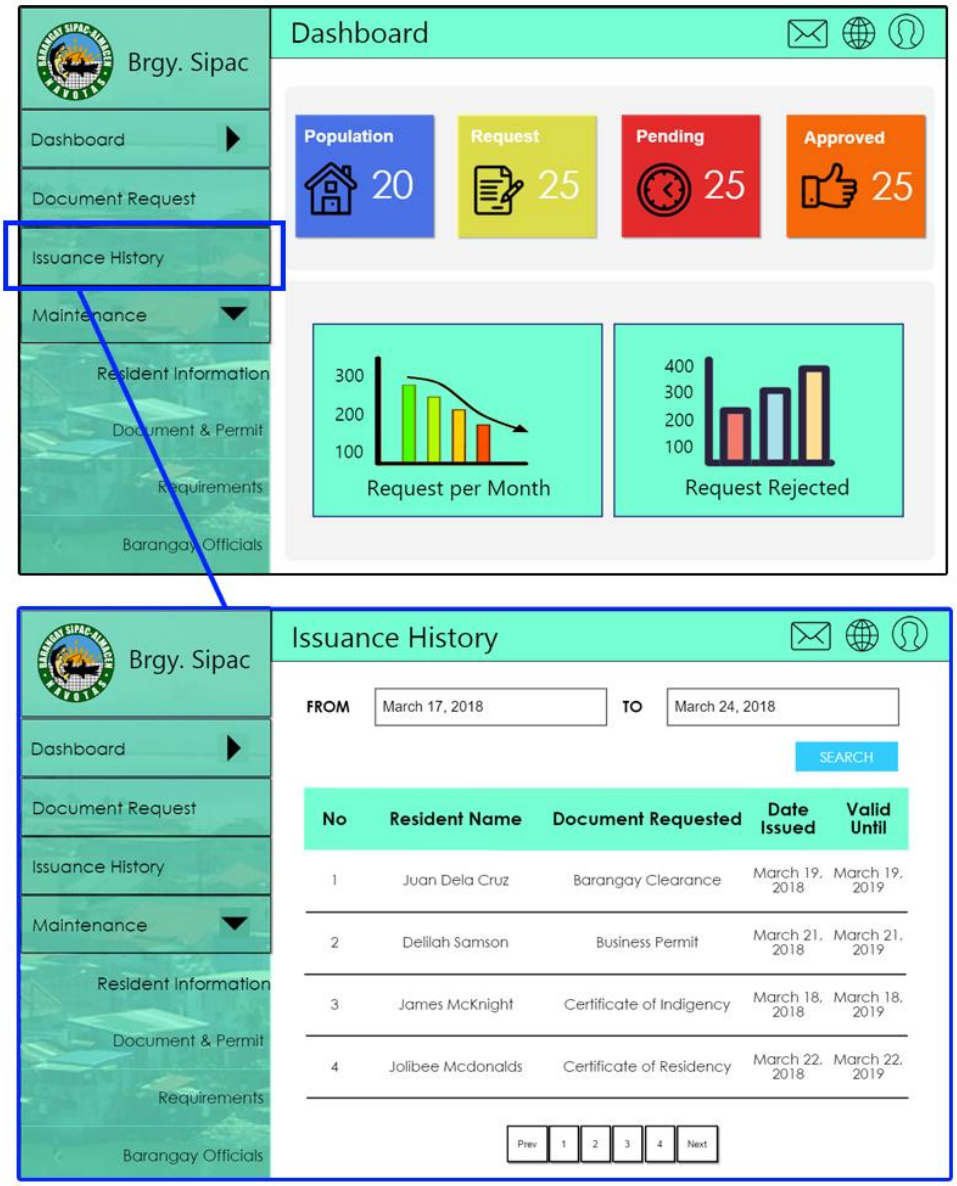

Figure 31: **Barangay Health Services and Certificate Issuance Management System (Issuance History Page)**

At this page, the admin sees the history of document issuance, together with the resident name who requested the document, the type of document requested date of issuance and documents validity date.

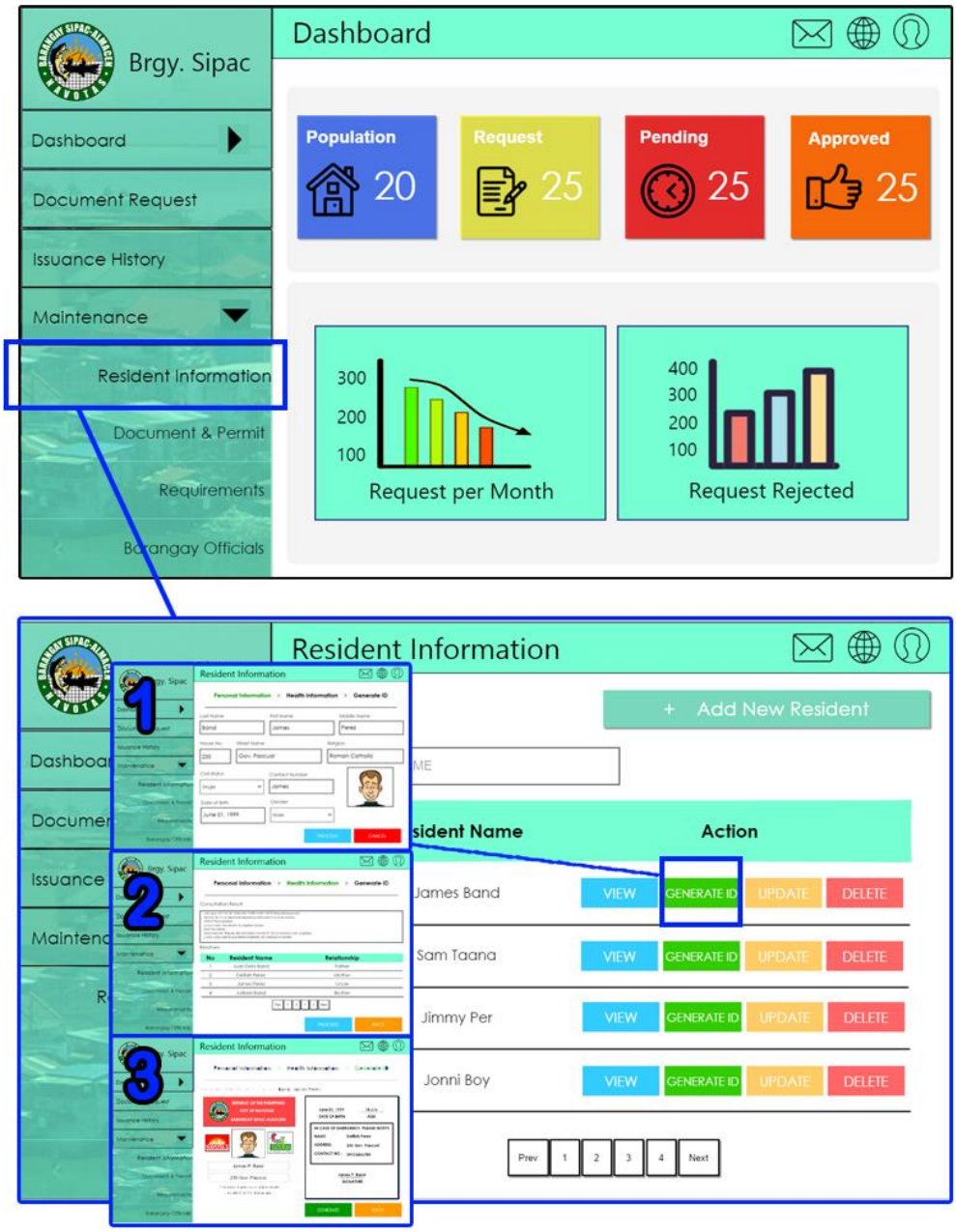

Figure 32: **Barangay Health Services and Certificate Issuance Management System (Resident Information Page)**

This page is use to add new resident, and generation of identification card of a chosen resident.

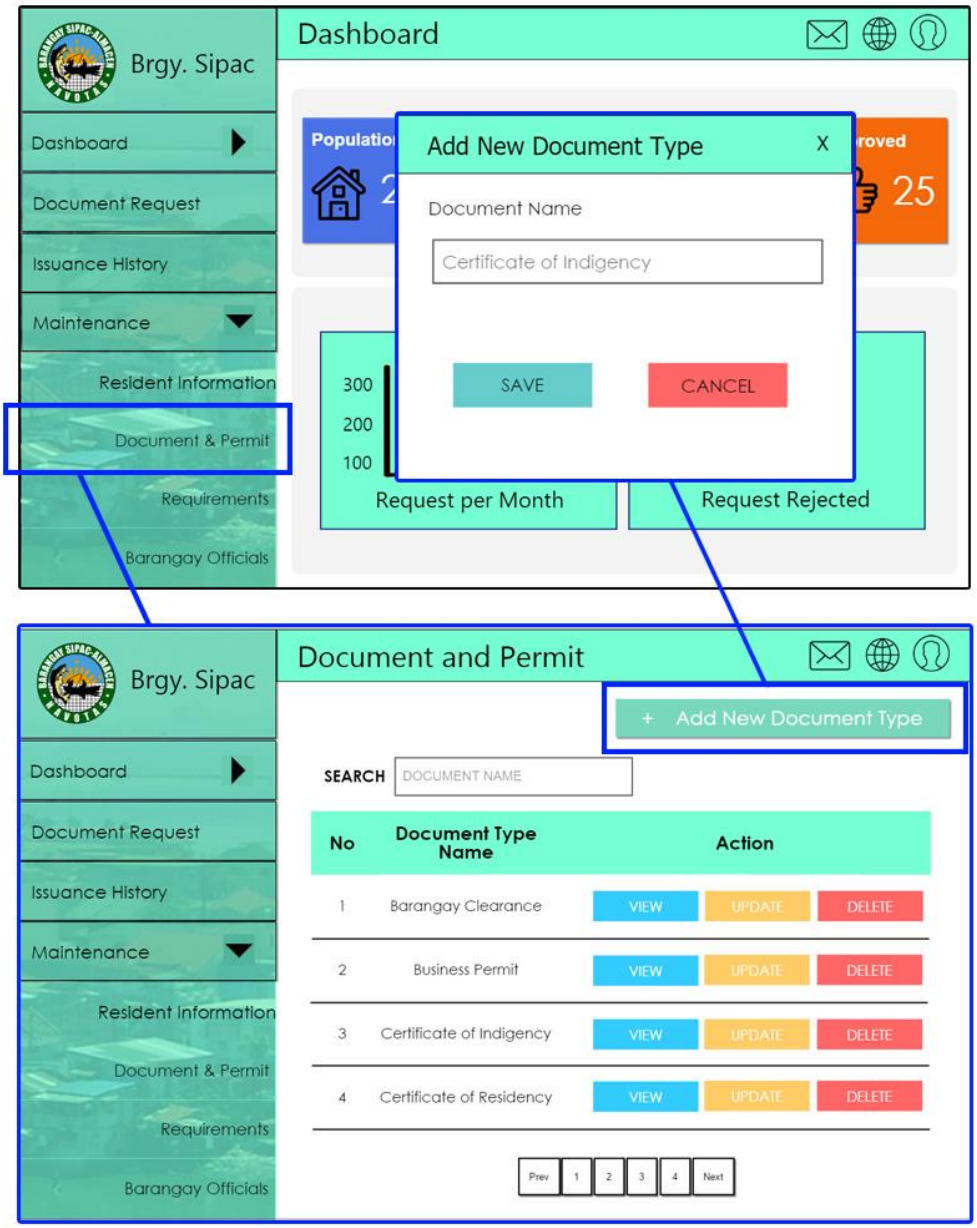

Figure 33: **Barangay Health Services and Certificate Issuance Management System (Document and Permit Page)**

This page is use to add new document type that can be able to generate by the system, it can be done by clicking the add new document type, this page also displays the list of created document type.

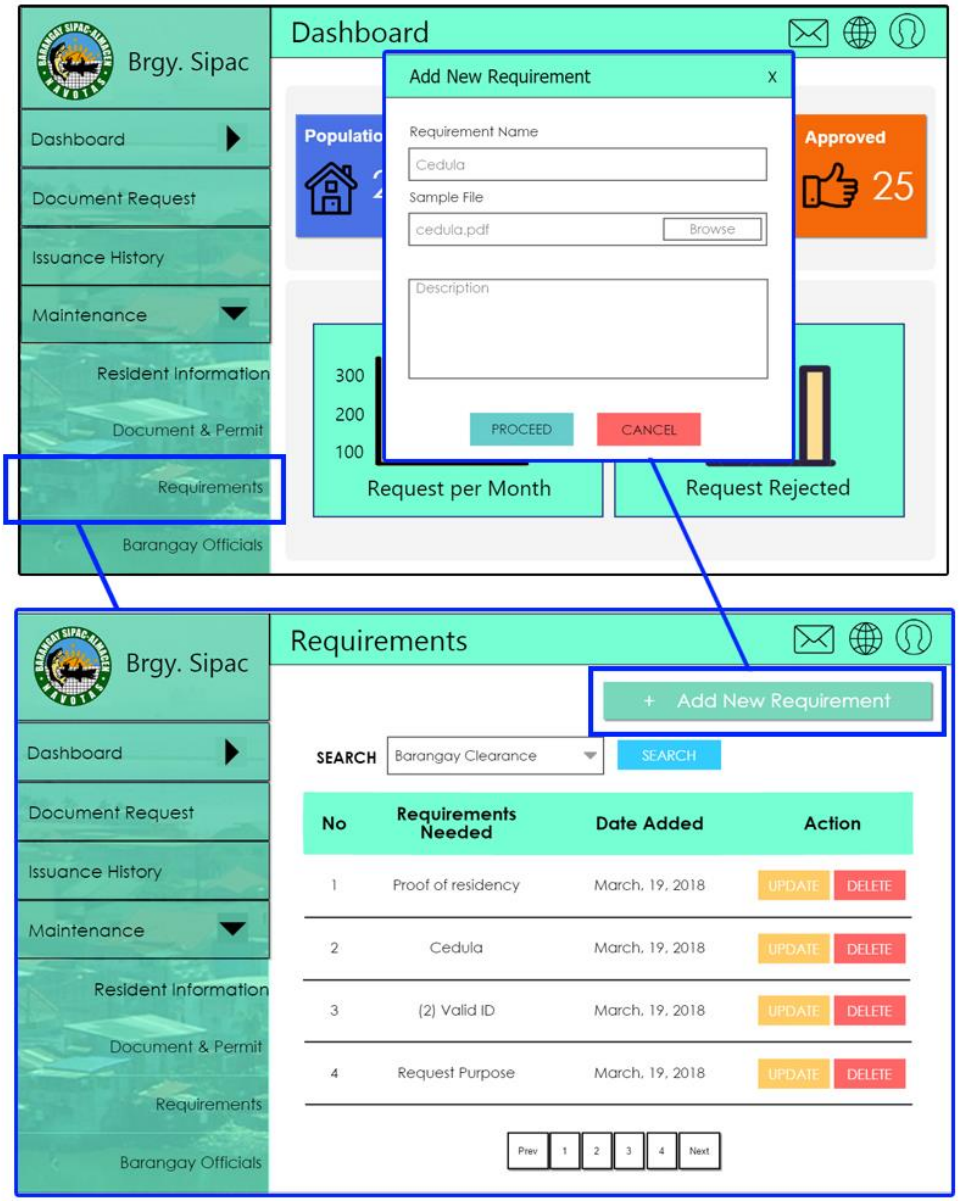

Figure 34: **Barangay Health Services and Certificate Issuance Management System (Requirement Page)**

This page is use to add needed requirement to a certain type of document, first by choosing the document type, the system will display all of the present requirements listed, and by clicking add new requirement the admin can now add another requirement to that specific document type.

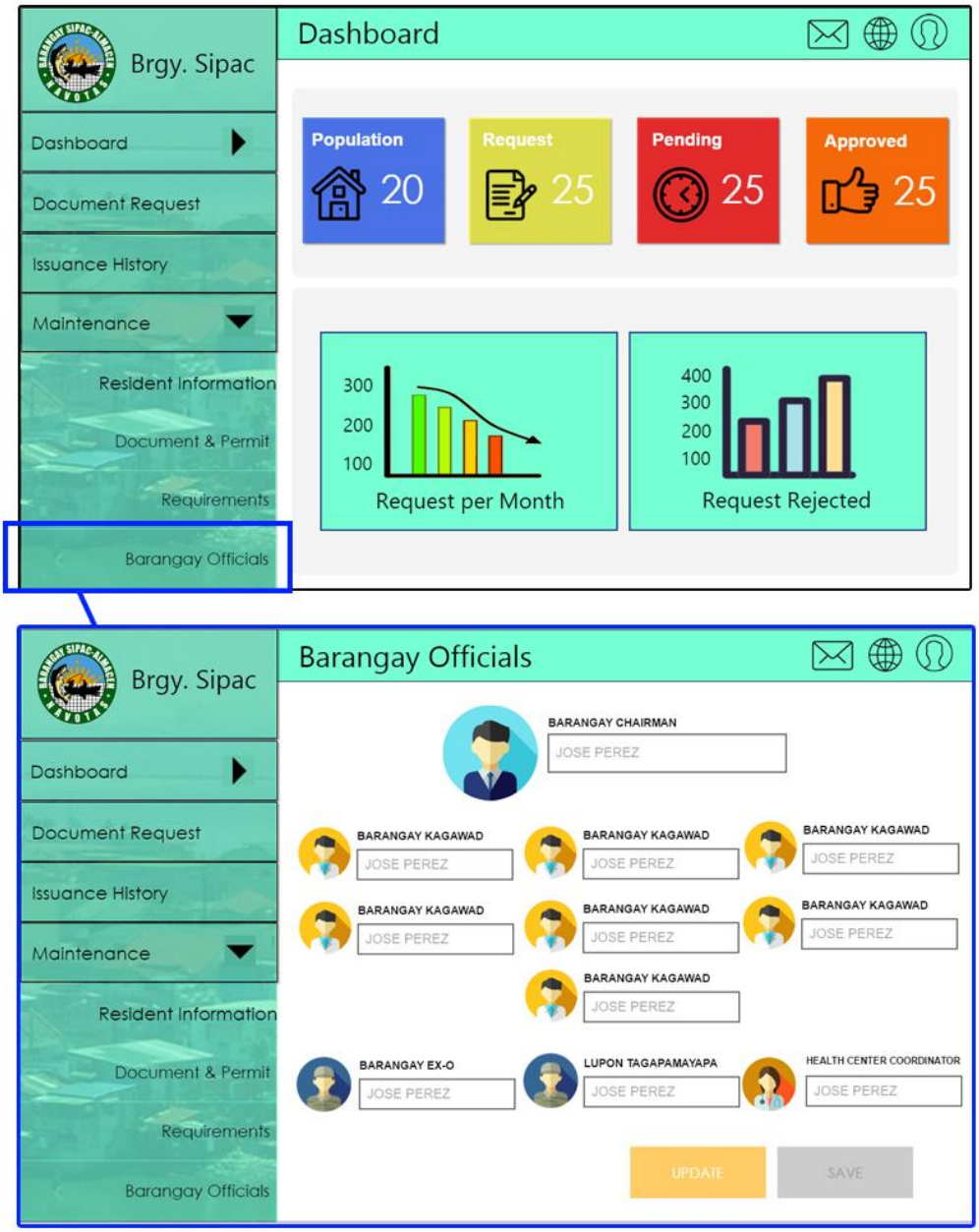

Figure 35: **Barangay Health Services and Certificate Issuance Management System (Barangay Officials Page)**

This page is used when the admin wants to update the current functionaries, to be used in document issuance.

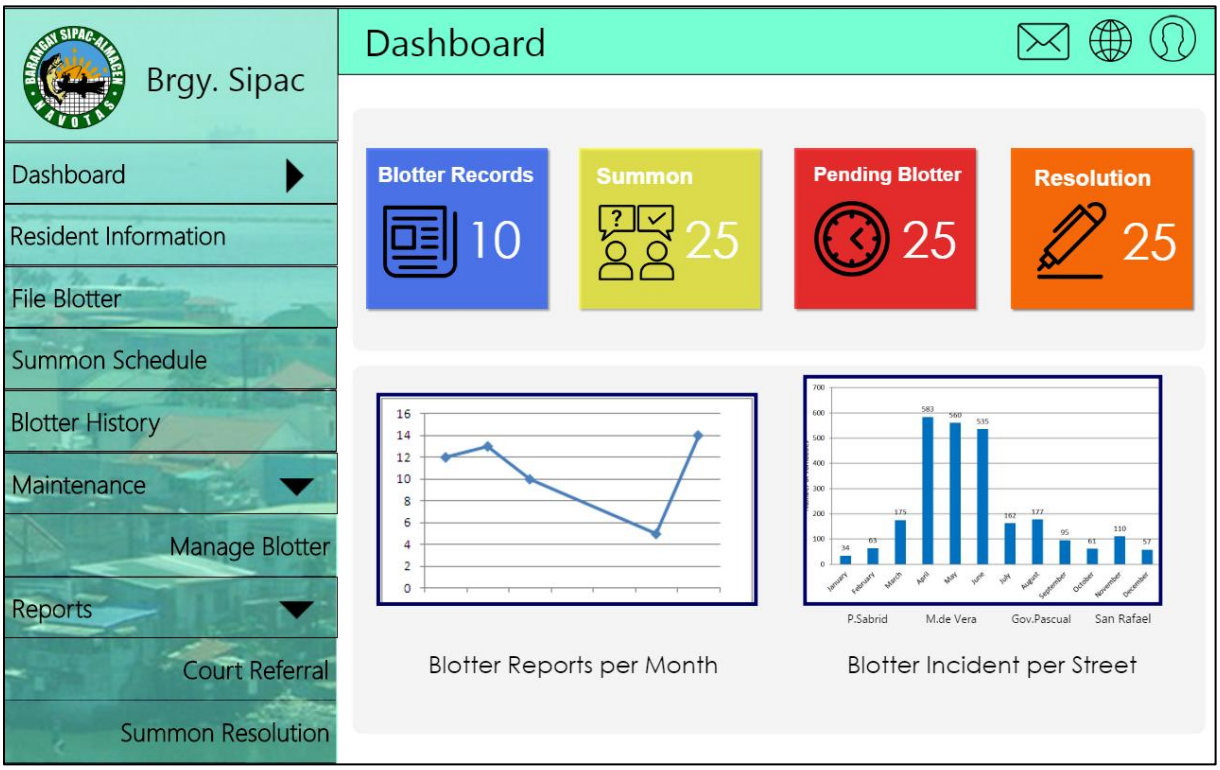

Figure 36: **Barangay Health Services and Certificate Issuance Management System (Blotter Management Dashboard)**

This page displays the blotter management dashboard, it contains the count of blotter records, summon scheduled, pending blotter and blotter resolution.

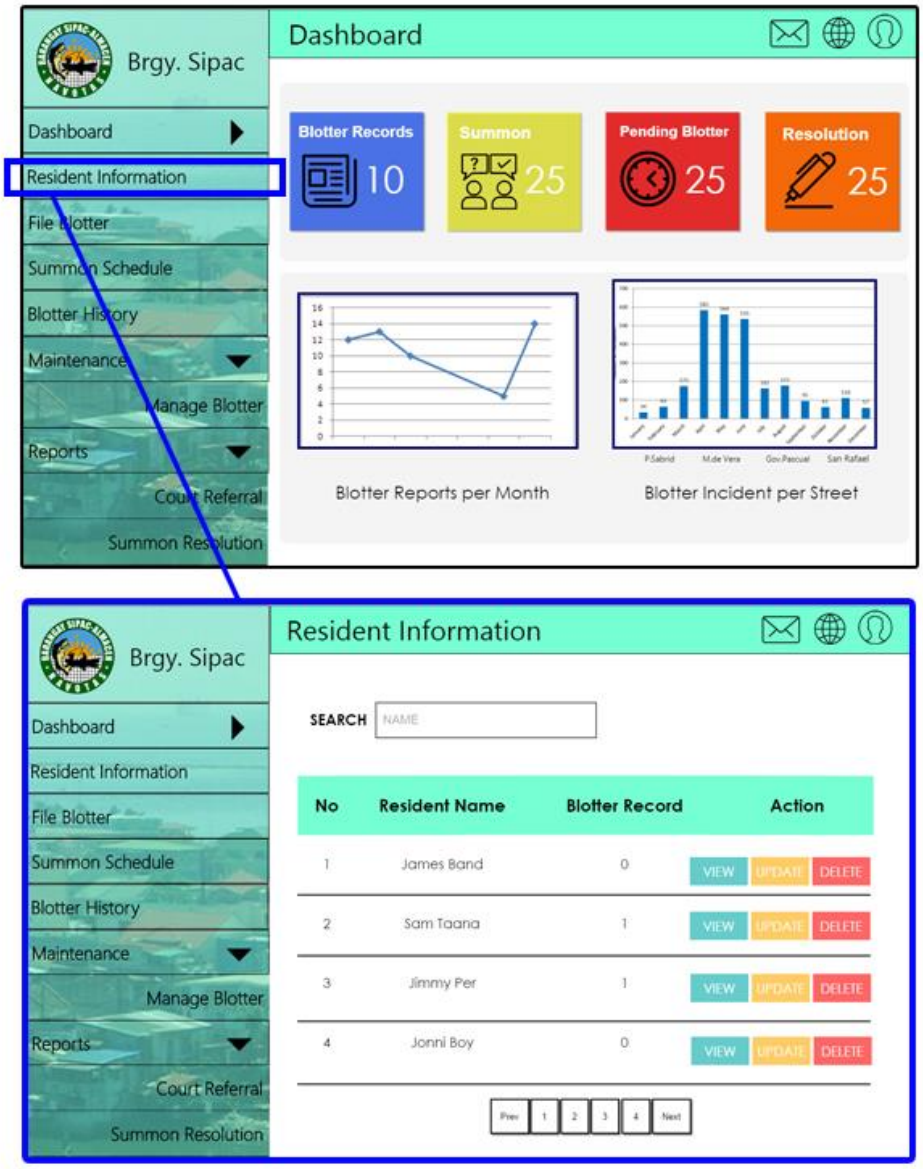

Figure 37: **Barangay Health Services and Certificate Issuance Management System (Resident Information Page)**

By clicking the resident information on the side menu, it will display this page. This page list all of the registered residents, this page can be used to retrieve residents' information. At this page also, the admin can update resident's info or put it into archive.

Figure 38: **Barangay Health Services and Certificate Issuance Management System (File Blotter Page)**

By clicking the file blotter on side menu, it displays the page where the admin can file or record a blotter report, it contains the complainant name, respondent name, witness name, incident place, incident details, summon date and time.

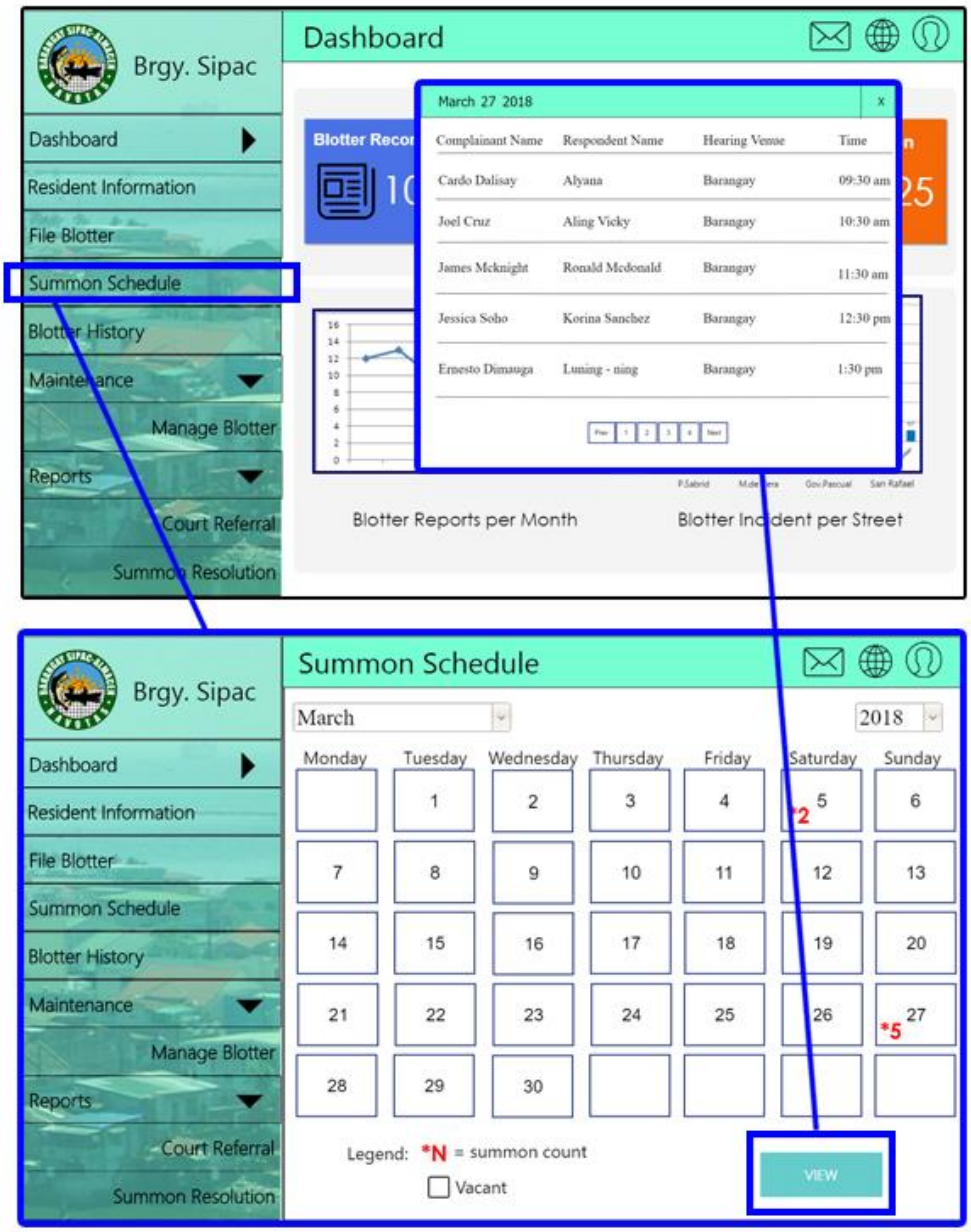

Figure 39: **Barangay Health Services and Certificate Issuance Management System (Summon Schedule Page)**

This page displays the scheduled summon per month, and by clicking date, the system will display all of the summon at that specific date.

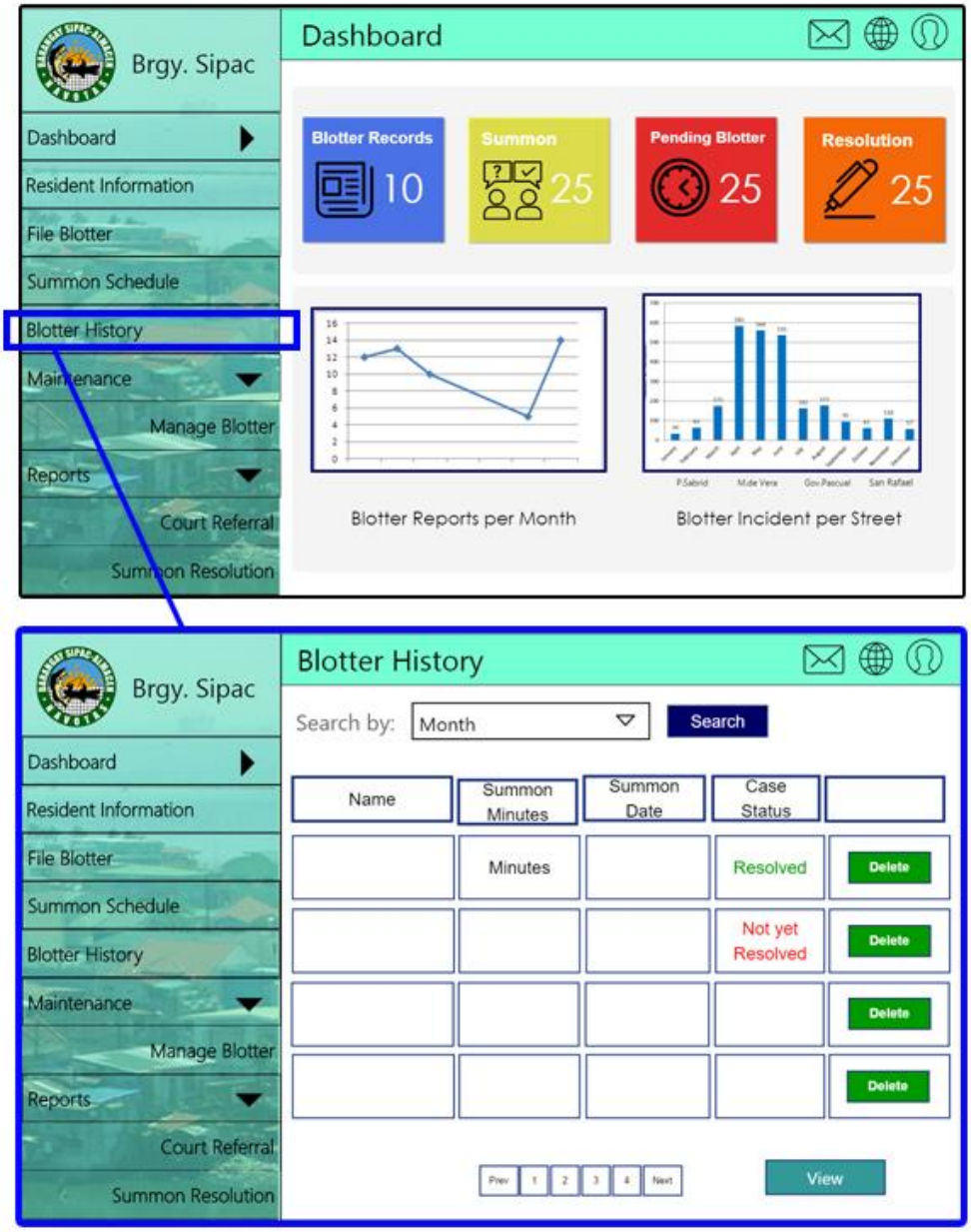

Figure 40: **Barangay Health Services and Certificate Issuance Management System (Blotter History Page)**

This page displays all of the past blotter reports. It contains the summon minutes, summon date, case status, if its resolved or not and also the admin can archive a certain blotter history.

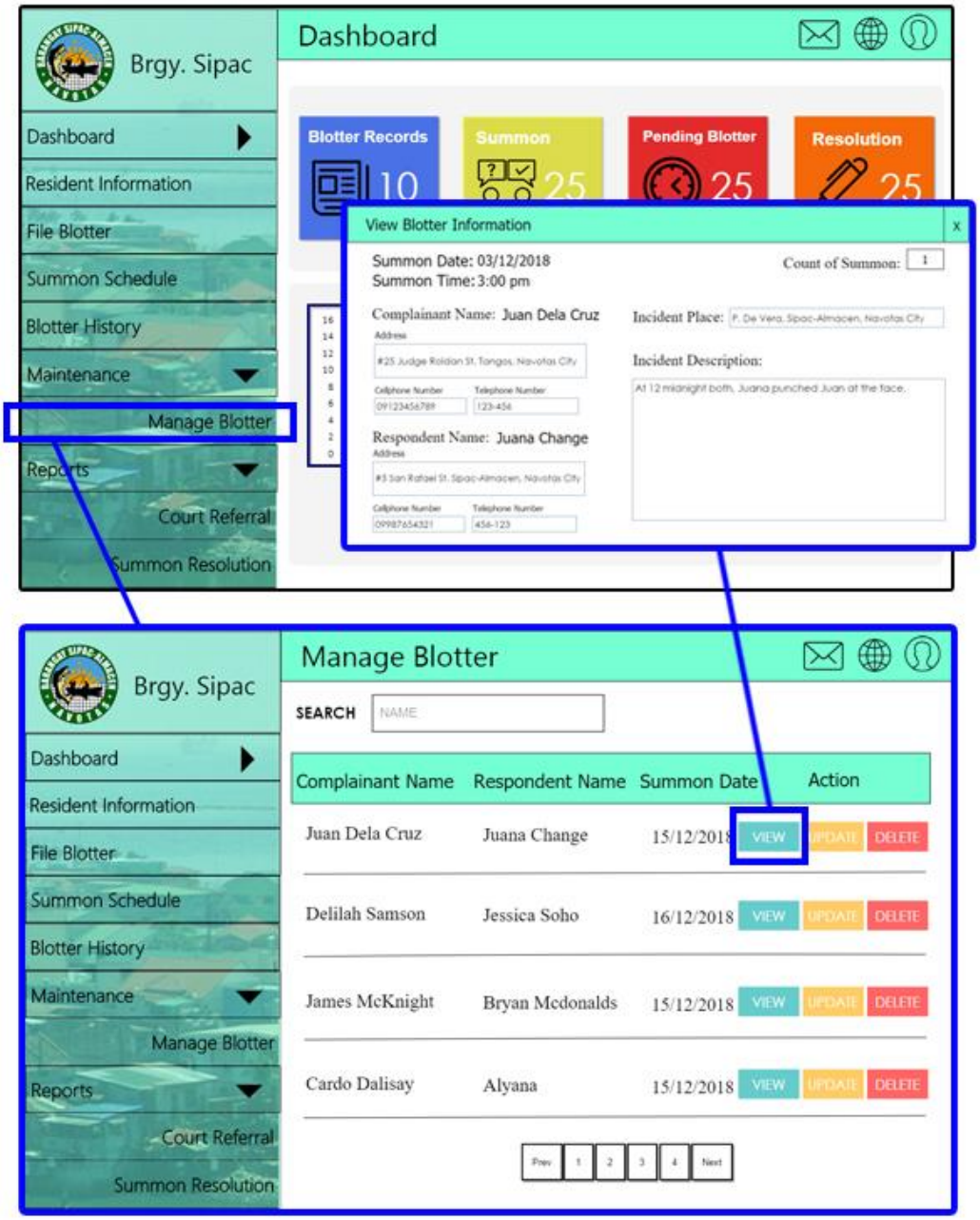

Figure 41: **Barangay Health Services and Certificate Issuance Management System (Manage Blotter Page)**

This page is can be used by the admin when he wants to update or archive a specific blotter reports. The admin can also filter those blotter reports per month.

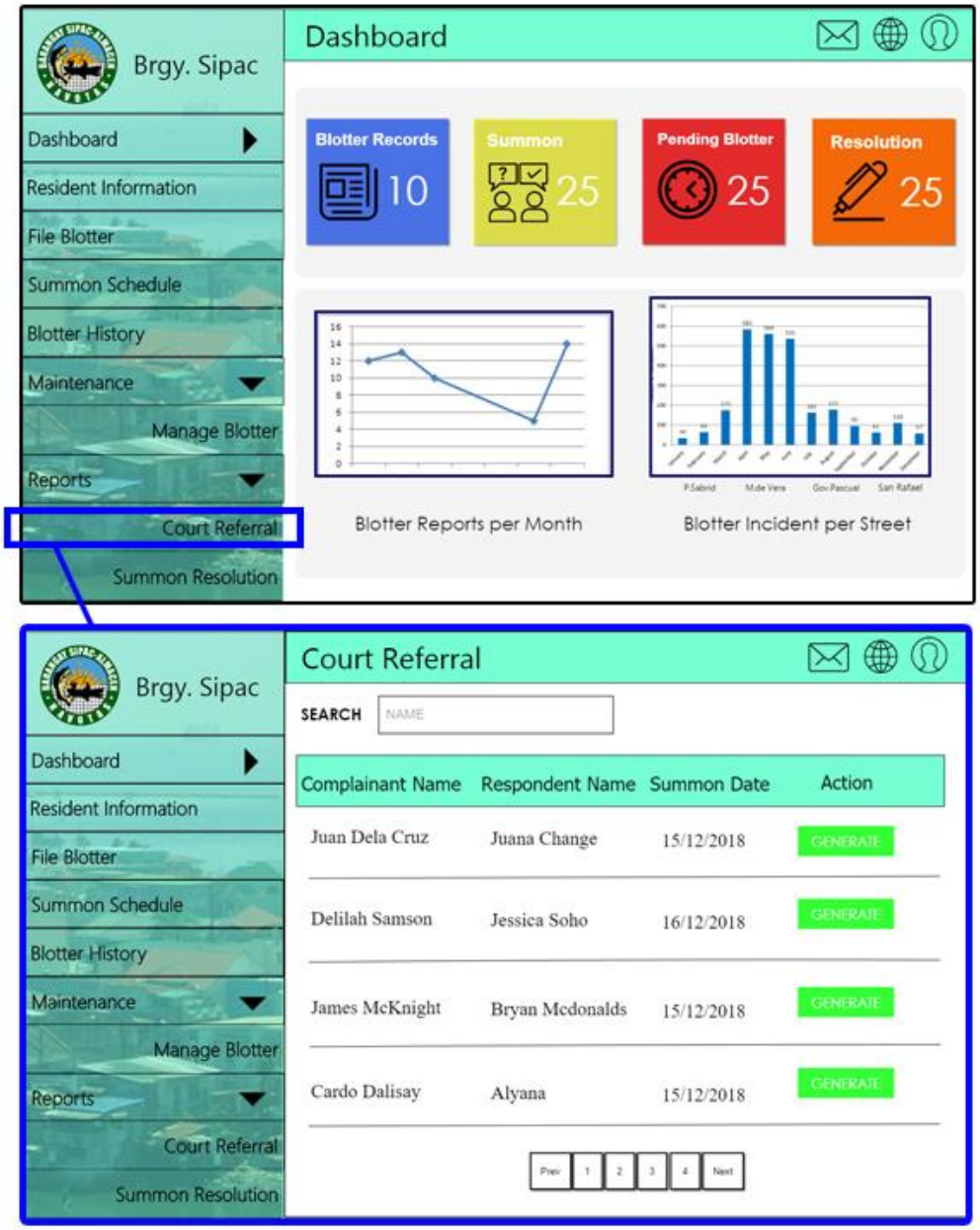

Figure 42: **Barangay Health Services and Certificate Issuance Management System (Court Referral Page)**

This can be used by the admin, when a certain blotter report is needed to be resolved by a much-powered authority like the police or the court. This page generates the report needed to submit to those authorities in order to process the blotter report.

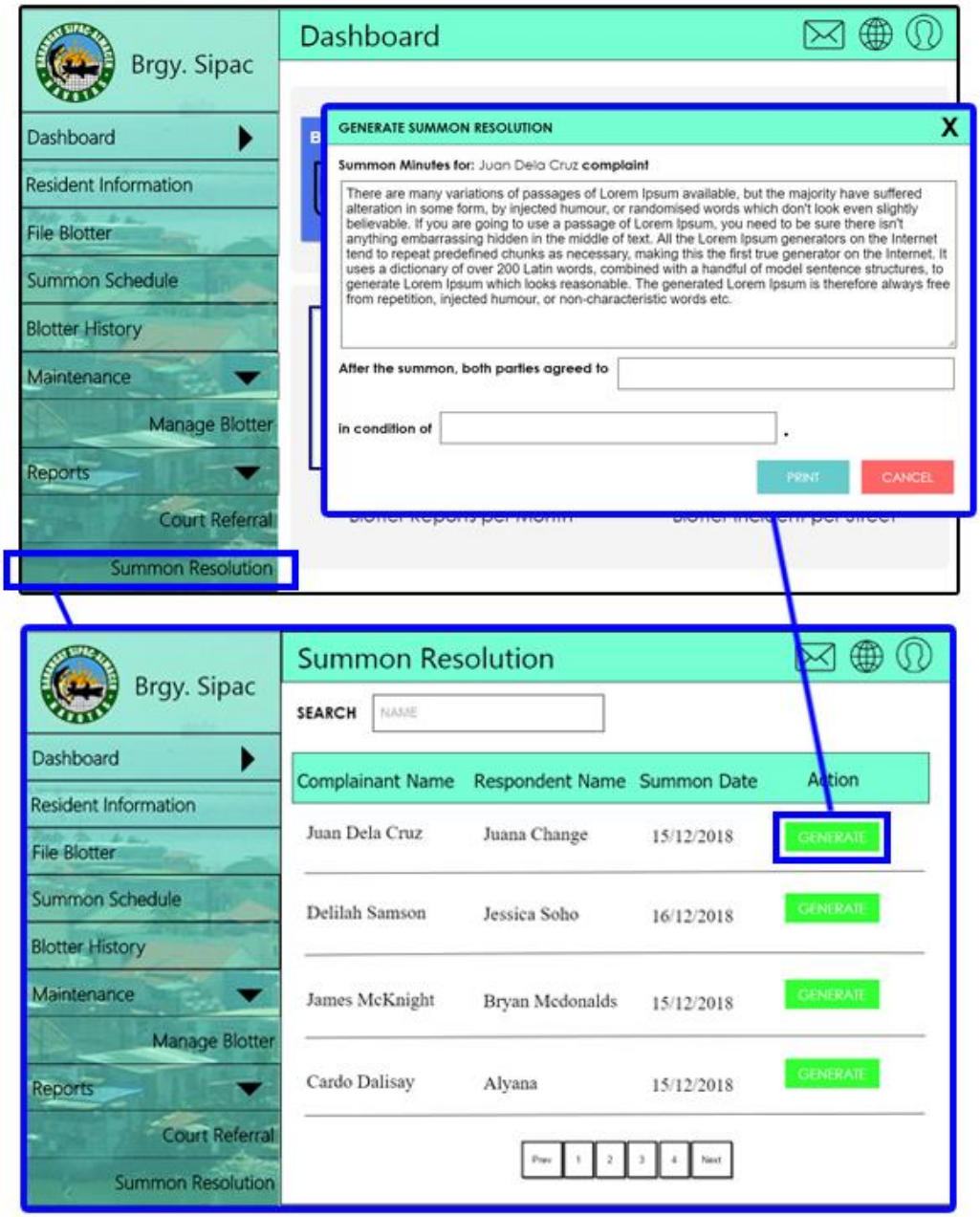

Figure 43: **Barangay Health Services and Certificate Issuance Management System (Summon Resolution Page)**

This page can be used to encode summon minutes, together with the resolution that is approved by both parties in a summon.

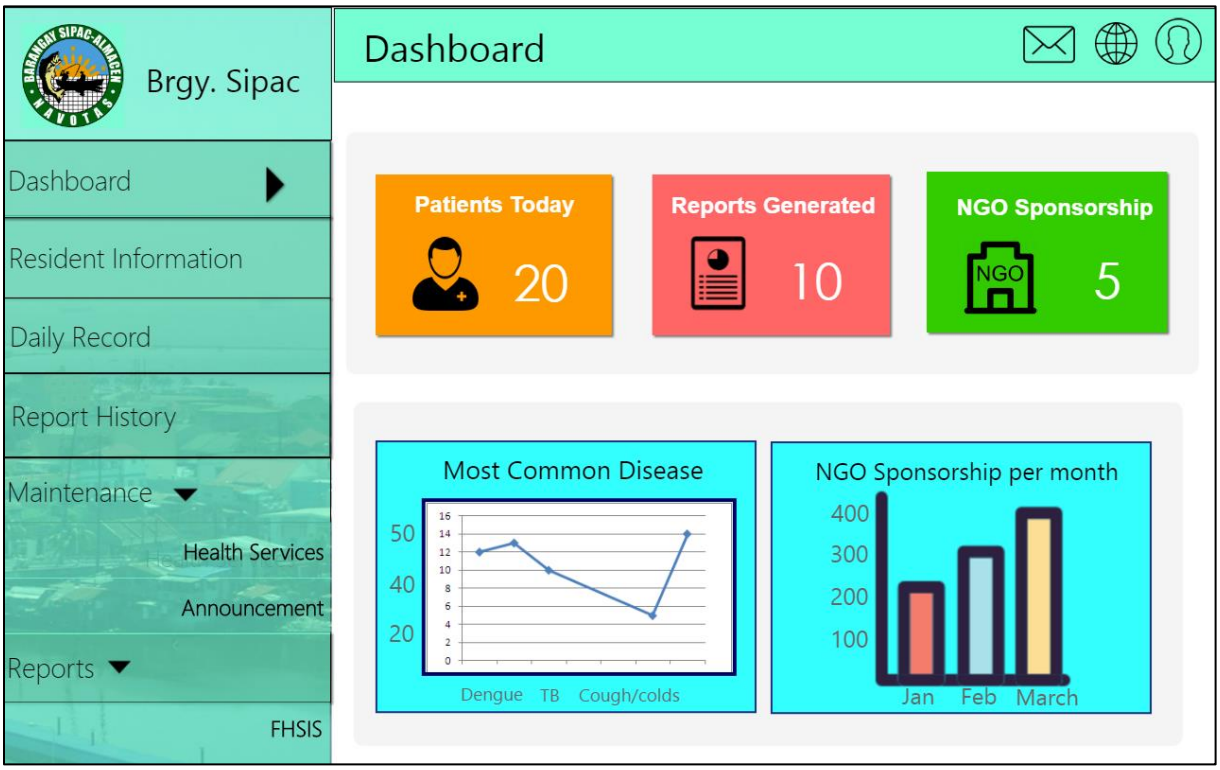

Figure 44: **Barangay Health Services and Certificate Issuance Management System (Health Services Subsystem Dashboard)**

This page displays the count of patients by that day, health reports generated and the number of NGO sponsorship.

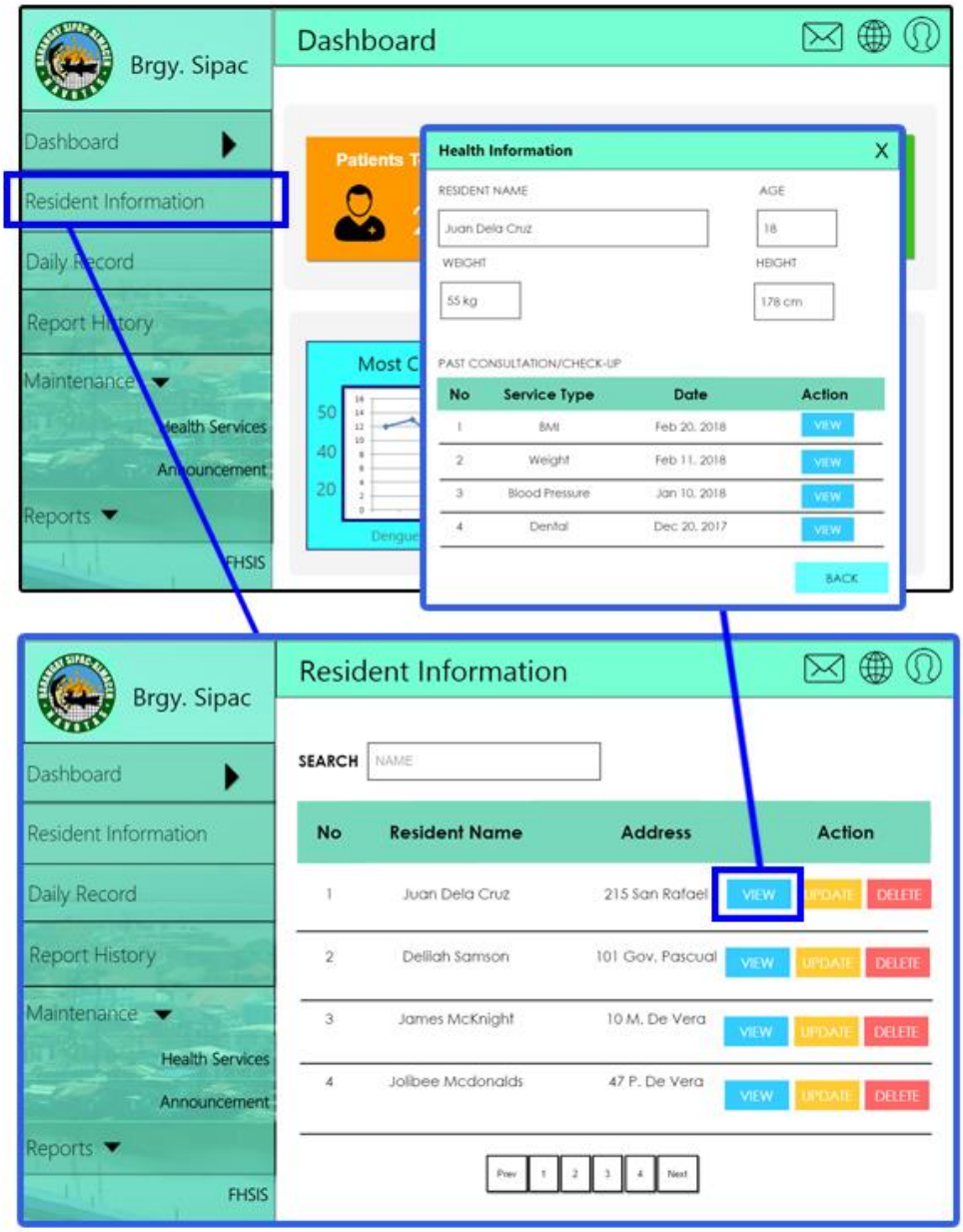

Figure 45: **Barangay Health Services and Certificate Issuance Management System (Resident Information Page)**

By clicking the resident information on the side menu, it will display this page. This page list all of the registered residents, this page can be used to retrieve residents' information. At this page also, the admin can update resident's info or put it into archive and he/she can also view the residents' health information.

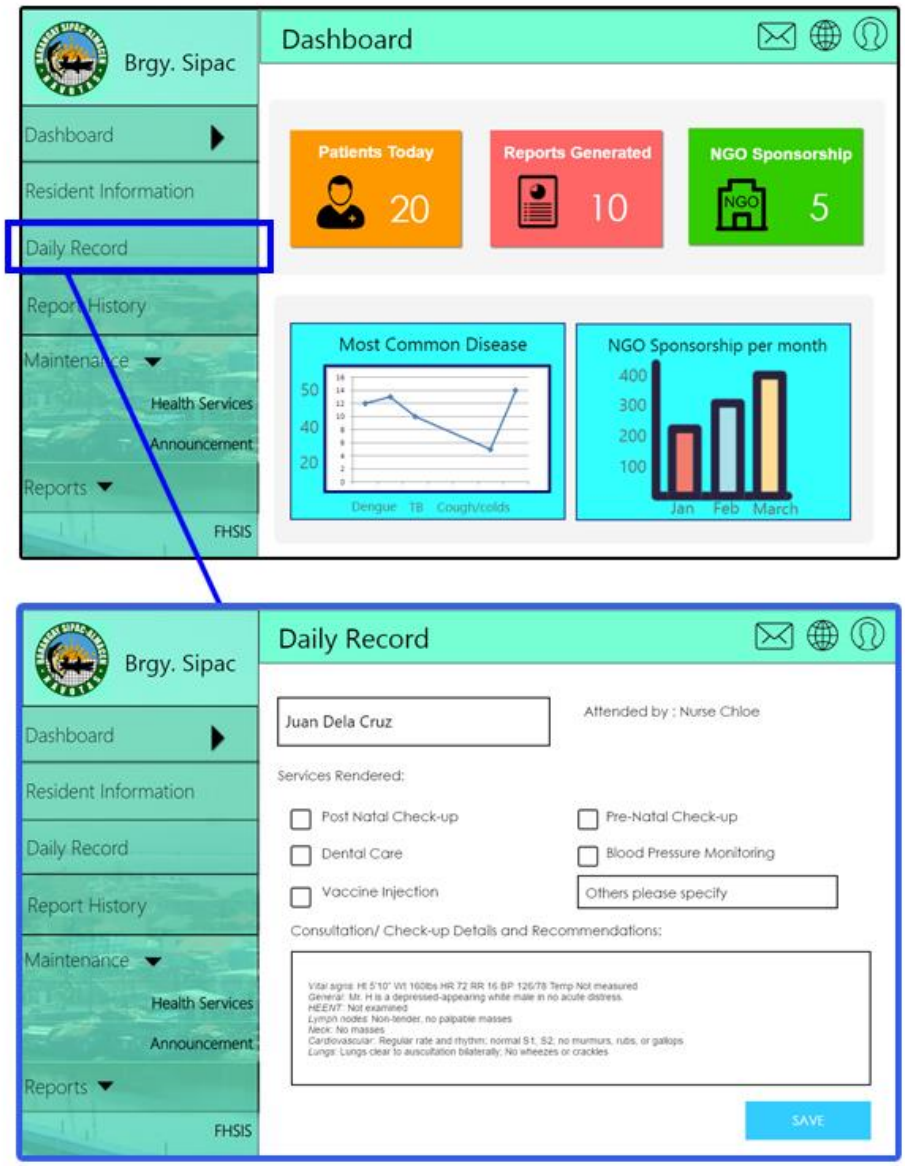

Figure 46: **Barangay Health Services and Certificate Issuance Management System (Daily Record Page)**

This page can be used by the admin when, recording a consultation/check-up session of patient. It consists of patient name, services rendered and check-up or consultation recommendations.

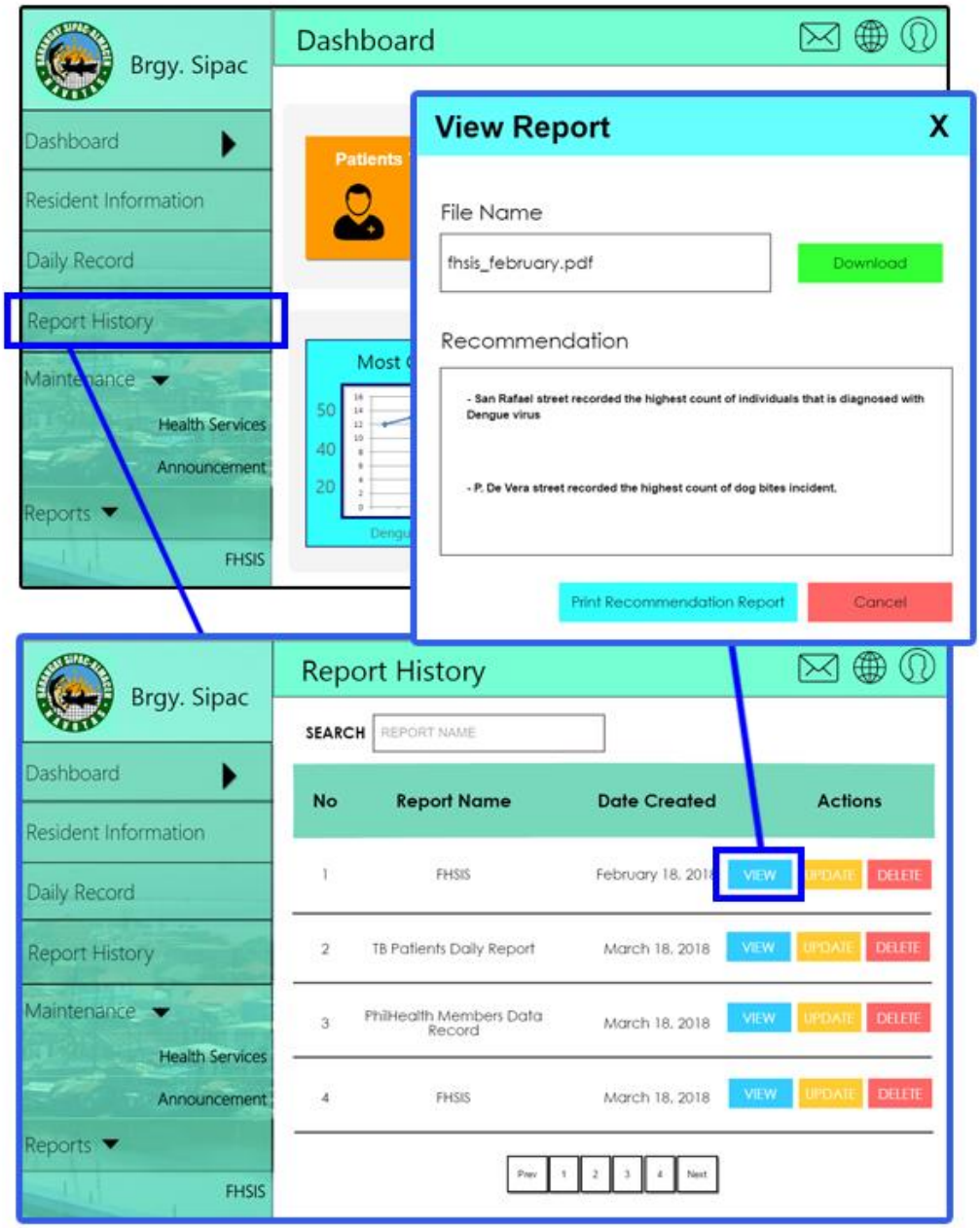

Figure 47: **Barangay Health Services and Certificate Issuance Management System (Report History Page)**

This page displays the list of all past generated reports, this can also be used to know health project recommendations, generated of a chosen report.

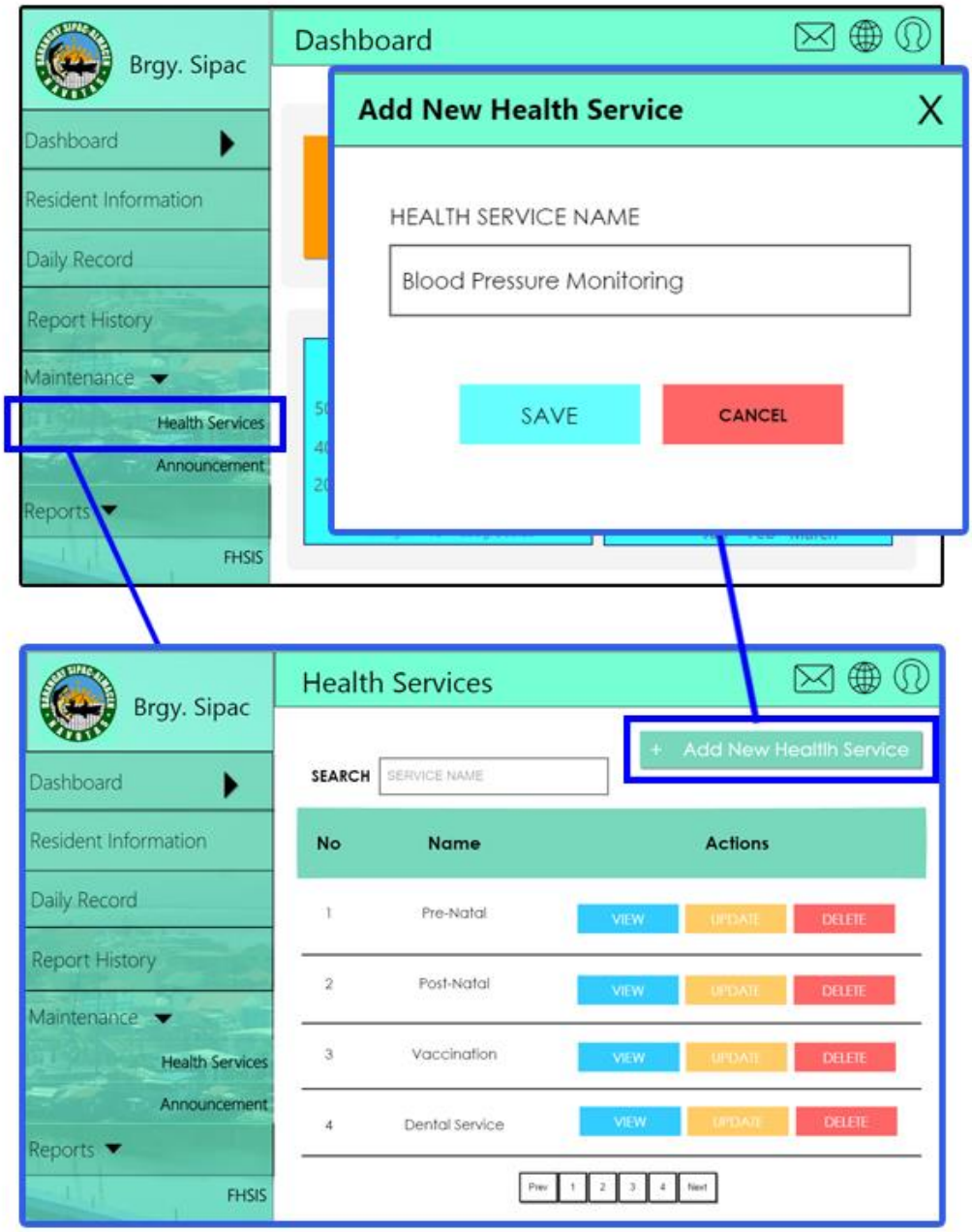

Figure 48: **Barangay Health Services and Certificate Issuance Management System (Health Services Page)**

This page displays all of the health services that can be rendered by the health center, this page can also be used to add new health service or update and archive existing health service.

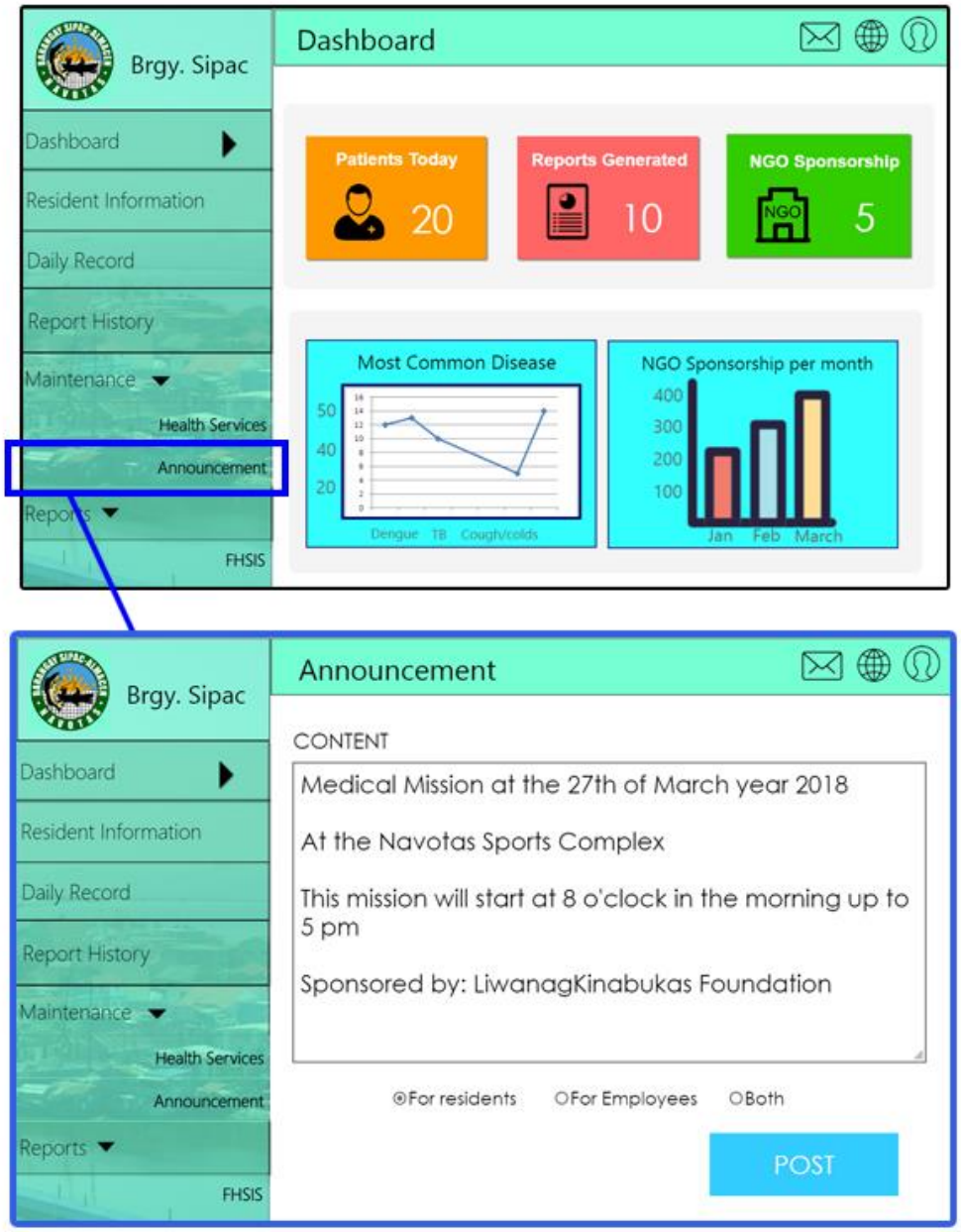

Figure 49: **Barangay Health Services and Certificate Issuance Management System (Announcement Page)**

This page can be used by the admin when he/she wants to post some announcement about the projects or medical missions that will be done by the health center.

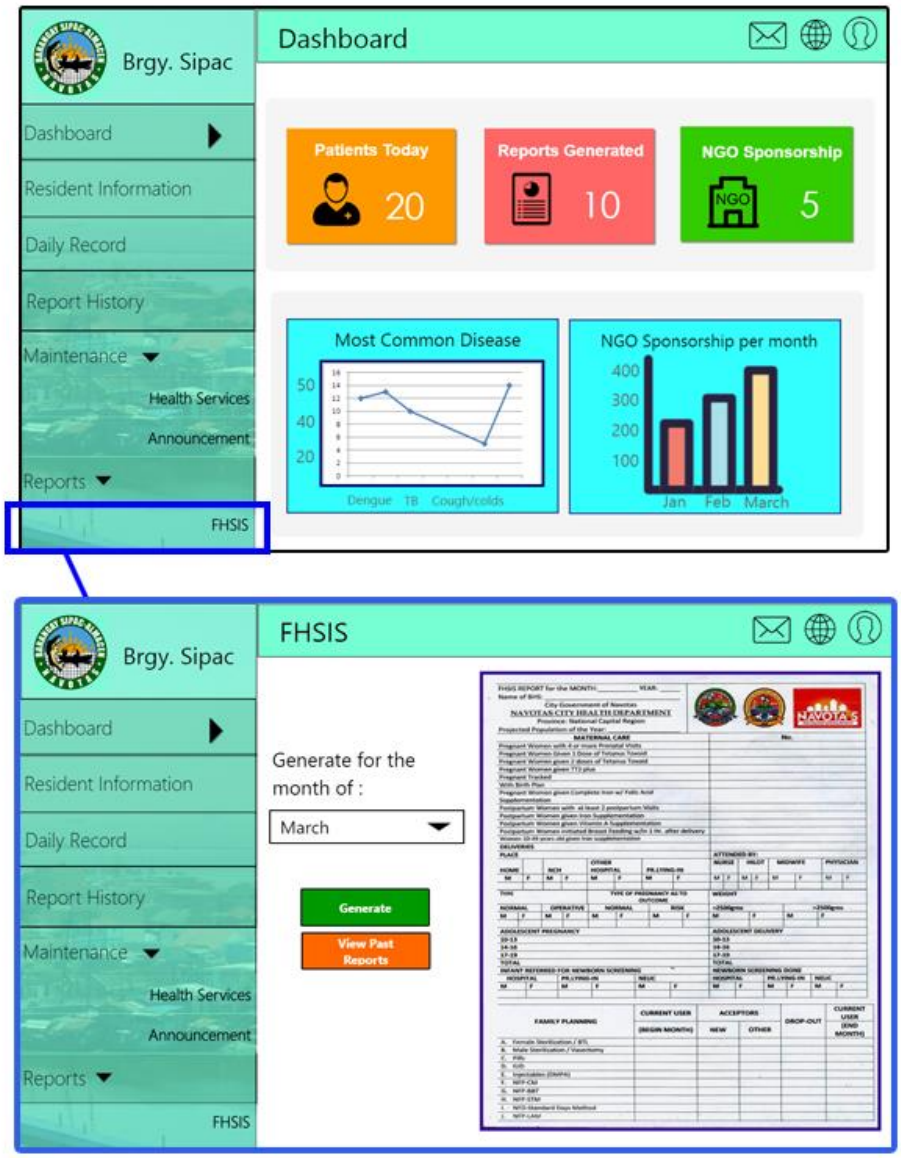

Figure 50: **Barangay Health Services and Certificate Issuance Management System (FHSIS Page)**

This page can be used by the admin when he/she wants to generate the Field Health Services Information System (FHSIS), a monthly report that is required to submit by the health center to the City Health Department.

3.2.4. Database Schema

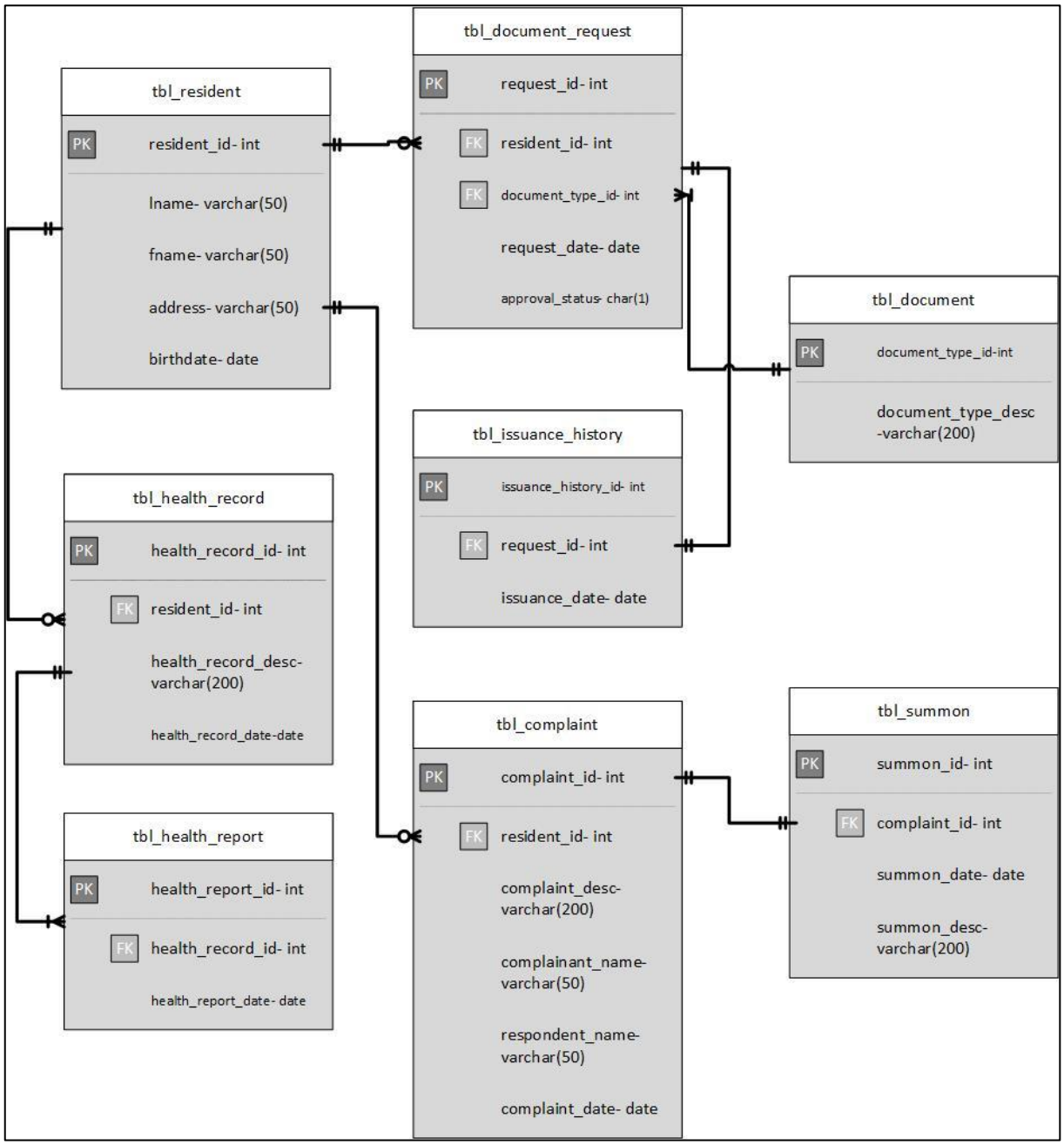

Figure 51: **Barangay Health Services and Certificate Issuance Management System (Database Schema)**

3.2.4. Data Dictionary

Table 15
Data Dictionary (tbl_resident)

TABLE NAME: tbl_resident
TABLE DESCRIPTION: Contains the residents' information
RELATED TABLE: tbl_document_request, tbl_health_record, tbl_complainant

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	resident_ id	Integer		N	NONE	NONE	ID OF RESIDENTS	1
	lname	Variable Character	50	N	NONE	NONE	RESIDENTS' LAST NAME	Dela Cruz
	fname	Variable Character	50	N	NONE	NONE	FIRST NAME OF RESIDENTS	John Peter
	address	Variable Character	100	N	NONE	NONE	RESIDENTS' ADDRESS	143 Narra Extension Tondo , Manila
	birthdate	Date		N	NONE	NONE	RESIDENTS' DATE OF BIRTH	1983/01/ 10

Table 16
Data Dictionary (tbl_document_request)

TABLE NAME: tbl_document_request
TABLE DESCRIPTION: Contains the requests' information
RELATED TABLE: tbl_resident, tbl_issuance_history, tbl_document

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	request_id	Integer		N	NONE	NONE	ID OF REQUESTS	1
FK	resident_id	Integer		N	NONE	NONE	ID OF RESIDENTS	1
FK	document_type_id	Integer		N	NONE	NONE	ID OF DOCUMENTS	1
	request date	Date		N	NONE	NONE	DATE OF REQUESTS	1983/01/10
	approval_status	Bit		N	NONE	0,1	REQUEST APPROVAL STATUS	0

Table 17
Data Dictionary (tbl_health_report)

TABLE NAME: tbl_health_report
TABLE DESCRIPTION: Contains the health report's id and date
RELATED TABLE: tbl_health_record

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	health_report_id	Integer		N	NONE	NONE	HEALTH REPORTS' ID	1
FK	health_record_id	Integer		N	NONE	NONE	HEALTH RECORDS' ID	1
	health_report_date	Date		N	NONE	NONE	HEALTH REPORTS' DATE	1983/01/10

Table 18
Data Dictionary (tbl_document)

TABLE NAME: tbl_document
TABLE DESCRIPTION: Contains the documents' information
RELATED TABLE: tbl_document_request

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	document_type_id	Integer		N	NONE	NONE	ID OF DOCUMENTS	1
	document_type_desc	Variable Character	100	N	NONE	NONE	DOCUMENTS DESCRIPTION	This document is for complaints.

Table 19
Data Dictionary (tbl_health_record)

TABLE NAME: tbl_health_record
TABLE DESCRIPTION: Contains the health records' information
RELATED TABLE: tbl_resident

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	health_record_id	Integer		N	NONE	NONE	ID OF HEALTH RECORDS	1
FK	resident_id	Integer		N	NONE	NONE	ID OF RESIDENTS	1
	health_record_desc	Variable Character	100	N	NONE	NONE	DESCRIPTION OF HEALTH RECORDS	John Peter Dela Cruz stil need consultations.

	health_ record_da te	Date		N	NONE	NONE	HEALTH RECORDS' DATE	1983/0 1/10

Table 20
Data Dictionary (tbl_issuance_history)

TABLE NAME: tbl_issuance_history
TABLE DESCRIPTION: Contains issuance information
RELATED TABLE: tbl_document_request

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	issuance_ history_id	Integer		N	NONE	NONE	ID OF ISSUANCE	1
FK	Reques t_id	Integer		N	NONE	NONE	ID OF REQUESTS	1
	Issuance _date	Date		N	NONE	NONE	DATE OF ISSUANCE	1983/01/10

Table 21
Data Dictionary (tbl_complaint)

TABLE NAME: tbl_complaint TABLE DESCRIPTION: Contains the information of complaints RELATED TABLE: tbl_resident, tbl_summon								
Key	**Field Name**	**Data Type**	**Length**	**Optional**	**Default Value**	**Field Validations**	**Description**	**Sample Data**
PK	Complaint_id	Integer		N	NONE	NONE	ID OF COMPLAINTS	1
FK	resident_id	Integer		N	NONE	NONE	ID OF RESIDENTS	1
FK	Complaint_desc	Variable Character	250	N	NONE	NONE	COMPLAINTS' DESCRIPTION	December 10,2015, 7:00 in the evening, a man named marlon beat me.
	Complainant_name	Variable Character	50	N	NONE	NONE	NAME OF COMPLAINANT/S	John Peter Dela Cruz
	Respondent_name	Variable Character	50	N	NONE	NONE	NAME OF RESPONDENT/S	Marlon Delos Santos
	Complaint_date	Date		N	NONE	NONE	DATE OF COMPLAINTS	2015/12/10

Table 22
Data Dictionary (tbl_summon)

TABLE NAME: tbl_summon
TABLE DESCRIPTION: Contains the summons' information
RELATED TABLE: tbl_complaint

Key	Field Name	Data Type	Length	Optional	Default Value	Field Validations	Description	Sample Data
PK	Summon_id	Integer		N	NONE	NONE	SUMMONS' ID	1
FK	Complaint_id	Integer		N	NONE	NONE	ID OF COMPLAINTS	1
	summon date	Date		N	NONE	NONE	DATE OF SUMMONS	2018/01/10
	Summon_desc	Variable Character	250	N	NONE	NONE	SUMMONS' DESCRIPTION	You are hereby summoned to appear before me in person, together with your witnesses on the 12th day of December, 2018 at 9 am

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