CHAPTER 1: INTRODUCTION
1.0 Introduction

1.1 Motivation for this project

As we have approached the new millennium there is a need to refocus and reorganize the way of analyzing patient history more effectively. There is therefore a need to develop a system that will help physicians, nurses and other medical staffs to carry out a variety of statistical analyses.

Is there a need for the public to preview the analyses? The answer is definitely “Yes”. There are various reasons for this. Life style changes due to higher purchasing power lead to increases in intake of fat, cholesterol and sugar. These dietary changes along with increasing stress at work contribute to increasing number of diseases as well as patients. Public should be aware of this and take precautions to avoid them. One way would be to analyze the diseases with accordance to the race, age group, gender, occupation and other factors.

This would indirectly create interest and motivate public to take necessary steps to avoid the disease. For instance, public would understand that the various modifiable risk factors such as diabetes, hypertension, hypercholesterolaemia, smoking, stress, and lack of exercise must be controlled so as to reduce the incidence of coronary artery disease.

A real challenge in this project paper is to carry out research and analysis before a final decision could be made before developing the system. Studies on patient history, statistical analysis, client-server applications and database would be very interesting and knowledgeable.
1.2 Problem Domain

The survey on Analyzing Patient History was conducted during the month of December 1999 till February 2000 and various aspects related to this study was investigated. Among the issues investigated include patient history, statistical package available in market currently, the types of analysis, and the importance of these analysis to the physicians and other medical staffs.

There are many statistical packages and of different formats. Unfortunately these statistical packages are not incorporated with the database where medical records are stored and there is no proper interfaces that link the system to the statistical part. Currently the statistical analysis is done manually where the data are retrieved from the database or spreadsheet and then exported to the data editor. This approach is very subjective and tedious. Furthermore, there is high probability of making errors. For instance, the individual may select the wrong data or miss some portion of the needed data. Hence, it is important to study the ways of incorporating the statistical application to the medical system.

The study also indicated the need to generate reports with charts for those who lack knowledge/experience in the statistical analysis. The physicians and other medical staffs will be given a set of common commands to carry out relevant statistical analysis.

Patient history is missing in many medical information systems for two main reasons, which are strictly correlated: the methodological problem of formalizing and treating temporal information, and the practical difficulty of its routine acquisition. [Bortolan, G. et al., 1998].
Furthermore, due to strict connections between a medical information system and a decision system, it is clear that the way the information related to patient history are formalized and stored is a crucial point for the acceptability of the system in clinical practice.

1.3 Project Objectives

Based on the problem domain described in Section 1.2 above, the study will attempt to address all the pertinent issues with regard to patient history and statistical analysis.

The first effort to handle the problem is based on the database management system, such as Microsoft Access, which has a relationship data model, where a date can be related to a set of data.

The medical information system is aimed at the following:

- Develop interactive and secure interfaces for medical database.
- Take into account all the relevant data related to the patient history. For instance, evolution of the disease and complaints about undesired drug side effects.
- Provide timely and meaningful reports to aid decision-making.
- Provide charts/graphs to analyze other factors relevant to the respondent, patient history.

Other than that, the researcher's objective is to integrate the statistical analysis function to the medical system, where variety of analysis can be carried out to aid the decision making of clinical pediatrician and nurse practitioner.
1.4 Scope of the project

The scope of this study covers the evaluation of the current health care delivery system and patient history of the patients in the selected private and public hospitals. The developed medical system, AZ-Phis includes the program to maintain patients’ admission, discharge and payment records. All information related to the patient is entered interactively, while the status of patient history is updated automatically. Furthermore, the integrated statistical package and Crystal Report helps user to have a wide selection of historical reports for effective analysis and decision-making. The reports, graphs and charts that are produced help the medical community to identify the diseases that attack the society lately and therefore take relevant measurements. However this documentation covers the various aspects of the medical system, especially the development cycle of the system.

1.5 Areas of interest

Areas of interest covered in the medical field were as follows:

- Government hospitals
- Private hospitals
- Clinics
- Private medical practitioners and other health staff in the hospitals and clinics
- Administrators, IT staff and their dependents.
1.6 Research Methodology

In this dissertation, two main research methodologies comprising surveys and interviews were employed. In the requirements capturing process, the questionnaire survey method was used to gather data and to draw inferences based on the responses of the participants. At the requirements capturing phase, questionnaires were formulated to gather information pertaining to the current system and the need to incorporate statistical package to the system. Questionnaires for system evaluation and user feedback were designed namely to analyze participants opinion on the administration and user sections of the developed system. Interviews were conducted on administration staffs, physicians, and nurses at the hospitals and clinics that have failed to return the questionnaires.

1.7 Framework of Study

The framework used to maximize utilization of proper research methodology and analyze patient history in the hospitals and clinics is shown in Fig.1.
Problem Identification

Priority Setting

Specify Key Issues and Subject Area

Define Methodology To be used

Data Collection

Analysis and Dissertation Writing

Dissertation

Presentation
1.8 Thesis Overview

The purpose of this thesis is to document essential information gathered and implemented throughout the development cycle of the project. It covers the project studies and analysis, the design of the software, development and testing stage and modules of the system. Manuals for the benefits of system users are also included. This dissertation is divided into six chapters, which are as follows:

Chapter 1: Introduction

Presents an overall view of the project and the objectives, scope, area of interest, and project planning details.

Chapter 2: Literature Review

Describes a literature review on patient, patient history and the statistical analysis. It also includes details on study of the fields relevant to the project.

Chapter 3: Research Structure

Focuses on the methodology used in the research. This includes the method of collecting data, questionnaire survey and the outcomes of the survey. This chapter also describes the feasibility study for functional and non-functional requirements for the system based on the requirement analysis and specification.