CHAPTER 1

INTRODUCTION

Cardiovascular diseases are increasing progressively in Palestine. Particularly hypertension and heart disease, at a rate which is almost the same as that reported in neighboring countries. In 2003, 3894 persons died from cardiovascular diseases (2073 males and 1821 females), with a proportion of 36% of total deaths, with a rate of 104.1/100,000 population. Mortality among males and females is almost equal (52.4% in males Vs 47.6% in females), with a rate 107.8 per 100,000 in males and 100.4 in females.

1.1 Cardiovascular mortalities are ranking as following:

1. All heart diseases constitute 27.1% of cardiovascular diseases with a rate 55.8 per 100,000 populations.
2. Ischemic heart disease constitutes 23.9% of cardiovascular diseases with a rate 35 per 100,000 populations.
3. Hypertensive disease constitutes 12.5% of cardiovascular diseases with a rate of 13.4 per 100,000 populations.
4. Other heart diseases constitute 17.4% of cardiovascular diseases with a rate of 17.9 per 100,000 populations.
5. A cerebrovascular disease constitutes 19.1% of cardiovascular diseases with a rate of 30.3 per 100,000 populations (Palestinian Health Information Centre, 2003).

Table 1.1: The mortality from different types of cardiovascular diseases in Palestine, 2003

Category	Male	Female	Total	%	Rate per 100,000
All heart diseases	604	452	1056	27.1	55.8
Rheumatic HD	16	22	38	1.0	1.0
Hypertensive disease	231	255	486	12.5	13.4
Ischemic heart disease	521	411	932	23.9	35.0
Pulmonary HD	33	36	69	1.8	1.8
Other heart diseases	286	284	570	14.6	17.9
Cerebrovascular diseases	382	361	743	19.1	30.3
Cardiovascular diseases	2073	1821	3894	100.0	104.1

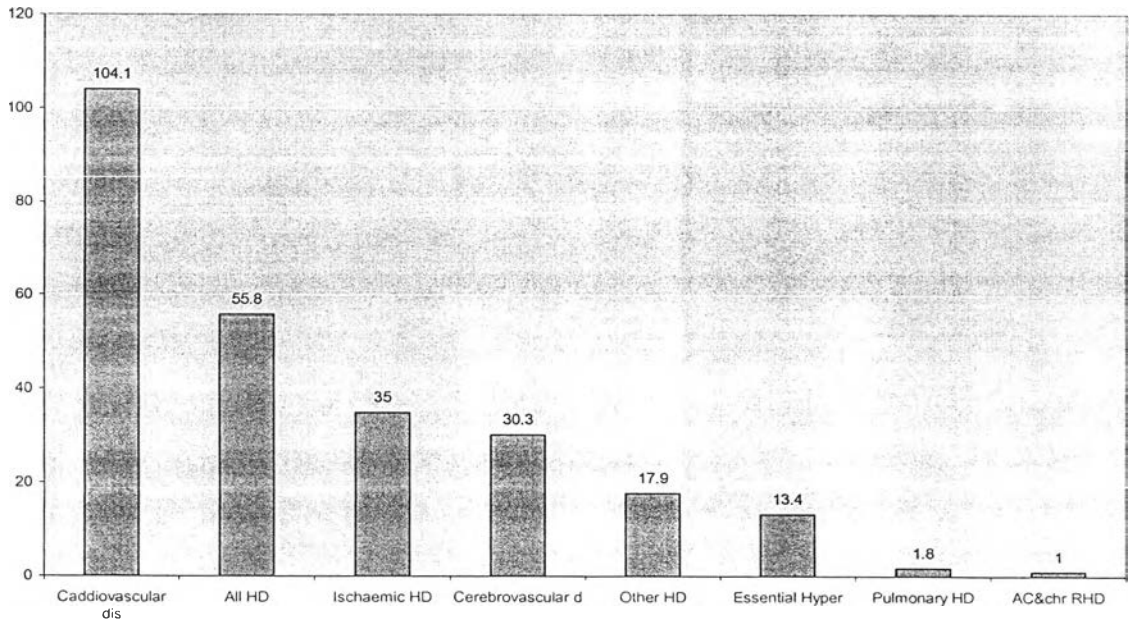

Figure 1.1: Distribution rate of all cardiovascular diseases mortality in Palestine, 2003 (per 100,000).

(Source: Palestinian Health Information Centre, 2003).

The Palestinian economy in the second year of "*Intifada*" witnessed a further steep decline in all Palestinian economic indicators. Gross national income (GNI) in 2002 declined to 40% less than 2000. Real per capita incomes are now only half of their September 2000 level. Unemployment stands at 40% of the workforce.

Table 1.2: Summary of west bank and Gaza strip estimated macroeconomic trends.

West bank and Gaza strip estimated macroeconomic trends.	1999	2000	2001	2002
Gross national income(GNI),$ mill	5,166	5,419	4,501	3,273
Gross domestic income(GDI),$ mill	4,289	4,607	4,012	2,951
GNI per capita (US$)				1,070
GDP per capita (US$)				831
Poverty, share of population. Below poverty line(2 US$)	20.1%	30.7%	45.7%	60%
Percent unemployment rate out of total workforce				40%

(Source: Health Management Information System [HMIS], 2002).

Gross national product (GNP) was 5,454 million $ in 1999 and decreased to 3,705 million $ in 2003. Gross domestic production (GDP) was 4,517 million $ in 1999 and decreased to 3,257 million $ in 2003. GDP per capita was $1,496 in 1999 and decreased to $896 in 2003 (Palestinian Health Information Centre, 2003).

Cardiovascular diseases are characterized by behaviors adopted early in life, and sustained for many years without health consequences. These behaviors are increasingly prevalent in today's adolescent and young adults, which support the prediction that CVD epidemic will expand in tomorrow's middle aged and other adult. Due to above challenge, effective heart health promotion calls for changes in certain life styles related to establish risk factors. In East Mediterranean countries, the challenge is to deliver interventions, which will promote behavioral changes in the population, and to disseminate such change nationally (Eastern Mediterranean Regional Office [EMRO]).

The committee of Honour will be chaired by Queen Sofia and is expected to consist of high-profile individuals from the arts and public life, who are currently involved in philanthropic work. The committee will work to develop awareness of the threat of cardiovascular diseases, as well as to raise funds throughout the world for the WHO program for the prevention of heart disease. Cardiovascular diseases kill more people than any other diseases annually, according for over 15 million deaths, or about 30% of the global total. Many more millions of people are disabled by them. Atherosclerotic disease is a life-long process, with its initial stage in childhood and youth and with clinical manifestation in middle age of later. Its development is linked to unhealthy lifestyles (mainly tobacco use, unbalanced diet and physical inactivity). Cardiovascular diseases are emerging rapidly as a major public health concern in most developing countries. People in the developing world still suffer from heart ailments such as rheumatic heart disease, which is linked to an upper respiratory tract infection and chagas heart disease, a parasitic related illness; both diseases are linked to low income, poverty, overcrowding, poor housing conditions and inadequate health services (World Health Organization [WHO] 1997).

The prevalence of hypertensions, diabetes and coronary heart disease is growing significantly in the region: Cardiovascular diseases are now the leading cause of death in many countries of the region. Data reported from Bahrain, Egypt, Iraq, Kuwait and Qatar over the last five years provide valuable indicators of mortality trends. In these countries, the populations of deaths attributable to diseases of the circulatory system range from 25% to 40% of all deaths. In Jordan cardiovascular disease was the leading cause of death, according for 44% of male and 34.5% of female mortality (EMRO).

Table 1.3: Comparison of Health indicators in Palestine (2001) and neighboring countries

Health indicators	Egypt	Jordan	Cyprus	Israel	Palestine
Population under age 15 years (as % of total), 1999	36	40.2	23.6	28.4	46.7
Population aged 65 years and above (as % of total), 1999	4.1	2.7	11.4	9.9	3.2
Population using adequate sanitation facilities (%), 1999	94	99	100		54
Total fertility rate per women, 1995-2000	3.4	4.7	2	2.9	3.87
Contraceptive prevalence (%), 1995-2000	47	53			51.4
One-year-olds fully immunized: against measles (%),97-2000	97	83	90	94	97.6
Tuberculosis cases (per 100,000 people), 1997	19	6	6	10	1.5
People living with HIV/AIDS: Adults (% age 15-49, 1999	0.02		0.1	0.08	0.003
Infant mortality rate (per 1,000 live births), 1999	41	29	7	6	22.9
Under-five mortality rate (per 1,000 live births), 1999	52	35	8	6	28
Physicians (per 100,000 people), 1990-1999	202	166	255	385	83

(Source: MOH, 2001).

1.2 The Catheterization Lab

Cardiac catheterization is a diagnostic procedure involves threading a small tube (or catheter) through an artery in the arm or leg to the heart. Physicians view the procedure by X-ray to determine if a serious heart problem exists and how to treat it (Carilion heart system, 2002).

Catheter –based procedures are performed in a special room in the hospital. The room is outfitted with high-resolution fluoroscopic (x-ray) video and film equipment.

The first step is a diagnostic picture of the arteries, called a coronary arteriogram, angiogram or catheterization. The needle puncture is made, using a local anesthetic. The physician then threats a catheter through the entry site and follows the main artery in the body, called the aorta, up and around into the opening of the left, or right, coronary artery.

Through this hollow catheter, the physician injects a small amount of special dye, called contrast, which then viewed in motion under X-rays, reveals any obstructions or plaques located within the coronary vessels. When the dye is injected, the patient may feel a warm sensation. Views from several camera angles are recorded on motion picture film.

Depending on the number, severity and location of these obstructions, the physician may refer the patient for medical therapy, bypass surgery, or, if appropriate, may treat the patient directly, using catheter-based techniques. These options are discussed with the patient after the diagnostic catheterization.

Upon occasion, the cardiologist may suggest transforming the diagnostic test on the spot into a therapeutic procedure which, since the arterial "highway" has already been traversed, can be done, adding about an hour to the session.

The cardiologist places a more versatile catheter into the opening of the coronary artery. A thin wire is threaded through this catheter and well past the narrowing, or stenosis, in the artery. A "rail" or track has now been established and any number of

therapeutic devices (in this illustration, a balloon) can be passed safely over the wire and positioned precisely at the obstruction.

As the blockage is opened, blood flow in the artery is stopped for very brief periods, during which the patient may experience some chest pain. This is normal when the procedure is over, all equipment is removed, the puncture site is compressed in order to heal, and the patient usually can return home within a day or two. For many patients, the most uncomfortable part is the several hours post-procedure, when they need to lie still for the puncture site compression. Several devices, or "sealers", are now being utilized to reduce this period significantly (Boston Scientific Corporation, 2000).

1.3 A brief account on Ramallah hospital catheter unit

Ramallah hospital was located in Ramallah city, West bank. It was built in 1961, an additional departments and units built in the beginning of 1990, the space of Ramallah hospital is 6500 M^2. The distribution of manpower is (medical professions 62, nurses professions 149, paramedical 46, administration and services 87). There are 17 sections and units in Ramallah hospital, one of these units is Cardiac catheterization.

In the field of cardiovascular diseases, cardiac catheter services are nowadays the most expensive, the most accurate, the most advances as diagnostic and therapeutic tool and thereby the most cost effective when considering the significant reduction in mortality and morbidity with its socio-economic consequences.

In 2004 have performed more than 2000 procedures in catheter unit without which we would have sent these cases to Jordan or Israel and would have paid millions of dollars for that.

Therefore the objectives of this unit are:

1. To provide a local essential and lifesaving service.
2. To alleviate the burden of travel on a heart disease patient.
3. Save money.
4. To provide a place for further training in invasive cardiology for Palestinian doctors and nurses.

5. To provide the necessary support for local cardiovascular surgeons.

The functions of this unit are:

1. Diagnostic: coronary artery diseases, carotid artery diseases, peripheral vascular diseases and renal artery diseases.
2. Therapeutic: Balloon angioplasty and stinting of coronary arteries, implementation of permanent cardiac pacemakers, pericardiocentesis and closure of defects and holes in the heart in children.

Catheter unit services extend to all Palestinian towns and villages in the West bank and Gaza strip (MOH, 2004).

1.4 Research Questions:

1. What is the Break-Even point for catheter unit?
2. Do government subsidy this unit, or the revenue cover the cost for this unit?
3. What is Willingness to pay for catheter unit?

1.5 Objectives of this Research

General objective

To determine Break-Even point and whether the government subsidizes this unit or not.

Specific objectives

1. To determine total cost, fixed cost, variable cost and unit cost for catheter unit.
2. To determine total revenue for catheter unit.
3. To measure the benefit for patients and government from catheter, this benefit explain why government subsidy this unit.

1.6 Possible Benefits

1. This study concentrate about the level number of patients where the total cost equal total revenue, this information will give top management important indicators to any decisions related to catheter unit in Ramallah hospital.

2. This study includes collecting primary data from individuals how willing to pay for catheter unit; this information from individuals gives top management indicators about the possible prices in the future.
3. the economic benefits for patients and government from catheter unit will encourage the government gives more attention for catheter unit from increase subsidy this unit or open new catheter lab in Palestine.