

CHAPTER 1

INTRODUCTION



1.1 Rationale

Medical technology, which comprises device, drug and procedure in patient management, is developed continuously to improve the outcome of patient care. High medical technology equipment can be cost-effective but the broader picture must be appreciated. Changing the pattern of diseases from infectious diseases to heart disease, cancer and chronic degenerative diseases required advance technology for its diagnosis and treatment. The use of new medical technology tends to increase because of the accuracy, specificity and sensitivity of this machine producing the precise diagnosis. Utilization of Magnetic Resonance Imaging (MRI), Computerized Tomography Scanning (CT scan), Ultrasonography (USG), Autoanalyzer and new expensive drug are some examples. This will improve the management of patient's care. However, this will also lead the physician to over prescribe and advice to the patients to do some the examination that is sometimes too much and is not necessary to establish precise diagnosis.

As a consequences of progress achieved in standard of livings and health development, improvement in education and increase in life expectancy has brought about significant rising demands for high and expensive medical care technology. However, this is not true for general population in Indonesia. The problem of infection diseases is still crucial for rural population and urban slum. Meanwhile among medium and high income group, mostly in the cities, there is a changing diseases pattern from infectious diseases to heart disease, cancer and chronic degenerative diseases which require advanced technology for its diagnosis and treatment. These will increase demand for services and health care cost.

Increasing of new medical technology expenditure gives a burden to a country as the new medical technology rises the national health expenditure steadily. In Indonesia, increasing health expenditure related with medical technology was given attention in 1986 by The Directorate General of Medical Care, Ministry of Health (MOH) of Indonesia. At the macro level, such an assessment is needed because

national health expenditure in Indonesia which is less than 3% of Gross Domestic Product (GDP) should not be consumed too high by medical care so that public health program could be expanded (MOH, 1997). The budget amount that can be available for medical care can be spent for more people needing quality medical care. The experience in developed countries reveal that new medical technology contributes up to 20%-25% of the expenditure of a medical care institution (Feldstein, 1993). Like other countries, Indonesia also needs to assess the new medical technology that has been introduced in medical care.

Automated Clinical Analyzer (ACA) is a modern laboratory equipment that has more test capability, more investment cost (29.06% of total cost) and high operational and maintenance cost (70.94% of total cost) (PPEKI,1991). This machine developed continuously to improve the outcome of patient care. However, this machine is not only expensive to buy, it is also expensive to maintenance and to operate, resulting cost for every test become expensive. In East Java the ratio of unit ACA is 0.27 per 100,000 population (MOH, 1997) which is 92 unit of ACA were installed in private clinical laboratory that locate in 26 districts. While the data of number of ACA in hospital was not available. To be effective, such equipment must be operated, calibrated and maintained by trained staff who has ready access to the necessary resources. It also involves the use of digital system in which the price of the system i.e. the hardware and the software are expensive and the cost of maintenance of the system is also high. In addition, the use of a new medical technology needs a high-qualified clinician as well as the support infrastructure necessary for continuing use of the device, and this will add the expense of medical care.

There are advantages from this machine, e.g. only need one operator or technician to operate so the labor cost become lower; mass production which means more capacity in one run; and rapid assessment which means result can achieve more faster. The accuracy, precision and sensitivity of this machine were show excellent performance than the manual method (Las Heras et al, 1993, Ben Naoui et al 1993, Flood et al, 1990). However, consideration must be given to the support infrastructure necessary for continuing use of the device. For example, quality and quantity of electricity supply availability of trained engineers to maintain the machine, skilled staff to operate ACA and interpret the result, the supply of reagent

and replacement component or spare part and acceptability of procedure to operate ACA. All those can lead to increasing price.

The cost of laboratory services is the information that must be known if the facility is considering to apply user charge as part of the financing sources. The aim is to recover the cost of services provided of the full costs. Thus, it seems to be relevant to find the information of cost as well as revenue to provide a guide to setting the price. In other word, it is required to know the cost recovery of laboratory services provided. It is also required to identify the problem of under-utilization of ACA in terms of cost recovery in order to provide the information needed to the policy of the referral system.

The result from previous studies showed utilization rate was range between 20% to 46.6% of full capacity per year. This indicated the problem of under-utilize. This problem also can be identified by analyzing both the accessibility of laboratory services and its financing from patient perspective. In the case of delivery medical services, this concept can be used to analyze differences of user characteristic in utilization of ACA among provider (public hospital and clinical laboratory). Factor influence the utilization of ACA from provider perspective is required to identify as well. Combining the cost recovery result and identification of user characteristic will provide the information for setting the price in each institution.

Indonesia consists of 27 provinces, has more than 17,000 islands as great heterogeneous among provinces in many ways and the population density. Java island, which occupies only 7 % of the total country's territory, is inhabited by 60% of the total population in 1990. On the other hand provinces of outer islands are scarcely populated. This uneven distribution consequently results in differences of health problems faced by each province, which implies that a characteristic policy should be implemented in coping with the health problem of each province. According to the Indonesia Health Profile 1997, the population of Indonesia was 198,205,000 in 1996, growth rate of population was 1.69% between 1990-1996 compared with 1.98% between 1980-1990 this rate has declined in the last two decades. Total fertility rate declined from 3.33 (1985-1990) to 2.86 (1992-1994) while dependency ratio decreased from 67.80 to 56.98. Infant Mortality Rate (IMR) was 54 per 1,000 live birth in 1996.

East Java is a part of Republic of Indonesia has own government regulation, which is based on No.5/1975 regulation stated of regional government principals. Based on that regulation, this regional has autonomy. It means that East Java is law community unit which has territory and has the right, authority and obligatory to arrange and to care household itself in unitary state of Indonesia in accordance with prevailing regulation. The territorial scope of East Java is 157,992 square kilometer and consists of 37 districts. According to Indonesia Health Profile, 1997, the number of population was 34,507,700 people with the average density of 689 people /km², and annual growth rate of 1.08% during the past 10 years. Income per capita in 1996 was Rp. 1.81 million (US\$ 760), with dependency ratio 50.3. Infant Mortality Rate in 1997 is 48 per 1,000 live birth and Life expectancy at birth is 65.2 years in 1997.

As a consequence of the population increase, growing health problem, both in quantity and quality, particularly with respect to epidemiological transitions, the rapid development of increasingly sophisticated health technology and the growing demand of the public for health services of high quality, the importance of allocating adequate fund for health is realized. Health budget has increased from Rp. 1,558.1 billions in 1994 to Rp. 2,899.8 billions in 1997 (see Table 1.1). Average health expenditure is about 2.3% of GDP of which average 30% is obtained from government while 70% is from private sector. Also the proportion of the overall national budget which was allocated to health promotion had increased from 1.3% in 1986 to 2.0% in 1995. But with regards to the group, this proportion had decreased from 2.5% in 1986 to 1.7% in 1995. It is possible that the role of private sector had been underestimated exists.

For the development of the private sector which is also part of efforts aimed at the mobilization of funds, the existing regulations need to be renewed. As the economy of Indonesia develops, the government is emphasizing the role of the private sector. Government expenditure represents a decreasing proportion of the Gross National Product (GNP) and more loans are being taken by private sector. Public industry is being privatized and new industries are being financed solely by the private sector. This pattern is being followed by the health sector, especially for secondary and tertiary services.

Table 1.1 Health Budget in Indonesia: 1994/1995 – 1997/1998

| | 1994/1995 | 1995/1996 | 1996/1997 | 1997/1998 |
|------------------------------------|-----------|-----------|-----------|-----------|
| Health budget (Billions of rupiah) | 1,558.1 | 1,798.8 | 2,1853.3 | 2,899.8 |
| Health budget per National budget | 2.2% | 2.3% | 2.4% | 2.9% |

Source: Indonesia Health Profile, 1997

Conditions related with equity issues, payment and financing mechanism of health services in Indonesia are as follows:

(1) Availability and accessibility of health care services in Indonesia.

Health care delivery system is provided by Ministry of Health with some part being delegated to local government. In general, health care delivery system comprises three components: Hospitals, Public Health Center (PHC) and community based activities. Private hospitals are concentrated in only a few cities and focused curative rather than preventive care. On the contrary, public sectors are spread throughout the entire country including PHC that provides a wider variety of preventive and curative services (see Table 1.2.). Most of the doctors are public sector employees and working part time in the private sector.

Even though health facilities are provided by both government and private sector, utilization of those facility is still scarce. In rural area, contact rate is around 0.8 times per person per year while in urban is 1.5 times per person per year. Bed days per year are below 80 days/1,000 population. Bed Occupation Rare in hospital average was below 60% in public hospital.

Table 1.2 Health Facilities and Health Manpower in Indonesia: 1992-1996

| | 1992 | 1993 | 1994 | 1995 | 1996 |
|--|--------|--------|--------|--------|--------|
| Hospitals: | | | | | |
| Public | 712 | 727 | 728 | 733 | 739 |
| Private | 282 | 299 | 311 | 329 | 335 |
| Total | 994 | 1,026 | 1,039 | 1,062 | 1,074 |
| Public Health Center | 5,976 | 6,954 | 6,984 | 7,105 | 7,177 |
| Ratio PHC per 100,000 population | 3.21 | 3.68 | 3.63 | 3.64 | 3.62 |
| Bed Occupancy Ratio (BOR) in Public hospital | 56% | 55.8% | 53.4% | 55.2% | 56.8% |
| Ratio doctor per 100,000 population | 9.38 | 11.56 | 12.16 | 10.38 | 10.73 |
| Number of visit per 100,000 population | 11,441 | 11,573 | 11,713 | 11,860 | 11,953 |

Source: Indonesia Health Profile, 1997

Health center clients usually come from places within 5 square km and 2 square km in case of sub centers. Consequently, those facilities are operating under optimal capacity and inefficiency, due to geographical barrier rather than capacity to pay. National Social Economics survey (1995) suggested that the ability to pay of community was adequate (before economic crisis). Since, only those who live in the surroundings of those facilities are the ones who are using the facilities. Therefore, equity in access to health services has not been achieved yet.

Another issues concerning inequity in the health services is the location of public hospital which mostly are in the urban areas. This implies that only urban people will mostly be able to utilize the facilities. Therefore, government subsidy to public hospitals has been enjoyed by urban population who can actually afford to pay the full real operating costs of the services. This inequity is even more aggravated by the existence of private sector and individual practice facilities in the cities. However, to reduce this equity problem, government sets the regulation that hospitals have to provide 10% of the beds for the poor.

(2) Payment and financing mechanism.

Indonesia has adopted a system of user charges for public sector health services. For hospital, the system consists of three main tariffs :

- Fixed fee for outpatient
- Fixed fee for inpatient/day
- Schedule fee for specialist services

For Public Health Center (PHC), user charge comprises a fixed fee for outpatient visit which is cover medical consultation and three days supply of drugs. In hospital, tariffs of outpatient service is about 30% of the full cost, inpatient service is 40%, while the tariff of each visit to PHC is around 30% of the full cost. It generates a small amount of revenue. The cost recovery in hospital is around 20%, while in PHC is only 3% (MOH, 1997). Meanwhile, there are two main payment mechanism in private sector: (1) Through out of pocket expenses for fee of services and drug purchases (75% of total private health expenditure); and (2) By private companies and enterprises that provide health services directly to their employees (19.9% of total private health expenditure).

Actions are taken to mobilize financial resources for health and ensure their efficient use to influence health and health status. With the adjustment of tariffs of government health services facilities, and the simultaneous implementation of self-supporting principles at hospitals, it is expected that hospitals will be able to improve their managerial skills. Thus, the mobilization of funds is improved. The fee retention policy, after the improved management, will result in the health center having flexible funds, which may be used for operational activities. An efficient implementation of above-mentioned activities requires improved managerial skills. It is argued that allowing health centers and hospital to collect and retain revenue will increase financial and managerial autonomy, improve the quality of care, and make the distribution of services fairer (Epstein and Coultas, 1991).

1.2 Research Questions

From the problem identification above, the research questions are as follows: (1) What are the factors influencing the utilization of ACA from physician and patient perspectives and (2) What are the total cost, total revenue and cost recovery of Automated Clinical Analyzer in public hospital and clinical laboratory?

1.3 Objectives of the Study

1) General objective

To determine factors influencing the utilization and assess the cost recovery of Automated Clinical Analyzer in public hospital and clinical laboratory in East Java province.

2) Specific objectives

- (1) To determine factors influencing the utilization of Automated Clinical Analyzer from physician and patient perspectives in public hospital and clinical laboratory in East Java province.

- (2) To identify the cost components of Automated Clinical Analyzer in public hospital and clinical laboratory in East Java province
- (3) To estimate the total cost and the total revenue of Automated Clinical Analyzer in public and clinical laboratory in East Java province.
- (4) To assess the cost recovery of Automated Clinical Analyzer in public and clinical laboratory in East Java province.

1.4 Scope of the Study

This study was intended to determine the factors influencing utilization of ACA from patient and physician perspectives and to assess the cost recovery as well. The samples of patients and doctors were selected purposively from one public hospital and one private clinical laboratory in East Java province. Respondents were interviewed during February 2000, while the data of costing were collected from record form of laboratory unit of public hospital and private clinical laboratory during October 1998 to September 1999. The cost was calculated from provider point of view.

1.5 Expected Benefits

It is hoped that this study can be used as an input and information to policy makers of Bureau of Planning Directorate General of Medical Care, Ministry of Health to make appropriate decision on pricing policy for setting appropriate services charges and purchasing of medical technology in the future. This study can also be used as reference to conduct the health technology assessment, especially the cost effectiveness analysis of new medical devices.