

CHAPTER 1

Introduction

Diabetes Mellitus (DM) is like the silent killer that threatens people's lives because many patients are not aware of having this disease and therefore do not have it treated. So they die before their usual lifespans are complete. In 1993, there were about 14,000,000 persons in the U.S.A. who had Non-Insulin-Dependent-Diabetes Mellitus (NIDDM) (Harris MI., 1993: 642-652), and about a half of them did not know they had DM. It results in several complications especially in vascular, eye, kidney and neuro systems.

DM is a chronic disease that results from abnormal metabolism of carbohydrate, protein and lipid because of insulin deficiency or insulin function is decreased. It results in uncontrolled blood sugar in the body. In Thailand, DM complications are vascular in many organs (eye, kidney, neuro, foot and others) 50%, hypertension 38.4 %, paralysis 3.7 % and cardiovascular insufficiency 2.8 % (Supawan Manosunthon, 1999:2).

Evolving from an agricultural to an industrial society and rapid social, economic and environmental change has resulted in lifestyle modification of people. The competition is increasing, so the people are under more stress. Moreover, values have changed to materialism and consumerism, Thais tend to over consume especially high cholesterol food. In addition, they always use modern technology and facilities, so most of them lack exercise. The risk factors of diseases have increased and the trends of diseases have changed from communicable to non-communicable diseases such as cancer, hypertension and DM etc.

Furthermore, the number of elderly people is increasing, resulting in changes in the pattern of chronic diseases and illnesses related to the aged. Most of the elderly have diseases of the muscular and skeletal, respiratory, gastrointestinal and cardiovascular systems. The mortality rate of heart diseases (death / 100,000 population) has increased from 245.0 in 1985 to 407.5 in 1996, the rate of cancer rising from 169.1 to 236.2 and DM from 25.5 to 57.4 in the same period. (Bureau of Health Policy and Plan, Ministry of Public Health, 1997 : 85-86)

From the changing above, WHO reported that there are more than 50,000,000 DM patients in the world. In Thailand 1995, DM patients totaled 836,000 persons (in Yasothon, there were 3,545 DM patients during the same period) and it is expected DM patients will be twice as high as it is now -- that is about 1,923,000 persons in 2015. This would affect the health, budget and service arrangements for managing services dealing with the problem (Supawan Manosunthon, 1999:2).

Because of the problems above, in decreasing illness and death from DM, the 8th Health Development Plan determined programs of prevention and control of heart disease, vascular problems and DM consisting of the three strategic plans listed below ;

1. Population and community approaches based on lifestyle modification and environment.
2. Case finding in hypertension (HT) and DM in the people who are over 40 years old
3. Continuous referral and treatment

In the three - strategy plan above, the Yasothon Provincial Health Office is proceeding with only continuous finding, referral and treatment in

searching for a procedural model and then determining the DM prevention and control policy and focusing it strictly in practice. However, the weak point of this was that this strategy of population and community-based approach did not include modification of lifestyle and of the environment.

Background and Rationale

The DM problem in Yasothon Province is severe. In fiscal year 1999, it was the fourth cause of death and the sixth of illness in patient department (Yasothon Provincial Health Office, 1999: 6-7), and the number patients were the increasing every year. From the report in 1997-1999, there were many DM patients registered and receiving treatment by doctors in Yasothon: in 1997, 4,574, or 844.57 persons/100,000 population; in 1998, 5,925 or 1,086.42 persons/100,000 population and in 1999, 6,489 or 1162.25 persons/100,000 population (Yasothon Provincial Health Office, 1997-1999). These data indicated that the increase as the number of DM patients from 1997 – 1998 was higher than that of 1998 – 1999; perhaps because in 1997, the Yasothon Provincial Chief Medical Officer (PCMO) began to determine and institute policy for DM prevention and control in every districts. So the DM screening was covered the target groups, after that the DM screening was only the new cases. Because of the DM patients' number are increasing every year, the hospital must having to look after them, it was crowded (there were about 100 DM patients/DM clinic in a community hospital and 250 DM patients/DM clinic in a general hospital) which results in the quality of service not being good. The occupational rate in the hospital is on the increase, and the other patients cannot be admitted as should be done.

Not only are DM patients increasing every year, but the Health Research Institute of Thailand and Ministry of Public Health 1991 studying (Department of

Medical Service, Ministry of Public Health, 1994:130) found that DM patients in Thailand who knew they had the disease and were treated represented only 37.4 % of the total. In Yasothon, although there is no study to confirm unknown DM cases, we expect that there are many DM patients who do not know they are ill and are not being treated by doctors.

An important problem of Yasothon is DM data collection. We found that it was not efficient, there was reiteration of DM patients' name registered; there has not been a central registration program and the data was not useful. We cannot get information for planning, and the situation & severity of DM were not clear.

From the problems shown above, the related health personnel in Yasothon Provincial Health Office researched and developed the model for DM prevention and control. We received budget funding from the Department of Medical Service, Ministry of Public Health, in 1996. The results of this study consist of two main systems; the screening & treatment system and the support system (Winai Sawatdivorn, et al., 1997: 18-25) as follows:

1. Screening and treatment system

1.1 Village Level

The village health volunteers (VHVs.) surveyed the target group and given health education about DM via the village broadcast tower. The VHVs appointed the target groups to check urine sugar in the morning at the community primary health care center (CPHCC). They measured the body weights, heights, checked urine sugar and analysed risk factors of DM in the target group such as family DM history, obesity and use of an immune depressive drug. When the VHVs knew the result of urine sugar, they would proceed as listed below;

1. When the urine sugar was trace, +1, +2, +3, +4, people were referred to check fasting blood sugar (FBS) at the hospital.

2. When the urine sugar was normal (-ve) and the target group did not have risk factors such as family DM history, obesity and use of an immune depressive drug, the VHVs would give health education about DM and made appointments to recheck urine sugar every two or three years at CPHCC.

3. When the urine sugar was normal (-ve) but the target group had risk factors, the VHVs would educate about DM and have them rechecked for urine sugar every six months at CPHCC. This system is summarized by Figure 1

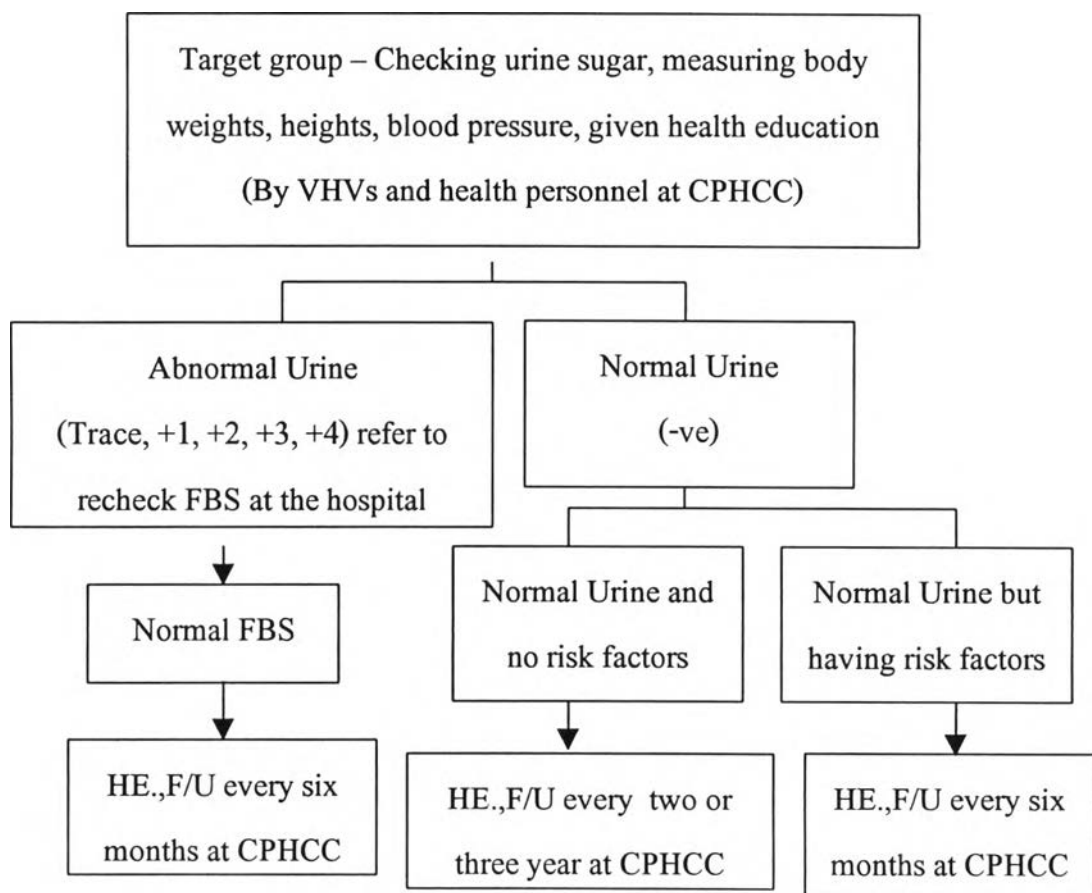


Figure 1 : DM Screening at the CPHCC

1.2 Tambon Level

Every health center has set up a DM clinic. The DM patients were referred from hospitals to health centers nearest their homes. If FBS is between 100–140 mg% and there are no complications of DM, the health center level personnel have a method to treat DM patients. They check FBS by Glucometer --- if the DM patients control FBS between 100–140 mg%, the health personnel will treat by Glibenclamide in the same dose, B.i.d. (morning - evening). Then they educate patients about DM and suggest diet control, exercise and practice. When they treat DM patients for six months, they will refer the patients to be checked at the hospital.

If the patients cannot control FBS, the health center level personnel must refer them to the hospital immediately. The criteria are listed below;

- 1) FBS < 80 mg% or > 160 mg% refer to hospital immediately
- 2) FBS > 140 mg% at least two times continuously
- 3) FBS < 100 mg% at least two times continuously
- 4) having DM complications and
- 5) being treated at health center for six-month course.

Even if there is only one criterion, the health personnel must refer the patients to the hospital by using referral form for check up and treatment, as summarized by Figure 2

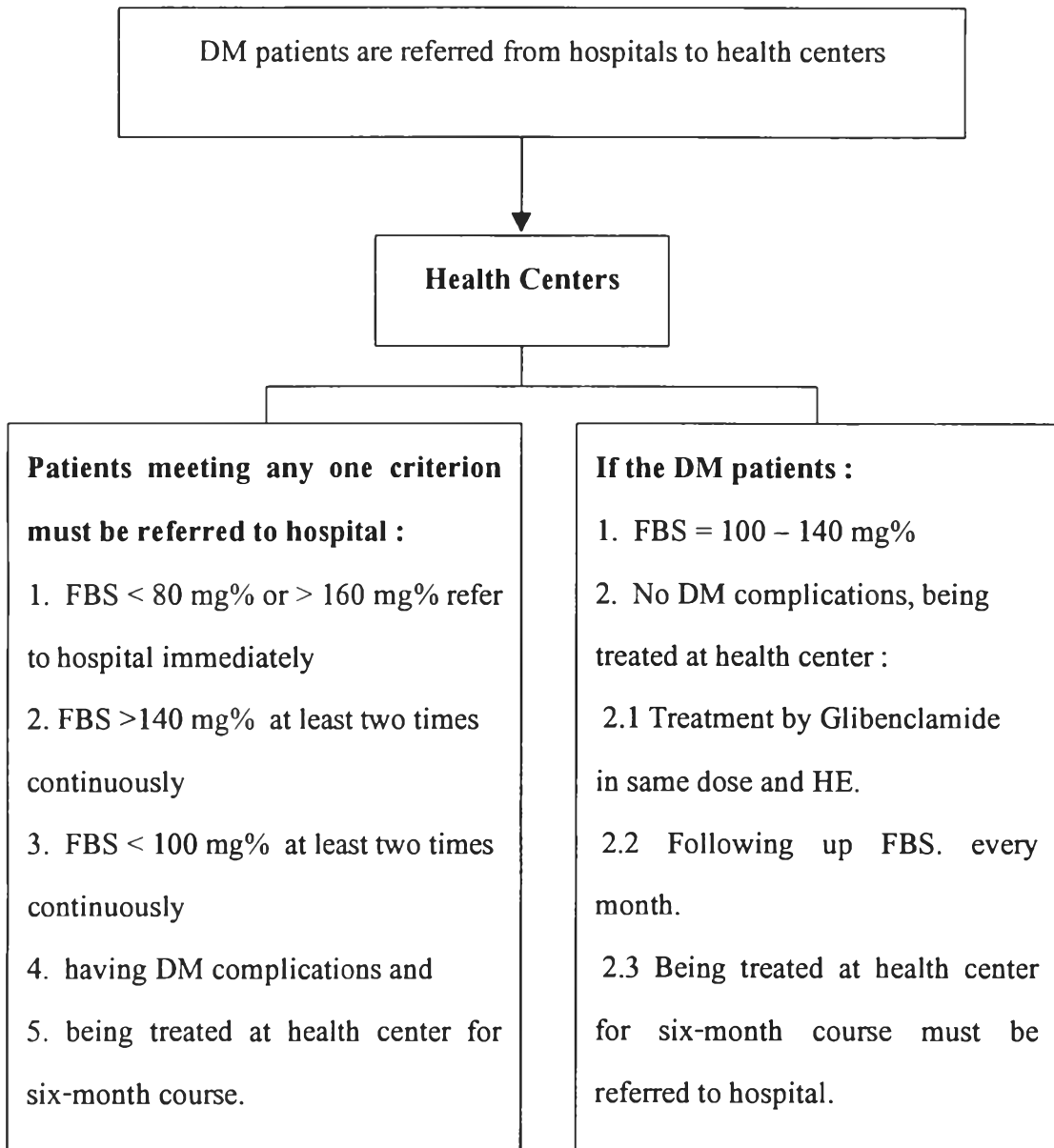


Figure 2 : DM Treatment System at the Health Centers

1.3 District Level

Every hospital has set up a DM clinic and has given service to the DM patients. People over 40 year old go to have urine sugar checked at CPHCC; if their urine sugar tests are abnormal (+ve), they are referred to recheck for FBS at the hospital. These following FBS results are sorted out as follows:

1. FBS is normal (-ve), the health personnel who work in the hospital educate patients in the risk group about DM, giving them appointment to recheck urine sugar at CPHCC every six months. And the hospital staff will report the result of FBS to the district health offices and health centers for DM monitoring.

2. When FBS is abnormal (+ve) > 140 mg% and the patients is diagnosed by the doctor to be DM, the doctor will treat the patient at the hospital in accordance with the following criteria:

A. After DM patients are treated at the hospital and referred to health centers, those DM patients being in a four - criterion state must do as listed below:

- 1) control FBS 100–140 mg% at least two times continuously
- 2) no DM. complications occur
- 3) being treated by Glibenclamide ≤ 1 tablet, B.i.d and
- 4) DM. patients assent to be treated at health centers.

B. The DM. patients treated at the hospital must:

- 1) be unable to control FBS and
- 2) have DM complications.

If patients meet even one criterion, they must be treated at the hospital; this can be summarized as shown in Figure 3

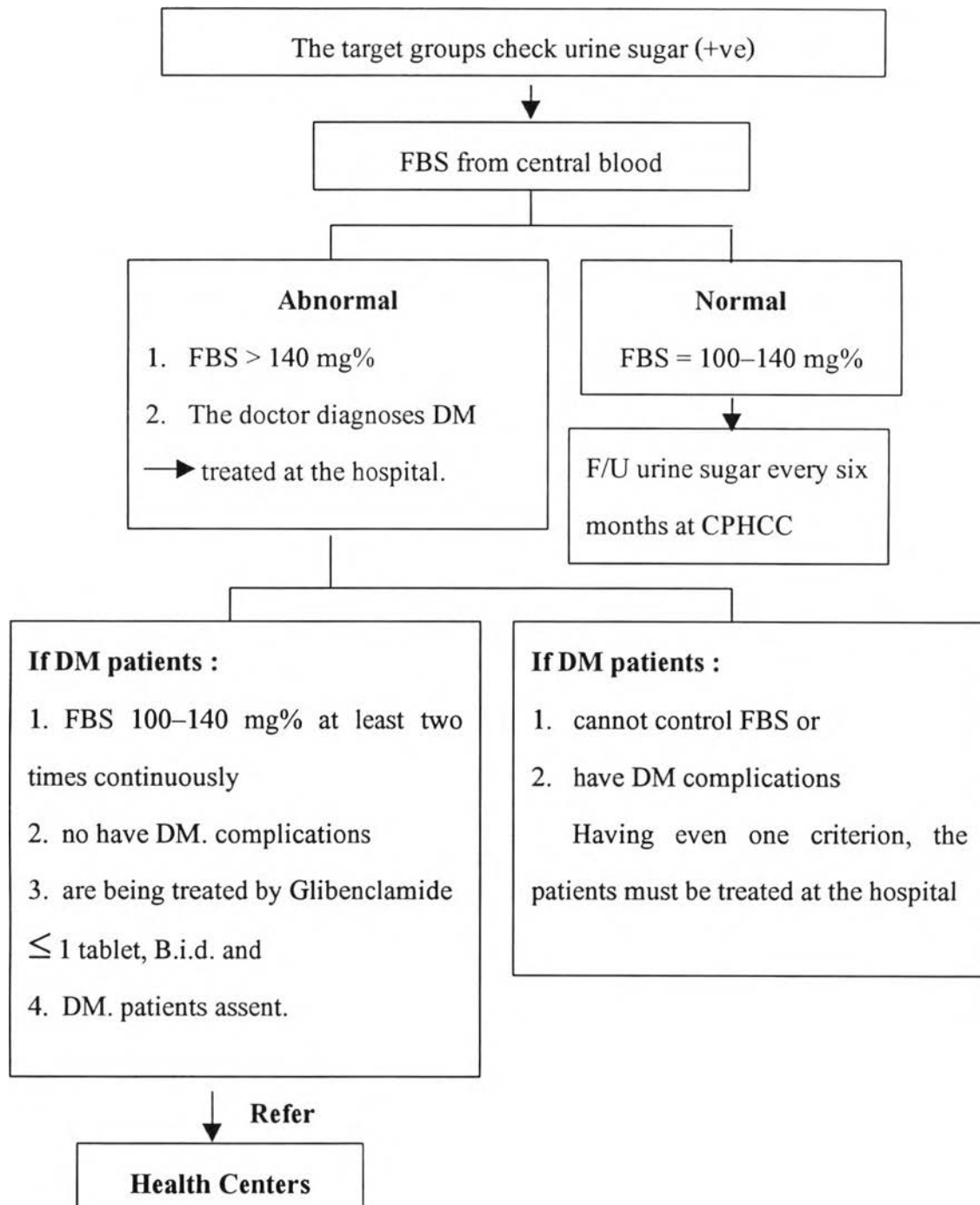


Figure 3 : DM Treatment System at the Hospitals

Summarizing the Direction to Care for DM Patients in Yasothon

Screening test : Urine sugar is +ve (trace, +1, +2, +3, +4)

Referring to recheck FBS at the hospital

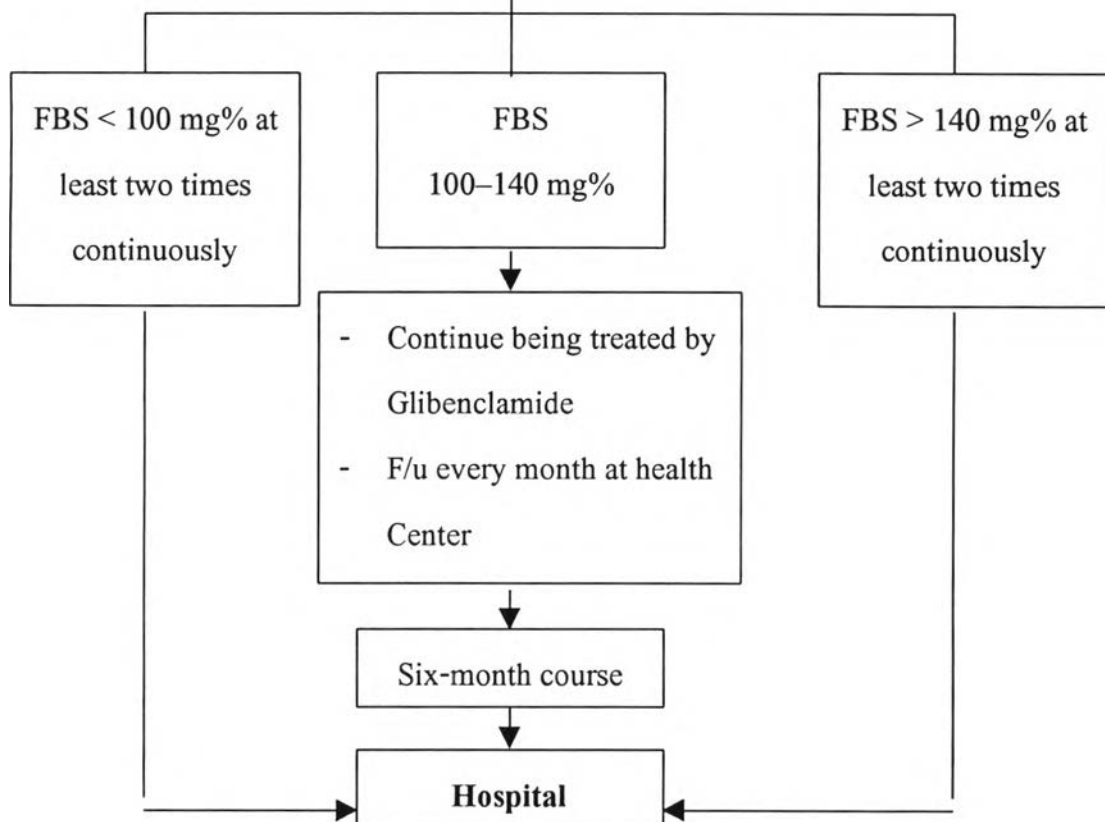


Beginning to be treated at the hospital

- Glibenclamide \leq 1 tablet, B.i.d
- FBS. = 100 – 140 mg% at least two times continuously



Referring to Health Centers



FBS < 80 mg% or > 160 mg% referred to hospital immediately

Figure 4 : Direction to Care for DM Patients in Yasothon Province

2. Support system

2.1 Medical and Medical Equipment Support

2.1.1 To Support Screening System of DM Patients

Yasothon Provincial Health Office supplied Glucometers, urine strips and blood strips to health personnel at every hospital and health center. Then the health centers supplied urine strips to CPHCC. But in fiscal year 1999, Yasothon Province reformed its financing system and used a new model for dividing the budget in accordance with the health care reform idea. The whole budget was allocated to fund the district level and managed by district officials. So Yasothon Provincial health office cannot provide anything to them.

2.1.2 To Support the Treatment of DM

Step 1

1.1 The health center personnel calculate medicine needed in accordance with the number of DM patients treated at health centers within six months and send drug form requests to the hospital.

1.2 The health personnel at the hospitals calculate medicine in accordance with the number of DM patients treated at the hospitals and health centers, and sends requests to the pharmacy room.

Step 2

The pharmacist in the hospital provides medicine for use in the hospital and health centers. The health personnel at the health center receive medicine in accordance with medical administrative plan of each district.

2.2 Development of Health Personnel Potential

Every hospital trains health personnel who work in the hospital and health centers of each district. They train in the following :

- Knowledge of DM
- Caring for DM patients
- Methodology to test urine sugar by urine strip
- Methodology to test FBS by Glucometer

2.3 Development of the Information System

- Supporting DM Card
- Creating DM Program to create a central registry system of DM patients in Yasothon Province
- To try out the program
- Training health personnel for using the program and reporting the result

2.4 Supervision

2.4.1 Yasothon Provincial Health Office monitors and supervises district levels and supervises some Tambons at random for studying problematic obstacles in working as the system of prevention and control of DM model develops and then co-operates to solve problematic obstacles.

2.4.2 Every health district office and hospital monitors and supervises Tambon level for studying problems, obstacles in working as the system of prevention and control of DM model develops. After that they find some way solve the problems and ask for some help and support from Yasothon Provincial Health Office.

2.4.3 The health centers monitor and supervise for studying problems, obstacles in working as the system of prevention and control of DM model develops. Then they take part in solving problems and asking for some help and support from the district health office and Yasothon Provincial Health Office.

After developing a suitable model, Yasothon PCMO strictly determined this focused policy. The agencies of Yasothon Provincial Health Office have had to proceed in accordance with this model since 1997. We introduced and advised about the model and instruct how to proceed for district and province level administrators in the planning and evaluation committee meetings. Furthermore, we invited the nurse directors and health personnel who are responsible to the task of DM prevention and control in hospitals and district health offices to listen to it, and they need to refer to the model when they are on duty or have any chance to advise Tambon level health personnel.

Although the Yasothon Provincial Health Office determined this policy to proceed according this model seriously and continuously, the provincial level supervisor team summarized that there are many health personnel who are responsible to this job in health centers, community hospitals and district health offices who have been moved to the other positions. So many health personnel taking the job nowadays lack the understanding of proceeding in according with the model which results in a lack of continuity. Thus, as the researcher whose position was the chief of mental health and non-communicable disease division of Yasothon Provincial Health Office. My major role was to evaluate the responsible jobs in the division and provide recommendations to the top administrator of the province. Knowing about the process, problems and obstacles in this study of a model is beneficial to government organizations and societies. It will be very useful to develop and adjust the strategy to work properly in the future.