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Holistic Management in Pulmonary Tuberculosis Patients with Malnutrition

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ABSTRACT

Background: Tuberculosis (TB) is still a problem in developing countries and even the world. TB is one of the top 10 causes of death and the first cause of death from an infectious agent worldwide. The government plans to eliminate TB by 2030, which is carried out with the National Strategy for TB control. Family doctors play an important role in which the role of family doctors is not only to cure but also to promote health and prevention of TB disease. **Purpose**: The application of evidence based medical doctor family services to patients by identifying risk factors, clinical problems, and management with a patient centered approach and family approach. **Method:** The study conducted was Case Report. Primary data were obtained through history taking and physical examination by making home visits, filling family folders, and filling patient files. The assessment was carried out based on the initial holistic diagnosis, process, and end of the visit quantitatively and qualitatively. **Results**: Based on a holistic diagnosis, it was found that an 87-year-old patient complained of coughing, difficulty in swallowing and weight loss since three months ago, three weeks ago the patient was diagnosed with TB. Physical examination showed a BMI of 14.2. The patient had difficulty swallowing, with the examination of nerves 10 within normal limits. Internal risk factors include lack of knowledge about TB, and aging. External factors are often exposed to dust. Functional degrees 4. Four visits were made. The interventions provided in the form of education about TB include the definition, symptoms, treatment and prevention, counseling with the family and providing a high-calorie, high-protein diet for patients. The evaluation results show an increase in patient and family knowledge about TB, and improvement in the patient's diet that the family has done. **Conclusion**: The diagnosis of TB with malnutrition and dysphagia is good. Management provided is in accordance with the guidelines, visible changes in behavior and knowledge of patients and patients' families after an intervention based on evidence based medicine that is patient centered, family approach.

Keywords: *TB, malnutrition, dysphagia*

INTRODUCTION

Tuberculosis (TB) is still a problem in developing countries and even the world. A total of 1.5 million people died from TB in 2018 (including 251,000 people with HIV). Worldwide, TB is one of the top 10 causes of death and the first cause of death from an infectious agent. Tuberculosis is a direct infectious disease caused by the TB germ (Mycobacterium Tuberculosis). This disease can be transmitted from one person to another through droplets of sputum with TB patients. The main symptom of pulmonary TB patients is coughing up phlegm for 2 weeks or more. Cough may be followed by additional symptoms, namely phlegm mixed with blood, coughing up blood, shortness of breath, weakness, decreased appetite, weight loss, malaise, night sweats without physical activity, fever for more than one month[1,2].

According to data released by the World Health Organization (WHO), in 2018 there were 10 million new cases due to tuberculosis where Indonesia was ranked 3rd with the most TB cases, which was around 845,000 with a total incidence ratio of 316 cases per 100,000 population. The incidence ratio of TB in Indonesia has decreased where in 2016 where the incidence rate of TB in Indonesia in 2016 was 391/100,000 population, with the TB mortality rate in Indonesia in 2016 was 42/100,000 population compared to 2018 which was 37/100 100,000[2,3].

Various efforts to control tuberculosis that have been carried out, one of which is the Directly Observed Treatment Success Rate (DOTS) strategy which was started in 1995. DOTS is a short-term tuberculosis cure strategy using direct supervision. This strategy is recommended globally by WHO to tackle pulmonary TB, because it can produce a high cure rate. But so far, these efforts have not shown maximum results[4,5].

There are many factors that cause the high TB cases, where the most important role is the incidence of drug withdrawal where many patients stop taking drugs after feeling healthy. In addition, the problem of TB is exacerbated by the increase in HIV/AIDS infection which is growing rapidly and the emergence of the problem of Multi-Drug Resistant (MDR)

TB which is resistant to various kinds of drugs. Another problem is the presence of latent TB sufferers, where the patient is not sick but due to decreased immunity, TB germs will be active again[6].

In 2019, Lampung was ranked 9th for TB cases where there were 15,960 new cases of TB disease from all groups in Lampung Province based on data released by the Ministry of Health. With a case finding rate of only 54.6% of the national target of 70%, perhaps there are still many TB cases that have not been detected in Lampung Province[7].

The government plans the elimination of TB by 2030, which is carried out with the National Strategy in TB control, including strengthening program leadership and system support, increasing access to services for Find TB Treat To Cure (TOSS-TB), control risk factors for TB transmission, increase TB partnerships through forums. TB coordination, increasing community independence in TB control and strengthening program management. To achieve this, the cooperation of various parties is needed. Family doctors play an important role in realizing this, where the role of family doctors is not only to cure but also to promote health and prevent TB disease. The approach taken by family doctors is not only patient centered, but also based on a family approach and community oriented so that the TB elimination target can be achieved[8,9].

AIM OF STUDY

1. Identify risk factors and clinical problems in the patient.
2. Implementing family doctor services in a holistic and comprehensive manner according to the problems found in patients and carrying out evidence-based medicine-based management with a patient-centered, family-focused

METHOD

This study is a case report. Primary data obtained from history (alloanamnesis), physical examination and home visits. Secondary data were obtained from the patient's medical record.

CASE REPORT

Mr. H, 87 years old, represented by family members taking medicine in the TB service room at the Puskesmas. The patient cannot take his own medicine or come with him because his body feels weak and unable to stand on his own. According to family members, the patient's complaints started with a continuous cough for more than 2 weeks and got worse since three months ago, accompanied by shortness of breath, fever and night sweats, these symptoms were felt for the first time. Patient complaints are also accompanied by difficulty swallowing, and weight loss. After three months of illness the patient checked himself into the hospital because the complaints were getting worse and accompanied by shortness of breath. At the hospital, the patient underwent ultrasound and a biopsy as well as a sputum examination. The doctor stated that he had TB with complications of fluid in the patient's left lung (pleural effusion). The patient was then treated for four days to aspirate the fluid in his lungs.

The patient has worked as a pensioner for a long time, before being sick the patient was able to take care of himself fully independently (Barthel index 100) but since the illness the patient has eaten, fed by the family and must be assisted with filtered porridge, bathing, dressing, and tidying up. The patient wears diapers for defecation and defecation due to difficulty walking alone (Barthel index 25).

After returning for treatment from the hospital, the patient was then referred back to the Kedaton Health Center for routine TB treatment for 6 months. The patient has also been given dietary therapy by the hospital (the patient does not know the composition of the food given by the hospital). All family members have been examined for sputum by the puskesmas and were declared negative.

According to the patient's family, none of the family members or closest neighbors had a long cough. The patient has a habit of traveling for a long time by motorbike often without wearing a mask through dusty and smoky areas. Neither the patient nor his family members smoked. Patients rarely exercise.

The patient lives with one of the children and their daughter-in-law and one child at home. Other family members also live next door to the patient. The patient's wife is dead. The patient's psychological condition is quite good, the patient often gathers together with his family members.

Biological Diagnosis and Psychosocial Diagnosis

General condition: looks very ill;

Consciousness: compos mentis; temperature: 36.5°C; blood pressure: 120/70 mmHg; pulse rate: 102 x/minute, regular; respiratory rate: 29 x/minute; body weight: 37 kg; height: 162 cm; BMI: 14.2/kgm2; poor nutritional status.

Generalist Status:
Eyes, ears, nose, impression within normal limits. Neck, JVP not increased, impression within normal limits. No lymph node enlargement was found. Thoracic examination was found on inspection of the shape and movement of the chest within normal limits, on sonor percussion in both lung fields, there were supra sternal (+/+) and intercostal (+/+) retractions on vesicular auscultation (+/+), fine wet rhonchi (+/+), wheezing (-/-). Cardiac examination was within normal limits. Abdomen, looks flat, no organomegaly or ascites is found, there is no tenderness in any region, the impression is within normal limits. Musculoskeletal and neurological status impressions were within normal limits.

Local Status:
Posterior thoracic region
I : Symmetrical, scar (-), tumor (-), same color as surrounding skin, intercostal retraction (+)
P : Tenderness (-/-), Fremitus right = left
P : sonor/sonor
A : Vesicular (+/+), smooth wet rhonki (+/+), Wheezing (-/-)

Anterior thoracic region

I : Symmetrical, scar (-), tumor (-), same color as surrounding skin, intercostal retraction (+), suprasternal retraction (+)
P : Tenderness (-/-), Fremitus right = left
P : sonor/sonor
A : Vesicular (+/+), smooth wet rhonki (+/+), Wheezing (-/-)

Supporting investigation
BTA (+), Current Blood Sugar 142 mg/dl
Pleural puncture: chronic inflammation, presence of tuberculosis is considered
Ultrasound: pleural effusion with marker

Family Data

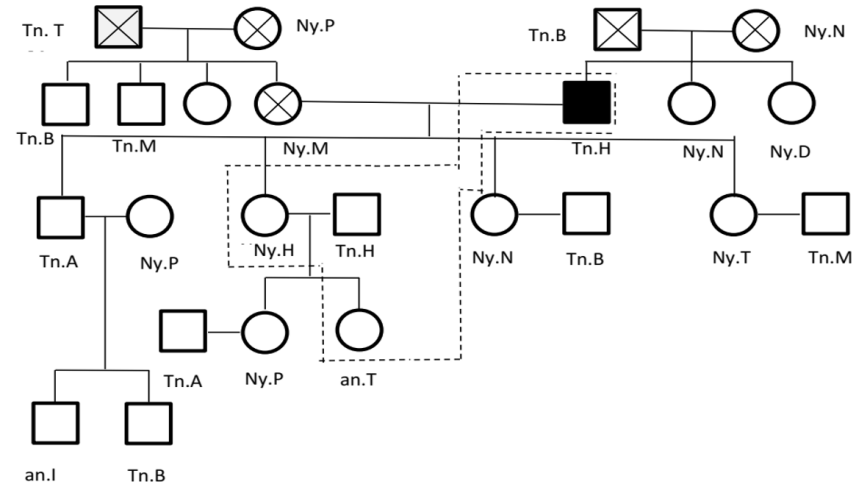
The patient is the father of 4 children, the patient's father and mother have died. The patient's wife has also died. Currently, the patient lives with Mrs. H, age 55 (the 2nd child also acts as PMO), and her son-in-law, Mr. H, 61, Ny.H, has two children, the first is Mrs. P is 30 years old who is married and now does not live together. The second child is An. T is 18 years old. According to the Duvall cycle, this family cycle is in stage VIII (Family with elderly parents). The patient is currently not working. All family problems are discussed together and decided by mutual agreement. The family's material needs are met from the income of their children and in-laws with a total income of 2,500,000/month. The patient also receives income from other children. All family members have health insurance.

The patient's relationship with his children, in-laws, grandchildren and great-grandchildren is quite close and they interact well with each other. Each family member supports another family member who is sick. Awareness of going to medical treatment is still not good. The patient's family went to the Kedaton Public Health Center which was ± 100m from the patient's house which was reached on foot.

Family APGAR Score

Adaptation	: 2
Partnership	: 2
Growth	: 2
Affection	: 1
Resolve	: 1

Total *Family APGAR Score* : 8 (good family function)



Information:
: Patient
: Die
: Male
: Female
: Live in one house

Figure 1. Mr. H Family Genogram

Genogram

The patient's wife had died about five years ago, due to illness, the family did not know what the illness was. The patient's parents have long died and it is also unknown what illness he suffered.

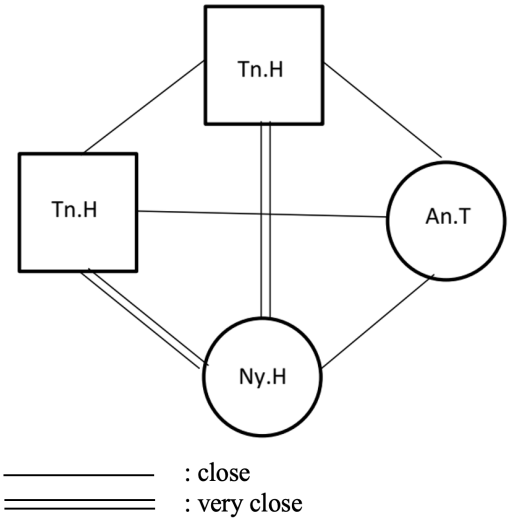


Figure 2. Relationships between families

Family Relations

Home Environment Data

The patient lives with his son and daughter-in-law and one grandson. The size of the patient's house is approximately 8mx6m with three bedrooms, one living room, one living room, one kitchen and two bathrooms. The floor of the house is made of cement, the walls have been painted. The roof of the house is not on the ceiling. Adequate lighting, sufficient sunlight. There are two bathrooms with squat latrines and no handles. The window measures 1m x 0.5m The house already uses electricity. The distance between the houses does not appear congested The water source comes from wells which are used for bathing and washing, the waste is channeled into the sewer. The family's drinking needs use a cooked well.

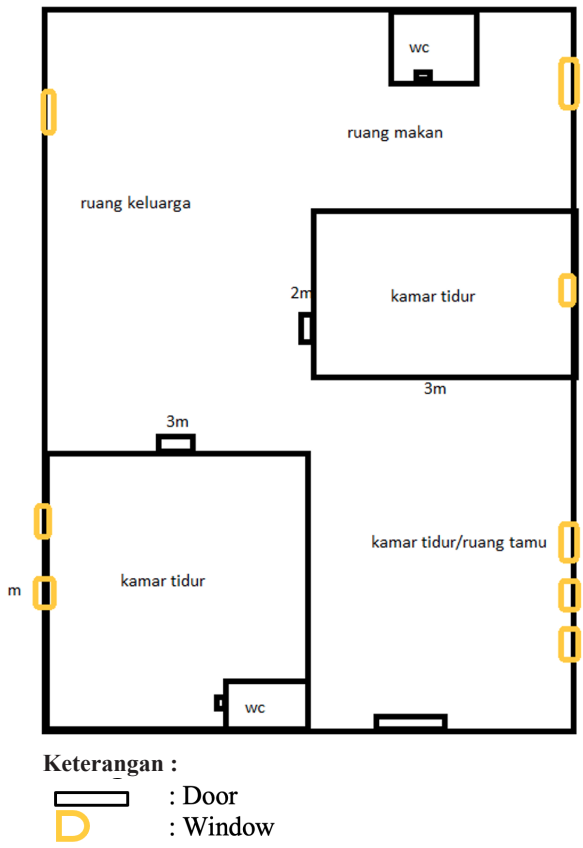


Figure 3. Mr. H House Plan

Early Holistic Diagnostics

1. **Personal Aspect**
   - patient wants disease control (ICD 10 Z51.81)
   - Worries: the disease is getting worse and can no longer be cured
   - Perception: disease can be cured and can return to activities
   - Hope: Complaints are reduced or even gone and the disease can be cured without the slightest flaw

2. **Clinical Aspect**
   - Pulmonary TB BTA +(ICD 10-A15.0)
   - Underweight (ICD 10- A63.6)

3. **Internal Risk Aspect**
   - Lack of knowledge about pulmonary TB disease and the importance of treatment and prevention of pulmonary TB transmission. (ICD 10-Z55.9)
   - Insufficient knowledge about curative treatment behavior (ICD 10- Z76.8)
   - Lack of knowledge about the importance of nutritional therapy for pulmonary TB disease (ICD 10-Z55.9)
   - Advanced age (87 years)

4. **External Risk Aspects**
   - Psychosocial family: Families do not understand about the patient's illness. (ICD 10-Z63.8)
   - Living environment: the house has proper ventilation and lighting, but the furniture is messy. (ICD 10-

Z59.8)
- Social environment: the risk of transmitting pulmonary tuberculosis and transmitting pulmonary tuberculosis. (ICD 10-Z60.8)

5. **Functional Degree:** 4 (four), the patient has difficulty performing daily activities and needs assistance

Intervention Plan

The non-pharmacological interventions given to these patients are education and counseling about their disease, prevention of transmission, prevention of complications, identifying household contacts, explaining guidelines for taking medication, choosing a drug taking supervisor (PMO), and the importance of follow-up examinations at the end of the day. treatment. Interventions also include educating families about Clean and Healthy Behavior (PHBS) and adequate diet in TB patients and the role of families in motivating and assisting patients during the treatment process. Interventions are also carried out by providing information on how to recognize TB disease and what actions need to be taken. The media used are posters about TB education and diet sheets for TB patients including the number of calories, types of substitute food ingredients and the dose of food ingredients. The interventions are divided into patient centered, family focused.

Patient Centered

1. Counseling about tuberculosis in patients.
2. Counseling to patients to carry out routine check-ups if there are complaints and take medicine at the puskesmas if the medicine is about to run out.
3. Counseling to patients regarding guidelines for taking medication and side effects of treatment.
4. Remind the patient to do an examination at the end of treatment.
5. Education about a clean and healthy lifestyle, such as not coughing or sneezing in any place and the function of ventilation in the house.
6. Educate to use masks so as not to become a source of transmission to other family members.
7. Making a specific diet according to the patient's current condition (diet with additional calories and protein).
8. Education if the complaint of difficulty swallowing does not improve or worsens to immediately come to the puskesmas to be referred to a specialist.

Family Focused

1. Counseling regarding Tuberculosis and its nutritional status.
2. Counseling regarding infectious Tuberculosis and recommending family members who later suffer from chronic cough to immediately have their sputum checked.
3. Provide education to families to play a role in reminding patients about the routine of taking medication. And encourage patients to recover from their illness.
4. Counseling on the importance of nutrition for the recovery of TB patients.

Pharmacology

Pharmacological therapy in this patient is as follows:

The fix dose combination with three antituberculosis drugs in one tablet, namely rifampin 150 mg, isoniazid 75 mg and pyrazinamide 400 mg (PDPI) is given 2 tablets.

Final Holistic Diagnosis

1. **Personal Aspect**
   - Concerns about the illness not being cured and interfering with activities, as well as the fear of transmitting it to other people begin to decrease by knowing that routine treatment can cure the disease, and knowing how to prevent the disease.
   - The hope that the patient can complete his treatment until he recovers and does not transmit the disease to others.

2. **Clinical Aspect**
   - Pulmonary TB BTA + (ICD 10-A15.0)
   - Underweight (ICD 10- A63.6)

3. **Internal Risk Aspect**
   - Increased knowledge about pulmonary TB disease and the importance of treatment and prevention of pulmonary TB transmission. (ICD 10-Z55.9)
   - Increasing knowledge about the importance of nutritional therapy for pulmonary TB disease (ICD 10-Z55.9)

4. **External Risk Aspects**
   - Family psychosocial: Increased family knowledge about the patient's illness. (ICD 10-Z63.8)
   - Residential environment: the condition of the house has appropriate ventilation and lighting and the furniture is well organized. (ICD 10-Z59.8)
   - Social environment: the risk of transmitting pulmonary tuberculosis and transmitting pulmonary tuberculosis. (ICD 10-Z60.8)

5. **Functional Degree** 4 (four), the patient is difficult to carry out daily activities and needs assistance.

DISCUSSION

In the patient Mr. H was diagnosed after taking a history, physical examination, and supporting examinations. The patient has been diagnosed with TB from the hospital with additional complaints of difficulty swallowing and weight loss. When first diagnosed, the patient also suffered from complications in the form of pleural effusion which was then treated to clear the effusion fluid. Patients were sent home with TB package drugs and TB treatment packages were handed over to the Kedaton Public Health Center. The patient could not take the medicine on his own because the patient was unable to walk on his own because he was too weak to stand. In patients with pulmonary TB, it is known that the main symptom is coughing up phlegm for more than 2 weeks. Cough is followed by additional symptoms of shortness of breath, weight loss, malaise, sweating and fever at night without physical activity. In HIV-positive patients, coughing is often not a typical symptom of TB, so

the cough does not always have to last 2 weeks or more[10].

On physical examination found a fast respiratory rate (29x/min). On thoracic examination found on inspection of the shape and movement of the chest within normal limits, on sonor percussion in both lung fields, there are supra sternal and intercostal retractions (+/+) on vesicular auscultation (+/+), smooth wet rhonchi (+/+) , wheezing (-/-). In pulmonary tuberculosis, the abnormalities obtained depend on the extent of the lung structural abnormalities. In the early (early) development of the disease is generally not (or very difficult) to find abnormalities. Lung abnormalities are generally located in the superior lobe area, especially the apex and posterior segments, as well as the apex area of the inferior lobe. On physical examination can be found, among others, bronchial breath sounds, amphoric, weakened breath sounds, fine wet crackles, signs of pulmonary withdrawal, diaphragm & mediastinum. The patient has a body mass index of 14.2, where this value is included in the underweight category (<18,5 kg/m^2). Pulmonary TB patients with a body mass index in the underweight category have a higher mortality rate than other body mass indices[11,12]. Malnutrition or lack of calories, protein, vitamins, iron and others, will affect a person's immune system so that he is susceptible to diseases including pulmonary TB.

The patient was diagnosed with pulmonary tuberculosis after the results of the sputum examination were obtained, namely in the category of pulmonary tuberculosis patients with positive smear. Patients are advised to take 2 tablets of the drug every day according to their body weight. Treatment in TB patients itself aims to 1) Cure patients and improve productivity and quality of life. 2) Preventing death due to TB or its subsequent adverse effects. 3) Preventing TB recurrence. 4) Reduce the risk of TB transmission. 5) Prevent the occurrence and transmission of drug-resistant TB. Where the treatment management in this case is in accordance with the literature[10].

The interventions carried out are interventions based on patient centered and family focus. Where the intervention is not only based on the patient but also on his family. Patient Centered Care is managing patients by referring and respecting individual patients including preferences/choices, needs, values, and ensuring that all clinical decision making has taken into account all the values desired by the patient. Family focused is an approach that involves the patient as part of the family, so that the family plays a role in the development of the patient's illness. For the patient's family, it is hoped that there will be an increase in knowledge and a change in attitude that will lead to the patient's health. In addition, patients and their families can understand the steps for treating TB disease, and participate in preventing TB disease transmission[13].

Patients and families are explained about the explanation of TB disease, causes, symptoms of tuberculosis, modes of transmission, therapy, complications that can occur, and ways to prevent transmission of the disease. Therapeutic education is explained about the duration of treatment, side effects that can occur, and the importance of OAT adherence. Patients and families were also explained about the importance of taking medication supervisors (PMO) with the DOTS (Directly Observed Treatment Shortcourse) method which was carried out to prevent drug withdrawal events due to patients forgetting to take medication, therefore the importance of the role of the family in preventing complications in patients and also preventing the occurrence of complications. drug resistance. In addition, patients are also asked to make a record of the drugs eaten every day with the help of a calendar. Giving an "X" is given every time the patient takes the drug on the date on the calendar. This calendar is expected to help patients and their families as PMOs to participate in maintaining patient medication adherence. Patients are also tested for blood sugar to determine whether the patient has type 2 diabetes or not. On blood glucose examination, the blood glucose level was 142 mg/dl, which indicates that the patient does not have diabetes mellitus. The health threat due to TB has the potential to increase along with the increase in the number of people with DM. Immune and lung dysfunction in people with DM is what contributes to the poor outcome of people with TB and DM. In addition to DM, patients with TB should also be tested for HIV tests. In areas with a high HIV prevalence with the possibility of TB-HIV coinfection, such as in Indonesia, all TB patients are offered to have an HIV diagnosis test without looking at risk factors[14,15].

Patients and families are also educated about the importance of providing nutritious food to patients and their families. Patients are recommended to eat foods that are high in calories and high in protein (TKTP) to increase the immunity of patients who are infected with tuberculosis, and also to increase the body mass index of patients who currently fall in the underweight category. A high-calorie, high-protein diet aims to meet increased energy and protein needs to prevent and reduce tissue damage. In addition, giving this diet is also to gain weight until it reaches a normal weight. There are principles of the TKTP diet, namely 1. High energy, which is 40-45 kcal/kg BW, 2. High protein, ie 2.0-2.5 g/kg BW, 3. Adequate fat, which is 10-25% of the total energy requirement, 4. Sufficient carbohydrates, ie the rest of the total energy requirement, 5. Sufficient vitamins and minerals, according to normal requirements, 6. Food is given in easily digestible form. In this patient, the TKTP 1 diet was chosen (2600 kcal/day, 100 g protein/day)[16].

CONCLUSIONS

1. The case of the patient is in the form of pulmonary TB, intensive phase treatment with malnutrition
2. Management of pulmonary TB in new cases of pulmonary TB with positive smear is the provision of OAT - KDT category I.
3. Changes in knowledge of the patient and the patient's family can be seen after the intervention with patient centered and family focused.

SUGGESTIONS

For Patients

1. Continuing OAT treatment until complete and declared

cured.
2. Always apply the principle of preventing the transmission of pulmonary TB disease.
3. Maintain a healthy and nutritious diet and intake.

For Family
1. Provide support to patients both physically and psychologically and monitor the supervision of taking the patient's medication until the patient is declared cured.
2. Applying the principle of preventing the transmission of pulmonary TB disease.

For Health Center
1. Perform risk management in addition to addressing patient clinical complaints.
2. Can continue family development.

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