

Analysis of Cost-Effectiveness Use of Antibiotics Patients with Pulmonary TB Outpatient at Royal Prima Medan Hospital in 2018

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ABSTRACT

India, Indonesia and China are the countries with the highest number of tuberculosis cases, which are 23%, 10% and 10% of all cases in the world. Selection of antibiotics that are inappropriate for therapy and irrational use of antibiotics can increase patients without hospitals and government. With the selection of antibiotics with relatively high costs, the effectiveness of the patient's therapy can be approved. This study was aimed to determine the cost-effectiveness of antibiotic use in pulmonary TB patients treated at the Royal Prima Hospital Medan in 2018. This study is an observational or non-experimental study of 46 medical records as samples (respondents), data collected as data patient's general characteristics, type and category of TB drugs, and direct medical costs. Then the data was analyzed with SPSS and agreed on cost-effectiveness of both OAT dosage forms. The results of this study indicate the direct medical research costs of pulmonary TB patients at the Royal Prima Medan Hospital in 2018 amounting to Rp 220,000.00 for action costs, Rp 350,000.00 for doctor services costs, and OAT costs of Rp 1,142,550.00. The cost (P value = 0.973) and effectiveness (P value = 0.665) was not different significantly between each group of respondents who received the FDC and Separated dosage. There is no difference in cost effectiveness between the two forms of TB drugs preparation.

Keywords: Pulmonary TB, Separated Dosage, TB Drug, FDC, Direct Medical Costs, Cost Effectiveness

INTRODUCTION

In industrialized countries around the world, TB disease morbidity and mortality rates have been decreasing. But since the 1980s, the graph has remained and increased in areas with high HIV prevalence. High morbidity is usually found in people with low socioeconomic groups and the prevalence is higher in urban than rural areas (Amin and Bahar, 2014).

Tuberculosis is estimated to still attack 9.6 million people and cause 1.2 million deaths in 2014. India, Indonesia and China are the countries with the most tuberculosis sufferers, namely 23%, 10% and 10% of all sufferers in the world, respectively. TB prevalence in 2014 was 647 / 100,000 population, increased from 272 / 100,000 population in the previous year, the 2014 incidence rate was 399 / 100,000 population from the previous 183 / 100,000 population in 2013, as well as the mortality rate in 2014 of 41 / 100,000 population, out of 25 / 100,000 population in 2013. Most of the cases estimated in 2014 occurred in Asia (58%) and Africa (28%); the four smallest proportions of cases occurred in the eastern Mediterranean (8%), the European region (3%) and the American region (3%). The six countries with

prominent TB cases with large numbers of cases in 2014 were India, Indonesia, China, Nigeria, Pakistan and South Africa, these countries and four other countries (Bangladesh, Philippines, DR Congo, and Ethiopia) which became top ten countries with TB disease. India, Indonesia and China alone were responsible for 43% of global cases in 2014 (WHO, 2015).

In 2015, it was found that the number of tuberculosis cases was 330,910 cases, an increase compared to all tuberculosis cases found in 2014 which amounted to 324,539 cases. The highest number of cases reported was in provinces with large populations, namely West Java, East Java and Central Java. Tuberculosis cases in these three provinces account for 38% of the total number of new cases in Indonesia (Widoyono, 2011).

Based on the results of the Basic Health Research, the prevalence of the population in Indonesia diagnosed with pulmonary TB by health workers in 2013 was 0.4 percent, not different from 2007. The five provinces with the highest pulmonary TB were West Java (0.7%), Papua (0.6%), DKI Jakarta (0.6%), Gorontalo (0.5%), Banten (0.4%) and West Papua (0.4%). The proportion of the population with symptoms of pulmonary tuberculosis with cough ≥ 2 weeks was 3.9 percent and coughing up blood was 2.8 percent (Table 3.4.3). Based on population characteristics, the prevalence of pulmonary TB tends to increase with age, at low education, unemployment. Lowest pulmonary TB prevalence in the top quintile. Of the total population diagnosed with pulmonary TB by health personnel, only 44.4% were treated with program drugs. The top five provinces that treat TB with program drugs are DKI Jakarta (68.9%), DI Yogyakarta (67.3%), West Java (56.2%), West Sulawesi (54.2%) and Central Java (50.4%) (RISKESDAS, 2013).

Based on the OAT guidelines used in Indonesia, there are two OAT drug preparations, namely the OAT-KDT or (FDC) and the Kombipak package. OAT-

KDT or Fixed Dose Combination Anti-Tuberculosis Drugs are provided for category-1 and category-2 treatment and are packaged in one package for one patient. While the kombipak package is a loose drug package consisting of Isoniasid, Rifampin, Pyrazinamid and Ethambutol which is packaged in a blister form, and is provided for the treatment of patients who experience side effects of OAT-KDT.

The comparison of the efficacy of this drug in curing pulmonary TB also varies. Several studies have been conducted to compare the effectiveness of this drug as reported by Al-Shaer et al. (2017) on 148 respondents at two public hospitals in Qatar reported that there was a significant difference in the time it took for the conversion of sputum results to negative between respondents who received FDC and separate doses in the group of respondents with diabetes where it took longer for respondents who received the kombipak package.

Inappropriate selection of antibiotics in a therapy and irrational use of antibiotics can increase patient and hospital and government expenditures. The selection of antibiotics with relatively high costs does not necessarily guarantee the effectiveness of patient therapy. The condition that attracted the attention of the author to know more about the cost-effectiveness of using antibiotics in patients with a diagnosis of pulmonary tuberculosis who was hospitalized at the Royal Prima Hospital Medan.

LITERATURE REVIEW

Tuberculosis

Tuberculosis is an infectious disease of the chronicle which attacks almost all the organs of the human body and is the largest of the lungs (Bahar et al., 2014). The World Health Organization/ WHO (2014) define pulmonary tuberculosis is the TB cases diagnosed clinically and bacteriological involving the lung parenchyma or ducts trakeobronkial. Millitary TB diklasifikasi as pulmonary TB due to lesinya in the lung.

The Diagnosis Of Pulmonary Tuberculosis

The Diagnosis can be established through anamnesis (history taking) and physical examination, radiograph, and results of the examination bakteriologik. The Diagnosis is definitely established if on examination bakteriologik found M. Tuberculosis in sputum or tissue. Because the effort to find TB bacillus is not always easy, then sought a way to be able to prove that there is a TB bacillus in the body. The way the proof is via serology (Djojodibroto, 2012).

Farmakoekonomi

Farmakoekonomi is the science that measures the cost and the results obtained are linked with the use of drugs in health care. Analysis farmakoekonomi describe and analyze the drug costs to the health care system (Arnold, 2016). Farmakoekonomi also defined as the description and analysis of the cost of therapy in a health service system, about the process of identification, measuring, comparing costs, risks and benefits of a course of therapy services (Araujo et al., 2016). The results of the analysis farmakoekonomi can be used as information that can help policy makers in determining the choice of alternatives of treatment available to the health service more effective and efficient (Trisna, 2016).

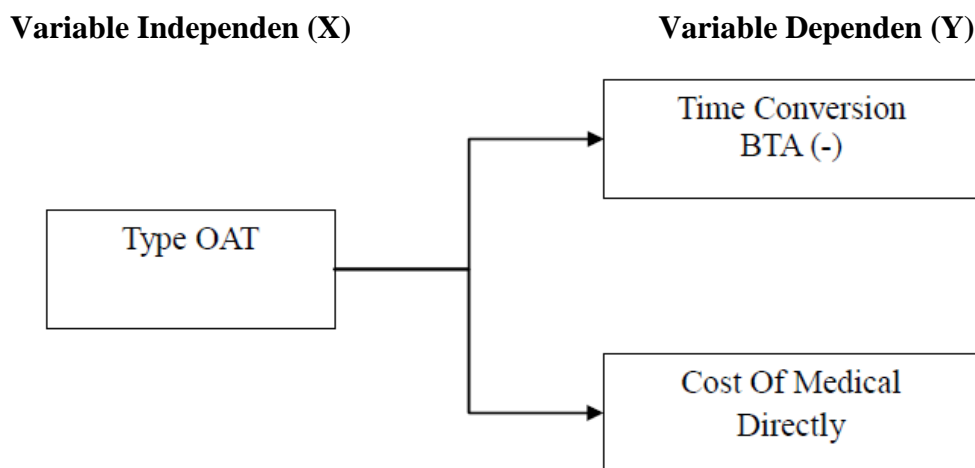


Figure 1 Conceptual Framework

Hypothesis

Based on the background research and the relationship between variables, the hypothesis of this research is as follows :

Ha : There are differences in the cost-effectiveness of treatment between types of dosage OAT on an outpatient basis with a diagnosis of Pulmonary TB in Hospital Royal Prima Medan year 2018.

Ho : there is No difference in cost-effectiveness of treatment between types of dosage OAT on an outpatient basis with a diagnosis of TBParu in the Royal Hospital Prima Medan year 2018.

MATERIAL AND METHODS

This research is an observational or non-experimental study by collecting and collecting existing data without giving any intervention or treatment to the test subjects and is carried out retrospectively, namely the medical records of outpatient pulmonary tuberculosis patients at Royal Prima Hospital Medan. The results of the data were analyzed for their cost-effectiveness of pulmonary TB therapy without studying the relationship between each variable or descriptive non-analytic.

The populations of this study were all medical records of patients diagnosed with pulmonary tuberculosis in 2018.

Meanwhile, the reachable populations of this study were all media records of outpatient pulmonary tuberculosis patients at Royal Prima Hospital Medan in 2018. Sampling was carried out by disproportional random sampling, where the medical records with a diagnosis of pneumonia in children during 2018 were selected as many as $46/12 = 3.83 \sim 4$ people each month who were randomly selected, so that 46 medical records were found throughout 2018.

The data collection method in this study where the data collected in this study is secondary data obtained from outpatient medical records with pulmonary TB diagnoses during 2018, data collection is written in tabulated sheets. The method of measurement in this study is to collect secondary data from the medical records of outpatients with pulmonary tuberculosis at the Sakir Royal Prima Medan Hospital in 2018. The data collected in this study are age, gender, occupation, treatment category, types of health insurance, Negative BTA Conversion Time, Types of OAT, Nursing and Treatment Costs, Doctor's Service Fees, Supporting Examination Fees, OAT Prices and Other Drug Prices

RESULTS AND DISCUSSION

Characteristics Of Outpatients With A Diagnosis Of Pulmonary TB

The results of this study contradict the results of research by Ulya and Thabrany (2019) at the Private Hospital of Depok City which reported that there were more female patients, namely between 20-22 people (55.56% -61.11%) who experienced pulmonary TB than male patients 14 -16 people (38.89% -44.44%) in both hospitals with DOTS and non-DOTS.

The results of this study are not much different from the results of Kurniawan's research (2015) at the Harapan Raya puskesmas, it was found that the older the age, the fewer the number of patients who experience pulmonary tuberculosis, where at productive age (15-50 years) 36 people had pulmonary tuberculosis while

the rest were found. 7 people (16.3%) at non-productive age (> 50 years).

Meanwhile, if it is viewed from the use of insurance or the method of payment made in this study, almost all patients pay using BPJS for health both at health centers and hospitals (Ulya and Thabrany, 2019). This is in line with the results of a study where 76.1% of outpatients with pulmonary TB treated with BPJS.

Characteristics Of Outpatient Treatment With A Diagnosis Of Pulmonary TB

The results of this study are not much different from the results of research conducted by Kurniawan et al. (2015) at the Puskesmas Harapan Raya reported that there were more patients using OAT with loose preparations as many as 41 people (95.3%) compared to OAT-KDT as many as 2 people (4.7%).

Analysis Of Medical Costs In Outpatient Pulmonary TB

As a comparison of costs. The cost of doctor services in this study tended to be cheaper when compared to the average DOTS Hospital in other cities such as Depok where the average cost of doctor services was IDR 1,375,700.00. However, the cost of action is also considered cheaper in the results of this study, namely IDR 220,000 while in other cities it can reach IDR 440,600.00. However, the cost of OAT drugs at the Royal Prima Hospital is considered more expensive, namely IDR 1,143,550.00 compared to other DOTS hospitals in other cities, namely IDR 360,000.00 (Ulya and Thabrany, 2019).

Effectiveness Of Treatment Costs Of Pulmonary TB Treatment

The results of this study indicate the results of research that are in line with the results of research by Al-Shaer et al. (2017) who reported that the average time needed for the conversion of positive to negative AFB was 29.9 days in patients receiving OAT-KDT while those receiving OAT loose preparations took a little longer to

experience a negative AFB conversion, namely 35.6 days. However, the difference was not statistically significant, as reflected in the P value which was less than 0.05 (P value = 0.12).

Other studies show results that are not much different from Wu et al. (2015) reported that there was no significant difference between pulmonary TB patients who received OAT-KDT and loose preparations.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

- a. The trend of direct medical costs for pulmonary TB patients at the Royal Prima Hospital Medan in 2018 is Rp. 220,000.00 for action costs, Rp. 350,000.00 for doctor services fees, and OAT costs of Rp. 1,142,550.00.
- b. There was no difference in the price of OAT in patients who received KDT and loose preparations (P value = 0.973).
- c. There was no difference in the effectiveness of treatment through the negative BTA conversion time between patients using FDC and loose preparations (P value = 0.665).

RECOMMENDATIONS

From the results of this research, the authors provide the following suggestions:

- a. Need to do more research with the approach/type of other research to explore the effectiveness of both types of dosage forms.
- b. Agencies may need to conduct monitoring and evaluation of related treatment costs or perform a cost comparison with other agencies, so that agencies can have the cost of medical directly with competitive price.

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