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Abstract Book

LIAT OF SELECTED ABSTRACT

ORAL PRESENTATION

ANALYSIS OF THE RELATIONSHIP BETWEEN HOME PHYSICAL ENVIRONMENT AND TUBERCULOSIS (TB) CASES BASED ON AGE GROUPS IN THE SUB-DISTRICT OF CIAWIGEBANG, KUNINGAN REGENCY, WEST JAVA PROVINCE IN 2022

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ABSTRACT

Backgrounds: Tuberculosis (TB) is still a high-burden disease in global including Indonesia. Based on the World Health Organization (2021), the estimated number of TB cases in Indonesia in 2021 is 845,000 and the Ministry of Health (in 2018), the number of cases in West Java is 31,598 and It is generally located in slum's area and dense population with age range between 15-50 years (WHO, 2021). This abstract focuses on discussing the relationship between physical home environment and the incidence of tuberculosis by age group.

Methods: The research method is an analytic observational with a mixed method design with a total sampling of 142 respondents from the number of TB patients undergoing treatment at the Ciawigebang and Cihaur Health Centers, Kuningan district, West Java in 2021. The research data was processed and analysed using the Chi-Square and Logistic Regression test.

Results: The distribution of TB patients based on the productive age group was 98 people or 69.1% and 44 people or 30.9% were from non-productive age groups. Based on the results of statistical tests, it was concluded that there was a relationship between occupancy density, ventilation size, room humidity, room temperature, lighting, and floor type with the incidence of tuberculosis based on age group or p-value less than 0.05. The most dominant factor is the size of the ventilation with an OR of 7.953.

Conclusion: Ventilation which is under standard resulted low room temperature, high humidity, and poor lighting, non-waterproof floors, and transparent walls then it will increase the risk of TB transmission in the productive age group. The cross-sectoral cooperation, including the community empowerment are expected to improve the physical environmental situation, especially ensuring that ventilation met the standards then it will be carried out to prevent TB transmission.

Keywords: Tuberculosis, Age Group, Environment, Ventilation

COMPREHENSIVE SCREENING AND TUBERCULOSIS PREVENTION TREATMENT IN INTERNATIONAL RESIDENTS AND EMPLOYEES IN COMMUNITY INSTITUTIONS IN MIMIKA DISTRICT

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ABSTRACT

Backgrounds: Penitentiary is an area that has a high risk of TB transmission due to the density of residents and the high intensity of contact. Class 2 Penitentiary in Mimika Regency have routinely carried out TB screening every 3 months but have never found TB cases. In March 2022, it was found that a Penitentiary inmate was sick with TB, so a contact investigation was necessary. In April 2022 the Limau Asri Health Center and the Health Office collaborated to carry out a comprehensive TB screening activity for inmates and employees in Penitentiary. This research will report the case finding of active TB and latent TB in Mimika district penitentiary after comprehensive screening has been carried out.

Methods: This is a cross-sectional research on a comprehensive screening activity of inmates and employees in the Mimika district penitentiary which was conducted from April to June 2022. Data sources from the Tuberculosis Information System (SITB) of the Mimika District Health Office and the register of TB screening participants in the penitentiary.

Results: We evaluated the symptoms and signs of TB and examined sputum using the Molecular Rapid Test on 398 inmates and employees at Mimika Prison. From the TCM examination, it was found that 10 inmates had confirmed TB (2.5%) and received TB therapy. Tuberculin tests were carried out on 354 inmates and prison employees whose TCM was negative and did not show symptoms of TB, and 254 (71.7%) were diagnosed as positive for latent TB. TB preventive treatment with Isoniacid and Rifapentin regimens for 3 months was given to 242 patients (95.2%) and by August 2022 a total of 197 patients (81.4%) had completed TPT.

Conclusion: The high cases of latent TB infection indicate an active process of transmitting TB bacteria in Penitentiary. TB screening in penitentiary needs to be carried out routinely and comprehensively for all penitentiary residents to prevent TB outbreaks in Penitentiary.

ASSOCIATION BETWEEN CLINICAL PARAMETER, LABORATORIUM AND RADIOLOGY ALONG WITH VALIDATION OF SCORING SYSTEM WITH LUNG TUBERCULOSIS STATUS IN ADULT HIV PATIENTS

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ABSTRACT

Background: Many obstacles are commonly found in diagnosing tuberculosis in HIV patients, increasing the risk of morbidity and mortality in patients. This study aimed to assess the association of several clinical, laboratory and radiological parameters to pulmonary TB status in adult HIV patients.

Methods: This was an observational analytic study with cross-sectional design conducted in Bali from January to June 2021, involved patients with HIV. Bivariate analysis was performed with chi-square, while multivariate analysis with multiple logistic regression. The adjusted odds ratio indicates the association of each parameter with pulmonary TB status and used as the base to compile a score for adult TB.

Results: From 105 subjects, 92 subjects met the research requirements. The results of the multivariate analysis obtained several significant variables ($p < 0.05$); cough (OR: 17.0), shortness of breath (OR: 21.0), fever (OR: 20,0), weight loss (OR: 5.5), night sweats (OR: 31.6), chest radiograph (OR: 80.0), geneXpert (OR: 27.8), neutrophils (OR: 6.2), NLR (OR: 10.7), MLR (OR: 11.3) and ESR (OR: 11.9). The results of pulmonary TB scoring in adult HIV patients with a value of > 55 indicate pulmonary TB and < 55 non-pulmonary TB with a significant validity test result (p-value < 0.001).

Conclusion: Clinical, laboratory and radiological parameters have a significant relationship with TB status in adult HIV patients and can be used as complements to the gold standard if the results of the XpertMtb examination are doubtful or not in accordance with the patient's clinical course.

Keywords: Clinical, laboratorium, radiology, TB status, Human immunodeficiency virus (HIV), XpertMtb

RISK FACTORS FOR DEATH OF MDR TB IN MIMIKA REGENCY, PAPUA FROM 2020 TO 2021

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ABSTRACT

Background: Based upon the WHO Global TB Report in 2019, Approximately 24.000 cases of drug-resistant tuberculosis (DR TBC) are anticipated to occur annually in Indonesia. In MDR TB cases, death is impacted by numerous factors. This research intends to identify the factors that contribute to the overall mortality of MDR TB patients.

Method: This research utilized a retrospective observational cohort methodology of MDR tuberculosis patients in Mimika Regency over the years 2020 - 2021. Data were acquired from the Tuberculosis Information System (SITB) of the Mimika District Health Office and medical records. The risk factors for death in MDR TB patients were determined by using descriptive analysis and unadjusted odds ratio.

Result: By the 37 MDR TB patients who were diagnosed in Mimika Regency overall in 2020–2021, 34 underwent therapy, and 7 of them passed away (20.5%). Two of the three patients who did not receive treatment died (66.7%). MDR TB mortality recently been diagnosed who had previously been treated for TB (n = 17, 77.7%, OR = 6.3), Papuan ethnicity (n=16, 66.6%, OR 3.6), Unilateral infiltrate in chest x-ray (n=20, 66.6% OR 2), Women (n=22, 55.5%, OR 0.8), HIV (n=7, 44.4%, OR 6.6), short-term treatment regimen (n=11, 44.4%, OR 4), Diabetes mellitus (n=6, 11.1 %, OR 0.57, 95% CI = 1.00–1.11).

Conclusion: Patients with a history of preceding TB treatment are the largest risk factors for the mortality rate among MDR TB patients in the Mimika regency between 2020 and 2021. MDR TB patients require improved clinical care management to avert death.

LEVELS OF FERRITIN, TRANSFERIN AND IRON IN CASES OF PULMONARY TUBERCULOSIS AND HOUSEHOLD CONTACS IN MAKASSAR

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ABSTRACT

Background: Iron deficiency can interfere with immune function, increasing the susceptibility and severity of TB disease. Anemia in TB is caused by impaired iron transport. The aim of study was to obtain an overview of ferritin, transferrin and Fe levels as the basis for assessing susceptibility to TB disease.

Methods: This initial study involved 70 TB cases and TB contacts. consecutive sampling, with the criteria of positive smear results for TB cases and positive IGRA results for TB contacts, data normality test with Shapiro-Wilk and descriptive statistic to see the levels of ferritin, transferrin and Fe in both groups.

Results: Both TB cases (60%) and TB contacts (54%). in male (57%) and female (66%) TB cases in TB contacs. The average HB level in TB cases is 11,9 g/dL and TB contacs is 13,1 g/dL The mean Fe level in case were 150,12 µmol/L and 629,35 µmol/L pada kontak TB (p<0,001). The mean transferin level of TB cases was 60,91 ng/ml and 61,57 ng/ml in TB contacs (p <0,0001). Rerata ferritin pada kasus TB 112, 28 ng/ml dan 115,34 ng/ml in TB contacts (p= 0,55).

Conclusion: The addition of other markers of iron metabolism,, total iron binding capacity, unsaturated iron binding capacity and soluble transferin receptor with T-Spot assay is expected to differentiate TB cases and TB contacts.

Keywords: Anemia, Ferrritin, transferrin, Iron

ASSESSING THE DIAGNOSTIC PERFORMANCE OF NEW COMMERCIAL IGRAS FOR *MYCOBACTERIUM TUBERCULOSIS* INFECTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ABSTRACT

Background: In recent years, new interferon-gamma release assays (IGRAs) have been introduced to diagnose tuberculosis infection (TBI). We conducted a systematic review and meta-analysis to compare the diagnostic performance of these six new IGRAs (QFT-Plus, QIAreach, QFT-Plus CLIA, TB-IGRA, TB-Feron, and T-SPOT.TB with T-Cell Select) with the WHO endorsed tests (QFT-G, QFT-GIT, T-SPOT.TB, and the TST) and or the QFT-Plus. This review was commissioned by WHO in July 2021, and results were presented to a WHO technical advisory group in October 2021.

Methods: We searched studies in Medline, EMBase, Web of Science, Cochrane Database of Systematic Reviews, International Clinical Trials Registry Platform, International Journal of Tuberculosis and Lung Disease, and manufacturers' data. We selected cross-sectional and cohort studies comparing the diagnostic performance of new IGRAs with WHO-endorsed tests. Data were extracted independently and in duplicate; study quality was assessed with the QUADAS-C tool.

Results: Compared to the QFT-GIT, QFT Plus's sensitivity was 0.1 percentage points lower (95% CI, -2.8, 2.6), and its specificity 0.9 percentage points lower (95% CI, -1.0, -0.9). Compared to the QFT-GIT, Wantai TB-IGRA's sensitivity was 3.0 percentage points higher (95% CI, -0.2, 6.2), and its specificity 2.6 percentage points lower (95% CI, -4.2, -1.0). Agreement between the QIAreach and QFT-Plus CLIA with QFT-Plus was excellent (pooled kappa statistics of 0.86 [95% CI, 0.78, 0.94] and 0.96 [95% CI, 0.92, 1.00], respectively). The pooled kappa statistic comparing the TB-Feron and the QFT-Plus or QFT-GIT was 0.85 (95% CI, 0.79 to 0.92). No independent studies assessing the T-SPOT.TB with T-Cell Select were included.

Conclusions: The QFT-plus and the Wantai TB-IGRA have very similar sensitivity and specificity as WHO-approved IGRAs. Studies assessing other new IGRAs than the QFT-Plus and the Wantai TB-IGRA are limited.

Keywords: IGRA, TB infection, Systematic Review

TUBERCULOSIS INFECTION RISK FACTORS AND EXPOSURE TIME AMONG HOUSEHOLD CONTACTS OF BACTERIOLOGICALLY CONFIRMED TUBERCULOSIS PATIENTS IN TWO DISTRICTS, YOGYAKARTA PROVINCE, INDONESIA – ZERO TB YOGYAKARTA

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ABSTRACT

Background: Tuberculosis household contacts are at increased risk of developing tuberculosis infection. Risk factors of tuberculosis infection and significance exposure time among household contacts of persons with infectious tuberculosis (TB) are still not widely studied.

Method: A retrospective cohort study was performed using records of contact investigation of bacteriologically confirmed tuberculosis patients registered in SITB from 2018-2022, in two districts of Yogyakarta Province, from January 2021 until July 2022. Contact investigation data were collected from all household contacts that had clinical assessment, chest X-ray, tuberculin skin test (TST), and those with clinical suspicion of tuberculosis were also examined for sputum with Xpert MTB/RIF. Lastly, we classified the diagnosis and analyzed the risk factors of tuberculosis infection among household contacts.

Result: We found tuberculosis infection in 87 (2.9%) and Latent TB Infection (LTBI) in 1081 (35.8%) of 3020 household contacts of 944 bacteriologically confirmed tuberculosis index patients. Mean of exposure time to develop tuberculosis infection was 375.46 days, while mean exposure time of LTBI was 313.04 days. There was no significance between exposure time and diagnosed classification of household contacts of bacteriologically confirmed tuberculosis patients *($P>0.05$).* The risk of tuberculosis infection increased in household contacts who are male, live in the same household, and have history of previous TB infection.

Conclusion: No significant was found between the time of exposure and the prevalence of tuberculosis infection among household contacts exposed in confirmed tuberculosis patients. This study also focuses on risk factors associated with tuberculosis infection among bacteriologically confirmed tuberculosis household contacts.

CASCADE OF CARE OF RIFAMPICIN-RESISTANT TUBERCULOSIS IN BANDUNG GREATER AREA

ABSTRACT

Background: The cascade of care (CoC) is one of the public health tools to identify gaps along patient care, and thereby indicating which step needs intervention. Rifampicin-resistant tuberculosis (RR-TB) is a thread for TB control in Indonesia with a low treatment success rate. This study aimed to identify the gap in the RR-TB CoC in the Bandung Greater Area.

Method: We studied CoC of RR-TB patients from the programmatic registry that included all presumptive RR-TB patients in the Bandung Greater Area, which included Bandung and Bandung Barat districts, as well as Bandung and Cimahi cities in 2020. We investigated the characteristics of RR- TB patients and their subsequent care, including established diagnosis with Xpert MTB/Rif and DST testing, the therapy, and its outcomes.

Result: We collected 2,812 presumptive RR-TB cases data, of which 87.6% went through Xpert MTB/Rif, and 14.2% were diagnosed as MDR-TB with a male proportion of 60.7% while female proportion of 39.3%. The RR-TB patients had a median age of 35 (IQR=22). Of those with RR-TB (n=399), 81.7% continued treatment, yet only 28.8% treated successfully, while 18.7% died during treatment. 57% of the RR-TB patients were supported by the result of the phenotypic drug-susceptibility testing (DST). Those who went on therapy mainly came from Bandung City (98.8%).

Conclusion: RR-TB patients were characterized with a significant proportion who did not initiate treatment, low treatment success rate, and only few supported with phenotypic DST results. Interventions to link patient with RR-TB treatment facilities, improve patient's adherence to treatment, and better laboratory support are warranted to improve RR-TB quality of care.

Keyword: Rifampicin Resistant Tuberculosis, cascade of care

ENGAGING COMMUNITY STAKEHOLDER FOR TB ACTIVE CASE FINDING: EXPERIENCES FROM ZERO TB PROJECT

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ABSTRACT

Background: The World Health Organization recommends active case finding (ACF) of tuberculosis (TB) to find the missing cases. Community engagement and involvement of the to stakeholders if of importance in the success of ACF. This study aims to describe Zero TB Yogyakarta's experience in engaging stakeholders to identify TB cases through ACF using mobile X-ray in the community.

Method: This study was carried out in Yogyakarta district, from April 2021 to July 2022. The process was initiated with preparation, discussion with the head of Puskemas to identify the marginalized and high-risk areas for TB. In the implementation phase, we conducted intersectoral meetings with the head of sub-district to explain and assist TB screening activities, and discuss action plans. During local community events, community leaders and cadres mobilized communities to participate in the ACF and disseminate information about TB. In the end, a review and evaluation were conducted to identify challenges and to evaluate the achievement.

Result: We conducted ACF using mobile X-ray in all subdistricts in Yogyakarta districts. The coordination and involvement of the stakeholders were going well. We screened 23,264 participants (42.3% male and 57.7% female) at 270 ACF events A total of 3,335 person had TB presumptive and 364 person had TB diagnosed. The negative perception of handling TB cases is one of the challenges. Some stakeholders found it more challenging or burdensome to work on TB cases.

Conclusion: Stakeholder community engagement is necessary to improve the reach and sustainability of TB active case finding in the community.

Keywords: Tuberculosis, Active Case Finding, Community Stakeholder, Engagement

ADVANCING PRIVATE HEALTH PROVIDER ROLES IN QUALITY DRUG-RESISTANT CARE IN INDONESIA

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ABSTRACT

Background: Indonesia is one of 22 countries with highest DR-TB burden in the world with estimated 24,000 people develop Drug-resistant TB (DR-TB) per year. DR-TB notification and treatment success rates remains a constant challenge despite the expanded TB control strategy. Past study suggests majority of people who had TB symptom sought care in private sector. Efforts to engage private sector have drawn more attention as Indonesia moves towards TB elimination. While concern over the quality of TB care in private sector persist, a suboptimal approach to engage private providers in TB programs may lead to unfavorable consequences as delayed diagnosis and treatment, increased transmission risk and TB deaths. Recognizing the pivotal role of private sector in TB, an innovative approach to harness private sector participation in national DR-TB program is critical.

Methods: Muhammadiyah initiated DR-TB care in six hospitals in Central Java, Yogyakarta, and East Java. Selected hospitals were equipped with standardized infrastructure for DR-TB site. Around 150 health staffs were trained to deliver quality DR-TB care. Nearly 60 patient supporters capacitated to provide social support and observed patients' treatment adherence. Adverse events and clinical audit were monitored on regular basis.

Result: A total of 151 DR-TB patients were treated in the 6 hospitals between January 2021–August 2022. The overall treatment adherence rate was 96% with low loss to follow up of 4%.

Conclusion: The DR-TB initiative in 6 Muhammadiyah hospitals suggests high treatment adherence. As Indonesia continues to accelerate progress toward the End TB goal by 2030, this interim findings can help to inform future policy on leveraging engagement of private health providers in addressing gaps in DR-TB program.

Keywords: drug-resistant tuberculosis, private hospitals, quality treatment, treatment adherence

ARE WE READY TO COLLABORATE FOR ACCELERATING TB ELIMINATION? PARTNERSHIP AREA OF COMMUNITY BASED ORGANIZATION SUPPORT, TB FUNDING MAPPING AND PARTNERSHIP FORUM EXISTENCE AT DISTRICT LEVEL IN INDONESIA

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ABSTRACT

Background: As mandated by Presidential Decree No. 67 in 2021, to engage communities, stakeholders, and other multisector in TB control for tuberculosis (TB) elimination in Indonesia, we aimed to identify readiness to collaborate for accelerating TB elimination by mapping the partnership area of community based organization support, TB funding and partnership forum existence at district level in Indonesia.

Design/Methods: We identified 11 local community based organizations, member of TB control multisector partnership forum (WKPTB) for their partnership area and TB funding at districts level through google docs. We also identified partnership existence through online survey of webinar participants during Nationwide TB Control Multisector Partnership Forum Socialization. We performed descriptive analysis using QGIS for mapping aggregated by number of TB burden and number of partners and excel for graph.

Results: 11 Partners consist of NGO, faith based organization, and TB survivor organization. Nationwide mapping showed 45,5% (234/514 districts) have total of 458 partners varying from 1 to 6 partners each and centralized in Java. Partners in 7 priority provinces is 304 partners. The partners distribution are varied, some are within in high TB burden districts (red color: ≥5.000 TB cases) and others aren't. It's challenging how partnership be implemented in the high TB burden provinces with limited partners (West Java=47 partners, DKI Jakarta=14 partners), while in Central Java with less TB burden then West Java has 106 partners. TB funding at districts mapping showed varied amount from very low TB funding to very high. 50% (103/204) districts have high-very high TB funding and low-very low and medium TB funding for 25% each. 48,5% (500/1031) respondents confirmed of partnership existence unfortunately limited respondents confirmed of multisector partnership forum, showing further support are needed to engage TB control multisector partnership forum establishment nationwide.

Conclusions: Multisector partnership shall be synchronized, synergized, by optimizing the potential of resources (partners, funding, multisector partnership forum establishment at district level) from all relevant partners nationwide to make sure accelerating of TB elimination takes place in 2030.

UNLOCKING THE POTENTIAL FOR OPTIMIZING TB CASE FINDING IN INDONESIA: LESSONS FROM SYSTEMATIC SCREENING FOR TB IN HEALTH FACILITIES

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ABSTRACT

Background: Indonesia had made a steady progress in TB elimination until the COVID-19 pandemic struck in early 2020.The pandemic has adversely impacted the national capacity to control TB leading to a steep decline in TB notification by 42 percent.To address the urgency of restoring lost ground in TB control efforts, we implement a systematic TB screening to people who sought care in hospitals. Barriers of TB case finding in health facility settings primarily related to inadequate commitment to the integration of TB screening in the healthcare delivery and the absence of interoperability between hospital information system and national TB surveillance platform.

Design/Methods: We carried out a systematic TB screening in 48 Muhammadiyah hospitals in Indonesia.Patients who sought healthcare at emergency-departement, outpatient, and inpatient wards were screened for cough of any duration and fever.Those with cough and met 1 of 3 criteria of TB symptoms (shortness of breath, lack of appetite/weight loss/night sweats, and contact history) referred to chest-radiography (CXR) and Xpert-MTB/Rif tests.Confirmed TB patients were linked to TB treatment following the National TB Program standard guidelines.

Results: For the period of September 2021-July 2022 1,847,660 people were screened. Of these, 256,279 met the criteria for presumptive TB and underwent diagnostic tests.Of the presumptive TB found, 7,370 (2,9%) were diagnosed with TB and 6,795 of them (92,2%) linked to TB treatment.Enactment of hospital policy, engagement of hospital teams such as supporting staffs and clinical key personnel in the TB screening have led to improved TB case finding in the participated hospitals.

Conclusions: Systematic TB screening amongts patients who sought healthcare in hospital has the potential to improve TB case finding in health facility.The successful implementation of the initiatives requires significant institutional commitment, engagement of facility staffs, and uninterrupted TB commodities.

Keywords: TB screening, Tuberculosis, TB case finding, TB Drug Sensitive

TUBERCULOSIS INFECTION AMONG HEALTH CARE WORKERS, CADRES AND COMMUNITIES IN BANDUNG

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ABSTRACT

Background: One of the Sustainable Development Goals coverage for tuberculosis disease (TBD) elimination is providing TB preventive treatment (TPT). Health care workers (HCWs), cadres and communities in TB high-burden countries, such as Indonesia, are at increased risk of being exposed to *Mycobacterium Tuberculosis* (MTB). We aimed to examine the TBI as defined by a positive tuberculin skin test (TST) and normal chest x-ray (CXR) in HCWs, cadres and communities in Bandung.

Methods: This study was a part of a large TPT trial on Rifampicin conducted at TB Research Clinic in Bandung from December 2019 – August 2020. HCWs, cadres and communities were invited and screened for TBI using TST. Participants with positive TST were asked to undergo CXR.

Result: Among 650 potential participants, 24 (4%) refused to be screened. Of 626 (96%) participants who consented to a screening, 179 (28.6%) had negative TST results, and 447 (71.4%) had positive TST results and were asked to undergo CXR. Of them, 28 (6.3%) were refused, 27 (6%) had abnormal CXR suggesting TBD, and 392 (87.7%) had normal CXR. TBI was found in 392 of 599 (65%) who had both TST and CXR results.

Conclusion: TBI in HCWs, cadres and communities in Bandung was high. Therefore in high-burden countries, TBI screening needs to be expanded to these groups not only for household contacts.

Keywords: TBI, TST, HCW, cadres and communities

COMPLEXITY OF DRUG AVOID CAUSES IN DRUG RESISTANT TUBERCULOSIS (RO-TB) PATIENTS IN THE ERA OF THE COVID-19 PANDEMI IN 2022 (QUALITATIVE STUDY IN DIY)

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ABSTRACT

Introduction: Special Region of Yogyakarta is one of the highest Tuberculosis area with 3.770 cases and the total of drug-resistant tuberculosis reach 82 cases in 2017. 5 out of 40 cases found was continuing the treatment. The 45% of TB treatment success and the 30% of drug discontinuation estimated causes the increase of mortality and Lost to Follow Up (LTFU) that influenced by age, knowledge, psychological, and economic factors. TB symptoms are almost identic with COVID-19 but lately there have not been many studies related to COVID-19 infection in TB patients as well as the TB studies conducted during the COVID-19 pandemic.

Purpose: Identifying the cause of drug discontinuation in TB drug resistant patients that presently under treatment period.

Method: A qualitative design with 5 respondents of TB drug-resistant discontinuation in Special Region of Yogyakarta in 2022 treatment period. The data were taken with in-depth interview method, observation, and documentation. Instruments used in this studies are interview and observation guidelines, documentation. Data were analyzed by the independent recorder using the seven coalition steps which are transcripts, repeated readings, quotation, marking lines, codes, categories, and themes.

Result: The result of the study are 77 codes, 16 categories, and 4 themes. The psych-spiritual and economic factor influenced by psychological, spiritual, and economic management. The support system factor influenced by acceptant stage, roles function, rewards, and diagnosed based on assessment. The side effect factor influenced by alternative treatments, mental and physical post treatment, safety reason, and decision making. The adaptation factor influenced by the freedom to determine beliefs, the ability to do prevention, comfort and the government program targets.

Conclusion: Factors that causing drug discontinuation in TB drug-resistant patients in Special Region of Yogyakarta are psych spiritual and economic factors, support systems factor, side effect of treatment factor, and adaptation factor.

Keyword: Tuberculosis Drug Resistant, Drug Discontinuation, COVID-19 Pandemic.

IMPACT OF THE COVID-19 PANDEMIC ON TB CARE IN TWO CITIES IN INDONESIA (DOMINO STUDY)

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ABSTRACT

Introduction: It has been documented that the COVID-19 pandemic has affected the continuity and quality of TB care worldwide. However, systematic evidence of the long-term impact of COVID-19 on TB services and the cascade of care is limited. This paper presents and discusses preliminary findings on access to TB health services in Indonesia, before and during the COVID-19 pandemic.

Method: We conducted a retrospective cohort study in two cities with high COVID-19 cases and high TB burden, Yogyakarta and Bandung. Routine TB testing and treatment data were collected from 64 health facilities in the two cities, before (2019) and during the pandemic (2020). All data were sourced from the TB information systems operated by the Ministry of Health, the *Sistem Informasi Tuberkulosis Terpadu* (SITT) and *Sistem Informasi Tuberkulosis* (SITB). The comparative analysis of the two periods was structured using the cascade of care framework (i.e., diagnosis, started treatment, completed treatment, and successful treatment).

Result: In our study sample, the total number of individuals diagnosed with TB was lower during the pandemic compared to before the pandemic (4863 vs 6578). However, different patterns were observed in the two cities. In Yogyakarta, after the pandemic, there was a moderate reduction in access to TB services and worse outcomes (started treatment: 76% vs 78%; completed treatment: 72% vs 75%; successfully treated: 67% vs 69%). In Bandung, by contrast, uptake of TB services was proportionally higher during the pandemic (started treatment: 68% vs. 62%; completed treatment: 61% vs 58%; successfully treated: 55% vs 51%).

Conclusion: The COVID-19 pandemic affects the TB cascade of care, with a different pattern observed between the two cities. This highlights the importance of efforts to intensify services to mitigate the impact of COVID-19 on TB services.

THE IMPACT OF ONE-ON-ONE TRAINING ON PRIVATE PRACTITIONERS' KNOWLEDGE ABOUT TUBERCULOSIS MANAGEMENT IN BANDUNG, INDONESIA

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ABSTRACT

Background: Private practitioners (PPs') knowledge of TB management is highly diverse. We conducted one-on-one training, as opposed to classroom training, as a part of an intervention package in a cluster-randomized trial aiming to increase TB notification in Bandung (INSTEP2) and evaluated the impact of the training on PPs' knowledge.

Methods: 90 out of 105 enrolled PPs received two one-on-one training sessions about TB management and context-specific referral pathways (August 2020 – November 2020). The sessions were delivered by five trained educators at least one week apart. Due to COVID-19 pandemic, 62 PPs received the training online, either for two sessions (56.6%) or one of the sessions (hybrid; 12.2%). Changes in knowledge were assessed by a pre-test before the first session and a post-test two weeks after the second session, consisting of ten case-study questions with multiple choice answer on TB management. Wilcoxon signed-rank test was used to compare pre-test and post-test scores and one-way ANOVA was used to compare the effect of different delivery methods on PPs' knowledge change.

Results: Among 90 PPs receiving two sessions of one-on-one training, 52 (57.8%) took both pre and post-tests, 4 (4.4%) declined to take any tests, and 34 (37.8%) took one test. Among 52 PPs (general practitioners; 63.5% female; median age 36 years) with completed tests; 11 (21.1%) received in-person training sessions, 36 (69.2%) received online sessions, and 5 (9.6%) received hybrid sessions. The post-test scores (Median=6) were statistically significantly higher than pre-test scores (Median=5) ($p<0.05$). There was no statistically significant difference in PPs' knowledge change between PPs attending offline, online, or hybrid sessions ($F=1.054$; $p=0.356$).

Conclusion: Administering one-on-one training for PPs can increase their knowledge about TB management. Different training delivery methods may have no effect on knowledge improvement, although small sample size may reduce the ability to detect a small difference in knowledge change.

Keywords: tuberculosis, one-on-one, private practitioners

EARLY INTERRUPTION IN TUBERCULOSIS PREVENTIVE TREATMENT AMONG CONTACTS DIAGNOSED WITH TB INFECTION IN BANDUNG

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ABSTRACT

Background: Tuberculosis (TB) preventive treatment (TPT) is a key component of the WHO End TB Strategy. TPT treatment completion will result in a lower incidence of active TB disease. Understanding factors that may cause poor adherence to TPT is crucial in designing an appropriate programmatic intervention. This study aimed to evaluate the reasons for early treatment interruption in TPT.

Method: Prospective observational sub-study was conducted as part of a large TPT trial on Rifampicin in a TB Research Clinic in Unpad Teaching Hospital Bandung from December 2020 - August 2022. The reasons for early TPT interruption were collected using a structured case report form and evaluated descriptively.

Results: Among 945 close and casual contacts indicated from Puskesmas' Index Case, 457 were diagnosed with TB infection and received TPT within two weeks of diagnosis. Of them, 158 (34%) had early treatment interruption, with 82% occurring in the first month of treatment. Of those who had early treatment interruption, 140 (89%) participants decided to stop the treatment earlier, which was against the provider's advice. Reasons for deciding to stop treatments early were: 74 (52%) experienced mild adverse events that don't require medical action, 33 (23%) felt healthy, 18 (13%) felt there were too many pills to take, 5 (3%) are afraid of the potential side effect, 4 (3%) moved out of town, and 2 (1%) didn't get permission from family member to continue taking treatment.

Conclusion: Early treatment interruption in TPT is still high. More than half of the reasons are due to experiencing adverse events, even though it is mild. A shorter, safer, and simpler regimen for TPT and a systematic health education intervention is urgently needed to reduce the probability of early treatment interruption.

Keywords: TB infection, TPT, treatment interruption

ADHERENCE TO 4 MONTHS RIFAMPIN THERAPY FOR TUBERCULOSIS INFECTION IN BANDUNG

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ABSTRACT

Background: Tuberculosis (TB) Preventive Treatment (TPT) is expected to prevent individuals at risk of contracting TB disease (TBD) and reduce TB transmission. The 4 months rifampin was not inferior to the to the 9 months isoniazid for the prevention of TBD. Short-term TPT is recommended because it is more tolerable and has good efficacy in increasing the completion rate. This study aimed to measure adherence in completing TPT with 4 months rifampin in patients with TB Infection (TBI).

Methods: This study was part of a larger trial. Potential participants were obtained from household contact (HHC), healthcare workers (HCWs), cadres, and communities in Bandung City. The initial screening began with tuberculin skin test (TST), followed by a chest X-Ray (CXR) examination. Positive TST results accompanied by normal CXR were then given TPT with 4 months rifampin. Completion rate and reasons for not completing the 4 months rifampin were described.

Results: From 119 respondents with TBI who were asked to start TPT, 85 (71.4%) participants completed the treatment, 27 (22.7%) did not complete it, and 7 (5.9%) had never started it. Reasons for not completing were: 14 (51.8%) participants due to personal decisions and 13 (48.2%) due to adverse events.

Conclusion: Almost three-quarters of individuals with TBI in our study completed TPT. The completion rate of TPT still needs to be increased to prevent individuals with TBI from progressing to TBD.

Keywords: TPT, TB infection, Adherence

POOR AGREEMENT BETWEEN INTERFERON-GAMMA RELEASE ASSAYS (IGRA) AND TUBERCULIN SKIN TEST (TST) IN MEDICAL AND NURSING STUDENTS IN BANDUNG, INDONESIA

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ABSTRACT

Background. The difficulty in the diagnosis of tuberculosis infection (TBI) is that there is no gold standard diagnostic test. The intra-dermal tuberculin skin test (TST) has known limitations in accuracy and reliability. Interferon-gamma release assays (IGRA) have been developed as an alternative to TST for diagnosing TBI. We assessed the agreement between IGRA and TST as screening tests for TBI in medical and nursing students in Bandung, Indonesia.

Methods. Medical and nursing students who started their clinical program in January 2017 were screened for TBI using both IGRA and TST simultaneously. The agreement between the two tests was measured using Cohen's Kappa coefficient. Logistic regression was used to identify factors associated with IGRA and TST positivity.

Results. Of 266 students, IGRA was positive in 43 (16.2%) and TST was positive in 85 (31.9%). Agreement between the two tests was 74.7% (kappa 0.33, 95% CI 0.21-0.45, $P<0.0001$). Either using IGRA or TST, students who had direct contact with family or friends who were diagnosed with TB disease unexpectedly negatively associated with test positivity (AOR 0.18, 95% CI 0.05-0.64 and AOR 0.51, 95% CI 0.26-0.99, respectively).

Conclusion. In this study, test positivity for TBI was lower when measured by IGRA, than that measured by TST, with a poor agreement between the two tests. Positive tests were associated with the same TB exposure. As there is no diagnostic gold standard for TBI, TST or IGRA could be used, as recommended by World Health Organization.

Keywords: TBI, TST, IGRA, Medical and Nursing students, Agreement.

ADVERSE EVENT OF RIFAMPICIN PREVENTIVE THERAPY FOR TUBERCULOSIS INFECTION IN BANDUNG

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ABSTRACT

Background: A quarter of the world's population is estimated to have been infected with *Mycobacterium Tuberculosis*. They have no signs or symptoms of tuberculosis (TB) disease and are not infectious, but they are still at risk of progressing to TB disease. Rifampicin is recommended for the treatment of TB infection (TBI). One of the factors affecting treatment completion and effectiveness is the occurrence of adverse events (AEs). We aimed to describe AEs of rifampicin in individuals with TBI.

Methods: This study was part of a larger trial on Rifampicin in a TB Research Clinic in Unpad Teaching Hospital Bandung from December 2020 - August 2022. The types of AEs were collected using a structured case report form and were described descriptively.

Results: Among 945 close and casual contacts indicated from Puskesmas' Index Case, 457 were diagnosed with TBI and received rifampicin. Of those who received rifampicin, 94 (20.5%) participants experienced AEs, and 5 (1.1%) experienced serious AEs (SAEs). AEs that occurred were: nausea 54 (57.4%), vomiting 12 (12.7%), itching 11 (11.7%), edema conjunctiva 9 (9.5%), rash 7 (7.4%), prolonged nausea and vomiting 1 (1.1%) and pregnant 1 (1.1%). Of those who experienced SAEs but were not related to the drug: died 3 (60%), and hospitalization 2 (40%).

Conclusion: AEs of rifampicin were common and expected, but all reported SAEs not related to the drug. However, an intensive follow-up is still needed, and it is necessary to prevent individuals on TBI treatment from worsening and stopping their treatment.

Keywords: adverse event, rifampicin, tuberculosis preventive therapy.

PRE-DIAGNOSIS COSTS OF PEOPLE WITH TUBERCULOSIS DURING COVID-19 PANDEMIC IN DIFFERENT HEALTHCARE SETTINGS IN BANDUNG

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ABSTRACT

Background: Tuberculosis (TB) clearly undergo a massive disruption due to COVID-19 pandemic that may result in suspected TB patients and the household spend higher costs. We aimed to quantify the TB pre-diagnosis cost and the factors associated with the higher cost for TB diagnosis during the COVID-19 pandemic in Bandung, Indonesia.

Method: This cross-sectional study was held from July 2021 to February 2022 in 7 hospitals, 59 private practitioners, and 9 community health centers (CHC) purposively selected in selected CHC areas in Bandung. We interviewed adult pulmonary TB patients using a structured questionnaire to collect information on sociodemographic characteristics and costs before diagnosis. Costs in rupiah were converted into 2021 U.S dollars then presented in median. Predictors of pre-diagnosis TB cost were identified using quantile regression.

Results: A total of 251 participants, of which 36%, 23%, 32%, and 9% were interviewed at private hospitals, private practitioners, CHC, and public hospitals, respectively. The median total pre-diagnosis costs were $35.45 (IQR 17.69-67.62) with the higher median costs were experience by participants from private hospitals ($54.51, IQR 29.48-98.47). The rapid antigen and PCR for SARS-CoV-2 emerged as additional medical costs among 26% of participants recruited in private hospitals. We identified that having no insurance ($37.59 versus $27.46, $p < 0.05$), visit $\geq$ 6 provider before diagnosis ($36.65 versus $18.29, $p < 0.05$), presenting first at private hospital ($50.68, $p < 0.05$), and being diagnosed in private health sector ($39.98 versus $20.30, $p < 0.05$) were significantly associated with higher pre-diagnosis cost.

Conclusion: Patients suffered substantial costs in the process of TB diagnosis during the COVID-19 pandemic despite free TB diagnosis and treatment. Strengthening TB Public-Private Mix and increase availability of TB diagnostic are warranted during COVID-19 at private health facilities to reduce financial burden on TB patient.

Keywords: tuberculosis, costs, COVID-19, pandemic

STANDARDIZED PATIENT TO ASSESS PRESUMPTIVE TB CASE MANAGEMENT BY PRIVATE PRACTITIONERS DURING COVID-19 PANDEMIC IN BANDUNG, INDONESIA

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ABSTRACT

Background: Tuberculosis (TB) diagnosis and treatment in Indonesia are mostly provided by public health centers. However, most patients with TB symptoms first seek help from private practitioners (PPs). We aimed to compare the performance of PPs in managing presumptive TB patients in actual and virtual visits during the COVID-19 pandemic in Bandung, Indonesia.

Methods: A cross-sectional study conducted between July 2021 and January 2022 was undertaken at 36 randomly selected Puskesmas areas in Bandung. Ten local actors were trained to simulate presumptive TB scenario and made unannounced actual and virtual visits to PPs. Structured questionnaires were filled to assess PPs performances. Expected management was described as concordance with the National TB Program (NTP) guideline and the International Standard for Tuberculosis Care (ISTC). Pearson chi-square test was used to compare differences in actual and virtual visits.

Results: Three hundred thirty-one visits were conducted, consisting of 89,7% actual visits and 10,3% virtual visits. Only 12,4% asked all TB main symptoms. Most private practitioners (69,5%) sent SP to do Chest X-rays. Sputum bacteriology test with AFB smear and X-pert MTB/Rif were only ordered in 89 (26,9%) and 3 (0,9%) visits respectively. PPs prescribed general antibiotics in 226 (68,3%) and anti TB drugs in 35 (10.6%) visits. Proportion of management concordance with the 2014 ISTC, the 2016 and the 2021 NTP guidelines were 73,4%, 27,2% and 0,9% consecutively. 4 ISTC, the 2016 and the 2021 NTP guidelines were 73,4%, 27,2% and 0,9% consecutively. Virtual visits tended to skip inquiries regarding cough duration (p <0,0001) and weight loss (p = 0,002) and also provided more general antibiotics (p= 0,036) compared to actual visits.

Conclusions: We found the management of presumptive TB patients by private practitioners to be suboptimal, particularly with the low frequency of orders for sputum bacteriology tests. Further assessment is needed to identify the knowledge of PPs in managing TB patients to develop a proper intervention.

Keywords: Standardized Patients, Actual, Virtual, Private Practitioners

INCREASING TB CASE FINDING USING CHEST X-RAY IN HOUSEHOLD CONTACTS OF TB PATIENTS: A LESSON LEARNED FROM ZERO TB YOGYAKARTA

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ABSTRACT

Background: In 2021, it was estimated that 824.000 TB cases existed in Indonesia, while only 443.235 (54%) cases were notified. The WHO recommends using chest X-ray (CXR) as a screening tool for detecting TB diseases in several populations, including household contacts of a TB patient. This study aims to describe the experience of the Zero TB Yogyakarta project in using CXR to screen household contacts of TB patients.

Method: This study was conducted in two districts, Yogyakarta province, from June 2020 until July 2022. The population screened was household contacts of TB patients registered in the National TB information system from 2018-2022. We conducted contact investigation for all types of TB index cases, and screened TB symptoms to household contacts of all ages. Chest X-ray was performed in a mobile CXR on the van for all (symptomatic and asymptomatic) household contacts aged above five years and for contacts aged less than five years who had TB symptoms. Either doctors or artificial intelligence interpreted the CXR to determine TB presumptive participants, whose sputum was collected for Xpert MTB/RIF test. Puskesmas's doctor decided on the TB diagnosis. The TB presumptive and TB cases were reported in the National TB information system. Monitoring and evaluation were conducted regularly.

Result: Of 1714 index cases, 5084 household contacts were registered, 4385 (86%) were screened for TB symptoms, and 3493(79,6%) were screened by CXR. 892(20,4%) did not undergo CXR due to 188(21%) under five without TB symptoms, pregnant, long distance to X-ray site, and refused to attend. 686(15,6%) TB presumptive, while 586 (85,4%) is CXR positive screening with or without symptoms, 550(93,9%) undergo Xpert MTB/Rif test, and 88(2%) had TB diagnosed.

Conclusion: Using CXR as TB screening may detect TB cases in the early stage and increases the TB case finding.

TB CAMPAIGN TARGETING COMMUNITY THROUGH YOUTH EMPOWERMENT IN INDONESIA

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ABSTRACT

Tuberculosis (TB) is one of the top ten causes of death. It remains a public health issue worldwide including in Indonesia. To address this, the Indonesian government and various relevant stakeholders are working hard in a joint effort to achieve the target of TB elimination by 2030. As one of the TB elimination efforts, the Stop TB Partnership Indonesia (STPI) through Tulodo Indonesia conducts TB campaigns targeting the community members through young people in five cities in DKI Jakarta and 25 districts/cities in West Java. The TB prevention campaign was conducted from April to June 2022 by engaging 60 young people from 30 locations. They were then assigned with three different methods to deliver the campaign by using the communication materials (pamphlets and videos) with strict health protocol. The first was the individual/one on one approach. The second was the small limited groups (consisting 2-3 people in a group), and the third was delivering campaigns targeting large groups (more than 15 people). The study explored which method will be more effective in delivering the campaign messages. A total of 2,784 people in DKI Jakarta and West Java received outreach from young people representatives with 75.7% (n=2,108) through individual outreach, 10.7% (n=298) through the small limited group outreach, and 13.6% (n=378) through large group outreach. This study found that the community members in the intervention areas preferred one on one approach to the group approach as the campaign messages can be delivered more effectively. Young people have an important role in TB prevention efforts particularly in delivering the campaign messages to the community members. During the post COVID-19 pandemic, one on one methods was preferable compared to other methods. There is a need to continue support for young people, like capacity building and mentoring to implement the TB campaign.

Keywords: campaign, community, youth, empowerment

BARRIERS RELATED TO PATIENT PATHWAYS' DELAYS TO DIAGNOSIS AND TREATMENT OF TUBERCULOSIS DURING THE COVID-19 PANDEMIC IN BANDUNG, INDONESIA

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ABSTRACT

Background: The COVID-19 pandemic brought some changes in TB patient care-seeking behaviors that resulted in management delays. Many healthcare facilities changed their regulation due to COVID-19 and probably most patients with respiratory tract symptoms are in uncomfortable situations. Our study aims to explore what are the barriers to diagnosing and treating tuberculosis during COVID-19 which can be the reasons for these delays.

Method: We conducted a qualitative study from October 2021 to August 2022 in Bandung, Indonesia. We did in-depth interviews with doctors or nurses (n=10) and pulmonary TB patients (n=15) recruited from private clinics/hospitals/community health centers. We used Andersen and Newman's Health Utilization Framework for transcription and thematic content analysis.

Results: We found three main categories of barriers to TB service utilization: anxiety regarding COVID-19, financial barriers, and changes in health service provision. Patients were worried to be tested for COVID-19 or putting their precarious health at risk of being infected with COVID-19 when visiting healthcare facilities. Patients preferred to visit private facilities as their first point of care rather than public facilities to reduce the anxiety of being infected with COVID-19. Patients and their caretakers also expressed difficulties in taking diagnostic tests, such as X-ray tests, particularly for those who do not have insurance seeking care in private facilities. Furthermore, the overwhelming workload of health service workers in handling TB and other services leads to adjustments in terms of operational hours, queueing system, and availability of services.

Conclusion: Patients' anxiety about being tested and being infected with COVID-19 in health care facilities are essential barriers to patients' utilization of TB services during a pandemic. Patient-centered solutions should be considered to alleviate this situation, such as promoting information to reduce the stigma around COVID-19 and developing teleconsultation channels.

Keywords: Patient pathways, Tuberculosis, COVID-19, Barriers

GLOBAL BIOGEOGRAPHY OF MYCOBACTERIUM TUBERCULOSIS INDO OCEANIC STRAINS FROM WHOLE GENOME SEQUENCING DATA

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ABSTRACT

Background: Mycobacterium tuberculosis Indo Oceanic (ancient lineage 1) is highly prevalent in countries around the Indian Ocean. In Indonesia, strains belonging to this lineage are predominant in the eastern provinces, like Papua, while strains in modern lineages (East Asian and Euro American) dominate other regions of the archipelago. However, our understanding of its distribution remains limited. We attempted to describe the global geographic spread of MTB lineage 1, including obtaining sub-lineage and drug-resistance information.

Methods: A total of 306 WGS data of MTB lineage 1 were identified and downloaded from the European Nucleotide Archive (ENA) and the Sequence Read Archive (SRA) databases. These sequences underwent bioinformatics analysis using the PHEnix pipeline and TB-Profiler as well as phylogenetic analysis using the maximum-likelihood method.

Results: A majority of the data originated from southeast Asia (48%), followed by south Asia (17%), Africa (7%), North America (7%), north Asia (6%), west Asia (5%), Europe (5%), Oceania (3%), and South America (2%). Using TB Profiler, 27.8% of isolates showed at least one mutation associated with drug resistance, mostly associated with resistance to isoniazid (19%), ethionamide (15%), and rifampicin (10%). Genotypic multidrug resistance TB were found in 9.4% of the subjects. Three large clades were seen in the phylogenetic analysis, which belong to sub-lineage 1.1 (from Africa, western and southern Asia, and mainland southeast Asia); sub-lineage 1.2.2 (also from Africa, southern Asia, and mainland southeast Asia), and sublineage 1.2.1 (from island southeast Asia, Oceania, northern Asia, Europe, and North and South America).

Conclusion: A significant difference in sub-lineage profiles was observed between regions globally, particularly sublineages 1.1 and 1.2.1. The route of transmission of lineage one to the Indonesian archipelago is worth further study.

Keywords: Mycobacterium tuberculosis, Lineage 1, whole-genome sequencing, biogeography

THE EFFECTS OF CURCUMA LONGA EXTRACT SUPPLEMENTATION ON IL-10 AND SPUTUM CONVERTION IN DRUG RESISTANCE TUBERCULOSIS PATIENTS RECEIVING SHORT TIME REGIMEN

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ABSTRACT

Background: Drug resistant tuberculosis (DR-TB) is a major health problem in the world. WHO reported 9,9 new TB cases globally in 2021. Indonesia is the fifth ranked for the most DR-TB incidence in the world. Current DR-TB treatment guidelines still gave unsatisfactory results. The short term regimen (STR) have many side effects that contribute to high lost to follow-up and poor treatment outcomes. Curcuma longa with active compound curcumin, is a potent immunomodulator that has been investigated as adjuvant therapy in TB. Curcuma longa believed can alter IL-10 levels that contribute to TB disease progression. The aim of this study is to assess IL-10 levels changes and sputum convertion before and after Curcuma longa extract suplementation.

Methods: This is an experimental study, double-blind approach with pre and post design group conducted in Dr. Soetomo Hospital. The subjects of this study were DR-TB patient receiving STR anti-tuberculosis drug, devided into control group receiving placebo and treatment group receiving Curcuma longa extract for two months.

Results: In this study 18 subjects recruted, 9 subjects in each group. IL-10 levels significantly decreased in treatment group (p 0,018) but not significantly decreased in control group (p 0,840). IL-10 changes significantly correlated to Curcuma longa extract suplementation (p 0,046), but not correlated to sputum convertion in both group (p 0,375 and p 1,000).

Conclusion: Curcuma longa extract supplementation can affect IL-10 levels changes but had no efficacy to sputum convertion in DR-TB patients.

Keyword: Curcuma longa, curcumin, IL-10, DR-T

POLICY IN ADVANCING TB AGENDA IN THE VILLAGE FUND PRIORITIES – A QUALITATIVE STUDY

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ABSTRACT

The national government is not the sole key stakeholder in TB elimination. The village was one of the other key stakeholders in accelerating the TB elimination in Indonesia as several TB cases may be undetected in villages due to the barriers in communication access and limited education resources compared to urban areas. The villages may play a pivotal role in testing, tracing, and treatment by supporting the participatory community approach through the scheme of village funds. Therefore, strengthening the role of villages through policy outline and capacity building for village government is urgently needed. Action research was utilized to support the evidence-based advocacy in this study. This research mainly implied a qualitative analysis through desk study, focus group discussion, and key informant interviews. There were more than 20 related regulations analyzed in the desk study. Fifty participants involved in the FGD and 24 participants involved in KII consisted of multilevel stakeholders. Data triangulation was applied to the result of FGD and KII. This study found that the village government was not provided with broad access to TB patients' data, resulting in a weak sense of TB elimination urgency. The needs of TB patients are not facilitated yet by the village government, local government, and central government. The TB issue is not prioritized in planning, budget allocation, and implementation of program activities in the village. Allocation of village funds was mostly for infrastructure, salary, and the operations of village governments, only small parts of village funds were allocated for health. Unfortunately, health spending in many villages is devoted to routine needs, such as "Posyandu" and stunting. The Covid-19 situation narrowed the village fund allocation as there is an earmarked for BLT-Village Fund. In conclusion, the village government provided limited support for TB elimination. Therefore, we recommend a new regulation in advancing the TB agenda in the village fund priorities as regulated in the Presidential Decree No.67/2021.

DEVELOPMENT OF A WEBINAR-BASED TRAINING MODULE FOR COMMUNITY PHARMACISTS IN TUBERCULOSIS ELIMINATION

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ABSTRACT

Introduction: Community pharmacists' involvement in TB elimination can potentially improve TB case finding and positive outcomes of TB treatment in various settings. A training model is needed to enhance their knowledge and attitude to maximize this potential. Hence, this study aimed to develop a webinar-based training module for community pharmacists in Tuberculosis Elimination.

Methods: The analysis, design, development, implementation, and evaluation (ADDIE) framework of instructional design was used to create a webinar-based training module. In the analysis phase, we analyzed the gaps and needs of community pharmacists to maximize their roles in TB elimination. Then we established a set of functional specifications and detailed them by listing the competency that community pharmacists and items should master to test in the design phase. Subsequently, we developed the blueprint to construct the module to deliver the training to the pharmacists. Then, the test items were validated and tested for reliability, followed by content validation for the module. Furthermore, we set guidance to train trainers and prepare participants for the webinar in the implementation phase. Lastly, we followed levels 1 and 2 of the Kirkpatrick model to create a training evaluation plan.

Results: A webinar-based training module consisting of two modules for trainers and participants was developed between April – December 2021. The materials were constructed to be delivered in webinars using Gagne's Nine Events of Instruction that align with cognitive processes to maximize learning outcomes. As a result, five hours a day of virtual learning training were arranged. Questionnaires were developed to ask participants' reactions toward training and assess knowledge and attitude. The item test for knowledge and attitude had Cronbach alpha values of 0.899 and 0.950, and the content validity index of the module was 0.77, 0.78, and 0.85.

Conclusion: A webinar-based training module could be developed using the ADDIE framework.

EKSPRESION OF NATURAL RESISTANCE–ASSOCIATED MACROPHAGE-1 AND VITAMIN D RECEPTOR GENES IN CERVICAL LYMPHADENITIS TUBERCULOSIS WITH SUPPLEMENTATION VIRGIN COCONUT OIL (VCO) AND SUNBATHING

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ABSTRACT

Introduction: New insights about the defense mechanism against TB are genetic factors, that can influence the responses of TB patients, including Natural Resistance Associated Macrophage Protein-1 (NRAMP-1) and Vitamin D Receptor (VDR). Many studies have reported that traditional medicine including Virgin Coconut Oil (VCO) have good effect in pulmonary TB but there is no study in Cervical Lymphadenitis Tuberculosis (CLnTB). The aim of this study is to compare ekspression of NRAMP-1 and VDR after supplementation of VCO and sunbathing in CLnTB for six months.

Methods: This is an experimental study with cohort design. 50 CLnTB's patients were divided into two groups, negative control group (only ATD) and treatment group (ATD with supplementation VCO 1000 mg/day and 30 minutes sunbathing for six months). The blood was drawn from each group before treatment, on two and six month after treatment. The blood sample was examined Real Time PCR to determine gene ekspression of NRAMP-1 and VDR.

Results: The result Annova test for gene NRAMP1 ekspression showed significant diferrences between two group before treatment , in 2nd and 6nd month after treatment ($p<0,05$). The result for VDR ekspression showed significant diferrences between two group in 2nd months after treatment ($p<0,05$).

Discussion: Cervical lymphadenitis tuberculosis (CLnTB) is the most common form of extra pulmonary TB. VCO contains lauric acid, a strong antimicrobial and fatty acid which has impact killing MTB by penetrating in the plasma membrane and cell wall MTB. NRAMP-1 is an iron transporter for secreting iron in macrophages which is required MTB for survival. The skin contains 7-Dehydrocholestrol when exposed to UVB rays will produce pro-vitamin D which then binds to the Vitamin D Receptor (VDR) activating cathelicidin, a microbicidal.VCO supplementation and sunbathing have the potency to increase and support the standard treatment on CLnTB.

Keywords: virgin coconut oil, lymphadenitis tuberculosis, extra pulmonary TB, sunbathing

CAN COMMUNITY PHARMACIES INCREASE TUBERCULOSIS CASE FINDINGS IN INDONESIA?

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ABSTRACT

Background: Control of tuberculosis (TB) is hampered by suboptimal case detection and subsequent delays in treatment, which is worsened by the COVID-19 pandemic. The community pharmacy is reported as the place for first aid medication among patients with TB. We, therefore, analysed knowledge, attitude, and practice (KAP) on TB patient detection (TBPD) of community pharmacy personnel, aiming to find innovative strategies to engage community pharmacies in TBPD.

Methods: A multicentre cross-sectional study was performed in four areas of Indonesia's eastern, central and western parts. Pharmacists and pharmacy technicians who worked in community pharmacies were assessed for their characteristics and KAP related to TBPD. Descriptive analysis was used to assess participant characteristics and their KAP, while multivariable regression analyses were used to analyse factors associated with the KAP on TBPD.

Results: A total of 1,129 participants from 979 pharmacies, comprising pharmacists (56.6%) and pharmacy technicians (43.4%), were included. Most participants knew about TB and showed a positive attitude towards TBPD. They believed in their professional role (75.1%), capacity in TB screening (65.4%) and responsibility for TBPD (67.4%). Nevertheless, a lack of TBPD practice was identified in most participants. Several factors significantly associated with performing the TBPD practice ($p < 0.05$), such as TB training experience ($p < 0.001$), provision of a drug consultation service ($p < 0.001$), male gender ($p < 0.05$), a positive attitude towards TBPD ($p < 0.001$), short working hours ($p < 0.001$), and central city location of the pharmacy ($p < 0.05$).

Conclusions: Although the TBPD practice was still sub-optimal, most participants had good knowledge and attitude, which can be a modality for the practical of TBPD. We identified that TB educational programs are essential in improving the KAP. An integrated TB program for pharmacy-led by the national TB programmer is needed to enhance TBPD activities in the community pharmacy.

Keywords: pharmacy, KAP, Tuberculosis, Indonesia

SOCIAL SECURITY FOR PEOPLE AFFECTED BY DRUG RESISTANCE TB

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ABSTRACT

The high number of drug tuberculosis resistance (DR-TB) and the low number of its treatment rate showed that TB control in Indonesia needs serious measures. Indonesian National Health Insurance (JKN) and the enabler from the Global Fund have helped the DR TB control and management. However, the implementation faced challenges due to the uneven distribution of the enabler and the understock of the medication. Therefore, this study aimed to explore existing social safety net policies and the perceived need for social security for DR-TB patients in tackling the effects of DR-TB treatment. A mixed-method approach with a convergent parallel study design was utilized in this study. The data were collected through in-depth interviews, FGD, and surveys to 322 respondents selected purposively from December 2021 to February 2022. This study confirms that people affected by DR TB experienced physiological, psychological, social, and financial impacts, including catastrophic costs. However, only 23% of DR TB respondents accessed the GoI cash transfer mechanism (PKH) in 2020. Unfortunately, 54% of the respondents were in poverty, and 23% were vulnerable to poverty, implying that access to a social safety net for people with DR TB remains limited. There are several existing schemes of social protection which can support people with DR-TB, including "The Health Indonesian Program," "PKH," "Sembako Program," "Social Entrepreneurship Program," and "Social Rehabilitation of Uninhabitable Homes" (RS-RTLH). Those social protection measures can be tailored for DR-TB patients to prevent catastrophic consequences and multi-dimensional effects. Moreover, there is an opportunity to develop another measure in social protection for DR TB patients as it has been regulated in Presidential Decree No. 67/2021. It requires multi-sectoral synergy to integrate DR TB into social security mechanisms. This viable policy option protects people affected by DR TB from its multi-dimensional consequences and improves patients' recovery.

CATASTROPHIC COSTS OF MDR TB FOR URBAN PEOPLE IN INDONESIA: EXPENDITURE APPROACH

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ABSTRACT

Drug-resistant Tuberculosis (DR-TB) has become a significant health problem in Indonesia. In 2021, there were 8,268 DR-TB cases, while only 5,082 enrolled in treatment. In the same year, West Java and East Java were two provinces with a relatively low percentage of DR-TB case notifications compared to other provinces, namely West Java with 45% (of 3.747 estimated cases) and East Java with 37% (2.807 estimated cases). Low notification and treatment rates will cause significant losses as it causes a heavy economic burden for sufferers. This study aimed to explore the catastrophic cost among people with DR-TB in Bandung, West Java, and Surabaya, East Java. Quantitative analysis through micro-costing was utilized on 100 DR-TB patients selected by purposive sampling. In the micro-costing, we identified the catastrophic cost by calculating the ratio of costs incurred in treating DR-TB and annual household expenditure (more than 20%). The calculation was conducted by utilizing questionnaire adapted from Tuberculosis patient cost surveys: a handbook published by WHO. This study found that people with DR-TB tend to experience economic pressure due to job loss (60% of them stopped working) or loss of productive time during DR-TB treatment. This study showed that 81% of respondents experienced a catastrophic failure. Patients who experience catastrophic failure do various ways to cover catastrophic costs, ranging from getting social assistance and borrowing money to selling assets. There were 28% of respondents sold assets, and 28% borrowed money to cope with the economic impact of DR-TB. There were even respondents who sold assets of up to Rp95,000,000 to overcome the economic impact of DR-TB. Unfortunately, not all people with DR-TB get economic assistance from the government. Therefore, a clear scheme of social protection for people with TB is needed, aiming to reduce the catastrophic impact of DR-TB.

DEVELOPMENT OF A STRUCTURED SURVEY QUESTIONNAIRE AND PREDICTION MODEL FOR NON-ADHERENCE OF PULMONARY TUBERCULOSIS PATIENTS TO TREATMENT IN JAKARTA, INDONESIA: A COHORT STUDY

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ABSTRACT

Introduction: The Indonesian government has designated the eradication of Tuberculosis (TB) as one of its 2035 national goals. Several studies indicate that some determinants influence patient non-adherence to treatment. These determinants serve as the foundation for the development of the Structured Survey Questionnaire and the Prediction Models in this study.

Method: From December 2021 to August 2022, a total of 371 TB patients participated in a community-based cohort study. Information on the socio-demographic characteristics of respondents (8 items), and questions related to things that affect patient non-adherence to treatment (160 items). The expert revised and narrowed it down to 60 items (5 items from each of the 12 aspects). 50 MDR-TB patients self-administered a hard copy questionnaire to test face validity. Data analysis was performed using SPSS software. Construct validity and item reliability were analyzed to obtain items that were tested before being redistributed in two phases.

Result: The final draft produced a 22-item Structured Survey Questionnaire with five Likert scales. There were a total of 5 major determinants, including socioeconomic, health care team, and conditions -related (5 items each), therapy-related (4 items), and patient-related (3 items). The questionnaire was distributed in two phases over the course of six months. 321 new TB patients (treatment for 1-2 months) were included in phase 1, and six months later, they were reinstated as phase 2 patients. Using logistic regression, the results obtained at these two phases were evaluated for the development of the prediction model.

Discussion: The developed prediction model is based on the evaluation results from both phases of questionnaire distribution. The developed model is dependent on the questionnaire created for this study; therefore, the prediction model will not function if data are gathered using a different questionnaire. The prediction model assigns a weight to each determinant in order to produce accurate predictions.

Keyword: Tuberculosis, Non-adherence, Questionnaire Development, Prediction Model, Logistic Regression

CONTRIBUTING FACTORS FOR TREATMENT SUCCESS AMONG TUBERCULOSIS-HIV CO-INFECTED PATIENTS IN DR. SARDJITO HOSPITAL YOGYAKARTA

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ABSTRACT

Introduction; TB-HIV co-infected patients need more awareness compared to those with a single infection only. Those patients on a higher risk of morbidity and mortality and more medical and social challenges. This study aims to find factors related to TB-treatment success among TB-HIV co-infected patients.

Methods; We undergo a cohort retrospective study involving all TB-HIV co-infected patients aged 18 years or over registered in the medical record in Dr. Sardjito Hospital from 2018 to 2021. We excluded those who do not have data on TB-treatment results. Our considering variables were social demographic characteristics, CD4, HIV-stadium, HIV- and TB- regiment, adherence and duration on TB treatment, TB classification, and other co-infections. Patients would be categorized as TB treatment successful only if they adhered to treatment for as minimum as 6 months and were diagnosed BTA-. A logistic analysis was conducted to identify significant factors.

Results; A total of 106 patients were involved in our study cohort with 88 patients (83%) categorized as TB treatment successful. Most of them were male (80%), aged 30-39 years (38%), have a high level of formal education (82%), not-married (54%), and were employees (80%). Our multivariate analysis contains variables have p-value<0.25 in bivariate analysis found 9- and 12-months TB-treatment duration were significant factors (p-value: 0.001 and 0.037) while sex (p-value:0.083), marital status (0.902), and HIV-stage (0.113) were not significant factors.

Conclusion; Although most of our participants were TB-treatments successful, they recovered in 9 and 12 months of TB treatment. As we provide only initial evidence, a follow-up study is needed, especially by bringing a balance proportion number on case and control.

Keywords: TB-HIV; treatment successful; risk factors; cohort retrospective

ACCELERATION OF TUBERCULOSIS ELIMINATION THROUGH OPTIMIZATION OF CASE FINDINGS USING THE SELF-ASSESSMENT METHOD IN EAST JAVA PROVINCE

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ABSTRACT

Background: Indonesia is one of the countries with the highest TB burden, with an estimated number of people with TB reaching 845,000 with a mortality rate of 98,000 deaths per year. The number of TB cases in East Java Province ranks 3rd highest at 43,248 cases and finding of TB cases in East Java has only reached 45.08% of the 85% target. The target is awareness about TB from populations at risk of TB infection, such as people with HIV.

Method: Self-assessment method as an alternative to accelerate and increase new case finding of TB suspects in people with HIV. The implementation: TB screening is done independently by the people with HIV, actively or passively using the E-TIBI application. The phases are preparation, trials, socialization, implementation, monitoring and evaluation. This project involves various internal stakeholders: TB Program team, IT team, and Health Promotion team at East Java Health Office, and external stakeholders: East Java TB Expert Team, WHO Indonesia, Health Ministry TB Sub-directorate, Airlangga University Faculty of Medicine, NGO Mahameru and Yabisha, and all District Health Offices in East Java.

The results by August 2022, 957 people with HIV have used TB suspect examination independently, 288 (30%) were suspected, with performance achievements exceeding the target (163%). The optimization of new case findings with a self-assessment method that should be focused on HIV patients, can also be used by the general public. 767 suspects were found from 3,635 people who examined themselves.

Recommendations by issuing a Governor's Regulation, currently in the making, as a basis for collaborating with all stakeholders related to actualization of East Java's "Find and Treat TB Movement", integrating the case finding TB policy through the self-assessment method with the national TB Program, and synchronization with the activities of community-based programs in each city district in East Java.

THE INCIDENCE OF TUBERCULOSIS AMONG HOUSEHOLD AND NEIGHBOURHOOD CONTACTS OF PULMONARY TUBERCULOSIS CASES IN BANDUNG CITY, INDONESIA

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ABSTRACT

Background & Aims: Contacts of tuberculosis (TB) cases are at high risk of developing TB. We aimed to estimate TB incidence among household contacts (HHCs) and neighbourhood contacts (NCs) of TB cases.

Methods: A prospective cohort study was conducted between April 2021 to April 2022 in six Community Health Center (CHC) areas in Bandung. HHCs and NCs aged ≥10-years of newly diagnosed pulmonary TB cases (index cases; IC) were screened for TB symptoms and underwent a chest X-ray (CXR). Sputum samples were collected from anyone with cough or CXR suggestive of active TB for smear microscopy, rapid molecular test, and *M. tuberculosis* culture. All contacts with no evidence of TB disease at baseline examination were followed-up (FU) by phone after 4 and 8 months, then in-person visit at month 12 for repeat TB screening.

Results: Of the129 bacteriologically confirmed ICs (53.5% females, median age 32 years) recruited, 262 HHCs and 1399 NCs were followed-up (median follow-up time 8 months, range 3-12). Three HHCs and 4 NCs were diagnosed with active TB. The total TB incidence rate was 705 (95% CI 336 to 1479) per 100,000 person-years. TB incidence was higher among HHCs (1860; 95% CI 600 to 5769/100,000 person years) compared to NCs (481; 95% CI 180 to 1281/100,000 person years), with an incidence rate ratio of 3.86 (95% CI 0.56 to 22.86; p=0.05).

Conclusion: TB incidence among HHCs and NCs was higher compared to overall incidence rate in 2020 in Indonesia (301 per 100.000 person-years). Systematic screening of HHCs and NCs of index cases should be prioritized to limit further TB transmission.

Keyword: tuberculosis, neighbourhood, incidence

TOMO APP : IMPROVING MDR TB PATIENT ADHERENCE WITH TELEHEALTH

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ABSTRACT

Background: MDR-TB remains a major public health concern in Indonesia. The failure to manage side effects is a major contributor to the high dropout rates, particularly due to patients’ lack of access to the clinical team at the hospital. TOMO is a mobile health app developed by the Center for Tropical Medicine to monitor patients' adherence and improve communication between patients, TB providers at Puskesmas, and the clinical team at the treating hospital.

Methods: Tomo is currently implemented at the Moewardi Hospital, Solo. MDR TB patients treated at MDR TB clinic were offered to install and use the application. We also invited the corresponding Puskesmas to install the application. We then follow the patients overtime, measuring their acceptance, treatment adherence, user experience, and problems encountered.

Results: Twenty two patients and 18 Puskesmas from five districts were involved in the study. Ninety five percent of the patients and 85% of Puskesmas staff consistently used the app to report and validate the patients’ medication. Up until July 2022, nine patients had completed the medication since using TOMO (median = 4 months) and one died from diabetes complications after nine months of using TOMO. Ninety nine percent of side effect reports were responded to by the case manager or clinical team within 22 minutes (median). Among the users, 95.5% were satisfied with TOMO, and 68.2% said they would recommend it to others. The majority (80%) had never encountered a problem in logging in and accessing TOMO, while the internet connection was the major problem (20%).

Discussions: TOMO is a first step toward improving MDR-TB patients' adherence to treatment by facilitating direct communication between patients and providers. Although the national TB treatment flow is standardized, there is a need for TOMO development to inquire about the variety of needs in all places.

Keywords: MDR-TB, Mobile application, treatment adherence

TUBERCULOUS MENINGITIS PATIENT PATHWAYS AND DELAYS TO DIAGNOSIS IN INDONESIA

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ABSTRACT

Introduction: Establishing a diagnosis of tuberculous meningitis (TBM) is notably challenging. This causes delays in treatment initiation, which is associated with increased risk of death and neurological sequelae. Defining patient pathways prior to diagnosis can help target resources and accelerate diagnosis. This study investigates patient's pathways and their alignment with TBM related diagnostic services in Indonesia.

Methods: We conducted a retrospective study among patients who were started on TBM treatment and who were admitted to two tertiary hospitals in Indonesia. Using face-to-face surveys, patients or their family members recalled healthcare visits from symptom onset until hospital admission at inclusion. For hospitals visited by at least 2 patients, we evaluated TBM-related diagnostic services using online surveys and phone interviews.

Results: We recruited 175 TBM patients. After onset of symptoms, patients visited a first healthcare provider after a median 10 days [IQR 1-31]. Many patients (38.1%) first visited private primary level providers, and patients visited a median 5 healthcare providers [IQR 3-8] over 31 days [IQR 10-79] until a diagnosis was made, while treatment was initiated a median 1 day [IQR 0-1] after diagnosis. Of 40 hospitals that were visited by ≥2 patients, 3 (7.5%) had no neurologist, 21 (52.5%) did not always have LP kits, 9 (22.5%) had no brain CT/MRI, and 12/38 (31.6%) and 32/38 (84.2%) lacked facilities for routine CSF laboratory analysis and CSF GeneXpert, respectively.

Conclusion: In this urban setting in Indonesia, pathways to TBM diagnosis are complex and lengthy, and often not aligned with appropriate diagnostic services

CHARACTERISTICS OF PULMONARY TUBERCULOSIS PATIENTS IDENTIFIED BY ACTIVE CASE FINDING ACTIVITY IN BANDUNG, INDONESIA

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ABSTRACT

Background & Aims: Tuberculosis (TB) active case finding (ACF) is a strategy to detect patients earlier to reduce morbidity and mortality and limit transmission. We compared the characteristics of TB cases found through the ACF process with the patients who presented themselves at the health care facilities (passive case finding; PCF).

Methods: A cross-sectional study was conducted in six Community Health Center (CHC) catchment areas in Bandung, Indonesia (April 2021 to July 2022). New bacteriologically confirmed TB patients were recruited in the CHCs or hospitals within the catchment areas. Their household members and closest neighbours were screened for TB symptoms and underwent a chest X-ray (CXR). Anyone with cough or CXR suggestive of TB gave sputum samples for microbiology examinations. Categorical variables were compared using the Chi-squared test. Numerical variables were compared using a Mann-Whitney test.

Results: Among 207 bacteriologically-confirmed TB patients (51% male, median age 33 years), 172 (83%) were diagnosed using PCF and 35 (17%) ACF. Patients identified through ACF were less likely to be underweight (40% vs 56%; $p=0.001$), a lower proportion reported coughing (74.3% vs. 98.8%, $p<0.001$), shorter cough duration (median 14 vs. 45 days, $p<0.001$), and less hemoptysis (5.7% vs. 27.3%, $p=0.006$), fever (40.0% vs. 63.8%, $p=0.01$), weight loss (45.7% vs. 83.7%, $p<0.001$) and fatigue (28.6% vs. 73.3%, $p<0.001$) compared with those identified using PCF. Fewer ACF patients had a suggestive active TB CXR reading (65.7% vs 76.0%) compared to PCF patients. Higher bacterial load was found in PCF patients (smear result +++ 26.7%) than ACF patients (smear result +++ 14.7%).

Conclusion: Tuberculosis patients identified using ACF were less severe and had a lower bacterial load, suggesting a better prognosis and lower risk of transmission. Our study suggested that ACF programmes are important in controlling and limiting the spread of TB in the community.

Keywords: tuberculosis, active case finding, passive case finding

ACTIVE TUBERCULOSIS AMONG HOUSEHOLD AND NEIGHBOURHOOD CONTACTS OF PULMONARY TB PATIENTS IN BANDUNG, INDONESIA

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ABSTRACT

Background & Aims: Indonesia is the 3rd country with the highest Tuberculosis (TB) burden in the world. We aimed to estimate the prevalence of TB among household contacts (HHCs) and neighbourhood contacts (NCs) of newly diagnosed pulmonary TB patients (index cases; ICs).

Methods: A cross-sectional study was conducted recruiting participants from six Community Health Centres (CHCs) and two hospitals in Bandung City (April 2021 to July 2022). All HHCs and NCs identified were screened for TB symptoms and offered a chest x-ray. Anyone with cough or CXR suggestive of TB were asked to give sputum samples for microbiology examinations. The prevalence and 95% confidence interval (CI) of bacteriologically confirmed TB among HHCs and NCs was calculated. The prevalence ratio was determined using Poisson regression.

Results: Of 177 ICs (50.3% females, median age 32 years, 89.0% culture positive), we screened 427 HHCs (54.3% females, median age 37 years), and 2520 NCs (57.6% females, median age 40 years). HHCs were more likely to have a cough (16.2% vs 12.8%, $p<0.06$), be underweight (23.9% vs 16.1%, $p<0.001$), and had a suggestive active TB result on CXR (10.5% vs 4.9%, $p<0.001$) compared with NCs. We found 18 and 23 bacteriologically confirmed TB among HHCs and NCs, respectively. The prevalence of TB among HHCs (4.22%, 95% CI 2.52-6.58) was higher than NCs (0.91%, 95% CI 0.58-1.37) ($p<0.001$). The prevalence ratio was 4.62 (95% CI 2.49-8.56).

Conclusion: The prevalence of active TB in HHCs was 4 times that of NCs. Meanwhile, the risk of TB disease in neighbouring contacts is 2 times that of the general population (0.5% in 2014 in West Java). Active case finding among HHCs and NCs is crucial for TB elimination program.

Keyword: tuberculosis, active case finding, household, neighbourhood

DEVELOPMENT AND VALIDATION OF THE KNOWLEDGE, ATTITUDE, AND PRACTICE QUESTIONNAIRE FOR COMMUNITY PHARMACY PERSONNEL IN TUBERCULOSIS CASE DETECTION, DRUG MONITORING, AND EDUCATION

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ABSTRACT

Validated and standardized structured questionnaires based on psychometric analysis are extremely limited, particularly for evaluating the knowledge, attitude, and practice (KAP) of community pharmacy personnel (CPP) in tuberculosis (TB) case detection, drug monitoring, and education (DME). Therefore, we developed and validated a questionnaire to assess the KAP of CPP to improve their role in TB-DME. We developed the questionnaire, which included framework development, item generation, item screening, and pre-testing. Then, we validated the questionnaire with 400 participants using participant analysis, item discrimination, item difficulty, individual item content validity index (I-CVI), confirmatory factor analysis (CFA), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), non-normed fit index (NNFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Cronbach's alpha and test–retest reliability tests were performed using Pearson's correlation and intraclass correlation coefficients (ICC). In the development phase, we defined 63 items that comprised 18 sociodemographic, 18 knowledge, 18 attitude, and 9 practice items. Across the 63 items, the I-CVI scores of sociodemographic and KAP items were 1 each. Cronbach's alpha coefficients of K, A, and P items were 0.75, 0.91, and 0.95, respectively. According to the results of test–retest reliability with Pearson's correlation coefficient, the correlation coefficients of K, A, and P were 0.84, 0.55, and 0.91, respectively ($p < 0.01$ for all). The ICCs for K, A, and P were 0.91, 0.71, and 0.95, respectively. The CFA model parameter values were $\chi^2/df = 2.28$; AGFI = 0.95; CFI = 0.99; NNFI = 0.98; RMSEA = 0.06; and SRMR = 0.03 ($p < 0.05$ for all). We successfully developed a valid and reliable questionnaire for assessing the KAP of CPP for TB-DME. The questionnaire can be used as an assessment tool for KAP and further interventions to engage pharmacies in the management of TB.

Keywords: development, validation, knowledge, attitude, practice, community

INVOLVEMENT OF PRIVATE HEALTH SERVICES IN TB CASE FINDING IN BANGLI DISTRICT

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ABSTRACT

Background: Tuberculosis (TB) is still a health burden and one of the top 10 causes of death in the world. On the other hand, the low TB case finding is an important problem in efforts to control TB cases. TB case data Bali Province in 2017-2019 showed Bangli District has the lowest Case Notification Rate (< 30% from target). One strategy in increasing TB case finding is the collaboration of public and private services (public private mix). This study aims to determine the involvement of private services in TB case finding in Bangli District.

Method: This survey uses a cross-sectional design with the population was private health services in Bangli District. This survey was conducted in July – August 2021, with a consecutive sampling selection. A total of 47 respondents were willing to take part and answer online questionnaires. The variables studied were service characteristics, forms of involvement and barriers to TB case finding. The data collected was analyzed descriptively.

Result: The characteristics of the respondents showed that the average age of the respondents is 41 years, with most is women with a D3 professional education, having a private midwife practice but concurrently as staff in a public health center or hospital. Only 30% of respondents stated that they had attended TB training. Approximately 75% of respondents have been involved in TB case finding with 57% of respondents have been involved for more than 10 years. The selected referrals were balanced between community health center or public hospitals. About 20% of respondents stated that they submitted incomplete and not timeliness reports. The obstacles in case finding were the difficulty of finding cases with pulmonary and extra-pulmonary symptoms accordingly, difficulty in obtaining sputum, low awareness of patients and families in taking an active role, use of standard forms and the conditions of the Covid-19 pandemic (decreased patient visits and difficulties in tracing close contacts).

Conclusion: The potential to increase the involvement of private health services in case finding is still quite large. For this reason, it is necessary to strengthen the network and improve the TB case finding system through a persuasive approach, workshops and an agreement on a case finding system accordingly with Bangli District.

Keywords: Tuberculosis, case finding, private health services.

PERFORMANCE PRISM OF DISTRICT-BASED PUBLIC PRIVATE MIX

ABSTRACT

Background: DPPM TBC (District-based Public Private Mix-Tuberculosis) is an organization for policy makers to reduce missing cases towards the elimination of tuberculosis by 2030. The purpose of this study is to analyze the role of policy makers based on the dimensions of the prism of performance (contribution, strategy, process, capability, satisfaction).

Methods: The method used in this study is a quantitative method. Data collection by survey method. Successfully recruited 125 respondents. The data were transformed by Rasch modeling, then analyzed descriptively with the Winsteps.

Results: The results showed that all respondents perceived the tendency of a high contribution of 99.2% to the performance of DPPM TBC. The satisfaction dimension is 98.4%. However, in the strategy dimension, 26.4% of respondents think that organizational strategy is not related to DPPM TBC. As many as 16.8% consider the TBC problem not the responsibility of the organization. Most respondents perceive positively the process dimension of 94.4%. However, 22.4% still feel lacking in planning for TBC DPPM. %. High capability of 93.3%. But, resources (15.2%) and technology (20%) are considered lacking in respondents. The results of logit categorization from respondent perceptions show that the contribution dimension has the lowest category compared to other dimensions, which is 64.8%. An increase of 0.49 logit of satisfaction can increase 1 logit of contribution. Health workers in private health facilities are stakeholders who have the highest level of interest in maintaining the performance of the TB DPPM in Purwakarta Regency.

Conclusion: The role of stakeholders in the TBC DPPM program in Purwakarta Regency is not evenly distributed. Many of the private and government sectors are functioning their roles for this program, but not a few stakeholders, both from government and private elements, whose role is still low.

Keywords: Contribution, Satisfaction, Respondents.

SCREENING ANALYSIS OF RISK FACTOR IN THE TRANSMISSION OF TUBERCULOSIS DISEASE AT SCHOOL THROUGH ACTIVE CASE FINDING (ACF)

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ABSTRACT

Background: Modelling towards tuberculosis elimination by 2030 illustrates five intervention keys including: "Screening in groups with a high risk of tuberculosis and expanding the range of services in people with tuberculosis in communities that have been undetected" (Ministry of Health of the Republic of Indonesia, 2020).

Objective: This study aims to obtain the results of contact screening and investigation through sputum laboratory test.

Method: Quantitative study using prospective cohort research design on Muhammadiyah Junior High School students in Central Jakarta who have close contacts with the adults who are positive pulmonary TB in the school and home environment with TB format.15.

Results: In the total of 110 respondents, there were 57% female, 53% male, 2.7% having history of TB disease in the household, 77% having history of smoking, 46.3% having emaciated nutritional status. There were clinical symptoms such as coughing more than 2 weeks 29.1%, shortness of breath 14.15%, sweating at night 9.1%, and fever 1.8%. Therefore, 19 children were tested with sputum BTA with a result of 5.2% is positive.

Conclusion: Risk factor affects TBC transmission on students. ACF can increase case finding with 46.3% of children with emaciated nutritional status and 77% of history of smoking and at risk for TB transmission.

Keywords: Students, Tuberculosis, Risk, Transmission, Active Case Finding

EVALUATION OF CURE RATE MDR-TB PATIENTS IN BANDUNG

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ABSTRACT

Background: The high prevalence of tuberculosis led to increased use of antibiotic therapy causing numerous problems, one of which is Multi Drug Resistant Tuberculosis (MDR-TB). In Indonesia, the cure rate of MDR TB is still low at 51% in 2013. Many factors from extrinsic or intrinsic can cause this, one of which is SLC11A1 gene polymorphism. Solute carrier family 11-member 1 (SLC11A1) gene polymorphism at rs17235409 were known to be associated with multidrug-resistant tuberculosis (MDR-TB) incidence.

Methods: This study was a retrospective cross-sectional design to determine the cure rate of MDR-TB patients at the Hospital Dr. Hasan Sadikin the period 2012-2014 and a cross-sectional study was done by detecting SLC11A1 (rs17235409) gene polymorphism using DNA sequencing.

Results: The results, the cure rate of patients in 2012 amounted to 51.92%; in 2013 amounted to 48.76%; and 2014 amounted to 48.17%. Overall cure rate of the year 2012-2014 in the amount of 49.03%. City / county with the highest burden of MDR TB in Bandung West Java, namely the number of patients as many as 149 people. Districts with highest MDR TB burden in the of West Java is Andir with the number of patients 18 people. DNA sequencing showed 74% identifiable subjects with 81,081% subjects having GG genotype and 18,918% subjects having GA genotype, and no subjects (0%) having AA genotype.

Conclusion: It can be concluded that the cure rate of MDR-TB patients at the Hospital Dr. Hasan Sadikin still low so we need a variety of evaluation not only this polymorphism.

Keywords: MDR TB, cure rate, SLC11A1 rs17235409

EVALUATION OF TUBERCULOSIS SURVEILLANCE SYSTEM IN NORTH SUMATRA PROVINCIAL HEALTH OFFICE 2022

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ABSTRACT

Introduction : Tuberculosis Global Report 2021 TB was being the major death caused by one infection agent. Result of health problem analysis in North Sumatra Provincial Health Office, TB was choosen as the first priority with main determinant low treatment coverage TB. The purpose of this study is to know the implementation of surveillance TB system based on system approach and evaluate based on surveillance attribute in North Sumatra Provincial Health Office 2022

Methods : The type of research is descriptive with evaluation design. Subject of the research was surveillance TB system has been implemented in North Sumatra and Deli Serdang Health Office District in 2021 with TB officer in Health Office. Data collected by interview with TB officer using questionarre and supported by document study. Evaluation was doing by system approach and based on surveillance attribute. The data interpreted by narration and table.

Results : Results of evaluation system component TB in Health Office in Provincial and District obtained that implementation system of TB was appropriate with surveillance guidelines and TB control guidelines by Ministry of Health. Based on attribute evaluation, from 9 attributes Health Office Provincial and Distrcit got 5 attributes with good results means that TB surveillance program was simple, acceptable, good data quality, sensitive, and stable but the surveillance program was not flexible, low predictive value positive, not timeliness, and not representative.

Conclusions : Based on the evaluation results, TB surveillance system in North Sumatra Provincial Health Office and Deli Serdang District Health Office has a good system based on input, process, and output. Based on attribute surveillance, its still need some improvements in terms of increasing predictive value positive by doing screening people before TCM examination and analysis of cases by person place and time so the data would be representative and describe the real condition

Keywords: Evaluation, Surveillance system, Tuberculosis

DETERMINANTS OF TUBERCULOSIS

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ABSTRACT

Background: Tuberculosis (TB) is still a major public health problem globally. World Health Organization (WHO) reported about 10 million people fell ill with TB and about 1.5 million people died from TB in 2020 globally. TB epidemic is strongly fuelled by social and economic development and health related risk factors such as smoking, undernutrition, diabetes, HIV infection and alcohol use disorder. The objective of this paper is to describe the need to address these factors as an integral part of the TB control strategy.

Methods: Reviewed WHO Global Tuberculosis Report 2021 to obtain information about determinants of TB.

Results: The report presents globally in 2020, an estimated 1.9 million incident cases of TB were attributable to undernutrition, 0.74 million to HIV infection, 0.74 million to alcohol use disorders, 0.73 million to smoking and 0.37 million to diabetes. However, there is significant variation among countries in the relative contribution of the five factors. Addressing these determinants of the TB epidemic requires multisectoral approach, political leadership and accountability as highlighted in the report.

Conclusion: There is a need to have better understanding of social determinants of TB and concrete actions to address them.

Keywords: TB, determinants, policy-actions

SUCCESS RATE OF DRUG PROVOCATION TEST-GUIDED TUBERCULOSIS TREATMENT IN PATIENTS WITH HISTORY OF ANTI-TUBERCULOSIS DRUG HYPERSENSITIVITY

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ABSTRACT

Background: Hypersensitivity to anti-tuberculosis drugs (ATD) can affect the patient's subsequent treatment options and affecting the outcomes of tuberculosis (TB) treatment. A drug provocation test is expected to guide TB treatment in patients with ATD hypersensitivity. This study aims to evaluate the outcome of TB treatment in patients with a history of ATD hypersensitivity, guided by drug provocation tests.

Methods: This study is a retrospective cohort study of adult tuberculosis patients involving 92 TB patients with a history of ATD hypersensitivity who underwent drug provocation testing and 1,998 TB patients without a history of ATD hypersensitivity. The sampling method was carried out by total sampling for both groups. All patients in the hypersensitivity group underwent drug provocation test before restarting their TB treatment. All patients were observed until completion of TB treatment and then grouped into treatment success or failure based on medical record data. The definition of treatment success was the number of subjects cured plus complete treatment. Data were analyzed using the Chi-Square test to examine the relationship between ATD hypersensitivity and TB treatment outcome.

Results: There was a decrease in the success rate of TB treatment guided by drug provocation test in patients with a history of ATD hypersensitivity (58.2%) compared to patients without any history of ATD hypersensitivity (59.4%), but statistically not significant (p=0.840).

Conclusions: A drug provocation test can guide the treatment of tuberculosis in patients with a history of ATD hypersensitivity so that there is no significant reduction in treatment success compared to patients without a history of hypersensitivity.

Keywords: Drug hypersensitivity, drug provocation test, tuberculosis, anti-tuberculosis drugs, treatment success

MULTI EPITOPE-BASED VACCINE DESIGN FOR PROTECTION AGAINST *MYCOBACTERIUM TUBERCULOSIS* AND SARS-COV-2 COINFECTION

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ABSTRACT

Background: A prophylactic and immunotherapeutic vaccine for *Mycobacterium tuberculosis* (MTB) and SARS-CoV-2 coinfection needs to be developed for a proactive and effective therapeutic approach. Therefore, this study aims to use immunoinformatics to design a multi-epitope vaccine for protection against MTB and SARS-CoV-2 coinfection.

Methods: The bioinformatic techniques were used to screen and construct potential epitopes from outer membrane protein A Rv0899 of MTB and spike glycoprotein of SARS-CoV-2 for B and T cells. The antigenicity, allergenicity, and several physiochemical properties of the developed multi-epitope vaccination were then evaluated. Additionally, molecular docking and normal mode analysis (NMA) were utilized in evaluating the vaccine's immunogenicity and complex stability.

Results: Selected proteins and predicted epitopes suggest that the vaccine prediction can be helpful in the protection against both SARS-CoV-2 and MTB coinfection. Through docking molecular and NMA, the vaccine-TLR4 protein interaction was predicted to be efficient with a high level of IgG, T-helper cells, T-cytotoxic cells, andIFN-γ.

Conclusions: This epitope-based vaccine is a potentially attractive tool for SARS-CoV-2 and MTB coinfection vaccine development.

Keywords: SARS-CoV-2, *Mycobacterium tuberculosis*, multi-epitope vaccine, docking simulation

CHALLENGES FOR IMPLEMENTATION OF THE MINI COHORT OF MULTIDRUG RESISTANCE TUBERCULOSIS PATIENTS DURING PANDEMIC IN WEST SUMATRA PROVINCE

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ABSTRACT

Background: In 2019, an estimated 24,000 DR TB cases per year but only 48% of Multi Drugs Resistant Tuberculosis (MDR TB) patients were found to have started treatment. The pandemic has caused a lot of disruption to MDR TB services. The mini cohort activity will provide regular feedback on MDR TB services, and assess the conformity between recording and reporting from the National Tuberculosis Program (NTP).

Methods: The method used is descriptive. Mini cohort implementation was carried out at 6 MDR TB Referral Hospitals: Dr M Djamil Padang Hospital, Bukittinggi Hospital, Lubuk Alung Respiratory Hospital ,M Natsir Solok Hospital, Pasaman Barat Hospital and M Zein Hospital from January-Augustus 2022.

Results: Analysis of MDR services in West Sumatra Province was carried out on 26 patients on treatment. Most of them were male (76.9%) and >40-65 years old (65.4%). Most are treated at Bukittinggi Hospital (30%) and came from Padang (19.2%). Patients who do not work are (19.2%). Based on the results of DST, the highest classification is MDR (61.5%) while the lowest is Pre XDR and XDR (11.5%). Patients with the Individual Regimen (84.5%) more than the Short term regimen (15.4%) and patients who survived were 88.5%. Inappropriate treatment guidelines is 45%. The investigative contacts that have not been maximized according to the target are 20 contacts, which is 90%. Recording and reporting that has not been maximized is 66% while the ESO Management needs improvement is 10%. Patients who died and had the same comorbidities 14%.

Conclusions: All DR TB services in the hospital have been done mini cohort process. The majority of mini cohort indicator was found as comply, however, One of the findings from the mini cohort that needs to be considered is the low number of contact investigations that need more improvement.

Keywords: DR TB, Mini cohort, West Sumatera, 2022

INDOLEAMINE 2,3-DIOXYGENASE 1 PLASMA IN TB-HIV COINFECTION AND HIV WITHOUT TB INFECTION IN DR. M. DJAMIL CENTRAL GENERAL HOSPITAL PADANG, WEST SUMATRA, INDONESIA

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ABSTRACT

Introduction: The diagnosis of Tuberculosis in HIV patients is a great challenge, because of the atypical features of the disease. Chronic infections such as HIV and TB cause chronic immune activation which will lead to an increase in IFN-γ. Indoleamine 2,3-dioxygenase 1 (IDO1) is an immunoregulatory enzyme induced by IFN-γ that breaks down tryptophan to kynurenines. This condition will lead to tolerance of immunity to infections that have occurred. IDO1 plasma is a newly determined marker for diagnosing TB in blood samples of HIV patients.

Objective: We investigated the difference in plasma IDO1 activity of TB-HIV coinfection and HIV without TB infection.

Methods: This study is an analytic observational study with a cross-sectional design. Plasma IDO1 activity was assessed by calculating the kynurenine/tryptophan ratio (K/T ratio). The diagnosis of pulmonary TB was made using a Lowenstein Jensen culture. This indicator was assessed on 38 HIV patients who were divided into 2 groups, namely TB-HIV coinfection and HIV without TB infection.

Results: Thirty-eight subjects were included in this study with a mean age of 37.5 years, with more males than females. The mean K/T ratio in this study was 0.144. The K/T ratio in TB-HIV coinfection being higher than HIV without TB infection (0.199 vs 0.089, p=0.005).

Conclusion: There was a significant difference in plasma IDO1 activity in the TB-HIV coinfection group and HIV without TB infection group. This study is in following several previous studies which also found that the K/T ratio in TB-HIV coinfection was higher when compared to HIV or TB infection. Plasma IDO1 levels increased in HIV, TB, and TB-HIV infections, but the increase was more significant in HIV-TB coinfection. This can be a consideration for further research to make IDO1 plasma activity a new test to help diagnose TB in HIV patients.

Keywords: HIV, Tuberculosis, IDO1, K/T ratio

PPM TB-DM PARTNERSHIP MODEL DEVELOPMENT OF TUBERCULOSIS CONTROL PROGRAM AS AN EFFORT TO ACCELERATE TUBERCULOSIS ELIMINATION IN PASURUAN CITY

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ABSTRACT

Indonesia is ranked second among countries with highest TB burden, base on estimated epidemiological burden of TB in 2019. Implementation of the prevention efforts through the National TB Control Program, has not given results, especially the low number of new cases finding that will hinder the achievement of TB Elimination in 2030. Through the partnership model, the involvement of the private sector and the community that has been carried out in Pasuruan City has increased the number of new cases finding in the last three years, but has not yet reached the target. This study aimed to analyze the partnership model that was carried out and develop a model for implementing partnerships: PPM in Pasuruan City.

Qualitative study is used through the process of exploration, understandings, and obstacles of the model partnership implementation of the TB control program. The sources of research data are actors involved in the implementation of TB control programs.

Results of the study showed that only principles of partnership that are carried out are only in the trust, equality, mutual benefit and risk-sharing. Then PPM TDC (TB-DM Collaboration) partnership model was developed, that is strategy development to improve case finding and service quality involving primary, secondary and government-private health facilities by collaborating with TB and DM programs, and implementing the principle of Commitment, Cooperation, Trust, Communication, Quality of service, Dependancy, Adaptability and Profit.

As a conclusion of the partnership model: PPM TDC can be an effort to accelerate the achievement of TB elimination. Suggestions for District/Municipality Governments that have implemented PPM are to evaluate and develop the PPM TDC approach, which has not been able to carry out the PPM TDC approach directly. PPM TDC evaluation is carried out periodically by an integrated monitoring team involving academics, professional organizations.

EVALUATION OF THE TUBERCULOSIS SURVEILLANCE SYSTEM IN BANGLI DISTRICT IN 2022

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ABSTRACT

Background: Every year around 10 million people worldwide suffer from TB disease, 1.5 million people die from TB in 2020. Surveillance has an important role in monitoring the trend of TB disease. There was a decrease in TB case finding in Bangli Regency in 2020 compared to 2015 to 2019. The study aims to evaluate the TB surveillance system and its surveillance attributes.

Method: Descriptive evaluation research was conducted in February-May 2022 in Bangli Regency. Observations were made on TB reports at the Public Health Center (PHC) and the Health Office related to Case Notification Rate (CNR). Interviews about the characteristics of officers and surveillance attributes were conducted on 17 respondents, namely TB officers from the Health Service (1), PHC officers (12), government hospitals (1) and private hospitals (1) as well as Prisons (1) and Narcotics Prisons (1). The analysis was done descriptively.

Results: Observations showed that the CNR achievement in 2021 in all PHC was still below the target and in the Health Office it was only 26.71% of the 60% district target. The results of the interviews revealed that 40% of TB officers had never attended TB surveillance training, 100% of officers had dual duties, 76% of service facilities did not have trained TB testing laboratory personnel. Evaluation of the attributes of the surveillance system found that the surveillance system was not simple, not representative, reporting was not timely and the quality of the data was still lacking. However, TB surveillance is flexible, acceptable, and sensitive in diagnosing.

Conclusion: The TB surveillance system has not been running well due to the dual duties of officers and inadequate staff capacity, so it is necessary to increase the capacity of TB officers regarding TB surveillance.

Keywords: surveillance, tuberculosis, evaluation, Bali

RIFAMPICIN AND ISONIAZID INHIBITORY CONCENTRATION AGAINST MYCOBACTERIUM TUBERCULOSIS IS LOWER THAN CRITICAL CONCENTRATION

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ABSTRACT

Background: The clinical bactericidal effect of anti-tuberculosis drugs can be measured by the ratio of its in vivo blood concentration to the minimal inhibitory concentration of the drug against Mycobacterium tuberculosis (MTB) in vitro. Pharmacodynamic parameters such as AUC/MIC or Cmax/MIC were shown to have the best correlation with rifampicin and isoniazid effectiveness. Studies that showed good responses to tuberculosis treatment even at low blood concentration of rifampicin or isoniazid, are thought to be due to differences in MIC of MTB in the region. This study was aimed to assess the rifampicin and isoniazid MIC against MTB in new cases of pulmonary TB patients in Bandung

Methods: The MIC assessment was carried out on isolates of MTB culture from sputum specimens of 20 new cases of pulmonary TB, at a pulmonary hospital in the city of Bandung. MTB cultures were performed on liquid media using MGIT method, and the MIC was assessed by growth unit observation at the critical concentration (for isoniazid is 0.1 mg/L and for rifampicin is 1.0 mg/L), and at two levels below the critical concentration (0.05 mg/L and 0.025 mg/L for isoniazid, while for rifampicin 0.5 mg/L and 0.25 mg/L).

Results: For rifampicin, all isolates were sensitive at 0.25 mg/L, and for isoniazid, 19 isolates (95%) were sensitive at 0.05 mg/L, and 1 isolate was sensitive at 0.1 mg/L.

Conclusions: MTB isolates from pulmonary TB patients in this study had lower MIC compared to WHO critical concentration for rifampicin and isoniazid.

CHILDHOOD TUBERCULOSIS: A CASE CONTROL STUDY IN SURABAYA PULMONARY HOSPITAL

ABSTRACT

Tuberculosis remains one of the major causes of morbidity and mortality in the world. The WHO estimates that TB cases of children in Indonesia reached 23.170 cases in 2014. In 2013, Childhood tuberculosis in Indonesia shows the proportion between 1,8% to 15,9%. The exposure and infection are the main factors of tuberculosis transmission, especially in children. The objective of this study is analyzing the risk factors for TB in children who live with adult pulmonary TB patients at Surabaya Pulmonary Hospital.

This study was an analytical observational study using case-control study. The subject of this study was children aged 0-14 years who diagnosed with tuberculosis in Surabaya Pulmonary Hospital. 60 children is used as samples for the study consisting 20 cases and 40 controls. The sample has taken by simple random sampling method. The independent variables were the BCG immunization record, the number of transmission source, sputum smear for adult patients, long-term contact tuberculosis, knowledge about TB prevention, and child nutritional status. Analysis of the effect was using logistic regression.

The result shows the variables that influence of childhood TB incidence who live with adult pulmonary TB patient in bivariate are; 1) sputum smear for adult patients (p=0,032), 2) long-term contact tuberculosis (p=0,000), and 3) child nutritional status (p=0,001). Significant factors in multivariate are; the nutritional status of children (OR = 0.084 95% CI = 0.014 to 0.493) and long-term contact tuberculosis (OR = 0.037 95% CI = 0.006 to 0.219).

The conclusion of this study is the most influential variables of childhood TB incidence who live with adult pulmonary TB patients are child's nutritional status and long-term contact tuberculosis. Stakeholder have to do early diagnostic to break the chain of tuberculosis transmission with early household contact detection.

Keywords : childhood tuberculosis, child's nutritional status, long-term contact

POSTER PRESENTATION

DRUG-RESISTANCE LYMPHADENITIS TB

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ABSTRACT

Background : Lymphadenitis TB is the most common extrapulmonary TB which can occur in all lymph nodes, especially the colli, axilla and others. The incidence of drug resistance in lymphadenitis TB is a rare case.

Case : A 24-year-old female patient came with complaints of lumps in both axilla since 9 months ago. The lumps began to appear when the patient was taking anti-tuberculosis drug for the 3rd month on the indication of pulmonary TB at the puskesmas. After 6 months of anti-tuberculosis drug treatment, the patient was declared cured of pulmonary TB with a negative AFB result but weight loss and lumps in both axilla getting bigger and starting to fester. At the hospital, treatment with anti-tuberculosis drug was continued with a treatment plan for 9 months. After 6 months of treatment the size of the lymph nodes increased so the patient was referred to a pulmonary hospital. Furthermore, at the pulmonary hospital, fine needle aspiration biopsy of lymph node was carried out with ultrasound guiding for sampling and Xpert MTB examination was carried out. Xpert MTB results showed the presence of rifampin resistance. The patient was treated as drug-resistant TB with a short-term regimen of streptomycin, moxifloxacin, clofazimine, ethambutol, pyrazinamide, ethionamide and INH starting on July 26, 2019. After 9 months of treatment, the lumps in both axilla disappeared and cicatrix appeared. Ultrasound results also showed no further enlargement of the lymph nodes.

Conclusion : The results of TB lymphadenitis treatment were determined from the shape/size of the lesion and the clinical course of the patient. If there is no improvement, a sample examination must be carried out to determine whether drug resistance is present, even though the cases are rare.

Keywords : lymphadenitis TB, drug resistance

EVALUATION OF THE RESULTS OF CONTACT INVESTIGATIONS AND TUBERCULOSIS PREVENTIVE THREATMEN AT THE WANIA HEALTH CENTER, MIMIKA REGENCY FROM JANUARY 2020 TO JULY 2022

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ABSTRACT

Background: The number of tuberculosis (TB) patients at the Wania Health Center is increasing from year to year. From 2020 to July 2022 the Wania Health Center has been actively conducting contact investigations of TB cases. To find new cases and provide tuberculosis preventive threatment (TPT) to TB contacts who are healthy and eligible to be given TPT.

Method: This is a cross-sectional study to describe the results of a contact investigation conducted from January 2020 to July 2022 at the Wania Health Center, Mimika Regency. The data were taken from the Tuberculosis Information System and the TB01 PPINH form.

Results: There was an increase in the number of TB cases with contact investigations from 82% in 2020, to 100% in 2021, and 85% until July 2022. The total contacts found were 281 and 22 of them were children aged <5 years, 50 children aged 5 -14 years, and the rest are adults. There were 16 contacts who were sick with TB and all of them had been treated. A total of 22 children received TB preventive threatment. The proportion of children <5 years who received TPT increased from 20% to 36% in 2022, the proportion of children 5-14 years who received TPT from 0 increased to 12%, and adults who received TPT from 0 to 2.4% after the availability of preventive drug preparations with rifapentine and isoniazid.

Conclusion: Not all TB contacts have received TB preventive threatment, especially children under 5 years who meet the requirements for TB preventive threatment even though education has been carried out on the benefits of TB preventive threatment. Short-term TPT regimens increase patient adherence to giving TPT to child contacts, as evidenced by 2022 there is an increase in the number of TB contacts receiving TB preventive threatment.

PERCEPTIONS OF PRIVATE MEDICAL PRACTITIONERS ON TUBERCULOSIS NOTIFICATION: A CASE STUDY IN PONTIANAK CITY ON 2020

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ABSTRACT

Background: Tuberculosis (TBC) is an infectious disease of the Mycobacterium tuberculosis bacteria that is con tagious. In 2018, Indonesia was recorded as the country with the second highest TBC burden in the world with an estimated total case of > 1 million cases and was ranked second with the highest number of unreported cases in the world, which was around 690,000 cases. The low perception of acceptance from Independent Practitioners and Private Clinic Practitioners for the TBC notification program is suspected to be involved in the large number of missing TB cases.

Methods: This research uses a qualitative approach with a case study design. The samples in this study are 12 Private Medical Practitioners from each sub-districts in Pontianak City, and the TBC program managers. The samples in this study are determined using purposive sampling technique, and the qualitative data is analyzed using content analysis system.

Result: The result showed a lack of knowledge and understanding from private sectors towards PERMENKES No. 67 Tahun 2016, which is about case reporting systems.

Conclusion: The factors that influence the low reporting of TBC cases to Independent Practitioners and Private Clinic Practitioners include the role of the puskesmas as the first-level health facility that has a program for TBC patients so that it becomes the main reference for TBC patients, in addition to the limited knowledge and understanding of Minister of Health Regulation No. 67 of 2016 as well as the realization of these regulations, the lack of coordination and socialization from the government, either directly or indirectly, to independent practicing doctors and private clinicians, as well as patients who are less cooperative in handling TBC cases.

Keywords: Tuberculosis, Notification, Private Medical Practitioners

TB TREATMENT DELAY AMONG TB PATIENTS DETECTED THROUGH ACTIVE CASE FINDING IN YOGYAKARTA, INDONESIA

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ABSTRACT

Background: TB active case finding (ACF) aims to detect TB cases among high-risk populations who have not sought care and started treatment immediately. Understanding treatment delay of TB cases detected in ACF and its contributing factors will improve the ACF performance to eliminate TB.

Methods: We measured time from screening to diagnosis and treatment initiation for TB patients detected through ACF activities of Zero TB Yogyakarta from 1 April-31 October 2021 in Yogyakarta city and Kulon Progo district, Indonesia. After symptom screening, CXR and sputum collection at ACF services, primary health facilities decided the final TB diagnosis and started TB treatment. We asked the TB nurses about the patients who refused to start TB treatment or delayed the treatment on the factors that contributed to the treatment delay.

Results: Among 19,464 persons presenting to ACF services, 186(1.0%) TB cases were detected, 72 with bacteriological confirmation and 114 clinically diagnosed. The median time from presentation in ACF to TB diagnosis confirmation was 1 (IQR:0-2) days for bacteriologically confirmed patients and 2 (IQR:0-15)days for clinically diagnosed TB. 162(87.1%) patients started TB treatment, 12(6.5%) refused, 2(1.1%) died before treatment, 3(1.6%) were lost to follow up and 7(3.8%) with other reasons. The median time to treatment initiation was 4 (IQR 2-13) days after the diagnosis for bacteriologically confirmed patients and 7 (IQR 2-38)days for the non bacteriologically confirmed patients. Patients reported delaying or refusing treatment for a range of reasons: not feeling ill, unaware of their diagnosis, afraid of side effects, not ready for long treatment, and moving out. Nurses reported challenges in finding time to trace the patients; and referral to specialists to confirm the diagnosis.

Conclusion: Although TB patients were detected rapidly through ACF, diagnostic and treatment delay still occur, requiring strengthening of TB referral and management system to minimize them. Treatment refusal because the patients were not feeling ill is a challenge of subclinical TB detection.

IMPLEMENTATION OF TB PREVENTIVE THERAPY (TPT) AMONG PLHIV IN WATES HOSPITAL, KULON PROGO DISTRICT, YOGYAKARTA PROVINCE, INDONESIA: FROM ZERO TO HERO

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ABSTRACT

Background: TB preventive therapy (TPT) for people living with HIV (PLHIV) has been recommended by the National TB program in Indonesia since 2014 rarely implemented. We describe an experience of the Zero TB Yogyakarta project to provide technical assistance in implementing TPT for PLHIV in a district hospital.

Method: This operational study was held in Wates District Hospital (RSUD Wates), Yogyakarta, which provided HIV services, from September 2021 until July 2022. We targeted all PLHIV who visited the ART clinic regularly. In coordination with the District Health Office, advocacy to the hospital management, logistics support, and on-the-job training for the HIV team were conducted before the implementation. The PLHIV were screened for TB symptoms and chest X-ray (CXR) was performed. The TB presumptive cases were tested by Xpert MTB/Rif. The PLHIV who were diagnosed with TB started TB treatment (OAT) and who were not diagnosed with TB was given TPT. Drug side effects, adherence, and TB symptoms were monitored during the follow-up visits.

Result: Of 82 PLHIV registered, 67(81.7%) screened for TB symptom and 66(80.4%) CXR examination, 7(10.6%) were TB presumptive and 0(0%) were diagnosed with TB. Of 67 PLHIV eligible for TPT, 64(95.5%) started the TPT. Among those, 62(96.8%) has completed the TPT.

Conclusion: Implementation of TPT among PLHIV in the hospital requires strong coordination with the management level, highly competent HIV team, and ensured logistics supplies.

EVALUATION OF SIDE EFFECTS OF DRUG-RESISTANT TUBERCULOSIS TREATMENT IN MIMIKA REGENCY, PAPUA

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ABSTRACT

Background: Since 2018 the number of patients with drug-resistant tuberculosis (DR-TB) in Mimika Regency has continued to increase. The drug regimen used has also changed from a long-term regimen with injections to a treatment regimen that can be given in a shorter time and orally. However, drugs for resistant TB have various side effects and not much is known about the side effects of new DR-TB drugs to TB patients in Papua. This study will report the variations of side effects of DR-TB treatment at the Mimika District Hospital.

Methods: We observed 31 DR-TB patients who underwent DR-TB treatment in Mimika district from January 2020 to July 2022. Data were collected from individual patient data in the TB Information System and patient medical records. Data were compiled and analysed descriptively in an Excel file.

Results: From the evaluation of 32 patients, 22 patients (68.7%) experienced 1 or more drug side effects. Adverse events were reported the most in patients receiving Bdq Cfz Cs Lfx Lzd (12,54.5%), followed by the Cfz Cs Dlm Lfx Lzd regimen (4,18.1%), and other individual regimens (5,22.7%). Reported side effects include: musculoskeletal disorders (13,59%), gastrointestinal disorders (11,50%), visual disturbances (8,36.3%), nervous disorders (6,27.2%), skin disorders (4,18.1%)), abnormal blood profile (3,13.6%), impaired liver function (3,13.6%) and hearing disorders (2,9%). Due to side effects, the treatment regimen must be modified in 7 patients: reduce the drug dose (linezolid) in 6 patients (27.2%), drug discontinuation (linezolid and ethambutol) in 6 patients (27.2%), and increasing the dose of pyridoxine in 13 patients (59%). Number of cases with severe drug side effects increase every year with varieties effects and drugs. There was no patients experiencing severe drug side effects in 2020, 11 patients in 2021 (50%), and 2 patients in 2022 (9%).

Conclusion: The administration of new drugs, particularly, Linezolid caused severe side effects in DR-TB patients in Mimika district, therefore doctors and nurses need to pay more attention to drug side effects in managing DR-TB cases since the starts of treatment to prevent clinical deterioration.

PLEURITIS TUBERCULOSIS AND OVARIAN TUBERCULOSIS WITH KRUKENBERG OVARIAN TUMOR CAUSE BY ESTROGEN DEFICIENCY: TWO DIFFERENT ENTITIES

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ABSTRACT

Introduction: Estrogen receptor α (ERα) is expressed in multiple cell types, and its activity is involved in growth of reproductive tissues and immune response. Estrogen has a role in the immunology of antibacterial autophagy response. Estrogen levels are useful for reducing the risk of ovarian cancer. Ovarian tuberculosis (TB) is an uncommon manifestation of extrapulmonary tuberculosis. Krukenberg tumor is a rare metastatic signet ring cell tumor of ovary, 1-2% of all ovarian tumors. We reported a case with infection and malignancy due to hormonal comorbidities.

Case Presentation: A 47-year-old multiparous female with pleuritis tuberculosis and ovarian tuberculosis with krukenberg ovarian tumor. The patient had cardinal signs and symptoms of TB infection. She had history of menstrual cycles were irregular and anemic episodes due to prolonged menstruation. Estradiol was decreased and she got hormonal therapy. She also had paroxysmal atrial fibrillation and received anticoagulants regularly. Her neigbor diagnosed with pulmonary TB. Abdominal ultrasound (USG) and computer tomography (CT-scan) contrast showed ovarian cysts with ascites. Chest X-ray showed dullness in right costophrenic angle assessed with right pleural effusion. Puncture with thorax USG guiding was done and ADA test was increase. GeneXpert MTB/RIF sputum *Mycobacterium tuberculosis* not detected. Histopathology from biopsy ovarian tissue revealed anaplastic epithelial cell infiltration, singlet ring cells, and tubercle formations with cells of the datia langhans type.

Conclusion: This case highlights ovarian TB with krukenberg ovarian tumor due to suspected ERα deficiency. ERα can help activate in autophagy and regulates autophagy leading to host defenses during mycobacterial infection.

Keywords: ovarian tuberculosis, krukenberg ovarian tumor, estrogen

THE PILOT STUDY USING OF INTERFERON GAMMA RELEASE ASSAY (IGRA) BASED ON SIMPLE TECHNIC TO EARLY DIAGNOSIS PAEDIATRIC TUBERCULOSIS AT PRIMARY HEALTH CARE LEVEL

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ABSTRACT

Background: In the last decade, interferon gamma release assay (IGRA) has been developed and have high agreement with tuberculin skin test (TST) to diagnose TB infection. Unfortunately, the complexity of technical method and high cost estimated were were limited the usage of IGRA method. Simple technic in IGRA examination was is needed to be implemented in primary health care level. This study aims to capture the implementation of simple technic in IGRA methods for tuberculosis early diagnosis in pediatric patients at primary health care level.

Methods: During November 2021-June 2022, a cross sectional study has been done at 5 satellite primary health care level, with one as referral for IGRA test, in Padang city. This study consists of 3 steps; short training for health care officers, socialization and implementation. Blood samples were collected from children with household contact and children with any symptoms of tuberculosis. We identified the usage experiences of IGRA with simple survey to doctor, laboratory officer, patient and tuberculosis officer.

Results: In total, 103 children were recruited. IGRA reactive showed in 9/24 children from contact investigation without any symptoms, 14/38 children from contact investigation with any symptoms and 7/41 children with any symptoms. Simple survey also concluded that most of respondent were very agree that IGRA methods can help to diagnose tuberculosis infection (8/10 respondent) and diagnose latent tuberculosis infection (9/10 respondent). The obtacles of this method weres IGRA as an unfamiliar method between the family patient, most of TB officers stated that they still need to discuss with doctor about the implementation and the laboratory officer still need adaptation.

Conclusions: The simple IGRA technic highly recommended to use, especially to children with TB contact and children with any TB symptoms in primary health care level. Socialization and proper training are needed for primary health care officer.

Keywords: IGRA; paediatric tuberculosis; LTBI, primary health care

PROFIL KUALITAS HIDUP PENDERITA MDR-TB DI RSUP SANGLAH DENPASAR

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ABSTRACT

Kualitas hidup merupakan indikator keberhasilan terapi obat. Kondisi fisik, penyakit, dan penggunaan obat pada penderita Tuberkulosis resisten obat berisiko terhadap kualitas hidup penderita. Penelitian ini ditujukan untuk mengukur kualitas hidup pasien TB resistensi obat yang dirawat di RS Prof. I Gst Ngoerah Gde Ngoerah, Denpasar,Bali.

Penelitian ini menggunakan desain deskriptif analitik yang pengambilan datanya dilakukan secara potong lintang. Seluruh pasien Tuberkulosis dengan resisten obat (22 orang) direkrut dalam penelitian. Pengumpulan data kualitas hidup dilakukan menggunakan kuisioner standar penilaian kualias hidup yaitu kuisioner SF-36.

Data yang didapatkan dari 22 responden menunjukkan bahwa terdapat penurunan kualitas hidup yang signifikan dari pasien penderita tuberculosis resisten berturut-turut pada 8 domain penilaian kuisioner SF-36 dengan penurunan kualitas hidup utama pada domain keterbatasan emosional (37,87%±24,03 SD) dan domain kesehatan secara umum (45,63%±33 SD).

Pendamping pasien TB dengan resisten obat perlu memberi perhatian pada domain kesehatan umum dan pengelolaan emosional pasien untuk peningkatan keberhasilan terapinya.

Kata Kunci : TB resisten obat, kualitas hidup, SF-36

ASSOCIATION *OF MYCOBACTERIUM TUBERCULOSIS STRAIN* WITH CLINICAL SEVERITY AND RIFAMPICIN RESISTANCE IN PULMONARY TB PATIENTS

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ABSTRACT

Background : Genotypes of *M. tuberculosis* strains have been successfully mapped based on genomic maps of H37RV strains. M. tuberculosis often divided into Beijing and nonBeijing strains. A number of studies reported mixed results of clinical severity and rifampicin resistance in *M. tuberculosis* strain. Strains are determined by genetic mutations in specific genes using PCR-based methods. Our study used modified Bandim TB score to assess clinical severity and multiplex PCR to detect *M. tuberculosis* strain. Primer in multiplex PCR would detect mtbk_20680 gene specific to Beijing strain. This study aims to analyze whether *M. tuberculosis* strains are related to clinical severity and rifampicin resistance of pulmonary tuberculosis patients.

Method : This study is an observational analytical study with a cross sectional research design in 102 pulmonary tuberculosis patients at Poli DOTS-MDR Dr. Soetomo Hospital. Subjects were grouped into Beijing strain (48 subjects) and non-Beijing (54 subjects). The clinical severity were calculated using bandim TB score and resistance were determined using Genexpert. The data is analyzed using the chi square test.

Result : Rifampicin resistance was found in 72.9% of the Beijing *tuberculosis* strain and in 48.1% of non-Beijing strains. Bandim's average *score* is not much different in beijing and non-Beijing strains with values of 4.12 and 4.67. Men are more infected and DM is the most comorbid in the subject.

Conclusion : *The M. tuberculosis strain* is not associated with the degree of clinical severity, but has a significant association with rifampicin resistance.

Keywords : *Strain*, tuberculosis, Beijing, Bandim TB *score*, resistance

MANAGEMENT THERAPY OF PULMONARY AND MENINGITIS TUBERCULOSIS IN PATIENT WITH STEVEN JOHNSON SYNDROME: A CASE REPORT

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ABSTRACT

Introduction: The *Mycobacterium Tuberculosis (MTB)* can overcome the barriers in respiratory system and cause pulmonary tuberculosis. It can also migrate to the lymphatic system or blood stream, to reach distant organs including *Central Nervous System (CNS)* and causes serious brain damage.

Case: A 33 years old woman, with pulmonary tuberculosis confirmed bacteriologically came to TB ward due to Steven Johnson Syndrome caused by Anti Tuberculosis Drugs (ATDs). Patient had treated with Rifampicin, Isoniazid, Pyrazinamide, and Ethambutol for a month. The did not complain of any respiratory problems, but frequent headache and dizziness. Patient was also examined by neurologist who performed lumbar punction to collect *Cerebrospinal Fluid (CSF)* for examinations. The CSF GeneXpert test revealed MTB detected very low, Rifampicin Resistance not detected, and the CSF analysis showed positive for Nonne and Pandy. We re-introduced the ATDs and it showed that the patient hypersensitive to Isoniazid, Pyrazinamide and Streptomycin. The Acid-Fast Bacilli of sputum test came out negative. The patient later treated with Rifampicin, Ethambutol, and Levofloxacin as well as corticosteroid for tuberculous meningitis. A week after treatment, the symptoms of SJS was getting worse so that the decision was to stop all medications. A week later the patient was re-hospitalized due to dizziness and seizure.

Discussion: The patient showed improvement in respiratory symptoms compared to her first condition when started the tuberculosis treatment. The bacteriological finding for evaluation of pulmonary tuberculosis showed a conversion state. The therapy that she received had improved her respiratory condition, but the fact that she was hypersensitive to some of ATDs had jeopardized the whole treatment.

Conclusion: The patient took non-standard treatment due to her condition of severe hypersensitivity to ATDs. She was clinically improved in terms of respiratory conditions, but then worsening because of unresolved tuberculous meningitis.

Keywords: Pulmonary tuberculosis, tuberculous meningitis, Steven Johnson Syndrome

ASSESSING THE DIAGNOSTIC PERFORMANCE OF NEW COMMERCIAL IGRAS FOR *MYCOBACTERIUM TUBERCULOSIS* INFECTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ABSTRACT

Background: In recent years, new interferon-gamma release assays (IGRAs) have been introduced to diagnose tuberculosis infection (TBI). We conducted a systematic review and meta-analysis to compare the diagnostic performance of these six new IGRAs (QFT-Plus, QIAreach, QFT-Plus CLIA, TB-IGRA, TB-Feron, and T-SPOT.TB with T-Cell Select) with the WHO endorsed tests (QFT-G, QFT-GIT, T-SPOT.TB, and the TST) and or the QFT-Plus. This review was commissioned by WHO in July 2021, and results were presented to a WHO technical advisory group in October 2021.

Methods: We searched studies in Medline, EMBase, Web of Science, Cochrane Database of Systematic Reviews, International Clinical Trials Registry Platform, International Journal of Tuberculosis and Lung Disease, and manufacturers' data. We selected cross-sectional and cohort studies comparing the diagnostic performance of new IGRAs with WHO-endorsed tests. Data were extracted independently and in duplicate; study quality was assessed with the QUADAS-C tool.

Results: Compared to the QFT-GIT, QFT Plus's sensitivity was 0.1 percentage points lower (95% CI, -2.8, 2.6), and its specificity 0.9 percentage points lower (95% CI, -1.0, -0.9). Compared to the QFT-GIT, Wantai TB-IGRA's sensitivity was 3.0 percentage points higher (95% CI, -0.2, 6.2), and its specificity 2.6 percentage points lower (95% CI, -4.2, -1.0). Agreement between the QIAreach and QFT-Plus CLIA with QFT-Plus was excellent (pooled kappa statistics of 0.86 [95% CI, 0.78, 0.94] and 0.96 [95% CI, 0.92, 1.00], respectively). The pooled kappa statistic comparing the TB-Feron and the QFT-Plus or QFT-GIT was 0.85 (95% CI, 0.79 to 0.92). No independent studies assessing the T-SPOT.TB with T-Cell Select were included.

Conclusions: The QFT-plus and the Wantai TB-IGRA have very similar sensitivity and specificity as WHO-approved IGRAs. Studies assessing other new IGRAs than the QFT-Plus and the Wantai TB-IGRA are limited.

Keywords: IGRA, TB infection, Systematic Review

A CASE WITH SUGGESTIVE OF RIGHT BASAL GANGLIA LARVAE IN MENINGOENCEPHALITIS AND SPONDYLITIS TUBERCULOSIS

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ABSTRACT

Introduction: Tuberculous meningitis (TBM) is the most common form of central nervous system (CNS) tuberculosis. Larvae sugestif cysticercosis in basal ganglia is a rare case. It is an infectious disease caused by the larvae (cysticerci) of the Taenia saginata tapeworm. Symptoms of cysticercosis depend on the site of infection and the number and size of the cysts formed by the tapeworm larvae.

Case: A 22-year-old woman presented convulsions two days before admission. The patient complained weakness of the lower limbs since 3 years, vomitus, , loss of vision, loss of appetite and gardually increasing headache in the past one week. On physical examination. She was cachexic with a BMI of 16.8. The signs of meningeal irritation were positive, exopthalmus, right ptosis, both pupil midriasis, anisokor, and decreased pupillary light reflex. A chest x-ray revealed suggestive of tuberculous pleurisy. A computed tomography (CT) of head findings compatible with meningitis. Sputum GeneXpert test was negative, lumbar MRI suggesting tuberculous spondylitis and destruction of 4 and 5 lumbar vertebrae with abscess, head MRI suggestive of larvae in the basal ganglia. During treatment swallowing and cough reflexes are getting weaker, lung examination revealed crackles in the right lung, a chest X-ray showing pneumonia which was not present before. The urinalysis showed a urinary tract infection, sputum KOH spora and hyphae, and urine culture C. tropicalis. Our patient is being treated with antituberculosis high dose rifampisin, isoniazid, etambuthol, pirazinamid and moxifloxasin. We also give broadspectrum antibiotics, corticosteroid, antifungal and we planned to give an antihelmentic drug but before we gave the drug the patient had died.

Discussion: Treatment in CNS tuberculosis need a high dose of rifampisin. We also choose moxifloxasin because can enter the blood brain barrier. Larvae sugestif cysticercosis in basal ganglia is a rare case. Patient has habit of eating half cooked roast beef. Spondylitis TB causes long bed rest with various comorbidities that complicate the treatment. Delay in treatment meningoencephalitis tuberculosis result in mental status deteriorates, neurological morbidity and death.

Conclusion: Delay in treatment meningoencephalitis tuberculosis result in mental status deteriorates, neurological morbidity and death.

PRE-EXTENSIVE DRUG RESISTANT PULMONARY TUBERCULOSIS CONCOMITANT LIVER CIRRHOSIS AND COVID-19 SECOND ATTACK: A CASE REPORT

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ABSTRACT

Introduction: Tuberculosis is one of the burdens in COVID-19, especially in Pre-XDR conditions accompanied by liver cirrhosis. This situation is a difficult condition because it must be able to regulate drugs, where ATD and COVID-19 drugs can aggravate liver cirrhosis' condition. There is concern that ATD administration will exacerbate the patient's comorbidities.

Case Illustrations: A 39 years old man has been reported with chronic cough, body weakness, nausea, vomit, decreased of appetite and body weight. The patient has a previous history of being infected with COVID-19. He smoked and drank alcohol more than 10 years. He has been taking ATD 1st category for 3 months and has never returned to control. GeneXpert MTB sputum examination showed MTB detected medium and rifampicin resistance detected. LPA 2nd line showed moxifloxacin and levofloxacin resistance. DST showed high dose isoniazid, levofloxacin, moxifloxacin, and pyrazinamide resistance. The patient started receiving an individualized ATD regimen. He was examined by abdominal ultrasound with the results of parenchymal liver disease and ascites. The fibroscan showed a fibrosis score of F4, which means advanced scarring or cirrhosis. Anti HCV was reactive and he has been taking anti-retroviral drugs for 6 months. Antiviral SARS-CoV-2 was not given because of mild degree. Since 3rd month of ATD treatment, the symptoms resolved, Mtb culture and acid-fast staining were negative.

Discussion: The patient had liver cirrhosis but liver function remained normal. ATD can still be given according to standards without aggravating the condition of liver cirrhosis and not causing hepatitis C flare-ups. The patient was not given antiviral SARS-CoV-2, but COVID-19 did not get worse even though the patient had comorbidities.

Conclusion: ATD treatment can still be continued well even though the patient has liver cirrhosis and suffers from viral infections.

Keywords: tuberculosis, liver cirrhosis, COVID-19.

A RARE PRESENTATION OF SIMULTANEOUS BILATERAL SECONDARY SPONTANEOUS PNEUMOTHORAX WITH TUBERCULOSIS, COVID-19, PNEUMONIAE IN SMOKER PATIENT

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ABSTRACT

Background: The first reported case of simultaneous bilateral secondary spontaneous pneumothorax with Tuberculosis, Covid-19, Pneumoniae in smoker patient in the world. Clinical presentation of simultaneous bilateral secondary spontaneous pneumothorax is vary, ranging from mild dyspnea to tension pneumothorax and can result in a severely deteriorated condition.

Case presentation: A 47-year-old active smoker man with history of shortness of breath since 2 weeks which worsened in the last 1 day. Patient came to Lawang Hospital, CXR show Left Tension Pneumothorax, then brought to Saiful Anwar Hospital. CXR from Saiful Anwar Hospital shows Bilateral Pneumothorax with Left Tension Pneumothorax. Patient underwent two chest tube insertion with an interval of 2 days between insertion. PCR Covid-19 result came Positive. Sputum Bacteriological Examination show infection of Kleibsiella Pneumoniae. CT-Scan Thorax Contrast shows multiple cyst and bullae in bilateral hemithorax with a suspicion of Cystic Lung Disease and Bilateral Ground Glass Opacity in Tree in Bud with a suspicion of Lung TB. Tuberculosis Bacteriological Examination came out Negative. Patient still treated with Anti Tuberculosis Drugs, Antibiotics, and Antivirus with improvement in his condition.

Conclusion: The case of Simultaneous Bilateral Secondary Spontaneous Pneumothorax with Tuberculosis, Covid-19, Pneumoniae in smoker patient with subtle clinical presentation are quite rare which often can lead to misdiagnosed in CXR examination and lead to deteriorating patient condition, it should prompt clinicians to be more aware for the possibility of the disease.

Keyword: Simultaneous Bilateral Secondary Spontaneous Pneumothorax, Pulmonary Tuberculosis, Covid-19, Pneumoniae, Cystic Lung Disease.

PRIMARY PRE-EXTENSIVELY DRUG-RESISTANT (PRE-XDR) TUBERCULOSIS WITH MENINGOENCEPHALITIS IN YOUNG IMMUNOCOMPETENT FEMALE: A CASE REPORT

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ABSTRACT

Introduction: Mycobacterium tuberculosis constantly evolves to resist therapy. This has led to drug resistant-tuberculosis which has higher therapy failure and mortality rate, and the need for alternative methods to prevent disease transmission. Pre-extensively drug resistant tuberculosis (Pre-XDR TB) is MTB strain resistant to isoniazid and rifampicin, as well as a any fluoroquinolone drugs.

Case Report: A 19-years-old immunocompetent, HIV-negative female came to our emergency departement with dyspnea and severe headache. She also reported cough, low grade fever and weight loss. She has no prior significant medical history and no known exposure to TB. Chest X-Ray showed infiltrates in both lungs with cavity and fibrosis, while Brain CT suggested meningoencephalitis. We conducted drug sensitivity test from sputum specimen and found that this patient was resistant to rifampin, isoniazid, levofloxacin, and moxifloxacin. She was then diagnosed with Pre-XDR TB and treated with individualized longer regimen consisting of Bedaquiline, Cycloserin, Linezolide, Clofazimine, and Etambutol. This regimen showed significant improvement in her symptoms.

Discussion: Primary pre-XDR TB is a rare occurrence in an immunocompetent patient, while our case is even rarer with meningoencephalitis involvement. Management of pre-XDR TB consist of individualized regiment which needs to be tailored to one's clinical condition and comorbidities. Exposure of transmission from a positive contact was questionable in this patient, which prompt us for more careful contact investigation to prevent further spread.

Conclusion: There is a possibility of 'silent' drug resistant tuberculosis in our region. Early detection and prompt treatment of such cases are important to prevent unmanageable pan-resistant TB. Successful management with careful contact investigation will reduce the mortality rate and spread rate of drug resistant tuberculosis.

Keywords: Drug-resistant tuberculosis, Immunocompetent, Meningoencephalitis tuberculosis

A RARE CASE OF MYOMETRIAL TUBERCULOSIS WITH ENDOMETRIAL CARCINOMA

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ABSTRACT

Background. Extrapulmonary tuberculosis has increased significantly in recent decade. Female genital tuberculosis accounts for a fifth of extrapulmonary tuberculosis case worldwide, but only 2.5% infected the myometrium. Coincidence of genital malignancy with tuberculosis rarely occurs in tuberculosis endemic areas.

Case. A 61-year-old female with history of haematuria and vaginal bleeding underwent laparotomy and histopathology biopsy revealed as endometrial carcinoma on December 2021. Six months later, she underwent a second laparotomy for tumor restaging with the histopathology biopsy revealed an additional finding of chronic granulomatous myometritis, with the presence of Langhans-type giant cells typical for tuberculosis. Patient was diagnosed as myometrial tuberculosis and undergo prescribed six months course of anti-tubeculosis therapy. Patient was improved after Trachelectomy-Bilateral Salphingoophorectomy-Bilateral Pelvic Lymph Node Dissection-Paraaorta Lymph Node Dissection (Trachlectomy-BSO-BPLND-PALND) and within two months of anti-tuberculosis therapy.

Conclusion. Myometrial tuberculosis may present as an incidental finding in patient with immunosuppression, including malignancy.

Keywords: Myometrial tuberculosis, endometrial carcinoma

PULMONARY LANGERHANS CELL HISTIOCYTOSIS OF TUBERCULOSIS

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ABSTRACT

Introduction: Langerhans cell histiocytosis (LCH) is a rare disease caused by the proliferation of dendritic cells and macrophages belonging to the mononuclear phagocytic system. The presented case of pulmonary Langerhans cell histiocytosis (PLCH) has unique features such as a history of heavy smoking that may have precipitated the disease at an early age, a characteristic site of consolidation, and accompanying pulmonary tuberculosis (TB).

Case: A 35-year-old male patient was observed due to having shortness of breath for two years. He had a history of smoking for twenty years with severe brinkman indeks. The computerized tomography revealed thin-walled cystic lesions in different sizes in the upper lobes.There is a large bullae in the right upper lobe lung field and left-sided hydropneumothorax. Microbiological examination with molecular rapid tests showed negative results for pulmonary tuberculosis, but antituberculosis treatment has still given as clinical pulmonary tuberculosis in relapsed cases. This case was considered as pulmonary Langerhans cell histiocytosis in a smoker with clinical tuberculosis relapsed so that the patient was given anti-TB treatment and insertion of a chest tube on the left chest.

Discusion: PLCH is a rare diffuse cystic lung disease characterized by the development of centrilobular lesions composed of $CD1a^+$ dendritic cells (DCs). There is a strong association with smoking and lung parenchymal damage from chronic infection. PLCH most commonly diagnosed in patients aged 20 to 40 years. Pulmonary biopsy in these patients is not possible due to extensive lung damage with severe tolerance. Smoking cessation, good nutrition, treating comorbidities, complications and physiotherapy are the mainstay of treatment and show a good prognosis.

Conclusion: PLCH found in this patient is interesting because it is a rare case. Lung biopsy is the standard of diagnosis. Management in this case is conservative treatment such as smoking cessation, anti-tuberculosis drugs, nutrition, physiotherapy, and surgical interventions such as chest tube placement.

Keywords: Pulmonary langerhans cell histiocytosis, Lung, Tuberculosis, Hydropneumothorax.

TUBERCULOSIS WITH DRUG-INDUCED LIVER INJURY

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ABSTRACT

Background: The Effective treatment of tuberculosis (TB) requires combination of bactericidal and/or bacteriostatic tuberculosis drugs. Drug-induced liver injury (DILI) is a form of adverse reaction leading to treatment failure, recurrence, and drug resistance leading to discontinuation or modification of tuberculosis treatment. Severe tuberculosis sepsis, a rare complication of tuberculosis infection, is associated with septic shock with multiple organ failure.

Method: a-72-year-old male presented with a cholestatic DILI on sixth weeks of anti-tuberculosis drugs. Patient came in with shortness of breath, jaundice, nausea, anorexia and productive cough. The Patient's sputum was positive for tuberculosis bacteria. Patient’s ALT, ALP and total bilirubin was significantly increased. Patient diagnosed with community acquired pneumonia and bacterial lung tuberculosis. Patient was hospitalized and anti-tuberculosis drugs was discontinued. Patient showed worsening clinical and laboratory conditions, eventually going into sepsis and developed respiratory distress on third day of admission. Patient was lethargic with SOFA score was 7 point.

Discussion: DILI has been reported in 2-28% of patients, with a mortality rate of up to 22.7%. DILI from anti-tuberculosis drugs usually occurs within two months of administration or during the intensive phase of treatment and the highest incidence occur in the first two weeks. Symptoms found are jaundice, abdominal pain, nausea, vomiting, and anorexia. Community acquired pneumonia can caused severe sepsis in patients with lung tuberculosis. One hour bundle sepsis should be done immediately to prevent sepsis shock.

Conclusion: Prevention of DILI by screening for risk factors and regular assessment of liver enzymes in patients receiving antituberculosis therapy is importance. Early diagnosis and prompt treatment are necessary, especially if clinical symptoms do not improve with treatment that we gives.

MAPPING CASES OF LUNG TUBERCULOSIS FOUND IN PUBLIC HEALTH CENTER OF DENPASAR CITY IN 2021 USING GEOGRAPHIC INFORMATION SYSTEM (GIS)

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ABSTRACT

Tuberculosis (TB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis. The purpose of this study was to find cases of pulmonary tuberculosis at the Denpasar City Health Center in 2021. The main symptom of pulmonary TB patients is coughing up phlegm for 2 weeks or more. The province of Bali had reported the number of TB cases in 2020 was 2,873 cases with the highest number found in the Denpasar city area. The burden of the TB control program in Denpasar is the CDR by 28.9% where this number has not reached the set standard of 55%. In CNR coverage, the achievement of Denpasar city is 109.5 per 100,000. In the coverage of treatment success rate, Denpasar city is 90.3% where this number has met the standard set, which is 85%. The purpose of this study was to map the discovery of pulmonary tuberculosis cases at the Denpasar City Public Health Center in 2021. The design in this study was descriptive analysis using Ecological research. The sample in this study was a case of pulmonary TB in 2021 at the Denpasar City Health Center with findings of 307 cases. This map will be used as a tool for visually reporting pulmonary TB cases of Public Health Center area. The results showed that spatially and statistically, the case finding of pulmonary TB at the Public Health Center in areas with a high population density and number of pre□prosperous and having a high case finding of pulmonary TB was in the area of Public Health Center II West Denpasar and Public Health Center III South Denpasar. However, although statistically it did not show a significant relation, both variables showed a positive direction of relation, meaning that every increase in population density and underprivileged families was followed by an increase in pulmonary TB case finding. In a 3000 meters radius from the Public Health Center, there were 304 cases (99.02%). The Health Office and Public Health Center are expected to increase the number and capacity of TB officers in each Public Health Center to support officers in the effort to screen for pulmonary TB cases.

Keywords: Tuberculosis, Mapping, GIS, Public Health Center

USE OF THREE MEDIAS FOR HEALTH EDUCATION TO IMPROVE SCREENING FOR TUBERCULOSIS INFECTION IN BANDUNG

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ABSTRACT

Background: Tuberculosis infection (TBI) screening and treatment are necessary to end TB, but it's challenging in many high TB burden countries, such as Indonesia. We aimed to describe our experience in improving acceptance and willingness of TBI screening by using health education media related to TBI to encourage at-risk populations.

Methods: This study was part of a large trial of TB preventive treatment (TPT) collaborating with 60 primary health centers (PHCs) in Bandung. We invited health care workers, cadres, and communities to attend the socialization meetings and gave them health education related to TBI screening and treatment. Three media, namely presentation slides, flipcharts, and leaflets, were given to the participants during the meeting. The attendance list and willingness to participate in the TBI screening were described.

Result: Ten socialization meetings with the three media packages were done, and 490 participants attended those meetings. Among those who attended, 43 (8.7%) participants did not meet the eligibility criteria for TBI screening, 30 (6.1%) refused to be screened, and 447 (90%) participants were willing to undergo TBI screening.

Conclusion: The acceptance and willingness for TBI screening in this study are high. The media which is easily understood may give benefit to improve the number of high-risk groups for TBI screening.

Keywords: Health Education, TBI, Presentation, Flipchart, Leaflet.

A RARE CASE OF PRIMARY RIFAMPICIN RESISTANCE LUNG TUBERCULOSIS WITH MENINGITIS

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ABSTRACT

Introduction: Drug-resistant tuberculosis (TB) is a significant health problem worldwide, especially in Indonesia. It is associated with higher mortality and morbidity. Meningitis TB is the most lethal type of extrapulmonary TB due to the difficulty of establishing the diagnosis.

Method: A-20-year old woman presented with altered consciousness a week before admission. The patient complained productive cough, fever, and loss of appetite for two months and a gradually increasing headache in the past two weeks. There was no history of antituberculosis drugs and contact with multidrug-resistant TB patient. On physical examination, the patient is disoriented with a Glasgow Coma Scale 13. The signs of meningeal irritation were positive. From lung examination, there was bilateral crackles. Chest x-ray revealed fibroinfiltrates and cavities in both lungs. Head CT scan are compatible with meningitis. Sputum Xpert MTB/RIF test was positive with rifampicin resistance detected. The patient was initiated with MDR-TB regimen consisting of bedaquiline, levofloxacin, linezolid, clofazimine, and pyrazinamide.

Result: Rifampicin Resistant Tuberculosis Meningitis (RR-TB meningitis) was associated with greater mortality risk, with reported mortality rate of 67%. A definitive diagnosis was established from cerebrospinal fluid acid-fast bacilli, molecular test, and culture. The choice of RR-TB meningitis regimen should be considered according to drug properties of penetrating the blood-brain barrier, such as levofloxacin, moxifloxacin, cycloserine, ethionamide, and linezolid. A routine drug sensitivity test should be done to optimize the treatment.

Conclusion: Rifampicin Resistant Tuberculosis Meningitis incidence are rare but fatal. Early diagnosis of RR-TB meningitis is essential to ensure adequate treatment. Optimal treatment regimen selection is required to achieve better outcomes in RR-TB meningitis.

ENGAGING YOUNG PEOPLE AND COMMUNITY IN CO-DESIGNING AND IMPLEMENTING A TB CAMPAIGN IN INDONESIA

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ABSTRACT

Tuberculosis (TB) is an infectious disease with a high mortality rate and it remains a health problem in Indonesia. In 2021, there were a total of 824,000 TB cases with 443,235 notified TB cases, 54% treatment coverage and 8,268 MDR-TB in Indonesia. To support the TB elimination efforts by 2030, a TB prevention campaign 'STOP TBC, Sehat Bersama' targeting community members in 30 districts in DKI Jakarta and Jawa Barat between January and August 2022. A total of 58 community members and 60 young people were invited to participate in the co-designing of the campaign through Focus Group Discussions (FGDs) and the implementation of the campaign. Behavior Centered Design (BCD) approach (called 'ACED', Assess, Create, Execute and Determine) was used as a framework to guide the development of campaign strategies to ensure that it was designed and developed according to the target beneficiaries' needs with inputs from young people. The activities include rapid assessment, production and pretesting of communication materials, capacity building for young people, implementation of TB campaign through offline and online approach, monitoring and evaluation, and post-rapid assessment. There was a significant increase of knowledge level after the capacity building of young people from 61.5 to 81.4 points ($p<0.001$). A total of 2,784 community members joined the campaign delivered by young people via face-to-face meeting with strict health protocol. The post-rapid assessment showed that there was an increase in the target audiences' knowledge-related to TB. This campaign shows that young people have an important role in co-designing and delivering the campaign messages to the community. There is a need to continue to empower young people to be involved in the campaign by improving their communication and engagement skills. There is a need to strengthen collaboration with local governments including the District Health Office, Puskesmas and other relevant stakeholders, for example, by using the communication materials produced in the campaign.

Keywords: Tuberculosis, campaign, youth engagement, empowerment

SUCCESSFUL THERAPY OF MULTI-DRUG RESISTANT TUBERCULOUS PULMONARY AND MENINGITIS: A CASE REPORT

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ABSTRACT

Introduction: Multidrug-resistant tuberculosis (MDR-TB) is caused by organisms that are resistant to isoniazid and rifampicin. Drug-resistant tuberculous meningitis has been reported worldwide. Multidrug-resistant (MDR) pulmonary tuberculosis (TB) is well described in the literature. Meanwhile, reports of MDR TB meningitis (MDR-TBM) are rare with a poor prognosis. We describe a case of successful treatment of a patient with MDR-TBM.

Case: A 28-year-old man came to Dr. Soetomo hospital in May 25th, 2022 with chief complaints of decreased consciousness one day before admission. He also complaint a chronic cough for 5 months, shortness of breath for 4 days, fever for 5 days, and 7 kilograms weight loss. The patient had a history of consuming the first category of ATD in 2021 and was declared cured with a negative sputum test result. In February 2022, he got chronic cough and loss of body weight, a positive acid-fast bacilli test result and he was given ATD from primary health care. He took ATD for only 2.5 months irregularly and stopped himself. He had a Sputum GeneXpert MTB detected low with Rifampicin resistance and CT head with contrast and the result was encephalitis. During hospitalization, the patient experienced seizures and positive *nuchal rigidity*. His cerebrospinal fluid examination showed a positive Nonne and Pandy test result.

Results: The patient received ATD MDR individual regimen of 6 Bdq 400 – Mfx 600 – Lzd 450 – Cfz 100 – Cs 500. The patient showed improvement during the treatment.

Conclusion: Treating cases of MDR-TB meningitis is often delayed, increasing its morbidity and mortality. Quick decisions and appropriate therapy in managing MDR-TB meningitis can reduce morbidity and mortality for patients.

Keywords: Multidrug-resistant tuberculosis; Mycobacterium tuberculosis; CNS tuberculosis.

EFFECTIVENESS OF TB CAMPAIGN THROUGH YOUTH EMPOWERMENT IN INDONESIA

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ABSTRACT

Indonesia is the second country with the highest TB cases in after India. Based on the WHO Global TB Report 2021, a total of 384,025 TB cases in Indonesia were found and reported in 2020, and almost 75% of people with TBC aged between 15 and 54 years. A TB prevention campaign targeting community members was conducted through 60 young people representatives (TB cadres) aged 15-30 years in DKI Jakarta and West Java. Young people were equipped with communication materials such as pamphlets and videos. The rapid assessment using qualitative approach was conducted through ten Focus Group Discussion. The participants were recruited by using a simple random sampling from the data obtained by the young people representative. A total of 58 people participated in the rapid assessment that was conducted before and after the TB campaign implementation. Coughing for more than two weeks was identified as the main symptom of TB by more respondents in the post-rapid assessment. The respondents have also been exposed to information that the symptoms and treatment of TBC and COVID-19 are different. Respondents in the post-rapid assessment stated that if they have been coughing for more than two weeks, they will immediately go to a health facility to do a sputum test. Young people representatives who conducted the campaign have also been identified as a source of information for the community (e.g., explaining the TB case in children, TB treatment management, transmission, health services provided, and the nearest health services to visit if they have TB symptoms). The community has been exposed to information on four main messages of the TBC campaign. There is a need to strengthen campaign collaboration between the young generation and health workers regarding TB in the community, especially on information related to health services and TB treatment.

Keywords: campaign effectiveness, implementation, youth, empowerment, tuberculosis

EVALUATION OF THE TUBERCULOSIS PROGRAM AT CIHAUR PUBLIC HEALTH CENTER, KUNINGAN : QUALITATIVE STUDY

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ABSTRACT

Background: The Tuberculosis (TB) prevention program has been implemented up to the Puskesmas level, but it is necessary to know the achievements of the national targets through evaluations on aspects of input, process, output and outcome. The purpose of this study was to evaluate the TB control program during the Covid-19 pandemic at the Cihaur Public Health Center.

Methods: This type of qualitative research with a sample of informants who collect 5 people with data collection techniques of observation, interviews, and documentation. The data taken are indicators of input, process, and output of the TB control program. Data analysis using source triangulation.

Results: The results of the research on aspects of human resource input, infrastructure and finance are sufficient, the process of discovery, diagnosis and treatment has been carried out well and the CDR output (75.5%), Conversion Rate (98%), TB Success Rate (88.87%).

Conclusion: The implementation of the pulmonary TB control program at the Puskesmas was considered quite successful, judging from the success rate of TB treatment having reached the national target. It is expected to improve the quality of the TB control program at the Cihaur Health Center so that the achievement of the program continues to increase every year.

Keywords: Evaluation, TB, Public Health Centers

A SIMULTANEOUS CASE MILIARY TUBERCULOSIS PRESENTING WITH TUBERCULOUS MENINGITIS

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ABSTRACT

Objective. Miliary tuberculosis in children could occur 20-40% simultaneously with tuberculous meningitis (TBM). Dissemination of the tuberculous bacilli from the lungs to the meninges leads to the formation of small tuberculomas. These rupture into the subarachnoid space leading to TBM. Despite the availability of effective therapy, diagnosis is usually late and mortality remains high.

Case. A 15-year-old boy came to our emergency ward with the chief complaint loss of consciousness 2 days before admission. Patient had fever in the past one month. Fever occurred in several episodes along with cough. Patient had headache since 5 days before admission. Projectile vomiting was denied. Patient had lost his weight about 5 kilograms in last one month. Vital signs are stable and within normal limits. Physical examination showed lethargic, neck stiffness and enlarged lymph node on the neck. Neurologic examination was normal. Chest X-ray showed miliary opacities scattered over both lung fields confirmed miliary tuberculosis. Cerebrospinal fluid (CSF) examination showed clear with low glucose and high cell count suggested to TBM. However, there was no bacteria found in CSF culture sample. A head computed tomography scan (CT scan) with contrast revealed a leptomeningeal contrast enhancement. Active communicating hydrocephalus also seen on head CT scan. Eventually, Mycobacterium was detected from the gastric fluid. Diagnosis of probable tuberculous meningitis was made from Marais score (score was 16). This patient was treated with anti-tuberculous therapy intensive phase and continued with advanced phase. The patient was planned to get a ventriculoperitoneal shunt placement, but denied by family.

Conclusion. We reported cases of miliary tuberculosis simultaneously with tuberculous meningitis in 15-year-old patient. We highlighted the importance of considering diagnostic of miliary tuberculosis with symptom of tuberculous meningitis in children along with integrated management. The timely diagnosis and management will reduce morbidity and mortality.

Keywords: Children, milliary tuberculosis, tuberculous meningitis

NEEDLE ASPIRATION IN TUBERCULOSIS-ASSOCIATED SECONDARY SPONTANEOUS PNEUMOTHORAX

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ABSTRACT

Background. The management of tuberculosis-associated secondary spontaneous pneumothorax mostly requires chest tube insertion. We report a case of tuberculosis-associated secondary spontaneous pneumothorax that improved with needle aspiration.

Case Presentation. A 29-year-old female with pulmonary tuberculosis, presented with sudden onset shortness of breath. Chest examination revealed asymmetry, decreased vocal fremitus, hyper resonance, and decreased vesicular sound in the right lung field. Chest radiograph showed right pneumothorax with two cm interpleural distance. Needle aspiration was performed because the patient refused chest tube insertion. The first needle aspiration evacuated approximately 615 cc of air. The second needle aspiration was repeated 24 hours later due to clinical deterioration and 610 cc of air was evacuated. Chest radiograph evaluation on the 6th day of treatment showed no pneumothorax. During hospitalization, the patient received oxygen therapy, anti-tuberculosis drugs, chest physiotherapy, and other symptomatic therapy such as mucolytic. The patient's condition improved and was discharged on the 9th day of hospitalization. Tuberculosis-associated secondary pneumothorax occurs in 1-3% of cases. Needle aspiration is one of therapeutic modality for tuberculosis-associated secondary spontaneous pneumothorax. This modality has several advantages, including: shorter length of stay, less cost and pain, also fewer complications.

Conclusions. Needle aspiration combined with oxygen therapy, antituberculosis drugs, and chest physiotherapy should be the modality of treatment for tuberculosis-associated secondary pneumothorax.

Keywords: Needle aspiration, pneumothorax, tuberculosis.

PROBABLE OCULAR TUBERCULOSIS IN ADOLESCENT WITH STEROID-RESISTANT NEPHROTIC SYNDROME: A CASE REPORT

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ABSTRACT

Tuberculosis (TB) is one of global health problem caused by rod shaped, acid-fast stain, obligate aerob pathogenic bacteria called *Mycobacterium tuberculosis*. TB are 10.4 million cases in the world with 1,3 million death. Indonesia currently included as 5 countries with most cases TB in the world. Primary infection with M. tuberculosis leads to clinical disease in 10% individuals and the remaining as latent tuberculosis infection (LTBI). LTBI can reactivated into active TB disease while under prevention tuberculosis treatment due to several risk factors and mechanism. Here, we reported a 15 years old male with history of LTBI and steroid-resistant nephrotic syndrome that already on medication prevention TB medication and steroid-resistant nephrotic syndrome with alternating dose prednisone and alkylating agents cycle 3 developed probable ocular tuberculosis. Patient received anti tuberculosis medication with 2RHZE/4RH and condition improved while discharged from hospital.

Conclusion: TB is multisystem disease that may affect other organ, including the eye. Ocular tuberculosis (OTB) caused from hematogenous spreading from the primary pulmonary TB, reactivation of latent TB or immune-mediated reaction caused by *M. tuberculosis*. Various comorbidities and risk factors are associated with developing active TB, and can categorized as high, moderate, low risk. Diagnosis OTB challenging because gold standard may difficult to accomplish considering culture considering small volume of ocular samples and diagnosis for ocular TB rely on presumptive diagnosis. Early detection of active tuberculosis would prevent from serious complications of ocular TB.

Keywords: Latent tuberculosis infection, ocular tuberculosis, reactivation

BEHAVIORAL ANALYSIS OF GIVING TUBERCULOSIS PREVENTIVE THERAPY (TPT) TO TODDLERS BY MOTHERS IN THE WORK AREA OF THE KEMBANGAN DISTRICT PUBLIC HEALTH CENTER IN 2022

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ABSTRACT

Background: Tuberculosis Prevention Therapy (TPT) is a treatment offered to someone who is infected with *Mycobacterium tuberculosis* and is at risk of TB disease or also known as a treatment for latent TB infection to prevent the occurrence of TB. Toddlers who are in household contact with adult TB sufferers have a greater risk of contracting TB. The purpose of this study was to determine the description of mother's behavior in providing TPT to toddlers and the things that affect it at the working area of Puskesmas Kembangan in 2022.

Methods: This study was qualitative research with descriptive methods and used in-depth interview techniques. The main informants in this study were 5 people, namely mothers who had toddlers in household contact with TB sufferers consisting of 2 mothers who underwent TPT and 3 mothers who did not undergo TPT, 5 supporting informants who were family members of each mother, and 1 key informant, namely the person in charge of the program TB at the health center. The data analysis used is Content Analysis.

Results: Mothers who underwent TPT had good TPT-giving behavior and gave rewards to their toddlers if they wanted to take medicine. Meanwhile, mothers who did not undergo TPT did not have good knowledge about the TPT program and did not receive educational support and motivation from puskesmas officers to provide TPT.

Conclusion: Lack of awareness and knowledge among mothers about the TPT program and a lack of support from health workers, so it is recommended that the puskesmas needs to provide TPT education media that such as videos and dissemination of TPT information through social media. The Dinkes DKI Jakarta needs to provide an allocation of funds as an appreciation for health cadres who help in increasing the coverage of TPT under five.

CAN COMMUNITY PHARMACIES INCREASE TUBERCULOSIS CASE FINDINGS IN INDONESIA?

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ABSTRACT

Background: Control of tuberculosis (TB) is hampered by suboptimal case detection and subsequent delays in treatment, which is worsened by the COVID-19 pandemic. The community pharmacy is reported as the place for first aid medication among patients with TB. We, therefore, analysed knowledge, attitude, and practice (KAP) on TB patient detection (TBPD) of community pharmacy personnel, aiming to find innovative strategies to engage community pharmacies in TBPD.

Methods: A multicentre cross-sectional study was performed in four areas of Indonesia's eastern, central and western parts. Pharmacists and pharmacy technicians who worked in community pharmacies were assessed for their characteristics and KAP related to TBPD. Descriptive analysis was used to assess participant characteristics and their KAP, while multivariable regression analyses were used to analyse factors associated with the KAP on TBPD.

Results: A total of 1,129 participants from 979 pharmacies, comprising pharmacists (56.6%) and pharmacy technicians (43.4%), were included. Most participants knew about TB and showed a positive attitude towards TBPD. They believed in their professional role (75.1%), capacity in TB screening (65.4%) and responsibility for TBPD (67.4%). Nevertheless, a lack of TBPD practice was identified in most participants. Several factors significantly associated with performing the TBPD practice ($p< 0.05$), such as TB training experience ($p< 0.001$), provision of a drug consultation service ($p< 0.001$), male gender ($p< 0.05$), a positive attitude towards TBPD ($p< 0.001$), short working hours ($p< 0.001$), and central city location of the pharmacy ($p< 0.05$).

Conclusions: Although the TBPD practice was still sub-optimal, most participants had good knowledge and attitude, which can be a modality for the practical of TBPD. We identified that TB educational programs are essential in improving the KAP. An integrated TB program for pharmacy-led by the national TB programmer is needed to enhance TBPD activities in the community pharmacy.

Keywords: pharmacy, KAP, Tuberculosis, Indonesia.

EXISTING COMMUNITY COMPONENT AT DISTRIC PUBLIC PRIVATE MIX JEMBER INDONESIA; SWOT ANALYSIS

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ABSTRACT

Background: Globally, Indonesia is country with the second highest TB burden in the world. Missed TB cases are either undiagnosed or diagnosed but not notified to the national TB database. Public-private mix interventions are contributing significantly to the case detection, diagnosis, and treatment of TB in Indonesia. However, it is estimated that many cases of infected TB patients go undetected. Community functions in the PPM were coordinate with the Center Health (Puskesmas) regarding contact investigations and TB case finding.

Objective: to SWOT analysis existing community component at Distric Public Private Mix in Jember Indonesia

Method: The method used was descriptive observational approach. The subject of research were a head of the Division of Disease Prevention and Control and TB deputy supervisor at Health Office Jember regency. We used interview to collect data and analysis data with SWOT analysis.

Result: The calculation of the score on the internal factor analysis for strength is 3.75 and for weakness is 1.43. While the results of the calculation of the score on the analysis of external factors for opportunity is 9.67 and for threat is 1. The SWOT curve shows that the position of the community component at implementation of the DPPM program in Jember occupies quadrant 1 indicating that the program implementation has a progressive strategy recommendation.

Conclusion: This position indicates that the community component at DPPM is in prime condition so that it is very possible to continue to do development and fullest expansion.

PERBURUKAN KLINIS TB PARU SETELAH INFEKSI COVID-19

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ABSTRACT

COVID-19 is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2), while Tuberculosis (TB) is a disease caused by the bacterium Mycobacterium tuberculosis (M. TB). Based on the 2018 Global TB Report, it is estimated that in 2017 there were 842,000 new TB cases and 116,400 deaths due to TB. One of the continuation of TB infection is miliary TB in patients post COVID-19 infection. SARS-CoV2 and M. TB, both are transmitted through the respiratory tract and are associated with similar risk factors. The relationship between miliary TB and COVID-19 is rare and the etiopathogenesis is unclear. The author presents a case of the development of miliary TB in patients post COVID-19 infection. A case of a 62-year-old man has been reported with complaints of shortness of breath, decreased consciousness and weakness. The patient was previously hospitalized with a diagnosis of severe COVID-19 symptoms, new cases of pulmonary TB. Patient diagnosed with miliary TB, Post COVID-19. With the management of miliary TB, OAT is given. In this case, the patient had previously been treated with a diagnosis of pulmonary TB and severe COVID-19 symptoms and was allowed to go home. After 1 month the patient came back with complaints of shortness of breath, decreased consciousness and weakness. From the chest X-ray examination, the picture was found to support miliary TB. So the patient was diagnosed with miliary TB. In this case, what is interesting is the progression of the patient's disease from pulmonary TB to miliary TB. According to several studies this is due to COVID-19 infection, patients experience a decrease in the number of T cell lymphocytes. CD4 T cells are known to function as a vital defense against mycobacteria, so this decrease in CD4 T cells may underlie the worsening of TB infection in patients.

Keyword: COVID-19, pulmonary TB, miliary TB.

GALLSTONES AS A PREPICIPITATING FACTOR OF GALLBLADDER INVOLVEMENT IN DISSEMINATA TUBERCULOSIS: A RARE CASE REPORT

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ABSTRACT

Introduction: Gallbladder tuberculosis (TB) is one of the rare extrapulmonary TB. Fewer than 120 cases worldwide have been published since it was first reported in 1870.

Case Description: A 55-year-old woman came to the hospital with chief complaints of right upper abdominal pain. Patient also had non-productive cough for two weeks and decrease of body weight. The abdominal ultrasonography results obtained gallstones and right pleural effusion. Patient was known to have gallstones since 4 years ago, but it asymptomatically. The pleural fluid analysis was exudative and mononuclear cells predominant with ADA test of 52. The patient was diagnosed with acute cholecystitis and undergoes laparoscopic cholecystectomy. The gallbladder was resected with histopathologic examination result showed inflammation of chronic cholecystitis cells and in smear was found acid-fast bacilli. The patient was diagnosed with disseminata TB with gallbladder and pleural involvement. The therapy was the first category of antituberculosis drugs for nine months. The outcome was good with clinical and radiological improvement.

Discussion: Gallbladder is an organ that is generally immune to TB infection due to its thick walls and natural conditions of alkaline bile. This condition inhibits the growth of Mycobacterium tuberculosis. The presence of gallstones and obstruction is believed to reduce bile immunity against TB infection.

Conclusion: Gallbladder tuberculosis is a rare disease even in the endemic area. The absence of typical sign of disease, presence of gallstone, and the symptoms mimicking acute cholecystitis makes the surgery is unavoidable as therapy and diagnosis plan.

Keywords: Gallbladder tuberculosis, Cholecystitis, Disseminata tuberculosis

Case Report: Rifampicin Resistant Tuberculosis With Comorbid Diabetes and Complication Pyopneumothorax

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ABSTRACT

Introduction: Primary drug-resistant pulmonary tuberculosis (TB) is currently increasing, with various comorbidities and complications. One of the most common comorbidities is diabetes mellitus and the success of treatment will also decrease than without diabetes. More efforts are needed when drug-resistant TB patients come with severe disease and complications. Complications of pyopneumothorax with the formation of a fistula are very difficult to treat, patients often fall into antibiotic resistance and require a multidisciplinary team.

Case Illustration: A 49-year-old male, smoker, with a productive cough for a month, accompanied by shortness of breath, febrile, weight loss, and discharge from a left thoracic drain. The patient was 2 months previously treated in Kalimantan with a left pneumothorax. There is no history of TB treatment and contacts of drug-resistant TB patients. Xpert MTb/Rif sputum examination 2 times found Rifampicin resistance. Imaging studies showed hydropneumothorax sinistra. The patient was given long term regimen therapy drug-resistant TB and diabetes control with insulin. During therapy there was no improvement of the fistula and a re-insertion of the thorax catheter showed confirmed pyopneumothorax. There was no improvement during 1 month of hospitalization, the thoracic catheter was replaced with a small indwelling thoracic catheter for home care. The fistula wound was getting wider, did not close completely and 5-6 left ribs were visible, then an eloesser flap procedure was performed after it was proven that the TB culture was converted. The patient experienced side effects of anemia so that the dose adjustment of Linezolid was needed. During treatment, patients are often hospitalized to improve their condition and need the help of others when carrying out activities.

Discussion: Management of RO TB patients is very difficult if there are comorbidities, especially if there are complications from pulmonary TB disease pyopneumothorax. Wound healing process in diabetic patients is slower and more difficult. The risk of bacterial and fungal infections is common even if the patient is taking standard medications. Sputum culture conversion targets and TB were declared cured, which was expected even though there was disability. Blood sugar control is important to do as the key therapy for TB RO and fistula wounds. Surgical management is one way to overcome focal infection and improve the patient's quality of life.

Conclusion: TB RO therapy does not only focus on managing TB but also controlling blood sugar comorbidities and managing advanced complications of pulmonary TB disease. Sputum culture conversion, complete and cure treatment as well as managing comorbidities and complications require a multidisciplinary team resource.

Keywords: Drug Resistant TB, Diabetes, Pyopneumothorax

ANALYSIS BURDEN OF DISEASE TUBERCULOSIS PATIENTS WITH COST OF ILLNESS METHOD

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ABSTRACT

Tuberculosis financing causes high economic losses for sufferers, families and government budgets. This study aims to determine the direct cost and Burden Of Disease (BOD) of tuberculosis. The design of this study is descriptive with a quantitative approach and sampling techniques are proportional samples with a total sample of 62 tuberculosis patients consisting of 14 patients at the Ujung Lero Health Center, 37 patients at the Mattirobulu Health Center and 11 patients at the Mattiro Deceng Health Center. The results of the study at the Ujung Lero Health Center were 42.9% aged <29 years, 78.6% were male, direct costs of Rp. 8. 977. 850 and BOD of Rp.1. 220.260.032, at the Mattirobulu Health Center as many as 43.3% aged 45-59 years, 59.5% are male, direct costs are Rp.19,667,450 and BOD of Rp.72,769,565, at the Mattiro Deceng Health Center as many as 36.3% aged 30-44 years, 63.6% male gender, direct costs of Rp. 5. 955.3 50 and BOD of Rp.581.8 37. 695. The total BOD of three puskesmas amounted to Rp.1. 874. 867. 292. It was concluded that the BOD costs of the three health centers were very high.

Keywords : Direct cost, burden of disease, tuberculosis

PRIMARY DRUG RESISTANT TUBERCULOSIS (DR-TB) IN WEST NUSA TENGGARA

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ABSTRACT

Introduction Tuberculosis remains a major global health problem and become the 13th leading cause of death in the world and the second infectious disease leading cause of death after COVID-19. Based on data from the Global TB Report 2021, Indonesia ranks third as a country with a high burden of tuberculosis in the world after India and China. Drug Resistant Tuberculosis (DR-TB) has become an important health problem and threatens TB control program worldwide. DR TB was estimated 3,4% among new cases and 18% previously treated TB. The National MDR-TB estimated 2.4% among new TB cases and 13% previously treated TB.

Material and Methods The research was conducted in August 2022 with simple type of descriptive analysis quantitative research by collecting SITB (National Tuberculosis Information System)'s record from January of 2020 to July of 2022 in West Nusa Tenggara.

Results The results showed that the majority of DR-TB patients in West Nusa Tenggara from January of 2020 to July of 2022 had no prior TB treatment and counted as 39 cases or 56.5% of 69 DR TB total cases. DR TB Patient mostly in productive age nearly 71,8% (18-55 years old), only 0.04% patients 18 years old and below, and it count 17.4% patient are more than 55 years old. DR TB Patient were likely found in male for 64%.

Conclusion Primary DR-TB patient West Nusa Tenggara has counted more than Secondary DR-TB and likely found in male and in the productive age. (18-55 years old)

Keyword : Primary DR-TB, new cases, treated, NTB

THE CORRELATION OF PROFILES RESISTANCE RIFAMPICIN AND ISONIAZID WITH ACID FAST BACILLI GRADATIONS IN MULTIDRUG RESISTANCE TB PATIENTS

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ABSTRACT

Background: Multi-Drug Resistance Tuberculosis (MDR-TB) is a global health problem. Rifampicin resistance (RR) is caused by mutations in the rpoB gene, resistance of INH is caused by mutations in katG or inhA. Fitness is defined as the ability of pathogens to survive, replication and transmission. The fitness of drug resistance strain is one of the determinants MDR-TB/RR spreading. Estimation of strain MDR-TB fitness were assessed by the gradation of AFB smear in new case and previous treatment of MDR-TB Pulmonary TB patients

Method: The study was conducted at RSUD Dr. Soetomo Surabaya from November 2021 to March 2022. To detect genetic mutations conducted by Line Probe Assay (Genoscholar™NTM+MDR TB II, NIPRO Japan), and AFB examination using Ziehl Neelsen staining microscopy. Analyze correlation of resistance gene with AFB gradation using chi square test and Fischer's exact

Results: There were 33 subjects recruted, 16 MDR/RR-TB patients new cases and 17 MDR-TB/RR patients with previously treatment. The new cases patients had more rpoB mutations, while patients with previously treatment had more double mutations (rpoB+katG/inhA). Higher AFB smear grades were significant associated with MDR/RR-TB previously treatment, otherwise no significant correlation in all TB cases of resistance in RR and HR with AFB gradation. Among the lower AFB grades revealed rpoB and rpoB+katG/inhA mutations were 57,14% and 42,86%. In the Higher AFB grades revealed rpoB and rpoB+katG/inhA mutations were 47,37% and 52,63% respectively.

Conclusion: There is no correlation between profile resistance of rifampicin and INH with AFB gradation.

Keywords

TB-MDR/RR, rpoB, inhA, katG, AFB

TUBERCULOSIS MIMICKING LUNG TUMOR: A CASE REPORT

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ABSTRACT

Introduction: Diagnosis of tuberculosis (TB) is not always easy to prove. Obtaining a representative and adequate sample is often challenging. Even in the high incident country, TB could be nearly misdiagnosed as a malignant lung tumor due to its unspecified presentation.

Case Illustrations: A 38 years old woman complained for chest pain for 3 months with loss of appetite and body weight. The history of chronic disease was denied. *Mycobacterium tuberculosis* (MTB) was not detected in GeneXpert sputum. The chest X-ray showed a homogenous opacity in the right suprahilar without any fibro-infiltrate in both hemithorax. Computed tomography (CT) thorax with contrast was performed. It showed a lesion with 44 Hounsfield units (HU), clear border, with popcorn calcification (3.87 x 2.11 x 2.04 cm) in the posterior segment of the superior lobe of the right lung with contrast enhancement (88 HU). The tumor marker showed a normal value. A fine needle aspiration biopsy of the mass could not be performed because there was no window. From tissue samples collected from video-assisted thoracoscopic surgery (VATS), MTB was detected with rifampicin-sensitive by GeneXpert. Malignant cells were not found in histopathological examination. After getting antituberculosis treatment, the patient's complaint improved.

Discussion: The diagnosis of TB can be made on a clinical, radiological, and bacteriological basis. The clinical and radiological presentation of TB can resemble other lung diseases. Otherwise, TB should always be considered as an alternative diagnosis in patients with chronicity, especially in endemic countries. A bacteriological approach for TB diagnostic is always recommended as the gold standard. Even, more invasive sampling procedure needs to be performed to avoid inappropriate treatment.

Conclusion: The presentation of TB is varied, including mimicking lung tumor. Therefore, the bacteriological approach for diagnosis is recommended.

Keywords: tuberculosis, tuberculoma, lung tumor

PATHOLOGICALLY CONFIRMED ABDOMINAL TUBERCULOSIS IN PATIENTS WITH PRIMARY MULTI-DRUG RESISTANT PULMONARY TUBERCULOSIS: A CASE REPORT

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ABSTRACT

Introduction: Many multi-drug resistant pulmonary tuberculosis (MDR TB) patients do not want to be treated, causing spread to other people, as a result, the incidence of primary MDR TB increases. Tuberculosis (TB) can spread to lymphogenous and hematogenous, what is known as extrapulmonary TB, this can occur in sensitive and resistant TB, although the diagnosis is not easy. The spread of TB depends on the quality of local immune cell defenses.

Case Illustrations: A 59 year old man has been reported with chronic cough, loss of appetite and weight loss. The patient didn't have history of anti tuberculosis drugs (ATD), so the gene- Xpert examination was performed twice, the result's Rifampin Resistant. Chest X-Ray showed fibroinfiltrates in both of lung. The patient also complained of defecation and gastrointestinal disorders. Physical examination showed abdominal distension and shifting dullness. The plain abdominal radiograph showed bowel dilatation in the abdominal cavity to pelvic cavity. Colonoscopy examination showed an terminal ileal mass, suggesting malignancy. Histopathology of the mass showed chronic granulomatous inflammation and caseous necrosis, leading to tuberculosis. The patient has taken all oral short-term regiment (STR) ATD. Clinical and bacteriological evaluation showed improvement and conversion of AFB from the first month of treatment.

Discussion: Based on clinical, bacteriological, radiological and histopathological, this patient was diagnosed with MDR TB with clinical, radiological and histopathological confirmed abdominal TB. However, regarding abdominal TB, it has not been determined whether Mtb is sensitive or resistant, although the patient experienced clinical improvement and AFB conversion after first month of STR-ATD treatment.

Conclusion: All oral STR-ATD for abdominal TB is applicable and it can improve patient's clinical and radiograph, despite the presence of primary MDR TB.

Keywords: abdominal tuberculosis, primary multi-drug resistant pulmonary tuberculosis, anti-tuberculosis treatment

UNUSUAL PRESENTATION OF EXTRAPULMONARY TUBERCULOSIS IN PARAPARESESIS CHILD

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ABSTRACT

Backgrounds: Extrapulmonary tuberculosis (TB) accounts 15–20% of all tuberculosis cases with lymph node being the most common affected organ. Spinal tuberculosis and scrofuloderma are rare manifestation of extrapulmonary TB, constitutes less than 5% of the cases. Establishing diagnosis is a challenge. Eradication and prevention of sequelae complicate further management of the disease.

Objective: To describe the clinical manifestation and the management of spondylitis tuberculosis and scrofuloderma in a child.

Case presentation: A 15-years-old girl came with chief complaint of lower extremities weakness for a week following monthly chronic low back pain. She also reported painless lesion on her back with no sign of acute inflammation. She also complained intermittent fever with night sweats and lost 3 kilos of body weight in last two months. From physical examination we found a kyphotic posture and severe malnutrition. Skin examination revealed open wound on her right lower back, size 4x3 cm, no sign of inflammation. The tuberculin skin test was positive with 15 mm induration. The spinal magnetic resonance imaging revealed destruction of the vertebral corpus thoracal segment, hyperintense sacrum and right ileum bone with cold abscess suggested spondylitis TB. A wound biopsy with hematoxylin-eosin stain concluded chronic granulomatous inflammation and showed multinucleated giant cell Langhans-type, suggestive for cutaneous tuberculosis. Microbiology examination (PCR GeneXpert) from wound biopsy and ziehl neelsen stain failed to detect Mycobacterium tuberculosis. The patient was diagnosis with Pott's disease and scrofuloderma. Anti-tuberculous therapy was commenced, and patient showed good responses after several months of treatment.

Conclusions: the diagnosis of extrapulmonary TB manifests as spinal tuberculosis and scrofuloderma could be made from clinical manifestation and imaging.

Keywords: Pott's disease, Scrofuloderma, Tuberculosis, Children

PANSITOPENIA AND NEURITIS OPTIC SIDE EFFECT OF LINEZOLID TREATMENT FOR TUBERCULOSIS MDR: A CASE REPORT

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ABSTRACT

Introduction: Treatment of Tuberculosis Multi Drug Resistance (TB MDR) is not always easy, it requires strict evaluation in the long-term use of such drugs. Linezolid as one of the TB MDR drugs has long-term side effects that need to be monitored regularly. Linezolid is a synthetic oxazolidinone antimicrobial indicated for gram-positive infections, and has even been approved as a TB MDR treatment regimen.

Case Illustrations: A 47 years old man complaining of body weakness that occurs when getting TB MDR treatment in 6 months, the patient then hospitalized and performs several examinations and gets therapy after the examination. From peripheral blood smear were founded microcytic hypochromic anemia of anisopoikilocytosis, leucopenia with granulocyte immature (+) and atypical lymphocytes (+), thrombocytopenia. The history of chronic hemorragic disease or blood loss before was denied. Patient was given a transfusion of 5 colfs PRC without stopping linezolid treatment, the consideration was not stopped because the hematological disorder only occurred after 6 months of treatment. Hematological conditions improved and evaluation during outpatient post-therapy 1 week did not obtain hematological disorders again. 8th months of treatment the patient then complained disorder of vision, patient then consulted to the eye department to perform a series of examinations. Patient was given high dosis of oral steroid for 4 months but the problem of low vision did not getting better, MRI examination of the eye obtained the condition of the nervous opticus either no bleeding, field of view examination obtained the results of limited visibility. Linezolid then stopped at 12th months treatment and changed to delamanid, the patient said the complaints of blurred eyes began to decrease until now, the patient's activity began to improve, the patient's weight also increased.

Discussion: Linezolid is a synthetic oxazolidinone antimicrobial indicated for gram-positive infections, and has even been approved as a drug-resistant. Some of the side effects of linezolid are as follows: (a) peripheral and ocular neuropathy; (b) anemia resulting from the direct effect of linezolid on bone marrow red blood cells; (c) thrombocytopenia; (d) hyperlactatemia (lactic acidosis with plasma lactate level >2 mmol/L); (e) diarrhea, nausea, and headache; (f) hypoglycemia; and (g) reticulocytopenia.

Conclusion: The presentation of linezolid side effect as TB MDR regiment. Therefore, evaluation strict evaluation on the use of linezolid should be particularly observed

Keywords: tuberculosis MDR, linezolid, pansitopenia, neuritis optic

FACTORS CAUSING PATIENT COMPLIANCE IN UNDERGOING PULMONARY TUBERCULOSIS TREATMENT AT THE PUSKESMAS PESANTREN I KEDIRI

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ABSTRACT

Background: Tuberculosis is a disease caused by Mycobacterium tuberculosis. People with tuberculosis are most likely to pass the disease on to people who spend time with them every day, including family members, friends, co-workers, or schoolmates. People with Tuberculosis should carry out treatment regularly and schedule. The long treatment time causes sufferers to often be threatened with dropping out of drugs. Dropping out of the drug will result in the treatment pattern having to start from the beginning so that the treatment time becomes longer. The purpose of the study was to identify factors affecting patient adherence in the treatment of Pulmonary Tuberculosis.

Method: The design of the study is cross-sectional. The population is all patients undergoing pulmonary tuberculosis treatment at the Puskesmas Pesantren I Kediri, a sampling technique using a total sampling of 23 respondents. Descriptive analysis data are used to explain the factors that can affect adherence to undergoing treatment.

Results: The results of the preliminary study using secondary data recorded 30 pulmonary Tuberculosis patients who were undergoing treatment and there were 3 patients (10%) who were non-compliant in undergoing treatment in the intensive phase.

Conclusion: The conclusion of non-compliance in undergoing treatment is very risky to transmit to others and another impact is the occurrence of tuberculosis drug resistance called Multi Drugs Resistance (MDR). Further studies are needed to find the factor cause of people with Tuberculosis not complying is undergoing treatment in a timely manner. The patient's adherence to the treatment of Tuberculosis is essential to achieve recovery, prevent transmission and avoid drug-resistant cases.

Keywords: Adherence, Treatment, Pulmonary Tuberculosis

HUBUNGAN UMUR DENGAN KEJADIAN *LOSS TO FOLLOW-UP* (LTFU) PADA KASUS TB RO DI PROVINSI RIAU TAHUN 2020 - 2021

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ABSTRACT

Pendahuluan: Meningkatnya kejadian *loss to follow-up* (LTFU) pasien TB RO di negara berkembang seperti Indonesia menjadi masalah kesehatan masyarakat prioritas tinggi. Data SITB Provinsi Riau menunjukan 19,5% dari 87 pasien TB RO tahun 2020 dan selaras dengan tahun 2021 yaitu (14,65% dari 116 pasien) merupakan kasus LTFU. Persentase ini masih berada dibawah target nasional yaitu maksimal 10%. Umur >= 40 tahun menjadi penyebab utama (43,7%) dalam kejadian LTFU karena ketidaksanggupan pasien dalam menerima Efek Samping Obat (ESO) TB RO. Penelitian ini bertujuan untuk mengetahui hubungan umur dengan kejadian LTFU pada kasus TB RO di Provinsi Riau tahun 2020 – 2021.

Metode: Kami menggunakan desain kohort retrospektif dari data pasien yang teregister di SITB tahun 2020 – 2021 yang memenuhi kriteria inklusi. Analisa statistic menggunakan uji Regresi Logistik dengan ukuran asosiasi *Risk Relative* (RR) pada aplikasi STATA 15

Hasil: Umur diketahui memiliki hubungan statistic yang bermakna terhadap kejadian LTFU (*p value* = 0,012; 95% CI = 1,267 – 6,820; RR = 2,46) sedangkan jenis kelamin, riwayat pengobatan TB, status HIV dan domisili pasien tidak memiliki hubungan yang bermakna dengan kejadian LTFU.

Kesimpulan: Umur >= 40 tahun memiliki risiko 2,5 kali pada kejadian LTFU pasien TB RO dibandingkan dengan umur < 40 tahun. Penelitian ini menggunakan data sekunder sehingga peneliti menyesuaikan dengan ketersediaan data yang ada.

Kata Kunci: Umur, LTFU, TB RO, Provinsi Riau

THE CORRELATION BETWEEN GENETIC POLYMORPHISMS NAT2 AND SLCO1B1 WITH DRUG INDUCED HEPATOTOXICITY DUE TO ISONIAZID AND RIFAMPICIN IN TUBERCULOSIS PATIENTS

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ABSTRACT

Background: Tuberculosis (TB) patients receiving anti-tuberculosis treatment may experience serious adverse drug reactions (ADRs) such as hepatotoxicity. Variants of the N-acetyltransferase 2 (NAT2) and Solute Carrier Organic Anion Transporter Family Member 1B1 (SLCO1B1) gene may increase the risk of experiencing such toxicity events.

Methods: A prospective observational analysis at Dr. Soetomo General Academic Hospital, Surabaya, Indonesia collected from patients with DIH and non-DIH as controls were subjected to NAT2 and SLCO1B1 genotyping by direct DNA sequencing. Data was analyzed using the Fisher's exact with p value ($p < 0.05$).

Result: From the total of 40 TB patients receiving anti-tuberculosis, 32 patients were enrolled according to inclusion and exclusion criteria. The NAT2 SNPs identified were: 282C>T, 341T>C, 481C>T, 590G>A, 803A>G and 857G>A at rs1041983, rs1801280, rs1799929, rs1799930, rs1208, rs1799931. The distribution of NAT2 genetic polymorphisms was mostly found in the NAT2*6A allele which was a predictor of ultra-slow acetylation phenotype followed by slow acetylation phenotype with NAT2*7B, NAT2*5A and NAT2*5B alleles. The highest proportion of DIH events occurred in the diplotyped allele NAT2*4/*6A with allele from the intermediate acetylator followed by allele from the ultra-slow acetylation NAT2*6A/*7B and NAT2*6A/*6A, and the highest incidence of DIH occurred in ultra-slow acetylation. The SLCO1B1 SNPs identified were: OATP1B1 A388G and T521C at rs2306283 and rs11045819. The distribution of SLCO1B1 genetic polymorphisms was mostly found in normal transporter function status with genotypes SLCO1B1*1b/*1b, *1a/*1b and *1a/*15. The highest proportion of DIH events occurred in the allele diplotype *1b/*1b having a normal transport function

Conclusion: There was no significant relation between the NAT2 and SCLO1B1 gene polymorphisms and the incidence of DIH due to Isoniazid and Rifampicin

Keywords: NAT2, SLCO1B1, tuberculosis, drug induced hepatotoxicity (DIH), rifampicin, isoniazid

TUBERCULOUS DACTILITIS IN YOUNG MALE, A RARE CASE

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ABSTRACT

Background Tuberculous (TB) infection of metacarpals, metatarsals, and phalanges of hands and feet known as Tuberculous Dactylitis (TD), is a relatively rare presentation of TB, constituting around 10%–15% of all cases of extrapulmonary TB. Most of the patients are younger than 6 years of age. Since tuberculous dactylitis mimics conditions like osteomyelitis and malignancy, early diagnosis and treatment are essential.

Case presentation A 17-years-old male patient with a history of trauma on his hand, had swelling on his right index finger for the last 5 months. He felt numb and no other complaints. Patient was given oral antibiotics and anti-inflammatory medication from primary health care, but there was no improvement. Patient then referred to Orthopedics Department. Radiograph showed a lytic lesion from middle until proximal area of the first phalanx, along with blurred limits of the bone surfaces involved. Chest radiograph showed within normal limit. A magnetic resonance imaging was ordered and suggested primary bone malignancy involving tendon and soft tissue of right index finger. Surgical debridement with open biopsy was done. Pathology results showed caseating granulomas, suggesting the diagnosis of TD. Patient then referred to Pulmonology Department. Tissue culture and Molecular Rapid Test was done for confirmation, but the result was negative. He was then treated with 6-month course of anti-tuberculous drug. After completing the therapy, he came to our department for a follow-up with significant improvement on his hand.

Conclusion Tuberculous Dactylitis of the hand is a very rare entity of the spectrum of extrapulmonary M. tuberculosis infection, especially in adolescent. Clinicians should be more aware concerning this pathology and not to delay the diagnosis, which could lead to permanent deformity. Early diagnosis and treatment can significantly improve outcomes.

Keyword: Tuberculous Dactylitis, Adolescent, Tuberculous Infection, Bone Malignancy

NON TUBERCULOUS MYCOBACTERIA CO-INFECTION IN PULMONARY TUBERCULOSIS DETERMINING DIAGNOSIS USING LINE PROBE ASSAY IN PATIENTS OF DR. SOETOMO HOSPITAL, SURABAYA INDONESIA

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ABSTRACT

Introduction: Non Tuberculosis Mycobacteria (NTM) prevalence increases in high TB burden countries. The lack of diagnostic tools and prevelence data in certain countries including Indonesia make the clinicians determine unaccurate dagnosis of pulmonary TB. Conventional tests such as culture and biochemical test techniques have some cumbersome to identify Pulmonary Tuberculosis co-infection NTM species, while line probe assay (LPA) can detect both MTB and NTM species more effectively.

Objective: This research aims to study the percentage of NTM in pulmonary TB patients.

Methods: This is an observational descriptive study. Study subjects were adult pulmonary TB patients in Dr Soetomo Hospital, in January 2020 until Desember 2021 who met inclusion and exclusion criteria and was examined for LPA (Genoscholar NTM+MDRTB II) and MTB culture method using BACTEC MGIT 960 System (Becton Dickinson) from sputum samples.

Results: A total of 60 adult pulmonary TB patients were examined for determining diagnosis Pulmonary TB co-infection NTM with characteristic were the average age 43.9 years, male 68.3%, normal nutritional status 53.33%, high school education status 80%, 40% are employees, history of smoking 45%, diabetes mellitus 30%, new treatment cases 73.33%, non-HIV 95% and 90% non-alcoholic. NTM growth in MGIT 960 System culture method was detected 3.33% (2/60) while on LPA examination detected 1.67% (1/60) with identified the NTM species is other NTM (M.avium, M.intracellulare, M.kansasii). Characteristics of NTM co-infection in Pulmonary TB patients obtained an average age of 42 years, male gender, average BMI 17.4, a history of smoking with COPD comorbidities was obtained in 1 patient. All patients were TB re-treatment without a history of alcohol and HIV negative.

Conclusion: The percentage of NTM in people with pulmonary TB by culture is 3.33% while based on LPA is 1.67% with identified the NTM species.

Keywords: Non Tuberculous Mycobacteria (NTM), Pulmonary Tuberculosis, Line Probe Assay, Dr. Soetomo Hospital, Surabaya

THE EVALUATION OF PUBLIC PRIVATE MIX (PPM) IMPLEMENTATION FOR TUBERCULOSIS STRATEGY IN MATARAM CITY IN THE YEAR OF 2022

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ABSTRACT

Background: The Global TB Report 2019 reported that Indonesia was one of the countries with the largest TB case reporting gap among the highest TB burden countries in the world. The gap is estimated up to 10%. The national TB strategy stated that TB case finding as the main focus of TB control in Indonesia. PPM define as the involvement of all health care providers in the provision of TB care. The Patient Pathway Analysis (PPA) study in 2017 resulted that the role of government and private health care providers in the discovery and treatment of TB was only 54% and 42% respectively. The TB information system (SITB) reported that not all TB treated cases were notified. Mataram City has carried out PPM activities by involving government and private hospitals, private doctors and clinics, but there is no evaluation has been carried out.

Aim: to evaluate the implementation of the PPM strategy in Mataram City in January-July, 2022.

Methods: The study involved in 7 persons of TBC officers working in private clinic as samples through purposive sampling technique. Then the collected data was analyzed by qualitative description.

Results and discussion: The achievement of treatment coverage (TC) was 25.83%, while the success rate was 43.83%. The proportion of government and private health providers in reporting suspected TB cases were 85.71 % and 32.98% respectively. The challenges are the absence of regulations regarding the control of TB, limited number and capacity of personnel in recording and reporting TB cases in private care providers, and the non-optimal community involvement in TB case finding.

Conclusion: The implementation of TB PPM strategy in Mataram City 2022 was not provided optimally since it has not reached the expected target.

Keywords: Evaluation, Implementation, Public Private Mix, Tuberculosis, Mataram

TB POINT OF CARE QUALITY IMPROVEMENT AT PRIMARY HEALTH CARE : AN IMPLEMENTATION RESEARCH

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ABSTRACT

Background: Point Of Care Quality Improvement (POCQI) is a service approach model that is carried out to improve the quality of health services. For tuberculosis (TB) services, there have been no reports on the use of the service quality approach using the POCQI model. Therefore, this study aimed to improve the quality of TB service with the POCQI implementation model in the context of accelerating the elimination of TB disease in 2030 by measure differences in the competence of health workers during pre and post POCQI implementation, TB patient satisfaction during pre and post POCQI implementation, and acceptance of POCQI implementation research on TB services at the Purwakarta District Health Center.

Methods: The design of this research was mixed methods concurrent triangulation strategy that used primary data obtained by using a question instrument through a survey where the research subjects were health workers who provided TB services for competency research and implementation research and TB patients who received services at the Health Center. The data were analyzed using reliability and validity tests with rasch modeling, the data analysis was conducted with frequency distribution, and the categorization was based on rasch modeling.

Results: The results of this study indicated that there was no difference in the competence of health workers during pre and post implementation of POCQI. In total, there was no difference in customer satisfaction of TB patients both during pre and post POCQI implementation, but there were significant differences in four attributes, namely service time, competence of medical officers, behavior of officers, and infrastructure. The results of the implementation research showed that 80.6% of respondents accepted POCQI as a model in improving service quality, especially in problem solving. For the result of the qualitative study, all respondents were aware of and accepted POCQI in TB services.

Conclusion: There was no difference in the competence of health workers, but there were differences in TB patient satisfaction, the research on the implementation of POCQI was very well received, in practice this model requires repeated training, monitoring and evaluation guidance from the local Health Office.

Keywords: POCQI, competence, patient satisfaction, and implementation research

RELATIONSHIP BETWEEN C-REACTIVE PROTEIN (CRP), FERRITIN SERUM AND CLUSTER OF DIFFERENTIATION 4 (CD4) CELL COUNT WITH PULMONARY TUBERCULOSIS IN NAÏVE HUMAN IMMUNODEFICIENCY VIRUS (HIV) PATIENT IN BALI

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ABSTRACT

Background: Diagnostic of pulmonary tuberculosis (PTB) in patients with human immunodeficiency virus (HIV) infection remain challenging. The evaluation based on clinical symptoms of PTB, marker of inflammation, acute phase reactant and state of immunodeficiency, can provide a feature of PTB disease in patient with HIV infection. The purpose of this study was to analyze the relationship between inflammatory parameters of acute phase reactant and state of immunodeficiency with the pulmonary tuberculosis in patients with naïve HIV infection.

Methods: A cross sectional study was conducted in Sanglah General Hospital and Kuta Selatan Public Health Centre on February-June 2021. C-reactive protein (CRP), ferritin serum levels, and CD-4 cell count were obtained from patient's serum. Data were collected by questionnaire. Bivariate analysis using Chi-Square test or Kolmogorov Smirnov test, and multivariate analysis using logistic regression.

Results: A total of 60 participants were included in this study, and 58,3% had pulmonary tuberculosis (38,3% bacteriologically confirmed, 20% clinically confirmed). Fifty five percent participants had CRP level ≥10 mg/l, 83% had ferritin serum level ≥260 ng/ml, and 83% had CD4 cell count <200 cell/ml. Bivariate analysis showed that PTB in patient with HIV patients was associated with CRP level ≥10 mg/L ($p < 0,0001$), ferritin serum level ≥260 ng/ml ($p < 0,0001$) and CD4 cell count <200 cell/ml ($p <0,0001$). Multivariate analysis showed that the most influential factor for PTB in HIV patients was CRP level ≥10 mg/L (adjusted prevalence ratio/APR 4,9; 95%CI 7,81-2327,04; $p = 0,001$) and ferritin serum level ≥260 ng/ml (APR 3,32; 95%CI 1,752-433,65; $p = 0,018$).

Conclusions: High CRP and ferritin serum levels were significantly related with PTB in naïve HIV patients. No relationship was found between low CD4 cell count and PTB in naïve HIV patients.

LACK OF OPTIMUM KNOWLEDGE TOWARD TUBERCULOSIS AMONG MEDICATION SUPERVISORS IN TASIKMALAYA : A KNOWLEDGE, ATTITUDE, AND PRACTICE STUDY

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ABSTRACT

Early diagnosis and appropriate management of Tuberculosis (TB) cases by knowledgeable and skilled Medication Supervisor (MS) are key in improving medication adherence, achievement of TB therapy, and preventing TB transmission. The aimed of this study was to evaluate the level of knowledge, attitude, and practice of MS. This cross-sectional survey was carried out in the City of Tasikmalaya, from June to August 2021. Individuals who have cared for or are currently caring for TB patients from 2019 to August 2021 are the selection criteria for drug supervisors. A systematic questionnaire was used to interview 121 samples from the family and health cadres. The quantitative data presented in this study underwent editing, processing, and cleaning. A descriptive presentation of medication supervisors' sociodemographic characteristics, the history of monitored TB patients, knowledge, attitude and practice toward TB. The study's findings demonstrate that medication supervisors' knowledge of TB causes, transmission, signs and symptoms, diagnosis, treatment, and preventative measures is still inadequate (95.9%), while only 1.1% of families have information that is adequate. None of the cadres meet the criteria for inadequate performance when it comes to attitudes linked to managing the patient's medication intake. While most families are still found to lack in practice (52.8%), cadres have carried out their responsibilities as supervisors for taking medication, overseeing patient re-visits, communicating side effects, inspiring and motivating TB patients, and reporting to local health workers optimally. The ability to properly carry out their duties and enhance TB patient treatment outcomes is a requirement for the medication supervisor. Continuous capacity building for Drug Supervisors is required in order for them to fulfill their responsibilities. This includes training cadres to be able to educate the community on proper TB care practices, especially for TB patients and their accompanying families.

Keywords : Drug supervisor, Tuberculosis, Knowledge