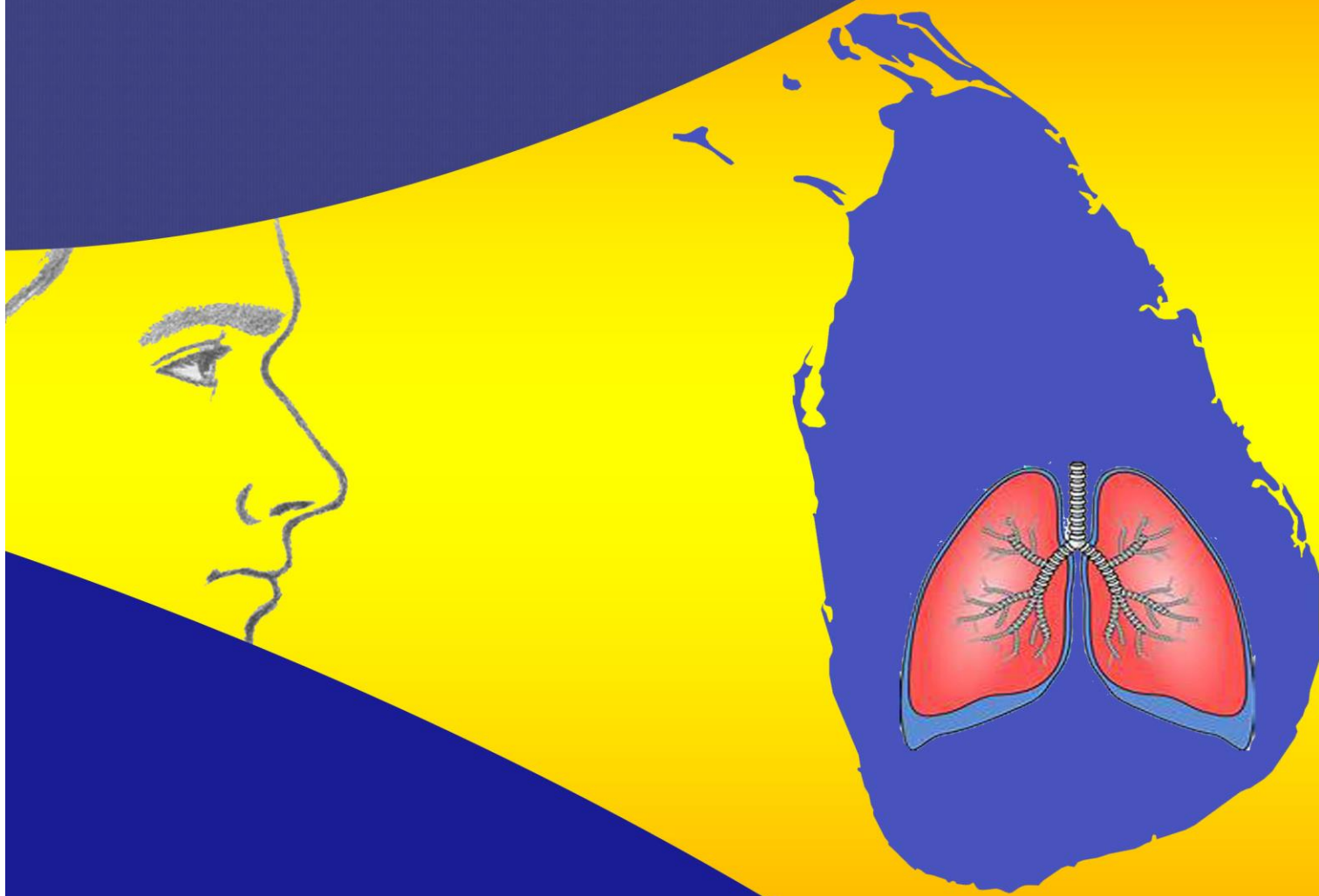


Index of Research Studies on Tuberculosis in Sri Lanka



**Developed for Research Repository of the
National Programme for Tuberculosis Control
and Chest Diseases of Sri Lanka**

Index of research studies on tuberculosis in Sri Lanka

**This Research Index was developed for Research Repository of the National Programme
for Tuberculosis Control and Chest Diseases of Sri Lanka.**

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Introduction and aim

A “**research repository**” is an archive for the storage of research work such as case reports, academic journal articles, theses, dissertation, working papers, technical reports etc irrespective of the stage of publication. A research repository could be developed based on the amount of research work carried out by an institution or based on scholarly work related to a certain disciplinary area. TB research repository brings together all accessible tuberculosis related researches on to one platform which enables global visibility on the amount of work carried out on a single subject area, tuberculosis.

History of tuberculosis control in Sri Lanka rolled back to 1904, with the establishment of Tuberculosis commission, a pioneer step in TB control. Since then, the programme has been evolved through a long pathway using policy innovations based on programmatic experiences and research evidences. The first piece of tuberculosis research work could be traced back to the year of 1946, an era even before the independence.

Currently, Sri Lanka is moving towards the World Health Organization’s (WHO) End TB Strategy to end the global tuberculosis (TB) epidemic by 2025. It targets a 95% reduction in TB mortality, a 90% decline in TB incidence (to below 10/100,000 population) and zero catastrophic costs for TB-affected households. To reach these ambitious targets, intensified research is needed to develop more effective interventions to detect, cure and prevent TB. Considering this important fact, the third pillar of the End TB Strategy was identified as “Intensified research and innovation”.

Evidence informed decision making is mandatory for the successful implementation of a disease control programme. This work highlights the need of all spectrum of research, basic/fundamental research, clinical and translational research, operational and implementation research, epidemiologic research, and policy, health and social system research. All types of researches together will provide a clear insight that aid decision making on strategies related to TB control.

Collection of TB research work conducted by individuals, group of experts and institutions in to one place is a strenuous but a worthy and a timely exercise. This TB research repository could be considered as the first ever collection of TB research carried out in Sri Lanka. All literature was compiled in view of finding research gaps in the field of TB in Sri Lanka. This will provide an overall perception on where are we, what we have done, and what more to be done? in relation to TB research conducted in Sri Lanka. The repository will function as a better tool to facilitate evaluation of policy decisions taken in the past. It will also provide evidences for formulation of new policies and change of existing policies to overcome the programmatic challenges in order to achieve effective TB control in Sri Lanka.

Method of literature search

A comprehensive literature search was performed manually and electronically to identify the research studies conducted in Sri Lanka in relation to tuberculosis. A range of key words including medical subject headings (MeSH) terms were used to facilitate the search. The electronic data bases were searched for “Tuberculosis” combined with each of the following terms: “Sri Lanka”, “South Asia”, “South East Asia”, “developing countries” and “Lower Middle-Income countries”.

Manual search for relevant literature was performed referring text books, journals, publications, dissertations and theses in all main libraries including the Post-Graduate Institute of Medicine. Research registry maintained at the National Programme for Tuberculosis Control and Chest Diseases (NPTCCD) for researches funded by the NPTCCD was also referred. In addition, academia and researchers in the field of Respiratory Medicine and Tuberculosis in Sri Lanka were consulted.

Structure of compiled literature

Clear understanding on available literature on a research area is essential for interested parties to plan future research. In addition, using local evidence tend to improve the effectiveness of policy level decisions and feasibility of interventions. This index of tuberculosis research in Sri Lanka was compiled with the intention of presenting evidence for such concerned parties. Research studies are compiled under the broad themes as shown below to improve the user friendliness.

- Epidemiological studies
- Clinical and patient behaviour studies
- Microbiological and other diagnosis related studies
- Treatment related studies
- Studies on health information systems
- Health system studies
- Case reports

This index includes studies dated back as far as 1946, up to January, 2019. The studies are oriented in a chronological order of years to enable the reader to focus on most recent evidence first.

Details of research studies

YEAR - 2019

Clinical and patient behaviour studies

Title	Characteristics and sputum conversion of tuberculosis patients in Kalutara, Sri Lanka
Authors	Nandasena S., Senevirathna C., Munasinghe C., Wijesena C., Sucharitharathna R.
Source	Indian Journal of tuberculosis; 66: p 76-80.
Abstract	<p>Background:</p> <p>Tuberculosis (TB) is an infectious bacterial disease; remains as one of the important public health problem affecting every part of the world. Substantial number of TB cases are reported from Sri Lanka every year irrespective of its strong preventive health system. The aim of this analysis is to describe the characteristics of TB patients and to assess the factors associated with sputum conversion. This analysis was based on the data from the District Chest Clinic of Kalutara district, Sri Lanka.</p> <p>Methods:</p> <p>Information of all newly diagnosed and registered patients in the District Chest Clinic, Kalutara in year 2013 were ascertained. Out of 687 newly reported TB patients, 669 records were included in final analysis.</p> <p>Results:</p> <p>Majority of patients were males (n = 451, 67.4%), in the age group of 36–60 years (n306, 45.7%) and underweight (n=359, 61.7%). Substantial proportion of normal weight or overweight adult patients (92.1%) had sputum conversion at 2–3 months as compared to underweight adult patients (82.5%) (p=0.034). Those who smoke tobacco is less likely to have sputum conversion at 2–3 months as compared to non-smokers (90.2% vs. 82.1%, p = 0.045).</p> <p>Conclusions:</p> <p>Provision of good nutrition, maintaining of appropriate body mass index (i.e., BMI), and abstinence from smoking and alcohol consumption are important for sputum conversion among smear-positive pulmonary TB patients.</p>

YEAR - 2018

Epidemiological research

Title	Examining the social status, risk factors and lifestyle changes of tuberculosis patients in Sri Lanka during the treatment period: a cross-sectional study.
Authors	Senanayake M.G.B., Wickramasinghe S.I., Samaraweera S., De Silva P., Edirippulige S.
Source	Multidisciplinary Respiratory Medicine. 2018; 13 (1): 9
Abstract	<p>Background:</p> <p>Tuberculosis (TB) is a major global health problem, commonly seen in underdeveloped countries. The probability of contracting the disease is significantly higher among the economically vulnerable and the socially disadvantaged. Risk factors associated with TB can also change over time. In the Sri Lankan context, no study has explored how these factors impact patients. Therefore, we aimed to explore social status, associated risk factors and lifestyle changes during the treatment period of TB patients attending a tertiary respiratory center in Colombo, Sri Lanka.</p> <p>Methods:</p> <p>The descriptive cross-sectional study was conducted in 2011. The study population consisted of diagnosed tuberculosis patients above the age of 15 years. Patient records were retrieved from the TB patient registry for the Colombo district. Systematic sampling was used to identify patients to be invited to the study. An interviewer-administered questionnaire was used for data collection. Data were collected on social status (example, level of education, employment, and income), associated risk factors (example, smoking and alcohol consumption, contact history, narcotic drug use) and lifestyle changes during treatment (example, employment status, social interactions). The analysis included a logistic regression model to explore the association between social status and risk factors.</p> <p>Results:</p> <p>The total number of patients included in the study was 425. Tuberculosis was found to be strongly prevalent among participants from the lower socio-economic status. It was also common in participants with a low level of education, unemployed, if employed, those who are engaged in unskilled employment and have low levels of income. Risk factors associated with the patients were smoking, alcohol consumptions, narcotic drug use, imprisonment, close contact history with active TB patients and chronic medical conditions. Changes in employment and the reduction of social-interactions were the main lifestyle changes of the participants occurred during the treatment period. The</p>

analysis also showed positive correlation between low-level social status and sputum smear infectivity, and use of dangerous drugs. Even after adjusting for confounders, tuberculosis negatively affected social interactions and income levels of participants from the low social status.

Conclusion:

Low socio-economic status negatively affected the lifestyle and social interactions of patients during the treatment period. Though competent treatment programs exist in Sri Lanka, it is still important to identify and mitigate risk factors associated with tuberculosis patients. A comprehensive multi-disciplinary approach considering patient lifestyle, and the implications of the disease and treatment on social interactions may strengthen the current preventive strategies.

Clinical and patient behavior research

Title	Health related quality of life, association of treatment success with health-related quality of life, household cost and quality adjusted life years saved during treatment among new pulmonary tuberculosis patients in Colombo district
Authors	Seneviratne S., Ginige S., Kularatne S., Gunawardena N.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Background:</p> <p>Tuberculosis continues to be a major public health problem throughout the world including Sri Lanka. The personal burden of illness cannot be described fully by clinical or laboratory indices and therefore, psychological factors, functional impairment, difficulty in fulfilling personal and family responsibilities, pain, physical weaknesses and financial strain should also be encompassed.</p> <p>Objectives:</p> <p>To assess health-related quality of life, association of treatment success with health-related quality of life at the initiation of treatment and to assess household cost and quality adjusted life years saved during treatment among new pulmonary tuberculosis patients in the Colombo district and to compare health related quality of life and household cost of new pulmonary tuberculosis patients practising daily directly observed treatment undertaken at a health facility and weekly home based directly observed treatment undertaken at home by a family member with weekly visits at the health facility in the Colombo district.</p> <p>Methods:</p> <p>The study consists of three components. Component I of the study included selection and cultural adaptation of functional assessment of chronic illness therapy- tuberculosis (FACIT-TB) tool to assess health-related quality of life (HRQOL) of pulmonary tuberculosis (PTB) patients in Sri Lankan setting. It was validated through the method of triangulation and the validation study to perform confirmatory factor analysis (CFA) and the reliability assessment was done on a sample of 225 new PTB patients in the Kandy district. Component II included a descriptive cross-sectional study carried out in the central chest clinic (CCC) Colombo district among 552 new PTB patients >18 years to assess HRQOL, quality-adjusted life years (QALYs) and household cost at three patient encounters; at the initiation of treatment, at the end of two-month treatment period and at the end of six-month treatment period. The FACIT-TB was used to assess HRQOL and the utilities for calculation of QALYs were assessed by using locally validated EQ-5D - 3L tool. Component III of the study was a cross-sectional comparative study to compare HRQOL and household cost of new PTB patients practising daily Directly Observed Treatment (DOT) and weekly DOT in the Colombo district.</p>

Results:

The FACIT-TB was found to be valid and reliable in assessing HRQOL of PTB patients in the Sri Lankan setting. The model fit indices of confirmatory factor analysis revealed: Root Mean Square Error of Approximation =0.05, Standardized Root Mean Square Residual=0.07, Comparative Fit Index=0.94 and Non -Normal Fit Index=0.94 suggesting reasonably good fit between the FACIT-TB model and the observed data.

A total of 552 patients were enrolled in the study with 100% response rate. The mean age was 49.1 ± 16.2 years and 68.5 % were males. A majority were bacteriologically confirmed PTB [n=403 (73.0%)] patients. A total of 485 and 465 PTB patients completed the interview at the end of the two-month intensive phase and six-month treatment period respectively with a final dropout rate of 15.7%.

The TB treatment had a significantly ($p=0.000$) positive impact on the overall HRQOL and all sub-scale scores of PTB patients during the treatment period. When adjusted for the effects of confounding, overall HRQOL at the initiation of treatment [adjusted OR =1.075 (CI: 1.049-1.102), $p=0.000$] was shown to increase the likelihood of treatment success in PTB patients. The PTB patients gained 0.05 ± 0.07 QALYs during the six- month treatment period. The total household cost for treatment of a PTB patient was SLR 12332.94. The household cost of management of a PTB patient during the intensive phase was SLR 11295.80 and the household cost of management of a PTB patient during the continuous phase was SLR 1037.14. The direct cost constituted 43.5 % of the total cost while seeking clinic care and 52.5 % of the total cost while seeking DOT services during the intensive phase of treatment. The direct cost constituted 63.1% of the total cost during the continuous phase of the treatment and the transport cost constituted the major proportion of direct cost in all these instances.

Patients practising weekly DOT had a significantly higher ($p=0.000$) transport cost. It was found that majority of patients [n=66, 55.7%] practising daily DOT were within less than one km distance to the DOT centre. There was no significant difference in HRQOL in patients practicing daily DOT and weekly DOT.

Conclusions:

The FACIT-TB is a valid and reliable tool to assess HRQOL of PTB patients in Sri Lankan setting. The anti-TB treatment has a positive impact on HRQOL of PTB patients. The PTB patients gained 0.05 ± 0.07 QALYs during the six - month treatment period. The total household cost of a PTB patient while seeking treatment was SLR 12332.94. There was no significant difference of HRQOL in patients on daily DOT and weekly DOT. The PTB patients on daily DOT had lower transport cost as the DOT centres were within walking distance.

Clinical and patient behavior research

Title	Tuberculosis induced autoimmune haemolytic anaemia: a systematic review to find out common clinical presentations, investigation findings and the treatment options.
Authors	Siribaddana D.R.S.
Source	Allergy, Asthma & Clinical Immunology 2018;14;11
Abstract	<p>Background:</p> <p>Tuberculosis induced autoimmune haemolytic anaemia is a rare entity. The aim of this study was to explore its common presentations, investigation findings and treatment options through a systematic review of published reports.</p> <p>Methods:</p> <p>PubMed, Trip, Google Scholar, Science Direct, Cochrane Library, Open-Grey, Grey literature report and the reference lists of the selected articles were searched for case reports in English on tuberculosis induced auto-immune haemolytic anaemia. PRISMA statement was used for systematic review. Quality assessment of the selected reports was done using the CARE guidelines.</p> <p>Results:</p> <p>Twenty-one articles out of 135 search results were included. Thirty-three percent of patients were reported from India. More than half had fever and pallor. The mean haemoglobin was 5.77 g/dl (SD 2.2). Positive direct coombs test was seen in all patients. Pulmonary tuberculosis (43%) was most prevalent. Twenty-nine percent of patients needed a combination of anti-tuberculosis medicines, blood transfusion and steroids. Higher percentage of disseminated TB induced AIHA (67%) needed steroids in comparison to the other types of TB induced AIHA (13%).</p> <p>Conclusions:</p> <p>Rarer complications of tuberculosis such as auto-immune haemolytic anaemia should be looked for especially in disease-endemic areas. Blood transfusion and steroids are additional treatment options along with the anti-tuberculosis medicines.</p>

Clinical and patient behavior research

Title	Assessment of noncompliance of Tuberculosis treatment in intensive phase at Kalutara District.
Authors	Ranawaka N.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Introduction:</p> <p>Tuberculosis (TB) occurs every part of the world and one of the top causes of death in worldwide. Although, Sri Lanka is not among the high TB burden countries, still remains to be a major public health problem. Reducing the non-compliance among TB patients are important for treatment success and to prevent drug resistant TB.</p> <p>Objectives:</p> <p>Objective of this study is to assess the factors associated with noncompliance of TB treatment in intensive phase and to assess the selected covariates at Kalutara District.</p> <p>Methodology:</p> <p>This was a descriptive cross-sectional study. Study comprised of the TB patients who were registered in District Tuberculosis Register Kalutara for a period of six months. A structured, pre-tested interviewer administered questionnaire, District TB register, TB treatment card and TB follow up card were used to collect data. Data were collected from all responders from the chest clinic and by field visit. Data entered to EpiData software and exported to an analyzing software.</p> <p>Result:</p> <p>There were total of eligible 267 patients for the study. Fifteen patients did not response and data were collected from 252 patients. Mean age of study group was 49.5 years and the group consisted of 63.5% (n=160) males and 36.5% (n=92) females. Among them 77% (n=194) were married and living together. Majority were Sinhalese (57.2%, n=144) and Buddhist (53.2%; N=134). The noncompliance rate was 18.3% (n= 46) among newly diagnosed TB patients in Kalutara District. Only 13.5% (n=34) visited DOT provider daily. Majority (61.9%, n=156) of DOT providers did not observe for drug intake and it was significantly associated with noncompliance ($\chi^2 = 4.7994$, $p = 0.028$). Side effects of the drugs were significantly associated with noncompliance ($\chi^2 = 4.131$, $p=0.042$). Educational level Ordinary level or below ($\chi^2=4.2904$, $p=0.038$), living environment of the TB patients ($\chi^2=13.338$, $p=0.004$) and</p>

living along without care giver ($\chi^2=4.633$, $p=0.031$) were significantly associated with noncompliance to TB treatment. Mean total non-medical expenses for one patient per day for attending to Directly Observed Treatment (DOT) center was 341.61 Sri Lanka Rupees (SLR). Mean total medical expenses for one patient in intensive phase was 1254.13 SLR.

Conclusions:

Noncompliance with the treatment is still a common problem among TB patients which may end up with loss to follow up. Healthcare workers should be aware of the factors which significantly associated with noncompliance. Special emphasis should be made on TB patients with education level O/L or below, living in slum areas, estate sectors and patients living along without care giver. Motivation for regular drug intake, proper supervision and education should be done for TB patients who have risk of noncompliance. There was general inadequacy of adherence to DOTS policy of National Programme For Tuberculosis and Chest Disease (NPTCCD) within the health care system in Kalutara district. Proper programme should be arranged to make DOT providers adhere to the DOTS policy. Despite of free health care system in Sri Lanka, “Out of Pocket Expenditure” for daily DOTS were high. Material support by transport subsidies or by supply meal during DOTS is recommended for reducing the financial burden of TB patients.

Treatment related studies

Title	Impact of tuberculosis and long-term benefits of anti-retroviral treatment in patients with HIV in Sri Lanka.
Authors	Karunaratne A.H., Gamlath P.M., Udithani L.C., Perera M.S., Tashmini M.T., Sooriyaarachchi C., Wijewickrama A.
Source	Ceylon Medical Journal. 2018; 63: 143-148
Abstract	<p>Introduction:</p> <p>Although prevalence of HIV infection in Sri Lanka is low, there is a gradual increase in incidence. Effective anti-retroviral treatment (ART) controls the virus, improves immunity and reduces transmission of HIV greatly.</p> <p>Objective:</p> <p>We studied the impact of tuberculosis and response to ART in a cohort of patients with HIV in Sri Lanka.</p> <p>Methodology:</p> <p>A retrospective study of all patients with HIV followed up at the ART clinic at National Institute of Infectious Diseases, Angoda, Sri Lanka was carried out. Their socio-demographic data, clinical presentations, anti-retroviral treatment and clinical, immunological and virological response were analyzed.</p> <p>Results:</p> <p>Study included 72 patients. Mean age was 47.19 (SD-10.354) years. Male to female ratio was 1:0.8. Forty-nine (68%) patients were diagnosed with HIV after presenting with an opportunistic infection. Of these, 25 had tuberculosis (TB). Another 5 developed TB later. Fifty-two (72.2%) had CD4 cell counts <200/μl which included 45(62.5%) who had CD4 <100/μl. Twenty-six (36.1%) patients were bed ridden and a further 6 (8.3%) were physically dependent at the time of diagnosis. Mean duration of ART was 82.4 months. With ART, CD4 cell counts and mobility improved. In 38 (52.8%) CD4 counts increased to more than 500/μl. Viral load became undetectable in 62 (86.1%). Sixty-nine (95.8%) became completely physically independent.</p> <p>Conclusion:</p> <p>TB is a common co-infection in patients with HIV in Sri Lanka. Though many patients with HIV presented with poor immunological and physical status, ART markedly improved these outcomes and reduced the viral load which results in prevention of spread of HIV. Therefore, ART should be supported and encouraged.</p>

Treatment related studies

Title	Significance of Coexisting Mutations on Determination of the Degree of Isoniazid Resistance in Mycobacterium tuberculosis Strains.
Authors	Wijesundera K.G.H.R.E., Vidanagama S.S., Adikaram D., Priyangani C., Perera, J.
Source	Journal of Microbial Drug Resistance. 2018; 24 (6): 844-51
Abstract	<p>Introduction:</p> <p>The emergence and spread of drug-resistant tuberculosis (TB) pose a threat to TB control in Sri Lanka. Isoniazid (INH) is a key element of the first-line anti-TB treatment regimen. Resistance to INH is mainly associated with point mutations in <i>katG</i>, <i>inhA</i>, and <i>ahpC</i> genes.</p> <p>Objective:</p> <p>The objective of this study was to determine mutations of these three genes in INH-resistant Mycobacterium tuberculosis (MTb) strains in Sri Lanka.</p> <p>Method:</p> <p>Complete nucleotide sequence of the three genes was amplified by polymerase chain reaction and subjected to DNA sequencing.</p> <p>Results:</p> <p>Point mutations in the <i>katG</i> gene were identified in 93% isolates, of which the majority (78.6%) were at codon 315. Mutations at codons 212 and 293 of the <i>katG</i> gene have not been reported previously. Novel mutations were recognized in the promoter region of the <i>inhA</i> gene (C deletion at -34), <i>fabG1</i> gene (codon 27), and <i>ahpC</i> gene (codon 39). Single S315T mutation in the <i>katG</i> gene led to a high level of resistance, while a low level of resistance with high frequency (41%) was observed when <i>katG</i> codon 315 coexisted with the mutation at codon 463.</p> <p>Conclusion:</p> <p>Since most of the observed mutations of all three genes coexisted with the <i>katG</i>315 mutation, screening of <i>katG</i>315 mutations will be a useful marker for molecular detection of INH resistance of MTb in Sri Lanka.</p>

Microbiological and other diagnosis related studies

Title	Co-existence of mycobacterial infections: is it an emerging issue with retroviral infections?
Authors	Keragala B.S.D.P., Herath H.M.M.T.B., Janappriya G.H.D.C., Gunasekera C.N.
Source	Tropical doctor. 2018
Abstract	We report a 46-year-old woman presenting with leprosy, HIV and active pulmonary tuberculosis (TB). It is advisable to screen for each one of TB, HIV and leprosy patients, especially when an extra feature emerges. Particularly in a leprosy case, if TB remains undiagnosed, the development of rifampicin resistance secondary to monotherapy in leprosy is a major concern.

Case reports

Title	Non-healing scrotal ulceration-an unusual manifestation of TB epididymo-orchitis: case report and review of literature.
Authors	Jayarajah U., Gnanaselvam P., Sivaganesh S.
Source	Clinical Case Reports. 2018; 6 (1):143-46
Abstract	The clinical presentation of genitourinary tuberculosis (TB) may be variable and a high index of suspicion is required for a timely diagnosis, especially in endemic areas. Recurrent scrotal ulcers associated with epididymo-orchitis even without other constitutional symptoms should alert the clinician of a possible diagnosis of TB.

YEAR - 2017

Clinical and patient behaviour studies

Title	Lifestyle changes among Tuberculosis patients attending the Central Chest Clinic Colombo
Authors	Senanayake M.G.B., Samaraweera S.
Source	Journal of the College of Community Physicians of Sri Lanka, 22(1), pp.39–51.
Abstract	Abstract not available.

Microbiological and other diagnosis related studies

Title **Diagnosis of tuberculosis – from yesteryear to recent days**

Authors Pallewatte N., Samaraweera S., Vidanagama D.

Source Journal of the College of Community Physicians of Sri Lanka, 23(2), 88–90

Abstract Background:

Tuberculosis (TB) is an infectious air borne disease and it is a major public health problem. The disease is more commonly seen in under developed countries. Association of TB with stigmatization and its impact on lifestyle of the patient is an important aspect that worth exploring.

Objective:

To describe the influence of the disease on their lifestyle among tuberculosis patients attending the Central Chest Clinic Colombo

Methods:

This was a descriptive cross-sectional study. The study population consisted of all diagnosed tuberculosis patients, who were above the age of 15 attending to Central Chest Clinic Colombo. The total sample size comprised of 266 Tuberculosis patients, who have completed the first two months of treatment course to assess the impact of the disease on their lifestyle. Systematic sampling was conducted by considering the total number of clinic attendees and the duration of data collection. An interviewer administered questionnaire was used to collect data.

Results:

Tuberculosis is associated with the lower socio-economic status and linked with poverty. It is common in people with lower level of education and unemployment. More negative lifestyle changes were commonly seen in the socially disadvantaged group of patients which could further worsen their social status. More lifestyle changes had significant associations with male sex, low education level, employment, low income level, retreatment and infective patients, residing within the CMC area and substance abuse (alcohol, smoking, narcotic drug use). The stigma associated with the disease had a major impact on patients' lifestyles as it has influenced to the family interactions, marital status and social interactions.

Conclusion:

Tuberculosis is associated with poverty, low socio-economic status; they change their lifestyle more negatively making them more vulnerable to social disadvantages. Not only the medical treatment, but also the lifestyle aspects of the TB patients need to be considered in patient management.

Health system research

Title	Utilization and availability of resources at microscopic centers and knowledge, attitudes and practices among medical officers on screening for tuberculosis in selected hospitals in Kalutara district.
Authors	Samarasinghe Y.J.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Background:</p> <p>Tuberculosis (TB) will remain one of the top ten causes of death worldwide and in Sri Lanka, 6000 new cases are reported annually. Underutilization of microscopic centers (MCs) along with poor contact tracing and inadequate detection of new cases have been identified as a major weakness in TB control program in Sri Lanka.</p> <p>Objectives:</p> <p>To assess the extent of utilization of MCs, availability of resources at MCs and the knowledge, attitude and practices among Medical Officers (MO) on screening for TB in selected hospitals in Kalutara district.</p> <p>Methods:</p> <p>A descriptive cross-sectional study was carried out in MCs and selected hospitals in Kalutara districts where the MCs are available. Referral data on patients (n=1522) were extracted from TB Laboratory Registries (TBLR) of all MCs in the district using a check list. January 1st to 31st March of 2017. Availability of resources was assessed based on perception of the staff (PHLTs, TBAs, MOP, RE) members, a purposive sample of 10, directly involved in TB screening using a semi-structured interviewer guide. Knowledge, attitude and practices among MOs (n=202) on screening for Tb was assessed using a pre-tested, self-administered questionnaire. Main areas to assess knowledge included risk factors, diagnostic criteria and investigations on screening and attitudes on prevalence, diagnostic criteria and training. Practices were assessed using clinical vignettes based on typical TB presentations, TB in child and TB in diabetes.</p> <p>Results:</p> <p>Majority of MCs (80%, n=4) were under-utilized by OPD (<3 referrals per 1000 OPD attendees) and none of the MCs including the Kalutara district clinic were utilized by public or private health care institutions. Nevertheless, MCs were satisfactorily utilized by in-ward settings of same hospitals where</p>

MCs are located. Three consecutive sample submission of majority of MCs (80%, n=4) remain below 50%. Majority of staff trainings (70%, n=7), provision of WHO recommended safety goggles (90%, n=9) N95 or FFP2 equivalent face masks (100%, n=10) and provision of disinfectants (70%, n=7) were adequate. None of the MCs or CC had an established cough area.

Majority of MOs (86.9%, n=147) had satisfactory knowledge and favourable attitudes (87%, n=147) on screening on TB. However, half of MOs (50.9%, n=90) had unfavourable attitudes to refer patients with more than 2 weeks of cough and over one third (39.2%, n=68) of MOs to perform CXR on PTB suspects. Unfavourable attitudes were significantly higher among those over 30 years of age ($p=0.005$), more than 5 years' experience ($p=0.007$), working in a different unit other than medical and pediatric ward ($p=0.05$) and working in a DH ($p=0.02$). majority (63.3%) of MOs had unsatisfactory practices towards screening of TB. Majority of MOs (60-79%) treated different presentations of PTB suspects with bronchodilators and antibiotics. Atypical presentation was answered correctly by a higher presentation of 73.3% (n=125).

Conclusions:

All MCs were satisfactorily utilized by in-ward settings, majority of MCs were under-utilized by OPD and none of the MCs including the Kalutara chest clinic were properly utilized by close-by public or private health care institutions. None of the hospitals has introduced TB suspect register introduced by the MoH. WHO recommended essential and providable equipment, consumables and infrastructure within cost concerns have not been provided to MCs while staff for MCs were found to be satisfactory except important criteria of screening such as duration of illness, performing and CXR. Majority had unsatisfactory level of practices.

Recommendations:

Continuous staff awareness, periodic review meetings about TB suspect register at public sector, explicit agreement of establishing TB suspect register at the private sector before granting the license, establishing of MC cluster laboratory system, cover up duty arrangement for closed MCs, annual in-service training programmes on MC staff, provision of WHO recommended possible equipments, consumables and infrastructure through annual estimates and compulsory in-service training programme for MOs are recommended.

Health system research

Title	Knowledge and attitudes regarding tuberculosis, respiratory hygiene practices and factors associated among adults aged 20-59 years in Medical Officer of Health - Moratuwa.
Authors	Kodithuwakku N.C.
Source	Post graduate Institute of Medicine, University of Colombo
Abstract	<p>Background:</p> <p>Tuberculosis (TB) is a major cause of morbidity and mortality in the world. It remains a significant health problem in Sri Lanka, particularly in the Western Province. Moratuwa is one of the urban areas located within the Western province, which is affected by TB largely. Knowledge and attitudes regarding TB in the community is imperative to the prevention and control programmes.</p> <p>Objectives:</p> <p>To describe knowledge, attitude and health seeking behavior related to TB and respiratory hygiene practices and to determine the factors associated with TB knowledge and respiratory hygiene practices and to determine the factors associated with TB knowledge and respiratory hygiene practices among adults aged 20-59 years in Medical Officer of Health area, Moratuwa.</p> <p>Method:</p> <p>Descriptive cross-sectional study was conducted among 602 study participants selected using multi-stage cluster sampling method. Data was collected using pre-tested interviewer-administered questionnaire developed for local setting and assessed for validity. Knowledge and practices were categorized in to good and poor based on the mean. Factors associated with knowledge and respiratory hygiene was assessed applying Chi square test, and $p < 0.05$ was taken as statistically significant.</p> <p>Results:</p> <p>Majority of the participants had good overall TB knowledge (56%). They had good knowledge regarding symptoms, diagnosis, treatment, sputum disposal and prevention. However, knowledge with regard to causative agent of TB, risk factors and BCG vaccination were poor among the study participants. Being male (OR=1.5; CI=1.1-2.0), being non-Sinhalese (OR=2.1, CI=1.1-4.0), being currently single (OR=1.4; CI=1.1-2.1), educated up to O/L or below (OR=2.2; CI=1.6-3.1) and having monthly household income equal or</p>

below LKR 50,000.00 (OR=1.6; CI=1.1-2.3) were significantly associated with poor overall TB knowledge.

Majority of participants agreed that TB patients should not be isolated in the society and were willing to help family members and relations suffering from TB. Majority (84%) had good respiratory hygiene practices and appropriate TB related health seeking behavior. Being aged 40 years or more (OR=1.7; CI=1.1-2.7), being male (OR=2.4; CI=1.5-3.8), educated up to O/L or below (OR=2.3; CI=1.4-3.8) and having monthly household income equal or below LKR 50,000.00 (OR=1.9; CI=1.1-3.4) were significantly associated with poor respiratory hygiene.

Conclusions and recommendations:

TB knowledge and selected aspects of respiratory hygiene practices were relatively satisfactory among the study participants. Further research is needed to understand attitudes attached to TB, respiratory hygiene practices and effectiveness of them in preventing respiratory tract infections in the community. Socio-demographic factors should be considered in planning communication interventions and behavioural strategies.

Studies on health information systems

Title **Facilitating information use via user specific Dashboards: The case of Electronic Patient Information Management System at the National Programme for Tuberculosis Control and Chest Diseases**

Authors Epasinghe D.U.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Introduction:
Tuberculosis is a major public health concern globally, due to its contagious nature, and the impact on economically productive age groups of the society. Information and communication technology present opportunities for innovative approaches to support TB control programmes globally. The National Programme for Tuberculosis Control and Chest Diseases (NPTCCD) in Sri Lanka adopted Electronic Patient Information Management System (ePMIS) in 2014 to strengthen the TB control programme and its information flow in the country. Although the system gathers adequate amount of patient data, there is a delay in using this information for actions. In order to facilitate information for action, user specific Dashboards were developed and implemented.

Method:

The research project was conducted in three phases.

Phase one included a qualitative study to identify user requirements. In depth interviews were done using 12 identified key users of the system. Thematic analysis was carried out to analyze data, which resulted in 288 codes categorized into 23 categories and 6 major themes.

Phase two resulted in three customized dashboards created using latest version of GHIS2. Design and development of dashboards were done within ePIMS at the NPTCCD server. Dashboards were designed to cater the user requirements identified in phase one.

Phase three, evaluation of customized Dashboards for user satisfaction was done using identified users in a similar manner to phase one using in depth interviews. Thematic analysis resulted in 59 new codes which were summarized in to 7 organizing themes 3 major themes.

Findings:

Users were more concerned about the visual representation of quality indicators than concentrating on the design of the dashboard.

Conclusions:

User perceptions are necessary in designing dashboards and that it should be done in an iterative manner as users tend to change in their position regarding the requirements and the visualization of dashboards following seeing the actual design.

Case report

Title **A rare presentation of common disease: endotracheal tuberculosis**

Authors Madegedara D., Senevirathna S., Samankantha S., Nakandale S. Nandadewa

Source Asian pacific Society of Respiratory Conference

Abstract **Background and Aims:**

Tracheal tuberculosis is uncommon representing only 4% among those with endobronchial TB. So far less than 150 cases have been reported in literature.

Methods:

We report a case of tracheal TB in a 65-year-old male patient with complicated diabetes, who presented with 3 weeks history of intermittent fever, productive cough, SOB and loss of weight. On presentation there was evidence of ongoing sepsis with low blood pressure, tachycardia, tachypnoea and a SpO₂ of 93% on room air. Lung fields had bilateral coarse crepitations.

Results:

Investigations on admission, WBC of $13 \times 10^9 /l$, 65% neutrophils, 32% lymphocytes, 3% eosinophils. Hb 10g/l.ESR 124mm, CRP 115. Mantoux 16mm. Creatinine 2mg/dl. FBS 18mmol/l. liver functions and electrolytes within normal limits. Sputum for AFB repeatedly negative. Chest x ray revealed no significant abnormalities. On follow up after discharge his symptoms improved except for the loss of appetite. He had persistently high ESR at 115 and a CRP of 55. This prompted further investigations. Bronchoscopy showed normal larynx, pharynx and vocal cords. The trachea showed multiple white nodular infiltrates up to and involving the carina, but no involvement of the distal bronchial tree. Biopsy sent for Genexpert TB assay became positive for *Mycobacterium tuberculosis*. At the time of reporting he was showing good clinical response to anti tuberculous medication and was awaiting a repeat bronchoscopy to assess the clearance of lesion.

Case report

Title	PUO in a respiratory ward in an endemic country; is it TB always? a rare tb mimic from Sri Lanka
Authors	Samankantha S., Nakandala B.S.S., Seneviratne S., Abeygunawardana N., Madegedara D.
Source	Asian pacific Society of Respiratory Conference
Abstract	Not available

YEAR - 2016

Clinical and patient behaviour studies

Title **Psychological morbidity and illness perception among patients receiving treatment for tuberculosis in a tertiary care centre in Sri Lanka**

Authors Galhenage J.S., Rupasinghe J.P., Abeywardena G.S., De Silva A.P., Williams S.S., Gunasena B.

Source Ceylon Medical Journal, 2016; 61(1): 37

Abstract A descriptive cross-sectional study was carried out to determine prevalence of depression and anxiety and to describe disease perception among patients with tuberculosis (TB) at National Hospital for Respiratory Diseases (NHRD), Welisara. Consecutive patients on anti-TB therapy admitted to wards and attending clinic were recruited until the estimated sample of 430 was reached. They were assessed using Hospital Anxiety and Depression Scale (HADS) and Brief Illness Perception Questionnaire (BIPQ).

A total of 254 in-ward patients and 176 clinic patients were included. Of the inward patients, 25.2% had depression and 12.6% had anxiety. Of the clinic patients, 17.6% screened were positive for anxiety and 8.5% screened were positive for depression. Mean BIPQ score was 27.44 for the whole population. Prevalence of depression was significantly higher among in-ward patients (25.2%, $p<0.0001$), elderly age groups (20.5%, $p=0.007$), patients with lower education levels (20.6%, $p=0.012$) and previously treated patients (32.3%, $p=0.004$). In-ward group (50.8%, $p=0.002$), lower education group (48.7%, $p<0.0001$), previously treated group (60%, $p=0.005$) and patients with depression (60.8%, $p=0.001$) and anxiety (68.3%, $p<0.0001$) showed significantly higher BIPQ scores.

Our study shows that depression and anxiety are common among patients receiving treatment for TB.

Clinical and patient behaviour studies

Title	DOTS seeking behavior and the factors affecting DOTS seeking behavior among new smear positive pulmonary tuberculosis patients during intensive phase who were registered at Colombo Chest Clinic
Authors	Liyanage D.H.
Source	Post graduate Institute of Medicine, University of Colombo
Abstract	<p>Introduction:</p> <p>One third of the world population is infected with <i>Mycobacterium Tuberculosis</i>. Directly Observed Treatment Short Course (DOTS) has been identified as the key strategy in Tuberculosis (TB) control and prevention. Little research exists in DOTS seeking behavior in Sri Lanka. the study objectives were to identify DOTS seeking behavior and the factors affecting it during the intensive phase among new smear positive pulmonary TB (PTB) patients to assess the duration of direct observation and describe patient health service-related factors. this was a descriptive cross-sectional study. Study population was all smear positive PTB patients registered at Colombo chest clinic., who had already finished the intensive phase (IP) and were currently on the continuation phase (CP).</p> <p>Methods:</p> <p>Data were collected using interviewer-administered questionnaire. SPSS and MS_Excel were used to analyze data.</p> <p>Results:</p> <p>Of the study sample, only 86.4% commenced treatment on the day f the diagnosis. 43.3% were on daily DOTS and 65.9% swallowed drugs in front of DOT providers only on medication collection. Treatment interruption rate was 8.0%. of the defaulters, 75.8% were males, who were belonging to low income groups (75%), had an O/L or below education (86.4%), and were ≥ 35 years of age. (78.6%). A significant association existed between “DOTS seeking behavior” and age category ($p=0.027$), distance ($p=0.000$) time to visit ($p=0.000$) and selection ($p=0.000$) of DOT center and between treatment interruption and time spent at ($p=0.000$) and type of DOT center ($p=0.013$).</p> <p>Conclusions:</p> <p>TB is associated with low economic status and education. A high proportion of patients smoke and/ or consume alcohol. History of close contact and chronic ailments are common. Health workers must prioritize patient convenience and avoid marginalization to avoid treatment interruption.</p>

Microbiological and other diagnosis related research

Title	Magnetic resonance imaging findings of patients with suspected tuberculosis from a tertiary care centre in Sri Lanka
Authors	Pallewatte A.S., Wickramasinghe N.A.
Source	Ceylon Medical Journal, 61(4), 185–188.
Abstract	<p>Background:</p> <p>Spinal tuberculosis (TB) is a relatively common cause for spinal pathology in Sri Lanka and a common indication for magnetic resonance imaging (MRI).</p> <p>Objectives:</p> <p>he objective of the study was to describe the MRI imaging pattern of spinal TB in a series of patients.</p> <p>Methods:</p> <p>One hundred and nine patients with clinically confirmed spinal tuberculosis who had undergone MRI scans at the National Hospital of Sri Lanka from 2012-2016 were included in the study.</p> <p>Results:</p> <p>The commonest vertebral level of spinal TB involvement was at L4/5 level, followed by L5/S1 level. L5 vertebral body involvement was the commonest and L4 was second commonest. Single level involvement (68.8%) was commoner than multiple (31.2%) involvement or contiguous involvement. Wedging (24.8%), erosions (89%), end plate changes (96.3%), canal stenosis (77.1%), paravertebral collection (65.1%), prevertebral collection (39.4%), psoas abscess (23.9%) and epidural collection (45.9%) were noted. No significant difference was seen between females and males.</p> <p>Conclusions:</p> <p>Spinal tuberculosis commonly involves L4/5 level.</p>

Microbiological and other diagnosis related studies

Title	Real time PCR for the rapid identification and drug susceptibility of Mycobacteria present in Bronchial washings
Authors	Keerthirathne T.P., Magana-Arachchi D.N., Madegedara D., Sooriyapathirana S.S.
Source	BMC Infectious Diseases. 2016; 16: 607
Abstract	<p>Background:</p> <p>Mycobacteria have a spectrum of virulence and different susceptibilities to antibiotics. Distinguishing mycobacterial species is vital as patients with non-tuberculous mycobacterial (NTM) infections present clinical features that are similar to those of patients with tuberculosis. Thus, rapid differentiation of <i>Mycobacterium tuberculosis</i> complex from NTM is critical to administer appropriate treatment. Hence the aim of the study was to rapid identification of mycobacterial species present in bronchial washings using multiplex real time Polymerase Chain Reaction (PCR) and to determine the drug susceptibility in identified mycobacterial species.</p> <p>Methods:</p> <p>Sputum smear negative bronchoscopy specimens ($n = 150$) were collected for a period of one year, from patients attending the General Hospital Kandy, Sri Lanka. The specimens were processed with modified Petroff's method and were cultured on Löwenstein– Jensen medium. DNA, extracted from the mycobacterial isolates were subjected to a SYBR green mediated real time multiplex, PCR assay with primers specific for the <i>M. tuberculosis</i> complex, <i>M. avium</i> complex, <i>M. chelonae-M. abscessus</i> group and <i>M. fortuitum</i> group. DNA sequencing was performed for the species confirmation, by targeting the 16S rRNA gene and the drug susceptibility testing was performed for the molecularly identified isolates of <i>M. tuberculosis</i> and NTM.</p> <p>Results:</p> <p>The optimized SYBR Green mediated multiplex real-time PCR assay was able to identify the presence of genus <i>Mycobacterium</i> in 25 out of 26 AFB positive isolates, two <i>M. tuberculosis</i> complex, three <i>M. avium</i> complex and two isolates belonging to <i>M. chelonae-M. abscessus</i> group. DNA sequencing confirmed the presence of <i>M. tuberculosis</i>, <i>M. chelonae-M. abscessus</i>, <i>M. intracellulare</i>, <i>M. avium</i>, <i>Rhodococcus</i> sp. and <i>M. celatum</i>. Remaining isolates were identified as <i>Mycobacterium</i> sp. All the NTM isolates were</p>

sensitive to amikacin and seven were resistant to ciproflaxacin. Twenty-two of the NTM isolates and the isolate *Rhodococcus* was resistant to clarithromycin. The two isolates of *M. tuberculosis* were sensitive to all first line anti tuberculosis drugs.

Conclusion:

The optimized SYBR Green mediated multiplex real time PCR assay could be an effective tool for the rapid differentiation of pathogenic *M. tuberculosis* complex from the opportunistic nontuberculous mycobacteria and also it confirmed the presence of NTM in 15.3 % of the study population.

Health system research

Title	Policy Innovation and Policy Pathways: Tuberculosis Control in Sri Lanka, 1948-1990
Authors	Jones, M.
Source	Medical History Journal. 2016; 60(4): 514-53
Abstract	<p>His paper, based on World Health Organization and Sri Lankan sources, examines the attempts to control tuberculosis in Sri Lanka from independence in 1948. It focuses particularly on the attempt in 1966 to implement a World Health Organization model of community-orientated tuberculosis control that sought to establish a horizontally structured programme through the integration of control into the general health services. The objective was to create a cost- effective method of control that relied on a simple bacteriological test for case finding and for treatment at the nearest health facility that would take case detection and treatment to the rural periphery where specialist services were lacking. In the late 1940s and early 1950s, Sri Lanka had already established a specialist control programme composed of chest clinics, mass X-ray, inpatient and domiciliary treatment, and social assistance for sufferers. This programme had both reduced mortality and enhanced awareness of the disease. This paper exposes the obstacles presented in trying to impose the World Health Organization's internationally devised model onto the existing structure of tuberculosis control already operating in Sri Lanka. One significant hindrance to the WHO approach was lack of resources but, equally important, was the existing medical culture that militated against its acceptance.</p>

Health system research

Title	Survey on knowledge of tuberculosis among nurses in Central Sri Lanka
Authors	Madegedara D., Mirihella R., Nakandela S.
Source	Medical History Journal. 2016; 60(4): 514-53
Abstract	Not available

YEAR - 2015

Epidemiological research

Title	Analysis of emerging, reemerging and eliminating disease trend in Anuradhapura District.
Authors	Weerakoon H
Source	Anuradhapura Medical Journal. 2015; 9 (2): 2
Abstract	All the major NCDs shows increment during this 5-year period. In those diseases chronic kidney disease reported more than 1000 cases annually and 2014 had threefold rise of new case detection and it is the top of the leading cause of death in Anuradhapura during this 5-years period. Among communicable diseases, Leishmaniasis was increasing steadily during this five-year period and highest number of Leishmaniasis patients was reported in Anuradhapura since 2010. Detection of Tuberculosis and Leprosy patients are also increasing. There is no indigenous malaria case since 2011. NCD has already become the largest contribution to disease burden. Among communicable diseases Leishmaniasis is the main emerging health problem and leprosy is considered a reemerging disease in Anuradhapura. Malaria is considered an eliminated disease.

Epidemiological research

Title	Screening patients with tuberculosis for diabetes mellitus in Ampara, Sri Lanka
Authors	Rajapakshe W., Isaakidis P., Sagili K.D., Kumar, A.M.V., Samaraweera S., Pallewatta N., Jayakody W., Nissanka A.
Source	Public Health Action. 2015. 5; 2(2): 150-52
Abstract	Given the well-known linkage between diabetes mellitus (DM) and tuberculosis (TB), the World Health Organization recommends bidirectional screening. Here we report the first screening effort of its kind from a chest clinic in the Ampara district of Sri Lanka. Of 112 TB patients registered between January 2013 and October 2014, eight had pre-existing DM. Of those remaining, 83 (80%) underwent fasting plasma glucose testing, of whom two (2%) and 17 (20%) were found to have diabetes and impaired fasting glucose, respectively. All of these were enrolled in care. Screening TB patients for DM was found to be feasible at the district level. Further studies at the provincial/country level are required before making any decision to scale up bidirectional screening.

Title	Retrospective analysis of Demographic trends In Tuberculosis in Central Sri Lanka
Authors	Madegedara R.M.D., Sirisena P.W.M.S.S.
Source	Asian pacific Society of Respiratory Conference 2015.
Abstract	Not available

Clinical and patient behavior related research

Title	Post-Tuberculosis Obstructive Airway Disease in Pulmonary Smear-Positive Patients.
Authors	Madegedara R.M.D., Priyanka J.K.B.W.
Source	Asian pacific Society of Respiratory Conference
Abstract	Not available

Microbiology and other diagnosis related studies

Title	Genetic diversity of <i>Mycobacterium tuberculosis</i> isolates obtained from three distinct population groups, in the Central Province, Sri Lanka
Authors	Weerasekara D., Magana-Arachchi D., Medagedara D., Dissanayeke N., Thevansam V.
Source	Asian pacific journal of tropical diseases. 2015;5(5):385-92
Abstract	<p>Objective:</p> <p>To characterize the <i>Mycobacterium tuberculosis</i> (<i>M. tuberculosis</i>) isolates by spoligotyping and mycobacterial interspersed repetitive unit-variable number tandem repeat (MIRU-VNTR) typing to understand how <i>M. tuberculosis</i> strains transmit among the study population.</p> <p>Methods:</p> <p>Spoligotyping and MIRU-VNTR were used to genotype <i>M. tuberculosis</i> isolates obtained from three distinct population groups in Sri Lanka. General population suspected of having tuberculosis attending the Chest Clinic, Kandy ($n = 78$), patients having tuberculosis in Bogambara prison, Kandy ($n = 22$) and estate workers having tuberculosis in the Central Province, Sri Lanka ($n = 50$), from January 2012 to April 2014 were included in the study.</p> <p>Results:</p> <p>Among 150 isolates, a total of 19 distinct families were observed including 6 major spoligotyping-based families; East-African-Indian (39.33%), Haarlem (20%), Beijing (8.6%), Central European family T (6.5%), European family X (5.2%) and Central and Middle Eastern Asian (0.6%). Beijing strains were only identified among the general population. MANU strains were significant (36.36%) among the prisoners who had clustered with the MANU strains of the general population indicating contact cases and a possible transmission index within a particular geographical area. Haarlem 3 (34%) was the predominant strain among the estate workers. There was a close epidemiological relationship between the prisoners and the estate workers in the population.</p> <p>Conclusions:</p> <p>The first insight of 15 loci MIRU-VNTR typing in conjunction with spoligotyping in a population in Sri Lanka demonstrated the feasibility and the applicability of these techniques to differentiate strains, their heterogeneity and the predominance of several worldwide distributed spoligotypes.</p>

Microbiology and other diagnosis related studies

Title	T-SPOT. TB assay and tuberculin skin test for diagnosis and screening of tuberculosis: First report in a Sri Lankan population
Authors	Ratnatunga C.N., Thevanesam V., Medagedara D., Dissanayake N.L.A., Kumara K.G.R.A.
Source	Asian Journal of Medical Sciences. 2015; 7(1):14-19
Abstract	<p>Objective:</p> <p>Guidelines encourage evaluation of an Interferon Gamma Release Assay (IGRA) in the local setting, particularly in low/middle income, Bacillus Calmette Guerin (BCG) vaccinated populations where the assays have shown variable utility. The T-SPOT.<i>TB</i> assay and the Tuberculin Skin Test (TST) were compared in diagnosis of active tuberculosis (TB) and in contact screening in an adult Sri Lankan population.</p> <p>Materials and Methods:</p> <p>A prospective study including confirmed TB cases (n=75), controls (n=74) and close contacts of smear positive cases (n=27) was carried out at the regional Chest Clinic in Kandy district. Clinical history and investigation findings, including TST results were recorded and the T-SPOT.<i>TB</i>(Oxford Immunotec) performed.</p> <p>Results:</p> <p>The presence of diabetes and cavitation were significant predictors of T-SPOT.<i>TB</i> positivity, while TST had no significant clinical predictors. In the diagnosis of active TB, T-SPOT.<i>TB</i> sensitivity was 73.3% (95% CI, 58.6-84.6%) and a specificity was 72% (95% CI, 62.0-85.5%) while the TST sensitivity was 70.7% (95% CI, 54.2-83.3%) and specificity was 64.1% (95% CI, 49.7-76.5%). In contact investigation neither test showed an association with exposure level. Cost estimate was LKR 9400.00 per T-SPOT.<i>TB</i> test compared to LKR 200.00 per TST. A high (21%) indeterminate result rate was seen with the T-SPOT.<i>TB</i> assay.</p> <p>Conclusions:</p> <p>This study did not show any advantage in using T-SPOT.<i>TB</i> over TST in this setting.</p>

Microbiology and other diagnosis related studies

Title	Major circulating <i>Mycobacterium tuberculosis</i> stains and their Genetic diversity in three population groups, in the Central Province, Sri Lanka
Authors	Weerasekara D., Magana-Arachchi D., Medagedara D., Dissanayeke N., Thevansam V.
Source	2 nd International conference on Advances in Medical Science (ICAMS),The National University of Malaysia
Abstract	<p>Objectives:</p> <p>To characterize the <i>Mycobacterium tuberculosis</i> (MTB) isolates by spoligotyping and Mycobacterial Interspersed Repetitive Unit-Variable Number Tandem Repeat (MIRU-VNTR) typing to understand how MTB transmit among the study population.</p> <p>Methods:</p> <p>Spoligotyping and MIRU-VNTR were used to genotype the MTB isolates obtained from three distinct population groups in Sri Lanka. General population suspected of having TB attending the Chest Clinic, Kandy (n=78), patients having TB in Bogambara prison, Kandy (n=22) and estate workers having TB in the Central Province, Sri Lanka (n=50) from January 2012 to April 2014 were included in the study.</p> <p>Results:</p> <p>Among 150 isolates, a total of 19 distinct families were observed including six major spoligotyping-based families; East African Indians (39.33%), Haarlem (20%), beijin (8.6%), Central European Family T (6.5%), European family x (5.2%) and Central and Middle Eastern Asian (0.6%). Beijin strain were only identified among the general population. MANU strains were significant (36.36%) among the prisoners who had clustered with the MANU strains of the general population, indicating contact cases and a possible transmission within a particular geographical area. Haarlem 3 was the predominant strain among the estate workers. There was a close epidemiological relationship between the prisoners and the estate workers in the population studied.</p> <p>Conclusion:</p> <p>This study demonstrates the potential use and the applicability of spoligotyping in conjunction with 15 loci MIRU-VNTR in a population in Sri Lanka and its feasibility to differentiate strains, determine their heterogeneity and the predominance of several worldwide distributed spoligotypes.</p>

Health system research

Title	Audit of the awareness of Tuberculosis and its management among DOTS providers in Kandy
Authors	Madegedara R.M.D., Arampola R.M.D.
Source	Asian pacific Society of Respiratory Conference
Abstract	Not available

Case report

Title	Isolated coccygeal tuberculosis
Authors	Thilakarathne B.M.I.K., Waduge R.N., Kotakadeniya R., Madegedara D.
Source	Ceylon Medical Journal 2015; 60: 67-8.
Abstract	Not available

YEAR - 2014

Epidemiological research

Title	Socio-demographic features and clinical risk factors for active pulmonary tuberculosis: Potential criteria for TB screening in a moderate burden setting
Authors	Ratnatunga C.N., Thevanesam V., Madegedara D., Samita S.
Source	European Respiratory Society annual academic session
Abstract	Not available

Title	TB in immune compromised
Authors	Madegedara D.
Source	47 th Annual Academic Sessions, College of Chest Physicians
Abstract	Not available

Microbiological and other diagnosis related research

Title	Non-Specific Amplification with the LAMP Technique in the Diagnosis of Tuberculosis in Sri Lankan Settings
Authors	Senarath K.D., Usgodaarachchi R.B., Navaratne V., Nagahawatte A., Wijayarathna C.D., Alvitigala J., Goonasekara C.L.
Source	Journal of Tuberculosis Research, 2014, 2, 168-172
Abstract	<p>Background:</p> <p>Tuberculosis (TB) remains a burden to Sri Lanka, where the incidence of the disease has been increasing over the past decade. The lack of early and accurate detection of the disease has been the main obstacle to its control. Microscopy or the culturing of mycobacteria from clinical samples is the most commonly used TB diagnostic tools in Sri Lanka. All these methods have their own limitations. Alternative diagnostic methods are therefore of high importance.</p> <p>Objectives:</p> <p>In this study, an attempt was made to validate loop mediated isothermal amplification (LAMP), which specifically amplifies a DNA sequence very rapidly at a low cost with limited resources.</p> <p>Methods:</p> <p>Crude DNA extractions of fifty culture isolates prepared from sputum samples, which were collected from patients with suspected TB extracts, were subjected to three separate LAMP assays. One assay was specific for 16S ribosomal RNA (16S rRNA) gene in genus <i>Mycobacterium</i>, and could detect the bacteria up to the genus level. The other two contained MTB specific primers targeting <i>rimM</i> or <i>gyrB</i> gene sequences in <i>Mycobacterium tuberculosis</i> (MTB), which enabled detection up to the species level. The sensitivity and specificity of the LAMP assays in the identification of mycobacteria or MTB were compared to microscopy and culture techniques.</p> <p>Results:</p> <p>Forty three out of the 47 <i>Mycobacterium</i> cultures were <i>Mycobacterium</i>-positive for LAMP assays with universal primers indicating a sensitivity of 92% in identifying <i>Mycobacterium</i> genus. However, thirteen out of 14 culture negatives were also positive with LAMP assays, which showed a specificity of only 7% in identifying MTB. The results suggested a high percentage of false positives by LAMP assays as compared to culture. Based on the colour</p>

changing of ZYBR Green dye and gel electrophoresis of the LAMP-amplified product, the detection of a non-specific amplification, even in the absence of target DNA, was recurrently observed. The result was the same even after following strict safety operations and laboratory practices to avoid the possibility of a cross-over contamination of MTB. Interestingly, this nonspecific DNA amplicon did not respond to digestion with BsaI restriction enzyme, suggesting that the false positives are not due to the presence of MTB.

Conclusion: Under the tested conditions, the specificity of the LAMP method to identify MTB is low as compared to culture technique. Further investigations into optimizing the LAMP assay technique are required before it can be used, in its simple form, to diagnose TB in local clinical settings.

Microbiological and other diagnosis related research

Title	DNA probe based colorimetric method for detection of rifampicin resistance of <i>Mycobacterium tuberculosis</i>
Authors	Adikaram C.P., Perera J., Wijesundera S.S.
Source	Journal of Microbiological and other Microbiological and other diagnosis related Methods. 2014. 96; 92-98
Abstract	<p>Introduction:</p> <p>Rifampicin resistance of <i>Mycobacterium tuberculosis</i> is due to the occurrence of point mutations of the <i>rpoB</i> gene and the site of mutations vary geographically. Commercialized molecular based methods are not able to comprehensively detect rifampicin resistance as they target a limited number of gene mutations which are thought to be common. The aim of the study was to establish a low-cost DNA probe based colorimetric method that can be customized for detection of rifampicin resistance of <i>M. tuberculosis</i>.</p> <p>Methods:</p> <p>Enzyme-linked oligosorbent assay (ELOSAs) was developed for the detection of polymerase chain reaction (PCR) amplified fragments of <i>rpoB</i> gene of <i>M. tuberculosis</i> DNA on microtiter plates. Forty-two <i>M. tuberculosis</i> isolates (rifampicin resistant and susceptible isolates identified by agar proportion method) were used for developing and validating the assay. The point mutations of resistant isolates had been previously determined by DNA sequencing. Two fragments of <i>rpoB</i> gene were labeled with digoxigenin by PCR. The amplified products were hybridized with selected allele specific probes for three mutations and its wild types (six probes) which were captured onto streptavidin coated microtiter plates and detected by color development.</p> <p>Results:</p> <p>Both sensitivity and specificity of all probes were $\geq 96\%$ and there was excellent discrimination (area under the curve (AUC)>0.9) between rifampicin susceptible cases and resistant cases. The probe-based colorimetric assay (PCR-ELOSAs) developed in this study showed good agreement with reference mutations that were confirmed by DNA sequencing. In conclusion, PCR-ELOSAs is a reliable and economical assay that can be customized for detection of rifampicin resistance.</p>

Microbiological and other diagnosis related research

Title **Effect of number of sputum samples examined and sputum processing on the efficacy of smear microscopy in the diagnosis of pulmonary tuberculosis**

Authors Ratnatunga C.N., Madegedara D., Kumara A., Thevanesam V.

Source Annual Academic Session, Kandy Society of Medicine

Abstract Not available

Title **Identification and characterization of pre dominant mycobacterium tuberculosis strains using mycobacterial interspersed repetitive unit variable number tandem repeat typing**

Authors Madegedara R.M.D., Weerasekara D.K. et. al.

Source 3rd Annual Conference, Sri Lanka Society for Microbiologists

Abstract Not available

Title **Sensitive identification of mycobacterial, species using PCR RFLP on bronchial washings**

Authors Madegedara R.M.D, Weerasekara D.K. et. al.

Source 2nd international symposium, Sri Lankan academy of young scientists.

Abstract Not available

Title **A case control comparison of the Mantoux test and a commercial IGRA in adult**

Authors Madegedara D., Ranathunga C.N. et. al.

Source Asia pacific Respirology Conference

Abstract Not available

Microbiological and other diagnosis related research

Title	Polymerase chain reaction-restriction fragment length polymorphism analysis for the differentiation of mycobacterial species in bronchial washings
Authors	Weerasekara D.K., Magana-Arachchi D.N., Madegedara D., Dissanayake N.
Source	Ceylon Medical Journal 2014; 59: 79-83.
Abstract	<p>Objectives: To identify mycobacterial species in bronchoscopy specimens with a simple assay based on polymerase chain reaction and restriction enzyme digestion.</p> <p>Methods: Sputum smear negative, bronchoscopy specimens (n=202) were collected from patients attending the Central Chest Clinic and the Teaching Hospital Kandy, Sri Lanka. DNA, extracted from the mycobacterial cultures (n=43) were amplified using known mycobacterial specific Sp1 and Sp2 primers. Resulting products were digested with HaeIII and CfoI restriction enzymes and DNA sequencing was performed for the selected isolates.</p> <p>Results: Among the culture positive patients, PCR was able to distinguish 12 rapid growers (~280-320 bp), 15 slow (~200-220 bp) and 10 patients having both rapid and slow and one having two rapid growing mycobacteria. DNA Sequence analysis revealed the presence of <i>M. intracellulare</i> (n=3), <i>M. phocaicum</i> (n=7), <i>M. tuberculosis</i> complex (n=13), <i>Nocardia</i> (n=2), <i>M. smegmatis</i> (n=1) and <i>Mycobacterium</i> sp (n=12). The identified organisms got digested upon exposure to HaeIII restriction enzyme whereas when exposed to CfoI, only <i>M. phocaicum</i> yielded 80 bp and 230 bp DNA fragments while others remained undigested. Consequently, six patients were confirmed to have <i>M. tuberculosis</i> complex, seven had both <i>M. tuberculosis</i> and non-tuberculosis bacteria (NTM) in their bronchoscopy specimens while 21 had NTM.</p> <p>Conclusions: Optimized PCR-RFLP assay was able to differentiate <i>M. tuberculosis</i> complex bacteria from non-tuberculosis mycobacteria and <i>Nocardia</i>. Molecular analysis confirmed the presence of NTM in bronchoscopy specimens and according to the study a significant proportion of patients (13% to 14%) of the study population were found to have NTM in their bronchial washings.</p>

Microbiological and other diagnosis related research

Title	Diagnostic value of same day sputum smears in diagnosing pulmonary tuberculosis instead of three standard samples
Authors	Madegedara R.M.D., Wijethilake B.H.W.M.G.T.
Source	Asia pacific Respiratory Conference
Abstract	Not available

Health system research

Title	Knowledge, attitude, practices and associated factors in relation to provision of care for pulmonary tuberculosis patients among nursing officers in Teaching Hospital Kurunegala.
Authors	Rajapaksha R.M.P.T.D.
Source	Post Graduate Institute of Medicine, University of Colombo.
Abstract	<p>Introduction:</p> <p>Tuberculosis (TB) is one of the major killers worldwide among infectious agents, second only to HIV/AIDS. In Sri Lanka, around 9000 new cases are notified annually and around 50% of them are sputum positive. Stigma related to TB is a worldwide phenomenon interfering with treatment and control. Nursing officers are one of the main sources of health education and emotional support in medical settings. Their knowledge, attitudes and practices directly affect the quality of care for TB patients.</p> <p>Methods:</p> <p>This descriptive cross-sectional study was carried out among all nursing officers attached to Teaching Hospital, Kurunegala. Those who could not read and write in Sinhala/English and those on long term leave were excluded. A sample of 389 nursing officers was selected through simple random sampling. Data was collected through a pre-tested, self-administered questionnaire. Knowledge, attitudes and practices were described in frequencies and percentages. Total knowledge and attitudinal scores were calculated and categorized as good or poor. These categories as well as specific knowledge, attitudes and practices were cross analyzed with selected associated factors. Statistical significance was tested at 95% confidence levels using Chi square test.</p> <p>Results:</p> <p>Majority of the nursing officers were females (95.9%). Most had work experience of 5- 14 years (83.4%). Only 15.9% had "high exposure" to TB by working in chest units. Almost half (48.1%) had never participated in in-service programs on TB. Knowledge on the correct causative factor, mode of transmission, symptoms, best investigation to diagnose and effects of defaulting was good. But the correct period of infectivity of a patient on regular treatment was identified by only 60.9%. Heavy alcoholism as a risk factor was not identified by 63% and 89.2% misidentified Bronchial Asthma. Majority (79.7%) were unaware that hand washing does not protect against TB.</p>

Knowledge on safe disposal of sputum and effects of BCG vaccine were comparatively low. Overall attitudes of most (53%) were good. Yet majority (77.7%) believed "most TB patients do not care about others getting infected through them". Practices of proper referral of suspected TB patients and DOTS provision was favor majority (71.2% and 94.3% respectively). Only 57.3% maintained confidentiality of TB pa within wards. There was a statistically significant ($p=0.003$) association between good levels of know and better attitudes. Participants with "high exposure" displayed a highly significant association ($p=0.000$) with good attitudes but not with good knowledge ($p>0.05$). They also had better attitudes than others in most attitudinal statements explored and for four statements, the difference was statistically significant. The knowledge on period of infectivity of a patient on regular treatment had a significant association with good attitudes ($p=0.000$).

Maintaining the confidentiality of TB patients had a highly significant association with attitudes ($p=0.000$) but not with good knowledge ($p>0.05$).

Conclusions:

Both knowledge and attitudes of nursing officers in providing care for pulmonary TB patients was satisfactory. Good attitudes were significantly associated with good knowledge, but were specific deficiencies in knowledge and attitudes that may lead to poor practices. There should be regular in-service programs targeting the evidence-based knowledge gaps and negative attitudes. More exposure to TB patients within their training may aid improving attitudes toward TB patient.

Health system research

Title	Management of previously treated tuberculosis patients in Kalutara district, Sri Lanka: how are we faring?
Authors	Abeygunawardena S.C., Sharath B.N., Van den Bergh R., Naik B., Pallewatte N., Masaima M. N. N.
Source	Public Health Action. 2014; 4 (2): 105-09
Abstract	<p>Setting: District Chest Clinic, Kalutara, Sri Lanka.</p> <p>Objective: To determine the coverage of culture and drug susceptibility testing (CDST), delays in CDST, treatment initiation, obtaining CDST results and treatment outcomes of previously treated tuberculosis (TB) patients.</p> <p>Design: Retrospective cohort study involving review of records and reports. All previously treated TB patients from January 2008 to June 2013 were included in the study.</p> <p>Results: Of 160 patients, 126 (79%) samples were sent for CDST; 79 (63%) were culture-positive and no multi-drug-resistant (MDR) TB cases were reported. Respectively 9% and 15% of patients experienced a delay in sending samples (median delay 21 days) and receiving CDST reports (median delay 71 days), while 20% experienced delays in initiating the retreatment regimen (median delay 11.5 days). The cohort recorded an 82% treatment success rate.</p> <p>Conclusion: Of all retreatment patients, only 79% were tested for CDST and there were sizeable delays in sample transportation and treatment initiation. Possible ways forward to strengthen the programme are discussed.</p>

Health system research

Title **Lag period of diagnosing and starting treatment for pulmonary tuberculosis patients**

Authors Madegedara D., Nandadeva D., Dhanasekara S., Kumara H.

Source Annual Academic Sessions, European Respiratory Society

Abstract Not available

Title **Cross sectional screening of health care workers (HCW) at a regional chest clinic an interferon gamma release assay (IGRA): first report from Sri Lanka**

Authors Madegedara D., Ratnatunga C., Thevanesam V., Nandadeva D., Kumara A.

Source Annual Academic Sessions, European Respiratory Society

Abstract Not available

Title **Audit on treatment interrupters in tuberculosis patients in the district of Kandy**

Authors Madegedara D., Samankantha S., Nandadeva D., Samarabandu S., Amarasinghe K., Egodawela N.

Source Asia pacific Respiratory Conference

Abstract Not available

Title **Revisiting Mantoux testing in health care workers and interpretation of late reading of the Mantoux test**

Authors Madegedara D., Samankantha S., Nandadeva D., Wirasinghe C., Egodawela N.

Source Asia pacific Respiratory Conference

Abstract Not available

Case reports

Title A child presenting with tuberculous spondylitis in a single third cervical vertebra

Authors Senanayake M.P., Karunaratne I.

Source Journal of Medical Case Reports. 2014. 8; 1: 284

Abstract Introduction:

Despite a global reduction in tuberculosis, extrapulmonary tuberculosis is increasing. Spinal tuberculosis remains the commonest form of skeletal tuberculosis. Cervical spine involvement is rare but is the most dangerous form because of diagnostic difficulties and serious residual disability. We report a child who had single vertebral involvement of her third cervical vertebra which is extremely rare. To the best of our knowledge isolated third cervical vertebra involvement in a child by tuberculosis has not been reported previously. Difficulties in obtaining material for histology and bacterial culture from this critical location and how the diagnosis was reached despite these challenges are highlighted.

Case presentation:

A 10-year-old Sinhalese girl developed painful torticollis and 'cries during sleep'. She had received Bacillus Calmette-Guérin vaccine at birth, was well nourished, and had no loss of weight, anorexia or contact with tuberculosis. A plain radiograph of her neck showed a collapsed third cervical vertebra with no disc involvement. Magnetic resonance imaging confirmed isolated destruction of third cervical vertebra associated with prevertebral soft tissue swelling indenting the thecal sac without cord compression. Her chest radiograph was normal. There was peripheral lymphocytosis, elevated erythrocyte sedimentation rate, negative tuberculin (Mantoux) test, and negative QuantiFERON®-TB GoldIn-Tube assay. Invasive procedures to obtain tissue for histology, smear or culture were perceived by parents as dangerous due to surrounding critical structures and consent was denied. The differential diagnosis included spinal tuberculosis and unifocal Langerhan cell histiocytosis. Nocturnal symptoms and the prevertebral collection of soft tissue (cold abscess) were characteristic of tuberculosis, and nonspecific findings of elevated erythrocyte sedimentation rate and lymphocytosis supported this diagnosis. An incidental finding of a calcified hepatic nodule when evaluating for multifocal histiocytosis was presumed to be tuberculous because schistosomiasis and visceral leishmaniasis were extremely rare in her country of residence, Sri Lanka. Empirical treatment with a 12-month course of antitubercular therapy resulted in clinical recovery and radiological healing. There was no kyphosis or neurological sequel.

This report highlights to clinicians the value of a high index of suspicion and careful history taking in spinal tuberculosis; and how a combination of nonspecific findings helped reach a clinic-radiological diagnosis.

Oration

Title	Evidence based approach in management of tuberculosis: A Sri Lankan experience
Authors	Madegedara R.M.D.
Source	Bibile Memorial oration, Kandy Society of Medicine
Abstract	Not available

YEAR - 2013

Epidemiological research

Title **Annual risk of tuberculosis infection in Sri Lanka: a low prevalent country with a high BCG vaccination coverage in the South-East Asia Region**

Authors Wijesinghe P.R., Palihawadana P. De Alwis S., Samaraweera S.

Source WHO South-East Asia Journal of Public Health. 2013; 2 (1): 34

Abstract Introduction:

Despite its simplicity, efficiency and reliability, Sri Lanka has not used the Annual Risk of Tuberculosis Infection (ARTI) to assess the prevalence and efficiency of tuberculosis (TB) control. Hence, a national tuberculin survey was conducted to estimate the ARTI.

Methods:

A school-based, cross-sectional tuberculin survey of 4352 children aged 10 years irrespective of their BCG vaccination or scar status was conducted. The sample was selected from urban, rural and estate strata using two-stage cluster sampling technique. In the first stage, sectors representing three strata were selected and, in the second stage, participants were selected from 120 clusters. Using the mode of the tuberculin reaction sizes (15 mm) and the mirror-image technique, the prevalence and the ARTI were estimated.

Results:

The prevalence of TB estimated for urban, rural and estate sectors were 13.9%, 2.2% and 2.3%, respectively. The national estimate of the prevalence of TB was 4.2% (95% CI = 1.7-7.2%). ARTI for the urban, rural and estate sectors were 1.4%, 0.2% and 0.2%, respectively, and the national estimate was 0.4% (95% CI = 0.2-0.7%). The estimated annual burden of newly infected or re-infected TB cases with the potential of developing into the active disease (400/100 000 population) was nearly 10-fold higher than the national new case detection rate (48/100 000 population).

Conclusion:

The national estimate of ARTI was lower than the estimates for many developing countries. The high-estimated risk for the urban sector reflected the need for intensified, sector-specific focus on TB control activities. This underscores the need to strengthen case detection. Repeat surveys are essential to determine the annual decline rate of infection.

Epidemiological research

Title	Tuberculous meningitis in adults: a prospective study at a tertiary referral centre in Sri Lanka
Authors	Gunawardhana A.C.U., Somaratne S.C., Fernando M.A.H., Gunaratne P.S.
Source	Ceylon Medical Journal. 2013; 58 (1); 21
Abstract	<p>Introduction:</p> <p>Central nervous system tuberculosis is the most severe form of extrapulmonary TB and it is associated with a substantial morbidity and mortality.</p> <p>Objectives:</p> <p>To describe the demographic profile, clinical features, laboratory and imaging results of a cohort of adult patients with TBM (Tuberculous meningitis).</p> <p>Methods:</p> <p>This study encompasses a prospective analysis of all adult cases of TBM diagnosed from 1st January 2010 to 31st December 2011 in the Neurology unit 2, National Hospital of Sri Lanka. Consensus case definitions for TBM were used for clinical case classification and patients were given a definite, probable, or possible tuberculous meningitis status accordingly.</p> <p>Results:</p> <p>A total of 89 patients fulfilled the established diagnostic criteria for TBM and there were 22 definitive cases, 46 probable cases and 21 possible cases. The mean age of the series was 44 years and 56 (63%) were males. TBM presented with fever in 64 (71%), general constitutional symptoms in 61 (68%), headache in 53 (59%), and diminished level of consciousness in 36 (40%) patients. CSF biochemistry revealed elevated protein in all patients. MRI brain showed meningeal enhancement in 73 (82%). Twenty-four (27%) died during hospitalisation and out of 65 who survived 44 (49%) had residual sequelae at the time of discharge.</p> <p>Conclusions:</p> <p>MRI evidence and biochemical analysis of CSF are still the main supportive diagnostic modalities. TBM is a relatively common but difficult to diagnose disease, which results in significant morbidity and mortality.</p>

Epidemiological research

Title	Spinal Tuberculosis: A study of the disease pattern, diagnosis and outcome of medical management in Sri Lanka
Authors	Yasarathna B.M.G.D., Wijesinghe S.N.R., Madegedara R.M.D.
Source	Indian Journal of Tuberculosis. 2013; 60:208-216
Abstract	Not available

Clinical and patient behaviour studies

Title **Characteristics and outcomes of tuberculosis patients who fail to smear convert at two months in Sri Lanka**

Authors Jayakody W., Harries A.D., Malhotra S., de Alwis S., Samaraweera S., Pallewatta N.

Source Public Health Action. 2013; 3 (1): 26-30

Abstract Setting:
Five districts in Sri Lanka.

Objectives:

To determine: 1) the proportion of sputum smear-positive pulmonary tuberculosis (PTB) cases who failed to smear convert at 2 months, 2) their management, and 3) whether baseline characteristics and final treatment outcomes were different from those who did smear convert.

Design:

Cross-sectional retrospective review of medical files, tuberculosis (TB) registers and TB treatment records of new smear-positive PTB patients registered from January to December 2010.

Results:

Of 925 patients, 840 were available to submit sputum at 2 months, of whom 137 (16%) were smear-positive. Baseline sputum smears showing 3+ acid-fast bacilli and missing doses of anti-tuberculosis drugs during the initial phase of treatment were significantly associated with being smear-positive at 2 months. Management was poor: of 137 patients, 46 (34%) submitted sputum for culture and drug susceptibility testing and *Mycobacterium tuberculosis* was cultured in six cases; 120 (88%) received a 1-month extension of the initial phase, and of the 30 patients still smear-positive at 3 months there were no culture results available. Final treatment outcomes were similar, regardless of smear conversion at 2 or 3 months.

Conclusion:

Certain characteristics were risk factors for failure to smear convert at 2 months. However, treatment outcomes for all patients were good. These findings have implications for the modification of national programme recommendations.

Microbiology and other diagnosis related studies

Title	Identification of Mycobacterium and Nocardia with PCR-RELP assay
Authors	Weerasekara D.K., Magana-Arachchi D., Madegedara D.
Source	Annual conference and scientific session of Sri Lanka Society of Microbiologist, 2013.
Abstract	Not available

Title	Rapid detection of Mycobacterium tuberculosis strains using PCR Assay
Authors	Magana-Arachchi D., Ambalavanar V., Mahesweran S., Weerasekara D.K., Madegedara D.,
Source	4 TH International Symposium on Molecular Medicine and Drug Research, Pakistan.
Abstract	Not available

Treatment related studies

Title	Rapid detection of rifampicin and isoniazid resistance in mycobacterium tuberculosis culture isolates: an evaluation of a line probe assay.
Authors	Francis V.R.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Background:</p> <p>Molecular methods allow rapid detection of drug resistance in <i>M.tuberculosis</i>. One such commercially available method is the Line Probe Assay (LPA). The aim of this study was to assess the performance of a commercial line probe assay the Geno Type MTBDR plus test (Hain Life science GmbH, Nehren, Germany) for rapid detection of rifampicin and isoniazid resistance in Sri Lankan <i>M.tuberculosis</i> culture isolates.</p> <p>Methods:</p> <p>A total of 74 <i>M.tuberculosis</i> culture isolates, consist of 17 multi-drug resistant (MDR), 4 rifampicin mono-resistant, 15 isoniazid mono-resistant and 38 susceptible strains, were tested with the GenoType MTBDR plustest and the performance was compared with the conventional phenotypic drug susceptibility testing using the proportion method.</p> <p>Results:</p> <p>All seventy-four strains tested with the Geno Type MTBDR plus test gave interpretable results. The sensitivity of the assay in this study was 90.5%, 90.6% and 88.2% and the specificity was 98.1%, 100% and 98.2% in detecting rifampicin resistance, isoniazid resistance and multi-drug resistance (MDR) respectively.</p> <p>Conclusion:</p> <p>The Geno Type MTBDR plus test is very user friendly and is easy to perform. It is highly specific and sensitive in detecting rifampicin resistance, isoniazid resistance and multidrug resistance. As our MDR-TB rate is low, we recommend performing this assay on culture isolates or on direct specimen of high-risk patients who can harbour MDR-TB. The conventional DST should be performed routinely.</p>

Case reports

Title	An isolated tuberculous liver abscess in a non-immunocompromised patient.
Authors	Mendis A.W.Y., de Silva D., Ginige W.D., Prabhamalee A., Parameswaran P., Hewage, S.K., Banagala K., Sarath A.
Source	Journal of the College of Physicians and Surgeons--Pakistan: JCPSP. 2013; 23 (9): 667-9
Abstract	A liver abscess is an uncommon extra-pulmonary manifestation of a common disease that is tuberculosis. It usually follows primary infection in the lung or the gut. Tuberculous liver abscess in a non-immunocompromised patient in the absence of primary disease elsewhere is an extremely rare occurrence. We report here a case of a tuberculous liver abscess in a 30 years old female who presented a considerable diagnostic challenge.

Title	A case series of TB lymphadenitis (TBL) with outcome measures
Authors	Weerakoon M.P., Yasaratne B.M.G.D., Nandadeva D., Kumara S.K.G.P.H., Madegedara R.M.D.
Source	Annual Academic Sessions Kandy Society of Medicine
Abstract	Not available

YEAR - 2012

Epidemiological research

Title	Melioidosis mimicking tuberculosis- are we missing the diagnosis?
Authors	Madegedara D., Weerasinge C.
Source	Respire. 2012; 4(1): 9-11.
Abstract	Not available

Microbiological and other diagnosis related research

Title Identification of non-tuberculous mycobacteria isolated from patients at Teaching Hospital, Kandy and Peradeniya

Authors Senanayake N.P.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Introduction:

Mycobacteria species other than members of *Mycobacterium tuberculosis* complex are called non-tuberculous mycobacteria (NTM). NTM are widely distributed in nature and human disease is believed to be acquired from environmental exposure. Non-tuberculous mycobacteria are usually opportunistic pathogens occurring in cases of general or local immuno-suppression. The incidence of mycobacterial diseases caused by non-tuberculous mycobacteria has dramatically increased with the outbreak of Acquired Immune Deficiency Syndrome (AIDS). In recent years, non-tuberculous mycobacteria (NTM) have emerged as an important cause of opportunistic nosocomial infections. At present little is known about the role of NTM infections in Sri Lanka. The aim of the study is to identify NTM in patients presenting with pulmonary and extra pulmonary diseases at Teaching Hospitals, Kandy and Peradeniya.

Methods:

Forty mycobacterial clinical isolates obtained from samples of sputum, urine, broncho-alveolar lavage and peritoneal fluids were analyzed initially by growth characteristics followed by biochemical and molecular methods for the presence of non-tuberculous mycobacteria. Five main growth characteristics were analyzed, which included rate of growth, growth-temperature relationship, production of pigment, colony morphology and growth on McConkey agar. Secondly these mycobacterial clinical isolates were subjected to Multiplex-PCR for the rapid identification of non-tuberculous mycobacteria. Finally, speciation of these NTM clinical isolates were done by performing biochemical tests which included Tween 80 hydrolysis, sodium chloride tolerance, tellurite reduction, iron uptake, urease test, catalase test, nitrate reduction, pyrazinamidase test and niacin accumulation. 248

Results:

Of the 40 mycobacterial clinical isolates 10 isolates were identified as nontuberculous mycobacteria of which eight species of NTM were identified. These 8 species were obtained from sterile as well as non-sterile clinical samples. The identified species were *M.scrofulaceum*, *M.haemophilum*, *M.chelonae*, *M.kansasii* (2 isolates), *M.phlei*, *M.flavescens*, *M.gastri* (2 isolates) and *M. vaccae*.

Conclusion:

Non-tuberculous mycobacteria were isolated from a wide range of sterile and non-sterile clinical samples and contributed to 25% of the mycobacterial clinical isolates. The results of culture characteristics were compatible with the molecular identification differentiating *Mycobacterium tuberculosis* from non-tuberculous mycobacterial strains. *M.kansasii* and *M.gastri* were the most common NTM isolated from clinical isolates. Since the identification of mycobacterial clinical isolates up to species level is of prime importance in accurate diagnosis and treatment of infections caused by these organisms, Mycobacterial laboratory services need to be upgraded to meet this need.

Microbiological and other diagnosis related research

Title	Safety and benefit of adjunctive systemic corticosteroid therapy in the management of severe smear positive pulmonary tuberculosis: An interim analysis of randomized controlled trial
Authors	Madegedara R.M.D., Yasarithna B.M.G.D., Kulathunga K.M.C., Ranabahu C.S., Wijesinghe S.N.R., Alwis S.
Source	Annual Academic Sessions Kandy Society of Medicine 2012
Abstract	Not available

Treatment related research

Title	Identification of mutations associated with drug resistant mycobacterium tuberculosis strains molecular method
Authors	Maheswaran S., Magana Arachchi D.N., Madegedara R.M.D.
Source	68 th annual session of Sri Lanka association for the advancement of science, 2012.
Abstract	Not available

YEAR - 2011

Epidemiological studies

Title	Tuberculosis of the spine; demography, Clinical characteristics and treatment outcome.
Authors	Weerawardhana K.S.S., Yasarathne B.M.G.D., Bandara J.M.P.R., Madegedara R.M.D.
Source	Annual Academic Sessions of Kandy Society of Medicine 2011
Abstract	Not available

Title	Retrospective Analysis of Tuberculosis Mortality Among TB Patients Who Were Registered in Chest Clinic Kandy
Authors	Wejerathna P., Monaragala L., Madegedara D.
Source	Annual Academic Sessions of Kandy Society of Medicine 2011
Abstract	Not available

Title	An analysis of mortality among patients with tuberculosis (TB) in Sri Lanka
Authors	Madegedara D., Wijerathna P., Monaragala L., Yasarathna D., Dissanayake N.
Source	Thematic poster presentation. European Respiratory Society Congress: 2011, Amsterdam.
Abstract	Not available

Microbiological and other diagnosis related research

Title	Molecular characterization of Mycobacterium tuberculosis isolates from Kandy, Sri Lanka
Authors	Magana-Arachchi D.N., Medagedara D., Thevanesam V.
Source	Asian Pacific Journal of Tropical Disease. 2011; 1 (3): 181-86
Abstract	<p>Objective:</p> <p>To determine tuberculosis epidemiology in Kandy, Sri Lanka.</p> <p>Methods:</p> <p>IS6110 RFLP and spoligotyping analyses were performed on 100 Mycobacterium tuberculosis (M. tuberculosis) clinical isolates from Kandy district, Sri Lanka. RFLP hybridization patterns (n=73) were analysed by the software GeneDirectory. Spoligotypes (n=110) were compared with the international database SPOTCLUST.</p> <p>Results:</p> <p>The majority of the circulating M. tuberculosis strains in Kandy belong to a single family, but the degree of IS6110 DNA polymorphism was high. 71 (80%) of the strains displayed distinct RFLP patterns and 63 (71%) were clustered into one main family. Within the family three isolates were grouped into one cluster while the rest isolates were grouped into one. The copy number varied from 1 to 17 while single copy strains were predominant (12) and 15 lacked the IS6110 element. Spoligotyping revealed a total of 24 families including the 9 major families. Strains were distributed among all the three principle genetic groups PGG1, PGG2, and PGG3. Except for two strains, the rest were not defined in the latest spoligotype database SpolDB4/SITVIT.</p> <p>Conclusions:</p> <p>The first study of RFLP and spoligotyping of M. tuberculosis strains in Sri Lanka demonstrates the applicability of the genetic marker IS6110 to differentiate strains and the heterogeneity and predominance of several worldwide-distributed spoligotypes.</p>

Microbiological and other diagnosis related research

Title	Radiological features of spinal tuberculosis with a limited clinical correlation: a descriptive case series.
Authors	Yasaratne B.M.G.D., Weerawardhana K.S.S., Wijesinghe S.N.R., Madegedara R.M.D.
Source	Annual Academic Sessions of Kandy Society of Medicine 2011
Abstract	Not available

Title	An Analysis of Specimens Sent for Mycobacterial Studies to the Culture lab, Chest Clinic, Bogambara, Kandy
Authors	Dissanayake N.L.A., Kulathunga K.M.C., Medagedara D.
Source	Annual Academic Sessions of Kandy Society of Medicine 2011
Abstract	Not available

Title	Detection of Non-Tuberculosis Mycobacteria (NTM) in Bronchoscopy Samples
Authors	Dissanayake N.L.A., Medagedara D., Karunarathne U., Prematilake C., D.N Magana-Arachchi D.N.
Source	Annual Academic Sessions of Kandy Society of Medicine 2011
Abstract	Not available

Title	Restriction Fragment Length Polymorphism (RFLP) on Mycobacterium Tuberculosis Strains Isolated from Patients Attending the Central Chest Clinic Kandy
Authors	Magana-Arachchi D.N., de Silva B.A.C., Medegedara D., Thevanesam V.
Source	Annual Academic Sessions of Kandy Society of Medicine 2011
Abstract	Not available

Microbiological and other diagnosis related research

Title **Molecular characterization of Mycobacterium tuberculosis isolates from Kandy, Sri Lanka**

Authors Magana-Arachchi D.N., Madegedara R.M.D., Thevanesan V.

Source Asian Pacific Journal of Tropical Disease 2011; 1(3):181-6.

Abstract Objective:
To determine tuberculosis epidemiology in Kandy, Sri Lanka.

Methods:

IS6110 RFLP and spoligotyping analyses were performed on 100 Mycobacterium tuberculosis (M.tuberculosis) clinical isolates from Kandy district, Sri Lanka. RFLP hybridization patterns (n=73) were analyzed by the software GeneDirectory. Spoligotypes (n=110) were compared with the international database.

Results:

The majority of the circulating M.tuberculosis strains in Kandy belong to a single family, but the degree of IS6110 DNA polymorphism was high. 71 (80%) of the strains displayed distinct RFLP patterns and 63 (71%) were clustered into one main family. Within the family, three isolates were grouped into one cluster while the rest isolates were grouped into one. The copy number varied from 1 to 17 while single copy strains were predominant (12) and 15 lacked the IS6110 element. Spoligotyping revealed a total of 24 families including the 9 major families. Strains were distributed among all the three principle genetic groups PGG1, PGG2 and PGG3. Except for two strains, the rest were not defined in the latest spoligotype database SpolDB4/ SITVIT.

Conclusions:

The first study of RFLP and spoligotyping of M. tuberculosis strains in Sri Lanka demonstrates the applicability of the genetic marker IS6110 to differentiate strains and the heterogeneity and predominance of several worldwide-distributed spoligotypes.

Microbiological and other diagnosis related research

Title **High burden of rapidly growing non-tuberculosis mycobacteria in patients with respiratory disease undergoing elective bronchoscopy**

Authors N Dissanayake, D Madegedara, D Magana Arachchi, U Karunarathna, D Yasarathna, C De Silva, C Kulathunga, S Nakandala, P Wijerathna, C Wirasinghe

Source Thematic Poster, European Respiratory Society Congress: 2011, Amsterdam.

Abstract Not available

Title **Spoligotyping of mycobacterium tuberculosis strains isolated from patients attending the central Chest Clinic Kandy**

Authors Magana-Arachchi D.N., de Silva B.A.C., Medegedara D., Thevanesam V.

Source Annual Academic Sessions of Kandy Society of Medicine 2011

Abstract Not available

Treatment related research

Title	Practicing empirical anti-tuberculosis treatment (ATT) in suspected spinal tuberculosis (STB): Follow up of 33 cases from Sri Lanka, a limited resource setting with an intermediate disease burden.
Authors	D.Yasarathna, D Madegedara, K Weerawardhana, P Wijerathna, K Nishantha, S Nakandala, N.Dissanayake, C Wirasinghe
Source	Thematic Poster, European Respiratory Society Congress: 2011, Amsterdam.
Abstract	Not available

Health system research

Title	Do doctors know enough on tuberculosis? A survey among government medical officers in the curative health sector.
Authors	Madegedara R.M.D., Yasaratne B.M.G.D.
Source	SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS. 2011; VIII (2): 1-5.
Abstract	Not available

Case reports

Title **A case of isolated splenic tuberculosis; a rare presentation in a non- HIV positive adult male**

Authors Yasarathna BMGD, wijerathna AACP, Madegedara RMD

Source Annual Academic Session of the Association of Pulmonologists - 2011

Abstract Not available

Title **Secondary Thrombocytopenia: a Rare Presenting Manifestation of Primary Tuberculosis**

Authors Yasaratne B.M.G.D., Wijerathne P., Madegedara R.M.D.

Source Annual Academic Sessions of Kandy Society of Medicine - 2011

Abstract Not available

YEAR - 2010

Epidemiological studies

Title	Tuberculosis of skin; a brief review.
Authors	Yasarathna D., Madegedara D.
Source	Journal of Ceylon College of Physicians. 2010;41(2):83-89.
Abstract	Not available

Clinical and patient behaviour studies

Title **Pulmonary tuberculosis knowledge, attitudes and practices among newly diagnosed patients in Sabaragamuwa province**

Authors Gunathilake K.A.M.P.

Source Post graduate institute of Medicine, University of Colombo

Abstract Background:
Tuberculosis (TB) is re-emerging and fast becoming an alarming public health problem in Sri Lanka affecting the economically active age group. Hence much concerted efforts are needed to control the Tuberculosis epidemic including appropriate management of patients. Non-compliance to drug regimens, lack of awareness regarding preventive measures against disease transmission, mal-adaptive behaviors such as smoking and alcoholism are major issues arising in controlling TB.

Objectives:

This study aimed to describe knowledge, attitudes and practices regarding pulmonary tuberculosis among newly diagnosed patients in Sabaragamuwa Province.

Methods:

A cross sectional descriptive study was carried out on 279 newly diagnosed patients with smear positive pulmonary tuberculosis who are over 15 years of age and been on anti TB drugs for at least 2 weeks and less than 6 months. All newly diagnosed patients with smear positive pulmonary tuberculosis attending to District Chest clinics Rathnapura and Kegalle during the study period were recruited. Subjects were assessed using a pretested interviewer administered questionnaire. Knowledge, attitudes, and practices were described in frequencies and percentages. Overall knowledge score and a favorable attitude score was calculated. Overall knowledge, favorable attitudes and safe practices were compared with selected socio-demographic factors using Chi square test and statistical significance was tested at 95% confidence levels.

Results:

The mean age of the study population was 43.8 years ranging from 15 to 74 years and a greater proportion was represented by males (69.2%) and Sinhalese (79%). Majority (30.1%) have been educated up to grade 6-10 and a greater proportion belonged to lower social class IV (40.9%) and V (42.7%).

Mean knowledge score was 58.6% (SD=10.6) and nearly seventy percent of the participants had an average level of knowledge (mean \pm 1 SD). Thirteen percent of the patients had poor knowledge. Patients lacked knowledge on mode of disease transmission (36.2%), cause of TB (61.3%), environment most conducive for germ causing TB to live (85.3%), side effects (64.6%), and consequences of discontinuation of drugs (79.6%). Majority had good knowledge on curability (99.3%) and duration of treatments (96.4%). Nearly fifty six percent of the patients had scored poorly in attitudinal questions. Non-disclosure of TB to others (50.5%), negative influence on marriage (45.9%), avoiding social gatherings due to stigma (60.9%), belief that 98

sharing food spreads the disease to others (75.6%), considered fate/ 'karma' as the reason for getting TB (57%) were the unfavorable attitudes held by the majority. Thirty eight percent were covering face while coughing and only 11.8% practiced safe sputum disposal. A considerable proportion continued to smoke (31.6%) and consumed alcohol (15%). Overall knowledge was significantly associated with age, sex and level of education ($p<0.05$). Although poor knowledge was associated with low social classes and non-Sinhalese, this was not statistically significant. There was no statistically significant association between favorable attitudes and age, sex, level of education, ethnicity, and social class. Safe practices were significantly associated with age and not associated with sex, level of education, ethnicity and social class. Overall knowledge was not significantly associated with safe practices. Health care providers had done a commendable job in the process of delivering some important health messages such as complete curability with proper treatment, duration of treatment, and drug frequency interval. Non-Sinhalese patients who are above 44 years of age from lower social classes with poor educational background were more likely to have poor knowledge on TB and irrelevant practices, increasing the likelihood of treatment failure and spread of disease. Therefore, choice of media for communication of health education messages has to be appropriate to the target population; the message should be commensurate with the level of education, literacy levels and must be delivered in languages relevant to the target groups.

Treatment related studies

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|-----------------|--|
| Title | Clinico-histopathological correlation and the treatment response of 20 patients with cutaneous tuberculosis. |
| Authors | Ranawaka R.R., Abeygunasekara P.H., Perera E., Weerakoon H.S. |
| Source | Dermatology online journal. 2010;16 (8): 13 |
| Abstract | Cutaneous tuberculosis (TB) can mimic other granulomatous diseases clinically and histopathologically. This case series relates images and workup of 20 patients who were histopathologically and therapeutically confirmed to have cutaneous TB. Although positive results of ESR, Mantoux reactivity, and TB cultures facilitate the clinical diagnosis, negative results should not exclude the diagnosis of cutaneous TB. An alternative cause should be considered if the clinical response to anti-TB drugs is inapparent within 2 months. |
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- | | |
|-----------------|--|
| Title | Retrospective Analysis of use of Empirical Anti TB treatment in Smear Negative Pulmonary Tuberculosis |
| Authors | Madegedara R.M.D, Perera KLSR, Kulathunga CN, Nakandala SC, Kapilawansa S. |
| Source | 1. Annual Academic Sessions of Kandy Society of Medicine, 2010
2. SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS. 2010; VII (2): 15-19 |
| Abstract | Not available |

Microbiological and other diagnosis related research

Title	The value of routine histopathological analysis in patients with fistula in-ano
Authors	Wijekoon N.S., Samarasekera D.N.
Source	Colorectal Disease. 2010; 12 (2): 94-96
Abstract	<p>Objective: To determine the positive yield of routine histopathology in patients undergoing surgery for fistula in-ano.</p> <p>Method: Histopathology reports of all the patients who underwent surgery for fistulae-in-ano over a period of 36 months were reviewed.</p> <p>Results: Analysis included 84 patients of which 73 (87%) were male subjects. The mean age was 39.4 years (range 11-68). Forty-one (49%) had recurrent fistulae. Granulomatous diseases such as Crohn's disease and tuberculosis (TB) were suspected in six patients. However, of the six patients, confirmation of the disease status was obtained only in three patients: stains for acid-fast bacilli confirmed TB in two (2.4%) patients and colonoscopy and biopsy confirmed Crohn's disease in one (1.2%) patient. All three patients had recurrent fistulae.</p> <p>Conclusion: As the positive yield of routine histopathology is minimal, we do not recommend routine histopathology for fistula in-ano, except for those presenting with recurrent fistulae and those with clinical suspicion of an underlying disease such as TB, HIV or Crohn's disease.</p>

Health system studies

Title **Awareness Regarding Tuberculosis Control Among Medical Officers in Kegalle District**

Authors Madegedara R.M.D., Punyasoam K.M.D., Nakandala S.

Source Annual Academic Sessions of Kandy Society of Medicine, 2010

Abstract Not available

Title **Awareness Regarding Tuberculosis Control Among Medical Officers in Kegalle District**

Authors Madegedara D., Gunawardena A., Nakandala S., Kulathunga C.

Source Annual Academic Sessions of Kandy Society of Medicine, 2010

Abstract Not available

Case reports

Title **A case series of symptomatic ocular tuberculosis and the response to anti tubercular therapy**

Authors Yasarithna B.M.G.D., Madegedara D., Senanayaka N.S., Senarathna T.

Source Ceylon Medical Journal. 2010; 55(1): 16-19

Abstract Not available

Title **Tuberculous liver abscess; a rare manifestation of extra-pulmonary tuberculosis**

Authors Aravinthan M., Kodikara Arachchi R.W.

Source Galle Medical Journal. 2010; 15: 28

Abstract Not available

Title **Case report on miliary tuberculosis**

Authors Arasalingam A.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Case report on tuberculous meningitis**

Authors Bandara J.M.R.P.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Worsening of symptoms in a patient with disseminated tuberculosis and HIV/AIDS after starting antiretroviral treatment**

Authors Dharmawardane P.H.D.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A young girl with extrapulmonary tuberculosis**
Authors Srigrishna R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Miliary tuberculosis in a patient with aplastic anemia**
Authors Walawwatta K.K.A.O.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR - 2009

Epidemiological research

Title	Epidemiology of pulmonary and latent tuberculosis among household Contacts of recently diagnosed tuberculosis patients in Colombo District, Sri Lanka
Authors	Mallawaarachchi M.G.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Pattern of Tuberculous Eye Diseases in an Endemic Setting
Authors	Medagedara D., Yasarathne B.M.G.D., Nishantha K.M.C., Senanayake S.N., Senarathne T.D.
Source	Kandy Society of Medicine Annual sessions 2009
Abstract	Not available

Title	Prevalence of smear positive TB in a prison population in Sri Lanka
Authors	Medagedara D., Abeyesiriwardana S., Herath N., Jayawardana K.A.S.
Source	Unpublished literature
Abstract	Not available

Clinical & patient behavior research

Title	Direct and indirect cost of treatment, burden and quality of life of patients with tuberculosis in the district of Colombo
Authors	Kasturiaratchi S.K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Background:</p> <p>Tuberculosis is a common contagious disease prevalent in Sri Lanka for many decades and places an enormous economic burden on households of economically vulnerable people and causes a significant reduction in quality of life of patients. This study was carried out to assess the direct and indirect cost of treatment and the disease associated household economic burden of families and the quality of life of adult tuberculosis patients undergoing two alternative treatment models in the district of Colombo.</p> <p>Methods:</p> <p>The study consisted of three components. Component 1 of the study was a qualitative study carried out to identify factors influencing the costs associated with tuberculosis treatment in the district of Colombo. Component 2 of the study was a cross sectional follow up study undertaken to assess the disease associated economic cost and household economic burden of tuberculosis patients and their families and to assess the quality of life (QOL) of those who are currently on treatment in the district of Colombo. Component 3 of the study was a cross sectional comparison study carried out to compare direct and indirect costs associated with treatment between patients practicing Directly Observed Treatment Short course, daily (Daily DOTS) and home-based weekly treatment and also to compare programme costs associated with these 2 models of treatment. Component 1 consisted of in-depth interviews. Twenty-one patients, both males and females were purposively selected for in-depth 142</p> <p>interviews representing all three ethnic groups. Component 2A and 2B consisted of a prospective follow up study where the respondents were interviewed at the time of registration, at the end of 2 and 6 months (end of intensive and continuation phases respectively) of the study. Component 3 of the study was a prospective comparison study, of those who were assigned to daily DOTS and weekly DOTS (weekly collection of drugs ingested under supervision). Convenient samples of patients who fulfill the eligible criteria were selected for both component 2 and 3.</p>

Results:

The study findings revealed that the mean overall total costs incurred by a patient with tuberculosis at completion of treatment was Rs.23, 244.52 (median Rs. 14156.00). Fifty percent (50.8%) of the total cost (mean - Rs.15, 838.03, median - Rs.8333) was due to indirect costs and 49.2% was due to mean direct cost (Rs.6267.77, median Rs 3690). It was revealed that 65.4% of the patients had a cost burden of more than 10% of their monthly household income which in economic terms considered catastrophic for the households. Among them, 9.3% of the respondents had a cost burden more than 100% of their total household income. On an average, Rs.8405.55 (median Rs. 3278) has been spent by patients in seeking treatment for the symptoms before he or she was properly diagnosed as suffering from tuberculosis. Of this pre-diagnosis cost, 76.8% (mean-Rs.6480.59, median-Rs.3333.33) had been due to direct costs. In spite of the free services provided during intensive phase of treatment, patients spend an average 5988.89 rupees (median Rs.1968) out of their own pockets. Of the total cost during intensive phase of treatment 66.6% of the total cost was due to loss of earnings as a result of the disease. A mean of Rs.1240.67 (median-Rs.768), (19.7% of the total cost during this period) have been spent as transport expenses to seek treatment. Among the study population, an average of 12.9 working days has been lost due to illness even before it was diagnosed. At the end of the intensive phase of treatment, an average 30.2 working days was lost by a patient. Thus, during total period of illness, an average 41.5 working days had been lost by a patient. Only 3.8% of the respondents had received any form of governmental or nongovernmental sickness assistance during treatment. By the end of treatment period 31% of the respondents have borrowed money (mean of 27,549.00 rupees) to spend for their illness related activities. Quality of Life (QOL) assessment revealed that patients with TB have poor mean scores for all four domains of QOL namely physical, psychological, social relationships and environment at the commencement of treatment. By comparing the mean scores for each domain of 143

QOL, it can be shown that domains of physical health, social support and psychology achieved significant improvements as the patient passed through different phases of the treatment process. However, such a change could not be shown for the environment domain. The following were found to be significantly associated with poor QOL after controlling for the confounding effects through multivariate analysis: domain of poor physical health with increasing age ($p=0.01$); poor psychological health and social relationships with the lower level of education and employment status ($p<0.001$) and poor environment with lower monthly household income ($p=0.003$) and male sex

($p < 0.023$) in addition to lower level of education ($p < 0.001$) and employment status ($p = 0.001$). Cost comparisons between these two modes of treatment during the intensive phase of tuberculosis treatment, demonstrated that home based weekly treatment is more cost beneficial than the daily DOTS treatment. By shifting to weekly DOTS, a significant lower cost ($p < 0.001$) could be achieved in relation to both direct and overall costs. In addition, healthcare providers could save an average of 88.7 minutes per patient per month (Rs. 241.18) which could be utilized for providing better attention to patients. The results of this study may be used to develop new strategies and policies to improve the overall quality of patient care for tuberculosis by providing adequate financial support for needy patients in the community. Weekly issuing of drugs could be an alternative to reduce patient cost during intensive phase of treatment.

Clinical & patient behavior research

Title **Ocular Tuberculosis: Clinical outcome following Standard Anti-Tubercular Therapy**

Authors Medagedara D., Yasarathne B.M.G.D., Nishantha K.M.C., Senanayake S.N., Senarathne T.D.

Source Kandy Society of Medicine Annual sessions 2009

Abstract Not available

Title **Can home DOTS be recommended for TB control in Sri Lanka?**

Authors Jayawardena K.A.S., Medagedara R.M.D.

Source Kandy Society of Medicine Annual sessions 2009

Abstract Not available

Treatment related studies

Title	Effects of Fixed-Dose Combination (FDC) Chemotherapy on sputum conversion time & treatment Outcome in Active Pulmonary Tuberculosis; A Preliminary Study in the Kandy District, Sri Lanka
Authors	Jayarathna K.A.S., Medagedara R.M.D., Siribaddana A.
Source	The journal of the Association of Pulmonologists. 2009; 1(1)
Abstract	Not available

Health system research

Title **Critical evaluation of significance of acid-fast bacilli in Broncho alveolar Lavage fluid**

Authors Nishantha K.M.C., Madegedara R.M.D.

Source Post Graduate Institute of Medicine, University of Colombo.

Abstract Not available

Title **Time to treatment of Tuberculosis: is there a delay?**

Authors Nishantha K.M.C., Madegedara R.M.D.

Source Kandy Society of Medicine Annual sessions 2009

Abstract Not available

Title **Involving family members in the delivery of TB care in the Kandy District, Sri Lanka**

Authors Jayawardana K.A.S, Madegedara D.

Source SAARC Journal of Tuberculosis, Lung diseases and HIV/AIDS. 2009; 6(1): 12-16

Abstract Not available

Health system research

Title Notification of tuberculosis patients receiving treatment at Central Chest Clinic Colombo and factors related to quality of field investigation

Authors Cader M.

Source Post Graduate Institute of Medicine, University of Colombo.

Abstract Background:
The consequences of tuberculosis on the society are immense and multiple strategies need to be implemented to overcome the threat. Epidemiological surveillance is a major strategy in the prevention and control of tuberculosis. Among all surveillance activities, tuberculosis notification and contact tracing play a leading role in improving tuberculosis control in the community. Coverage, timeliness, accuracy and quality of notification process are vital components that affect the success of this strategy.

Methods:

This study was conducted in Colombo district, aiming to describe selected aspects of notification of tuberculosis patients receiving treatment at Central Chest Clinic Colombo and factors related to field investigation. It was initiated as a descriptive cross-sectional study of the patients attending Central Chest clinic Colombo for treatment, two to four months after registration. Information from the patients was collected through an interviewer administered questionnaire. The notification pathway of these patients up to the central unit NPTCCD and down to the MOH units in the CMC and non-CMC area was then traced and retrospectively analyzed the secondary data available at these units by using relevant checklists to achieve the specific objectives. A descriptive cross-sectional study was also carried out to assess the knowledge, attitude, practice of Public Health Inspectors (PHII) and other factors related to field investigation by providing a self-administered questionnaire to all the range PHII in the district.

Results:

Altogether 311 study participants, 54.7% (n=170) from CMC and 45.3% (n=141) from non-CMC area were interviewed at the CCC. Coverage of notification at the level of Central unit, National Programme was 92.3% (n=287). Mean timeliness of notification from the date notified was 14.84 days and varied significantly according to the place of notification. Name, age, sex, address, diagnosis and disease category were cross checked for the accuracy of information and found 72% (n=207), 79% (n=228), 88% (n=255), 55% (n=160), 86% (n=248) and 86% (n=248) accuracy in the respective selected variables. Coverage of notification at the MOH level was 93.9% (n=292) and varied significantly between notifying institutions. Mean

timeliness of notification to the MOH units was 28.4 days and varied significantly according to the MOH categories and the place of notification. Coverage of field investigation by PHII according to the patients interviewed was 35.7% (n=111) while according to the data analyzed at MOH, three months later was 90% (n=263) from total notification received (n=284) and 84% (n=263) from total notification sent (n=311). Mean timeliness for field investigation was 13.5 days with a significant variation between individual MOH units in the non-CMC area. Only 25.5% (n=67) of the field investigation was done within seven days of receiving notification. During field investigation, majority of patient were educated regarding disease spread 69.2% (n=72), completion of treatment 88.5% (n=92) and treatment under DOTS 56.8% (n=63), while minority about side effects of the drugs 26% (n=27). Out of 111 study participants visited by PHI, 85.6% (n=96) had a poor knowledge on TB and the difference was significantly related to PHII visit. PHII had visited only 38% (n=46) of study participants with child contacts. Screening of child contacts was significantly related to the home visit by the PHI. Out of 109 (86%) range PHII who responded, majority 67.9% (n=74) had a good knowledge on notification process and selected aspects of health education. Overall attitude regarding current notification process was unfavorable. Attitudes towards allowance paid for 45 field investigation, availability of transport facilities and coordination between MOH and Central Chest Clinic was also unfavorable. Majority of PHII maintain TB notification register, TB file, investigate immediately or within seven days, regularly inform untraced patients, assist defaulter tracing but only a minority are regularly invited to the chest clinics for reviews. Address change of patients during treatment and unsupervised treatment, failure to obtain a land mark during registration and PHII factors like less work experience, poor knowledge on notification, and availability of transport and inadequacies of coordination with CCC were found to be significantly associated with non-investigations of cases. According to the view of PHII, inadequate address, unclear address, busy schedule were some factors that ranked according to the priority as the reasons for non-investigation.

Conclusion:

Significant disparities of timeliness of notification, inaccuracies of written information, deficiencies in coverage and timeliness of field investigation and inadequacies on selected aspects of health education were mainly identified from the study. Poor knowledge, unfavorable attitude and poor practice of PHII on selected aspects of notification and other factors related to non-investigation of cases were also identified. It was recommended to review the routine practice accordingly to fill the gaps of notification process and to strengthen advocacy, training and the coordination.

Health system research

Title	Progress towards millennium development goals for TB control in seven Asian countries.
Authors	Chadha V.K.
Source	The Indian journal of tuberculosis. 2009; 56 (1): 30-43
Abstract	Not available

Case reports

Title **Case report on disseminated tuberculosis**

Authors Dias L.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available.

Title **A case of miliary tuberculosis with tuberculous meningitis**

Authors Jayasinghe D.A.C.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Acute demyelinating polyneuropathy (Guillain-Barre syndrome) caused by mycobacterium tuberculosis**

Authors Pathirage L.P.M.M.K.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A case report on tuberculous meningitis**

Authors Silva H.K.M.S.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A case report on pulmonary and spinal tuberculosis**

Authors Tharising T.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title	A patient with pulmonary tuberculosis
Authors	Thivakaran T.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	A case study on disseminated Tuberculosis
Authors	Waidyanayake N.P.D.
Source	Post Graduate Institute of Medicine, University of Colombo.
Abstract	Not available

Year - 2008

Epidemiological research

- Title** **Prevalence and predictors of default with tuberculosis treatment in Sri Lanka.**
- Authors** Pinidiyapathirage J., Senaratne W., Wickremasinghe R.
- Source** The Southeast Asian journal of tropical medicine and public health. 2008; 39(6): 1076-82
- Abstract** Objectives:
The objectives of this study were to determine the default rate and predictors for default in patients undergoing anti-tuberculosis treatment.
- Methods:
All consenting patients with a confirmed diagnosis of tuberculosis admitted to a unit of the Chest Hospital, Welisara, Sri Lanka from April 2001 to April 2002 were recruited into the study. Personal and follow-up data were recorded on a pre-tested questionnaire and data sheet, respectively. A defaulter was defined as a patient who interrupted treatment for more than two consecutive months before the end of the course of treatment.
- Results:
Of the 892 patients recruited, 770 were new cases and 122 were relapses. The default rates were 10.3% (95% CI: 8.3-12.6) and 30.3% (95% CI: 22.7-38.1) among new cases and retreatment cases, respectively, during the intensive phase of treatment and 10.9% (95% CI: 8.7-13.3) and 16.5% (95% CI: 9.7-25.5), respectively, during the continuation phase. Ninety percent of new cases and 94% of retreatment cases were sputum positive for acid-fast bacilli at diagnosis. Two hundred five patients (22.9%) defaulted on treatment (95% CI: 20.3-25.8). Using logistic regression analysis, regular smokers (OR = 1.9), smear positive patients who were previous defaulters (OR = 2.4) and patients having involvement of less than 3 zones of the lung on chest x-ray (OR = 0.5) were more likely to default compared to patients who did not smoke regularly, smear positive patients who had relapsed after taking the full course of treatment and patients with less lung involvement. Skilled and unskilled laborers were the most likely occupation to default (OR = 2.03) followed by sales personnel (OR = 2.00), compared to the unemployed or home-bound. A high default rate of 23% was observed among the study participants.
- Conclusions:
Smoking status, occupation, history of treatment compliance of the patient, and extent of lung involvement were predictors for defaulting.

Clinical & patient behaviour research

Title	Factors Contributing to Medication Noncompliance of Newly Diagnosed Smear-Positive Pulmonary Tuberculosis Patients in the District of Colombo, Sri Lanka
Authors	Navaratnasingam J., Seneviratne, R de Alwis
Source	Asia Pacific Journal of Public Health. 2008;20(3): 214-23
Abstract	Medication noncompliance hinders effective tuberculosis control. This descriptive study investigates the factors contributing to medication noncompliance among new patients with smear-positive pulmonary tuberculosis on treatment at government health institutions in Colombo, Sri Lanka. In a cohort of patients aged ≥ 15 years ($n = 326$), 23% were found to be noncompliers ($n = 74$) on follow-up. The median age of noncompliers (50 years) was significantly higher than the compliers (45 years). In multivariate logistic regression analysis, factors associated with noncompliance are as follows: being a male, living alone or with extended family, experiencing side effects to medication, perceiving nonsusceptibility to adverse effects of illness, and perceiving no benefit in regular treatment. The participants of a focus group discussion on service factors opined that the reception at treatment facilities and the interaction with certain categories of staff were poor. Noncompliance is related to a multiplicity of fact.

Clinical & patient behaviour research

Title	Socio-demographic Features among the Tuberculosis Patients Attending the Central Chest Clinic, Kandy
Authors	Meeghakubura M.G.K.M., Ambalawana V., Madegedara R.M.D., Thevanesham V., Magana-Arachchi D.N.
Source	Annual Academic Sessions, Kandy Society of Medicine
Abstract	Not available

Microbiological and other diagnosis related research

Title	Diagnosis of tuberculous lymphadenitis: combining cytomorphology, microbiology and molecular techniques - a study from Sri Lanka.
Authors	Mudduwa L.K.B., Nagahawatte A.de S.
Source	Indian journal of pathology & microbiology. 2008; 51 (2): 195 -7
Abstract	<p>Background:</p> <p>Fine needle aspiration is a simple technique to obtain material for early diagnosis of tuberculous lymphadenitis.</p> <p>Objective:</p> <p>To assess the value of fine needle aspiration cytology (FNAC) in the diagnosis of tuberculous lymphadenitis.</p> <p>Methods:</p> <p>A total of 43 aspirates from patients who were clinically suspected to have tuberculous lymphadenitis were included in the study. Apart from FNAC, aspirates were smeared for Ziehl Neelsen stain and cultured on Middlebrook 7H9 and 7H10 media. Culture was considered the gold standard. Positive and negative predictive values and agreement between the gold standard and five diagnostic criteria were assessed. Kappa value was used to calculate the agreement.</p> <p>Results:</p> <p>The presence of epithelioid cells either with caseation or positive Ziehl Neelsen had the highest agreement (kappa value 0.84), with high positive and negative predictive values (85.71% and 96.55%). Positive Ziehl Neelsen alone and presence of epithelioid cells with positive Ziehl Neelsen had 100% positive predictive values, but the kappa values were lower (0.62 and 0.52) with lower negative predictive values (83.33% and 81.08%). Epithelioid cells alone had a high negative predictive value (93.35%), but the positive predictive value was lower (84.62%). When epithelioid cells were taken together with caseation, the positive predictive value reduced further (83.33%).</p> <p>Conclusion:</p> <p>The presence of epithelioid cells either with caseation or positive Ziehl Neelsen stain appears to be the best diagnostic criteria, with a very good agreement with the gold standard and high positive and negative predictive values.</p>

Microbiological and other diagnosis related research

Title	Molecular diversity of Mycobacterium tuberculosis isolates from patients with pulmonary tuberculosis in Sri Lanka
Authors	Rajapaksa U.S., Victor T.C., Perera A.J., Warren R.M., Senevirathne S.M.P.
Source	Transactions of the Royal Society of Tropical Medicine and Hygiene. 2008; 102 (10):997-1002
Abstract	Not available

Microbiological and other diagnosis related research

- Title** **Low cost in-house PCR for the routine diagnosis of extra-pulmonary tuberculosis.**
- Authors** Magana-Arachchi D., Perera J., Gamage S., Chandrasekharan V.
- Source** The international journal of tuberculosis and lung disease. 2008; 12(3):275-80
- Abstract** Setting:
Conventional methods for the identification of mycobacteria are slow and labour intensive. DNA amplification methods offer rapid sensitive and specific diagnosis.
- Objective:
To determine the feasibility of an in-house polymerase chain reaction (PCR) method to detect *Mycobacterium tuberculosis* in clinical samples.
- Design:
The present study focused mainly on diagnosing extra-pulmonary tuberculosis (EPTB) using an in-house PCR method in 465 clinical samples. This study also compared the efficacy of a standard phenol-chloroform (PC) extraction procedure and the guanidine thiocyanate with diatomaceous silica (GTCS) method of DNA extraction and purification. A subsample of patients was used for the validation of results based on the final diagnosis.
- Results:
Among 373 patients with suspected EPTB, 75 specimens were positive by PCR, four by microscopy and six by culture. Of the 25 PCR-positive patients, 95% had a final diagnosis of TB. Globally, the GTCS method was found to be superior to the PC method for DNA extraction and removal of inhibitors from clinical specimens.
- Conclusion:
The DNA amplification method was found to be significantly more sensitive and rapid compared to culture and microscopy for a reliable final diagnosis of EPTB.

Treatment related studies

Title	Effects of Fixed Dose Combination Chemotherapy on Treatment Outcome in Active Pulmonary Tuberculosis; A Preliminary Study in the Kandy District
Authors	Jayawardena K.A.S., Madegedara R.M.D., Siribaddena AD
Source	Sri Lanka Medical Association 121 st Annual Session, 2008
Abstract	Not available

Treatment related studies

Title	Effect of Chemotherapy on Sputum Conversion Time And Clinical Outcome In Active Pulmonary Tuberculosis
Authors	Jayawardena K.A.S., Gamage L., Madegedara R.M.D.
Source	Annual Academic Sessions, Kandy Society of Medicine
Abstract	Not available

Treatment related studies

Title	Impacts of DOTS Strategy on TB Control: A Revive of Statistics
Authors	Kumar T.S., Madegedara R.M.D., Jayawardena K.A.S.
Source	Annual Academic Sessions, Kandy Society of Medicine
Abstract	Not available

Health system studies

Title	Awareness of Tuberculosis Control among Doctors in A Tertiary Care Hospital
Authors	Madegedara R.M.D., Gunathileke P.S.S., Jayawardena K.A.S.
Source	Annual Academic Sessions, Kandy Society of Medicine
Abstract	Not available

Case reports

Title **Tuberculosis kills a pregnant woman**

Authors Dahanayake K.S.

Source Post Graduate Institute of Medicine, University of Colombo.

Abstract Not available

Title **Factors contributions to delay in diagnosis of pulmonary tuberculosis patients after care seeking in the District of Anuradhapura Sri Lanka**

Authors Rajapaksha R.P.L.I.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A patient with miliary tuberculosis presented with autoimmune haemolytic Anaemia**

Authors Sumanasekara W.G.V.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A case of peritoneal tuberculosis**

Authors Mahathevan, S

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A case report on pulmonary tuberculosis**

Authors Perera S.G.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Case reports

Title	A case report on tuberculous meningitis
Authors	Perera U.D.C.A.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 2007

Case reports

Title **A case study on pulmonary tuberculosis**
Authors Antony A. A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A patient with pulmonary tuberculosis**
Authors Abey Siriwardana S.J.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Unusual presentation of miliary tuberculosis**
Authors Abeyrathna K.H.K.W.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Pulmonary tuberculosis complicated with pneumothorax**
Authors Ajith K.K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis pleural effusion**
Authors Chandramohan V.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title **A case report on pulmonary tuberculosis**
Authors Dayaratne N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A patient with pulmonary tuberculosis**
Authors Dharmasiri K.K.R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report on miliary tuberculosis**
Authors Fernando H.M.P.K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Supra clavicular lymphadenopathy**
Authors Fernando L.N.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Disseminated tuberculosis**
Authors Galgamuwa S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title **Peritoneal tuberculosis**

Authors Gunathilake P.S.S.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A patient with uncommon symptoms of pulmonary tuberculosis**

Authors Hennayake A.S.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Tuberculous pleural effusion**

Authors Indrapala W.K.P.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Multi drug resistance tuberculosis**

Authors Jayakody J.M.D.K.K.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Testicular tuberculosis**

Authors Kuhathasan T.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Case reports

Title **Tuberculous pleural effusion**
Authors Mafaz A.H.M.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Anti-Tuberculosis Treatment**
Authors Munasinghe A.V.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report on miliary tuberculosis**
Authors Nandadasa V.G.S.R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A patient with a diagnosis of pulmonary tuberculosis**
Authors Nawaratne S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Pleural effusion with tuberculosis**
Authors Pakshaweera N.P.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title **A case study on pulmonary tuberculosis**
Authors Pushpakumara G.N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Pulmonary tuberculosis: uncommon presentation**
Authors Ramachandran A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculous lymphadenitis**
Authors Samaradivakara D.M.A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis complicated with renal cell carcinoma**
Authors Samaraweera U.K.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A patient with disseminated tuberculosis**
Authors Sanjeewa R.G.S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title Pulmonary Tuberculosis leading to pneumothorax
Authors Silva G.P.A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title Tuberculosis lymphadenitis
Authors Surshkumar T.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title Pulmonary tuberculosis lymphadenitis
Authors Wijesinghe K.V.L.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title Tuberculous pancreatic disease
Authors Wijesinghe W.M.D.N.K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title A lady with fever and right sided chest pain
Authors Withana W.D.R.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 2006

Clinical & patient behavior research

Title	Disease pattern, level of satisfaction and perceptions on Ayurveda medical care of patients seeking treatment from registered private Ayurveda Practitioners in Kalutara District.
Authors	De Silva Y.N.P.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Aim of the study was to identify demographic and socioeconomic factors of patients seeking Ayurveda treatment, their disease patterns, satisfaction and perception on Ayurveda medical care in Kalutara district. Patients' satisfaction on Ayurveda medical care on the aspects of facilities available at the institution, waiting time (85.5%) and the cost spent for treatment (76.2%) were high whereas, their knowledge on availability of surgical procedures (14.8%) and family planning methods (3.5 %) in Ayurveda were poor. Majorities had perceived that the Ayurveda medical care was less costly (66.8%) and less of side effects (87.4%). Greater part of the respondents had stated that the Ayurveda medicine is better in treating fracture (83.1%), paralysis (78.6%) and asthma (64.6%) whereas allopathic medicine is better in treating dog bites (77.2%), heart attacks (74.8%), high blood pressure (78.3%), tuberculosis (76.8%) and leprosy (69.2%).</p>

Microbiological and other diagnosis related research

Title	Preliminary evaluation of a rapid, colourimetric assay for susceptibility testing of mycobacteria
Authors	Jayasundara J.M.A.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Antimicrobial susceptibility testing (AST) of Mycobacterium tuberculosis complex (MTBC) plays an important role in tuberculosis (TB) control. Inexpensive, rapid, and easy to perform AST methods are needed. Tetrazolium microplate assay (TEMA) that employs dimethylthiazol-diphenyltetrazolium bromide (MTT) was evaluated with modifications. Twelve clinical isolates and tuberculosis H37Rv were tested by TEMA and the agar proportion method (PM) against isoniazid (INH) and rifampicin (RIF). There was total agreement between the results of TEMA and PM. Minimal inhibitory concentrations (MICs) for H37Rv obtained by TEMA correlated with its known MICs. TEMA appears to be a promising candidate for routine AST of MTBC in resource-poor settings.</p>

Case reports

Title	Anti-tuberculosis drug induced hepatitis - a Sri Lankan experience.
Authors	Senaratne W.V., Pinidiyapathirage M.J., Perera G.A.M.H.E., Wickremasinghe A.R.
Source	The Ceylon medical journal. 2006; 51(1):9-14
Abstract	<p>Objective:</p> <p>To assess the incidence of anti-tuberculosis (TB) drug induced hepatitis (AIH) in Sri Lankan patients, determine risk factors of AIH, and to address management options in AIH. DESIGN A prospective study.</p> <p>Setting:</p> <p>Chest Hospital, Welisara, Sri Lanka, from April 2001 to April 2002. PATIENTS Seven hundred and eighty-three patients with a confirmed diagnosis of TB and resident in the Colombo and Gampaha districts who presented to Chest Hospital, Welisara, Sri Lanka.</p> <p>Methods:</p> <p>World Health Organization recommended treatment was commenced in all cases. AIH was diagnosed when patients complained of decreased appetite with nausea or vomiting and elevated serum bilirubin (SB; >1.1 mg/dL) or elevated serum alanine transferase (ALT; > 3 times upper limit of normal).</p> <p>Results:</p> <p>Of 783 enrolled patients, 74 (9.5%) developed AIH, the majority (58%) developing AIH within the first 2 weeks of the intensive phase of treatment. AIH was more common among patients over 60 years ($p = 0.018$), who developed pulmonary TB ($p = 0.028$), and in patients weighing 33-55 kg ($p = 0.004$). Age, weight and rifampicin overdosage were significant predictors of AIH. Of the 74 AIH patients, standard treatment was restarted in 60, treatment modified in six, two defaulted and six died.</p> <p>Conclusions:</p> <p>The incidence of AIH in Sri Lanka is 9.5% in treated patients. AIH was associated with age, low body weight and rifampicin overdosage.</p>

Case reports

Title **A case study on disseminated Tuberculosis**

Authors Gurusinghe D.A.D.S.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **A diagnosis of spinal tuberculosis**

Authors Perera W.A.H.A.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

YEAR – 2005

Epidemiological research

Title	Epidemiological pattern of tuberculosis and selected aspects of case management in the district of Colombo, Sri Lanka.
Authors	Janakan N.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>This study composed of three components. First component was a descriptive study based on retrospective analysis of secondary data of all cases of tuberculosis registered in year 2002 with Programme for Tuberculosis Control and Chest Diseases in the Colombo district. The objective was to describe selected aspects of epidemiology of tuberculosis, current treatment practices and to treatment outcomes. The second component was also a descriptive study, where data was co prospectively to identify delays in the diagnosis and initiation of treatment, and patients' compliance treatment. The third component was a case control study to determine the risk factors, including contact history of smear-positive pulmonary tuberculosis (PTB). The study found that 92. Of the new c smear-positive PTB received DOT while re-treatment cases, who are generally believed to be compliant and prone to lower cure rate a significantly lower proportion received DOT ($p=0.001$) showing the selection of patients could have been improved. Ideally more patients belong treatment category should be given DOT. New cases of smear positive PTB showed a median p delay of 40 days provider delay of 8 days and a total delay of 50 days. To shorten patient delay public should be educated about symptoms of tuberculosis and the importance of early medical consultation. Efforts should be made to improve the diagnostic skills and the awareness of TB of all doc particularly general practitioners, since most patients first seek treatment from them. In this study, health belief model (HBM) was used to study factors related to non-compliance.</p>

The objectives of the present study, comprising 2 components, were to assess the level of performance of selected food safety activities at Divisional level, to determine factors associated with the performance of these activities. The study was carried out in seven provinces in Sri Lanka except the Northern and Eastern Provinces. In component 1, the performance of selected food safety activities in 199 MOH areas was measured using a self-administered questionnaire. Data on selected attributes of the MOH areas and the

Authorized Officers were obtained concurrently and factors associated with the performance were determined using appropriate analysis.

In component 2 of the study, the opinion on the relevance and the adequacy of the Divisional level food safety activities was obtained using a self-administered questionnaire. There was a wide variation in the performance of food safety activities at Divisional level and the strength and direction of the association of the factors predicting performance.

The inadequacy of the number of Authorized Officers engaged in food safety activities at Divisional level was highlighted at many points of data collection. Opinions of different Authorized Officers on specific food safety activities revealed the inadequacy of coverage and intensity, not giving priority on a scientific basis, and the need for better feedback and follow up actions as the most important that need improvement. Deficiencies of Authorized Officers, administrative, managerial, and supervisory deficiencies of the system, the lack of resources, process deficiencies of food safety activities, poor coordination among different agencies, the attributes of the food industry, trade and the persons involved food handling, and the attributes of the MOH areas and the PHI areas were the road categories of reasons identified as responsible for the current deficiencies.

Areas recommended for further study include performance of food safety activities in Northern and Eastern Provinces, factors that were not included in the present study due to-practical reasons, and the study of performance of food safety activities at the level of the PHI range. The rules and regulations governing the sanitary situation at food handling establishments need to be reviewed and revised periodically. Current food safety activities should be expanded to cover a wider range of the food continuum including intervention at harvesting level and enhancing educational activities covering schools. Due publicity should be given through improved interaction with the consumers to maintain the consumer confidence at the highest level. Relatives should be educated and adequately counseled about the duration of treatment importance advantages of DOT, side effects of the drugs and the consequences of Interrupting treatment to improve the treatment compliance.

Clinical and patient behaviour studies

Title	Nutritional status and immune status of patients with active pulmonary tuberculosis.
Authors	Wijesuriya M.T.W.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Objectives:</p> <p>To quantify the immune response with regard to lymphocyte subpopulations [T cells (CD4 and CD8 subsets), B cells, B 1 cells, NK cells and NKT cells] in patients with active pulmonary tuberculosis; To describe nutritional status in active pulmonary tuberculosis using anthropometry, haemoglobin and red cell indices; To compare immune response (with regard to lymphocyte subpopulations) and nutritional status between patients with active pulmonary tuberculosis and healthy controls, To describe the effect of nutritional status (malnutrition and anaemia) on the immune response (with regard to lymphocyte subpopulations) in patients with active pulmonary tuberculosis.</p> <p>Methods:</p> <p>A cross-sectional, comparative study involving 49 smear-positive TB patients and 49 controls was carried out. Nutritional status was assessed using anthropometric measurements, haemoglobin concentration and red-cell indices. Nutritional status assessed by weight mid-arm circumference and body mass index was significantly lower in patients with active pulmonary tuberculosis.</p> <p>Results:</p> <p>Presence of anaemia (normocytic normochromic) was higher in patients with tuberculosis. Mean total white cell count in blood was higher in TB with relative lymphopenia and neutrophil leucocytosis. Mean total lymphocytes and the means of most lymphocyte subsets were significantly lower in TB. Significant differences were not observed in the means of Natural-killer cells.</p> <p>Conclusions and Recommendations:</p> <p>Incidence of malnutrition and anaemia was significantly higher in patients with tuberculosis. Depletion of total lymphocytes and most lymphocyte subsets in peripheral blood were observed in TB. It suggests that these take part in the immune response against tuberculosis. These observations would be useful in designing and evaluating novel therapeutic measures and vaccines against tuberculosis.</p>

Clinical and patient behaviour studies

Title	A study of tuberculosis, malnutrition and gender in Sri Lanka
Authors	Metcalf N.
Source	Transactions of the Royal Society of Tropical Medicine and Hygiene. 2005; 99(2):115-19
Abstract	Not available

Case reports

Title **A patient with miliary tuberculosis**
Authors Ainkaran M.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report on acute miliary tuberculosis**
Authors Arulnithy K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Intestinal tuberculosis**
Authors Bandaranayake A.K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report on pulmonary tuberculosis**
Authors Chandratilleke M.G.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report milliary tuberculosis**
Authors Duminda K.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title **Management of cervical lymphadenitis due to tuberculosis**
Authors Hewapathirana T.N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Management of tuberculosis of the dorsal spine**
Authors Perera M.T.P.R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Renal tuberculosis**
Authors Pradeepan S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 2004

Clinical & patient behavior research

Title	Comparative evaluation of a modified directly observed treatment short-course (DOTS) with standard WHO strategy.
Authors	Tissera W.A. A.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>This is a prospective, analytical intervention study carried out at the Colombo Chest Clinic with, New, sputum positive, pulmonary tuberculosis patients. The study was conducted over a period of one year commencing from May 2003. The standard Institutional-based Directly Observed Treatment (DOT) strategy was compared with a directly observed home-based strategy with a family member serving as the DOT supervisor using a randomly selected sample of 17 patients in each group. This study demonstrated that a home-based Directly Observed Treatment Strategy supervised by a family member proved to be better in improving compliance than the current health worker administered DOTS. The majority of treatment supervisors were either spouses or family members of the patients (44.7%)</p>

Clinical & patient behavior research

Title	Relative lack of clinical disease among household contacts of tuberculosis patients compared to leprosy households.
Authors	Dissanayake S.
Source	Transactions of the Royal Society of Tropical Medicine and Hygiene. 2004;98(3):156-64
Abstract	The incidence of clinical tuberculosis and clinical leprosy among household members of tuberculosis and leprosy patients in Sri Lanka was studied.

The study period was approximately 20 years (January 1981 to December 2001) and the total number of patients and contacts were 325 and 968 for tuberculosis and 726 and 3066 for leprosy, respectively.

While none of the tuberculosis patient households had more than 1 patient nor any contacts who developed clinical disease during the observation period, 20% (148/726) of the leprosy patients had more than 1 patient in the family and 0.9% (13/1403) of their contacts who were followed-up developed clinical leprosy during the observation period. Although the tuberculosis patient household contacts did not develop clinical disease, in 79% (88/112) of contacts who were tested by Western blot analysis, there was serologic evidence of *Mycobacterium tuberculosis* infection.

These data show that in populations of comparable socio-economic, environmental and geographic locations, tuberculosis and leprosy show very different transmission patterns. In general, in tuberculosis household contacts, in spite of exposure, infection did not proceed to clinical disease. In contrast, a significant number of leprosy household contacts developed clinical leprosy. These findings have implications in the design and implementation of control programmes for these two diseases.

Treatment related studies

Title	Outcome of treatment of multidrug resistant tuberculosis.
Authors	Senaratne W.V.
Source	The Ceylon medical journal. 2004; 49(3): 86-87
Abstract	<p>Multidrug resistant tuberculosis (MDRTB) is a growing problem worldwide. It is an emerging problem in Sri Lanka too although the exact data are not known. This report describes treatment and outcome of 14 MDRTB patients. All have had previous anti-tuberculosis treatment. Out of 32 previous treatment episodes, treatment has been either irregular or defaulted in 26(81%), which has largely contributed to the emergence of drug resistance. Treatment commenced with a combination of second line anti-tuberculosis drugs, namely, amikacin, ciprofloxacin, ethionamide, clofazimine and pyrazinamide. Four patients were considered cured, another four failed treatment, five defaulted treatment and one died. Previous sensitivity to second line drugs and proper isolation facilities were not available. Preparedness to face the threat of MDRTB is essential. Measures should be taken to reduce the rate of defaulters of anti-tuberculosis treatment, and facilities to treat MDRTB should be expanded.</p>

Health system research

Title	The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis, and human immunodeficiency virus/acquired immunodeficiency syndrome
Authors	Russell S.
Source	The American Journal of Tropical Medicine and Hygiene. 2004; 71(2):147-55
Abstract	<p>Ill-health contributes to impoverishment, a process brought into sharper focus by the impact of the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic. This paper reviews studies that have measured the economic costs and consequences of illness for households, focusing on malaria, tuberculosis (TB), and HIV/AIDS. It finds that in resource-poor settings illness imposed high and regressive cost burdens on patients and their families. Direct and indirect costs of illness for malaria were less than 10% of the household income, but still significant when combined with the costs of other illnesses. The costs of TB and HIV/AIDS were catastrophic for households (more than 10% of the income). Health service weaknesses in many countries, including low coverage, user charges, and poor quality of care, contributed to high costs. Poor households in developing countries with a member with TB or HIV/AIDS struggled to cope, highlighting the urgent need for a substantial increase in health sector investment to expand access to preventive and curative health services. Government and non-governmental interventions should also be broadened to encompass measures that reduce the substantial indirect costs associated with diseases such as malaria, TB, and HIV/AIDS.</p>

Case reports

Title **A patient with renal Tuberculosis**
Authors Aryasingha J.V.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case of pyrexia of unknown origin - milliary tuberculosis**
Authors Boyagoda S.B.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A man with tuberculosis**
Authors Dahanayaka N.J.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report on miliary tuberculosis**
Authors Dunuwille J.N.J.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **An immunocompromised patient with Pulmonary tuberculosis**
Authors Ghetheeswaran S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title	Tuberculosis: uncommon presentation
Authors	Gunaratne S.R.R.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	A case study on tuberculosis
Authors	Jayathilake S.K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Tuberculosis pericardial effusion
Authors	Ramadasa G.U.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	An uncommon presentation of a common disease
Authors	Senanayake T.A.D.N.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Case reports

Title **A case report on a man with tuberculosis**

Authors Siyambalapitiya S.P.

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

Title **Miliary tuberculosis in a patient with aplastic anemia**

Authors Walawwatta K.K.A.O

Source Post Graduate Institute of Medicine, University of Colombo

Abstract Not available

YEAR – 2003

Case reports

Title **Abdominal Management of a case of spread of Tuberculosis,**
Authors Dhanapala D.M.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A young girl with Pyrexia of unknown origin and milliary tuberculosis**
Authors Mapa Pathirna T.S.L.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Re-grasping of a losing opportunity (A case of milliary tuberculosis)**
Authors Medagoda K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis lymphadenopathy**
Authors Mugunthan N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 2002

Clinical & patient behavior research

Title	Pulmonary tuberculosis: Treatment seeking behaviour and compliance to treatment among patients and practice in relation to diagnosis and treatment among physicians in the district of Gampaha.
Authors	Sooriyaarachchi M.B.U.D.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>Objective of the study was to determine the treatment seeking and anti-TB drug collecting behaviour of new cases of pulmonary tuberculosis patients aged 15 years or more who are treated at government medical institutions in the district of Gampaha. An early treatment seeking behaviour was present among the patients while multiple constitutions prior to diagnosis highlight an existence of delay in diagnosis. The defaulter rate was 20.3 and 71 of the total defaulters, defaulted after the commencement of ambulatory treatment. Median duration of defaulting was days. Smoking and not living with family members were significantly associated with defaulting. Lack of awareness regarding specifications relate to symptoms suggestive of PTB and confirmatory diagnostic tests as well as under prescription of anti-TB therapy in terms of both dosage and duration of treatment was the deficiencies identified. Reduction of defaulting has to be targeted through finding reasons for educating the patients and their relations and strengthening the available defaulter tracing mechanism. Also, it is recommended that programmes have to be conducted to upgrade the knowledge of the service providers with a view to improve the case findings in terms of quality and quantity.</p>

Case reports

Title **A dilemma of tuberculosis vs sarcoidosis in a nurse on corticosteroids.**
Authors Chang A.A.P.T.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Multi-drug resistant tuberculosis.**
Authors Das Perera W.S.T.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Peritoneal Tuberculosis: a case report**
Authors Dickmadugoda N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A man with milliary Tuberculosis**
Authors Herath J.I.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A patient with multi drug resistant tuberculosis**
Authors Jayawardane C.A.R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Spinal tuberculosis: easy to miss**
Authors Wanigaratne B.D.A.T.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Mutli-drug resistant tuberculosis**
Authors Weerasuriya N.K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Multi drug resistant tuberculosis**
Authors Weragama U.T.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 2001

Case reports

Title **A man with tuberculosis**
Authors Cassim K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis masquerading as chronic cystitis**
Authors Fernando A.D.A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **AIDS with ileocaecal tuberculosis**
Authors Hirimutugoda, L.C
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis presenting as a mediastinal mass**
Authors Idampitiya P.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case report on Tuberculosis**
Authors Illanchellien G.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title **A patient with prolonged fever due to abdominal tuberculosis**
Authors Muhunthan S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Intestinal obstruction in a patient with tuberculosis**
Authors Nellihela L.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A pregnant lady with pulmonary tuberculosis**
Authors Pathirana G.K.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Anti-tuberculosis drug induced hepatitis**
Authors Peiris M.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **65-year-old patient with pulmonary tuberculosis, icterus and vomiting**
Authors Wijetunga R.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 2000

Case reports

Title	Peritoneal tuberculosis: difficult diagnosis
Authors	Ilango S.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Multi drug resistant tuberculosis
Authors	Jayawardana H.A.P.P.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	A case report on miliary tuberculosis
Authors	Jeganathan K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Drug resistant tuberculosis
Authors	Rohini W.A.V.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Case reports

Title **Lymphadenopathy with bicytopenia: Hodgkin's disease that mimics tuberculosis**
Authors Sathananthan P.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Miliary tuberculosis with tuberculous meningitis**
Authors Seneviratne M.M.N.N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis in a problem drinker**
Authors Sivansuthan S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis moves in mysterious ways**
Authors Somasundaram N.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Miliary tuberculosis with unusual symptoms**
Authors Subhashinie D.W.R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title	Pulmonary tuberculosis: a case report
Authors	Wanigasekara W.A.D.P.C.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available
Title	Tuberculosis: An unusual presentation of a common disease
Authors	Wathudura S.P.K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1999

Case reports

Title	Tuberculosis of the spine
Authors	Amarasekera S.S.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	The management of tuberculosis
Authors	Chapman K.R.P.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	A case report on post-primary tuberculosis
Authors	Dasanayaka Y.K.R.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Tuberculosis of spine
Authors	De Silva S.H.M.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Pulmonary Tuberculosis: Severe unresolving pneumonia
Authors	Deshapriya R.K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title **Tuberculosis of thoracic spine with paraplegia**
Authors Jeyamanohara S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Ileo-caecal tuberculosis**
Authors Lakshman N.L.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis with a complicated course**
Authors Liyanaarachchy G.G.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Pancreatic tuberculosis**
Authors Munidasa S.M.P.D.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Case reports

Title	Abdominal tuberculosis
Authors	Prematilake S.A.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	A presentation of acute milliary tuberculosis
Authors	Tennakoonwela R.M.C.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1998

Case reports

Title **A case of prolonged fever due to disseminated tuberculosis**
Authors Abeygunasekara S.C.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Extrapulmonary Tuberculosis: a case study**
Authors Amarasekera H.S.U.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Disseminated Tuberculosis**
Authors Kaiyoom S.A.A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Tuberculosis of the spine**
Authors Kumarasinghe De Silva M.P.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **Ileo-caecal hyperplastic tuberculosis**
Authors Wadanamby S.U.W.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 1997

Clinical and patient behaviour studies

Title	Autoimmune Haemolytic Anaemia Responding to Anti-Tuberculous Treatment
Authors	Siribaddana S.H., Wijesundera A.
Source	Tropical Doctor. 1997;27(4):243-44
Abstract	Not available

Case reports

Title	A case report on miliary tuberculosis
Authors	Brabaharan M.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available
Title	Intestinal obstruction in a patient with tuberculosis
Authors	Goonasinghe S.K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available
Title	Pulmonary tuberculosis mimicking fibrosing alveolitis
Authors	Mujahieth M.I.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available
Title	An effusive-constrictive pericarditis of tuberculosis origin
Authors	Pathirana A.K.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Case reports

Title **A patient with unusual presentation of tuberculosis**
Authors Ranasinghe H.S.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case of puerperal pyrexia -pulmonary tuberculosis**
Authors Sivasuriam S.A.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A case of extrapulmonary tuberculosis**
Authors Sritharan N.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A rare complication of tuberculosis**
Authors Sutharson R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

Title **A rare complication of tuberculosis**
Authors Sutharson R.
Source Post Graduate Institute of Medicine, University of Colombo
Abstract Not available

YEAR – 1996

Epidemiological research

Title	Tuberculosis and HIV infection.
Authors	Uragoda C.G.
Source	The Ceylon medical journal. 1996;41(1):5-6
Abstract	Not available

Treatment related studies

Title	Primary drug resistant tuberculosis in the Central Chest Clinic, Colombo.
Authors	Perera J., Wijekoon P.N., Gamage S.
Source	The Ceylon medical journal. 1996;41(2):51-54
Abstract	<p>Objective:</p> <p>To determine the drug sensitivity of Mycobacterium tuberculosis strains isolated from pretreatment (primary) cases of pulmonary tuberculosis.</p> <p>Design:</p> <p>A descriptive study.</p> <p>Setting:</p> <p>The Central Chest Clinic, Colombo. 103 patients with pulmonary tuberculosis who have not taken anti-tuberculosis drugs previously. Antibiotic sensitivity pattern of M tuberculosis isolates for isoniazid (INAH), ethambutol (EMB), rifampicin (RMP) and streptomycin (SM) tested in drug incorporated Lowenstein Jenson (LJ) medium using resistance ratio method.</p> <p>Results:</p> <p>15.5% isolates of M tuberculosis were resistant to at least one drug. Resistance to a single drug was found to be most prevalent (69%) among the resistant isolates and among these INAH resistance was most prevalent followed by streptomycin. None of the isolates were resistant to all four drugs. Resistance rates to individual drugs were INAH 9.7%. SM 6.7% EMB 2.9% and RMP 2.9%.</p> <p>Conclusions:</p> <p>Since the introduction of RMP and EMB in the treatment regimens from mid-1970s the incidence of tuberculosis and rate of primary drug resistance to anti-tuberculosis drugs has not changed significantly ($p > 0.05$) when compared with the results of studies conducted previously (2, 3). However, it is recommended that regular surveillance of drug sensitivity pattern should be maintained to determine alternate drug regimens and to detect the spread of resistant strains in the community.</p>

Case reports

Title	Tuberculosis- a cause for oral ulcer
Authors	Raveendran S.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1995

Case reports

Title	Tuberculosis ulcer in the tongue
Authors	Dharmadasa H.M.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Tuberculosis of the spine
Authors	Ziyad, M.R.M
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1994

Clinical and patient behavior research

Title	Risk factors associated with pulmonary tuberculosis
Authors	Tissera P.A.D.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>The principle objective of this case-control study was to identify some demographic, socio-economical and biological factors associated with pulmonary tuberculosis. 93 cases of pulmonary TB in patients aged 30 years and above, presenting at the chest clinic, Galle was compared with age and sex matched same number of controls admitted to surgical units at teaching Hospital Karapitiya, during the same period of time. There was statistically significant association between tuberculosis and education level ($P=0.01$). However, education level of grade 8 and lower was not found to be a risk factor associated with TB in age group 60 and above ($p=0.05$). There was statistically significant association between TB and income level ($P=0.001$). However monthly income of equal or less than Rs.3000/0.05). The bivariate analysis revealed areas of residence as a risk factor in age group 30-59 years ($OR=2.5$, $P=0.05$) and ex-smoker and smokers as a risk factor in age group 60 years and above.</p>

Health system research

Title	Analysis of patient care cost for selected preventable diseases in Intensive Care Unit at Lady Ridgway Hospital in 1992.
Authors	Jayatissa K.L.R.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	<p>The study revealed that the Ministry of health has achieved a certain level of success in controlling the preventable diseases. Intensive care utilization for this category was only 23 per cent as compared to 77 per cent for non-preventable diseases. Per patient day cost at the ICU was Rs.3,306.00, which is almost ten times greater than that for general ward treatment at LRH. The mortality rate for patients with preventable diseases had remained at a high level (60 per cent) 70 per cent of the preventable conditions were due to birth asphyxia and complications of LBW. These two conditions produce high incidence of admissions under one month (97 per cent out of all neonates). Among the non-preventable diseases, there were patients with long standing public health problems such as complications of worm infestation (0.7 per cent), gastroenteritis (4.1 per cent), malaria (0.7 per cent), neonatal tetanus (1.4 per cent), tetanus (1.4 per cent). tuberculosis (1.4 per cent) and typhoid (0.7 per cent). There were also patients appearing with newly highlighted public health problems such as dengue hemorrhagic fever (2.1 per cent) and encephalitis (7.5 per cent) which could be a major public health problems in the future. 8.9 per cent of patients presented as poisoning which is easily preventable. 55 per cent of the total ICU cost for preventable diseases has consumed by non survivors as compared to the cost consumed by survivors. This highlights well known important concept of prevention is better than cure. There is a growing demand for intensive care by the health professionals and other pressure groups, this may not be a right investment considering the loss of opportunity of primary and secondary care for large numbers due to lack of resources. While accepting the fact, that intensive care is integral part of tertiary care, these should not be established at the expense of basic primary care.</p>

YEAR – 1993

Clinical and patient behaviour studies

Title	Study on TB patients who defaulted treatment at chest clinic-Kurunegala.
Authors	Herath H.M.P.B.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	This study was carried out to determine the associated factors with drug defaulting by tuberculosis patients. Result of this study was aimed at predicating the possible defaulters at the beginning of treatment and to take the necessary precautions to minimize such "drop-outs" in the future.

Case reports

Title	Tuberculosis of the thoracic spine
Authors	Jayasekara H.R.R.G.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Intussusception due to ileo-caecal tuberculosis
Authors	Pieris R.R.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1992

Case reports

Title	A case of peritoneal tuberculosis
Authors	Mahathevan S.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1990

Case reports

Title	Ilaeo caecal tuberculosis
Authors	Kularatne, H.K De Silva
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

Title	Tuberculosis of the breast
Authors	Punchihewa, G.L.
Source	Post Graduate Institute of Medicine, University of Colombo
Abstract	Not available

YEAR – 1988

Epidemiological research

Title	Tuberculosis of the skin in Sri Lanka
Authors	Atukorala D.N., Amerasekera L.R.
Source	The Ceylon medical journal. 1988;33(3):97-99
Abstract	Not available

YEAR – 1987

Clinical and patient behaviour studies

Title	Tuberculin response of Sri Lankan children after BCG vaccination at birth
Authors	Karalliedde, S., Katugaha L.P., Uragoda, C.G.
Source	Tubercle. 1987;68(1):33-38
Abstract	<p>A total of 740 healthy children aged between 3 months and 11 years who had received BCG vaccination in the first month of life were Mantoux tested in Sri Lanka. Despite 97 % having a visible scar following vaccination, 80 % showed Tuberculin anergy (0–1 mm). Those without a scar showed no response. There was no correlation between scar size and the Mantoux response. A low mean Mantoux reaction was seen at all ages: 3.5 mm at 3 months, 3.2 mm at 18 months, 1.8 mm at 5–7 years and 1.9 mm at 9–11 years. A significant waning of the Mantoux reaction occurred at 5–7 years but there was no significant change at 9–11 years. Children who had received routine revaccination at 10 years, having received the first at birth, had a significantly higher mean Mantoux reaction (9.6 mm) when tested 3 months after revaccination. In 90 bacteriologically proven tuberculous patients, there was a significantly increased Mantoux reaction compared to all other groups. 1 T.U. PPD RT 23 (with tween 80) was used in all instances for Mantoux testing. The present study shows that routine BCG vaccination at birth, using a reduced dose of 0.05 ml, is unlikely to interfere subsequently with the diagnostic value of the Mantoux test. However, revaccination at 10 years may do so.</p>

YEAR – 1984

Epidemiological research

Title	Tuberculosis in Sri Lankan immigrant workers to the Middle East.
Authors	Uragoda C.G.
Source	The Ceylon medical journal. 1984;29(1):37-41
Abstract	Not available

YEAR - 1982

Treatment related studies

Title	Sensitivity to Ethambutol and Rifampicin of tubercle bacilli from patients with pulmonary tuberculosis in Sri Lanka.
Authors	Pinto M.R., Arseculeratne S.N., Dasan P., Uragoda C.G.
Source	The Ceylon medical journal. 1982;27(2):75-79
Abstract	Not available

YEAR – 1980

Epidemiological research

Title	Respiratory disease in tea workers in Sri Lanka
Authors	Uragoda C.G.
Source	Thorax. 1980;35(2):114-17
Abstract	Blending of different grades of tea is a very dusty process which exposes workers to a fine fluff. One hundred and twenty-five tea blenders with an average service of 22.9 years in the industry were interviewed according to a standard questionnaire, and submitted to a clinical and radiographical examination. The examination was repeated eight and 31 months later. A total of 46 workers (36%) had respiratory illness, 31 had chronic bronchitis (24.8%), eight had asthma (6.4%), and seven had active or inactive pulmonary tuberculosis (5.6%). The prevalence of chronic bronchitis and asthma was more than that expected in the general population. It is suggested that these two conditions are aetiologically related to long-term exposure to tea fluff.

YEAR – 1972

Epidemiological research

Title	Pulmonary tuberculosis in graphite miners
Authors	Uragoda G.C.
Source	The Journal of tropical medicine and hygiene. 1972;75(11):217-20
Abstract	Not available

YEAR - 1962

Epidemiological research

Title	Primary pulmonary tuberculosis in adults
Authors	Rajasuriya K., Thenabadu P.N.
Source	The Ceylon medical journal. 1969;14(1):43-48
Abstract	Not available

YEAR – 1953

Epidemiological research

Title	Pulmonary tuberculosis in Ceylon
Authors	Barlow D.
Source	British medical journal. 1953;1(4810):613-14
Abstract	Not available

YEAR – 1946

Epidemiological research

Title	The tuberculosis problem in Ceylon
Authors	Ranawake G.E.
Source	National Association for the Prevention of Tuberculosis (NAPT) bulletin. 1946;8(6):173-75
Abstract	Not available

