Report on Activities:
- SAARC Regional Workshop to Develop Protocol for QA on TB and HIV/AIDS Control and Prevention
- Partnership Programme with Medical Colleges on TB and HIV/AIDS Control and Prevention
- Partnership programme with Industries on TB Control
- SAARC Training on Data Management of TB & HIV/AIDS Control Programme
- SAARC Regional Training for Lab Trainers on Importing training on QA in Sputum Microscopy
- Fifteenth Meeting of Governing Board of STC
- World AIDS Day
  - Interaction Programme with Media
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- SAARC Charter Day
  - Interaction with School Students
- Partnership Programme with School and Media
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- Commemoration of World TB Day
- SAARC Regional Training of Trainers on ITSE
- Second SAARC-UNAIDS Expert Group Meeting to develop a Work Plan to implement SAARC Regional Strategy on HIV and AIDS

Editor's Request

STC Newsletter is a regular publication of SAARC TB and HIV/AIDS Centre, It includes reports on activities, decisions of important meetings of the Centre and recent information on tuberculosis, HIV/AIDS and their control.

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Editor: Dr. Ranu Mal Piryani, Deputy Director
Co-editor: Dr. Md. M. Rahman, Epidemiologist
Editorial

Looking back to recommendations on HIV/AIDS, a consultative meeting on TB & AIDS was organized in September 1996 in which, it was unanimously approved to make STC a Nodal Centre to strengthen, coordinate and cooperate among Member States by smooth flow of information on TB as well as HIV/AIDS control to STC with feedback to the Member States.

Subsequently, a four year SAARC-Canada Regional TB and HIV/AIDS Project was developed and successfully completed in March 2004 under which Regional Strategy for TB/HIV Co-infection, Regional Epidemiological and Laboratory Networks have been developed.

Under MoU between SAARC & UNAIDS signed in April 2004, SAARC Regional Strategy on HIV and AIDS was developed in April 2005 by Member States in close cooperation with UNAIDS & co-sponsors.

Considering the activities and achievements done by the Centre for prevention and control of HIV/AIDS, the 31st Session of the Standing Committee of SAARC held in Dhaka in November 2005 approved renaming of the Centre.

Now, the Centre will be working as SAARC TB & HIV/AIDS Centre (STC). STC is looking forward for your continued cooperation & coordination to achieve Millennium Development Goals (MDGs) set for TB & HIV/AIDS..........................................................
SAARC Regional Workshop to Develop Protocol for QA on Culture and DST in National TB Reference Laboratories, July 12-14, 2005 Islamabad

To comply recommendation of the Fourteenth Meeting of the Governing Board of STC, Regional Workshop to develop Protocol for QA on Culture and DST in National TB Reference Laboratories was organized jointly by STC and NTP, Pakistan in Islamabad on July 12-14, 2005.

Dr. Mostafa Kamal from Bangladesh, Mr. Binay Thapa from Bhutan, Dr. Balasangameshwara H Vollepore from India, Dr. Tribhuvan Prasad Rajbhandari from Nepal, Dr. Sabira Tahseen and Mr. M. K. Khatak from Pakistan participated in the workshop.

Dr. C. N. Paramasivan from TRC, Chenni, India was the resource person. Dr. Kashi Kant Jha and Dr. Rano Mal Piryani from STC facilitated the workshop.

Inaugural Session:

Dr. Ishfaque Ahmed, Deputy Director General (International Health), Ministry of Health, Govt. of Pakistan, chaired the session and delivered address. Dr. Syed Karam Shah, NTP Manager, Pakistan delivered welcome speech. Ms. Riffit Massod, Director SAARC Division, Ministry of Foreign Affairs, Pakistan graced the session as Chief Guest and presented the overview of SAARC.

Dr. Kashi Kant Jha, Director STC, delivered remarks as Guest of Honour in the opening session. Dr. Rano Mal Piryani, Deputy Director, STC spoke about the activities of STC and objectives of the workshop. Dr. Sabira Tahseen, In-charge, National TB Reference Laboratory, NTP, Pakistan delivered vote of thanks.

Objective of the Workshop:

To develop protocol on QA in Culture and Drug Sensitivity Testing in National TB Reference Laboratories of the SAARC Region.

Technical Session:

Dr. Kashi Kant Jha declared the session open. Participants discussed the draft agenda and adopted it.

Dr. Rano Mal Piryani, highlighted overview of laboratory network in SAARC Region and objectives and methodology of the workshop.

Dr. C. N. Paramasivan, resource person of the workshop, presented laboratory diagnosis of TB, Smear Microscopy and Culture & Drug Sensitivity Testing in TB Control as well as importance of QA, organization of Culture and DST activities in laboratory & need of protocol for QA.

Dr. S. M. Mostofa Kamal from Bangladesh, Mr. Binay Thapa from Bhutan, Dr. Balasamgameshwara from India, Dr. Tribhuvan Prasad Rajbhandari from
Nepal, and Dr. Sabira Tahseen from Pakistan presented their country presentations.

**Plenary Session:**
In this session QA in Smear Microscopy, QA in Culture and DST, Drug Resistance Surveillance, Generic Protocol and DRS Organization were discussed.

**Closing Session:**
The guidelines on Quality Control, which are most important component of QA of Mycobacterial Culture was adopted with suitable modifications. It was suggested further that STC may facilitate the Member States to organize culture and DST services by taking the help of reference laboratories available within the Region.

As a chairperson in the closing session, Dr. Kashi Kant Jha thanked all participants, resource persons and officials for their support to make the workshop fruitful and declared workshop completed.

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**Partnership Programme with Medical Colleges on TB and HIV/AIDS Control and Prevention in Karachi**

National TB Control Programme, Government of Pakistan and STC jointly organized one-day partnership programme with Medical Colleges on TB and HIV/AIDS on July 15, 2005 in Karachi, Pakistan. Seventy participants from Medical Colleges, NTP, Provincial TB Control Programme Sindh, WHO Sindh, representatives from drug manufacturing companies, TB and HIV/AIDS Centres, JICA Drug Management Centre, Civil Hospital, Private Practitioners and officials from STC took part in the programme.

**Methodology**
- Presentations, deliberations and Interaction

**Proceedings**

**Opening session**
Dr. Prof. Masood Hameed, Vice Chancellor, Dow University of Health Sciences, Karachi graced the occasion as Chief Guest. Dr. Syed Karam Shah, National Manager, NTP Pakistan welcomed the Chief Guest, participants and officials in the programme. Dr. Shah also expressed happiness and appreciated the initiative taken by STC for organizing this important activity in Karachi, Pakistan.

Dr. Kashi Kant Jha, Director, STC delivered remarks and highlighted the functions of STC and its role in prevention and control of TB & HIV/AIDS in the Region. He thanked the Chief

**Objectives**
- to build-up/expand partnership with Medical Colleges in planning, implementing & evaluating TB & HIV/AIDS control programmes and undertaking research for TB & HIV/AIDS & their control.
- to build up/expand partnership with Medical Colleges/Hospitals on advocacy for TB & HIV/AIDS control, providing learning opportunities for TB & HIV/AIDS & their control and providing preventive, diagnostic & management services for TB & HIV/AIDS in accordance with National programme guidelines.

Guest for gracing the inaugural session and appreciated the excellent arrangements done by the NTP, Pakistan.

Dr. Prof. Masood Hameed, VC, Dow University of Health Sciences, Karachi expressed his commitment to support TB control by implementing training, identification of focal persons in the Medical Colleges and TB related laboratory activities. He appreciated the activities being performed by STC in the Region.

**Technical Session:**

Dr. Rano Mal Piryani, Deputy Director, STC, presented Involvement of Medical Colleges in
addressing DOTS and TB/HIV co-infection in the SAARC Region.

Dr. Ashraf Sadiq, Director, Ojha Institute of Chest Diseases (Dow University of Medical Sciences), presented TB control by DOTS in Dow University Medical Sciences, Karachi.

Dr. Tojammul presented DOTS in Civil Hospital, Karachi.

Dr. Syed Karam Shah, NTP Manager, Pakistan presented involvement of Medical Colleges in DOTS implementation in Pakistan.

Participants from various institutions took part in the discussion.

Dr. Rano Mal Piryani, Deputy Director, STC coordinated and moderated the technical session.

Closing Session

Dr. Kashi Kant Jha, Director, STC chaired the closing session. Dr. Iqtidar Ahemed, TB Programme Manager, Sindh delivered vote of thanks. The chairperson delivered closing remarks.

The Nation – SUNDAY, JULY 17, 2005

The Nation – daily on July 17, 2005, published the news on above activities under the title “Experts identify TB among major health problems”. Some portion of the news was given as under

“(KARACHI, APP)-Experts addressing a workshop jointly organized by SAARC TB Centre (STC) and National TB Control Program (NTP) here Friday identified TB among the major health problems in the region.

Speakers including Dr. Kashi Kant Jha, Director, Dr. Rano Mal Piryani, Deputy Director, STC, Dr. Syed Karam Shah, NTP Manager, Dr. Ashraf Sadiq, Director, Ojha Institute of Chest Diseases, DUHS and Dr. Tajamul Beg explicitly discussed the issue of partnership among the medical colleges in DOTS implementation and the control / prevention of TB/HIV Co-infection.

The Chief Vice Chancellor, DUHS, Prof. Masood Hameed speaking on the occasion mentioned that there was no dearth of resources in the country to combat TB casting its devastating impact on health of almost all age group.

“What we need is absolute coordination among different stake-holders engaged in dealing with the disease at varied levels”.

According to him there was dire need for improved under standing among Principals of Pakistan based medical colleges and medical superintendents of all tertiary care hospitals along with provincial and federal levels TB control.

Idea and focus should be to mitigate discrepancies in drug prescriptions for TB patients and ensure implementation of a standardized DOTS program as recommended by WHO, he said mentioning that appropriate diagnosis coupled with required intervention and absolute compliance are equally significant.

In the given situation when general physicians and doctors at teaching hospital and specialized facilities are seem to making varied treatment regimen it is extremely essential to initiate continuing medical education programs for the GPs.

The VC also referred to an extremely pertinent issue related to shortage of well trained lab technicians in the country often causing confusion with regard to proper diagnosis of TB.

DUHS, he said, has taken a step in this regard as while introducing training programme for lab technicians on modern lines at the university, continuing medical education programmes are also organized for GPs in 32 different diseases including TB. DUHS being an autonomous institution, the VC said has also initiated adequate modifications in its curriculum”.

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Partnership Programme with Industries on TB Control in Karachi

National Tuberculosis Control Programme (NTP) Pakistan and STC jointly organized Partnership Programme with Industry workers on July 16, 2005 at JAVEDAN CEMENT FACTORY, Karachi, Pakistan.

Objectives

- to ensure commitment of all levels for TB control
- to ensure implementation of DOTS as part of the ongoing health services and to establish DOTS centre in identified areas
- to initiate information and education programme to raise awareness among workers about TB

Methodology

The following methodologies were adopted to conduct the programme:

- Meeting with the management to discuss various aspects of TB and its negative impact on the health of the workers, their families and the overall impact in the performance of the industry.
- Implementation of DOTS in the industry complex and
- Interaction with industry workers

Proceedings

Meeting with Industry management:

A meeting with the high level officials of the industry was held in the chamber of General Manager (GM), which was attended by all departmental heads, in-charges and NTP Managers from Sindh and Karachi.

Mr. Ashique Ali, GM welcomed the factory and STC officials in the meeting.

Dr. Kashi Kant Jha, Director, STC highlighted the objectives of the programme and explained the ways of prevention of TB, especially at the workplace. He also explained the importance of DOTS at the workplace.

Captain, Dr. A. B. Talpur, Deputy General Manager (Medical) gave information about medical facilities provided to the employees of the factory and expressed his happiness for bringing the awareness programme by targeting the workers of the Javedan Cement Industry. He also gave commitment to open DOTS centre at that industry.

Dr. Iqtidar Ahmed, NTP Manager, Sindh explained about TB control and DOTS programme run by the Government of Pakistan in Karachi and Sindh & assured to help in opening DOTS centre.

Dr. Rano Mal Piryani, Deputy Director, STC initiated the discussion. Dr. Kashi Kant Jha, Director and Dr. Rano Mal Piryani, Deputy Director and Dr. Md. M. Rahman, Epidemiologist, STC jointly clarified the queries related to TB and DOTS made by the factory officials.

Interaction with industry workers

Workers attended the interaction programme and acquired the knowledge about TB and its control.

Captain Dr. A. B. Talpur, Deputy General Manager (Medical) welcomed officials from STC and NTP Pakistan, PTP Sindh and industry workers and representative from union of industry workers. He also highlighted the importance of the programme.

Dr. Kashi Kant Jha, Director, highlighted in presentation that “TB is fully curable disease”.
An early detection and treatment are essential to control TB. The diagnosis and treatment are available at free of cost in all DOTS centres. He also added that if workers suffer from TB disease it affects not only the individual but also the family, industry and ultimately the Nation. So, TB control programme at the workplace is crucial.

Dr. Rano Mal Piryani, Deputy Director gave talk in local language on general information about TB.

Dr. Iqtidar Ahmed, NTP Manager, Sindh explained on various aspects of TB control and importance of DOTS in industrial setup.

Outcome:

There was an agreement between NTP Sindh and Industry Management to set up DOTS Centre in the premises of the industry for industrial workers.


To comply the recommendation of the fourteenth meeting of the Governing Board, STC organized training on data management of TB & HIV/AIDS control programmes from July 27 to 31, 2005 in Kathmandu.

Mr. Md. Nurul Islam, Health Educator, National TB and Leprosy Control Programme, Bangladesh, Mr. Tshewang Dorji, Programme Officer, STI & HIV/AIDS Programme and Mr. Kinzang Namgyel Programme Officer (TB), Bhutan, Mr. Hari Bahadur Kunwar TB/HIV Coordinator, NTC, and Mr. Hemanta Sharma Paudel, Health Education Inspector, National Centre for AIDS & STD Control, Nepal, Ms. Salma Bano, Computer Officer, NTP, Pakistan and Dr. Faisal Mansoor, Medical Officer, National AIDS Control Programme, Pakistan, Dr. D. M. K. S. P Herath, Medical Officer, NPTCCD, Sri Lanka participated in the training.

Mr. Sitaram Ghimire, Statistical Officer, NTC Nepal and Mr. Shyam Lal Kandel, Regional TB Coordinator WHO/NTP Nepal also took part in the training as additional participants from host country.

Inaugural Session:

Dr. Kashi Kant Jha, Director, STC delivered the welcome speech and expressed gratitude to the Government of Member States for valuable support to organize the training. Dr. Jha also expressed gratefulness of His Excellency SAARC Secretary General, Director, Mr. Mohamed Naseer for their guidance and support to implement this programme. Dr. Jha highlighted

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the objectives of the training.

Dr. Hari Nath Acharya, Member, Governing Board of STC & Chief, Policy, Planning and International Cooperation Division, Ministry of Health & Population, HMG Nepal, graced the inaugural session of the training.

Dr. Acharya highlighted the importance of data management in control of TB and HIV/AIDS and expressed his gratitude to the Member States for sending participants to make the training successful. On behalf of the MoH & P., HMG Nepal, he thanked Dr. Jha and STC team for organizing such important training in Nepal.

Dr. Acharya and Dr. Jha inaugurated the training jointly by clicking the Computer. Dr. Rano Mal Piryani, Deputy Director, STC delivered the vote of thanks.

Dr. Md. M. Rahman, Epidemiologist, STC conducted the inaugural session.

Programme of the Training

Each participants was provided with desktop computer and necessary training handouts/modules

Mr. Avijit Home Choudhury, Epi-Centre, Resource Person, TB Unit, WHO, New Delhi, Mr. Rastra Bhusan Khadka, Academic and Technical Director, National College of Computer Study, Kathmandu, Dr. Rano Mal Piryani & Dr. Md. M. Rahman facilitated the training.

Closing Session

The Chief Guest Dr. Bishnu Prasad Pandit, Director General, Department of Health Services, HMG Nepal graced the closing session. On behalf of the participants Dr. Faisal Mansoor from Pakistan thanked Director STC, his team and facilitators for their untiring efforts to teach them. He also expressed satisfaction for excellent arrangements of the training programme made by the organizers.

The Chief Guest and STC Director jointly awarded certificates to the participants and facilitators. Dr. Pandit expressed happiness and urged the participants to use their skills learnt in this training after resuming at works. Dr. Jha thanked the participants and facilitators for excellent efforts for making the programme successful. He extended his best wishes for the pleasant journey back to their country.
SAARC Regional Training for Laboratory Trainers on Imparting training on Quality Assurance in Sputum Microscopy, Aug. 15-17, 2005, Colombo

To comply the recommendation of the fourteenth meeting of the Governing Board, SAARC Regional training for Lab. trainers on imparting training on QA in Sputum Microscopy was organized jointly by STC and NTP Sri Lanka in Colombo, on August 15-17, 2005.

Inaugural Session:

Hon'ble Nimal Siripala de Silva, Minister of Health Care, Nutrition & Uva-Wellassa Development, Sri Lanka inaugurated the training by lightening the traditional lamp and delivered inaugural remarks. Dr. Chandra Sarukkali, Director, NPTCCD, Sri Lanka, delivered welcome address. Dr. Athula Kahandaliyanage, Director General of Health Services, Sri Lanka and Dr. Kashi Kant Jha, Director, STC delivered remarks, where as Dr. Rano Mal Piriyani, Deputy Director, STC gave vote of thanks. Dr. Imbulana conducted the inaugural ceremony.

Proceeding:

Technical Session:

Proceeding of the programme was started with the introduction of the participants.

Methodology

- Modular Training
- Presentation & Deliberation
- Field Visit

Objectives

- to update the knowledge and strengthen skills of the participants on quality assurance in sputum microscopy
- to make the participants proficient to impart training on quality assurance on sputum microscopy to laboratory supervisors at(District/Region/State/Province) levels.

Mrs. Thuji Wang, Lab. Technician, PHL, Thimphu, Ms. Pema Yuden, Lab Technician, PHL, Thimphu, Dr. V. P. Mynedu, Sr. Microbiologist and Head, Dept of Microbiology, LRS Institute of TB and Respiratory Diseases, Delhi, Ms. Thooma Adam, Lab. Technologist, PHL, Male, Ms. Fathimath Ibrahim Manik, Sr. Lab. Technologist, IGMH, Lab. Services, Male, Mr. Keshab Raj Sharma, Lab.Technician, Palpa Hospital, Nepal, Dr. Inayatullah Menon, Pathologist, Institute of Chest Diseases, Sindh, Dr. Muhammad Ashraf, Pathologist, Fatima Jinnah General Hospital, Quetta, Ms. D. R. Weerasinghe, Public Health Laboratory Technician, Central Laboratory, National Programme for TB control and Chest Diseases, Welisara, Mr. Jagath Kumara Guruge, Public Health Lab Technician, CCC, Colombo, Mr. P. A. L. D. Bandra, Public Health laboratory Technician, Central Lab, NPTCCD, Welasara, Mrs. L.N.K. Dilrokshika, PHL technician, Central Lab, NPTCCD, Welisara, and Dr. Jayanthi Elwitigala, Consultant Microbiologist, Central Lab., NPTCCD, Welisara participated in the training.

Dr. Sabira Tahseen, NPO, NRL, TNP, Pakistan, Dr. Chandra Sarukkali, Director, NPTCCD, Central Unit, Sri Lanka, Dr. K.A.I.U. Imbulana,
Training Co-ordinator, NPTCCD, Central Unit, Sri Lanka facilitated the training.

Dr. Kashi Kant Jha, Director, STC and Dr. Rano Mal Piryani, Deputy Director also facilitated and coordinated the programme.

Closing Session:

Dr. Jha chaired the closing session and Dr. Sabira Tahseen and Dr. Chandra Sarukkali gave their closing remarks. As chairperson, Dr. Jha thanked every participants and officials for their contribution in the training and declared the training closed.

Fifteenth Meeting of the Governing Board of SAARC TB Centre

The Fifteenth Meeting of the Governing Board of the SAARC Tuberculosis Centre was held on October 5-6, 2005 in Kathmandu. The Board Members Dr. Vikarunnessa Begum, Programme Manager (TB), Bangladesh, Dr. Ugen Dophu, Medical Director, JDWNRH, Thimphu, Bhutan, Dr. Teja Ram, Chief Medical Officer (TB), DGHS, India, Mr. Ibrahim Shaheem, Deputy Director General, Dept. of Public Health, Maldives, Dr. Babu Ram Marasini, Deputy Health Administrator, MoH & P, Nepal, Dr. Mohammad Naeem, Additional Director, Provincial TB Control Programme, Punjab, Pakistan and Mr. Wimal de Silva, Counsellor, Embassy of Sri Lanka (Nepal) Mr. Mohamed Naseer, Director, SAARC Secretariat and Dr. Kashi Kant Jha, Director, STC (Member Secretary) attended the meeting.

Hon’ble Mr. Neekshya SJB Rana, Assistant Minister for Health and Population, HMG Nepal inaugurated the meeting on Nov. 5, 2005. Dr. Nirakar Man Shrestha, Officiating Secretary, Ministry of Health and Population chaired the session. Mr. Mohamed Naseer, Director, SAARC Secretariat and Dr. Vikarunnessa Begum, Chairperson of the Governing Board of STC addressed the session. Dr. Kashi Kant Jha, Director, STC delivered welcome address in the inaugural session.

Dr. Kashi Kant Jha, Director, STC presented the achievements of the year 2005 and proposed the programmes and budget for the year 2006 in the meeting of the Governing Board.

The Governing Board reviewed the achievements of the Centre of the year 2005 and recommended programmes and budget for the year 2006.

Programme for the year 2006

1. Public Awareness and Advocacy Programme on TB and HIV/AIDS
2. Participation in International/Regional Meetings, Seminars, Conferences in the field of TB and HIV/AIDS & NTP Review in Member Countries
3. Production and Distribution of STC Publications
4. Strengthening of STC Library and strengthening and updating of Website
5. Carry out Situation Analysis of TB and HIV/AIDS Control Program Activities in India and Nepal
6. SAARC Regional Meeting of Managers of National TB Control Programme from SAARC Member States
7. SAARC Regional Training of Trainers (TOT) on Quality Assurance in Sputum Microscopy
8. SAARC Regional Training on Leadership and Strategic Management in TB and HIV/AIDS Control
9. SAARC Regional Training on Data Management Applications for TB and HIV/AIDS Managers
10. SAARC Regional Workshop to revise Regional Guidelines for Quality Assurance in Sputum Microscopy and Develop Country Specific Protocol for DRS
11. SAARC Regional Training of Trainers on DOTS Plus
12. 3rd SAARC Regional Workshop on TB/HIV Co-infection
13. Strengthening SAARC Regional Epidemiological Networking by developing software (Epi. Centre for TB & other for HIV/AIDS data management)
14. Prevalence of HIV among diagnosed TB Patients in Bangladesh / Pakistan
15. Gender based disparity among TB suspects and new TB patients: a record based retrospective study in the Region
16. SAARC Regional Workshop on Advocacy, Communication and Social Mobilization
17. Procurements of Chemicals and other Materials for STC Reference Laboratory

Activities under UNAIDS support to SAARC

1. Second SAARC-UNAIDS Expert Group Meeting to develop a Work plan to implement SAARC Regional Strategy on HIV and AIDS, in Dhaka in April 2006
2. Short term staff to initiate the process of implementation of SAARC Regional Strategy on HIV/AIDS
3. SAARC/ASEAN Workshop to promote awareness on HIV/AIDS prevention and control
4. Study visit by SAARC delegation on ASEAN’s experiences on HIV/AIDS prevention and control

World AIDS Day 2005

World AIDS Day is commemorated around the globe on 1st December every year. It celebrates progress made in the battle against the epidemic – and highlights issues need to be addressed. Every year a theme is given and accordingly the theme of the year 2005 was “Stop AIDS, Keep Promise”.

Awareness is the main issue needs to be addressed to prevent HIV. To create awareness STC organized partnership programmes with media on control and prevention of TB and HIV/AIDS in Birgunj, Parsa, Nepal.
Interaction Programme with Media:


Birgunj, being one of the main entry points, was chosen for advocacy to the media people of both side of border, Nepal and India.

Forty-eight Journalists from Parsa District of Nepal and Raxual of India and representatives from government and non-government organizations participated in the programme.

Opening Session

Dr. Murali Prasad Sing, Medical Superintendent, Narayani Sub-regional Hospital, Parsa, Nepal chaired the session and Mr. Nabin Kumar Ghimire, Chief District Officer, Parsa district graced the occasion as a Chief Guest.

Mr. Shartrughan Nepal, President, Federation of Nepalese Journalists Association, Parsa, delivered welcome address.

Mr. Binod Gautam, District Public Health Officer, Parsa highlighted the present status and problem of HIV/AIDS in Parsa district.

Mr. Nabin Kumar Ghimire, CDO, Parsa thanked STC for organizing this programme on the occasion of World AIDS Day 2005 in Birgunj. He expressed satisfaction for the invitation of journalists of Nepal and from adjacent district of India. He also appreciated for the gathering of people from different level such as doctors, bureaucrats, social workers, etc. working for HIV/AIDS.

Dr. Kashi Kant Jha, Director, STC welcomed the participants. He thanked for their active participation in the programme. Dr. Jha presented paper on "Situation of HIV/AIDS and TB/HIV co-infection in the SAARC Region". He emphasized that TB and HIV/AIDS are not only medical problem but also the social and economical problem. So, media is only the effective vehicle to carry the messages against TB and HIV/AIDS in the community. He also thanked media people for their continued support & extending collaboration at this juncture.

Mr. Rano Mal Piryani, Deputy Director, STC presented "the Role of Media in Control and Prevention of HIV/AIDS". He explained the role of media and said that media has to play role in mobilizing public support, influencing policy makers and reducing social stigma and discrimination.

Dr. Md. M. Rahman, Epidemiologist, STC presented prevention strategy for HIV/AIDS. Dr. Rakesh Verma, President, NMA, Parsa and Mr. Ganga Bahadur Thapa, Vice-president, NATA, Parsa gave their remarks.
Discussions:

Director, Deputy Director, Epidemiologist of STC, Mr. Binod Gautam, DPHO, Parsa and Dr. Murali Prasad Singh, Medical Superintendent, Narayani Sub-regional Hospital, Parsa clarified the queries raised by the participants during discussion.

Suggestions from Participants:

1. Plan the activities on the cross-border issues, media education/training activities and rural/VDC based activities for the control of TB and HIV/AIDS.
2. Organize training programme on creating awareness on TB and HIV/AIDS for the journalist of the SAARC Region.
3. Prepare visual of awareness & literacy programme on TB and HIV/AIDS.

After discussion Dr. Rakesh Verma, President, NMA, Parsa, Mr. Ganga Bahadur Thapa, Vice President, NATA, Parsa delivered their remarks.

Closing Session:

Dr. Murali Prasad Singh, Med. Superintendent, NSR Hospital, Parsa, chairperson of the programme delivered the concluding remarks. He acknowledged the cooperation rendered by the journalists. He also thanked the STC officials and declared the session closed.

Media coverage:

News Papers appreciated the activities of STC

Different newspapers from India and Nepal (Birgunj) published the news of the activities organized by STC on the occasion of World AIDS Day 2005 in Birgunj:

Hindustan Daily:

Nepal mey 61,000 HIV pidit.........

Hindustan – Daily 02 December 2005, It was published in Hindi language titled “Nepal mey 61 hazar HIV pidit” (61,000 HIV infected people in Nepal). In the news it was mentioned that SAARC TB Centre and Federation of Nepalese Journalists (FNJ), Parsa district jointly organized a seminar on HIV/AIDS under the chairpersonship of Dr. Murali Prasad Singh. The chief guest was Mr. Nabin Ghimire, CDO, Parsa district. In the programme Dr. Rakesh Verma, President, Nepal Medical Association, Narayani Region, Mr. Ganga Bahadur Thapa, Nepal Anti-TB Association, Parsa, Dr. Murali Prasad Singh, Chief, Narayani sub-Regional Hospital, Dr. Kashi Kant Jha, Director, STC and Deputy Director of this Centre Dr. Rano Mal Piryani (Pakistan) Dr. M. Rahman (Bangladesh) explained about the prevention and control of TB and HIV/AIDS in the community and role of the journalist.

Similarly the following dailies of Birgunj also published the news by appreciating the activities organized at Birgunj:

- Jana Pratibimba, Daily
- Pratik, Daily
- Chatyang, Daily
- Satya Sandesh Daily
- Ankush Daily
Partnership Programme with School

The SAARC TB Centre organized a partnership programme with school an awareness programme on TB and HIV/AIDS at Shri Mahabir Prasad Raghubir Ram Madhyamik Bidyalaya, Birgunj, Nepal on Dec. 2, 2005.

Opening Session:
Mr. Janak Prasad Aryal, Teacher, Shri Mahabir Prasad Raghubir Ram Madhyamik Bidyalaya chaired the session. Mr. Binod Gautan, DPHO, Parsa welcomed the participants and officials from different organization in the programme.

Dr. Kashi Kant Jha, Director, STC delivered welcome address and highlighted the objectives of the programme and role of students in control of TB and prevention of HIV/AIDS in the community.

Dr. Rano Mal Piryani, Deputy Director, STC gave general information on TB. Dr. Md. M. Rahman, Epidemiologist, STC discussed general information about HIV/AIDS & its spread and prevention.

Students and teachers took part in discussions and raised different queries, which were answered by the STC experts.

Closing Session
Dr. Rakesh Verma, President, NMA, Parsa and Mr. Ganga Bahadur Thapa, Vice-president, NATA, Parsa gave their remarks. Mr. Shatrughan Nepal, President, Nepal, Federation of Nepalese Journalist also gave remarks.

Objectives:
- to educate students about TB, HIV/AIDS and TB/HIV co-infection and control of TB and prevention of HIV infection,
- to forge an active partnership with students in fight against TB and HIV/AIDS, TB/HIV co-infection, and
- to raise public awareness by mobilizing community at large.

Mr. Janak Prasad Aryal, Teacher, Shri Mahabir Prasad Raghubir Ram Madhyamik Bidyalaya and Chairperson of the programme concluded the programme with his remarks.

The programme was appreciated widely and there were requests for organizing such type of awareness programme in future.

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SAARC Charter Day

Interaction with School Students


Mr. Ratna Lal Shrestha, Vice Principal, welcomed the STC team, students and teachers at the programme. The programme was started with the presentation of Dr. Kashi Kant Jha, Director, STC. Dr. Jha highlighted the activities of STC and status of TB and HIV/AIDS in the SAARC Region. He also appealed the students to play the role of "Child Ambassador" to control TB and HIV/AIDS in the community.

Dr. Rano Mal Piryani, Deputy Director, STC explained about TB, its symptoms, diagnosis and treatment where as Dr. Md. M. Rahman, Epidemiologist explained about HIV/AIDS, its spread, precaution and prevention.

On behalf of school Mr. Rupak Gyawali, Teacher assured STC of their contributions for the control of HIV/AIDS in the community. Mr. Gyawali also expressed happiness for getting opportunity to participate in the programme and thanked STC for selecting their school to organize the programme. He also advised students to communicate the knowledge, which they have gained in this programme to their friends, family and relatives.

All participants expressed their willingness to contribute and shown their solidarity to help STC in its efforts to control TB and HIV/AIDS.
SAARC Training of Trainers on Tuberculosis Control Programme Management in Islamabad, Pakistan

Trainer's Training on Tuberculosis Control Programme Management was jointly organized by NTP, Government of Pakistan and SAARC Tuberculosis and HIV/AIDS Centre (STC), Kathmandu in Islamabad from 12 to 21 December 2005.

Dr. R. P. Vasist, State TB Control Officer, Delhi, Ms. Aishath Wahida, CHW, Male, Ms. Maya Ranjitkar, Senior Public Health Administrator, Pokhara, Dr. Sundar Shyam Jha, MO, NTC, Bhakapur, Dr. Muneer Ahmed Mangrio, District Health Officer, Sukkur, Dr. Saleem Ahmed, EDO Health, Balochistan participated in the programme.

Ms. Salma Bano, Computer Officer, NTP, Pakistan, Dr. Imtiaz Ali Memon, Assistant Manager, TB Control Project, Good Life Health Services, Pakistan, Dr. Tariq Rashid, MO, Social Security, Islamabad, Mr. Abdul Majeed Naich, Statistical Officer, NTP, FG TB Centre, Rawalpindi also participated in the programme as additional participants from the host country.

Dr. Pushpa Malla, Senior Consultant Chest Physician, NTP, Nepal, Mr. Syed Zia Khurshid, Sociologist, NTP, Pakistan, Dr. Sameh Yousef, Team Leader, STCP, GLRA, Islamabad, Dr. Thomas, GTZ, Dr. Karam Shah, NTP Manager, Pakistan, Dr. Sabira Tahseen, Lab In-charge, National TB Reference Laboratory, NTP, Pakistan and Dr. Hussain Hadi, Deputy Programme, Manager, NTP, Pakistan along with Dr. Kashi Kant Jha, Director, STC, Dr. Rano Mal Piryani, Deputy Director and Dr. Md. Mojibur Rahman, Epidemiologist facilitated the programme.

Inaugural Session

Dr. Hussain Hadi, Deputy Programme Manager, NTP, Pakistan opened the training.

Proceedings

Technical Session

Following topics were presented and discussed:

i. Role of Laboratory Services
ii. Logistics Management & Drug Procurement
iii. Importance of Partnership Programmes
iv. Recording & Reporting, Monitoring, Supervision & Data Management
v. TB/HIV Co-infection Activities in TB Control Programme
vi. MDR TB and its Management

Objectives

- to strengthen the capacity of the participants in managing tuberculosis control programme and imparting trainings, to health care providers in this respect
- to strengthen the capacity of the participants in implementation and,
- to evaluate TB control programme based on the DOTS strategy and imparting trainings to health care providers in this respect.
vii. Human Resources Development for TB Control

Field Visit was also organized.

Closing Session

Dr. Syed Karam Shah, National Manager, NTP Pakistan honoured the participants and facilitators by offering them Certificates and CD containing electronic copies of the presentations and delivered the closing remarks.

Dr. Kashi Kant Jha, Director, SAARC TB and HIV/AIDS Centre also facilitated the training course where as Dr. Rano Mal Piryani, Deputy Director of the Centre facilitated and coordinated the programme. Dr. Md. M. Rahman also participated on the training.

Partnership Programme with School and Media held at Hyderabad, Sindh, Pakistan on Dec. 23, 2005

Partnership with School in Control and Prevention of TB

An interaction programme with school students in control and prevention of TB was held at Government Himayat-ul-Islam Girls High School, Hyderabad, Sindh, Pakistan on Dec. 23, 2005. SAARC TB and HIV/AIDS Centre, Kathmandu, Nepal, National TB Control Programme, Pakistan and Provincial TB Control Programme, Sindh jointly organized the programme at school premises. Nearly 100 participants (students and teachers) participated in the programme.

Proceeding of the programme:

Head Mistress of the school extended a warm welcome to the officials of STC and PTP of Sindh and all the participants. She thanked the organizers for selecting their school for such an important activity. She emphasized that the students could play active role in spreading messages against TB in the community.

Dr. Rano Mal Piryani, Deputy Director, STC explained about the general information on TB in local language (Urdu & Sindhi)

Dr. Kashi Kant Jha, Director, STC extended a warm welcome to the participants and highlighted the role of students in TB control and prevention.

Dr. Iqtidar Ahmed, Manager, PTP, Sindh briefed about the activities being carried out in Hyderabad district.

The experts answered the queries raised by the participants about the TB and its control programme.

Objective

To enhance public awareness on control and prevention of TB by:

- educating students about TB, its control and prevention,
- forging a partnership with students in fighting against TB and
- raising public awareness by mobilizing community at large
At the conclusion Dr. Nazir Shaikh, NPO, PTP Sindh thanked to all the participants, Head Mistress, Teachers and Staff of the school. Dr. Shaikh appreciated the cooperation rendered by school and PTP officials. He thanked STC for organizing this programme in Sindh.

An audiovisual documentary was displayed in the programme.

Dr. Mohd. Gajjan Mastoi, District TB Coordinator, Hyderabad district coordinated the programme.

**Partnership with Media in Control of TB and Prevention of HIV/AIDS**

An interaction programme with media people in control of TB & prevention of HIV/AIDS was held at Hyderabad, Pakistan on Dec. 23, 2005. SAARC TB and HIV/AIDS Centre, Kathmandu, Nepal, National TB Control Programme, Pakistan and Provincial TB Control Programme, Sindh jointly organized the programme.

**Objective**

To enhance public awareness on TB and HIV/AIDS and their control and prevention by making media aware about situation of TB and HIV/AIDS, its nature of spread as well as impact on people and convincing the media people to be a part of campaign.

An audiovisual documentary was displayed in the programme.

**Proceeding of the programme:**

The programme was started under the chairpersonship of Representative from Director General of Health Services, Sindh.

Hon'ble Law Minister of Sindh Mr. Chudhari Iftikhar Ahmed graced the programme as a Chief Guest. Dr. Iqtidar Ahmed, Manager, PTP, Sindh welcomed the participants and briefed about the TB control programme in Sindh and Pakistan.

Dr. Kashi Kant Jha, Director, STC extended a warm welcome to the Chief Guest and participants and highlighted the situation of TB & HIV/AIDS in the SAARC Region. He also briefed about the role of STC in control of TB & prevention of HIV/AIDS in SAARC Region. Dr. Rano Mal Piryani, Deputy Director, STC talked on the role of media in prevention and control of TB and HIV/AIDS.

Discussions, question-answer session were held after the presentations. Participants appreciated the efforts made by NTP Pakistan, PTP Sindh and STC Kathmandu for control of TB and prevention of HIV/AIDS. They thanked the organizers for holding such programme in Hyderabad.

Hon'ble Law Minister of Sindh Mr. Chudhari Iftikhar Ahmed as a Chief Guest delivered remarks and said that Government has given high priority to control of TB and allocated enough fund for it.

The Chairperson of the programme expressed the commitments of his department in controlling TB & preventing HIV/AIDS to the participants.

Dr. Nazeer Ahmed Shaikh, NPO, Sindh delivered vote of thanks.

An audiovisual documentary on Burden of TB & HIV/AIDS in SAARC Countries, Success & Future Challenges was also displayed in the programme.
SAARC Regional (Second) Workshop on TB/HIV Co-infection to identify Research Areas & to develop Research Protocol on the identified areas & study visit to TB/HIV (pilot project) implementation sites from 28-31 Dec. 2005, Pune, India

Objectives
- to review the trend of TB, HIV/AIDS & TB/HIV co-infection and their impacts regionally
- to adopt TB/HIV collaborative approach by sharing experiences and by visiting TB/HIV pilot project areas, (programme implementation sites)
- To identify priority research areas/topics in relation to TB/HIV co-infection and to develop research protocol on the identified areas/topics.

Inaugural Session
Dr. Kashi Kant Jha, Director, STC chaired the session. Dr. P. P. Doke, Director, Health Services, Maharashtra, India graced the session as Chief Guest. Dr. A. B. Patil, State TB Officer, Maharashtra welcomed the participants. Dr. Jha delivered the opening address and highlighted the problem of TB, HIV and TB/HIV co-infection

Methodology:
- Presentation on country situation of TB, HIV/AIDS & TB/HIV co-infection,
- Field Visit
- Group Work
- Interactions & discussions
in the SAARC Region and explained the need of the workshop. Dr. V. Salhotra, CMO, Central TB Division, Government of India gave remarks. Dr. Rano Mal Piryani, Deputy Director, STC delivered the vote of thanks.

**Proceedings:**

**Technical Session:**

Dr. K. Sharma from Bhutan chaired the proceeding of the technical session. Dr. Md. M. Rahman, Epidemiologist, STC discussed the objectives, methodology and expected outcome of the workshop. Participants presented their country presentations.

Dr. V. S. Salhotra chaired the second session that identified & prioritized the research topics.

Field visit to VCTC, DMC, DOTS centres and National AIDS Research Institute, Pune was organized. The participants presented field visit reports under the chairpersonship of Dr. Fatima from Maldives. The draft protocols were discussed at the session chaired by Dr. Pushpa Malla. Participants also prepared certain recommendations.

Dr. A. B. Patil, Member Secretary & State TB Officer, Maharashtra State TB Control Society, DD of Health Services, Maharashtra, India, Dr. Padma Shetty, TB/HIV Medical Consultant, WHO, Maharashtra, India, Dr. Anita Kar, Reader in Health Sciences, Social Medicine Department, University of Pune, India, and Dr. Srikanth P. Tripathy, Deputy Director, National AIDS Research Institute, Pune, Director, Deputy Director & Epidemiologists of STC facilitated the workshop.

Dr. Sheela Rangan, Chief Research Scientist, MAAS, Pune and Dr. Amrita Mishra, WHO Consultant, TB, Maharashtra also facilitated the programme.

**Closing Session:**

Dr. Piryani, presented the recommendations and sum up of the workshop. Dr. Jha delivered the closing remarks. He thanked participants, facilitators for their deliberations and invaluable contributions to make the workshop successful by developing research protocols. He expressed gratitude to the Government of India, Central TB Division, Government of Maharashtra, Dr. Patil and his team for excellent arrangement and cooperation. Dr. Pushpa Malla gave remarks on the behalf of participants.

Chief Guest Dr. Tripathi highlighted importance of Operational Research and Dr. Ayer told about the benefit of workshop to the participants. Dr. Karnatake, APD, Maharashtra, a chairperson awarded certificates to the participants. Dr. Vikas Inamdar delivered the vote of thanks.

**Quality Assurance of Sputum Smear Microscopy in Private laboratories in Nepal**

To comply with the decision of the 14th Meeting of the Governing Board of STC a study on Quality Assurance of sputum smear microscopy in private laboratories in Kathmandu valley and Bhaktapur districts of Nepal was conducted in the year 2005. Randomly 10 laboratories (5 from each district) were selected for this study, among them 9 laboratories took part. The study was focused to ensure that the selected laboratories would provide results, which are correct and relevant to the clinical situation of the TB suspects or chest symptomatics.

**Objectives**

- to assess the quality of sputum microscopy of selected laboratories in Kathmandu valley using a panel of stained smears,
- to suggest or recommend necessary measures for further improvement.

**Participating Laboratories**

**Kathmandu district**

1. Everest Nursing Home, Baneshwor
2. Sanjibani Polyclinic, Jadibuti
3. Koteshwor Medical, Koteshwor
4. S. S. Pharma, Koteshwor

Bhaktapur district
1. Dr. Iwamura Memorial Hospital, Sallaghari
2. Suryabinayak Policlinic, Suryabinayak
3. Model Clinic, Tripurasundari
4. Shrestha Pathology, Dudhpati
5. S. S. Pathology, Suryabinayak

Discussion and Conclusion

Quality Assurance of Sputum Smear Microscopy is one of the methods recommended for External Quality Assessment (EQA). Present study of Quality Assurance of Sputum Smear Microscopy in Private Laboratories in Nepal was conducted first time in the Region. Of the nine laboratories, taken part in the first round testing; only one laboratory had a QE. None of the laboratories have showed any major error.

It is recommended that prior to involvement of private laboratories in TB control at least External Quality Assessment activity should be done with subsequent training and orientation as per need.

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Third Round External Proficiency Testing of Smear Microscopy in National TB Reference Laboratories in SAARC Region

STC conducted Third Round External Proficiency Testing of Smear Microscopy in National TB Reference Laboratories in SAARC Region in 2005. STC supports National TB Reference Laboratories by coordinating and conducting laboratory activities to improve quality assurance on sputum smear microscopy; standardize the culture and drug susceptibility testing. It also supports to implement internationally accepted bio-safety measures.

The 3rd round of external proficiency testing on sputum smear microscopy in National TB Reference laboratories is one of such kind. After analyzing the reports the results reveled that none of the National TB Reference labs reported errors of any type.

Objective

To implement an ongoing proficiency testing programme for sputum smear microscopy within the Networks of National TB Reference laboratories in SAARC Region.

Methodology

- Preparation of a panel of 10 slides
- Distribution of each panel to National TB Reference Lab for examination
- Getting back panel of slide along with reports
- Analyzing of the reports received.

Prevalence of HIV among diagnosed TB patients

The study on prevalence of HIV among diagnosed TB patients is being carried out in Nepal with the objective to estimate proportion of HIV infection among diagnosed TB patients. The study is continuing and will be finished soon.
Barriers in seeking health care in TB control programme, an Institutional Based Pilot Study in Dhaka, Bangladesh

The study was conducted in two TB diagnostic centres of Bangladesh.

1) TB Control & Training Institute, Chankharpool

2) National TB Control Project, Shyamoli, Dhaka

The objectives – The objectives of the study were to assess the pattern of health seeking behaviour and to explore the barriers in seeking health care among the TB suspects with gender differentials.

Design & methodology – The study was an institution based, cross sectional study, which was conducted among 998 identified TB suspects of both sexes and of ages 15 years or more. Information and socio-demographic characteristics, presenting symptoms/complaints, health seeking behaviour and barriers in seeking health care of the TB suspects were collected by using pre-tested semi-structured questionnaires.

Results – The overall male:female ratio was 57:43. More than 52 % of the studied TB suspects were below 30 years of age. Higher number of female was found in the age group of 15-19 years and beyond that males were more. Overall mean age was significantly higher in male TB suspects than that in female TB suspects (p<0.05). About 68% of the TB suspects were from urban area and no sex difference was found regarding their place of residence, (p>0.05). Mostly they were from low socio-economic status.

Along with cough other complaints were chest pain (87%), fever (82%), night sweat (62%), loss of appetite (86%), loss of weight (89%) and blood in sputum (33%). Compared to males, higher number of females complained of fever, chest pain and loss of appetite (p<0.05 in each case). Duration of symptoms showed no significant sex difference except night sweat by which female suffered for longer duration (p=0.044).

About 17% of the TB suspects did not seek any advice for their symptoms. In this regard there was no significant sex difference. The most common cause for not seeking health care was lack of awareness or ignorance (52%). Others causes were want of money (32%) and lack of time (15%).

Among those who sought advice for their symptoms, 42% visited paraprofessionals or irrelevant sources and another 38% visited either qualified private practitioners or private hospitals. Only 16.5% visited government hospital/health posts. No significant gender difference was found in this regard. Significantly more males had to loose wages and more females had to take an accompanying person for visiting the centre. About 75% of the TB suspects faced some form of social stigmatization.

Conclusion - A substantial proportion of the TB suspects in this study did not seek health care due to lack of awareness or ignorance. Among those who sought advice for their symptoms, most of them visited paraprofessionals or private sectors. Some of the TB suspects faced social stigmatization. Strengthening of awareness programme for paraprofessionals and expansion of public private partnership are vital to achieve the target of TB case detection.

Strengthening STC Library

STC library, a Resource Centre is established for health workers; researchers, medical students and general people. Students from medical/nursing colleges, doctors/nurses working in different hospitals and research centres as well as general people use this library. It remains opened from 9 am to 5 pm, Monday to Friday except SAARC holidays.
New books added in Library:

1. Global Patterns of HIV/AIDS Transmission, Dr. V. Ramanurthy
2. HIV/AIDS Vulnerability in South Asia, Dr. V. Ramamurthy
3. AIDS Transmission: Challenges in the New Millennium, G.C. Satpathy
5. Prevention of HIV/AIDS and Drug Abuse
6. AIDS in the World, Jafar Mahmum
7. AIDS Causes & Prevention, Jaiswal
9. AIDS Pathology, Diagnosis, Treatment & Prevention
10. Tuberculosis, Madkour
12. Health and Social organization
14. Poverty migration and HIV/AIDS
15. AIDS and NGOs
16. Programming with C – Gottfried
18. Hardware Bible – Winn Rosch
19. Introduction to Computer – Peter Norton
20. Let Us C – Kanetkar
21. HTML – Bible Series
Renaming of the Centre

On the recommendation of Fifteenth Meeting of Governing Board of STC, the 31st Session of Standing Committee of SAARC held in Dhaka on November 9-10, 2005 renamed the SAARC Tuberculosis Centre as **SAARC Tuberculosis and HIV/AIDS Centre**.

The Headquarters agreement

31st Session of Standing Committee of SAARC approved the common format for Headquarters Agreement between SAARC Regional Centres and host Government. The Headquarters Agreement between SAARC Tuberculosis & HIV/AIDS Centre and His Majesty’s Government of Nepal will be signed soon.

WHO Collaborating Centre

Dr. Nani Nair, WHO/SEARO and Dr. C. Gunneberg, WHO, Nepal discussed the re-designation of STC as WHO Collaborating Centre with Dr. Kashi Kant Jha, Director, STC on December 10, 2005. Dr. Rano Mal Piryani, Deputy Director and Dr. Md. M. Rahman, Epidemiologist, STC also took part in discussion. The team discussed the functioning of the Centre as a collaborating centre of WHO for the control of TB and HIV/AID in the Region for next four years.

SAARC Regional Strategy on HIV/AIDS

SAARC Regional Strategy on HIV/AIDS has been developed in collaboration with UNAIDS in April 2005 in Expert Group Meeting held in Dhaka. The 31st Session of Standing Committee of SAARC held in Dhaka on Nov. 9-10, 2005 approved the strategy.

STC’s Participation

23rd IUATLD-ER Conference in Lahore, Pakistan

At the invitation of the Chairman, Organizing Committee of 23rd International Conference on TB and Lung Diseases IUATLD-ER, Lahore, Pakistan, Dr. Kashi Kant Jha, Director, Dr. Rano Mal Piryani, Deputy Director and Dr. Md. M. Rahman, Epidemiologist participated in the conference held in September 25 to 28 in Lahore, Pakistan.

Dr. Jha, Dr. Piryani and Dr. Rahman presented papers on TB Situation in the SAARC Region, TB/HIV Co-infection & its status in SAARC Region and Socio-demographic characteristics of families with and without TB suspects: findings from a community based survey in Kathmandu valley respectively.

36th Union World Conference on Lung Health – Paris

Dr. Jha presented papers on “Success of Tuberculosis Control in the SAARC, Dr. Piryani presented papers on "Quality Assurance of Sputum Microscopy in the SAARC and Dr. Rahman presented papers on "Barriers in seeking health care among TB suspects: a community based pilot study in Kathmandu valley in 36th IUATLD World Conference held in Paris from 18-22 October 2005.

International Review of NTP Nepal

At the invitation of the Director, NTP Nepal the Director and Deputy Director from STC participated in NTP review along with the International and National experts conducted from 17 –26 November 2005.

PPP Workshop in TUTH
Dr. Kashi Kant Jha, Director, STC participated in PPP Workshop held on November 23, 2005 at Ttibhuvan University Teaching Hospital (TUTH) Kathmandu.

26th Session of Programming Committee of SAARC

Dr. Kashi Kant Jha, Director, STC participated in 26th Session of Programming Committee of SAARC held in Dhaka on November 8-9, 2005. Dr. Jha presented the Report of STC Governing Board.

4th Meeting of the SEAR Technical Working Group on TB:

At the invitation of WHO/SEARO Dr. Kashi Kant Jha, Director and Dr. Rano Mal Piryani, Deputy Director attended the meeting held at Kathmandu on December 8-9, 2005. The meeting reviewed the progress during the past year and followed up the recommendations of the 3rd TWG meeting held at SEARO, New Delhi. The meeting also advised on key priorities to scale up and intensify implementation of the expanded DOTS strategy at Regional and country levels towards reaching the Millennium Development Goals and recommended ways to ensure and sustain adequate financial support for TB control activities.

11th Meeting of the National TB Programme Managers of SEA Region

With the objectives to review the progress at the country level in regard of TB control targets set for 2005 to discuss the Regional Strategic Plan for TB, National five-year TB control plans (2006-2010), to identify country-specific steps for implementation during 2006-2007 and to identify steps for implementation of joint TB-HIV activities at the Regional and country level, a meeting was organized in Kathmandu from 5-7 December 2005 by WHO/SEARO. Dr. Kashi Kant Jha, Director and Dr. Rano Mal Piryani, Deputy Director of STC participated in the meeting.

Involvement of Students in TB Control

World Vision International and Nepal Public Health Association organized a programme to distribute awards to the winners of essay competition at Korea-Thimi Maitri Hospital at Thimi, Bhaktapur, Nepal. Dr. Kashi Kant Jha, Director, STC graced the occasion as Chief Guest. In the competition students of 16 schools from Bhaktapur participated. After awarding the certificates Dr. Jha highlighted the importance of the involvement of schools in TB control. He explained about the role of school in prevention and control of TB. He also explained the activities of STC in schools and highlighted the importance of essay competition organized by STC at different schools of SAARC Member States on the occasion of SAARC Awareness Year for TB and HIV/AIDS 2004.

Participation in International Course

Dr. Rano Mal Piryani, Deputy Director, STC attended the International Course in Budgeting & Finance for TB Control from Sept. 5-17, 2005 held in Bangkok organized by IUATLD (the UNION) Paris, under the sponsorship of IUATLD.

Happiness of Abhaya Raj made us more happy....

The Kopila - January 20, 2006 – Supplementary of the Kantipur daily published an article under the title "SAARC ma Doshro" means 2nd in SAARC. In this article, the success story of Abhaya Raj Shakya, Grade 10, Palpa Abasiya Madhyamik Vidyala, has been published. He got second prize in Essay Competition organized by SAARC TB Centre on the occasion of SAARC Awareness Year on TB and HIV/AIDS 2004. In this competition Miss Tanjeen Laila Jhilik from Bangladesh stood 1st and Wishma Jeewanali Samaraweera from Sri Lanka stood 3rd. STC congratulate all of them.

A Tribute to Dr. Iwamura

STC expressed profound grief at the sad demise of Dr. Iwamura, Japan who has lot of contributions in TB control activities in Nepal. He had started his service through UMN in 1960 and served for 25 years. He was given title of "Bare
Footed Doctor" because some time he used to forget to put-on his shoes during field visit to serve the people hurriedly. So people of Palpa district – (western Nepal) gave him lovely title of **Bare Footed Doctor**. He died on November 27, 2005 after long suffering from blood cancer.

We pray to the Almighty God for the eternal peace of his departed soul.

It is an honour Dr. Iwamura Memorial Hospital and Research Centre is established at Sallghari of Bhaktapur district of Nepal.
Every Life is Precious
Even if a single death from Tuberculosis
can be prevented by this book,
this book is worth it.

SeSyTuFFo: The TB Warriors

Fight TB
NOW
So that the battle is timely
WON

By
Dr. Vijay Gupta
Assistant Professor
Manipal College of Medical Sciences, Pokhara, Nepal
Control of any disease requires active participation of end users and tuberculosis is no exception. Increased awareness ensures optimal utilisation of health services by the target group.

The children form an important proportion of the nation’s population and they are in a unique position to reach all the end users till the grass-root. The best platform to mould them is schools. However, the literature and effort to motivate them, create awareness among them is highly inadequate. Providing them with necessary information can be very helpful in spreading the required message across the cross-section of society creating a cascading effect. It is well said, "Forewarned is Forearmed". It goes without saying that educating them about a single disease can serve as foundation for education on many other medical problems.

Taking the case of tuberculosis, it is considered as a social stigma, incurable, people don't know that its treatment is free. These are some of the reasons, which relate to its spread and need concerted efforts at the level of community. For instance, tuberculosis being a communicable disease spreads mainly due to delay in seeking treatment and partly also due to not taking due precautions while coughing, sneezing etc. which produce contagious air-droplets. Though health providers can provide all necessary treatment and support but it is important that the community should also contribute in controlling a disease. The tuberculosis patients should not only try to complete the treatment but should also take precautions to prevent its spread till they become non-infectious. This is though communicated to the patient time and again but still it needs to be reminded again and again. Student volunteers can do this. If patient does not want to cooperate, the patient can't be dictated. Spread of proper knowledge can bring attitudinal changes. Again student volunteers can play an important role in this.

Keeping in with the community concerns, sensitivities and attitudes, the same platform can also be used to get feedback from end-users not about the services but also about their other problems. This can help in programme evaluation. It can help in identification of problem areas. All these can ensure community participation in formulating national policies and programmes.

One

This is a story of a remote village in Kaski district. It was evening time. Shrishti, a twenty years old daughter of Nirmala was coughing for a long time and suddenly she cried "Blood, blood", her mother Nirmala who was cooking in the kitchen came running. On seeing blood in Shrishti's mouth she became worried. She called for the Dhami (the witch doctor, sorceress). The dhami said, "Shrishti is under the control of a bad spirit and would need witch-craft." The dhami asked for a broom and after murmuring some words she started hitting Shrishti. Shrishti cried and cried until she became unconscious. Dhami said, "Now, the problem is over" and demanded two hundred rupees for the treatment. After pocketing the money, dhami left the place saying that Shrishti would now wake up healthy.

Alas ! When Shrishti woke up she was no better. She suffered another bout of coughing and spit out blood again. Nirmala called for the dhami again, but the dhami said the case was beyond her control. Feeling cheated by the dhami Nirmala became very depressed. She couldn't decide on further course of action. Shrishti was running fever and was not eating anything.

"Mom I!" suddenly Nirmala heard the voice of her son. Her son Dhiraj who was studying in a faraway college in Pokhara City has returned
home to collect his books. He got disappointed on seeing her sister’s pathetic condition. Nirmala asked surprisingly “Oh Dhiraj! why you are here? You did not inform me. Is everything fine?” Dhiraj replied, “Yes mom! everything is fine but I am not happy the way Shrishti didi’s cough is being treated. You must consult an educated doctor. Please get ready, we will go to Pokhara for her treatment.” “What are you saying? I am trying my best to take care of Shrishti. Don’t underestimate that dhami, she is an expert” retorted Nirmala. “Mom, why you trust these people? They can’t handle such cases. We should consult a doctor before it is too late” replied Dhiraj with pain. Nirmala said authoritatively “But, let me take care of Shrishti.” Dhiraj replied, “Oh, leave it mom, we should go to doctor first. He then said loudly, “Didi, Didi, I am with you, don’t worry. Get ready we are going to see a doctor.”

After examining Shrishti, the doctor said, “It appears that Shrishti is suffering from tuberculosis, in short it is called TB. You should get her sputum be tested and chest X-ray done.” Nirmala became too much worried and started weeping. “No didi, you should not behave like this, TB is not such a bad disease, it is curable. If Shrishti has TB she will be alright in a few months”, said the doctor sympathetically to Nirmala. Nirmala said, “But, doctor Saab, I have heard TB can’t be cured and one should not go near a TB patient. Such a patient should be kept in a separate house.” “No, TB is curable. As far as going near is concerned, till the TB germ is present in the sputum of the patient, precaution should be taken, thereafter usually there is no harm” explained the doctor. “But sir, how we would know whether germ is present in the sputum”, asked Dhiraj astonishingly. “Oh, it is not so difficult. Shrishti’s sputum would be tested for the presence of germs to make the diagnosis of TB. At first it is attempted thrice on three different days, till the germs are detected. Once germs are detected the TB is diagnosed, the treatment is started. If possible, the patient should live in a separate room. After two months of initiating treatment, if the germs are not detected then her sputum is germ free. Now it is relatively safe to live with her, no need to keep her in a separate place” explained the doctor.

“Alright sir, we will get the sputum examined. But I am also worried about the cost of treatment. My father is no more and my mother does some farming to earn our livelihood. I have heard that the medicines for TB are very costly and the treatment may last 1-2 years. I don’t know what to do?” said Dhiraj disappointingly. “Young man you should not worry unnecessarily, the government has arranged for free TB treatment. You don’t have to pay anything, even for the tests. As far as duration is concerned with modern drugs the treatment may last from 6-8 months. I will refer you to nearest DOTS Centre so that you don’t have to travel such a far distance from your village to Pokhara. I will write a referral letter to the doctor over there” assured the doctor.

Dhiraj said “Doctor Saab! Why such an expensive treatment should be free? Is it true? Doctor replied “You see the medicine is provided free to prevent the spread of the disease to other healthy persons near him. If a person becomes diseased his productive power may be lost. Thus, instead of contributing to the economy, he may become a burden on the society, draining its resources. It has been found that a single person with infectious TB can spread infection to 10-15 persons in a year. Further, 75% of the people having TB disease are in the economically productive (15-54 years) age group. Some unfortunate people who develop this disease may not be cured and may die, the productive member of the family may be lost. Thus, the society can lose its productivity many times. Therefore, it is more economical to prevent than to treat the disease. Further, there are 80,000 people with TB in Nepal. Every year about 20,000 develop the disease and over 16,000 die. Probably TB kills more people than any other disease. Over next five years nearly 100,000 people will be saved from an untimely death. Therefore, the cost of its treatment is much less than the overall benefit to the society.”

“Thanks a lot doctor Saab, we are very grateful to you for your kind words. This boy is my son Dhiraj and he is studying in Pokhara, if you want, Shrishti can stay here for treatment under your supervision” said Nirmala. Doctor replied promptly, “No didi, you should not worry, other
doctors are as good as me and they will take care of Shrishti. If she wants she can stay in Pokhara, I don't find any problem. But, now get her tested and then I would advise you accordingly."

Footnote:

1. Dhami (Sorceress): Also called as Jhankri or witch doctor. Is a traditional healer that is considered to possess supernatural powers to cure diseases. But this is not true.
2. Tuberculosis: Also called as TB. It is a bacterial disease, which mainly affects the lungs and is usually caused by bacteria Mycobacterium tuberculosis (Mtbc, in short). TB is also known by various names like Khapate: Wasting, Kshaya Rog: Breaking up, Sukenas: Blackening, Sukuti: Drying up. In Sanskrit it is called as ‘Rajyakshyama’: King of diseases. Other mycobacteria can also cause TB. The TB causing bacilli is included in Mycobacterium tuberculosis complex comprising of- M tuberculosis, M bovis, and M africanum, all closely related species.
3. Sputum: The secretions from respiratory tract, which one spits out while coughing. It usually consists of mucus secreted in respiratory tract. In case of tuberculosis infection of lungs, it can contain the germs of TB. This makes spread of infection possible from one person to other when the patient coughs or sneezes.
4. X-ray: A medical procedure, which uses electromagnetic rays to visualise inside of human body to detect diseases.
5. DOTS: Directly Observed Treatment, Short Course. It is most preferred form of treatment for tuberculosis. In this type of treatment a supervisor actually watches while the patient takes (swallows) the medicines. It is found to be highly effective to cure TB and prevent emergence of drug resistance.

Key Learning Facts:

1. Tuberculosis is an infectious disease because the TB germ is expectorated in sputum as aerosol. One person with infectious TB can infect nearly 10-15 people in a year, which come in close contact with him.

2. TB is curable, needs proper and complete course of treatment. DOTS therapy is free of cost. This is because TB mainly affects the poor people who may not be able to bear the cost of medicine. However, even if the TB is treated free of cost it is profitable for the society. And, even if the patient can afford to buy TB medicines, ideally he should take medicines from a DOTS centre. This is because DOTS centres work in a scientific manner.

Conflicts:

1. X-ray Chest:

Usually Sputum examination is the best approach to detect TB. The X-ray of lungs (chest) is not done commonly. This is because x-ray is less accurate than sputum smear in detection of tuberculosis. It can't differentiate between infectious and non-infectious cases and can't differentiate between fresh and old TB disease. Sputum test is simple, easy, cheaper and reliable. It specifically identifies disease-spreading individuals. It can also help to know the response to treatment and finally when it is cured. X-ray was done in this case to rule out any other cause of blood in sputum.

2. Dhami (Sorceress):

In ancient times there were no scientifically trained doctors. The people tend to look to traditional healers like- witch doctor (called as Dhami or Jhankri in Nepal) for treatment. They are respected because of the easy accessibility, cheaper and flexible payment, longer personal attention with better communication. However, due to lack of scientific training in Medicine they can't deliver what is expected from them.

Additional Point:

Sputum Collection Guidelines:

- After overnight sleep the sputum should have accumulated so it is highly likely to contain TB germs. That is why early morning sputum sample is preferable for TB germ testing. Saliva and nasal secretions are unlikely to contain any TB germs.
In the morning patient should go outdoors where aerosols are diluted and sterilised by direct sunlight. Or can go to a well-ventilated room away from other people.

- Taking a deep breathe many times, cough up the sputum by coughing as hard and as deeply as possible. The sputum should be spit into the appropriate container and its outside should not be contaminated with sputum.

- If the specimen is not thick or amount is less than 5 ml, patient should try to cough up sputum again.

- Close lid tightly and don't expose to high temperature and sunlight. After labeling the container, submit it for examination the same day.

**Two**

The next day, on seeing the reports the doctor told Nirmala, "Shrishti is suffering from TB because her sputum is having germs. She should preferably stay away from you." The doctor further asked "Is anybody near you or does anybody in your family suffering from cough or a disease like this?" "Yes, doctor saab, Shrishti's friend Sonu is having a lot of cough for last many days and so far I know she is not having any disease or taking any medicine for it" Nirmala replied promptly. "Oh, it could be very dangerous if she is also having tuberculosis. It is not only bad for her but also for others because she might also be spreading TB germs" said the doctor. The doctor further said, "You should advise her to see a doctor as soon as possible."

"Doctor Saab, can we also have TB? If germs are present in the sputum, what happens? asked Dhiraj. "You see, you can also have TB because you might have got the infection from Shrishti. In case of TB, often there may be symptoms like- cough of more than 3 weeks duration, weight loss, evening fever, chest pain, night sweats, loss of appetite, weakness, blood in sputum, breathlessness, etc. Now, if the person is having lung TB and if the germs are found in the sputum then such persons can spread TB while coughing, sneezing and talking by releasing TB germs in the air as droplets. If the sputum is containing large number of TB germs then this also means the infection is severe and such person may not live for long time if the treatment is not given. Further, till they are not treated they go on spreading the infection to healthy people. When a person staying near them, inhales such droplets he or she can acquire TB infection and may develop TB disease" said doctor.

"Sir, then what should be done as a precaution?" interrupting in between asked Dhiraj. "The person with germs in sputum should not only take prompt treatment for TB but should also live in a separate room (Isolation) till his or her sputum becomes free of germs and should preferably cover mouth while coughing, sneezing, spitting and talking" advised doctor. Dhiraj became anxious and impatiently asked "For how long Shrishti has to take these precautions, doctor Saab?" Understanding the anxiety of Dhiraj, doctor said "Not for long. I mean as soon as her sputum becomes free of germs and for that we would test her sputum after 2 month or so." Then Dhiraj asked "Sir, one more thing I wanted to know, whether I and my mother should be tested for presence of tuberculosis infection?" Doctor became very happy, "Good ! this is a very nice thing you have asked me. You and your mother should also get yourself tested to rule out any tuberculosis disease. This is called as Contact survey. I have already written this prescription and once your reports come then you can meet me. Bye."

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Footnote:

1. Symptoms: These are the problems, which arise in the patient due to a disease, process e.g. pain, tiredness. Only patient can feel them. They are in contrast with 'signs' which are disease-related problems that can also be observed by the doctor, like- swelling, fever, rash etc.

2. Droplets: A single act of coughing can produce 3000 droplet nuclei which are 1-5 micron in diameter (micron is 1 millionth of a meter) and each droplet can contain at least one TB bacterium. During the act of coughing, sputum as
droplets rushes out from the body under pressure and form an aerosol. As droplets are sufficiently small to reach lung alveoli, can initiate an infection there. Because the healthy persons can get TB infection from it, droplets are considered highly contagious, especially in indoor situation.

3. TB infection versus disease: Person's risk for TB infection depends on his own immunity (immunity means power to resist infection by a microorganism) and number of TB bacteria he is exposed to. More the number of times and duration this exposure occurs more is the risk. TB bacilli mainly enter through respiratory tract and lodge in lungs. Once infected with TB bacilli, in 90% of the cases, TB bacilli can stay in the lungs (body) in inactive state (dormant), may be for whole life. Thus, these persons remain healthy but have TB infection (Primary Infection) but no TB disease. However, if the immunity becomes weak the dormant bacilli can become active, multiply to cause TB disease (Post-primary TB). In rest 10% of the infected persons, disease starts after Primary Infection if the body's immune response is not strong enough to prevent multiplication of TB germs. This is seen especially in children.

4. Isolation: As the person with TB germs in sputum can spread TB germs through droplets. If possible, such a person should be advised to stay in a separate room till the sputum is germ free. Instruct the patients and children about the importance of following TB isolation precautions (children under 12 years are highly susceptible to infection). Limit the number of visitors. Isolation of patient may be discontinued only on the advice of a doctor. Even after adequate anti-TB treatment, if drug resistance is suspected, isolation should be carefully followed till the doctor advises.

5. Contact Survey: The persons who come in close contact with the infectious case of TB are at risk of contracting TB infection and developing TB disease. The process of evaluation of such people is called Contact Survey. This is because, the TB disease can have very subtle manifestation.

Key Learning Facts:

1. Common symptoms of TB are- cough of more than 2-3 weeks duration, weight loss, evening fever, chest pain, night sweats, loss of appetite, weakness, blood in sputum, breathlessness etc.
2. Infectious person can spread TB germs as air-droplets and this may lead to TB infection in other people coming contact with those germs through inhalation. During the act of coughing, sneezing etc. the patient should cover his mouth and nose. All sputum should be collected in a covered container and disposed off properly.
3. During the infectious period the TB patient should stay in well-ventilated room to decrease the concentration of TB germs. Room should have plenty of sunlight so that TB bacteria will die in just a few minutes due to UV rays in sunlight. Transmission by indirect contact through sputum/droplet contaminated articles (fomites) is extremely rare.
4. TB can spread to people who live with the patient or come in prolonged contact with the patient (schoolmates, co-workers etc.). The above people should ideally be tested for TB (Contact Survey).

Conflicts:

1. A patient even if suffering from infectious TB not admitted to hospital: This is because home treatment is equally effective as hospital treatment and to prevent the spread of TB in public places like hospitals, nursing homes etc., is a priority. The likelihood that a person on exposure to TB bacilli will develop the disease depends mainly on the concentration of TB bacilli and the duration of exposure. If good infection control policies are not practiced and a number of infectious TB patients are admitted, the concentration of bacilli in form of droplets is likely to become high in TB patient wards reaching dangerous proportions. Thus, not only is a risk of transmission of infection to people with poor immunity (immunity means power to resist infection by a microorganism) but even to healthy people. Also there is a risk of cross-transmission of drug-resistant bacilli from one TB patient to the other. This means a person having non-resistant TB disease can develop drug-resistant TB
disease. Hospitalisation also means more expense, separation of patient from family, etc. Therefore, ideally a TB patient should not be admitted to the hospital. If an infectious case is discharged from the hospital, though he is infectious, he can infect others only on close-prolonged contact and this can be avoided by isolation at home and by other precautions. Hospitalisation is rarely needed, e.g. if there is severe hemoptysis or highly susceptible contacts are there at home.

2. Why test for germs after two months if sputum can become germ free in 2 weeks: In fact two weeks should not be considered as ideal time when the sputum becomes germ free. There may be people who are slow responders (bacteria are slow to respond to treatment).

Additional Point:
Destroying the sputum:

- The sputum should be collected in a container with a lid (spittoon).
- It should be destroyed either by burning or by burying.
- It can be decontaminated by using 5% Phenol or 2% Lysol in spittoon.

Three

After this incident, Dhiraj became very interested in tuberculosis and he started collecting information about it. He stayed back in the village for a few days to find out whether any other person in the village was possibly suffering from tuberculosis, and to find out from whom Shrishti has possibly got the TB infection. He came to know that Sonu, who was a close friend of Shrishti, was also having similar kind of complaints as Shrishti except no blood in sputum. He met Sonu's brother Paresh and explained about TB to him. Paresh found that Sonu's friend Diva, in school is having similar kind of problem and Sonu became ill later than her friend Diva did.

Dhiraj and Paresh met Diva's father. Dhiraj asked him "Uncle! Diva didi is having cough, have you got her tested?" Uncle said, "Oh yes, I have consulted a doctor. The doctor said that she has to be tested for TB. But, you know she has got engaged and if her would be 'in-laws' come to know that she is having TB then they will break the engagement. Then who will marry her? So we don't want to go to any doctor." Dhiraj said "Uncle, could I suggest you that we can see a doctor who knows me very well. I will tell him to keep everything secret if Diva didi is having TB." The uncle became angry "What do you think of yourself? You are just a young boy. You don't know about this society. I can't take any risk." Dhiraj and Paresh become disappointed. But after thinking for some time Dhiraj gathered some courage and said "Uncle, I have full respect for your feelings. But, if Diva didi is not cured then her health will go on deteriorating. It is not good to put her life at risk. If something bad happens to her or if her in-laws come to know about her disease at a later date, then? We are still in dark whether she is really having TB." Uncle then finally praised Dhiraj for his suggestion and agreed to see the doctor.

Dhiraj arranged an appointment with the doctor at Pokhara. Sonu and her friend Diva both were diagnosed to have tuberculosis. This alerted Paresh and Dhiraj that the infection is spreading through contacts and many more persons may be affected by the disease. Fortunately none of their family members were having the disease. All the affected persons started medicines. Dhiraj came back to Pokhara to resume his studies. Paresh who was a school student at the village remained there.

After 8 weeks when they visited the doctor again, the doctor was happy to note that sputum of Shrishti was now blood free and also non-infectious i.e. free of TB germs. However, Sonu's sputum was still infectious because it was containing germs, with all the same precautions she was advised to continue her treatment. Diva did not turn for follow-up. Doctor told Dhiraj to contact her. Sonu's friend Diva when contacted was not taking any medicine. This alarmed Sonu also and indicated that possible reason for presence of TB germs in Sonu's sputum even after treatment could be Diva's refusal to take treatment. Dhiraj and Paresh then contacted Diva's parents and told them about the ground
realities. Diva's parents said after taking medicine Diva was passing red urine and stools that is why they have stopped the treatment.

Dhiraj recollected the doctor's advice that after taking one of the TB medicines the urine and stool can become red. He told Diva's parents about this. However, only after re-assurance from the doctor that Diva's red urine was due to medicine her parent agreed to start her treatment seriously. As Paresh was staying in the village, Dhiraj then advised Paresh to ensure that all the three patients take the medicines regularly.

Seeing the effect of treatment and also when no treatment is taken, Paresh started taking the issue seriously. He teamed up with Dhiraj and met Dr. Vikram to find out how he could help his community to fight this disease. After a lengthy meeting it was decided that Dr. Vikram would also help them to create awareness about tuberculosis in their village. Dhiraj and Paresh came back to their village and Paresh made a poster mentioning symptoms of tuberculosis. He displayed that poster on front wall of his house. He also made a small poster of similar type and fixed to back of his schoolbag. While going to school he displayed that poster at his back. His father got annoyed on his gesture but he did not say anything. His classmates made a joke of him.

In the meantime, he contacted all the villagers and informed them that doctor would be coming to the village to talk about TB. Next Saturday the doctor came to talk about tuberculosis at the Chaupal of the village. But a very few villagers have gathered to listen to the doctor. After his lecture the villagers realized the importance of Paresh's effort and praised him for his creative mind. Two of Paresh's friends also joined him, they also started displaying the posters.

In Paresh's school, students use to come from other villages also. Some of the students from other villages also became interested in this activity. Paresh and his friends then made different posters and some posters they got from the doctor. These posters were then displayed in schools in other villages. All interested students stuck one poster in front of their houses and also used to carry message on schoolbags at their backs. Suddenly there was an increase in the number of cases reporting with suspicion of tuberculosis at the Regional TB hospital in Pokhara. The patients told the doctor that they are seeking consultation because of the campaigning by Paresh and Dhiraj's team.

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Footnote:

1. Diagnose: This is the process of determining the nature of disease. This can involve physical examination of patient, biochemical tests, x-ray etc. Once a disease is diagnosed, a 'diagnosis' is made.
2. Follow-up: The patient under treatment should report to the doctor at regular intervals till he is cured. This helps to know whether the patient is responding to the treatment or not, the treatment can be modified, if needed.

Key Learning Facts:

1. The sputum examination should be performed to find out whether the sputum has become germ free. This serves many purposes:
   a) Whether the medicines are effective or not,
   b) Person is infectious or not
2. Some of the drugs can cause side effects. An anti-TB drug Rifampicin can cause harmless red colouration of urine and other body secretions. This can create unnecessary tension in the patient's mind. The patient should be told about this. Patient should also be aware of toxic reactions of drugs.

Conflicts:

1. Women are not decision-makers: It is a pity that women are not allowed to exercise the 'right to freedom'. Male members of the family take most of the decisions, this includes fooding, education, job, marriage and even access to medical treatment when needed. The women should be treated as socially equal and should have a final say in highly personal matters like medical treatment at least.
2. Social Stigma: There is a social stigma attached to TB disease. In a way, the stigma associated with TB disease is society's
appropriate reaction to contagious and potentially fatal disease like TB. This can prevent transmission of infection to healthy people. However, modern antibiotics ensure full cure for TB disease, which was non-existent in pre-antibiotic era. Therefore, this stigmatic reaction could only be acceptable to the stage till the person is infectious. Once a TB patient is safe for the society he should be well accepted by the society.

3. Irregular treatment: After taking anti-TB drugs for 2-3 months the patients start feeling normal and they may discontinue treatment. This can result in worsening of the TB disease. Further, the patient may discontinue treatment due to side effects of the medicine. However, this could be disastrous. The patient should continue the medicine till completion of the course as prescribed by the doctor and consult the doctor if any drug reaction occurs.

Additional Point:
Gender Issues: Women have been historically the most marginalised members of the society. They have been accorded a lower status to male, a total social injustice. They have got limited decision making power, less mobility, less access to information, lack of autonomy to spend money, less access to education and healthcare. The male members are served more food, if females get less food they will be malnourished. This will cause weakening of immunity thus, making them more prone to develop diseases including TB. Above reasons also affect their healthcare seeking behaviour. If they get ill they are less likely to receive better care than males in the family. Therefore, it is not surprising that TB is the commonest cause of death in young women. These deaths could be easily prevented. Furthermore, nearly 15-20 % of the ladies suffering from TB face rejection by the family. The married women may be divorced. Due to these reasons the women don’t want to seek healthcare, if they are once diagnosed to have TB they may have to face the above consequences. A radical change in thinking is needed whereby the women are accorded a status equal to that of a male.

Four

After getting support from his friends and schoolmates, Dhiraj got very enthusiastic he met Dr. Vikram and told him "Sir, in my school the students come from all the directions and distant places as far as 10-12 kilometers. Many of them are interested in campaigning against TB. I think if they join us they can spread the message to distant places." Seeing their enthusiasm doctor advised Dhiraj and Paresh to arrange a meeting of all the students who were interested in campaigning against TB. In the meeting the students formed a formal society and named it as: Self Styled Tuberculosis Fighting Force and in short they called it as SeSyTuFFo. All the SeSyTuFFo members pledged to fight the menace of tuberculosis. Dhiraj came to the stage and declared “The members have decided the following line of action:

a) to display poster mentioning symptoms of TB, like cough, fever etc.
b) to educate their fellow students about TB.
c) to go to nearby villages in small groups to spread awareness about TB and tell them it is curable, the TB patients need care not rejection.”

Dr. Vikram appreciated that the SeSyTuFFo members have already defined the line of action. He said “Though the responsibility for the treatment of the patient lies with the doctors but SeSyTuFFo can play an important role in treatment also. He said “The cause of TB is known for more than a century and the treatment is known for more than a half century yet the TB could not be controlled. The problem is at organisational level. The role of people in tackling the problem of TB is very important. In fact, school children can play an important role in control of TB. Awareness about TB should be created among school children because they form a significant proportion of country’s population. The school is a suitable platform for this because children from distant and different places meet regularly at school. They are easily accessible at the school and they can then take the message to every section of the society i.e.
parents, relatives, friends, neighbours, etc.” He suggested that SeSyTuFFo could also include the following in their plan of action i.e.

d) identify suspected cases of TB and pursue them to seek medical help at TB (DOTS) centre

e) keep track of all the TB patients in their neighbourhood. If any patient of TB is not taking the treatment regularly, to take their responsibility and monitor their anti-tubercular treatment so as to ensure that no patient misses the medicine and to report the same to the doctor on a monthly basis. If possible then include in their duties to collect the medicine for those patients from the doctor who are unable to go to TB centre (like old people, handicapped people etc.)

f) they should motivate them to complete their treatment and pursue contacts of TB patients to seek medical advice. So much so if they feel they can directly participate in DOTS by administering drugs to TB patient living near them. They can also tell them how to recognize side effects of treatment and what to do.

Then Dhiraj said “But sir, we can help to find more and more cases of TB, what is the importance of giving more stress to treatment ?” To clarify the above point, Dr. Vikram said “Case finding, i.e. finding new cases of TB, is given less preference over case treatment because only 55% of those found to have the TB disease complete the treatment. Thus, rest 45% due to incomplete treatment can have infectious sputum and infect more people. Further, incomplete treatment makes their TB germs drug resistant and thus they spread drug resistant TB germs.”

In between Dhiraj said “Yes sir, I have now understood that the activities d, e and f of SeSyTuFFo will help in the following manner: Initiation of regular treatment will help in making the infectious patients i.e. sputum positive patients germ free. This will prevent further transmission of infection. If all those with TB can become non-infectious there would no more cases of TB.” “Excellent !” said Dr. Vikram. He continued further “Since the treatment is long and many medicines are to be taken, the patients may lose interest and may discontinue treatment. Therefore, monitoring their treatment will not only help in curing those people but will also prevent emergence of drug resistance in case a person takes the medicines irregularly or takes only some of the medicines and not all. Thus, not only case detection but also the goal of complete cure can only help to eradicate TB. Otherwise, detected but incompletely treated TB cases will continue to spread the disease. Further, the problem can be compounded by rise of drug resistant cases.”

Finally, he also advised that keeping in mind the ethics, members of SeSyTuFFo would not share any personal information about the patient with anybody else. He also said that once they know how to handle one particular disease they could extend the same knowledge/experience to tackle other social/medical problems.

During the later part of the meeting some of the student members also gave funny ideas, like- the anti-TB medicine should come as a chocolate so that nobody misses it. Then somebody rejected the idea saying that normal people will also then start taking medicines. Some of the members suggested that the government can release an attractive and large postage stamp listing all the important symptoms of tuberculosis to spread the message across or the postage envelopes can be made to carry the same message. Some students suggested making a song on tuberculosis and singing it with Karaoke system in the house. Finally, when meeting was being concluded Dr. Vikram asked whether member student want anything else from his side. Then Dhiraj suggested that if possible Dr. Vikram can hold certain meetings in which he can tell the members about tuberculosis so that they can do their work in a better manner. To this request Dr. Vikram agreed readily. Thus, on the whole the meeting was a success.

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Footnote:

1. Case: From TB point of view, case is a person in whom active TB disease has been confirmed to be present.
2. Case Finding: To find diseased people. In this case, to detect the cases of active pulmonary TB especially those have infectious sputum. This helps to identify source of infection i.e. disease
spreading individuals. 

3. Case Holding: The cases of TB detected by 'Case Finding' are treated with anti TB drugs till they are cured. Treating them prevents new cases, which can infect others. This also curbs emergence of drug resistance. 

4. Drug Resistance: When bacteria are no longer killed or weakened by a drug they continue to multiply in its presence. This is called Drug resistance. The TB bacilli can develop resistance to one or multiple drugs (MDR) and in such a case treatment becomes difficult (less drugs options, prolonged infectiousness and morbidity, more expense, longer duration of treatment, more toxic reactions, higher mortality). Drug resistant bacilli can emerge due to wrong drug combinations, inadequate doses, irregular treatment, incomplete course of treatment. 

5. Ethics: It is the science of moral conduct. One of the medical ethics is not to pass on personal information about a patient to others. 

Key Learning Facts: 

1. Once treatment starts it helps in alleviating poverty by reducing the duration of illness, number of complications and by saving lives. 

2. Loss of Interest (Non-compliance): Due to prolonged treatment and use of multiple drugs, the patient may lose interest in treatment and stop taking medicines as soon as he starts feeling better. However, incomplete treatment may result in incomplete cure and the patient may later develop more severe disease especially if bacteria have become resistant to drugs. To overcome this drawback of treatment more effective DOTS strategy has been developed. (Compliance means to follow the instructions of the doctor and complete the treatment) 

3. Case Holding: Most important strategy in effective control of TB is to prevent Non-compliance. The diagnosed case of TB is motivated to complete the course of anti-TB drugs. This helps not only to restore the health of the patient but also prevents spread of disease to healthy people and curbs emergence of drug resistance. 

Conflicts: 

1. TB not controlled despite the fact that drugs were available is due to reason like-

   a) At Patient’s level: inadequate doses of drugs, less number of drugs, improper drug combination, incomplete course, inaccessibility to drugs (esp. poor patients), etc. 

   b) On an organisational level: inadequate TB control programmes, population growth, erratic supply of drugs, etc. 

2. Is Student Campaigner wasting time?: A student campaigner does the work voluntarily. He should devote time as per his convenience and should not neglect his studies. When he works for the society this gives a sense of happiness. He develops confidence in himself. He meets people hence develop the power to communicate, frankness and openness. He can also develop social contacts. All these attributes will result in around development of his personality and one day can plan for bigger accomplishments. 

3. Is Campaigner at risk of developing TB ? Even all the close contacts of a TB case don't develop TB disease. The campaigner usually doesn't stay for long duration with the TB patients. So, there is no additional risk for him to develop TB disease as compared to normal population. 

Five 

At the next weekend, Dr. Vikram was invited to speak about tuberculosis after school hours so that the members of SeSyTuFFo can do their work more freely. During the school-time the members were excited about Dr. Vikram's lecture. They had already informed their parents that they would be coming home late. After last period the members gathered in the playground under a tree. Dr. Vikram arrived at right time. With him was certain bundle of papers and some posters. He welcomed all the members and praised them for being ready to work for their community.
Dr. Vikram said, "Tuberculosis, in short TB, is a deadly communicable disease which mainly affects the lungs. Today, I will be telling you little bit about its history. Bacteria called Mycobacterium tuberculosis, which has been infecting human beings since time immemorial, cause it. Biological evidence of tuberculosis has been found in the remnants of prehistoric man and animals. In the Egyptian mummies were found definite signs of tubercular decay in spinal cord."

"According to an analysis, approximately 200 million people have been killed by this tiny microbe in just last one century. Even the famous people like Shri Ramanujam, Kamla Nehru, Kasturba Gandhi, Goethe, Keats, Nelson Mandela etc, to name a few, became its victims. Nevertheless TB has been called as the 'Captain of death'. It was also called as 'White Plague' in Europe in eighteenth and nineteenth centuries. Though much was known about this disease but its cause and cure were still a mystery for long time.

In 460 BC, Hippocrates labeled tuberculosis as "phthisis" (Greek for consumption) as the most prevalent disease of the times. He also observed that it killed nearly everyone it infected.

In Opera Medica, Sylvius in 1679, described tubercles as a characteristic change in the lungs and other parts of the body in TB patients. He also mentioned about abscesses and cavities. The infectious nature of the disease began to be known in the 17th century.

In 1720, Benjamin Marten an English physician, opined that TB could be caused by "wonderfully minute living creatures". He also held that a healthy person could contract TB on coming in prolonged contact with a person having TB disease.

In 1854, Hermann Brehmer as a patient of TB on the advice of his doctor moved to a healthier climate in the Himalayas. After spending some time there he returned home cured. This moved him to construct the first sanatorium in Gorbersdorf. Sanatorium, a place where patients could get plenty of fresh air, and good nutrition. In addition, this possibly aided the healing process by providing rest. This also served to isolate the sick from the healthy population, preventing the spread of its germs.

In 1860s Jean-Antoine Villemin, a French doctor demonstrated that TB could be passed from man to cow to rabbit. Based on these findings he postulated that the disease was caused by a specific microorganism, which can be transmitted, from one person to other.

On March 24th 1882, when in Berlin the Great Scientist Robert Koch announced the discovery of the bacteria that causes tuberculosis, he stated: that all dreaded infectious diseases, such as plague, cholera, etc., rank far behind tuberculosis. He was able to discover the bacteria using a special staining technique. It was called as - Mycobacterium tuberculosis. In the same year he presented his findings at the Berlin Physiological Society and labeled Tubercle bacillus as the cause of tuberculosis. The discovery of causative organism of TB raised the hopes of finding a cure. This gave an impetus to fight against TB."

After a pause Dr. Vikram asked "Any questions ?" Paresh asked “Sir, I have question that do we have Sanatoriums now ?” Dr. Vikram replied “No, we don’t treat TB patients in sanatorium. Antibiotics are the best option to treat TB and they are equally effective whether patients are treated at home or sanatorium. Major disadvantage is disruption of family life and cost involved when patient is kept in a sanatorium. As full recovery is also ensured at home, so sanatoria don’t exist anymore. Further, the risk of spread of disease when patient stays at home is not higher than that at sanatorium. I hope I have clarified your doubt.”

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Footnote:

1. Communicable Disease: It is a disease which spreads from person to person, for instance, by physical means like contaminated air, food or water, for instance, influenza is airborne.

2. Mycobacterium tuberculosis (Mt): The causative microorganism for tuberculosis. It is
also called as *Mycobacterium tuberculosis hominis*, to differentiate it from other stain of Mtb i.e. bovine strain, which is found in cattle and known to cause intestinal tuberculosis in human, it is called as *Mycobacterium tuberculosis bovis*. *Mycobacterium*: On staining with Ziehl-Nelson stain it is seen as a red beaded rod which is 2-4 micron long and 0.2-0.5 micron wide.

3. Tubercular decay: When body's immune system reacts to Mtb infection there occurs tissue death giving rise to round areas of necrosis which are called Tubercles and the process is called Tubercular decay or caseous necrosis. On liquefaction the caseous material helps the TB bacilli to multiply.

4. Acid Fast Bacilli: When in a laboratory TB germs are stained with dyes, waxy coat of mycobacterium tuberculosis makes it retain the aniline dye carbol fuchsin even after decolorisation treatment with acid and alcohol. Therefore, they are called Acid-Alcohol Fast Bacilli (AAFB) but short form AFB used.

**Conflicts:**

Sanatorium: Before the introduction of antibiotics, treatment of TB consisted of attempts to strengthen the patient's resistance to disease. For this sanatorium was considered good where there would be no tensions and strains of routine life. However, the mortality was high, upto 50 %, due to lack of antibiotics. When antibiotics were introduced no difference was found in Sanatorium and home treatment, so sanatoria were gradually closed.

Gallery of Nobel Laureates:
Robert Koch (1843-1910):

He got Nobel Prize in 1905 for his discovery of tuberculosis bacillus. He is also considered as the founder of Modern Bacteriology. He has given 'Koch's Postulates'. He also discovered many other bacteria, such as for anthrax, cholera etc.

**Six**

Dr. Vikram restarted his lecture after a few minutes. He said “In 1895, introduction of X-ray technology (radiography) by Wilhelm Roentgen helped to view the lesions in the lungs. This greatly helped to monitor the progression of disease in TB patients. Then came in the BCG vaccine. Scientists Calmette and Guerin reduced the virulence of bovine strain of TB by repeated culture leading to the creation of the vaccine. In 1943, Selman Waksman discovered the first anti-tuberculosis drug Streptomycin, making tuberculosis nearly curable. He had been working for several years to find an antibiotic that was effective against *Mycobacterium tuberculosis*. Streptomycin purified from bacteria named Streptomycetes griseus was first administered to a human on November 20, 1944. The results were quite impressive, which became the first antibiotic to be used against tuberculosis. In the coming years, more and more anti-TB drugs were developed.”

Ending his lecture, Dr. Vikram said "Now you all know something about the history of tuberculosis. If you have any doubts then I am ready to clarify them." Bikash raised his hand. Encouraging him Dr. Vikram asked him to put forward his query. Bikash said "Sir, can BCG vaccine prevent TB ?" Dr. Vikram replied "Actually, BCG vaccine is not so effective in preventing TB disease. However, in children it has been found to prevent serious complications of TB disease like brain infection (TB meningitis) and miliary TB (a kind of whole body TB disease). Any other question please." After waiting for sometime when no body asked any questions, Dr. Vikram said "Ok ! no questions ? I would be happy if some of you could come up at the stage and give your opinions about what you have learnt from this lecture. If you wish you can take a recess for the same."

The students started whispering and after a few minutes Dr. Vikram called them to come up with their views. He said whosoever wants to talk can raise his hand. Rajat raised his hand. Dr. Vikram was very happy and he said "Good, you are welcome on the stage." Rajat said "On behalf of the members of SeSyTuFFo I thank Dr. Vikram for helping us to fight against TB in our community. He has given useful information
about history of TB. From this talk we have learnt that TB is a dreaded disease which has been there since antiquity. After suffering for thousands of years, humanity came to know about its causative organism as Mycobacterium tuberculosis after its discovery by Robert Koch. Hats off to the great scientist. However, it's a pity that only a few decades ago we could develop treatment against TB. I feel privileged that I am a member of SeSyTuFFo, which is trying to fight against TB. This is a very great cause. My co-members also feel lucky that we are living in an era in which there is a cure for tuberculosis. We also feel that the hard work of several scientists and doctors will not go waste. We will try our best to realise their dream that is the elimination of TB, at least in our region. We need your blessings Dr. Vikram Sir. Thank you very much again."

After Rajat when no body came forward to share his experience Dr. Vikram concluded the meeting after showing some posters on TB. The next lecture was scheduled for Sunday. Students were very happy to learn more about TB and left for their homes. In the evening, they shared whatever they have learnt about TB from Dr. Vikram with the villagers.

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Footnote:

1. Lesions: An area of tissue damage, which can be due to infectious process, cancer or an injury.
2. BCG Vaccine: BCG stands for Bacille Calmette Guerin. It was first used in 1921. It is a live attenuated vaccine whereby weakened living TB bacilli (bovine strain) injected intradermally usually within 1 month of birth. It protects against severe and disseminated TB in children. It has no effect in preventing adult type of TB disease.
3. Virulence: The capacity of a microorganism to produce disease.
4. Antibiotic: A substance of biological origin capable of killing or inhibiting growth of certain bacteria.

Conflicts:

1. Vaccine: It is used to produce immunity against different diseases caused by microorganisms like viruses and bacteria. To induce immunity, whole or part of microorganism is used as an Antigen. The antigen can be any structure present on microorganism, which induces formation of certain proteins in the human system called Antibodies. These antibodies have the capability to destroy the microorganism when they come in contact with them. Is it not surprising that the components of microorganisms are used to create certain proteins, which destroy those microorganisms. This helped in eradication of deadly disease like smallpox from this world, a great scientific advancement indeed.

2. Antibiotic: There is a term called Antibiosis which signifies relationship between two organisms in which there occurs harm to one organism owing to production of a chemical (called Antibiotic) by the other. For example, Alexander Fleming in 1929 isolated Penicillin from a fungus- Penicillium notatum. It was shown to inhibit the growth of bacteria staphylococci. It is known as first antibiotic isolated and now nearly 50 antibiotics are used for treatment out of thousands of antibiotics known. Does it not appear conflicting that a chemical from one organism is used to inhibit growth of the other organism.

Gallery of Nobel Laureates:

a) Roentgen (1845-1923): A German physicist, got First Nobel Prize in 1901 for the discovery of X-rays.

b) Selman Waksman (1888-1973): A Ukrainian biochemist, discovered Streptomycin, the first drug to be effective against TB in man. He got Nobel Prize in 1952 for this discovery.

Seven

In next meeting on a Sunday, Dr. Vikram saw a gathering, which was quite larger than previous meetings. He realised that besides the members of SeSyTuFFo there were several villagers and teachers who have come to attend the lecture. Dr. Vikram was overwhelmed by the response.
He started his lecture with the following words "I am glad to see that the people have developed interest in TB. I welcome all the new audience to this lecture series. I am not here to make you perfect in TB but to let you make aware about this dreaded disease. Many people think it can't be cured. But it is now curable. Then, if anybody suffers from TB, people out caste that person. But this is wrong. The person suffering from TB needs not only treatment but also moral support. Of course, if the person is infectious, he can be kept in isolation but should not be out-casted. Once he is no more infectious, the person can be removed from isolation."

In today's lecture, first I will tell about the bacteria which causes Tuberculosis i.e. the bacterium Mycobacterium tuberculosis (Mtb). It is also known as tubercle bacillus. In this picture you can see it appears like a thin rod, usually straight or slightly curved. It often appears singly and occasionally in groups. Mtb grows extremely slowly. In the lab, it may take up to 6 weeks for mycobacterium growth to appear on culture medium. The slow growth is a result of the tough cell wall with a thick, waxy coat that resists the passage of nutrients into the cell. It also prevents the entry of anti-TB drugs making it less susceptible to antibiotics. Further, as these bacilli are present intracellularly (inside macrophages) the entry of antibiotics becomes still more difficult. Their coat also enables Mtb to survive within the human host against and in the environment when spit in sputum.

Can you imagine what is the size of this bacterium? You would be surprised to know that several thousands mycobacteria together will form a sphere equivalent to the size of a mustard seed.

Mycobacterium tuberculosis, the bacteria, which causes Tuberculosis, spreads by person-to-person contact in almost all the cases of tuberculosis. The lesions in the lungs of a person suffering from Tuberculosis can contain Mtb. When such a patient coughs, sneezes, sings, spits or talks the bacteria become air-borne as droplets (aerosol) and spread through the air exhaled out. The minute size of Mycobacterium tuberculosis with surrounding moisture allows the bacteria to remain viable (alive) in the air for long periods. As the unsuspecting person inhales infected air droplets laden with bacteria, this infectious disease is transmitted. One needs to inhale only a very small number of these bacteria to become infected.

On inhaling infected air droplets they travel via air inhaled with breath into the lungs. Body's protective cells called Macrophages eat up the bacteria. The affected person may develop only mild inflammation at the site of lodging of the bacteria but one's natural defenses are usually able to control the infection and inhibit further complications. This results in small lesions, known as tubercles and also called as Primary infection. The infection though is controlled but these bacteria may not die and remain inactive there itself inside macrophages life-long. Thus, a vast majority of those infected never develop the clinical disease. However, the disease occurs in 10% of those with primary infection, especially if immunity is weak as

a) when one has prolonged exposure to the bacterium. Mycobacterium tuberculosis either remains in the lesions or migrates from the lesions to the lymph nodes. From here, multiplication continues and the lesions expand. The lesions start destroying normal lung tissue. OR

b) Primary infection if controlled can become active when the body's resistance (immunity) is low, for instance after HIV infection. This second type of tuberculosis infection is also called Reactivation infection. Majority of the new cases of TB is a result of a reactivation infection. One of the leading causes for this is HIV infection. Sometimes, there is re-exposure leading to TB disease.

It is estimated that one-third of the world's population is infected with Mycobacterium tuberculosis, but only 10% of those infected actually develop tuberculosis. Those that do develop tuberculosis and are left untreated have the possibility to infect almost a dozen people per year. Those who are at increased risk are those who live in the same household with an active victim of tuberculosis, have excessive exposure
to untreated Tuberculosis cases. Catching tuberculosis generally requires prolonged, direct contact with an infectious person, which can also occur at workplace, school, in hospital or in facilities where communal living is common, such as jail, shelter. Having constant contact with another that is infected with tuberculosis may increase the risk of developing active tuberculosis. TB is not spread through food, water* or by sexual contact, blood transfusion or mosquito bites. Risk for infection or reactivation is increased in relation to susceptibility. Extremes of age, immunosuppressive therapy, cancer, diabetes, severe malnutrition etc increase the risk of developing tuberculosis. For complicated and unreliable reasons injection drug (narcotic) use is also known to increase risk.

On reactivation, either there is pulmonary TB or when TB bacillus causes formation of tubercles, the tubercles can invade the pulmonary vein, the bacilli can then travel through blood and thus the infection is spread throughout the whole body via the bloodstream. Miliary tuberculosis results and lesions are found in many of the body's main organs.

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Footnote:

1. Sputum Smear positive: Also written in short as SS+. Sputum smear is found to be positive when at least 10,000 TB bacilli are present per millilitre of sputum.

2. Culture: TB germs can be grown artificially on special nutrient mediums such as L-J (Lowenstein-Jensen) Medium. This medium contains egg and potato as nutrient. This technique can be used to detect Extra pulmonary TB (Ex-PTB), for instance, in TB of brain using brain fluid (CSF). It is also used to test sensitivity of TB germs to antibiotics especially in cases of drug resistant TB. Its major drawbacks are expense, slow growth.

3. Body defence: A layman's term for immunity

4. HIV: Human Immune Deficiency virus whose infection can cause weakening of immunity and results in fatal disease AIDS.

Key Learning Facts:

1. Risk of acquiring TB disease after infection by TB bacilli depends on susceptibility (whether immune system is strong or not) and extent of exposure (short or prolonged, means length of time for which the contaminated air has been breathed in by the victim). Further, the level of exposure depends on concentration of bacteria in droplet nuclei in contaminated air. In short, risk of developing TB disease is high with close, prolonged indoor exposure to an infectious case of TB.

2. Direct sunlight due to its UV rays (at 254 nm) can quickly kill tubercle bacilli, may be in just 5 minutes. But, in the part of the room where sunlight does not reaches, bacilli can survive for long.

Conflicts:

1. Though lungs usually have a protective mechanism to trap harmful organisms entering them. But, the lungs may not be able to trap the TB bacilli because of the extremely small size of droplets carrying them. Thus, they cross terminal bronchioles to reach alveoli. There they multiply to cause TB infection.

2. Macrophages can harbour the bacteria life long: Macrophages are large phagocytic cells, which are part of the immune system. They engulf (eat up) harmful chemicals and microorganisms to destroy them. They can engulf TB bacilli. Non-activated macrophages may not destroy TB bacilli, rather TB bacilli may multiply in them and remain there life long. They can further multiply when the immunity becomes weak, come out of macrophage after killing it. Thus, they become a potential source for TB disease throughout life. Also, lying within macrophages they can travel along lymph channels to reach blood and thus, are capable of spreading throughout the body.

3. TB bacteria harmless but deadly: TB bacilli don't produce any toxin but can destroy tissues by:

   Facultative intracellular multiplication. The body then responds by producing inflammatory reaction leading to high levels of inflammatory chemicals, which can cause necrosis of normal tissues. If infection is not controlled, over a period
of time normal tissues are destroyed progressively, this results in loss of function of the tissue/organ. If this is vital organ, it can be fatal.

(Infiammation: Tissue or body's reaction to an injury or infection usually to remove harmful substances, dead cells and produce repair and healing)

Additional Points:

Non-Tuberculous-Mycobacterial infections are now known to occur through water etc. They can cause Crohn's disease, skin infection etc.

Eight

In the next part of the meeting, Dr. Vikram started by saying "Now, I will tell about sign and symptoms of TB. He then showed some pictures about changes in lungs as seen on X-ray in TB. He said "I know you are not medical persons but to know about these things will not harm you in any way. This will help to improve your knowledge about TB as a disease. Whatever I am telling you about TB it will reinforce my lecture and will help you to understand it better. Further, as a non-medical person it would be good for you to know about the symptoms of TB which can help you to trace possible cases of TB. These symptoms are non-specific i.e. I mean that their presence does not mean the person is having TB, because they can be present in some other diseases also."

"Truly speaking the microbe of TB does not produce any toxic substance which can harm the body. It does not cause any tissue injury in itself. However, when TB bacilli get lodged in the body, the body considers TB bacilli as foreign body and tries to destroy them or eliminate them from the body. In this process certain reactions occur in the body called as Chronic Inflammation. This results in formation of tubercles and destruction of normal tissues of the body. For example, in tuberculosis of the lung, the normal lung tissue is destroyed over time. This result in loss of breathing capacity of the lungs and the person may die from respiratory failure. Similarly, if TB affects kidneys, the kidney tissue is destroyed over time and person can die from kidney failure. Thus, TB is a condition in which the body is damaged in indirect fashion. However, before much damage is done one can diagnose TB on the basis of certain symptoms including:

- Cough of more than 3 weeks duration
- Low grade fever, especially at night
- Night sweats
- Loss of appetite
- Weight loss
- Weakness/Tiredness

In case of lung TB, sometimes there can be blood-streaked sputum, chest pain etc. Nonetheless the absence of symptoms does not exclude TB. Sometimes, TB may be without symptoms. An expert can only diagnose this only.

I think I must stop my lecture here itself because I am using too many medical words and they must be difficult for you to understand. I know that many of the things are new to you and you may not understand them easily but I feel one has to start one or the other day. In the long run as you will learn more about TB you will start understanding the TB disease. You are welcome to seek clarifications if you want." Then in the crowd one person raised his hand. "Yes please, what is your question" asked Dr. Vikram.

"Doctor Saab, we know only about lung TB but you have said that TB can affect other organs also. Is it true ?" "A good question. Actually other types of TB are very rare. Majority of TB cases has lung TB only. However, besides lungs TB can affect many other organs including kidneys and intestines. This is also called as Extrapulmonary TB. The intestinal TB can spread if a person drinks milk from the cow or buffalo suffering from intestinal tuberculosis. The pasteurisation of milk or boiling of milk before drinking kills such bacilli in milk and prevents this kind of TB. It is also called as Bovine TB and is caused by another bacteria which is a close relative of TB bacillus. The boiling of milk also destroys other harmful organisms that can cause diarrhoea, typhoid etc. I hope this has clarified you doubt."

Another person raised his hand. He asked "Sir, suppose any person is having fever and cough,
is he suffering from TB ?" Dr. Vikram replied promptly "Very intelligent question indeed. No, not at all. Any person who has got a cough of more than 3 weeks' duration or fever whose cause can't be diagnosed, then there is high suspicion of TB. Such a person should see a doctor immediately to rule out tuberculosis. I think my answer is useful to you." The questioner nodded in affirmative.

Seeing no more questions being asked Dr. Vikram concluded his lecture "Next time I would be talking about diagnosis and treatment of TB. I would also like that the members of SeSyTuFFo should consult general knowledge books and try to find out interesting facts about TB. The best submissions would be rewarded in the future meeting. Thank you very much."

The meeting ended with a big applause for Dr. Vikram.

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Footnote:

1. Extra-pulmonary TB: TB disease affecting lungs is also called Pulmonary TB (PTB). Of all types TB diseases, PTB is seen most of the times. Rest cases have TB disease outside lungs also called as Extra-PTB. The examples are Effusion in chest cavity (is outside lungs), lymph nodes, brain, spine, intestines, urinary tract, joints etc. The clinical features may be fever, weight loss and also include features related to site of disease (e.g. in joint: pain, swelling etc., in brain: epilepsy, headache etc.) . In cases of ExPTB, sputum smear should be done to rule out associated PTB.

Commonest form of ExPTB found in children is neck lymph node TB (scrofula). It is seen as enlarging, painless group of rounded swellings in neck which start discharging pus.

2. Pasteurization: It is process of sterilising milk where milk is exposed to hot temperature of 72 degree centigrade for 20 seconds and then rapidly cooled to 10 degrees. It destroys harmful bacteria including that of TB.

3. Bovine TB: TB of cattle (cow etc.) can get transmitted to human beings when the animal suffers from tuberculosis of milk glands (tuberculous mastitis). The TB causing germ in cattle is Mycobacterium tuberculosis bovis (Mtbovis), the close relative of Mtbovis hominis. The unboiled milk of cattle containing TB germs when is drunk by human beings can result in infection of tonsils presenting as scrofula (neck lymphnode infection) and TB of intestines. This type of TB diseases is grouped under ExPTB.

Key Learning Facts:

1. Smear negative TB can only be diagnosed by an expert and only an expert can treat it. This may be the case particularly with extra-PTB.
2. Boiling and/or pasteurization of milk not only kill the harmful TB bacilli but also kill other harmful bacteria, which can cause dysentery, typhoid etc.

Conflicts:

TB bacilli are not harmful as such but the body's protective reaction, which is developed to eliminate it, is harmful. Immune reaction results in destruction of normal tissue. Thus, an infected organ loses its capacity to function. This reaction is different from an autoimmune reaction, a type of reaction, which occurs against normal body cells and can result in many diseases like-Arthritis etc.

Nine

Today Dr. Vikram was going to talk about diagnosis (detection) of TB. He has already told in previous lecture that members of SeSyTuFFo are not expected to know about TB in so much detail. However, according to him some knowledge about all the aspects of TB will help them to carry out their work in a better way. As per his announcement many members have come up with different posters containing varied information about TB. These posters were displayed on the walls of the school. When Dr. Vikram arrived he was eager to see the posters. Without saying anything he moved straight to the exhibits. He saw many members of SeSyTuFFo were explaining about posters to other villagers
and children. Some of the good exhibits were as follows:

a) Prajwal has contributed on milk induced tuberculosis. He has mentioned in his poster that: Mycobacterium bovis (bacteria closely related to Mycobacterium tb hominis) causes tuberculosis in animals and it can be transmitted to man on drinking unboiled milk. Besides causing disease in people, bovine TB results in worldwide annual losses to agriculture to the tune of 350 billion Nepal rupees due to premature animal death.

b) Sailesh has talked about BCG vaccine in his poster. According to him:

M. bovis was used to develop Bacillus Calmette Guerin (BCG) vaccine. M. bovis strain was made to undergo serial passage on potato slices soaked in ox-bile and glycerol over 13 years. This resulted in attenuation (weakening) of its virulence (harmfulness). Exact basis of its attenuation is still unknown.

Dr. Vikram then came to the stage and declared the above two posters being selected for the prize. He said "I am very happy that young people are coming forward to help the community to fight against TB. Seeing their posters one can say that they are doing it with their full devotion. Effort of all the participants who have presented their posters is commendable and no poster is less than the other but these two posters have definitely given useful information and we should clap for them."

After a long applause, he continued "Today, I would be talking about diagnosis and treatment of TB. The topic of diagnosis is a complicated topic, which can't be explained, in simple words. But, I will try my best to simplify it. In the last lecture there was some doubt about diagnosis. I hope it would be clarified further in this session. Although there have been numerous attempts to develop sensitive and specific tests for detecting M. tuberculosis infection, but unfortunately none has performed well till date. One can suspect the person is having TB on the following grounds:

a) Symptoms, as mentioned in previous session. More importantly if the person is having cough of long duration may be more than 2-3 weeks or so.

b) A person who is living near a TB patient for long time, especially the patient whose sputum contained TB germs i.e. close contacts of sputum positive TB patient.

c) Persons with medical conditions that lead to decreased immunity, such as the people suffering from diabetes mellitus, kidney failure or with HIV positive status or AIDS.

d) Individuals with X-ray evidence of tuberculosis.

To confirm whether the person is having TB the person can be investigated as follows:

a) If cough with sputum is there, then sputum examination for detection of TB bacilli.

b) X-ray of the chest to look for any lung lesions or pleural effusion (fluid in chest cavity).

Both these tests are available at health centre and can be done easily. The reports can be available on same day. The sputum examination is best test because it directly shows the presence of TB germs. I hope, I am clear. If any doubt is there you can ask a question."

Prajwal then raised his hand. After being permitted by Dr. Vikram he asked "Sir, what about TB outside lungs and Mantoux test? Is Mantoux test useful in the diagnosis of TB?" Dr. Vikram replied "A very good question indeed. Detection of TB outside lungs (extra-pulmonary TB) requires special tests, they are decided by the doctor. I think it is difficult to explain everything to you. As far as Mantoux test is concerned, it is one of the controversial tests. It is not useful if the person has previous exposure to TB bacilli or any other type of mycobacteria. This exposure also occurs after BCG vaccination. Like that 6 out of 10 people can have a positive Mantoux test. It can only tell the presence of TB infection but not TB disease. Therefore, it is not routinely used in this region. I hope that you have understood my answer. If no more questions I close here. Please don't forget to collect that brochure over there, which tells about TB in HIV positive and AIDS patients. In next session, we can discuss about it and we will also discuss treatment of TB."

Footnote:

1. Attenuation: To decrease the virulence of the
harmful microorganism. Process used to develop vaccines.

(Virulence: Capacity of a microorganism to produce disease)

2. Mantoux Test: Von Pirquet developed it in 1906. It relies on determining the extent of delayed type hypersensitivity (allergic) reaction to intradermal injection of purified protein derivative from TB bacilli (PPD also called Tuberculin). It is considered non-specific because past healed primary TB infection or exposure to nontuberculous mycobacteria can result in a non-specific reaction to PPD (falsely positive result). It may also be falsely negative in face of active TB disease e.g. miliary TB etc.

3. Sensitivity of a Test: Ability to detect all the persons having the disease
4. Specificity of a Test: Ability to exclude all those persons who are not having disease

Key Learning Facts:

1. Tuberculin Sensitivity: It does not indicate presence of active tuberculosis disease. It can only indicate whether person has been exposed to TB bacilli or not, and this can also happen in the past.

Ten

Before the next session, Dr. Vikram went through all the posters again and he also appreciated the following posters:

a) As per year 2005 WHO Report on TB, in the year 2003 about 1.7 million people died of tuberculosis world over. Now, if this data is analysed considering 365 days in a year, 24 hours in a day, 60 minutes in an hour and 60 seconds in a minute, then due to tuberculosis, in the world:

- 4658 people die everyday, 194 die every hour, 3 die every minute and 1 person dies every 20 seconds

Similarly, in Nepal, in the year 2003: 7,399 people died due to TB, that means.

- 20 people die every day
- Almost 1 person dies every hour

and if TB is not controlled then in next 10 years, nearly one hundred thousand (100,000) people can die from Tuberculosis.

Who is next victim, I am or You.

b) the other stated the timing of discovery of different anti-TB drugs (ATD). The poster mentioned:

After streptomycin (1944), p-aminosalicylic acid (1949), isoniazid (1952), pyrazinamide (1954), cycloserine (1955), ethambutol (1962) and rifampin (rifampicin; 1963) were introduced as anti-TB agents.

Starting his lecture he said "Treatment part of TB disease is again beyond the domain of common man. However, I will initiate the discussion and any of you can interrupt me to ask your questions." Continuing further he said "When a person is diagnosed with TB it is very important to treat the patient with multiple drugs. As displayed in that poster there are many antibiotics which can be useful in treating TB." Paresh raised his hand to ask a question. On prompting by Dr. Vikram he asked "Sir, could you explain this further ?" Dr. Vikram replied "Alright, actually Mtb organisms are slow growing and remain inactive for long time. The drugs may not produce their effect. So, a prolonged course of treatment is needed and multiple drugs are used to prevent emergence of drug-resistance and prevent treatment failure. Usually four or more medicines are recommended to be given together to treat TB."

Interrupting him Dhiraj asked "Sir, why so many antibiotics are used ?" Dr. Vikram said "Multiple drugs must be used to treat tuberculosis because one drug alone will not be able to completely destroy the microorganism. Some patients don't like too many medicines and that too for long periods of time. It has been found that ATDs are equally effective even if given on an intermittent basis. However, when a patient is taking
medicine intermittently, it should be under direct supervision of a responsible person and thus should have a directly observed therapy. This is also known as DOTS in short. It is very important to take all the medicines and for appropriate duration otherwise cure will not be possible. Any side effects should be told to the doctor."

Sailesh asked "Sir, how do we know the effect of the treatment ?" Dr. Vikram replied "With the proper treatment, there should be a rapid improvement in symptoms. After a month, the patient should be without fever, feel well and have regained weight. Coughing and sputum should have diminished. Although bacteria may still be present in the sputum smears but their number will be low and they will become more and more difficult to culture."

"Sir, then what if no improvement occurs ?" asked Paresh. "The absence of improvement in the first three months should be grounds for concern and the doctor should be consulted. There can be many reasons for this as follows:

a) It is important to remember that response to treatment may be slow. Some people may just be slower at responding to treatment, with symptoms persisting for weeks (also culture positive after three months). Who do not have drug-resistant disease, therapy should be extended beyond six months.

b) If the patient is taking medicine himself then it is important to confirm whether medicine has been taken or not. Patient compliance must be monitored throughout treatment. Like SeSyTuFFo members can motivate the patients to take their medicine regularly and complete its course.

c) If patient is taking medicines in right manner then the doctor should reevaluate the bacteria’s drug sensitivity.

d) Further, sometimes relapses (recurrence) can occur within six months of the end of treatment, and in most cases are due to poor patient compliance. When TB becomes active again in a previously treated patient, there is a high chance that the bacteria will now be drug resistant. The patient should tell the doctor about his previous problem so that the doctor can plan proper treatment. He should not present himself as a new case of TB but tell about his past TB disease and its treatment (including drugs and whether completed or not). If possible patient should show all the records of previous treatment to the doctor."

Dhiraj asked "Sir, in what other ways we can help the patient ?" Experienced health providers should monitor the patient. As a health care supporters you can serve a supplementary role by helping the patient to know about side effects and recognise problems like drug reactions and assist them to get help from the experienced health providers. Sometimes, medicines like rifampicin may cause red colouration of urine, tears etc. Usually, there are no side effects and TB drugs are safe. If any side effects are seen, the most common drug side effect is hepatotoxicity i.e. Isoniazid, rifampin and pyrazinamide are all toxic to liver. There can be jaundice, pain in belly, yellow urine, then patient should see the doctor and till that time all drugs should be stopped. If the patient experiences itching, disturbances in vision, skin rash, blood under skin, difficulty in breathing, should consult the doctor.

You also work on the following points:

a) You can tell the patients to store Medicines away from direct sunlight, humidity and high temperature; otherwise there can be loss of strength of medicine.

b) You can remind them to cover their mouth while coughing, sneezing etc. Also tell them how to dispose off the sputum.

"Sir, what about pregnant ladies with TB disease, do they need any special care ?" Pregnant women should take the medicine and the baby born to her should be tested for TB. If there is no TB then chemoprophylaxis with INH is given and is followed by BCG vaccination. If TB is there, then it should be treated. In no case the mother’s milk should be withheld, it should always be given because neither TB drugs nor TB germs are present in human mother’s milk."
Seeing no more questions being asked Dr. Vikram declared the conclusion of the meeting. He wished ‘Good Luck’ to the members of SeSyTuFFo and told them to contact him in case of any problem. The meeting ended with a long applause for Dr. Vikram.

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Footnote:

1. Sensitivity: Means extent to which bacteria are vulnerable to killing or growth inhibiting effect of an antibiotic or a drug

2. Culture: It is a technique to grow microorganisms artificially for the purpose of diagnosis, research etc. It is also used to test the sensitivity of the organism to a drug. When a bacterial culture is done one can get a colony of bacteria i.e. a connected mass of bacterial growth, usually originating from a single bacterial cell.

3. Drug reactions: It is an effect of drug seen along with desired therapeutic effect. It can be harmful to the patient. Most of the TB drugs can cause some kind of toxicity. Fortunately, toxic reactions are seen in only less than 4 % of the patients taking anti-TB drugs. Doctors should tell the patient about how to recognise them.

4. Relapse: Disease resurfacing after a patient was declared to be cured.

5. Prophylaxis: The technique of preventing a disease e.g. polio vaccine is used to prevent polio

Key Learning Facts:

1. Important Points in treatment are:
   * Patient should take all the drugs prescribed, whether 3 or 4 or more
   * Patient should take all drugs in prescribed dose
   * Ensure that drugs are taken regularly
   * All the medicines are taken long enough i.e. for correct duration neither less nor more.
   The aim of treatment is not just curing the disease but should also be to achieve cure as early as possible with lesser complications and without any problems like spread of disease, relapse, emergence of drug resistance.

2. If the patient is going out of station, should carry the doctor’s prescription and should all the prescribed medicines in adequate amount till the duration of outside stay so that the treatment is not affected.

3. If a patient is not responding to therapy as expected it is important to check for drug resistance, treatment non-compliance and drug malabsorption.

4. Due to the close proximity of the baby to the mother, the baby born to a mother with tuberculosis should be tested for TB. If there is no TB then chemoprophylaxis with INH is given. This because not only the infection can be easily transferred from mother to the baby but also due to the fact that the immune system of an infant is weak. Thus, infant may not be able to fight the TB infection and can develop TB disease.

Additional Points:

In case of good compliance and no other problems, the sputum smears and cultures are negative in >90 percent of patients after two months of effective therapy and in 99 percent after three months.

** Eleven**

SeSyTuFFo came into action. The members divided the responsibility among themselves and then they also started visiting other villages with banners and posters. Initially, they also met resistance from the people like- some people said that they don’t have any such disease, so they should not be disturbed. Some villagers said their children would miss their studies. Notwithstanding this opposition the results started pouring in. The incidence of tuberculosis started declining in the villages in which the campaigning was done. The government issued a large colourful stamp to spread awareness about tuberculosis listing all the important symptoms of tuberculosis. All the members of SeSyTuFFo became a well-knit group and besides campaigning for tuberculosis they also started collective activities like group study,
formed strong volleyball team. Their scholastic performance started improving. They became popular and now the society was also getting requests from distant villages to come and tell about tuberculosis.

SeSyTuFFo soon came into headlines. The King felicitated all the members for their good work and all the students were given scholarship by an International Health Organisation in appreciation of their contribution and were given the designation of 'Child Health Ambassadors'. They were also given a bicycle to continue their selfless service to the society. When they were asked about future plans, they said that they would continue to spread awareness about TB even if it is controlled now. This is because new cases will continue to emerge due to persistence of dormant TB bacilli in people who are now healthy. As per WHO one third of world's population is infected with TB bacilli though may not have disease now. They are at risk of developing TB disease at one or the other time. Also, next on their agenda was to spread awareness about AIDS.

Appendices

Appendix-1: The art of counseling

There are certain basics involved in spreading awareness, some are:
Inform, Motivate and Help. Information is a prerequisite to awareness. Once people are aware of a problem they develop interest, try to analyse and search for appropriate solution. Motivation helps them to contact right people who can solve their problems. Counsellors can guide them when, where, who, how should be contacted.

Other important points are:

- Try to involve the people by making yourself acceptable. For this be friendly, knowledgeable, sympathetic.
- Talk in people's language
- Tell only relevant things
- Don't give conflicting information
- Repeat & reinforce

Appendix-2: School Health Education

Educating children on health aims to produce a level of health consciousness in children and equips them not only to improve their own health but also to contribute significantly towards family and community health. It is equally important to provide necessary equipment and facilities to help students apply this knowledge in practice.

Dr. U. Ko Ko
Regional Director
WHO South-East Asia Region

Benefits of Educating Children at School on Health Issues:

a) Foremost point is:
Only a healthy child can be in the best position to educate himself. The children of today are responsible citizens of tomorrow.

b) By learning about health issues not only the children empower themselves but can also act as a catalyst to improve the health status of their families and communities.

c) Most of the habits develop during young age like smoking etc. The children are receptive and keen to learn. Early knowledge about the ill-effects of such habits can prevent the formation of such habits.

d) Children are nation's 'Most Important Human Resource Under Process of Development'. It is easy to reach this sizeable proportion of nation's (nearly 25% of) population at school in a regular manner which is also cost effective.

e) Incorporating health education in curriculum can be useful in many more ways:

- As the duration of school education lasts about a decade, there is possibility to educate them on health issues in step-wise manner
- It is possible to find the level of retention of learning at least in terms of theory, if not practice.

- More chances of interactive learning wherein the family of child can also be involved.

- Regional health problems, cultural values and practices can be given more weightage while imparting health education.

- Libraries can provide educational materials on a loan basis, thus resources are not wasted and can be re-used.

- Senior students can act both as learners as well as guide and peers to younger students in health matters. There can be ‘Health Prefects’.

- School can initiate some good practices in school itself, like mandatory for every child to brush teeth after lunch.

Important to support above:

- Develop teacher training.
- Develop health teaching material different from conventional instruction based meant just to impart information, especially in local language with local cultural values in mind.

- Field visits, self to do health projects like finding health problems prevalent in the region.

- Incentive, rewards to outstanding students, teachers.

Appendix-3: DOTS Therapy

This is the strategy used to treat Tuberculosis.

DOTS: Has 5 key components, all are essential:

1. Political and administrative commitment for TB control measures
2. Diagnosis primarily by microscopy among patients attending all health facilities
3. Uninterrupted supply of good quality drugs for short-course treatment
4. Direct observation of treatment at a time and place convenient to patients by a trained observer who is accountable to the health system
5. An intensive system of monitoring and supervision which tracks the diagnosis, progress, and outcome of each and every patient treated.

Appendix-4: HIV & Tuberculosis

Infection with AIDS virus (HIV: Human Immunodeficiency Virus) causes profound damage to cellular immunity. If cellular immunity becomes weak the TB bacilli either present previously in the or newly entered the body will multiply to cause active tuberculosis disease. The HIV positive patients are 40-50 times more prone to TB disease as compared to general population.

TB disease in these patients is similar to TB disease in common population. Hence they are treated in same way. Only thiacetazone (an anti TB drug) is not given to them as it can cause serious reactions.

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Abstracts

Socio-economic status and adherence to tuberculosis treatment: a case-control in a district of Nepal:


Setting: A western hill district in Nepal, where tuberculosis (TB) treatment under DOTS was offered by the regional tuberculosis centre, two primary health centres, eight health posts, three sub-health posts and one ward of sub-metropolitan Pokhara.
Objective: To analyze the contribution of socio-economic status to non-adherence to DOTS.

Design: Case-control study. Data were collected by questionnaire-based face-to-face interview. The study sample consisted of 50 cases and 100 controls. The participation rate was 80% for cases (non-adherents) and 95% for controls.

Results: Logistic regression analysis showed that the risk of non-adherence to TB treatment was significantly associated with unemployment (odds ratio [OR] 9.2), low status occupation (OR 4.4), low annual income (OR 5.4), and cost of travel to the TB treatment facility (OR 3.0). Factors significant in the bivariate analysis—living contrition, literacy and difficulty in financing treatment—were not found to be significantly associated with non-adherence when adjusted for other risk factors in the multivariate regression model.

Conclusion: Low socio-economic status and particularly lack of money are important risk factors for non-adherence to TB treatment in a poor country such as Nepal.

Active case finding of tuberculosis: historical perspective and future prospects:

JE Golub, CI Mohan, GW Comstock, RE Chaisson
INT J TUBERC LUNG DIS 9(11): 1183-1203 – Review Article

Despite a history of remarkable scientific achievements in microbiology and therapeutics, tuberculosis (TB) continues to pose an extraordinary threat to human health. Case finding and treatment of TB disease are the principal means of controlling transmission and reducing incidence. This review presents a historical perspective of active case finding (ACF) of TB, detailing case detection strategies that have been used over the last century. This review is divided into the following sections: mass radiography; house-to-house survey, outpatient case detection, enhanced case finding, high-risk population and cost-effectiveness. The report concludes with a discussion and recommendations for future case finding strategies. Understanding the strengths and weaknesses of these methods will help inform and shape ACF as a TB control policy in the twenty-first century.

Criteria used for the diagnosis of childhood tuberculosis at primary health care level in a high-burden, urban setting

AC Theart, BJ Marais, RP Gie, AC Hesseling, NB Beyers
INT J TUBERC LUNG DIS 9(11): 1210-1214

Background: Children contribute a significant proportion of the total tuberculosis (TB) case load in high burden settings and present a major diagnostic challenge.

Objective: To document the criteria used at primary health care level to diagnose childhood TB in a high burden, urban setting.

Methods: This retrospective descriptive study was conducted at two primary health care clinics in Cape Town, South Africa.

Information on all children (<15 years of age) entered into the TB register from January 2002 through December 2003 was retrieved for analysis.

Results: During the study period, 1277 cases of TB were entered into the TB register, of which 268 (21.0%) were children. Information on 256 (95.5%) children was available for analysis. The majority (206, 80.5%) had intrathoracic TB, of whom 107 (51.5%) had uncomplicated lymph node disease, 79 (38.3%) complicated lymph node disease, 8 (3.9%) a pleural effusion and 12 (5.8%) adult-type cavitating disease. According to modified WHO criteria, the diagnosis of TB was confirmed in 27 (10.5%), probable in 193 (75.4%) and suspect in 36 (14.1%).

Discussion: The diagnostic criteria used at primary health care level demonstrated good
agreement with current guidelines, but depended heavily on chest radiograph interpretation.

**Impact of fluoroquinolones on the diagnosis of pulmonary tuberculosis initially treated as bacterial pneumonia**

YS Yoon, HJ Lee, HI Yoon, C-G Yoo, YW Kim, SK Han, Y-S Shim, J-J Yim
INT J TUBERC LUNG DIS 9(11): 1215-1219

Objective: The excellent in vitro activity of fluoroquinolones against *Mycobacterium tuberculosis* has raised concerns about the delayed diagnosis of pulmonary tuberculosis (PTB) initially misdiagnosed as pneumonia. The aim of this study was to assess the effect of empiric fluoroquinolone therapy on delay in diagnosis in patients with PTB initially misdiagnosed as bacterial pneumonia.

Design: Patients with PTB initially treated as having community-acquired pneumonia and treated with fluoroquinolones for more than 5 consecutive days, from January 2000 to December 2004, were enrolled. As a control group, TB patients initially treated with non-fluoroquinolone antibiotics were enrolled. We reviewed the clinical data and compared treatment responses between the two groups.

Results: Nine patients in the fluoroquinolone group and 19 patients in the non-fluoroquinolone group were enrolled. In the fluoroquinolone group, eight patients (89%) improved clinically or radiographically, whereas only eight patients (42%) in the non-fluoroquinolone group improved ($p=0.04$). The delay in initiation of anti-tuberculosis medication was longer in the fluoroquinolone group than in the non-fluoroquinolone group ($43.1 \pm 40.0$ vs. $18.7 \pm 16.9$ days, $P=0.04$).

Conclusion: Delay in the initiation of anti-tuberculosis treatment is possible in patients administered fluoroquinolone and initially misdiagnosed as having bacterial pneumonia.

**Comparison of extra-pulmonary and pulmonary tuberculosis cases: factors influencing the site of reactivation**

B Musellim, S Erturan, E. Sonmez Duman, G Onen
INT J TUBERC LUNG DIS 9(11): 1220-1223

Setting: *Mycobacterium tuberculosis* bacilli spread by the hematogenous route during primary infection and reactivate later.

Objective: To compare factors influencing the reactivation site.

Design: A total of 236 pulmonary tuberculosis (PTB) and 139 extra-pulmonary TB (EPTB) cases were compared in terms of age, co-morbid disease, immunosuppressive drug use, history of contact with a PTB case in close relative, history of tuberculosis, smoking habit and alcohol intake.

Results: The sex ratio of EPTB and PTB cases was significantly different ($P<0.001$): respectively 74% of EPTB cases and 34% of PTB cases were females; 53.3% of PTB cases and 23% of EPTB cases were smokers ($P<0.001$); and the disease appeared within the first 5 years after contact in 23.7% of EPTB cases compared to 72.6% in PTB cases ($P<0.001$). In logistic regression analysis, gender (OR = 3.69), smoking habit (OR=0.54) and interval between contact and disease (OR=1.07) were found to influence the reactivation site.

Conclusion: The probability of PTB development was higher in males, in smokers and within the first 5 years of contact. In contrast, the probability of EPTB development was higher in females and after 5 years of contact.

**Performance of variations of carbolfuchsin staining of sputum smear for AFB under field conditions**

INT J TUBERC LUNG DIS 9(10): 1127-1133
Setting: A field project in Bangladesh
Objective: To compare the effectiveness of commonly used carbolfuchsin-staining variations.

Design: Routine hot Ziehl-Neelsen (ZN) 1% basic fuchsin staining for 15 min in 75 field clinics. Blind reading of duplicate smears stained by ZN 1% vs. 0.3% basic fuchsin applied for 5 min, or by ZN 1% 5 min vs. Kinyoun cold staining. Rechecking of discordant series.

Results: For comparable numbers of false positives, sensitivity was significantly lower with Kinyoun than with ZN 1% 5 min (85.6% vs. 93.0%, \( P < 0.001 \)). Sensitivity with ZN 1% 5 min was not significantly higher than with 0.3% 5 min staining (89.9% vs. 86.5%). Routine examination using 1% 15 min ZN identified more positives than any of the study techniques.

Conclusion: Kinyoun cold staining sensitivity was unsatisfactory in field clinics. The sensitivity of the WHO/IUATLD recommended 0.3% fuchsin for 5 min was not significantly different from the original 1% ZN for 5 min, but 1% 16 min hot staining might be superior. A reduced fuchsin concentration together with a short staining time may leave too narrow a margin for error. TB programmes using hot ZN with a concentrated stain or longer staining time should not be urged to change.

Integration of microscopy and serodiagnostic tests to screen for active tuberculosis

GV Kanaujia, PK Lam, S Perry, PN Brusasca, A Catanzaro, ML Gennaro
INT J TUBERC LUNG DIS 9(10): 1120-1126

Setting: University of California San Diego Medical Centre, USA.

Objective: To create a simple screening strategy for tuberculosis (TB) that includes antibody detection as say to improve the accuracy of microscopic examination of sputum for acid-fast bacilli (AFB smear).

Methods: Serum samples were obtained from 190 patients suspected of having active TB, TB diagnosis was established by Mycobacterium tuberculosis culture. HIV status was determined by commercial serologic tests. IgG antibody levels were measured by ELISA using purified \( M. \) tuberculosis antigens. Data from 130 randomly selected patients were used to develop a screening strategy, data from the remaining 60 patients were used for validation. Results: AFB smear had 70% sensitivity and 88% specificity. In algorithms integrating single or multi-antigen ELISA with AFB smear and HIV results, the sensitivity improved over each test alone. The algorithm that included a four-antigen ELISA (38 kDa antigen, lipoarabinomannan, MPT-64 and glutamine synthase) had a sensitivity of 93% and a specificity of 76%. Compared to AFB smear, the sensitivity of the algorithm was significantly higher, while the specificity was not statistically different.

Conclusion: This study demonstrates that a screening strategy can be created by integrating multi-antigen ELISA with AFB smear and HIV testing.

Development and evaluation of new chest radiograph reading and recording system for epidemiological surveys of tuberculosis and lung disease

S Den Boon, ED Bateman, DA Enarson, MW Borgdorff, S Verver, CJ Lombard, E. Irusen, N. Beyers, NW White
INT J TUBERC LUNG DIS 9(10): 1088-1096

Objective: The development and evaluation of a new chest radiograph reading and recording system (CRRS) for community surveys of tuberculosis (TB) and lung disease.

Design: An experienced pulmonologist read 2608 chest X-ray (CXR)s performed as part of a TB prevalence survey using the newly developed CRRS. The kappa (k) for inter-reader agreement was calculated after a second reader reported on a stratified random sample of 810 (31%) of the 2608 CXRs. The k for intra reader agreement was calculated from the repeated reporting of a stratified random sample of 104 CXRs.
Results: The k agreement between the two readers was 0.69 (95% CI 0.64-0.74) for abnormalities consistent with TB and 0.47 (95% CI 0.42-0.53) for any abnormalities. The k for intra-reader agreement was 0.90 (95% CI 0.81-0.99) for abnormalities consistent with TB and 0.85 (95% CI 0.74-0.95) for any abnormalities.

Conclusion: This standardizes method for CXR reading and recording provides satisfactory inter and intra reader agreement, making it suitable for surveys of TB and other forms of lung disease in the community. Its use will permit comparisons of result obtained in different surveys.

Tuberculosis epidemiology in India: a review

VK Chadha
INT J TUBERC LUNG DIS 9(10): 1072-1082

High prevalence and incidence of disease and a high rate of transmission of infection characterize the tuberculosis (TB) situation in India. Disease surveys conducted in different parts of the country since the 1950s have reported prevalence of smear-positive pulmonary TB (PTB) of 0.6-7.6 per 1000 population, culture-positive TB of 1.7-9.8 and culture and/or smear-positive TB of 1.8-12.7. The incidence of smear-positive PTB has been observed in the range of 1.0-1.6/1000 and that of culture-positive PTB 1.0-2.5/1000 in the limited number of studies carried out. The annual risk of tuberculosis infection (ARTI) had been estimated at 1-2% for most of the tuberculin surveys carried out in different areas over different time periods. During a nation wide study in 2000-2003, the average ARTI in the country was estimated at 1.5%. An increasing trend has been observed in human immunodeficiency virus (HIV) sero positivity among TB cases, which has been found to vary between 0.4% and 28.8% in different studies conducted mostly at tertiary health care centres. The proportion of new cases with multi drug resistance (MDR) was relatively low, at 0.5-5.3%. However, the proportion of MDR cases among previously treated cases varied between 8% and 67%.

Scaling up antiretroviral therapy in Africa: Learning from tuberculosis control programmes – the case of Malawi

E Libamba, S Makombe, AD Harries, R. Chimziz, FM Salaniponi, EJ Schouten, R. Mpazanje
INT J TUBERC LUNG DIS 9(10): 1062-1071

The rapid and massive scale-up of antiretroviral drug therapy (ART) so needed in sub-Saharan Africa will not be possible using a ‘medicalised’ model. A more simple approach is required. DOTS has been used now for many years to provide successful anti-tuberculosis treatment to millions of patients in poor countries for the world, and many of the established concepts can be used for the delivery of ART. Malawi, a small and impoverished country in sub-Saharan Africa, is embarking on a national scale-up of ART. In this review we describe how we have adopted several of the principles of DOTS for delivering ART in Malawi: case finding and registration, treatment, monitoring, drug procurement, staffing and the issue of free drugs. We also discuss ART for HIV-tested TB patients. We hope that by using the DOTS approach we will be able to deliver ART to large numbers of HIV-infected patients under controlled conditions, and minimize the risk of developing drug resistance.

The impact of an IEC campaign on tuberculosis awareness and health seeking behaviour in Delhi, India.

N Sharma, DK Taneja, D Pagare, R Saha, RP Vashist GKA Ingle
INT J TUBERC LUNG DIS 9(11): 1259-1265

Objective: To study the impact of an intensive IEC campaign regarding the Revised National Tuberculosis Control Programme launched by the Government of Delhi on awareness generation among the general population and improvement in self-reporting by symptomatic cases in Delhi, India.
Design: Cross-sectional study

Result: A pilot study wherein 1008 persons selected by systematic random sampling from the general population and 1012 patients selected from symptomatic cases reporting to DOTS centres were interviewed. Among the general population, 716 (71.0%) had been exposed to one or more IEC message through the media. The core message regarding symptoms, diagnosis, treatment centre and free treatment was recalled correctly by 144 (14.3%), 449 (44.5%), 659 (65.4%) and 900 (89.2%), respectively. In the post IEC period, a significant increase ($P < 0.01$) was seen in individuals self-reporting with symptoms to DOTS centres: the media message reportedly encouraged 36.3% of these to self-report. Prior to the IEC campaign only 49 (9.8%) patients had chosen a DOTS centre as first source of treatment, which increased significantly ($P < 0.0001$) to 104 (20.4%) post IEC.

Conclusion: The IEC campaign launched by the Government of Delhi has been effective in raising awareness and improving self-reporting, but it requires intensification with suitable modification to reach all sectors.

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Welcome News

Visit of PANOS SOUTH ASIA

Journalists from PANOS South Asia visited STC on July 28, 2005. The journalists expressed their views during the visit, which are as follows:

"We are visiting the SAARC Centre to learn about its activities in the South Asian Region. We are a group to 15 journalists and 2 resource persons, writing on TB issues. The visit was extremely well organized and each detail thought of SAARC & NTP is doing a commendable job in TB treatment, prevention & control".

Anusheeran Mishra
PANOS SOUTH ASIA

"Thank you very much to the SAARC TB Centre for receiving the PANOS/STOP TB media fellows & for giving us a thorough presentation & visit".

Shalu Rozario
STOP TB Partnership, Secretariat

"It is really a great honour for me to have a chance for visiting the SAARC TB Centre. Thank you very much for giving me a thorough presentation about how the SAARC works".

Aryani
Indonesian Journalist – PANOS

The following journalists also expressed their views:

Gary Hampton, Photo Journalist, New Delhi, India, Kaman Reza Choudhury, Staff Reporter, The Daily Jugantor, Dhaka, Bangladesh, Kay Alare from Manila, Philippines, Unipa Z Bito from Manila, Philippines, Shanifuzzaman Pintu from Bangladesh, Anuradha from The Indian Express, Pune, India, and Ramya Kaman from The Hindu, Chennai, India.

Visit of Ms. Fathimath Leena

His Excellency Secretary General during his visit to Male, agreed a proposal by the SAARC Costal Zone Management Centre (SCZMC) that Ms. Fathimath Leena, Administrative Assistant, may visit the SAARC Secretariat and SAARC TB Centre for on the job training in the financial and administrative matters. She visited STC on July 25, 26 and 29, 2005 and observed the administrative and financial procedures / management of the Centre.
Visit of Health Minister at SAARC TB and HIV/AIDS Centre

Hon'ble Mr. Neekshya SJB Rana, Assistant Minister for Health and Population of Nepal visited STC on August 11, 2005. Special Secretary for Health Dr. Nirakar Man Shrestha as Acting Secretary accompanied Hon'ble Minister for Health and Population.

Dr. Kashi Kant Jha, Director, STC welcomed the distinguished guests at STC by delivering a welcome remarks in a special function. Dr. Rano Mal Piryani, Deputy Director, STC presented Introduction of SAARC and STC.

Hon'ble Minister observed the functioning of the Centre with great interest and gave his remarks. He thanked all staff of the Centre. He assured to provide support to STC from His Majesty's Government of Nepal. He also assured support of MoH & Population to STC for its additional responsibility for the control of HIV/AIDS.

Hon'ble Minister gave his signature with remarks in Visitors' Book of STC. The remarks are as follows:

"It was a pleasure being here at NTC and STC. The presentations were very enlightening. Despite of deficiency in various fronts, I noticed a sincere devotion of the staff, which is definitely praiseworthy. I also noticed the feeling of oneness for the cause even from supporting foreign doctors, which definitely deserves our gratefulness. Thank you all for all the hospitality. My commitment for sure will always be encouraging and I will always try to be there for these Centres".

sd/-
Neekshya SJB Rana

Visit by officials from Dr. Iwamura Memorial Hospital and Research Centre (IMHRC), Bhaktapur.

To promote the partnership between two centres, particularly in research related to TB and HIV/AIDS a team comprising Mr. Neel Krishna Tamrakar, Managing Director, Dr. J. P. Jaiswal, Medical Director, Dr. Uttam Krishna Karmacharya, Mr. Raju Man Joshi, Mr. Daan Gurung and Mr Ravi Giri visited STC on September 6, 2005.

Director, STC welcomed the team and organized a meeting with STC official. The meeting decided that two centres would work together in research areas relating to TB and HIV/AIDS in coming days.

Students under SAARC Internship Programme of SAARC Secretariat:

Under the SAARC Internship Programme of SAARC Secretariat, Students Mr. Aneel Piryani – (Pakistan) from Kathmandu College of Management, Mr. Yogendra Bahadur Mahat, Apex College and Mr. Bikash Mahat, Kathmandu College of Management, Nepal visited SAARC TB and HIV/AIDS Centre on Sept. 22, 2005. The Director and Deputy Director of the Centre interacted with them. Students also observed the functioning of the Centre.
Visit of NTP Authority from India

Dr. L. S. Chauhan, NTP Manager, India Dr. P. Kumar, Director, NTI, Bangalore and Dr. Salhotra, Chief Medical Officer, Central TB Division, New Delhi visited STC on 9 Dec. 2005 during their participation in WHO/SEARO Meeting held in Kathmandu.

Proposed Programmes

- Partnership programme with Manpower Agencies – March 2006
- Commemoration of World TB Day – 24 March 2006
- SAARC Regional Training of Trainers on DOTS Plus – April 2006.
- Second SAARC-UNAIDS Expert Group Meeting to develop a Work Plan to implement SAARC Regional Strategy on HIV and AIDS, in Dhaka in April 2006.

Editor's Request

Dear Readers

Through this Newsletter, we update you about the STC activities. Your feedback will help us in improving incoming issues of Newsletter.

Thank you

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If undelivered, please return to:

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