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**ASSOCIATION OF POKHARA UNIVERSITY
PUBLIC HEALTH STUDENTS' (APPS)**

WORKSHOP REPORT



**A REGIONAL WORKSHOP ON ISSUES AND
THREATS REGARDING TUBERCULOSIS
CONTROL IN NEPAL**

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IN NEPAL**

Friday, 26th March 2010

Seminar Hall, School of Health and Allied Science

Pokhara University

By Amrit Banstola

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ACRONYMS AND ABBREVIATIONS

APPS	Association of Pokhara University Public Health Students
TB	Tuberculosis
WHO	World Health Organization
MDR	Multi Drug Resistance
XDR	Extensive Drug Resistance
DOTS	Directly Observed Treatment Short-course
RTC	Regional Tuberculosis Center
DPHO	District Public Health Office
MoH	Ministry of Health
BPH	Bachelor of Public Health
NTC	National Tuberculosis Control
NTP	National Tuberculosis Program
HIV	Human Immuno-Deficiency Virus
PAL	Practical Approach to Lung

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Our special thanks also goes to Regional Tuberculosis Center (RTC), Pokhara, District Public Health Office (DPHO), Kaski and all the students of BPH of Pokhara University, invited guests and participants who contributed to the program.

We also extend our appreciation to Mr. Dilip Kumar Yadav for his untiring support bestowed in preparing this report.

BACKGROUND

Association of Pokhara University Public Health Students' (APPS) is a student led non profitable and non-political student association of School of Health and Allied Sciences, Pokhara University, Lekhnath-12, Kaski, Nepal. It has been actively working in the field of public health by organizing different program on the health day with the motto "HEALTH, EDUCATION, AWARENESS".

On the occasion of World Tuberculosis Day 2010 "On the move against Tuberculosis, innovate to accelerate action" APPS organized a one day regional workshop on 26th March 2010, on the theme ISSUES AND THREATS REGARDING TUBERCULOSIS CONTROL IN NEPAL. This report gives a summary of the presentations and discussions held on that date, when invited members of the Regional Tuberculosis Center (RTC) and the District Public Health Office (DPHO) with extensive knowledge and experience in the field of TB attended a one day workshop as resource persons. The purpose of the workshop was to:

- Provide information about Tuberculosis, its global situation and the role of National Tuberculosis Control (NTC) Program.
- Provide overview of trainings in NTC Program.
- Provide knowledge on Tuberculosis and Public Health: Issues and Threats
- Inform participant about Multi Drug Resistance (MDR), Extensive Drug Resistance (XDR) and TB-HIV Co-infection.
- Provide knowledge on management of Tuberculosis at District Level in respect with Directly Observed Treatment Short-course (DOTS).

The report is a record of what went on at the workshop.

ORGANIZERS AND RESOURCE PERSONS

Organizer:

Association of Pokhara University Public Health Students (APPS), School of Health and Allied Sciences, Pokhara University in technical collaboration with Regional Tuberculosis Center (RTC), Pokhara.

Moderator:

Aswini Thakali, BPH I Semester, School of Health and Allied Sciences, Pokhara University.

Resource Persons:

Dr. Prakash Mishra , Director, RTC, Pokhara,

Mr. Hari Kunwar, Regional TB Coordinator, RTC, Pokhara,

Dr. Naryan Ojha, Medical Officer, RTC, Pokhara,

Mr. Bashant Bhattari, District Tuberculosis and Leprosy Officer, DPHO, Kaski.

ACTION POINTS

Actions

- The workshop recommended that the DOTS Therapy be prioritized to control TB and prevent MDR-TB
- It also recommended the urgent implementation of the Three Is (Intensified case-finding, Isoniazid prevention therapy, and Infection control) – measures which reduce the burden of TB in people living with HIV.

Facts

- The above simple approach forms the basis of DOTS strategy promoted by WHO and adopted worldwide.
- TB is a curable disease. To cure TB, DOTS is the answer.
- DOTS is the systematic cost effective and highly successful strategy to control TB by providing the most effective medicine and confirming that is taken.
- DOTS is the only strategy which has been documented to be effective worldwide on a program basis.
- In Nepal, treatment success rate in DOTS center is approximately 89% .
- TB is a leading killer of people with HIV. People who are HIV-positive and infected with TB are 20 to 40 times more likely to develop active TB than people not infected with HIV living in the same country.

SUMMARY OF PROCEEDINGS

SESSION 1 - CHAIRED BY DR. PRAKASH MISHRA

“GLOBAL BURDEN OF TUBERCULOSIS AND NATIONAL TUBERCULOSIS CONTROL PROGRAM”

Introduction of TB

Tuberculosis is an infectious disease caused by *Mycobacterium Tuberculosis*. It affects mainly in lungs and is called pulmonary TB. If it affects other than lung such as gland, abdomen, intestine, bone& joint, skin, brain and other organ it is called extra pulmonary. Both type of TB can be treated by using DOTS.

TB is contagious and spreads through the air. If not treated, each person with active TB infects on average 10 to 15 people every year. More than 2 billion people, equal to one-third of the world's population, are infected with TB bacilli; the microbes that cause TB. One in ten people infected with TB bacilli will become sick with active TB in their lifetime.

TB is a disease of poverty affecting mostly young adults in their most productive years. The vast majority of TB deaths are in the developing world, and more than half of all deaths occur in Asia.

There were 9.4 million new TB cases in 2008 (3.6 million of whom are women) including 1.4 million cases among people living with HIV. Among the new cases 1.8 million people died from TB in 2008, including 500, 000 people with HIV equal to 4500 deaths a day. The estimated global incidence rate fell to 139 cases per 100,000 population in 2008 after peaking in 2004 at 143 cases per 100, 000. Rates are falling very slowly in 5 WHO regions (the rate is stabilizing in Europe). The total number of deaths and cases is still rising due to population growth.

TB is a leading killer of people with HIV. People who are HIV-positive and infected with TB are 20 to 40 times more likely to develop active TB than people not infected with HIV living in the same country. Critical to saving lives is the urgent implementation of the Three Is (Intensified case-finding, Isoniazid prevention therapy, and Infection control) measures which reduce the burden of TB in people living with HIV.

Multi drug-resistant TB (MDR-TB) is a form of TB that is difficult and expensive to treat and fails to respond to standard first-line drugs. Extensively drug-resistant TB (XDR-TB) occurs when resistance to second-line drugs develops on top of MDR-TB. 5% of all TB cases have MDR-TB, based on data from more than 100 countries collected during the last decade. There were an estimated 500 000 new MDR-TB cases in 2007. Just over 1% of cases were receiving treatment in 2008 known to be based on WHO's recommended standards. In 2008, WHO reported that the highest rates of MDR-TB ever recorded, with peaks of up to 22% of new TB cases, were in some settings of the former Soviet Union. In the same region, 1 in 10 cases of MDR-TB is XDR-TB. 27 countries account for 85% of all MDR-TB cases. The top five countries with the largest number of cases are India, China, the Russian Federation, South Africa and Bangladesh. XDR-TB has been found in 57 countries to date.

In 2009, a World Health Assembly MDR-TB and XDR-TB resolution was endorsed by 192 WHO Member States and included recommended priority actions to combat drug-resistant TB.

TB is not a clinical problem; it is a social and public problem.

TB Burden in Nepal

Jung Bahadur Shamsheer Rana, the first Rana Prime Minister was infected with pulmonary tuberculosis and had built Tuberculosis Center at Tokha. More than 25 years ago, according to the National data 110,000 TB cases were identified now the cases have declined to only 90,000 cases. Every year 45% of total population is infected with TB (40,000 people) and every year 20,000 new sputum positive cases are recorded. 5000-7000 people die each year from TB, mainly from the economically active age group which was 16500 death 25 years ago.

Nepal: TB Epidemiology

I. Infection

- 45% of total population are infected
- 1.8% Annual Risk of Infection
- 4% in Urban Areas (Kathmandu)

II. Disease

- 80-90,000 people have active TB
- 40,000 new cases occur annually
- 20,000 new P+ (infectious) cases per year

III. Deaths

- 5-7,000 a year (Expected)
- Notified death in FY 2063/64=2700

TB Control Goal

To dramatically reduce the burden of TB in Nepal by 2015 in line With the Millennium Development Goals and the Stop TB Partnership targets. Targets linked to the MDG and endorsed by the Stop TB Partnership:

By 2005:

Detect at least 70% case detection and 85% treatment success targets among new cases.

By 2010:

To halve TB deaths and prevalence

By 2015:

“To have halted and begun to reverse the incidence”

By 2050:

To have eliminated TB (Incidence <1/million pop)

THE TB TARGETS FOR 2015

UN Millennium Development Goals:

to have halted and begun to reverse incidence

Current assessment

On target in all WHO regions though incidence is falling slowly

The Stop TB Partnership targets:

halving prevalence and deaths by 2015

in comparison with 1990

Current assessment

WHO Africa region not on target

If the Global Plan to Stop TB 2006-2015 is fully funded and implemented 14 million lives will be saved and 50 million people treated

TB is a curable disease; to cure TB patient, DOTS is the answer

DOTS is the most effective strategy for controlling TB. It is a management package for diagnosing and treating people with TB which is more cost effective than any other health care intervention. Successful DOTS needs a high level of commitment.

Five Components of DOTS

1. Political commitment
2. Case detection by sputum smear microscopy among symptomatic patients self reporting to health services
3. A regular, uninterrupted supply of all essential anti-TB drugs
4. Directly observed treatment
5. Monitoring: standardized Recording and Reporting, Evaluation, Training and Supervision

Benefits of DOTS

- Higher Cure Rates
- Lives saved
- Fewer Relapses
- Prevention of drug resistance and MDR-TB
- Longer life expectancy in people with AIDS and TB

DOTS and DOTS PLUS in Nepal

DOTS was first started in Nepal on April 1996 in Kailai, Nawalparasi, Parsa, Bhaktapur.

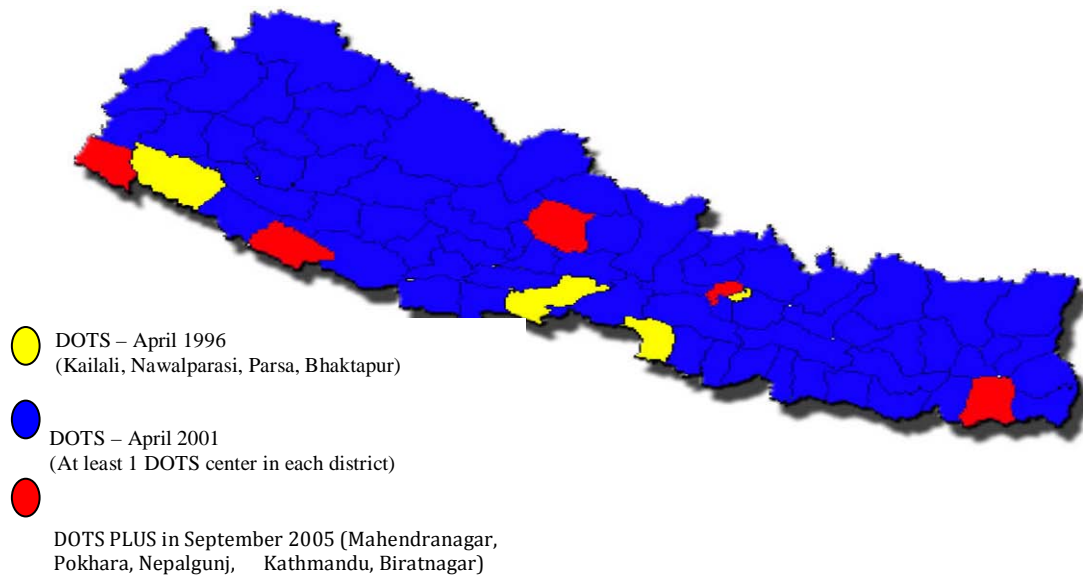


FIGURE 1 DOTS AND DOTS PLUS IN NEPAL

DOTS Treatment Centre

• **Population:** 5000 to 100,000

Basic elements:

- *Commitment*
- *Microscopy services*
- *Anti TB Drugs*
- *DOT*
- *Monitoring and accountab*



Place: Health Institution

- Hospital
- Primary Health Centre
- Health Post
- Municipality Ward Clinic
- I/NGOs Health Clinic
- Medical colleges
- Nursing homes
- Jails and refugee camps
- Community Health facilities



Recording Tools:

- **Lab register**
- **TB register**
- **Drug Stock book**
- **Treatment Card**
- **Patient card**



Manpower

- **Trained Lab staff**
- **Trained Clinical staff**
- **Trained Stat, Store staff**

FIGURE 2 DOTS TREATMENT CENTRE

DOTS Treatment Sub Center

Essential components

- **Local commitment**
- **Anti TB drugs**
- **DOT**
- **Monitoring**



Place:

- **Health Post**
- **Sub health post**
- **I/NGOs health clinic**
- **Community Health Facilities**

- Recording Tools:**
- TB treatment card**
 - Patient card**
 - Stock register**

Manpower

- **Trained clinical staff**
- **Trained store staff**

FIGURE 3 DOTS TREATMENT SUB CENTER

Globally there were 5.7 million TB case notifications in 2008. 36 million people were cured in DOTS programs in between 1995-2008 with as many as 8 million deaths averted through DOTS. The 87% global treatment success rate exceeded the 85% target for the first time since the target was set in 1991. 53 countries exceeded this 85% patient treatment target.

NTP involves following sectors in the implementation of DOTS

- DOTS Committee
- District and Village Development Committee
- Community Health Clinics
- Mission Hospitals
- NGOs and INGOs Health clinics
- Ward clinic of Municipalities
- Central and Zonal Hospitals
- Nursing Homes and polyclinics
- Police and Army Hospitals
- Refugee Camps
- Jails
- Medical colleges and schools
- Factories and Industries
- Media
- Community Volunteers
- Social Workers
- Teachers and Students
- TB Patients

National Tuberculosis Program

Vision of NTP

Building TB-free Nepal

Goal of NTP

To reduce the mortality, morbidity and transmission of TB to such a level that it is no longer a public health problem.

Objectives of NTP

- To achieve 85% treatment success rate.
- To achieve at least 70% case detection rate.
- To reduce of TB prevalence and death rates by 50% by 2015 compared to that of 1990.
- To provide high-quality diagnosis & patient-centered treatment services.
- To reduce the suffering & socio-economic burden associated with TB.
- To protect poor & vulnerable populations from TB, TB/HIV and MDR-TB.
- To support development of new tools & enable their timely & effective use.

NTP Strategies

1. Pursue high-quality DOTS expansion and enhancement.
 - To pursue high-quality DOTS expansion & enhancement following strategy should be applied.
 - Political commitment.
 - Case detection through quality assured bacteriology.

- Standardized treatment supervision and patient support.
- An effective drug supply and management system.
- Monitoring and evaluation system and impact measurement's DOTS expansion and enhancement

2. Address TB/HIV and other challenges.

Following activities are to be addressed.

- Joint TB/HIV activities.
- MDR Prevention and Control.
- Management of Vulnerable groups and marginalized population.

3. Contribute in health system strengthening.

- Actively participate in efforts to improve system-wide policy, human resources, financing, management and service delivery and information system.
- Share innovations that strengthen systems, including the Practical Approach to Lung Health (PAL).
- Adapt innovations from other field.

4. Engage all care providers.

- Public-Public and Public-Private Mix (PPM) approaches.
- International Standards for Tuberculosis Care.

5. Empower people with TB and communities.

- Advocacy, communication and social mobilization.
- Community participation in TB care.
- Patients charter for Tuberculosis care

6. Enable and promote research.
 - Program-based operational research.
 - Research to develop new diagnostics, drug & vaccines.

NTP Policy

- NTC is the central point of NTP.
- Strengthen microscopic network & diagnosis through sputum test.
- TB diagnosis through passive case finding.
- Develop trained manpower and implement NTP in an integrated way.
- Give first priority to smear positive TB patient.
- Monitoring the treatment through sputum test
- Treat according to the Fixed Dose Combination (FDC) 6 month regimen through DOTS.
- Supply medicines and equipment regularly.
- Collaborate and conduct TB and HIV/AIDS programs.
- Expand DOTS plus program.
- Conduct special program to target population as poor, dalit, indigenous and other disadvantage group.
- Conduct various ACSM activities.
- The NTP has endorsed revised PP/ISTC in long term plan.

NTP Activities

- Conduct regular supervision & monitoring.
- Provision of training to prepare trained human resource.
- Maintain mutual coordination and collaboration with private and non-governmental organizations
- Expanding quality laboratory service & provide free TB diagnosis and treatment.
- Conduct program evaluation every year.
- Raise awareness.
- Regular logistics supply.
- Quarterly review meeting at treatment center, regional center level.
- Conduct collaborative activities for TB & HIV/AIDS.
- Expand DOTS plus program at district level.
- Contact tracing.

NTP Logistic Supply System

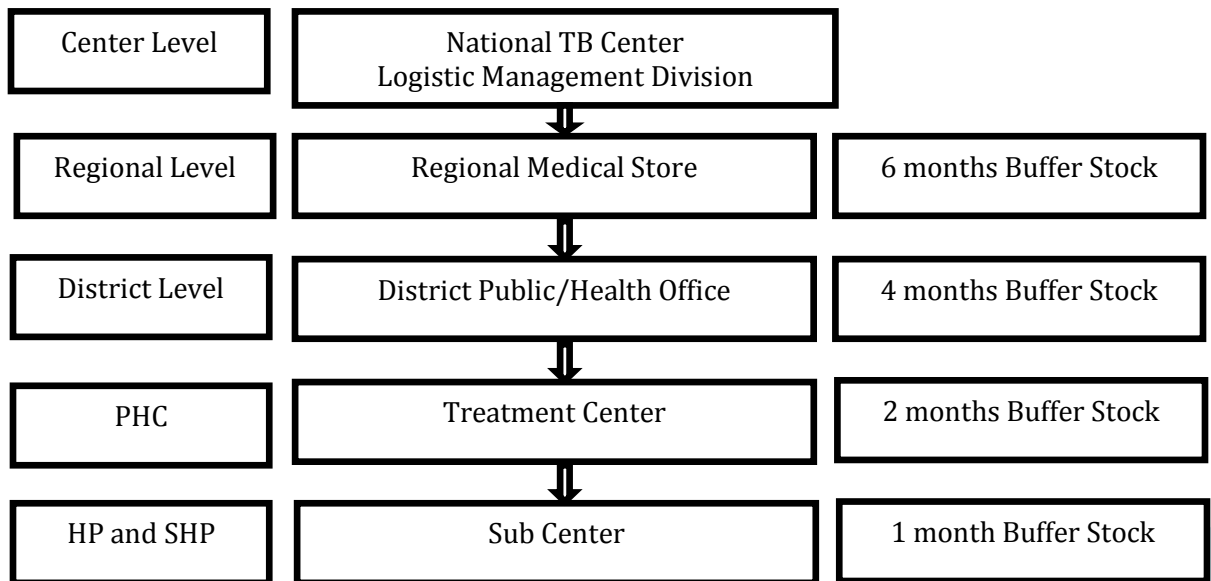


FIGURE 4 NTP LOGISTIC SUPPLY SYSTEM

NTP Monitoring System

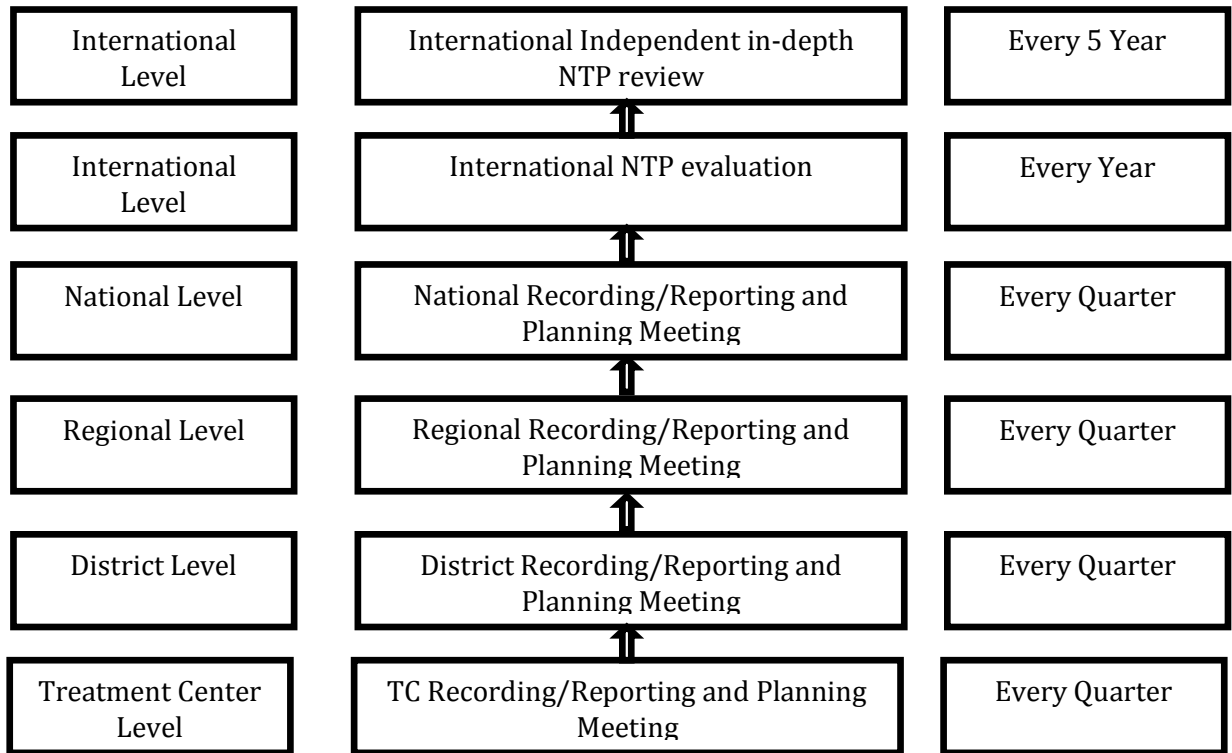


FIGURE 5 NTP MONITORING SYSTEM

NTP Supervision Policy

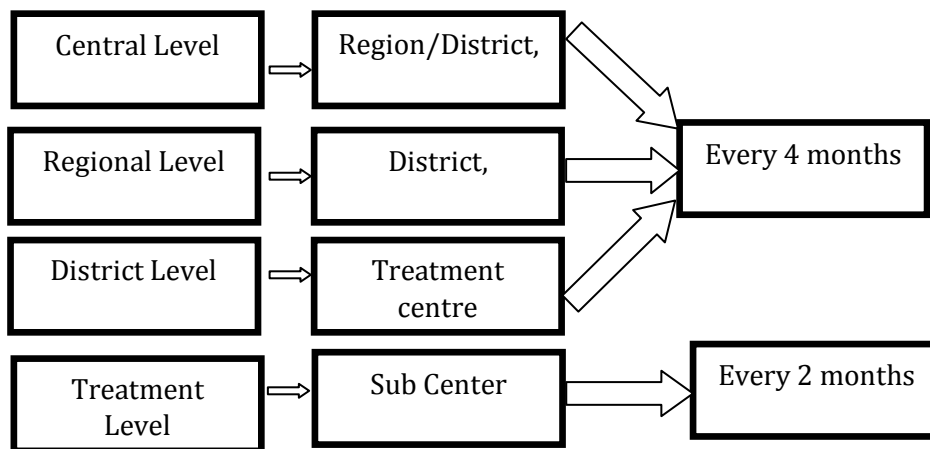


FIGURE 6 NTP SUPERVISION POLICY

Trends of New Smear + ve and Total TB cases

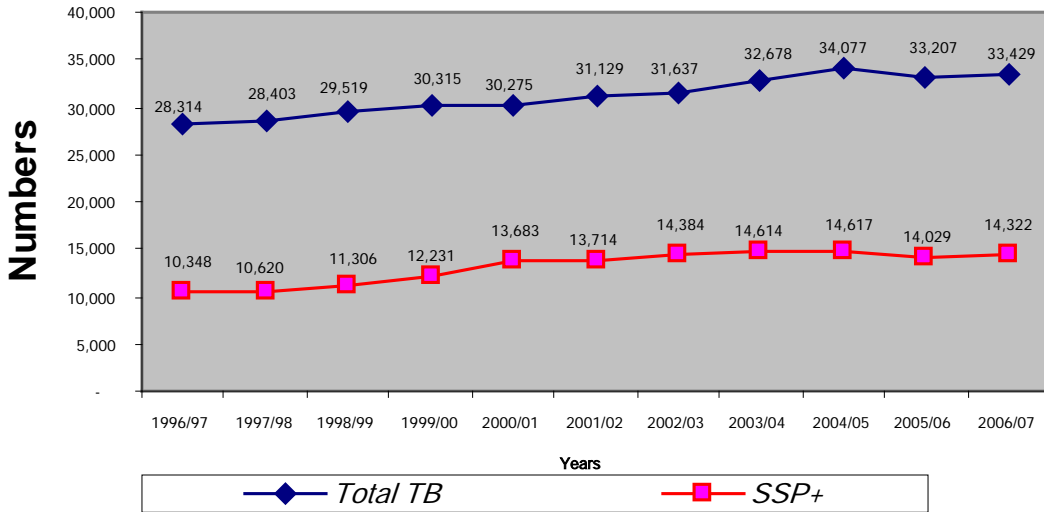


FIGURE 7 TRENDS OF NEW SMEAR +VE AND TOTAL TB CASES

Age Distribution of New Smear Positive Cases Notified In Nepal

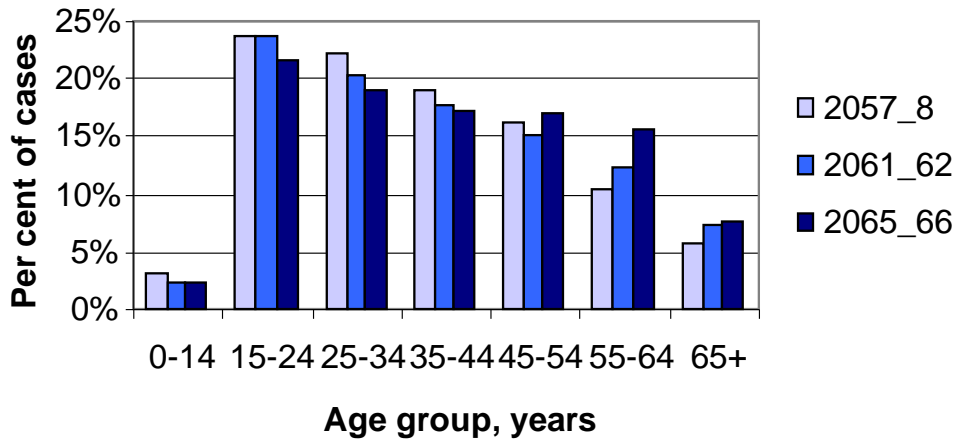


FIGURE 8 AGE DISTRIBUTION OF NEW SMEAR POSITIVE CASES NOTIFIED IN NEPAL

DOTS Saves Lives in Nepal

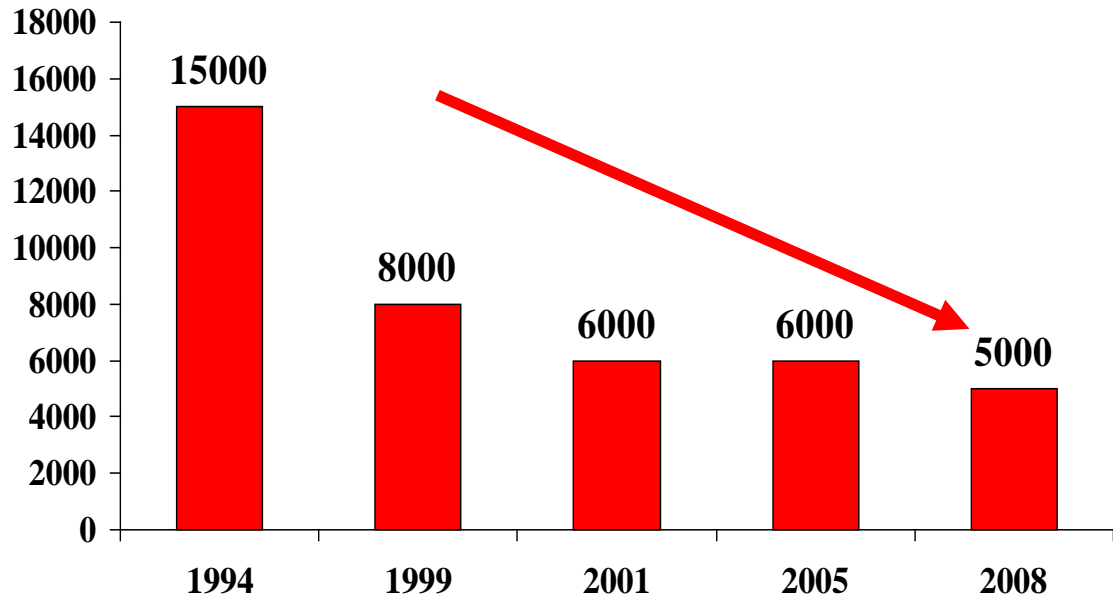


FIGURE 9 DOTS SAVES LIVES IN NEPAL

Fixed Dose Combination

Drugs composition

CAT I- New pulmonary smear +ve, smear-ve & EP cases

Intensive Phase (2 months)

Isoniazid (H) =75 mg

Rifampicin (R) =150 mg

Pyrazinamide (Z) =400mg

Ethambutal (E) =275 mg

Continuation Phase (4 months)

Isoniazid (H) =75mg

Rifampicin (R) =150 mg

CAT II- Relapse, Treatment Failure, & RAD +Ve cases

Intensive Phase

Isoniazid (H) =75 mg

Rifampicin (R) =150 mg

Pyrazinamide (Z) =400mg

Ethambutal (E) =275 mg

SM (2 months only) 1gh vial

Continuation Phase (5 months)

Isoniazid (H) =75 mg

Rifampicin (R) =150 mg

Ethambutal (E) =275 mg

Note:

- NTP use daily regimen continuation phase for TB Meningitis, TB Miliary and spinal TB with Neurological complication for child and adult cases must be 7 months.
- For childhood (0-8) years TB Meningitis, TB Miliary and spinal TB with Neurological complication SM is given for two months instead of Ethambutol.

**“TRAININGS IN NATIONAL TUBERCULOSIS CONTROL PROGRAM AND
TUBERCULOSIS AND PUBLIC HEALTH: ISSUES AND THREATS”**

Mr. Hari Kunwar also spoke about TB, its types together with sign and symptoms, diagnosis, and about some preventive measures to make participants more clear about TB in his opening session. He also spoke about the DOTS therapy in Western Development Region of Nepal.

Signs and symptoms

Pulmonary

- Cough more than 2 weeks
- Loss of appetite
- Fever
- Chest pain
- Loss of weight
- Haemoptysis

Extra pulmonary: Depends on affected organs

- Gland TB: Swelling of lymph node and sometimes pus formation
- Bone TB: Joint pain, swelling
- TB meningitis: Headache, fever, neck stiffness

Diagnosis of tuberculosis

- Sputum smear microscopy (3 sample within two consecutive day)
- Chest x-ray

- Culture

Others

- Histopathology (Biopsy)
- Cytology (FNAC)
- Ultra sound (USG)
- CT Scan
- PCR

Mode of transmission

- Coughing and sneezing
- Transmit through droplet infection
- Transmission often occurs indoors
- Only 10% of people have developed disease

Prevention of TB

- Early case detection and treatment
- BCG vaccination for under one year children
- Not spitting everywhere (direct sunlight kills TB bacilli in 5 minutes)
- Cover mouth by hand/handkerchief while sneezing and coughing
- Improve the ventilation of houses
- Reduce overcrowding wherever possible
- Help everyone to think spitting a nasty and unacceptable habit

- Reducing national tobacco consumption
- Reducing national alcohol consumption

Western Development Region

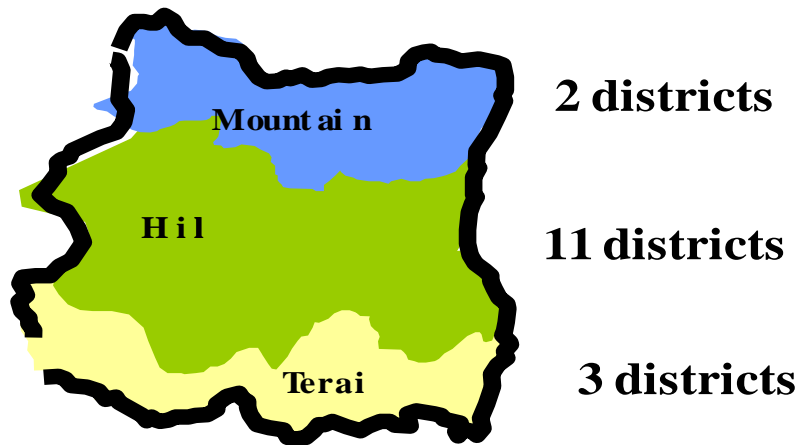


FIGURE 10 WESTERN DEVELOPMENT REGION

DOTS and DOTS Plus Center in Western Development Region			
DOTS Treatment Center	235	Urban DOTS Center	15
DOTS Sub Center	650	DOTS Plus Center	3
Microscopy Center	80	DOTS Plus Sub Center	6

TABLE 1 DOTS AND DOTS PLUS CENTER IN WESTERN DEVELOPMENT REGION

Training program of NTP

- International level
- National level
- Regional level

- District level
- Community level

Training activities

- Medical Officer Basic and refresher 4-2 days
- TB Modular training 5days
- TB Refresher Training 2days
- PAL training for health staffs 5days
- TB/HIV management training 5days
- DOTS PLUS Modular & Refresher 5-2 days
- Late patient tracer training 2days
- VHW/MCHW training 2days
- TB Lab Modular training 5days
- TB Lab Refresher training 3days
- Smear preparation training 2days
- Lot quality control training 2days

TB Orientation One day

- Orientation for DOTS committee
- Orientation for disadvantage group
- Orientation for Local leader
- Orientation for drug retailers & wholesalers

- Orientation to Parliament members
- Orientation to Media people

TB training at International level

- Doctors / DHO/PHO
- RTLO/DTLO
- Medical Technologist / Lab tech
- Quality Control Officer
- Statistical officer / Assistant
- HA/SN/AHW

TB training at National level

- Doctors / DHO / PHO
- RTLO / DTLO
- Medical Technologist
- TB / HIV co infection

TB training at Regional level (TB Modular training)

- Statistical officer/ Assistant
- Nursing staffs
- District supervisor / HA / SN
- TB/HIV Management

- Store keeper
- Journalist
- PAL
- Lab tech and Assistant
 - Sputum microscopy Basic and Refresher training
 - Lot quality control training

TB Training at District level (TB Modular/Refresher training)

- District supervisor / HA / SN
- AHW / ANM
- VHW/MCHW
- Ayurvedic health staffs
- Health workers who are working in TB/HIV
- VHW / MCHW
 - Smear preparation training
 - Late patient tracer training

TB Training at Community level (Orientation)

- FCHV
- Mother groups
- Traditional healer
- Urban slum area volunteers

- Teacher
- Prisoners
- Gumba
- PP workshop
- DOTS orientation for Drug retailers
- DOTS orientation to Patient to patient their family
- DOTS orientation for Factory workers
- DOTS orientation for drivers
- DOTS orientation to office assistant

Tuberculosis and Public Health: Issues and Threats

- TB/HIV co-infection
- MDR-TB
- X-DR-TB
- Cross-border issue
- Conservativeness
- Poverty
- Migration
- Gender bias
- Geographical situation
- Refugees, Prisoners
- Establishment of National Reference Laboratory.

TB/HIV co-infection*

- About one-third of the 40 million PLHA worldwide are co- infected
- In Nepal, out of all TB patients, 2.4% are HIV Positive
- HIV increases the rate of recurrent tuberculosis.

MDR-TB and X-DR TB

- About 700 patients in Nepal registered for MDR-TB treatment.
- 78 patients in western region.
- 8 patient X-DR cases in Nepal but 1 case in western region.

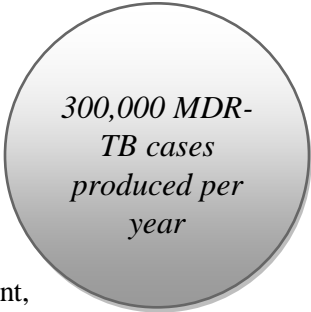
* This TB/HIV co-infection section is also covered in Session 3 - Chaired by Dr. Naryan Ojha page no. 35 under the same heading.

“MDR AND XDR TUBERCULOSIS AND TB-HIV CO-INFECTION”

DOTS PLUS Program (Management of MDR-TB)

Drug Resistance

- Occurs when micro-organisms are not killed or inhibited by a specific antibiotic due to the selection of naturally occurring resistant mutants through inadequate therapy
- Clinically manifested by disease progression despite treatment, failure to achieve negative sputum or cultures, and/or treatment failure



300,000 MDR-TB cases produced per year

Definitions of Drug Resistance WHO/IUATLD 1994-1997

- Mono-resistance
 - Documented resistance to only one drug
- Polyresistance
 - Documented resistance to at least 2 drugs but not to both Isoniazid and Rifampicin
- Multidrug resistance (MDR)
 - Documented resistance to at least INH and RIF
- Acquired drug resistance:
 - Patient has received anti-tuberculous therapy for more than one month and
 - Resistance was created during weak or inadequate therapy
- Primary drug resistance

- Patient with no prior history of TB treatment
- Resistance strain transmitted directly from another case of MDR

How is MDR TB caused?

Human error in

- Prescription of chemotherapy
- Management of drug supply
- Case management

Prescription of Chemotherapy

- Inadequate: e.g. 2-3 drugs in multi-bacillary resistant to Isoniazid
- Addition of one drug to failing regimen.

DOTS PLUS Pilot Districts and Clinics

- Treatment is long (24 months Plus)
- Treatment is directly observed daily
- Treatment (including side effects) is free
- Initial Pilot in 5 districts
- Systems which have been demonstrated to work in DOTS will be applied.



FIGURE 11 DOTS PLUS PILOT DISTRICTS AND CLINICS

NEPAL – NTP

Tuberculosis Patient Sputum Smear +ve



CAT 1 Treatment (If fails)



CAT 2 Treatment (If fails)

Chronic Patient



Treatment



Second line TB drugs

DOTS PLUS Treatment

FIGURE 12 PROCESS OF DOTS PLUS TREATMENT

Who will be treated?

Mainly Smear Positive Cat 2 Failures

Also:

- CAT 1 Failure with culture & Drug Sensitivity Testing confirmed MDR TB.
- Any MDR TB patient household Contact , smear positive, with culture & DST confirmed MDR TB
- Any MDR TB patient, smear positive with culture & DST confirmed MDR-TB.

Standardized Treatment Regimen

1. Intensive Phase:

K (Kanamycin)

8 months with Injectable K.

- 4 months: 6 days a week (100 doses) Plus
- 4 month: 3 times/week (50 doses)

(If sm/cr +ve 6 mths add 4 months K)

Et (Ethionamide),

O (Ofloxacin),

Cs (Cycloserine),

Z (Pyrazinamide)

2. Continuation Phase: (16 months)

Et (Ethionamide),

O (Ofloxacin),

Cs (Cycloserine),

Z (Pyrazinamide)

Monitoring

- Monitoring of serum Creatinine and K⁺ during injectable (8 month phase).
- Thyroid function tests if clinical signs of hypothyroidism.

Goals of DOTS PLUS Treatment

- To reduce mortality morbidity and transmission of MDR TB by offering 2nd line treatment to:
 - Smear Positive CAT 2 (DOTS) failures.
 - Other patients with proven MDR TB (Chronic Patients/ Cat 1 Failures/HH contacts of MDR TB).

Management of Drug supply

- Patient cannot afford drugs
- Shortage of TB drugs provided by MoH
- Use of drugs of unproven bioavailability

Case management of Patient

- Patient lack of knowledge : due to inadequate communication by physician
- Poor case management: no follow-up no directly observed treatment

How to prevent MDR TB

- Treat TB with DOTS strategy
- Treat smear/culture +ve MDR TB

- Infection control measures as for TB open ventilated area/separate sleeping spit and discard (incinerate) outside.

XDR (Extensive Drug Resistance) TB Management

XDR is resistance to any one of drug of injectable and any one of drug of Quinolone.

Anti-Tubercular drugs

Group -1 (Oral)

HRZE

Group -2 (injectable)

SM,

KM,

Amikacin,

CM (capromycin)

Group -3 (Fluoroquinolone)

Ofloxacin

Levofloxacin (Lfx),

Moxifloxacin

Gatifloxacin

Group -4 (Bacteriostatic agent)

Ethionamide or prothionamide

Cycloserine,

PAS

Group-5 (Agents with unknown efficacy against TB)

Clofazimine (cfz)

Amoxicillin+ clavulanic acid (Amx/clv)

High dose INH

Linezolid

Clarithromycin

XDR Regimen

Items	33-50	51-70	>70	Frequency
CM	750mg	1 gm	1gm	daily
Mfx	400mg	400mg	400mg	daily
PAS	8gm	8gm	8gm	2divided dose
Amx/clv	625mg	625mg	625mg	TDS
Cycloserine	500mg	750mg	1gm	daily
Pyrazinamide	1200 -1600 mg	1600-2000mg	2000-2400mg	daily
Add clofazimine	200mg	300mg	300mg	daily

TABLE 2 XDR REGIMEN

Side effects

- Capreomycin: Hypokalemia, ototoxicity, nephrotoxicity, hypocalcemia, hypomagnesemia
- Mfx: Well tolerated
- PAS: Nausea, gastritis, hypothyroidism, hepatitis, yellow orange skin rashes to sun exposure
- Amx/clv: Nausea, headache, rashes
- Cycloserine: Agitation, behavior change, depression, psychosis, seizure
- Pyrazinamide: Nausea, hepatitis, gout

Duration of treatment

- 24 months

Note:

Capreomycin:

6 days/wk for 4 month

3 days/wk for 8 month

PAS:

Take with acidic juice or Yogurt. It needs refrigerator

TB- HIV Co-infection

- The HIV pandemic is affecting the disease epidemiology of other diseases.
- HIV challenges to the control of TB, however this scenario can be taken as an opportunity to address TB HIV co-infection.

HIV vs. AIDS

- HIV is the virus that causes AIDS
- Not everyone who is infected with HIV has AIDS
- Everyone with AIDS is infected with HIV
- AIDS is result of progression of HIV infection
- Anyone infected with HIV, although appearing healthy, can still transmit the virus to another person

Current Situation of HIV/AIDS in Nepal

- HIV prevalence in Nepal is estimated at 0.49% in the adult population.
- This corresponds to about 70,000 people living with HIV in Nepal and approximately one in three is women.
- Nepal is categorized as a country with concentrated epidemic.
- The epidemic is driven by injecting drug use and sexual transmission.
- The Integrated Bio- Behavioral Survey (IBBS) conducted by Government of Nepal shows the highest rate of HIV among the injecting drug users (IDU).

Current Situation of TB/HIV Co- infection

- About one-third of the 40 million PLHA worldwide are co-infected.
- In Nepal, out of all TB patients, 2.4% are HIV positive.
- The annual risk of developing tuberculosis in PLHA ranges from 5-15%.
- HIV increases the rate of recurrent tuberculosis

TB-HIV co-infection in Nepal

Year of sentinel survey patients	% of HIV among TB
1993/94	0.00
1995/96	0.60
1998/99	1.88
1999/2000	1.39
2001/2002	2.44
2006/2007	2.40

TABLE 3 TB-HIV CO-INFECTION IN NEPAL

Natural History of TB Infection

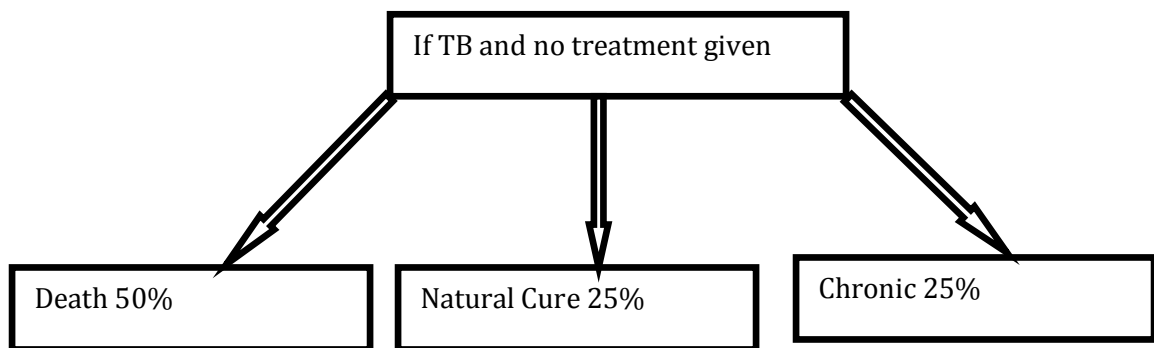


FIGURE 13 NATURAL HISTORY OF TB INFECTION

If HIV and TB and no treatment 100% death

HIV Negative and TB Infections

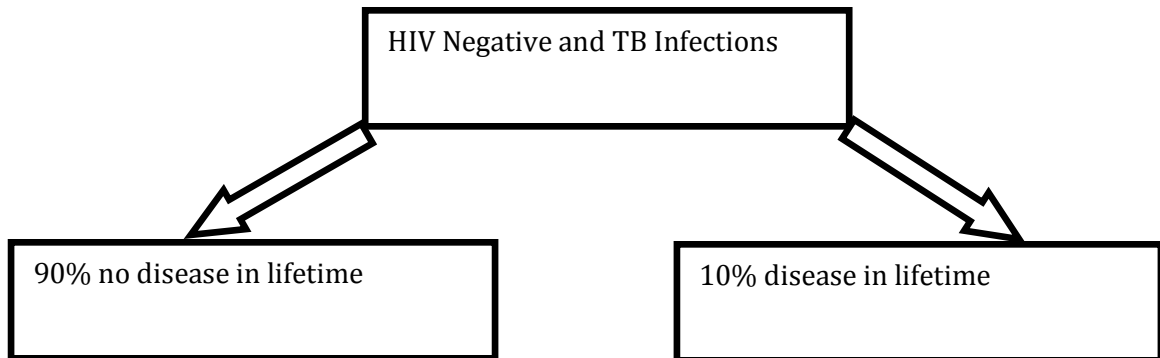


FIGURE 14 HIV NEGATIVE AND TB INFECTIONS

For anyone with HIV positive the chance of getting TB is 10% per year. That means in 10 years 100% people with HIV positive will be infected.

TB/HIV Collaboration

- The co-infection of TB and HIV affects millions and threatens global public health.
- Since the mid-1980s, HIV has increased TB rates by as much as 500% in some countries of sub-Saharan Africa.
- Improved collaboration between TB and HIV/AIDS program leads to more effective control of TB among HIV infected people.
- The absence of HIV testing services for TB patients might also contribute to missed opportunities for diagnosis of co-infection.

“MANAGEMENT OF TUBERCULOSIS AT DISTRICT LEVEL IN RESPECT WITH DOTS”

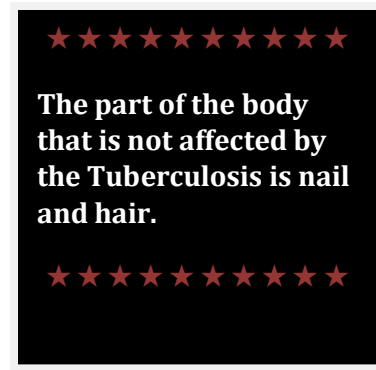
Tuberculosis Information DPHO, Kaski

- DOTS Treatment Center W/Microscopic F. (5)*
 - DPHO DOTS,
 - Manipal Hospital,
 - Bhedabari,
 - Shishuwa,
 - Kristi PHC

- DOTS Treatment Center (23)
 - DPHO DOTS (1),
 - PHC (3),
 - HP (11)
 - Urban Center (5),
 - Private TH (1)
 - Private MH (2)

- Urban DOTS Center (5)
 - PSMC Ward No.{2, 5, 8, 17, 18}

- Private Urban DOTS Centre (3)



* Digit inside the small bracket indicates the number of DOTS center.

- Manipal Hospital,
- Santi Medical Hall,
- Narhari Medical Service
- DOTS Treatment Sub-Center
 - SHP (34)
- DOTS Plus T.C
 - RTC (1)
- Sub T.C. (2)
 - Manipal Hospital
 - Shishuwa PHC

Patients Registration (2066/067 Sharwan to Falgun)

- New Sputum Positive
 - Male – 91
 - Female – 46
- New Sputum Negative
 - Male - 16
 - Female - 13
- New Extra Pulmonary
 - Male – 44
 - Female - 59

- Retreatment
 - Male – 26
 - Female - 7
- Others / T.in
 - Male - 15
 - Female - 14
- Treatment Category
 - CAT 1 = 291
 - CAT 2 = 36
 - 0 – 8 Years (Child) = 4

Treatment Outcome*

District population: 452885

- DOTS Coverage = 100%
- Case Finding Rate = 78%
- Conversion Rate = 83%
- Cured Rate = 92%
- Death Rate = 3%
- Defaulter = 1%
- Failure Rate = 1%
- Transfer out Rate = 3%

[New +ve Reg-126, Cured-116, Failure-1, Died-4, Defaulted-1 T. out -4]

* Updated 2066/067 End of 2nd Trimester

History of DOTS in Nepal

Date	Events
1994	HMG/WHO review
1995	Policy of DOTS adopted
1996	Four DOTS demonstration centers
1998	DOTS in private sector started in Lalitpur
1999	DOTS in urban areas
1999	DOTS in jail
2001	DOTS covered whole country
2002	KTM urban DOTS strength
2003	Partnership with pharmacist strengthen
2004	Imitation of DOTS PLUS project
2005	Implementation of DOTS PLUS pilot project in five regions
2006	New Stop TB strategy adopted

TABLE 4 HISTORY OF DOTS IN NEPAL

Drug Management

Fixed Dose Combination

Isoniazid (H)	Rifampicin (R)
Pyrazinamide (Z)	Ethambutal (E)
Streptomycin (S)	

Note: Ethambutol is Bacteriostatic group and other medicines are Bactericidal groups.

CATEGORY-I (New Smear Positive, Smear Negative & EP)

Patient Body Weight (Kg)	Intensive Phase 2 Months	Continuation Phase 4 Months
	HRZE Combination	HR Combination
<i>30 - 37 Kg</i>	2	2
<i>38 - 54 Kg</i>	3	3
<i>55-70 Kg</i>	4	4
<i>71 & Above</i>	5	5

TABLE 5 CATEGORY-I (NEW SMEAR POSITIVE, SMEAR NEGATIVE & EP)

CATEGORY-II (Relapse, Treatment failure and RAD +ve)

Patient Body Weight (Kg)	Intensive Phase 3 months		Continuation Phase 5 Months
	SM 2 months	HRZE 3 months	HRE 5 months
<i>30 - 37 Kg</i>	0.5 mg	2	2
<i>38 - 54 Kg</i>	0.75 mg	3	3
<i>55-70 Kg</i>	1.0 gm	4	4
<i>71 & Above</i>	1.0 gm	5	5

TABLE 6 CATEGORY-II (RELAPSE, TREATMENT FAILURE AND RAD +VE)

CHILDREN 0 - 8 years of age

CATEGORY-I (New Smear Positive, Smear Negative & EP)

<i>Patient Body Weight (Kg)</i>	<i>Intensive Phase 2 Months</i>	<i>Continuation Phase 4 Months</i>
	HRZ Combination	HR Combination
<i>5 - 10 Kg</i>	1	1
<i>11 - 18 Kg</i>	2	2
<i>19 - 24 Kg</i>	3	3
<i>25 - 29 Kg</i>	4	4

Regimen for the Patients with TB Meningitis, Miliary TB & Spinal TB with Neurological deficit can continue Continuation Phase for 7 months

TABLE 7 CATEGORY-I (NEW SMEAR POSITIVE, SMEAR NEGATIVE & EP)

DISCUSSION

All the key spokesperson of the “Regional Workshop On The Issues And Threats Regarding Tuberculosis Control In Nepal” have their particular topic for presentation but they all seemed to be more focus on the introduction to tuberculosis, its global situation, MDR-XDR together with TB-HIV co-infection, DOTS program.

CONCLUSION

The workshop was found to be successful in achieving its objectives. Every spokespersons of the workshop provide information about Tuberculosis and its global situation together with their special topic for presentation. The role of National Tuberculosis Control (NTC) Program in preventing this infectious disease is clearly presented with its vision, goal, objectives, strategies, policies, and key activities. NTP logistics supply system, monitoring system, supervision policy were other topics dealt under the role of NTC program in the workshop session.

Overview of trainings in NTC Program was presented in the session two. Training programs of NTP is conducted at international level, at national level, at regional level, at district level and at community level with training activities such as TB modular training, TB refresher training, smear preparation training etc.

Tuberculosis and Public Health: Issues and Threats which was the theme of the workshop itself was one of the most important topics of discussion. In Nepal context, TB/HIV co-infection, MDR-TB, XDR-TB, cross boarder issues, and poverty are some of the threats and issues among many.

Multi Drug Resistance (MDR) was defined as the resistance to at least INH and RIF where as Extensive Drug Resistance (XDR) was defined as resistance to any one of drug of inject able and any one of drug of Quinolone.

In Nepal, out of all TB patients, 2-4% are HIV positive which demonstrate the current TB/HIV co-infection situation. It was mentioned that HIV increases the rate of recurrent tuberculosis.

For the management of Tuberculosis at Kaski district in respect with Directly Observed Treatment Short-course (DOTS), five DOTS Treatment Center W/Microscopic F., twenty three DOTS Treatment Center, five Urban DOTS Center, three Private Urban DOTS Centre, thirty four DOTS Treatment Sub-Center at sub health post, one DOTS Plus T.C at RTC and two Sub T.C. are established.

2066/67 end of 2nd trimester reports demonstrate that DOTS coverage is 100% with cured rate 92%, death rate 3% and failure rate 1%. But the incidence of TB is not decreasing accordingly. 40,000 new cases of TB occur annually in Nepal with 1-8% annual risk of infection. Participants felt that subsequent progress has been uneven and the reasons might be due to:

- Lack of evidence based complete timely reporting,
- Interrupted drug supply
- Lack of patient compliance (Patient compliance is critically important throughout the prescribed period of treatment.)
- Increased HIV incidence rate and poverty,
- Lack of awareness

- Poor case management — no follow up
- Exaggerating nature of organizations working for TB control on the data of TB cure rate, treatment success rate etc and understating the failure rate, new case rate etc. for individual benefit

RECOMMENDATIONS

In order to improve the situation of TB in Nepal, participants of the regional workshop recommended that:

- Ministry of Health (MoH), National Tuberculosis Control (NTC) Program, Regional Tuberculosis Center (RTC), District Public Health Office (DPHO), INGO, & NGO working in the field of Tuberculosis together with the private projects including the university teaching public health program should organize different kinds of programs like seminar, workshops, and community awareness program and health education on TB.
- Improved collaboration between TB and HIV/AIDS program leads to more effective action to prevent TB-HIV Co-infection. Stakeholders, Public People and the individual should show active involvement in those programs and take appropriate action to combat the spread of Tuberculosis, MDR & XDR, and promote the use of DOTS.
- Training activities under training program of NTP should be regularly conducted with up to date information by the National Tuberculosis Control Program.
- Government should make a provision of uninterrupted supply of medicine at all treatment center.
- All treatment centers should submit the evidence based complete report timely to the NTP.
- NGOs and INGOs working for tuberculosis control must not exaggerate any findings of TB such as the cure rate, treatment success rate etc and understate the failure rate, new case rate etc. for their individual benefits.
- Monitoring and supervision must be regularly performed by all treatment centers.

- Both intensive and continuation phase drugs should be given under the strict supervision of the health workers or other trained person to increase the patient compliance.
- Government should bring effective policy package to reduce poverty.

POSSIBLE FOLLOW-UP

A “Dynamic Coalition” has to be formed to follow up to this workshop, facilitate the discussion and feed the results back into the next Tuberculosis workshop. It is open to all stakeholders, and everyone is encouraged to participate.

In context of Nepal, active case findings should be done to combat this disease and reduce its burden. As the consensus “TB is a curable disease. To cure TB patient, DOTS is the answer, it is suggested that this becomes one of the main themes for the next World Tuberculosis Day 2011.

USEFUL LINKS

<http://www.who.int.org/>

<http://www.moh.np>

ANNEX I - PROGRAM SCHEDULE

A REGIONAL WORKSHOP ON ISSUES AND THREATS REGARDING TUBERCULOSIS CONTROL IN NEPAL

(On the Occasion of World Tuberculosis Day 2010)

“On the Move against Tuberculosis, Innovate to Accelerate Action”

Date: 26th March 2010 (Friday)

Time: 10:30AM to 4:30 PM

Venue: Seminar Hall, School of Health and Allied Sciences, Pokhara University

Opening Ceremony

S.N.	Topics		Time	Remarks
1.	Registration	APPS Members	10:30- 10:40	
2.	Welcome Speech	Director, School of Health and Allied Sciences, APPS members	10:40- 10:45	
3.	Inauguration	Dean, Faculty of Science & Technology, Pokhara University	10:45- 10:50	
4.	Tea Break		10:50- 11:00	

Scientific Ceremony

S.N.	Topics	Resouce Person	Time	Remarks
1.	Global Burden of TB	Dr. Prakash Mishra,	11:00-	

	& National TB Control Program	Director, RTC, Pokhara	12:30	
2.	Trainings in National TB Control Program & TB & Public Health: Issues & Threats	Mr. Hari Kunwar, Regional TB Coordinator, RTC, Pokhara	12:30-1:30	
3.	Refreshment		1:30-2:00	
4	MDR & XDR TB & TB-HIV Co-infection	Dr. Narayan Ojha	2:00-3:00	
5.	Management of TB at District Level in respect with DOTS.	Mr. Bashant Bhattari, District TB and Leprosy Officer, DPHO, Kaski	3:00-4:00	
6.	Closing Ceremony & Certification		4:00-4:30	

ANNEX II - LIST OF PARTICIPANTS

S. No.	Name of Participants	Email Addresses
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ANNEX III - WORKSHOP EVALUATION QUESTIONNAIRE

WORKSHOP EVALUATION QUESTIONNAIRE

Workshop Name: _____

Workshop Location: _____

Participant Name (optional): _____

Today's Date (MM/DD/YY): _____

Occupation: _____

Years in present position: _____

INSTRUCTIONS

Please circle your response to the items. Rate aspects of the workshop on a 1 to 5 scale:

1 = "Strongly disagree," or the lowest, most negative impression

2 = "Disagree"

3 = "Neither agree nor disagree," or an adequate impression

4 = "Agree"

5 = "strongly agree," or the highest, most positive impression

Choose N/A if the item is not appropriate or not applicable to this workshop. Your feedback is sincerely appreciated. Thank you.

WORKSHOP CONTENT (Circle your response to each item.)

1. I was well informed about the objectives.	1	2	3	4	5	N/A
2. This workshop lived up to my expectations.	1	2	3	4	5	N/A
3. The content is relevant to my occupation.	1	2	3	4	5	N/A
4. The workshop covered useful material.	1	2	3	4	5	N/A
5. The workshop was effective.	1	2	3	4	5	N/A
6. The content was Presented at the Right Level	1	2	3	4	5	N/A

WORKSHOP DESIGN (Circle your response to each item.)

- | | | | | | | |
|---|---|---|---|---|---|-----|
| 7. The workshop objectives were clear to me. | 1 | 2 | 3 | 4 | 5 | N/A |
| 8. The workshop was well organized & managed. | 1 | 2 | 3 | 4 | 5 | N/A |
| 9. The workshop activities stimulated my learning. | 1 | 2 | 3 | 4 | 5 | N/A |
| 10. The activities in this workshop gave me sufficient practice and feedback. | 1 | 2 | 3 | 4 | 5 | N/A |
| 11. The pace of this workshop was appropriate. | 1 | 2 | 3 | 4 | 5 | N/A |

WORKSHOP INSTRUCTOR (FACILITATOR) (Circle your response to each item.)

- | | | | | | | |
|---|---|---|---|---|---|-----|
| 12. Instructor's Knowledge was excellent | 1 | 2 | 3 | 4 | 5 | N/A |
| 13. Instructor's Presentation skill was excellent | 1 | 2 | 3 | 4 | 5 | N/A |
| 14. The instructors were well prepared. | 1 | 2 | 3 | 4 | 5 | N/A |
| 15. The Instructors Covered Material Clearly | 1 | 2 | 3 | 4 | 5 | N/A |
| 16. The instructors Responded Well to Questions | 1 | 2 | 3 | 4 | 5 | N/A |

WORKSHOP RESULTS (Circle your response to each item.)

- | | | | | | | |
|--|---|---|---|---|---|-----|
| 17. I accomplished the objectives of this workshop. | 1 | 2 | 3 | 4 | 5 | N/A |
| 18. I will be able to use what I learned in this workshop. | 1 | 2 | 3 | 4 | 5 | N/A |

SELF-PACED DELIVERY (Circle your response to each item.)

- | | | | | | | |
|--|---|---|---|---|---|-----|
| 19. The workshop was a good way for me to learn this content. | 1 | 2 | 3 | 4 | 5 | N/A |
| 20. How would you improve this workshop? (Check all that apply.) | | | | | | |
| ___ Provide better information before the workshop. | | | | | | |
| ___ Clarify the workshop objectives. | | | | | | |
| ___ Reduce the content covered in the workshop. | | | | | | |
| ___ Increase the content covered in the workshop. | | | | | | |

- Update the content covered in the workshop.
- Improve the instructional methods.
- Make workshop activities more stimulating.
- Improve workshop organization.
- Make the workshop less difficult.
- Make the workshop more difficult.
- Slow down the pace of the workshop.
- Speed up the pace of the workshop.
- Allot more time for the workshop.
- Shorten the time for the workshop.
- Add entertainment to the workshop.

21. What other improvements would you recommend in this workshop?

22. What is least valuable about this workshop?

23. What is most valuable about this workshop?

24. Are you interested in receiving the workshop report?

Yes [] No []

25. If so, please write your name, address, e-mail, phone number, and educational level.

26. Overall, how would you evaluate this workshop session?

Excellent [] Good [] Fair [] Poor []

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