



सत्यमेव जयते
Ministry of Health and Family Welfare
Government of India



Training Manual on Management of Communicable Diseases for Community Health Officer at Ayushman Bharat – Health and Wellness Centres



**Training Manual on Management of Communicable Diseases
for Community Health Officer**
at Ayushman Bharat – Health and Wellness Centres

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Contents

Essential Knowledge and Skills for Community Health Officers
for Management of Communicable Diseases including
National Health Programmes iv

Unit I: Vector Borne Diseases 1

- ▶ National Vector Borne Disease Control Programme 2
- ▶ Malaria 6
- ▶ Dengue 11
- ▶ Chikungunya 14
- ▶ Japanese Encephalitis 15
- ▶ Filariasis 20
- ▶ Kala-azar 23
- ▶ Vector Control Activities under NVBDCP 25

Unit II: Mycobacterial Infections 27

- ▶ National Leprosy Eradication Programme 28
- ▶ Leprosy 32
- ▶ National Tuberculosis Elimination Programme 40
- ▶ Tuberculosis 45

Unit III: Sexually Transmitted Infections	55
▶ National AIDS Control Program	56
▶ HIV/ AIDS	60
▶ Sexually Transmitted Infections/ Reproductive Tract Infections	64
Unit IV: Rabies	69
▶ National Rabies Control Program	70
▶ Rabies	71
Unit V: Viral Hepatitis	45
▶ National Viral Hepatitis Control Program	76
▶ Viral Hepatitis	79
Annexures	82
References	88
List of Contributors	91

Essential Knowledge and Skills for Community Health Officers for Management of Communicable Diseases including National Health Programmes

Service	Activities of CHO	Knowledge	Skills
Management of Communicable Diseases including National Health Programmes	<ul style="list-style-type: none"> • Diagnosis and Case management • Documentation and reporting to higher levels • Supporting and supervising the staff of SHC- HWC and other outreach staff • Coordinate IEC activities in the Community • Set-up and monitor Surveillance system • Assist outbreak investigation. • Implement National Health Programmes at SHC-HWC level 	<ul style="list-style-type: none"> • Epidemiology of common communicable diseases • Diagnostic protocols • Management protocols • Measures of prevention • Record keeping, documentation, basic analysis of data, reporting system to higher centres. • Surveillance system • Outbreak investigation • National Health programme protocols 	<p>Clinical Skills:</p> <ul style="list-style-type: none"> • Take history of patients. • Conduct physical examination of patients. • Perform relevant lab investigations. • Provide treatment for simple illnesses. • Provide counselling services for patients. • Perform screening for selected diseases. <p>Management Skills:</p> <ul style="list-style-type: none"> • Basic IT skills to record, analyse and report cases to higher levels. • Monitor and enhance preventive measures at community level. • Able to provide supportive supervision of ASHA and MPWs to undertake outreach/ community level services. <p>Community Intervention skills:</p> <ul style="list-style-type: none"> • Conduct health education sessions and IEC activities for the community. • Assist Medical Officer in outbreak investigation. • Provide preventive services. • Promote community mobilization

UNIT I

Vector Borne Diseases

- ▶ National Vector Borne Disease Control Programme
- ▶ Malaria
- ▶ Dengue
- ▶ Chikungunya
- ▶ Japanese Encephalitis
- ▶ Filariasis
- ▶ Kala-azar

National Vector Borne Disease Control Programme

National Vector Borne Disease Control Program (NVBDCP) is implemented in the States/UTs for prevention and control of vector borne diseases (VBDs) namely Malaria, Dengue, Chikungunya, Filariasis, Japanese Encephalitis (JE) and Kala-azar. The Directorate of NVBDCP is the nodal agency for planning, policy making, technical guidance and monitoring and evaluation of program implementation in respect of prevention and control of these vector borne diseases under the overall umbrella of NHM. The prevention and control of vector borne diseases are complex; as their transmission depends on interaction of numerous ecological, biological, social and economic factors including migration.

Out of the six vector borne diseases, Malaria, Dengue, Chikungunya, Lymphatic filariasis and Japanese encephalitis are transmitted by different kind of vector mosquitoes, while Kala azar is transmitted by sand flies. The transmission of vector borne diseases in any area is dependent on frequency of man-vector contact, which is further influenced by various factors including vector density, biting time, etc. Mosquito density is directly related with water collection, clean or polluted, in which mosquitoes breed.

The **goals** of NVBDCP for disease elimination are as follows:

- ▶ Eliminate Malaria (no new indigenous cases) throughout the entire country by 2030
- ▶ Achieve and maintain elimination status of lymphatic filariasis in endemic pockets
- ▶ Eliminate kala azar (less than 1 case per 10,000 population at block level) so that it is no longer a public health problem
- ▶ Reduce morbidity, mortality and disability in children due to JE/AES

Under NVBDCP, the three-pronged strategy for prevention and control of VBDs is as follows:

1. **Disease Management** including early case detection and complete treatment, strengthening of referral services, epidemic preparedness and rapid response.
2. **Integrated Vector Management (IVM)** for transmission risk reduction including indoor residual spraying in selected high-risk areas, use of insecticide treated bed-nets, use of larvivorous fish, anti-larval measures in urban-areas, source reduction and minor environmental engineering.
3. **Supportive Interventions** including behaviour change communication (BCC), public private partnership and inter-sectoral convergence, human resource development through capacity building, operational research including studies on drug resistance and insecticide susceptibility, monitoring and evaluation through periodic reviews/field visits, web-based management information system, vaccination against JE and annual mass drug administration against lymphatic filariasis.

VECTOR BORNE DISEASES

Integrated Vector Management Activities under NVBDCP

Actions	For Individual Protection	For Community Protection
Decreasing human-mosquito contact	Insecticide treated nets, repellants, protective full-length clothing	Insecticide treated nets, protective full-length clothing
Destruction of adult mosquitos	Mosquito killers/ repellent dhoop batti	Spraying, fogging of insecticides (DDT, malathion) on inner walls of houses
Destruction of mosquito larvae	Cleanliness of areas surrounding house, Emptying of unused stagnant water (e.g. discarded items as tyres, drums placed over rooftops	Spraying of larvicidal agents on water surfaces, placement of Gappi fish in water bodies
Source reduction	Small scale drainage, Putting lids over open drains near house	General cleanliness of public places, underground drains and closing of open drains
Social Participation	Motivation for personal and family protection	Health education, IEC activity

Role of CHO

- ▶ The main role of CHO is to act as a mid-level manager of the activities of VBDs under the area of his/her jurisdiction.
- ▶ On the field visit to villages, CHO to cross verify the records of ASHA by visiting houses of fever cases and ensuring that complete treatment was/is being provided.
- ▶ CHO to assess the level of IEC of the community regarding different VBDs, especially vector control measures, Signs and symptoms of diseases and usage of LLIN etc.
- ▶ Ensuring that records of all ASHA are routinely verified and compiled at SHC-HWC level and analysed to ensure that there is no sudden increase in number of fever cases.
- ▶ CHO must ensure good communication with field level health care workers to detect any signs of impending outbreaks and inform MO-PHC, BMO/DVBDCO/Nodal officer-IDSP.
- ▶ At the SHC-HWC, CHO to ensure that severe Malaria cases are referred to appropriate health facility with adequate pre-referral care.
- ▶ CHO to ensure all fever cases reporting to the SHC-HWC are tested and treated appropriately.
- ▶ CHO to supervise all the activities of ASHA and MPW in the field related to all VBDs

Record Keeping

- ▶ Maintain and submit village wise monthly reports of Malaria in prescribed formats to MO-PHC
- ▶ Submit monthly stock positions of various drugs and diagnostics available at the HWC

Roles of SHC-HWC Team under CHO

ASHA

- ▶ Be the first point of contact for fever cases in the village
- ▶ Perform Rapid Diagnostic Test (RDT) and take blood smear in slides in fever cases and Provide treatment to patients based on results of RDT or microscopic examination
- ▶ Arrange for transportation of slides to the laboratory and to get back results
- ▶ Identify warning signs of severe malaria and ensure timely referral of such cases with adequate pre-referral care, to the nearest First Referral Unit (FRU) such as anearby Block PHC with inpatient facility or district hospital after making blood smear and performing RDT
- ▶ Arrange funds from NRHM flexi-pool for transportation of severe malaria cases
- ▶ Identify any increase in the number of fever cases in the community and provide prompt information of fever outbreak to the MPW, CHO, MO-PHC, BMO /DVBDCO / Nodal Officer-IDSP
- ▶ Early identification and referral of suspected AES cases in proper position to a higher health facility to ensure compliance to medication
- ▶ To act as a Drug Administrator (DA) in Mass Drug Administrator for Elimination of Lymphatic Filariasis and ensure directly observed consumption
- ▶ Facilitate immunization for Japanese Encephalitis
- ▶ A village level team (ASHA, MPW, Kala Azar Technical Supervisor-KTS) are involved in Active Case Detection. Activities are to be conducted 4-6 times in a year in Kala Azar Endemic Villages. ASHA to ensure Kala Azar treatment

MPW F/M

- ▶ Conduct weekly domiciliary house-to-house visit, in areas where ASHAs have not been deployed, as per schedule developed by CHO
- ▶ Collect blood smears (thick and thin) or perform RDT from suspected malaria cases during domiciliary visits and keep the records in M-1
- ▶ Transport slides collected along with M-1 to the laboratory for examination
- ▶ Provide treatment to positive cases as per the drug policy
- ▶ Identify warning signs of severe malaria and ensure timely referral of such cases with adequate pre-referral care, to the nearest referral institution such as Block PHC or District hospital after making blood smear and performing RDT
- ▶ Arrange funds from NRHM flexipool for transportation of severe malaria cases
- ▶ Contact the ASHAs during village visits and collect blood smears and M-1 for sending to the laboratory
- ▶ Cross-verify ASHA's records by visiting patients diagnosed positive between the previous and current visit
- ▶ Replenish the stock of microscopy slides, RDKs and drugs to ASHAs wherever necessary
- ▶ Maintain record of blood smears collected and patients given antimalarials in M-1
- ▶ Take decision on dumping sites for insecticides

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VECTOR BORNE DISEASES

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ASHA

- ▶ Work in close coordination with MPW and Malaria Technical Supervisor (MTS) of the area to ensure adequate mobilization of the community for acceptance of IRS before the rounds
- ▶ Provide prior information on IRS to the community and village opinion leaders, 7 days in advance and then again one day before the spray
- ▶ Provide prior information on LLIN usage before and after the distribution of the LLINs and ensure LLIN usage by the community
- ▶ Assist the MPW and MTS in selection of sites for dumping of insecticides
- ▶ Educate the community about signs and symptoms of malaria, its treatment, prevention and vector control
- ▶ Undertake advocacy for vector control, e.g. spreading awareness on source reduction activities and improving utilization of ITNs
- ▶ Participate in camps organized for insecticide treatment of bed nets
- ▶ Be a member of the Village Health, Nutrition and Sanitation Committee and take active part in its meetings and contribute to the discussions

MPW F/M

- ▶ Supervise the work of spray squads
- ▶ Deploy the spray squads in such a way that they work in adjacent houses for convenience of supervision
- ▶ Make a report in prescribed proforma about insecticide consumed, squads deployed, and human dwellings sprayed, missed, locked, refused and rooms sprayed/rooms missed
- ▶ Ensure that the spray is of good quality in all human dwellings
- ▶ Educate the community about signs and symptoms of malaria, its treatment, prevention and vector control
- ▶ Provide advance information on spray dates to the community/villages
- ▶ Participate in the antimalaria month activities
- ▶ Be a member of the Village Health, Sanitation, and Nutrition Committee and take active part in its meetings and lead the discussions
- ▶ A village level team (ASHA, MPW, KTS) are involved in Active Case Detection. Activities are to be conducted 4-6 times in an year in Kala Azar Endemic Villages. MPW to ensure Kala Azar treatment

Record Keeping

- ▶ Maintain village level records of fever cases in M-1, record of blood slides in M-2
- ▶ Line listing of cases of Lymphatic Filariasis

Recording and Reporting

- ▶ Maintain record of fever cases diagnosed by blood slides and RDTs in M-1 and prepare a subcentre report (M-4) for all cases in the area, including those of ASHAs and submit it to PHC-HWC
- ▶ Maintain the record of supervisory visits in tour diary and submit to CHO during monthly meetings for verification

EPIDEMIOLOGY

Malaria is a protozoal disease caused by Plasmodium and transmitted from person to person thorough bite of female *Anopheles* mosquito. There are four species of plasmodium parasite of which, *Plasmodium vivax* (Pv) and *Plasmodium falciparum* (Pf) are most common causes of Malaria in India, others being *P. Malariae* and *P. Ovale*. Pf infection leads to most cases of severe malaria and higher mortality compared to Pv infection.

Malaria is a seasonal disease. In most parts of India, the maximum prevalence is from July to November, because stagnant rain and sewage water provides breeding places for Anopheles mosquitoes.

SPREAD OF MALARIA

The plasmodia spread from person-to-person by the bite of mosquitoes. This process is called the transmission of the disease, and the mosquitoes are the vectors of malaria. The vector is Anopheles female mosquito.

CLINICAL FEATURES

Symptoms and signs of malaria in mild form are generally non-specific and most commonly present as a group of symptoms including:

- ▶ Fever with chills and rigor
- ▶ Malaise
- ▶ Weakness
- ▶ Gastrointestinal complaints (nausea, vomiting, diarrhoea)
- ▶ Headache, back pain, myalgia

The fever in malaria is typically cyclical in nature. Fever occurs every 3 days in Pv, Pf and Po malaria and every 4 days in Pm malaria.

Fever Occurs in the Following Stages:

- ▶ **Cold Stage:** Characterized by shivering and a feeling of cold (lasts for 15–60 minutes)
- ▶ **Hot Stage:** Characterized by fever, flushed, dry skin, and often headache, nausea, and vomiting (lasts for 2–6 hours)
- ▶ **Sweating Stage:** The fever drops rapidly and the patient sweats (lasts for 2–4 hours)

VECTOR BORNE DISEASES

Physical exam could be normal in most patients except for recordable fever and signs of mild-moderate dehydration. Splenomegaly may be noted in some patients.

In pregnant women, malaria causes severe acute anemia and can result in abortion, intrauterine death, premature labour, etc.

Delayed diagnosis and treatment of malaria can cause increased parasite load and further development of disease. Gradually signs of severe malaria and organ failure start to appear for many systems all at a time. These red flag signs are as follows:

- ▶ **Central Nervous System:** Hypoglycemia, impaired consciousness, cranial nerve palsies, convulsions, coma
- ▶ **Respiratory System:** Secondary bacterial infection leading to pneumonia, pulmonary edema, respiratory distress
- ▶ **Cardiovascular System:** Severe hypotension and shock, dysrhythmia, heart failure
- ▶ **Blood:** Destruction of RBCs leading to severe anemia, thrombocytopenia, blood clotting defects
- ▶ **Renal:** Dark colored urine, hemoglobinuria (called as black water fever), Acute renal failure
- ▶ **Abdomen:** Jaundice, tender hepatomegaly, hepatitis, large painful splenomegaly

MANAGEMENT AT SHC-HWC LEVEL

In endemic areas where there is high burden of the disease, malaria should be routinely suspected in any febrile person. Suspicion for malaria should be kept high for those persons from non- endemic area with acute febrile illness, who have history of recent travel to a malaria endemic zone.

Any case suspected for malaria should be confirmed by a laboratory diagnosis. Microscopic examination of thick and thin blood smears and visualization of malarial parasite in the slides confirms the diagnosis. This test is available at all primary health centers. Rapid diagnostics kits are available at SHC-HWC level, which are reliable, easy to use and give results within minutes (Annexure 1).

Presumptive treatment of malaria is not recommended routinely. Treatment is recommended only after confirmation of diagnosis of suspected malaria case is done. Treatment should be based on three main factors:

1. The infecting malaria parasite (Plasmodium or Vivax) species
2. The clinical status of the patient
3. The drug susceptibility of the infecting parasites as advised for the geographic area

UNCOMPLICATED MALARIA

Treatment of Uncomplicated *P. vivax* Cases

- i. **Chloroquine:** 25 mg/kg body weight divided over three days, i.e. 10 mg/kg on day 1, 10 mg/kg on day 2 and 5 mg/kg on day 3. (For adults above 60 kg, maximum dose is 600 mg)
- ii. **Primaquine:** 0.25 mg/kg body weight daily for 14 days with maximum dose for adults 15 mg/day

Age-Wise Dosage Schedule for Treatment of *P.vivax* Cases

Age (in years)	Tab. Chloroquine 250 mg (150 mg base)			Tab. Primaquine (2.5 mg base)
	Day 1	Day 2	Day 3	Day 1 to 14
<1	½	½	¼	0
1-4	1	1	½	1
5-8	2	2	1	2
9-14	3	3	1 ½	4
15 & above	4	4	2	6
Pregnancy	4	4	2	0

Treatment of Uncomplicated *P. falciparum* Cases and Mixed Infections (Pv+Pf)

- ▶ **Artemisinin based Combination Therapy (ACT):** Artesunate tablets 4 mg/kg body weight daily for 3 days (Caution: ACT is not to be given in 1st trimester of pregnancy)
- ▶ **Sulfadoxine (25 mg/kg body weight) and Pyrimethamine (1.25 mg/kg body weight):** As a single dose on first day
- ▶ **Primaquine:** Single dose of 0.75 mg/kg body weight on day 2 only

Age-wise dosage schedule for treatment of *P. Falciparum* (with colour codes of Artesunate blister packets)

Age (in Years)	1 st Day tablets		2 nd Day tablets		3 rd Day tablets
	Artesunate (50 mg)	SP* (250+12.5 mg)	Artesunate (50 mg)	Primaquine (7.5 mg base)	Artesunate (50mg)
<1	¼	¼	½	0	½
1-4	1	1	1	1	1
5-8	2	1 ½	2	2	2
9-14	3	2	3	4	3
15 years and above	4	3	4	6	4
Pregnancy 2 nd /3 rd Trimester	4	3	4	0	4

Note: Primaquine is contraindicated during pregnancy and should not be given in either Pv, Pf or Mixed Pv+Pf infection. For pregnant women in first trimester, tablet Quinine (10 mg/kg three times a day for 7 days) is recommended for uncomplicated malaria infection instead of artesunate combination therapy.

MANAGEMENT OF PATIENT'S SYMPTOMS AND HIS/HER CLINICAL STATUS

After the diagnosis of malaria is confirmed, the first thing that you should do is to assess whether the patient has signs of severe malaria or any complications or not and which are the presenting complaints reported by the patient.

IN ADDITION TO ANTIMALARIAL DRUGS, GIVE TREATMENT FOR PATIENT'S PRESENTING COMPLAINTS

- ▶ **Fever and Pain:** Paracetamol tablet/ syrup is effective to treat these symptoms. Do not give ibuprofen, diclofenac or aspirin, as they increase the risk of bleeding in malaria patients. In adults and pregnant women, give PCM 500mg 4 times a day for 3–5 days or till symptoms are resolved.

In children, give PCM syrup/ tablet 15mg/kg 4 times a day till symptoms are resolved.

- ▶ **Vomiting:** Metoclopramide syrup and tablets may be used. If vomiting occurs within 30 minutes of intake of medicines, repeat the dose.

Avoid giving antimalarial drugs on empty stomach. Counsel the patient to take full course of medicines. Ask the patient to report back to HWC, if symptoms are not resolved after 3 days of medicines or if danger signs as bleeding from gums, nose or urine, black-reddish round patches or rash appears anywhere over the skin.

COMPLICATED MALARIA

Patients with severe malaria may present with different combination of red flag signs; therefore, every case of severe malaria may be different than the other. Overall management should be based on specific findings in an individual patient.

For example, all 3 of the following features are seen in three different patients with malaria.

- i. Fever of 3 days with acute onset seizures, or
- ii. Fever from 2–3 days and severe shock and respiratory distress, or
- iii. Patient with high grade fever and severe vomiting with splenomegaly.

Assessment of A-B-C (Airway, Breathing, Circulation) should be done first as per basic life support protocols and necessary steps be taken accordingly. All sick patients with severe malaria should receive 1st dose of antimalarial drugs as well as required resuscitation at HWC level itself, before referral to higher center.

PREVENTIVE MEASURES

- ▶ In malaria endemic areas, all front lines workers including ASHA and MPW are expected to undertake fortnightly house to house visits in their village to identify any person with fever. They prepare blood smears of febrile patients and send them to PHC-HWC laboratory for confirmation of diagnosis of malaria. If suspicion of malaria is high as in high risk areas or when the patient is sick, the SHC-HWC team may confirm the diagnosis

VECTOR BORNE DISEASES

using rapid diagnostic kits and start the treatment with first dose of antimalarial drugs immediately and then refer the patient to PHC-HWC.

- ▶ ASHAs counsel individuals and families to adopt self-protection measures and to maintain cleanliness in and surrounding houses. PHC-HWC have Gappi fish tanks and from which Health assistants and MPW(M)s are responsible for their distribution and disposal to mosquito breeding sites. All the staff and HWC are responsible for conducting awareness sessions for community regarding malaria prevention. (see Appendix for integrated vector management).

EPIDEMIOLOGY

Dengue is a vector-borne viral infection transmitted by female *Aedes aegypti* mosquito, which is also responsible for spread of other viral diseases like Chikungunya, Yellow fever and Zika virus infection.

Ae. aegypti breeds almost entirely in man-made water stores found in and around households like overhead tanks, ground water storage tanks, water accumulated in old tyres, coolers, water coolers, flowerpots, etc. or in construction sites and factories. *Ae. aegypti* is a day biting mosquito. That means the mosquito is most active during day light, for approximately two hours after sunrise and several hours before sunset.

CLINICAL FEATURES

Dengue virus infection may be asymptomatic or may cause non-specific febrile illness: Dengue Fever (DF), or Dengue Hemorrhagic Fever (DHF) including Dengue Shock Syndrome (DSS).

Stages	Clinical Features
Asymptomatic Infection	Body's immune system effectively fights the virus, and there are no apparent symptoms experienced by the person.
Dengue Fever	<p>History: Non-specific symptoms as any other viral infection like fever, body ache, malaise, mild headache, anorexia, etc. Up to 50% patient may show wide spread red colored rash all over body, that appears on first day of fever or a day before that; rash mostly disappears in 2-3 days.</p> <p>Exam: Patient gets to the clinic on his/her own and the general appearance is fair. May not have any physical findings.</p> <p>Course: Mostly, disease usually resolves within 4-5 days with help of simple symptomatic treatment, and without any complications. Some cases do progress to severe forms as DHF, thus needs good follow up systems in place.</p>
Dengue Hemorrhagic Fever	<p>History: Children are at more risk for DHF compared to adults. Initially DHF starts as an acute onset high grade fever, similar to DF, associated with other nonspecific symptoms, lasts for 2 to 7 days, this is called Acute Phase. This is followed by appearance of visible bleeding from multiple sites as gums, conjunctiva of eyes, anywhere on the skin and subcutaneous area, etc.</p>

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VECTOR BORNE DISEASES

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	<p>Exam: Bleeding in layers of skin appears as reddish purpuric rash and petechial spots or large blue-black ecchymosis patches of skin.</p> <p>There is also bleeding inside the internal organs as intestines, lungs, kidneys, etc. which appears as local symptoms like blood in stools, blood in vomiting, hematuria (blood in urine), etc. When patients are brought to hospital, they appear sick, dehydrated, and lethargic and show danger signs as above; they need immediate admission and further management. Patients also complaint of severe bodyache.</p> <p>Course: Patient looks sick in this stage and needs hospitalization for further care. There is increased risk of death from failure of vital organs and shock.</p>
Dengue Shock Syndrome	<p>Clinical Features: In this stage of illness, bleeding has already been there at multiple sites, including major vital and other internal organs and patient appears to be in a hemodynamically unstable condition with moderate to severe hypotension or shock, decreased urine output, and altered sensorium or stupor.</p> <p>Course: By the arrival of this stage patient's general condition is severely worsened and there is very high rate of deaths among this group of patients, they need urgent resuscitation and appropriate inpatient care.</p>

MANAGEMENT AT SHC-HWC LEVEL

- ▶ In mild DF, only symptomatic care is recommended. Paracetamol tablets as antipyretics, good hydration with plenty of fluids in different forms of home remedies as rice-water, fresh fruit juices, nimbupani, ORS, etc. are advised.
- ▶ Aspirin/NSAIDs (nonsteroidal anti-inflammatory drugs) like Ibuprofen, Diclofenac, etc. should be avoided since it may cause gastritis, vomiting, and severe bleeding complications in patients with dengue infection.
- ▶ Patients should be monitored for 24–48 hours in DHF endemic areas for warning signs even after they become afebrile. They should be explained about danger signs and symptoms and clearly instructed to return to SHC-HWC for follow up.
- ▶ Any person, confirmed with rapid kit tests to have dengue infection should be referred to higher center for treatment, if he/she shows following danger symptoms/signs:
 - hypotension (systolic BP <90 mmHg)
 - signs of severe dehydration
 - altered sensorium (confusion, irrelevant talk, slurring of speech, etc.) or unconsciousness
 - breathing difficulty
 - bleeding gums
 - decreased urine production or complete absence
 - jaundice
 - bluish-black patches over skin

VECTOR BORNE DISEASES

- ▶ When a patient is brought to SHC-HWC in shock, as in DHF or DSS; then initial stabilization with IV fluids should be done before and during referral from SHC-HWC. During referral of DSS patients, carefully follow these principles:
 - i. First thing to do is hemodynamic stabilization of patient with reference to vitals; this includes treatment of hypotension for a patient in shock. About 10–20 ml/kg of IV fluids (preferably Ringer’s lactate RL or Normal saline NS) should be given in first one hour. Additional 10 ml/kg of fluids may be given if patient is still hypotensive during referral.
 - ii. Confirm the diagnosis using rapid test kits and discuss with the relatives, attendants about severity of illness, and required level of facility care, plan of referral including place, accompanying persons, vehicle, possible requirement for arrangement of blood and blood donors, etc.
 - iii. Provide a good referral note mentioning briefly details of first clinical assessment and treatment given. Call and inform the referral center in advance about the concerned patient.

Preventive Measures

Integrated vector management and personal protective measures are the most important steps for prevention and protection from dengue virus infection, similar to other vector borne diseases and this has been adopted as a strategic plan of NVBDCP.

Early identification of all cases, timely referral of all sick persons, and increased community awareness are among the other activities to be carried by SHC- HWC staff at community level.

EPIDEMIOLOGY

Chikungunya disease is a viral hemorrhagic febrile disease (similar to dengue and JE), transmitted in humans by the bite of infected *Aedes* mosquitoes. It has derived its name Chikungunya, meaning “that which bends up”, a typical symptom in Chikungunya infection, where patients walk in a bent posture due to severe joint pain.

As previously discussed, *Aedes aegypti* bites during daytime and breeds in clean stored water. One episode of infection usually gives life-long immunity to the patient from Chikungunya infection.

CLINICAL FEATURES

Chikungunya typically starts as acute febrile illness associated with severe multiple joint pains in all four limbs, purpuric-petechial rash all over body and other nonspecific symptoms as vomiting, nausea, headache and mild diarrhea.

Other less commonly seen symptoms includes mouth ulcers, loss of taste and conjunctivitis. Severe joint pain is the main and the most debilitating symptom of Chikungunya.

It is usually not life threatening and most patients feel better within a week with simple symptomatic treatment only.

In post-acute or chronic phase of disease when fever and other symptoms have resolved, joint pain and inflammation may persist up to three months or beyond.

MANAGEMENT AT SHC-HWC LEVEL

- ▶ It is based on serological tests but these are reliable only after first week of infection; these tests are mostly available at level of medical colleges.
- ▶ Clinical suspicion should be kept high based on presentation of symptoms. There is no specific antiviral treatment for Chikungunya. Only symptomatic management is advised that includes rest, antipyretics (Paracetamol), good hydration with plenty of oral fluids, home remedies.
- ▶ Do not give aspirin and other non-steroidal anti-inflammatory drugs to avoid risk of bleeding. Paracetamol and opioid analgesics (eg. Tramadol) can be given for management of severe joints pain.

PREVENTIVE MEASURES

Vector Control (*Aedes* mosquito control) and vector source reduction and environmental modification are the main strategies of prevention.

Japanese Encephalitis

ACUTE ENCEPHALITIS SYNDROME (AES)

Clinically, a case of AES is defined as a person of any age, who develops acute onset of fever and a change in mental status, which includes any of the symptoms such as confusion, disorientation, coma, inability to talk, or new onset of seizures; excluding simple febrile seizures.

AES includes a group of infections caused by any of the several different viruses, bacteria, fungus, parasites, spirochetes, chemical/ toxins etc., many of which has similar clinical features.

Japanese Encephalitis (JE), a vector borne viral infection, is one of the common causes of AES syndrome. The outbreak of JE usually coincides with the monsoon and post monsoon period (i.e. from July to September-October), when the density of mosquitoes is increased; on the other hand AES from other viruses especially Enteroviruses occur throughout the year as these are water borne infections. The severe forms of disease with high death rate are reported every year in parts of India including eastern UP and Bihar. AES including JE is reported mainly from Assam, Bihar, West Bengal, Tamil Nadu and Uttar Pradesh.

EPIDEMIOLOGY

Japanese Encephalitis (JE) is a mosquito borne zoonotic viral disease. The virus is maintained in animals, birds, pigs, particularly the birds belonging to family Ardeidae (eg. Cattle egrets, pond herons etc.) which act as the natural hosts. Pigs & wild birds are reservoirs of infection and are called as amplifier hosts in the transmission cycle, while man and horse are 'dead end hosts. The virus does not cause any disease among its natural hosts and transmission continues through mosquitoes primarily belonging to vishnui group culex. Vector mosquito is able to transmit JE virus to a healthy person after biting an infected host with an incubation period ranging from 5 to 14 days.

VECTOR

In India, JE virus has been isolated from 17 mosquito species in wild caught specimens from different parts of the country. Maximum isolations have been recorded from Culex vishnui group consisting of Cx.tritaeniorhynchus, Cx.vishnui and Cx.pseudovishnui. Female mosquitoes get infected after feeding on a vertebrate host harbouring JE virus and after 9-12 days of extrinsic incubation period, they can transmit the virus to other hosts. Culex vishnui subgroup of mosquitoes are very common, widespread and breed in water with

luxuriant vegetation, mainly in paddy fields and their abundance may be related to their breeding in rice fields, shallow ditches, pools, fish ponds, etc. Preference for breeding places during rainy season and irrigation channels bordering the paddy fields support breeding during non-monsoon season. Rain water collections in low lying areas with aquatic vegetation/ submerged grasses support the breeding during post monsoon months. However permanent water collection in ponds, ditches etc. with aquatic vegetation such as water hyacinth, elephant grass, etc. provide favourable breeding places during all months.

Cx. tritaeniorhynchus, the principal vector of JE has been reported to be an outdoor restor (exophilic) but may also rest indoor during some part of the year. Vectors of JE are zoophilic and feed outdoor as well as indoor. They prefer to feed on cattle and pigs. Cattle such as cows may reduce risk of transmission by diverting vector mosquitoes (zooprophylaxis). For planning vector control measures, the bionomics of vector mosquitoes in an area needs to be studied.

In view of the breeding habitats of the vector mosquitoes, JE is usually associated with rural areas with paddy cultivation. For planning vector control measures, the bionomics of vector mosquitoes in an area needs to be studied. Most vulnerable age group for JE infection is children between 1–5 years followed by 5–10 years and 10–15 years in that order

CLINICAL FEATURES

To carry out clinical surveillance of JE it is crucial that all health institutions, which are attending to patients either at outpatient department or as indoor cases, be on the lookout for any patients presenting with the signs and symptoms of encephalitis. All the reporting units (health institutions) in endemic areas both in public and private sector should further notify all these suspected JE cases based on standard case definitions.

For surveillance purposes, JE is commonly reported under the heading of “acute encephalitis”. In the WHO’s guidelines for JE surveillance, syndromic surveillance for JE is recommended. This means that all cases of Acute Encephalitis Syndrome (AES) should be reported. Laboratory confirmation of suspected cases can be done where feasible. The following case definition should be used for reporting of suspected JE cases in endemic areas:

CASE DEFINITION OF SUSPECTED CASE

- ▶ Acute onset of fever, not more than 5–7 days duration.
- ▶ Change in mental status with/ without
- ▶ New onset of seizures (excluding febrile seizures)
- ▶ (Other early clinical findings – may include irritability, somnolence or abnormal behavior greater than that seen with usual febrile illness)

IMPORTANT

In an epidemic situation fever with altered sensorium persisting for more than two hours with a focal seizure or paralysis of any part of body, is Encephalitis.

- ▶ Presence of rash on body excludes Japanese Encephalitis
- ▶ AES with symmetrical signs and fever is likely to be Cerebral Malaria

CASE CLASSIFICATION

Laboratory-Confirmed Case

A suspected case with any one of the following markers:

- ▶ Presence of IgM antibody in serum and/ or CSF to a specific virus including JE/Enterovirus or others
- ▶ Four fold difference in IgG antibody titre in paired sera
- ▶ Virus isolation from brain tissue
- ▶ Antigen detection by immunofluorescence
- ▶ Nucleic acid detection by PCR

In the sentinel surveillance network, AES/JE will be diagnosed by IgM Capture ELISA, and virus isolation will be done in National Reference Laboratory.

Probable Cases Suspected Case: in close geographic and temporal relationship to a laboratory confirmed case of AES/JE in an outbreak

Acute Encephalitis Syndrome due to Other Agent: A suspected case in which diagnostic testing is performed and an etiological agent other than AES/JE is identified Acute Encephalitis Syndrome due to unknown agent

A suspected case in which no diagnostic testing is performed / no etiological agent is identified/ test results are indeterminate

MANAGEMENT AT SHC-HWC LEVEL

One of the major components of the Programme Strategy is the Case Management of the patients, most of whom are admitted in Health Institutions in a serious condition. Management of Acute Encephalitis Syndrome including Japanese Encephalitis is essentially symptomatic. To reduce severe morbidity and mortality, it is important to identify early warning signs and refer patients to health facility in proper position and educate the health workers about the first line of management at the grassroots level.

Treatment at the health facility, it is important to exclude other causes of CNS affliction like meningitis or cerebral malaria which require specific treatment. Treatment will depend on the condition in which patient is received in the health facility. Since patients are likely

to arrive with high grade fever and change in mental status or convulsions proceed with the assessment of patency of airway. The treatment at PHC - HWC/CHC /District level or at tertiary care hospitals remains the same. Depending upon the needs of care and availability of facilities available at the centre/ hospital the patients to be transferred to the nearest higher centre for further management. It should be ensured before transferring the case, all the available treatment is provided to the patient. Only needy patients where such facilities are not available, to be transported. The time consumed in transportation itself is a major cause of high mortality rate.

The treatment of the patients may require:

1. Management of Airways and Breathing
2. Management of Circulation
3. Control of Convulsion and Intracranial Pressure
4. Control of Temperature
5. Fluid and Electrolytes and Calories/ Nutrition
6. General Management
7. Specific Treatment of any for Treatable Cause
8. Investigations, Samples Collection & Transportation
9. Reporting of a Case
10. Rehabilitation

For surveillance purposes, JE is commonly reported under the heading of “acute encephalitis”. In the WHO’s guidelines for JE surveillance, syndromic surveillance for JE is recommended. This means that all cases of Acute Encephalitis Syndrome (AES) should be reported. Laboratory confirmation of suspected cases can be done where feasible.

PREVENTIVE MEASURES

As a part of NVBDCP programme, strategies and activities at PHC-HWC/SHC-HWC and community level to prevent JE include JE vaccination campaign covering 1–15 yrs of children followed by two doses JE vaccination for all children in endemic districts (first dose at 9–12 months of age and booster dose at 16–24 months of age), integrated vector control measures and sessions for increased community awareness and education.

VECTOR CONTROL

JE vector are exophillic end ophagic in nature. The risk of transmission increases when the human dwellings and animal sheds particularly piggeries are situated very close to each other. When they are situated far from each other the risk of transmission is reduced. Because of

VECTOR BORNE DISEASES

outdoor resting habits and crepuscular nature, the vector control using indoor residual spray is technically not feasible. In addition to this, due to vast and enormous breeding habitats like perennial ponds, paddy fields and other water bodies larval control using various anti larval measures is also not feasible as it is resource intensive. Therefore, vector control using ULV fogging (ultra low volume) is the only recommended method of vector control and can be used during JE epidemics also.

Under NVBDCP, Presently Malation and Pyrethrum formulations are use for fogging applications, For thermal fogging: 5 per cent Malathion (Technical) in kerosene/diesel (1 litre of technical Malathion in 19 litres of diluents). The application rate of insecticide with most of this equipment is generally <0.5 litres per hectare and requirements can be worked out on this basis. Mostly the effective application is about 330 ml per hectare; however, it varies with type of machine used. Usually a maximum of 1–1.5 km radius from the epicenter of outbreak is considered adequate.

SHC-HWC and PHC-HWC staff should be aware of the endemic status of their field area and should be vigilant to pick up children and persons with similar clinical features, report and refer them to higher facilities. Measures for prevention and protection from mosquito bite are to be advised and monitored for at community level.

EPIDEMIOLOGY

'Filar' means thread-like. Lymphatic filariasis is infection with the filarial worms (nematodes) - *Wuchereria bancrofti* and *Brugia malayi*, the former being the most widespread parasite. Therefore, the disease is also called 'Wuchereriosis" (Bancroftian filariasis). These parasites are transmitted to humans through the bite of an infected mosquito (mostly *Culex*) and develop into adult worms in the lymphatic vessels, causing severe damage and swelling (lymphoedema). Though not fatal, disease is responsible for significant suffering, deformity and disability.

CLINICAL FEATURES

- ▶ In the early stages of Lymphatic Filariasis (LF), there are either no symptoms or non specific symptoms like fever.
- ▶ Asymptomatic infection (asymptomatic microfilaremia) is frequently characterized by the presence of thousands or more larval parasites (microfilariae) in the blood and of adult worms in the lymphatic system without any obvious symptoms or signs. Although there are no outward symptoms, the lymphatic system is damaged. This stage can last for several months to years.

ACUTE PHASE

- ▶ Small wounds over the skin allow development of bacterial infection over that limb; this result in acute form of filariasis, where symptoms are primarily localized to the limb in which lymph vessels are already damaged and bacterial infection has set up. These acute episodes then present as fever, lymphangitis (inflammation of lymph vessels) and lymphadenitis (inflammation of lymph nodes). This is also called as Adeno Lymphangitis (ADL)s.
- ▶ Lymphangitis mostly occurs in the lower limbs, but sometimes also in the scrotum. Clinical symptoms in form are moderate to severe pain and hot sensation over the affected part of limb. In severe form of acute filariasis, abscesses with bacterial infection can develop, and wounds often take a long time to heal.
- ▶ Lymphadenitis is the formation of firm and painful nodules due to the collections of adult worms in the lymph nodes. In men, nodules tend to form around the scrotal area.
- ▶ Due to damaged lymphatic system, patients with lymphoedema have frequent attacks of infection causing high fever and severe pain.
- ▶ Acute episodes often develop in patients with chronic lymphoedema or elephantiasis.

CHRONIC PHASE

- ▶ Chronic phase may appear years after primary infection, by the time the lymph nodes and vessels get destroyed and there is failure of drainage of lymph leading to gross localized swelling. This may present with commonly known features of filariasis as follows:
 - Lymphoedema i.e. localized tissue swelling over breasts, vulva, arms, etc.
 - Elephantiasis (skin/tissue thickening) of limbs or arm, the vulva and the breast may affect up to 10% of men and women in endemic communities.
 - Hydrocele i.e. scrotal sac swelling filled with lymph. Swelling may extend over penis and groins.

MANAGEMENT AT SHC-HWC LEVEL

The microfilariae that cause lymphatic filariasis circulate in the blood at night (called nocturnal periodicity). Blood collection should be done at night to coincide with the appearance of the microfilariae, and a thick smear is prepared and examined under microscope to visualize microfilaria. Microscopy is available at PHC-HWC and CHC/DH levels.

Other rapid tests are also available, but not at SHC-HWC level.

MANAGEMENT OF DIFFERENT STAGES OF LYMPHATIC FILARIASIS

Treatment for Acute Phase Illness—Mild and Uncomplicated Form:

- ▶ Give Analgesic such as Paracetamol (500 mg given 4 times a day)
- ▶ Give oral antibiotic such as Amoxicillin (500 mg given 3 times a day) for at least 8 days
- ▶ Clean the limb with antiseptic
- ▶ Good daily hygiene practices—such as washing the affected parts may play an important part in preventing progression of the early stages of lymphoedema, thus reducing acute attacks
- ▶ Check for any wounds, cuts, abscesses and infection between toes and fingers
- ▶ Give advice about prevention of chronic lymphedema caused by lymphatic filariasis
- ▶ **Do not give anti-filarial medicine**
- ▶ **No exercises are advised during acute attacks**
- ▶ **Cold compression will help the patient**
- ▶ Home management includes following measures:
 - drinking plenty of water
 - rest
 - limb elevation
- ▶ Follow-up after 2 days at home. If situation does not improve, then refer the patient.

Treatment of Acute Phase illness–Severe Form

- ▶ High fever, confusion, Headache, Drowsiness, Pain in affected part, splitting of the skin, Sudden increase in the size of the limb, vomiting and no response to treatment within 24 hours are the symptoms of the severe form.
- ▶ Give analgesic/antipyretic such as Paracetamol or Ibuprofen.
- ▶ Clean and dress up the open wound if present.
- ▶ Refer the patient to higher centers urgently.
- ▶ **Do not give anti-filarial medicine at this stage.**

Hydrocele and Elephantiasis

- ▶ Individuals with scrotal or limb swelling should be referred to medical officer in PHC-HWC or higher facilities for evaluation and surgery.
- ▶ Elephantiasis needs comprehensive care including training of patients and relatives for regular exercises limb elevation, taking care of skin over swollen area and preventing injuries to the skin.
- ▶ MMDP Kits are provided to the patient of Elephantiasis.

Treatment of Asymptomatic Microfilaremia

Treat Microfilaria carriers with Diethyl Carbamazine (DEC) at a dose of 6 mg/kg per day (3 divided dose) for 12 days.

PREVENTIVE MEASURES

Filarisis has been a part of NVBDCP and specific strategies have been initiated under the programme for control and prevention of filariasis. Currently, the below mentioned strategies and activities are being observed at SHC-HWC level throughout all the high endemic states:

- ▶ Supervised Mass Drug Administration (MDA) with DA(DEC and Albendazole) or IDA (Ivermectin, DEC and Albendazole) once a year.
- ▶ Selective Microfilaria carrier treatment with DEC at a dose of 6 mg/kg per day for 12 days.
- ▶ Antilarval measures in urban areas and indoor residual spray in rural areas.
- ▶ Management of acute and chronic filariasis through referral services at higher centres.
- ▶ Information-Education-Communication (IEC) activities for inculcating individual and community based protective and preventive measures for filariasis control.

EPIDEMIOLOGY

Kala-Azar (Leishmaniasis) is a slow progressing disease caused by a protozoan parasite *Leishmania donovani*. The parasite primarily infects visceral organs such as bone marrow, spleen, liver, etc., also known as Visceral Leishmaniasis; continues to circulate throughout with the blood.

Leishmania donovani is transmitted by the bite of infected female Sandfly. Breeding places of sandflies are near cattle sheds and mud houses and resting place include cracks and crevices, burrows and tree holes, termite hills and earthen mounds, under stone and foliage.

In rural areas where houses are frequently constructed with mud walls and earthen floors, and cattle and other livestock live close to humans, heavy annual rainfall, mean humidity above 70%, temperature range of 15–38°C, abundant vegetation, subsoil water, etc.; all of these factors favor transmission of disease. In India, the states of West Bengal, Bihar, Jharkhand and Uttar Pradesh are endemic for kala azar.

Though the disease can affect persons of any age including children within 1 year of age, children with age group of 05–09 years are most affected.

CLINICAL FEATURES

Leishmaniasis appears as acute febrile illness with gradual development of distended abdomen (due to hepatomegaly and splenomegaly), severe anemia, black coloured stools (due to gastro-intestinal bleeding), and loss of weight, anorexia. Febrile stage may last longer than 2–4 weeks.

Disease often remains underdiagnosed during early phases; and patient, who initially seek care from local healers; visit hospital after about 2–3 weeks of fever. By this time, all empirical treatments are given over the counter for presumptive malaria, typhoid and other bacterial infections and have all failed to resolve symptoms. This is a common scenario in villages.

CLINICAL CASE DEFINITIONS

Visceral Leishmaniasis

A person from endemic area with fever of more than 2 weeks duration with splenomegaly and who is confirmed with rapid diagnostic kit or biopsy, is called as confirmed case of Leishmaniasis.

Cutaneous Leishmaniasis

In this form, skin is mainly affected sparing or minimally affecting visceral organs. Painful ulcers develop over those parts which have been exposed to the sand fly. Detailed history is needed to investigate presence of other systemic signs.

Post-Kala Azar Dermal Leishmaniasis

There is development of macular, maculo-papular, and nodular rash in patients with visceral leishmaniasis (VL) after treatment, who are otherwise well.

Management at SHC-HWC Level

The visualization of the parasite by microscopic examination of aspirates from bone marrow or spleen is the gold standard for the diagnosis of VL. Rapid diagnostic kits are also available, but not at SHC-HWC level.

At SHC-HWC level, malaria and dengue should be ruled out in first visit of the patient. Those with both negative tests and presence of short duration of only nonspecific symptoms as pain, fever, vomiting, etc. may have some other mild viral infection that can resolve with symptomatic treatment.

Those patients with negative results for both dengue and malaria tests, and have signs as large spleen, loss of weight, long duration of fever for more than 2 weeks, skin lesions, etc. in addition to non-specific symptoms should be referred to CHC or DH for early diagnosis using rapid tests.

Visceral leishmaniasis needs hospitalization for management with and other supportive therapy including nutrition.

Mostly management at SHC-HWC level is symptomatic, includes giving antipyretics and counseling of patient and family regarding nature of disease before referral.

Vector Control Activities under NVBDCP

S. No.	Disease	Caused by	Mosquitos
1	Malaria	Anopheles mosquito	2030 (in phased manner)
2	Lymphatic Filariasis	Culex quinquefasciatus	2021 (Mf rate <1)
3	Kala-azar	Sandfly	2020 (< 1 case per 10,000 population)
4	Dengue	Aedes mosquito	
5	Chikungunya	Aedes mosquito	

COMMON BREEDING SOURCES

S. No.	Mosquito	Biting habits	Breeding Sources
1	Anopheles mosquito	Night bite	Clean water included rainwater, pools, puddles, Barrow pits, River bed pools, irrigation channel, seepages, rice field, wells, pond margins and sandy margins, tyre tracks etc.
2	Culex Mosquito	Night Bite	Dirty and polluted water, rice field, dirty ponds. Drainage, Dunk drainage (Gober Gas).
3	Sandfly	Evening and throughout the night	Edge of water body or decay vegetable material. Adult female lay their legs in range of habits including damp soil, moist decaying leaf material and muddy, sandy or vegetated substrates.
4	Aedes mosquito	Day biter	Container breeders like old tyres, cement tank, coconut shields, flower pots, Coolers, uncovered tanks, drums, discarded buckets and containers, construction blocks, bottles, tree holes and bamboo, bottle pieces on top of wall ,roof guttering, Brick holes, unmaintained swimming pools

Important Preventive Measures Taken under NVBDCP:

- ▶ Source Reduction Activities
- ▶ Indoor Residual Spray
- ▶ Long Lasting Insecticidal Treated Nets (LLINs)
- ▶ Anti-Adult Measures-like fogging, indoor space spray etc.

VECTOR BORNE DISEASES

Recording and Reporting at SHC-HWC

Disease	Component of Programme	Records and Reports
Malaria	Surveillance/ case finding	<ul style="list-style-type: none"> • No of Fever cases (M4-SC) • No of Malaria cases (M4-SC) • No of Pf cases (M4-SC) • No of RDTs received & used (M4-SC) • No of ACT Blister Packs received & used (M4-SC)
	Integrated Vector Control	<ul style="list-style-type: none"> • No of ITNs/ LLINs distributed (VC 4) • Bednets Treated (VC 4) • No of houses with at least two bednets (VC 4) • IRS Coverage – Population (%) (VC 1) • IRS Coverage – Rooms (%) (VC 1)
	Others	<ul style="list-style-type: none"> • Outbreak reported -Y/N
LF	MDA	13 table reports compile
		Line list of LF cases (Lymphoedema and Hydrocele)
	MMDP	MMDP format

UNIT II

Mycobacterial Infections

- ▶ National Leprosy Eradication Programme
- ▶ Leprosy
- ▶ National Tuberculosis Elimination Programme
- ▶ Tuberculosis

National Leprosy Eradication Program

National Leprosy Eradication Programme (NLEP), India is a Centrally Sponsored Scheme under the umbrella of National Health Mission (NHM). The major concern of the Programme is to detect the cases of leprosy at an early stage, and to provide complete treatment, free of cost, in order to prevent the occurrence of Grade II Disability (G2D) in the affected persons. Under NLEP, it is aimed to ultimately reduce G2D percentage to ZERO among new cases of leprosy and ZERO new child cases. Several initiatives have been taken to encourage early case detection, to ensure complete treatment, and to contain the onset of disease in close contacts of the index cases (persons diagnosed with leprosy).

OBJECTIVES

- i. To bring down Prevalence Rate of leprosy to less than 1/10,000 population at district level
- ii. To bring down Grade II Disability rate per million population to Zero at district level
- iii. To bring down Grade II Disability percentage to ZERO among new cases
- iv. To bring down child leprosy cases to ZERO among new cases
- v. To generate awareness about leprosy disease
- vi. To strengthen Disability Prevention & Medical Rehabilitation (DPMR) services for persons affected by leprosy

STRATEGIES FOR LEPROSY ELIMINATION IN INDIA

- ▶ Decentralized integrated leprosy services through General Health Care system
- ▶ Early detection & complete treatment of new leprosy cases
- ▶ Early diagnosis & prompt MDT, through Active case detection and Regular surveillance
- ▶ Strengthening of Disability Prevention & Medical Rehabilitation (DPMR) services
- ▶ Contact survey and Post Exposure Prophylaxis through Single Dose of Rifampicin (SDR) among close contacts
- ▶ Information, Education & Communication (IEC) activities in the community to improve self-reporting to Health facilities and reduction of stigma
- ▶ Intensive monitoring and supervision

ACTIVITIES

Diagnosis and Treatment of Leprosy: Free-of-cost Services for diagnosis and treatment (Multi drug therapy) are provided by all public health care facilities.

- ▶ Enhanced active & early case detection through Active Case Detection and Regular Surveillance (ACD&RS) in rural as well as urban areas
- ▶ Convergence of leprosy screening under Rashtriya Bal Swasthya Karyakram (RBSK) for screening of children (0–18 yrs.) and under Comprehensive Primary Health Care programme of Ayushman Bharat for screening of people above 30 years of age

Disability Prevention and Medical Rehabilitation (DPMR) i.e., reaction management, provision of MCR footwear, Aids & Appliances, referral services for management of cases and reconstructive surgery at District Hospitals and Medical Colleges/Central leprosy institutions

Capacity Building: Training of general health staff like Medical Officer, health workers, health supervisors, laboratory technicians and ASHAs are conducted every year to develop adequate skills for diagnosis and management of leprosy cases

IEC and Counselling: Intensive IEC activities are conducted to generate awareness which will help in reduction of stigma and discrimination associated with persons affected with leprosy throughout the year. Along with this Special Annual Mass Awareness campaigns named Sparsh Leprosy Awareness Campaigns (SLAC) were launched on 30th January, 2017 i.e., Anti Leprosy Day, to reduce stigma and discrimination against persons suffering from leprosy

NIKUSTH: web-based reporting system under NLEP to capture “on-treatment/MDT” data of leprosy cases

Role of CHO

1. Ensure implementation of Active Case Detection and Regular Surveillance (ACD&RS) for leprosy in the villages as per the following mandate:
 - a. Identify the eligible population for leprosy screening
 - b. Identify the suitable teams of female and Male health worker for leprosy screening
 - c. Ensure the village level availability of House-hold screening registers and referral slips for record keeping of ACD&RS
 - d. Ensure the sharing of missing members data with the concerned MO- PHC
2. Submission of monthly screening report of ACD&RS to MO-PHC/UPHC
3. Screening round completion certification as per ACD&RS guidelines
4. Referral of the suspected cases of leprosy to MO-PHC for confirmation of diagnosis
5. Identification of early signs of reactions (I and II)/ Neuritis and referral to MO-PHC for management

(Contd.)...

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6. Identification of the eligible grade II disability cases for Reconstructive surgery and referral to higher facility
7. Follow-up of under treatment leprosy cases and disability cases
8. Dispensing of MDT and Prednisolone for neuritis/lepra reaction
9. Ensure follow up of all on treatment leprosy cases till MDT treatment completion/Release From Treatment (RFT)
10. Retrieval of Defaulters/dropouts
11. Distribution of MCR footwear and Self care kits to the eligible cases twice a year
12. Counseling to Persons Affected with Leprosy (PAL), Under Treatment (UT), RFT and family members
13. Active participation in Sparsh Leprosy Awareness Campaigns (SLAC) and awareness generation among general population regarding leprosy through appropriate IEC/ BCC/ awareness generation tools
14. Overall supervision of field level activities done by ASHA/MPW

Record Keeping

- ▶ Maintain and submit village/urban pocket level monthly screening report of ACD&RS to MO-PHC/UPHC
- ▶ Screening round completion certification of village level screening as per ACD&RS guidelines
- ▶ Follow-ups and record maintenance of under treatment cases.
- ▶ Maintain and update line list of Grade I and Grade II disabilities and new and old cases
- ▶ Submit monthly progress report (MPR) to MO-PHC
- ▶ Maintenance of record of ULF1-NLEP card

Roles of SHC-HWC Team under CHO

- | ASHA | MPW F/M |
|--|---|
| 1. Screening of assigned village/urban wards population for leprosy as per symptoms guide given in ACD&RS guidelines | 1. Support ASHA ensuring regularity and completion of treatment |
| 2. Refer suspected cases of leprosy for diagnosis and treatment to nearest health facility. | 2. Contact tracing of confirmed case of leprosy and administration of PEP as per standard guidelines |
| 3. Generating awareness to reduce stigma & encourage self-reporting | 3. Record keeping of contact tracing and PEP implementation |
| | 4. Detailed investigation of grade II disability cases in the field as per standard norms and submit report to the CHO on monthly basis |

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MYCOBACTERIAL INFECTIONS

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5. Encourage leprosy affected person to take treatment regularly and complete the treatment
6. Encourage leprosy disabled person to practice self-care (as advised by doctor/ Health worker) to prevent deformity
5. Demonstration of self-care activities to the patients having residual or new grade II deformities due to leprosy
6. Identify the adverse effects of MDT on new patients and counseling
7. Impart Health Education on Leprosy and its treatment to the community
8. Suspect new cases of leprosy and those with complications and refer them to PHC-HWC
9. Provide subsequent doses of MDT to patients ensure regularity and completion of treatment and assist health supervisor in retrieval of absentee/ defaulter
10. Update the case cards at SHC-HWC & treatment register at PHC-HWC
11. Assist leprosy disabled people in self-care practices, monitor them and refer them to PHC-HWC whenever required

Record Keeping

- ▶ Maintain HH level screening registers as given in the ACD&RS guidelines
- ▶ Maintain and share the information of missing members of the HH during house visits
- ▶ Filling and sharing of referral slip for suspects
- ▶ Follow up on MDT/ treatment cases for MDT completion

EPIDEMIOLOGY

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. It is a slow growing bacillus and one Leprosy bacillus takes 12–14 days to divide in to two. It is an acid-fast bacillus.

- ▶ **Source of Infection:** Untreated Leprosy affected person (Human beings) is the only known source for *M leprae*.
- ▶ **Portal of Exit:** The major sites from which bacilli escape from the body of an infectious patient is respiratory tract especially nose. Only small proportion of those suffering from Leprosy can transmit infection.
- ▶ **Transmission of Infection:** Leprosy is transmitted from untreated Leprosy affected person to a susceptible person through droplets, mainly via the respiratory tract.
- ▶ **Portal of Entry:** Respiratory route appears to be the most probable route of entry for the bacilli.
- ▶ **Incubation Period:** Incubation period for Leprosy is variable from few weeks to even 20 years. The average incubation period for the disease is said to be 5–7 years.
- ▶ **Host Factors Age:** Leprosy can occur at any age but is usually seen in people between 20–30 years of age. Increased proportion of affected children in the population indicates the presence of active transmission of the disease in the community. As the disease burden declines, it is seen more in older age groups.
- ▶ **Gender:** Disease occurs in both the genders. However, males are affected more as compared to females.
- ▶ **Immunity:** Occurrence of the disease depends on susceptibility/immunological status of an individual.
- ▶ **Socio-Economic Factors:** Leprosy is a disease generally associated with poverty and related factors like overcrowding. However, it may affect persons of any socioeconomic group.

The *Lepra* bacteria reside within nasal mucosa of the patient and spread infection to healthy persons through droplet infection while coughing/sneezing, contact with soil, used items as contaminated towels, etc. After entry from nose into healthy person, lepra bacteria take long time to show up as symptoms and signs. This time period may vary from few months to even more than 5 years. Patients who remain underdiagnosed and/or untreated are main sources of infection. Patients without apparent symptoms of infection are also a source of infection.

The risk of getting infection among household contacts is higher compared to persons with recent or occasional contact with leprosy patient. Many places have reported the disease among 2 or more or even all members of same family.

Disease affects everyone across ages, from younger children to elderly. However, in endemic areas, disease is usually acquired in childhood and a high prevalence of infection among children means that the disease is active and spreading.

CARDINAL SIGNS OF LEPROSY

Diagnosis of Leprosy is confirmed by eliciting at least one of the three cardinal signs of Leprosy through systematic clinical/bacteriological (whenever required) examination.

The three Cardinal Signs of Leprosy:

1. Hypo-pigmented or reddish skin lesion(s) with complete/partial sensory deficit
2. A thickened or enlarged peripheral nerve with loss of sensation and/or weakness of the muscles supplied by that nerve
3. The presence of Acid-fast bacilli in slit skin smears or histopathology presence of any one out of three cardinal signs is essential to diagnose Leprosy.



Fig.1: Presentation of Skin Lesions, Thickened/Enlarged Peripheral Nerve, Nodules on Ear, Type II Reaction and Lagophthalmos in Left Eye

The hypo-pigmented skin patch with sensory loss can be present anywhere on body, commonly over face, arms, back and chest. The most commonly felt thickened nerves are the ulnar nerve near elbow joint, popliteal nerve behind knee joint and greater auricular nerve behind the ear, which also pain on touch.

Patients who remain underdiagnosed or undertreated gradually develop other clinical features like loss of eyelashes and eyebrows, shiny skin with loss of hair and absence of sweating, nodules on skin, loss of sensation in palm (inability to feel hot/cold objects), weakness and numbness in hands and feet, followed in few months by severe progressive disabilities.

CLASSIFICATION

Treatment of leprosy under the programme is according to the type of disease. Classification of leprosy is based on the number of skin lesions, involvement of nerves and presence of the lepra bacteria in skin smear of the patient, as under.

MYCOBACTERIAL INFECTIONS

Characteristic	PB (Paucibacillary)	MB (Multibacillary)
Skin lesions	1-5 lesions with definite loss of sensation	6 and above with definite loss of sensation
Peripheral nerve involvement	No nerve/ only one nerve	More than one nerve
Skin smear	Negative at all sites	Positive at any site

MANAGEMENT AT SHC-HWC LEVEL

Any suspected case of leprosy, either presenting to the SHC-HWC or detected during Active Case Detection and Regular Surveillance (ACDRS) should immediately be referred to the Medical Officer at the PHC-HWC. The following signs should be carefully looked for to suspect a leprosy case:

1. Any change in the skin color (Pale or Reddish patches on skin) with partial or complete loss of sensation
2. Thickened skin on the patches
3. Shiny or Oily face skin
4. Nodules on skin
5. Thickening of ear lobe(s)/ Nodules on earlobe(s)/ nodules on face
6. Inability to close eye(s)/ watering of eye(s)
7. Eyebrow loss
8. Nasal infiltration (saddle nose deformity)
9. Thickened peripheral nerve(s)
10. Pain and/ or tingling in the vicinity of the elbow, knee or ankle
11. Inability to feel cold or hot objects.
12. Loss of sensation in palm(s)
13. Numbness in hand(s)/ foot/ feet
14. Ulceration in hand(s)/ painless wounds or burns on palm(s)
15. Weakness in hand(s) when grasping or holding objects; inability to grasp or hold objects
16. Difficulty in buttoning up shirt/ jacket etc.
17. Tingling in fingers(s)/ toe(s)
18. Tingling in hand(s)/ foot/feet
19. Ulceration in foot/ feet; painless wounds or burns on foot/feet
20. Clawing/ bending of finger(s)/ toe(s)
21. Loss of sensation in sole of foot/ feet
22. Weakness in foot/ feet/ footwear comes off while walking
23. Foot drop/ dragging the foot while walking

MYCOBACTERIAL INFECTIONS

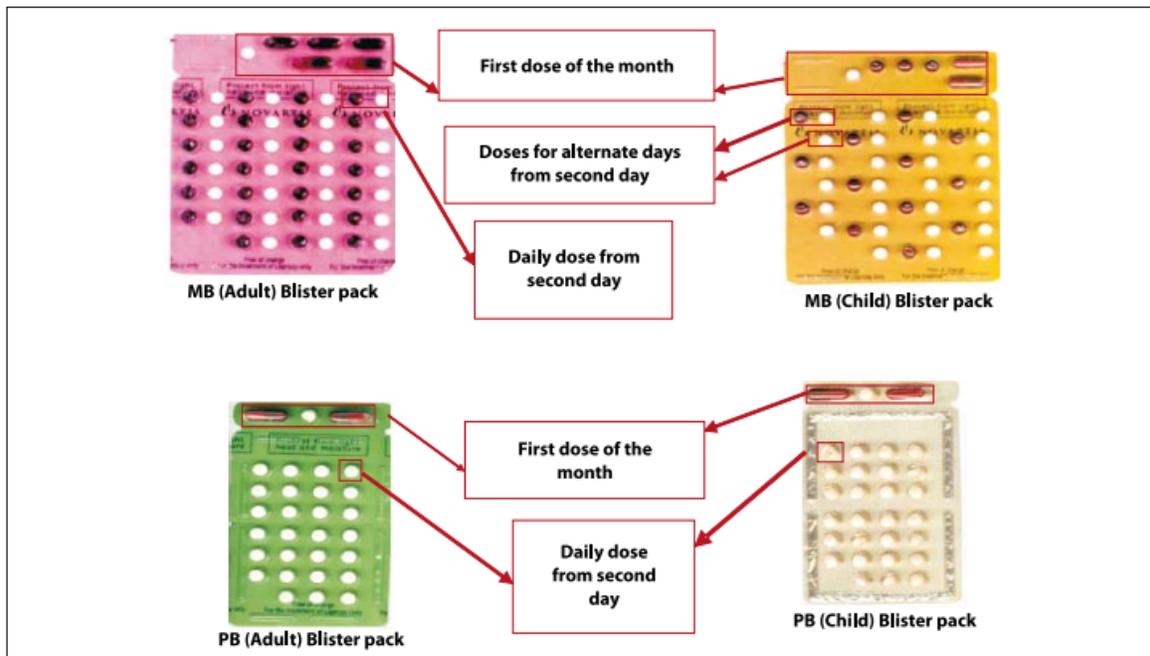
If ASHA suspects that a person screened is a “Suspect case”, she/ he will issue a Referral Slip to the Suspect with the advice to immediately visit the nearest SHC-HWC for final diagnosis by the CHO. A copy of the said Referral Slip shall also be handed over by the ASHA to the MPW F/M of the SHC-HWC/PHC-HWC/UPHC-HWC concerned within a day of screening of such Suspect. The CHO should diagnose the Suspect where a HWC is established. If, however, the CHO fails to make a final diagnosis, the Suspect should be referred to the MO-PHC for final diagnosis. The MO-PHC will confirm the diagnosis (based on clinical examination and slit-skin smear if available) and initiate the treatment (Multidrug therapy/MDT). CHO should follow up with the patient to find out their diagnosis and management advised at PHC-HWC to ensure treatment compliance.

After confirmation of a new case of leprosy, the CHO/PHC/UPHC Medical Officer will inform the concerned MPW F/M and ASHA and shall ensure screening of all the close contacts of such index case following Guidelines for Post Exposure Chemoprophylaxis shared earlier with all States/UTs. The close contacts of every ‘Index Case’ of leprosy shall be screened for signs or symptoms of leprosy by a regular trained health worker, under the overall supervision of the CHO/MO- PHC/UPHC. If a confirmed case of leprosy is found in the contacts, the treatment needs to be immediately initiated with MDT. For the remaining contacts, Single Dose of Rifampicin (SDR) is required to be administered as Post Exposure Chemoprophylaxis (PEP).

STANDARD TREATMENT

The Standard Adult Treatment Regimen for MB Leprosy		The Standard Child (Ages 10-14) Treatment Regimen for MB Leprosy	
Rifampicin	600 mg once a month	Rifampicin	450 mg once a month
Clofazimine	300 mg once a month, and 50 mg daily	Clofazimine	150 mg once a month, and 50 mg every other day
Dapsone	100 mg daily	Dapsone	50 mg daily
Duration: 12 months (12 blister packs)		Duration: 12 months (12 blister packs)	
The Standard Adult Treatment Regimen for PB Leprosy		The Standard Child (Ages 10-14) Treatment Regimen for PB Leprosy	
Rifampicin	600 mg once a month	Rifampicin	450 mg once a month
Dapsone	100 mg daily	Dapsone	50 mg daily
Duration: 6 months (6 blister packs)		Duration: six months (6 blister packs)	

MYCOBACTERIAL INFECTIONS



COMMON SIDE EFFECTS OF THE TREATMENT

1. **Orange Colored Urine:** Patient must be reassured and encouraged to continue treatment. The colour is due to Rifampicin, and it is not associated with any harmful effect on body. Urine colour would appear as normal after the treatment is stopped after completion of course.
2. **Brown Discoloration of Skin:** Patient should be counselled to not worry, as the discoloration is due to Clofazimine and it is reversible after the treatment is completed.
3. **Gastrointestinal Upset:** This is often observed among patient taking MDT. A short course of antacids over 5–7 days may help. It should not be repeated for longer than that and in cases when there is no relief, advice should be taken from MO-PHC.
4. **Anemia:** Paleness inside the lower eyelids, mouth and fingernails, tiredness, oedema of feet and breathlessness, Give anti-worm treatment and iron tablets. Continue Dapsone.

REGULARITY OF MDT

- ▶ Adequate counseling at the start of treatment will encourage the patient to be regular and complete the required number of doses of MDT.
- ▶ Patients who are absent should be contacted immediately to identify to reasons and take corrective actions.
- ▶ Flexibility in MDT delivery (more than one pulse/dose at a time) may be applied whenever it is essential. Patient in need may be provided Accompanied MDT (A-MDT).

Information to the patient's family at the starting of Treatment

a. Basic facts regarding the disease

- ▶ The disease is curable
- ▶ Patches may not disappear or sensory loss may remain even after completion of treatment. There is no need for further treatment.

b. About the treatment

- ▶ Duration of treatment
- ▶ Regularity of treatment
- ▶ The number of tablets/ capsules to be taken and their frequency
- ▶ Possible side effects
- ▶ Consult with doctor at the health center if any problem arising at any time, during or after treatment
- ▶ Possible obstacles to treatment and suggestion to overcome them
- ▶ Importance of self-care for patients with disability

c. Support to the patients for successful completion of treatment

d. Support to the patient's self-care practices

LEPRA REACTIONS

Leprosy reactions are inflammatory episodes that complicate the course of a *Mycobacterium leprae* infection. Leprosy reactions are immunological responses to *M. leprae* antigen. Reactions place a significant burden on leprosy services. Leprosy reactions may occur before, during, or after the successful completion of **Multi-Drug Therapy (MDT)**.

Sudden onset of acute inflammation of skin lesions, nerves, eyes and sometimes even in other internal organs, in leprosy affected person is indicative of reactions.

Types of Reactions

There are two types of Leprosy reactions. Both types can occur before the start of treatment, during treatment or after treatment has been completed.

Type 1 Reaction: Also called Reversal Reaction can occur in any patient with unstable CMI

Type 2 Reaction: Also called Erythema Nodosum Leprosum (ENL) occurs in patients with MB leprosy having a heavy load of bacilli

Patient with leprosy reaction needs to refer to PHC-HWC for treatment.

DISABILITY IN LEPROSY

Disabilities in leprosy are mainly due to damage to peripheral nerves. Nerve damage can occur as part of lepra reaction with signs of acute inflammation. It can also occur during the course of the disease without any obvious signs and symptoms of inflammation. Early detection and proper treatment of nerve function impairment will prevent the occurrence of disability.

GRADING OF DISABILITIES (WHO)

Grade – 0: No disability found

Grade – 1: Loss of sensation over skin supplied by any peripheral nerve. Weakness / paralysis of muscles and no visible deformity

Grade – 2: Weakness / paralysis of muscles, visible deformity, cannot count fingers at 6 meters distance, lagophthalmos, red eye, corneal ulcer etc. EHF score is the sum of the individual disability grades for each Eye, Hand and Foot.

DISABILITY PREVENTION AND MEDICAL REHABILITATION

If leprosy is not detected and treated early, it leads to multiple disabilities in late stages due to damage to nerves, eg., claw hand, foot drop, ulcers in hands and feet, inability to close eyes, corneal damage, etc. Reconstructive surgeries are conducted under the programme in recognized tertiary care facilities to correct these deformities in affected leprosy patients. Patients with deformities of feet are also prescribed special footwear called MCR under the programme.

SELF-CARE ACTIVITIES

Person with nerve function impairment is trained and encouraged to minimize their disabilities by practicing **self-care**.

IEC AND COUNSELLING

Encourage self-reporting of leprosy cases in the community and generate awareness to reduce stigma.

Following four key messages are suggested to generate awareness regarding leprosy in the community:

1. **Leprosy is Curable:** The disease is caused by leprosy germs and can be cured with medicines (MDT) that are available free of charge in all the health facilities.
2. **Early Symptoms of Leprosy:** Leprosy usually starts as a skin patch with loss of sensation or as numbness and tingling in hands and/ feet. Consult health worker on occurrence of any of these.
3. **Disabilities can be Prevented:** Early detection with appropriate treatment helps prevention of disability due to leprosy.

MYCOBACTERIAL INFECTIONS

4. **No Place for Segregation:** Leprosy is treatable and once on treatment patient does not infect others and hence there is no place for segregation of Persons affected by leprosy.
5. **Accept Persons Affected by Leprosy:** Persons affected by leprosy, once on treatment needs compassion and empathy. Discrimination of patients is in human

Interventions for reducing stigma may be required at five levels –Viz. intrapersonal, interpersonal, community, organizational/institutional and governmental level.

Role of HWC-SHC Level in Delivering Services under NLEP

1. Implementation of Active Case Detection and Regular Surveillance (ACD&RS) for leprosy in the villages under the jurisdiction of HSC-HWC as per ACD&RS Operational Guidelines 2020
2. Implementation of Post Exposure Prophylaxis for the close contacts of index cases in coordination with MO and in compliance with the PEP guidelines.
3. Refer all the suspect cases of leprosy to MO-PHC for confirmation of diagnosis and initiation of treatment
4. Dispensation of Multi Drug Therapy (MDT) to the confirmed leprosy cases as prescribed by MO PHC
5. Follow up the on MDT (on-treatment) cases and identify the early signs of reactions (Type I and II) /Neuritis and referral to MO-PHC for management
6. Maintain and update line list of Grade I and Grade II disability cases and new /old cases
7. Identification of eligible grade II disability cases for Reconstructive surgery and their referral to higher facility
8. Identification of early signs of disability and referral for physiotherapy and treatment to the higher facility.
9. Follow-up of Under Treatment (UT) and Released From Treatment (RFT) leprosy cases
10. Retrieval of Defaulters/dropout cases
11. Distribution of MCR to the eligible cases twice a year
12. Distribution of self-care kits to the eligible cases twice a year
13. Counseling of Persons Affected with Leprosy, and their family members
14. Active participation in Sparsh Leprosy Awareness Campaigns (SLAC) and awareness generation among general population regarding leprosy through appropriate IEC/BCC/ awareness generation tools
15. Supportive supervision of ASHAs and MPWs

National Tuberculosis Elimination Programme

India continues to be the country with highest Tuberculosis (TB) burden in the world in terms of the absolute numbers of new cases each year. About 18 lakh new cases were diagnosed with tuberculosis in 2020 and TB is the 5th leading cause of all deaths in India. Approximately 5% of the incident TB cases also suffer from HIV-AIDS, and death rate is much higher in them.

National TB control programme was operational in India since year 1962, which was reformed into Revised National Tuberculosis Control Programme (RNTCP) in year 1993. RNTCP focused on achieving a high detection rate with help of good diagnostics and cure rate with help of Directly Observed Short Course Treatment (DOTS) of tuberculosis with the broad aim to control the disease in the country. The programme also included activities for screening of all contacts by community health workers, providing special attention for patients with TB and HIV co-infection and ensuring social, nutritional and financial support to all TB patients.

The Government of India declared Tuberculosis a notifiable disease on 7th May 2012 and created an IT portal called Nikshay where all patients diagnosed with any form of tuberculosis are to be mandatorily registered. The Nikshay platform is used to register each and every patient diagnosed with TB and track and closely monitor their management and progress on real time basis.

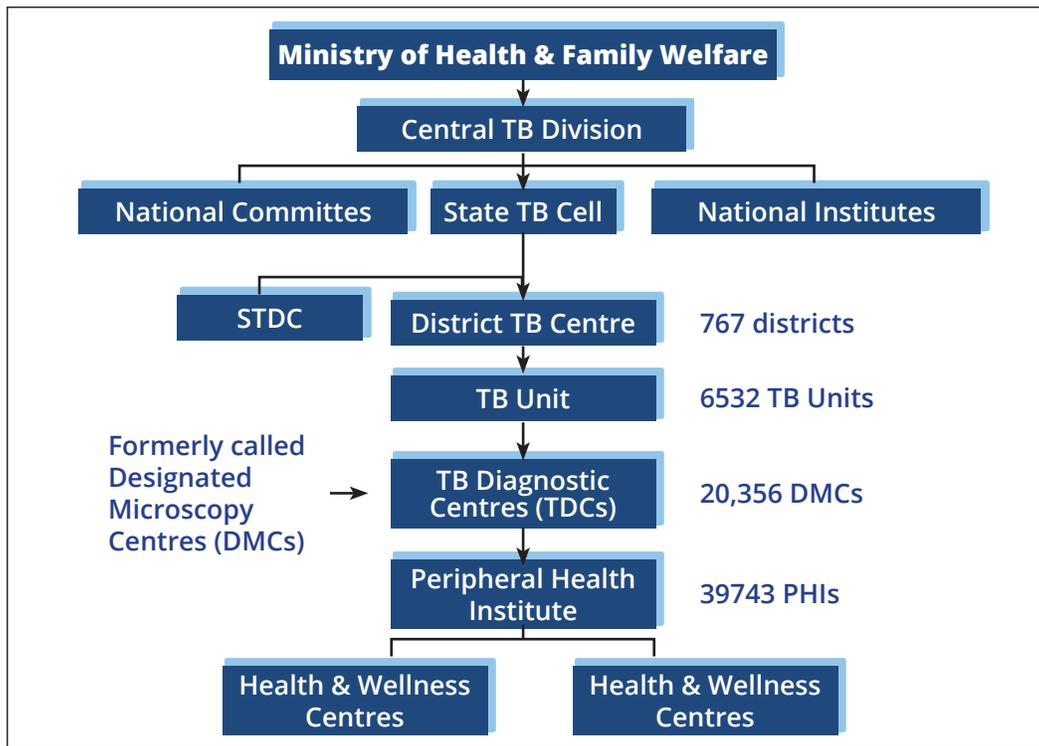
In 2017, the National Strategic Plan for Tuberculosis Elimination 2017–2025 (NSP 2017–2025) was formulated with a goal to achieve a rapid decline in burden of TB, morbidity and mortality while working towards elimination of TB in India by 2025. The implementation strategy for moving towards TB elimination has four strategic pillars of “Detect – Treat – Prevent – Build”.

In year 2020, RNTCP has been renamed as National Tuberculosis Elimination Programme (NTEP) with a goal to achieve SDG goals related with TB by 2025, five years ahead of the global timelines. The goals are as under:

- ▶ Reduce incidence rate of TB from that in 2015 by 80%
- ▶ Reduce number of TB deaths from that in 2015 by 90%
- ▶ Reduce % of TB- affected families facing catastrophic costs due to TB to 0

The organizational structure under NTEP is also follows:

MYCOBACTERIAL INFECTIONS



SERVICES PROVIDED UNDER NTEP

Under NTEP, services for diagnosing and treatment of TB patients are provided free of cost to all patients accessing public health facilities. Free drugs are also provided to patients in the private sector, if they wish to avail the same. All notified patients are also offered nutritional support under the Nikshay Poshan Yojana, DRTB patients are offered travel support for investigations and follow-up and patients from notified tribal areas are offered one time travel support.

NIKSHAY POSHAN YOJANA

Under the Nikshay Poshan Yojana, all patients notified on Nikshay Portal are offered nutritional support in form of Direct Benefit Transfer (DBT). At present, it is Rs 500/month for the entire treatment duration.

OTHER BENEFITS PAID TO TB PATIENTS

- ▶ TB patients currently residing in a Notified Tribal Block get one time financial incentive of Rs 750 for supporting their travel to health facility for diagnosis and treatment.
- ▶ DRTB patients are provided with support for meeting transport costs incurred by patient and a caregiver for travel to the DR-TB Centre for investigations and consultations.
- ▶ Support is also provided to DRTB patients for getting injections from a non-salaried personnel.

INCENTIVES PAID TO THE SERVICE PROVIDERS & COMMUNITY VOLUNTEERS:

- ▶ **Informer Incentive:** Any informer is paid Rs 500 on referral of a presumptive TB patient for investigation to government institutions, provided the individual is diagnosed with TB.
- ▶ **Incentives Paid to Treatment Supporters:** On completion of treatment of a DS-TB patient Rs 1,000. On completion of treatment of a MDR/XDR-TB patient (during initiation phase) Rs 2,000. On completion of treatment of a MDR/XDR-TB patient (during continuation phase) Rs 3,000
- ▶ **Incentives to Private Providers:** Private doctors are provided with an incentive of Rs 500 for notification of a TB patient on Nikshay Portal. Further, they also get an incentive of Rs 500 for reporting outcome of the treatment .
- ▶ **Incentives to Private Chemists:** Private chemists are provided with incentive for dispensing anti-TB drugs free of cost to patients in the private sector.

NATIONAL CALL CENTRE (NIKSHAY SAMPARK)

Patients can now provide feedback and report grievances to the system through the help desk mechanism, or submit to the DTO on paper or email. Toll free number is 1800-11-6666. Nikshay Sampark is operational in 14 languages for information, patient support, service linkage and grievance redressal.

Role of AB-HWC Sub Health Centres in NTEP

AB-HWCs can play an important role in TB prevention and care, especially by taking the services close to the community and undertaking TB prevention measures in the community, under the guidance and supervision of AB-HWC-PHCs. Details can be found in the “Operational Guidelines for TB Services at AB-HWCs”. The below diagram depicts the role of AB-HWC Sub Centre in the TB prevention and care.

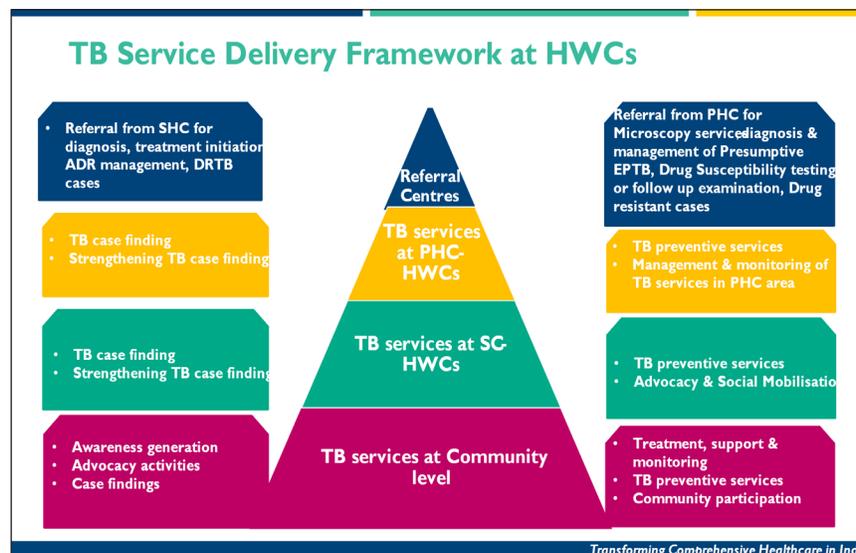


Fig. 1

Role of CHO

- ▶ Plan and monitor awareness and community mobilization activities
- ▶ Sensitize VHSNC members, Jan Arogya Samiti members, PRI members etc. on TB and their potential role in eliminating TB
- ▶ Screen person for symptoms of TB and ensure periodic screening of patients with diabetes and those on immunosuppressants, and smokers
- ▶ Refer the presumptive TB patient to PHC-HWC to ensure complete diagnostic evaluation with microscopy, radiology, molecular test
- ▶ Ensure follow up testing of patients at regular frequency
- ▶ Clinically monitor patients identified as high risk for complications/death and ensure that they undergo required investigations at suggested intervals
- ▶ Monitor treatment of patients through visits at least once a month and review treatment record on fortnightly basis. Support in retrieval of TB patients who have stopped taking anti-TB drugs before prescribed period
- ▶ Plan, organize and implement active case finding in their area
- ▶ Early identification of adverse drug reaction and prompt management
- ▶ Ensure comorbidity and drug susceptibility testing, linkages of comorbidity patients, and drug resistant TB patients
- ▶ Ensure inventory of laboratory request form, specimen container, anti-TB drugs
- ▶ Coordinate with PHC-HWC for logistics, patient's management
- ▶ Ensure record maintenance, reporting on NIKSHAY
- ▶ Identify and engage community treatment supporters and train them on supporting and monitoring TB treatment
- ▶ Educate patients and family members on TB, treatment, etc.
- ▶ Ensure screening and testing of contacts of sputum positive TB patients for TB/LTBI
- ▶ Coordinate with RBSK team and PHC MO for ensuring screening for pediatric TB
- ▶ Facilitate for ruling out TB complete evaluation by microbiological and/or radiological examination and/or other investigations for contacts of TB patients and others vulnerable for LTBI
- ▶ Ensure that eligible person undergo TB Treatment or TB preventive treatment as needed
- ▶ Identify potential TB champions among TB survivors and facilitate their participation in the programme
- ▶ Coordinate, guide and monitor village level activities for TB control

Roles of SHC-HWC Team under CHO

ASHA

- ▶ Awareness generation about TB in the village during home visits/survey, community meetings, VHSNDs etc.
- ▶ Filling of the CBAC forms and identification of presumptive TB patients in the community
- ▶ Mobilize and preferably accompany presumptive TB patients to the nearby AB-HWC-SHC
- ▶ Sample collection and transportation to PHI (SHC/PHC/UPHC) as per the local need/requirement, following essential infection practices such as hand-washing/hand sanitization, wrapping of sputum cup/falcon tube with tissue paper, carrying sample to PHI in zip-lock cover/leak proof container/box etc.
- ▶ Work as treatment supporter for local TB patients
- ▶ Submit patient's bank details to health facility for Nikshay Poshan Yojna
- ▶ Counsel patients on treatment adherence, nutrition, healthy life-styles and cough etiquettes
- ▶ Monitor the nutritional status of patients and provide feedback to MPW/CHO
- ▶ Ensure treatment adherence and timely follow up of patient
- ▶ Update TB patient's treatment cards/updation of health diaries provided by the health and wellness centres duly updating the family folders wherever required
- ▶ Alert patients for ADR, if any and facilitate seeking medical care
- ▶ Motivate household contacts of confirmed TB patients for undergoing TB screening and eligible contacts for taking complete chemoprophylaxis
- ▶ Participate in vulnerability assessment of population by doing household survey (during the CBAC enumeration and further annual exercises or other household level surveys done by AB-HWCs) and in active case finding among identified vulnerable population
- ▶ Discuss TB related agenda in VHSNC/MAS meetings

MPW F/M

- ▶ IEC and Social Behavior Change Communication (SBCC) activities for awareness generation
- ▶ Co-ordinate and participate in the outreach activities for patient support and regular active case finding
- ▶ Educate and screen pregnant women for TB and support pregnant women with TB to undergo TB treatment
- ▶ Mobilization of community members and leaders
- ▶ Refer patients for diagnosis and management
- ▶ Sample collection for transport to the nearest appropriate health facility/Referral Centre
- ▶ Home visits of patients for public health action
- ▶ Monitoring patient adherence and facilitate follow up and ADR management.
- ▶ Undertake minimum three visits to each DSTB patient and minimum six visits to DRTB patients during treatment
- ▶ Support in retrieval of TB patients who have stopped taking anti-TB drugs before prescribed period
- ▶ Supervision of treatment supporters in the area
- ▶ Work as treatment supporter
- ▶ Maintain of TB records
- ▶ Long term follow-up of treated patients every six months for next two years
- ▶ Map vulnerable population for Active case finding and screening and referral for LTBI
- ▶ Supply of drugs to treatment supporter

EPIDEMIOLOGY

Tuberculosis is caused by the bacteria *Mycobacterium tuberculosis*. Patients of tuberculosis are sources of infection; those with pulmonary and laryngeal TB are more infectious and releases loads of bacteria through sputum droplets during coughing. Patients are infective as long as they remain untreated.

Tubercular mycobacteria enter human body via inhalational route and settle in lung alveoli. This primary infection resolves spontaneously in many persons with good nutritional and immune status; while in remaining >10-15% people, symptoms of pulmonary disease become evident after an asymptomatic period of few days to weeks. Bacteria may also infect nearby bronchi by direct extension of infection or spread by infected sputum. Mycobacteria in some cases enter bloodstream, after which they can infect almost any tissue, any part of the body.

TB INFECTION AND TB DISEASE

- ▶ **TB Infection** is a state of persistent immune response to stimulation by *M. tuberculosis* antigens with no evidence of clinically manifested TB disease. [There is no gold standard test for direct identification of *M. tuberculosis* infection in humans. Most infected people have no signs or symptoms of TB but are at risk for developing TB disease. TB infection is also known as “latent TB infection” (LTBI), although this term is being discarded given that infection cannot always be considered latent.
- ▶ **Tuberculosis** is the disease that occurs in someone infected with *M. tuberculosis*. It is characterized by signs or symptoms of TB disease, or both, and is distinct from TB infection, which occurs without signs or symptoms of TB.

RISK FACTORS FOR TB

- ▶ Household contact with TB patients and contact at workplace
- ▶ Social factors such as poor housing, poor ventilation & sanitation, overcrowding
- ▶ Weak immune system: HIV/AIDS, Diabetes, Severe undernutrition
- ▶ Chronic bidi/cigarette smoking
- ▶ Occupational lung diseases, previous history of TB

Undernourished persons have a very high risk of developing tuberculosis compared to healthy persons. Not only that, but in undernourished persons, tuberculosis often develops rapidly, causes destruction at site of infection thus a severe form of disease and also has higher risk of complications and increased risk of death. Well-nourished patients with tuberculosis respond far better to anti-tubercular drugs as compared to those with poor nutritional status.

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The Determinants and Risk Factors of TB are Summarized as below:

Biological Determinants	Behavioural Determinants	Social Determinants	Occupational Determinants
People living with HIV (PLHIV) People recently infected with <i>M. tuberculosis</i> (within past 2 years) People with medical conditions known to increase the risk of TB Silicosis Diabetes Mellitus (DM) Severe kidney disease Cancer Immunosuppressive therapy (including prolonged use of corticosteroids, anti-cancer drugs)	Use of tobacco Alcoholism Undernutrition	Person who has just come into contact with a TB-infected person Areas with a large number of TB patients Slums and clusters where more people live in limited spaces Dark and moist places where there is no sunlight Persons living in poor ventilated spaces with limited or no air circulation	Mining work Quarry work Construction work Works with exposure to dust

CLINICAL FEATURES OF TUBERCULOSIS

Clinical presentation of tuberculosis is variable and depends on location of infection. Although tuberculosis can affect any organ in the body than hair and nail, the respiratory tract is the organ most commonly affected; Lungs followed by Pleura and Lymph Nodes. Other common sites of infection are abdomen (colon, urinary tract and uterine endometrium), meninges, spine, skin, etc.

Cases with multiple sites of tubercular infection are also seen; there may be 2, 3 or more sites of infection in one person and these patients would have all those symptoms and signs related to respective organ.

Some common nonspecific symptoms and signs that are commonly seen in all forms of tuberculosis are loss of weight, decreased appetite, intermittent fever, and night sweats. Weight loss is faster and progressive in pulmonary and intestinal TB.

Types of Tuberculosis

1. Pulmonary Tuberculosis:

- ▶ About 80–85% of all TB patients present with pulmonary form of disease. The most common presentation of pulmonary TB is persistent cough for 2 weeks or more, usually with expectoration associated with intermittent high grade fever. Sputum is usually thick, whitish and small in amount.
- ▶ Patients also complaint of shortness of breath, which progressively worsens as more parts of lung are destroyed by the infection and worst when both lungs are involved.

2. Extra-pulmonary Tuberculosis Sites:

TB can affect any part of the body, except hair and nail, and usually presented in:

- i. Pleura
- ii. Lymph nodes and skin
- iii. Meninges
- iv. Spine
- v. Abdomen
- vi. Genito-urinary tract

Diagnosis of TB Disease

TB can be diagnosed using the following diagnostic tests:

- ▶ Sputum smear microscopy – this is available at Designated Microscopy Centres where trained LTs are available. 2 samples of sputum are collected from the presumptive TB patient and are subjected to microscopy. Results are available within one day.
- ▶ Nucleic Acid Amplification Test (NAAT) – this is a molecular diagnosis, and the test can be done at facilities having CBNAAT or TrueNAAT machines. NAAT allows early detection of TB and Rifampicin resistance. The results are available within one day. Patients diagnosed are known as “microbiologically confirmed TB patients”.
- ▶ X-ray is also used to diagnose TB. Such patients are known as “Clinically Diagnosed TB patients.”

All TB patients are also offered Culture & DST test and LPA for further assessment resistance pattern for anti-TB drugs.

- ▶ Sputum culture and DST for diagnosis of DR TB – Sputum culture can be performed at high end labs only (usually known as C-DST labs). TB detection results by culture are available within 15 days (for positive) to 42 days (for declaring as negative). Culture positive samples are then subjected to Anti TB Drugs to evaluate susceptibility for which results are available within next 15–20 days.
- ▶ Line Probe Assay for diagnosis of MDR/XDR TB is also performed at high end labs.

MANAGEMENT OF TUBERCULOSIS AT HWC LEVEL

TB Case Finding

A. Who should you test for ‘Presumptive TB’?

Anyone with following symptoms shall be referred for test for “Presumptive Pulmonary TB”

- ▶ Any person with symptoms and signs suggestive of TB including: Cough >2 weeks, fever >2 weeks, significant weight loss, haemoptysis (blood in sputum)
- ▶ Children with persistent fever and/or cough >2 weeks, loss of weight or no weight gain, and/or contact with pulmonary TB cases must be evaluated for TB

MYCOBACTERIAL INFECTIONS

Anyone with following symptoms shall be referred for test for “Presumptive Extra Pulmonary TB”

- ▶ Anyone with presence of organ-specific symptoms and signs like swelling of lymph node, pain and swelling in joints, neck stiffness, disorientation, etc., and/ or constitutional symptoms like significant weight loss, persistent fever for two weeks or more, night sweats

B. Who should undergo clinical evaluation for TB?

- ▶ All people living with HIV (PLHIV), malnourished, diabetics, cancer patients, patients undergoing dialysis, patients on immunosuppressant or maintenance steroid therapy, chronic smokers.
- ▶ Enhanced case finding and contact screening should be undertaken in **high priority populations** listed in the table given below:

Clinical	Social	Geographical
Clients attending HIV Care Settings	Prisoners	Urban Slums
Substance abuse including smokers	Occupations with risk of developing TB	Hard to reach areas
Co-morbidities like Diabetes, patients on dialysis and long term immunosuppressant therapy	People in Congregated settings- night shelters, De-addictions centres, Old age homes	Indigenous and tribal populations
Healthcare Workers		
Household and work place Contacts		
Patients with past History of TB		
Malnourished		
Antenatal mothers attending antenatal clinics/ MCH clinics		

How to Conduct Case Finding Activities at Sub Health Centre HWC?

- ▶ Early identification of presumptive TB patients through screening for cough, fever, weight loss, blood in sputum, or night sweat should be undertaken during OPD and during Population Enumeration using the CBAC form or its updation, or during any other population-based activities by the HWC.
- ▶ Periodic TB screening (preferably once in a quarter) shall be undertaken among identified vulnerable population including diabetic patients, patients on immunosuppressants, smokers, etc.
- ▶ Presumptive TB patients should be referred to the nearest microscopy or molecular laboratory through laboratory request forms by MPW-Female/Male/CHO, with information provided to the PHC MO. Referral cases should be appropriately registered on Nikshay platform as presumptive TB patient by the SHC-HWC/ PHC-HWC/ UPHC-HWC and forwarded to the Designated Microscopy Centre (DMC) or the concerned laboratory.

Facilitated referral is preferable. Persons with symptoms of TB should be given sputum container and counselled for collection of good quality sputum in the morning, which can be taken to the laboratory for testing.

- ▶ Depending on local need and distance of laboratory, the SHC should be made the sample collection centre and adequate number of sputum containers should be stored at the SHC. Open area in the SHC campus should be identified for collection of samples. Both samples are to be packaged as per NTEP guidelines (<https://tbcindia.gov.in/index1.php?lang=1&level=2&sublinkid=4781&lid=3306> – Chapter 4) and are to be transported in the sample transport box to the nearest laboratory along with the completely and correctly filled laboratory request form. Sample transport arrangement to be made in consultation with MO-PHC for coordination, for feasibility and financial measures required for such arrangement and can include local volunteers, courier services, etc. Mechanisms created for sample transportation under NHM Free Diagnostic Services could also be utilized for sample transportation.
- ▶ If sample collection is not possible at the SHC-HWC, the presumptive TB patients should be referred to the PHC-MO for confirmation from the SHC-HWC level.
- ▶ Those identified with symptoms of Extra-Pulmonary TB should be referred the PHC-HWC MO for further examination and appropriate management.
- ▶ SHC should have adequate sputum collection containers (sputum cups and falcon tubes) and materials for sample packaging and transportation.

Treatment of Tuberculosis

The treatment for TB will be initiated by an MBBS Medical Officer.

TREATMENT REGIMEN IN NTEP

The TB Treatment involves four first-line anti-tubercular drugs and the entire treatment period is divided in to 2 phases as given under:

1. Intensive Phase

Isoniazid (H) + Rifampicin (R) +Pyrazinamide (Z) +Ethambutal (E) (HRZE) over 02 months

2. Continuation Phase

Isoniazid (H) + Rifampicin (R) +Ethambutal (E) (HRE) over 04 months

Calculation of Drug dosage for Adult TB

Weight category	Number of tablets (Adult FDCs)	
	Intensive phase HRZE 75/150/400/275 mg	Continuation phase HRE 75/150/275 mg
25-39 kg	2	2
40-54 kg	3	3
55-69 kg	4	4
>=70	5	5

COMMON SIDE EFFECTS & MANAGEMENT

- ▶ **Vomiting, Nausea with Medicines:**
 1. Mild and Occasional: Reassure patient that this is a common event with medicines and encourage to continue medicines
 2. Moderate and Recurrent: Assess for dehydration and presence of skin rash, jaundice, dark coloured urine and refer to CHC for liver function tests to check for drug induced hepatitis.
- ▶ **Orange coloured urine:** Tell patient that it is due to the medicines and this effect is not harmful to his/her body, advice to continue treatment
- ▶ **Skin rash, urticarial:** Assess general condition of patient, signs of sepsis and inform medical officer immediately, Refer accordingly for further care.
- ▶ **Inability to distinguish between different colours and decreased vision:** This is due to toxic effect of Ethambutol on eyes. Ethambutol alone should be stopped and rest medicines to be continued, evaluation by ophthalmologist is needed. Inform your MO and Refer patient directly to DH.
- ▶ **Decreased sensations and burning in soles and palms:** This could be due to injury to nerves from Isoniazid, treatment with Pyridoxine tablets is available. Inform your medical officer and continue medicines.

DRUG RESISTANT TB (DR-TB)

TB patients can develop resistance to first-line drugs if the treatment is taken irregularly or if the dose is inadequate, they suffer from drug-resistant TB or DR-TB. There is also a chance to get infected with DR-TB itself, if there is contact with DR-TB patient without adequate protections.

Drug Resistant TB can be in form of resistance to only one first line drug or more than one first line drugs. The different categories are summarised below:

Type of DRTB	Details
Mono-Resistance	A TB patient whose biological specimen is resistant to only one first-line anti-TB drug
Poly Drug Resistance	A TB patient whose biological specimen is resistant to more than one first-line anti-TB drug, other than both Isoniazid (INH) and Rifampicin (R)
Multi Drug Resistance (MDR)	A TB patient whose biological specimen is resistant to both Isoniazid and Rifampicin, with or without resistance to other first-line drugs, based on the results from a quality assured laboratory
Rifampicin Resistance (RR)	Resistance to Rifampicin detected using phenotypic or genotypic methods, with or without resistance to other anti-TB drugs excluding INH. Patients who have any Rifampicin resistance, should also be managed as if they are an MDR-TB case

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MYCOBACTERIAL INFECTIONS

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Isoniazid (INH) Resistant TB (HrTB)	A TB patient whose specimen is resistant to Isoniazid and susceptibility to Rifampicin has been confirmed
Extensive Drug Resistance (XDR)	An MDR-TB patient whose biological specimen is additionally resistant to a fluoroquinolone (ofloxacin, levofloxacin, or moxifloxacin) and a second-line injectable anti-TB drug (kanamycin, amikacin, or capreomycin) from a quality assured laboratory

Under the NTEP, all notified TB patients are offered NAAT test to know if they are sensitive to Rifampicin. This is termed as Universal Drug Sensitivity Test (UDST) for Rifampicin.

Who all are presumptive DRTB Patients?

- ▶ TB patients found positive on any follow-up sputum smear examination during treatment with first-line drugs, including those who are treatment failures
- ▶ Paediatric TB patients who are not responding to 1st line treatment
- ▶ Contacts of DRTB patients
- ▶ Patients with previous history of TB treatment
- ▶ New TB patients with HIV co-infection

DR-TB management has to be initiated only at district DR-TB or Nodal DR-TB centres. However for H/Mono Poly cases, the treatment can be initiated by MBBS Medical Officers at CHCs or PHCs.

Role of CHOs in DRTB Prevention & Management

- ▶ DR-TB can be prevented by effective implementation of the DOTS strategy and supporting patients in completing treatment of DS-TB.
- ▶ Early detection of DR-TB is important to interrupt transmission of this difficult-to-treat TB infection to others, to treat them, prevent death and reduce the chances of problems after treatment. CHOs can ensure that all TB patients are offered Universal Drug Sensitivity Test and follow-up sputum smear examination is carried out to monitor treatment.
- ▶ Supporting patients identified with DRTB:
 - Health education/counselling is provided to patient and family members by Nodal/District DR/TB Centre counsellors. CHOs can also counsel and educate the patient and her/his family about the need to continue with the treatment with the recommended drugs and duration as the patient may have taken incomplete treatment in the past leading to drug resistance.
 - Monitoring side effects and early referral for management is also very important as there are many side effects for the DRTB treatment.

TB AND COMORBIDITIES

Several medical conditions are risk factors for TB and poor TB outcomes. Similarly, TB can complicate the course of some diseases. It is therefore important to identify these comorbidities in people diagnosed with TB and manage both the conditions in order to ensure early diagnosis and improved outcome.

- ▶ **TB and HIV infection:** It is important to know whether the TB patients are co-infected with HIV and also whether PLHIV are having TB, so that appropriate management is initiated. All TB patients are offered HIV testing. This can be conducted at AB-HWC sub Centre also. All TB patients with HIV infection should receive a) co-trimoxazole as preventive therapy for other infections, and b) Anti-Retroviral Therapy (ART) as per recommended doses. CHOs shall also note that all diagnosed with HIV are offered TB testing at ART Centres. If they are co-infected with TB, TB treatment is initiated at ART centre itself. However, if they are not having TB, then they are offered 6 months TB Preventive treatment, as they have high risk of contracting TB.
- ▶ **TB and Diabetes Mellitus (DM):** People with diabetes have 2-3 times higher risk of TB. All TB patients registered under NTEP will be screened for diabetes at HWCs. TB patients diagnosed with diabetes will receive the same duration of TB treatment with daily regimen as non-diabetic TB patients.
- ▶ **TB and Malnutrition:** Undernutrition is considered as one of the risk factors in the development of TB, as it causes decreased immunity. People with TB and with severe acute malnutrition (SAM) or moderate undernutrition should be referred to the MO for further management.
- ▶ **Lactating women with active TB:** A lactating woman should receive a full course of TB treatment. Breastfeeding has to be continued. After ruling out active TB by the MO of PHC-HWC, the baby should be given 6 months of Isoniazid preventive therapy followed by BCG vaccination.
- ▶ **TB and Alcohol and Tobacco Addiction:** While registering as a TB patient, the status of addiction of alcohol / tobacco should be recorded in the patient records. If the TB patient is an addict, he/she should be counselled to quit it/ or linked to de-addiction services. They shall be monitored for treatment adherence very closely.

Role of SHC-HWC in TB Case Management and Support

- ▶ Stock and dispense anti-TB drugs supplied from NTEP to the TB patients in the SHC catchment area.
- ▶ Support TB treatment adherence of the patient: Following the prescription of anti-TB drugs by the MO, the primary health care team led by the CHO at SHC HWC will identify appropriate treatment supporter in consultation with the patient, train him/her on giving drugs to the patient, dispense drugs to treatment supporter or patients, counsel patients on treatment literacy, cough etiquette, nutrition, fall back system in case patient has to move during the treatment, etc.. SHC HWC can also act as treatment support centre for patients staying closer to it.

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- ▶ Execute public health action for all diagnosed TB patients: This will include home visits, counselling, contact investigation, testing of blood sugar (if not done), mobilization/referral for chemoprophylaxis and HIV testing (if not done) to PHC-HWC, sample collection and transportation for DST (if not done), linkages to Antiretroviral Therapy (ART_ centre / DRTB centres (if needed), collection of bank account details and entering the same on Nikshay for facilitating Nikshay Poshan Yojana DBT, monitoring for adherence to treatment and facilitating follow up examination.
- ▶ Clinically monitor patients who are identified as at- risk for complications or death and facilitate care from appropriate facilities, whenever required. This includes monitoring general condition, nutritional status and Hb measurement, blood sugar and blood pressure monitoring of TB patients.
- ▶ Co-ordinate with the STS of the area and ensure regular updation of the records in hard copies as well as in Nikshay. The visits to the patient's home can be coordinated with the STS of the area for better integration at the system level.
- ▶ Prevent treatment interruptions by regularly monitoring the patient's drug intake and counselling the patient whenever there is likelihood of treatment interruptions.
- ▶ Identify Adverse Drug Reactions (ADR) and refer to the referral centre for management of ADR.
- ▶ Collect and transport the samples for follow up to nearby DMC as per the local need.
- ▶ Carry out long term follow-up of treated patients for next 2 years at 6 months interval, with support from ASHAs and update the records accordingly. ASHAs will mobilize the treated TB patients for follow-up assessments.
- ▶ Provide palliative care and also facilitate post-treatment rehabilitation of TB patient.

Role of CHOs in TB Prevention

- ▶ Prevention of TB transmission in the community:
 - Educate the TB patients about cough etiquettes, proper disposal of sputum, need for completing treatment, etc.
 - Educate the family members and community about need for improving nutritional status.
 - Work with PRIs/VHSNC/other community groups, etc. to promote cough hygiene in the community, especially public places.
 - Counsel the community members who are chronic smokers or alcoholics along with their family members on its harmful effects.
 - Regularly visit families who use wooden chulahs / other smoke generating cooking methods / hookah and assess their respiratory health, especially of young children and elderly in the household.

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- ▶ Management of TB Infection for preventing active TB disease
 - Ensure screening of all eligible population for TB and TB Infection (TBI) identified during the population enumeration and CBAC filling exercise or any other population level survey/assessment.
 - Facilitate complete evaluation by microbiological and/or radiological examination and/or other investigations of persons likely to have TBI to rule out TB, in coordination with PHC HWC team.
 - Ensure that eligible persons undergo TB preventive treatment.
 - Follow up of patients for completion of TB preventive treatment.

Advocacy, Communication and Social Mobilization Activities

- ▶ Generate awareness in the community on nutrition and healthy eating habits utilizing the Eat Right toolkit
- ▶ Mobilize community, community leaders (religious leaders, school principals, women's Self-Help Groups, etc.) and PRI members for TB sensitization activities
- ▶ Facilitate and monitor TB control activities by VHSNC/MAS
- ▶ Present and review tuberculosis status in the villages during Gram Sanjeevani Samiti
- ▶ Identify TB survivors to volunteer for the community engagement activities and nominate them as members of the Jan Arogya Samitis

UNIT III

Sexually Transmitted Infections

- ▶ National AIDS Control Program
- ▶ HIV/ AIDS
- ▶ RTI/ STI

National AIDS Control Program

National AIDS Control Programme (NACP) was launched in India in 1992 to control HIV/AIDS infections in the country. The programme has significantly slowed down the spread of the disease since its launch, and currently aims to achieve end of AIDS as a public health threat by 2030. Currently National AIDS Control Programme (Phase-IV Extension) is under implementation as a 100% central sector scheme through 36 State/UT AIDS Control Societies and one Mumbai District AIDS Control Society in the country. NACP (National AIDS Control Programme) response to HIV/AIDS epidemic in India comprise a comprehensive three-pronged strategy of prevention, testing and treatment supported through critical enablers of Information Education Communication (IEC), laboratory services and strategic information management. Communities are at the centre of response and equity, gender and respect for the rights of communities were continuously adopted as guiding principles.

There are several activities within the package of services under the programme. Key components of the programme have been summarized below.

PREVENTION OF NEW INFECTION

1. **Targeted interventions for “high risk groups”** (female sex workers, transgenders, injection drug users, men who have sex with men) and “bridge population” (truck drivers and migrants) by behaviour change communication, condom distribution, needle syringe exchange programme, opioid substitution therapy, STI/RTI management, periodic HIV testing for early detection and subsequent initiation and retention on treatment services.
2. **Prevention of parent-to-child transmission** of disease by testing of pregnant women and HIV exposed infants followed by treatment of infected mother and need based prophylaxis/treatment of newborn as per guidelines.
3. **Promotion of blood safety** to prevent disease spread through blood transfusion.
4. **Condom promotion** to prevent disease spread through sexual route.
5. **People who have Sexually Transmitted Infections** have a higher risk of HIV infections. The prevention and control of STIs is a well-recognized, cost effective strategy for controlling HIV transmission and reducing reproductive morbidity.
6. **IEC activities** for awareness generation and through vibrant multi-media approach comprising mass media, mid-media, on-ground mobilization, inter personal communications, advocacy and partnerships in the country.

EARLY DETECTION OF HIV INFECTED PEOPLE

NACP provides HIV counselling and testing services for early detection of HIV infections as a core component of the programme. HIV counseling and testing services through HIV Counseling and Testing Services Centers are offered for

- ▶ High risk groups and their clients/partners
- ▶ Spouses/partners of HIV infected partners
- ▶ People having multiple sexual partners and their partners
- ▶ Pregnant women
- ▶ High-risk spouses/partners of pregnant women
- ▶ HIV exposed infants and children
- ▶ General population

CARE, SUPPORT AND TREATMENT OF HIV/AIDS PATIENTS

Through ART (Anti-Retroviral Therapy) centres, link-ART centers and Care and support Centers. These treatment services offer free standardized Anti-Retroviral Therapy (ART) for all diagnosed people living with HIV (PLHIV) as well as comprehensive management of opportunistic infections. 'Test and Treat' policy has been adopted to enhance the uptake of treatment services. First, Second and Third line ART is being provided for PLHIV. Single window delivery of TB and HIV services has also been initiated across all ART centers.

VIRAL LOAD SUPPRESSION

The state of health of a PLHIV on treatment can be safely determined by measuring the number of copies of HIV virus in the blood. It also indicates his/her response to treatment. Since its launch on 26 February 2018, the programme has progressively introduced routine viral load testing for all PLHIV, initially through a public private partnership and thereafter, through 64 molecular laboratories set up by the Government in the public sector.

LABORATORY SERVICES

Quality testing under NACP is ensured through a hierarchical network of laboratories for HIV diagnosis and monitoring of cluster of differentiation 4 (CD4) count and viral load testing of PLHIV as well as deoxyribonucleic acid (DNA) polymerase chain reaction (PCR) testing for early infant diagnosis.

STIGMA AND DISCRIMINATION

The **Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (Prevention and Control) Act, 2017** towards protecting and securing the human rights of persons who are infected or affected by HIV/AIDS or are vulnerable to the disease is under implementation. The Act prohibits discrimination or unfair treatment of HIV-infected people on any grounds.

MAINSTREAMING

Mainstreaming and Partnership is one of the key strategies in NACP to strengthen multi-sectoral response to HIV and AIDS. Till date, NACO has signed 18 Memorandum of Understanding (MoUs) with key Ministries/ Departments of Govt. of India.

STRATEGIC INFORMATION

Use of data is fundamental to National AIDS Response. The evidence based decision making is ensured through complementary systems of IT enabled client centric programme monitoring, epidemic surveillance and research focusing on high quality data collection, analysis and dissemination.

LINK WORKERS SCHEME

For covering rural population as a prevention programme which covers all High Risk Groups and also Vulnerable population, Antenatal Mothers, TB Patients & Known PLHIVs in the villages.

EMPLOYER LED MODEL (ELM)

Implemented by the employers (industries) envisaged to cater the informal labourers who are linked in the industries .ELM is being implemented by the employer (Industry) and HIV/AIDS services are provided to the labourer linked to them.

The control of Reproductive Tract Infections (RTI) and Sexually Transmitted Infections (STI) other than HIV/AIDS are also covered under NACP, since 1992 when the National STD Control Programme was merged with NACP. The RTI/STI control activities are early detection and treatment of these diseases and increasing awareness to control their spread. Early diagnosis, appropriate and complete treatment of STI/RTI reduces the transmission rate of HIV infection by more than 40% and hence the NACP provides quality standardized STI/RTI services at Designated STI/RTI Clinic (DSRC), branded as 'Surakhsa ' Clinic. Syndromic Case Management, with minimal laboratory tests is the cornerstone of STI/RTI management under NACP.

Role of CHO

- ▶ Identification of high risk persons and confirmation of diagnosis
- ▶ Initiation of free of cost treatment from ICTC centers and follow up including management of opportunistic infections
- ▶ Keeping privacy of information and identity of patient.
- ▶ Awareness among community to decrease stigma associated with the disease
- ▶ Ensure treatment compliance of the patients

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Roles of SHC-HWC Team under CHO

ASHA

1. Awareness generation for HIV prevention, testing promotion, treatment compliance and stigma reduction
2. IEC activities on HIV/AIDS and STI their spread and prevention
3. Distribution of condoms
4. Support behavior screening and referral of people with high-risk behavior to MO for cases for further services in context of HIV/AIDS and STI

MPW F/M

1. Awareness generation for HIV prevention, testing promotion, treatment compliance and stigma reduction
2. IEC activities on HIV/AIDS and STI their spread and prevention
3. Distribution of condoms
4. Support screening and referral of suspected STI and HIV/AIDS cases to MO for further services
5. Provide counseling and referral of pregnant women to HTCS through ANC clinics, group meetings and household contacts
6. Offer HIV screening services among pregnant women and people engaged in high-risk behavior using appropriate test kits
7. Follow-up screened reactive persons for their linkage to confirmatory centers and then their linkage to treatment centers if confirmed positive.
8. Counsel and motivate PLHIV for treatment compliance and periodic viral load testing Dispensation of anti-retroviral drugs to stable PLHIV

EPIDEMIOLOGY

Human immunodeficiency virus (HIV) is the virus that attacks and weakens immune system of an infected persons by destroying important white blood cells that fight disease and infection. As time passes, the virus destroys more and more of these cells and finally leads to a stage where the HIV infected persons become immune deficient. Acquired immunodeficiency syndrome (AIDS) is the advanced stage of HIV infection where immunodeficiency results in increased susceptibility to a wide range of infections (opportunistic infections), cancers and other diseases that people with healthy immune systems can fight off. Death among HIV infected people is mostly because of the opportunistic infections.

The virus is transmitted primarily through four routes:

- ▶ Unprotected sexual intercourse (vaginal and anal) with an infected partner
- ▶ Transfusion of infected blood and blood products (packed red cells, fresh-frozen plasma, platelets etc.)
- ▶ Sharing of unsterilized injecting drug equipment (needles, syringes etc.), and
- ▶ From infected mother to her baby during pregnancy, delivery or breastfeeding (Vertical transmission)

There is no definitive treatment that can completely remove HIV viral infection. Currently available medicines called as 'Anti-Retroviral Therapy (ART)' effectively help patients to keep minimum load of virus in blood, so that person has relatively well functioning immune system. This therapy if taken regularly results in significantly improved quality of life, prolongation of life and decreased rate of opportunistic infections. However, persons who are HIV-positive are infected for life and are also infectious until and unless they have achieved viral load suppression through life-long ART treatment,

It is estimated that, in the year 2019, 22 out of 10,000 adults (15-49 years old) in India were infected with HIV. However, there are States where the prevalence is much higher with 100 or more HIV infected persons among every 10,000 adults (15-49 years old). In 2019, there were around 69,200 new HIV infections in country and around 59,000 PLHIV died of AIDS related illness in the same year.

AT-RISK POPULATION

Under the National AIDS Control Programme, female sex workers (FSW), men who have sex with men (MSM), injecting drug users (IDU) and hijra/transgender (H/TG) people are considered as high-risk groups (HRG) as they are most at risk of acquiring and transmitting HIV because

of the high-risk behaviors in which they engage. In India, while overall, there are only 22 HIV infected people for every 10,000 adults (15-49 years) population, among IDUs there were 626 HIV infected IDU for every 10000 IDU population in 2017. Similarly, there are 314 HIV infected H/TG people for every 10,000 H/TG people. There are 269 HIV infected MSM people for every 10,000 MSM population while 156 HIV infected FSW for every 10,000 FSW population.

Another risk group are the bridge populations comprises of people who through close proximity to high risk groups are at the relatively higher risk of contracting HIV than the rest of the population. Quite often they are clients or partners of female sex workers. Truckers and migrant labors are major bridge populations. There are 86 HIV infected truckers among every 10,000 long distance truckers while 51 HIV positive migrants among every 10,000 positive single male migrants.

HIV negative spouses as well as other sexual/injecting partners of HRGs, bridge population and people living with HIV are other population group who are at-risk of acquiring HIV infections. The HIV sero-positivity among spouse/partner of HIV positive has consistently been in the range of 50%–52% from 2017–18 to 2019–20.

CLINICAL FEATURES

HIV infection is asymptomatic in the initial stage. The infected person can be an asymptomatic carrier for a variable period of time (few months to few years). AIDS is the end-stage of HIV infection, with the following three major symptoms:

- ▶ Weight Loss more than/ equal to 10% of body weight
- ▶ Chronic diarrhea for more than one month
- ▶ Prolonged fever for more than one month (intermittent or constant)

Signs of Opportunistic Infections that Occur as a Result of Reduced Immunity

- ▶ Persistent cough for more than one month
- ▶ Generalized pruritic dermatitis
- ▶ Generalized lymphadenopathy
- ▶ History of Herpes Zoster
- ▶ Oro-pharyngeal Candidiasis
- ▶ Chronic progressive or disseminated herpes simplex infection
- ▶ Fungal meningitis
- ▶ Cancers (Kaposi's sarcoma)
- ▶ General Lymphadenopathy

MANAGEMENT AT HWC LEVEL

(A) PREVENTION OF HIV AT HWC LEVEL

Following activities are to be undertaken as preventive measures at HWC level:

- ▶ Promotion of use of Condoms: Condoms, if used during intercourse properly and regularly, are effective personal protective measure to prevent spread of HIV infection. All

sexually active men, especially those with high risk sexual behavior should be counseled for using condoms.

- ▶ Screening of all pregnant women: It is possible to prevent transmission of infection from pregnant woman to her child; thus, all pregnant women should be screened and those found HIV positive should be referred to nearest HCTS Centres for further confirmation of diagnosis.
- ▶ All staff at SHC - HWC and PHC - HWC should be trained on how to prevent oneself from needle stick injuries and correct techniques of handling instruments, blood stained surfaces etc. All staff should follow proper Bio Medical Waste Management guidelines.
- ▶ Promotion of safer injecting among people who inject drugs: People engaged in high risk behaviors such as injecting drug users may be counselled on the risk of HIV transmission through sharing of used needles, syringes and injecting paraphernalia and may be referred to nearest TI-NGOs implementing harm reduction and drug dependency treatment services (such as IDU Targeted Intervention, Opioid Substitution Therapy centre, Deaddiction Centre/ Rehabilitation Centre etc.)

(B) SCREENING/ DIAGNOSIS

All SHC-HWCs have been provided with rapid kits for screening of HIV. This is not a confirmatory test and those persons who are screened positive must undergo confirmatory test that is available at block CHC or district hospital level in HIV/AIDS counselling and testing Services facilities. Those persons with negative test results from rapid test can be assured of not having active HIV infection. The persons with negative result showing high risk behaviors should be followed up regularly for early detection.

Following blood or sexual contact with HIV patient, the infection in the form of antibody response does not show up immediately on the test; it may take few weeks to turn positive and give negative test results till then. This is known as “Window Period”. Thus such cases with known exposure should undergo repeat screening test after 6 weeks.

Some groups of people who are at a high risk of HIV infection should undergo routine HIV screening:

- ▶ All pregnant women
- ▶ Babies born to HIV-positive women
- ▶ Children of women living with HIV
- ▶ Children presenting with suboptimal growth or severe acute malnutrition, delay in developmental milestones, oral thrush, severe pneumonia and sepsis
- ▶ Patients who present with signs and symptoms suggestive of HIV/AIDS
- ▶ Individuals who have faced sexual assault

SEXUALLY TRANSMITTED INFECTIONS

- ▶ Anyone (including hospital staff) who had needle prick injury or blood contact with HIV positive person
- ▶ All patients with TB or presumptive TB, Kala-azar, hepatitis B or C, or STI/RTI
- ▶ STI/RTI clinic attendees
- ▶ Sexual partners/spouses of PLHIV (People Living with HIV)
- ▶ Prison Inmates
- ▶ Persons who have undergone sexual assault
- ▶ Injecting Drug Users (IDU)
- ▶ Adolescents (age groups 10–19 years) with high risk behavior
- ▶ Needle sharing partners of HIV positive IDU

Health and wellness centers have a vital role to play in management of patients living with HIV, which includes both individual & community level actions and delivery of preventive as well as curative care services. It can be broadly divided into following components:

- ▶ Identification of high-risk persons and confirmation of diagnosis

Initiation of free of cost treatment from nearest ART Centre and follow up including management of opportunistic infections

- ▶ Keeping privacy of information and identity of patient
- ▶ Awareness among community to decrease stigma associated with the disease

(C) FOLLOW UP OF PATIENT LIVING WITH HIV AT SHC-HWC

- ▶ Evaluate if patient had lost any weight compared to that during his/her previous visit and record it, any change in his/her appetite, mental status, any stress at home, dependence for routine activities like eating, bathing, etc.
- ▶ Ask if patient has started having any new symptoms or old symptoms has not resolved and do careful relevant examination.
- ▶ Routinely check all patients for skin lesions, nail and hand hygiene, oral lesions, throat and respiratory tract infections and Screening of opportunistic infections like TB etc. should be done at every visit of the patient.
- ▶ Refer those with any problems to ART Centers, inform these centers if patient is not willing or unable to visit them and prepare plans accordingly.
- ▶ See treatment card of the patient and ask him/her if medicines are being taken regularly or not. Also look if patient has any complaints regarding medicines. Most patients will be taking multiple tablets at a time including ART drugs, antibiotics for prevention and/or treatment of infection and other supplements.
- ▶ Ensure confidentiality / privacy of the patient's name, symptoms, sexual history or any other information.

Sexually Transmitted Infections/ Reproductive Tract Infections

According to National Family Health Survey (NFHS) data, it is estimated that the prevalence of symptoms suggestive of STI/RTI in women is in the range of 23% to 43%, while in men it is in the range of 4% to 9%. The STI clinic based data indicates syphilis as the major prevalent STI among men (12.6-57%) followed by chlamydia (20%-30%), chancroid (9.9%-34.7%), and gonorrhoea (8.5%-25.9%).

EPIDEMIOLOGY

Sexually transmitted infections as the name suggests are transmitted from one person to another during unprotected sexual intercourse and primarily affect external and internal genital/ reproductive tract organs. The common STIs (excluding HIV/AIDS) are gonorrhoea, syphilis, genital herpes, bacterial vaginosis, genital warts, chlamydial infections, etc. Mostly patients develop a mild form of disease for initially, some of them progresses to severe illness that appears from spread of infection to other organs.

Reproductive tract infection is a broader term and includes STI and those infections of reproductive tract acquired by other routes as blood or by continuous spread from nearby organ.

EPIDEMIOLOGY

Sexually transmitted infections (STI) rank among the top five conditions for which sexually active adults seek health care in the developing countries. As per the community based STI/RTI prevalence study (2003), over 6% of the adult population in India suffers from one or the other STI/RTI episode annually. As per National Family Health Survey 2015–16, overall, 11 percent of women age 15–49 who have ever had sex and 8 percent of men age 15–49 who have ever had sex reported having an STI and/or symptoms of an STI in the past 12 months. Presence of a STI/RTI in the sexual partner increases the risk of acquisition of HIV from an infected partner by 8–10 fold. Effective control of STI/RTI is a strong and most cost effective strategy for reducing/preventing transmission of HIV.

Following are the high-risk behaviors for acquiring common STI/RTI:

- ▶ Multiple sexual partners
- ▶ Unprotected sex with infected individuals
- ▶ Unsafe blood transfusions

- ▶ Use of contaminated syringes and needles
- ▶ Poor menstrual hygiene
- ▶ Unhygienic practices by service providers during delivery, abortion, and IUCD insertion in women

Syndromes/ Common Symptoms of RTI/STI

Though STIs are caused by a variety of organisms causing localized infections of reproductive tract, there are some common symptoms and signs found in patients of STI/RTI. As it is difficult to make a confirmatory diagnosis of causative organism at the field level which are based on multiple advanced laboratory tests, the common symptoms and signs have been divided into syndromes for easy and effective diagnosis and treatment at primary care level facilities. This is called as 'Syndromic Approach for management of RTI/STIs'. These groups of syndromes are as follows:

- ▶ Vesicular and/or non-vesicular genital ulcers
- ▶ Urethral discharge
- ▶ Vaginal discharge
- ▶ Painful swelling in groins, scrotal swelling with/without discharge like Inguinal bubo (lymph node enlargement)
- ▶ Lower abdominal pain
- ▶ Scrotal pain
- ▶ Genital skin conditions as warts
- ▶ Ano-rectal discharge among MSM & TG

Syndromes with Variable Clinical Features of Different Infections are Summrised in the Table Given Below:

Table

S.No.	Cinical Features
A.	GENITAL ULCERS
1	Multiple, tiny, grouped vesicles, forming shallow ulcers, develop within a day or 2 days and resolve in 2-4 weeks time, Symptoms may reappear (multiple episodes) among more than 50% of the persons
2	Primary Syphilis: Painless single ulcer on a genital area e.g. penis, scrotum, anus, rectum, labia or cervix. They are usually singular, hard and non-itchy. Enlarged, rubbery inguinal lymph nodes are also present. Secondary Syphilis: usually develops 3 months after primary infection. Signs and symptoms include: skin rash – hands and soles of the feet (not usually itchy or painful), fever, malaise, arthralgia, weight loss, headaches, etc. Teritary (late) Syphilis: develops in 25% of untreated cases. Usually fatal due to involvement of heart, great blood vessels and brain

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SEXUALLY TRANSMITTED INFECTIONS

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3	Chancroid: Multiple painful dirty ulcers anywhere on the external genitalia with development of painful enlarged lymph nodes in the groin.
4	History of small, usually painless papules (like pimples) around the penis or vulva followed by enlarged lymph nodes in the groin ultimately breaking down forming multiple fistulae (draining openings)
B.	URETHRAL DISCHARGE
5	In women: Burning micturition along with pus discharge mixed with urine, often associated with pain on passing urine and inflamed (red and tender) urethral opening; In Men: pus discharge per urethra, often associated with pain on passing urine (dysuria), periurethral abscess
C.	VAGINAL DISCHARGE (Due to Vaginal or Cervical Infection)
6	Profuse watery vaginal discharge with fishy odour and greyish colour
7	Trichomoniasis: White or often greenish, frothy, watery vaginal discharge in large amount
8	Vaginal Candidiasis: Curdy white thick discharge with moderate to intense vaginal/vulval itching
9	Asymptomatic pus discharge from cervix
D.	LOWER ABDOMINAL PAIN
10	Pelvic inflammatory disease (PID): Menstrual irregularities like heavy irregular vaginal bleeding (dysmenorrhoea), dyspareunia (pain during sexual intercourse), burning micturition (dysuria), low backache, vaginal/cervical discharge, congestion or ulcers, lower abdominal tenderness or guarding, uterine/adnexal tenderness, cervical movement tenderness, presence of a pelvic mass
E.	SCROTAL SWELLING/PAIN
11	Epididymo-orchitis: Acute: severe pain and swelling over one or both testes.
F.	GENITAL SKIN CONDITIONS
12	Genital Warts: Single or multiple soft, painless, "cauliflower" like growths which appear around any of these sites: anus, vulvo- vaginal area, penis, urethra and perineum
13	Molluscum contagiosum: Multiple, smooth, glistening, globular painless papules of varying sizes from a pinhead to a split pea can appear anywhere on the body. Sexually transmitted lesions on or around genitals can be seen.
14	Pediculosis pubis: There may be small red itchy papules with a tiny central clot caused by lice irritation.
15	Genital scabies: Severe pruritis (itching) is experienced by the person that becomes worse at night.

MANAGEMENT AT SHC-HWC LEVEL

- ▶ At SHC-HWC level it is important to pick up these syndromes based on history of symptoms, with help of specific questions and confirm the findings with careful examination as a first step. These identified cases should be referred to the PHC - HWC Medical Officer and should complete the full course of medicines as advised by MO.
- ▶ Keeping privacy of the patient's name, symptoms, sexual history, or any other information is of vital importance; this would build confidence among patients.
- ▶ Patient should be reassured before examination and permission for examination should be specifically asked for. Examination should be conducted at a designated area so that dignity of the patient is maintained. A female attendant should always be present during examination of a lady with symptoms of RTI/STI.
- ▶ Patients with RTI/STI need to be told that their symptoms are of a sexually transmitted illness. Thus, it is necessary to assess their sexual partner for any complaints and give them appropriate treatment; otherwise the infection would reappear frequently.
- ▶ Women should also be counseled to keep a good menstrual hygiene. Utilization of old, unhygienic clothes for cleaning menstrual blood should be strictly prohibited and advice for using sanitary napkins and/or menstrual cups should be encouraged.
- ▶ Men should be encouraged to keep general cleanliness of genital area and to use condom for both contraception and prevention of STIs.
- ▶ Activities to raise awareness regarding prevention of these diseases should be undertaken to reduce misconceptions and stigma regarding RTI/STI among people.

UNIT IV

Rabies

- ▶ National Rabies Control Program
- ▶ Rabies

National Rabies Control Program

Rabies is an acute viral encephalitic disease which is fatal. It is spread by contact with saliva of infected animals through bites, licks and scratches. Even though human deaths from rabies are significantly underreported, an estimated 20,000 deaths occur every year in India.

The National Rabies Control Programme was approved during 12th FYP to be implemented under the Umbrella of NHM to address the problem of rabies in the country. The programme is being implemented in all states and UTs.

The Main Objectives of the Programme

- ▶ Training of health care professionals on appropriate animal bite management and Post Exposure Prophylaxis for rabies.
- ▶ Implementation of Intradermal route of Post exposure prophylaxis for animal bite victims and Pre exposure prophylaxis for high risk individuals.
- ▶ Strengthening of Human Rabies Surveillance System.
- ▶ Strengthening of Regional Laboratories under NRCP for Rabies Diagnosis.
- ▶ Creating awareness in the community regarding the disease and its prevention.

Role of CHO

- ▶ Awareness generation on rabies and post exposure prophylaxis.
- ▶ Administering tetanus toxoid according to the category of the wound
- ▶ Ensuring administration of full course of Anti-Rabies Vaccine

Roles of SHC-HWC Team under CHO

- | ASHA | MPW F/M |
|--|--|
| 1. Raising awareness on rabies and post exposure prophylaxis | 1. Raising awareness on rabies and post exposure prophylaxis |
| 2. Referral of cases of animal exposure | 2. Referral of cases of animal exposure |

EPIDEMIOLOGY

Rabies, also known as hydrophobia, is an acute, highly fatal viral disease of the central nervous system, caused by rabies virus. It is primarily a zoonotic disease of warm-blooded animals, particularly carnivorous such as dogs, cats, jackals and wolves. It is transmitted to man usually by bites, scratches or licks of rabid (rabies infected) animals. In India, dogs are responsible for about 97% of human rabies. Other animals which can spread rabies are cats, monkeys, cattle, mongoose and all wild animals. Rabies is not transmitted through bats in India.

The virus spreads from the bite/scratch wound through the peripheral nerves to the central nervous system and then throughout the body which cause symptoms. The incubation period in man is highly variable, commonly 1–3 months following exposure but may vary from 7 days to many years depending on site and severity of bite, number of wounds, amount of virus, species of animal, protection provided by clothing and treatment undertaken, if any.

CLINICAL FEATURES

Prodromal Symptoms: Headache, malaise, sore throat, slight fever lasting for 3–4 days and pain or tingling at the site of the bite.

This stage is followed by widespread excitation and stimulation of all parts of nervous system. The patient is intolerant to noise, bright light or a cold draught of air. There are increased reflexes and muscles spasms along with dilatation of pupils and increased perspiration, salivation and lacrimation. Mental changes include fear of death, anger, irritability and depression. The duration of illness is usually 2-3 days and death usually occurs due to respiratory or cardiac arrest, or due to convulsions and coma.

MANAGEMENT AT SHC-HWC LEVEL

POST EXPOSURE PROPHYLAXIS

Since rabies is a fatal disease, all efforts should be made to prevent it. The time immediately after animal exposure is crucial to prevent the disease. Prevention of rabies after animal exposure is called Post Exposure Prophylaxis (PEP). PEP depends on the type of exposure, which is divided into three categories.

The post-exposure prophylaxis is a three-pronged approach:

- ▶ Management of animal bite wound(s)
- ▶ Passive immunization with Rabies Immunoglobulin (RIG)
- ▶ Active immunization with Anti-Rabies Vaccines (ARV)

RABIES

Table

Category	Type of Contact	Type of Exposure	Management
I	Touching or feeding of animals Licks on intact skin	None	None, if reliable history is available
II	Nibbling of uncovered skin Minor scratches or abrasions without bleeding	Minor	Wound management Anti rabies vaccine
III	<ul style="list-style-type: none">• Single or multiple transdermal bites or scratches• Licks on broken skin• Contamination of mucous membrane with saliva	Severe	Wound management Rabies immunoglobulins Anti rabies vaccine

Although all three, carry equal importance and should be done simultaneously as per the category of exposure, Management of wound is only possible approach that may be performed at SHC-HWC level and should be done immediately before referral of patient to the PHC - HWC for ARV and RIG.

MANAGEMENT OF ANIMAL BITE WOUND(S)

Immediate washing of the wound(s) is a priority. Wound(s) toilet can be done by prompt and gentle thorough washing with soap or detergent and flushing the wound(s) with running water for at least 10 minutes. If soap and detergent are not immediately available wash with running water.

The application of irritants (like chilies, oil, turmeric, lime, salt, etc.) is damaging and should be strictly avoided. In case irritants have been applied on the wound(s), enough gentle washing with soap or detergent to remove the external applicant/s should be done followed by flushing with copious amount of water immediately.

Application of antiseptics: After thorough washing and drying the wound(s), any one of the available chemical viricidal agents should be applied, such as povidone iodine, alcohol, etc.

Suturing of wound(s) should be avoided as far as possible since it can lodge the virus deeper into the wound(s). If surgically unavoidable, after adequate cleansing, suturing should be done a few hours after rabies immunoglobulin has been infiltrated in the depth and around the wound(s). and suturing should be delayed by a few hours. Minimum loose sutures may be applied for arresting the bleeding in life threatening situations.

Tetanus toxoid injection should be given to all Category II and III exposures. Antibiotic prophylaxis should be given if required. To prevent sepsis in the wound(s), a suitable course of an antibiotic may be recommended.

PASSIVE IMMUNIZATION WITH RIG

All Category III exposures require RIG to be infiltrated and injected around and into the wound(s). This neutralizes the virus at the site of bite and prevents rabies.

ACTIVE IMMUNIZATION WITH ARV

All Category II and III wounds require a full course of Anti-Rabies Vaccine to be taken over a month.

People with Category II and III exposures should immediately be referred to the PHC – HWC for ARV and/or RIG after ensuring wound care.

PRE-EXPOSURE PROPHYLAXIS

Individuals at high risk of animal exposure can be given a course of ARV which protects them against rabies. This is called Pre Exposure Prophylaxis (PrEP). If a person who has taken full course of PrEP has an animal exposure in the future, RIG is not required to be given and only booster dose of ARV is sufficient to protect him/her against rabies.

AWARENESS GENERATION

IEC activities should be conducted to raise awareness regarding rabies, its spread and prevention by immediate and timely care-seeking, and to break myths and misconceptions regarding the disease which are highly prevalent in rural areas. It is also important to educate people regarding avoidance of harmful practices like applying turmeric, chili etc. on the wound.

UNIT V

Viral Hepatitis

- ▶ National Viral Hepatitis Control Program
- ▶ Viral Hepatitis

National Viral Hepatitis Control Program

The Government of India (GoI) launched National Viral Hepatitis Control Program (NVHCP) in 2018, in alignment with Sustainable Development Goal (SDG) 3.3 “.....combat hepatitis.” The program envisages prevention through awareness generation and management of viral hepatitis by providing free diagnosis and treatment.

AIM

1. Combat hepatitis and achieve country wide elimination of hepatitis C by 2030.
2. Achieve significant reduction in the infected population, morbidity and mortality associated with hepatitis B and C viz. liver cirrhosis and liver cancer.
3. Reduce the risk, morbidity and mortality due to hepatitis A and E.

Components under NVHCP

Preventive component	Diagnosis and Treatment	Monitoring & Evaluation, Surveillance and Research	Training and Capacity Building
Awareness generation & behaviour change communication	Screening/diagnosis by serological tests	Hepatitis information and management portal	Digital & conventional training program with standardized modules
Immunization for hepatitis B – birth dose, high risk groups, health care workers	Treatment of uncomplicated cases - at treatment centres, drug dispensation upto HWC	Indicator based monitoring of the program	Induction & refresher trainings
Injection Safety by use of Reuse Prevention (RUP) syringes	Treatment of complicated cases at model treatment centres	Review meetings	Facilitation through tele-consulting
Safe socio-cultural practices	Referral and linkages		
	Uninterrupted supply of drugs		

SERVICE DELIVERY

NVHCP envisages free diagnosis and management of hepatitis B & C.

The implementation framework is given below:

VIRAL HEPATITIS

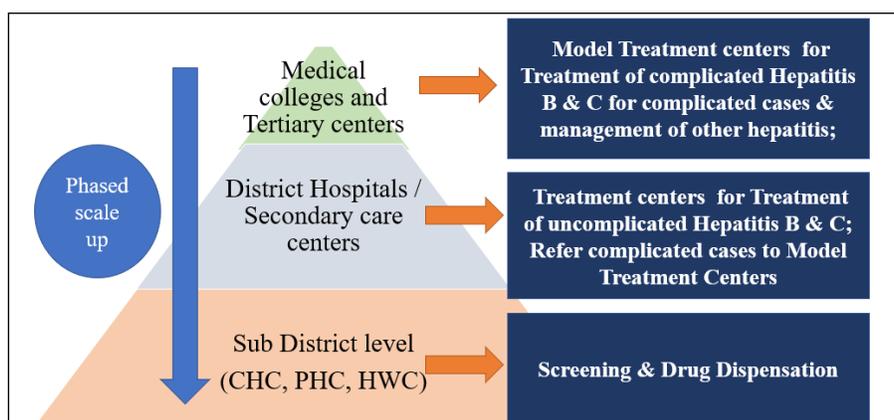


Fig. 1: Framework for Service Delivery

AWARENESS GENERATION MESSAGES

- ▶ Hepatitis B/C is silent i.e. remains without symptoms for years and if not treated can lead to serious liver problems like liver cancer.
- ▶ Hepatitis B can be prevented by timely vaccination of the new born.
- ▶ Ensure display of IEC material at HWC at prominent places.
- ▶ National Viral Hepatitis Helpline No. 1800-11-6666.

Role of CHO

- ▶ Screening of pregnant women for hepatitis B using Rapid Diagnostic Test Kits
- ▶ Screening of HBV and HCV of high-risk groups e.g. Intravenous Drug Users, recipients of multiple blood transfusions, commercial sex workers, etc. using Rapid Diagnostic Test Kits
- ▶ Ensure referral of the Hepatitis B positive women after delivery to MTC/TC for further evaluation & management
- ▶ Drug dispensation after prescription by MO for treatment of HBV and/or HCV, on a monthly basis from the HWC
- ▶ Supervision of MPWs undertaking home visits to ensure follow up regarding appointments at HWC for collection of medicines, treatment adherence and any side effects
- ▶ Monthly reporting format to be filled and submitted to the PHC-HWC MO
- ▶ Ensure availability of kits/drugs by timely indent to avoid stock outs
- ▶ Awareness generation

Roles of SHC-HWC Team under CHO

ASHA

1. Raising awareness on hepatitis
2. modes of transmission
3. prevention
4. Mobilize all pregnant women for screening of Hepatitis B
5. Ensure and facilitate referral for institutional delivery of the pregnant women if screened positive for hepatitis B & receipt of birth dose of hepatitis B vaccine & HBIG to new born
6. Record keeping and documentation of hepatitis B positive pregnant women along with their Expected Date of Delivery (EDD)

MPW F/M

1. Raising awareness on hepatitis
2. modes of transmission
3. prevention
4. Conduct & ensure screening of hepatitis B in pregnant women & hepatitis B & C in High Risk Groups
5. Ensure referral/facilitate for institutional delivery of the pregnant women if screened positive for hepatitis B & receipt of birth dose of hepatitis B vaccine & HBIG to new born
6. Follow up of the patients for treatment adherence & any complications
7. Follow up of patients regarding appointments at HWC for collection of medicines, treatment adherence and any side effects
8. Record keeping and documentation

EPIDEMIOLOGY

Viral hepatitis is a global public health problem of epidemic proportions that caused 13.4 lakhs deaths in 2015 a number comparable to deaths caused by tuberculosis and higher than those caused by HIV. Due to paucity of national representative data the exact burden of disease in India cannot be established. However, based on some regional level studies it is estimated that in India, approximately 4 crores are chronically infected by hepatitis B and 0.6 –1.2 crores with hepatitis C.

CLINICAL FEATURES

Viral hepatitis can be caused by the five known hepatitis viruses—A, B, C, D and E (HAV, HBV, HCV, HDV and HEV). Acute hepatitis presents with yellowish discoloration of sclera (jaundice) and skin (serum bilirubin above 2.5mg/dL) and serum alanine aminotransferase (ALT) is more than 10 times the upper limit of normal.

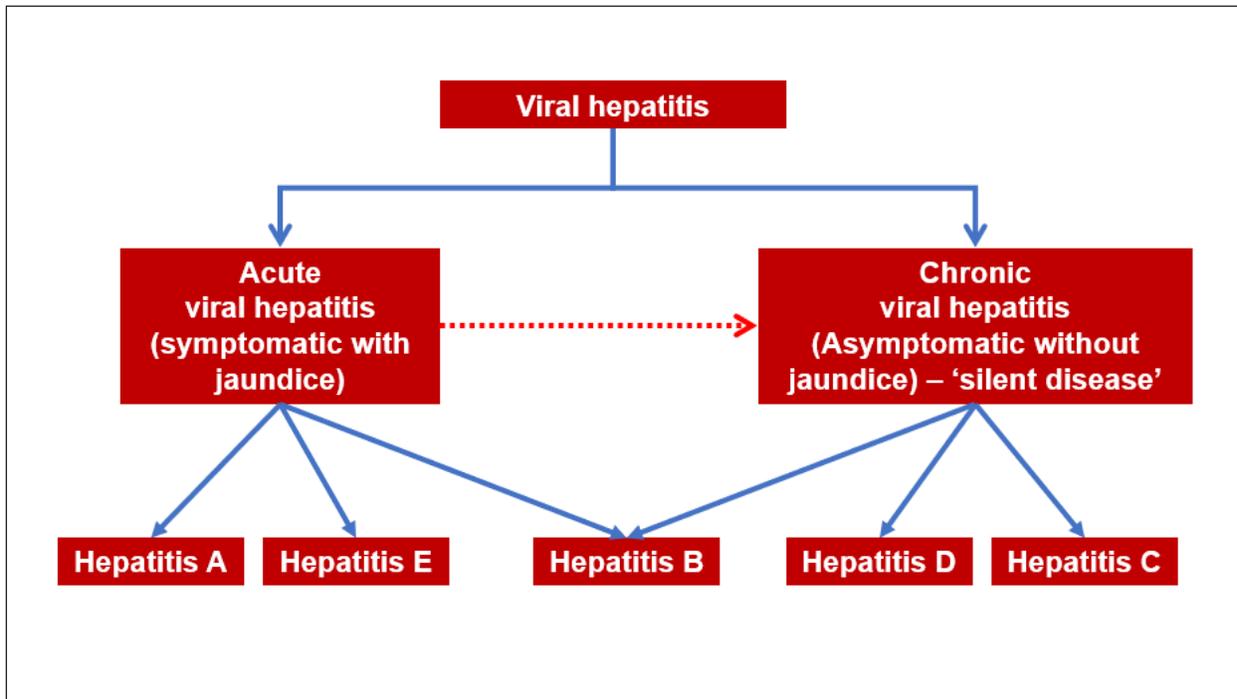


Fig.1

VIRAL HEPATITIS

Table 1: Salient Features of Different Types of Viral Hepatitis

Virus	HAV	HEV	HBV	HCV	HDV
Incubation period	15–45 days	14–60 days	30–180 days	15–160 days	30–180 days
Mode of transmission	Faecal-oral		<ul style="list-style-type: none"> •Blood/ Blood products; •Mother to child; •Sexual etc. 		
Signs & Symptoms	Yellowish discoloration of sclera (jaundice) and skin; Dark urine and clay coloured stools; Non-specific constitutional symptoms —low-grade fever nausea and vomiting, fatigue, loss of appetite etc. *In case of signs & symptoms in pregnant women immediate referral to higher facility for management.		Asymptomatic (mostly) May manifest as hepatic failure (jaundice, peripheral edema, blood in vomitus etc).		
Complications like cirrhosis, liver cancer etc.	No		Yes		
Vaccine available	Yes	No	Yes	No	No

MANAGEMENT AT SHC- HWC LEVEL

PREVENTION

Awareness generation & outreach activities regarding preventive measures need to be carried out at the SHC-HWC and community level

HEPATITIS A AND E

- ▶ Promote and advocate safe water, hygiene and sanitation: washing hands after using the toilet and before eating food; safe drinking water–boiled/ filtered/ packaged/ safe portable etc., ensure safe disposal of human excreta, avoid open defecation
- ▶ Promote and advocate for safe food: ensuring that eating well cooked and appropriately stored food items; avoiding or peeling fruits and vegetables that may have been washed or grown in contaminated water etc.

HEPATITIS B AND C

Vaccination

- ▶ Ensure hepatitis B birth dose to all newborn (within 24 hours of birth), followed by three doses at 6, 10 and 14 weeks to complete the schedule
- ▶ Vaccination of all healthcare workers with hepatitis B vaccine at 0,1 & 6 months

Safety of Blood and Blood Products

- ▶ Promote information regarding availability of safe blood at licensed blood banks

Harm Reduction in High Risk Groups

- ▶ Prevention package is similar to that under NACP i.e. behavioural change communication, condom promotion, community mobilization and enabling environment, and linkages to TC/MTC for further management
- ▶ Screening of pregnant women for hepatitis B using Rapid Diagnostic Test kits
- ▶ Screening of HBV and HCV of high-risk groups e.g. Intravenous Drug Users, recipients of multiple blood transfusions, commercial sex workers, etc. using Rapid Diagnostic Test kits (Annexure 2)

Injection Safety and Infection Control

- ▶ Limit use of unnecessary injections and promotion for use of Reuse prevention syringes when needed.
- ▶ Safe injections practices while respecting the socio-cultural practices like tattooing, religious ceremonies (e.g. mundans), ear/body piercing etc.

DIAGNOSIS AND MANAGEMENT

APPROACH TO A PATIENT

Viral hepatitis B & C are usually a silent disease (asymptomatic). A patient may present at a healthcare setting with or without jaundice. Ensure testing of all pregnant women or persons in the high-risk categories. After the patient has been tested & found positive for viral hepatitis, s/he will be referred to MO for further evaluation and management. In case of the treatment initiation by the MO, the drugs for hepatitis B and C may be dispensed monthly after ensuring compliance at SHC-HWC as per national guidelines. The patient is to be followed for treatment adherence and any side effects of the drugs.

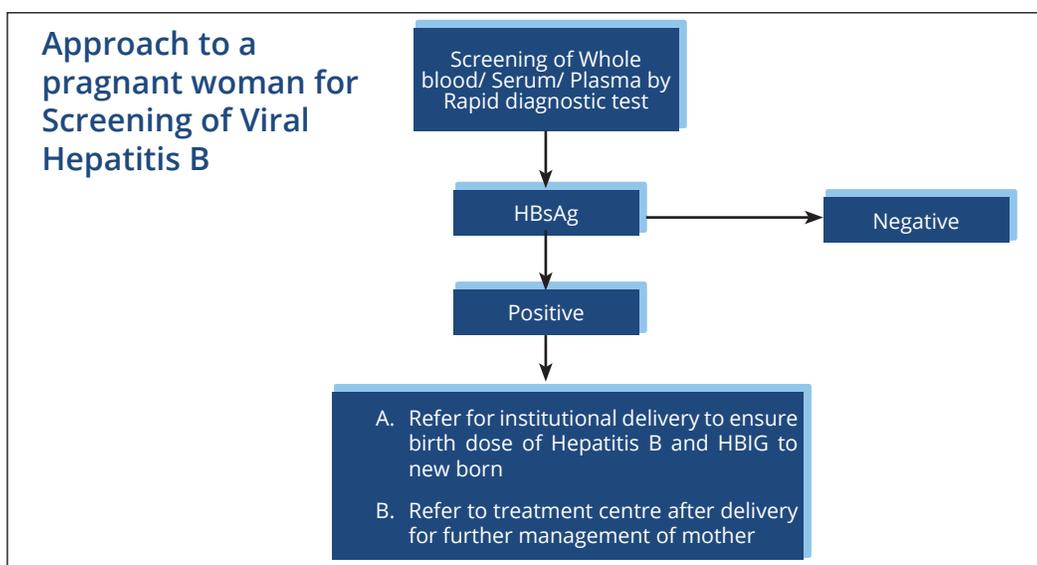


Fig. 2

Annexures

Annexure 1: Tests for Malaria

S. No	A: Steps to Prepare the Thick and Thin Smear:
1.	Select the ring finger of the left hand
2.	Clean with antiseptic or sterile wipes
3.	Dispose of the cotton swab as per Gol protocol
4.	Allow the finger to air-dry
5.	Puncture at sides of the flesh pad of the finger avoiding the centre and the tip of the finger
6.	Allow the blood to come up automatically
7.	Don't squeeze the finger
8.	Hold the slide by the edges
9.	Touch the drop of blood with a clean slide
10.	Collect 3 drops to prepare a thick smear and 1 drop for a thin smear. Place the thin and thick smear at either end of the slide
11.	To prepare a thin smear, touch a single drop of blood with the edge of the slide
12.	Keep the slide in front of the second drop and allow the blood to spread
13.	Hold it at an angle of 45 degrees and spread with a rapid but not brisk movement
14.	Write the slide number on the same side as the thin smear
15.	Spread the drop of blood with the corner of the slide to make a circle or a square of approximately 1 cm in diameter
16.	Wrap and send the slide to the laboratory for staining and to be examined under the Microscope

S. No	B: Steps for Malaria Testing using the Rapid Diagnostic Test Kit (RDT)
1.	Store the kits at the recommended temperature
2.	Check that the RDT kit is not damaged
3.	Check the expiry date on the kit
4.	Remove the RDT packaging and take the dropper from the foil pouch and place it on a flat, dry surface
5.	Label the RDT with the patient's ID and the date the test was performed
6.	Allow the reagents to reach room temperature if kept in cold chain
7.	Select the finger for puncture, clean with spirit swab and allow to air-dry
8.	Puncture the finger with a sterile lancet
9.	Slowly add 1 drop of blood to the sample well and add 2 drops of the assay diluents
10.	As the test begins to work, a purple colour will be seen moving across the result window in the centre of the test device
11.	Interpret test* result at 5-20 mins (do not interpret after 20 mins) as per the manufacturer's instructions

ANNEXURES

*Interpretation of the Result for Monovalent RDT Kit:	
Negative result	If only one line (band) appears, the test has worked and the patient is negative for malaria
Positive result	If 2 lines (bands) appear within 15-20 mins, the person is suffering from P. falciparum malaria
Invalid result	If no line appears within 15-20 mins, discard and repeat the test
*Interpretation of the Result for Bivalent RDT Kit:	
Negative result	If only 1 line (band) appears at C (control), the test has worked and the patient is negative for malaria
Positive result	If 2 lines (bands) appear within 15-20 mins at C (control) and T1, the person is suffering from P. falciparum malaria
Positive result	If 2 lines (bands) appear within 15-20 mins at C (control) and T2, the person is suffering from P. vivax malaria
Positive result	If 3 lines (bands) appear within 15-20 mins at C (control), T1 and T2, the person is suffering from both P. falciparum and P. vivax malaria
Invalid test	If no line appears within 15-20 mins, discard and repeat the test

Annexure 2: Rapid Diagnostic Test for Syphilis

S. No	Steps
1.	<p>STORAGE: The test syphilis test kit should be kept in the refrigerator to maintain the temperature at 2°C to 8°C. If a refrigerator is not available at the sub-centre, then the kits should be kept at the PHC-HWC to maintain cold chain, and be brought to the VHND or outreach sessions while ensuring that cold chain is maintained.</p>
2.	<p>PROCEDURE:</p> <ul style="list-style-type: none"> • Remove test device from foil pouch • Add 20 uL whole blood to the sample well and 3-4 drops of assay diluent. • Interpret test results within 10 min • Negative result: presence of only one purple color band visible within the result window • Positive result: Presence of both 'T' and 'C' bands visible within the result window • Invalid result: No purple band visible within the result window



Annexure 3: Rapid Diagnostic Test for Hepatitis B

S. No	Steps
1.	<p>SAMPLE / SPECIMEN COLLECTION & STORAGE</p> <ul style="list-style-type: none"> • Test should be performed on human serum or plasma only immediately after collection. • If not tested immediately, specimen should be refrigerated at 2-8°C up to 3 days following collection. • If testing within 3 days is not possible, specimen should be stored frozen at -20°C. • Haemolysed specimen or specimen with microbial contamination should be discarded and fresh aliquot should be collected.
2.	<p>TEST PROCEDURE: Procedure should be followed as per kit manual. Briefly, the procedure is as follows:</p> <ul style="list-style-type: none"> • Bring the required number of test foil pouches and specimen to room temperature prior to testing. • Take out device from the foil pouch. • Label the test card with patient's name or identification number. • Add 2 drops (70 µl) of human serum/plasma specimen into the sample well using the dropper provided (use separate dropper/microtip for each specimen). • Allow reaction to occur during the next 20 minutes. • Read results at 20 minutes. • Discard the test kit immediately after reading result at 20 minutes, considering it to be potentially infectious.
3.	<p>INTERPRETATION OF RESULT</p> <p>REACTIVE: Appearance of pink coloured line, one each in test region "T" and control region "C" indicates that the sample is REACTIVE for HBsAg.</p> <p>NON-REACTIVE: Appearance of one distinct pink line in the control region "C" only, indicates that the sample is "NON REACTIVE" for HBsAg.</p> <p>INVALID: When neither control line nor the test line appears on the membrane, the test should be treated as invalid which maybe because of following reasons:</p> <ul style="list-style-type: none"> • Improper storage at temperature other than the recommended temperature. • Wrong procedure. • Long atmospheric exposure of the test device after opening the pouch. <p>The test should be repeated using a new test card and test sample</p>

Annexure 4: Rapid Diagnostic Test for HIV/AIDS

S. No	Steps
1.	Materials and reagents: HIV TRI-DOT test device, buffer solution, Protein- A conjugate. Negative control, positive control, sample dropper
2.	Storage: Store the entire kit at 2–8°C in the coolest and driest area available. Do not use the kit beyond the expiry date. Do not freeze the kit components.
3.	Specimen/ sample collection <ul style="list-style-type: none"> • Collect blood in a clean dry sterile vial and allow to clot • It is recommended that fresh sample should be used if possible. • If serum is not to be assayed immediately, it should be stored at 2-8°C or frozen at minus 20°C (-20°C). • Haemolysed specimen or specimen with microbial contamination should be discarded and fresh aliquot should be collected.
4.	Procedure: Procedure should be followed as per kit manual. Briefly, the procedure is as follows: <ul style="list-style-type: none"> • Add 3 drops of Buffer Solution to the centre of the device • Hold the dropper vertically and add 1 drop of patient's sample 50µl (serum or plasma) using the sample dropper provided (use a separate sample dropper for each specimen to be tested). • Add 5 drops of Buffer Solution. • Add 2 drops of Protein-A Conjugate directly from the conjugate vial. • Add 5 drops of Buffer Solution and read results. • Read results immediately and discard the device considering it to be potentially infectious.
5.	<p>Interpretation of results:</p> <p>NON-REACTIVE: If only one Dot (only the Control Dot) appears, the specimen is non-reactive for antibodies either to HIV-1 or HIV-2. Interpret sample as non-reactive.</p> <p>REACTIVE:</p> <ul style="list-style-type: none"> • If two Dots, one for the control and the other for HIV-1 appear, the specimen is reactive for antibodies to HIV-1. • If two Dots, one for the control and the other for HIV-2 appear, the specimen is reactive for antibodies to HIV-2. • If all the three Dots, one each for control, HIV-1 & HIV-2 appear, the specimen is reactive for antibodies to HIV-1 & HIV-2. <p>INVALID TEST: If no Dot appears after the test is complete, either with clear background or with complete pinkish/purple background as, the test indicates ERROR. This may indicate a procedural error or deterioration of specimen/reagents or particulate matter in the specimen. The specimen should be tested on a new device.</p>



ANNEXURES

Annexure 5: Health & Wellness Centre and NLEP Services

S. No	Essential Medicine List (Anti-Leprosy Medicines) at SHC-HWC
1.	MDT- MB blister pack
2.	MDT- MB – Child blister pack
3.	MDT – PB blister pack
4.	MDT – PB-Child blister pack
5.	MCR Foot wears
6.	Self-Care Kits
	Essential Medicine List (Anti-Leprosy Medicines) and Aids & Appliances at PHC-HWC
1.	MDT- MB blister pack
2.	MDT- MB – Child blister pack
3.	MDT – PB blister pack
4.	MDT – PB-Child blister pack
5.	Prednisolone tablets of 5 mg and 10 mg.
6.	Loose Clofazimine
	Aids and Appliances
1.	MCR Foot wears
2.	Self-Care Kits

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Namaste!

You are a valuable member of the Ayushman Bharat–Health and Wellness Centre (AB-HWC) team committed to delivering quality comprehensive primary healthcare services to the people of the country.

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