

---

*EMERGENCY TUBERCULOSIS OPERATION  
IN PAPUA NEW GUINEA*

*CODE OF ENVIRONMENTAL PRACTICE*

---

**October 13, 2016**

## Introduction

The Government of Papua New Guinea (GoPNG) and the World Bank are in the process of preparing support for responding to increased tuberculosis (TB) rates through a Credit in the estimated amount of US\$15 million.

The financing would focus on Provinces with high rates of TB, and aim to scale-up or replicate existing successful programs, and support aspects of TB management deemed critical for which current financing is unavailable. This will involve:

- i. Early Detection for Active Tuberculosis Patients, including mass screening of TB on Daru Island and Systematic Screening in National Capital District (NCD);
- ii. Effective treatment of Drug Sensitive and Drug Resistant Tuberculosis including improvements to Clinical Management, and strengthening the Directly Observed Treatment Strategy (DOTS); and
- iii. Strengthening the Government system to manage the TB response

As this project is in response to the outbreak of Drug Sensitive and Drug Resistant TB in PNG, project targeting is based on the areas with the highest numbers of active TB patients according to existing data. These have been identified as Daru Island in Western Province, and the National Capital District.

The National Department of Health (NDoH) will be the Implementing Agency, and will procure Contractor/s as the end entity, to undertake the components of the project.

The Code of Environmental Practice (COEP) has been developed for (a) minor impact and small scale physical interventions, such as the placement of a container laboratory at the Port Moresby General Hospital; (b) infection control and medical waste management at facilities receiving support for the early detection and treatment of tuberculosis which may be financed by the World Bank; and (c) carrying out community consultations during the implementation of early detection and treatment of tuberculosis in communities targeted for such support.

The COEP is intended to ensure compliance with PNG National Law and World Bank Safeguard Policies and provides guidance regarding the safeguard measures to be carried out by (a) the contractor during the minor physical activities; and (b) health care workers in carrying out infection control and proper hazardous waste disposal, including health care waste management. It also covers the principles of community consultation and grievance redress which is expected to be carried out as part of the project design. Performance monitoring will be conducted on a semi-annual basis, and findings will be included in the regular progress reports, and will be disclosed.

## What does this COEP cover?

The objective of this Code of Environmental Practice (COEP) is to establish general guidelines for potential environmental and social impacts of the Drug Resistant Tuberculosis Emergency Operation in Papua New Guinea. It provides principles and minimum standards that shall be met in (a) site preparation necessary for placement of a container laboratory; (b) practicing infection prevention and control (including health care waste management) at sites targeted for support under the Project; and (c) consultation with communities in the implementation of early detection and treatment of tuberculosis. This COEP shall be read in conjunction with:

- NCD Waste Management Policy <sup>1</sup>
- Public Health Act 1987
- National TB Treatment Guidelines
- National Health Services Standards
- Water & Sanitation Act
- Water & Sanitation Policy
- Environmental Act 2000

All sites supported under this Project are required to comply with the National Health Services Standards of Papua New Guinea and this COEP.

---

<sup>1</sup>The [NCDC Waste Management Services Group](#), acknowledges that “there is lack of appropriate and specific policy guidelines on solid, liquid and hazardous waste management – relevant and responsive to the local need of the community. This creates an unstable working environment not only for the operational aspect of waste management but also the established procedures in engaging contractors”. This COEP is intended to fill these policy shortcomings, and provide the guidance necessary to manage hazardous and medical waste associated with this project.

## **1. Minor Site Works (relating to Project Construction)**

Minor physical works will be undertaken as part of this project. This will consist of the installation of two shipping containers to nominated sites with the Port Moresby and Daru General Hospital. The containers will act as laboratories for the testing and treatment of active TB patients, and will be connected to urban services within the hospital grounds. Level, vacant sites exist within both hospital holdings, to accommodate the containers. Physical works will consist of very minor site preparation in order to install the laboratories.

Sections of the COEP relating to site works will be included as a separate annex in the bidding and contract documents. The Contractor will be made aware of and commit to this obligation and know that cost for implementation of the proposed measures is part of the construction cost.

**General Environmental Codes of Practice** (applicable to most construction activities) for environmental protection/impact mitigation measures for the following during construction:

### **i. Noise:**

- (a) Plan activities in consultation with communities so that noisiest activities are undertaken during periods that will result in least disturbance;
- (b) Noise levels should be maintained within the national permissible limits/standards and limited to restricted times agreed to in the permit;
- (c) Use noise-control methods such as fences, barriers or deflectors (such as muffling devices for combustion engines) and select equipment with lower sound power levels where possible;
- (d) Minimize transportation of construction materials through community areas during regular working time; and
- (e) Maintain a buffer zone (such as open spaces, row of trees or vegetated areas) between the project site and the residential and hospital areas to lessen the impact of noise to the patients, visitors, and staff.

### **ii. Soil Erosion:**

- (a) Implement suitable project design (e.g., establish appropriate erosion and sediment control measures) to minimize soil erosion
- (b) Use mulch, grasses or compacted soil to stabilize exposed areas; and
- (c) Once work is completed, the construction area should be covered with topsoil and re-vegetation (plant grass, fast-growing plants/bushes/trees).

### **iii. Air Quality:**

- (a) Minimize dust from exposed work sites by applying water on the ground regularly;
- (b) Do not burn site clearance debris (trees, undergrowth) or construction waste materials; and

- (c) Keep stockpile of aggregate materials covered to avoid suspension or dispersal of fine soil particles during windy days or disturbance from stray animals.

**iv. Water Quality:**

- (a) Activities should not affect the availability of water for drinking and hygienic purposes;
- (b) No construction materials, solid wastes, toxic or hazardous materials should be poured or thrown into water bodies for dilution or disposal; and
- (c) The flow of natural waters should not be obstructed or diverted to another direction, which may lead to drying up of river beds or flooding of settlements.

**v. Solid and Hazardous Construction Waste:**

- (a) Collect and transport construction waste to appropriately designated/hazardous waste controlled sites; if these sites are unavailable, devise another procedure which will appropriately handle and dispose of hazardous waste
- (b) Maintain waste (including soil for foundations) at least 300 meters from rivers, streams, lakes and wetlands;
- (c) Use secured area for refueling and transfer of other toxic fluids distant from settlement area and ideally on a hard/non-porous surface;
- (d) Train workers on correct transfer and handling of fuels and other substances and require the use of gloves , boots, aprons, eyewear and other protective equipment for protection in handling highly hazardous materials; and
- (e) Collect and properly dispose of small maintenance materials such as oily rags, oil filters, used oil, etc.

**vi. Workers' Health and Safety:**

Workers' Health and Safety procedures must be compliant with the World Bank's Environmental and Social Safeguard Guidelines and PNG Law. Minimum Requirements include:

- (a) Provide personal protective gear for workers as necessary (gloves, dust masks, hard hats, boots, goggles), etc;
- (b) Keep worksite clean and free of debris on daily basis;
- (c) Keep corrosive fluids and other toxic materials in properly sealed containers for collection and disposal in properly secured areas;
- (d) Ensure adequate toilet facilities for workers from outside of the community;
- (e) Rope off construction area and secure materials stockpiles/ storage areas from the public and display warning signs. Do not allow children to play in construction areas;
- (f) Fill in all earth borrow-pits once construction is completed to avoid standing water, water-borne diseases and possible drowning; and
- (g) Each construction sub-project to have a basic first-aid kit with bandages, antibiotic cream, etc.

## 2. Health Care Waste Management

This section of the COEP relates to infection prevention and control (including health care waste management) at sites and facilities which will be supported through World Bank financing, as well as appropriate treatment and disposal of medical wastes arising from project activities.

Hazardous waste can be broadly defined as any material that cannot be used further or is unwanted, and poses a risk to the community or to the environment if not properly handled. These materials include, but are not limited to, chemical, biological and radioactive wastes, sharps, contaminated glassware, balancing/dilution pit waste and some waste products generated during building maintenance, construction and demolition works. Each hazardous waste stream requires special handling to protect the health and safety of personnel generating and handling the waste, their colleagues and the wider community.

In addition to the Policies and Guidelines which have been prepared by the Government relating to health care waste management, the general hospitals which are located in the Project target areas, all have Standard Operating Procedures which include a section on infection prevention and control. Following is a list of the current Policies and Guidelines, as well as an indication of those which are in the process of being revised or updated:

- NCD Waste Management Policy
- Public Health Act 1987
- National TB Treatment Guidelines
- Water & Sanitation Act
- Environmental Act 2000
- Infection Prevention Policy Guidelines for Health Facilities 2008: currently under revision

Contractors engaged by the NDOH will be required, as part of the procurement process, to prepare Health Care Waste Management Plans (HCWMP). These Plans will provide details of the how the full waste stream will be managed. At a minimum, all hazardous waste is to be collected at least weekly from all sites producing waste, including BMUs and Container Laboratories. Specialist hazardous waste contractors will be used to collect, re-pack (if necessary), transport, treat and dispose of the hazardous wastes in accordance with legislative requirements.

### **Storage, transport and spills**

Plastic bags for the collection of clinical and biological wastes other than sharps should:

- Have sufficient strength to safely contain the waste class they are designated to hold;

- Be suitable for the purpose, i.e. if to be heat sterilized they must be able to withstand high temperatures and allow steam to penetrate;
- Not be filled to more than two-thirds of their capacity;
- Allow for secure final closure when the bag is filled to a maximum of two-thirds of its capacity or 6kg, whichever is lesser; and
- Not be secured with staples or any other closure devices with sharp points or edges.

The storage of clinical and biological wastes prior to disposal would be minimized. Wastes would be treated as soon as possible after generation. When storage is required, the area selected would minimize exposure to the waste and prevent increases in the numbers of potentially harmful organisms present. For this reason refrigeration may be required. The storage area should also be kept secure at all times, be vermin-free, and be regularly cleaned and disinfected.

The HCWMP at particular sites, including Daru Island, Western Province, and NCD, will be included as an Annex in Contractor Documents if applicable.

### 3. Infection Prevention and Control

#### National Tuberculosis Infection Control Guidelines

Infection control procedures meeting or exceeding international good practice requirements will be submitted with contractor bids/proposals. An overview of issues and practice guidelines is provided below:

In any health facility, when a smear positive TB patient enters, he/she breathes out or coughs out droplets containing infectious bacilli. These are small droplet nuclei containing TB bacilli at its core and it is usually invisible to the naked eye.

Sunlight quickly kills TB bacilli, so a room where there is plenty of natural light will have faster killing of TB bacilli by the sunlight. Attending to coughing patients quickly from outpatients, treatment rooms and other venues in health facilities reduces transmission of TB.

The following are methods of air-borne infection control to be used in health facilities:

1. Patient triage and organization of patient flow.
2. Ensuring adequate ventilation into rooms.
3. Patient education and cough etiquette.
4. Sputum collection and management of hazardous bio-medical waste.
5. Take measures to decrease personal occupational risk as a health worker.

To reduce chances of TB transmission, it is advisable to quickly attend to coughing patients or suspected TB patients as these are likely to be smear positive patients and thus reduce the time spent by them in the health facility. Have separate waiting areas for patients with cough and do not let them mingle freely with children and/or immuno-compromised patients such as HIV positive patients. Prepare, install and maintain bio-hazard signs for areas where TB patients are examined and preferably keep these areas as 'No thoroughfare' areas.

All health facility rooms should be designed to allow good movement of air in all rooms which are accessible to smear positive TB patients.

Some health facilities may use mechanical ventilation systems – these may consist of one of the following:

1. Exhaust fans – A fan which sucks air out of the room is installed at a window.
2. Local filter units for specific rooms or isolated areas.
3. Central ventilation mechanisms with air handling units and HEPA filter.
4. A mechanical ventilation unit that usually consists of:
  - a) A fan or a motorized unit which helps to suck air out of the room;
  - b) An air filter at the point of exhaust; and/or

c) Sometimes, a germicidal irradiation mechanism such as UV lights.

To improve ventilation and decrease the risk of infection in the facility:

1. Check that all windows and doors can be opened and are easy to keep open.
2. Check that doors allow some airflow, even when closed. Doors on examination and treatment rooms can be trimmed to increase air flow below them even when closed.
3. Check that all exhaust fans and air conditioners are in good working order and clean. Clean dirty fans, and repair or replace broken fans. Keep exhaust fans on. If there is an air conditioner, check that its filter is kept clean.
4. Place fans in windows to blow room air to the outdoors. Window fans should be placed in locations so they add to natural ventilation currents. However, check where the fan will be blowing the air: it should not blow into a patient waiting area or hall where people would breathe that air.
5. Keep doors, windows and skylights open and allow air to blow into and out of the building.

Sputum collection is an activity which can be carried out with manageable risks. Omitting to take certain precautions could increase risk of TB transmission at the time of sputum collection and during handling of sputum in labs. At all times, those collecting sputum should follow the precautions below:

1. Encourage patients to cough for sputum in open well ventilated, sunny areas. Do not use poorly ventilated, closed or poorly lit closed rooms or corridors or even toilet facilities.
2. Never stand in front of a coughing patient when observing a patient's sputum collection.
3. Stand upstream of wind-direction when patient is coughing to bring out sputum. Keep good cross ventilation in the rooms.

### **Summary on the TB Infection Control Guideline:**

Key elements of infection control activities that should be implemented in all health care settings include:

#### **A. Administrative Controls:**

1. Training of health care workers on infection control policies.
2. Placement of written guidelines within all TB and HIV care facilities.
3. Triaging to find symptomatic TB patients and improve patient flow.
4. Separating infectious TB patients/suspects from other patients.
5. Early diagnosis and treatment of TB patients.
6. Reducing lengths of exposure of TB patient in the health care facility through reduced hospitalization and prompt attendance to TB patients.

7. Training and encouraging all patients and relatives attending health care settings on cough etiquette, respiratory and general hygiene and minimizing potential exposures to other vulnerable patients.
8. Establishing a system for monitoring and evaluation of infection control activities.

**B. Environmental Controls:** Ensuring good ventilation in rooms and places where patients access through mechanical (ceiling fans, exhaust fans, etc.) and natural (wind & sunlight) ventilation. There should be good movement of air in all rooms accessible to smear positive TB patients. Good movement of air in all rooms helps the infection containing aerosols to disseminate quickly from the ambient air. The use of good cross ventilation and natural air-flow and sunlight can kill TB bacilli and stop TB transmission in health care facilities.

**C. Personnel Protection Controls:**

1. Use of respirator masks such as N95 masks by the health worker when available. The normal surgical mask offers no protection to the wearer but is beneficial if it is worn by the infectious TB patients.
2. HIV care and treatment (ART, CPT, IPT) of health workers living with HIV and regular TB screening and relocate them to areas with minimum risk of TB transmission.
3. Regular screening of health workers for TB and relocation of health workers with active TB to non HIV care facilities

## **4. Communications Strategy and Grievance Redress**

This Code outlines communications strategies used by NDOH and the GoPNG to communicate public health related activities to affected communities, including infection prevention. A Communications Strategy is to be developed in partnership with NDOH and the relevant Contractor so that all affected communities fully understand the project and who is responsible for each activity. In particular, this Strategy will ensure that the Grievance Redress Process is clearly articulated.

Below are mechanisms currently used to provide information about TB. This section also outlines the Grievance Redress Mechanisms currently employed by the NDOH and how these will be made available to affected communities.

### National TB Treatment Protocol 2011

“Communication” is the process people use to exchange information about TB. This could make use of some sort of media or channels of communication. In the context of programme communication, this is related to creating awareness and empowering people to take action. The main forms of TB communication that health workers will need to be familiar with in PNG includes posters which corrects common misconception, TB brochures and information cards.

### Tuberculosis Strategic Plan 2015-2020

Information on TB will be transmitted to communities through community awareness activities dovetailed with outreach activities organized by Provinces. Standardized community level information guides developed by the National Tuberculosis Plan will be used by health workers and liaison officers to deliver the needed culturally sensitive information, including those appropriate to indigenous persons, to communities. Radio Doctor through local radio stations, Church gatherings and Haus Krai will also provide information on TB. Community TB Associations have also been formed and are expected to be used as a medium to transfer information to affected communities.

### Communications with Indigenous People

All people in PNG are considered by the World Bank as Indigenous. The Communications Strategy will be prepared early in project implementation and will include a specific section on this issue. All project information will be communicated to affected communities in a culturally appropriate manner, reflecting the protocols stated here.

## Management of Patient Information and Records

Documentation in health care records must provide an accurate description of each patient/client's episodes of care or contact with health care personnel. The policy requires that a health care record is available for every patient/client to assist with assessment and treatment, continuity of care, clinical handover, patient safety and clinical quality improvement, education, research, evaluation, medico-legal, funding and statutory requirements.

Only approved health care personnel, including those who provide assessment, diagnosis, treatment and ongoing care, will have access to patients' confidential health records. Anyone who is not an approved health care personnel may be granted restricted access to patient information in accordance with legislative requirements.

To preserve patient confidentiality, the e-health system which will be designed with support under the World Bank Project, will include mechanisms to ensure this aspect is addressed in accordance with PNG laws and global best practice.

## Grievance Redress

The NDOH will ensure that Grievance Redress Procedures are included in the Communications Strategy, and that these Procedures are accessible to all affected communities.

The NDOH will particularly ensure that Grievance Redress Procedures are accessible to Indigenous People, including, where necessary, translation into all appropriate languages, and the use of multiple mediums of communication including letters, phone lines, email and others where appropriate.

The Contractor will also be required to develop their own Grievance Redress Systems and is expected to outline these in bid documents.

At a minimum, the first point of grievance redress must be a locally appointed grievance redress manager within the BMU; this will most likely be the Manager of the BMU. This person will receive all grievances from the community, and will determine whether to escalate the grievance to a higher power, or resolve the grievance locally.

The World Bank also houses a Grievance Redress Service, which ensures that complaints to the World Bank are being promptly reviewed and addressed by the responsible units in the World Bank. The objective is to make the World Bank more accessible for project affected communities and to help ensure faster and better resolution of project-related complaints. Details pertaining to the World Bank Grievance Redress Service will be included in communications with affected communities.

## **5. Record of Consultations**

Consultations have been held with the following stakeholders:

- The Conservation and Environmental Protection Authority (CEPA)
- Port Moresby General Hospital
- BMUs in Western Province which are targeted for support
- BMUs in National Capital District which are targeted for support
- NCD Waste Management Manager
- National TB Technical Working Group
- National Emergency Response Taskforce

Consultations with all stakeholders will continue throughout the project life cycle.