

## **BEST PRACTICE 1 :**

**Title:** Water Quality Analysis and Public Health Laboratory Services for Ensuring Safe Drinking Water

### **Objectives:**

1. To assess the physical, chemical and bacteriological quality of water samples collected from different sources.
2. To determine whether the tested water is fit for human consumption based on relevant water quality parameters.
3. To identify possible contamination and water quality problems in drinking-water sources.
4. To provide appropriate guidance and recommendations for purification and improvement of water quality whenever a sample is found unsuitable for human consumption.
5. To promote awareness regarding safe drinking water, water hygiene and prevention of water-borne diseases among students, staff and the surrounding community.

To strengthen the role of the Department of Community Medicine in preventive and promotive health services through laboratory-supported public health interventions

**Context:** contamination of water can contribute to a variety of water-borne and water-related diseases. Regular assessment of drinking-water quality is therefore an important component of preventive and community health practice.

The Department of Community Medicine has developed a Water Quality Analysis and Public Health Laboratory facility to facilitate regular assessment of water sources used by the institution as well as the surrounding community.

Water samples are received from various locations within the institutional campus, including:

- Staff quarters
- Boys' hostel
- Girls' hostel
- Mess
- Hospital premises
- Canteen
- Other institutional water sources

The laboratory also receives samples from institutions and establishments in the Loni and Rahata areas, thereby extending the benefit of the facility beyond the campus.

The practice provides an opportunity to integrate laboratory-based assessment with public health action, wherein the findings are communicated to the concerned institution and appropriate recommendations are provided wherever deficiencies are identified

**Practice:** The Department follows a systematic process for collection, analysis, reporting and appropriate public health guidance.

#### A. Receipt and processing of water samples

Water samples are received from various locations within and outside the campus. The samples are appropriately processed and subjected to relevant physical, chemical and bacteriological examination.

#### B. Physical and chemical analysis

The water samples are assessed for important water quality parameters, including:

- pH
- Total Dissolved Solids (TDS)
- Total hardness
- Chloride
- Free residual chlorine
- Fluoride
- Iron
- Nitrate

These parameters help in assessing the overall physicochemical quality and suitability of the water for consumption.

#### C. Bacteriological examination

Water samples are also subjected to bacteriological quality assessment to identify evidence of microbial contamination and determine the microbiological safety of the water.

#### D. Interpretation of results

The laboratory findings are interpreted with reference to applicable drinking-water quality standards/guidelines to determine whether the water is suitable for human consumption.

#### E. Reporting and feedback

A report containing the findings of the water quality analysis is provided to the concerned institution/establishment.

If the sample is found to be unsuitable for human consumption, the Department communicates the findings and provides necessary public health recommendations and guidelines for appropriate water purification and corrective measures.

#### F. Public health linkage

The practice goes beyond laboratory testing by establishing a link between:

Water sample → Laboratory analysis → Identification of contamination → Reporting → Corrective guidance → Prevention of water-borne disease

This makes the activity a practical example of preventive and promotive community medicine in action

#### **Evidence of Success:**

The success of the practice is demonstrated through the following measurable and documentary outcomes:

1. Regular analysis of water samples received from multiple locations within the institutional campus.
2. Analysis of water samples received from institutions and establishments in the Loni and Rahata areas, demonstrating extension of laboratory services to the surrounding community.
3. Availability of documented laboratory reports for the samples tested.
4. Identification of physicochemical and/or bacteriological abnormalities in water samples wherever present.
5. Provision of specific recommendations for water purification and corrective measures when water is found unsuitable for consumption.
6. Creation of an institutional mechanism for periodic surveillance of drinking-water quality.
7. Increased awareness among concerned authorities, students, staff and community institutions regarding the importance of safe drinking water and water hygiene.

8. The practice strengthens the Department's contribution to preventive health care, environmental health and community-oriented medical education.

**Documentary evidence :**

The following records are maintained as supporting evidence:

- Register of water samples received
- Sample collection/receipt records
- Laboratory investigation reports
- Records of physicochemical analysis
- Bacteriological examination records
- Reports communicated to concerned institutions
- Records of recommendations/corrective measures
- Photographs of the Public Health Laboratory
- Photographs of water testing activities
- Photographs of the Transchem Agritech Pvt. Ltd. water testing kit
- Annual summary of the number and source of samples tested

**Problems encountered and resources required:**

**A. Resources required**

1. Public Health Laboratory facility with adequate workspace and basic laboratory infrastructure.
2. Water testing equipment and reagents, including the Transchem Agritech Pvt. Ltd. Water Testing Kit used by the Department.
3. Appropriate containers for water sample collection, transportation and storage.
4. Reagents and consumables required for physicochemical and bacteriological examination.
5. Trained faculty and laboratory personnel for sample processing, testing, interpretation and reporting.
6. Documentation facilities for maintaining sample registers, laboratory records and reports.
7. Institutional support for communication of findings and implementation of recommended corrective and purification measures.

**B. Possible problems / constraints**

Potential challenges in implementing the practice include:

- Delay between sample collection and receipt at the laboratory, which may affect certain test results.
- Improper sample collection, handling or transportation.

## **BEST PRACTICE : 2**

**Title:** Mapping of Geo-tagged Family Survey Data (TOOLS FAST)

**Objectives:**

1. To collect and validate Family Adoption Data using EpiCollect 5 Software
2. To analyze data and Map key variables like Households with incomplete immunization, Diabetes, Hypertension, Larval hotspots
3. To train students to show the hotspots in maps

**Context:** This is an Add-on to the Family Adoption Programme which is implemented to better understand and remedy problems in the adopted community as part of Community Based Medical Education (COME)

**Practice:** We train the UG Students to use EpiCollect5 and Google MyMaps via a workshop TOOLS FAST, the workshop is developed and its training materials Copyrighted by Department of Community Medicine. Once the Family Adoption Data is collected it is time stamped, each house is coded and a selfie of student with the family is present to verify the visit. This data is then cleaned, linked and mapped highlighting the variables of Interest.

**Evidence of Success:** The practice is functional in last 3 years and is incorporated in FAP report generation. It also helps with longitudinal tracking of families.

**Problems Encountered:** Unequal engagement of students initially, is being overcome by repeated sensitization. Migration of families is sometimes an impediment to long term follow up.