Using GIS to effectively monitor human resources for managing TB in West Arsi Zone, Ethiopia

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Background

For improved patient outcomes, tuberculosis (TB) program managers should be able to quickly compare demographic and epidemiologic data with data on service site locations and human resource (HR) capacity for TB diagnosis and management.

Intervention

In 2012 the USAID-funded TB CARE I and MEASURE Evaluation projects worked with the West Arsi Zonal Health Office in Ethiopia to assess the use of a geographic information system (GIS) for presenting and comparing data on:

- TB cases,
- HR capacity,
- laboratory services,
- health facilities, and
- population density.

First, the team collected this data from 29 facilities in five woredas in West Arsi using a structured questionnaire.

They then entered this data into a GIS so it could be mapped, compared, analyzed, and used for planning and decision-making regarding the zone’s TB control efforts.

The partners also trained key staff from the West Arsi Zonal Health Office and the Oromia Regional Health Bureau to use the open source GIS (quantum GIS or QGIS) for linking data and assessing service delivery capacity and gaps.

Results

- TB case notification rates varied significantly between woredas, ranging from 70 cases per 100,000 inhabitants to 180 cases per 100,000 inhabitants (see map 1).
- The distribution of facilities offering TB diagnostic and treatment services correlated with the TB case distribution and population density (see maps 1 and 2).
- Microscopes at 25% (7/28) of the facilities were defective or partially functional (see map 2).
- 79% (23/29) of the facilities had at least three clinical staff providing TB services on the day the assessment team visited their site (see map 3).
- While 96% (28/29) of facilities provided services for both HIV and TB, these service were integrated in only 76% (22/29) of the facilities (see map 4).

Conclusion

GIS allowed program managers to see relationships among TB case distribution, HR capacity, laboratory services, health facilities, and population density within the five woredas in the West Arsi Zone.

GIS maps also helped staff from the West Arsi Zonal Health Office and the Oromia Regional Health Bureau identify areas and facilities where deficiencies existed and develop targeted action plans to address these gaps and improve service quality.

The assessment team is currently developing a toolkit comprised of an open source QGIS, spatial data infrastructure, and guidelines for using this system to link routine health information data to HR data.

This toolkit will enable zonal health offices and regional health bureaus to develop univariate and bivariate maps showing service delivery features and HR capacity at facility and woreda levels.

While piloted for TB, this GIS toolkit can be adapted to collect and display data on other diseases.

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