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DISCUSSION BRIEF

Performance Evaluation of Peru's Regional Information System

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Overview

At the international level, there is consensus that health information is one of the so-called public goods, given its importance in the design, monitoring, and evaluation of policies, as well as for accountability. It is also the main input for making everyday decisions and the means through which health actions and outcomes can be monitored and evaluated.

However, the usefulness of health information can be reduced if there is insufficient investment in information systems for collection and analysis. This, in turn, affects its quality, dissemination, and use. In addition, health information systems (HIS) around the world have evolved irregularly and often suffer from fragmentation, dispersion, and dissolution of responsibilities and multiple poorly coordinated subsystems.

Based on the premise that better health information means better decisionmaking and so better health for all, and to increase the availability and use of such information in developing countries and globally, the Health Metrics Network (HMN) was launched in Peru in 2005. The national HMN is a global alliance of countries, bilateral and multilateral cooperation agencies, foundations, and technical experts working to improve health by strengthening and harmonizing investments in the development of HIS.

The HMN has developed a conceptual framework that brings together the components of the supply of and demand for health information and so helps to define the systems, standards, skills, and processes needed. The HMN framework connects the standard framework for health measurement with the participatory techniques of diagnosis, planning, and implementation, which are objective, transparent, and include all stakeholders.

In Peru, the USAID | Health Policy Initiative, coordinating with the General Office of Statistics and Informatics and the General Office of Epidemiology of the Ministry of Health (MOH); the Regional Health Authorities (DIRESAs) from Ayacucho, Cusco, Huanuco, Junin, Pasco, San Martin, Ucayali, Apurimac, Lima, and Callao; and the Lima Health Authorities (DISAs) of Lima Ciudad, Lima East, and Lima South, carried out the performance evaluation of the routine health information system (SIRS), using an instrument developed by the HMN. Given the magnitude of the task, the DIRESA of Apurimac and the DIRESAs of Lima and Callao received technical and financial assistance from the General Office of Epidemiology and the USAID-funded MEASURE Project, respectively.

Intervention

The Health Policy Initiative team conducted an evaluation between July 2008 and January 2009 in the health facilities of these DIRESAs. The purpose was to identify strengths and critical points from which to fortify the overall information system.

The team analyzed records produced in SIRS. These HIS forms were obtained from ambulatory care patients—those in recovery as well as preventive-promotional care—and from directories of health facilities, hospitals, and health centers.

Sample selection

The team took a regionally representative sample of health facilities. The sample consisted of the following two strata: (I) hospitals and (II) health centers. The team did not sample in stratum I, as all hospitals participated. In stratum II, the team selected health centers at a sampling rate equal to 25 percent of all centers.

To determine the sample size, the total number of records in the selected reference week in the DIRESA health facilities was used as a base. The sample of records was determined in proportion to the number of records produced in each stratum.

For purposes of selection, health centers were sorted from highest to lowest, according to the number of weekly records, and then selected by probability proportional to size to obtain 25 percent of existing establishments in stratum II. Once the health centers were selected, the sample of records obtained from each facility was determined in proportion to the total amount.

The HIS forms for the records from each sampled health facility (hospital or health center) were classified into four groups—outpatient, growth and development, family planning, and prenatal care—which then were selected by systematic sampling.

Evaluation forms

In each health facility, the following six tools were used for collecting information:

1. Checklist. The checklist collected information on equipment, basic services of the establishment, storage of information, available communication technology, quality and quantity of inputs, system operations standards, and the time allocated for report preparation.

2. Organization and behavior of the system (OBAT). This tool provided data about organizational and behavioral factors that affected information system performance. Among the behavioral factors were knowledge, skills, problem solving, confidence to perform system tasks, and motivation. The organizational factors referred to staff perceptions about the culture of information in the establishment. Comparing these factors with the performance of the system made it possible to identify weaknesses and strengths.

3. System administration. This questionnaire combined the findings of the observation tool with the knowledge and experience of the principal SIRS beneficiaries. It allowed for the numeric measurement of the organization's performance, planning, training, supervision, finances, and use of tools for performance improvement.

4. Technical quality of the system. This tool evaluated the quality of data on the HIS forms, specifically that relating directly to client care. In these fields, quality review focused on data omission, data inconsistency, errors in coding, agreement of the data with the clinical history, adjustments made by the statisticians, and compliance with basic standards of care in the control of growth and development, family planning, and monitoring of care for pregnant women.

5. Transmission of the information. This tool assessed the timeliness with which the data were delivered to the point of electronic data entry (that is, determining whether data suppliers met a predetermined deadline).

6. Use of the information. This tool evaluated the use of information, as assessed by statisticians issuing reports, regularity of reports, and the existence of feedback from analysts. Additionally, the tool evaluated supervision and feedback, the indicators used for the data analysis, and the results generated (i.e., health facility action plans for both information management and the improvement of population health).

Assessment moments

The team evaluated SIRS performance in the DIRESAs and the DISAs in the following three stages:

1. Workshop on information transfer, in which the team trained those responsible for statistics and epidemiology for the health centers, hospitals, and DIRESAs in methodology and tools management. The training lasted for three days in each region—one day of theory and two days of training in hospitals and health centers.

2. The assessment itself, which took place in the selected hospitals and health centers and lasted for four days.

3. Workshop on assessment consolidation and presentation of results, in which the team consolidated and analyzed data from the assessments of the selected hospitals and health centers and presented the results to the appropriate DIRESA/DISA authorities.

The descriptive statistical analysis was conducted using means, proportions, and graphics specifically designed to facilitate interpretation of results using a computer application in Microsoft Excel®.

Results

The team conducted the performance evaluation of the SIRS in 214 health facilities—63 hospitals and 151 health centers—of the DIRESAs of Ayacucho, Cusco, Huanuco, Junin, Pasco, San Martin, Ucayali, Apurimac, Lima, and Callao and the DISAs of Lima Ciudad, Lima East, and Lima South.

In each health facility, the six tools were applied; the results are presented below.

Logistics and human resources

Most health facilities had operating computer equipment for information management. However, fewer than 20 percent of the facilities had continuous electricity and communication service (landline telephone, cellular telephone, Internet).

Only 20 percent of the assessed facilities had the updated HIS coding manual and less than 5 percent had medical records and databases in good condition. The average number of staff devoted to statistical work was one person per facility.

System Administration

In general, those administrative aspects of the SIRS related to organization, planning, training, supervision, and financing were below 50 percent. The weakest processes were training (27%), supervision (26%), and financing (13%).

Item	Value
Organization	42%
Planning	40%
Performance improvement	50%
Training	27%
Supervision	26%
Finances	13%

System organization and behavior

Personnel showed levels of motivation and satisfaction above 60 percent, even though recognition for good work was at only 22 percent.

Regarding observed skills, 60 percent of the evaluated staff was competent in data processing. However, capacity strengthening needs to be done in the areas of quality control and analysis, as well as data use, which was low, at 29 percent.

Item	Value
Self-perception of their own competencies:	
Workers who think they can correctly complete the reports	73%
Workers who think they can verify data quality	70%
Workers who think they can correctly calculate percentages and indices	70%
Workers who think they can record data by months or years	72%
Workers who think they can analyze trends from the use of graphs and bars	70%
Workers who think they can use data	72%
Observed competencies:	
Workers who can correctly complete the reports	44%
Workers who can verify data quality	33%
Workers who can correctly calculate percentages and indices	77%
Workers who can record data by months and years	60%
Workers who can analyze trends from the use of graphs and bars	45%
Workers who can use data	29%
Motivation: Workers who feel motivated in their work	76%
Job satisfaction: Workers who feel satisfied with their work	65%

Technical quality of the system

The recorded data revealed omissions, inconsistencies, errors in diagnosis coding, and discordance between the clinical history forms and HIS forms.

Item	Value
Omission of data record	7%
Omission of data coding	4%
Fields corrected by health facility statistician	43%
Fields with inconsistencies	3%
Error in the diagnosis coding	15%
Record discordance between the HIS forms and the clinical history forms	20%
Compliance with technical standards of care in the clinical history form: CRED: 73%, FP: 68%, PC: 65%; CRED = growth and development (as abbreviated in Peru); FP = family planning; PC = prenatal control	69%

Timeliness of the data

The timeliness with which the data was delivered from the HIS form to the point of electronic data entry was 44 percent.

Item	Value
Regularity in submittal of HIS forms and database	92%
Timeliness in submittal of HIS forms for electronic data entry	44%
Timeliness in submittal of the database	62%
Delay (in number of days) in the submittal of HIS and database	2%

Use of the information

As to the availability of information, health facilities present reports, graphs, or maps in less than 20 percent of health facilities. The use of the information for analysis or decisionmaking takes place in fewer than 15 percent of health facilities.

Item	Value
Health facilities regularly issuing reports	18%
Health facilities receiving feedback	14%
Health facilities presenting an up-to-date table with at least one indicator	30%
Health facilities presenting an up-to-date chart with at least one indicator	20%
Health facilities presenting an up-to-date map with at least one indicator	4%

Achievements

The results of the performance evaluation of the SIRS have allowed the DIRESAs and DISAs to develop action plans for systems strengthening. Under these plans, the following has been accomplished:

- A competency profile for recording and processing information has been developed. Still pending is defining competencies for the analysis and use of information.
- The DIRESA of Ayacucho has developed information management agreements between the DIRESA and the networks.
- The DIRESA of San Martin has created a board to monitor information management indicators.
- The DIRESA of San Martin has started a small public investment project (PIP) to develop the components of a new health information system.
- The DIRESA of Cusco has initiated the development of a PIP for a new health information system.

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