

An Evaluation of Integrated Diseases Surveillance Project
Bellary Unit.Karnataka state,INDIA

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EXECUTIVE SUMMARY

Introduction

The Government of Karnataka has launched the Integrated Disease Surveillance Project (IDSP) in the state in response to the Government of India guidelines and a long felt need expressed by various expert committees. The state hereby proposes to utilize the RCH officers and thereby strengthen IDSP which would enable to detect early warning signals of impending outbreaks and help initiate an effective response in a timely manner. It is also expected to provide essential data

to monitor progress of on going disease control programs and help allocate health resources more optimally.

Components to strengthen disease surveillance project

Component 1. Integrate and strengthen disease surveillance at the district level.

This component addresses the constraints imposed by lack of coordination at the district and state levels, the limited use of modern technology and data management techniques, the inability of the system to act on information and the need for inclusion of other stakeholders. It will integrate and strengthen disease surveillance at the state and district levels, and involve communities and other stakeholders, in particular, the private sector. The strong network of AFP surveillance would act as a platform to overcome all these deficiencies at the initial stage itself.

Component 2. Improve laboratory support. This component will consist of:

- (i) Upgrading laboratories at the state level, in order to improve laboratory support for surveillance activities. Adequate laboratory support is essential for providing on-time and reliable confirmation of suspected cases; monitoring drug resistance; and monitoring changes in disease agents;
- (ii) introducing a quality assurance system for assessing and improving the quality of laboratory data.

Component 3. Training for disease surveillance and action. The changes envisaged under the first three components will require a large and coordinated training effort to reorient health staff to an integrated surveillance system and provide the new skills needed. Training programs will include representatives from the private sector, NGOs and community groups.

Objectives

- ♦ To establish a state based system of surveillance for communicable and non-communicable diseases, so that timely and effective public health actions can be initiated in response to health challenges in the country at the state and national level.
- ♦ To improve the efficiency of the existing surveillance activities of disease control programs and facilitate sharing of relevant information with the health administration, community and other stakeholders so as to detect disease trends over time and evaluate control strategies.

Project Highlights

- It will monitor a limited number of conditions based on state perceptions for which public health response is available.
- Increase efficiency of District, Surveillance unit so that the program is able to respond in a timely manner to surveillance challenges in the district including emerging epidemics.
- Integrate surveillance activities in the district under various programs and use existing infrastructure for its function.
- Private practitioners / Private hospitals / Private laboratories to be inducted into the program as sentinel units.
- Active participation of medical colleges in the surveillance activities.
- The project will ensure uniform high quality surveillance activities at all levels by
 - (i) Limiting the total number of diseases under surveillance and reducing overload at the periphery

- (ii) Developing standard case definitions
 - (iii) Developing formats for reporting
 - (iv) Developing user friendly manuals
 - (v) Providing training to all essential personnel, and
 - (vi) Setting a system of regular feed back to the participants on the quality of surveillance activity.
- District Public Health Laboratory will be strengthened to enhance capacity for diagnosis and investigations of epidemics and confirmation of disease conditions.
 - Use of information technology for communication, data entry, analysis, reporting, feedback and actions. A national level surveillance network will be established up to the district level.

Key performance indicators:

Key aspects of overall performance of the surveillance system will be assessed using the following indicators:

- ♦ Number and percentage of districts providing monthly surveillance reports on time - by District and overall;
- ♦ Number and percentage of responses to disease-specific triggers on time - by District and overall;
- ♦ Number and percentage of responses to disease-specific triggers assessed to be adequate - by District and overall;
- ♦ Number and percentage of laboratories providing adequate quality of information - by District and state;
- ♦ Number of districts in which private providers are contributing to disease information;
- ♦ Number of reports derived from private health care providers;
- ♦ Number of reports derived from private laboratories;
- ♦ Number and % of Districts in which surveillance information relating to various vertical disease control programs have been integrated

- ♦ Percentage of project districts and states publishing annual surveillance reports within three months of the end of the fiscal year;
- ♦ Publication by CSU of consolidated annual surveillance report (print, electronic, including posting on the websites) within three months of the end of fiscal year.

Expectations/Recommendations

Surveillance is the essence of a disease control program. By setting up a decentralized, action oriented, integrated and responsive program, it is expected that the platform would be created for IDSP will avert a sufficient number of disease outbreaks and epidemics and reduce human suffering and improve the efficiency of all existing health programs. Such a program will also allow monitoring of resource allocation and form a tool to enhance equity in health delivery.

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Acronyms

IDSP-Integrated disease surveillance project

STG-Surveillance training group

NGO-Non governmental organization

ANM-Auxiliary nurse midwife

DSU-District surveillance unit

GOI-Govt of India

CSU-Central surveillance unit

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Introduction

Effective communicable disease control relies on functioning disease surveillance, which is the systematic and regular collection of information on the occurrence, distribution, and trends of an event on an ongoing basis with sufficient accuracy and completeness to provide the basis for action. A well-functioning disease surveillance system therefore provides information for planning, implementation, monitoring, and evaluation of public health programs. It includes case detection and registration, case confirmation, data reporting, data analysis, outbreak investigation, response and preparedness activities, feedback, and communication. Health authorities

must also provide appropriate supervision, training, and resources for the surveillance system to operate properly.

Disease surveillance is an essential, but often overlooked part of health. Disease Surveillance audit disparities are wide and needs are inherently varied because of diverse cultural, religious and economic factors and constantly changing life style of individual in their life-span.

Surveillance is essential for the early detection of emerging (new) or re-emerging (resurgent) infectious diseases. In the absence of surveillance, disease may spread unrecognized by those responsible for health care or public health agencies. By the time the outbreak is recognized, it may be too late for intervention measures. Continuous monitoring is essential for detecting the 'early signals' of outbreak of any epidemic of a new or resurgent disease. For disease surveillance to prevent emerging epidemics, the time taken for effective action should be short.

Disease surveillance plays a central role in this process by enabling the identification of needs, the selection of priorities and the development of disease surveillance strategies that are appropriate and relevant to individual regions. To ensure that the focus and relevance of the work is maintained, such disease surveillance is best done within and by country/states themselves.

Institutional strengthening, in the form of disease surveillance support, equipment purchase, supply provision, staff training and consultant inputs to disease surveillance institutions in India/states, has been an integral part of the overall disease surveillance strategy of the programme through its existence. By placing health disease surveillance within the broader health context of country/developing states, linkages are achieved between development goals, poverty reduction initiatives and improved health outcomes.

Underpinning disease surveillance capacity building is the need, to cope with evolving needs and new challenges and shared historical experiences to arrive at factors it considered constrained or, if addressed, that could facilitate improvement in the current disease surveillance capacity strengthening efforts by

1. Identifying and encourage regions of excellence to forge strategic partnerships with weaker regions

2. promote intra-regional disease surveillance initiatives through the issue of competitive disease surveillance budget/grants based on a theme of relevance to the region
3. Enhance the States/centre's visibility and leverage for attracting additional disease surveillance funding by actively linking them with institutions
4. Greater emphasis should be placed on strengthening regional-level training
5. Candidates for STGs (Surveillance Training Group) should be selected from institutions/merit base
6. The panel considers scientific and project management workshops and data dissemination symposia important mechanisms for surveillance
7. Allocate appropriate budget that could be improved by building-in some defined monitoring and evaluation activities, which include new indicators, e.g. for institutional administrative efficiency, for effectiveness in regional disease surveillance, indicators for effectiveness in global disease surveillance participation, indicators of sustainability and for impact.
8. Assess the effectiveness and impact of the programme's strategy for disease surveillance capacity strengthening
9. Identify the constraints to current strategies for disease surveillance capacity strengthening
10. Recommend strategies with potential for maximum impact on disease surveillance capability within regions, including the potential for utilization of disease surveillance findings, health care and preventive interventions
11. Identify institutions with the greatest potential for disease surveillance in the programme's expanded disease surveillance agenda.

Aims of the Evaluation

The aims of this evaluation are to systematically and objectively evaluate the attributes of Integrated

Disease Surveillance Project and highlight areas for improvement.

Objective and Utility

Objectives of the integrated diseases surveillance System is to monitor the sensitivity of quality of surveillance system functioning in the district and identify the bottlenecks to rectify management problems and in disease incidence to help understand the epidemiology of communicable diseases in the district.

The list of objectives of IDSP disease surveillance system have as follows:

- Control communicable diseases
- Alert state or territory health authorities to communicable disease episodes which require public health action across jurisdictional borders
- Coordinate district/state responses to disease threats and act as a clearing house for the dissemination of information.

METHOD OF ASSESSMENT AND INDICATORS

The current evaluation was carried out based mainly on data from Integrated Disease Surveillance Project centre at Bellary district of Karnataka. This comprised information extracted from the reports submitted by reporting units to District on disease surveillance project, staff development, training conducted at the centre, sources of funding, etc; Qualitative assessments and centre-specific case scenario; Information presented by the Medical officer in charge of the centre;

- ❖ In-depth discussions between District IDSP Surveillance Officer and Staff
- ❖ Review of relevant documents.

The following specific quantitative indicators were derived using the information available from the existing database:

Number of weekly reports sent/received

- ❖ Number of weekly reports received at district surveillance on time

- ❖ Percentage of weekly reports received by district/sent by the reporting hospitals/institutions

Overall Assessment

A quantitative overview of the main outputs generated during the review shows that the sheer magnitude of the numbers involved reflect to a certain extent, the capacities that have been developed or strengthened to conduct disease surveillance, develop a critical mass of disease surveillance.

Indicators for effectiveness in District Disease Surveillance

- ❖ *Disease surveillance output:*
 - Number of Report units in district disease surveillance project
- ❖ *Staff development:*
 - Number of staff trained
 - Number in different fields of training

Indicators for impact

- ❖ Impact on health services (adoption and utilization of disease surveillance findings)
- ❖ Impact of Disease surveillance on decision formulation
- ❖ Number of people trained within the institution
- ❖ Networking role within the region

As evaluation tools, these indicators are made specific in assessing a particular function where in the indicators are sensitive enough to detect significant differences or changes taking place over a period of time. This ideal set of indicators found extremely difficult to come by. However, the power of these indicators greatly enhanced and conscious effort is made to take into account those variations inherent in the centre so as to improve the specificity and sensitivity of these indicators as evaluation tools.

The database variables, data-processing and analysis

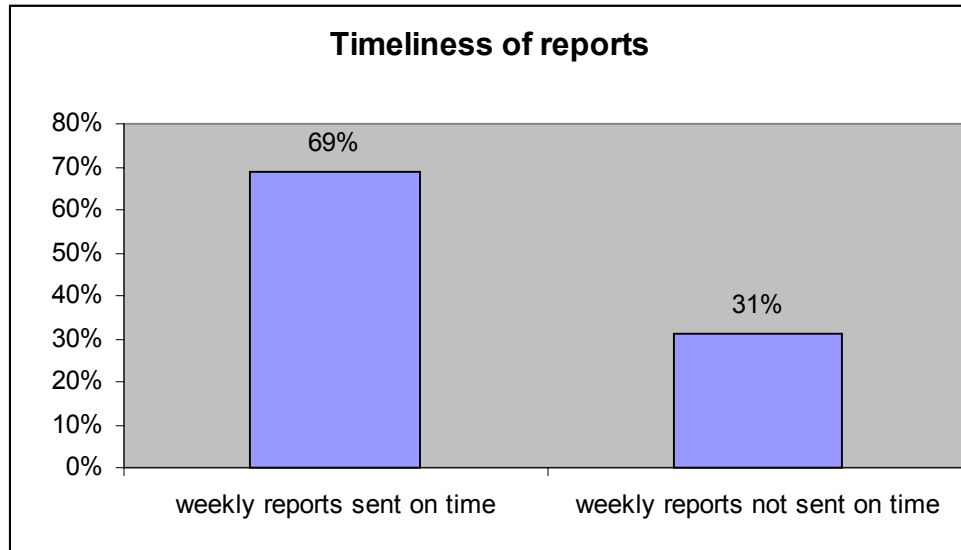
The database included quantitative entries for main variables disease surveillance projects, reports, staff trained, individuals trained at the centre and funding received from state for IDSP. This information was collected for the

centre for one year. The information was further sub-classified into several convenient categories. One of the main indicators of the performance of centre, namely the number of diseases under surveillance project carried out during the reporting period, was difficult to quantify accurately. The quantitative summaries included in the centre' annual reports refer to number of diseases reported in last one year. Hence, based on the available information the output of centre in terms of disease surveillance activity was more realistically reflected. Specific indicators derived from the analysis of the database for disease surveillance and training activities.

Observations

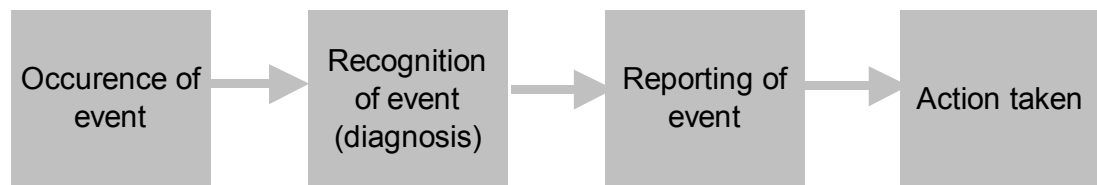
Data received from the jurisdictions are analysed & examined in detail and the year's data are compared as follows

Figure 1 Timeliness of reports



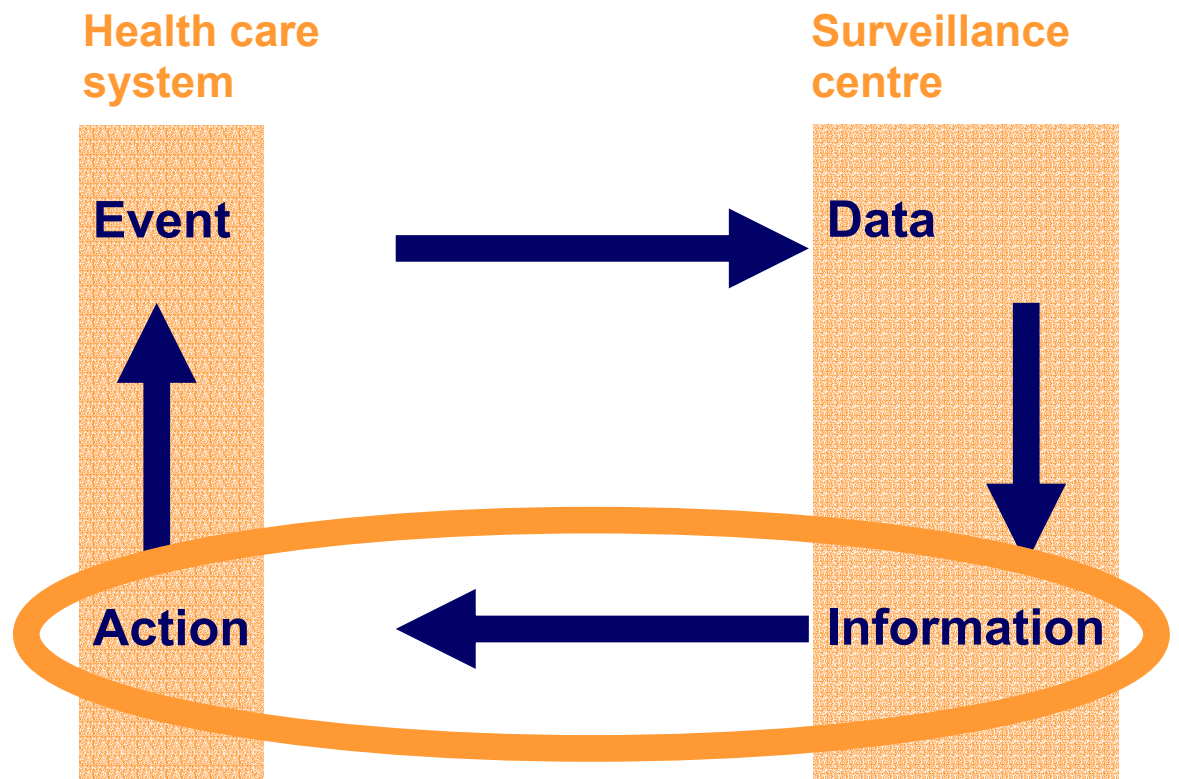
The weekly reports sent on time shows that only 69% of reporting units have sent the diseases surveillance report on time and 31% have not sent the report on time. This disparity will hamper the quality of work towards disease surveillance as the reporting weekly itself tells the sensitivity of surveillance system.

Timeliness process



The timeliness process shows how the sequential steps work to carry out the effective surveillance system and its impact.

Usefulness of timeliness report



This clearly illustrates that timely reports will give timely information which helps to predict future outbreaks, trends of diseases occurrence, cases for further studies, future impact of diseases surveillance and action for problems identified on time.

Figure 2 Types of Surveillance system

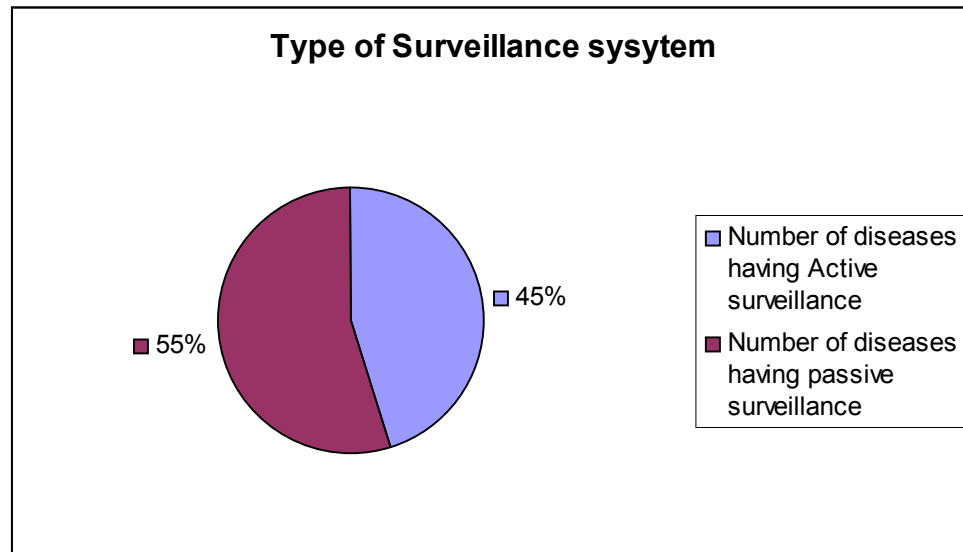


Figure 2 summarizes that 55% of the diseases are under passive surveillance and 45% under active surveillance. The passive surveillance is one where the diseases/cases are reported as and when case comes to the hospital and there will not be any weekly reports/thorough search of registers of hospital to ensure that all the suspected cases are reported. Where as in Active surveillance there will be weekly reports in prescribed format after thorough search of hospital records/registers. Hence the Active surveillance will give more accurate information about the occurrence of disease than passive surveillance. The above figure 2 infers that still 55% diseases are under passive surveillance, which has to be changed into active surveillance to have sensitive surveillance system.

Figure 3 Training

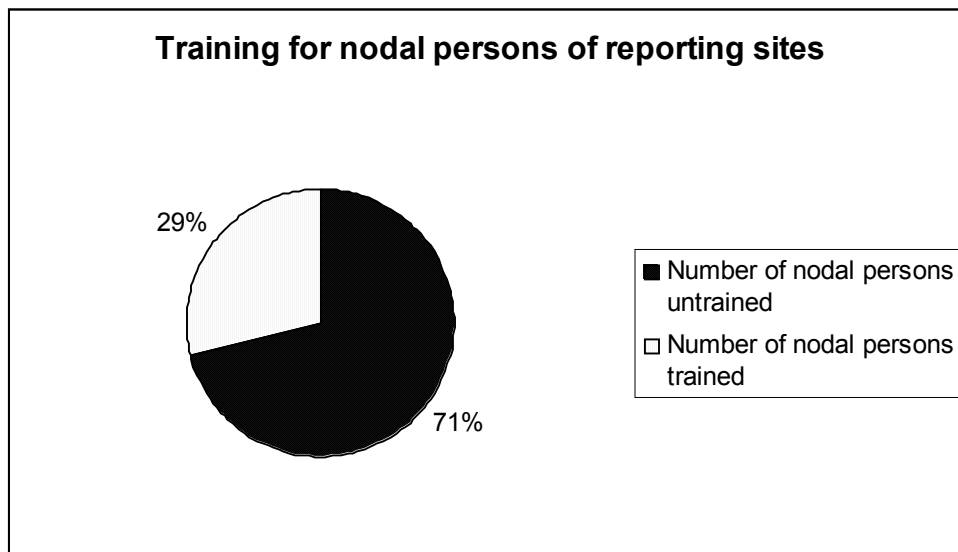


Figure 3 depicts clearly that the persons trained are 29% when compare to untrained persons which is 71%. For the success of surveillance programme training of concerned persons plays pivotal role. Since the formal training is not given the quality of reporting system is also not up to the mark as shown in Figure 1.Hence to have the quality of detecting diseases, training of all the concerned persons in all the reporting hospitals is an important integral part of the surveillance system.

Figure 4. Institutions involved in surveillance system

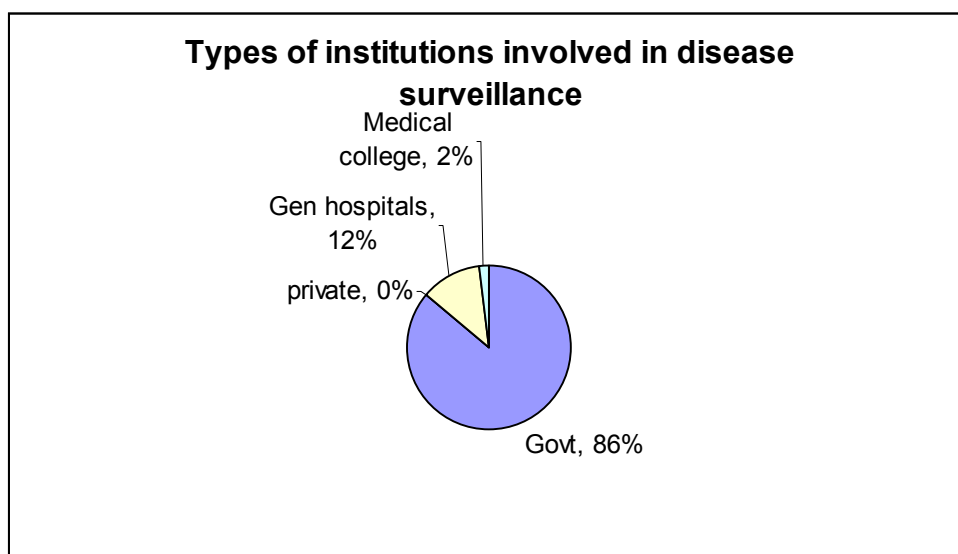


Figure 4 illustrates that 86% of total institutes involved in surveillance system are from Govt sector, Govt general hospitals 12% and Medical College 2%. The significant factor to note is 0% involvement of private institutions. Since the private practitioners/institutions are not involved for disease surveillance system, the accurate information about diseases can not be assessed as the significant amount of health services are rendered by the private practitioners/institutes. Hence active involvement and training of all the key persons in private is equally important in disease surveillance system.

Figure 5. Laboratory Support

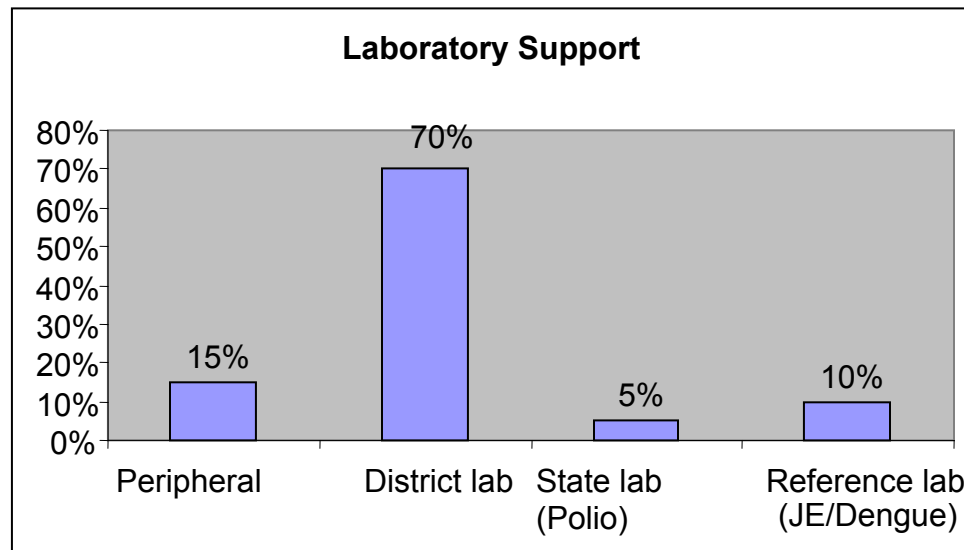


Figure 5 illustrates that the facilities provided by the laboratories at different levels i.e peripheral labs provides services for 15% of diseases, district lab provides services for 70% of the diseases, state lab provides services for 5% of diseases, and reference laboratories provides services for 10% of diseases which are under existing surveillance

The components would consist of the upgrading of laboratories at the state level, in order to improve laboratory support for surveillance activities. Adequate laboratory support is essential for providing on-time and reliable confirmation of suspected cases; monitoring drug resistance; and monitoring changes in disease

agents; and the introduction of a quality assurance system for assessing and improving the quality of laboratory data.

The laboratory network for the IDSP has 4 levels: L1- peripheral laboratories and L2 - district public health laboratories; L3-disease-based state laboratories; and L4 – reference laboratories and quality control laboratories. L1 laboratories will provide information for the diagnosis of malaria, TB, typhoid, chlorination levels in water and fecal contamination of water etc. Whilst these laboratories already handle examination for many possible diseases but, some need minor internal modification.

L2 laboratories will need to carry out tests for TB, malaria, typhoid, cholera and water quality, primarily to confirm results from the peripheral levels and for quality control. Some will require minor internal modification and additional equipment, reagents and kits. These laboratories will also be connected to the computer network. Staff will be as already assigned, reassigned from other laboratories or, in the case of microbiologists, hired on contract.

L3 laboratories will carry out tests to confirm L1 and L2 results, for some state-specific diseases (e.g. leptospirosis), as part of the internal quality control mechanism, and assays required for the non-communicable disease surveys. The project provides for some minor internal modification of laboratories, equipment required for additional tests, reagents and kits, and a computer, software and telephone connectivity.

L4 laboratories - IDSP will have reference laboratories to support routine work and specific outbreak investigations. These are high quality laboratories to carry out the laboratory tests required.

External Quality Assurance surveys (EQAS) of laboratory data are an important tool in improving the quality of laboratory information. This should be carried out at regular intervals but it is not happening yet. This will help IDSP laboratories in each district for specific interventions in the IDSP system to improve laboratory quality.

Figure 6. Measures taken for surveillance report

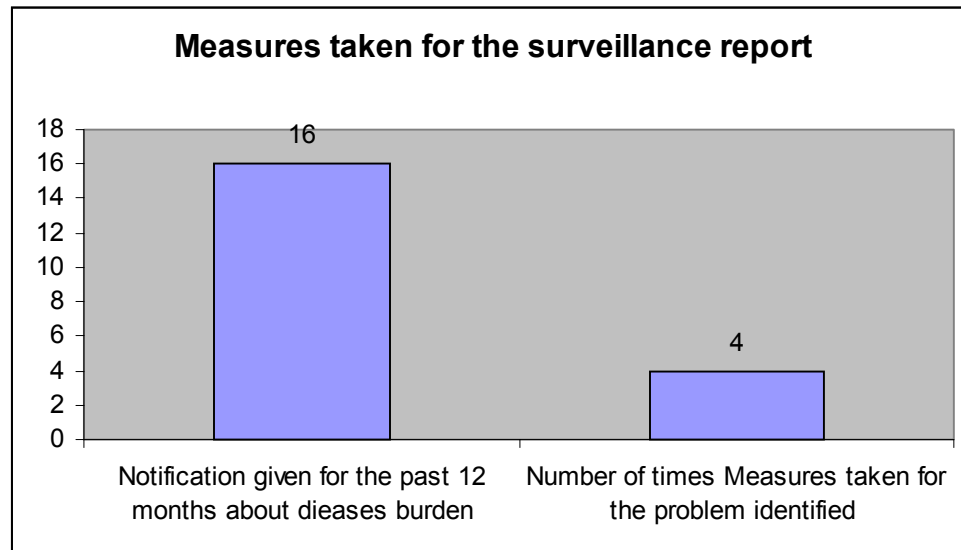


Figure 6 shows that the disease surveillance unit has alarmed 16 times about the problem of different diseases in 12 months but immediate measures taken only on 4 times. This shows that the health administrative set up of the district not very seriously viewing the problems which have been identified.

Figure 7. Diseases under surveillance

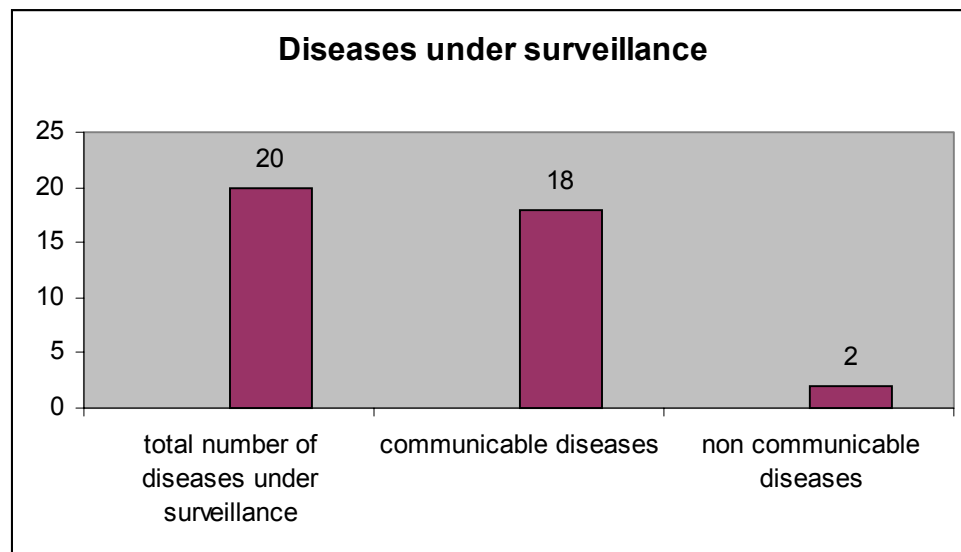


Fig 7 shows that there are 20 diseases under surveillance. Out of 20 diseases 18 are communicable and 2 are non communicable diseases. Though communicable diseases are predominant in our country but simultaneously focusing on non communicable diseases like Diabetes mellitus/Myocardial infarction also important as they are also rising slowly. Instead of doing surveillance when diseases burden more better to start surveillance on diseases which are major killers, they could be communicable like AIDS or non communicable diseases like Malignancy.

Figure 8. Financial support

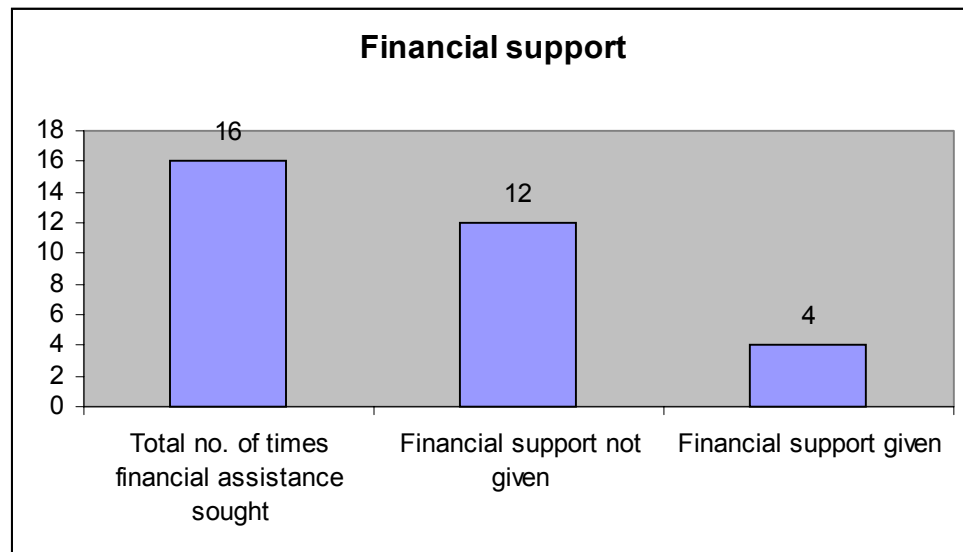


Figure 8 reveals that total number of times financial support sought was 16 times in one year but received only 4 times and non receipt is 12 times. This amply demonstrates that the adequate financial support is not given to the district surveillance unit from the state which indirectly hampered the quality of surveillance activity.

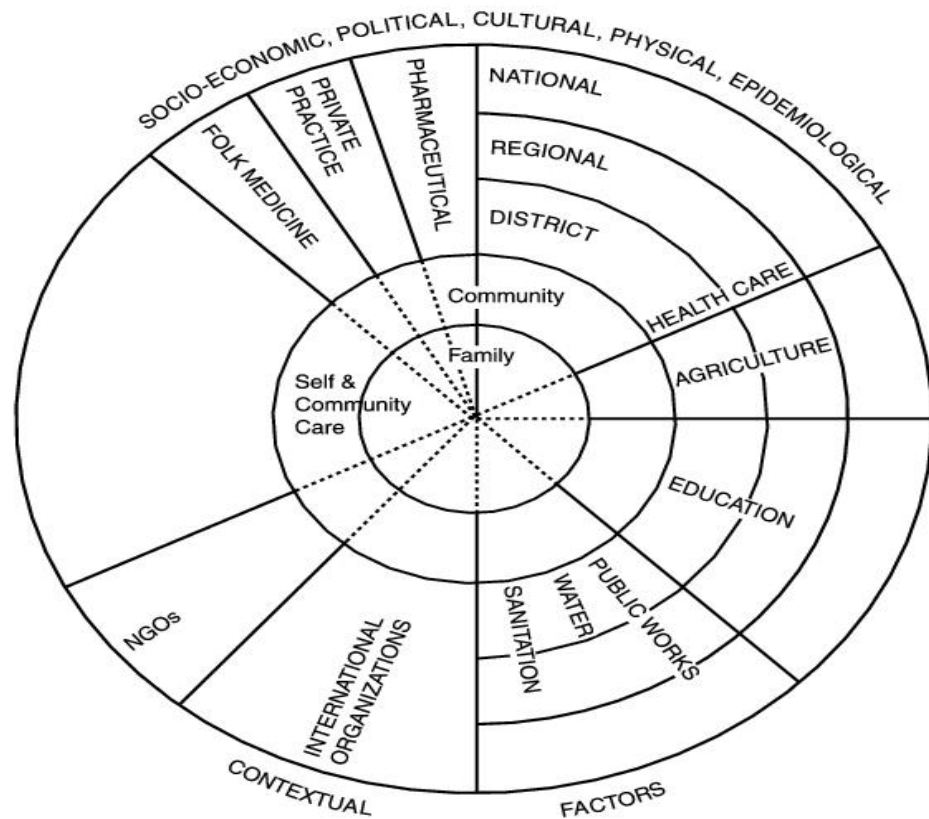
Discussion

The level of surveillance for diseases at District/Primary level

Active or passive data collection is going on for numerous different conditions. The peripheral data collection system is over burdened with a substantial percentage of the time of the ANM spent on surveillance related activities. Quality of reporting is hampered by absence of clear case definitions/timely financial support. Data transmission is affected by poor communication facilities available and inadequate or absence of formats for reporting diseases adversely affecting quality of the data collection.

There is no horizontal integration of surveillance activities of existing disease control programs and hence the surveillance unit has to ask repeatedly for sending weekly reports etc. Data is not collected from private practitioners and private hospitals both in rural and urban setting. Apart from these there is no system of quality control for the data collected and there is very little analysis/analysis of data is inadequate for meaningful interpretation and action based on the data. District level response system is not activated in most times of outbreak and there is lack coordination between departments which leading the district administration not making use of the health data effectively. Effective coordinated effort is essential as shown in figure 9 to have impact of disease control system

Figure 9. Representation of multilevel responsibility to have control on diseases



Health services by themselves cannot control all of the factors that influence health. The factors like– geographical, socio-economic, cultural, political, demographic, and epidemiological – not only influences the health of people if managed well, it also affects the health services if not managed properly. Health of community can be better protected by involvement of different sectors at different level as shown in figure 9. i.e primary responsibility is of individual then family/education/health services/sanitations/political/cultural practices etc. Poverty and political systems which either widen or narrow the gap between rich and poor and which promote or neglect the health of people. With the available resources we could cover more needs, or more people, in a more cost-effective way. It is possible to introduce public –private partnership to reduce the risk of unexpected high costs, in particular for the economically vulnerable. Could co-

operate with the private/NGO sector to improve and can well-define bottlenecks in the system

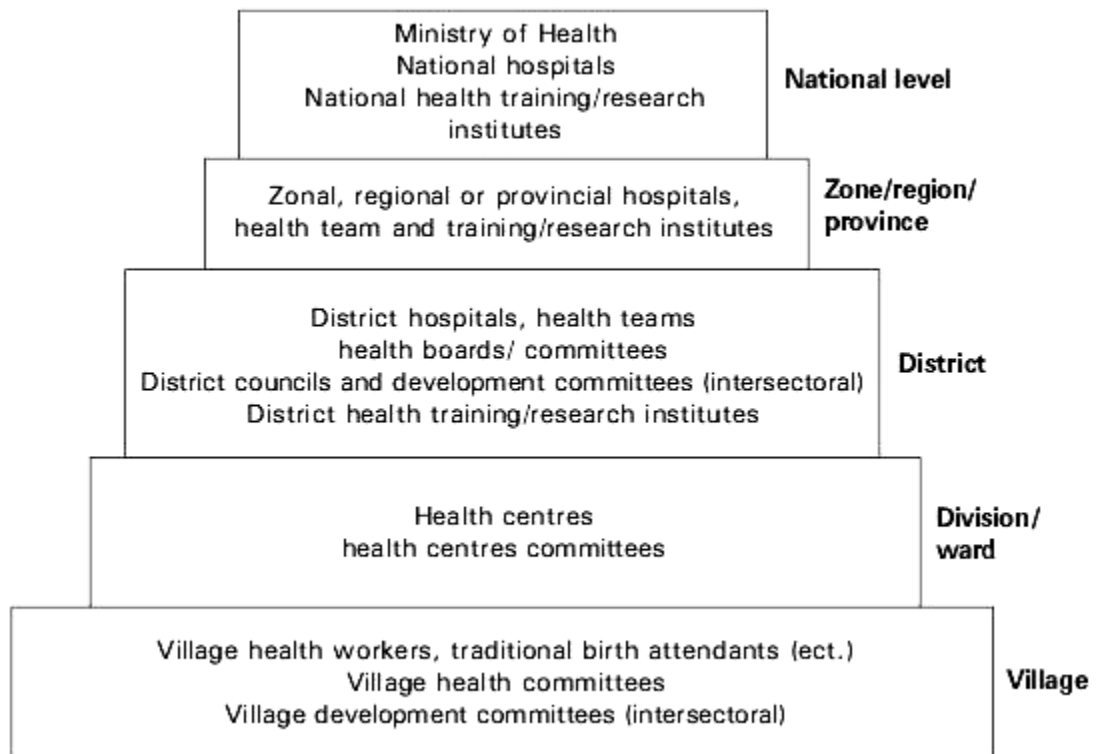
State

There is need to improve the quality of data in terms of reliability and validity, there is problem of timeliness as data is transmitted to state head quarters irregularly and often late. There is need to improve human resources as most of the department staff is decided and posted by state and frequent change of staff or officers or posting of incompetent persons is hampering the disease surveillance quality.

Recommendations based on the above summary

Process of Disease Surveillance

Figure 10.



1. As illustrated in the figure 10 health providers at all levels ought to understand the scope and benefits of disease surveillance and be able to delineate surveillance related activities from other health services.
2. Strategies to improve the validity of surveillance data
 - There is need to develop operational manuals in the local language for different levels of health functionaries. The health staff should be formally oriented to the contents of the operational manual on surveillance with periodic reinforcement of key issues.

- The case definitions of the diseases that are under surveillance should be clearly understood by the health workers and other staff. Changes in case definitions should be avoided unless absolutely necessary.
 - Surveillance formats should be simple, requiring minimum necessary information to be obtained and readily available as printed forms. The health workers must complete these during their contact with patients at home, field or health facilities.
 - Increasing the sensitivity of data
 - Complete coverage of population under every health worker by
 - i. Targeting hard to reach and migratory populations
 - ii. Improving efficiency of fieldwork through micro planning and categorizing surveillance data that needs to be collected during house visits or from health facilities.
 - Involving all stakeholders in the entire process (private sector, community, leaders, influences, etc.) by various strategies like social mobilization, sensitization, training and ownership activities.
- 3. Improvement in the overall quality of data.
 - Surveillance should be restricted to 10-15 health conditions that are of public health significance in the area.
 - Training of health workers and other health personnel in basic principles of epidemiology, data collection, surveillance of health conditions that are now proposed to be included in the list e.g. non - communicable diseases and preliminary data analysis and interpretation.
- 4. Early identification of outbreaks / epidemics
 - The health workers and field staff should have a pre-defined list of epidemic prone diseases in their area. They must be aware of the

epidemiology of these health conditions and risk factors that facilitate disease outbreaks, and maintain a high level of suspicion.

- Health workers should be able to recognize unknown disease conditions occurring / reported in their area.
 - Awareness levels of traditional sources of first information about epidemics (i.e. community members, local leaders, press, NGOs) should be increased to facilitate early reporting.
 - Interval between first information and confirmation of outbreak needs to be minimized to avoid delays in response.
 - Health staff should be encouraged to report occurrences of unusual cases or observed increase in the number of cases with epidemic potential.
 - Trigger levels and standard operating procedures need to be pre defined for all health conditions with epidemic potential.
5. Disease Surveillance has to be associated with feedback to field staff and community and appropriate responses.
 6. There is a need for an inbuilt mechanism of regular monitoring of the program with a checklist of tasks that ought to be supervised. Supervision has to be supportive. PHC doctors should perform their role as leaders of the primary health care team by providing appropriate training, motivation and encouragement, to health workers.

Involvement of Private Sector

1. The objective of incorporating the private sector in health will be to improve the sensitivity of surveillance data. The private health facilities /

practitioners including traditional healers can function as sentinel sites to regularly collect and send information. Such information will at least be able to demonstrate the trends in disease occurrence.

Community involvement

2. An institutional mechanism to be put in place where field staff makes proactive efforts to develop personal rapport with the community and solicit their support and cooperation in various health programs including disease surveillance.
3. Community must be regularly given feedback about surveillance data and the consequent responses to sustain their participation and interest. Community leaders, influencers and NGOs should also be made part of the process that makes health related decisions at the community level.

Integrating and strengthening disease surveillance at the state and district levels

This component includes involvement of communities and other stakeholders, in particular the private sector. This component addresses the constraints imposed by lack of coordination at the district level, the limited use of modern technology and data management techniques, the inability of the system to act on information and the need for inclusion of other stakeholders. It will consist of 4 sub-components:

State-level. disease surveillance unit should emphasis on strengthening integration of the activities of existing health staff, laboratory information, the private sector and the community into the overall system through implementation of procedures and activities spelt out in the district-level and state-level disease surveillance manuals.

Activities at the state level should include:

training state and district level staff, implementing periodic surveys for communicable/non-communicable diseases and/or their risk factors, implementing Quality Assurance surveys (in conjunction with GOI), integration of disease control efforts based on the surveillance data, supporting districts in data analysis, transport of laboratory specimens, and outbreak investigations, analyzing surveillance data across districts, supervision and support of the respective units under them.

District level: The District Surveillance Unit (DSU) should work effectively by analyzing surveillance data from the peripheral level; providing support for collection and transport of specimens to laboratory networks; initiating investigation of suspected cases; providing feedback to the health facility; responding promptly to information provided by communities.

Information technology and data quality, analysis and links to action: Activities should include 'real-time' on-line entry, management and analysis of surveillance data through use of computers, the Internet and the WWW. Reporting surveillance data using standard software, including GIS, while allowing flexibility to add new systems as needed; email services between central sections and departments, within and between states, laboratories and other persons and institutions involved in public health; rapid dissemination of 'health alerts' and other textual information; and electronic distribution of reports both to the public health staff and civil society; Quality Assurance surveys of laboratory information.

Software for the system should be developed to facilitate simplified data entry with multilingual formats, analysis and consolidation of data at each level, generation of alerts on the basis of disease-specific thresholds, documentation of the system and development of manuals, phased deployment of software, skills assessment of staff and provision of appropriate training.

Conclusion

Overall, using the various mechanisms presented above has been not very successful but good initiative. It has made an important contribution to the promotion of diseases surveillance for preventive and promotive care of health in India. Many of the Reporting sites/units have shown the effectiveness of the diseases surveillance input via their active involvement in disease surveillance projects covering the broadened diseases surveillance mandate. In some cases, it was noted that the application of disease surveillance findings had led to policy change and improvement in networking. The varying degrees of effectiveness of the disease surveillance strategy noted in the different centers in the three regions are attributable to centre- and region-specific factors and future strategies would have to look into creative ways to overcome some of the centre- and region-specific constraints, so as to enable centers to meet their districts health needs more effectively.

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