



ACTIVITY REPORT 126

Assessment of Early Warning and
Reporting Systems (EWARS)
in NEPAL

David F. Pyle, Lalit M. Nath , Badri Lall Shrestha,
Asok Sharma, Sushil Koirala

March 2004

Prepared under EHP Project 26568/E.X.NE6.TE.SURVEIL

Environmental Health Project
Contract HRN-I-00-99-00011-00
is sponsored by the
Office of Health, Infectious Diseases and Nutrition
Bureau for Global Health
U.S. Agency for International Development
Washington, DC 20523

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Abbreviations

AFP	acute flaccid paralysis
CBARS	community-based alert and response system
CDC	Centers for Disease Control and Prevention
DHO	district health officer
DPHO	district public health officer (or office)
EDCD	Epidemiology and Disease Control Division
EHP	Environmental Health Project
EWARS	Early Warning and Reporting System
FCHV	female community health volunteer
HMG	His Majesty's government
HMIS	health management information system
HP	health post
JE	Japanese encephalitis
KA	kala-azar
MOH	Ministry of Health
MRA	medical record assistant
NFHP	Nepal Family Health Project
NNT	neonatal tetanus
PEN	Polio Eradication Nepal
PHC	primary health center
PHO	public health officer
RRT	rapid response team
SARS	severe acute respiratory syndrome
SHP	sub-health post
SMO	surveillance medical officer
SS	sentinel site
STI	sexually transmitted infection
TPM	team planning meeting
USAID	United States Agency for International Development
VBD	vector borne disease
VBDRTC	Vector Borne Disease Research and Training Center

VDC	village development committee
VPD	vaccine-preventable disease
WHO	World Health Organization

About the Authors

The assessment team consisted of four professionals with complementary backgrounds, experience and expertise:

Dr. David Pyle was the team leader. He is a senior associate at JSI and has considerable experience in monitoring and evaluation. Pyle has served as team leader on a number of evaluations of USAID projects.

Dr. Lalit Nath brought significant knowledge of surveillance systems and infectious diseases. His distinguished career has included serving as director of the All India Institute of Medical Sciences and as a member of the Scientific Advisory Committee for the Department of Communicable Diseases and Surveillance, Global Alert and Response at WHO/Geneva. His responsibility in the assessment was on technical, disease-related matters as well as surveillance issues.

Dr. Badri Lall Shrestha served in the MOH in a number of capacities including Director General of Health Services and Chief of the Malaria Control Division. Dr. Shrestha reviewed EHP's support to EWARS training and laboratory support.

Dr. Asok Sharma has been the program officer of EHP/Nepal for the last two years, largely responsible for overseeing the project's support of EWARS. He was instrumental in organizing and looking after all the logistics involved in the assessment while providing the team with any background materials and information that it required.

In addition, Sushil Koirala, who works with EDCCD and EHP on EWARS, assisted in the field assessment and in the preparation of the dissemination presentation.

Executive Summary

The Environmental Health Project (EHP) requested a team of consultants to carry out an assessment of the Early Warning and Reporting System (EWARS) in Nepal. The objective of the assessment was to examine the current performance of the system in the eight pilot districts, focusing attention on the reporting and response functions.

EWARS is a hospital-based sentinel surveillance system. It includes six diseases: three vaccine-preventable diseases or VPDs (polio, measles and neonatal tetanus or NNT) and three vector-borne diseases (malaria, kala-azar (KA), and Japanese Encephalitis (JE)). It was designed to provide more timely information to the decision makers to facilitate early response. EWARS was started in 1996, and the Epidemiology and Disease Control Division (EDCD) of the MOH has been the implementing agency. The number of sentinel sites has grown to the current 28, and they are expected to report every week on the number of cases and/or deaths (including “zero” reports) of the six priority diseases. EDCD compiles the information from the reporting districts and publishes a weekly *EWARS Bulletin*.

A team of three experts conducted the assessment during a three-week period in November 2003, in anticipation of the termination of EHP activities and funding in Nepal in March 2004. The assessment was launched with several Team Planning Meetings, including one in Washington with relevant EHP and USAID personnel and the Team Leader attending, and one in Kathmandu with the EHP/Nepal staff and the assessment team. The methodology followed in the assessment included interviews with key officials in the Ministry of Health (MOH) as well as in the field. In addition, the assessment team reviewed all significant reports and documents. Moreover, the team visited four of the pilot and several of the non-pilot EWARS districts and spoke to the hospital and public health officials who played a role in the surveillance system and rapid response teams (RRTs). The assessment findings were disseminated to the EWARS stakeholders at a workshop, and feedback from the participants was integrated as appropriate into the final report.

The principal findings of the assessment team are divided into strengths, weaknesses and recommendations. They are summarized here:

I. Strengths

- The MOH has grown to accept the need and importance of EWARS.
- EWARS has created an awareness at the district level of what an early warning system is, how it functions and why it is vital.
- A third of the districts (25/75) are now submitting weekly reports on the incidence of priority diseases.

- The need for rapid response in the form of an RRT and how it is to be employed has been reinforced at the district level.
- Capacity has been built into a portion of the districts for early warning data collection, reporting and response.
- Hospitals and district public health offices (DPHO) are working together in some districts.
- The dipsticks for the rapid diagnosis of KA and falciparum malaria have proved to be very effective and helpful for early treatment of these diseases at the periphery.
- Community-based diagnosis and referral has demonstrated great potential.
- His Majesty's Government (HMG)/MOH has supported the early warning and response principle by committing resources to EWARS.
- The MOH has accepted ownership of this donor-initiated activity.

II. Weaknesses

- The diseases included in EWARS were not all prone to epidemic outbreaks (e.g., NNT and KA).
- A hospital-based system, by its very nature, cannot provide “early warning” — it is too late once a patient is admitted to a hospital.
- There is overlap in the reporting of VPDs with the Polio Eradication Nepal (PEN) that has a much more extensive network of reporting sites.
- Confirmed diagnoses of JE cases are limited by inordinate delays in reporting and exorbitant transportation costs.
- EDCCD has not been proactive in its support of capacity building and other aspects of EWARS (e.g., percentage of reports received on time has not improved in last five years).
- Feedback to the districts in the form of *EWARS Bulletin* has been irregular and tends to be in batches (sent every two to three months).
- The relationship between the medical superintendent at the district hospital and the DPHO is still problematic in most districts.
- No budget line is allocated to support EWARS activities, resulting in the fact that it often loses to competing priorities and receives scarce resources if any.
- There are multiple disease-specific reporting systems in existence (e.g., for TB, STI/HIV/AIDS, leprosy, malaria) that respond to different programs or donor perceptions.
- The reporting loop through the Vector-Borne Disease Research and Training Center (VBDRTC) is unnecessary;

- With no plans for income generation in place, sustaining the VBDRTC after USAID/EHP funding ends in March 2004 will be difficult if not impossible.
- There is no national plan or policy supporting a national disease early warning and response system.

III. Recommendations

In general, the assessment team supported the establishment of a sustained and effective, integrated Early Warning and Rapid Response System in Nepal. For this to become a reality, the following should be considered:

- EWARS should be moved from the hospital to the Public Health structure.
- Data should originate at the periphery (from the Female Community Health Volunteer (FCHV) and the sub-health posts).
- To ensure effectiveness of an early warning system, capacity must be built to collect and analyze data and to initiate a prompt, effective response.
- A line item for diagnosis and early response at the district level should be added to the budget.
- With the empowerment of the districts there is no identifiable role for VBDRTC in data management; the data can and should be sent directly to EDCC for information and compilation.
- The role envisioned in EWARS for the VBDRTC should be restricted to training and the inclusion of more diseases beyond VBDs.
- The VPDs should be dropped from EWARS and left to PEN, with its extended and well-funded program.
- Community-based malaria and KA diagnosis and early warning/response should be expanded.
- KA should not be included in an early warning system since it is better served in a national registry or health management information system (HMIS).
- The cost of diagnosing JE should be reduced by posting a serum sample on filter paper to the lab and procuring dividable microtiter plates.
- EWARS could be expanded to include other epidemic-prone diseases, including emerging/reemerging diseases and diseases of unknown origin.

In summary, the assessment team concluded that the HMG/MOH should explore the possibility of developing and institutionalizing an integrated disease surveillance system with the capacity for early warning, and incorporating into this an effective rapid response mechanism. Donors could take a larger or smaller share of this national surveillance and response plan.

1. Introduction

The Environmental Health Project (EHP) requested a team of consultants to conduct an assessment of the Early Warning and Reporting System (EWARS) that it has supported for the last several years. This support will terminate in March 2004, as the current EHP comes to an end in June 2004. With the end of EHP in sight, the assessment team was asked to review EWARS operations and its effectiveness. In addition, the team was asked to recommend what the Department of Health Services of the Ministry of Health (MOH) of Nepal might consider in the future to identify disease outbreaks and respond to them in the most effective way to safeguard the health of the population. The Scope of Work for the assessment team is appended as **Annex 1**.

The assessment team gathered in Kathmandu on Nov. 5, 2003, and began the assignment with a team planning meeting (TPM) that included a review of the background and the current status of EWARS, identification of the primary and secondary clients, and discussion of how the team would work with the client. The scope of work for the team was reviewed and the roles and responsibilities of the individual team members identified. The team agreed on the objective of the assignment, on the expected outcome, and on how individual team members would participate and contribute to the final product. A work plan and schedule for the project review was worked out and a plan developed for how the team would work together to produce the final report. Administrative and logistic arrangements for the team were discussed. Travel to the Terai for the purpose of visiting a sample of EWARS sentinel sites was complicated by the Maoist rebels. This made it necessary to fly between Kathmandu and district towns rather than driving between the districts. Security problems also prevented the assessment team from visiting a number of EWARS pilot sites such as Kanchanpur on the western border of Nepal that was of special interest because of its community reporting and the success it had achieved in malaria reporting and response.

The methodology followed in the assessment consisted of several aspects. Key players in the development and implementation EWARS were interviewed. This included persons in Washington (from USAID and EHP), at the EHP and USAID offices in Kathmandu, and in the pertinent offices of decision makers and EWARS implementers and users in Nepal (e.g., MOH, EDCD, VBDRTC, WHO). **Annex 2** provides a list of persons interviewed and **Annex 3** is a copy of a list of questions that guided these interviews. In addition, the team reviewed a large volume of project-related reports, including the EWARS reports and bulletins, baseline assessment, and annual and semiannual reports. The assessment team also visited a number of accessible pilot and non-pilot EWARS sites to discuss the surveillance project

activities and operations to ascertain how successful the project has been in achieving its objectives. Moreover, the team wanted to identify ways to improve the early detection of disease outbreaks and effective response to them in the future. The assessment was concluded with a workshop attended by various EWARS stakeholders to review findings and discuss how the disease early warning and response system in Nepal can be improved. **Annex 4** is the agenda for the dissemination workshop, **Annex 5** is the list of attendees, and **Annex 6** is the PowerPoint presentation given at the meeting.

This assessment report consists of a description of the background of EWARS and a discussion of the context in which it is being implemented. This chapter includes a review of the history of the EWARS effort and a discussion of other activities that are currently being taken to report on some of the same diseases that EWARS focuses on.

The background chapter is followed by the assessment team's findings, focusing on EWARS' strengths and weaknesses. Based upon these findings, a set of recommendations is made regarding how to improve the effectiveness of the system and to strengthen the MOH's capability to identify disease outbreaks expeditiously and ensure that the response to such outbreaks is appropriate and effective. It is the intention of the assessment team to focus on a limited number of recommendations rather than a long laundry list of suggestions. As such, only the most appropriate, feasible and affordable recommendations are included.

2. Background

EWARS is a hospital-based sentinel surveillance system. It grew out of an interest in tracking cases of poliomyelitis and was then expanded in scope to include other vaccine-preventable diseases such as neonatal tetanus (NNT) and measles. Subsequently, with the USAID interest in VBD, it extended to report on Malaria, KA and JE as well. The existing Health Management Information System (HMIS) in Nepal, as elsewhere, is not designed to provide timely information or facilitate early response. In addition, hospital cases were inadequately investigated, and there were inadequate definitions and guidelines for diagnosis, investigation and management of diseases. There was an inadequate link between hospitals and the public health infrastructure and actions.

In response to the need for epidemiological surveillance of priority communicable diseases, the Nepali government's Department of Health Services of His Majesty's Government (HMG) designed and launched EWARS in 1996. The Epidemiology and Disease Control Division (EDCD) was designated as the implementing agency. EWARS was viewed as a means to supplement and complement the HMIS by providing timely reporting for the early detection of selected vector-borne and vaccine-preventable diseases, as well as other diseases with outbreak potential.

The four basic elements of surveillance that were the cornerstones for EWARS development were (1) a mechanism for hospital inpatient-ward-based case detection, (2) laboratories for identifying and characterizing microbes, (3) information systems, and (4) response (information feedback and mobilization of investigative and control efforts). EWARS objectives were:

- to develop a comprehensive, computerized database of infectious diseases of public health importance
- to monitor and describe trends of infectious diseases through a sentinel surveillance network of hospitals followed by public health action and research
- to receive early warning signals of diseases under surveillance and to detect outbreaks
- to instigate a concerted approach to outbreak preparedness, investigation and response
- to disseminate data/information on infectious diseases through an appropriate feedback system.

The main focus of EWARS was reporting on a weekly basis the number of cases and deaths (including “zero” reports¹) of the six priority diseases. These diseases were selected based on a number of criteria: widespread distribution; major causes of morbidity, mortality and disability; potential for causing outbreaks; already monitored under national programs; amenable to control through cost-effective means; and being a global priority for elimination, eradication and/or control. The selected EWARS diseases were divided into two groups: (1) vaccine-preventable diseases (VPDs), which include acute flaccid paralysis (AFP), measles, and NNT; and (2) vector-borne diseases (VBDs), which include KA, JE, and malaria. In addition, in the case of an outbreak, EWARS includes the immediate reporting of a single suspected/probable/confirmed case of AFP, NNT, severe and complicated malaria, and JE, as well as ten cases of measles from the same locality within 24 hours of diagnosis. Other communicable diseases are also reported periodically in EWARS.

EWARS was designed to complement the HMIS, which already contains a large amount of information and responds to numerous needs. The HMIS report is submitted on a monthly basis, and thus is not conducive for use as an early warning system. In contrast, EWARS provided a systematic collection, collation, analysis, interpretation, and dissemination of data on six identified diseases for immediate public health action, monitoring, and timely response to outbreaks of these priority diseases.

EWARS began in September 1996 with the development of guidelines and the selection of eight sentinel sites (SSs). Training of the medical records assistants (MRAs) took place several months later, in November. Between December 1996 and March 1997 the SSs were visited to ensure that everything was in place so that EWARS could start functioning in April 1997. In the same year, the first workshop on prevention and control of vector-borne diseases was held in Kathmandu. Recommendations on policies and strategies for prevention and control of VBDs were formulated and launched. The emergence and reemergence of these diseases served as a stimulus for the initiation of EWARS. A year later, in 1998, EWARS was expanded to 24 sites, in 2002 to 26 sites, and 2003 to 28 sites (see map, **Annex 7**).

The Environment Health Project, with USAID funding, conducted a baseline assessment of EWARS in April and May 2001. The purpose of this exercise was to develop strategies to improve the system and expand EWARS to the Village Development Committee (VDC) level. Based upon a three-day, EHP-organized workshop on EWARS implementation (September 2001) a work plan was developed to review and revise EWARS information and reporting forms, identify roles and responsibilities, design and develop improvement guidelines and training protocols, and prepare a supervision and monitoring plan for the seven pilot districts.

¹ “Zero” reporting refers to the requirement to submit a report even if no cases were identified during that week. This is to ensure that those responsible at the MOH for collecting and collating the information from the sentinel sites know the situation at the project sites.

EHP's support and strengthening of EWARS responded to USAID/Nepal's Strategic Objective 2 (reducing the fertility and protecting the health of Nepalese Families) and Intermediate Result (IR) 2.4 (strengthening capacity and programs to control selected infectious diseases). **Annex 8** is a graphic presentation of the five objectives under IR 2.4 that have guided EHP's EWARS support.

The components of EWARS that EHP has assisted in developing or strengthening include guidelines, reporting forms, investigation forms, outbreak reporting forms, rapid response teams (RRTs), bulletins, training technology for surveillance and response, epidemiological surveillance kits, and resource backup (HMG, USAID and WHO).

Annex 9 is a schematic of how EWARS works. EWARS activities consist of preparation of data collection and case investigation tools; receipt of data on communicable diseases; compilation, analysis, and interpretation of data; publication and distribution of the *EWARS Bulletin*; training; linking EWARS and RRTs; outbreak preparedness and response; and monitoring and supervision.

The sentinel sites send reports immediately in the case of an outbreak and weekly on a regular basis (even if there are no cases to report) to the Vector Borne Disease Research and Training Center (VBDRTC) in Hetauda. These reports are sent by fax. VBDRTC serves as the focal point for EWARS by receiving and analyzing all immediate and weekly reports sent from the sentinel hospitals. The VBDRTC consolidates the reports and forwards weekly summaries to the Epidemiology and Disease Control Division (EDCD) of the MOH in Kathmandu. EDCD compiles, analyzes, and publishes a weekly report in the form of the *EWARS Bulletin*. In this way, national epidemiological data for the week is disseminated to all major health institutions in the country's 75 districts. Of late the VBDRTC has also started sending copies of the 24-hour reports to the DPHO/PHO for the concerned district.

The *EWARS Bulletin* consists of two pages (see **Annex 10**). The first page is divided into two sections. The first part gives the total number of cases and deaths for the week (each week is numbered 1–52 according to the calendar). The second part is a review of timeliness of the EWARS reports submitted by the SSs. This informs the reader whether the SS submitted its report on-time (by Tuesday noon of the reporting week), late (by Friday noon) or no report (after Friday noon or never), in which case the data for that SS will not be included in that weekly *EWARS Bulletin*. The *Bulletin* also contains data on the number of reports missing for weeks earlier in the year so that it is possible to ascertain at a glance the completeness of an SS's reporting history. The completeness of the reporting (i.e., the percentage of SS reports received for the week in question and for the year to date) is also provided.

On the second page, the *EWARS Bulletin* compares the number of cases of and deaths from the six diseases, both for the same week this year as against last year (e.g., week #18 in 2003 versus week #18 in 2002, in order to reflect seasonal trends) and the cumulative number (e.g., the first 18 weeks of 2003 versus the same period of the previous year). Section D is an age (<1, 1–4, 5–15, >15) and gender distribution of

cases and deaths by the six diseases. Section E is the laboratory confirmation from the SSs for the three vector-borne diseases: JE (number sent, number confirmed), malaria (how many diagnosed as *Plasmodium vivax* and *P. falciparum*) and KA (how many confirmed by K-39 dipstick and by microscopy). Section F notes any other communicable diseases reported by the SSs during that week, by name of the site, disease, number of cases and deaths, and number of cases admitted. The final section of the weekly *EWARS Bulletin* is a space for notes. Subjects mentioned in this section cover a wide range of subjects, from reminders to the SSs to submit reports on time, to requests for SSs to report on the stock (e.g., K-39 dipstick) of supplies, to descriptions of influenza and currently circulating influenza viruses. It is in this section that EDCCD passes along WHO reports of outbreaks of new communicable diseases such as SARS (Severe Acute Respiratory Syndrome), the atypical pneumonia that caused such widespread concern in East and Southeast Asia in early 2003. Information on symptoms and treatment of SARS were passed along via subsequent editions of the *Bulletin*.

The EWARS Assessment of 2001 identified strengths, weaknesses and areas of improvement in three areas: recording and reporting, laboratory and response. Under the first area of recording and reporting, the strengths were identified as design and infrastructure, human resource capacity, and communication. Weaknesses included a lack of awareness (systems, procedures and concepts), lack of uniformity (sources, malaria, KA), lack of coordination (hospitals and PHO), lack of feedback, and dependence on a single MRA. The areas of recording and reporting that required improvement were awareness and ownership by districts, simplification of guidelines, coordination within the districts, coordination of monitoring and supervision, and recognition of the importance of the information.

In the laboratory aspect, the strengths were that they had been established, there was malaria testing in all sentinel sites, and the staff was interested in EWARS. The weaknesses that were found included infrequent malaria microscopy training, separation of hospital and public health laboratories, lack of specimen collection and a transport system, and irregular quality control and supervision. To strengthen the laboratory component, more training and education was required as was improved coordination, development of systems and guidelines (specimen collection/transport), and more coordination of monitoring and supervision.

The strengths of the response aspect included the formation of RRTs, interest of DPHOs, potential support (EDCCD, VBDRTC, SBP Koirala Institute for Health Sciences), and outbreak training. The weaknesses were found to be the lack of information and resources, lack of guidelines for RRTs (team composition and roles, outbreaks, and lab procedures), poor coordination between EWARS and DPHOs, and the lack of centralized reporting and feedback. To improve the response of EWARS, there was a need to develop guidelines and training in the use of information (EWARS and RRTs), a need for guidelines and policies on RRT composition and roles, a requirement for DPHOs to respond in a more timely way, for EDCCD feedback to be strengthened, and a need for greater awareness and resource mobilization of RRTs at the district level.

3. Findings

The assessment of the EWARS is made difficult since there was little information on the situation regarding disease early warning and response when EWARS was initiated in the mid-1990s. As a result it is not possible to compare the current situation with what existed at that time. This is particularly problematic when referring to MOH attitudes and understanding with regard to EWARS. Another constraint was that time and logistic considerations prevented the team from visiting non-EWARS sites and comparing attitudes and services in the two types of sites. This being the case, the assessment team has focused on the current state of affairs. Its recommendations are based on this current assessment and what is required for Nepal to have a cost-effective system that ensures that disease outbreaks are quickly identified and handled in the most expeditious manner possible in order that disease is not spread and the health status of the population is protected.

The findings of the assessment team are divided into three sections. The first of these focuses on the strengths of EWARS and the positive results of the efforts over the last six years by the MOH and with EHP's support. The second part of the findings involves the weaknesses identified by the assessment team; that is, aspects that should be considered if the early warning and response efforts are to be improved. Based upon these findings, the assessment team makes a series of recommendations to be considered by HMG/MOH when it decides what their disease surveillance system will look like and how it will function in the future.

A. Strengths

As a result of its review of EWARS operations and discussions with those involved in and familiar with the system, the assessment team identified a number of positive things that have happened since EWARS was introduced seven years ago with EHP support.

1. National Acceptance — The MOH has accepted and adopted disease surveillance as an important concept. The key informants that the assessment team spoke to at the national level were all aware of what EWARS is, how it functions, and the information that is provided by it. Without exception, they saw the principle of disease early warning and response as essential and something to which the MOH is committed. Regardless of the specifics of the system, everyone at the national level was supportive of the surveillance and response concept. EDCCD, with support from EHP, has done a good job of publicizing the benefits of and need for EWARS and in advocating its use and support. The health sector decision makers

in Kathmandu were aware of such details as the agencies responsible for EWARS, how it functioned, the diseases covered, and reports that were produced.

2. District Awareness — In the six district-level facilities that the assessment team visited, the health authorities and staff involved in maintaining EWARS were knowledgeable and generally supportive of the early detection and reporting effort. They also accepted the need to tie detection and reporting with response. Through orientation and capacity-building efforts of both the hospital and public health personnel, those responsible for health matters at the district level are now aware of the reasons that they must receive and respond to disease outbreaks that occur within their catchment areas. The districts officials were most aware of and were most conscious of the need to report on the six diseases that are included in EWARS, but they also appreciated the need to be alert to other disease outbreaks. Their reports during the last year included such diseases as typhoid, diarrhea, dysentery, rabies, snake bites and even, in one case, a monkey bite!
3. Institutionalization — EWARS is currently functioning with varying levels of effectiveness in a third (25) of all the districts (75) of Nepal. The medical records assistants (MRAs) and medical superintendents in the EWARS districts are aware of what is required of them in terms of immediate and weekly reporting. Those requiring training have been trained, both on the hospital side as well as their counterparts on the public health side. Even though EWARS, as currently designed, is most dependent on the hospital staff to implement the system, the relevant persons on the public health side have also been trained in the same early warning and reporting matters. Together, the proper forms are being maintained and submitted as a part of the health administrators regular duties. Thus, EWARS has become an integral part of health programming in the districts where it has been introduced.
4. Rapid Response — Not only are the EWARS districts tracking and reporting on the six designated diseases, but they are also aware of the need to respond to any outbreak when it may arise. In all the districts visited by the assessment team, there was a rapid response team (RRT) that had been constituted and would meet periodically or as required. The need for such a quick response capacity was accepted and acted upon by all the districts without exception. The leadership of the respective RRTs varied, being either the medical superintendent or the DPHO who heads the public health operations and activities in the district. The team noted that the districts generally convened the RRTs and followed up on outbreak reports before receiving any feedback or instructions from the MOH in Kathmandu. They viewed such outbreaks as their responsibility and felt it was up to them to initiate a responsible response.
5. Capacity Building — One of EHP's greatest contributions was training staff at the district level in disease early warning, reporting and responding. As mentioned, several persons (notably the persons responsible for medical records) from both the hospital as well as the public health infrastructure from all EWARS sites were trained in early warning and reporting. In early 2002, EHP oriented the persons

who kept the records (the MRAs in the hospitals and the statistical assistants in the public health infrastructure) along with the laboratory technicians from both the hospitals and public health structure in all the EWARS districts. They were trained together for the express purpose of fostering a closer personal and working relationship between the two operations. The four-day training oriented the participants to EWARS, its forms and formats, and how reports are submitted and handled. After the late 2001 EHP assessment of EWARS, the lab and statistical personnel from the eight pilot sentinel sites received two additional days of training on changes in the system. This included an explanation of why the forms and formats were changed and what this meant for them. In March 2003, the DPHOs and MRAs received refresher training on the reoriented and improved EWARS forms with an emphasis on use of information for response.

EHP also provided training for laboratory technologists and technicians in both JE and malaria. In JE, EHP conducted four trainings. The first training (five days) was held in Kathmandu in August 1999 and involved lab technicians from the four regional facilities that were responsible for examining suspected JE cases. The training was on laboratory diagnosis of JE using IgM Capture Elisa and the trainers for this initial course were from the National Institute of Health in Thailand. Approximately one year later, the same group of laboratory staff received three days of refresher training at VBDRTC. Ten additional laboratory technicians and technologists were trained for three days, this time at the National Public Health Laboratory in May 2001, with refresher training for the same number of days at the same location seven months later. In July 2002, laboratory assistants from several of the high prevalence EHP-supported EWARS districts and VBDRTC were trained for a day on the use of *Plasmodium falciparum* malaria dipsticks. Finally, in November 2001, 15 laboratory assistants from all the 12 KA-endemic districts received training in the use of the K-39 dipstick diagnostic process.

Along with the training, EWARS provided some of the laboratories, including several of the pilot sites, with equipment (e.g., microscopes) that increased their capacity to determine whether or not there was a disease outbreak that required a rapid response.

6. Collaboration of Hospital and Public Health — The extent of collaboration between the hospital and public health structures at the district level is essential if an early warning and response system is to operate effectively. Typically, the collaboration between these two entities is problematic for a combination of reasons ranging from politics to jealousies over availability of resources. Often it can come down to the personality of the medical superintendent in charge of the district hospital and how s/he gets along with the person responsible for public health (the DPHO) in the district. The relationship between the two structures was found to be good in several districts the assessment team visited, especially Jhapa where the two individuals collaborated, communicated and cooperated in EWARS matters in an exemplary manner. They shared information and coordinated responses through the district's RRT as required. Perhaps the

experience of the medical superintendent as acting regional director contributed in no small measure to this high degree of cooperation.

7. KA and Malaria Diagnostics — One of the most significant contributions of EHP/Nepal was the testing and introduction of the KA and *P. falciparum* malaria dipstick diagnostics. These greatly facilitated the diagnosis of these two diseases, thereby increasing the capacity of the districts to respond more rapidly. The K-39 dipstick has now been introduced and is used in the 12 KA-endemic districts of Nepal. Because of the nature of the disease and the pain associated with the diagnosis as well as treatment, people were reluctant to come forward and present themselves to health providers so that diagnosis was possible. Replacing the painful method of diagnosis (it involves taking a sample of bone marrow) with the drawing of a blood sample and using a dipstick is a great advance. It is now possible to identify locations where a cluster of KA cases exist and do some active case detection to identify those infected and treat them. EHP has also proposed adding Miltefosine to the therapeutic armamentarium, and now that the field trials are over, this introduction will further help community acceptance of the KA program.

EHP also launched a community-based effort in malaria detection in Kanchanpur District of extreme western Nepal. This activity has demonstrated that health workers at the periphery are able to use the malaria dipstick to diagnose deadly *P. falciparum* malaria. The field worker treats any suspected case of malaria presumptively while taking a blood sample to test for *P. falciparum*. If the sample tests positive, the patient is treated with drugs that will cure *P. falciparum* malaria. With 15-20% of the malaria cases being *P. falciparum*, it is possible for the health system to reduce both morbidity as well as mortality with the use of the malaria dipstick. EHP supported this effort by introducing, testing, procuring, and providing the two dipstick diagnostics.

8. Community Diagnosis — As described above, EHP and EWARS have demonstrated the efficacy and value of being able to diagnose such diseases as KA and *P. falciparum* malaria at the community or close to community level. The new technologies made it possible to extend the level of capacity to identify disease outbreaks, at least in the case of these two diseases, down to the sub-health post (SHP) level and even into the community. The sooner outbreaks of diseases like *P. falciparum* malaria can be identified, the sooner help can be mobilized to treat and cure those affected and prevent further spread of infection in the community.
9. MOH Commitment — HMG has demonstrated its commitment to the development of an effective early warning and response system through its support of EWARS, EDCCD and VBDRTC. Although all three entities receive considerable support from donors (e.g., WHO and USAID), the MOH has also contributed significant resources to the initiation and development of an early warning and response capacity. With so many competing priorities, it is a vote of confidence from the government that it is willing and able to commit some of its

scarce resources to EWARS in order to achieve the objective of establishing and sustaining a capacity to detect outbreaks early and mount an effective response as soon as possible.

10. MOH Ownership — Although EWARS was initiated and has been heavily dependent on donors for its operations during its eight-year history, at present EDCC demonstrates a high level of understanding and ownership of both the concept of early warning and response as well as to EWARS and its operation. This feeling of ownership is very important as EWARS reaches an important juncture in its development. As a major donor and moving force in its initial stages, USAID's announced withdrawal of support from EWARS in early 2004 will force the MOH to make some crucial decisions. MOH and EDCC have to consider how to rectify the weaknesses of EWARS that are discussed below and decide what they want to do for disease early warning and response in the years ahead. This is a crucial time in the history of EWARS and the future of early warning and response hangs in the balance.

B. Weaknesses

While progress has been achieved in launching and institutionalizing a disease early warning and rapid response system, the assessment team identified a number of problems that limited EWARS's effectiveness and ability to provide the health authorities with the information they require to achieve the most important objectives of such a system. The weaknesses discussed below serve as the basis for the recommendations that follow in the last section of the chapter on findings.

1. Disease Selection — When EWARS was originally designed in the mid-1990s, the diseases to be included were selected based on the following criteria: widespread distribution; major cause of morbidity, mortality and disability; potential for causing outbreaks; already monitored under national programs; amenable to control through cost-effective means; and being a global priority for elimination, eradication and control. However, of the six diseases selected as the core diseases of EWARS, half are not epidemic-prone. For example, a case or several cases of KA does not indicate an epidemic. At the same time, it is useful to know about cases of KA since it can help identify localities where the disease is endemic and active case detection and treatment should be initiated. Due to the pain associated with the classic diagnostic technique (involving bone marrow) and treatment, patients are reluctant to come forward, hence the disease continues to exist and be spread in infected communities. Two of the VPDs are also not epidemic-prone: AFP and NNT. The primary reason for identifying and reporting AFP and NNT cases is to determine where there may be a need to improve immunization coverage. While these non-epidemic-prone diseases are included in EWARS, other diseases that are epidemic-prone, like typhoid, are not a part of the early warning system as designed.

2. Hospital Based — The fact that EWARS is hospital based makes it inappropriate for an early warning system. No cases are reported in EWARS, either immediate or weekly, unless and until they are admitted in the hospital. For an early warning system to be useful, it must be sensitive to the earliest evidence of an outbreak, or better still, of an impending outbreak. Cases occur in the community, most often at the periphery. Before they become a presence in a hospital, typically there will be a sizable number present in the community. Thus, a hospital-based sentinel system is not the best system for the early detection of an outbreak. The only exception to this general rule could be when the disease in question is so severe that almost all patients are rushed to a hospital. JE may well be one such condition.

Case Study

The sub-health post at the village of Bhogteni in Morang District reported 11 children with measles on Feb. 26, 2003. The DPHO immediately sent out his RRT to deal with the outbreak. By March 10, 44 cases had been identified. Serum samples were taken from 20 people and sent for analysis; 16 were found positive for measles. The outbreak was reported early from the community through the local health facility and promptly dealt with by the RRT that conducted a house-to-house survey and carried out mass vaccination (203 susceptible children were immunized). It is interesting to note that during the same period no cases of measles from the area were reported from the hospital on EWARS Form 1 (immediate) or weekly form. As far as the hospital-based early warning system was concerned, there had been no measles outbreak

3. Overlap with PEN — As part of the worldwide campaign to eradicate polio, WHO has assisted the MOH to establish and launch the Polio Eradication Nepal (PEN) surveillance system. With generous funding, they have set up a vast network of sites and personnel that report on suspected cases of AFP. The network consists of 13 Surveillance Medical Officers (SMOs) who are responsible for four to nine districts each (depending on population density). PEN has 79 active surveillance sites and 369 units that submit weekly reports (even if they have no cases of AFP to report²). **Annex 11** is a map showing the PEN network of surveillance sites and reporting units. Recently, as the number of cases of AFP decreases, PEN has added measles and NNT to the reporting agenda for this vast network of surveillance sites. The SMOs support the surveillance sites by regularly visiting them for purposes of monitoring and supervision. EWARS reporting on these conditions covered under the PEN umbrella is clearly much less comprehensive and redundant.
4. JE Confirmation — Although JE is an epidemic-prone disease that should be included in an early warning and response program, serious problems have arisen with the timeliness and costs associated with laboratory testing to confirm diagnosis. With the support of EHP, the capacities of four laboratories in the country have been strengthened to include the capacity to confirm JE. But

² This is referred to as “zero reporting.”

interviews with hospitals raised several problems that they had experienced when sending blood samples for analysis. To begin with, the transportation of samples is expensive. One district official estimated that it cost over NRS 1,000 (over US\$14) to send one of the hospital staff by bus to deliver the blood sample to the lab. This cost includes bus fare as well as travel and daily allowances (i.e., per diem for two days). Even if the hospital went to the expense of sending the blood sample from a suspected JE patient, it may take a month or two to get the results back. This is because the current testing equipment is designed for large capacity and labs collect samples until they have enough to justify carrying out the test. By the time the hospital receives the confirmation, the patient has been presumptively treated and discharged. Again, the problems associated with diagnosing JE hardly lend themselves to early warning and response.

5. Timeliness of Reporting — Since the “R” in EWARS stands for “reporting,” considerable attention has been given to the timeliness and completeness of the weekly reports from the 28 sentinel sites to VBDRTC and EDCCD. Timeliness is categorized into three groups—on time (received by noon on Tuesday), late (by noon on Friday), and no reports (after noon on Friday of the reporting week). When one compares the timeliness of the weekly reports from the sentinel sites over the last four and a half years of the project, there has been no progress. As demonstrated in **Chart 1**, 55% of the reports were received either on time or late in 1999, the same figure achieved during the first half of this year 2003. Timeliness reached as high as 62% in 2000 and dipped as low as 43% in 2001.

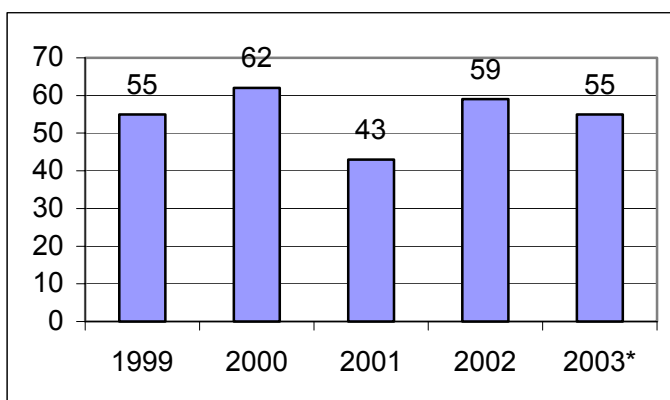


Chart 1: Timeliness of Sentinel Site Reports

EHP and EDCCD also tracked the completeness of the reports, meaning the percentage of reports received from a sentinel site that year. This figure tells us little since periodically a supervisor will visit the site and all overdue reports will be submitted, maybe a month or two or more late. The way the data is recorded is not conducive to useful analysis. When the overdue reports are ultimately submitted, they are entered in the cumulative total but not in the weekly count of disease episodes. This has at least two results. First, the number of cases is more than the total of weekly disease reports. In addition, it becomes impossible to chart disease frequency as a time trend (i.e., the number of cases in one week or

any period in a year cannot be compared to the same week or period in the previous year).

The poor performance in reporting indicates several things. One is the lack of effective supervision and support from EDCD. It also demonstrates that no one desperately needs or wants the data.

6. Feedback to Districts – According to the EWARS design, EDCD is to consolidate the information received from the districts and disseminate it in the form of the *EWARS Bulletin*. The assessment team found that the *Bulletins* were received by the district hospitals very irregularly, usually in batches of 8 to 12 issues. The *Bulletin* is weekly only in the sense that the date printed on the cover. Upon enquiry it appears that the *Bulletin* is actually prepared by Friday evening every week. However, the rules specify that a meeting is to be held to discuss the information in the *Bulletin* every week with people from EDCD, WHO, and EHP. This meeting often does not take place resulting in the *Bulletin* not being able to be released without the approval of the committee. This defeats the purpose of the publication. It is understandable that busy members of EDCD and the other agencies probably have come to realize that the *Bulletin* does not serve the purpose of an early warning tool and, as such, reviewing it has become an unappreciated ritual. One example of the problem: *EWARS Bulletin* #2 in 2003 contained information from the WHO on SARS dated early March (see **Annex 10**). This means that this particular edition of the *Bulletin* was at least two months old by the time it reached the districts. This hardly warrants the title of “early warning.”

Section E of the *EWARS Bulletin* on Laboratory Confirmation raises some problems. First, it is not clear what the purpose of the listing is: Who is expected to use the information and is it really a part of an early warning system? Or is it meant to be used to supervise the effectiveness of laboratory services? Given the way the report is currently constructed, there is no way of relating the report to when the sample was sent for analysis. Positive reports have to be carefully excluded from disease counts to avoid being double counted.

Only one person mentioned using the information contained in the *Bulletin*, and it was not for early warning purposes. One PHO interviewed by the assessment team said that he used the *Bulletin* to review the situation in neighboring districts. However, since the dissemination of the *Bulletin* is not timely, the information is out of date by the time he receives it.

7. Relationship with DPHO/PHO — The assessment team noted that with one exception (Bhadrapur Hospital in Jhapa District) the hospital authorities had little to do with the DPHO or PHO and vice versa. EWARS data about the target diseases were generally sent to the VBDRTC at Hetauda and not shared with the DPHO in an adjacent compound. The MRA at the hospital, the person primarily responsible for EWARS reporting, does not share the information s/he collects and reports with his counterpart in the public health system, the statistical

assistant. And the reverse is also true. If the public health system receives information of a disease outbreak within their catchment area, they do not share it with the hospital. A reasonable place for the forces to be joined and communicate is the RRT that is supposed to have a medical officer from the hospital on it. Almost invariably, the assessment team found that the medical officer designated as a member of the RRT was drawn from one of the Primary Health Centers (PHCs).

8. Reporting Loop — Once the VBDRTC received the immediate and weekly report from the sentinel sites, it recorded the information and forwarded it to the EDCD for consolidation and dissemination in the *EWARS Bulletin*. It was also expected to send the report back to the DPHO/PHO for action. This reporting loop and feedback function is really unnecessary since the action has to be taken at the district level. If the district is unable to handle the problem, they should request assistance and expertise from the higher authorities at the VBDRTC and EDCD. Data should be shared with EDCD for the purposes of consolidation and tracking. It is a way for them to augment and complement data in the HMIS that is collected only on a quarterly basis and issued only yearly. The VBDRTC was included in the EWARS only to give it a role since it was newly established and looking for legitimacy.
9. Budget — There are no resources at the district level to support any early warning or response activities. The RRT has no funds allocated to it. This lack of funding has several results. For one, the districts do not have funds to respond to disease outbreaks when they occur or to send samples for analysis as and when required. In addition, the lack of resources is one reason for the discord and competition between the public health system and the hospitals. The two entities are competing for scarce resources and do not collaborate for the common good.
10. No National Plan or Policy — The assessment team asked a number of high-ranking officials in the MOH about the country's disease surveillance plan or policy. The latest five-year plans were reviewed. We were not informed about, nor did we find any reference to, a disease surveillance or early warning strategy or program. And there is no evidence regarding the country's plan to develop an integrated disease early warning and response system. The result has been donors initiating and funding their special interests and specific programs. PEN for polio and the VPDs of measles and NNT has already been mentioned. In addition, there are vertical programs for such diseases as tuberculosis, sexually-transmitted infections (STIs) and HIV/AIDS, leprosy, and malaria. The separate programs have their separate reporting systems in addition to the national HMIS. The result is a very fragmented system and no national early warning and response capability for a wide-range of infectious diseases. The fact that the government has no plan creates a vacuum, which the donors are all too happy to fill with their own interests and perceived needs with little or no regard to what is wanted or required for the MOH and Nepal as a whole.

11. Sustainability — As EHP funding and support for EWARS comes to the end in late March 2004, the future of the disease early warning and reporting system must be considered. EHP funds a number of positions in EDCC, including one that plays a significant role in EWARS, which will be terminated. There are also six EHP-funded positions at the VBDRTC as well, including the person who is responsible for receiving and recording EWARS data and forwarding it to the EDCC. While there may be donor support that can help EDCC survive and continue to provide its services, there seems to be little in the way of support on the immediate horizon for the VBDRTC. They have training capacity and facilities but lack such essential capacities as epidemiology (this position has been unfilled for several years).

C. Recommendations

The assessment team has one overriding recommendation: that HMG and the Ministry of Health establish and sustain an effective and integrated early warning and rapid response system. Most of the following recommendations suggest what such a system might look like and how it might function. These suggestions, based on the findings above, were vetted and discussed at the dissemination workshop where the senior HMG staff present agreed with the conclusions of the assessment team.

1. National Policy — Of utmost importance is the development and acceptance of a national policy of disease surveillance, early warning and rapid response. The MOH should seek donor assistance to design such a system and put it in place as soon as possible. Once this policy has been developed and is in place, then a plan should be constructed on how the policy will be implemented. The government would be well served to find donors who are interested and willing to fund components of the national disease early warning and response system. If properly implemented and managed by the MOH, this will result in an effective, integrated national system that gives the government and the districts the capacity to identify disease outbreaks as soon as they occur and to provide the response required immediately. It puts the MOH in control of the surveillance and response process and ensures that it meets Nepal's needs.
2. Move to Public Health Structure — The overwhelming conclusion of the assessment team was that EWARS or any disease early warning and response system should be located in and managed by the public health structure. As was seen in the measles outbreak in Morang District as well as in the typhoid outbreak in Chitwan District in May through July 2003 and the *P. falciparum* outbreak in Kanchanpur District in June and July of 2003, it is the DPHO and the public health structure s/he directs that identify the problems and are in the best position to respond quickly.

It is recommended that instead of basing the early warning and response effort in the hospitals it be moved to the public health structure and managed by the DPHO or PHO. In this system the data would originate at the community level using both

community-based and Female Community Health Volunteer (FCHV)-initiated reports that move up the existing structure (SHP/HP/PHC) to the DPHO/PHO who would then activate rapid response immediately. The reporting of hospital-based data would continue as detailed below in **Chart 2**, which provides a graphic presentation of what this Community-based Alert and Response System (CBARS) might look like.

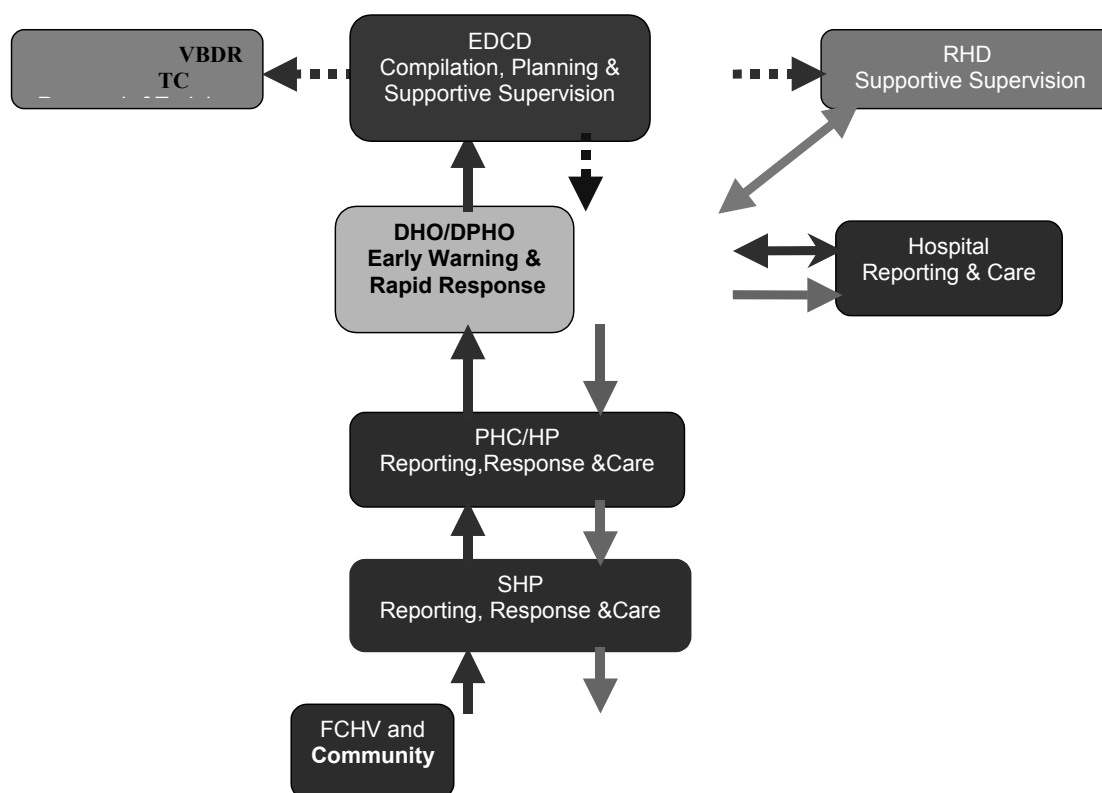


Chart 2: Community-Based Alert and Response System Structure

The role of the DPHO in this new system would include receiving outbreak/incidence data from the periphery, originating from the FCHVs and the community and sent up through the public health structure. The DPHO would analyze the reports and, if s/he decides it is warranted, would convene the RRT and initiate rapid response. The public health leader would document the episode and inform the hospital, usually the Medical Superintendent, if s/he is present, and the EDCD. If the DPHO feels it is necessary, s/he will request additional support and expertise from the regional directorate and/or EDCD.

This modification of EWARS could be initiated immediately without extensive changeover expenses or delays for training and capacity building at the district level, at least in the 25 districts where EWARS is active. It could then be phased in to cover the entire country, since the public health structure is found throughout Nepal and RRTs are supposed to be functioning. In addition, a good system of

outreach and community involvement already exists through the VDCs and FCHVs³.

The EWARS-developed hospital-based operation would be asked to continue recording target diseases on Form 1 that would be passed from the MRA to the statistical assistant on a daily basis. These two offices are seldom far apart. In fact at some places they are in the same building or even the same room. In the worst case, they are situated in a nearby compound. EWARS Forms 2 and 3 would no longer be required. The medical superintendent would no longer be required to sign the form, relieving this person of the need to spend precious time each day to sign a form which informs the DPHO/PHO of the admission of patient(s) suffering from a specific target diseases. This information could also be used to trigger response when and if needed.

Data reporting mechanisms and episode response report formats can be developed. These would need only the type of information currently provided by the district PHO on response reports.

The CBARS would ultimately also serve to link internationally with the Global Alert and Response System being initiated by WHO headquarters.

3. Budget — To enable the district-level early warning and rapid response effort to function effectively, it will require a small amount of funds that the DPHO would control and utilize to support the activity. This would allow the public health system and structure to carry out its responsibilities in support of CBARS, covering those small expenses that are not provided for elsewhere and are required without notice to identify an outbreak and/or to be able to respond without having to look for, request, or generate additional funds. Early warning and rapid response should be added as a new line-item in district health budgets, and their use should be kept flexible so that the DPHOs/PHOs can use them as they see fit to meet the immediate need.
4. Reporting — As described in the weaknesses section above, there is no need for the reporting/feedback loop to include both VBDRTC and EDCCD. The former should be dropped entirely from the distribution list for the routine reports. Instead, reports should be sent by the DPHO/PHO directly to EDCCD, which would consolidate and compile the data.
5. VBDRTC — After visiting the VBDRTC and meeting with its new director, the assessment team considered what role the facility might have in a future CBARS. Their strength at this time is training—a role they played in EWARS. Their accommodations and classroom space are particularly well suited for that

³ There are approximately 46,000 FCHVs operating in Nepal. These women have been found to be very effective at the community level, especially in the Vitamin A Program and the Acute Respiratory Infection (ARI) intervention (to provide early diagnosis and treatment). The FCHVs are noteworthy for their dedication and very low turnover rate.

purpose. But that will not provide enough income or the basis for keeping the institution open. The team suggests that its mandate be broadened beyond vector-borne diseases. The institution would be more valuable if it were to become a center for epidemiology, providing technical assistance and consulting services for a number of different clients, including HMG, donor agencies (both bilateral as well as multilateral) and INGOs International Non-government Organizations . The facility could also be contracted to carry out research and studies on a number of different diseases and health-related problems. The role of such a center in a CBARS would be to investigate and help respond to disease outbreaks in districts that need and/or request assistance. It would serve as a mini Centers for Disease Control and Prevention in Nepal. Unfortunately, in the few months left before losing USAID support, there is little time for the VBDRTC to reinvent itself and generate donor support.

6. Drop VPDs — With the well-funded PEN providing such an extensive reporting network and covering the three vaccine-preventable diseases, there is no reason for any early warning and rapid response effort to include them. PEN has also expressed an interest in broadening their surveillance system and reporting to include JE and this should be considered. At the same time, however, the MOH, as part of the development of the national early warning and rapid response policy and planning exercise, should consider what will happen and what should be done when polio is eradicated. Funding is likely to be reduced and, in the process, reporting on the other VPDs could be reduced. The handling of this transition should be considered and provisions made for it.
7. Community-Based Diagnostics — The successful trials of the *P. falciparum* malaria and KA diagnostics have provided a means for these two vector-borne diseases to be identified at the community level. The former has been introduced in Kanchanpur District in western Nepal and been used effectively to diagnosis and treat cases of *P. falciparum* malaria. It is recommended that *P. falciparum* dipstick diagnostic be utilized more broadly in the Terai where *P. falciparum* malaria is endemic. The protocol should be that all severe fevers appearing to be malaria be treated immediately with chloroquine, and the patient tested by means of the dipstick for *P. falciparum*. If positive, then treatment for *P. falciparum* malaria should be started at once.

The K-39 dipstick has been tested in Dhanusha and Mahottari Districts and found effective as a diagnostic for KA. It has proven to be an effective means to test patients since it is less costly and painful than the traditional diagnostic test that involves the taking and testing of a bone marrow sample. By being able to identify locations where KA is widespread, health authorities can carry out active case detection and initiate treatment of patients found to have the disease.

The treatment for KA is effective but painful. This discourages patients from beginning and complying with treatment, but the new cost-effective diagnostic will help reduce infection and control the disease by identifying areas where active case detection should take place. The diagnostic is now being used in the

12 KA-endemic districts of Nepal, and every effort should be made to ensure that the dipsticks are supplied in sufficient quantity so that all suspected KA cases can be tested and treated.

A new therapeutic regimen for KA has been the subject of an operations research field trial. Miltefosine is effective in KA and does not involve the very painful injections that are the form of medication currently in practice. This change is also likely to increase the acceptability of KA therapy.

8. KA Early Warning — As mentioned earlier, KA is not an epidemic-prone disease. For this reason, KA can be dropped from any future disease early warning and rapid response program. While it is important that KA cases be reported, it need not be done as part of an early warning system since there is nothing that can be done in this case: KA information needs are well served by the HMIS and/or a National Registry of KA cases. As pointed out, it is most important to identify locations where the incidence of KA is high so that people can be treated and interventions to prevent (e.g., initiate spraying) and control the disease can be implemented.
9. Japanese Encephalitis — The prohibitive cost of sending serum samples and the length of time to get results have been mentioned as reasons that JE diagnoses are rarely done. Or if they are done, they do not qualify as “early warning.” It is recommended that an alternative strategy be tested for efficacy and feasibility. It involves sending the serum sample on filter paper to the laboratory. This makes it possible to send the sample by post and save on staff time and transport costs. This approach has been found cost-effective in other conditions. Then, to expedite the testing of samples, it is recommended that the labs procure divisible microtiter plates. This means that they do not have to wait until they have 90 or more samples to fill up the plates before they carry out the analysis. Instead they can cut off a section of the microtiter plate and run the test on a smaller batch. This should greatly speed up the tests and reduce the turn-around time required to get results back at the district.
10. Expansion of Diseases — It is recommended that as part of the redesigned national disease early warning and rapid response system, additional epidemic-prone diseases be included. Some of these have already been mentioned: e.g., typhoid and STI and HIV/ AIDS. It is also important that emerging and reemerging diseases plus diseases of unknown origin be included. This would be part of an integrated and comprehensive system that would serve the needs of both the country as well as individual districts.
11. Private Sector — During the dissemination workshop several participants mentioned the need to include the private practitioners in any early warning and rapid response system. While the assessment team agrees wholeheartedly in principle, it is easier said than done. Even though there is a law that makes it mandatory that they report on specific diseases, it is very difficult to monitor and enforce. One suggestion is to provide private practitioners with preaddressed post

cards to the MOH on which the physician can report when he has a patient with any one of the targeted diseases. But once again, this would be very difficult to enforce. And for some diseases like STIs, it may be impossible to get accurate information on the number of patients seen since doctors are reluctant to provide the government information that they think might be used against them for tax purposes. And when we expand the private practitioners to include community-based traditional healers and birth attendants, where a significant portion of the rural population receives health care, it would be virtually impossible to get any information from this group. A start can be made by including large private medical institutions, such as private medical colleges and their field areas, in the network.

4. Conclusion

After assessing the EWARS and discussing the experience and need for a surveillance/early warning and rapid response system in Nepal, the assessment team is strongly supportive of HMG/MOH exploring the possibility of an integrated disease surveillance system with capacity for early warning and incorporating an effective rapid response mechanism. Once this has been done and a plan developed, donors could then take larger or smaller shares of the surveillance and response plan, building capacities and providing support.

Annex. 1

Terms of Reference under SO 2: EWARS Consultant to undertake assessment of current Early Warning and Reporting System (EWARS)

Background

The Early Warning Reporting System (EWARS) is a hospital-based sentinel surveillance system reporting six infectious and vaccine preventable diseases with outbreak potential in Nepal – malaria, kala-azar, Japanese encephalitis, acute flaccid paralysis, measles and neonatal tetanus. The system was established at eight sites in 1997 and was expanded to 26 zonal and district hospitals throughout the Terai region in 1998. Eight of the 26 EWARS sites are designated as pilot sites for improved surveillance of vector-borne diseases (VBDs) - malaria, kala-azar and Japanese encephalitis.

The Vector-borne Disease Research and Training Center (VBDRTC) in Hetauda serves as a focal point for EWARS by receiving and analyzing all immediate and weekly reports directly from the sentinel hospitals. VBDRTC then consolidates the reports and forwards weekly summaries to the Epidemiology and Disease Control Division (EDCD), Ministry of Health. EDCD in turn issues a weekly bulletin summarizing case totals and information on completeness and timeliness of reporting.

Actions and Progress to Date

EHP has provided technical support to strengthen the EWARS system. During Year III (April/May 2001), EHP performed an assessment of EWARS functions at 24 sentinel sites and identified the following areas needing improvement:

- Revised EWARS forms, formats, registers and guidelines
- Education/refresher training for laboratory staff
- Coordination between public health and hospital laboratories
- System and guidelines for specimen collection/transport
- Coordination of monitoring and supervision.

In Year IV, EHP began working with the EDCD and VBDRTC to develop and implement a work plan for improving vector-borne disease surveillance and response at the 8 pilot sites. The first phase focused on improving surveillance operations at

the EWARS sites, by training medical recorder assistants, lab personnel and statistical assistants to use revised reporting forms, incorporate lab results into reports, and share EWARS reports with designated district officials. As EWARS information flows and reporting improved, the team then shifted its attention to strengthening response capacities at the district level, by forming Rapid Response Teams (RRTs), preparing guidelines, and orienting focal persons in the EWARS and RRTs in using the revised reporting formats.

Over the last two years, EHP, EDCCD, and VBDRTC have taken the following actions to strengthen surveillance and response for the priority vector-borne diseases:

- Identified approaches and supporting mechanisms for implementing the work plan
 - Held ETAG and EOG meetings regularly
 - Formed district teams for action at the local level
- Prepared materials, guidance, and task-specific action plans
 - Revised EWARS reporting forms and distributed new forms to all sites
 - Established procedures for data analysis and documentation (detailed compilation and consolidation of EWARS information, trend analysis, and documentation requirements for response)
 - Developed draft guidelines for Rapid Response Teams
 - Prepared monitoring and supervision plans for the eight pilot districts
 - Developed a monitoring and supervision framework with checklists
 - Prepared EWARS improvement guidelines and training protocols (draft)
- Provided training and other support for improved operations:
 - Conducted joint training of focal persons collecting EWARS information at hospitals and the district public health managers at all 8 sites, to improve information exchange and facilitate mechanisms for instituting a response when outbreaks are suspected.
 - Established regular feedback mechanism through publication of the EWARS bulletin
 - Conducted 2 rounds of monitoring and supervision
 - Organized meetings on Epidemic Preparedness at the central, district and peripheral level, using EWARS information on the recent outbreak of malaria in Kanchanpur district.

- Expanded capacity for laboratory diagnosis of vector borne diseases at district, regional and central levels.
 - Provided regular supplies of K39 dipsticks to 13 districts
 - Provided malaria dipsticks to 3 districts
 - Completed evaluation of malaria dipsticks and endorsed their use for national implementation
 - Supported systemization of referral procedures for 4 referral laboratories, in collaboration with NPHL and EDCD and with refresher training for lab personnel by AFRIMS
 - Training on lab diagnosis of Kala-azar up to PHC level in Dhanusha and Mahottari Districts.

Purpose of the TOR

This Terms of Reference is designed to guide the consultants in undertaking an assessment of EWARS.

Task A : Assess current EWARS performance with attention to reporting (EWARS) and response (RRT) functions.

This assessment will examine the current performance of the EWARS system in the 8 piloted districts, with attention to the reporting (EWARS) and response (RRT) functions. The assessment will examine surveillance reports received from the pilot sites, findings from supervision visits, and, to the extent possible, relate data to actions taken by RRTs, the national EDCD and other offices. The assessment will also review changes in surveillance and response at a sample of the 18 EWARS sites that were not a focus of EHP support, to identify changes that may have occurred at these sites and help determine how lessons learned at the 8 focal sites may be applied to the entire national system.

The Polio Eradication Nepal (PEN) program is a parallel surveillance system supported by WHO and other donors primarily for acute flaccid paralysis surveillance and other vaccine preventable diseases. The USAID mission in Nepal has requested that the assessment include a comparison of PEN and EWARS with regards to case detection protocols, use of surveillance information, and response to cases under PEN. (A briefing note from the USAID mission backstop, John Quinley, will be provided in background documents for this assignment).

The assessment team will include an external consultant and local experts. In its report, the team will identify lessons learned and prioritize future needs and opportunities for improving VBD surveillance and response. Recommendations on changes to be made to EWARS to focus on what functions it could continue to fulfill

and those which should be dropped will be made by the assessment team as appropriate.

Sub-tasks :

- Undertake thorough analysis of documents related to milestone of EWARS activities from its inception, assessment completed in 2001, actions completed under Improved EWARS Implementation plan
- Review documents related to Rapid Response Team (RRT) functions (although limited docs used)
- Review reports generated from the sentinel sites (both immediate and weekly), response reports and compiled weekly reports prepared by Vector Borne Disease and Research Centre (VBDRTC), Hetauda and feedback mechanism from Epidemiology and Disease Control Division (EDCD)/MoH.
- Review other existing VBD surveillance systems.
- Design and develop framework/tools, guidelines for an assessment of EWARS information flow and response activities.
- Conduct field based assessment of sentinel sites (a sample determined by the team and EHP/Nepal), VBDRTC and EDCD functions related to EWARS and RRT
- Interact or visit various key players in the system like WHO staff working in EDCD/Nepal, Polio Eradication Nepal (PEN)/WHO – working in surveillance both Kathmandu and field offices, Child Health Division
- Prepare a comprehensive report outlining the findings, recommendations and lessons learned for a surveillance and response system to the Ministry of Health, Epidemiology and Disease Control Division

Task B: A half-day meeting with key stakeholders will be convened by the to discuss the results of the assessment

Sub-tasks :

- Design and develop a half-day meeting on the dissemination of the findings
- Prepare a workshop proceeding with conclusions and possibly broad framework/structure of the future EWARS and response strategy and operational aspects

Consultant Responsibilities

The Team Leader will participate in a team planning meeting on November 3, 2003; he will also lead a team planning meeting in Nepal after his arrival on November 5. The roles and responsibilities of the team members will be determined and documented during these TPM's.

The Team Leader will work with the Resident Advisor, Pandu Wijeyaratne, and EHP Nepal staff during this assignment. He will report to Lisa Nichols and/or Eckhard

Kleinau in EHP/Washington on a bi-weekly basis on his progress. The Team Leader's primary responsibilities will be to lead the team in completing the above sub tasks and prepare and submit the assessment report.

Deliverables:

1. Assessment report
2. Agenda for half-day meeting

Schedule:

TPM November 3, 2003

Travel to Nepal November 3-5, 2003

Kathmandu: November 5 – November 23, 2003

First Draft of Report: December 10, 2003

Assessment Report finalized: January 15, 2003

LOE:

Team Leader: 30 days

Other members: 20 days each

Team Members:

David Pyle: Team Leader

Professor Nath

2 EHP Nepal staff/consultants

Annex. 2

List of Persons Met

Washington, DC

Sandi Collier	Project Director, EHP
Lisa Nichols	Activity Manager, EHP
Eckhard Kleinau	Senior Technical Director, EHP
Nimal Gunatilleke	Senior Associate, ISTI
Murray Trostle	Senior Public Health Advisor, USAID
Matthew Lynch	Malaria Advisor, USAID

Kathmandu, Nepal

Panduka Wijeyaratne	Project Director, EHP/Nepal
John Quinley	Technical Adviser, USAID/Nepal
Mahendra Bahadur Bista	Director, EDCD
Vladimir Janout	WHO Epidemiologist, EDCD
Benu Bahadur Karki	Chief, Policy, Planning & International Cooperation Division, MOH
Padam Bahadur Chand	Chief, Management Division, MOH
Jyoti R. Shrestha	Sr. Public Health Administrator, MOH
Govinda Prasad Ojha	Director, Child Health Division, MOH
Thomas Wierzba	Epidemiologist, WHO/EPI & Polio Eradication
Rajendraa Bohara	National Coordinator, PEN
Ram Kumar Shreshtha	Director, National Vitamin A Program
Stephen Hodgins	Chief of Party, NFHP
Madan Raj Tapa	Senior Program Officer, NFHP

Janakpur, Dhanusha District

Vijaya Kumar Singh	Acting Medical Superintendent, Zonal Hospital
Sushil Thakur	Medical Records Assistant, Zonal Hospital
Inder Prasad Yadav	Senior Public Health Officer
Suresh Yadav	Statistical Assistant
Rudra Narayan Jha	Village Health Worker (working as Lab Assistant)

Mahendranagar, Dhanusha District

Shamjhana Dhakal	In-charge
Pradip Adhikari	Auxiliary Health Worker
Shyam Yadav	Auxiliary Health Worker

Bhadrapur, Jhapa District

Kedar Nath Sharama	Medical Superintendent, Mechi Zonal Hospital
Rajendra Chaudhary	Senior Health Assistant (acting DPHO)
Manoj Pokharel , MRA	Medical Recorder Assistant
Kedar Nath Shah	Vector Control Assistant

Inarauwa, Sunsari District

Mahesh Khannal	Acting District Health Officer
Harish Chandra Shah	Public Health Officer
Yogeshwor lal Karn, Snr.	Auxiliary Health Worker
Sivan Thakur	Vector Control Assistant
Saligram Karki	Lab. Technician
Bijaya Regmi	Medical Recorder Assistant
Samim Ansari	Public Health Inspector

Biratnagar, Morang District

Bhogendra Raj Dotel	Senior DPHO
Gita Bhandari	Matron
Devi Prasad Paudel	Medical Records Assistant
Khagendra Bhandari	Medical Records Assistance
Tek Raj Koirala	Health Assistant
Bishnu K.C	Statistical Assistant
Sarita Dahal	Nursing In-charge
Ram Avtar Yadav	Senior Health Assistant

VBDRTC, Hetauda, Makwanpur District

Krishna Kumar Rai	Executive Director
Sishir Panta	Entomologist

Hetauda, Makwanpur District

Girish Upadhyaya	District Health Officer
Arun Kumar Mahato	Senior Public Health Officer

Kalyan Basnet	Medical Officer
Naresh Yadav	Vector Control Assistant
Bhogendra Kumar Acharaya	Statistical Assistant

Annex. 3

Interview Questionnaire (for EWARS sites)

I. Reporting

1. Assess timeliness/completeness of reports.
2. If form sent late, what was reason?
3. Is fax machine working? Was it out of service anytime during last 6 months? If so, how long? What did you do in that case?
4. Review EWARS monitoring forms for last year for site and determine if problems mentioned have been addressed.

Use of EWARS

5. What training would you like to make you or EWARS more effective?
6. Do you have copies of guidelines? [quiz on details – e.g., case definitions]
7. Have you had any disease outbreak in last year? If so, describe. Was investigation carried out? [ask to see copy]
8. How do # of KA and malaria cases compare this year vs last? And this month vs same month last year?
9. Do you receive EWARS bulletin? What do you do with information when you receive it?
10. How do you use EWARS data? Give example of how you used EWARS data. Has EWARS data ever led to action? – describe.
11. What has value of EWARS been to you? What have you done differently because of EWARS data?
12. How could EWARS be improved?
13. Why do you think it is necessary to send reports to EDCC and VBDRTC and then have information sent down to districts?
14. How would you suggest extending EWARS down so that it is more of an early warning system? [probe – should data from HPs and PHCs be included? should suspected and probable cases be included?]

III. Linkages

15. How do you link with DPHO or DHO on surveillance? When meet with him last on subject?
16. How do you link with PEN?
17. Do you send AFP, NNT & measles information to both EWARS & PEN each week? What is value?
18. Do you send 2 copies of AFP reports (including zero reports) to Regional Surveillance Officer?

IV. Response

19. Have ever had treatment failures in KA? Malaria? If so, did you report them?
20. What does RRT consist of? When did it last meet? [review minutes] Has RRT ever had to respond to an outbreak? If so, describe.
21. Are there buffer stocks on hand for response to outbreak? [observe]
22. Are there funds available for travel if outbreak occurs?
23. Check laboratory equipment to ensure present and operating and necessary reagents/supplies are available.

Annex. 4

Meeting to Discuss Findings of Assessment of Ehp Support to Ewars and Considerations for Future Surveillance and Repsonse Sytem in Nepal

(20 November 2003, Yak & Yeti Hotel)

Tentative Agenda

9:00 – 9:10	Welcome (<i>Dr. Panduka Wijeyaratne</i>)
9:10 – 10:15	Findings of Assessment (<i>Dr. David Pyle assisted by team</i>)
	Background
	Methodology
	Strengths
	Weaknesses
	Recommendations
10:15 – 10:30	Tea Break
10:30 – 12:30	Detailed discussion of recommendations (<i>moderated by Dr. Pandu</i>)
12:30	Lunch

Annex. 5

Dissemination Workshop on “Assessment of EWARS”

Venue : Hotel Yak and Yeti

Date : November 20, 2003 Time : 9 a.m. to 12:30 p.m

S.N.	Name	Office	Designation
	Dr. M.B. Bista _	Epidemiology and Disease Control Division, DoHS/MoH	Director
	Dr. G.P.Ojha	Child Health Division, DoHS/MoH	Director
	Dr. Sarala Malla	National Public Health Laboratory, DoHS, MoH	Director
	Dr. P.B. Thapa	Kanti Children Hospital, DoHS, MoH	Director
	Dr. G.D. Thakur	Epidemiology and Disease Control Division, DoHS/MoH	Chief, Disease Control Section
	Dr. S.S. Jha	Sukraraj Tropical and Infectious Disease Hospital, Teku	Director
	Dr. Prakash Ghimire	Department of Microbiology, Tribhuvan University, Kirtipur	Head of Department
	Dr. C.R. Pant	Kathmandu University Medical College, Dhulikhel	Director
	Dr. G.M. Shakya	Malaria Expert	Ex. WHO
	Mr. B.R.Koirala	National Health Education, Information and Communication Center, DoHS/MoH	Sr. Health Education Administrator
	Dr. Rana K. Jung	Malaria Expert	Ex. WHO
	Dr. K.K. Rai	Vector Borne Disease Research and Training Center, MoH, Hetauda	Executive Director
	Dr. P.B. Chand	Management Division, DoHS, MoH	Sr. Public Health Administrator
	Dr. U.N. Devkota	GTZ, Nepal	Epidemiologist
	Dr. Anand B. Joshi	Institute of Medicine, Dept. of Community Medicine, TU	Associate Professor
	Dr. Subarna Acharya	Tribhuvan University Teaching Hospital (TUTH), Maharajgunj	For Director TUTH

	Ms. Sita Gurung	Family Health Division, DoHS, MoH	Public Health Nurse
	Dr. Thomas Weirzba	WHO Polio Eradication, Nepal	Head
	Dr. D.N. Gongol	National Academy for Medical Sciences, MoH	Director
	Dr. John Quinley	USAID, Nepal	Health Advisor
	Dr. Steve Hodgins	Nepal Family Health Project, Kathmandu	Chief of Party
	Mr. Nirbhay K. Sharma	National Health Research Council, MoH	Acting Member Secretary
	Dr. Pandu Wijeyaratne	Environmental Health Project/USAID, Kathmandu	Resident Advisor
	Dr. Asok Sharma	Environmental Health Project/USAID	Program Coordinator
	Ms. Archana Singh	Environmental Health Project/USAID	Int. Support Specialist
	Ms. Sabeena Pandey	Environmental Health Project/USAID	Cross Border Coordinator
	Ms. Deepika Singh	Environmental Health Project/USAID	Cross Border Coordinator
	Mr. Jyoti Shrestha	Environmental Health Project/USAID	Admin. & Finance Officer
	Prof. Lalit Nath	Environmental Health Project/USAID	Consultant
	Dr. David Pyle	Environmental Health Project/USAID	Consultant
	Dr. B.L. Shrestha	Environmental Health Project/USAID	Consultant

Annex. 6

Slide 1

ASSESSMENT OF EARLY WARNING AND REPORTING SYSTEM (EWARS) - NEPAL

**David Pyle, Lalit M Nath,
B. L. Shrestha, Asok Sharma
Sushil K Koirala**



ENVIRONMENTAL HEALTH PROJECT

**HMG Ministry of Health/USAID Program for the Prevention and
Control of Selected Infectious Diseases in Nepal**

Slide 2

Outline of Presentation

- **Background**
- **Methodology**
- **Strengths**
- **Weaknesses**
- **Recommendations**



Slide 3

Objectives of EWARS

- **To develop a comprehensive, computerized database of infectious diseases of public health importance**
- **To monitor and describe trend of infectious diseases through sentinel surveillance network of hospitals followed by public health action and research**
- **To receive early warning signals of diseases under surveillance and to detect outbreaks**
- **To instigate concerted approach to outbreak preparedness, investigation and response**
- **To disseminate data/information on infectious diseases through appropriate feedback system**

Ref. Dr. Bista

Slide 4

Rationale

- **HMIS does not ensure timely response**
- **Hospital cases were inadequately investigated**
- **Inadequate case definitions and guidelines for diagnosis, investigation and management of diseases**
- **Inadequate linkage between hospitals and public health in public health actions**

Ref. Dr. Bista

Slide 5

Targeted Diseases

Vector Borne Diseases

- Malaria
- Kala-azar
- Encephalitis (including JE)

Vaccine Preventable Diseases

- Acute Flaccid Paralysis (AFP)
- Neonatal Tetanus (NNT)
- Measles

Ref. Dr. Bista

Slide 6

Core Activities

- Data collection, recording and reporting at hospital level.
- Reporting by hospitals in **WEEKLY** (0 reporting) and **IMMEDIATELY** basis (reporting within 24 hours, if an outbreak) to VBDRTC in Hetauda by Fax.
- VBDRTC receives and analyze all immediate and weekly reports
- VBDRTC then consolidates the reports and forwards weekly summaries to EDCD
- Outbreak preparedness and response is carried out by RRTs & EDCD will guide and monitor the response.
- EDCD compiles, edit and publish the weekly report in the form of **EWARS Bulletin**

Ref. Dr. Bista

Milestones

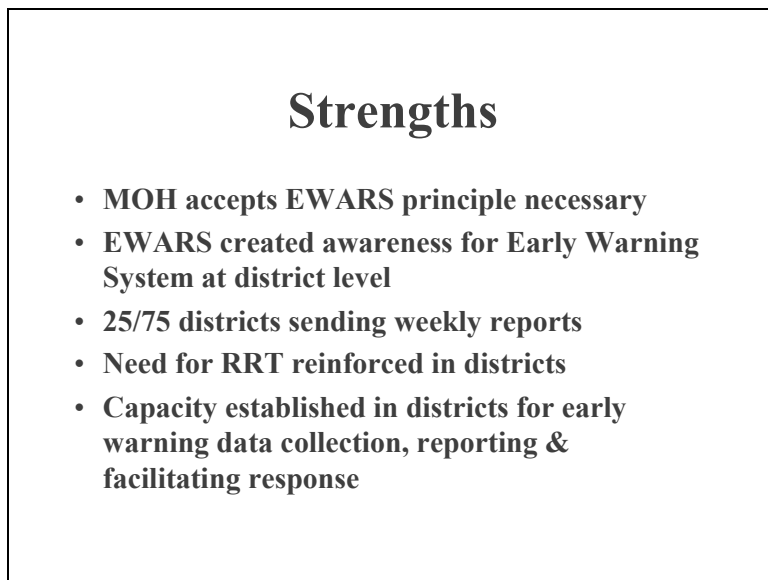
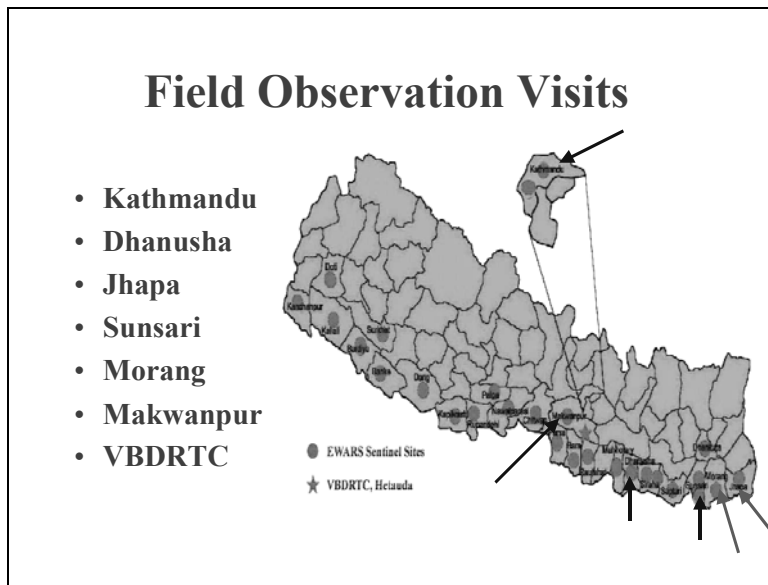
- **1996: EWARS guidelines, selection of sentinel sites and training**
- **1997: EWARS started functioning with 8 hospital based sentinel sites.**
- **1998: Expanded to 24 sites**
- **2001: EHP assessment**
- **2002: Re-orientation and revised formats**
- **2003: 28 sites**

Ref. Dr. Bista

Assessment Methodology



- **Briefing by USAID/EHP**
- **Review of Reports**
- **Meetings with HMG Senior Officials**
- **Field observation visits**



Strengths 2

- **Hospital & District Public Health Office working together in several districts**
- **K-39 & Pf dipstick tested, introduced. Better quality of data from periphery**
- **Community-based diagnosis & referral has demonstrated potential**
- **HMG/MOH has committed scarce resources to EWARS**
- **MOH has accepted ownership of this donor initiated activity**

Weaknesses

- **Selection of diseases – not all epidemic prone**
- **Hospital based system does not provide “early warning”**

Example

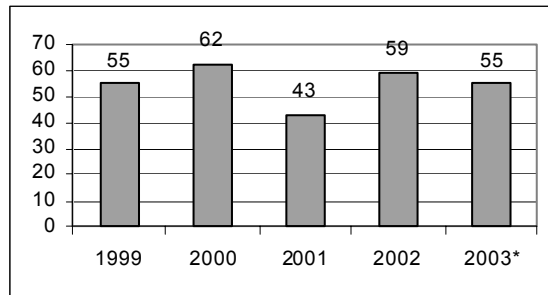
- **February 25th '03 SHP informed Morang DPHO that 11 children in village Bhogteni had measles**
- **By March 10th 44 cases had been identified**
- **20 samples sent and measles verified in 16**
- **RRT went house to house & did 203 immunisations**
- **No measles cases from this area in hospital data**

Weaknesses 2

- **Overlap with PEN in VPD. Their extensive network gives more complete information.**
- **JE confirmation limited by inordinate delays in reporting and exorbitant transport costs**
- **EDCD not proactive in support of capacity building and other aspects of EWARS**

Weaknesses 3

Timeliness of weekly reporting has not improved in last 5 years



* Data only for first 26 weeks

Weaknesses 4

- **Feedback to districts / stakeholders irregular and in batches (*EWARS Bulletin*)**
- **Relationship between Med. Supt. & DPHO still problematic in several places.**
- **No budget line for EWARS so competing priorities for scarce resources**

Weaknesses 5

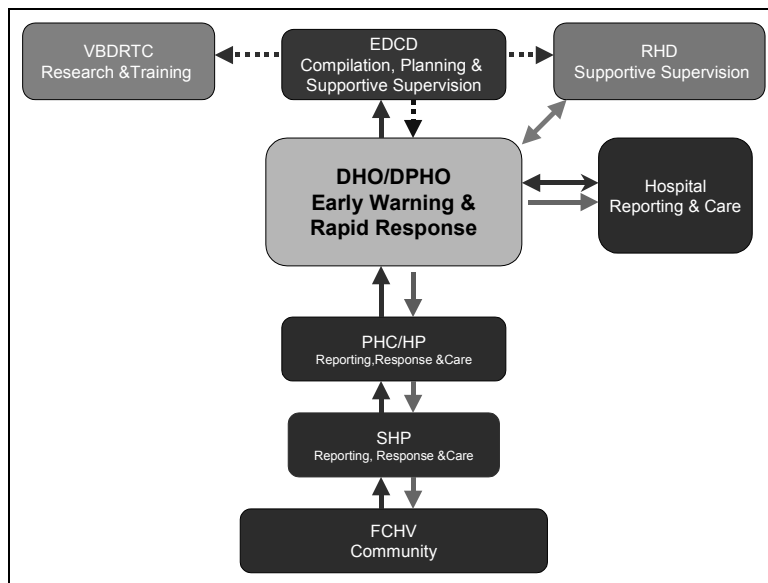
- **Multiplicity of disease-specific reporting systems (eg TB, STI/HIV-AIDS, leprosy, Malaria) responsive to different programme / donor perceptions.**
- **Reporting loop unnecessary**
- **Sustainability a problem after USAID/EHP funding ends in March 2004**

Recommendations

**Establish and sustain an
effective, integrated Early
Warning and Rapid Response
System**

Recommendations 2

- **Move EWARS to Public Health structure**
- **Data should originate at periphery (FCHV and sub-health post)**
- **To ensure an effective early warning system, build district capacity to collect, analyze data and institute a prompt effective response.**
- **Incorporate a budget line for diagnosis & early response at district level**



Role of District PHO

- **Get outbreak/incidence data from periphery.**
 - originating from FCHVs/community
 - sent to PH office through health system
- **Analyse reports and initiate Rapid Response**
- **Document episode and inform hospital/EDCD**
- **Seek additional support if required from regional directorate / EDCD**

Slide 22

Recommendations 3

- **With district empowerment, no role for VBDRTC in data management; data sent directly to EDCD for information and compilation**
- **VBDRTC role restricted to training and expanded beyond focus on VBDs**
- **Drop VPD reporting, leave to PEN**

Recommendations 4

- **Expand community based malaria and kala-azar early warning and response system**
- **KA information needs served by HMIS and/or a National Registry**
- **JE – determine efficacy & feasibility of sending serum samples on filter paper. Explore getting dividable microtitre plates**
- **Expand to include other epidemic prone diseases, including emerging/re-emerging diseases and diseases of unknown origin**

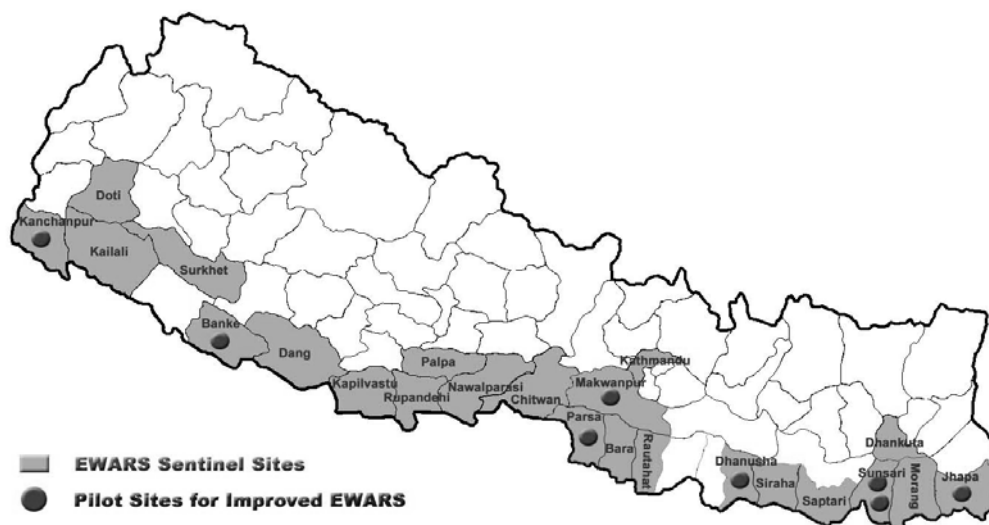
Recommendations 5

- **HMG/MOH should explore the possibility of an integrated disease surveillance system with capacity for early warning and incorporating an effective rapid response mechanism. Donors could take larger or smaller shares of the surveillance and response plan**



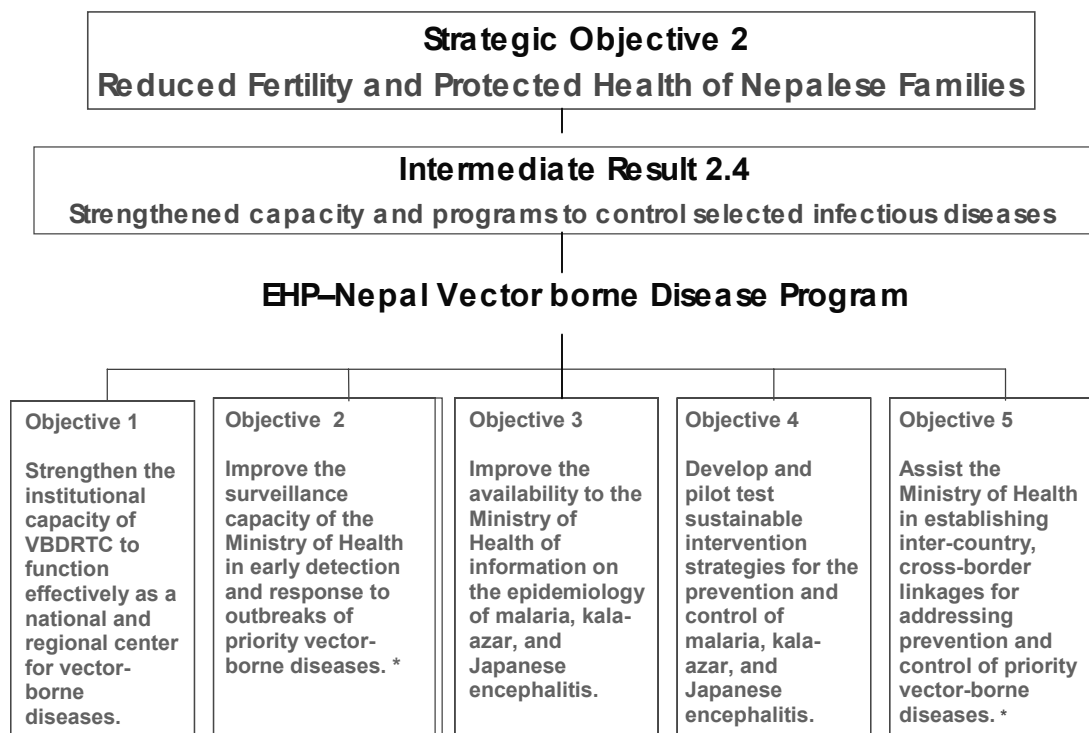
Annex. 7

Early Warning Reporting System (EWARS)



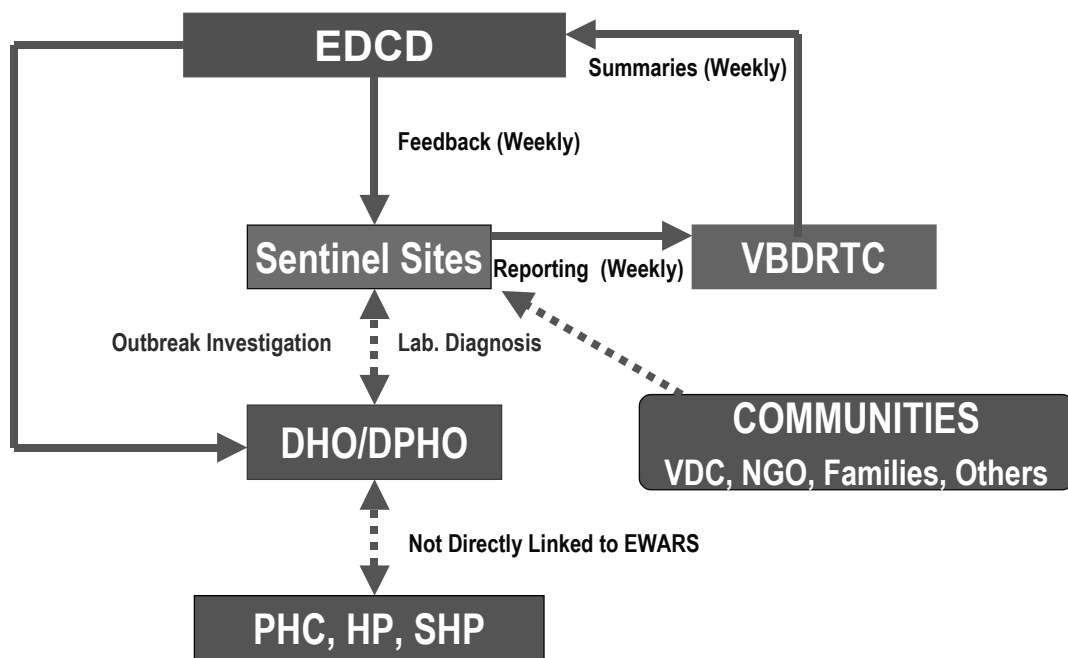
Annex. 8

USAID / Nepal



Annex. 9

FLOW OF INFORMATION UNDER EWARS



Annex. 10

Early Warning Reporting System

EWARS
BULLETIN
Ministry of Health
Department of Health Services
Epidemiology & Disease Control Division

Early Warning Reporting System
EWARS

Year: 2003

Vol. VII Nc Epidemiological Week No. 2 21- 27 Poush 2059 (5- 11 Jan 2003)

A. Total Number of Cases & Deaths for the Epidemiological Week No.

Sentinel Sites	Acute Flaccid Paralysis		Measles		Neonatal Tetanus		Malaria		Kala-		Encephalitis	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Mechi Z.H, Jhapa	NA	NA	NA		NA	NA	NA					
Koshi Z.H, Morang		0			0	0	0	0	2	0	0	
District H, Sunsari	0	0			0	0	0	0	1	0	0	
BPKHS, Sunsari	0	0			0	0	0	0	1	0	0	0
District H, Dhankuta	0	0	0		0	0	0	0	0	0	0	0
Sagarmatha Z.H, Saptari	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Lahan H, Siraha	NA	NA			NA	NA	NA	NA	NA	NA	NA	NA
District H, Siraha	0	0			0	0	0	0	5	0	0	0
Janakpur Z.H, Dhanusa					NA	NA	NA	NA	NA	NA	NA	NA
District H, Rautahat					NA	NA	NA	NA	NA	NA	NA	NA
District H, Bara	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Narayani SRH, Parsa	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
District H, Makwanpur	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Bharatpur H, Chitwan	0	0	0		0	0	0	0	0	0	0	0
Kanti CH, Kathmandu	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Sukraraj T & I D H, Kathmandu	0	0			0	0	0	1	0	3	0	0
UMN Mission H, Palpa	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
District H, Nawal Parasi	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
District H, Kapilvastu	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Lumbini ZH, Rupendehi	0	0	0		0	0	0	0	0	0	0	0
District H, Dang		0	0		0	0	0	1	0	0	0	0
District H, Surkhet	0	0			0	0	0	1	0	0	0	0
Bheri ZH, Banke	0	0			0	0	0	0	0	0	0	0
Seti ZH, Kailali	NA				NA	NA	NA	NA	NA	NA	NA	
Mahakali ZH, Kanchanpur	0											
District H, Doti		NA	NA		NA	NA	NA		NA			
Total	0	0	1	0	0	0	3	0	12	0	0	

B. Reporting Status of Sentinel Sites for Epidemiological Week No. 2

Sentinel Sites	Timeliness			Completeness	EWNW R**	Sentinel Sites				enches
	OT	L	NR							
Mechi Z.H, Jhapa			x	50%	2	Bharatpur H, Chitwan				
Koshi Z.H, Morang	x			100%		Kanti CH, Kathmandu				
District H, Sunsari	x			100%		Sukraraj T & I D H, Kath.				
BPKHS, Sunsari	x			100%		UMN Mission H, Palpa				
District H, Dhankuta		x		100%		District H, Nawal Parasi				
Sagarmatha Z.H, Saptari			x	50%	2	District H, Kapilvastu				50%
Lahan H, Siraha			x	0%	1,2	Lumbini ZH, Rupendehi				100%
District H, Siraha	x			100%		District H, Dang				100%
Janakpur Z.H, Dhanusa			x	0%	1,2	District H, Surkhet				100%
District H, Rautahat			x	50%	1	Bheri ZH, Banke				100%
District H, Bara			x	0%	1,2	Seti ZH, Kailali				
Narayani SRH, Parsa			x	0%	1,2	Mahakali ZH, Kanchanpur				
District H, Makwanpur			x	0%	1,2	District H, Doti				
						Total	9	3	14	
						Percentage	35	12	54	58%

* OT= On Time Report/L= Late Report/NR=No Report

**EWNW= Epidemiological week number without report

C. Comparison of the Data of Diseases of the Epi. Week No. 2 of 2003 with the Epi. Week No. 2 of 2002

			AFP	MSL	NNT	MAL	K-A	Enc.
Cases	This week	2003	0	1	0	3	12	0
		2002	1	2	0	10	11	3
	Cumulative	2003	0	3	0	11	20	0
		2002	1	8	0	13	30	8
Deaths	This week	2003	0	0	0	0	0	0
		2002	1	0	0	0	0	1
	Cumulative	2003	0	0	0	0	0	0
		2002	1	0	0	0	0	1

D. Age & Sex Wise Distribution of Cases & Deaths for Epidemiological Week No. 2

Disease	<1 year				1-4 years				5-15 years				15 + years				Total			
	Cases		Deaths		Cases		Deaths		Cases		Deaths		Cases		Deaths		Cases		Deaths	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
AFP																	0	0	0	0
JE																	0	0	0	0
K-A									1	1			7	3			8	4	0	0
MAL													2	1			2	1	0	0
MSL																	0	0	0	0
NNT																	0	0	0	0

E. Laboratory Confirmation Reports Received from Sentinel Sites for Epidemiological Week No. 2

Sentinel Sites	Clinical	Japanese Encephalitis		Malaria		Kala Azar	
		Specimen Sent	Lab Confirmation	Lab Confirmation	Lab Confirmation	Dipstick	Micro.
District Hospital, Sunsari			This week	Backlog	pu	pf	
							1
							1
							5
					1		
					1		
		0	0	0	0	2	0
							7
							0

F. Sentinel Sites Reporting Communicable Diseases other than 6 Diseases for Epidemiological Week No. 2

SN	Sentinel Sites	Disease	No. of cases	No of Deaths	No of cases Admitted

NOTES:

- Only 47% of sentinel sites reported this week, all the remaining sites are requested to send reports on-time.
 - Koshi Zonal Hospital, Morang and Sukraraj Tropical and Infectious Disease Hospital, Kathmandu are requested to send the lab confirmation of Kala-azar and Malaria cases reported this week. The lab confirmation of cases from this week should be incorporated in next week's report, if the lab report was received after the one week.
 - VBDRTC should check the Measles cases and correlate the number of cases in Table number 4 and 2.
- WHO issues Global Alert about the cases of atypical Pneumonia cases of severe respiratory illness may spread to Hospital Staffs (12 march 2003)
- Since mid February, WHO has been actively working to confirm reports of outbreaks of a severe form of pneumonia in Viet Nam, Hong Kong Special Administrative Region (SAR), China and Guangdong Province in China. The signs and symptoms of the disease include initial flu-like illness (rapid onset of high fever followed by muscle aches, headache and soar throat) Please follow the next bulletins for the updates and case definitions as they unfold for this mysterious syndrome named as Severe Acute Respiratory Syndrome (SARS).

Dr. Padam Bahadur Chand
Director
Epidemiology and Disease Control Division
Department of Health Services, Teku, Kathmandu
Phone: (01) 255796; Fax/Phone: (01) 26226



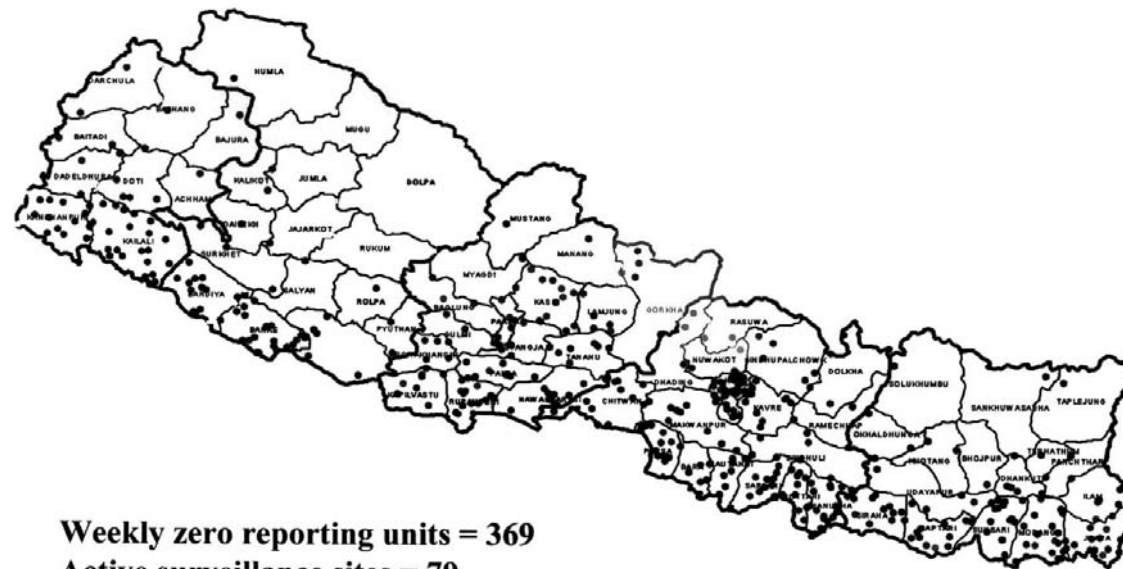
EPIDEMIOLOGICAL ALERT!!!!

Vector Borne Disease Research and Training Center Hetauda,
Makwanpur Phone: (057) 20572 Fax: (057) 20484
e-mail: vbdrtc@vianet.com.np

Prepared by EDCD with Technical Support from WHO & EHP/USAID

Annex. 11

Weekly zero reporting units and active surveillance sites, Nepal, 2003



Data as of 01 November 2003

Polio Eradication Nepal/WHO Nepal.

