

HEALTH INFORMATION SYSTEM

(HIS)

REVIEW

JAYAWIJAYA DISTRICT

PAPUA PROVINCE, INDONESIA

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24TH FEBRUARY - 6TH MARCH 2000

1. INTRODUCTION

The development of a Health Information System for the Republic of Indonesia was first conceptualised by the Department of Health during 1998. The development and refinement of the Health Information System is a key program which has been designed in order to develop Health Data Centres at the district / kabupaten, provincial and the national levels of administration. The Health Information System is an extremely important component in the process of building an effective and sustainable National Health System. A number of factors have contributed to the emergence of the Health Information System for Indonesia. Most notably, improvements in the quality of human resources and increased availability of appropriate computer hardware and software make the collection, storage and analysis of such large amounts of data feasible for the first time.

The Health Information System requires considerable management of a range of activities including the field collection of relevant data, reporting, data editing, data entry, database management and data processing / analysis as well as the preparation of reports based on the final results of the HIS. Therefore the HIS managers must be supported with sufficiently skilled human resources and appropriate equipment and materials (such as data collection and reporting forms, computers and data management and analysis software). Up until the present, the lower levels of the Health Administration, from the Aid Posts and Community Health Centres (Puskesmas) through to the District Health Services (Dinas Kesehatan DATI II), have had very limited access to such resources. As a result, HIS recording and reporting activities carried out at these levels have had to be carried out manually which seriously impacts on the effectiveness, efficiency and reliability of the HIS.

In 1995 the WATCH project developed a HIS program with modified and simplified data collection and reporting forms for use in the Jayawijaya District. These forms have since been adopted and used for HIS data collection in the District. However, to date this data cannot be properly managed and processed despite the fact that appropriate software has already been developed for these purposes. The main problems preventing the effective management and processing of this data are the shortage of staff to carry out this work (in particular staff skilled in data entry and processing), the shortage of computer hardware and problems / bugs in the data management and processing software which are yet to be resolved. In order to ensure the efficiency, effectiveness and reliability these three problems need to be resolved.

2. SITUATION ANALYSIS

2.1 RECORDING AND REPORTING AT THE VILLAGE AND SUB-DISTRICT LEVELS

The heads of the Community Health Centres (Puskesmas) have responsibility for the management of the bottom / grass roots levels of the HIS. The Sub-Community Health Centres (Puskesmas Pembantu / Pustu) Treatment Centres (Balai Pengobatan / BP) Village Medicine Posts (Pos Obat Desa / POD), Village Birthing Posts (Polindes) and Village Aid Posts (Posyandu) are required to maintain records of all cases and submit routine reports to the Puskesmas. The Puskesmas staff are responsible for editing these reports and compiling the data to complete the appropriate HIS forms which are then lodged with the District Health Office. A number of problems were identified as occurring at these stages of the data collection and reporting process as outlined below :

- 1 The illness reports received by the Puskesmas from the Pustu, BP, POD and Polindes usually take the form of lists of the total number of occurrences of specific symptoms, ie. headache, cough or vomiting, rather than diagnosed diseases. Consequently, the puskesmas staff experience great difficulty in transposing the data from these reports into the LB1 forms which they are required to submit to the District Health Office.
- 2 The classification of patients / cases according to such demographic criteria as gender, age group, and whether the cases are new or pre-existing seems to continue to be a problem. In the reports submitted by the Pustu, BP, POD, Posyandu and Polindes these statistics are regularly incomplete.

This is caused by the poor level of understanding and an imperfect record keeping system at these levels.

This is probably caused by the poor understanding of the importance of these criteria in interpreting and analysing health statistics with many village and sub-district level health workers presumably considering the collection of these statistics to be primarily a bureaucratic exercise with no practical application for them or their communities. Compounding this situation is the fact that the record keeping and reporting systems are still considered to be somewhat onerous by many of these health workers. In order to reduce the amount of time and effort expended on record keeping activities, only that data which was considered to be important, such as data relating to symptoms of illness, empirical measurements etc. might have been maintained whilst the seemingly unimportant demographic data was often overlooked.

- 3 The daily records in those Puskesmas visited was already of an acceptable standard. Records were regularly transcribed from the medical record and subsequently diagnosed by the Anamnesa (the history taking) Division (in Hom-Hom). Apparently in many other Puskesmas, such as the Wanena Town Puskesmas, these duties were not being carried out. The reasons given for this

- include staff shortages and the lack of supervision and coordination due to the regular absence of many of the heads of Puskesmas from their posts.
- 4 Some of the record keeping and reporting duties in the Puskesmas have already been delegated to particular staff. For example, one staff member has responsibility for the LB1 and LB2 forms, a second is responsible for the LI1, LI2 and MA forms. However, many puskesmas are still unclear regarding who is responsible for handling the SP2TP (for example Wamena Town).
 - 5 Due to regular shortages of official LB1, LB2, LI1, LI2 and MA reporting forms the reports submitted by the Pustu, BP, POD, Posyandu and Polindes generally aren't regular or uniform. Reports are often not submitted or only submitted after considerable delay or they are written on pages torn from exercise books using formats / layouts that may later cause problems in transcription. Appropriate report forms have been developed, tested and distributed. However, the ongoing distribution of these forms has been poorly coordinated resulting in regular shortages in the sub-district and village levels. Some of the most active and dedicated Puskesmas staff have taken the initiative of making their own copies of these forms to overcome these shortages.
 - 6 The classic reason given by Puskesmas staff for their failure to submit reports to the District Health Office was the lack of feed-back or follow-up action resulting from the submission of reports. In some cases it would seem that this excuse was valid as the Puskesmas staff had genuinely attempted to carry out the reporting system and had submitted a number of reports but had received no attention or feedback from the District Health Office. However, in many other cases there would seem to have been little or no real attempt to carry out the reporting system so this excuse is either invalid or is based on other previous experiences or pre-existing prejudices.
 - 7 The availability of SP2TP reporting forms would seem to be very poor. Several puskesmas staff members responsible for the completion of these forms reported that they had experienced considerable difficulty sourcing any of these forms even when they had visited the District Health Office itself in search of them.
 - 8 The assignment of numerical identifier codes to each Posyandu has not yet been carried out by the puskesmas. This means that in every LI1 and LI2 report the numeric identifiers for the posyandu are either left empty or are filled in at whim. This will cause some confusion and increased workload for the computer operators when attempting to enter the data into the HIS databases as the different posyandu will be identified by the computer software through the numeric identifiers rather than their names.

2.2 RECORDING AND REPORTING SYSTEMS AT THE DISTRICT LEVEL

- 1 The reports received from each of the Puskesmas are transcribed by staff of the District Health Office (from the Rehabilitation, Women and children's health and Infectious diseases / P2M sections) into the main district health data record books. The data is then summarised with the figures for the entire district being combined and tallied. A report based on these figures is then prepared and submitted to the Provincial Health Office. All of this work is carried out manually using ledger books, type writers and adding machines. This not only causes the diversion of a considerable proportion of the DHO's limited pool of human resources into this task but it also increases the likelihood of errors in data transcription occurring.
- 2 There is presently no coordinating body for the HIS recording system with three separate sections of the District Health Office each having responsibility for part of the record keeping and data processing. The LB1 and LB2 forms are handled by the rehabilitation section, the LI1 and LI2 forms are handled by the Women and Children's health section whereas the P2M section handles the epidemic illness reports and KLB. There is a lack of coordination between these three sections and consequently there is overlap in the work of these sections (for example P2M could obtain the information on epidemics and KLB from the LB1 forms) and the data produced by the different sections is often inconsistent or conflicting,
- 3 There are often considerable inconsistencies in the monitoring of sub-district level reporting between the three different sections despite the fact that reports coming into the three sections all came from the same sources. For example the results of monitoring activities carried out by the rehabilitation section reported that Puskesmas A had already submitted its reports whereas Infectious diseases had no record of this data being submitted.
- 2 The data from the LB1 forms has already been transcribed into a master record book based on the reports sent in by all of the Puskesmas in the district. The HIS computer database program has not yet been fully utilised. To date only LB1 and LB2 data for a few puskesmas over a period of several months have been entered into this database.

2.3 GENERAL PROBLEMS

- 1 Changes which have recently been made to the LI2 form in accordance with the recommendations and practices of Merlin have made it necessary to make a number of changes to the HIS software.
- 2 The supply of LB1 forms which were printed by the WATCH project have been exhausted and those which are now available through the DHO are the new versions printed by the Central Government in Jakarta. In some respects these new forms are somewhat simplified in that they no longer require data on whether cases are new or pre-existing. However, these forms cover a wider range of diseases including a number of conditions which are not a concern in Jayawijaya District. If these new forms are to be used the database structure and software will have to be altered and the data which has already been entered into the database must be converted into the new format.
- 3 Generally speaking workers at the village and sub-district levels do not understand the goal of the HIS or what the reports which they submit are used for. Therefore, many health workers are inclined to submit reports only so as to meet the requirements of the DHO and some data submitted is likely to only be based upon estimations or even fabricated.
- 4 Staff at the Puskesmas are generally disinterested in the reporting system as they feel that it does not have any real application and perhaps more importantly because they feel that there is never any feed-back from the DHO. For their part staff of the DHO feel that where they have tried to give feed back it has been received only as criticism. These problems are related to poor communications and lack of understanding between the different arms of the district health service.
- 5 Most health workers in the Pustu, BP, POD and Polindes feel that they are less than capable of correctly completing LB1 reports especially in regards to diagnosing illnesses. The Diseases Flow Chart (Bagan Alir Penyakit) which has already been produced can be used as a guide in making diagnoses based upon easily discernible symptoms and should therefore be promoted to help overcome this problem.

3. THE HIS SOFTWARE

3.1 MODIFICATIONS MADE TO THE HIS SOFTWARE

Up until the present the software which was specifically developed for the purpose of storing HIS data for Jayawijaya District has not been utilised except on a trial basis. One of the main factors which has prevented this software being used on a larger scale are a large number of problems or bugs in the software itself. Many of these bugs must be resolved before the software will be useable and when the program was closely inspected by the consultant a number of previously unnoticed problems came to light particularly in the counting functions related to reports. During the course of the consultancy a number of modifications and repairs were carried out on the software. These are outlined below :

- 1 Extra spaces have been added to numerical fields to allow for 5 digit numbers rather than the previous 3 digit numerical field sizes. This change was made to the database forms for LB1, LB2, LI1, LI2 and MA both for data entry and editing purposes as well as the production of reports.
- 2 The millenium bug problems in the software have been resolved and the program is now working on a four digit date (year).
- 3 The title Irian Jaya on the cover page has been replaced with Papua in accordance with the recent renaming of the province by Presidential Decree.
- 4 Additional printer settings have been added in order to allow users to use both dot matrix and laser printers to print reports from the database.
- 5 The format of LI2 database forms, tables and reports were altered to bring them into line with the new LI2 report forms to be used for data collection. On the old LI2 forms there were only 19 columns whereas the new forms have a total of 23 columns and in a number of cases the names of variables have also changed. The changes in columns and variable names are outlined in the following table.

New Column	Old Column	Name of Variable
0	0	Numerical Identifier
1	1	Name of Village Aid Post / Posyandu
2	2	Live Birth < 2.5 kg
3	3	Live Birth \geq 2.5 kg
4	4	Pre-natal death / Still born
5	-	Post natal death
6	5	Total number of births
7	6	Delivery assisted by a health worker or trained midwife
8	7	Delivery assisted by a trained traditional midwife / traditional birth attendant (TBA)
9	8	Delivery assisted by other
10	9	Abortive bleeding
11	-	Auto-partum bleeding
12	-	In-partum bleeding
13	10	Post-partum bleeding
14	-	False Pregnancy (Mola Hidati Dosa/ Hamil Anggur)
15	12	Bunifas Vitamin A (Ibu Masa Nifas : 0 -40 days after delivery)
16	13	Home visit; neo-natal; 0-7
17	-	Home visit; neo-natal; 8-28
18	14	Home visit; 0 - 40 days after delivery
19	-	Pre-eclampsia
20	-	Delivery of long duration
21	-	Infection
22	-	Referral
23	15	Notes (this variable previously called information topic)

Therefore, the columns in the old database needed to be replaced with the corresponding variable columns of the new database. These changes were necessitated by the assignment of numeric identifiers to variables in the new forms which did not correspond with the numeric identifiers assigned to the variables in the pre-existing forms. For example, item 10 in the new column refers to the variable Abortive Bleeding whereas in the old database it referred to the variable post-partum bleeding. If the database was not modified to include the new fields and to assign data from fields in the old database format to the corresponding fields in the new format considerable mistakes would have occurred in reports subsequently produced from the database.

- The format of the LA data entry forms, database tables and the data output or report forms were modified to make them compatible with the format of the latest LA field report form. These alterations were required because in the old and new formats there are a number of variables the values of which are automatically generated by the computer program based upon other data within the database. In the old LA format these variables were in columns 15, 16, 22 and 23 whereas in the new format they were moved to columns 3, 4, 23 and 24. Due to this

repositioning of automatically generated variables the expressions or formulas which are used to automatically generate the variables also had to be repositioned.

7. An error in the automated calculations in the LB1 computer report was rectified. This error was caused by two expressions or formulas, with automated calculations being placed in the wrong positions which resulted in a feedback loop within the calculations. This error caused the number of cases to be counted over and over again resulting in outputs in hundreds or thousands rather than tens.
8. An error in the automated calculations in the LB2 computer report was also rectified. This error was also caused by two expressions or formulas, with automated calculations being placed in the wrong positions which resulted in a feedback loop within the calculations. This error caused the number of deaths to be counted over and over again resulting in outputs in hundreds or thousands rather than tens. For example the number of deaths related to pneumonia and other upper throat infections was calculated at 900 cases when it should in fact have been 40.
9. The structure of the database reports were altered so that diseases which were listed within the database but which were marked with a value of "0" would not be included in the final PWS reports.
10. The structure of the LSBP (Ten major diseases report) database report was altered so that the category "*Other Diseases*" was deleted from the report. This was done because this category was not particularly useful and was causing confusion amongst some readers.
11. The page setup used for database reports (both for printing and saving to file) was altered in order to overcome a problem whereby only a small amount of information (six cases) was being printed on each page. This problem was overcome and the new page setup will now allocate up to thirty cases to each page of the reports.
12. The page margins within the page setup for database reports was also altered so that reports would be printed nearer to the centre of each page. The left hand margin, which was previously set at 1 inch was reset to 5 inches.
13. The LPLB (Monthly Report Submission Report) computer report was altered due to problems experienced with saving the computer report to file. The LPLB computer report can now be saved to file after it has been printed from the HIS computer program.
14. In order to match the dimensions of the computer reports to the paper sizes being used for printing the number of rows on each page was reduced. This was most important in cases where the computer reports were being printed using a landscape orientation.

15. An automation object was added to all computer reports. This automation object will automatically insert the appropriate report name (ie. LB1, LB2, LPLB, LSBP, etc.), month and year to the top of the report. This was done to save DinKes personnel from having to manually add these details to each report.
16. Extra variables for BP, POD and Polindes were added to the “Puskesmas Information” program file within the HIS database and computer program.

3.2 OUTSTANDING ERRORS IN THE HIS SOFTWARE

Due to the time constraints of the HIS Review consultancy contract and the large number of bugs / errors in the HIS software (many of which were previously not apparent) there were a number of errors in the software which need to be corrected but which could not be addressed during the course of this review. These errors include the following :

1. Reports for the Kabupaten Level

- LKLB (Extraordinary Events Report)

This program already exists however, there are still problems with the counting of extra-ordinary events related to the vague definition of what constitutes an extraordinary event which is used. In the existing program the definition of extraordinary events is based solely upon increases or decreases in the statistical frequency of a specific disease since the previous monthly report. This definition does not include a set percentage variation in the statistical frequency of a disease which must occur before that disease is classified as being an extraordinary event. Due to the fact that almost all diseases will vary in frequency from one month to the next the lack of a set percentage variation with the definition means that almost all diseases will be reported as extraordinary events every month even though the actual variation in frequency of cases may actually be as little as 0.01%. Therefore, a better definition of extraordinary events which incorporates a set percentage variation in disease frequency needs to be agreed to by the concerned parties and incorporated into the program.

- LB3 (Report on Nutrition, Women and Children’s Health, Immunisation and Infectious Diseases Prevention)

This program produces a database report comprised of data drawn from a number of other tables within the database. This program has already been written however, it is still incomplete and requires further refinement

2. Reports for the Puskesmas

- LB3 (Report on Nutrition, Women and Children's Health, Immunisation and Infectious Diseases Prevention)

This program has already been written but it requires further refinement and explanatory notes / help notes need to be written into the program to guide personnel working on data entry in how to correctly enter the data.

- LA (Child Health Report)

This program is already working however an automation object should be written into the program to automatically insert the file name (report name, puskesmas, year and date) at the top of the computer reports which are printed. This automation would save personnel the task of manually inserting these details later.

- LI1

This program already works and file names are already automatically added to the reports which it produces. However, the file name used is not complete with the name of the Puskesmas and the month missing. These details should be corrected.

- LI2

This program already works and file names are already automatically added to the reports which it produces. However, the file name used is not complete as the name of the Puskesmas missing. This detail should be corrected.

3.3 SUB-PROGRAMS THAT SHOULD BE CREATED

There are a number of sub-program options which have already been included on menus within the HIS software but which have not yet been programmed. These include the following sub-programs :

1. Computer reports for the DinKes level:

- PWS reports for the three major diseases:

- a. Pneumonia;
- b. Malaria; and
- c. Diarrhoea.

- Print outputs for PWS reports on:

- a. Immunisation; and
- b. KIA / Women and Children's Health

2. Computer reports for the Puskesmas Level:

- LB1 (Monthly Disease Report) reports

This includes sub-reports covering babies, infants, children under five years, LSBP, LPW and LKLB. The printed report forms for these reports already exist.

- LB2 (Monthly Death Report) reports

This includes sub-reports covering babies, infants, children under five years, and others. The printed report forms for these reports already exist.

- PWS reports

4. TRAINING OF PERSONNEL RESPONSIBLE FOR DATA COLLECTION AND REPORTING (SP2TP)

During the course of the HIS review consultancy a training workshop was organised and conducted to help improve the knowledge and skills of the staff involved in data collection and reporting at the Puskesmas level (SP2TP). The workshop was held in Wamena and was attended by SP2TP from across the Jayawijaya District. Training materials were presented by the three sections of the DinKes responsible for management of the HIS, namely, KIA, P2M and Seksi Pemulihan. Prior to the running of this workshop a planning meeting was held which was attended by WATCH personnel, the head of DinKes as well as representatives from the KIA, P2M, and Pemulihan Sections and the supervising midwife. The main topic discussed during this meeting was the HIS database program and the written report forms which have already been produced by WATCH. In particular, this discussion sought to determine to what extent the different parties involved would be willing to use this software and report forms and what they considered to be areas in need of further work. During this meeting the SP2TP training workshop was also discussed and the presentation of materials by the KIA, P2M and Pemulihan Sections was planned.

The SP2TP training workshop began with three overviews of the subject matter to be covered by the workshop. These overviews were presented by the three responsible sections of DinKes (KIA, P2M and Seksi Pemulihan) and were followed by short question and answer sessions. In the overview presented by the KIA section workshop participants raised the problems related to the K1 (First Ante-natal Check) criteria. This problem relates to a difference in the criteria for K1 as cited in the PWS handbook and that which is used by the WHO. It was suggested that the WHO criteria for K1 was far too narrow for any meaningful application in the HIS for Jayawijaya. Under the WHO criteria K1 visits must take place during the first trimester of pregnancy. In Jayawijaya experience and observation, indigenous women do not usually consider themselves to be pregnant until the pregnancy is quite advanced. Due to this cultural norm most K1 visits do not occur until late in the second trimester or early in the third which means that they are disqualified as K1 visits under the WHO definition. On the other hand, the PWS criteria for K1 visits does not stipulate that the visit must be during the first trimester which makes it more appropriate for use in Jayawijaya. Workshop participants therefore suggested that the KIA section should make a clear decision as to which K1 criteria should be used and train all SP2TP personnel accordingly.

The main problem which came to light during the overview presented by the P2M section was the fact that the data presented in monitoring reports by P2M was not the same as the data contained in reports produced by the Seksi Pemulihan or that data available from Pemulihan was not recorded at all in the monitoring section of P2M. This occurs despite the fact that both Pemulihan and P2M generate these reports from the same data which was submitted by the Puskesmas. This situation has undermined the confidence of many Puskesmas in the HIS as they feel that the P2M or Pemulihan sections are not producing meaningful or reliable reports from the data which they take considerable time and effort to collect. The problem seems to be related to poor

communication between the two sections involved. The system of using SSB radio to communicate HIS data / reports from Pukesmas in remote sub-districts to the DinKes offices in Wamena has also not yet been properly established. Considering the rugged geography of Jayawijaya District and the resulting transportation and communication problems the effective establishment of this radio communication system is considered vital to the success of the HIS.

Some of the people attending the workshop had been working as SP2TP personnel for some time whereas others had only recently taken on the role and therefore had only a limited understanding of problems in the field relating to data collection and reporting.

The other main issue raised by SP2TP personnel attending the workshop was the problem of report forms being virtually unobtainable. The DinKes itself experiences difficulties in maintaining a supply of these printed forms due to the fact that the cost of printing such materials is no longer drawn from their own budget so they too must wait for forms to come into their office through external budget lines.

5. RECOMMENDATIONS

Based upon the findings of the situation analysis it is clear that the Jayawijaya HIS still requires a considerable amount of work before it will be able to function efficiently and effectively. This work includes further improvement of the HIS database software, the sourcing of more computer hardware, activities aimed at improving the human resources which contribute to the HIS and improved communication procedures. The main areas which need to be addressed are outlined below :

A. Dinas Kesehatan Kabupaten Jayawijaya

- 1 Many health workers including SP2TP personnel still have a poor understanding of how and why the LB1, LB2, LI1, LI2 and LA reports should be completed. The DinKes should therefore undertake further training activities at the Pustu, BP, POD, Posyandu and Polindes level. This training should focus on how to correctly complete these forms and the correct channels and procedures for HIS data recording and reporting.
- 2 DinKes should designate a specific section who would have overall responsibility for management of the HIS throughout Jayawijaya so that all incoming reports are channelled through one section. The Seksi Pemulihan would seem to be the most appropriate section of DinKes to act as a coordinating body for HIS data recording and reporting and as a Health Data Centre for Jayawijaya.
- 3 In order to ensure continuity in the HIS data collection and reporting processes the proposed Health Data Centre should have at least two DinKes personnel permanently assigned to it.

- 4 The numeric identifier codes for Posyandus throughout Jayawijaya need to be agreed to, incorporated into the database software and taught to Posyandu staff for inclusion in written reports. These codes are used to identify each posyandu with a unique numeric code which is easier to enter into the database than the often lengthy posyandu names. To date these codes have not been finalised which is causing some confusion.
- 5 Ongoing monitoring of the HIS data recording and reporting system needs to be carried out by DinKes both through field visits and via regular SSB radio communication. DinKes should also continue to impress upon the heads of Puskesmas the importance of the HIS in fulfilling the future health care needs in Jayawijaya.
- 6 When carrying out evaluations and/or providing feedback to the Puskesmas DinKes must be very tactful and careful in its approach so as to avoid upsetting the Puskesmas staff by making them feel that they personally are being criticised. Admittedly this is not an easy recommendation to implement however, if this feedback relationship between the DinKes and Puskesmas is not handled with considerable tact and care there is a serious risk of the HIS being undermined by breakdowns in communications.
- 7 In relation to the problem of field report forms being very difficult to obtain DinKes and the Heads of Puskesmas should work together to ensure that all of the appropriate forms are available at all times. The budget line that covers the costs of printing and distributing these forms is no longer covered by the DinKes operational budget as this has been shifted to the budget of individual Puskesmas. These forms are desperately needed now. However, it will take some considerable amount of time for each Puskesmas to submit budget requests to cover the costs of printing these forms. It is therefore suggested that DinKes should request the assistance of WATCH in providing an intermediate supply of the appropriate forms whilst DinKes and the Puskesmas work on better arrangements to ensure a future supply.

B. WATCH Project Jayawijaya

- 1 In order to make it easier for SP2TP and other health workers to fill in the appropriate HIS report forms a basic guide on how to correctly complete the forms needs to be produced and distributed. This guide should include clear examples of forms that have been correctly filled in to make this matter clearer.

- 2 In order to perfect the HIS database software further work needs to be done to complete those sub-programs which have not yet been written such as the LB1 report for the kecamatan level.
- 3 The format of field report forms for the LB1, LB2, LI1, LI2 and IA reports requires further consideration. New forms have been made available by the central Health Department. However, these forms differ slightly from the forms previously produced by WATCH and used in Jayawijaya. In some respects the new forms are easier for village and sub-district level health workers to complete as there is no longer any distinction between new and pre-existing cases. It may therefore be appropriate to adopt the new forms but this would require appropriate changes to be made to the HIS database / software.
- 4 The HIS promotion, training and monitoring activities which have to date been carried out by WATCH need to be continued for at least a further six months to ensure that the HIS is well established and operating sustainably at the village and sub-district levels.
- 5 Considering the problems facing DinKes in relation to shortages of computer hardware for use in HIS data management and processing WATCH should look at the possibility of providing a computer specifically for use in the HIS Data Management Centre. The computer which has been used to date is located in the Seksi Pemulihan of DinKes and is used by many different sections for a wide variety of purposes. This causes considerable interruptions to HIS data management and processing activities.