Administrative Data System of Ministry of Health and Population in Nepal

Presented in "Improving Administrative Data Sources for the Monitoring of the Millennium Development Goal Indicators – Regional Workshop 9-11 July 2007"
Asian Institute of Technology (AIT)
Thailand, Bangkok

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9-11 July, 2007
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1. Introduction

1.1 Country Background
Nepal, a land locked country (between India and China) in South Asia, has a population of 23 million (2001). Country’s total area is 147,181 sq. km. Nepal is divided into three ecological zones: the mountains, the middle hills and Terai (southern plain). It has 5 development regions termed as eastern, central, western, mid-western and far-western. Further the country is divided into 14 Zones, 75 administrative districts.


1.2 Local Governments
Currently, Nepal has two tire local government systems: central and local. The lowest local government unit is called Village Development Committees (VDCs, 3913) and Municipalities (58). The VDCs and municipalities are further divided into smaller political units called wards. At the district level, District Development Committees (DDCs) are local government units (75). Districts are also divided into sub-district levels (Ilakas).

2. Health Systems and Institutional Framework

2.1 Nepal Health Sector Programme
Nepal Health Sector Program, based on the Health Sector Strategy: An Agenda for Change/Reform (HSS), 2003 and the Nepal Health Sector Program - Implementation Plan (NHSP-IP, 2004-2009) are the key health policy level programmes. These aim at expanding access to and increasing the use of essential health care services (EHCS), especially for the underserved, thus heading towards meeting the Millennium Development Goals (MDGs).

2.2 Institutional Set-up of Health System
Sub-Health Posts (SHPs) are the grassroots level health institutions at VDC level. Currently there are 3,129 Sub-Health Posts (SHPs), 786 Health Posts (HPs) at the sub-district (Ilaka) level, and 205 Primary Health Care Centers (PHCs) at the electoral constituencies. These institutions are responsible for the delivery of basic health services,
which include disease control, reproductive health care, child health care and nutrition services. Within the district health care system there are 68 district hospitals. This is the first referral center where the patients are referred to by SHPs, HPs and PHCs. At the tertiary level, there are 9 Zonal hospitals and 4 Regional Hospitals. At the central level there are specialized Hospitals which have been providing the specialized health services.

A total of 278 District Ayurvedic Health Centers provide alternative medicine services at local level. At the centre, there is one Ayurvedic hospital in Kathmandu.

3. Health and Millennium Declaration

3.1 Millennium Development Goals (MDGs)

There are three MDGs, out of eight are related to the health sector. The goals are reducing child mortality; improving maternal health and combating communicable diseases progress in attaining the MDGs (table 1).

<table>
<thead>
<tr>
<th>Table 1: MDG 4 - Child Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
</tr>
<tr>
<td>Infant Mortality rate (IMR)</td>
</tr>
<tr>
<td>Under Five Mortality rate(U5MR)</td>
</tr>
<tr>
<td>Proportion of one-year-olds</td>
</tr>
<tr>
<td>immunized against measles</td>
</tr>
</tbody>
</table>

Source: NDHS survey, 2006

<table>
<thead>
<tr>
<th>Table 2: MDG 5 - Maternal Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
</tr>
<tr>
<td>Maternal mortality ratio (MMR)</td>
</tr>
<tr>
<td>Percentage of deliveries attended</td>
</tr>
<tr>
<td>by health care providers (doctors</td>
</tr>
<tr>
<td>nurses and auxiliary nurse midwives</td>
</tr>
<tr>
<td>Contraceptive prevalence rate (%)</td>
</tr>
</tbody>
</table>

Source: NDHS survey

<table>
<thead>
<tr>
<th>Table 3: MDG 6 - AIDS and TB Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
</tr>
<tr>
<td>HIV prevalence among 15-19 years of</td>
</tr>
<tr>
<td>age (%)</td>
</tr>
<tr>
<td>Contraceptive prevalence rate</td>
</tr>
<tr>
<td>including condom use (%)</td>
</tr>
</tbody>
</table>

Source: NDHS survey
3.2 Summary of Finding of NDHS, 2006

The Nepal Demographic and Health Survey (NDHS), 2006 shows a significant achievement in health indicators towards achieving MDGs as compared to NDHS, 2001 despite a decade long conflict situation in the country. There has been a remarkable reduction in child and maternal mortality rate in particular, in the last 10 years period. Child immunization rates increased (to 83%), child and infant mortality decreased (to 61/1,000 and 48/1,000 respectively), fertility rates decreased (4.6 births per women in 1996 to 3.1 in 2006), skilled attendance at birth increased (to 18.7 %), and knowledge of HIV/AIDS prevention also increased. The following table summarizes the achievement shown by NDHS, 2006 in addressing MDGs.

<table>
<thead>
<tr>
<th>Health Related Goal</th>
<th>Indicator</th>
<th>Value (Men)</th>
<th>Value (Women)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Eradicate extreme poverty &amp; hunger</td>
<td>4. Prevalence of underweight children under five years of age.</td>
<td>37.5</td>
<td>39.7</td>
<td>38.6</td>
</tr>
<tr>
<td>4. Reduce child mortality.</td>
<td>13. Under five mortality rate (per 1,000 live births)</td>
<td>-</td>
<td>-</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>14. Infant mortality rate (per 1,000 live births)</td>
<td>-</td>
<td>-</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>15. Percentage of 1 year old children immunized against measles.</td>
<td>87.1</td>
<td>82.8</td>
<td>85.0</td>
</tr>
<tr>
<td>5. Improve maternal health</td>
<td>16. Maternal mortality ratio (per 100,000 live births)</td>
<td>Na</td>
<td>Na</td>
<td>281</td>
</tr>
<tr>
<td></td>
<td>17. Percentage of births attended by skilled birth attendant</td>
<td>Na</td>
<td>Na</td>
<td>18.7</td>
</tr>
<tr>
<td>6. Combat HIV/AIDS, malaria and other diseases.</td>
<td>19. Percentage of current users of contraception who are using condoms.</td>
<td>Na</td>
<td>1.09</td>
<td>Na</td>
</tr>
<tr>
<td></td>
<td>19A. Condom use at last high-risk sex</td>
<td>71.2</td>
<td>Na</td>
<td>Na</td>
</tr>
<tr>
<td></td>
<td>19B. Percentage of population aged 15-24 years with comprehensive knowledge of HIV/AIDS</td>
<td>43.6</td>
<td>27.6</td>
<td>Na</td>
</tr>
<tr>
<td></td>
<td>19C. Contraceptive prevalence rate</td>
<td>Na</td>
<td>44.2</td>
<td>Na</td>
</tr>
</tbody>
</table>

Source: NDHS Survey, 2006: xxiv

4. Tracking of Progress Through Data Systems

4.1 Current Data Collection and Management System

Population census is conducted in every 10 years at national level that includes various parameters. Besides the census, Demographic Health Survey is conducted at the interval of every 5 years. The first national level sample survey was conducted in 1976 for measuring the fertility and mortality incidences. Since then the MOHP has been conducting this kind of sample survey with five years interval on regular basis. The maternal mortality indicator was incorporated in the sample survey only in 1991 and 1996. Furthermore, periodic survey and studies are conducted as and when needed basis.

Before the integration of all health programme in 1993 vertical projects were using different recording and reporting practices for their own sub-sector purposes. All these reporting and recording practices were not integrated, interpreted and utilized well. More
than 110 different forms, cards, registers and reports formats were on use utilizing programme specific human resources. Until 1986/1987 all the vertical programmes were integrated at the district level but the information system was not integrated until 1993.

4.2 Health Management Information System (HMIS)

During the fiscal year 1993/94 the ministry of health was restructured and department of health was reinstated. A central Health Management Information System (HMIS) Section was established in order to develop integrated health management information system at all levels for better co-ordination, planning, monitoring and evaluation of the ongoing programme in an integrated manner at various management levels. Now, Health Management Information System (HMIS) includes data collection, compilation, processing, dissemination, analysis & interpretation.

Objectives of HMIS

The objectives of HMIS are as follows:

- To monitor the achievement, coverage, continuity and quality of health services.
- To help assessing progress (evaluation) towards goals and targets of district health programmers.
- To support the planning activities of all health programs.
- To help senior managers to develop appropriate health policy guidelines.
- To provide access of data/information to MoHP, all departments, divisions and centers on time.
- To support the planning, monitoring and evaluation (PME) management cycle of all health programmers.

Recording and Reporting

There are 37 recording and reporting tools are being used. Detailed list of HMIS tools are presented in Annex 1. Some of the tools have been modified; some tools are added to meet the data gaps and to address the social inclusion aspects (gender, caste, ethnicity, etc.). From the next fiscal year updated HMIS tools will be used. Major changes made are the following:

<table>
<thead>
<tr>
<th>Table 5: HMIS – Updates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forms: Currently used</strong></td>
</tr>
<tr>
<td>HMIS 8 Micronutrient distribution register</td>
</tr>
<tr>
<td>HMIS11 Face Sheet (Hormonal)</td>
</tr>
<tr>
<td>HMIS12 Face Sheet(Non- Hormonal)</td>
</tr>
<tr>
<td>HMIS18 Specimen Collection From</td>
</tr>
<tr>
<td>HMIS18B TB Sputum Examination Request from</td>
</tr>
<tr>
<td>HMIS20 Tuberculosis Treatment Card</td>
</tr>
<tr>
<td>HMIS20B Tuberculosis Treatment Card (patient)</td>
</tr>
<tr>
<td>HMIS25 Referral Slip</td>
</tr>
<tr>
<td>HMIS28 TBA Register</td>
</tr>
<tr>
<td>HMIS29 VHW/MCHW Diary</td>
</tr>
<tr>
<td>HMIS33 Direct Reporting From</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Forms: Currently used

<table>
<thead>
<tr>
<th>HMIS37</th>
<th>Hospital Tally Sheet</th>
<th>HMIS37</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hospital Tally Sheet A (Indoor Summary)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hospital Tally Sheet B (Inpatient)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hospital Tally Sheet C (OPD Morbidity)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hospital Tally Sheet D (Emergency)</td>
</tr>
</tbody>
</table>

Source: HMIS Section, DOHS

Information related to gender, marginalized groups, MDG related data can be obtained easily by the updated HMIS.

**Recording Tools**
There are 33 different forms and registers (HMIS 1-30 and 35-37) that are developed for data collection and recording purposes.

**Reporting Tools**
There are four types of reporting formats (HMIS 31-34) that have to be used by Village Health Workers (VHW/MCHW), SHP, HP, PHCC, District Health Office (DHO) and Hospitals for reporting purposes.

**Tool no.31:** It is used by MCHW & WHW or reporting to SHP within the first day of each month.

**Tool no.32:** It is used by SHP for reporting to HP/SHP within 3rd day of each month.

**Tool no. 32:** It is used by HP/PHC reporting to DHO/DPHO within 7th day of each month.

**Tool no.33:** It is used by DHO/DPHO for reporting directly to Regional Health Directorate (RHD) as well as HIMS Section within 15th day of each month.

**Tool no. 34:** It is used by each level hospital for reporting and send it directly to RHD as well as HMIS section within 7th day of each month.

**Rest tool no. 35, 36, and 37:** These are hospital based record keeping tools.

The HMIS 33 is the main reporting tools for the public health activities implemented in the district level. DHO/DPHO sends monthly report (HMIS-33) with in the 15th of the following month to HMIS Section/DOHS and respective Regional Health Directorate (RHD) offices.

HMIS-33 reporting from (5 pages) includes the following programs/activities:

**Page 1:** Reporting status and integrated supervision.

**Page 2:** EPI, Nutrition,ARI and CDD program

**Page 3:** Safe Motherhood, Family planning, FCHV, Drug Supply and other activities
After receiving the monthly reports, the HMIS Section carries out the following actions.

1. Received monthly reports are recorded and reporting status is maintained.
2. Cross checking of the report, coding other activities
3. Identification of the error and feedback to the district if necessary
4. Feedback responses regarding the error is edited when necessary
5. Data entry is computerized

**Variables and Indicators**

There are 400+ variables are recorded in the system and more than 100+ indicators are being monitored regularly. Data collection is being done for the following major indicators.

1. **Major Indicators: Child Health**

   **EPI:**
   i. Immunization Coverage  
   ii. Drop out Rate  
   iii. Wastage Rate

   **Nutrition:**  
   i. Coverage of Growth Monitoring 1st Visit  
   ii. Average no. of visits  
   iii. % Malnourished Children  
   iv. % of pregnant women receiving Iron tablets  
   v. % of postpartum mothers receiving Vitamin 'A'  
   vi. Treatment of Vitamin 'A'

   **ARI:**  
   i. Incidence  
   ii. % Pneumonia and severe pneumonia  
   iii. Treatment by antibiotic and mortality

   **CDD:**  
   i. Incidence  
   ii. % Dehydration and severe dehydration  
   iii. Treated with IV fluid and mortality

2. **Major Indicators: Reproductive Health**

   **Safe motherhood:**  
   i. Coverage of ANC and PNC 1st Visit  
   ii. Average no. of ANC Visit
iii. % ANC 4 Visit  
iv. Delivery conducted by health manpower  
v. Maternal Deaths  

Family Planning:  
i. No. of new acceptors and current users  
ii. CPR  
iii. CYP  
iv. Contraceptive distributions by method  

FCHV:  
i. Mothers Group Orientations  
ii. Contraceptive distributions  
iii. Motivation to the clients  

TBA:  
i. ANC visit  
ii. PNC visit  
iii. Delivery  

3. Major Indicators: Disease Control  

Malaria/ Kala-azar:  
i. Slide Positively Rate  
ii. Annual Parasite Incidence  
iii. Clinical Malaria Incidence  

Tuberculosis:  
i. Slide Collection  
ii. Sputum Conversion  
iii. Cure Rate  

Leprosy:  
i. Prevalence Rate  
ii. New case detection rate  
iii. Skin smear positivity rate  

AIDS/STD: Morbidity  
i. RTI  
ii. STD  
iii. HIV  

Hospital Services:  
i. Mortality & Morbidity pattern of Indoor Services  
ii. Average length of stay  
iii. Bed occupancy rate  
iv. OPD service and emergency  
v. Case Fatality Rate
Data Processing:
• Data received at HMIS are reviewed manually before further processing.
• Erroneous/Inconsistent data are noted and notified back for correction.
• Internationally standardized coding is applied where necessary. (e.g. ICD)
• Target population projection/estimation
• IT enabled system for: Data entry, Validation, Coding, central database

4.3 Reporting Status and Quality

Most recent reporting status by the health institutions are as follows:

Table 6: HMIS – Updates

<table>
<thead>
<tr>
<th>Health Institutions</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-health post</td>
<td>98%</td>
</tr>
<tr>
<td>Health post</td>
<td>99%</td>
</tr>
<tr>
<td>Primary health centers</td>
<td>99%</td>
</tr>
<tr>
<td>District hospitals</td>
<td>98%</td>
</tr>
<tr>
<td>Central hospitals</td>
<td>95%</td>
</tr>
<tr>
<td>FCHV</td>
<td>80%</td>
</tr>
<tr>
<td>INGO/NGO/Other Private hospitals</td>
<td>64%</td>
</tr>
</tbody>
</table>

Source: HMIS Section, DOHS, 2007

4.4 Data Quality Improvements

Data verification
• Follow-up meeting: To improve the quality of data HMIS conducts follow-up meeting with statistical Assistants and Medical Recorders at the respected regions. This meeting is also known as Data Verification and follow-up meeting. HMIS generates Data Verification Sheet (Raw data of all months of running fiscal year before verification) and provided in follow-up meeting for verification. They verify/tally the data from center with their reports, and if any inconsistency is found they correct the necessary cells.
• Feedback System (Manual & IT enabled): Raw data is generated every month by programs specific by district. Raw data sheet send to the respective program division/centers, Ministry of health and population, National Planning Commission (NPC) including EDPs for comment.
• Supervision/Monitoring: monitoring and supervision is continuous from center to district, and district to PHCs, HPs and SHPs.

Annual Report
Including all feedback and received information from monitoring and evaluation Department of Health Services publishes the annual report and information are disseminated.

4.5 Concluding Remarks
In summary, the following are the strengths and weakness of the current HMIS in Nepal.

Strengths
• Wide coverage in terms of spatial and program wise on monthly basis.
• Well established and functioning at regional, districts and below  
• Powerful tool for assisting in health program monitoring at all levels  
• Service statistics central database  
• HMIS Intranet  
• Large number of human resources trained on HMIS  
• Dedicated government staff at Central, Regional, District level and HMIS trained personnel below district level for the work of HMIS.

Constraints/Issues  
• Inconsistencies and incomplete reporting.  
• Under reporting from hospitals particularly in central level and less reporting from private sector  
• Monthly monitoring sheets need to be updated timely as of present indicators  
• Information need of the program not updated to accommodate the changing needs  
• Gender specific, marginalized group data not yet fully incorporated in the reporting  
• Training for newly recruited health personnel  
• Manually data collection, less use of computer  
• Timely unavailable due to the geographical reason

Conclusion  
The trend of child mortality and maternal mortality show that the progress is on-track as per indicators of the MDGs. Additional strategy and operational plan are needed to meet the target of HIV/AIDS. There is a need of further strengthening the capacity of the human resources related to HMIS.

Adoption of full computerized system with internet linkage up to district level, continuous updates the HMIS tools, expanded information system covering health institutions operated by the private sector have to be addressed to further strengthen the health information management systems in Nepal.
**HMIS Tools**

- HMIS 1  Master Register
- HMIS 2  Multipurpose Contact Card
- HMIS 3  Child Health Card
- HMIS 4  OPD Ticket
- HMIS 5  Immunization Register
- HMIS 6  TT Register
- HMIS 7  <5 Nutrition Register
- HMIS 8  Micronutrient Distribution Register
- HMIS 9  Maternal Health Card
- HMIS 10 Maternal Health Register
- HMIS 11 Face Sheet (Hormonal)
- HMIS 12 Face Sheet (Non- Hormonal)
- HMIS 13 Family Planning Register
- HMIS 14 Sterilization Register
- HMIS 15 IUD / Norplant Removal Register
- HMIS 16 Out Patient Register
- HMIS 17 Outreach Clinic Register
- HMIS 18 Specimen Collection Form
- HMIS 19 Laboratory Examination Register
- HMIS 20 Tuberculosis Treatment Card
- HMIS 21 District Tuberculosis Register
- HMIS 22 Leprosy Examination and Treatment Card
- HMIS 23 Leprosy Clinical Register
- HMIS 24 Malaria Classification and Treatment Register
- HMIS 25 Referral Slip
- HMIS 26 Defaulter Follow-up Slip
- HMIS 27 FCHV register
- HMIS 28 TBA Register
- HMIS 29 VHW/MCHW Diary
- HMIS 30 Universal Tally Sheet
- HMIS 31 VHW/MCHW Reporting Form
- HMIS 32 PHCC/HP/SHP Reporting Form
- HMIS 33 District Reporting Form
- HMIS 34 Hospital Reporting Form
- HMIS 35 Admission Register
- HMIS 36 Discharge Register
- HMIS 37 Hospital Tally Sheet