Bangladesh

Our eHealth

The roadmap of impressive development

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Preface

The World Health Organization (WHO) and International Telecommunication Union (ITU) organized a meeting (24-26 July 2012) in Geneva, Switzerland on National eHealth Strategy Development with concerned global development partners and countries with good progress in eHealth. The meeting was a pleasure for me witnessing that our eHealth progress reached a level of global championship, both with respect to theory and practical application. While most countries have their eHealth at number of isolated pilots, and are struggling to take them to the national scale, Bangladesh has already done all implementations at national level. Therefore, Bangladesh experience is very valuable for the whole world. However, the meeting also confronted me to new reality. This reality is the need of informing the world about our progress. Truly speaking, earlier we did not give enough attention to this need - even to inform the in-country partners and stakeholders.

This booklet is an effort to meet this need. I hope that our partners, stakeholders, citizens and friends, both in home and elsewhere, will find this booklet useful.

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Objectives of HIS & eHealth operational plan 2011-2016

General Objective

To improve health information system and eHealth and develop infrastructure and environment necessary for effective HIS, eHealth and medical biotechnology.

Specific Objectives

i. To improve health information system through:

a. Development and operation of population based HIS
b. Strengthening institution-based HIS
c. Strengthening human resource related HIS
d. Strengthening program based HIS
e. Developing and strengthening logistic tracking, and inventory management and procurement system
f. Developing financial management system
g. Expansion of GIS in health service

h. To improve infrastructure and human resource capacity necessary for HIS
i. To sustain the HIS initiatives and encourage public-private partnership

ii. To improve eHealth through:

a. Continuation and further development of Mobile Phone Health Service and other mHealth
b. Strengthening and expansion of video conferencing
c. Expansion of telemedicine service
d. Introduction of other eHealth services and programs
e. To improve infrastructure and human resource capacity necessary for eHealth
f. To sustain the eHealth initiatives and encourage public-private partnership

Health Service through Mobile Phone

Our citizens can take health suggestions now from doctors working in government health centers for free. For this, a mobile phone has been given to each district and sub-district hospital of Bangladesh. The numbers of these mobile phones have been publicized locally. These numbers are also given in the website of Directorate General of Health Services (www.dghs.gov.bd). Doctors receive calls in these numbers 24 hours. Local people can receive free health suggestions by calling these numbers without coming to hospitals in person. Busy persons can also take medical advice at the beginning of getting affected by any disease. The risk of complication of diseases is lessened this way.

This service has created opportunity to get medical advice by rich or poor people living particularly in rural areas. Medical advice now may be instantly available no matter whether it is late night, as an acute health problem, or patient is in long distance from hospital. For conditions where patients do not need to come to hospital, they can do so by taking advice through mobile phone. There is no need of coming to sub-district or district hospitals for those treatments which are possible from village community clinics or union health facilities. The service helps citizens avoid informal healers that may lead them to complications.

Many people come to out-patient departments of the government hospitals. It often becomes difficult to provide service with limited man-power and medicine. If health service through mobile phone gets wide publicity, a lot of people will be able to take health service from their residence. The pressure over the hospitals will be lessened this way. Then, with limited man-power and resource it will be possible to provide better treatment to the patients coming there. Thus, satisfaction of the patients will be increased.

Telemedicine Service

High quality telemedicine service is being provided in different levels of hospitals all over the country. Among these, there are 2 specialized hospitals (Bangabandhu Sheikh Mujib Medical University and National Institute of Cardiovascular Diseases), 3 district hospitals

(Shatkhira, Nilphamari and Gopalganj) and 3 sub-district hospitals (Pirgonj, Dakope and Debhata). Through this service, admitted patients in district and sub-district level hospitals can take suggestions from the doctors of specialized hospitals without need for visiting the higher level hospitals. Besides, web-camera has been given in each sub-district, district, medical college and post-graduate institute hospitals. These hospitals, therefore, can also give tele-medicine service using Skype or any other video conferencing platform.

Telemedicine Service in Community Clinics

Dhaka, August 2012. Community clinics, located in the rural areas of Bangladesh, already started receiving laptop computers with Internet connection. Before 2012 ends, 3600 laptops and by the next year all of the remaining community clinics will be supplied with laptops. Establishment of community clinics is the flagship program of present government. It is planned that there will be one community clinic for every 6,000 population and a total of 18,000 community clinics will be established with a view to deliver health care service to the rural citizens. The Management Information System is providing laptops to the community clinics to use for multiple purposes, viz., telemedicine, updating local health data, giving health education to citizens and training of health staffs. These laptops have wireless internet connection and in-built web camera and audio system. There is no doctor in the community clinic, where medical advice is provided by trained Community Health Care Provider. However, some patients visiting community clinics will require consultation from a qualified medical doctor. Telemedicine will help in this regard. A doctor working in the nearby sub-district hospital will provide such video consultation. As a result, absence of doctors in community clinics will be fulfilled.

These laptops will also be used for updating local health data through an online database

system called District Health Information System (DHIS). One of the excellent opportunities of the laptops in community clinics is their use in providing health education to rural people. The incidence and prevalence of communicable diseases have been increased worldwide due to climate change, which sometimes show fatal epidemics. During this period, it becomes very urgent to provide important health related information to common people. PowerPoint, audio-video speech, video clips - these types of health education messages can be made and distributed quickly through internet in the community clinics. In normal time, health awareness messages on healthy living, safe water, sanitation, nutrition, etc. Can be distributed through these channels. Additional advantage also remains. Health staffs may also be given online training materials to refresh and update their knowledge.

Telemedicine Service is being given in UISCs

The Access to Information (A2I) Program under the Prime Minister's Office operates Union Information and Service Centers (UISCs) in 4,536 unions of Bangladesh. These centers provide various value added service to local citizens against nominal charge using ICT tools. Local entrepreneurs run the centers. The A2I provided computer, printer, digital camera, scanner and Internet modem to the centers. In 22 of the UISCs, telemedicine service using Skype has been started on pilot basis. Doctors, sitting at the MIS office, are giving medical consultation every working day. The rural people are really welcoming the service and now the telemedicine service is one of the most popular value added services in the respective UISCs.

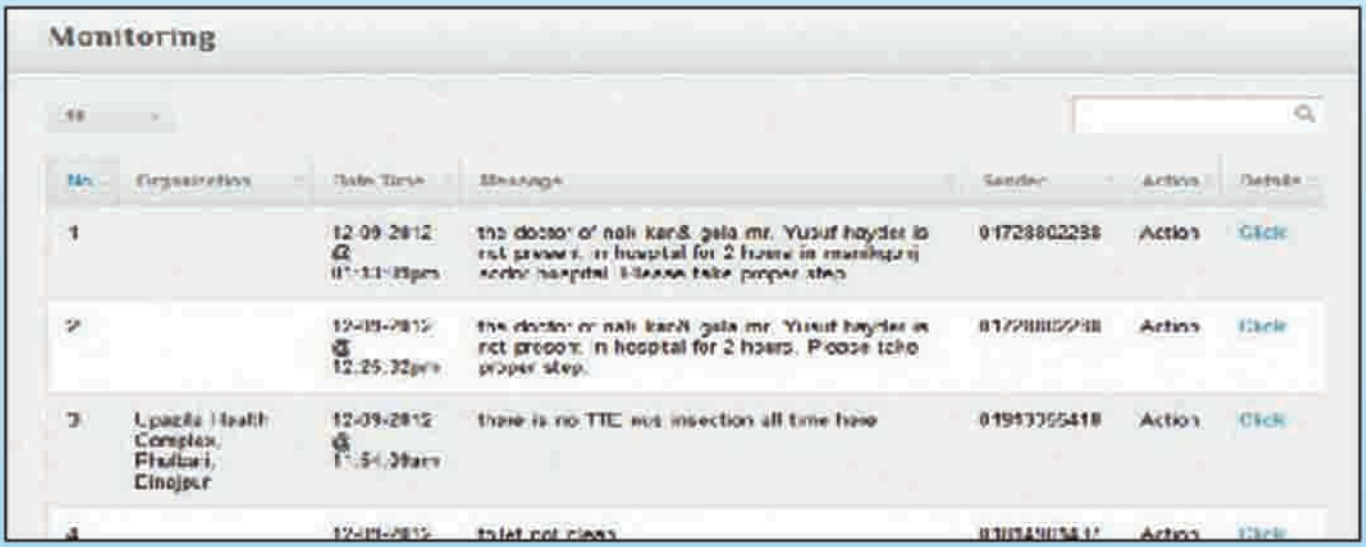
Case study

Miss Roksana Khatun (18 years) is a girl living in Horirampur village of Govipur Upazila She was suffering from loss of appetite and weight loss for a long time Due to this ailment, she could not concentrate to her study. There is no MBBS doctor in her union. She consulted a community health worker several times; but found no solution for her health problem. Once she visited the nearby Union Information & Service Center and came to know about availability of Telemedicine Service.

She had curiosity to know how she can see and talk to a doctor staying at distance and can get prescription from him. Dr. Bashirul Islam sitting in MIS office talked to her whom she could find on the computer screen at her end. The session appeared like a normal face to face conversion. She received a prescription printed from the computer printer at her end. She was very happy because she could clearly explain about her illness without any hesitation to the doctor who was very sympathetic to listen to her problem with patience. She came back to the UISC after one week with a new patient from her community. She was cured and so brought the new patient for getting treatment from Dr. Bashir.

Complaints-Suggestions through SMS

An exciting and effective innovation has been added to the existing service line of MIS. Citizens are now taking part in ensuring accountability of the service providers in health system. This has been possible through introduction of a SMS-based complaints-suggestions box. In each of about 800 public hospitals, display boards, fixed to walls, describe how to send complaints or suggestions by SMS for improving service. Patients, their relatives and all people visiting the hospitals, if they are not satisfied with the service, they send SMS. These SMS come to a web portal and assigned staffs oversee. The staffs call the senders of the SMS to understand more about the real situation; and



then talk to the local authority to implement immediate solutions to the problem. This system ensures accountability of public hospitals.

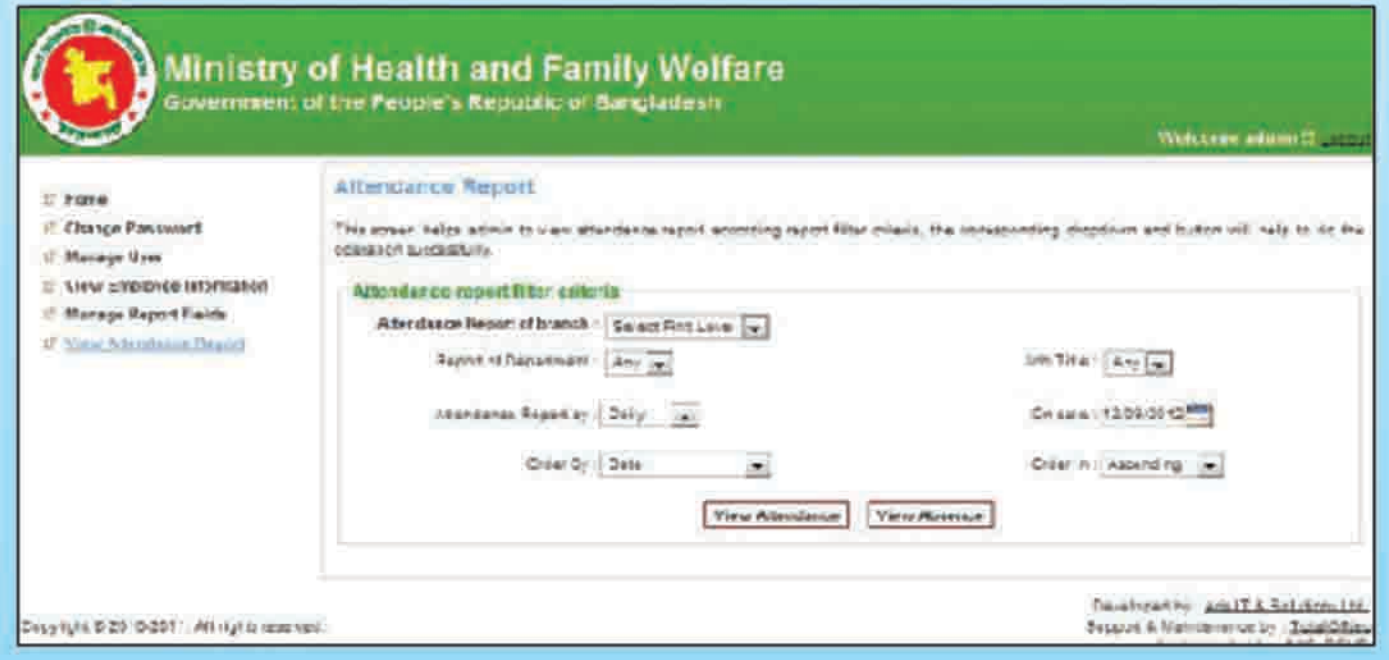
The difference between the traditional and this new system of suggestion or complainbox is that the suggestions or complaints are seen by the central authority directly. As a result, steps are taken in every care.

Office Attendance Monitoring with ICT

All sub-district and district level government hospitals of Bangladesh are introducing office attendance monitoring using biometric finger print detection system. The machines are being installed and expected to be completed by October 2012.

The date and time of arrival to and leaving from office of the officers and staffs will be recorded in the system and will allow reading from the head quarter. As a result the policy makers will find an objective way to assess works done by them.

This new system will replace the current system of office attendance monitoring which has shown success to improvement in the office attendance in remote health facilities. Currently, a monitoring cell established in MIS uses another ICT based mechanism to conduct the monitoring. The latec process uses land phone, mobile phone and web-camera. Hospitals are chosen randomly and called by land or mobile phone. The respondents are asked how many staffs are actually present in the office. To confirm presence, selected staffs are asked to proof presence by standing in front of web camera. The names of unauthorized absentees are informed to ministry for administrative actions. This simple mechanism has improved office attendance by a remarkable percentage.



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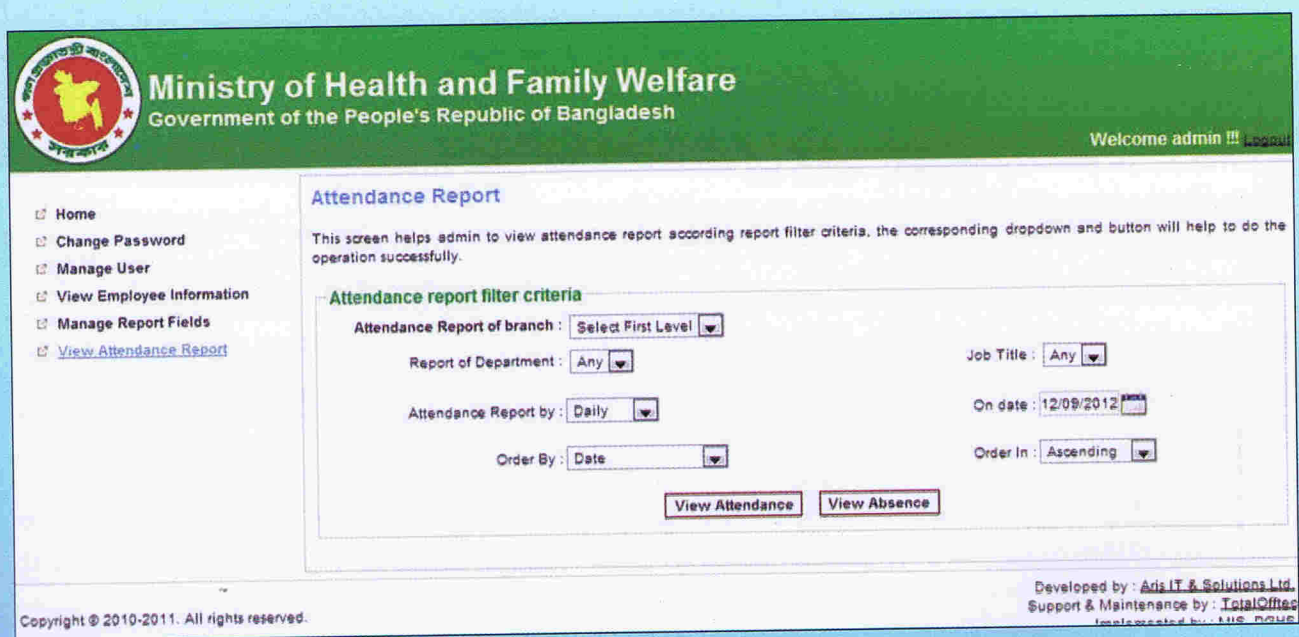


Pregnancy care advice through SMS

A Bangladeshi pregnant mom can get appropriate advice through SMS if she registers herself in a mobile phone based pregnancy care advice service operated by MIS. The registration process is easy.

In the SMS option of the mobile phone, she will type following codes and send to 16345:

dghs reg lmp_date mobile_no. name

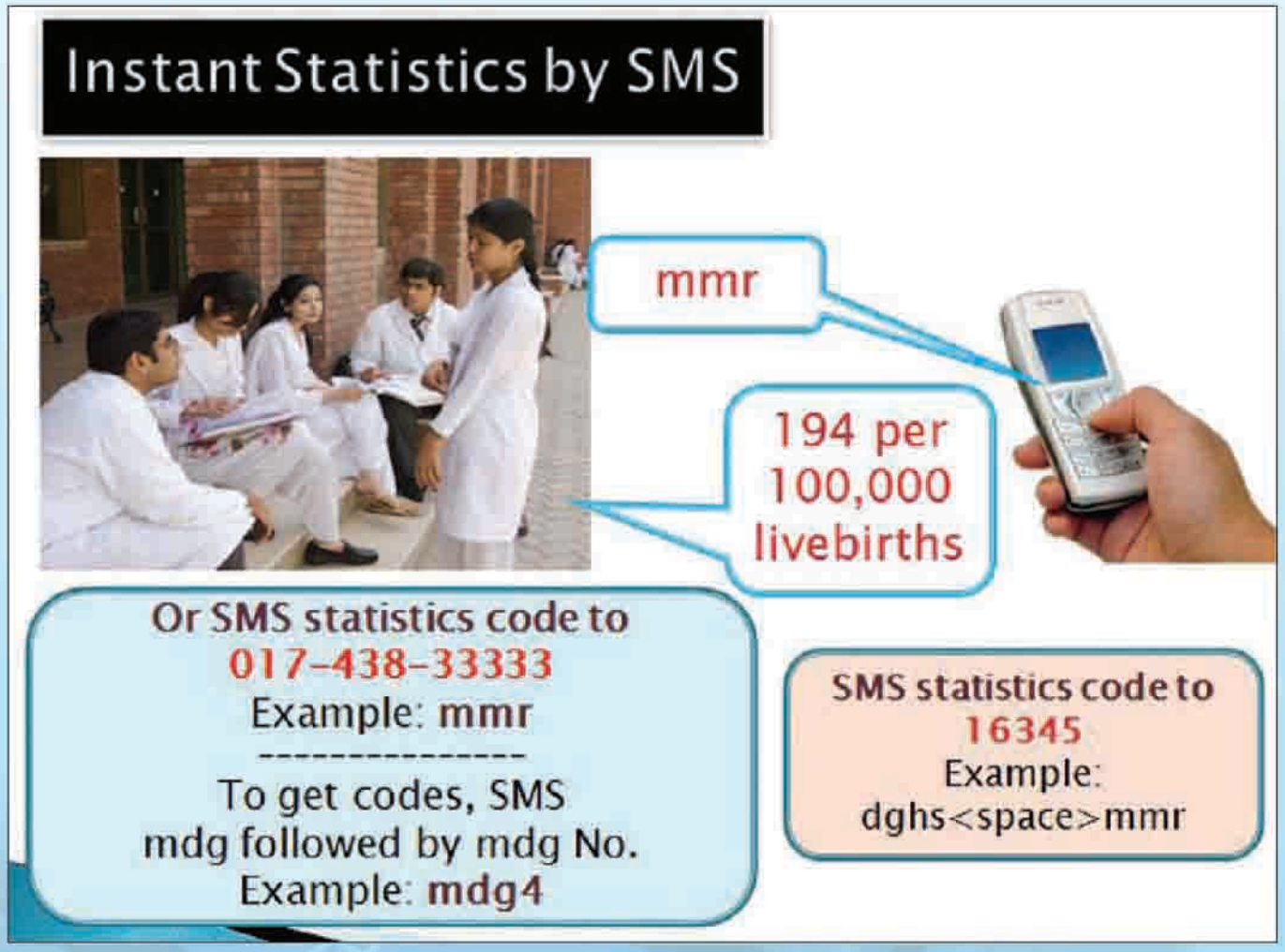
Example: dghs reg 04072012 01713018545 marjina

Explanation: LMP is the last menstrual period in format of ddmmyyyy. Mobile number is the cell number where she wants to receive the SMS advice. Name is her name.

On successful transmission of the registration SMS, she will receive an instant SMS reply, which will thank her for registration, inform expected date of delivery and advice for following the SMS advices she will receive automatically from time to time. The advices have been jointly developed by a group of subject experts from academic institutions, WHO, UNICEF and reproductive health program of the DGHS.

Health Statistics by SMS

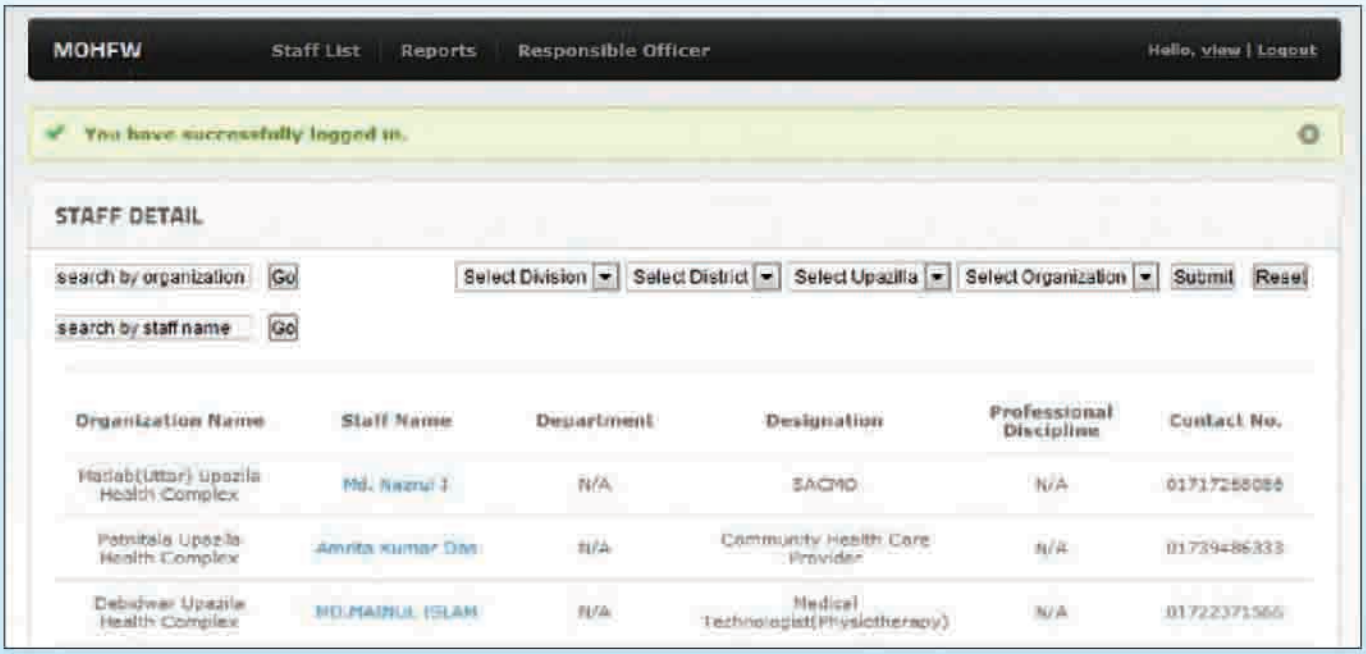
Medical students, researchers, development workers, health managers, planners, policy makers, journalists and other professional groups frequently require current health statistics for their work. They need a convenient way of finding such information. MIS has innovated and launched such as a quick and convenient system. A web based online database stores all the updated health statistics. The person who wants to get any of the statistics will send a statistics code prefixed with dghs in a SMS to 16345 (This number will be replaced by new short code, 16263). We have arranged system of updating health statistics to interested person or organization. The code will contain texts like following:



The codes are nmr, imr, u5mr, u5uw, u5s, u5w, mmr, etc. for neonatal mortality rate, infant mortality rate, u5 mortality rate, u5 underweight rate, u5 stunting rate, u5 wasting rate, maternal mortality ratio, etc. respectively.

Human Resource Databases

The MIS maintains three databases for human resource management. These are online Personal Data Sheet (PDS); online Human Resource Management System; and Field Staff Information System. In addition, Ministry of Health and Family Welfare made a database for leave management which takes data from Personal Data Sheet database. The ministry is developing another new database for tracking deputation information for on the job higher education.



Personal Data Sheet (PDS): Although developed for all categories of health professionals both in public and private sectors, as of now mainly the doctors working in the Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare (MOHFW) use the system. They create and update this database by themselves. This database provides detail profiles (a complete resume) of each staff maintaining his or her PDS.

Human Resource Management System: This database receives human resource data provided by each health organization under the DGHS. According to the plan, this database can provide updated information of all manpower in the Directorate General of Health Services (DGHS) any time.

Field Staff Information System: This database has been created through gathering data from each field staff working in the grassroots level, who sent personal information through SMS using respective mobile phone. The staffs include health assistant, assistant health inspector, health inspector and their family planning service counterparts. The community health care providers are also included in the database. The information includes name staff, affiliation, place of work, designation and mobile number of each field.

Official Schedule Management Software

This database software has been developed on a requirement given by the Honorable Minister for Health & Family Welfare Professor Dr AFM Ruhal Haque, MP. Top policy makers and high officials beginning from the Honorable Minister to Directors under the ministry and its agencies remain busy in plenty of meetings, and seminars, events daily, weekly and monthly. The Honorable Minister was looking for a convenient way for maintaining, tracking and updating his time-tables by a password protected user group for all events anytime and from anywhere through an easy to use Internet interface.

To fulfill this requirement, MIS developed an online database. The Honorable Health Minister is using the database, which is also made available for use by other high officials. The users now produce and print their day to day schedules directly from the database to display in personal time-table stands. Statistical reports can be prepared also from this database.

ADP Monitoring Software

The Ministry of Health & Family Welfare tracks progress of its Annual Development Program by an online database system called "ADP Monitoring System". All the line directors of the Health, Population & Nutrition Sector Development Program 2011-16 and all the other project directors of different development projects under the ministry update the database with financial and physical data pertaining to their ongoing progress. Each month there held a monitoring meeting chaired by the Senior Secretary of the ministry, where facts and figures are drawn from this database online and on large projection screens.

The respective line directors and project directors update the data from their respective offices. Tables, charts and summary reports including IMED (Implementation, Monitoring & Evaluation Department) are automatically generated. This database is a great tool for project managers, agency chiefs or the ministry to review progress of ADP anytime and from anywhere through Internet.

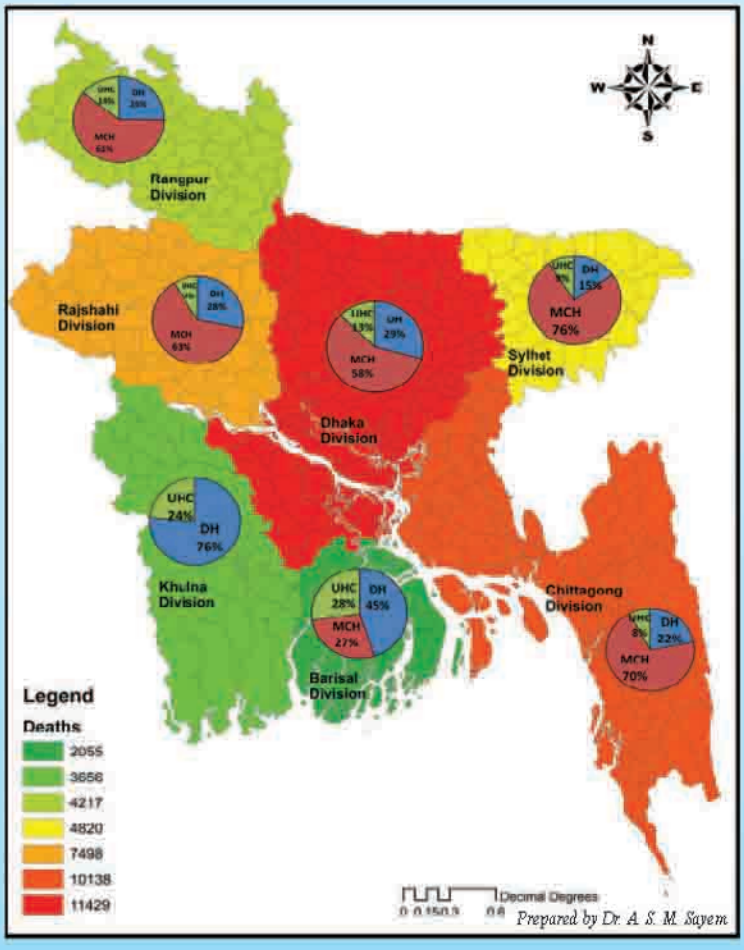
Online Processing of Medical & Dental Admission Tests

From 2011, students seeking admission in government and private medical and dental colleges of Bangladesh are to submit their applications and fees through Internet and mobile phones. They receive their admit cards, admission test time-table, examination hall information and result through Internet and mobile phones. A single admission test has been introduced for both public and private medical and dental colleges. Examination scripts are processed by optical mark reader system. The students, their guardians, examination authority and academic institutions found this new system extremely useful, quicker and reducing work burden.

GIS in Health Service

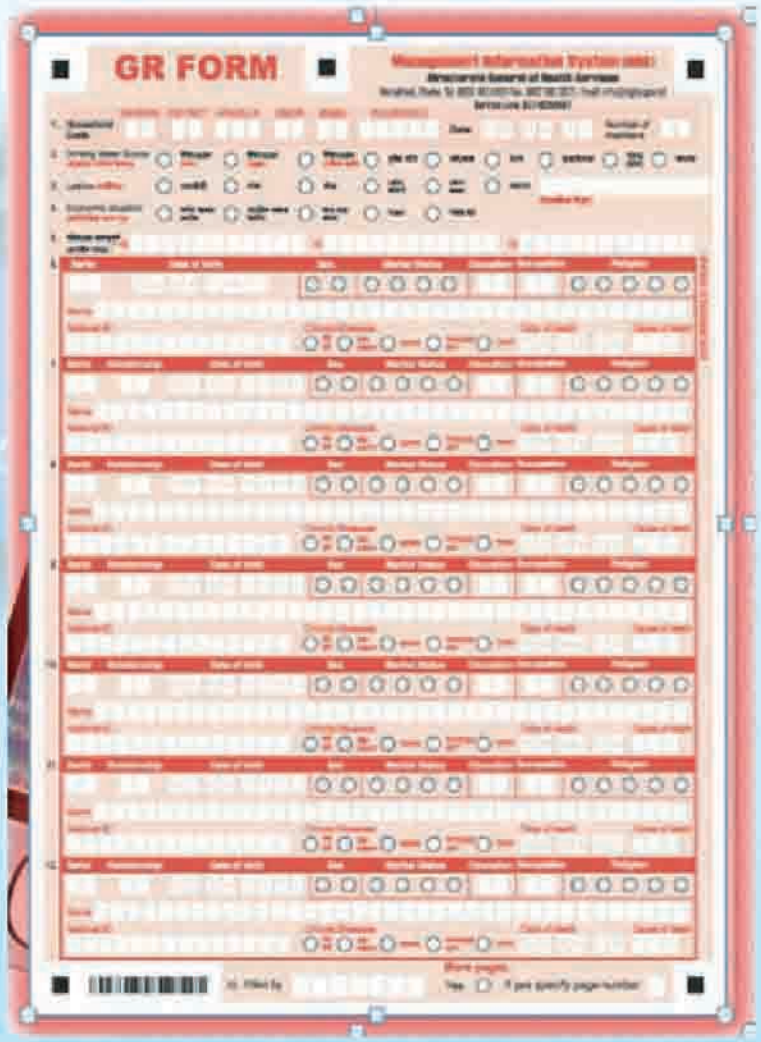
The health system of Bangladesh is seeing increasing level of use of Geographical Information System (GIS). The GIS helps in locating where a kind of health service is available, where not available and where certain kind of service is needed. It helps in disease surveillance and also in mapping service availability. Therefore, it is good tool for proper planning and evidence based decision making.

To create GIS capacity of health system of Bangladesh, Global Positioning System devices have been first provided to each Civil Surgeon's and Divisional Director's of health office. Statistical staffs were trained. They collected geo-location data from respective health facilities down to sub-district levels. The geo-location data have been put on the Google Map accessible worldwide through Internet. As of August 2012, the goe-location data for the union health facilities and community clinics are being collected to add to the Google Maps. The MIS is now giving emphasis on improving GIS based reporting system online and the future will see the development.



Online Registry for Citizens' Electronic Health Records

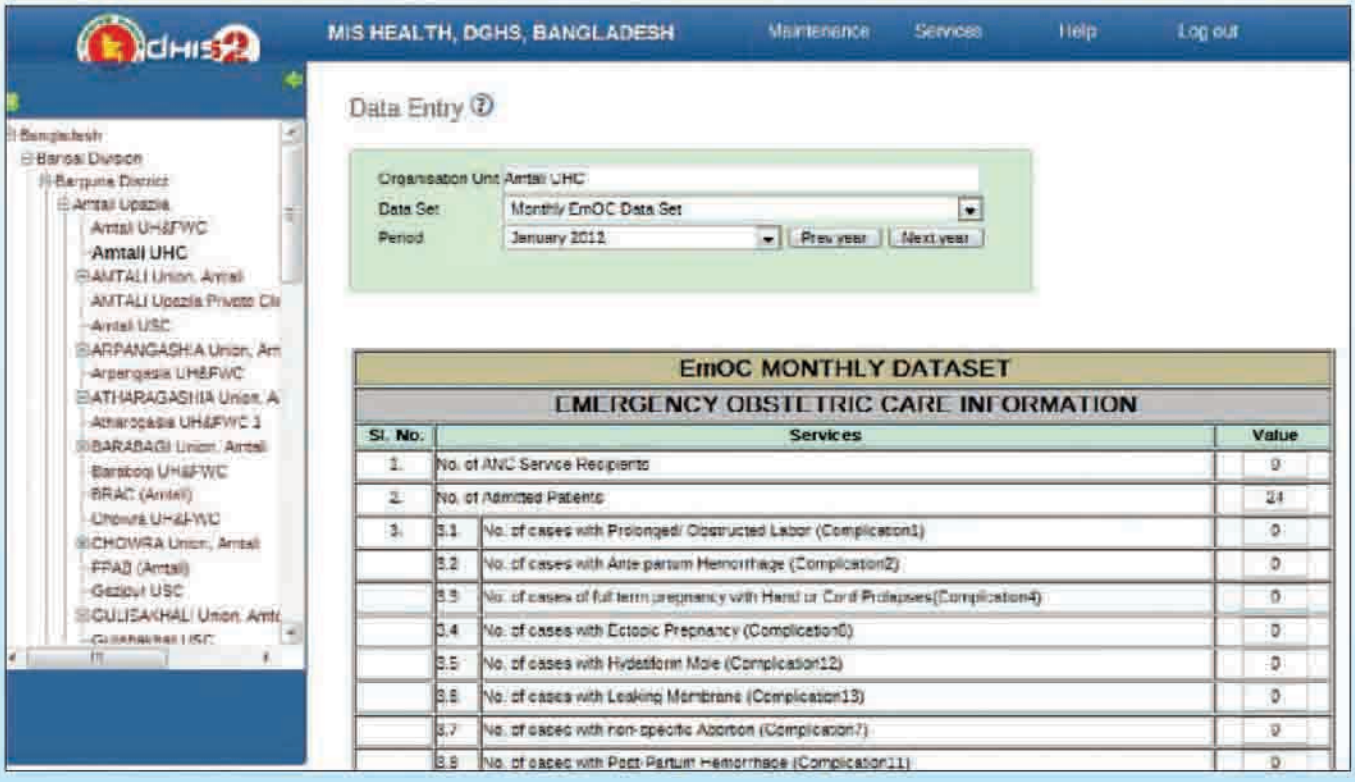
Making a permanent online registry of electronic health records of all citizens of Bangladesh is now on progress. The work included the rural citizens, who represent 70% of the country's population, as a first step. The reason for this is better organization of rural administrative and health care system. Data collection using specially designed computer readable forms have been completed. A technology called Intelligent Character Recognition (ICR) will be used to enter the data in the computer. This machine can read hand written scripts too. Data entry will start soon for preparing the online database. Each citizen will have an online health record traceable through unique identifier. The health records will be updated in each medical encounter and change of events. Health facilities, where the citizen will receive any medical care, or health workers visiting home of the citizen, or community clinic where the citizen is permanently affiliated will update the health record. To equip the health facilities, health workers, appropriate devices and Internet connectivity community clinics are being provided to these facilities and persons aimed to be completed by 2016.



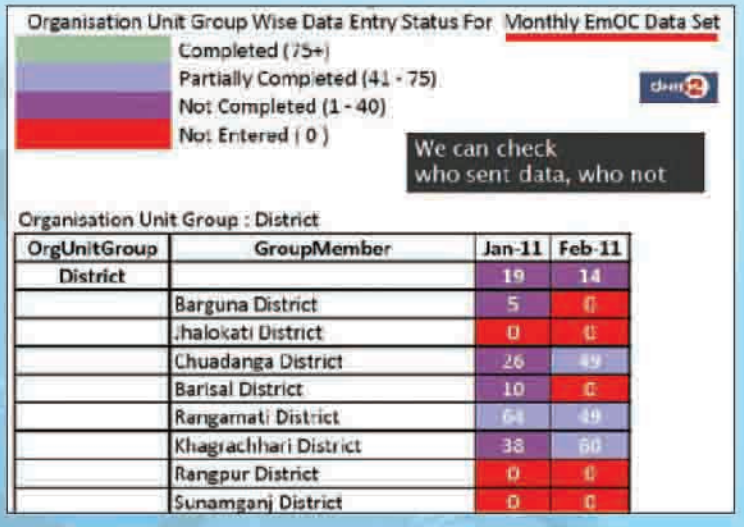
Once in its full functionality, this online registry will provide updated demographics, birth and death rates and disease related information at any time through Internet and user friendly computer dash board. Need for conducting separate surveys will be minimized through this system.

District Health Information System Version (DHIS 2.7)

MIS-DGHS has established a web based data collection system called District Health Information System (DHIS, version 2) to collect routine health data from the health facilities of Bangladesh.



The DHIS2 is a software tool for collection, validation, analysis and presentation of aggregate statistical data, tailored (but not limited) to integrated health information management activities. It is a generic tool rather than a pre-configured database application, with an open meta-data model and a flexible user interface that allows the user to design the contents of a specific information system without the need for programming. This database allows entry of data at the source and creation of summary tables, charts and GIS maps instantly for any level of hierarchy. Therefore, this a great tool for assuming the ongoing status of health outcome along with comparison between geographical locations and over time.



Local Health Bulletins

In 2012, MIS developed an innovative database to create local health bulletins by each health organization (over 500) under the DGHS. The system is simple and user friendly which enables user organization create consistently looking smart local health bulletins formatted with marvelous tables and charts, available online instantly.

Available online, the local health bulletins form also a platform to produce aggregate reports for important variables for sub-district, district, division and country as a whole.

DGHS website finds a new look

The DGHS website (www.dghs.gov.bd) has been given a new look. It has now bilingual interfaces, Bangla and English. The most attractive thing about the new design is addition of social media interfaces like, facebook, twitter, youtube, google+ and other tools. The online hit counters shows the traffic statistics of visitors. The information has been organized in a carefully thought user friendly manner. It is expected that the visitors will find the new design of the website very convenient and useful.

The visitor statistics show that between 8 & 20 August 2012, over one hundred thousand visitors have seen the Bangla website. From September 1 to 20, the visitors' number was 54,889.

Hospital Automation

The Bangladesh public health system is moving to achieve an ICT-based environment for improving management efficiency and transparency. One government clinic (Bangladesh Secretariat Clinic) is already transformed into an automated system. In 2012, three hospitals have been included for automation. These hospitals are National Institute of Kidney Diseases & Urology (NIKDU), Government Employees' Hospital and Azimpur Maternity Hospital.

Through automation, all hospital processes will be conducted by using ICT. Gradually all hospitals will be automated. The system architecture will be based on Open-MRS (Open Medical Record System - open source software). Health Information System Program of India (HISP-India) and GiZ are helping to deploy Open-MRS in Bangladesh.

Medical Biotechnology

Medical biotechnology is often termed as the technology of the future, which applies the technique of genetic engineering to modify biological organisms. It's implication in economic, health and livelihood improvement is expected to be unparalleled. Under HPNSDP 2011-16, a medical biotechnology (MBT) program has been launched through the operational plan of "Health Information System and eHealth".

The objectives of the 5 year program of medical biotechnology:

1. To implement short and medium term deliverables of the national guidelines of medical biotechnology 2010; and

2. To create appropriate environment for implementing the long term deliverables of the above national guidelines

The short and medium term deliverables:

- Establishment of Center for Medical Biotechnology;
- Situation analysis of medical biotechnology and development of medical biotechnology plan;
- Organization of sensitization / orientation training / workshops, updating medical curriculum with focus on medical biotechnology, development of medical biotechnology resources in medical libraries, introduction of postgraduate and technologist courses, identification of career group for medical biotechnology, and orientation of the core group members and concerned officials on medical biotechnology;

- Institutional capacity building, development of lab facilities, clinical services and epidemiological surveillance for medical biotechnology;
- Creation of R&D environment through supporting related research projects;
- Steps to open Department of Medical Biotechnology in the National Institute of Biotechnology and establishing a Center of Excellence for medical biotechnology;
- Appropriate communication programs with potential entrepreneurs of medical biotechnology;
- Appropriate public awareness programs;
- Development and enforcement of standards, codes of practice and regulatory framework for medical biotechnology;

Creation of Conditions for achieving the following long term deliverables (25 years or more):

- To attain medical biotechnology initiatives and infrastructures at globally competitive level;
- To make medical biotechnology industries, laboratories and services capable to compete globally and keep pace with global development trends;
- To produce high quality medical biotechnology products and services for local market as well as for export to the global market; and;
- To make availability of a world-class higher education and research base to serve the rapidly growing medical biotechnology needs both in home and in abroad; and
- Effective leadership, monitoring and supervision will be ensured.

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Photo Courtesy: Dr. A. S. M. Sayem