

# Strengthening Routine Health Information Systems through Electronic Management Information Systems in Bangladesh

June 2018





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## **MEASURE** Evaluation

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The aim of the Electronic Management Information System(s) (eMIS) initiative is to automate the business processes of community level health workers under the Ministry of Health and Family Welfare (MOHFW) of the Government of Bangladesh. This initiative was previously known as the Routine Health Information Systems(s) (RHIS) initiative; the name later changed to eMIS.

The eMIS initiative is a collaborative effort of four implementing partners of the United States Agency for International Development (USAID): MEASURE Evaluation, which is funded by USAID; International Centre for Diarrheal Disease Research, Bangladesh (icddr,b); Save the Children's MaMoni Health Systems Strengthening (HSS) Project; and Management Sciences for Health's Systems for Improved Access to Pharmaceutical and Services.

Producing this technical document has been a collaborative effort of the programmers, resource persons, and experts working on implementation of the eMIS initiative. The drafting of this document began in 2017 and there have been some changes in the software and certain functions have expanded since then that are not covered in this technical document.

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## ABBREVIATIONS

AEFI	adverse effects following immunization
AHI	assistant health inspector
ANC	antenatal care
API	application programming interface
BRN	birth registration number
CAR	contraceptive acceptance rate
CC	community clinic
CCDS	citizen core data structure
CHCP	community healthcare provider
CHW	community health workers
CS	civil surgeon
CSBA	community skilled birth attendant
DDFP	deputy director, family planning
DGFP	director general of family planning
DGHS	Directorate General of Health Services
ECP	emergency contraceptive pill
ECS	election commission secretariat
EDD	expected date of delivery
ELCO	eligible couple
eMIS	electronic management information system
EPI	extended program for immunization
FP	family planning
FPI	family planning inspector
FWA	family welfare assistant
FWC	family welfare centre
FWV	family welfare visitor
GR	geographical reconnaissance
HA	health assistant
HID	health identification numbers
HIS	health information system

HSS	health system strengthening
icddr,b	International Centre for Diarrheal Disease Research, Bangladesh
ICT	information and communication technology
IPC	interpersonal communication session
IUD	intrauterine device
LMIS	logistic management information system
LMP	last menstrual period
M&E	monitoring and evaluation
MCH	maternal and child health
MCI	master client index
MCWC	mother and child welfare center
MIS	management information system
MNC	Maternal and Newborn Care [eRegister]
MNP	multiple nutrient powder
MO	medical officer
MOHFW	Ministry of Health and Family Welfare
NGO	nongovernmental organization
NID	national identity card
NRC	non-registered clients
PAC	postabortion care
PCV	pneumococcal conjugate vaccine
PNC	postnatal care
PRS	population registration system
RHIS	routine health information system
SACMO	sub-assistant community medical officer
STI	sexually transmitted infection
TT	tetanus toxoid
UFPO	upazila family planning officer
UHFWC	Union Health and Family Welfare Center
UHFPO	upazila health and family planning officer
USAID	United States Agency for International Development

# 1. INTRODUCTION

The aims of the Electronic Management Information System(s) (eMIS) are large: nothing less than to change the way public sector community health workers (CHWs) do their jobs. CHWs provide outreach, information, and referral for health services in culturally and socially appropriate ways. They are a link between communities and health facilities and collect vital demographic and health service-related data on people living within their catchment areas. Prior to the initiative, these frontline health workers used paper-based forms and huge register books to gather data on health complaints of presenting clients, health services delivered, and medicines used. All those data were to inform policymaking and resource allocations to improve health for the population.

With the increasing accessibility of information and communication technologies (ICT), health sector actors—especially in the government sector—concluded it would be beneficial to automate data collection and storing processes of facility and community health workers.

Thus began the eMIS initiative in 2015. The Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP) are part of the Ministry of Health and Family Welfare (MOHFW) of Bangladesh, which is responsible for ensuring health service delivery across the country and for overseeing this initiative.

Under the initiative, comprehensive and interlinked digital tools have been developed for community health workers that work under the DGHS and DGFP at the community level and in rural facilities. These tools are designed to ease the transition from the paper-based system to a fully electronic or digital system for conducting the daily business of CHWs. Eventually most of the functions of CHWs could be performed using digital tools.

Currently, these digital solutions are used in two districts of Bangladesh: Tangail and Habiganj. The project is a collaborative effort of four implementing partners (IPs) of the United States Agency for International Development (USAID): MEASURE Evaluation; the International Centre for Diarrheal Disease Research, Bangladesh (icddr,b); Save the Children MaMoni Health System Strengthening (HSS) Project; and Management Sciences for Health's Systems for Increased Access to Pharmaceuticals Project.

## **The following factors facilitated the process of developing digital tools:**

- Analysis by experts familiar with the work of CHWs and with the overall Bangladesh health system
- Approval by government officials at all levels
- Interactions and feedback from users of the tools
- Implementation support for the team at the field level
- Continuous support, supervision, and monitoring by IPs at the central level

The eMIS team evaluated the paper-based management information system (MIS) tools and instruments (registers, guidelines, instructions, reporting formats) used at different levels of the health system. In addition to electronic tools for the CHWs, tools were developed for supervisors, managers, and policy makers.

The eMIS tools gather routine administrative and service data generated during service delivery, to enhance reporting that is consistent with national health MIS indicators. The implementation of the eMIS initiative began with a census of the population to identify the people belonging to the catchment area of the CHW in the pilot districts. The Population Registration System (PRS) developed for this task was a database containing a comprehensive list of the population. The introduction of service modules and supervisory tools followed. Management tools have yet to be fully developed. Eventually, all of these electronic tools will take a prominent role in ensuring data use, measuring performance, enhancing accountability, and improving health service delivery.

This technical document gives an overview of the tools developed under the eMIS initiative. The development of Bangladesh's eMIS and this accompanying technical document gave rise to the following lessons and accomplishments:

- Under the eMIS initiative, interlinked digital tools have been developed for community health workers (CHWs) that facilitate generation of real-time data ready for integration into the national health information system.
- Digital tools, used via hand-held tablets by CHWs at rural health facilities, are user-friendly and have been embraced in the daily work of providers and their facility-based supervisors (all tools are described in the document).
- The supervisors, managers, and decision-makers can view aggregated data to review the work carried out at the local level and make evidence-based decisions.
- The eMIS initiative is a truly collaborative effort by USAID-funded partners working together to fully digitize and empower CHWs, and their supervisors, through focused training that teaches them to use mobile technology to facilitate the collection, analysis, and reporting of health service statistics and to monitor health worker performance.

## 1.1 Background

The current work of this initiative builds upon the work carried out in an earlier phase by implementing partners (MEASURE Evaluation; icddr,b; and MaMoni HSS) to support the DGHS and DGFP in streamlining and standardizing health and family planning MIS tools. During the first phase (completed in December 2015) technical support was provided to MIS units to streamline and standardize paper-based tools. During this period, some data collection tools were digitized for periodic reports generated at the health facility and community levels. A review of this initial experience concluded that it would be beneficial to automate the full business processes of facility and community health workers. Accordingly, work for developing a comprehensive and interlinked digital system was undertaken for both the DGHS and DGFP. The knowledge and experience gained in the initial phase paved the way for an organization-wide automation based largely on mobile technology and cloud databases.



## 1.2 Health Service Delivery at the Rural Level

In Bangladesh, a Ministry may have one or more divisions headed by a minister or state minister. Each division is a separate entity. The secretary is the administrative head of a division. Until March 16, 2017, the MOHFW comprised one division with one secretary. That March, the MOHFW was reorganized into two divisions: The Health Services Division and the Medical Education and Family Welfare Division. The DGHS is now under the Health Services Division, and the DGFP is under the Medical Education and Family Welfare Division.

The DGHS and DGFP are now accountable to two different divisions, though they remain under one minister and one state minister. Both the DGHS and DGFP are responsible for delivery of healthcare services across the country. The two divisions employ a huge workforce and are spread across the country, with a community-level presence in rural areas. The DGHS and DGFP provide services through health facilities and staff at several levels: division, district, upazila (subdistrict), and parishad (union). The urban areas are not served by these institutions at the primary healthcare level; legally, that responsibility is decentralized to local government institutions.

The structure at the division level provides management oversight to all the districts in the division. Division headquarters contain tertiary hospitals and medical colleges. The structures at the district level of each department perform important management functions. The DGHS maintains district and general hospitals in the districts. Similarly, the DGFP manages the mother and child welfare centers (MCWCs) at the district level and, in a few instances, at lower levels.

There are also union-level facilities under the DGFP and DGHS. The DGFP facilities include the Union Health and Family Welfare Centers (UHFWCs), all of which have a sub-assistant community medical officer (SACMO), family welfare visitor (FWV), pharmacist, and support staff.

The DGHS facilities at the union level also include UHFWCs and rural dispensaries; however, both are rarely present in the same union.

The DGFP has nearly three times more facilities (3,275) than the DGHS (1,186), for a total of 4,461 facilities between the two divisions.<sup>1</sup> The combination of all such facilities ensures that there is at least one union-level health facility in communities throughout the country. Family welfare assistants (FWAs) and health assistants (HAs) provide domiciliary services and are required to sit at least 2–3 days in the Community Clinic (CC), which, at the old ward level, could be a daycare center. About 13,500 CCs are operational now (a few of them have created a space for normal delivery). The SACMOs and FWVs provide services at the union level but are required to provide outreach services through eight satellite clinics a month (these are usually held at the community clinic or at someone's home). The DGHS also has SACMOs at the union level.

In rural areas, at the union ward level (which is the lowest local government institution level), the communities are served by FWAs (under DGFP) and HAs (under DGHS). The FWAs provide maternal

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<sup>1</sup> Based on an assessment made by MaMoni HSS; Among the facilities managed by the DGHS, 797 are still known as union subcenters, and 87 are known as rural dispensaries.

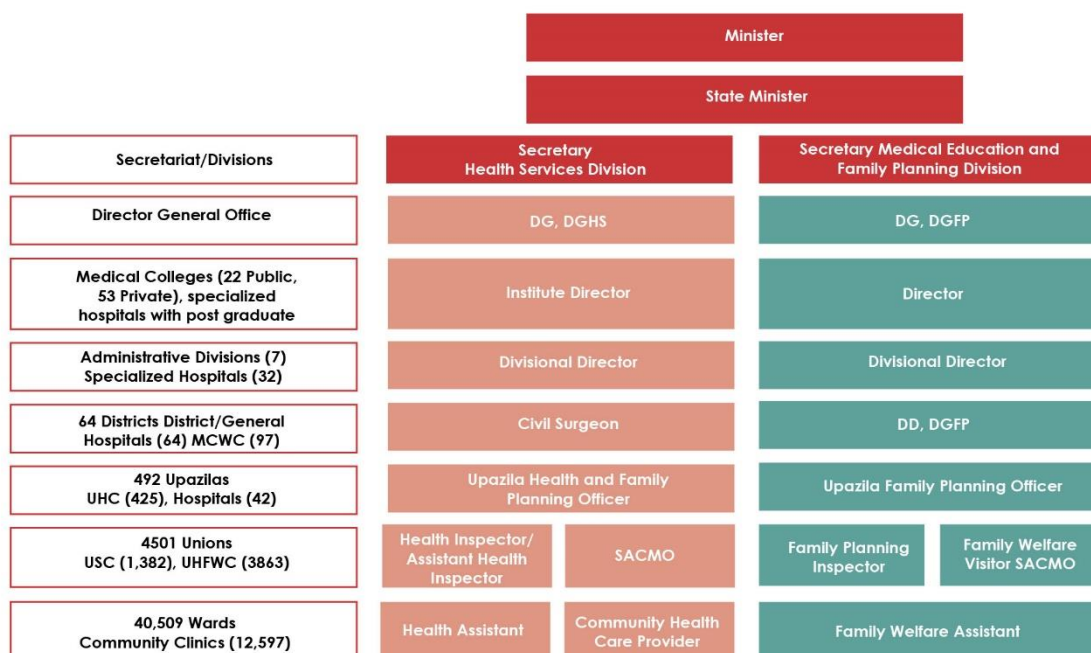
and childcare and reproductive health services. The HAs are responsible for immunization, behavioral change communication, and other public health activities.

The allocation of CHW responsibilities is based on the old division of wards. In the past, there were three wards in a union; later that was increased to nine wards. For administrative purposes, both DGFP and DGHS remain aligned to old ward boundaries. There are usually two or more FWAs and one or two HAs in each old ward depending upon the size of the population. The work area of FWAs is called an FWA unit.

The work of FWAs is supervised by a family planning inspector (FPI) and that of HAs by an assistant health inspector (AHI). The FWV reports to the medical officer (MO-maternal and child health [MCH]-FP). The union-level staff report to upazila (subdistrict) officials. At the upazila level, DGHS is represented by the upazila health and family planning officer (UHFPO) and the DGFP by the upazila family planning officer (UFPO). At the upazila level, both outpatient and inpatient services are made available by the DGHS through Upazila Health Complexes (UHCs). These are supposed to be fully functional facilities providing primary health care, though in reality many are well below their optimal level.

Figure 1-1 provides a snapshot of the MOHFW’s service delivery structure. The same patient may be served by any community-level worker; services provided to patients can be reported by both level of CHWs, which can be problematic for antenatal care (ANC) and other continuing services.

**Figure 1-1. MOHFW health service delivery structure**

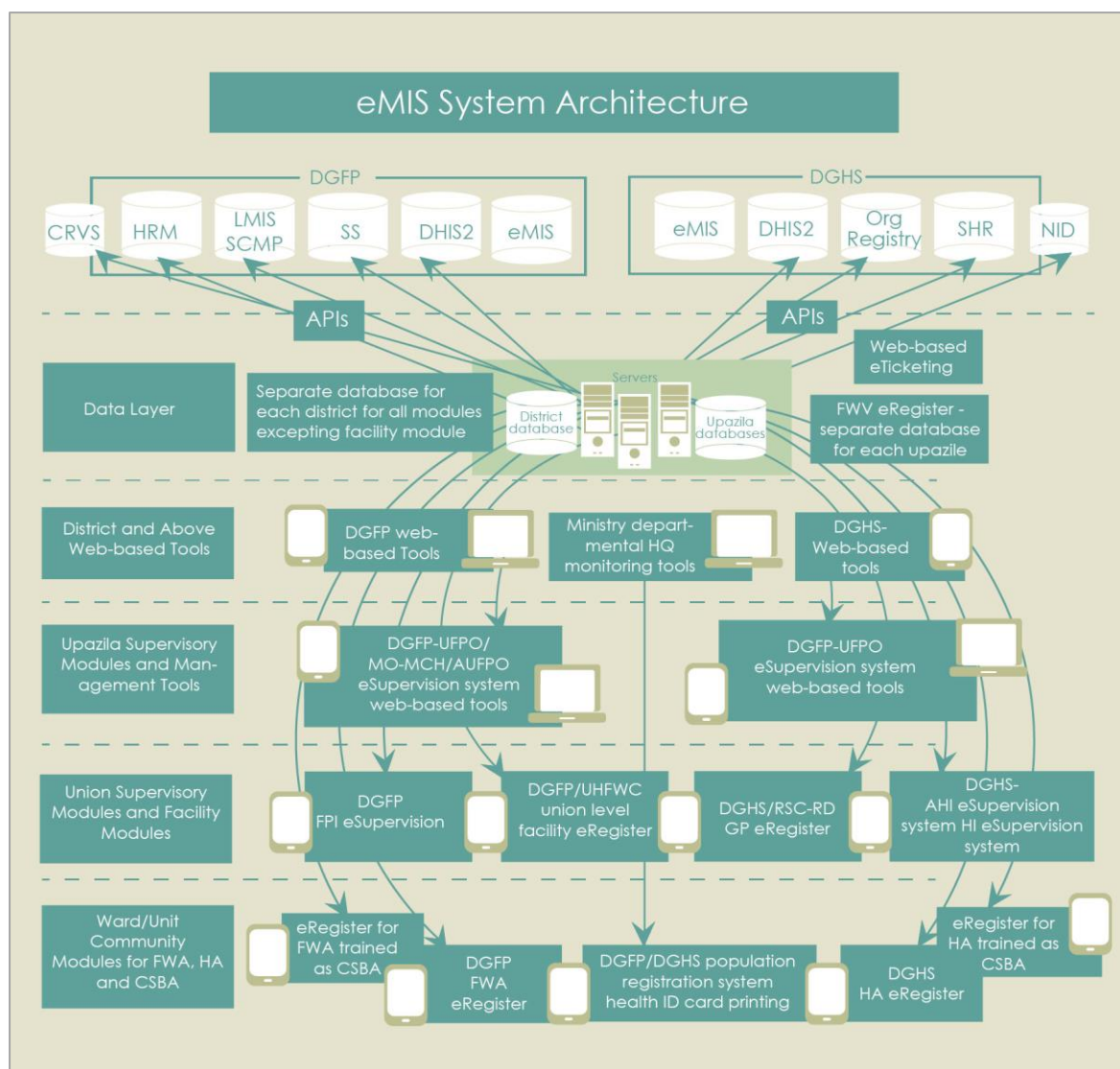


Adapted from Mid-Term Program Implementation Report (MPIR), Program Management and Monitoring Unit, 2014.

### 1.3 eMIS Architecture

The eMIS tools for CHWs are available for mobile devices or tablet computers and fit the category of mobile health (mHealth) applications. Such mHealth applications are desirable because mobile devices are portable and cheaper than laptops; and, with longer battery life, they could work without electricity and could easily be connected to the Internet. However, Internet connectivity has been a problem in rural areas; it is not stable, and many areas have no signal. Power supply is also erratic in rural areas. Therefore, all mobile applications were designed to work offline. Data captured during service encounters remain in the devices to be uploaded to a central server later, whenever an Internet connection is established. A centralized database allows data to be viewed or downloaded by supervisors and managers as needed for decision making. Managers can view aggregated data through web applications. The applications are interlinked so data can be shared horizontally and vertically, as needed, among different users. A great deal of work can be performed through server-side management or web applications, which are accessible through browsers or application interfaces (Figure 1-2).

Figure 1-2. eMIS system architecture



The eMIS applications are layered according to organizational hierarchies or administrative setup of DGHS and DGFP. The applications adhere to official responsibilities and job descriptions of each staff category and cover all decision-making levels. These digital solutions are used in the following three layers:

- Population Registration System.** The PRS at the bottom layer is foundational to the eMIS. Individuals within a household are registered using this system. All the service modules are linked to it. Personal data are required for populating services, tracking individuals for monitoring services, or for providing services at the point of care. Through PRS, a census is conducted in the catchment area of the CHWs (by FWAs and HAs). Registration of all household members is done in one or more sessions (depending on the availability of household members). Health identification cards are distributed to the registered population. Health identification (HID) numbers are generated by a shared health record (SHR) developed by the DGHS. The PRS creates a database of the whole population, for easy identification of potential service seekers. Population data are linked to service data generated through other applications and can be tracked to monitor health services provided to each citizen. Registration is a one-time activity, though updating would be required to capture changes in population.

- **Applications for Services, Service Data.** These constitute the second layer of applications. Services applications capture services provided to the clients on a transactional basis in community settings (such as the home) or at rural facilities. The CHWs also collect data on different services during household visits, which are recorded in registers. Accordingly, the service applications capture transactional data on services provided to individuals at the community level, or in rural facilities, as well as data on services received. These applications are designed based on the routine work carried out by the CHWs. The data entry forms and reports within these applications are exact replicas of the paper-based registers, forms, and instructions used by the CHWs. In this way, the familiarity of the CHWs with the data entry forms and reports within the applications is well maintained. These applications can generate the necessary reports for compilation at the upazila level and submission to national headquarters.

**These apps can be divided into community- and facility-based systems, as follows:**

- Community Apps: the FWA eRegister (built based upon the FWA register of DGFP); the HA eRegister for managing data on expanded program of immunization (EPI) and other DGHS services provided by HA.
- Facility Apps: for use by FWV and SACMO at UHFWCs or union subcentres

- **Supervisory, Monitoring, and Management Tools.** The third layer is composed of applications on tablets and web-based tools for monitoring the activities. These tools help to perform supervisory and administrative tasks. A web-based interface allows users to access these tools from the Internet. System maintenance tools are used by developers or technical people.

- Supervisory apps for union and upazila-level supervisors (such as FPIs/AHIs) and managers are available on mobile devices. These tools help them monitor the activities or performance of their workforce. The apps are based on forms used by the supervisors and guidelines issued by the departments. A module has also been finalized for upazila managers of DGFP or UFPOs, called the UFPO eSupervision System.
- Monitoring tools can be used by authorized users. Some tools are integrated with the core applications of the provider (such as in the FWA eRegister). Monitoring tools are also used to generate or view reports. These are mostly web-based tools that require connectivity. These tools could enhance data visualizations and future GIS-based solutions.
- System maintenance tools are used at the central level by developers, system administrators, and other authorized users. These can be used to assign access to users, prepare reports, assign work areas, and manage providers.

“Intelligent” solutions or medical algorithms have been used to provide decision supports in the app interface. For example, a pregnant woman can be automatically identified as at-risk based on patient history and examinations; service providers would then be advised to refer her to a higher level of health facility. In another example, when the date of the last menstrual period (LMP) is entered into the system, the expected date of delivery (EDD) appears on screen; this information can be used to suggest potential dates for ANC visits. Such elements have been incorporated into the system by taking full advantage of digital technologies.

Community-level workers belonging to both the DGHS and DGFP interact with the rural population at the household level. Many service applications used at the community and facility levels are interconnected. The tools are integrated vertically with all supervisory systems and horizontally with the counterparts of both departments. For example, when any pregnant woman is identified or provided any service, that data would be available to other relevant service providers (between the DGFP and DGHS personnel or between community-level and facility-level workers). This eliminates double counting and ensures that reporting is based on common denominators.

Interoperability was considered in designing the eMIS applications. The design of PRS is based on citizen core data structure (CCDS) as approved by the government’s Cabinet Division. Geocode, developed by the Bangladesh Bureau of Statistics, has been used to identify geographical locations, and the facilities registry of DGHS has been used to identify specific facilities.

The eMIS functionality has been further enhanced by integrating its applications with systems beyond the eMIS. For example, the community modules and facility modules of DGFP are integrated with the logistic management information systems (LMIS) database of the DGFP. The LMIS is a computerized inventory system for the upazila level, where supply and distribution data on logistics (reproductive health commodities and medicines) are updated monthly. The LMIS also monitors service delivery point data monthly. Connectivity with this database allows eMIS apps to record supplies received and update the stock at the end of the month, electronically via the supply chain management portal, in real time in the device and eMIS database. The eMIS will be able to “talk” with the SHRs of DGHS, a separate system (not yet fully functional). In the future HIDs would be generated online from SHRs and made available to the registered individuals.

The DGHS uses DHIS 2 for reporting health data. These routine data are generated at the upazila level and submitted to the MIS of DGHS, which makes the data available online through the DGHS website. The DGHS has a requirement for ensuring interoperability and making all data available through the DHIS 2 single platform. The DGFP is also going to introduce the DHIS 2 for reporting. The eMIS tools are fully interoperable with DHIS 2 and data can be sent to DHIS 2 platform.

The events of birth and death could be captured through CHWs and health facilities using the eMIS. Discussions have taken place with the Office of the Registrar Birth and Death concerning feasibility of exchanging data to facilitate registration of birth and death when the Office of the Registrar is ready.

The eMIS solutions can also accommodate the need of the Health Economics Unit to identify the percentage of the population living in poverty; the PRS could identify this based on specific variables within the system.

## 1.4 Implementation Districts

Two districts were chosen for implementation of eMIS tools based on the experience of the implementing partners. MEASURE Evaluation and icddr,b worked in Tangail during the previous RHIS phase and the MaMoni HSS Project worked in Habiganj. The main features of these districts are summarized below:

### 1.1.1 Tangail

The geographic area of Tangail District is 3,414 square kilometers. It has 12 upazilas: Tangail, Madhupur, Gopalpur, Bhuapur, Ghatail, Kalihati, Delduar, Nagarpur, Mirzapore, Shakhipur, Basail, and Dhanbari; 10 municipalities; 110 unions; and 2,516 villages. The population at the 2011 census was 3.6 million (1.8 million males and 1.7 million females). Annual growth of the population is 0.9 percent. Population density is about 1,000 per square kilometer. There is one upazila health complex in each upazila—except for Sadar, which has a district hospital. A medical college established in 2013 operates in a building adjacent to the district hospital.

### 1.1.2 Habiganj

The geographic area of Habiganj District is 2,637 square kilometers. Habiganj District is under Sylhet Division. The district has eight upazilas: Habigonj Sadar, Baniachong, Churunaghat, Lakhai, Bahubol, Nabigonj, Azmirigonj, and Madhabpur containing 77 unions and 2,142 villages. There are six municipalities: Habigonj Sadar, Madhabpur, Churunaghat, Nobigonj, Shaystagonj, and Azmirigonj. The population at the 2011 census was 20.9 million (10.3 million males and 10.6 million females). The population density is about 792 per square kilometer. The annual population growth is 1.72 percent. Habiganj has one district hospital, one MCWC, seven upazila health complexes in each upazila (Sadar upazila is covered by the district hospital) and 68 UHFWCs.

## 1.5 Conclusions

The eMIS initiative began at the grassroots level, with frontline health workers, and has gradually moved upward to include supervisors, higher-level managers, and other decision makers. Information related to all services and administrative tasks are now available in the tablets or laptops, which enables health workers to digitally plan, execute, and evaluate their daily business activities. This is revolutionizing the way they perform their work. Routine data on services provided are generated without any additional efforts for record keeping. This has great potential to improve performance management. Management functions are also included in the system. Changing business processes using ICTs does not entail much difficulty, and the transition should be seamless for workers at and above the community level.

## 2. POPULATION REGISTRATION SYSTEM

The population registration system (PRS) is foundational for all eMIS applications. It is used for registering all individuals in a household in the catchment area of a community health worker. Service delivery modules under eMIS use data from the PRS database to record transactions. The PRS makes it possible to track any individual for health service delivery. The PRS was the first application developed for the eMIS; its use started in April 2015. The community health workers of DGFP and DGHS (the FWAs and HAs) participated in the registration process. As digital registration by CHWs showed promise when it was first introduced, the scope of PRS was expanded to include collection of data relating to socioeconomic status (SES) of the household. The use of PRS is expected to expand again as it is rolled out partially to new districts, based on lessons learned. This section covers PRS functionalities and their introduction.

### 2.1 Business Process Analysis

All eMIS applications are based on business processes of the health workers. The PRS does not imitate any specific business process of the DGHS or DGFP. Historically, the DGHS carried out a geographical reconnaissance (GR) once a year for collecting population level data relating to the health situation in rural areas. The last GR was done in 2010 and data collected through that exercise were not processed. Typically, the FWAs do a round of registration in the first two months of the year, to identify eligible couples to whom they provide services throughout the year. The HAs prepare population level lists of women and children for the expanded program of immunization (EPI). The CHWs prepare lists of their target population. Data collection through PRS has some similarities with those activities but differs in the type and extent of data collected (Table 2-1).

The PRS is designed to collect data about all members of the household and the household's SES. In the first version of PRS, only personal and demographic data were captured. Based on the experience of using PRS in one upazila, additional SES variables were included for future data collection. The Health Economics Unit of the MOHFW requested two specific variables to be included in the SES module that would help identify the target population for the health insurance scheme called SSK or Shashtya Shurokkha Karmashuchi (health protection scheme).



**Table 1-1. Variables included in the geographical reconnaissance**

<b>Geographical Reconnaissance Variables</b>
Household code with a household number
Collection date
Drinking water source
Latrine
Economic situation with monthly expenditure
Important mobile numbers of the family
Personal and demographic data: date of birth
Sex
Marital status
Education
Occupation
Religion
Name
National identity card (NID)
Chronic diseases (diabetes, high blood pressure, cancer, respiratory illness, and obesity)
Date of death
Cause of death

## **2.2 Functionalities of PRS**

The PRS is a mobile-based application developed for use in tablet computers. Health workers use it to create a population-level database in the catchment area of a CHW. This is done by collecting data about the household and its members. A provider (FWA or HA) with appropriate credentials can access the PRS. After a successful login, the names of the villages under one's catchment area would be displayed. The provider can start registration by selecting the village.

Collecting PRS data requires substantial effort, because it is not a regular activity of either the FWAs or HAs. After discussions with district and upazila-level managers of DGFP and DGHS, the PRS work was distributed equally between the FWAs and HAs. These assistants undertook registration of all households in their designated areas. To avoid redundant registrations, caused by overlap of household registrations in these areas, the CHWs were advised to chalk a cross on a prominent place in the household to indicate whether registration had already been completed. (The CHWs have personal knowledge of the inhabitants and would likely know during their first encounter whether data about that household had been collected by another enumerator. It is also possible to search the household members using search functions.)

The PRS application allows creation of households, collection of information about individual members of each household, and household SES.

## 2.2.1 Creation of a Household

Creation of a household precedes the registration of individuals. People who live together (related or not) and eat food from the same pot or kitchen constitute a household. A household could be composed of one or more members. Anyone who has been away for more than six months is considered an absentee member. Others might eat in one place but sleep at a different place; such people would be registered where they sleep. A domestic helper would be a member of the household where he or she is working. If a man is married to more than one woman, and the women live separately, he is registered in the household where he spends the most time. A household is identified with a household number assigned through the system (Figure 2-1).

Figure 1-3. Creation of household within PRS

The image shows two screenshots from the PRS system. The left screenshot is a modal window titled 'ভিজিটের ফলাফল' (Visit Results). It contains two radio button options: 'তথ্য সংগ্রহের জন্য খানায় প্রাপ্তবয়স্ক সদস্য উপস্থিত' (Adult member present for data collection) and 'তথ্য সংগ্রহের জন্য খানায় প্রাপ্তবয়স্ক সদস্য অনুপস্থিত' (Adult member absent for data collection). Below these are 'Save' and 'Close' buttons. The right screenshot is a form titled 'সদস্য সংযোজন' (Add Member). It shows the location 'গ্রামঃ 60-1, আটিয়া উলাইল' and household number '10458'. It includes a dropdown for 'ইপিআই সাব ব্লক' (EPIC Sub-block), a question '১. এটা কি আপনার স্থায়ী ঠিকানা' (Is this your permanent address?) with 'হ্যাঁ' (Yes) and 'না' (No) options, a dropdown for '২. ধর্ম' (Religion), and a dropdown for 'আর্থ-সামাজিক অবস্থা' (Socio-economic status) with a 'সিলেক্ট করুন' (Select) button.

On visiting the household, the CHW would create a household in the register, and any adult who was present and able to provide relevant data could be added as a household member. Otherwise a household would be added without members—members would be added later, when an adult were available to provide the necessary information, including whether or not the household was the permanent address of that adult. The CHW could also collect data on religion, though respondents are not required to disclose their religion.

## 2.2.2 Socioeconomic Status

The consent of the respondent is sought before inputting SES data. Questions are asked concerning income and possession of land and movable properties. The CHW may also record data on the basis of personal observation (Figure 2-2).

**Questions cover the following topics:**

- What is the source of drinking water for the members of the household? (piped water inside house, piped water outside the house, standpipe, tube well, protected well, unprotected well, protected spring water, unprotected spring water, harvested rainwater, tanker truck, small tank, surface water, or bottled water)
- What kind of latrine is used in the household? (good-quality pit latrine, pit latrine with slab, pit latrine without slab, composting latrine, bucket latrine, open or hanging latrine, or open space)
- Do members of the household own any of these materials and are any of these materials in the household? (radio, TV, mobile phone, telephone, refrigerator, wardrobe, electric fan, water pump, table, chair, sofa, Instant Power Supply /generator, air conditioner, computer, electrical connections, solar power, or power purchased from a neighbor)
- What type of fuel is used for cooking? (electricity, liquefied gas, natural gas, biogas, kerosene, coal/lignite, charcoal, wood, roughage, stubble, cow dung, or no cooking at household)
- What type of material is used in the floor? (mud, timber, palm tree, designed wood, polished timber, ceramic tiles, cement, carpet, or others)
- What type of materials have been used for the roof? (no roof, straw, bamboo or palm, timber, cardboard, tin, wood, ceramic tiles, cement, tully or slate, or others)
- What has primarily been used for the walls? (no wall, jute stick/rattan/palm/tree log, mud, bamboo with mud, stone with mud, plywood, cardboard, corrugated iron sheet, cement with plaster, sandstone or cement, brick without plaster, or others)
- Do any of the members of family possess the following materials? (car/truck/microbus, auto bike/tempu/CNG vehicle/power tiller, rickshaw or van, bicycle, or motor cycle/scooter)
- Does the household own the homestead land?
- Do they have any land other than that of homestead?
- Do they have a permanent source of income?

Figure 1-4. Collecting data on socioeconomic status of a household

১. আপনার খানার সদস্যদের খানার পানি পান করার	
11-ঘরের মধ্যে পাইপের পানি	
12-বাড়ির চত্বরে /আঙ্গিনায় পাইপ	
13-সরকারি(পাবলিক ট্যাপ/স্বামী ট্যাপ)	
21-টিউবওয়েল (নলকূপ)	
31-সংরক্ষিত কূপ/ইদারা	
32-অসংরক্ষিত কূপ/ইদারা	
41-সংরক্ষিত ঝর্ণার পানি	
42-অসংরক্ষিত ঝর্ণার পানি	
51-সংগ্রহীত বৃষ্টির পানি	
61- ট্যাংকার ট্রাক	
71-ছোট ট্যাঙ্ক	
81- ভূপৃষ্ঠের পানি(নদী, খাল, পুকুর, লেক, সেচের পানির নালা ইত্যাদি)	
91-বোতলের পানি	
96- অন্যান্য	

২. এ খানার সদস্যরা সাধারণত কোন ধরনের পামাখানা ব্যবহার ক	
৩. আপনার খানার আছে কি?	11-ফ্লাশ করে পাইপের মাধ্যমে অপসারণ
a. বিদ্যুৎ	12-ফ্লাশ করে ট্যাংকে ধারণ
b. সৌর দি	13-ফ্লাশ করে গর্তে ধারণ
c. রেডিও	14-ফ্লাশ করে অন্য কোথাও অপসারণ
d. টেলিভি	15-ফ্লাশ করে কোথায় অপসারিত হয় তা জানিনা
e. মোবাই	21-বায়ু চলাচলের ব্যবস্থাসহ উন্নত মানের পিট ল্যাট্রিন
f. টেলিফো	22-পিট ল্যাট্রিন (স্ল্যাব সহ)
g. রেফ্রিড	23-পিট ল্যাট্রিন (স্ল্যাব বিহীন)/খোলা গর্ত
h. আলমা	31-কম্পোস্টিং ল্যাট্রিন
	41-বাকেট ল্যাট্রিন
	51-খোলা/ঝুলন্ত ল্যাট্রিন
	61-ল্যাট্রিন নাই/ঝোপ-ঝাড়/মাঠ
	96-অন্যান্য (নির্দিষ্ট করুন)

### 2.2.3 Addition of Members

First, the person who all household members agree is the principle decision maker is entered in the database as the head of the household. Next, the spouse, sons and daughters, parents, grandparents, and other members are added. After registration, a member is assigned a unique health ID number by the DGHS. All the variables in the PRS database follow the structure of the CCDS, as approved by the Cabinet Division of the Government of Bangladesh.

Figure 1-5. Entering details of member in the PRS database

সদস্যের তথ্য		CLOSE	
Health ID (ID আছে)	<input type="checkbox"/>	<input type="text" value="0000261608"/>	
খানার সদস্যের তথ্য	সিরিয়াল নম্বর	01	
১. নাম(ইংরেজি)	<input type="text"/>		
নাম(বাংলা)	<input type="text"/>		
২. খানা প্রধানের সাথে সম্পর্ক	<input type="text"/>		
৩. জাতীয় পরিচয় পত্র নম্বর	<input type="text"/>	নাই	<input checked="" type="checkbox"/>
জাতীয় পরিচয় পত্র নম্বর না থাকলে কেন নাই	<input type="text"/>		
৪. জন্ম নিবন্ধন নম্বর	<input type="text"/>	নাই	<input checked="" type="checkbox"/>
জন্ম নিবন্ধন নম্বর না থাকলে কেন নাই	<input type="text"/>		
৫. মোবাইল নম্বর-১	<input type="text"/>	নাই	<input type="checkbox"/>
মোবাইল নম্বর-২	<input type="text"/>		
৬. জন্ম তারিখ	<input type="radio" value="প্রকৃত"/> প্রকৃত	<input type="radio" value="আনুমানিক"/> আনুমানিক	
৭. প্রকৃত জন্ম তারিখ	<input type="text"/>	<input type="text" value="21"/>	

২. খানা প্রধানের সাথে সম্পর্ক	<input type="text"/>
৩. জাতীয় পরিচয় পত্র নম্বর	<input type="text"/>
জাতীয় পরিচয় পত্র নম্বর না থাকলে কেন নাই	<input type="text"/>
৪. জন্ম নিবন্ধন নম্বর	<input type="text"/>
জন্ম নিবন্ধন নম্বর না থাকলে কেন নাই	<input type="text"/>
৫. মোবাইল নম্বর-১	<input type="text"/>
মোবাইল নম্বর-২	<input type="text"/>
৬. জন্ম তারিখ	<input type="text"/>
৭. প্রকৃত জন্ম তারিখ	<input type="text"/>

৩. জাতীয় পরিচয় পত্র নম্বর	<input type="text"/>	নাই	<input checked="" type="checkbox"/>
জাতীয় পরিচয় পত্র নম্বর না থাকলে কেন নাই	<input type="text"/>		
৪. জন্ম নিবন্ধন নম্বর	<input type="text"/>		
জন্ম নিবন্ধন নম্বর না থাকলে কেন নাই	<input type="text"/>		
৫. মোবাইল নম্বর-১	<input type="text"/>		

The name of the member is written as it appears on the national identity card. In the absence of that form of ID, the name should be written as it appears on the birth registration certificate or a certificate of an educational institution. In the absence of all such documents, the name would be spelled with guidance from the respondent. Because of the limitations associated with use of a Bangla keyboard, the name is written only in English.

The enumerators must verify documents to authenticate the member, such as national identity cards (with NID number) or Birth Registration Certificate (with birth registration number). National identity cards are given by the Bangladesh Election Commission. All persons over the age of 18 are supposed to possess a valid NID card. One may, however, fail to produce the NID card. The CHWs would record the reasons for such inability. The client may have lost the card, have never had one, be unable to find it, or have left it somewhere else. Only citizens of Bangladesh would possess the card.

The birth registration number (BRN) would be noted on the verification of the document. Otherwise, the reason for not possessing one would be noted, and one of the following responses could be given: never had one, lost, unable to find where it is now (not lost), left at another place, and not a citizen.

Two mobile numbers could be collected from one person. If any household is using only one number, then whoever uses it most would be shown as the owner. In rural areas, issues with literacy may cause some respondents to be unable to recall the number. The enumerators are trained to find out the number by using a special code in their mobile set.

The date of birth of a household member is also collected. Actual date of birth must be recorded as far as practicable. There may be challenges in collection of these data. Few people actually are aware of their correct dates of birth. The CHWs would rely on an NID card, birth registration certificate, and educational certificates for recording date of birth. If there are differences in these cards, the NID would be used. For children, the immunization card would be used if a birth certificate is unavailable. For many citizens who are unable to report specific dates or produce any record, date of birth could be approximate. A conversion calendar is supplied that converts Bangla calendar values to English. The enumerator would try to identify some major events (natural event/personal milestones), because that would help to identify the age (like the age at marriage, the age at birth of first child, etc.). There could be instances of manipulating dates of birth progressively, especially of women, to evade legal restrictions on age of marriage. This practice poses challenges in service modules, especially in eligible couples (ELCOs) or pregnant women; however, approximate dates can be recorded separately in service modules.

The place of birth of the member is recorded. The sex of the respondent (male, female, or hijra [transgender]) is also recorded. Marital status of the member is entered into the system.

**Figure 2-4. Capturing data from members in a household**

৬. জন্ম তারিখ	00-স্কুলে যায়নি বা প্রথম শ্রেণী পাশ করেনি	01-ভৌত বিজ্ঞানী এবং এতদসম্পর্কিত টেকনিশিয়ান
৭. বয়স (বছর)	01-১ম শ্রেণী	02-ইঞ্জিনিয়ারিং ও স্থপতি
	02-২য় শ্রেণী	03-ইঞ্জিনিয়ারিং ও স্থপতি সম্পর্কিত টেকনিশিয়ান
৮. জন্ম স্থান	03-৩য় শ্রেণী	04-বিমান এবং জাহাজের কর্মকর্তা
	04-৪র্থ শ্রেণী	05-জীব বিজ্ঞানী এবং এতদসম্পর্কিত টেকনিশিয়ান
৯. পিতার লাইন নম্বর	05-৫ম শ্রেণী	06-চিকিৎসক, দস্ত চিকিৎসক ও পশু চিকিৎসক
	06-৬ষ্ঠ শ্রেণী	07-নার্স এবং চিকিৎসক সংক্রান্ত অন্যান্য কর্মী
১০. মাতার লাইন নম্বর	07-৭ম শ্রেণী	08-পরিসংখ্যানবিদ, গণিতবিদ, সিস্টেম এনালিস্ট এবং এতদসম্পর্কিত কর্মী
	08-৮ম শ্রেণী	09-অর্থনীতিবিদ
১১. লিঙ্গ	09-৯ম শ্রেণী	10-হিসাবরক্ষক
	10-মাধ্যমিক বা সমতুল্য	12-বিচারক
১২. বৈবাহিক অবস্থা	11-উচ্চ মাধ্যমিক বা সমতুল্য	13-শিক্ষক
		14-ধর্মীয় কর্মী
১৩. শিক্ষাগত যোগ্যতা		15-লেখক, সাংবাদিক এবং এতদসম্পর্কিত কর্মী

Educational qualifications of the members are collected. The enumerator can collect household member information from 22 variables, such as education, religion (though a respondent is not required to provide this), occupation, and citizenship.

## 2.2.4 Health Identity Number

After individuals are registered as household members, they are allocated individual health identification numbers (HIDs). At the initial phase of implementation, a 6-digit number was allocated to individuals. Later, 10-digit HIDs were provided by the DGHS. The DGHS has been implementing SHR as a means of creating electronic health records for all Bangladeshi citizens.

Figure 2-5. Sample of health ID card

Health ID Card			
HID	: 01001010001	প্রদানের তারিখ	: ০৭/০৮/২০১৭
নাম	: [Redacted]		
লিঙ্গ	: মহিলা	জন্ম তারিখ	: ১০/১১/১৯৮৭
গ্রাম	: টোকচানপুর	ইউনিয়ন/ওয়ার্ড	: ফাজিল হাট
উপজেলা	: দেলদুয়ার	জেলা	: টাঙ্গাইল
খানা নং	: ১১১১		
			
এই কার্ড গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের সম্পত্তি। কার্ডটি শুধুমাত্র ব্যবহারকারীর জন্য। কার্ডটি অন্য কোথাও পাওয়া গেলে নিকটস্থ স্বাস্থ্যকেন্দ্রে জমা দেওয়ার জন্য অনুরোধ করা হল।			

The SHR application was developed by ThoughtWorks. Within SHR, there is a master client index (MCI) for each citizen which generates a HID on a transactional basis (on receiving data about a person who has been registered in any facility). A facility registry is also available with the DGHS. Any individual receiving service from a health facility or any point of care is supposed to be registered through MCI. The SHR is supposed to maintain service history of those individuals.

However, the SHR system was in the development stage when the work of eMIS began. It was not possible to connect with the MCI for generating HIDs, at that time. Therefore, 7 million HIDs were provided in bulk to the eMIS team for use in Tangail and Habiganj. The temporary six-digit HIDs generated in the PRS were changed to SHR HIDs. The eMIS programmers have developed APIs for sending the PRS data to MCI to generate the SHR HIDs in the future. However, the MCI is not yet fully functional, and it may take time to generate HIDs on a transactional basis. A health identity card is also printed and supplied by the implementing partners based on HID number (Figure 2-5). The printing and distribution of HID cards are fraught with challenges, so computerized solutions were developed to streamline the process.

## 2.3 Data Available in PRS

National standards were used in designing the PRS database. National identity numbers and BRNs are consistent with the structure of relevant authorities of the country. Data available in the PRS can either be user or system generated, as described below.

- **User data:** Data on official users of the DGHS and DGFP (such as FWA, HA, FPI, AHI, UFPO, and UHFPO). Their particulars are now kept in a separate table, and these records will be

moved into the MOHFW's human resources information system, currently under development, when that system becomes fully operational.

- **Geographic data:** Names of the divisions, districts, upazilas, unions, and villages. A district, which is under a division, is an administrative unit containing upazilas, unions, and wards. Upazilas and unions are important local government institutions. Geocode, developed by the Bangladesh Bureau of Statistics, has been used for geographic data.
- **Personal data:** Name and date of birth of the registered person, names of parents and spouse, national identity card number, birth registration number, mobile phone number, education, religion, nationality, and occupation. The data structure has been designed following the CCDS approved by the Cabinet Division of the Government of Bangladesh.
- **Cell phone numbers:** One or more numbers for an individual
- **Educational qualifications and profession:** The CCDS provides for 77 categories of professions.
- **Socioeconomic status:** Initially, data on socioeconomic status were not collected. However, after evaluating the data entry skills of the CHWs during implementation, these data were included in the PRS.
- **Metadata (data about data):** Start and end time of data entry, location or GPS data (latitude and longitude), and time of uploading data into server.

## 2.4 Registration at Facilities: Non-Registered Clients

The implementation of the eMIS followed two different paths in Tangail and Habiganj. In Tangail, the community level domiciliary workers first visited houses to conduct the population registration. After that registration, services modules were introduced. The CHWs were then able to access population data stored in the mobile device or server. In Habiganj, facility modules were introduced first in some FWCs, and community modules were introduced later. Registration of households is not possible from health facilities. Thus, facility level providers in Habiganj encountered patients who had not been registered or who came from outside the catchment areas, where no registration process was likely to be initiated soon. To keep track of such patients, a separate registration process was initiated. They were identified as non-registered clients (NRCs). The process for NRCs was designed with a limited set of data with the idea that such clients would be registered in due course, at the communities, by the FWAs or HAs. The NRC process has no linkages with the household. However, the data of such persons could be accessed by community-level providers during registration at the household level by using search functions.

## 2.5 Modifying the Design of PRS: Partial PRS

The PRS arose, in part, in response to a need to address challenging field situations. The implementation of PRS offered significant learning opportunities for deciding the future course of action. In Tangail and Habiganj, the PRS required intensive inputs from both the DGHS and DGFP district and upazila officials and staff. Up to six months were required to complete the registration in one upazila depending on the size of population and number of CHWs available from DGHS and DGFP. Services-related applications followed the PRS.



Though the eMIS apps cover both communities and facilities, it is possible to implement community and facility modules without links to each other. Facility modules could be introduced with or without community modules as indicated in the operational plans of the MOHFW's Fourth Health, Population, and Nutrition Sector Program. Resources for rolling out community and facility modules together at the national level will not be made available in the new sector wide approach of MOHFW. Therefore, PRS implementation must be flexible in addressing these issues and other considerations, such as the following:

- Registering household is an additional task for FWAs and HAs requiring considerable additional time. It can take months to register households for an entire community/upazila.
- Both the DGHS and DGFP must be consulted simultaneously, requiring similar commitments from both regarding CHWs. Commitments by one department may be stronger than the other because of different field situations.

Partial PRS is a way to address the scenario where facility modules are introduced earlier than community modules. In the household setting, community-level health workers can use the full-fledged PRS. In a health facility, if a person is not registered, the facility can use a partial PRS module. The community health workers would still be responsible for full registration of that individual within their catchment area when the community modules are eventually introduced there.

If individuals in a household setting are registered at the facility level, major changes would have to be made in the eMIS architecture. The following are some of the challenges they faced:

- Members are in relationship with each other (by a sequential number). In the PRS database, household number was used as a unique key for the household in a given village.
- Some household data may be attempted, though household data should ideally be collected on site by the CHW.
- The providers' role is also crucial in distribution of HIDs. For managing delivery, all HIDs of a village are printed and distributed together.

In short, for any change, the challenges lie in the method of data collection, role of providers, means for covering all household members together, and process for distributing the workload between the workforce of DGFP and DGHS. Moreover, it would take much more time to collect data about all population in the catchment area of community-level health workers.

## 2.6 Way Forward

The PRS creates population-level data; authentication is required for some personal details of individuals. It would be beneficial if national-level databases could be used to authenticate data on individuals, as discussed below:

- **Verification through national identify card:** The NID card is maintained by the Election Commission Secretariat (ECS). Bangladesh has established an elaborate system of national identity which essentially captures all Bangladeshi citizens older than 18 years. To identify persons in a household, data on NID are collected. The ECS allows verification of NIDs through its database. Such access should be availed by the MOHFW in the future. The ECS allows verification through service-level agreements, which require payments. The MOHFW needs to earmark a budget for this activity in the future.
- **Verification through birth and death registration number:** The onus of registering births and deaths lies with local government institutions such as union councils, municipalities, and city corporations. The Office of the Registrar General maintains digital birth and death records of all citizens. The PRS should be able to verify data with the birth registration database.

## 2.7 Conclusions

The value of PRS has already been recognized by different units within MOHFW. On request of the Health Economics Unit, two variables on ownership of land and homestead were added in the PRS to facilitate identifying population living below the poverty line. The PRS creates a population-level denominator in the catchment area of the CHWs. This rich database could be utilized for planning purposes or for managing service delivery. Registration at the household level makes it feasible to track each member of the household at different service delivery points to ensure the continuum of care. The PRS is ready to begin tracking the population to help fulfill the Sustainable Development Goals.<sup>2</sup>

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<sup>2</sup> The United Nations General Assembly adopted the Sustainable Development Goals during their seventieth session, in October 2015, to end poverty, protect the planet, and ensure prosperity for all.

## 3. FWA EREGISTER

The FWA eRegister replaces the paper registers used by an estimated 30,000 FWAs who provide essential public health services in rural areas, under the DGFP. They conduct home visits, distribute reproductive health commodities and provide a range of maternal, child, and adolescent care. They also participate in EPI activities organized through DGHS and attend Community Clinics three days a week. They are directly supervised by the FPI and remain under the control of the UFPO.

### 3.1 Duties and Responsibilities of FWA

The FWAs have the following responsibilities:

#### 3.1.1 Planning and Implementing Programs

- Design strategies for family planning, mother and child care, and adolescent health and nutrition programs.
- Plan for achieving the targets.
- Achieve the targets specific to the union and attend community clinics on the designated days.
- Prepare monthly advance workplans for household visits; attend satellite clinics, community clinics, and EPI; and participate in other activities.
- Participate in monthly coordination meetings at upazila, biweekly meetings at UHFWC, and meetings of Union Family Planning Committee and Organizing Committee of UHFWC.
- Ensure adolescent care and client referrals and assist the FWV to visit households in FWA's catchment area.
- Act as a member of the Ward Family Planning Committee and Satellite Clinic Organizing Committee.

#### 3.1.2 Family Planning

- Provide information and education to eligible couples and mothers and motivate them.
- Select new couples based on methods.
- Distribute oral pills, condoms, emergency contraceptive pill (ECP), and Misoprostol to the clients.
- Refer the clients willing to adopt permanent methods (intrauterine devices [IUDs], injectable contraceptives, or implants) to the appropriate health facility.
- Administer second and subsequent doses of injectable FP-method, if properly trained.
- Visit clients to ensure regular collection and distribution of FP methods.
- Refer clients having complications to FWV/MO (FW/MCH-FP/Clinic).
- Counsel women about reproductive tract infections, sexually transmitted infections (STIs), and HIV/AIDS.

### 3.1.3 Satellite Clinic

- Inform residents of the community about the venue and schedule of the satellite clinic and motivate mothers and pregnant women to attend.
- Advise in favor of using condoms for prevention of sexually transmitted infections (STI, HIV/AIDS) and birth control, and supply them.
- Refer couples seeking treatment of infertility to medical officer (MCH-FP/clinic).
- Register mother and children and provide health education. Support the FWVs for increasing the number of injectable and IUD users.

#### 3.1.3.1 *Services to the Pregnant and the Lactating Mothers*

- Prepare the list of pregnant mothers in the catchment area, update it monthly, and send it to FWV.
- Advise pregnant women to visit Satellite Clinic/FWC/UHC/MCWC for ANC.
- Advise pregnant women, mothers, and family members about the importance of safe delivery, nutrition, and vaccination during pregnancy.
- Identify the risk-prone pregnant women and mothers and help them to visit FWVs working at the satellite clinic or FWC and, if needed, refer them to the medical officer (FW/MCH-FP/Clinic).
- Refer normal pregnant women and mothers to traditional birth attendants or/FWVs for safe delivery.
- Counsel parents to feed colostrum within one hour of birth, and for exclusive breastfeeding, for up to six months of age. Advise about complementary food and breast milk after six months.
- Visit the homes of postnatal women, keep regular contact, and advise them to visit the satellite clinic/FWC/UHC/MCWC for postnatal care (PNC).

#### 3.1.3.2 *Prevention of Diseases and Vaccination*

- Advise local people about prevention of diarrhea through personal hygiene.
- Participate in an EPI center.
- Counsel mothers on preparation of oral saline/salt-molasses drink and on taking care of children suffering from diarrhea.
- Refer patients with severe diarrhea to FWC/UHC.

#### 3.1.3.3 *Nutrition Education*

- Provide health-related information, education, and advice on nutrition to mothers, using guidebooks and flash cards.
- Distribute IFA, multiple nutrient powder (MNP), and vitamin A capsules to pregnant women and children.
- Encourage consumption of Iodine-fortified food.
- Refer severely malnourished and anemic patients to UHFWC/MCHC/UHC.

#### 3.1.3.4 *Equipment and Supply*

- Collect birth control materials from UFPO and preserve them in the mini store.
- Collect and distribute information, education, and communication materials on family planning and maternal and child health.
- Correctly enter the receipt, distribution, and stock of materials, and submit monthly accounts to the UFPO using the specified form.

#### 3.1.3.5 *Data Preservation and Report Preparation*

- Enlist all eligible couples in the FWA Register; preserve and update all data on eligible couples, method users, services to pregnant mothers and neonates, nutrition of mother and child, pregnant women, birth and death, childcare (0–5 years), and adolescent care.
- Prepare monthly or annual reports on stock and distribution of family planning and other materials and on progress of activities.
- Send reports on population of work area, list method users and non-users, and collect accounts relating to purchase of family planning materials on annual basis.

#### 3.1.3.6 *Other Responsibilities*

- Participate in training
- Advise on planting medicinal, fruit-bearing, and forest trees
- Advise on using toilets to prevent diarrhea
- Motivate people to participate in a birth-registration program
- Motivate against child marriage
- Accept other responsibilities assigned by superior authorities or local government

### 3.2 **Business Process Analysis**

The FWAs work in rural communities. Each has a defined catchment area and follows guidelines provided in the FWA Register, other government orders, and instructions regarding their responsibilities.

#### 3.2.1 *Work Area of FWAs*

The FWAs are posted in an organizational unit called the FWA unit. They are part of an elaborate setup of DGFP that extends to the grassroots level. They are located in wards (the lowest tier of the local government unit). In the rural areas, the DGFP has upazila-level offices. Upazilas have unions which are subdivided into wards, with nine wards in each union. There are 2–3 FWA positions in each ward depending upon the area and size of population. They are thus responsible for one or more villages in their part of the ward.

#### 3.2.2 *Contents of Paper Register*

The FWA paper register has gone through eight editions. The last edition was piloted in Tangail and introduced in January 2017. The register has 21 sections, as follows:

- Sections 1–7 provide a compendium of instructions and educational materials.
- Sections 8–19 are dedicated registers/lists and sections.

- Section 20 is used by FPI for inspection purposes.
- Section 21 is for observation by public representatives or senior officials.

Some variables (such as name and date of birth) are common to more than one section and must be entered in each section separately. The name and purposes of different sections in the register are explained in Table 3-1.

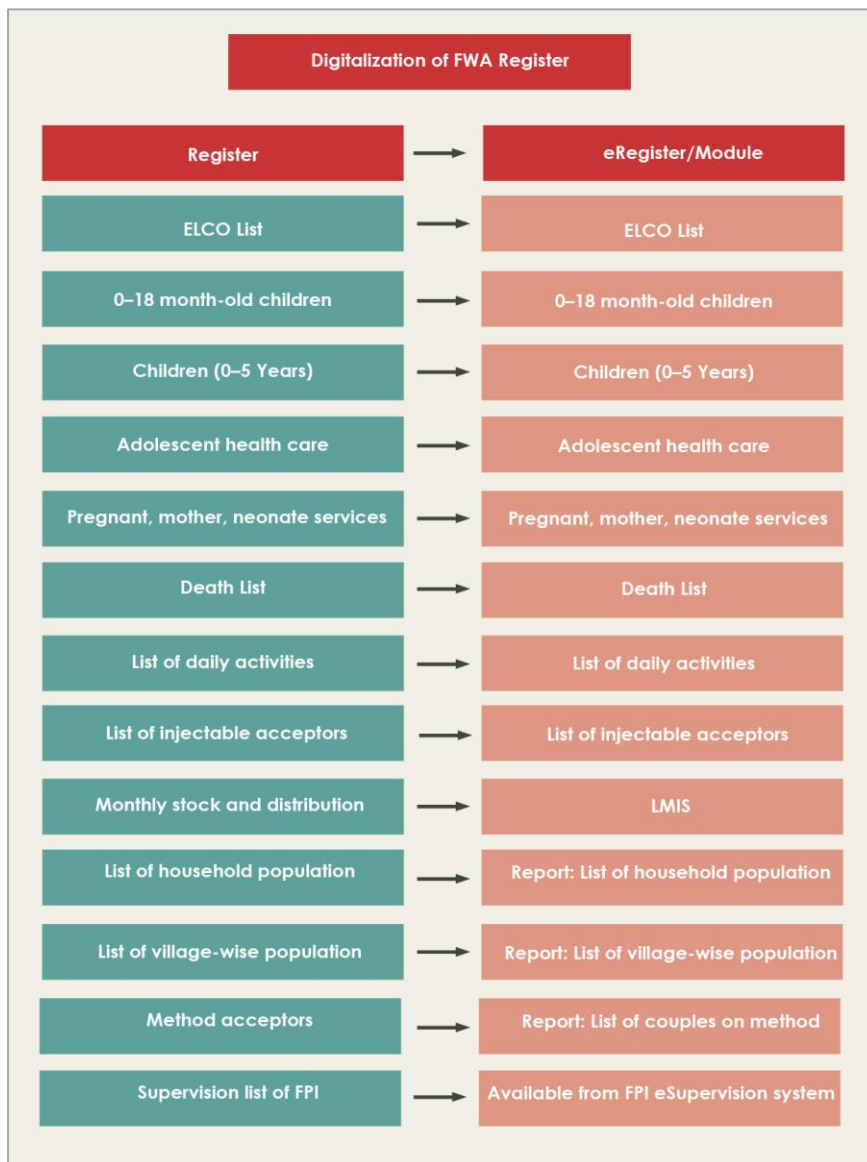
**Table 3-1. Name and purpose of different sections of FWA register**

Name	Purpose
Job Responsibilities of FWA	Duties and Responsibilities
Guidelines on Different Family Planning Methods	Education
Guidelines for Selecting Family Planning Method Users	Education
Guidelines for ANC, Delivery, PNC and Neonate Services	Education
Guidelines for Identifying Adolescent Health Problems and Counseling Services	Education
Guidelines for Nutrition Services	Education
Symbols for Filling Up Services Sections	Instructions
List of Eligible Couples	Service
List of Children Ages 0–18 Months	Service
Services to Children Ages 0–5 Years	Service
Adolescent Healthcare	Service
List of Pregnant Mother and Neonate Data/Services	Service
Death List	Data Collection
Daily List of Activities	Diary of Activities
List of Injectable Acceptors	List Maintenance
Monthly Stock and Distribution Register	Supply Management
List of Household Population	List Maintenance
List of Village-Wise Population	List Maintenance
Method Acceptors and Non-acceptors	List Maintenance
Supervision List of FPI	FP Inspection
Supervision List of Public Representatives/Officials	Official Use

### 3.3 Functionalities of FWA eRegister

The FWA eRegister used in a handheld tablet is a digital version of the FWA paper register. The FWA eRegister allows FWAs to conduct all their activities electronically. The application works offline and online. Data reside in the local device and a copy is uploaded to the central server when Internet connectivity is available. Figure 3-1 shows how sections of the paper register appeared in the eRegister.

**Figure 3-1. Converting the FWA register into an eRegister**



The above parts of the FWA eRegister deal with service and collection of information. In addition, the following modules have been developed to assist FWAs and perform specific functions:

- Advance workplan
- Migrate data
- Change/edit data

The FWAs log into the system using a unique password. Geographical and administrative data are available to them based on their responsibilities. The application uses a population database for identifying and tracking the service seekers. The local database contains records of all who have been registered previously.

The FWA eRegister is arranged into several panels or sections. The top panel is used to synchronize data or conduct a search. The second panel is for selecting the village or area where the FWA is working. This is where information about registered individuals within the FWA catchment area are stored. The total

number of households in that village is indicated in brackets. The FWA can either select the village by touching the screen or activate a relevant module. When the FWA selects a village, a list of households appears on screen from which searches can be performed based on many parameters.

The following modules can be accessed from the opening screen: eligible couples, list of children ages 0–18 months, childcare for those ages 0–5 years, adolescent care, maternal and neonatal information/care list, death list, daily activities list, list of women on injectable, list of distribution and stock, list of household population, list of village-wise population, list of eligible couples on methods and without methods, FPI supervision list, inspection lists of public representative/officials, list of mother’s nutrition care. The last section of the opening screen contains: status of current stock, adjustment of stock, placing demand, approval of demand, migration, and preparation of monthly advance workplan.

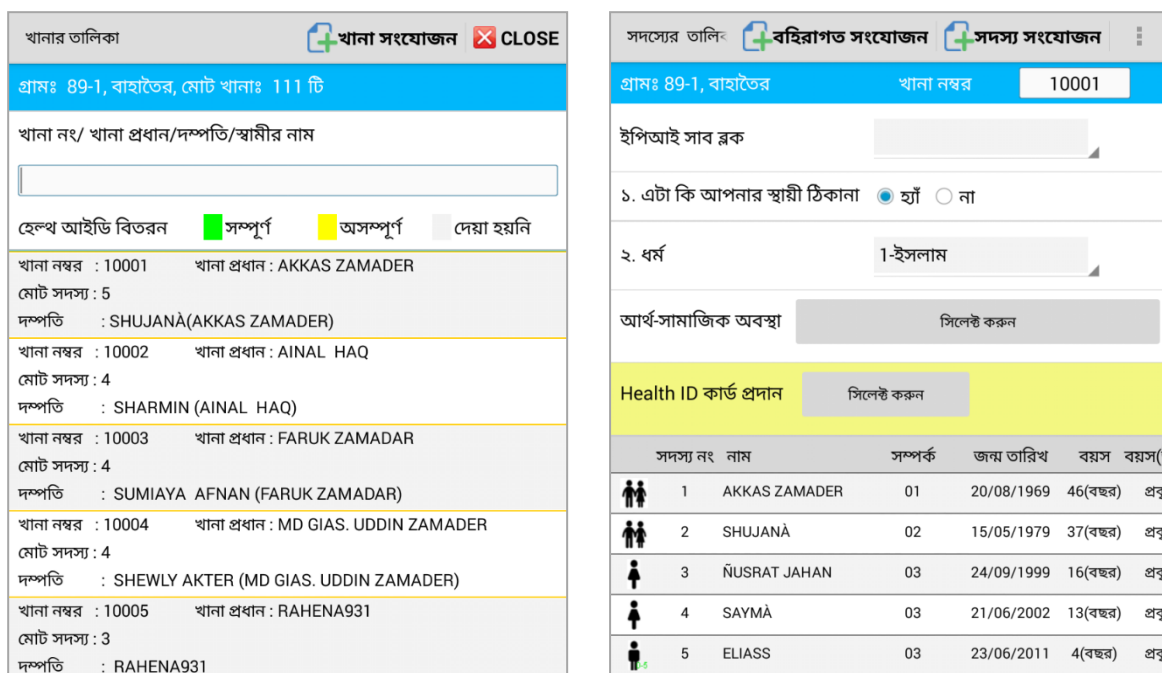
**Figure 3-2. Opening screen of FWA eRegister**

অনুসন্ধান DATA SYNC			
উপজেলা : 9, বাসাইল		ইউনিয়ন : 71, কাশিল	
ইউনিট : 06-৩খ			
কর্ম এলাকা (গ্রামের তালিকা)			
মৌজা: 89-বাহতের গ্রাম: 1-বাহতের (111)	মৌজা: 145-বদে ভাট পাড়া গ্রাম: 1-বদে ভাট পাড়া (131)	মৌজা: 268-বিয়লা গ্রাম: 1-বিয়লা (350)	মৌজা: 726-নাকাছিম গ্রাম: 1-নাকাছিম (222)
মৌজা: 872-সায়ের গ্রাম: 1-সায়ের (136)			
পরিবার কল্যাণ সহকারী রেজিস্টারের অংশ সমূহ			
দম্পতি ছক	মৃত্যু তালিকা ছক	গ্রামভিত্তিক জনসংখ্যার হিসাব ছক	
শূন্য থেকে ১৮ মাস বয়সী শিশুর তালিকা ছক	দৈনিক কার্যাবলীর হিসাব ছক	পদ্ধতি গ্রহণকারী ও অগ্রহণকারী সক্ষম দম্পতিদের বিন্যাস ছক	
শিশু (০-৫ বৎসরের নিচে) সেবাদান ছক	ইনজেকটেবল গ্রহণকারীর তালিকা ছক	পরিবার পরিকল্পনা পরিদর্শকের তদারকি ছক	
কিশোর কিশোরীর স্বাস্থ্য সেবাদান ছক	মাসিক মওজুল ও বিতরণের হিসাব ছক	জনপ্রতিনিধি/কর্মকর্তাদের তদারকি ছক	
গর্ভবতী মা ও নবজাতকের তথ্য/সেবা ছক	খানার জনসংখ্যার হিসাব ছক		



The FWA can perform a search or scroll down to select a household. The search can be done through household number or using names of any member of the household. Registration is also possible from this screen. The status regarding delivery of HID card is also made available to assist the FWA to deliver cards, if required.

Figure 3-3. Searching the household and members



The functions of different modules within the FWA eRegister are described in the following sections.

### 3.3.1 Eligible Couple

The Eligible Couple section of the eRegister corresponds to the List of Eligible Couples in the paper Register. A block of the eRegister section page is dedicated to recording household information: ELCO number, household number, name of wife and husband with age, tetanus toxoid (TT) doses, date of marriage, sons/daughters alive, educational qualifications of mother, NID number, BRN, and mobile phone number. During each visit to the household, the FWA is required to record the date of visit and the type of services provided, such as birth control, pregnancy, and nutrition services. This is one of the most important parts of the register.

The FWAs collect the particulars of all the eligible couples in their own catchment areas as reflected in the list of Eligible Couple or ELCOs (those with a married woman ages 15–49 years). An exercise is carried out to update the list at the beginning of each year, usually in January and February. In the app, the list of household members is generated enabling the FWA to pinpoint the client. The FWA can review the list of activities and services previously provided to determine whether the client needs referral for a birth control method or other services. That information is then recorded, and the client's information is updated (Figure 3-4).

Figure 3-4. Finding a woman from the list and providing services through app

৮. পরিদর্শনকৃত সকল দম্পতি সর্ব মোট : 1151

গ্রাম

নিবন্ধনকৃত  অনিবন্ধনকৃত

তারিখ  থেকে  Refresh

**অনুসন্ধান** +

ক্রমিক নং	খানা নং	দম্পতি নং	হেল্থ আইডি নং	গ্রামের নাম
1	10003	null	93252461219	BARNI KES
2	10001	1	93405107545	BANDA KUMARJAN
3	10056	1	96619742395	BANDA KUMARJAN

দম্পতি ছক CLOSE

HH No  Health ID

স্ত্রীর নাম  বয়স  (বছর) +

স্বামীর নাম  বয়স  (বছর)

দম্পতি নং  খানা নং  জানি না

বিবাহের তারিখ  প্রকৃত  আনুমানিক  21

জীবিত   মেয়ে

+ মহিলার টিটি

পরিদর্শন

অনুপস্থিত	কনডম 02/03/2016	পদ্ধতির জন্য প্রেরন 08/05/2016	পার্শ্ব- প্রতিক্রিয়ার জন্য প্রেরন 11/05/2016
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তারিখ  21  উপস্থিত  অনুপস্থিত

জন্মনিয়ন্ত্রণ ব্যবস্থা/গর্ভাবস্থা

Save

### 3.3.2 List of Children Ages 0–18 Months

This module corresponds to the paper register’s list of children ages 0–18 months old. There are fields for serial number, ELCO, date of collecting data, name of the child, date of birth (son/daughter), and data on vaccination (BCG, DPT, Hep-B, Hib, PCV, and OPV) and measles.

The purpose of this module is to list all children up to 18 months of age for the expanded program of immunization (EPI). The community health workers find information about all the children in this list. While preparing the list, the FWA asks for the EPI card to ensure that the child is immunized. The FWA would be informed about the immunization information from the card and use it to complete the information required by the application. The FWAs usually learn about births during household registration or routine visits. With the eRegister, FWAs can then identify each child against the EPI sub-block. The app interface allows the FWA to collect data about the mother (such as when she was administered a vitamin A tablet) and whether the birth registration certificate has been completed. When all the relevant information is completed and saved, the color of the row containing the name of the child becomes green (Figure 3-5).

**Figure 3-5. Registration and immunization data of neonate**

নবজাত শিশুদের রেজিস্ট্রেশন ও টিকাদান তথ্য CLOSE

ই পি আই সাব ব্লক সকল ব্লক ই পি আই সেশান

অনুসন্ধান +

০ থেকে ১৮ মাসের সকল শিশু (সর্ব মোট:52)

রেজিস্ট্রেশন সম্পূর্ণ  রেজিস্ট্রেশন অসম্পূর্ণ

হেল্থ আইডি	শিশুর নাম	ছেলে/মেয়ে	জন্ম তারিখ	মাতার নাম
55401	TANIA	মেয়ে	18/10/2015	ARIFA S
95479639592	TASKIA	মেয়ে	08/01/2015	NIRASA
94537829139	SAMIHA	মেয়ে	09/09/2014	MOWSI
96864797532	EBRAHIM	ছেলে	12/12/2014	SAHINU
95280573899	SIAM	ছেলে	09/08/2014	JESMIN
97987540106	TANBIR	ছেলে	13/12/2014	SHAHID

শিশু রেজিস্ট্রেশন

ই পি আই সাব ব্লক 01-ক ১

শিশুর নাম TASKIA

লিঙ্গ মেয়ে

মাতার নাম NIRASA.

পিতার নাম SORIFUL

জন্ম তারিখ 08/01/2015

রেজিঃ নং

রেজিঃ তারিখ  21

মাকে ভিটামিন- এ দেওয়ার তারিখ 19/02/2015 21

জন্ম নিবন্ধন ফরম পূরন করা হয়েছে?  1-হ্যাঁ  2-না

### 3.3.3 Childcare (0–5 Years)

This module corresponds to Section 10 in the paper register concerned with services to children ages 0–5 years. Such information is collected during routine household visits. The paper register has fields for collecting serial number, date of inspection, household/eligible couple number, name of the child, age and sex, any difficulties/problems, and advice, with comments in each row. In the electronic application, the list is opened by touching the screen. When FWAs notice symptoms, they are guided through multiple screens to assist in administering drugs or advice. If the problems remain, they can advise taking the child to the nearest facility or Upazila Health Complex (Figure 3-6).

**Figure 3-6. Accessing the list of children**

৬. ইউনিটের সকল শিশু (০-৫ বৎসরের নিচে) সেবাদান ছক

সর্ব মোট 335

গ্রাম All

তারিখ  21 থেকে  21 Refresh

অনুসন্ধান +

ক্রমিক নং	Healthid	শিশুর নাম	মাতার নাম
1	95526443030	ABDULLA ZAMADER	REHENA BEC
2	91567136807	TASHI	SHEWLY AK
3	96438713304	AFRIN	SARMIN

### 3.3.4 Adolescent Care

This module corresponds to Section 11 of the paper register concerned with adolescent healthcare. It is used to collect data relating to provision of services to adolescents. Adolescents are defined as any boy or girl ages 10–19 years. The provider addresses issues of malnutrition, anemia, iodine deficiency, menstrual problems, sexual diseases, and infection in reproductive organs. There are columns for recording gender, date of visit, and issues covered during counseling, with comments. Counseling codes included as footnotes cover: effects of child marriage and adolescent motherhood, advice for taking IFA tablets, nutritious and balanced food, changes during puberty, hygiene during menstruation and its complications, reproductive tract infections, and sexually transmitted infections. The electronic application contains algorithms to track these issues and help FWAs to provide effective consultation and services (Figure 3-7).

**Figure 3-7. Services and counseling for adolescents**

কিশোর-কিশোরীদের স্বাস্থ্য সেবাদান ছক		CLOSE	
Health ID	97896583023		
ক্রমিক নং	3	খানা নং	10001
নাম	SAYM		
বয়স	13 বছর	পুরুষ/মহিলা	মহিলা
পূর্বের ভিজিট			
পরিদর্শন 1	17/05/2016	পরিদর্শন 2	01/05/2016
পরিদর্শনের তারিখ		সর্ব মোট সম্পন্ন ভিজিট:	2
<input type="checkbox"/> অসুবিধা <input checked="" type="checkbox"/> কাউন্সেলিং সমূহ			
মন্তব্য			
Save			

কাউন্সেলিং সমূহ
 

- ক-বাল্যবিবাহ এবং কিশোরী মাতৃস্বের কুফল
- খ-কিশোরীকে আয়রণ ও ফলিক এসিড বড়ি খেতে বলা
- গ-কিশোর-কিশোরীদের পুষ্টিকর ও সুস্বাদু খাবার
- ঘ-কিশোর-কিশোরীকে বয়ঃসন্ধিকালীন পরিবর্তন বিষয়ে
- ঙ-কিশোরীদের মাসিককালীন পরিচ্ছন্নতা ও মাসিক সংক্রান্ত জটিলতা
- চ-কিশোর-কিশোরীর প্রজননতন্ত্রের সংক্রমণ ও যৌনবাহিত রোগ

### 3.3.5 Pregnant Mother and Neonate Data/Services

This module corresponds to Section 12 of the paper register concerning pregnant mothers and neonate data and services. It has 36 columns capturing a range of data: serial number, ELCO number, household number, date of visit, name of pregnant mother, name of husband, village/moholla and mobile phone number, age, LMP, EDD, gravida (number of pregnancies), number of children alive, age of youngest child, visit 1, visit 2, visit 3, visit 4, whether the risk-prone mother has been referred (yes/no), IFA tablets (y/n), Misoprostol (y/n), date of delivery/abortion, place of delivery, who assisted the delivery, type of delivery (normal/caesarean), Misoprostol distribution (y/n), delivery outcome (live birth/still birth), weight during birth (kg), premature birth before 37 weeks (y/n), whether the neonate was wiped with dry and clean cloth (y/n), Chlorhexidine 7.1% used after cutting the umbilical cord (y/n), neonate given colostrum within one hour of birth (y/n), whether the neonate was prevented from bath for up to three days after birth (y/n), visit 1, visit 2, visit 3, visit 4 (dates), death of neonate (within 0–28 days), maternal death, and comments.

The purpose of this module is to prepare a list with data about all pregnant women so that they and the newborn can be provided appropriate services. When a woman becomes pregnant, the FWA collects

general information about the pregnancy, antenatal care, delivery, the newborn, and postnatal care. There are five sections on the app for collecting this information.

The FWAs need to have a list of all pregnant women in their catchment area. This module allows registration of pregnant women. During current and subsequent visits, the FWA collects data on antenatal care, pregnancy outcome or delivery, neonatal care, and postnatal care. The name of pregnant woman, age, name of husband, and other data, are populated from the population registration. Data relating to the pregnant woman is entered first, such as: LMP, number of children, and history of previous pregnancies, followed by data on the neonate.

**Figure 3-8. Accessing households and members**

খানার তালিকা	খানা সংযোজন	CLOSE
গ্রামঃ 145-1, বন্দে ভাট পাড়া		
খানা নম্বর	খানা প্রধানের নাম	মোট সদস্য
10001	ALAKA	2
10002	KH.SHAMSUL	5
10003	ASIA	2
10004	ALAMGIR	6
10005	MASUDUR	4
10006	RABIN	3
10007	SAFIQUL ISLAM	3

সদস্য নং	নাম	সম্পর্ক	জন্ম তারিখ	বয়স	বয়স(উ)
1	ALAMGIR	01	07/09/1973	42	প্রকৃ
2	JOEL BEGUM	02	07/03/1977	39	প্রকৃ
3	AKHI	03	14/12/2002	13	প্রকৃ
4	OTHU	03	10/11/2005	10	প্রকৃ
5	JOTHY	03	28/04/2009	6	আনুমা
6	SALAM	03	28/04/2011	4	আনুমা

The FWA enters the date of LMP, which automatically generates the EDD by adding 280 days to the LMP. The HA would note para, gravida, number of living children, age of last child. Health workers are guided in identification of risks to the pregnancy based on the following parameters:

Figure 3-9. Collecting data relating to pregnancy and identification of pregnancies at risk

গর্ভবতী মা ও নবজাতকের তথ্য / সেবা ছক		CLOSE	
Health ID	94919869968		
ক্রমিক নং	4	দম্পতি নং	
গর্ভবতী মহিলার নাম	UZALA	বয়স	42 (বছর)
স্বামীর নাম	RUNGNAL	বয়স	49 (বছর)
গর্ভবতী মহিলার সাধারণ তথ্য	গর্ভকালীন সেবার তথ্য	প্রসব সংক্রান্ত তথ্য	নবজাতক সংক্রান্ত তথ্য
১. শেষ মাসিকের তারিখ	15/12/2014		
২. প্রসবের সম্ভাব্য তারিখ	21/09/2015		
৩. বর্তমানে কততম গর্ভ	৩য়		
৪. জীবিত সন্তানের সংখ্যা	2		
৫. শেষ সন্তানের বয়স	বছর 2	মাস 3	

৬. <input checked="" type="checkbox"/> ঝুঁকিপূর্ণ গর্ভ নির্ণয়	
<input checked="" type="checkbox"/>	গর্ভবতী মায়ের বয়স ১৮ বছরের কম বা ৩৫ বছরের বেশি হলে
<input checked="" type="checkbox"/>	প্রথম গর্ভাবস্থা বা ৩ এর অধিক সন্তান জন্ম দিয়েছেন এমন মা
<input type="checkbox"/>	মায়ের উচ্চতা ১৪৫ সে মি (৪ ফুট ১০ ইঞ্চি) এর কম হলে
<input type="checkbox"/>	জন্ম বিরতি- ২ বছরের কম হলে
<input type="checkbox"/>	পূর্ববর্তী প্রসবে প্রসবপূর্ব রক্তক্ষরণ, প্রসবোত্তর রক্তক্ষরণ অথবা জরায়ুতে গর্ভফুল আটকে থাকার ইতিহাস থাকলে
<input type="checkbox"/>	মৃত জন্মের বা নবজাতকের মৃতের ইতিহাস থাকলে
<input type="checkbox"/>	সিজারিয়ান অপারেশন বা যন্ত্রের মাধ্যমে (ফরসেফ/ ভেকুয়াম) প্রসবের ইতিহাস থাকলে

- If the age of pregnant woman is less than 18 and more than 35 years
- If this is her first pregnancy or she has given birth to more than three children
- If her height is less than 145 cm (or 4 feet 10 inches)
- If the space between births is less than two years
- If the woman had hemorrhages before or after previous delivery or there was an incident of placenta remaining in the uterus
- If she has given birth to stillborn or a child died within 28 days of birth
- If she had a caesarean section or previous delivery involved use of forceps or vacuum.

It would also be recorded whether the woman has been referred to a facility (such as UHC), in case of risk. The date on which the pregnant woman received ANC would be recorded together with other data, such as whether the pregnant woman received IFA tablets and whether she received Misoprostol on completion of seven months of pregnancy (Figures 3-10 and 3-11).

Figure 3-10. Collecting data on antenatal care

প্রকৃত গর্ভকালীন সেবা (ANC)	
১. পরিদর্শনের তারিখ	31/12/2015
২. আয়রন ও ফলিক এসিড বড়ি পেয়েছেন কিনা?	<input type="radio"/> হ্যাঁ <input type="radio"/> না
৩. মিসোপ্রোস্টোল বড়ি পেয়েছেন কিনা?	<input type="radio"/> হ্যাঁ <input type="radio"/> না
Save	

### 3.3.6 Delivery Related Data

If the woman has given birth, the HA asks questions about the results of delivery. It could be live birth/still birth or abortion. The date of delivery/abortion is also recorded. The following questions are asked, and answers are recorded:

- Where did the delivery take place? (home or public/private hospital/clinic)
- Who conducted the delivery? (doctor, nurse, SACMO, FWV, paramedic, community skilled birth attendant [CSBA])
- Was the delivery normal or caesarean?
- Had she taken Misoprostol after delivery?

### 3.3.7 Newborn Data

The HA records data on the neonate by asking questions, such as the following:

- What was the weight of the child (in kg)?
- Was the child born before completion of 37 weeks?
- Was the child wiped with a dry and clean cloth and wrapped immediately after birth?
- Was 7.1% Chlorhexidine administered after cutting the umbilical cord?
- Was the neonate fed breast milk within one hour of delivery?
- Did they refrain from showering the child within three days of birth?





Figure 3-11. Capturing data on delivery and newborn

প্রসব ফলাফল	নবজাতক
১. <input type="checkbox"/> জীবিত জন্ম <input type="checkbox"/> মৃত জন্ম <input type="checkbox"/> গর্ভপাত	জন্মের সময় ওজন (কেজি) <input type="text"/>
২. প্রসব/গর্ভপাতের তারিখ <input type="text"/> 21	অপরিনত জন্ম (৩৭ সপ্তাহের পূর্বে) <input checked="" type="radio"/> হ্যাঁ <input type="radio"/> না
৩. কোথায় প্রসব হয়েছে <input type="text"/>	জন্মের পর পরই শুষ্ক ও পরিষ্কার কাপড় দিয়ে মুছানো ও মোড়ানো হয়েছে কি না <input checked="" type="radio"/> হ্যাঁ <input type="radio"/> না
৪. কে প্রসব করিয়েছেন <input type="text"/>	নাড়ি কাটার পর ৭.১% ক্লোরোহেক্সিডিন ব্যবহার করা হয়েছে কি না <input checked="" type="radio"/> হ্যাঁ <input type="radio"/> না
৫. প্রসবের ধরণ <input type="radio"/> স্বাভাবিক <input type="radio"/> সিজারিয়ান	জন্মের ১ ঘন্টার মধ্যে বুকের দুধ খাওয়ানো হয়েছে কি না <input checked="" type="radio"/> হ্যাঁ <input type="radio"/> না
৬. মিসোপ্রোস্টোল বড়ি খেয়েছে কি না? <input type="radio"/> হ্যাঁ <input type="radio"/> না	জন্মের প্রথম ৩ দিন গোসল থেকে বিরত রাখা হয়েছে কি না <input checked="" type="radio"/> হ্যাঁ <input type="radio"/> না
<input type="button" value="Save"/>	

### 3.3.8 Postnatal Data (on Mother and Child)

The system shows the ideal timetable for four postnatal care visits, which the provider follows and records. The neonate should also be given four services together with the mother, which are captured in the module with date against each service (Figure 3-12).

Figure 3-12. Postnatal care dates are generated automatically

গর্ভবতী মহিলার সাধারন তথ্য	গর্ভকালীন সেবার তথ্য	প্রসব সংক্রান্ত তথ্য	নবজাতক সংক্রান্ত তথ্য	প্রসবোত্তর (মা ও নবজাতক)সেবার
<b>আদর্শ প্রসবোত্তর সেবার সময়সূচী (PNC)</b>				
পরিদর্শন ১ 14/09/2015 হতে 14/09/2015	পরিদর্শন ২ 15/09/2015 হতে 16/09/2015	পরিদর্শন ৩ 20/09/2015 হতে 27/09/2015	পরিদর্শন ৪ 20/10/2015 হতে 26/10/2015	
<b>প্রকৃত প্রসবোত্তর সেবা (PNC)</b>				
<b>মায়ের সেবা</b>				
পরিদর্শন	<input type="text"/>	 		
<b>নবজাতকের সেবা</b>				
পরিদর্শন	<input type="text"/>	 		

### 3.3.9 Death List

The HAs record any death that occurred within their catchment areas, which they would learn about during routine visits. (This does not include still births.) When the HA accesses the death notification module from the list of households, a screen pops up, showing the HID, name of the deceased, sex, name of parents, spouse.

The HA selects the date and possible cause of death. The cause of death is recorded according to ICD 10 classification. If the deceased person is a woman, there is an option to flag a maternal death. The HA records the place of death. On completion of data entry, names of all the members of the household are shown. The name of the deceased person becomes red in the member list, after which it cannot be used for providing services any more (Figure 3-13 and Table 3-2).



**Figure 3-13. Collection of data relating to death**

Health ID	Code
01-স্ট্রোক-164	Stroke
02-হার্ট এ্যাটাক-151.9	Cardiac Failure
03-ক্যান্সার-C80.9	Cancer
04-পানিতে ডুবে মৃত্যু-W74	Drowning
05-বিষ খেয়ে মৃত্যু-Y19	Poisoning
06-বজ্রপাতে মৃত্যু-X33	Thunder Struck
07-সড়ক দুর্ঘটনায় মৃত্যু-V99	Road Accident
08-বিদ্যুৎস্পৃষ্ট মৃত্যু-T75.4	Electrocution
09-আত্মহত্যা-X84	Suicide

সদস্য নং	নাম	সম্পর্ক	জন্ম তারিখ	বয়স	বয়স(উর্ধ্ব)
01	MALIK	01	08/09/1963	52	আনুমানিক
02	ABOLA	02	05/09/1975	40	আনুমানিক
03	MONIR	03	30/08/1998	17	আনুমানিক

**Table 3-2. Some codes used in HA eRegister**

SI	Disease	ICD code
1.	Stroke	164
2.	Cardiac Failure	151.9
3.	Cancer	C80.9
4.	Drowning	W74
5.	Poisoning	Y19
6.	Thunder Struck	X33
7.	Road Accident	V99
8.	Electrocution	T75.4
9.	Suicide	X84

### 3.3.10 List of Daily Activities

This module corresponds to Section 14 of the paper register concerning Daily Activities of the FWAs. FWAs are required to prepare a list of daily activities, based on which monthly list of activities is prepared. The FWAs use this list to keep a summary of their activities. This is divided into six parts. One is for recording the activities in the household visits and the other for activities outside the households. For household visits, information is aggregated for pills, condoms, injectable contraceptives, IUDs, implants and permanent methods. The data include old- and new-method adopters together with those who discontinued contraceptive use. The total number of eligible couples is also calculated. The number of pregnant women is also aggregated (new and old). The distribution of reproductive health commodities is also counted. The FWA records the number of daily visits to Satellite Clinics, the EPI center, and the Community Clinic, meetings attended, and leaves taken. The total number of births and deaths in one month are also counted. The total number of method users, eligible couples, and pregnant women are also reported. The total for the unit is attained by adding the total number of pregnant women during the current month and the previous month. Contraceptive acceptance rate (CAR) is calculated in this page using the following formula: Dividing the number of method users by total eligible couples in the unit, multiplied by 100 to arrive at a percentage figure. This module is yet to be developed as a part of the FWA eRegister.

### 3.3.11 List of Women Receiving Injectable

This module corresponds to Section 15 of the paper register concerning women receiving an injectable contraceptive. The paper register contains fields for capturing serial number, ELCO number, name of acceptor with village, and date of first dose. The fifth column has 12 boxes for recording the date of administration for each dose. Adverse effects are recorded in the last column. This list is prepared to gather information on all injectable contraceptive users to know when women need subsequent doses and/or referral to a FWV. In the eRegister, when the FWA touches the name of client on the list of women using injectable, an entry form appears where data from the PRS can be populated, such as ELCO number, name of the recipient, age, name of husband, and name of father and mother. If the FWA is trained to administer injectable contraceptives, he or she performs this procedure and administers the first dose. The application records the scheduled dates for the subsequent doses and lets CHWs know in advance so dose administration can be scheduled accordingly. When the method is changed by the client, a corresponding entry is made by the FWA and the client is removed from this list automatically. If the client starts the injectable contraceptives again, she would again be included in the list and her prior information can be reviewed (Figure 3-14).

**Figure 3-14. List of women receiving injectable contraceptive methods**

১২ ইনজেকটেবল গ্রহণকারী মহিলাদের তালিকা ছক

সর্ব মোট 12

গ্রাম 08901-BAHATAIR

তারিখ  থেকে  Refresh

অনুসন্ধান +

ক্রমিক নং	খানা নং	দম্পতি নং	হেল্থ কোড	গ্রামের নাম
1	10001	1	95248788993	BAHATAIR
2	10004	5	95534476311	BAHATAIR
3	10009	11	96648834783	BAHATAIR
4	10012	13	96412822519	BAHATAIR

ইনজেকটেবল গ্রহণকারী মহিলাদের ছক Health ID 95248788993

ক্রমিক নং 3 দম্পতি নং 1

গ্রহণকারীর নাম SHUJAN বয়স 37 (বছর)

স্বামীর নাম AKKAS ZAMADER বয়স 46 (বছর)

পিতার নাম ASSATON BAGEM

মাতার নাম D K 4IM M8AH

প্রথম ডোজের তারিখ 08/05/2016

ডিউ ডোজ 05/08/2016

ইনজেকটেবল প্রদানের তারিখ

ডোজের নাম	ডোজ	পার্শ্ব প্রতিক্রিয়া	যে তারিখে দেয়া হয়েছে
ইনজেকটেবল	1	না	08/05/2016
ইনজেকটেবল	2	না	07/05/2016

### 3.3.12 List of Monthly Distribution and Stock

This module corresponds to Section 16 of the paper register concerning monthly stock and distribution. There are 22 columns. This list allows the FWAs to keep record of stock and distribution per month and to verify whether the stock is sufficient for the month. The FWAs distribute reproductive health commodities, such as oral pills (two brands), condoms, injectables, and ECP. They must keep track of syringes and vials they receive for injectables. They also distribute Misoprostol tablets to pregnant women before delivery. They receive MNP and IFA tablets. These items are recorded for the current month and added to the items recorded previously. The FWAs record the total number distributed in the current month and the number remaining in stock. If there is any stock-out in the current month, they record those in one of four categories: no supply, insufficient supply, sudden rise in demand, or other.

In the eRegister, a transaction automatically updates the stock and the FWAs can view the current stock through this screen. There are fields for writing the name of the month and year, issue voucher number with date, previous balance of oral pills (two categories: sukhi and apon in cycles), condoms, injectable contraceptive and syringe, ECP in doses, Misoprostol in doses, MNPs, and number of IFA tablets. The FWAs may record if the client has received methods from other sources. The stock could be adjusted if any item is damaged, lost, returned, or expired. Items could be deducted, and reasons noted. When any item is exhausted, the FWA can open a form to place an order demand (Figure 3-15).

**Figure 3-15. Contraceptive stock distribution**

মজুদের ছক <span style="float: right;">X CLOSE</span>			
কোড	নাম	ইউনিট	মজুদের পরিমাণ
1	খাবার বড়ি (সুখী)	চক্র	1997
2	কনডম	পিস	2000
3	ইনজেকটেবল	ভায়াল	2000
5	সিরিঞ্জ	পিস	2000
8	ইসিপি	ডোজ	2000
9	মিসোপ্রোস্টোল	ডোজ	2000
10	খাবার বড়ি (আপন)	চক্র	2000
19	আয়রন ও ফলিক এসিড বড়ি	সংখ্যা	2000
20	এমএনপি	স্যাসেট	2000

There is a practice of exchanging stock among providers in the same union. The app allows one FWA to loan materials to another FWA.

### 3.3.13 List of Household Population

This module corresponds to Section 17 of the paper register concerning the list of household population. It is intended to identify households with and without eligible couples. This register must be filled in once a year in January–February. The list is prepared based on households and monitored over a period of three years (lifetime of the register). There are columns for recording serial number, household number, list of household population, ELCO number, name of household head, and population of the household in each year (male, female, and total). It will be available in the next version.

### 3.3.14 List of Village-Wise Population

This module corresponds to Section 18 of the paper register concerning the list of village-wise population. This list is used to view the village-wise list of all the population in the unit and is prepared once a year. It is divided into three sections dedicated to three years. The FWAs must fill in the values consecutively for each year up to the third year. The entries in the second year should be based on the first year, and the entries for the third year should be based on the second-year list. The electronic module is under development and not yet available to providers.

### 3.3.15 Arrangement of Eligible Couples on and without Methods

This module corresponds to Section 19 of the paper register concerning arrangement of method acceptors and non-acceptors based on number of children and age of eligible couples. This list identifies ELCOs who have adopted any methods, with details. The list also contains the names of those who have not adopted any method yet and who could be approached for a method. This list is filled in once a year

in January–February. There are four categories for recording ages (>20, 20–29, 30–39, and 40–49). All groups of couples are further divided into four groups based on the number of children (0, 1, 2, and 3+). For method users (oral pills, condoms, injectable contraceptives, IUD, implant), the FWAs identify where the supplies are coming from: public sector/government or private channels. For permanent methods users, gender data are collected. There are columns for method non-acceptors, pregnant mothers, and total children. The FWAs also record number of women whose husbands are abroad. The electronic module is not developed yet.

### 3.3.16 Inspection List of Family Planning Inspector

This corresponds to Section 20 of the paper register concerning supervision list of FPI. The FPIs supervise the FWAs, evaluate their activities, and record comments in this section of the register. There are 10 columns to cover: date of inspection and name of village, status of worker in terms of workplan (on track, advanced, or lagging), have adequate materials (y/n), numbers of ELCOs visited, results of verification of data from the register (method adopter: correct or not correct, sent for method, sent for adverse effects, number of pregnant mothers verified, other couples if verified, total verified couples) and recommendations with signature. The electronic module has not yet been developed but will be available in the future.

### 3.3.17 Supervision by Public Representatives/Officials

This module corresponds to Section 21 of the paper register concerning Supervision List of Public Representatives/Officials. There are 13 columns, covering: date of inspection, name of inspected village, the status of worker in terms of workplan (on track, advanced, or lagging), whether the fields are filled properly or not (in respect of ELCO list, list of pregnant women and neonate, death list, list of daily activities, list of injectable contraceptive clients, and services to adolescent list), number of inspected couple, data verification of methods used by couple (numbers correct/ numbers wrong), and recommendations with signature. The electronic module has not yet been developed but will be available in the future.

## 3.4 Preparation of Monthly Advance Workplan

All FWAs are required to prepare an advance workplan before the end of current month. The workplan captures the activities likely to be performed by them. This is also used by their supervisors (FPIs) for the purpose of inspection. This is a routine office procedure for the family planning staff. The workplan is approved by the FPI and sent to the upazila office. The paper form is prepared in triplicate and travels through the FPI to upazila and then district offices, a time-consuming approval process.

The FWA eRegister offers a module to perform this function digitally and more quickly. The module allows the FWA to prepare the workplan in advance and submit it to the FPI. The FPI could approve it or return it to the FWA for changes. The FWA then modifies the workplan and after approval could perform the job. The draft workplan is submitted to the FPI and when the FPI suggests changes it is saved. When the FWA downloads the workplan, all changes are highlighted in different colors to better guide the FWA to see them (Figure 3-16).

**Figure 3-16. Adding an activity to specific days for the advance workplan**

পরিবার কল্যাণ সহকারীর মাসিক অগ্রিম কর্মসূচী		
পরিবার কল্যাণ সহকারীর নাম	Amena Khanom	
কর্ম এলাকা (ইউনিট)	06-২ক	
কর্মসূচীর মাস	07-July,2016	
তারিখ	বার	কর্মসূচী
03/07/2016	রবিবার	কর্মসূচী সংযোজন
04/07/2016	সোমবার	কর্মসূচী সংযোজন
05/07/2016	মঙ্গলবার	কর্মসূচী সংযোজন
06/07/2016	বুধবার	কর্মসূচী সংযোজন
07/07/2016	বৃহস্পতিবার	কর্মসূচী সংযোজন
08/07/2016	শুক্রবার	সাপ্তাহিক ছুটি

<input type="checkbox"/> দম্পতি পরিদর্শন
<input type="checkbox"/> কমিউনিটি ক্লিনিকে সেবা প্রদান
<input type="checkbox"/> সাটেলাইট ক্লিনিকে উপস্থিত থাকা
<input type="checkbox"/> ইপিআই কার্যক্রমে অংশগ্রহন
<input type="checkbox"/> পরিবার পরিকল্পনা ক্যাম্প এ ক্লাইন্ট নিয়ে যাওয়া
<input type="checkbox"/> অগ্রিম কর্মসূচী প্রণয়ন
<input type="checkbox"/> ইউনিয়ন স্বাস্থ্য ও পরিবার কল্যাণ কেন্দ্রে পাম্বিক সভা
<input type="checkbox"/> উপজেলা পরিবার পরিকল্পনা অফিসে মাসিক সভা
<input type="checkbox"/> ছুটি
<input type="checkbox"/> মাসিক রিপোর্ট তৈরি

In a typical month, an FWA visits a house to serve the ELCO (usually an encounter with the woman), participates in an EPI session, attends the community clinic for two days a week, takes clients to the FP camp, attends fortnightly meeting at the Union Health and Family Welfare Center, collects materials for the UFPA, may take a leave, prepares monthly report or attends training, attends yard meetings, and goes to IPC or interpersonal communication sessions for motivating clients and other activities, as shown in Table 3-3.

**Table 3-3. Types of activities performed by FWAs**

ELCO visit
Provide services from CCs
Attend the satellite clinic
Participate in EPI session
Accompany client to the family planning camp
Prepare advance workplan
Attend fortnightly meeting at the UHFWC
Attend monthly meeting at the UFPO office
Receive FP materials from UFPO office
Leave
Preparation of monthly report (MIS 1 Form)
Participate in training
Yard meeting
Client Motivation/Visit IPC
Others

All these options are made available in the screen which the FWA selects to prepare the workplan on daily basis.

**Figure 3-17. Comments on workplan of FWA**

পরিবার কল্যাণ সহকারীর মাসিক অগ্রিম কর্মসূচী	
পঃ কঃ সহকারীর নাম	93002-Amena Khanom
কর্ম এলাকা	<span style="color: green;">+</span>
কর্মসূচীর মাস	08-August,2016
অনুমোদিত	<span style="background-color: green; color: white;">অননুমোদিত</span> অপেক্ষাধিন
Upload	Download
তারিখ	কর্মসূচী
পতি পরিদর্শন-06-গ্রাম:কুমারজানী ,দম্পতি র:(12-20)	অগ্রিম কর্মসূচী পরিবর্তন করতে হবে
টলাইট ক্লিনিকে উপস্থিত থাকা	
ইউনিট ক্লিনিকে সেবা প্রদান	অগ্রিম কর্মসূচী পরিবর্তন করতে হবে

পরিবার কল্যাণ সহকারীর মাসিক অগ্রিম কর্মসূচী		
পরিবার কল্যাণ সহকারীর নাম	Amena Khanom	
কর্ম এলাকা (ইউনিট)	06-২ক	
কর্মসূচীর মাস	08-August,2016	
তারিখ	বার	কর্মসূচী
01/08/2016	সোমবার	পরিবর্তন দরকার
02/08/2016	মঙ্গলবার	পরিবর্তন দরকার
03/08/2016	বুধবার	পরিবর্তন দরকার
04/08/2016	বৃহস্পতিবার	সম্পন্ন
05/08/2016	শুক্রবার	সাপ্তাহিক ছুটি

This tool could be very effective for reviewing the performance and effectiveness of individual workers.

### 3.5 Migration in and out

Change of residence occurs due to marriage or migration. FWAs should deal with people who have moved into or out of their catchment area. There is a module in the FWA eRegister to register such persons.

### 3.6 Integration with other Databases

The FWA eRegister is integrated with the LMIS of DGFP. This is done by establishing a link with LMIS through the API.

### 3.7 Reporting

The FWAs prepare MIS Form 1 at the end of each month. This report is generated using the FWA eRegister. Manual preparation was often very time-consuming, tedious, and prone to error. Now these reports are generated in the app at the click of a button, with no extra effort required. The chapter on Monitoring Tools provides further details on reports available under eMIS.

### 3.8 Enhancements in the New Version

A new version of the FWA eRegister was released in December 2017 containing a new user interface with modifications made to some of the previous modules and functional enhancements. All the buttons have been reorganized on the main screen (previously users needed to scroll down to view or use some modules and there were some buttons which were not effective). The top panel houses buttons for data search, data synchronization, report, notification, and job aid tools. Data search was not available from the main screen in the earlier version. Data synchronization has been included in the top panel so that users can invoke it whenever they feel the need to update any data. However, like before, the synchronization would run according to the schedule and can run in the background. The second panel presents the name of the villages together with the number of households. The buttons provide individuals in a village with access to services, while showing the total number of households registered.

The third panel contains an electronic version of some sections of the paper register. Some of the reports were included in this panel in the previous version. Now those have been shifted to the report button on the top panel. In this panel, a new module for monitoring progress of workplan has been included.

**Figure 3-18. New version of FWA eRegister**



### 3.9 Data Search

Implementation of data search and data synchronization is similar in the FWA eRegister and HA eRegister. The improvements in the data search engine include the following: making it easily accessible (placing it as the first button in the top panel), having the ability to include multiple parameters, and an advance search with some predefined searches. The search can be performed on multiple criteria, such as name of patient, father, mother, husband, date of birth, sex, health ID, mobile number, NID, BRN, and NRC number. Algorithms have been improved, allowing the search to be performed faster. There is also a provision for an advanced search that includes geographical areas. There are some predefined searches based on the activities of the FWAs: list of eligible couples (for providing reproductive health services), pregnant women, and those who are less than 5 years of age.

Figure 3-19. Search and advanced search

← সদস্যের তালিকা মোট সদস্য: ০

হেলথ আই ডি

ডাটা সার্চ

অ্যাডভান্স সার্চ

অনুসন্ধান করুন: সদস্যের নাম, পিতা, মাতা, স্বামী, জন্ম তারিখ, লিঙ্গ, হেলথ আই ডি, মোবাইল নং, জাতীয় পরিচয় পত্র নং, জন্ম নিবন্ধন নং, এন আর সি নং

দাম্পতি

বর্তমানে গর্ভবতী

বয়স ৫ বছরের কম

### 3.9.1 Data Synchronization

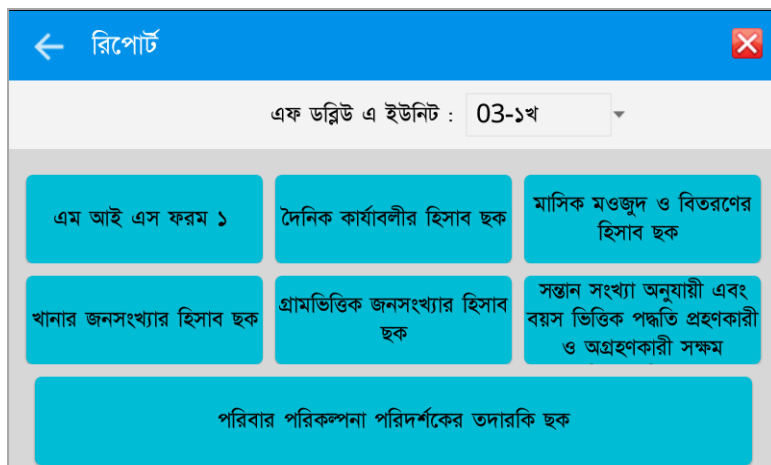
Data synchronization was mostly handled automatically (as a background service) in the earlier version. It has been brought into the main panel and can be invoked by the FWA at any time. The scheduler would also be working on the background. The synchronization routine has been rewritten by optimizing the queries. This improvement has resulted in better system performance. Data synchronization is vital for updating the server database. It is also essential for establishing concurrency and consistency among data from a source to target data storage and vice versa and for continuous harmonization of the data over time to maintain integrity of data. The new data synchronization mechanism optimized the execution process in both the Tab and Server, reduced the interaction between the device and the database (to optimize the concurrency in a multiuser environment) and optimized the SQL query (to expedite data searching). In the process, it solved problems that appeared during the synchronizing of data between device and server database in the earlier version. Faster synchronizing would also improve the user experience.



### 3.9.2 Reports

The report button provides access to seven features: MIS Form 1, list of daily activities, list of monthly stock and distribution, list of household population, list of village wise population, distribution list of population based on method acceptors and number of children, and supervision list of FPI.

Figure 3-20. The report panel



MIS Form 1 is a regular activity of the FWAs at the unit level. It must be submitted to the FPI at the end of the month. The list is generated from data available in the device.

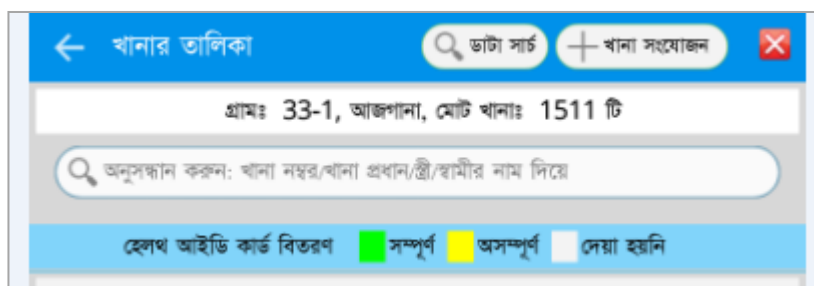
A list of daily activities could be generated via tablet computer.

Lists of all household and village-wise population are accordingly generated using the population data and ELCOs. All these lists required time-consuming examination of data and calculations. Automated generation would release the FWA from the drudgery of manual preparation.

List of stock and distribution is integrated with the inventory management system of the DGFP. It would be possible to view the stock on real-time basis. This facility was not ready in the previous version.

Distribution list of population based on method and number of children comes from the paper register and can now be generated in the new version. While accessing the household list the provider could look at the status of distribution of the HID cards and take steps for distributing the card.

Figure 3-21. List of all households and health information system distribution status



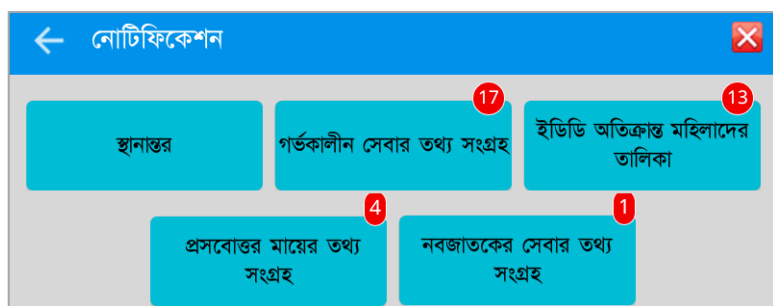
Supervision of FWA is component of FWA paper Register. Supervision List of FPI has been added to allow the FPI to record results of inspection as per FWA Register. The results of any inspection recorded in the FWA paper Register could not be assessed without going through the register in question manually. Now as soon as supervision is performed, relevant data would be uploaded in the central database and the FPI would be able to review them later from own location through internet (from own device). That should bring a new dimension to the FPI's supervision work.

### 3.10 Notification

Notification and job aid tools are new additions to both the FWA eRegister and the HA eRegister. The inclusion of notification feature was made possible by the strength of digital technologies and availability of an electronic database—in the device as well as the central server. And these are new additions representing something that could not have been made available to the FWAs within manual system of paper registers.

Notification is organized on five tabs: migration, collection of data on delivery, collection of data on women whose EDD have expired, data on delivery and newborn. Figure 3-22 shows the notification panel with number of clients whose data need to be updated (all buttons except migration are showing numbers in red colored circles). Migration would take the provider to the PRS and allow updating the relevant record relating to someone who had been identified as migrated in the catchment area of the provider. The FWA can use it to update records of anyone who is migrating in or migrating out of her catchment area.

**Figure 3-22. Notification panel**



When any button is touched, the list appears with additional tools. For example, while looking at the list of pregnant women whose EDD expired the FWAs could filter the records based on period of such expiry. The colors and labels help the FWA to filter all records or separately those with expiry of 1, 1-2, 2-3 or more than three months. All other buttons have similar features.

Figure 3-23. List of women whose EDDs have expired

The screenshot shows a mobile application interface with a blue header bar containing a back arrow, the text 'ইডিডি অতিক্রান্ত মহিলাদের তালিকা', and 'মোট 13' with a close button. Below the header is a dropdown menu for 'ইডিডি অতিক্রান্ত হওয়ার মেয়াদ' with '1 - সকল' selected. A legend below the dropdown shows four categories: '১ মাস' (blue), '১-২ মাস' (yellow), '২-৩ মাস' (orange), and '৩ মাসের অধিক' (red). At the bottom, there is a summary bar with 'দম্পতি নং : 187', 'গ্রামের নাম : AJGANA', 'হেলথ আইডি : 91038082960'.

### 3.11 Job Aid Tools

Job Aid Tools are predictive and as such are intended for assisting the CHWs while they are visiting the catchment areas. They can access the following list: pregnant women whose expected dates of delivery are within next seven days, list of pregnant women identified as with risk, list of women on any method, status of ELCO visits and e-Ticket (a separate application).

Figure 3-24. Job aid tools

The screenshot shows a mobile application interface with a blue header bar containing a back arrow, the text 'কর্ম সহায়ক', and a close button. Below the header are five buttons: 'গর্ভবতী মা যাদের সম্ভাব্য প্রসব আগামী ৭ দিনের মধ্যে সর্ব মোট:0', 'ঝুঁকিপূর্ণ গর্ভবতী মায়ের তালিকা', 'পদ্ধতি অনুযায়ী দম্পতির তালিকা', 'দম্পতি পরিদর্শনের অবস্থা', and 'ই-টিকেট'.

The list of pregnant women whose expected dates of delivery are within next seven days can be viewed based on different filters. For example, the list could be generated based on all or a part of a village. Similarly, the list of pregnant women with risk could be retrieved with details to facilitate quick visit and take necessary actions. The FWAs need to visit the ELCOs on a regular basis and collect data on method. The colors and labels help the FWA identify the dates relating to whom have expired by what amount of time or they are able to filter all records or separately those with expiry of 1, 1-2, 2-3 and more than three months.

Figure 3-25. Status of ELCO visit

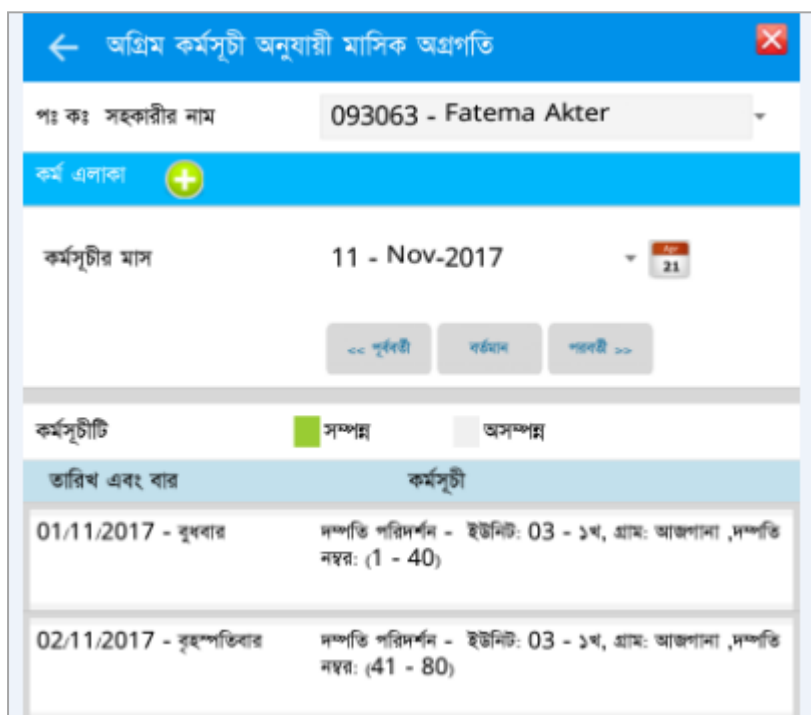


The e-Ticketing system is a separate web-based application. The users can report any issues through this tool and it has been incorporated in the app interface so that they can access it from within the app. It however, uses a browser interface and need online access.

### 3.11.1 Others

The main panel of the new interface also includes a button on the status of activities as per advance workplan. The FWAs prepare an advance workplan and need to submit that to the FPI for approval. The new tool would allow them to compare the progress or compliance with the workplan. The FWA would provide input after each day of work whether the activities of the day have been completed or not. This could also be viewed by the FPI allowing the supervisor to measure performance of the CHW.

Figure 3-26. Status of implementation of workplan



## 4. THE HEALTH ASSISTANT REGISTER

This module is used by HAs under the DGHS. The HAs work at the grassroots level in rural communities providing essential public health services. They have domiciliary responsibilities. They organize the EPI activities and conduct other mainstream programs. They are directly supervised by the AHI and remain accountable to the UHFPO. Currently, there are about 30,000 HAs in the DGHS.

### 4.1 Job Responsibilities of Health Assistants

The responsibilities of the HAs are described below:

#### 4.1.1 Extended Program for Immunization

- Ensure healthcare for children and adolescents through timely administration of preventive vaccines (TB, diphtheria, whooping cough, polio, tetanus, measles, hepatitis-B, and pneumonia).
- Prepare accurate list of fertile women ages 15–49 years for immunization.

#### 4.1.2 Maternal, Child, and Adolescent Health

- Provide ANC, delivery, and PNC to pregnant women and neonates (including immunization) subject to training, and maintain records of such services.
- Provide Vitamin A capsule to recently born children (especially to those suffering from severe malnutrition, prolonged diarrhea, or measles) and women who have recently given birth (within 6 weeks).
- Administer Vitamin A to children ages 1–5 years at an interval of six months; find all children suffering from night blindness and take steps for their treatment.
- Create awareness among mothers and guardians about the neonate danger signs and essential care.
- Conduct normal delivery at home, subject to necessary training and arrangements.
- Provide advice on menstrual problems and refer if necessary.

#### 4.1.3 Essential Services Package and Other Activities

- Conduct immunization under the essential services package to prevent diseases such as diarrhea and acute respiratory infection and address vitamin deficiency and blindness.
- Participate in behavior change and communication (BCC) activities concerning cleanliness, sanitation, and food habits

#### 4.1.4 Disease Outbreak Monitoring

- Participate in disaster management.
- Participate in control of epidemics.
- Take necessary actions to control communicable and infectious diseases.
- Take necessary steps to face emergency and crisis situations.
- Take precautionary measures against outbreak of certain infectious diseases and participate in preventive work in case of outbreak.

- Distribute necessary medicines in areas where elephantiasis is prevalent.
- Monitor severe paralysis, measles, tetanus of neonates, and epidemics; inform people about the prevention of these diseases.

#### 4.1.5 Nutrition

- Take effective steps to reduce malnutrition, especially of women and children.
- Advise on hygiene and food habits to prevent malnutrition.

#### 4.1.6 Behavioral Change and Communication

- Create awareness on healthy lifestyle, cleanliness, sanitation, balanced diet, breastfeeding, and nutrition, and on the need to prevent diseases through immunization, control Helminths, and control diarrhea; organize BCC.
- Provide counseling to the elderly population for living a healthy life.
- Implement health education program at ward or community level.
- Create awareness among girls and women about sexual health, safe sex, and benefits of nutrition and healthy food.
- Advise on exclusive breastfeeding immediately after birth and up to six months including feeding of colostrum to newborns.

#### 4.1.7 Birth Notification

- Assist in birth registration activities within 28 days of childbirth.

#### 4.1.8 Community Clinic

- Sit in the CC three days a week from 9 a.m. to 3 p.m. in accordance with local arrangements.
- Perform all duties at the CC in the absence of the community healthcare provider (CHCP) together with FWA.
- Find women who have not received ANC and PNC, and those men and women who have not received EPI, TB, and leprosy services, and bring them to the CC for services.

#### 4.1.9 Workplan

- Submit individual monthly advance workplans to the supervising officer.
- Prepare a yearly workplan in consultation with community group at the beginning of the year, mentioning the requirement of medicines, MSR, date of monthly/yearly plan, dates for satellite clinics, and an EPI schedule.

#### 4.1.10 Others

- Perform all duties according to their own scope of work.
- Remain vigilant to ensure proper treatment of patients referred from the field.
- Maintain regular contact with higher authorities for resolution of any problem relating to health.
- Perform other duties as assigned by the authorities from time to time.

## 4.2 Business Process Analysis

The work of HAs is based on structured and nonstructured registers, guidelines, and instructions issued by headquarters. The eMIS tools cover the areas of immunization, maternal, and child health. They provide resources for performing submission of daily activities and other administrative tasks.

### 4.2.1 Work Area

The HAs work in rural communities. They are part of an elaborate setup of DGHS. They are located in wards, the lowest tier of the local government units. There are now nine wards in a union (up from three wards per union in the past.) Each ward has two HAs; each is responsible for one or more villages, depending on the ward's population size.

### 4.2.2 Brief Description of Paper Registers

The HAs now use structured registers for immunization work, and follow guidelines or instructions for other work. (During the previous phase of the program, MEASURE Evaluation and icddr,b supported the design of two registers for maternal, neonatal, and child care and work by CSBAs. Those were piloted and are still used in Tangail and Chunarughat of Habiganj, but have not been rolled out nationally.) The EPI program is also implemented by city corporations and other local government bodies and nongovernmental organizations (NGOs).

All users rely on the same registers. At the beginning of the year, an EPI micro plan involves the target population for the immunization program. The EPI program management is carried out through upazila, municipalities, and city corporations. A ward falls within a sub-block. Each ward has eight outreach centers where regular immunization work is carried out by the HA/FWA/vaccinator once a week. The HAs also do regular immunization work in the facilities on designated days. Rural outreach centers are likely to be situated in a household of a local volunteer. The EPI program has 1.28 million outreach centers.

The HAs use paper registers to capture data on their activities relating to EPI:

- Neonate registration and immunization information
- Report on daily vaccines and other services (children)
- Monthly immunization report (children)
- Adolescents'/women's registration and immunization information
- Report on daily vaccines and other services (adolescents/women)
- Monthly immunization report (adolescents/women)

Two other registers are used for EPI stock for children and women. Those have not been considered for automation, owing to the absence of a computerized logistic management system.

**Neonate registration and immunization information.** This is used for preparing a comprehensive list of the population to be covered by EPI. The top sheet is used to capture starting date and ending date, name of village/moholla, and geographical data, number of total household, number of population, number of children ages 0–11 months, 12–23 months, and 0–5 years. Instructions for use are given on the second page. This book is divided into eight sections, and each section is used for one center. In each

section, there are 14 white pages plus two yellow pages for migrated persons. This book is permanently retained in the permanent immunization center.

The registration page has 30 columns, one for each of the following: date of registration, name of the child, sex, date of birth, name of parents, with address and mobile phone number, house/holding/GR number, date of administering vitamin A to the mother (must be within 42 days of birth), dates on which Pentavalent-1 and PCV-1 vaccine need to be given, date on which Measles/Rubella needs to be given, and date of giving vaccines.

The HAs are required to do the following:

- Visit households according to monthly advance workplan.
- Identify all children and women eligible to get vaccines, visit them, and ask them to come to the session with the EPI card.
- Visit households where a birth has taken place recently and register them.
- Write the date of first dose on the EPI card.

**Report on daily vaccines and other services (children).** This is used for maintaining daily records of vaccinations. There are guidelines for filling up the forms in the register, including completing some information before the start of the session. During the session, the HA keeps records of all vaccines and checks whether the birth registration certificate has been filled in, and whether the certificate has been distributed. At the end of session, the health worker counts the number of children immunized together with children who dropped out. The HA also writes the number of those who have completed all vaccines. The HA also counts all vials.

The HA/FWA/vaccinators are required to do the following:

- Keep the registration book, daily immunization, and other services book with them.
- Prepare the daily target based on last session and the left outs.
- Calculate the age of the children for effective vaccination.
- Complete all the doses based on schedule.
- Adopt non-touch technique (for vaccination).
- Write the dates of next vaccines after completion of vaccination.
- Open a vial only on appearance of a child.
- Brief the guardian about potential adverse effect of vaccination.



**This register is used to perform the following duties:**

- Prepare monthly ward reports on vaccination and other services.
- Raise stock requirements of auto-disable syringe, mixing syringe, and safety boxes.
- Keep track of clients outside of catchment area. They are reported separately through responsible supervisor or to concerned health worker in the monthly meeting so that the concerned health worker could update it in his or her own register.

**Monthly immunization report (children).** This is used for comparing targets and evaluation of achievements monthly. The HAs aggregate the third copy of the daily report to prepare this report and use it to show progress and next steps for all sub-blocks. This is also discussed in the monthly meeting at the UHC. The AHIs prepare a report from the second copy of the daily report that was submitted to them by the HAs. The upazila is required to compile and aggregate all the daily reports and compare them with reports submitted by the AHI or union supervisor.

This report contains the number of births and deaths of children. It includes data on the use of vaccines and depreciation. The report provides disaggregated figures for children ages 0–11 months (for BCG, Pentavalent, PCV, OPV, IPV, or Measles-Rubella, children ages 15–18 months (Measles-Rubella, 2<sup>nd</sup> dose), and children ages 12–23 months (for all vaccines taken, other than 2<sup>nd</sup> dose of Measles- Rubella). There are columns for indicating whether all appropriate vaccines have been completed, how many children have completed birth registration, and how many certificates have been distributed.

Health workers and supervisors at different levels, from wards to districts, are responsible for preparing and compiling this report. A district report is prepared by the EPI superintendent and is approved by the civil surgeon (CS). A district report must be finalized by the 15<sup>th</sup> of each month.

**Adolescent/women registration and immunization information.** This captures registration of women in the sub-block site. There are columns for registration number, date of registration, ELCO number (for married women only, to be taken from HA register), name of adolescent/woman, date of birth, name of parent/husband/guardian with mobile number, house number, date of vaccination, and screening of cervix and breast (for cancer).

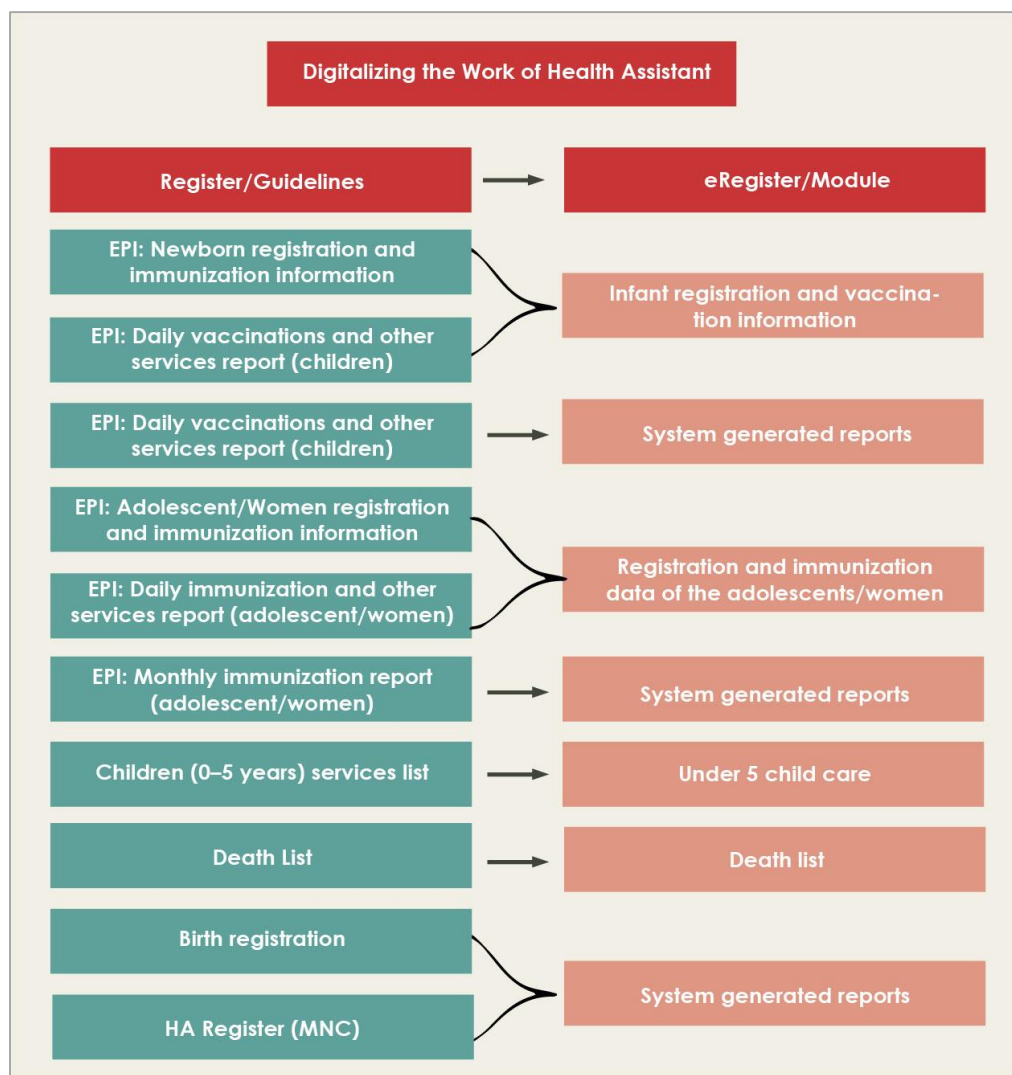
**Report on daily vaccines and other services (adolescent/women).** This captures vaccines given daily with other services. There are columns for serial number, registration number, date, name of adolescent/woman, date of birth, name of parent/guardian or husband, mobile number, house number, vaccines given (different doses of TT), reasons for not administering vaccine, and mention if outsider (migrated). This is also used for keeping record of vials, use of syringe, and demand for next session in the center.

**Monthly immunization report (adolescent/women).** This presents monthly immunization targets with achievements. The report is prepared based on sub-blocks/sites and extends to ward, union, upazila, municipalities, city corporations, and districts. A section of the page contains the targets for pregnant women and all women ages 15–49 years. All five doses of TT are accounted for against all target women in two groups (pregnant and others). It contains distribution of red vitamin A pills after delivery, number

of cervical and breast cancer screenings performed, total EPI sessions (target and actual), attendance of staff (HA, FWA, volunteer, or others).

These registers have been incorporated in the HA eRegister. The eRegister also contains tools available in the HA Register developed and piloted in Tangail and Habiganj. In addition, daily activities of the HA have been developed as a digital tool. The eMIS tools cover most of the work of the HAs as seen in Figure 4-1.

**Figure 4-1. Digitalizing the work of the health assistant**



A brief description of HA eRegister functions is presented below.

### 4.3 Functionalities of Health Assistant eRegister

The HA eRegister is available in the tablet PC and accessible to authorized providers using a provider ID number and password. The application displays upazila, union, and ward data. The ward number is shown according to the old ward. In the second panel, the list of villages within the catchment area of HA appears showing the number of registered population in the villages. The following modules are available for HAs (depending upon eligibility of the service seeker):

- Registration and immunization data of the neonates
- Registration and immunization data of the adolescents/women
- EPI schedule of neonates
- EPI schedule of adolescents/women
- Pregnant, mother, and neonate data/services
- Death list
- Children (0–5 years) services list
- BCC activities
- Data on communicable diseases (not yet functional)
- list of daily activities

However, some modules have not yet been developed. The opening screen loads the names of villages under the catchment area of the provider and the modules. The HA has options to access client information from the village list or through modules. The village list displays the households with name of the household head. The population data are retrieved from the PRS. All household members are shown with names and other details. From the list of households, individual household members can be accessed for providing services; only services applicable to that member can be activated. The HA can access pregnant, mother, and neonate information/services lists. Services can be provided after identifying the client from the household list or by searching the particular client using some parameters. The modules are explained in greater detail in the following subsections.

**Figure 4-2. Name of villages within the catchment area and accessible modules**

উপজেলা : 9,বাসাইল		ইউনিয়ন : 71,কাশিল	
ওয়ার্ড : 2			
<b>কর্ম এলাকা (গ্রামের তালিকা)</b>			
মৌজা: 78-বামুয়া গ্রাম: 1-বামুয়া (65)	মৌজা: 167-বাংড়া গ্রাম: 1-বাংড়া (355)	মৌজা: 313-দাপনাজোড় গ্রাম: 1-দাপনাজোড় (598)	মৌজা: 324-দেউলী গ্রাম: 1-দেউলী (524)
<b>স্বাস্থ্য সহকারীর কার্যক্রম</b>			
গর্ভবতী মা ও নবজাতকের তথ্য/ সেবা ছক	মৃত্যু তালিকা ছক	শিশু (০-৫ বছরের নিচে) সেবাদান ছক	
নবজাত শিশুদের রেজিস্ট্রেশন ও টিকাদান তথ্য	কিশোরী/মহিলাদের রেজিস্ট্রেশন ও টিকাদান তথ্য	দৈনিক কার্যাবলীর হিসাব ছক	
বিসিপি কার্যক্রম	সংক্রামক রোগের তথ্য		
নবজাতক শিশুদের ই পি আই সিডিউল		কিশোরী/মহিলাদের ই পি আই সিডিউল	

### 4.3.1 Neonate Registration and Immunization Data

The HAs can use the eRegister to prepare and automatically update a complete list of children in the catchment area who are covered through EPI. An EPI card is prepared based on this list. The HAs can generate a list of children up to the age of 28 days from the PRS database, where registered and unregistered children (for EPI) are shown in different colors (green and white). The list contains the name of the child, sex, mother's name, father's name, and date of birth. The user can generate a list of EPI sub-blocks. From the list, any individual child can be selected for registration. The date of registration is selected from the calendar. The HA can also fill in the date on which the mother was given vitamin A. After registration, the name of the child is shown in green.

Figure 4-3. Registration for EPI

ই পি আই সাব ব্লক: 01-ক ১ ই পি আই সিডিউল

অনুসন্ধান +

০ থেকে ১৮ মাসের সকল শিশু (সর্ব মোট: 4)

রেজিস্ট্রেশন সম্পূর্ণ  রেজিস্ট্রেশন অসম্পূর্ণ

হেলথ আইডি	শিশুর নাম	ছেলে/মেয়ে	জন্ম তারিখ	মাতার নাম
96544816710	HAMZA	ছেলে	12/12/2014	MST. S
53096305534426	dgv	ছেলে	10/03/2015	fgg
60107349033832	padgb	ছেলে	09/02/2016	sjg,dhk
65339189886911	cvv b	মেয়ে	08/03/2016	dfff

শিশু রেজিস্ট্রেশন

শিশুর নাম: HAMZA

লিঙ্গ: ছেলে

মাতার নাম: MST. SALMA AKTER

পিতার নাম: MD. TOWHIDUL HAQUE PA

জন্ম তারিখ: 12/12/2014

রেজিঃ নং: 1

রেজিঃ তারিখ: 10/03/2016 21

মাকে ভিটামিন-এ দেওয়ার তারিখ: 23/01/2015 21

Save Close

The EPI session data is captured by touching the EPI sub-block. A schedule for the EPI can be accessed from this module. The HA selects the name of the center. The HA can also record if there has been any change in scheduled date, and then record the new date of session. The HA can record the time of mixing the vaccines.

Figure 4-4. EPI session data and time of mixing vaccines

ই পি আই সেশন / শিশুদের টিকাদান তথ্য CLOSE

ই পি আই কেন্দ্রের নাম: Center A

ই পি আই সেশনের তারিখ: 06/03/2016 21

প্রকৃত ই পি আই দানের তারিখ: 10/03/2016 21

টিকা সংমিশ্রণের সময়

বিসিডি: 11:10 AM 21 এম আর: 11:10 AM 21

এম আর(২য় ডোজ): 11:10 AM 21

Save NRC ই পি আই রেজিস্ট্রেশন

After the HA saves the data, the screen will show two columns, one for those who have been vaccinated and one for those who have not. The EPI card of a particular child can also be viewed. The E-card is a replica of the physical card. It displays the the timetable for vaccines when a particular cell is touched on the screen. The HA is also able to schedule the next date of immunization.

Figure 4-5. Vaccination data and immunization card

The figure displays two screenshots from a mobile application. The left screenshot shows a form for entering vaccination data. The right screenshot shows the EPI card for a child named HAMZA, including a vaccination schedule table.

**Left Screenshot: Vaccination Data Entry Form**

অনুসন্ধান +

টিকা দেয়া হয়েছে      টিকা দেয়া হয়নি

শিশুর নাম : HAMZA      রেজিঃ নং : 1  
 মাতার নাম : null      জন্ম তারিখ : 12/12/2014  
 পিতার নাম : MD. TOWHIDUL      ছেলে/মেয়ে : ছেলে  
 HAQUE PAVEL  
 হেল্থ আইডি : 96544816710      মোবাইল নম্বর:

ই পি আই কার্ড

---

**Right Screenshot: EPI Card (শিশু)**

Health ID: 96544816710

ইপিআই টিকা দান কার্ড (শিশু)

শিশুকে সবগুলো টিকা দেয়ার জন্য কমপক্ষে ৬ বার টিকা কেন্দ্রে নিয়ে আসতে হবে

টিকা প্রদানের তারিখ

টিকার নাম	১ম বার	২য় বার	৩য় বার	৪র্থ বার	৫ম
	06/03/2016				08/
বিসিজি	.....				
পেন্টাভ্যালেন্ট	.....	.....	.....		
ওপিভি	.....	.....	.....		
পিসিভি	.....	.....		.....	
আইপিভি			.....		
এমআর					
এমআর (২য় ডোজ)					

টিকা দেয়ার পর যে কোন সমস্যা/অসুবিধা হলে সাথে সাথে স্বাস্থ্যকর্মী কে খবর দিন। প্রয়োজ কেন্দ্রে নিয়ে আসুন।

Close

A search can be performed to review a child’s records. If the child dies after registration, his or her record is deleted from the database.

### 4.3.2 Registration of Adolescents/Women and Immunization Data

All adolescents and women ages 10–49 years are covered for immunization. The list is prepared using this E-module and the PRS database. A person is located in the EPI sub-block. Registration data are accessed by EPI sub-block. A registration number is assigned to the adolescent or woman. The date of registration is then recorded. A registered person’s name will then be shown in green color.

Figure 4-6. Registration of adolescent women

কিশোরী/মহিলাদের টিকাদান তথ্য CLOSE

ই পি আই সাব ব্লক  সকল সাব ব্লক  ই পি আই সিডিউল

অনুসন্ধান +

মহিলাদের রেজিস্ট্রেশন ও টিটি টিকাদান তথ্য (সর্ব মোট:1761)

হেল্থ আইডি	মহিলার নাম	দম্পতি নং	জন্ম তারিখ	মা
92175096607	MST. SALINA BEGUM		25/07/1984	
91527286296	MST. TANIA BEGUM		17/11/1972	
94013094810	RASHIDA		11/06/1993	
97805600801	AMINA		10/06/1996	

কিশোরী/মহিলা রেজিস্ট্রেশন

মহিলার নাম MST. SALINA BEGUM

দম্পতি নং

মাতার নাম MAHIRA

পিতার নাম SORHAB

জন্ম তারিখ 25/07/1984

রেজিঃ নং 1

রেজিঃ তারিখ 20/03/2016 21

Save Close

The HA can select the EPI schedule for a center. The dates of session and immunization are recorded. The HA is able to see who has been immunized and who has not.

Figure 4-7. EPI of women

টিকা দেয়া হয়েছে	টিকা দেয়া হয়নি
<p>মহিলার নাম : MST. SALMA AKTER</p> <p>মাতার নাম : PORI BANU</p> <p>পিতার নাম : INSAN ALI</p> <p>হেল্থ আইডি : 94359855766</p> <p>ই পি আই কার্ড</p>	<p>রেজিঃ নং : 12</p> <p>জন্ম তারিখ : 10/09/1987</p> <p>দম্পতি নং :</p> <p>মোবাইল নম্বর:</p>
<p>মহিলার নাম : xukfkjxglcgi</p> <p>মাতার নাম : ckh</p> <p>পিতার নাম : fxucgi</p> <p>হেল্থ আইডি : 69217593049438</p> <p>ই পি আই কার্ড</p>	<p>রেজিঃ নং : 01</p> <p>জন্ম তারিখ : 10/03/2000</p> <p>দম্পতি নং :</p> <p>মোবাইল নম্বর: 12258888055</p>

Health ID 94359855766

ইপিআই টিকা দান কার্ড (কিশোরী/ মহিলা)

টিকার ডোজ	টিকা শুরু করার সঠিক বয়স	টিকা পাওয়ার তারিখ	টিকা প্রদানের তারিখ
টিটি - ১	১৫ বছর বয়স হলেই		.....
টিটি - ২	টিটি -১ পাওয়ার কমপক্ষে ২৮ দিন পর		...
টিটি - ৩	টিটি -২ পাওয়ার কমপক্ষে ৬ মাস পর		...
টিটি - ৪	টিটি -৩ পাওয়ার কমপক্ষে ১ বছর পর		...
টিটি - ৫	টিটি -৪ পাওয়ার কমপক্ষে ১ বছর পর		...

সম্প্রসারিত টিকাদান কর্মসূচি (ইপিআই), স্বাস্থ্য অধিদপ্তর স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়

Close

The EPI card can be accessed from the list. The electronic card is a replica of the paper-based card, and it shows all the vaccines with all possible entries.

It is also possible to search data for any women or adolescent on the basis of one or multiple parameters, such as health identity numbers (HID), mobile number, NID, BRN, or NRC number. An advanced search can also be done by geographical or personal details.

### 4.3.3 EPI Schedule for Neonates

When registration and vaccination data are recorded, the EPI schedule of neonates is automatically generated according to their dates of birth. The schedule is determined on the basis of location (sub-block) and center.

### 4.3.4 EPI Schedule for Adolescents/Women

It is possible to schedule the dates for vaccinations of adolescents and women in the catchment area through this E-module.

### 4.3.5 Pregnant Women and Neonates Data/Services

This module is like the module available in the FWA eRegister and is described there.

### 4.3.6 Death List

This module is like the module available in the FWA eRegister and is described there.

### 4.3.7 Services for Children (0–5 Years)

The HA may provide services to any child ages 0–5 years if, on a regular visit, it is found that a child is suffering from an ailment or has any other problem. Some common ailments will appear on the screen. On top of the options are general danger signs, followed by diarrhea, malaria, malnutrition, pneumonia. If any ailment checkbox is ticked, options to identify symptoms are shown. There is guidance within the module to take actions, such as referrals to a health facility.

Figure 4-8. Data on child having any danger sign

শিশু (০-৫ বৎসরের নিচে)		CLOSE	
Health ID	261177		
ক্রমিক নং	1	খানা নং	10001
শিশুর নাম	SHMA		
বয়স	4 বছর	ছেলে/মেয়ে	মহিলা
পরিদর্শনের তারিখ	07/01/2016	সর্ব মোট সম্পন্ন ভিজিট:	0

সাধারণ বিপজ্জনক চিহ্ন	
অসুবিধা	
<input checked="" type="checkbox"/>	যে কোন সাধারণ বিপজ্জনক চিহ্ন
<input type="checkbox"/>	বুকের নিচের অংশ ভিতরে ডেবে যাওয়া
<input type="checkbox"/>	দ্রুতশ্বাস
<input type="checkbox"/>	নিউমোনিয়া অথবা খুব মারাত্মক রোগ এর চিহ্ন/লক্ষন নাই
মারাত্মক নিউমোনিয়া অথবা খুব মারাত্মক রোগ	

If the child is suffering from malaria, the HA can select symptoms and the module will guide them to make referrals if necessary.

If the child is suffering from malnutrition, the HA may advise the child to be given proper food in order to tackle lack of glucose in blood and to keep the child warm.

If symptoms of anemia are observed in a child six months of age or older, the HA is guided to give IFA tablet and sufficient food, and possibly advise consultation at a hospital.

The E-module also covers the following guidance:

- If the child (0–5 years old) is suffering from skin diseases (itching), he or she should be advised to use neem leaves while showering and should receive consultation in a hospital.
- If the child has eye problems, he or she should be directed to consult a doctor.
- If the child is suffering from jaundice, he or she should be advised on the use of sugarcane juice and medicines.
- For loss of appetite, vitamins should be given and a doctor consulted.
- If the child is suffering from night blindness, the HA may advise the child to include small fish and vegetables in his or her diet and consult a doctor.
- If the child has worms, he or she should be advised in the administration of deworming medicine.

The HA is able to write comments if necessary.

#### 4.3.8 Non-Registered Clients

The EPI session starts with the list of persons from the catchment area. However, people from outside the area could visit for immunization and such persons could be vaccinated as outsiders. In this module, they could be registered as non-registered clients.

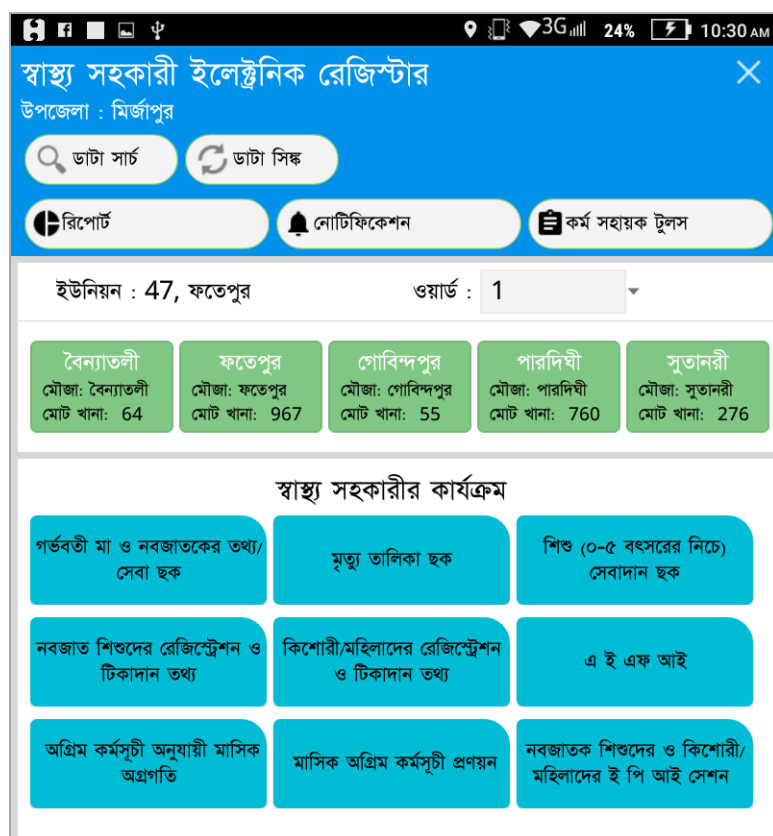
### 4.4 Enhancements in the New Version

Software tools require regular improvement through updates to maintain functionalities or to improve performance. A new version of HA eRegister was released on 24 December 2017, in which the user interface was changed, old features were improved, and new functionalities such as data search, Data Synchronization, Report, Notification, and Job Aid Tools were added. All these are located in the top panel of the screen.

The figure below shows the new interface: the top panel contains data search, data synchronization, report, notification, and job aid tools. The second panel shows geographical and catchment area details with villages. The number of households in each village is also presented. The village button leads to a list of all household and members. Main parts of the register are made available in the third panel (Figure 4-9).



Figure 4-9. Changed interface of HA eRegister



#### 4.4.1 Data Search

The improvement in data search includes, making it easily accessible (placing as the first button in the top panel), offering ability to include multiple parameters and adding an advance search with some predefined searches. The search can be performed on multiple criteria—such as name of patient, father, mother, husband, date of birth, sex, health ID, mobile number, NID, BRN and NRC number. Algorithms have been improved so the searches could be performed faster. The list of all pregnant women and children who are below the age of 5 years could be instantly accessed by the touch of the relevant button.

Figure 4-10: Data search was improved in new version



#### 4.4.2 Data Synchronization

Data synchronization was handled automatically in the earlier version. It has been brought in the main panel and can be done by the HA at any time. The scheduler would also be working on the background. The synchronization routine has been rewritten and queries have been optimized for which the synchronization is much faster. Data synchronization is vital for updating the server database. Data synchronization ensures consistency of data in both source and target storage. It also ensures continuous harmonization of data over time. The new data synchronization features the following: a streamlined execution process of the JSON data format, in both Client (Tab/Smart Phone) and Server (API); reduced interaction between Android System/API and the database to optimize the concurrency in a multiuser environment; and an optimized SQL query resulting in reduction in the execution time for the data search. It also solved some problems that appeared during synchronizing of data between device and server database in the earlier version. The major improvement in the synchronizing mechanism saves time, through faster and more-efficient execution.

#### 4.4.3 Reports

The report tab in the top panel is the result of some reorganization of the earlier screen. The reports tab from the top panel makes the following buttons available:

- Monthly report on healthcare activities
- EPI—Monthly Report of Immunization (children)
- Report on daily immunization and other activities (children)
- EPI—Monthly Report on immunization (adolescent girls/women)
- Report on Daily immunization and other activities (adolescent girls/women)

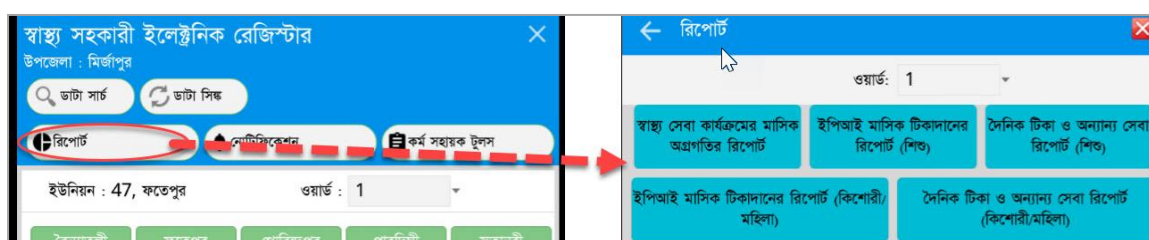


Figure 4-11. Generating reports on different activities

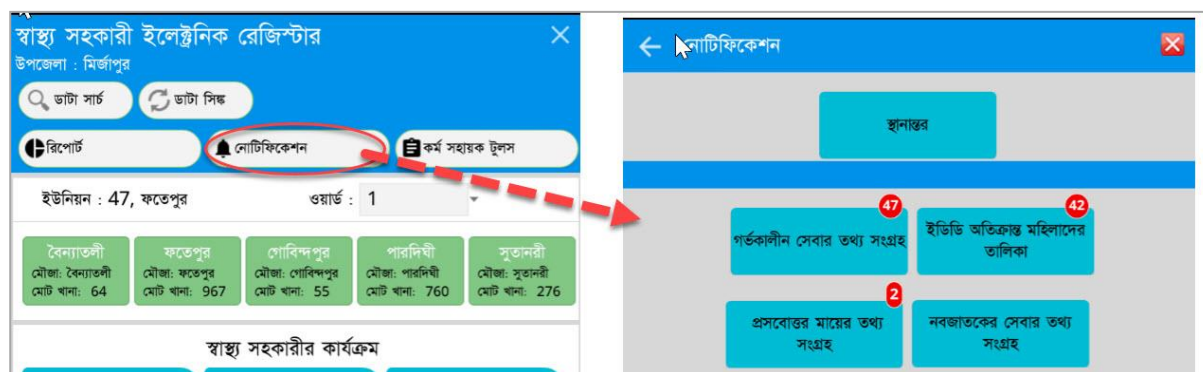
These reports could be generated based on different parameters including geographical areas.

#### 4.4.4 Notification

Notification is a new element added to the HA eRegister in the updated version. This shows how the benefit of new digital technology could be harnessed for improving performance of the CHWs. The notification feature is an example of a tool that could not have been possible in the paper register, because it requires processing of data based on location, specific clients, and at a given time. Notification can be thought of as a set of reminders to take actions related to pending work. The HAs are able to view the status of some key activities in their catchment area. There are five buttons related to the service the HA is providing:

- Migration: This button would generate alerts for updating the population register in the respective catchment area of the CHW. The HA would be notified when any migration has taken place in his or her respective catchment area. An alert would also occur if a person has migrated out of the catchment area of any other CHW. The updating action could be performed by invoking the PRS and could be verified later by respective CHWs.
- Data on pregnant women: The following image is of a notification reminding the HA that there are 47 women whose data should be updated by through home visits.
- List of women whose EDD have passed—implying that HAs need to collect data on these individuals and their outcomes (42 in Figure 4-11)
- Data on mother after delivery (for PNC services)
- Data on neonates' services

Figure 4-12. Notifications for collecting data on pregnant women, delivery, and ANC



#### 4.4.5 Job Aid Tools

The Job Aid tools button is similar in nature to the notification button. These tools are context sensitive and are based on the catchment area of the HA. The purpose of the tools is to guide the health worker to perform the work better. The job aid tools button brings a panel with the following options:

- Pregnant mothers whose EDD are within next seven days: This button generates a list that the HAs can use to easily plan household visits, collect data on the status of pregnant mothers, and advise the mothers based on their needs.
- List of pregnant mothers with risk: This button would show the list of all pregnant women identified as “with risk” in the catchment area of the HA.

- List of children earmarked for immunization in the next session.
- List of adolescents and women for immunization in the next session.

E-ticket: E-ticket is a separate web-based application that allows the CHWs to flag any issues and report them to technical people.

**Figure 4-13. Job aid tools**



#### 4.4.6 Others

Other functionalities have also been included in the new version, for example, allowing one to review the progress of an approved workplan or generate a list of all children ages 0–18 months for an upcoming EPI session.

Figure 4-14. Generation of list of registered children for the upcoming EPI session

The screenshot shows the eMIS interface for generating a list of registered children for an upcoming EPI session. The interface is in Bengali and includes a search bar, filters for location and ward, and a table of upcoming sessions.

**Health Worker Electronic Register (HWR) Interface:**

- Location: মির্জাপুর (Mirzapur)
- Ward: ১ (1)
- Upcoming Sessions:

  - বৈন্যাতলী (বৈন্যাতলী): মোট খানা: 64
  - ফতেপুর (ফতেপুর): মোট খানা: 967
  - গোবিন্দপুর (গোবিন্দপুর): মোট খানা: 55
  - পারদিঘী (পারদিঘী): মোট খানা: 760
  - সুতানরী (সুতানরী): মোট খানা: 276

**Upcoming EPI Sessions Table:**

শেষের তারিখ	সাব ব্লক	কেন্দ্রের নাম
03/11/2016	ক ২	মোঃ জুবায়ের (ফতেপুর)
07/11/2016	ক ১	উপ স্বাস্থ্য কেন্দ্র (ফতেপুর)
10/11/2016	খ ২	বালা বঙ্গ (ফতেপুর)
14/11/2016	খ ১	হায়দার মিয়া (ফতেপুর)
17/11/2016	গ ২	মোঃ দানোজ (পাড়দিঘী)
21/11/2016	গ ১	সি.সি (পাড়দিঘী)
24/11/2016	ঘ ২	হরিনাথ মন্ডল (ফতেপুর)

#### 4.5 Reports and Data

The HAs prepare reports daily, weekly, and monthly. They must allocate sufficient time to ensure the quality of reports. The eMIS tools make report generation easier. All reports relating to the EPI are included in the HA eRegister.

#### 4.6 Conclusions

The HAs provide essential public health services in rural communities. They also generate important health-related data about individuals in the community. Transitioning from paper to digital records enhances data management for HAs, supervisors, and decision makers, by reducing paperwork and making facilitating measurement of the performance of administrative units. Registration at the beginning of the year would no longer need to be a regular activity, once the area is covered by PRS; only occasional updating would be necessary.

The eMIS could also reduce printing and distribution costs. However, it would not be realistic to compare the price of manual and digital systems. The infrastructural cost of maintaining a digital system could be high initially. The improvement in business process would, however, ensure greater accountability, transparency, and utility of the health system.

## 5. UNION LEVEL FACILITY EREGISTER

The Union Level Facility eRegister contains three eRegisters, which have been developed for users mainly at union-level facilities: The Maternal and Newborn Care (MNC) eRegister, the FP eRegister, and the General Patient eRegister. These eRegisters are used by the FWV and the SACMO working at the UHFWC under the DGFP. The general patient eRegister is also used by the SACMOs who work under the DGHS at the union subcenters and rural dispensaries. Medical Officers when attending such facilities are also able to use these.

The providers at union-level facilities are responsible for providing family planning services: maternal, newborn and child care; reproductive health care, adolescent care, postabortion care, nutrition services, attending general patients, and for conducting satellite clinics at the union level.

### 5.1 Job Responsibilities of FWV

The job responsibilities of the FWV are described below:

#### 5.1.1 Participate in Planning and Organizing Activities

- Implement family planning, maternal and child care, reproductive health services, adolescent care, nutrition services, and health education programs in the FWC and support EPI.
- Conduct satellite clinics in the union and prepare reports.
- Participate in the long acting and permanent method camp at the FWC, under the guidance of the medical officer (maternal and child health-family planning) and upazila family planning officer.

#### 5.1.2 Mother and Child Care

- Register pregnant women in the union and ensure services to them.
- Collect a history of pregnant women, complete the care card for the pregnant mother, conduct a physical examination (including such information as height of uterus and heartbeat of fetus), determine fetal presentation in utero, and follow up regarding all regular services of pregnant women and new mothers.
- Identify at-risk pregnancies, refer them to MOs if necessary, and ensure their regular follow-up. Advise pregnant women on immunization and encourage them to undergo safe delivery in the clinic. Contact trained providers to advise pregnant women on health and nutrition during pregnancy, delivery, and after delivery.
- Take necessary actions for safe delivery of pregnant women.
- Examine mother and neonate after delivery to ensure good care of neonate, assist in breastfeeding, advise about family planning methods. Refer the mother to MOs in case of any complications.
- Ensure pregnant women have at least four ANCs and four PNCs in the FWC.
- Provide nutrition care to any child visiting the FWC, in accordance with the Nutrition Services Manual.

- Conduct a health education program on health and nutrition in the FWC and record all data in the Health Education Register.
- Take necessary actions for immunization of all mothers and children visiting the FWC.

### 5.1.3 Family Planning Services

- Motivate mothers visiting the clinic to adopt family planning methods. Advise visiting eligible couples to adopt an effective method based on assessment of their needs.
- Motivate and advise method users, especially the newlyweds and new mothers, after delivery.
- Select mothers properly for any method by following the manual and guidance and instructions of superior authorities.
- Record complications of method users in the register, and, if necessary, refer them to MOs and follow up regularly.
- Comprehensively assist the surgeon at the center's camps for permanent and long acting methods.
- Provide postoperative care to the patients to open stitches aseptically and provide follow-up. Refer complicated cases to MOs.
- Ensure postabortion care (PAC) is in accordance with manual and relevant circulars.
- Perform menstruation regulation procedure in accordance with the manual and relevant circulars. Record all menstrual regulation cases and assist in adopting family planning methods after menstrual regulation in the FWC.

### 5.1.4 Satellite Clinic

- Organize eight satellite clinics, if there are two FWVs or one FWA and one SACMO in the FWC, with support from the FPI and FWA; organize four clinics if there is only one FWV.

### 5.1.5 Reproductive Health

- Advise adolescent clients about reproductive health and provide necessary treatment.
- In case of reproductive tract infection and sexually transmitted diseases, advise clients on symptomatic treatment and HIV/AIDS.
- Advise the HIV/AIDS patients, and sexually transmitted disease patients, on subsequent infertility sterilization.
- Supply condoms to prevent sexually transmitted diseases.

### 5.1.6 Other Services

- Conduct primary healthcare services in the clinic.
- Refer those coming for treatment for infertility to the appropriate hospital.
- Advise and provide medical services to geriatric patients to encourage a healthy lifestyle.
- Ensure normal services are provided to the disabled.

### 5.1.7 Financial Management, Data Collection, and Preparation of Reports

- Record all financial transactions. Prepare a report on monthly activities, under supervision of MO (FW) and organize family planning services, maternal and child care, reproductive health, adolescent care, primary healthcare, and nutrition services in the FWC and satellite clinic.
- Ensure accountability, by participating regularly in upazila and union level meetings.
- Perform other duties as instructed by the superior authorities.

## 5.2 Business Process Analysis

A total of 24 registers were found in the UHFWC, where the FWV and SACMO perform their responsibilities. The following have been converted into electronic registers:

- Contraceptive Pill Register
- Condom Register
- IUD Follow-up Register
- Injectable Register
- Injectable Forward Register
- ANC Register (Combined)<sup>3</sup>
- Delivery Register (Combined)
- PNC Register (Combined)
- General Patient Register
- Child Register (0–5 Years)
- Birth Register
- Vaccination Register
- Health Education Register
- Satellite Clinic Register
- Stock Register-MCH

Eight registers not tied with any services were not converted to the eMIS: Staff Attendance Register, Visit Register, Movement Register, Furniture/Other Logistics Register, Stock Register, Stock Register-Satellite

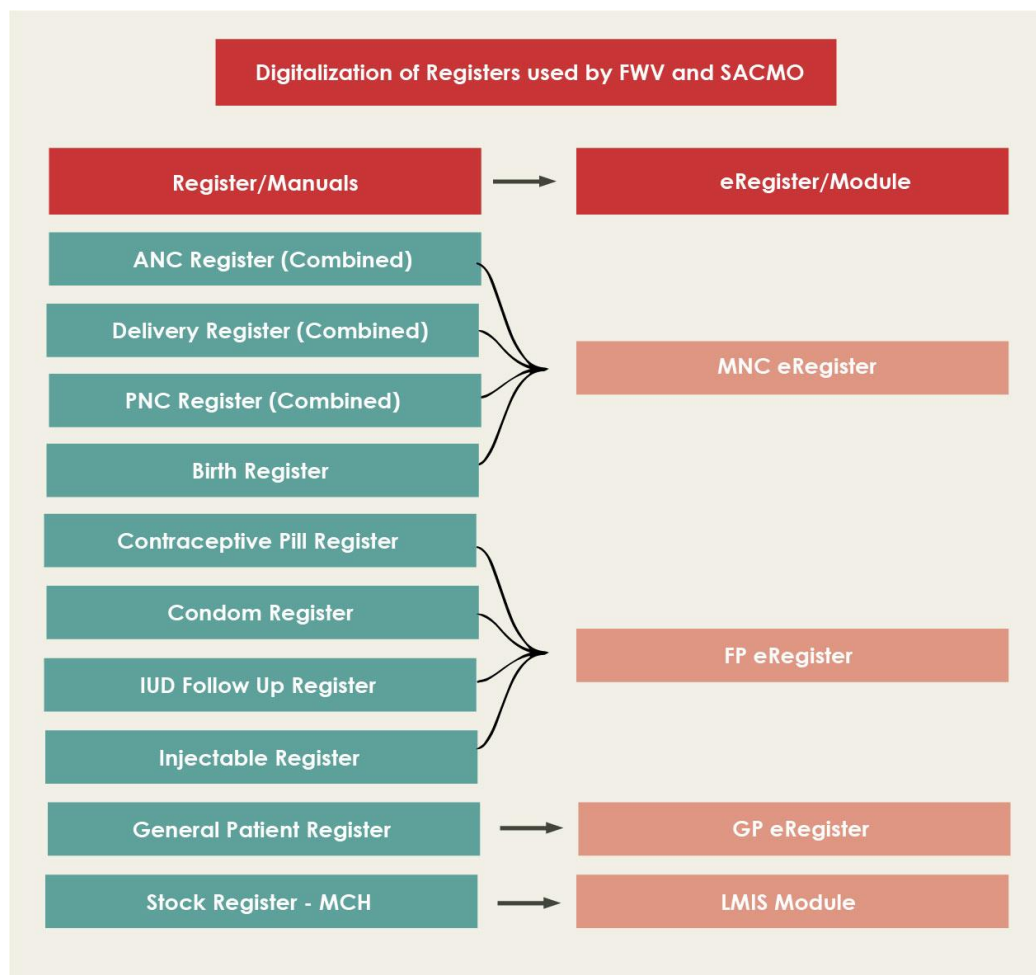
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<sup>3</sup> ANC, Delivery and PNC Registers were already combined into an MNH Register, though not implemented in all districts.



Clinic, Unusable/Date Expired Commodities Register, and Inventory Control Register. There is another register for menstrual regulation procedures, which has not yet been automated under the eMIS, though there is demand from the DGFP.

**Figure 5-1. Digitalization of registers used by FWV and SACMO**



### 5.3 Functionalities of Union Level Facility eRegister

This application is used at community level facilities, such as the union health, family welfare center (UHFWC or FWC) and satellite clinic. The FWV and SACMO can use relevant modules to provide services. After logging in on the tablet, the user is prompted to select a place for providing services, which could be either the UHFWC or a satellite clinic. When any service seeker visits the clinic, the provider finds out whether the service seeker is registered through the PRS. If the service seeker can produce the HID card or mention the HID, the provider can easily retrieve the record. If not, the provider performs a search based on one or more parameters to find the record of the service seeker. A person who has not been registered in the PRS would be registered as an NRC and be given a temporary NRC ID. The functionalities of each eRegister under the Union Level Facility eRegister is described in the following section.

## 5.4 MNC eRegister

The MNC eRegisters is used for collecting data or providing services to women during pregnancy, delivery, and after delivery. The newborns are also served by the providers.

### 5.4.1 Pregnant Care/Pregnancy Information

When a woman visits the FWC for pregnancy services, the FWV captures pregnancy-related data, such as the following:

- LMP (the system would then generate EDD)
- Parity/para or total delivery (if pregnancy was for more than seven months)
- Gravida (for all pregnancies regardless of outcome)
- Number of children alive and age of youngest
- Height
- Number of TTs administered

Figure 5-2. Collecting data on pregnant woman through app interface

The screenshot displays the MNC eRegister app interface for data collection on a pregnant woman. The interface is divided into several sections:

- Top Navigation:** Includes tabs for 'মা ও নবজাতকের সেবা' (Maternal and Newborn Care), 'পরিবার পরিকল্পনা সেবা' (Family Planning Services), 'সাধারণ রোগী সেবা' (General Patient Services), and 'মৃত্যু' (Death).
- Service Selection:** A dropdown menu shows 'গর্ভকালীন সেবা' (Pregnancy Care) selected.
- Registration Details:**
  - \*শেষ মাসিকের তারিখ: dd/mm/yyyy (Last Menstrual Period Date)
  - \*প্রসবের সম্ভাব্য তারিখ: dd/mm/yyyy \*প্যারা: [ ] \*গ্রাভিডা: [ ] (Estimated Delivery Date, Parity, Gravida)
  - \*জীবিত সন্তান সংখ্যা: ছেলে: [ ] মেয়ে: [ ] (Number of Living Children: Male, Female)
  - \*শেষ সন্তানের বয়স: [ ] বছর [ ] মাস (Age of Last Child: Years, Months)
  - উচ্চতা: [ ] ফুট [ ] ইঞ্চি রক্তের গ্রুপ: [ ] (Height: Feet, Inches, Blood Group)
  - টিটি টিকা: [ ] ১ (TT Vaccination)
- Pregnancy History Checklist:**
  - পূর্ববর্তী গর্ভের ইতিহাস: (Previous Pregnancy History)
  - রক্তপাত (প্রসবপূর্ব অথবা প্রসবোত্তর)  বিলম্বিত প্রসব
  - বাধাগ্রস্ত প্রসব  ৪৮ ঘন্টার মধ্যে নবজাতক মরে যাওয়া
  - মৃত সন্তান প্রসব করা  গর্ভফুল না পড়া
  - পা বা সমস্ত শরীর বেশি রক্ত ফোলা (ইডিমা)
  - একল্যাম্পসিয়া বা খিঁচুনিহ বার বার অজ্ঞান হওয়া
  - সিজারিয়ান অপারেশন বা যন্ত্রের মাধ্যমে (ফরসেফ/ভেকুয়াম) প্রসব
- Buttons:** 'ADD NEW PREGNANCY INFO' and 'EDIT' buttons are visible.
- Bottom Navigation:** Includes tabs for 'গর্ভকালীন সেবা (ANC)', 'প্রসবকালীন সেবা (DELIVERY)', 'প্রসবোত্তর সেবা (PNC)', and 'গর্ভপাত পরবর্তী সেবা' (Postpartum Care).

Data relating to pregnancy history are also collected to help the provider understand whether the service seeker is at-risk for the following:

- Hemorrhage during any prior pregnancy—or other complications such as protracted or obstructed labor
- Placenta remaining inside the uterus
- Stillbirth, neonate dying within 48 hours of birth, edema, and eclampsia or seizures
- Caesarean section or delivery with the help of a machine

Medical information is applied in assisting the provider. The color of information in the tablet turns red to visually indicate that the pregnancy is at-risk.

### 5.4.2 Antenatal Care

Services screens are provided after the collection of initial data. The services include ANC, delivery, PNC, and care following abortion.

The recommended number of ANCs is four, though a pregnant woman may opt to have four or more. The FWV records the visits in sequential number. The woman would first be asked about the place where she had received services, such as medical college hospital, district sadar hospital, maternal and child hospital, upazila health complex, UHFWC, NGO-run hospital/clinic or FWC, or private clinic/hospital. Any of these could be selected from a dropdown menu. The FWV would input the date of providing services. She would also perform the following activities:

- Measure the blood pressure, check weight, and examine whether edema is present.
- Record the height of uterus and the heart rate of the fetus.
- Note the fetal position of the baby. If the head is downwards, the situation is normal; all other positions are abnormal.

The module guides the FWV in collection of other data such as the following: danger signs/complications; difficulties; disease; management; advice; referral; and place of referral, with reasons for referral.

If any signs of danger are observed, they would be recorded during the ANC visit. The danger signs are the following: edema during pregnancy, severe headache, blurry eyesight, fever for more than three days, stinky discharge, convulsions during pregnancy, and hemorrhage. These are available from a dropdown menu, and the provider is required to check the appropriate box. The provider is also able to record any incidence of disease observed during the visit.

The FWV records what has been administered during the visit. For example, if a pregnant woman is suffering from eclampsia, she could be given Tab. Metronidazole 400 mg, Tab. Chlorophenol, or Inj. MgSO<sub>4</sub>.

The FWV could advise the pregnant woman as follows:

- Come to the facility for at least four ANC visits.
- Increase food intake by at least one fistful of rice and one spoonful of pulses.

- Increase water intake or drink at least eight glasses of water in a day.
- Take iron-rich food, vegetables, eggs, and IFA tablets to prevent anemia.
- Do not do any heavy work.
- Get plenty of rest.

The FWV might refer the pregnant woman to a higher facility and record the reasons in the register. All data would be automatically updated at each ANC, which can be retrieved later for examination.

### 5.4.3 Delivery Services

The following data are collected on delivery:

- Whether the delivery was normal or Caesarean section, with date and time of delivery.
- Name of the place where delivery took place, such as the following: medical college hospital, district hospital/government hospital, maternal and childcare center, UHC, UHFWC, community clinic, NGO clinic/hospital. The FWV would then record the date of the visit and indicate the ward number and bed.
- Whether correct procedure was followed for active management of the third stage of labor—such as administration of an uterotonic within one minute of delivery, delivery of the placenta by controlled cord traction, and uterine massage.
- Whether Oxytocin or Misoprostol was administered. (Oxytocin must be administered within one minute of the delivery, if not, Misoprostol can be given.)
- Whether episiotomy (a surgical cut in the perineum made just before delivery to enlarge the vaginal opening) was done.
- Name and designation of the person who conducted delivery, which could be a trained doctor, nurse, SACMO, FWV, paramedic, CSBA, or traditional birth attendant. The provider could input this information directly.

The FWV would record any complications relating to delivery (such as excessive hemorrhage, placenta retained, severe headache, blurry vision, protracted labor or delivery pain more than 12 hours, obstructed labor, breech position, or convulsions).

Figure 5-3. Data on delivery and neonate

### প্রসব সংক্রান্ত তথ্য

প্রসবের স্থান\*:  প্রসবের ধরণ\*:

প্রসবের তারিখ\*:  সময়:  :  PM

সেবাকেন্দ্রের নাম:

আগমনের তারিখ:

প্রসবের তৃতীয় ধাপের সক্রিয় ব্যবস্থাপনায় (AMTSL) যা অনুসরণ করা হয়েছে:

প্রসবের ১ মিনিটের মধ্যে অক্সিটোসিন প্রয়োগ

গর্ভফুল প্রসবের জন্য নাভিরজুতে নিয়ন্ত্রিত টান

জরায়ু ম্যাসাজ

ইপিসিওটমি করা হয়েছে?  হ্যাঁ  না

অক্সিটোসিন না থাকলে মিসোপ্রোস্টল খাওয়ানো হয়েছে?  হ্যাঁ  না

আমি প্রসব সম্পাদনকারী

প্রসব সম্পাদনকারীর নাম:

পদবী:

প্রসব সংক্রান্ত জটিলতা:

বিলম্বিত প্রসব  অতিরিক্ত রক্তক্ষরণ  বাধাগ্রস্ত প্রসব

গর্ভফুল না পড়া  প্রচল্ড মাথা ব্যাথা  চোখে ঝাপসা দেখা

মাথা ছাড়া অন্য কোন অঙ্গ বের হওয়া  খিটুনি  অন্যান্য

চিকিৎসা:

### নবজাতক সংক্রান্ত তথ্য

সন্তান: ১

ছেলে \*  মেয়ে \*

১ মিনিটের মধ্যে মোছানো হয়েছে:  হ্যাঁ  না

রিসাসসিটেশন:  হ্যাঁ  না

জন্ম ওজন (কেজি):

নাড়ি কাটার পর নাড়িতে ৭.১% ক্লোরহেক্সিডিন দ্রবন ব্যবহার করা হয়েছে:

হ্যাঁ  না

নাড়ি কাটার পর মায়ের দ্বকে নবজাতককে লাগানো হয়েছে:

হ্যাঁ  না

জন্মের ১ ঘন্টার মধ্যে বুকের দুধ খাওয়ানো হয়েছে:

হ্যাঁ  না

রেফার

SAVE

Any treatment and advice given would be recorded. If the patient was referred to a higher-level facility, reasons would be mentioned.

On selecting the newborn information button, the FWV would be able to collect data on the neonate, as follows in the next section.

#### 5.4.4 Data on Neonate

Data relating to the neonate are collected after collecting data on the mother. This e-module allows collection of the following detailed information on the neonate:

- Sex of the neonate, including twins.
- Whether the baby was wiped within one minute.
- Whether after cutting the cord 7.1 percent chlorohexidine was applied to the umbilical stump.
- Whether the neonate was placed on the mother's breast after cutting the umbilical cord.
- Whether the baby was breastfed within one hour of delivery.
- If referral was needed, the provider recorded the name of the referral location and reasons for referral (such as premature birth or low birth weight), weight at birth (if known), and whether resuscitation was necessary.

There are options for collecting data on stillbirth (intact or macerated).

### 5.4.5 Postnatal Care

The postnatal care information is now accessed from the eRegister. This module is for both the mother and the neonate. Postnatal care can be recorded up to four times. The FWV records the following:

- Number of visits and date of providing service.
- If the mother is facing any problem—measure temperature with thermometer, measure blood pressure, and check for signs for anemia.
- Hemoglobin count in percentage, if blood examination has been done.
- Signs of anemia with +, ++, +++ (as low medium and high).
- Presence of edema indicating with +, ++, +++.
- Involution of uterus (parallel to navel, 2–3 inches down navel).
- The FWV would examine the breast and indicate whether normal or swollen.
- The provider would find out whether the patient is having smelly discharges.

It is necessary to advise the woman about family planning methods to make her aware that if no method is used, she could become pregnant very soon, even without having her period. Some people believe that breastfeeding acts as a birth control method, but it is not entirely effective, and unwanted pregnancies do occur following delivery. The FWV would record if she advised the woman on any method.

The FWV would record if there is any danger sign following delivery. She can select from a dropdown menu of specific diseases. She would also prescribe medicines from a dropdown list.

The neonate would be attended next. If there is more than one neonate, both would be registered with date. Other data would also be collected, such as number of visits, date of providing service, temperature of neonate, and the weight. Breaths would be assessed (in minutes). The FWV would note if there are any danger signs and whether the child is breastfed. The date of receiving service, any difficulties (from the dropdown list), temperature, weight, breathing, danger signs, exclusive breastfeeding, diseases, and treatment given would also be recorded. The saved data could be edited or modified as needed.

### 5.4.6 Postabortion Care

Any woman visiting the center for services following abortion would be checked for registration. If she is already registered her data can be retrieved from the database using standard search criteria and updated as appropriate. When the FWV touches the PAC button a screen appears to collect data on abortion. The FWV would note the location of the abortion and the date. If the woman was not registered, her information would be entered into the database for current and future reference and services.

## 5.5 FP eRegister

The second part of the Union Level Facility eRegister is the FP eRegister, which is used for providing family planning services.

### 5.5.1 Selection of Effective Method for Family Planning

The service seeker may visit the clinic for two reasons. First, a new user may like to know which method is suitable for her. Second, someone may visit to get supplies (such as pills, condoms, or injectable

contraceptives), to get information about side effects and complications, or to change or discontinue a method. This module allows the FWV to collect some data and, after physical examination, suggest a suitable method to the client.

This module collects data on: date of marriage, number of living children, age of last born child, date of last delivery (if the client is registered, such data would be populated automatically), and date of last menstruation.

The provider ascertains whether the client is pregnant. If the client is uncertain, the provider would ask routine questions and conduct a physical exam. If the visit is taking place within four weeks of the last visit, then the system initially flags her as not pregnant. The provider would ask the client whether her period is regular or not, including the duration of her period in days, whether she has pains during her period. Finally, if the client is on any method, that is recorded.

On the next step or screen, the system would guide the FWV to select a method. She would have explored further by asking a series of questions.

**Figure 5-4. Family planning service**

According to the manual, providers are supposed to ask the following questions and use the electronic device where necessary to record responses:

- Do you have irregular periods?
- Do you bleed during a period or after sex?
- Do you bleed between two periods or after having sex?
- Do you suffer from excruciating pains during your period and have to refrain from work?
- Do you think you are carrying and you had your last period more than 4 weeks ago?
- Do you suffer from migraine and have blurry vision?

- Is the age of your youngest child less than six weeks?
- If the age of your youngest child is more than six weeks but less than six months, is he or she exclusively breastfed?
- Do you suffer from high blood pressure? (records are based on examination with machine)
- Are you suffering from uncontrolled diabetes?
- Are you suffering from asthma?
- Are the veins in your leg swollen and do you feel pain?
- Is there any lump in your breast?
- Do you feel pain in your chest or get tired after a little work?
- Are you suffering from acute anemia (hemoglobin less than 7 gm/dl)?
- Are you suffering from jaundice (if color of the eyes or skin yellowish)?
- Are you older than 35 and do you smoke or eat zarda, tobacco leaf? (not applicable for anyone under 35).
- Are you taking medicine for TB (rifampicin) or for epilepsy (phenytoin)?
- Do you have severe pain in the abdomen and stinky discharge or pus?
- Have you had the experience of ectopic pregnancy (tubal pregnancy in which the embryo attaches outside the uterus)?
- Do you feel that your uterus has come down or out of your body?
- Do you have only one child?
- Do you have two children?
- Are you suffering from acute skin diseases in the abdominal region?
- Were you operated upon in your abdomen?

The FWV has to observe whether the client is mentally stable. The screen would guide her to conduct physical examinations, for example to record blood pressure. Some examinations like anemia, jaundice, blood pressure, and breast are mandatory. Physical examination would entail vaginal wall, erosion, polyp, bleeding on touch of uterus, size of uterus, position of uterus (anteverted/retroverted), movement of uterus (can be moved/cannot be moved), pain, and fornix.

The system would then present the results of physical and laboratory examinations. Afterwards, the provider would be presented with a set of suggestions such as: an implant, oral pills (two brands based on availability in the store), and condoms. The provider is required to discuss options with the client and explain benefits and side effects.



Figure 5-5. Screening for selecting a method

<p>ক্লিনিং প্রিভিউ</p> <p>প্রশ্নমালাঃ</p> <hr/> <p>শারীরিক, পিভি ও ল্যাবরেটরী পরীক্ষাঃ</p> <hr/> <p>- রক্তস্বল্পতাঃ নাই          - জন্ডিসঃ নাই          - রক্তচাপঃ 110/70          - স্তন পরীক্ষাঃ স্বাভাবিক</p> <p>**সস্তান নেই (নালিপ্যারাস)</p>
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The system would then present a screen to help the provider explain various methods (Figure 5-7).

Figure 5-6. Counselling on methods

<p>পরিবার পরিকল্পনা পদ্ধতি ভিত্তিক কাউন্সেলিং</p>	
<p><b>ইমপ্ল্যান্ট</b></p> <p>গ্রহীতাকে ইমপ্ল্যান্ট সম্পর্কে সঠিক এবং বিস্তারিত তথ্য প্রদান করা হয়েছে? <input checked="" type="radio"/> হ্যাঁ</p> <p>ইমপ্ল্যান্ট সম্পর্কে গ্রহীতার কোন ভয়-ভীতি বা ভুল ধারণা থাকলে তার উপর বিস্তারিত আলোচনার মাধ্যমে সেই ভয় বা ভীতি দূর করা হয়েছে? <input checked="" type="radio"/> হ্যাঁ</p> <p>গ্রহীতাকে ইমপ্ল্যান্টের কার্যকারিতা, পার্শ্ব-প্রতিক্রিয়া, সুবিধা-অসুবিধা বুঝিয়ে বলা হয়েছে? <input checked="" type="radio"/> হ্যাঁ</p>	
<p><b>খাবার বড়ি (আপন)</b></p> <p>গ্রহীতাকে খাবার বড়ির কার্যকারিতা, পার্শ্ব-প্রতিক্রিয়া, সুবিধা-অসুবিধা বুঝিয়ে বলা হয়েছে? <input checked="" type="radio"/> হ্যাঁ</p>	
<p><b>খাবার বড়ি (সুখী)</b></p> <p>গ্রহীতাকে খাবার বড়ির কার্যকারিতা, পার্শ্ব-প্রতিক্রিয়া, সুবিধা-অসুবিধা বুঝিয়ে বলা হয়েছে? <input checked="" type="radio"/> হ্যাঁ</p>	
<p style="text-align: center;">NEXT</p>	

The opinion of the client is sought on the method before selecting the appropriate field. If a client wishes to change the method, the provider uses the system for guidance. A male client may be advised about a permanent method based on data collected. If the method of choice is not available from the center, the client would be referred to an appropriate facility. For example, for implant the patient may be referred to a UHC, MCWC, or district hospital.

## 5.6 General Patient eRegister

The general patient eRegister is the 3<sup>rd</sup> part of Union Level Facility eRegister. This eRegister is used by SACMOs at the UHFWCs or union subcenters or rural dispensaries.

Access routines and patient identification or search procedures are similar for both FWVs and SACMOs. The SACMOs provide services from the UHFWC, such as maternal and child care, family planning services, and general patient care. They also record cases of death. The SACMOs input data relating to the patient, such as, the date of visit, date of providing service, difficulties observed, weight (in kg), anemia, hemoglobin, jaundice, edema, pulse rate, temperature, blood pressure, lungs, liver, spleen, tonsil, other diseases, treatment, advice, and referral.

Figure 5-7. Providing service to a general patient

The screenshot displays the 'সাধারণ রোগী সেবার ইতিহাস' (General Patient Service History) form. The form includes fields for patient registration number, service date, and various clinical parameters. To the right, a list of symptoms is shown with checkboxes for selection.

রেজি: নম্বর:	সাধারণ রোগী সেবার তথ্য
পরিদর্শন: ১	
সেবাগ্রহণের তারিখ:	dd/mm/yyyy
অসুবিধা/উপসর্গ:	
দৈহিক পরীক্ষা	
ওজন (কেজি):	
রক্তস্বল্পতা:	
হিমোগ্লোবিন:	%
জন্ডিস:	
ইডিমা:	
নাড়ির গতি:	
তাপমাত্রা:	°ফা
রক্তচাপ (মিঃ মিঃ মার্কারি):	/
ফুসফুস :	

জ্বর	<input type="checkbox"/>
অনিদ্রা	<input type="checkbox"/>
ডায়রিয়া	<input type="checkbox"/>
আমশয়	<input type="checkbox"/>
কোষ্ঠকাঠিন্য	<input type="checkbox"/>
বমি	<input type="checkbox"/>
থাওয়ার অরুচি	<input type="checkbox"/>
দুর্বলতা	<input type="checkbox"/>
শ্বাসকষ্ট	<input type="checkbox"/>
হাপানি	<input type="checkbox"/>
বুক ধড়ফড় করা	<input type="checkbox"/>
সর্দি	<input type="checkbox"/>
কাশি	<input type="checkbox"/>
ম্যাডি দিষে বকু পড়া	<input type="checkbox"/>

To assist the provider, a list of symptoms is generated, and selections made from a dropdown box, as follows:

- Fever
- Insomnia
- Diarrhea
- Constipation
- Vomiting
- Loss of appetite
- Weakness
- Breathing problem
- Asthma
- Palpitation of heart
- Cold
- Coughs
- Bleeding from gums
- Cut or wound
- Burn
- Bleeding from nose
- Pain in the ear
- Pus from the ears
- Watery discharge from ears
- Loss of hearing
- Pressure and stuffiness in ears
- Itching
- Skin lesion
- Red eyes
- Conjunctivitis
- Pain in the eyes
- Watery eyes
- Discharge from eyes
- Headache
- Stomach pain
- Upper stomach pain
- Lower abdominal pain
- Back pain
- Muscle pain
- Chest pain
- Neck pain
- Throat pain
- Broken bone
- Sprain
- Drowning
- Poisoning
- Snake bite
- Dog bite
- Discharges from urinary tract
- Difficulties in urinating
- Pain or burning sensation when urinating
- Urinating often
- Discharges from vagina
- Smelly discharge
- Itching in the vagina
- Pain during intercourse
- Wound in reproductive organ
- Pain in the testicles
- Swollen testicles
- Swollen lymph nodes
- Abnormal growth in reproductive organs
- Skin rash
- Erectile dysfunction
- Pus from renal tract
- Pain around rectum
- Burning in chest
- Accidental bleeding
- Pain in the joints
- Swelling in joints
- Pain in the waist
- Wound from injury
- Nausea
- Insect bite

The provider physically examines the patient and enters observations in the relevant fields: weight in kilograms, anemia (slight, average, and severe), hemoglobin count, if available. The provider also notes symptoms of jaundice (on examination of color of the eyes). Edema is checked and recorded. Pulse is measured and recorded. The temperature is measured with the thermometer and recorded. Blood pressure is measured with the machine and recorded. The provider records the condition of lungs (normal/not normal), liver (normal/not normal), and tonsils (normal/not normal). Other items may also be entered.

On evaluation of symptoms, the provider selects the disease that seems applicable to the patient. A list of diseases is available in the app. On the list are fever due to virus, TB, malaria, dengue, typhoid, pneumonia, diarrhea, jaundice, heart disease, gum infection, dental carries, asthma, peptic ulcer, urinary tract infection, appendicitis, dyspepsia, arthritis, rheumatic fever, scabies, itching, foreign bodies in the eye, conjunctivitis, tonsillitis, reproductive tract infection, sexually transmitted infection, diabetes, heart attack, stroke, and arsenicosis. On identification of the disease, the provider offers medical advice. If the provider administers any medicine, that is recorded. A list of medicines is available from which multiple selections can be made, as follows:

- Cap. Amoxicillin 250 mg
- Syp. Amoxicillin
- Amoxicillin Pediatric Drop
- Cap. Cloxacillin 500 mg
- Tab. Ciprofloxacin 500 mg
- Cap. Doxycycline 100 mg
- Tab. Co-trimoxazole 120 mg
- Tab. Co-trimoxazole 480 mg
- Syp. Co-trimoxazole
- Tab. Phenoxymethyl penicillin 250 mg
- Tab. Phenoxymethyl penicillin 500 mg
- Tab. Azithromycin 1 gm
- Tab. Azithromycin 500 mg
- Tab. Erythromycin 500 mg
- Cap. Tetracycline 500 mg
- Tab. Cefixime 200 mg
- Tab. Cefixime 400 mg
- Inj. Ceftriaxone 250 mg
- Inj. Spectinomycin 2 gm
- Inj. Benzathine Penicillin G 2.4 million units
- Tab. Acyclovir 200 mg
- Tab. Acyclovir 400 mg
- Tab. Valaciclovir 1 gm
- Tab. Famciclovir 250 mg
- Tab. Metronidazole 400 mg
- Tab. Salbutamol 4mg
- Syp. Salbutamol
- Tab. Aminophylline 100 mg
- Tab. Aminophylline 175 mg
- Tab. Aminophylline 350 mg
- Tab. Theophylline 200 mg
- Tab. Theophylline 300 mg
- Syp. Theophylline
- Tab. Dicycloverine Hcl 10 mg
- Tab. Hyoscine N Butylbromide 10 mg
- Tab. Hyoscine N Butylbromide 20 mg
- Tab. Vitamin B Complex
- Tab. Mebendazole 100 mg
- Syp. Mebendazole 100 mg
- Tab. Levamisole 40 mg
- Syp. Levamisole
- Tab. Albendazole 400 mg
- Tab. Antacid
- Tab. Ranitidine 150 mg
- Tab. Paracetamol 500 mg
- Syp. Paracetamol
- Tab. Aspirin 75 mg
- Tab. Aspirin 100 mg
- Tab. Diclofenac 50 mg
- Tab. Diclofenac 100 mg
- Tab. Ibuprofen 400 mg
- Tab. Diazepam 5 mg
- Tab. Ferus Fumarate 200 mg + Folic Acid 0.20 mg
- Tab. Chlorpheniramine Maleate 4 mg
- Oint. Neomycin Sulphate 5mg + Bacitracin Zinc 500 IU
- Chloramphenicol Eye Oint
- Chloramphenicol Ear Drop

- Lotion Benzyl Benzoate 25%
- Oint. Benzoic & Salicylic Acid
- Lotion Gentian Violet 2%
- Tab. Fluconazole 50 mg
- Tab. Fluconazole 150 mg
- Cap. Fluconazole 50 mg
- Cap. Fluconazole 150 mg
- Tab. Myconazole
- Tab. Clotrimazole
- Clotrimazole Cream
- Tab. Secnidazole
- Tab. Tinidazole
- Tab. Penicillin V 250 mg
- Tab. Calcium Lactate 300 mg
- Tab. Zinc
- ORS
- Cap. Vitamin A 2 lac IU

Figure 5-8. Advice given to a patient

	<input type="checkbox"/>
বেশী পরিমাণে পানি খান (কম পক্ষে ৮ গ্লাস)	<input type="checkbox"/>
বারবার অল্প করে খান , তৈলাক্ত ও মসলা জাতীয় খাবার এবং ধূমপানে বিরত থাকুন	<input type="checkbox"/>
তিন বেলা ভারী খাবারের পরিবর্তে অল্প অল্প করে বারেবারে খান	<input type="checkbox"/>
(কোষ্ঠকাঠিন্য হলে) প্রচুর পরিমাণ পানি, শাকসবজি, হালকা গরম দুধ এবং ইসুপগুলের ভূষি খান	<input type="checkbox"/>
Cancel	Submit

In addition, the provider can add advice from a list, as follows:

- Take plenty of water (at least 8 glasses).
- Eat small amounts of food at greater frequencies.
- Eat less oily and spicy food.
- Stop smoking.
- Instead of taking three heavy meals, eat many times in smaller quantities.
- Drink plenty of water in case of constipation.
- Consume vegetables, warm milk, and isob gul (psyllium husk) with water.

The patient may be referred to a higher facility; the following options can be selected from a dropdown box: medical college hospital, district sadar hospital, maternal and child hospital, upazila health complex, NGO-run hospital/clinic/center, private clinic/hospital. The provider is required to input the reasons for referral, selecting from a range of options—e.g., high blood pressure, hand and feet swelling, asthma, palpitation of chest, and bleeding in gums. The provider confirms or discards the records; if saved, the data can be retrieved later.

## 5.7 Reports and Data

The activities in the UHFWC are reported monthly through MIS Form 3. This report is generated automatically. Providers can also generate reports at any time to review their own performance.

## 5.8 Conclusions

Providers working at the community level facilities can use the Union Level Facility eRegister for performing routine tasks. All their activities are saved regularly in the server and can be used to monitor performance at the local level and to devise strategies based on local situations.

## 6. COMMUNITY SKILLED BIRTH ATTENDANT REGISTER

This eRegister has been designed for use by trained CSBAs. The community skilled birth attendant (CSBA) is not a specific position in the organizational hierarchy of either DGFP or DGHS. The female FWA, HA, CHCP (belonging to community clinic) and community workers from NGOs who have received CSBA training are assigned to work as CSBAs in the rural areas.

### 6.1 Job Description of CSBA

The CSBAs are expected to be able to perform the following tasks:

#### 6.1.1 Services before Delivery

- Advise women and other members of the family on the importance of vaccination during pregnancy, nutrition, and safe delivery.

#### 6.1.2 Identify Problems during Pregnancy and during and after Delivery

- Miscarriage
- Obstructed labor
- Abnormal position
- Bleeding following delivery and management
- Infection following delivery and management

#### 6.1.3 Antenatal Care

- Advise women on antenatal care services and visit the satellite clinic/FWC/UHC/MCWC to provide such services.
- Identify at-risk pregnant women, help them visit a satellite clinic or FWV at UH&FWC, and, if necessary, refer them to MOs.
- Refer the normal pregnant women to trained person/FWC for safe delivery of child.
- Conduct health education sessions.
- Conduct normal delivery as needed.
- Visit mothers at home after delivery, to keep regular contact with them, and to advise them to visit satellite clinic/UH&FWC/UHC/MCWC for normal delivery.
- Conduct delivery for women who are not at-risk.

#### 6.1.4 Postnatal Care

- Advise the mother to feed the neonate colostrum within one hour of birth and to feed only breast milk up to six months of age. Advise on complementary food in addition to breast milk after six months of age.
- Visit the houses of the mothers after delivery to keep regular contact and to advise them to visit satellite clinic/FWC/UHC/MCWC.

### 6.1.5 Identify Emergency/Serious Problems during and after Delivery

- Abortion
- Obstructed labor
- Abnormal position
- Bleeding following delivery and management
- Infection following delivery and management

#### 6.1.5.1 Immediate Care of Neonate

- Identify and manage smaller problems of the neonate.
- Select method, counseling, and referral on prevention of HIV/AIDS.

## 6.2 Business Process of Community Skilled Birth Attendants

Births taking place in the facilities have been historically low in Bangladesh. As many deliveries occur in the home setting, with traditional birth attendants, the government developed plans to increase the number of skilled birth attendants in rural areas. This program aimed to increase skilled birth attendants at the community level and improve the referral process for emergency maternal delivery services. The FWAs belonging to DGFP (who are all female) and female HAs belonging to DGHS were given special training so that they can perform as CSBAs. In addition, female CHCPs and workers from NGOs have also received such training. They were trained to identify complications before or after delivery and to assist in delivery. They undertake domiciliary visits to provide services and are also present in satellite clinics.

The CSBA is not a separate position in the DGHS or DGFP, though it is recognized as a separate type of work. The CSBAs use the CSBA Register to record their activities. The CSBA Register is based on the MNC Register used by FWVs in the facilities.

Like other eMIS apps, the CSBA eRegister is accessible to authorized providers or those recognized as CSBAs either by the DGFP or DGHS. The CSBA eRegister is the same as the MNC eRegister, which has been covered in the chapter, Union Level Facility eRegister.

## 6.3 Reports

The CSBAs are required to submit a monthly report, which is generated through the application interface.

## 6.4 Conclusions

The CSBAs play an important role in ensuring safe delivery. The CSBA eRegister can assist the government in reviewing their performance to improve service delivery in home settings, where appropriate.



## 7. FAMILY PLANNING INSPECTOR ESUPERVISION SYSTEM

Family Planning Inspectors based in the unions supervise the work of FWAs. There is one FPI position per union, and each FPI supervises the work of six or more FWAs. The FPIs are accountable to the UFPO in administrative terms and to the assistant UFPO for their regular activities.

### 7.1 Detailed Responsibilities of FPIs

The detailed job description of the FPI, as formulated by the DGFP, is presented here.

#### 7.1.1 Planning and Organizing Activities

- Prepare a work plan for carrying out activities for maternal and child health, reproductive health, family planning, and nutrition services, using the FWA Register in accordance with the guidance provided by the MO/UFPO.
- Designate a location in the union for conducting and preparing schedules for the satellite clinic.
- Finalize the schedule and conduct family planning camp at union level following instructions by the MO (MCH-FP) or MO (family welfare) and UFPO.
- Attend fortnightly meetings of CHWs in the UHFWC and serve as member-secretary to the Union Family Planning Committee.
- Assist the EPI in the union under the guidance of the UFPO and MO (MCH-FP).
- Organize meetings on information, education, and communication; prepare plans for developmental campaign for health, education, nutrition, and tree planting at the union level.
- Help the FWAs achieve their target considering the number of eligible couples in the unit and people using methods.
- Develop a plan for preparing lists of eligible couples who are regularly on any family planning method, have discontinued the method, or are not receiving any method.
- Prepare innovative plans for improving provision of services in maternal and child health, reproductive health, adolescent health, family planning, and nutrition.
- Ensure that FWAs prepare a list of pregnant women; update the list.

#### 7.1.2 Implementation/Motivation

- Participate in the motivational meeting with local leaders.
- Motivate males to adopt temporary or permanent family planning methods.
- Organize dissemination of programs broadcast on national radio at the UHFWC with support of FWA and FWV.
- Organize mass communication programs through rural singers.
- Make arrangements to show movies on maternal and child health, reproductive health, adolescent reproductive health, family planning, and nutrition.
- Maintain communication and coordination with NGO representatives and divisional and intra-divisional officer/staff.

### 7.1.3 Satellite Clinic

- Organize the satellite clinic in consultation with ward member of the parishads and local leaders.
- Support the FWV/FWA in managing satellite clinics.
- Inform pregnant women and eligible couples about the date and venue of the satellite clinic.

### 7.1.4 Supervision and Monitoring

- Supervise the FWAs according to their work plans; use checklist during inspection and to inform UFPO on the inspection.
- Verify the family planning clients according to departmental circular.
- Monitor whether the FWAs are filling in the register properly and provide further training if necessary.
- Ensure that FWAs carry essential materials while visiting households (such as bag, register, family planning materials, field manual, and flash cards).

### 7.1.5 Administrative Responsibilities

- Recommend departmental proceedings against FWAs who fail to perform responsibilities appropriately.
- Approve advance monthly workplan of FWAs and forward it to the UFPO.
- Send casual leave application of FWAs to the UFPO.

### 7.1.6 Commodities/Input and Supply

- Ensure requisition of FP materials by the FWA and their distribution and receipt.
- Inform the UFPO or assistant UFPO of any problems relating to inputs and supply; take necessary action for immediate resolution.

### 7.1.7 Preserving Information and Preparing Reports

- Collect status report from the FWAs on maternal and child health, reproductive health, adolescent sexual health, monthly progress of family planning and nutrition, and information of monthly distribution of FP materials; compile reports and distribute family planning materials monthly in designated form.
- Organize information demonstrating union-wise eligible couples regarding contraceptive prevalence rate, maternal and child health, adolescent health, monthly progress of family planning and nutrition, progress of work in terms of family planning workers, charts, and work plan at the union. Ensure information is updated and used.
- Distribute and preserve the minutes of the coordination committee.
- Perform other duties assigned by the superior authorities.

## 7.2 Business Process Analysis

The FPIs are expected to visit and assess the work of FWAs. The FWAs are required to submit their monthly work plans in triplicate to the FPI on a designated form completed before the start of each month. After approval, this form must be sent to the UFPO. The UFPO sends all compiled forms to the district manager or deputy director of family planning (DDFP). The FPIs either approve or suggest modification(s) to the work plan. Available forms, current practices, and intensive feedback from the actual users have been used to design the FPI eSupervision System. The application also recognizes a new business process for registering the population; it provides tools to verify and improve data collected by the FWAs.

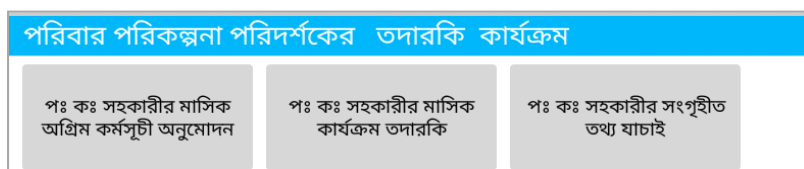
## 7.3 Functionalities of the Family Planning Inspector eSupervision System

This module is designed to completely automate the work of FPIs. In accordance with their job description and available forms, the following modules are made available for the FPIs in the FPI eSupervision System:

- Approval of advance workplan of FWA
- Supervision of monthly activities of FWA
- Verification of data collected by FWA

These are discussed in the following sections.

**Figure 7-1. Modules within FPI eSupervision System**



### 7.3.1 Approval of Advance Workplans of FWA

The FWAs submit their monthly advance work plans online through the FWA eRegister. The workplans submitted are uploaded to the server. The FPIs are required to download the workplans individually through the FPI eSupervision System.

For approval of any workplan, the FPI needs to open the module and select the name of the FWA, the work area, and the name of the village. After selection of the month, the workplan is downloaded. The FPI can review the workplan. The FPI is presented with three options on the status of the workplan: approved, not approved, and waiting to be approved. The FPI identifies which items of the workplan need to be changed; suggestions go to the FWA electronically. Any changes are color-coded with yellow, indicating that modifications are necessary. The changed workplan is submitted again by the FWA, with amendments. The FPI is alerted when a workplan is awaiting approval. The FPI can also delay the approval and flag these in the tablet. Whenever a workplan is approved, the information is automatically pushed to the FWA. Workplans not approved may be viewed for completing the approval process. The FPI can download the relevant FWA workplan during inspection.

**Figure 7-2. Retrieving the work plan for review**

পরিবার কল্যাণ সহকারীর মাসিক অগ্রিম কর্মসূচী মূল্যায়ন	
পঃ কঃ সহকারীর নাম	93014-Majeda Akter
কর্ম এলাকা(ইউনিট)	06-৩খ
গ্রাম	221-আইসড়া
কর্মসূচীর মাস	06-June,2016

অনুমোদিত	অননুমোদিত	অপেক্ষাধীন
Upload	Download	
কর্মসূচীর অবস্থা কাজের স্বার্থে অগ্রিম কর্মসূচী পরিবর্তন /পরিবর্তন হতে পারে ।		
তারিখ	কর্মসূচী	
01/09/2016	দম্পতি পরিদর্শন-গ্রাম:কুমারজানী ,দম্পতি নম্বর:(1-20)ই পি আই কার্যক্রমে অংশগ্রহন	
04/09/2016	কমিউনিটি ক্লিনিকে সেবা প্রদান,উঠান বৈঠক,ক্লায়েন্ট মর্টিভেশন/আইপিসিতে যাওয়া	
05/09/2016	স্যাটেলাইট ক্লিনিকে উপস্থিত থাকা	
06/09/2016	ই পি আই কার্যক্রমে অংশগ্রহন	

### 7.3.2 Supervision of Monthly Activities of FWA

One of the FPI's primary responsibilities is to inspect the FWA activities. The FPI relies on the advance workplan to conduct these inspections. The FPI can use the electronic application to prepare for such an inspection. The FPI selects the FWA and relevant date and can see results of any previous inspection. During inspection, the FPI notes whether materials are with the FWA (such as bags, tablet PCs, pills, condoms, injectables, Misoprostol tablets, field manuals, and flash cards). The FPI notes whether the FWA is on target according to her workplan.

**Figure 7-3. Supervision of FWA's work**

পরিবার পরিকল্পনা পরিদর্শক কর্তৃক পরিবার কল্যাণ সহকারীর কার্যক্রমের তদারকি	
পূর্বের ডিজিট	
পরিদর্শনের তারিখ	13/06/2016 <span>21</span>
পরিবার কল্যাণ সহকারীর নাম	93016-Meherun Nesa
গ্রাম	671-বাঘিল
ইউনিট নম্বর	04-২খ
কর্মী অগ্রিম কর্মসূচীর কোন পর্যায়ে	01-সঠিক

বাড়ি পরিদর্শনের সময় প্রয়োজনীয় সামগ্রী সংগে নেয় কিনা	
ব্যাগ	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
ট্যাবলেট পিসি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
জন্ম নিয়ন্ত্রন বড়ি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
কনডম	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
ইঞ্জেকটেবল	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মিসোপ্রস্টল বড়ি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মাঠকর্মী সহায়িকা	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
ফ্ল্যাশ কার্ড	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
Save	

### 7.3.3 Verification of Data Collected by FWA

This module helps the FPI verify data collected by the FWAs and determine whether specific data relate to a household, population, ELCO, or pregnant woman. The FPI selects the FWA from a dropdown menu, which provides options for verifying information on population registration, pregnant woman, and newborn. The whole work area with individual village names is available for selection and review. Verification is carried out by comparing the actual household information with what is presented. The

FPI can compare values captured by the FWA, noting them as correct or incorrect relating to the socioeconomic status of the household. Incorrect values would require correction.

Figure 7-4. Verification of SES data captured by the FWA

পঃ কঃ সহকারীর নাম

জনসংখ্যা নিবন্ধন     দম্পতি     গর্ভবতী মা ও নবজাতক

মৌজা: 78-বাঘুয়া গ্রাম: 1-বাঘুয়া (65)    মৌজা: 167-বাংড়া গ্রাম: 1-বাংড়া (355)    মৌজা: 313-দাপনাজোড় গ্রাম: 1-দাপনাজোড় (598)    মৌজা: 324-দেউলী গ্রাম: 1-দেউলী (524)

পরিবার পরিকল্পনা পরিদর্শক কর্তৃক সদস্যের খানার তথ্য যাচাই CLOSE

গ্রামঃ 313-1, দাপনাজোড়    খানা নম্বর

খানার বর্তমান অবস্থা  সঠিক  সঠিক না

ইপিআই সাব ব্লক

১. এটা কি আপনার স্থায়ী ঠিকানা  হ্যাঁ  না  সঠিক  সঠিক না

২. ধর্ম   সঠিক  সঠিক না

Save

আর্থ-সামাজিক অবস্থা

পরিবার পরিকল্পনা পরিদর্শক কর্তৃক আর্থ-সামাজিক অবস্থার তদারকি CLOSE

খানা নম্বর

আর্থ সামাজিক তথ্যাদি   1-সঠিক  2-সঠিক না

১. আপনার খানার সদস্যদের খাবার পানি পান করার প্রধান উৎস কি?   1-সঠিক  2-সঠিক না

২. এ খানার সদস্যরা সাধারণত কোন ধরনের পায়খানা ব্যবহার করে?   1-সঠিক  2-সঠিক না

৩. আপনার খানায় বা খানার কোন সদস্যের নিম্নে বর্ণিত জিনিস গুলো আছে কি?

a. বিদ্যুৎ  1-হ্যাঁ  2-না  1-সঠিক  2-সঠিক না

b. সৌর বিদ্যুৎ  1-হ্যাঁ  2-না  1-সঠিক  2-সঠিক না

The FPI would also be able to verify the data collected about the individual members of the household during population registration. The FPI needs to record those values as correct or incorrect. Variables have been included in this module that reflect changes brought about by eMIS tools aimed to improve quality of data collected by the community workers.

Figure 7-5. Verifying data about the individuals in the household

Health ID (ID আছে)

খানার সদস্যের তথ্য    সিরিয়াল নম্বর

১. নাম(ইংরেজি)   সঠিক  সঠিক না

২. খানা প্রধানের সাথে সম্পর্ক   সঠিক  সঠিক না

৩. জাতীয় পরিচয় পত্র নম্বর  নাই   সঠিক  সঠিক না

জাতীয় পরিচয় পত্র নম্বর না থাকলে কেন নাই   সঠিক  সঠিক না

৪. ইউনিটের পরিদর্শনকৃত সকল দম্পতি

সর্ব মোট : 9

তারিখ  থেকে

অনুসন্ধান

ক্রমিক নং	খানা নং	দম্পতি নং	হেল্থ কোড	গ্রামের নাম
1	16001	1	93221407202	AISARA
2	16002	2	93180294096	AISARA
3	16003	3	94642798682	AISARA
4	16004	4	95132269498	AISARA

### 7.3.4 Verification of Eligible Couples

The app allows the FPI to generate a list of ELCOs. Verification of data can be performed from this list. This is done by selecting a couple (woman) from the list of couples. The FPI can see if any pills were distributed during last inspection, who provided them, and in what dose. The FPI verifies and records whether the entries are correct. Similarly, the data relating to pregnant women and newborns can also be verified.

Figure 7-6. Verifying the data about the eligible couple (woman)

স্ত্রীর নাম	AMINA	বয়স	22 (বছর)	<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
স্বামীর নাম	SAHINOR			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
বয়স	27 (বছর)			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
দম্পতি নং	8			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
খানা নং				<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
জানি না	<input checked="" type="checkbox"/>			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
বিবাহের তারিখ	<input checked="" type="radio"/> প্রকৃত <input type="radio"/> আনুমানিক			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
	05/03/2009			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
জীবিত	ছেলে 0			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
	মেয়ে 1			<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
<input type="button" value="মহিলার টিটি"/>				

পরিদর্শন		
খাবার বড়ি	10/06/2016	<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
তারিখ	10/06/2016	<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
	<input checked="" type="radio"/> উপস্থিত <input type="radio"/> অনুপস্থিত	<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
জন্মনিয়ন্ত্রণ ব্যবস্থা/গর্ভাবস্থা		
	01-খাবার বড়ি	<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
উৎস		
	<input checked="" type="radio"/> পরিবার কল্যাণ সহকারী(নিজে)	<input type="checkbox"/> সঠিক <input type="checkbox"/> সঠিক না
	<input type="radio"/> ক্রয় সূত্র	
	<input type="radio"/> অন্য সূত্র (এন জি ও)	

### 7.3.5 Preparation of Monthly Advance Workplan

The FPI is required to submit a workplan for the coming month to the UFPO. This work has been automated through a separate module in the FPI eSupervision System.

The activities of FPI include the following:

- Prepare advance workplan.
- Verify and approve advance workplan of FWAs.
- Inspect activities performed by FWAs.
- Verify data collected by FWAs.
- Inspect EPI activities.
- Manage all activities related to the satellite clinic.
- Participate in fortnightly meetings held in the UHFWC.
- Participate in monthly meetings held in the UHFWC.
- Participate in monthly meetings held in the UFPO.
- Participate in other social activities.

The FPI can also identify the days when he or she will be on leave (requires UFPO approval). This activity will be integrated with the monitoring tools in the future so that the UFPO can review or approve the workplan and send feedback to the FPI.

**Figure 7-7. Preparation of advance work plan of FPI**

পরিবার পরিকল্পনা পরিদর্শকের মাসিক অগ্রিম কর্মসূচী		
পঃ পঃ পরিদর্শকের নাম	Ashrafal Alam	
কর্ম এলাকা	35,ফুলকী	
কর্মসূচীর মাস	08-August,2016	
তারিখ	বার	কর্মসূচী
01/08/2016	সোমবার	সম্পন্ন
02/08/2016	মঙ্গলবার	সম্পন্ন
03/08/2016	বুধবার	সম্পন্ন

03/07/2016:-কর্মসূচী সমূহ	
<input type="checkbox"/>	অগ্রিম কর্মসূচী প্রণয়ন
<input type="checkbox"/>	পরিবার কল্যাণ সহকারীর অগ্রিম কর্মসূচী যাচাই ও অনুমোদন করা
<input type="checkbox"/>	স্যাটেলাইট ক্লিনিকের স্থান নির্বাচন ও সময়সূচী তৈরি করা
<input type="checkbox"/>	পঃ পঃ শিবির সময়সূচী তৈরি করা
<input type="checkbox"/>	পরিবার কল্যাণ সহকারীর জন্ম নিয়ন্ত্রন সামগ্রীর চাহিদাপত্র তৈরিতে সহায়তা
<input type="checkbox"/>	পরিবার কল্যাণ সহকারীর কার্যক্রম পরিদর্শন

The FPI can perform daily work based on his or her workplan.

**Figure 7-8. View the FPI workplan from tablet**

পরিবার পরিকল্পনা পরিদর্শকের মাসিক অগ্রিম কর্মসূচী	
পঃ পঃ পরিদর্শকের নাম	Ashrafal Alam
কর্ম এলাকা	35,ফুলকী
কর্মসূচীর মাস	08-August,2016
Data Sync	
তারিখ	কর্মসূচী
01/08/2016	অগ্রিম কর্মসূচী প্রণয়ন
02/08/2016	পঃ পঃ শিবির সময়সূচী তৈরি করা
03/08/2016	মাসিক রিপোর্ট তৈরি

## 7.4 Conclusions

The FPI eSupervision System is tightly integrated with the FWA eRegister and Population Registration System. Supervising the work of FWAs using digital tools opens up ways to ensure effective health service delivery and improve performance of the health system. This application allows the FPI to prepare his or her own workplan and submit it in a timely manner to the UFP office. This would help the upazila level supervisors to monitor the work of FPIs and review their performance.

## 8. ASSISTANT HEALTH INSPECTOR eSUPERVISION SYSTEM

Each union has one AHI who supervises the work of the HAs. The activities of the AHI are supervised by the HI, under the administrative control of the UHC and accountable to the UHFPO.

### 8.1 Job description of the AHI

The responsibilities of AHIs are described below:

- Coordinate public health activities in the union and ward level under the essential services package (especially disease control and prevention), BCC, and work with NGOs.
- Supervise, inspect, and evaluate public health activities to prevent and control diseases through immunizations; control diarrhea; and prevent acute respiratory infection, diseases caused by vitamin A deficiency, and blindness—working from community clinic/satellite clinic or by visiting houses.
- Participate in activities to control epidemics and improve sanitation.
- Participate in awareness-building activities on cleanliness, sanitation, and food habits.
- Contribute proactively to the supply of medicines and other materials to the field workers under supervision.
- Support supervisory officials in coordinating with NGOs, voluntary organizations, and privately owned institutions.
- Prepare monthly advance workplan (including inspection) and submit to supervising officers.
- Conduct other work assigned by the superior authorities.

### 8.2 Business Process of Assistant Health Inspectors

The AHI eSupervision System strictly adheres to the business processes of the AHIs. The module was designed to help them conduct their supervisory work and prepare their own workplan for the coming month. The AHIs are required to visit houses served by HAs. The AHIs need to attend the EPI centers during immunization sessions. In the registers used by HAs for recording EPI data relating to women and children, there are rows where the AHI signs after verifying the activities performed by the HA. The EPI management is based on elaborate guidelines and instructions issued by the DGHS. The AHI needs to approve the HAs' advance workplan for the coming month. The AHI eSupervision System has been developed following all provisions in registers, guidelines, and instructions. This module also has extra elements to take care of new business processes, such as verification of data collected by the HAs regarding households during population registration.



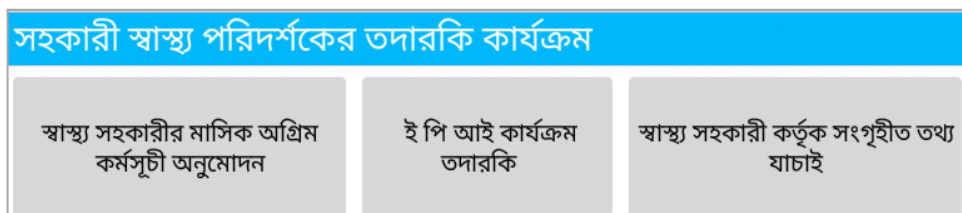
### 8.3 Functionalities of Assistant Health Inspector eSupervision System

This eSupervision System helps AHIs conduct their supervisory work and discharge other administrative responsibilities. On opening the application, the AHI is presented with the following options:

- Approve advance workplan of HA.
- Supervise EPI activities.
- Verify data collected by HA.

The AHIs can also use this application to prepare their own monthly advance workplan.

**Figure 8-1. Modules accessible in the AHI eSupervision system**



#### 8.3.1 Approval of Advance Work Plan of Health Assistants

The HAs prepare an advance workplan for the coming month, which must be approved by the AHI. This module allows the AHIs to review the workplan, then approve it or suggest modification. The final approved version is sent to the UHFPO.

The advance workplan is accessed by touching the button on the screen. It brings up the list of all HAs within the work area of the AHI. The AHI can select any one of them. The work area and month under review are also visible on the screen. The advance workplan needs to be downloaded for review. This requires online connection or access to Internet. The AHI can approve the workplan or suggest modification on any item as shown against specific days. The HA is notified of the actions or suggestions by the AHI. If any modification is suggested, the HA is required to change and resubmit the workplan for approval. The process is completed upon approval of the revised version.

**Figure 8-2. Advance workplan download and approval**

স্বাস্থ্য সহকারীর নাম	65800-MD.HARUN OR ROSHID
কর্ম এলাকা (ওয়ার্ড)	1
কর্মসূচীর মাস	12-December,2016
<p>স্বাস্থ্য সহকারীর কর্মসূচীটি Download করতে এখানে Click করুন।</p>	
<p>অনুমোদিত      অননুমোদিত</p>	
<p>কর্মসূচীর অবস্থা কাজের স্বার্থে অগ্রিম কর্মসূচী পরিবর্তন /পরিবর্তন হতে পারে।</p>	
তারিখ	কর্মসূচী
01/12/2016	ইউনিয়ন পরিষদ এ সমন্বয় সভা, স্বাস্থ্য শিক্ষা
03/12/2016	উপজেলা স্বাস্থ্য কমপ্লেক্স এ মাসিক সভা
04/12/2016	মাসিক রিপোর্ট জমাদান
05/12/2016	স্কুল পরিদর্শন
06/12/2016	IPC কাজ পরিদর্শন-ইউনিয়ন:কাশিল,ওয়ার্ড: 1,গ্রাম:বাংড়া,পাড়া:null,বাড়ি পরিদর্শন সংখ্যা :(1-20)
07/12/2016	স্কুল পরিদর্শন
08/12/2016	জাতীয় প্রোগ্রামে অংশগ্রহন
10/12/2016	ট্রেনিং এ অংশগ্রহন
11/12/2016	উপজেলা স্বাস্থ্য কমপ্লেক্স এ মাসিক সভা

### 8.3.2 Supervision of EPI Activities

A supervision visit by the AHI can coincide with the planned visit of the HA. This follows the selection of the HA. Two options are available on the tablet: visit houses or visit a session. On selecting the village, the names of all households appear. The AHI can also select from a household from the list.

The module provides instructions for the inspection of a household when evaluating the activities of the HA at the household level. While visiting the house, the AHI would first ask the household head or guardian about when the HA or vaccinator visited the household most recently. Then the AHI would ask whether they discussed the purpose of immunization, such as the BCG (for TB), Penta (for five diseases), polio (to prevent polio), measles, and tetanus, and whether the household head or guardian knows where to acquire the second dose. All the responses would be recorded using the application.

**Figure 8-3. Inspection in a house by AHI**

বাড়ি পরিদর্শন (মহিলা/ অভিভাবককে জিজ্ঞাসা করে পূরন করুন)	
জি আর / হোল্ডিং নং	<input type="text"/>
স্বাস্থ্য সহকারী/ ড্যাকসিনেটর এই বাড়িতে শেষ কবে এসে ছিলেন	<input type="text"/> 21
স্বাস্থ্য সহকারী/ ড্যাকসিনেটর গত পরিদর্শনে ই পি আই – এর কি বিষয় আলোচনা করেছেন (মা/ অভিভাবককে জিজ্ঞাসা)	
<input type="checkbox"/> বিসিজি: যক্ষার কাজ করে <input type="checkbox"/> পেন্টা: ৫টি রোগের প্রতিষেধক <input type="checkbox"/> পোলিও: পোলিও মাইলাইটিস রোগের প্রতিষেধক <input type="checkbox"/> হাম: হাম রোগের প্রতিষেধক <input type="checkbox"/> টিটি: ধনুষ্ঠংকার রোগের প্রতিষেধক	
শিশু/ মহিলা পরবর্তী ডোজ কবে ও কোথায় পাবেন তা অভিভাবক জানান <input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না	

মহিলা পরবর্তী কোন ডোজ টিটি টিকা পাবেন	
<input type="checkbox"/> ১ম <input type="checkbox"/> ২য় <input type="checkbox"/> ৩য় <input type="checkbox"/> ৪র্থ <input type="checkbox"/> ৫ম	
শিশু গত সেশনে টিকা পেয়েছেন?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মহিলা গত সেশনে টিকা পেয়েছেন?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মা ভিটামিন – এ ক্যাপসুল (লাল) খেয়েছেন (প্রসবের ৪২ দিনের মধ্যে)	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
শিশু কার্ড আছে	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মহিলা কার্ড আছে	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
Save	

### 8.3.2.1 Session Inspection

This module was designed based on the guidelines issued by the EPI of DGHS for supervision of the program at the EPI center. The AHI can decide to inspect an EPI session being conducted by an HA at the satellite clinic. By using the application to select the HA name and date, the AHI can view details regarding the session (such as name of EPI sub-block or name of immunization center).

The inspection routine covers the entire process of immunization. The AHI can find out how many workers are available in the session (HAs, FWAs, vaccinators, and others). The system also allows the AHI to see any previous history. The AHI can check whether the HA is present on relevant registers and cards. The AHI can note whether registers and cards are available or not (such as for child register, women register, child immunization card, women immunization card, tally book, and AEFI report book).

**Figure 8-4. Inspecting the number of health workers present with registers and cards**

পূর্বের ডিজিট	
পরিদর্শন 1	19/07/2016
সেশনে কত জন টিকা দান কর্তী আছে?	
স্বাস্থ্য সহকারী	<input type="text"/> 1
পরিবার কল্যাণ সহকারী	<input type="text"/> 1
ড্যাক সিনেটর	<input type="text"/> 1
অন্যান্য	<input type="text"/> 1

নিচের বই এবং কার্ড গুলো কি আছে?	
শিশু রেজিঃ বই	<input checked="" type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মহিলা রেজিঃ বই	<input checked="" type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
শিশু কার্ড	<input checked="" type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মহিলা কার্ড	<input checked="" type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
টালি বই	<input checked="" type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
এই এফ আই রিপোর্ট বই	<input checked="" type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

The AHI can verify and record the availability of items necessary for immunization, such as: vaccine, auto-disable syringe, mixing syringe, BCG mixing syringe, safety box, vitamin A capsule (red), vitamin A capsule (blue). The AHI examines whether the ice pack was conditioned properly or not, and whether the vaccine/diluent (BCG, Penta, Polio, PCV, IPV, Measles-Rubella and TT) was frozen or not.

**Figure 8-5. Inspecting routine for materials bought at the immunization sessions and condition of vaccines**

নিচের সামগ্রী গুলো কি আছে?	
ভ্যাকসিন	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
এডি সিরিঞ্জ	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
মিক্সিং সিরিঞ্জ	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
বিসিজি মিক্সিং সিরিঞ্জ	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
সেফটি বক্স	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
ভিটামিন - এ ক্যাপসুল (লাল)	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
ভিটামিন - এ ক্যাপসুল (নীল)	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
আইস প্যাক কন্ডিশনিং করা হয়েছে?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

ভ্যাকসিন ক্যারিয়ারে কোনো ভ্যাকসিন/ ডায়লুয়েন্ট ঠাণ্ডায় জমে গেছে?	
বিসিজি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পেন্টা	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পোলিও	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পিসিডি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
আইপিডি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
এম.আর	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
টিটি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

Observations are also made concerning the container and how the vaccines have been organized on the table. The AHI notes whether the HA followed the procedures properly and whether he or she used a non-touch technique.

**Figure 8-6. Observation on organization of the vaccines in the table and use of non-touch technique**

টিকাদান টেবিলে কোন ভ্যাকসিন কোথায় সাজান আছে?	
বিসিজি	<input type="radio"/> 1-টেবিলের উপর <input type="radio"/> 2-আইস প্যাকের উপর <input type="radio"/> 3-আইস প্যাকের গর্তে
পেন্টা	<input type="radio"/> 1-টেবিলের উপর <input type="radio"/> 2-আইস প্যাকের উপর <input type="radio"/> 3-আইস প্যাকের গর্তে
পোলিও	<input type="radio"/> 1-টেবিলের উপর <input type="radio"/> 2-আইস প্যাকের উপর <input type="radio"/> 3-আইস প্যাকের গর্তে

নন-টাচ টেকনিকে টিকা দেয়া হচ্ছে ?	
বিসিজি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পেন্টা	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পোলিও	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পিসিডি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
আইপিডি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
এম.আর	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

The AHI also notes whether the dates are recorded correctly in the register and on immunization cards. It would also be noted whether the accompanying mother/woman is immunized after inquiry or not, and whether the mother/guardian is informed about the adverse effects and the date for next dose of TT/measles-rubella vaccine. The HA is also required to inform the mother/guardian about the importance of maintaining the card, which should be recorded in the app.

**Figure 8-7. Finding out about the register, cards, and communications on immunization**

রেজিস্ট্রেশন বই এবং টিকাদান কার্ডে তারিখ সঠিক ভাবে লেখা হচ্ছে	
রেজিস্ট্রেশন বই	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
টিকা দান কার্ড	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
শিশুকে বহনকারী মা/ মহিলার টিটি টিকার খোঁজ নিয়ে টিটি টিকা দেয়া হচ্ছে?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
টিকার সম্ভাব্য পার্শ্ব-প্রতিক্রিয়া সম্পর্কে মহিলা/ অভিভাবকে জানানো হচ্ছে?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পরবর্তী টিকার তারিখ ও হামের টিকার তারিখ মহিলা/ অভিভাবকে জানানো হচ্ছে?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

The AHI further notes and records (with a yes/no button) whether the method of vaccination, dose, and root (place) were appropriate or not. For BCG, the reasons must be noted. The AHI would scrutinize whether the number written in the tally sheet is consistent with the target.

**Figure 8-8. Checking method of immunization, dose, root, and data recorded in the tally sheet**

টিকাদান পদ্ধতি, ডোজ ও স্থান (রুট) সঠিক ছিল	
বিসিজি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
না হলে কেন?	<input type="text"/>
পেন্টা	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
এম.আর	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
টিটি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
টিকাদানের পূর্বে এডি সিরিঞ্জের কাপ/ ঢাকনা ও টিকাদানের পর ব্যবহৃত সিরিঞ্জ সেফটি বক্সে ফেলা হচ্ছে?	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

দৈনিক টালি ফর্মেটি কার মাত্রা ভিত্তিক লক্ষ্য মাত্রা লেখা আছে?	
বিসিজি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পেন্টা	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পোলিও	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
পিসিডি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
আইপিডি	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না
এম.আর	<input type="radio"/> 1-হ্যাঁ <input type="radio"/> 2-না

The AHI finds out whether the HA has submitted surveillance reports regularly and notes how many surveillance reports were submitted in the past month. The HAs are required to report adverse effects following immunization (AEFI) and the AHI collects information from the HA. The AHI is required to gather details and note what kind of remedial measures were suggested, which could include referral to hospitals.

**Figure 8-1. Deposition of surveillance reports and identification of AEFI**

গত ১ মাসে কয়টি সারভিলেঞ্জ রিপোর্ট দিয়েছেন?	
এএফপি	<input type="text"/>
হাম	<input type="text"/>
নবজাতকের ধনুষ্টংকার	<input type="text"/>
অন্যান্য	<input type="text"/>
আজকের টিকাদান সেশনে কতজন শিশু হামের টিকা	<input type="text"/>

সমস্যা চিহ্নিত ও সমাধান	
কি সমস্যা পেয়েছেন	কি সমাধান দিয়েছেন
1. 01-টিকার জায়গা ফুলে যেতে পারে	01-হাসপাতালে প্রেরণ করা
2. 02-টিকার জায়গা পেকে যেতে পারে	01-হাসপাতালে প্রেরণ করা
3. 03-টিকার জায়গা শক্ত হতে পারে	01-হাসপাতালে প্রেরণ করা
4. 04-টিকার জায়গা চাকা হতে পারে	01-হাসপাতালে প্রেরণ করা
5. 05-টিকা দেওয়ার পর খিচুনি হতে পারে	01-হাসপাতালে প্রেরণ করা

### 8.3.3 Verification of Information Collected by HAs

Using this application, the AHI can download provider data by selecting the village, when visiting any area. The AHI can download data of all households or a set of households from a list of households mentioned in the AHI workplan. The AHI can verify the information collected by the HA for the population registration system and/or information collected on pregnant women and neonates. However, personal data used for verification purposes must be downloaded from the server, because they are not stored in the AHI's device. The AHI can download the village level data or select household records for inspection purpose. Verification starts from a household.

The AHI can verify the fields and record findings. The AHI looks at personal data first and verifies the socioeconomic data later. The app guides the AHI to verify each variable such as source of drinking water of the household, the kind of latrine used, and possession of electricity, solar power, radio, television, mobile phone, telephone, refrigerator, wardrobe, and other items.

Figure 8-10. Verification of data collected by health assistant

গ্রামঃ 436-1, হালদলী পাড়া	খানা নম্বর	10001		
খানার বর্তমান অবস্থা	<input type="radio"/> সঠিক	<input type="radio"/> সঠিক না		
ইপিআই সাব ব্লক	ঘ-২	<input type="radio"/> সঠিক	<input type="radio"/> সঠিক না	
১. এটা কি আপনার স্থায়ী ঠিকানা	<input checked="" type="radio"/> হ্যাঁ	<input type="radio"/> না	<input type="radio"/> সঠিক	<input type="radio"/> সঠিক না
২. ধর্ম	ইসলাম	<input type="radio"/> সঠিক	<input type="radio"/> সঠিক না	
		Save		
আর্থ-সামাজিক অবস্থা	সিলেক্ট করুন			

খানা নম্বর		10002		
আর্থ সামাজিক তথ্যাদি	সম্মত	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না	
১. আপনার খানার সদস্যদের খাবার পানি পান করার প্রধান উৎস কি ?	টিউবওয়েল (নলকুপ)	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না	
২. এ খানার সদস্যরা সাধারণত কোন ধরনের পায়খানা ব্যবহার করে ?	পিট ল্যাট্রিন (ম্যাব সহ)	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না	
৩. আপনার খানায় বা খানার কোন সদস্যের নিম্নে বর্ণিত জিনিস গুলো আছে কি?				
a. বিদ্যুৎ	<input checked="" type="radio"/> 1-হ্যাঁ	<input type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না
b. সৌর বিদ্যুৎ	<input type="radio"/> 1-হ্যাঁ	<input checked="" type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না
c. রেডিও	<input type="radio"/> 1-হ্যাঁ	<input checked="" type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না
d. টেলিভিশন	<input checked="" type="radio"/> 1-হ্যাঁ	<input type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না
e. মোবাইল ফোন	<input checked="" type="radio"/> 1-হ্যাঁ	<input type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না
f. টেলিফোন	<input type="radio"/> 1-হ্যাঁ	<input checked="" type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না
g. রেফ্রিজারেটর/ফ্রিজ	<input checked="" type="radio"/> 1-হ্যাঁ	<input type="radio"/> 2-না	<input type="radio"/> 1-সঠিক	<input type="radio"/> 2-সঠিক না

The AHI can also verify data relating to the pregnant woman and newborn, using the complete list of all pregnant women and newborns in the HWA's catchment area.

### 8.3.4 Preparation of Advance Workplan

The AHIs are required to prepare an advance workplan for the coming month and submit it to the UHFPO for approval. This module is available on the AHI's tablet. Activity for any day is entered by touching the day or date and the addition button that opens a list of the following activities:

- Inspection of IPC work
- Inspection of EPI session
- Community clinic visit
- Office work
- Attending monthly meeting at UHC
- On leave
- Collection of monthly report
- Preparation of monthly advance workplan
- Participation in national program
- Participation in training program
- Other activities

Figure 8-11. Selecting activities for the advance workplan

কর্মসূচীর অবস্থা <span style="float: right;">CLOSE</span>		
সহকারী স্বাস্থ্য পরিদর্শকের মাসিক অগ্রিম কর্মসূচী		
সহকারী স্বাস্থ্য পরিদর্শকের নাম	Lili Akter	
কর্ম এলাকা	71, কাশিল	
কর্মসূচীর মাস	08-August, 2016	
তারিখ	বার	কর্মসূচী
01/08/2016	সোমবার	সম্পন্ন
02/08/2016	মঙ্গলবার	সম্পন্ন
03/08/2016	বুধবার	সম্পন্ন

03/08/2016:-কর্মসূচী সমূহ
<input type="checkbox"/> IPC কাজ পরিদর্শন
<input type="checkbox"/> টিকাদান সেশন পরিদর্শন
<input type="checkbox"/> কমিউনিটি ক্লিনিক পরিদর্শন
<input type="checkbox"/> অফিসের কাজ
<input type="checkbox"/> উপজেলা স্বাস্থ্য কমপ্লেক্স এ মাসিক সমন্বয় সভা
<input type="checkbox"/> ছুটি
<input type="checkbox"/> মাসিক রিপোর্ট সংগ্রহ করন
<input type="checkbox"/> মাসিক অগ্রিম কর্মসূচী তৈরিকরণ
<input type="checkbox"/> ট্রেনিং এ অংশগ্রহন
<input type="checkbox"/> জাতীয় প্রোগ্রামে অংশগ্রহন
<input type="checkbox"/> অন্যান্য কার্যক্রম

The AHI indicates which activity is to be undertaken on each working day. Some activities require greater detail. For example, the IPC inspection requires selection of union, ward, mouza/village down to para (part of a village) together with the number of households. Similarly, for EPI sessions, the name of the HA and date of session, EPI sub-block, and name of the center must be filled in from the dropdown box. If a visit were made to a CC, the name of the CC would be mentioned along with the ward. Leave of absence can also be recorded. In case of weekly holidays, no entries are made.

Figure 8-12. Details need to be filled in when preparing the workplan

03/08/2016:-কর্মসূচী সমূহ	
<input checked="" type="checkbox"/> IPC কাজ পরিদর্শন	
ইউনিয়ন	71-কাশিল
ওয়ার্ড	01
মৌজা /গ্রাম	
পাড়া	
বাড়ি পরিদর্শন সংখ্যা	<input type="text"/> থেকে <input type="text"/> পর্যন্ত

<input checked="" type="checkbox"/> টিকাদান সেশন পরিদর্শন	
স্বাস্থ্য সহকারীর নাম	-
সেশন তারিখ	
ই পি আই সাব-ব্লক	
কেন্দ্রের নাম	

## 8.4 Conclusions

The AHI eSupervision System helps the AHIs perform their duties using digital technology. The digital system has many benefits. For example, it is easier to record, review, approve, and submit the HA workplans using the eSupervision System. When prepared on paper, several hurdles are faced, such as delays in receiving the advance workplan from the HAs; editing, sending, and communicating with the HA about changes; and finally sending the approved workplan to the UHFPO. In practice, the final product reaches well into the middle of the coming month when the workplan would already be under way. The electronic submission of workplans ensures that each workplan is submitted, reviewed, and



approved on time, ensuring more effective and efficient use of the plans for inspection and supervision. The Advance Workplan module can also be used to communicate the approval of advance workplans to the HA in a timely manner. If additional tools are developed, managers could review the performance of the HAs during house visits and review the allocation of their time in different activities. Session inspection data could be analysed for compliance. Training programs could be tailored based on the analysis of HA performance data.

The verification of data collected by HAs in the PRS and services module should also be very helpful in ensuring the quality of data. There are opportunities for fine tuning the management functions. Finally, the electronic process of preparing the workplan helps supervisors (UHFPO) learn about what AHIs enjoy about their jobs.

The module has given AHIs new tools for supervising EPI sessions. All the variables they are supposed to cover for observing the session appear in a logical manner in the application. This should increase the quality of supervision at the satellite clinic and in homes, leading to improvement in the quality of work by HAs.

The module has great potential to improve the verification of data collected by HAs about population registration, pregnant mothers, and neonates, which would help to improve the quality of data and lead to improved efficiency and care. A lot of work could be done in this area in due course by elaborating the functions of this module.

## 9. MONITORING TOOLS

eMIS Monitoring Tools are available through a web-based interface. The website allows authorized users to access it, and access is controlled on the basis of the role of the users—different types of users can access all or only a limited set of data. This site allows the decision makers, managers, and supervisors or CHWs to keep track of ongoing data collection and use the data for decision-making purposes. The term, monitoring tools, is therefore used as a generic name, and it offers a lot more than that. This chapter describes user management (including managing who has access or control) of the site, and it describes the tools available to help authorized users monitor data collection work and adopt strategies for use of data for decision-making purposes.

### 9.1 User Management and Access

The CHWs, or a different level of users, generate data during interactions with any client. These data are first captured in the device and later replicated in the central server. Data of individuals are essential at the point of service delivery throughout the year and remain available to the service provider. To maintain confidentiality, individual data are available only to the people responsible for providing the services at the local level or their supervisors and local level managers. All other users can view aggregate data, which is managed through access control and permissions. The table below explains the range of permissions given to the different types of users:

**Table 9-1. Permissions for different users**

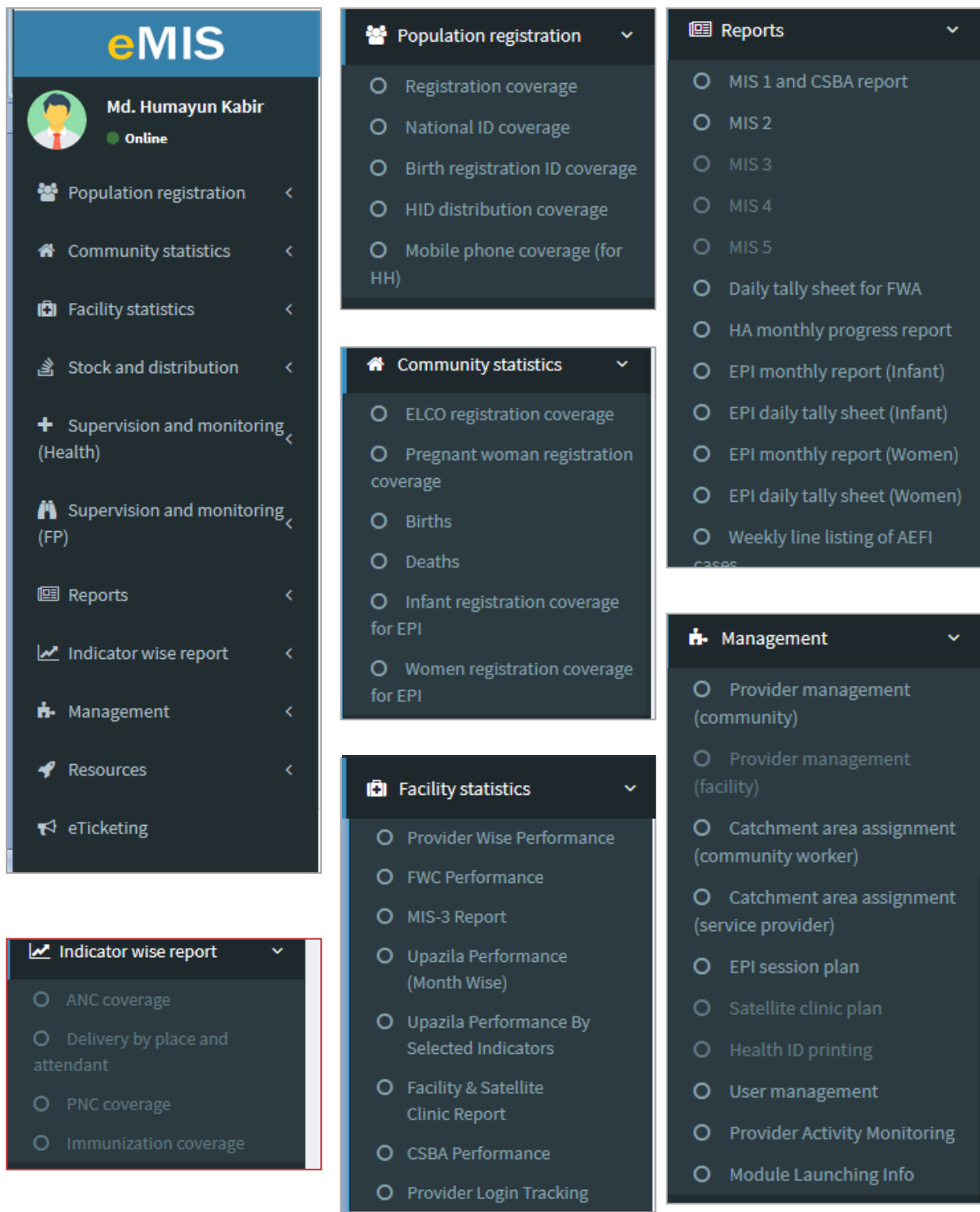
Role	Role Description	Remarks
Super admin	All system maintenance tasks/activities	System manager
Admin	Perform selected administrative activities	M&E personnel
Ministry, department HQs	View indicator wise or aggregated data	Officials as approved
Divisional manager	View aggregated data of own jurisdiction	Director
District manager	View data within own jurisdiction	CS, DDFF
Upazila manager	View data within own jurisdiction	UHFPO, UFPO, MO-MCH
Union level supervisor	View data within own designated union	HI, AHI, FPI
Union level service provider	View data of respective catchment area	MO, FWV, SACMO
CHW	View and work with data within own catchment area	HA, FWA
Guest	View selected set of data (not functional yet)	Anyone

### 9.2 Main Menu Options

The main menu has a different appearance for different levels of user, because of access control and permissions. The following options are available in the main menu: Population Registration, Community Statistics, Facility Statistics, Stocks and Distribution, Supervision and Monitoring (Health) Supervision

and Monitoring (FP), Reports, Indicator wise report, Management, and Resources. The following figure shows the menu from the view of super admin having the access privileges for all (Figure 9-1).

**Figure 9-1. Different menu options (with submenus) available in the eMIS Monitoring Tools site**

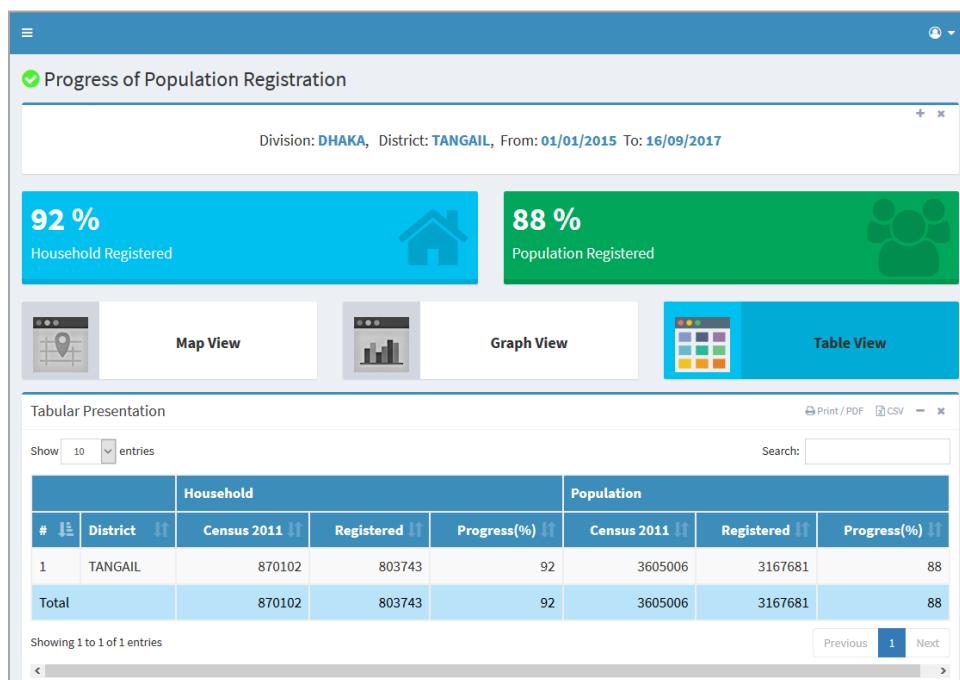


These menu options are explained in the following sections.

## 9.2.1 Population Registration

This menu provides tools for monitoring coverage of some key variables within PRS, such as households and individuals, national ID, birth registration, HID distribution, and possession of mobile phones. Supervisors and managers could use different submenus to see the progress of data collection against these fields. The viewer can choose how data are displayed, e.g., in a table, chart, or map. The following image shows registration coverage in an upazila in table view (Figure 9-2).

**Figure 9-2. Reviewing the progress of population registration**



The figures could be disaggregated by any geographic or administrative unit or provider. The local level managers can view individual data or aggregated data.

## 9.2.2 Community Statistics

Community statistics allow the managers to observe the coverage in relation to ELCOs, pregnant women, birth, death, EPI for infants and women. The work of both FWA and HA is visible from this menu item. The figure below shows the performance of a specific provider in terms of registration of eligible couples. The FWAs collect or update eligible couples (women of reproductive age) at the beginning of the year in the paper register. A paper register is used for a period of three years. After introduction of eRegister, names of the ELCOs were copied from the paper register to the tablet. Accordingly, a field was added to make them able to compare the number of persons entered in the paper Register with the number of persons copied in the eRegister or transferred to electronic database. Had it been not done, there would have been mismatch in the figures mentioned in the designated form (MIS 1).

**Figure 9-3. ELCO registration coverage**

ELCO registration coverage List of Eligible Couple

**Division**  **District**  **Upazila**  **Union**

**Unit**  **Village**  **Start Date**  **End Date**

**Report Type**  Aggregate  Individual [View Data](#)

---

Show  entries Search:

SL No.	Unit	Provider	Household Reg.	Elco (Paper Reg.)	Elco (Tab)	Progress (%)
1	1KA	Nasima Akter(93090)	1809	1225	537	44
<b>Total</b>			<b>1809</b>	<b>1225</b>	<b>537</b>	<b>44</b>

Showing 1 to 1 of 1 entries Previous **1** Next

### 9.2.3 Pregnant Women Registration

The CHWs collect data on pregnancies during house-to-house visits. They follow the registered women during different stages of pregnancies including deliveries and births. The following table shows number of women registered as pregnant Tangail during 2017.

**Figure 9-4. Collection of data on pregnancies**

SL No.	Upazila	Registered Population	Registered Pregnant Woman
1	BASAIL	173887	735
2	BHUAPUR	198094	764
3	DELDUAR	207368	648
4	DHANBARI	174756	507
5	GHATAIL	382798	1509
6	GOPALPUR	210151	860
7	KALIHATI	368934	1128
8	MADHUPUR	256073	679
9	MIRZAPUR	409234	1846
10	NAGARPUR	301674	1397
<b>Total</b>		<b>3256188</b>	<b>12240</b>

### 9.2.4 Birth

The FWAs and HAs collect data relating to birth. The number of newborns in any period can be viewed using a submenu. The figures collected by them may not be consistent with the national estimates at this stage, for various reasons. But at a later stage it should be more aligned with the estimates. But it would allow the local-level managers or supervisors to understand the underlying data collection issues with some additional tools.

**Figure 9-5. Collection of data relating to birth in Tangail in 2017**

SL No.	Upazila	Registered Population	Registered Birth
1	BASAIL	173451	274
2	BHUAPUR	195674	73
3	DELDUAR	201882	38
4	DHANBARI	174167	19
5	GHATAIL	366846	48
6	GOPALPUR	206237	33
7	KALIHATI	357362	53
8	MADHUPUR	252376	41
9	MIRZAPUR	400796	349
10	NAGARPUR	300037	79
11	SAKHIPUR	249844	36
12	TANGAIL SADAR	296800	23

### 9.2.5 Death

Data relating to death could also be viewed from monitoring tools through community statistics submenu. The following figure shows number of deaths captured by the CHWs. Birth and death data collection opens up avenues for collaboration with CRVS (Civil Registration and Vital Statistics) i.e., by exchanging data on a real-time basis and utilizing a system based on digital data collection.

**Figure 9-6. Data relating to death in 2017**

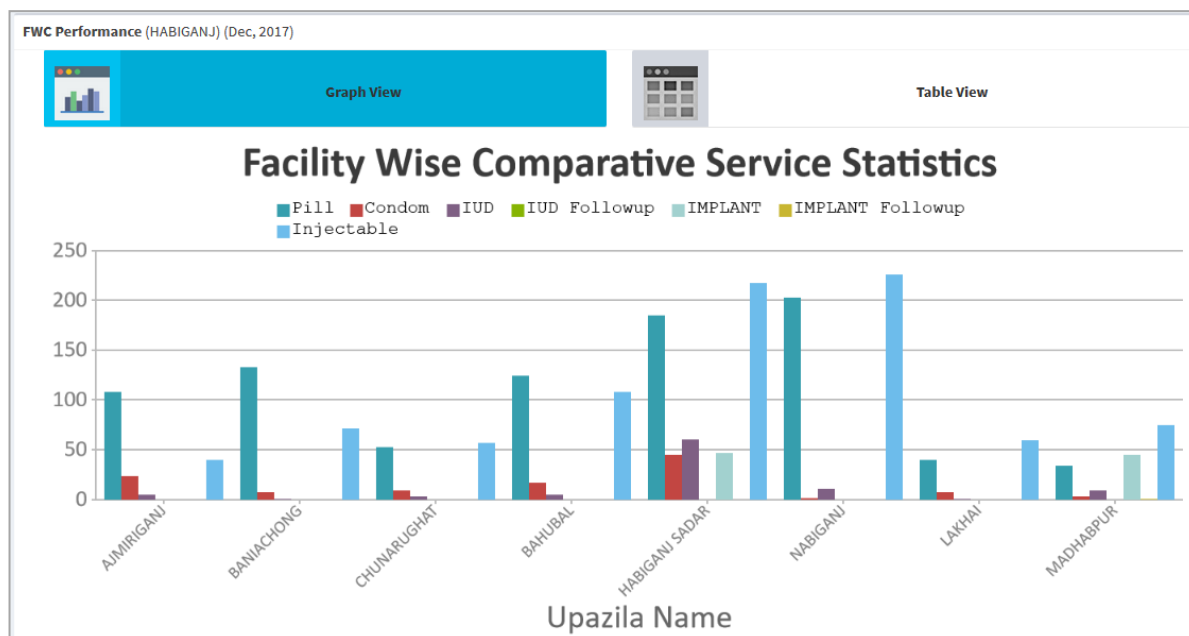
SL No.	Upazila	Registered Population	Registered
1	BASAIL	173887	217
2	BHUAPUR	198094	555
3	DELDUAR	207368	552
4	DHANBARI	174756	338
5	GHATAIL	382798	276
6	GOPALPUR	210151	143
7	KALIHATI	368934	349
8	MADHUPUR	256079	471
9	MIRZAPUR	409234	1374
10	NAGARPUR	301691	101
Total		3256211	4897

The following tools are also available under the community statistics: infant registration coverage for EPI and pregnant women registration coverage for EPI.

## 9.2.6 Facility Statistics

Under this menu, the following submenus are available: provider wise performance (of FWV and SACMO), FWC performance, MIS 3 report, Upazila performance (month wise), upazila performance by selected indicators, facility and satellite clinic report, CSBA performance, and provider login tracking.

**Figure 9-7. Family planning statistics from Habiganj in December 2017**



## 9.2.7 Supervision and Monitoring (Health) and Supervision and Monitoring (Family Planning)

These menus are still works in progress and are expected to be completed soon. Supervision and Monitoring (Health) allows the supervisors and managers are to view the status of implementation of monthly workplan, EPI Session Inspection, household inspection, and data verification.

Supervision and Monitoring (Family Planning) submenu allows the supervisors and managers to view status of the implementation of the monthly workplan, FWA inspection, and data verification.

## 9.2.8 Reports

The Reports menu is organized under 20 submenus. The submenus could be accessed for generating specific reports such as the following: routine MIS reports such as MIS 1, MIS 2, MIS 3, MIS 4, and MIS 5. It is also available for generating daily tally sheets for FWA, HA monthly progress reports, EPI monthly reports (infant), EPI daily tally sheets (infant), EPI monthly reports women), EPI daily tally sheets (women), weekly line listing of AEFI, CSBA monthly progress report, EPI supervision report, yearly household population, yearly village-wise population, ELCO by acceptor status, monthly stock and distribution count, FWA daily activity, and ELCO list.

## 9.2.9 Indicator Wise Reports

Indicator wise reports menu is still a work in progress and expected to be completed soon. Initially, the following reports could be generated: ANC coverage, delivery by place and attendant, PNC coverage, and immunization coverage.

## 9.2.10 Management

Management menu provide access to several submenus: provider management (community), provider management (facility), catchment area assignment (community worker), catchment area assignment (service provider), EPI session plan, satellite clinic plan and health ID card printing, user management, provider activity monitoring, and module launching information. These are categorized as management functions and would be used by system administrators and eventually designated managers.

Provider management at the community level is used for setting the device (tablet) for any specific provider. This requires identifying the providers (using a database of providers) and confirming areas and units/wards (FWA/HA for example). The device is locked for the specific uses. This could change for administrative reasons, transfer or retirement, for example. The authorized persons can assign the new person the device or reassign the area.

Figure 9-8. Provider management

#	Provider ID	Provider Name	Type	Device Settings	Area Settings	Area	Set	Actions
1	1798	Abdul Rashid Siddik	SACMO_HS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Assign"/>	<input type="button" value="Unit/Ward"/>	<input type="button" value="Update"/> <input type="button" value="Go PRL"/> <input type="button" value="Deactivate"/>
2	93191	A. Hakim	FPI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Assign"/>	<input type="button" value="Unit/Ward"/>	<input type="button" value="Update"/> <input type="button" value="Go PRL"/> <input type="button" value="Deactivate"/>
3	35390	Anjuman Ara	AHI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Assign"/>	<input type="button" value="Unit/Ward"/>	<input type="button" value="Update"/> <input type="button" value="Go PRL"/> <input type="button" value="Deactivate"/>

## 9.2.11 Catchment Area

The FWAs have defined administrative areas for work. Although these are decided centrally, some local variations were observed in the catchment areas assigned to the providers. The system required to have the ability to adjust the local arrangements. It was addressed in consultation with the district and local level managers and through catchment area assignment.



**Figure 9-9. Catchment area assignment**

#	Mouza	Village	Actions
1	[95] BIAGHAT	[1] BIAGHAT	<a href="#">Update</a> <a href="#">Remove</a>
2	[124] BIL HARIBARI	[1] BIL HARIBARI	<a href="#">Update</a> <a href="#">Remove</a>
3	[344] DASTANANAGAR	[1] DASTANANAGAR	<a href="#">Update</a> <a href="#">Remove</a>

### 9.3 Resources

Resources tab is accessible to all. Several essential documents are available for the user to download from the server. In addition, EPI schedule can be downloaded. It is expected that some e-learning tools would also be included under this menu.

### 9.4 Conclusions

The potentials of web-based monitoring tools have not been fully explored or materialized yet, owing to other development priorities and implementation challenges. It is expected that, in coming months, more attention could be given to developing or refining tools for monitoring and use of data; these tools should prove invaluable and experience wide use among supervisors and managers alike.





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