

Data Harmonization and Interoperability: A Case Study of Government Workers in Bangladesh

Jennifer Masters

Johns Hopkins Bloomberg School of Public Health

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mRegister



USAID
FROM THE AMERICAN PEOPLE



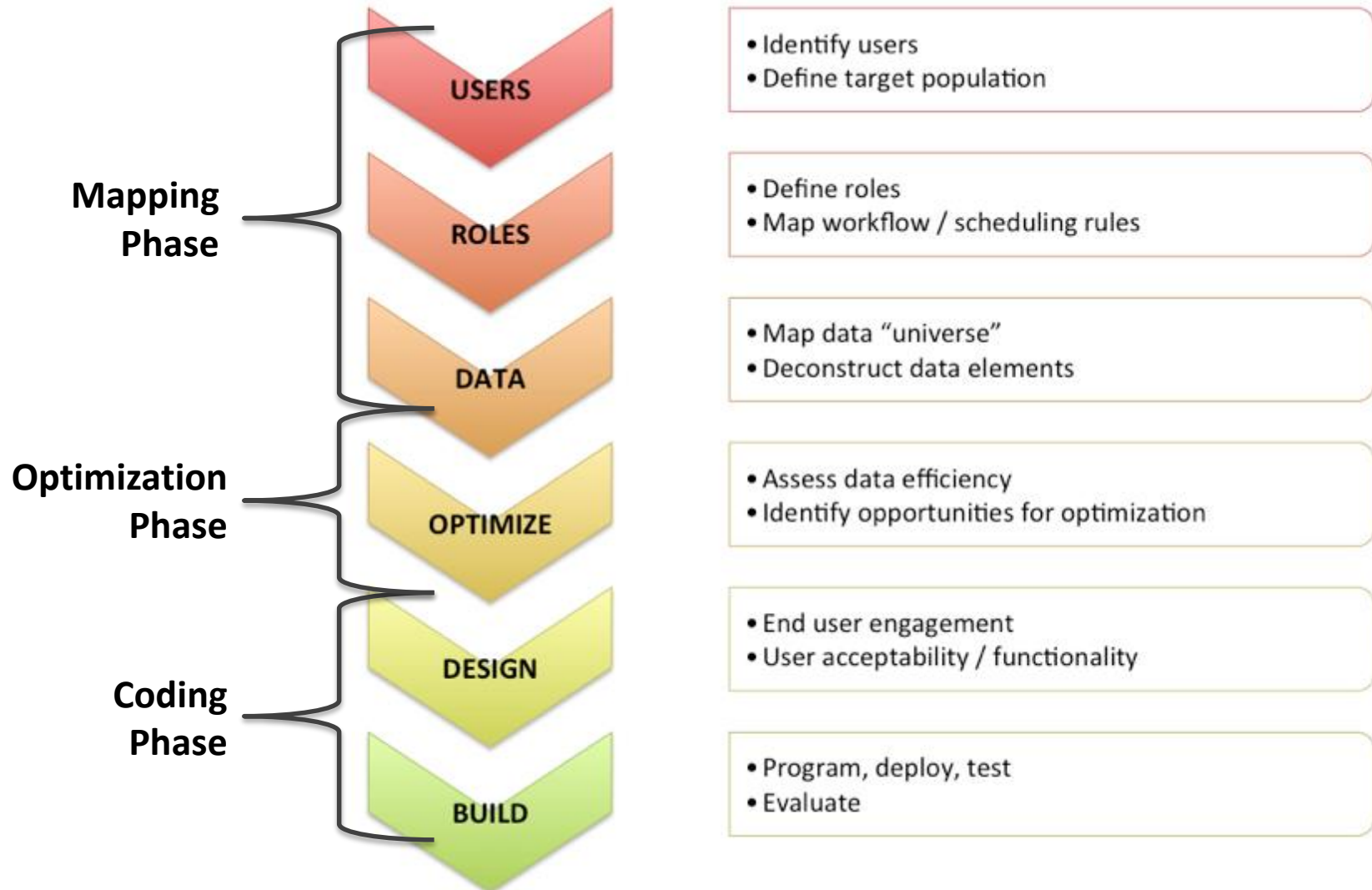
JOHNS HOPKINS UNIVERSITY
Global mHealth Initiative

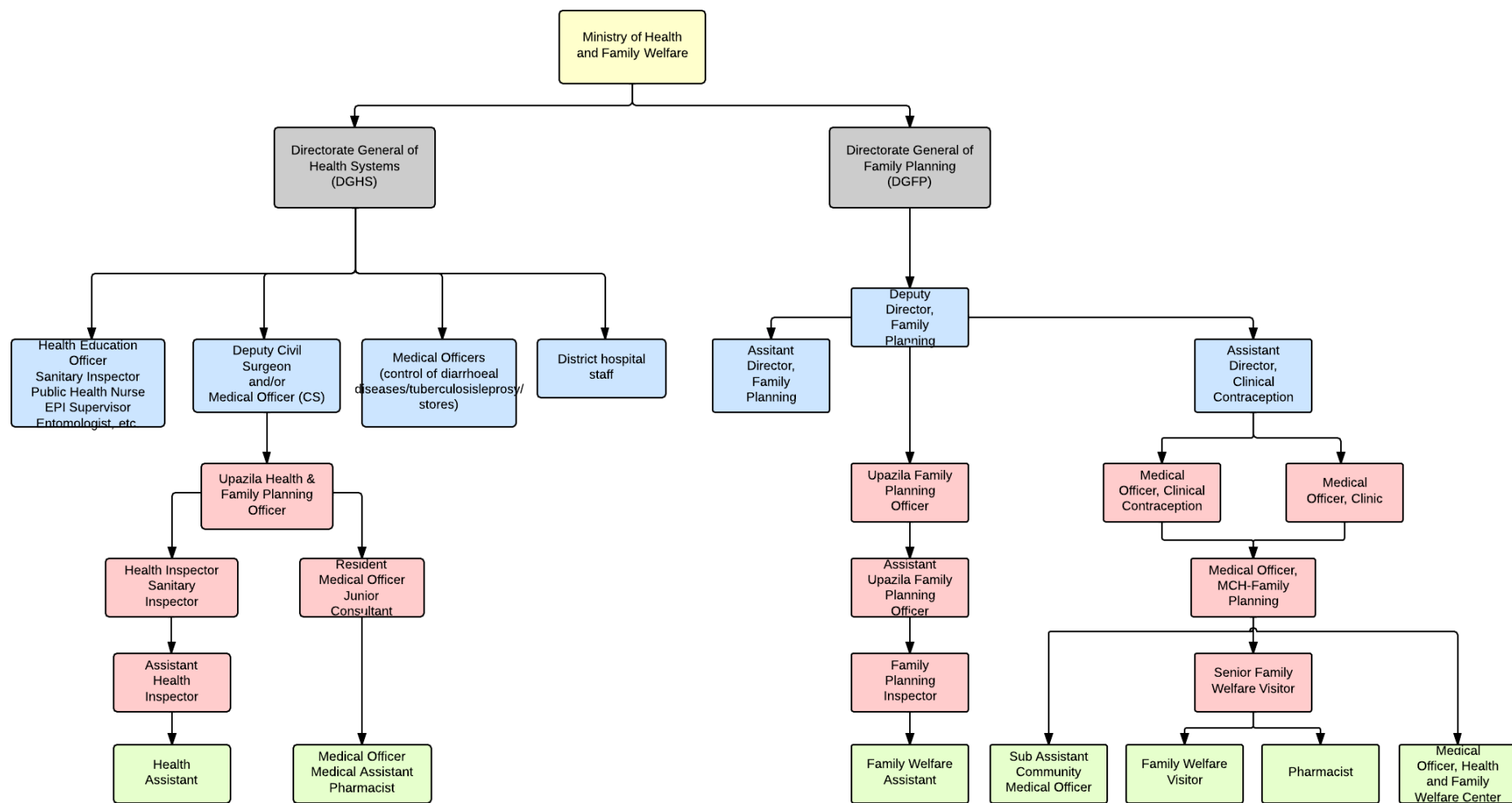
mRegister Project Objectives

To develop and test a mobile software system capable of:

- Improving the ability of frontline workers to provide care by digitizing logbooks, automating scheduling, and streamlining the data reporting process
- Expanding the ability of the MOHFW and its mid-level supervisors to monitor field workers by providing real-time task tracking
- Creating a more robust system for population registration and surveillance, including tracking vital events and other key outcomes

Project Framework





The Current Landscape

- Family Welfare Assistants (FWAs) are the principal frontline field workers of the Mother-Child Health and Family Planning program
- Her role is to educate and motivate married couples with regards to maternal and child health and family planning
- Each FWA is responsible for 800-1100 couples
- Household visits must be made on a bimonthly basis
- Data is recorded by hand in paper registers
- The heavy and large register book must be carried to field visits with other necessary supplies

Translated job descriptions

Family Planning Community Register

FWA Duties and Responsibilities

Introduction

Family Welfare Assistant is the principal field worker of the Mother-Child Health and Family Planning program and a planning member of the Family Planning worker group in the union. Her role will be providing information, educating and motivating all the reproductive husband and wife about Mother-Child Health and Family Planning in the selected unions, providing essential services to the reproductive couples of husband and wife and to the below-5 children. She will be executing these jobs by visiting houses, satellite clinics and through EPI schedule.

1. Planning and Implementation Activities

- 1.1. Family planning, mother and childcare, and nutrition program implementation technique.
- 1.2. Planning to achieve targets.
- 1.3. Achieving the targets specific to the union and conducting community clinics on a fixed day.
- 1.4. Creating a monthly visit schedule for household visits, conducting satellite clinics, community clinics, EPI activities, EPI schedules, and other activities.
- 1.5. Participation in monthly meeting at upazila, biweekly meeting at Family Welfare Center, and meeting at union family planning committee, and family welfare center committee.
- 1.6. Participation in trainings.
- 1.7. Provision of adolescent care, referral of clients, and helping FWV visit households in the respective FWA's area.
- 1.8. Performing the role as a member secretary of the ward family planning committee.

2. Family Planning

- 2.1. Providing information and education to eligible couples and mothers, and motivating them to seek care.
- 2.2. Selection of new couples and helping them to select the appropriate family planning method.
- 2.3. Distribution of oral pills, condoms, and ECP to the clients.
- 2.4. Referral of clients to a specific health facility who are willing to take up permanent methods of contraception, IUD, injectables, implants.
- 2.5. Administration of second and subsequent dose of injectable family planning method by trained FWA.
- 2.6. Visiting the clients to ensure regular collection and supply of family planning methods.
- 2.7. Referral of clients with family planning-related complications to FWV/medical officer [FW/MCH-FP/clinic].
- 2.8. Counseling women for reproductive tract infections (RTIs) and sexually transmitted infections (STIs) and HIV/AIDS.

3. Satellite Clinic

- 3.1. Informing community members about the place and schedule of satellite clinic.
- 3.2. Motivating mothers and pregnant women to attend the satellite clinic.
- 3.3. Counseling on the use of (and supply of) condoms for prevention of sexually transmitted diseases (STI, HIV/AIDS) and birth control.

- 3.4. Referral of couples who visit for the treatment of sterilization to medical officer (MCH-FP/Clinic).
- 3.5. Deliver health education and registration of mother & children.

4. Services to the Pregnant and the lactating mothers

- 4.1. Making a list of the pregnant mothers in the area, updating it monthly and then send it to FWV. Advice pregnant women to visit Satellite Clinic/ FWC/ Upazilla Health Complex/ MCWC for ANC.
- 4.2. Counseling of mothers and family members about the importance of safe delivery, nutrition and vaccination during pregnancy.
- 4.3. Identifying risk-prone mothers and helping them to meet FWV serving at Satellite Clinic or at FWC and if needed, referring them to the Medical Officer (FW/MCH-FP/Clinic).
- 4.4. Referral of normal pregnant mothers to trained TBA/Family Welfare Visitor for safe delivery.
- 4.5. Counseling to feed colostrums within 1 hour after birth and for exclusive breastfeeding up to 6 months. Giving advice for provide extra food along with the breast milk after 6 months.
- 4.6. Visiting the post natal women, Keeping in regular contact with them, and advising them to take PNC from Satellite Clinic/ FWC/ Upazilla Health Complex/ MCWC for ANC.

5. Prevention of diseases and vaccination

- 5.1. Advising the local people about prevention of diarrhea through personal hygiene.
- 5.2. Participation in EPI centre.
- 5.3. Counseling of mothers on preparation of oral saline or making of salt-sugar juice and about taking of diarrhea affected children.
- 5.4. Referring patients with severe diarrhea to FWC/ Upazilla Health Complex.

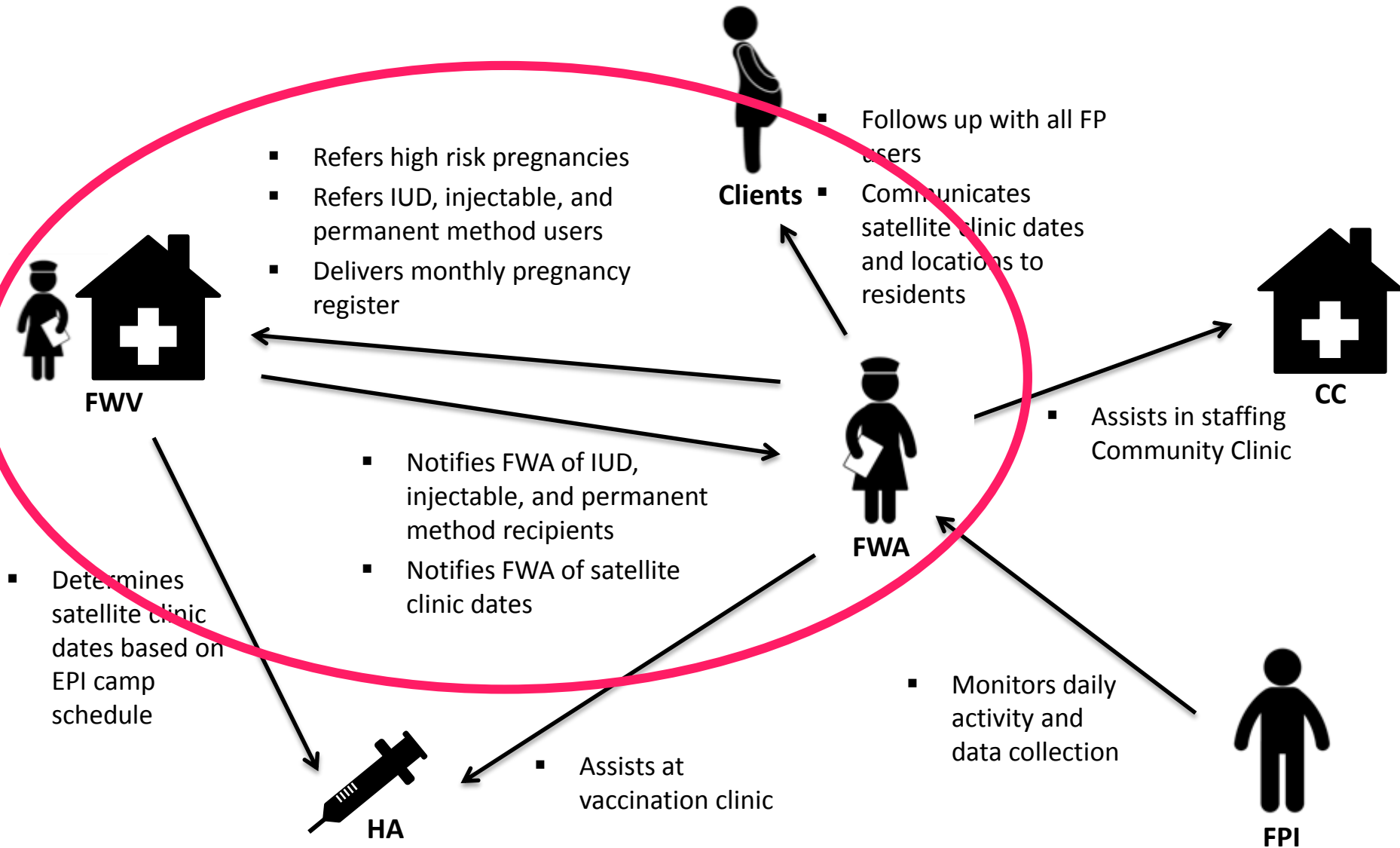
6. Education on Nutrition

- 6.1. Providing maternal health related information and education and counseling about nutrition using guidebooks and Flash Cards.
- 6.2. Distribution of vitamin capsule 'A' as per schedule.
- 6.3. Motivation to take Iodine fortified food.
- 6.4. Referring severely malnourished and anemic patients to Family Welfare Centre/Upazilla Health Complex.

7. Equipment and Supply

- 7.1. Collecting birth controlling devices from the office of Upazilla Family Planning and preserve in a "mini store".
- 7.2. Collecting family planning, ICC equipment received for maternal and child health and arrange to distribute them.
- 7.3. Proper documentation of receipt, distribution and storage of equipment in the storage and provide the accounts in a specified form to the Upazilla Family Planning Office.

Current CHW coordination is informal and complex



Translation of 19 registers allowed for greater insight into work processes and data collection

Flow chart of screening IUD clients	Follow-up list of IUD clients/ users				
<p>Ask client each of the following questions. If the client responses “yes” to any question, follow arrow sign and do according to instructions.</p> <p>Note: check the register if the woman has any child. IUD should not be given if the woman has no child. In that case, help the woman to choose another method.</p> <div> <p>1. Do you have excessive bleeding during menstruation? (Does the menstruation continue for more than 5 days, do you need to change cloth more than normal in a day?)</p> <p>2. Do you need to stop working due to severe pain during menstruation?</p> <p>3. Did you have fetus outside uterus (ectopic)?</p> </div> <div> <p>Help the woman to choose another method.</p> </div> <div> <p>4. Did you have labor (delivery) in past 42 days?</p> </div> <div> <p>Help the woman to choose another method</p> </div> <div> <p>5. Did you have last menstruation 4 weeks ago? (Does the woman think that she has become pregnant?)</p> <p>6. Do you have foul smelling or pus containing vaginal discharge and severe lower abdominal pain?</p> <p>7. Do you have vaginal bleeding in the period between two menstruations? Do you have bleeding after intercourse?</p> <p>8. Are you so weak (anemia) that you cannot perform any task? Do you unconscious often?</p> <p>9. Have your uterus came out through vagina?</p> </div> <div> <p>Take the woman to an FWV for more examination and treatment or arrange to refer her to an MO (MCH-FP/ Clinic)</p> </div> <p>If answer “no” to all questions above, you can give the woman an IUD. In this case, inform the woman the following issues.</p>	<p>Ask client each of the following questions. If the client responses “yes” to any question, follow arrow sign and do according to instructions.</p> <div> <p>1. Do you have white discharge more than before?</p> </div> <div> <p>Tell the woman that it is normal. It would get better within few days</p> </div> <div> <p>2. Do you have any of the following problems?</p> <ul style="list-style-type: none"> • Bleeding little more than normal bleeding or pain during menstruation. • Having spotting of blood in the period between two menstruations. </div> <div> <p>Explain to the woman that there are some minor problems initially after inserting an IUD. These are usually disappeared after 3 / 4 months.</p> </div> <div> <p>3. Did you have last menstruation 4 weeks ago? (Does the woman think that she has become pregnant?)</p> <p>4. Do you have severe lower abdominal pain?</p> <p>5. Do you have foul smelling vaginal discharge? Do you excessive itching during that time?</p> <p>6. Did you have high fever after last visit or do you have fever at present?</p> <p>7. Are you having excessive bleeding during menstruation (more than 5 days and needs to change cloth more than usual)?</p> <p>8. Do you have excessive bleeding in the period between two menstruations? Do you have bleeding after intercourse?</p> <p>9. Do you need to stop working due to severe pain during menstruation?</p> <p>10. Are you so weak (anemia) that you cannot perform any task? Do you unconscious often?</p> <p>11. Is the IUD thread lost (check with fingers)?</p> <p>12. Has the duration of IUD expired?</p> </div> <div> <p>Take or refer the woman to an FWV or MO more examination, treatment or removal of IUD</p> </div> <p>If answer “no” to all questions above, advice the woman to continue IUD.</p>	<div> </div>	<p>Usage:!</p> <ul style="list-style-type: none"> ↳ Insert IUD in the woman’s uterus in an ! FWV clinic.! ↳ Usually an IUD should be inserted within 7 days of starting menstruation. ! ↳ An IUD can be taken 42 days after labor/delivery.! ↳ An IUD can be taken right after an MR.! ↳ An IUD 280B can be used for 5 years.! • Check-up is required after 6 months and after that check-up is required in each year.! • A small thread will be hanging outside vaginal canal after inserting an IUD in uterus, , insert fingers to check if the IUD is at the right place right after each menstruation. • On expiration, a new IUD can be inserted taking out the old one. 	<p>Possible side-effects:!</p> <ul style="list-style-type: none"> • Menstruation for a longer period • Excessive bleeding during menstruation • Lower abdominal pain during menstruation • Having spotting of blood in the period between two menstruations. • Stop menstruation 	<p>Solutions to the side-effects:!</p> <ul style="list-style-type: none"> • Usually the side-effects get better within 3 – 4 months. • For excessive bleeding, better diets and iron tablets are suggested.

Identifying information is repeated on every form,
in different combinations

4. Couple Box

(Use the list to select interested women, follow-up clients and to provide maternal care during ante-natal and post-natal stage) Village:.....

Comments

[illegible]

5. List of children aged 0 – 1 year

Village:.....

Village:.....

Sl	Coup	Date of	Child's (0 – 1 yr)	Date of birth/ Age	Information on vaccination
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6. Infants Care (0 to less than 5 years)

Sl No.	Date of visit	No. of Household/ Couple	Name	Age		Complications	Advice/ Prescription
				Boy	Girl		

8. List of Pregnant Women

Sl No	Date of visit	No. of Couple	Village	Names of husband and wife (Mobile No. if available)	Wife's age	Date of last menstruation	Order of pregnancy	Probable date of	Date of delivery/	Type of outcome (live/still)	Informant
											Place of delivery (Home)

7. Adolescent healthcare

Sl No.	Date of visit	No. of Household/	Name	Age		Complications	Advice
				P	P		

9. Birth Register

[illegible]

12. List of women receiving Injectable

Sl No.	Couple No.	Client's name and Village Name	Date of first case	Schedule of Injection
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Identical vaccine information is recorded in multiple registers

5. List of children aged 0 – 1 year

Village:.....

Village:.....

[illegible][illegible]

9. Birth Register

[illegible]

Identical birth information is recorded in multiple registers

8. List of Pregnant Women

[illegible]

9. Birth Register

[illegible]

FWA reporting includes vaccine data, a task designated to DGHS workers

Vaccines are provided at EPI sessions, which are held by DGHS and staffed by Health Assistants

C) Childcare (0 – 5 years) !

Number of vaccinated children (0 – 1)!	BCG!		!!!
	Pentavalent	1	!!
		2	!!
		3	!!
	Measles!	!!	!!
Number of Polio vaccinated children!			!!
Number of children dosed VIT A!			!!
Number of ARI affected children receiving care!			!!
Number of diarrhea affected children receiving care!			!!
Number of malnourished children receiving care!			!!
Number of referred children!	ARI		!!
	Diarrhea!		!!
	Malnutrition!		!!
Night-blind children !	Boys!		!!
	Girls!		!!
Attendance at EPI session !	Target!		!!
	Attendance!		!!

Many data fields are not coded in a usable or consistent way

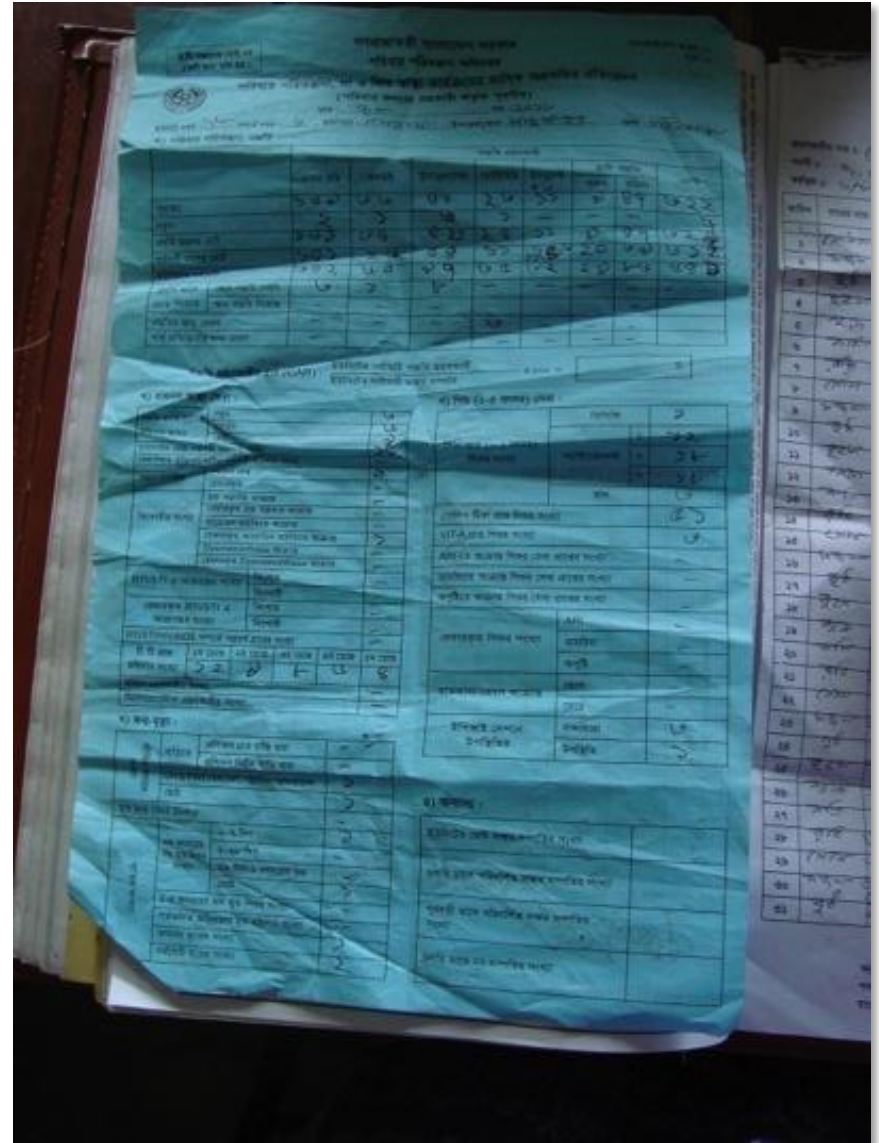
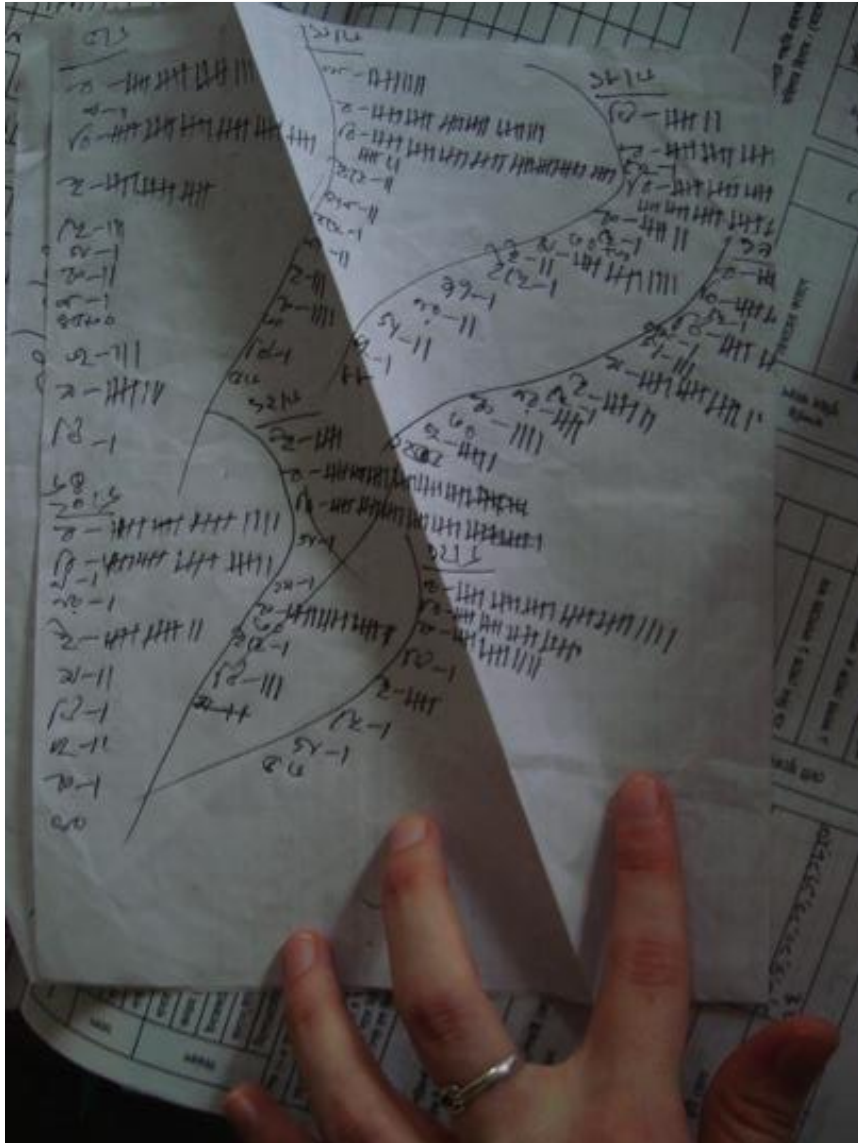
6. Infants Care (0 to less than 5 years)

[illegible]

C) Childcare (0 – 5 years) :

Number of vaccinated children (0 – 1)	BCG		
	Pentavalent	1	
		2	
		3	
	Measles		
Number of Polio vaccinated children			
Number of children dosed VIT-A			
Number of ARI affected children receiving care			
Number of diarrhea affected children receiving care			
Number of malnourished children receiving care			
Number of referred children	ARI		
	Diarrhea		
	Malnutrition		
Night-blind children	Boys		
	Girls		
Attendance at EPI session	Target		
	Attendance		

Every month, multiple workdays are devoted to manual data aggregation



	A	B	C	D	H	I	J
177	Agg. monthly	Days lost to government and weekly holy day		Primary	R11095	[Unknown]	Norec
178	Agg. monthly	Days spent, other		Primary	R11096	[Unknown]	Norec
179	Agg. monthly	Total deaths, age 0-7 days		Derived	R11097	(By month) COUNT of R10008	
180	Agg. monthly	Total deaths, age 8-28 days		Derived	R11098	(By month) COUNT of R10009	
181	Agg. monthly	Total deaths, age 29 days - 1 year		Derived	R11099	(By month) COUNT of R10010	
182	Agg. monthly	Total deaths, age 1-5 years		Derived	R11100	(By month) COUNT of R10011	
183	Agg. monthly	Total maternal deaths		Derived	R11101	(By month) COUNT of R10012	
184	Agg. monthly	Total deaths, other		Derived	R11102	(By month) COUNT of R10012	
185	Agg. monthly	Total deaths		Derived	R11103	SUM(R11097:R11102)	
186	Agg. monthly	Total live births		Derived	R11104	(By month) COUNT of R01016=L OR (By month) COUNT of R08011=Live; OR (By month) COUNT of R09003	Mult
187	Agg. monthly	Increase in eligible couples due to marriage		Derived	R11105	[Unknown]	Norec
188	Agg. monthly	Increase in eligible couples due to migration		Derived	R11106	[Unknown]	Norec
189	Agg. monthly	Decrease in eligible couples due to emigration		Derived	R11107	[Unknown]	Norec
190	Agg. monthly	Decrease in eligible couples due to over aged/divorced/death/other		Derived	R11108	[Unknown]	Norec
191	Agg. monthly	Number of clients, total in current month		Derived	R11109	R11077 (current month)	
192	Agg. monthly	Number of clients, total in previous month		Derived	R11110	R11077 (previous month)	
193	Agg. monthly	Number of clients, grand total in Unit		Derived	R11111	R11109+R11110	
194	Agg. monthly	Number of EC, total in current month		Derived	R11112	R11078 (current month)	
195	Agg. monthly	Number of EC, total in previous month		Derived	R11113	R11078 (previous month)	
196	Agg. monthly	Number of EC, grand total in Unit		Derived	R11114	R11112+R11113	
197	Agg. monthly	Number of pregnant women, total in current month		Derived	R11115	R11081 (current month)	
198	Agg. monthly	Number of pregnant women, total in previous month		Derived	R11116	R11081 (previous month)	
199	Agg. monthly	Number of pregnant women, grand total in Unit		Derived	R11117	R11115+R11116	
200	Agg. monthly	Client's adoption rate in Unit (CAR)	(Total family planning users in Unit / Total number of EC in Unit) * 100	Derived	R11118	(R11111 / R11114) * 100	

Monthly progress report for family planning, maternal and child health program
(To be completed by Family Planning Assistant)

Month: _____ Year: _____



Unit No.:..... Ward No.:..... Union:..... Upazilla/ Thana:..... District:.....

A) Family Planning Method:

		Client							
		Oral pills	Condom	Injectable	IUD	Implant	Permanent Method		Total
							Male	Female	
Old									
New									
Total of Current month									
Total of Previous month									
Total of Unit									
Discarded in current month	Did not adopt any method Adopted another method								
Sent for method									
Sent for side-effects									

The FWA re

572 unique

Client's Adoption Rate (CAR) :	$\frac{\text{Total}}{\text{Total unit}}$
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B) Reproductive Health Care Service:

Number of pregnant women in the current month	New
	Old
	Total

Total number of pregnant women in the unit	
Number of referred pregnant women with complications	

Infertile couple	Advised Referred
Number of Adolescent girls	Anemic
	Referred cases of anemia
	Iodine deficiency
	Referred cases of iodine deficiency
	Cases of Dysmenorrhoea
	Referred cases of Dysmenorrhoea

Number of RTI/STI cases	Adolescent b
	Adolescent p
Number of referred RTI/STI cases	Adolescent b
	Adolescent e

Number of advised cases of RTI/STI/HIV/AIDS				
Number of women receiving	1 st dose	2 nd dose	3 rd dose	4 th dose

11	
Number of ECP client	

D) Birth-death:

Number of livestocks	At home	Attended by trained person	
		Attended by untrained person	
	UHFVC/MCWC /Clinic/ Hospital		

C) Childcare (0 – 5 years) :

	BCG	
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E) Others:

Number of eligible couple in the unit	
---------------------------------------	--

	Total	
Skill Birth		
Number of death	Number of death among children less 1 year	0-7 days 8-28 days 29 days – less than 1 year Total
	Number of death in children aged 1-5 years	
	Number of maternal death	
	Number of other deaths	
	Number of total death	

Number of eligible couple visited in current month	
Number of eligible couple visited in previous month	
Number of newly married couple in current month	

MIS form - 1

Page - 2

Account of monthly storage and distribution:


[illegible]

Other

Number of people received information on ECD from trained worker
0
1
2
3
4
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[illegible]

The FWA registers contain 573 unique data fields.

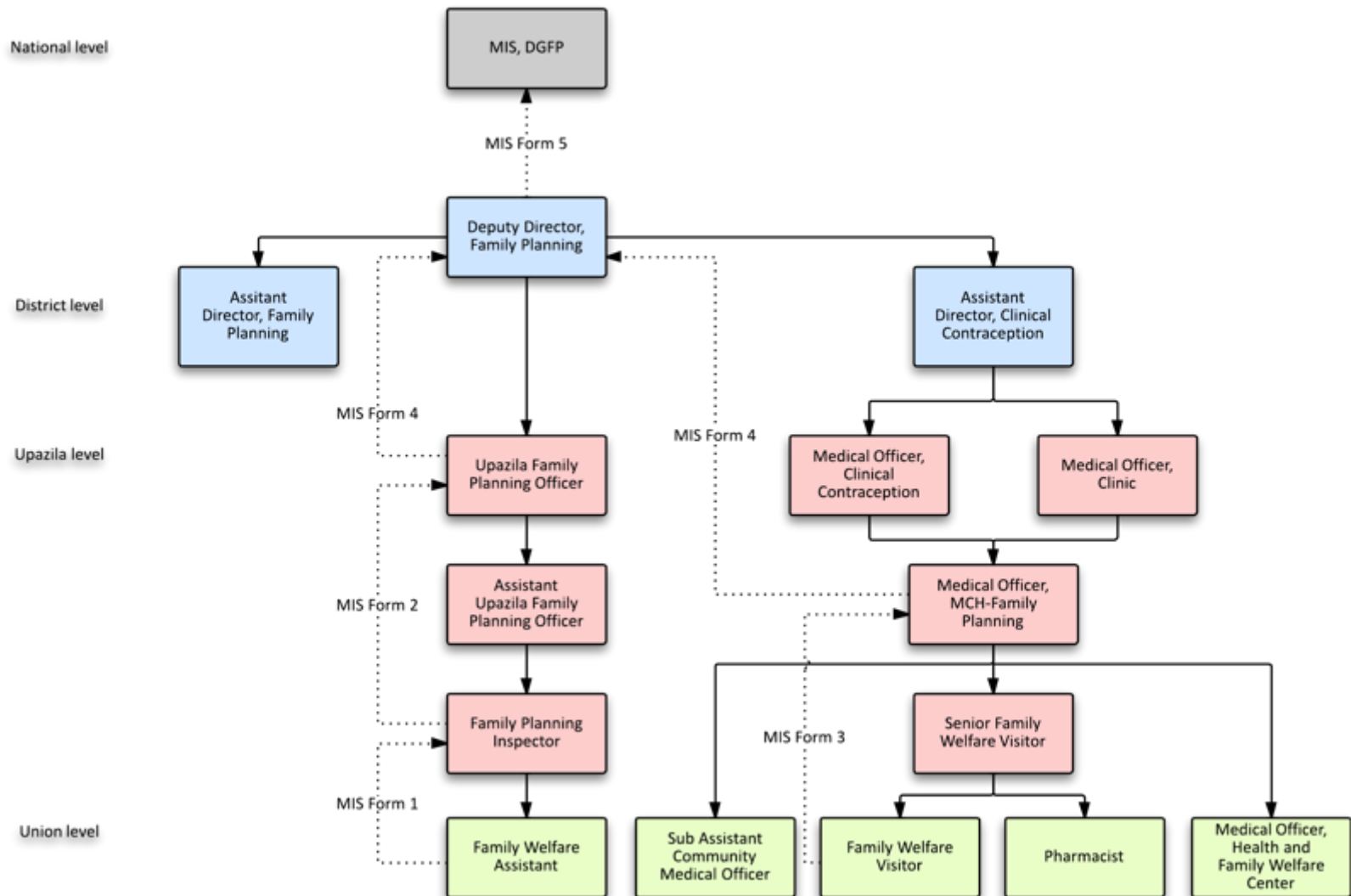


The screenshot shows a table with three columns. The first column is labeled 'C) Childcare (0 – 5 years) : BCG'. The second column is labeled 'Grand total'. The third column is empty. The table has a header row and a data row.

C) Childcare (0 – 5 years) : BCG	Grand total	

Approximately 60 fields would be required for a digital system to process the same information.

Field data is summarized and transferred 5 times before reaching the DGFP MIS unit.



“Interoperability means the ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities.”

- International Standards Organization

- Interoperability within organizational boundaries
 - Data collection is currently interfering with health service delivery
 - The paper-based system calls data quality into serious question
- Interoperability across organizational boundaries
 - DGFP and DGHS are collecting duplicate and conflicting data
 - The raw data should produce meaningful and comparable health indicators