Disruptive innovations in health information systems in Bangladesh

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Outline

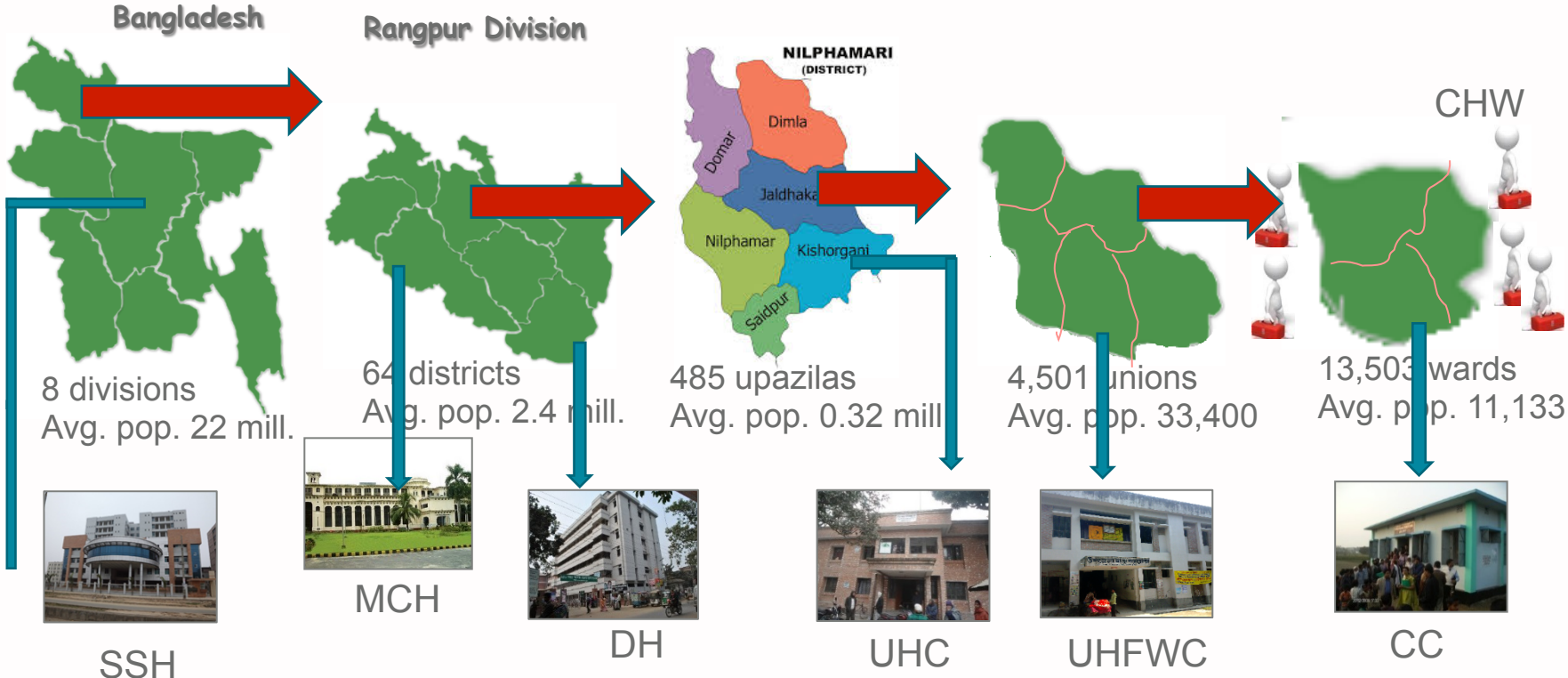
1. Importance of health-MIS
2. DHIS2 in Bangladesh
3. Data for decision making
4. Implications

Importance of MIS

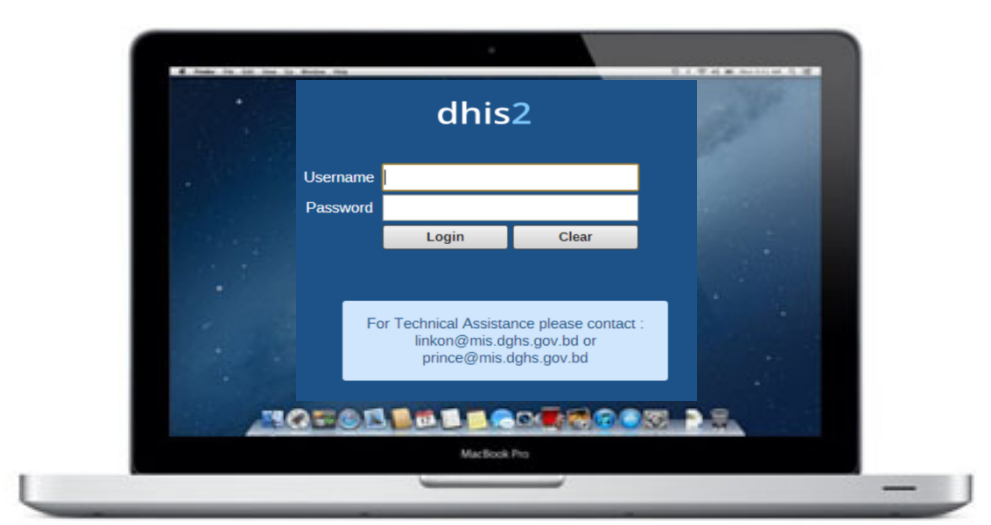
- One of the 6 Health System Building Blocks
- Routine monitoring system comprising of data collection, collation, analysis, feedback and action
- Global experience suggests
    - rarely used in management decision support
    - quality is poor, upward bias
    - policy planners rely on survey data

Bangladesh Facts

- A small country
- High population density
- Remarkable progress in health indicators
- Good health at low cost
- Epidemiological and demographic transition
- Tiered health system
- Paper-based to web-based HMIS in 2009



DHIS2: a decision making tool



Bangladesh is using DHIS2 since 2009

DHIS2 is an open source software.

All tires of health system are using DHIS2

Aggregate data from facility, Individual data from community

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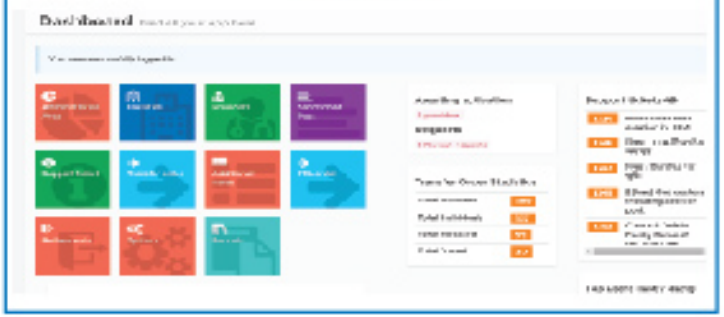
Other ICT tools used in HMIS

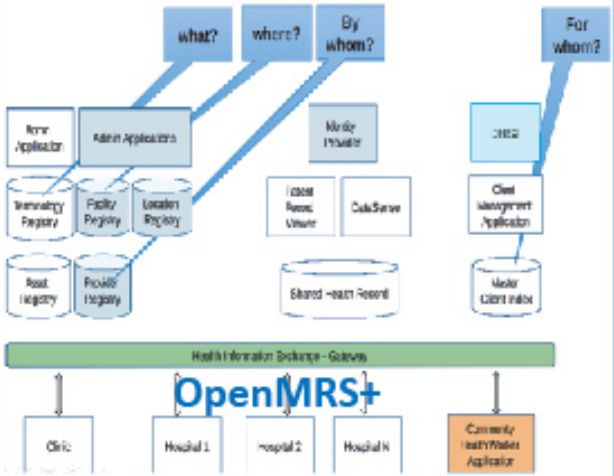
HRIS



Service Automation

- Annual Development Program Monitoring System
- Online Medical College Admission System
- Bulk SMS System
- Online Local Health Bulletin
- Web Portal
- Social Media

Shared Health Record



Citizen's life time record for

- Tracking universal health coverage
- Tracking population based data of global reference list of 100 core health indicators

Biometric Remote Office Attendance

All district & sub-district hospitals

24/7 Health Call Center 16263

Services

- Live consultation
- Content management
- Complaint management

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ICT infrastructure

About 600 hospitals

About 19,000 day-care facilities

About 100,000 health workforce

Super-specialized Hospitals

Tertiary Hospital / Medical College Hospital

District Hospital / Medical College Hospital

Sub-district Hospital

Union Health Center (Day care)

Community Clinic (Day care) Community Health Workers

Bangladesh (Pop. ~150 million)

Divisions (7) Pop. 23 million)

Districts (64) Pop. 2.5 million

Sub-districts (483) Pop. 0.3 million

Unions (4,501) Pop. 35,500

Wards (13,503) Pop. 12,000

Internet connected April 2009

3,500

13,000 community clinics

3,500

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DHIS2 Data system

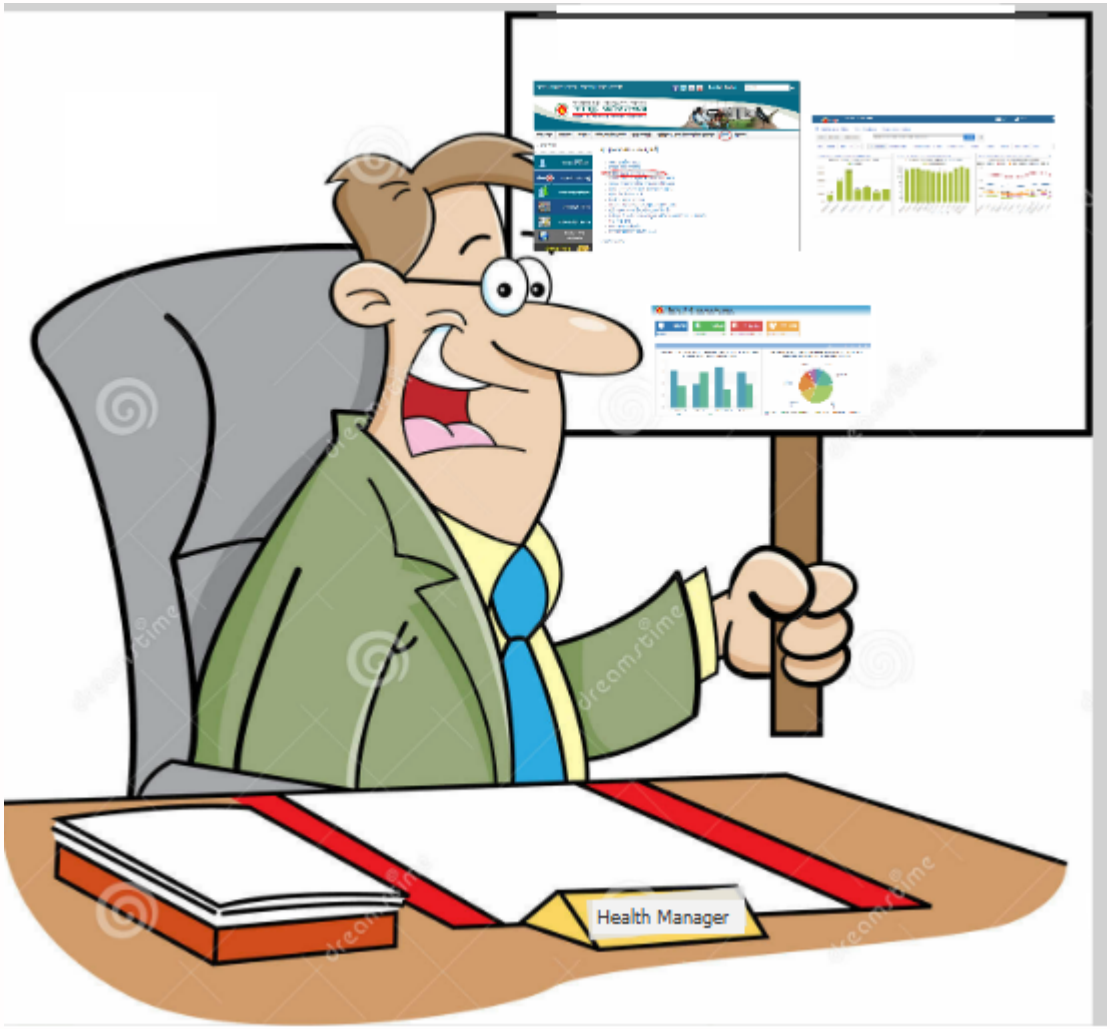
Aggregate

- EOC
- IMCI
- EPI
- Logistics
- Hospital statistics
- Cervical cancer
- HIV/AIDS

Individual (COIA+)

- Mother
- Child
- Kala Azar patients
- NCD
  - ✓ Hypertension
  - ✓ Diabetes Mellitus

Data visualization: how it helps managers



It is possible for health manager to examine

- Completeness of data
- Accuracy of data
- Monitor OP indicators
- Track own performances
- Find bottleneck
- Compare facilities
- Immediate action

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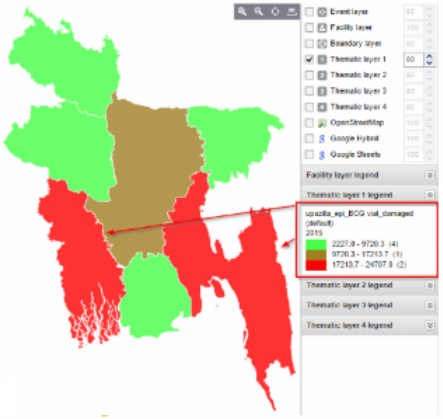
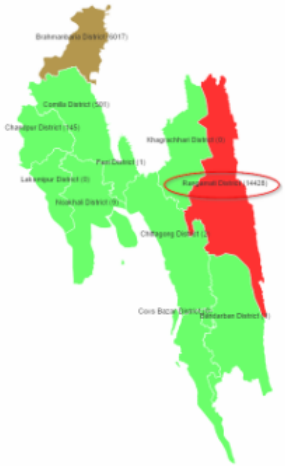
Data for action

LD's Dashboard



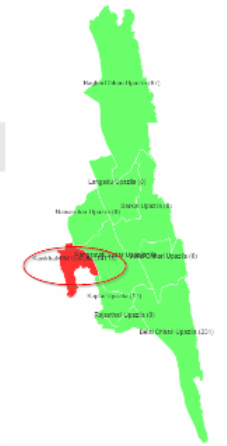
Drill down

Divisional Dashboard



Drill down

District Dashboard



Drill down

Upazila Dashboard

Periods / Operand	upazilla_epi_BCG vial_damaged (default)	Total
February 2015	0	0
March 2015	2 016	2 016
April 2015	2 016	2 016
May 2015	2 016	2 016
June 2015	2 016	2 016
July 2015	2 016	2 016
August 2015	2 016	2 016
October 2015	2 017	2 017
Total	14 113	14 113

Director's Office

Monthly Meeting

Chittagong

Divisional Director Office

Monthly Meeting

Civil Surgeon Office

Rangamati

Monthly Meeting

UH&FPO Kawkhali

Monthly Meeting

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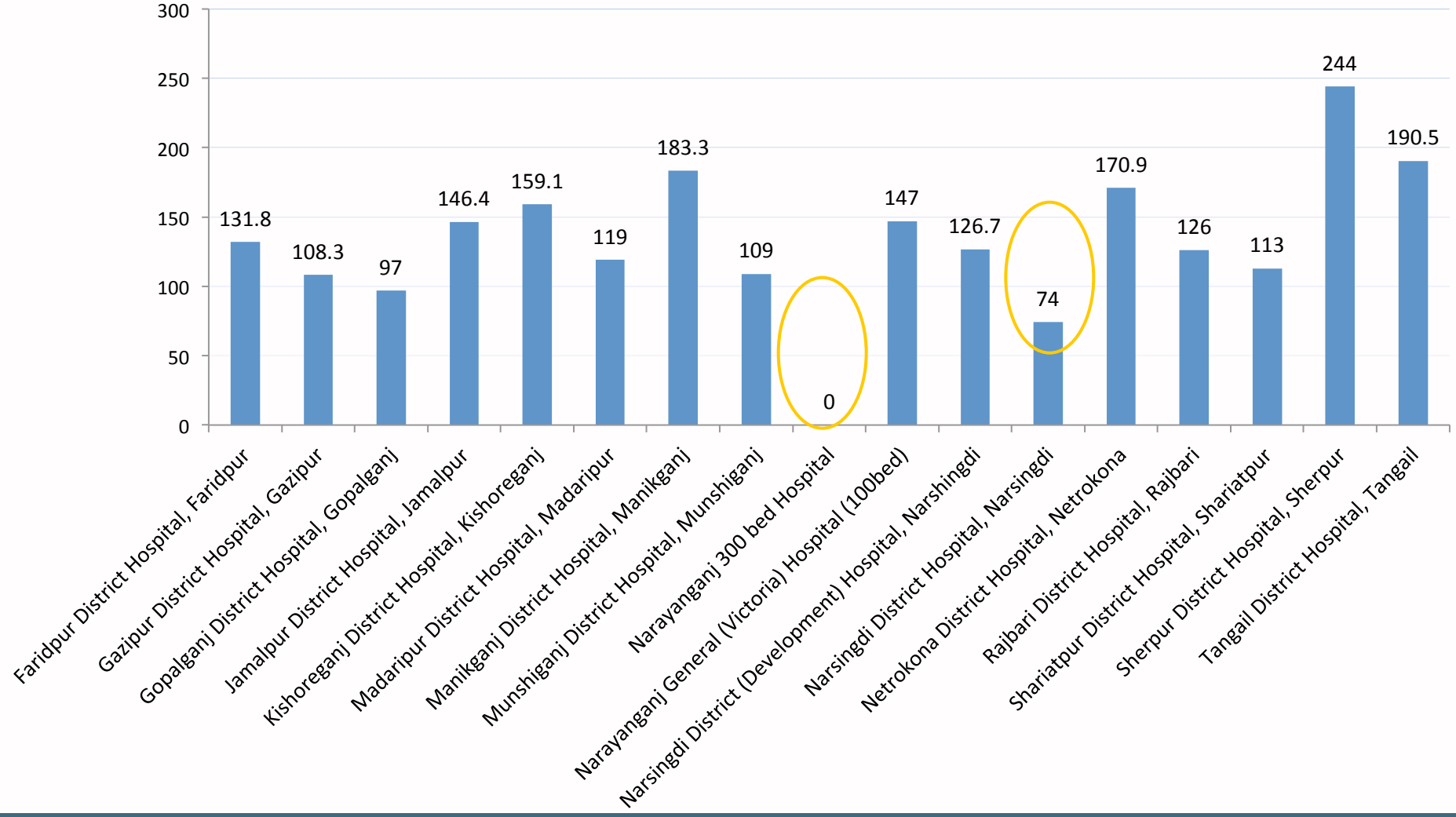
Divisional monitoring, Reporting status (%), April- 2016

Organisation units / Data	Monthly EmOC DataSet with Genital Fistula	Monthly IMCI Dataset	Daily OPD and Emergency Visits, Admission Data Set	Monthly HMC meeting	Monthly Hospital Bed Statement	Monthly Major Equipment Information	Cervical and Breast Cancer Screening Programme Report
Faridpur District Hospital, Faridpur	100	100			100		100
Gazipur District Hospital, Gazipur	100	100	83.3		100		100
Gopalganj District Hospital, Gopalganj	100	100	100		100		100
Jamalpur District Hospital, Jamalpur	100	100	100		100	100	100
Kishoreganj District Hospital, Kishoreganj	100	100			100		
Madaripur District Hospital, Madaripur	100	100	60		100		100
Manikganj District Hospital, Manikganj	100	100			100		100
Munshiganj District Hospital, Munshiganj	100	100	90		100	100	100
Narayanganj 300 bed Hospital	100	100		100	100		
Narayanganj General (Victoria) Hospital (100bed)	100	100	33.3	100	100	100	100
Narsingdi District (Development) Hospital, Narshingdi	100	100	100	100	100	100	100
Netrokona District Hospital, Netrokona	100	100	100	100	100	100	100
Rajbari District Hospital, Rajbari	100	100	93.3		100	100	100
Shariatpur District Hospital, Shariatpur		100			100		100
Tangail District Hospital, Tangail		100	96.7		100	100	100

Divisional monitoring, Bed Occupancy Rate (%), April- 2016



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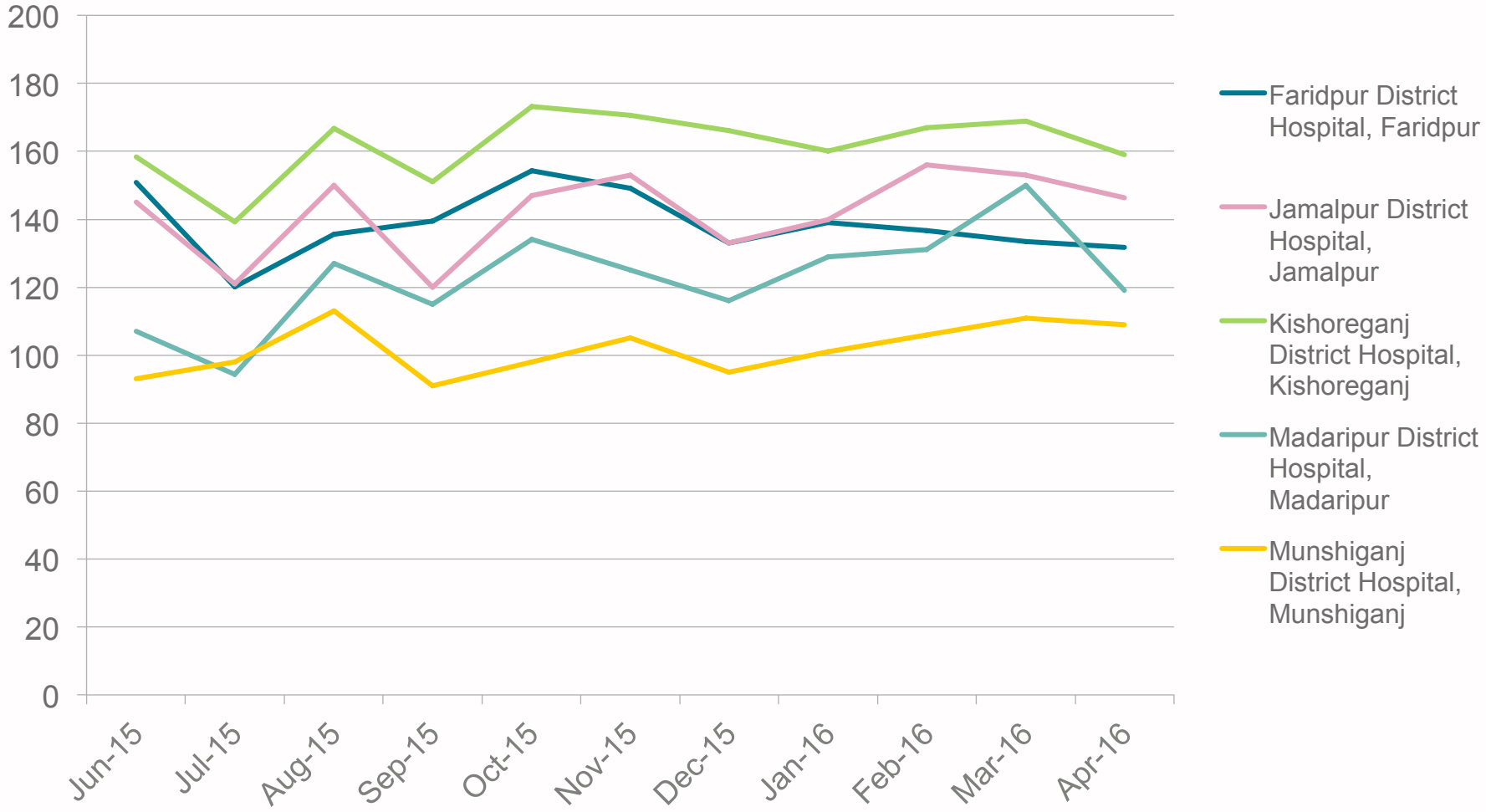
Trend: Bed Occupancy Rate (%), last 11 month



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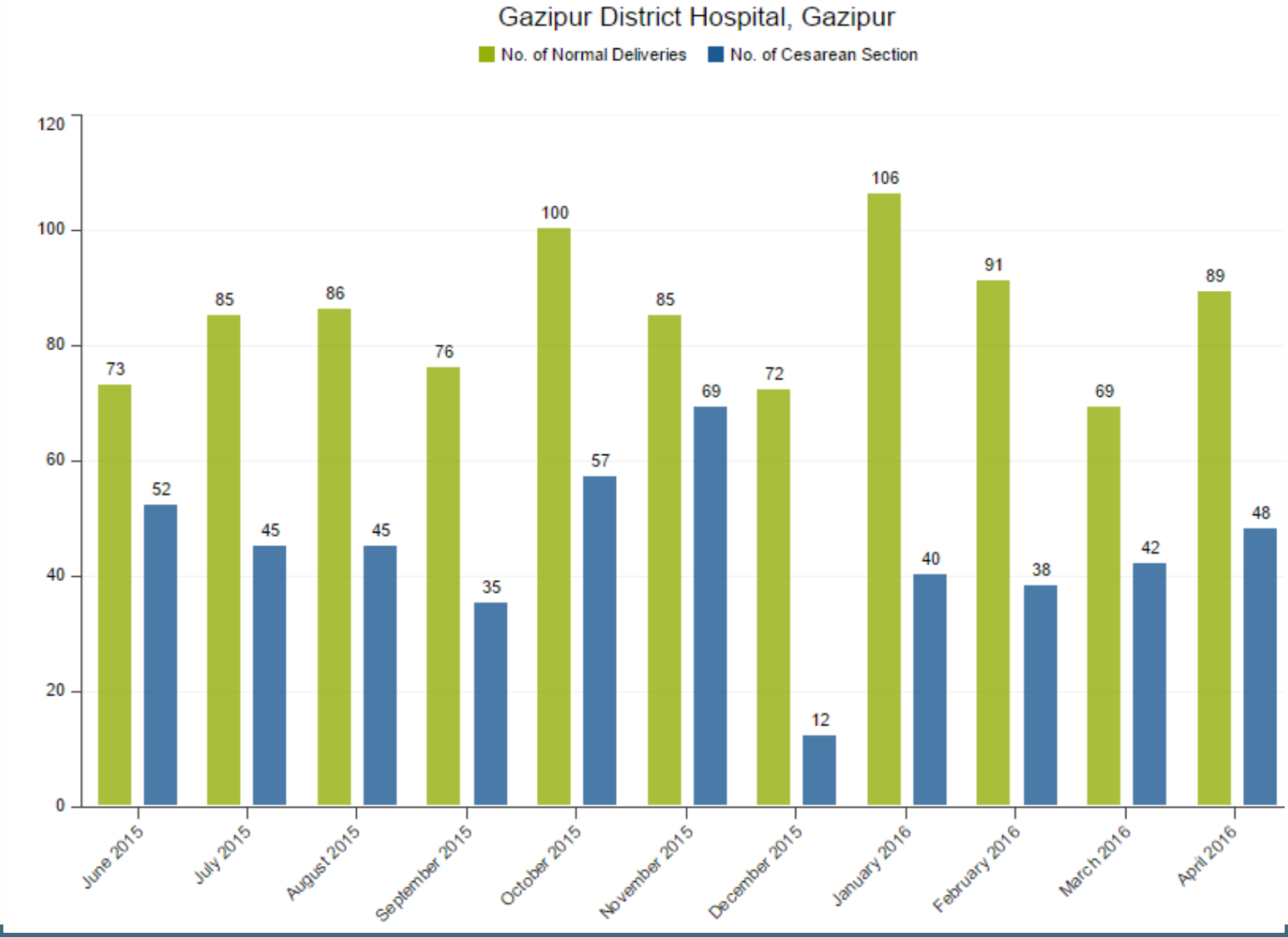
Trend: delivery and Cesarean Section, last 11 month



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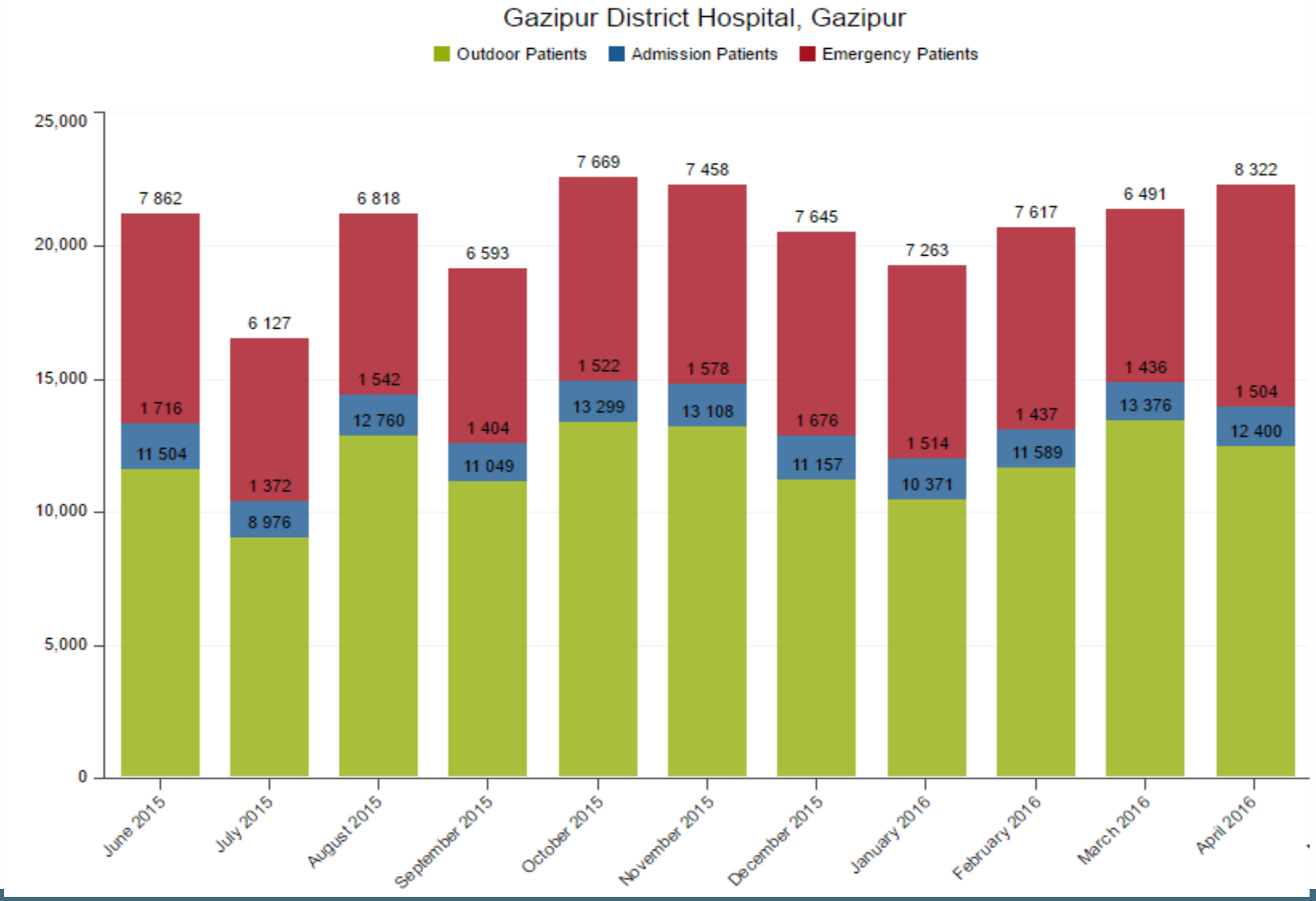
Trend: OPD, IPD, Emergency Patient, last 11 month



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COIA+, Type of delivery, last 12 month

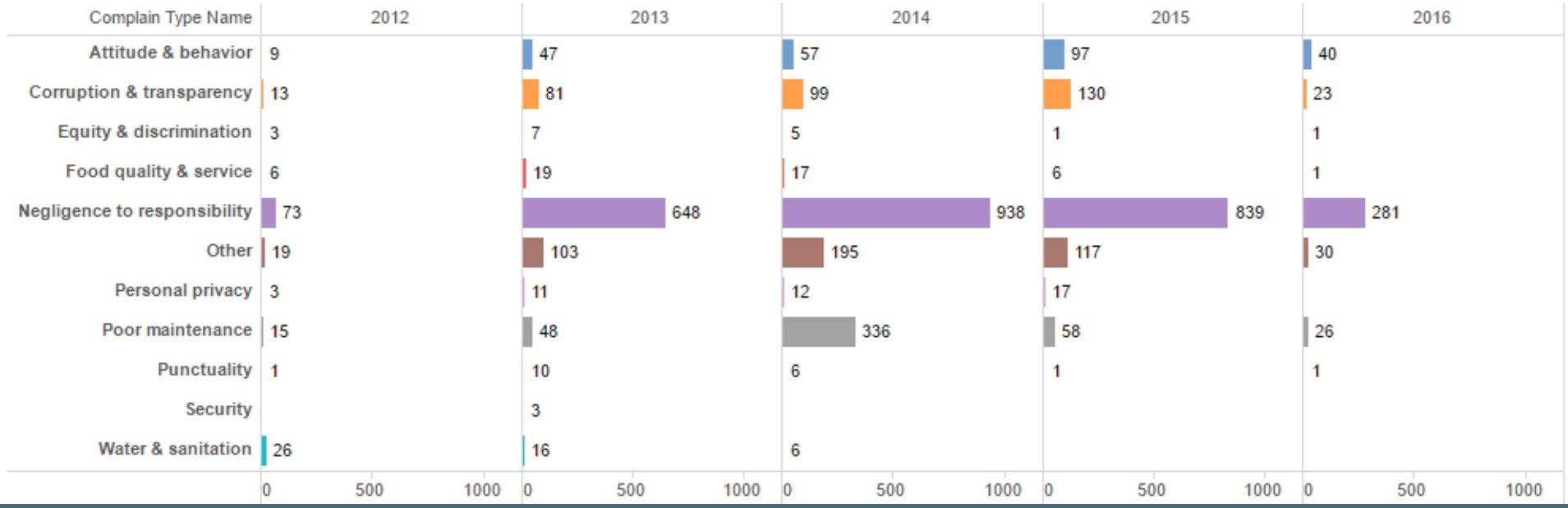
Organisation units	Bangladesh												Total
Type of delivery / Periods	**June 2015**	**July 2015**	**August 2015**	**September 2015**	**October 2015**	**November 2015**	**December 2015**	**January 2016**	**February 2016**	**March 2016**	**April 2016**	**May 2016**	
NVD	460	473	507	422	460	376	319	140	67	103	160	143	3 630
Cesarean section	41	53	65	78	46	62	35	34	10	31	52	53	560
Forcep	7	7	6	10	14	13	10	10	2	2	11	14	106
Vacuum	7	5	7	4	1	11	4			1	1	3	44
Destructive operation	11	10	9	13	8	7	18	7	3	5	12	20	123
Vaginal breech delivery	10	7	14	8	3	8	10	8		5	13	9	95
Vaginal face delivery	25	26	34	19	50	41	39	36	8	32	65	44	419
Total	561	581	642	554	582	518	435	235	90	179	314	286	4 977

COIA+, Place of delivery, last 12 month

Organization units	Bangladesh												Total
Place of delivery	**June 2015**	**July 2015**	**August 2015**	**September 2015**	**October 2015**	**November 2015**	**December 2015**	**January 2016**	**February 2016**	**March 2016**	**April 2016**	**May 2016**	
Medical College Hospital	41	33	45	42	34	41	45	29	5	12	15	25	**367**
District Hospital	123	147	146	182	154	161	125	67	11	40	56	62	**1 274**
Upazila Hospital	435	377	425	430	526	572	486	194	64	144	201	204	**4 058**
MCWC	20	15	18	27	30	45	32	23	5	10	23	6	**254**
UH & FWC / USC	37	23	43	22	32	46	48	21	3	5	14	8	**302**
Community Clinic	199	199	192	202	247	284	257	121	43	84	149	119	**2 096**
Private Hospital / NGO clinic	102	139	143	140	125	162	143	74	18	44	72	80	**1 242**
Home	1 041	991	1 115	965	1 191	1 092	908	445	112	199	294	265	**8 618**
Own Facility	15	20	24	19	25	25	28	8	1		4	8	**177**
Others	33	28	44	26	36	43	25	18	1	3	3	7	**267**
Total	2 046	1 972	2 195	2 055	2 400	2 471	2 097	1 000	263	541	831	784	**18 655**

Complain Box

Datetime	Org Name	Message
05-06-2016 ..	Sarkari Karmochari Hospital- Chankharpol- Dhaka	scigare staplar pin
04-06-2016 ..	National Institute of Chest Disease and Hospital (NI..	w12/13 rom 10, toileter doroja nai.bacin nai.janalar glas nai
04-06-2016 ..	National Institute of Kidney Disease and Urology (NI..	cash reciver person is not present at his room for a long time.
01-06-2016 ..	Sher-e-Bangla Medical College Hospital	lowest service every section.
01-06-2016 ..	National Institute of Ophthalmology (NIO)- Sher-e-B..	Sister of outdoor (Room no. 117) was very rude and behaved very toughly. (Time:9.30 a...
31-05-2016 ..	500 Bed Kurmitola General Hospital (Cantonment)	toilet not clean and doctor service very weak not a fast
31-05-2016 ..	Shaheed Suhrawardy Medical College Hospital	paying bed ward 9 Female 1 Celling fan are not working and insufficient fan. Patients are fi..
31-05-2016 ..	500 Bed Kurmitola General Hospital (Cantonment)	hard to find room numbe. Needed proper direction signe.
30-05-2016 ..	National Institute of Chest Disease and Hospital (NI..	no body present in information desk
30-05-2016 ..	Barhatta Upazila Health Complex	there is no sufficient tablet and capsule



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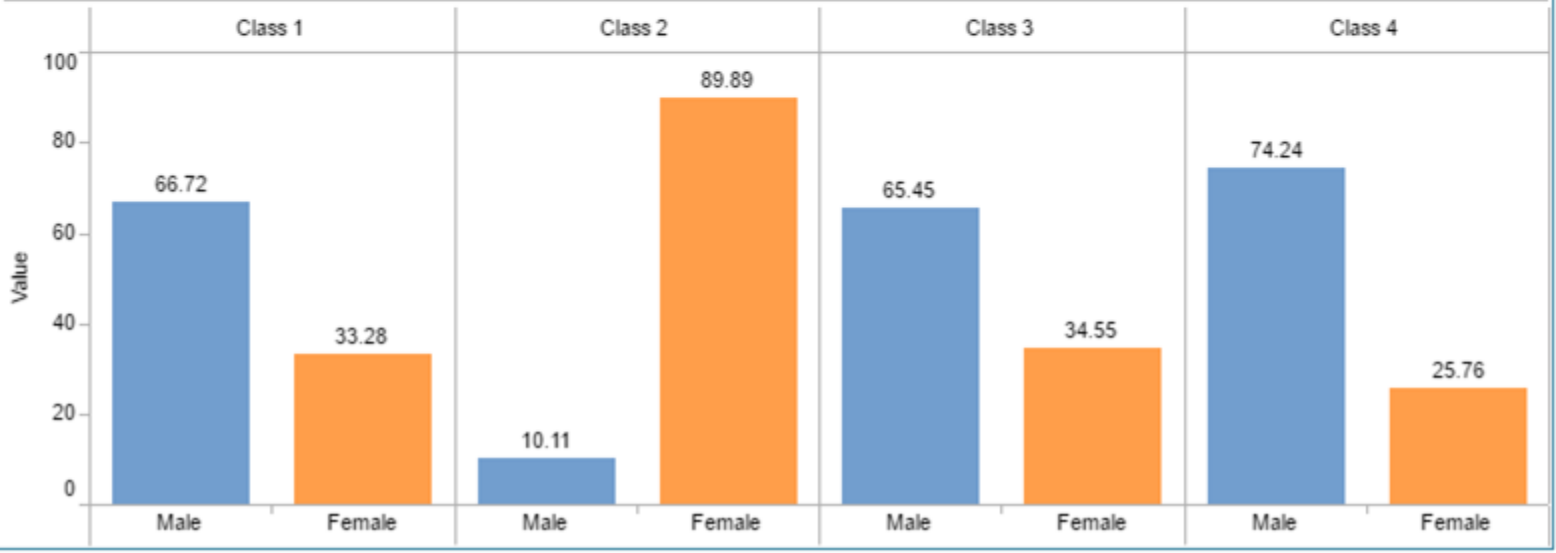
Human Resource Management

Agency
- DGFP
- **DGHS**
- Directly under MOHFW
- DNS
- HED
- NIPORT
- Other Ministry/not elsewhere

Number of sanctioned, filled- up and vacant posts

Class	Sanctioned	Filled-up (Male)	Filled-up (Female)	Filled-up (Total)	Filled-up (%)
Class 1	26,227	11,868	5,920	17,788	67.82
Class 2	19,388	1,340	11,914	13,254	68.36
Class 3	65,945	33,245	17,551	50,796	77.03
Class 4	27,387	12,194	4,231	16,425	59.97
Grand Total	138,947	58,647	39,616	98,263	70.72

Percent distribution of male and female staff



Total Facility : 18,091

Total Sanctioned post : 138,947

Total fillup post : 98,263

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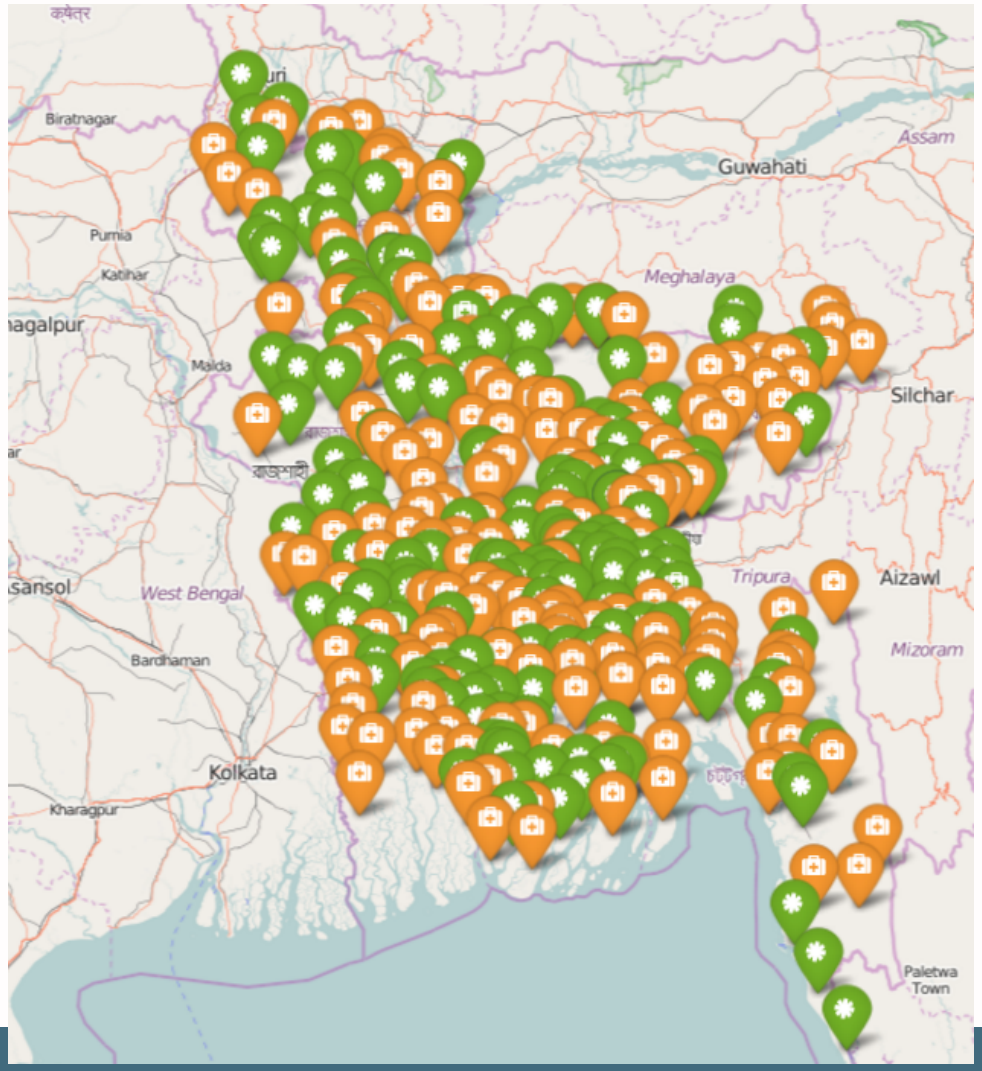
Human Resource Management

Agency	Class	Profession Category	Sanctioned	Filled up (Male)	Filled up (Female)	Filled up (Total)	Vacant	Vacancy %
DGHS	Class 1	Dental Surgeon	588	251	145	396	192	33.1
		Medical Technologi..	2	0	0	0	2	100.0
		Nurse	59	3	17	20	39	61.2
		Physician	25,841	11,889	6,003	17,892	7,949	43.9
	Class 2	Medical Technologi..	159	93	19	112	47	37.1
		Nurse	17,750	866	11,307	12,173	5,577	64.8
	Class 3	Field Staff	39,810	19,190	14,387	33,577	6,233	32.9
		Medical Technologi..	4,745	2,877	519	3,396	1,349	53.2
		Nurse	1,398	356	138	494	904	54.8
		Support Staff	24	3	0	3	21	76.7
	Class 4	Field Staff	4	0	0	0	4	100.0
		Support Staff	27,369	12,168	4,222	16,390	10,979	53.6
Grand Total			117,749	47,696	36,757	84,453	33,296	45.9

Attendance System

Those who recorded presence by bio metric machine



Organization Name	Total Employee	Total Attendance
Dhamrai Upazila Health Complex	95	66
Dohar Upazila Health Complex	50	21
Savar Upazila Health Complex	90	12
Alfadanga Upazila Health Complex	39	20
Sadarpur Upazila Health Complex	32	24
Tongi 50 Beded Hospital	110	66
Gazipur District Hospital	148	70
Kaliakair Upazila Health Complex	71	55
Kaliganj Upazila Health Complex	94	25

Active sending data

Active not sending data

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SHARE Baseline study, 2015

Current status

- Online system is established
- Computers, laptops, tablets, supplied, installed and in operation
- All data operators are trained
- Data input is customized
- Real-time data available

Success factors

- Strong leadership (**Champion**)
- Effective collaboration
- Donors support
- Political commitment
- A team-work approach

Key challenges

- Internet connectivity
- Data quality
- Motivation of managers
- Skills and knowledge
- Little use at local level

Way forward

- Capacity development of health manager for data analysis, interpretation, feedback and use for better resource allocation and decision making
- Create online training module so that user can learn from distance
- Create dashboard for each layer of user so that they can visualize and use data improving governance and stewardship
- Development of web portal, using TABLEAU, CLICDATA etc.
- Technical assistance to neighboring countries

Conclusions

- A ***Disruptive Innovations*** in the field of on-line Health-MIS
- Now ***real time*** data are available for
  - monitoring and evaluation
  - measurement and accountability
  - enhance competition
  - benchmarking for evaluation
  - research
- All these were possible due to strong **collaboration** and presence of a **benevolent leader**
- **Showcase** for neighboring countries
- Need for further strengthening and regional collaboration to support achieving health SDG targets

Orientation of Line-Directors of Health Department on DHIS2 data visualization

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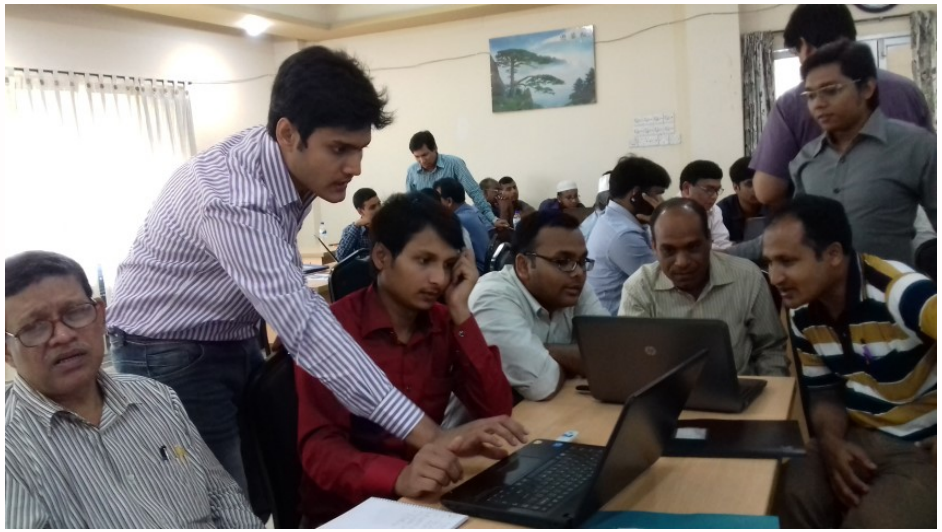
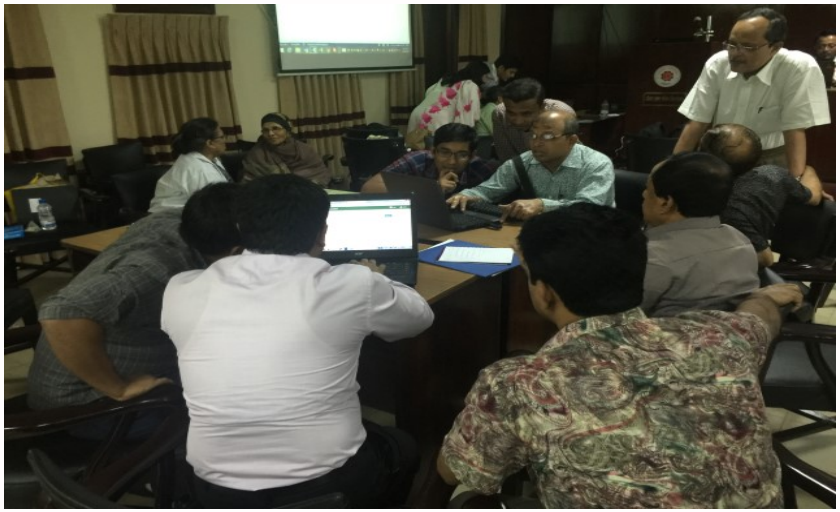
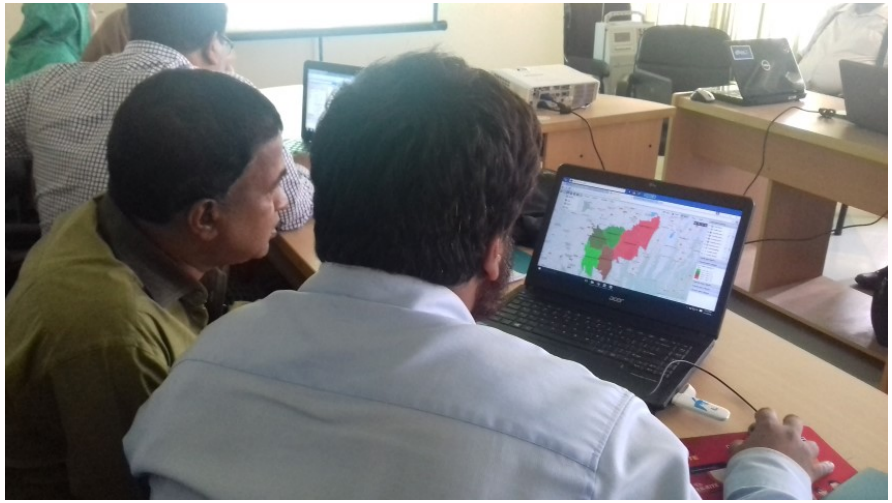
Divisional training for district mangers



Divisional training for district mangers





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Measurement and Accountability for Health

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thank you!