



CONCEPT PAPER FOR THE DESIGN OF PERFORMANCE MONITORING MECHANISM FOR HOSPITALS UNDER PUNJAB EMPLOYEES SOCIAL SECURITY INSTITUTION (PESSI)

Background

The Punjab Employees Social Security Institution (PESSI) is an autonomous body under the administrative control of Labor & Human Resource Department under the Punjab Government Rules of Business, 1974 established through the Provincial Employees Social Security Ordinance, 1965 - operational since March, 1967 and is governed by a 13 member Governing Body. It is the only autonomous body in Punjab providing **both** comprehensive healthcare coverage and cash benefits to its registered secured workers and their families. The main source of income of the institution is the collection of social security contribution from registered establishments under ordinance ibid.

Provision of health facilities to the workers and their dependants is covered under the Provincial Social Security Laws. The Provincial Employees Social Security Ordinance, 1965 requires the employers to contribute 6% of the wages of their employees (having wages up to Rs.22,000/-) to the Punjab Employees Social Security Institution.

The Medical Facilities under PESSI include comprehensive medical treatment in the Social Security Hospitals and the facilities not available in Social Security Hospitals are arranged through other hospitals at the cost of PESSI wherever those be available. In case, the required facilities are not available within the country, the same are managed abroad to cater to the health requirements of the secured persons / beneficiaries.

Currently, PESSI has several medical care facilities across Punjab. These hospitals are equipped with 24 hours emergency services - with enhanced medical facilities at certain locations. Each hospital is in turn also associated with, Social Security Emergency Centers (SSEC), Social Security Medical Centers (SSMC), and Social Security Dispensaries (SSD).

Health Care Facility	Number
Main Hospitals	17+2
Mini Hospitals	3
Social Security Dispensaries	138
Social Security Emergency Centre	87
Social Security Medical Centre	37

The total capacity of PESSI hospitals is around 2,030 beds, served by 6,835 staff members comprising of medical specialists, nurses, experts, admin staff etc. PESSI serves above 2.5 million patients every year with new facilities are being added up in the hospitals for serving additional needs of the patients.

Introduction

Given its scope of operations, PESSI is committed to providing better health services; its performance in turn however depends on the performance of its managers, health delivery





infrastructure and soundness of operations. With a patient inflow of 2.5 million per year and an ever expanding secured workers base, it is critical that the institutions under PESSI remain operational, functional and effective – thereby creating a need for mechanism that could effectively set benchmarks of excellence, monitor service delivery and identify possible areas for improvement.

Adopting and installing such a system requires a thorough collection of information (data) and analysis of outcomes. Deployment of a comprehensive & integrated M&E system across all PESSI medical facilities therefore becomes the next required step.

To keep the system simple in its initial stage, the M&E system will focus mainly on the 17 hospitals under PESSI and expand in phase 2 to include SSECs, SSMCs, and SSDs. These nineteen hospitals have varying bed capacities – all of which have been classified into three categories based on this very bed capacity. Category 'A' includes hospitals having 250 or above bed capacities. Category 'B' hospitals have bed capacities ranging between 50 and 250 beds. While hospitals having 50 or less than 50 beds capacity are included into category 'C' as illustrated in following table:

Categories	Name of Hospital	Bed Capacity
<	Nawaz Sharif Social Security Hospital Lahore	550
JORY	Faisalabad Social Security Hospital	300
CATEGORY A	Islamabad Social Security Hospital	180
	Social Security Hospital Shahdara	100
	Faisalabad Maternal Newborn and Child Health Centre	100
	Khawaja Fareed Social Security Hospital Multan	100
m	Gujranwala Social Security Hospital	100
ORY E	Gujrat Social Security Hospital	100
CATEGORY B	Sialkot Social Security Hospital	100
5	Rehmat-Ul-Lil-Alameen Institute of Cardiology Lahore	
	Kot Lakhpat Social Security Hospital	50
CATEGORY C	Okara Social Security Hospital	50
Jauharabad Social Security Hospital		25





Sheikhupura Social Security Hospital	30
Jaranwala Social Security Hospital	25
Jhang Social Security Hospital	25
Sahiwal Social Security Hospital	10

With categories predefined, the Reforms team at PESSI has conceptualized a comprehensive M&E system for data collection, reporting and validation for A, B and C hospitals. The process has been completed after a series of consultative meetings in year 2018 and 2019 with key stakeholders. Best study models of hospital performance evaluation mechanisms have been studied and considered - including models that are currently under implementation in Punjab and KPK. For data collection of KPIs, a number of existing online and offline data sources are being used that include hospital sourced information PMIS, HMIS, Biometrics and biomedical equipment tagging system.

A mechanism for data validation shall also be adopted to ensure reporting accuracy. The M&E system would be hosted on a web-based Platform that could process data from various sources and calculate key performance indicators with balance scorecard methodologies.

2. Objectives

The aim of the assignment is to explain the methodology behind design and development of a web-based performance M&E system – facilitated via online dashboards. The primary motive is to establish an interface that enables an unbiased monitoring and performance evaluation. It is aimed that this system will improve health service delivery while also building local capacity of PESSI staff. The emphasis is on result-based performance and monitoring instead of process or activities based performance.

This document therefore presents outline of the structural design of web-based M&E system based on discussion with various stakeholders.

3. System Design

This section presents structural design of the performance monitoring system, processes, data flows for measuring/capturing and presentations of calculated KPIs scorecard on the dashboards. The detailed design specifications, particularly related to software system is prepared during the system development and together with the document, shall form the overall set of technical documentations to be used as reference material in future for system maintenance and its up-gradation.

3.2. Performance domains





For Phase 1, performance domains and sub-domains for the monitoring of Category A, B and C have been identified. These domains and sub-domains relate to the major functions of the hospitals, and are given as under:

#	Domain	KPI (Monthly Reporting)
1	Planning & Management	Filled Posts
2	Planning & Management	Staff Presence
3	Planning & Management	Budget Utilization
4	Planning & Management	Cost per patient
5	Planning & Management	Drug Availability
6	Planning & Management	Equipment Availability
7	Planning & Management	Ambulance Utilization
8	Monitoring & Supervision	Administrative Review Meetings
9	Monitoring & Supervision	Clinical Audits
10	Monitoring & Supervision	Referrals from Dispensaries
11	Monitoring & Supervision	Referrals from hospitals
12	Monitoring & Supervision	Referrals to other hospitals
13	Service Delivery	Health Facility Utilization Rate (Total patients seen in OPD: self, dependents, total), (Total patients in IPD: self, dependents, total), (Total patients in Emergency: self, dependents, total), (Diet Charges)
14	Service Delivery	Bed Occupancy Rate
15	Service Delivery	Average Length of Stay
16	Service Delivery	OT Services performed
17	Service Delivery	Availability of specialized services
18	Service Delivery	Total Institutional Deliveries
19	Service Delivery	Availability: Xray, Ultrasound, ECG, CT Scan, Bloodwork
20	Service Delivery	Mortality Rate

3.3. Performance measures (KPIs)

A detailed list of quantitative performance measures, or key performance indicators (KPIs), their definition and formula for computing scores are given in Annexes. A summary is given as under:





Management Level	KPIs
Hospitals (Category A, B and C)	13 (Phase 1)
SSEC	Phase 2
SSMC	Phase 2
SSD	Phase 2

As delineated, for Phase 1 monitoring of Hospitals (Category A, B and C) a total of 13 unique indicators have been selected of which most indicators are quantifiable measures such as coverage percentages and proportions.

3.4. Data sources

A range of sources have been identified for data on key performance indicators. These include routine management information system, PMIS, Biomedical tagging, Biometrics record, HMIS, and submitted data from hospital personnel.

3.5. Configuring Scorecards

An administrative module, accessible through secure login is used for configuring the scorecard, for adding or changing key performance indicators, for assigning or changing weights of scorecard and for defining or altering formula of computation.

The scoring/weightage engine is dynamic in the sense that every time formula or weight for a particular KPI is changed, it will re-calculate performance indices of all management units and time periods according to new configuration.

3.5.1. Benchmarks and Performance Standards

For measuring performance according to set of standards, the following benchmarks have been developed after careful consultation with the concerned officials of PESSI:

- a) For a qualitative indicator having dichotomous values such as yes/no, the scores will be assigned based on full (100% in case of positive or 'yes') or NIL (0% in case of negative or 'no').
- b) For quantitative indicators having scale variables (percentage or absolute number values), the ceiling/floor cut points is used as the baseline or benchmark. Individual performance is measured in terms of variance between the KPI value and the benchmark and scores is assigned based on their relative weightage.

The system administration module of the software allows changes of benchmarks for individual KPIs and their relative scores. The system is flexible to accommodate any change in KPIs.

3.5.3. Weightage / Formula / Scoring Engine

Weights to the performance scores are based on subjective assessment of how important a performance domain and its measures. The weights are expected to change from time to time as priorities concerning health system management are changed. The scoring engine of





the software is catered for this flexibility requirement through proper authentication procedure. The rights to change weights is assigned to an authorized user at the provincial level.

The **formula** for computing performance scores based on KPI value and its relevant weightage is employed on the following methods.

Ceiling and Floor method

Ceiling and Floor are two performance extreme cut point assigned as benchmark. Ceiling is desired level and Floor is undesirable level for KPI performance value.

Scorecard is calculated based on KPIs, performance standards/benchmarks and weightage system and converts utilization and service statistics into scores. The balanced scorecard gives aggregate performance in all performance domains. The scorecard is completely customizable and can be adapted to any performance management framework.

The **Scoring engine** of the software is accessible to an authorized user at the provincial level only, who will be able to configure it by assigning weights, changing scoring methods and formulas.

3.6. Processes and tools

This section describes processes and tools involved in the performance monitoring system for PESSI.

3.6.1. Data collection process

At each hospital, a focal person is designated for submitting M&E data from the sources indicated KPI sheet. The data is collected on prescribed forms and then input in the online web-based system either through a web-browser using a PC/Notebook connected to internet, or in cases where internet connectivity is not readily available, or facing electricity load-shedding issues, then an Android tablet shall be used to input data through GPRS communication system. In case, data is missing, PESSI focal person will follow up to collect missing information from hospital focal person.

Once data will be captured on the form, it will be checked for completeness, consistency and accuracy before entering into the system. A signed hardcopy shall be filed for record and future reference.

3.6.3. Web-based data management and reporting system Important Design Considerations:

Flexibility: The software system is designed keeping the "extensibility" as key design element. The software is flexible to allow changes in performance domains, measures (KPIs), their benchmarks, scoring methods and relative weightage.

Integration: The structural design and technology platform is taken into consideration for future integration with other systems. This is particularly important if move towards comprehensive and integrated HIS is made in the future. The performance management system has easy interfaces with the new online data collection/reporting systems without requiring any significant changes in its programming code or underlying database.







Hospital Performance Management System

EFORMS FOR IMPROVED SYSTEMS

Home

Hospital Performance Evaluation

Indicators

Performance Rating

Login



The Objective

PESSI, under the Health Reform Agenda has introduced an innovative, state of the art Monitoring and Evaluation regime in all PESSI Hospitals. The main objective of designing this "Hospital Performance Management System" is to establish an interface that facilitates and enables an unbiased monitoring and evaluation system. It is aimed that via measuring and reporting on key performance indicators in various domains, this system will improve Health Service Delivery and institutionalize a result based evaluation system for improved accountability.







REFORMS **Hospital Performance Management System** Home Hospital Performance Evaluation Indicators Performance Rating Logout Submitted/15 **Facility Name** City Score SS MNCH KLP - Lahore 15 40 Lahore SSH - Faisalabad Faisalabad 15 40 Patients treated in Indoor RAIC - Lahore Lahore 15 39 In all PESSI Hospitals SSH - Gujranwala Gujranwala 15 34 34 SSH, Shahdara - Lahore 15 Lahore NSSSH - Lahore Lahore 15 34 SS MNCH - Faisalabad 31 Faisalabad 15 Kh. Frd. SSH - Multan Multan 15 30 SSH - Islamabad Islamabad 15 25 Kalsoom SSH - Okara Okara 15 22 SSH - Jaranwala 15 21 Jaranwala Patients treated in Outdoor SSH - Gujrat Gujrat 19 19 SSH - Sahiwal Sahiwal 15 In all PESSI Hospitals SSH - Sheikhupura Sheikhupura 15 18 SSH - Sialkot Sialkot 14 17 SSH - Jauharabad Jauharabad 14 13

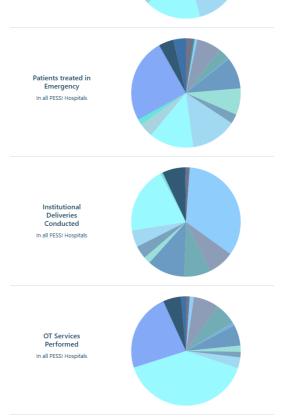
10

15

41-50 36-40 31-35

SSH - Jhang

0-30





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Punjab Employees ESSI Social Security Institution

Hospital Performance Management System

Hospital Performance Evaluation Indicators



Logout

Facility Name	City	Submitted/15	Score
SS MNCH KLP - Lahore	Lahore	15	40
SSH - Faisalabad	Faisalabad	15	40
RAIC - Lahore	Lahore	15	39
SSH - Gujranwala	Gujranwala	15	34
SSH, Shahdara - Lahore	Lahore	15	34
NSSSH - Lahore	Lahore	15	34
SS MNCH - Faisalabad	Faisalabad	15	31
Kh. Frd. SSH - Multan	Multan	15	30
SSH - Islamabad	Islamabad	15	25
Kalsoom SSH - Okara	Okara	15	22
SSH - Jaranwala	Jaranwala	15	21
SSH - Gujrat	Gujrat	15	19
SSH - Sahiwal	Sahiwal	15	19
SSH - Sheikhupura	Sheikhupura	15	18
SSH - Sialkot	Sialkot	14	17
SSH - Jauharabad	Jauharabad	14	13
SSH - Jhang	Jhang	15	10

SS MNCH KLP -	40
Lahore	
Indicator	
Clinical Audits	
CQI Meeting	2
Ambulance Utilization	2
Filled Post Index	2
Budget Consumption	3
Drug Availability	5
Equipment Availability/Functionality	2
Referrals to other Hospitals	5
Health Facility Utilization Rate	4
Bed Occupancy Rate	5
Availability of OT Services	2
Lab Services Availability	1
Institutional Deliveries	5

Performance Rating

Open Complete Report

36-40 31-35

41-50

0-30

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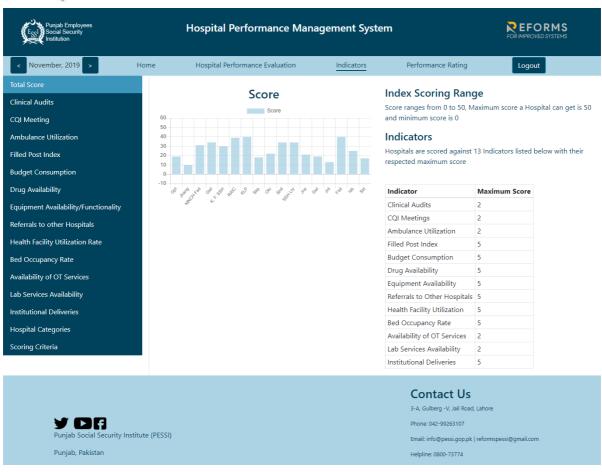
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SCORING

Domain	Subdomain	KPIs	Weight	Value Type	Performance Range	Data Source
	Human Resource		5	%	95-100%: 5	
					89-94%: 4	
		Filled Post Index			83-88%: 3	HPMS Portal
	Resource				77-82%: 2	
					71 - 76%: 1	
					96-100%: 5	
	Financial	Dudget			91-95%: 4	
	Financial Management	Budget Consumption	5	%	86-90%: 3	HPMS Portal
	Wanagement	Consumption			81-85%: 2	
Planning &					76 - 80%: 1	
Management		Drug	5	%	100%=5	PMIS
		Availability	3	70	0-99%=0	1 10115
	NA adiaina /Ca				98-100%: 5	
	Medicine/Sup plies	Equipment			95-97%: 4	Biomedical Tagging/Hospi tal Sourced Excel
	plies	availability/f	5	%	92-94%: 3	
	un	unctionality			89-91%: 2	
					86 - 88%: 1	
	Emergency	Ambulance	2	#	50+: 2	LIDMC Dortal
	Transport	utilization	2	#	5-50: 1	HPMS Portal
		CQI Meetings	2	Y/N	Yes=2	HPMS Portal
					No=0	
		Clinical	2 Y/	V/NI	Yes=2	HPMS Portal
	Review	Audits		1/11	No=0	HEIVIS POI LAI
					Category A: Inverse	
					(10-0): 5	
Marchael C					(11-20): 4 (21-30): 3	
Monitoring & Supervision					(31-40): 2	
<u>Supervision</u>		Referrals to			(41-50): 1	
		other	5	#	Category B & C:	Hospital Sourced Excel
		hospitals			Inverse	Sourced Exect
	Referrals				(30-0): 5	
	Neteral S				(31-50): 4 (51-70): 3	
					(71-90): 2	
					(91-120): 1	
Service	Service Quality	Health	5	#	Category A:	HPMS Portal
Delivery	& Delivery	Facility	3	#	1501+: 5	TIFIVIS FUILAI





		Utilization Rate (Average Daily OPD)			1251-1500: 4 1001-1250: 3 751-1000: 2 500-750: 1 Category B & C: 1001+: 5 751-1000: 4 501-750: 3 251-500: 2 50-250: 1	
		Bed Occupancy Rate	5	%	90+: 5 80-89%: 4 70-79%: 3 60-69%: 2 50 - 59%: 1	Hospital Sourced Excel
		OT Services Availability	2	%	Major > 1 : +1 Minor > 1 : +1	HPMS Portal
		Lab Services Availability	2	%	CT Scan: +1 Ultrasound, ECG, Blood Labs, X-Ray: +1	HPMS Portal
		Total Institutional Deliveries	5	#	100+: 5 70-99: 4 50-69: 3 25-49: 2 5-24: 1	HPMS Portal
TOTAL		50				

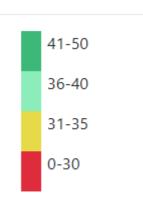




SCORE CALCULATIONS

Following the model by CM's Strategic Monitoring Unit (SMU), scoring of the Monthly indicators will be reflected via help of Traffic Lights. The idea behind the variations available within traffic lights as highlighted below:

With the overall score, as well traffic lights will be assigned to judge the standing of each hospital i.e.







DEFINITIONS

1. Domain: Planning & Management		Weight: 22
1.1 Sub-domain: Human Resource		Weight: 5
	Definition	Essential posts filled against sanctioned posts
	Data Capture	
	Point	HPMS Portal
	Interval	Monthly
	Formula	(Total Filled Posts / Total Sanctioned Posts) x 100
Filled Posts Index	Data Type	Percentage Value
		95-100%: 5
	Performance	89-94%: 4
	Range & Scoring	83-88%: 3
	Criteria	77-82%: 2
		71 - 76%: 1

1.Domain: Planning & Management		Weight: 22
1.2 Subdomain: Financial		
Management		Weight: 5
	Definition	% budget consumption as actual expenditure versus budget released
	Data Capture	
	Point	HPMS Portal
	Interval	Monthly
Budget	Data Type	Percentage Value
Consumption		Numerator: Actual Expenditure
	Criteria / Formula	Denominator : Budgeted Expenditure
		96-100%: 5
		91-95%: 4
	Performance	86-90%: 3
	Range & Scoring	81-85%: 2
	Criteria	76 - 80%: 1

1,Domain: Planning & Management		Weight:22
1.3 Subdomain: Medicines/Supplies		Weight: 5
Drug Availability Definition		Essential medicines availability and balance





Data Capture	
Point	PMIS
Interval	Monthly
Data Type	Percentage value
	Numerator: No of Drugs Available
	Denominator: No of Essential Drugs mentioned
	in the list
Performance	100% = 5
Range & Scoring	
Criteria	0-99% = 0

1.Domain: Planning & Management		Weight: 22
1.4Subdomain: Equipment Availability		
/ Functionality		Weight: 5
		Availability and Functionality of essential
	Definition	diagnostic equipment at the hospital
	Data Capture	
	Point	Biomedical Tagging/Hospital sourced excel
	Interval	Monthly
	Data Type	Percentage value
Equipment		Numerator: No of functional equipment
Availability /		Denominator : Total No of Essential equipment
Functionality		mentioned in the list
		98-100%: 5
		95-97%: 4
	Performance Range & Scoring	92-94%: 3
		89-91%: 2
	Formula	86 - 88%: 1

1.Domain: Planning & Management		Weight: 22
1.5 Subdomain:		
Emergency		
Transport	Weight	2
		Utilization of Ambulance in Hospital for
Ambulance		emergency transfer of Patients (Per Ambulance
Utilization	Definition	Patients transfer)
	Interval	Monthly





Data Type	Per Ambulance Patient Transfer
	Numerator: No of Patients transfer through
	Ambulance
Criteria /	Denominator : No of Functional Ambulance in
Formula	Hospitals
Performance	50+: 2
Range	5-50: 1

2.		
Domain/Subdomain:		
Monitoring &		
Supervision	Weight	9
2.1 Subdomain:		
Review	Weight	4
	Definition	CQI meetings
	Data Capture	
	Point	HPMS Portal
CQI Meetings	Interval	Monthly
	Data Type	Boolean
	Performance	Yes=2
	Range & Scoring	
	Formula	No=0
	Weight	2

2. Domain: Monitoring & Supervision	Weight	9
2.2 Subdomain: Review	Weight	4
	Definition	Clinical Audits Held in the hospital
	Data Capture	
	Point	HPMS Portal
	Interval	Monthly
KPI: Clinical Audits	Data Type	Yes/No
	Performance	Yes=2
	Range &	
	Scoring	
	Criteria	No=0





Weight	2
VVCISIIL	2

2. Domain: Monitoring &		
Supervision	Weight	9
2.3 Subdomain:		
Monitoring & Supervision	Weight	5
	Definition	Total Referral from the hospital
	Data Capture	
	Point	HPMS Portal
	Interval	Monthly
	Data Type	Percentage Value
		Numerator: Total Number referred to other
		Hospital
	Criteria /	Denominator: total number of emergency
	Formula	patients
		Category A: Inverse
Referrals		(10-0): 5
		(11-20): 4
		(21-30): 3
		(31-40): 2
		(41-50): 1
		Category B & C: Inverse
		(30-0): 5
		(31-50): 4
		(51-70): 3
	Performance	(71-90): 2
	Range	(91-120): 1

3. Domain: Service Delivery		
and Quality	Weight	19
3.1 Subdomain: Service		
Delivery	Weight	19
		Average no outdoor patient visited hospital
	Definition	per day
Hoolth Facility Hillingtion	Data Capture	
Health Facility Utilization	Point	HPMS Portal
Rate (Average Daily OPD)	Data Type	Number
	Criteria /	Numerator: Total OPD attendance (New +
	Formula	Follow up)





	Denominator: Number of working days x Bed Strength
	Category A:
	1501+: 5 1251-1500: 4
	1001-1250: 3
	751-1000: 2
	500-750: 1 Category B & C:
	1001+: 5
	751-1000: 4
Performance	501-750: 3
Range	251-500: 2
Benchmarks	50-250: 1
Weight	5

3. Domain: Service		
Delivery	Weight	19
3.1 Subdomain: Service		
Delivery	Weight	19
	Definition	Per day average filled Beds in hospital
	Data Capture	
	Point	HPMS Portal
	Data Type	Percentage Value
	Criteria /	Numerator: Average Beds filled daily
Rad Occupancy Rate	Formula	Denominator: Total Number of Beds
Bed Occupancy Rate		90+: 5
		80-89%: 4
		70-79%: 3
	Performance	60-69%: 2
	Range	50 - 59%: 1
	Weight	5

3. Domain:	Service		
Delivery		Weight	19
3.2 Subdomain:	Service		
Delivery		Weight	19





KPI: OT Availability		Definition	Hospital provided Surgical Procedure performed under General Anesthesia and Spinal Anesthesia
	Services	Performance	Major > 1 : +1
		Range	Minor > 1:+1
		Weight	2

3. Domain: Service Delivery	Weight	19
3.2. Subdomain: Service		
Delivery	Weight	19
		Essential Lab services provided in the
		hospital (CT Scan, ECG, Ultrasound,
	Definition	Bloodwork, MRI)
KDL Lab Sarvisas Availability	Data Capture	
KPI: Lab Services Availability	Point	HPMS Portal
	Performance	CT Scan: +1
	Range	Ultrasound, ECG, Blood Labs, X-Ray: +1
	Weight	2

3. Domain: Service		
Delivery	Weight	19
3.2 Subdomain: Service		
Delivery	Weight	19
		Number of Deliveries Conducted in the
	Definition	hospital
	Data Capture Point	HPMS Portal
	Data Type	Number
		(Number of Deliveries Conducted in a
KPI: Total Institutional	Criteria / Formula	month / Bed Strength) x 100
Deliveries		100+: 5
		70-99: 4
		50-69: 3
	Performance	25-49: 2
	Range	5-24: 1
	Weight	5