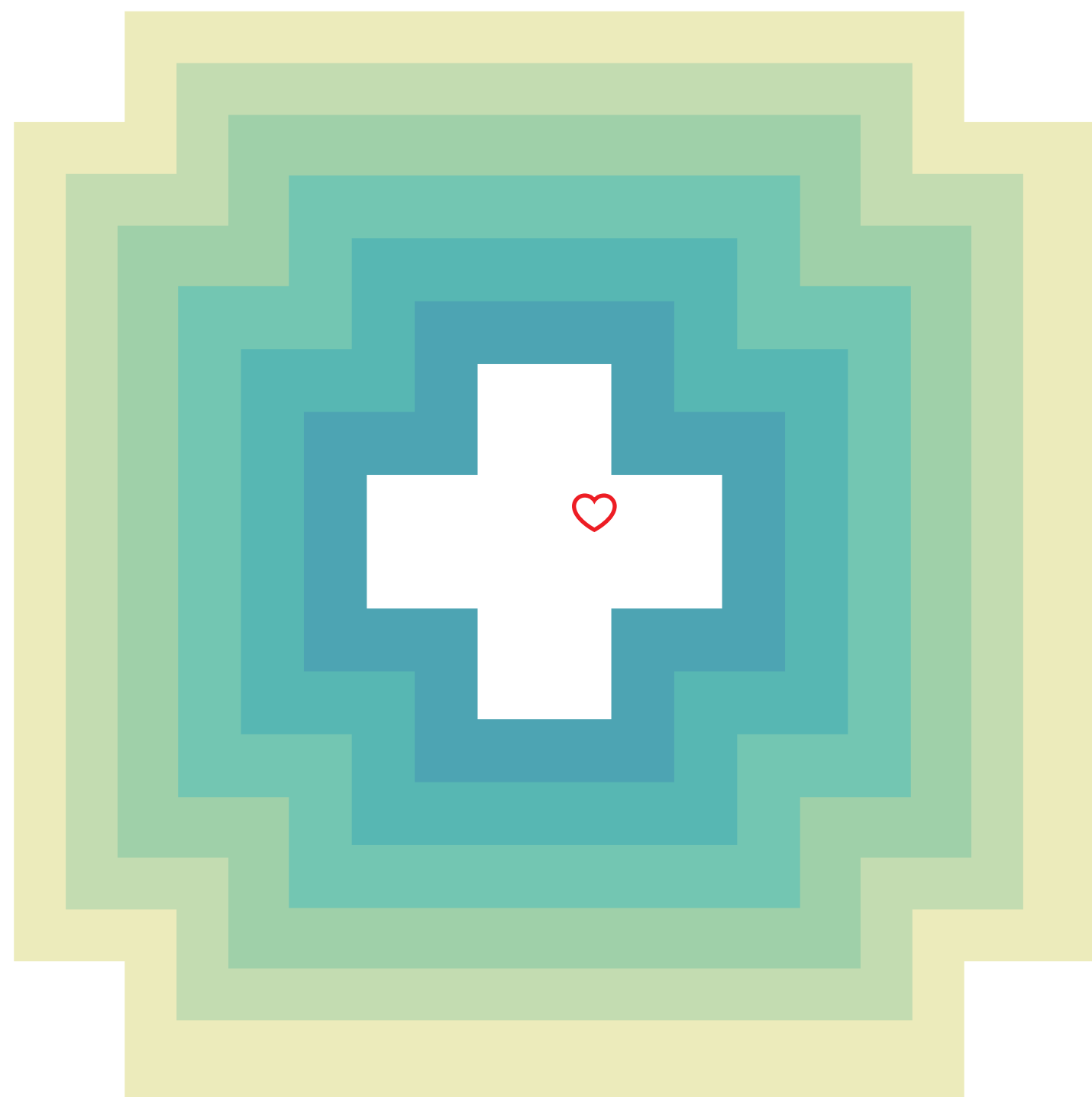




THE HEALTH OF OUR HOSPITALS

Tracking the Performance of District Hospitals



BACKGROUND

In a recent review of the health sector by the Hon'ble Prime Minister, it was decided that an online portal for tracking the performance of government hospitals based on outcome metrics be created and NITI was mandated to create the framework.

INTRODUCTION

2. In the present 3-Tier structured level of care being provided by public health facilities, the District Hospital (DH) serves at the secondary referral level. Its objective is to provide comprehensive secondary health care services to the people in the district at an acceptable level of quality and to be responsive and sensitive to the needs of people and referring centres. There are 734 DHs across India providing crucial services to the population.

CURRENTLY AVAILABLE DISTRICT HOSPITALS WITH BED COUNT.

Bed Count	No. of Facilities
101-200	197
201-300	138
301 and Above	201
Others*	198
Total	734

*Updated data on bed strength not available

3. Despite large funding allocation for District Hospitals, as well as their critical role in healthcare provision, there is no comprehensive system to assess their performance based upon their outcomes.

4. Indian Public Health Standards (IPHS), a set of uniform standards envisaged to improve the quality of health care delivery in the country came into existence in 2007 and were revised in 2012. These provide benchmarks for assessing the functional status of hospitals. The Ministry is nudging the hospitals to adopt these standards for providing optimal care to the community.

APPROACH

5. Study of national and international systems: As a first step to understand the scope and feasibility of the exercise to create the framework and to suggest a probable methodology for the task, various systems, both domestic and international, were studied through desktop research and meetings. Some of the systems studied are mentioned in Box 1. Salient features of these systems have been included in Annexure I.

6. The purpose of this study was to determine the domains that are required to be included in a holistic assessment of hospitals; selection of indicators, methodology of ranking to be adopted and periodicity of the exercise. An extensive review on healthcare quality measures and ranking systems reveals that measuring healthcare efficiency is far from a straightforward task.

7. Field visits for District hospitals Apart from the study of systems, field visits to the District Hospitals in Rajasthan & Tamil Nadu were undertaken to explore additional data that is available at the hospital level. Similarly, information about District Hospitals in UP & Bihar was obtained. These exercises revealed that a wealth of data is recorded within hospital records but not necessarily shared on the HMIS platform. It has been assessed that the information, currently being captured but not reported to HMIS, is vital for assessing the outcomes of the

Box 1. SYSTEMS STUDIED FOR DOMAINS

- IPHS Guidelines for District Hospitals
- Star Rating System for CHCs
- Operational Guidelines for Quality Assurance in Public Health Facilities, 2013 by MoH&FW
- National Accreditation Board for Hospitals and Healthcare providers (NABH)
- Times Health All India Multispecialty Hospitals
- US News and World Report Best Hospitals Ranking
- Study of selected international health systems – Taiwan, UK, Germany, Japan
- Institute of Medicine (IoM) Report – Crossing the Quality Chasm
- Center for Medicare and Medicaid Services (CMS) Star Rating – Hospital Quality Initiative
- Case study of improved quality – QCI in Gujarat



Sample of data captured by the District Hospital

hospitals. In order to have an effective framework for measuring the outcomes, these need to be included in forms for central reporting. For e.g. blood bank replacement rate, infection rates.

8. Stakeholder consultations A draft list of indicators was developed and shared with the Ministry of Health and Family Welfare, five States across the regions (Punjab, Maharashtra, Uttar Pradesh, Assam and Tamil Nadu) and technical/ specialist agencies such as the World Health Organization and the Bill and Melinda Gates Foundation. Thereafter, a meeting under the chairmanship of CEO, NITI with participation of the above mentioned stakeholders was conducted and responses of MoH&FW, States and specialist agencies were received. A working group comprising JS (Policy) MoH&FW, Adviser (Health) NITI Aayog, Principal Secretary- Health & ME (Punjab) and WHO Representative was constituted to finalize the indicator list.

9. Indicators, as finalized by the Working Group, were shared with the all the States & UTs along with the draft concept note for seeking their feedback. Thereafter, a meeting was held on 23.11.2016 in NITI in which representatives of Ministry of Health & Family Welfare along with States had participated. Various aspects, methodology and the indicators were deliberated and thereafter these indicators were agreed to in the meeting. Since a rigorous exercise had already be taken by the working group, after deliberations, it was decided that the Ranking of district hospitals should be planned and initiated nation- wide and improvements in the index can be done after the first round is completed. Wherever required, optimum ranges be fixed in consultation with experts.

10. Features of the exercise Based on the entire process as outlined in previous paragraphs, the indicators and scope of the exercise have been finalized as below:

- Periodicity of the Exercise** Considering the scope of the exercise, the periodicity of the ranking system is to be annual.
- Categorization of DH according to number of beds:** There is a need to categorize DHs according to their bed strength for comparing similar sized hospitals, as well as to assess these according to the services provided. After assessing the systems prevalent in these hospitals, the hospitals would be categorized as follows:

- District hospitals with up to 200 beds
- District hospitals with 201-300 beds
- District hospitals with > 301 beds

Additionally, District Hospitals within Special Category and North-East States will be ranked in a separate category.

- iii. **To rank or to rate?** The current framework envisages a ranking system since it depicts a comparative assessment of performance of each DH vis-à-vis the other and will create an environment to nudge towards improvement in rankings. It also provides an evidence base and argues for those hospitals that should be incentivized and which need focus by the respective State Governments. A range for indicators, wherever required and feasible, would need to be determined.
- iv. **Source of data for the exercise:** The current indicators that are being captured in HMIS are more input and RCH based. In terms of the mandate and in order to focus on the overall hospital service delivery outcomes, the approach needs to capture data from sources other than HMIS, and will also include the Kayakalp platform, National Quality Assurance Standards and Patient feedback launched by MoHFW. Those indicators for which online systems are already in place will be linked directly with the ranking portal. It has been decided by the Ministry that those indicators which are required for ranking purpose, but are not currently captured through an online system, will be included in the HMIS¹.
- v. **Categorisation of Indicators:**
- The selected indicators are distributed into three broad categories – Structure, Process, and Outcomes/Outputs.
 - Indicators are also categorized into two types- (A) Indicators that are largely under the control of the State and (B) Indicators that are largely under the control of the District hospital

11. Indicators: Following the above described approach, the finalized list of indicators for ranking the hospitals are listed in Table 1 (See Annexure 2 for a detailed description of the indicators)

¹ As decided upon by JS (P), MoHFW

TABLE 1. LIST OF INDICATORS FOR RANKING DISTRICT HOSPITALS²

Category A: Indicators that are largely under the control of the State

Category B: Indicators that are largely under the control of the District hospital

DOMAIN	WEIGHTAGE (%)	CATEGORY	INDICATORS
Structure (15%)	3	A	1. Number of functional hospital beds per 100,000 population
	3	A	2. a- Ratio of doctors in position to IPHS norm b- Ratio of staff nurses in position to IPHS norm c- Ratio of paramedical staff in position to IPHS norm
	3	B	3. Proportion of support services available
	3	A	4. Proportion of core healthcare services available
	3	A	5. Proportion of diagnostic services available
Process (10%)	5	B	6. Kayakalp score
	5	B	7. Quality score
Outputs and Outcomes (75%)	8	B	8. Number of laboratory tests per technician
	8	B	9. Stock out rate of essential drugs
	8	B	10. OPD per doctor
	9	B	11. Bed occupancy rate
	8	B	12. Surgical Productivity Index
	8	B	13. C-section rate
	8	B	14. Blood bank replacement rate
	9	B	15. Post-surgical infection rate
	9	B	16. Patient satisfaction score

12. As can be seen, all indicators are in *ratios/proportions/percentages*. While some important input/ process based indicators have been developed (HMIS is a facility based database), the focus has been kept on outputs and outcome-based parameters. These indicators also cover the perspective of various stakeholders, such as citizens, government and hospital administrators.

² See Annexure 2 for indicator list with details

13. Ranking methodology: Methods used to measure and rank performance in various systems were studied (Box 2). Key features about the systems studied, the statistical model and detailed methodology of assessment are annexed (Annexure I).

The Composite Index method, also adopted for assessing performance of Districts in selected parameters by the MoH&FW, was selected for this exercise (Annexure 3).

14. Since indicators included for the ranking are in different units, each value will be scaled as per the formulae shown in Box 3. The valence of each indicator included is indicated in Annexure 2.

A Composite Index will then be calculated which is an average of the scaled values. A higher index will therefore mean a better hospital.

15. Way Forward

Ranking of all the district hospitals across India (in categories) needs to be conducted. For this purpose, identification of agencies for design of portal and roll-out of exercise need to be done.

- i. **Data entry:** States will continue to enter data in HMIS and other portals such as DVDMS, Kayakalp etc. Information on indicators, which is not currently captured through an online system, but is required for ranking purpose, will be included in the HMIS by the MoH&FW and these will also be filled-in by the States.
- ii. **Workshops:** Mid-term workshops may be conducted with the States for course correction, if any.

Box 2. SYSTEMS STUDIED FOR DEVELOPING METHODOLOGY

- Times Health All India Multispecialty Hospitals Ranking Survey 2016
- WHO Ranking of world health systems
- Score Card Method for ranking Districts using HMIS
- Education Development Index – National University of Educational Planning and Administration
- Times Higher Education Ranking
- NBE testing methodology
- County Health Rankings and Roadmaps – Robert Wood Johnson Foundation
- U-DISE

Box 3. SCALING FORMULA

$$\begin{aligned} \text{Scaled value (positive indicator)} \\ &= \\ & \frac{X - \text{Minimum value}}{\text{Maximum value} - \text{Minimum value}} \end{aligned}$$

$$\begin{aligned} \text{Scaled value (negative indicator)} \\ &= \\ & \frac{\text{Maximum value} - X}{\text{Maximum value} - \text{Minimum value}} \end{aligned}$$

- iii. **Data validation:** will be carried out by a third party, if required. For this purpose, a sample of the District Hospitals will be checked for comparing the data entered with supporting documents.
- iv. **Calculation and Publication of results:** After all the data is populated in the portal, the system, to be designed, is expected to calculate all the indices. The ranking will also be published on this online portal.

ANNEXURE 1

SUMMARY OF SYSTEMS STUDIED

1. IPHS Guidelines for District Hospitals

The IPHS standards guide the HMIS annual infrastructure form, from which multiple indicators were directly picked. Revised in 2012, they cover the following domains, recommended by size

- Services
- Physical Infrastructure
- Manpower Requirements
- Equipment norms
- Laboratory Services at District Hospital
- Recommended Allocation of Bed Strength
- Requirements of Operation Theatre
- List of Drugs/Lab Reagents/Other Consumables and Disposables for District Hospitals Capacity Building
- Quality Assurance and Quality Control of Processes and Service Delivery
- Statuary Compliance
- Rogi Kalyan Samities (RKS)/Hospital Management Committee (HMC)
- Citizen's Charter

2. Star Rating System for CHCs

Star Rating system of the CHCs provides a good reference as it makes use of data sources that are readily available to us.

Categories considered

- Human Resources available
- Infrastructure available
- Drugs and supplies
- Service availability
- Client orientation
- Service utilization

Calculating the outcome

- HR + Infrastructure → facility is eligible for Star Reporting and gets 1 Star; NA where parameters are not reported or reported 0
- Where parameters have a non-zero value → NE (Not eligible)
- One star each for fulfilling criteria of delineated for other aspects
- **All yes/no questions**

3. Accreditation Standards for Hospitals and Healthcare providers – NABH

The following key domains to measure hospital quality are assessed:

- Access, Assessment and Continuity of Care (AAC)
- Care of Patients (COP)
- Patient Rights and Education (PRE)
- Infection Control (IC)
- Continuous Quality Improvement (CQI)
- Responsibilities of Management (ROM)
- Facilities, Management and Safety (FMS)
- Community Participation and Integration (CPI)

The orientation for assessment is truly patient-centred and provides a great reference for a vision for improving healthcare quality in India at the facility level.

4. Institute of Medicine (IoM) Report – Crossing the Quality Chasm

The initial motivation for the report was to counter the alarmingly high rate of preventable medical errors in the United States. It is now referenced as a basis for measuring quality care as the US shifts from a fee-for-service model to a value-based system → for Affordable Care and Patient Protection Act (ACA) 2010

Six quality aspects that are key to healthcare have been identified

- Safety
- Effectiveness
- Timeliness
- Efficiency
- Personalization
- Equity

5. US News and World Report Best Hospitals Ranking

The four domains for hospital ranking are structure, process, outcomes and patient safety. Specifically for outcomes, the following measures are considered – risk-adjusted mortality based on observed and expected values, and related indicators such as complications, readmissions, patient safety, infection rate

Weighting

The weights given to each domain are as follows – 32.5% for outcomes, 30% for structure, 27.5% for process, 10% for patient safety. Values normalized prior to weighting using the following formula:

$$\frac{\text{Value} - \text{minimum possible}}{\text{maximum possible} - \text{minimum possible}}$$

6. Center for Medicare and Medicaid Services (CMS) Star Rating – Hospital Quality Initiative

The aim was for patient’s to be able to choose hospitals based on ratings, which provides incentive through profits gained by being patient’s choice.

The categories measured were informed by the IoM report, Agency for Healthcare Research and Quality, National Quality Forum and the The Joint Commission. A variety of data sources are used to create **The Hospital Compare profile**, which consists of the following:

- General Information
- Survey of Patients’ Experience
- Timely and effective Care
- Complications
- Readmissions and deaths
- Use of medical imaging

Usage rate by type of diagnostic test, to gauge over-usage or potential of missing a diagnosis; often lower percentages are better or a recommended range is prescribed

- Payment and value of care

7. Study of selected international health systems – Taiwan, UK, Germany, Japan

Great Britain is seen to be a leader in preventive medicine and sees virtually no medical bankruptcy.

Taiwan worked with a Harvard-led committee to examine world’s best healthcare systems before reforming their own. The underlying goals of reform were equal access, no waiting, and competition among providers. An excellent information technology infrastructure was used to create the ‘smart card’ for every citizen. No medical bankruptcy is observed, but system, however, is very financially strained.

Japan boasts of the world’s longest life expectancy and lowest infant mortality. The system is one of social insurance – government picks up tab for those too poor to pay for healthcare. The Japanese health ministry controls price of healthcare tightly. Despite the system being very popular among citizens, 50% hospitals are in financial deficit.

Germany: Sickness funds – premiums based on income to private insurers, are the main means of healthcare funding. Health insurance continues with no change if citizens become unemployed. The system is extremely efficient – medical providers and insurers negotiate standard prices. Insurance plans actively compete though they are not allowed to profit.

SYSTEMS STUDIED FOR METHODOLOGY

1. Times Heath All India Multispeciality Hospitals Ranking Survey 2016

Desk Research, Factual Data Collection and a Perceptual Survey were used to choose hospitals and identify indicators to be measured. A detailed scoring system was developed for each parameter. After assigning scores to each parameter, raw scores were calculated. Based on importance determined through a regression model, raw scores were weighted. The weighted average of factual and perceptual score, with both given equal weight, yielded a final result.

2. WHO Ranking of World Health Systems

	Level	Distribution
Health	X	X
Responsiveness	X	X
Fairness in Financing		X

Methodologically, performance is measured by how well a country achieves the above five goals, relative to how well it can given its resource and development level. It is acknowledged that the overall goal attainment may not be '0' even in the absence of a modern health system. The framework is in reference to the minimum – the level of attainment that would exist even in the absence of any health inputs.

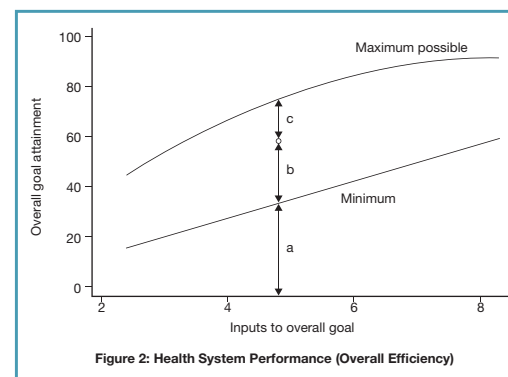


Figure 2: Health System Performance (Overall Efficiency)

A weighted average of the five component goals yields a conclusive result. A survey to gauge preference of individuals in their valuation of each goal was used to reach the distribution. A transcendental logarithmic model was used.

A linear equation is used to visualize the data, where the intercept is country-specific. Overall efficiency is represented by $[(\text{composite}) - (\text{minimum})] / [(\text{maximum} - \text{minimum})]$

3. Times Higher Education Ranking

13 carefully calibrated performance indicators grouped into five areas – teaching, research, citations, international outlook, industry income, each with different weights, are used.

On the rare occasions when the data are not provided, estimations are made – a low estimate between average value of indicators and the lowest value reported i.e. the 25th percentile of other indicators. That way, they avoid a harsh zero while being careful not to reward them for withholding information

The standardization approach used is based on the distribution of data within a particular indicator, and an evaluation is made on where a particular institution's indicator sits within a calculated cumulative probability function.

4. NBE Testing Methodology

Item response theory (IRT) is a psychometrically supported statistical model. The result is a score that takes into account performance of the candidate as well as difficulty of the form. The difficulty of each form may be perceived to vary. A post-equating process ensures fairness. Exam items are concurrently analyzed and the estimated item parameters (item difficulty and discrimination) are put onto a common metric.

5. Education Development Index – National University of Educational Planning and Administration

Raw data is converted into a normalized form. First the Best and Worst values in an indicator are identified. The BEST and the WORST values will depend upon the nature of a particular indicator. The formula then used is: $1 - [\text{best value} - \text{observed value}] / [\text{best value} - \text{worst value}]$

Once the Normalized Values are obtained for all the indicators across Districts/States, the next step is to assign factor loadings and weights. **Principal Component Analysis (PCA)** is used to compute the same. The objective of **Principal Component analysis** is to reduce the dimensionality (number of indicators) of the data set but retain most of the original variability in the data. The first Principal Component accounts for as much of the variability in the data as possible, and each succeeding component accounts for as much of the remaining variability as possible.

6. County Health Rankings and Roadmaps – Robert Wood Johnson Foundation

Each measure within each state is standardized to the average of counties in that state. The measures are in a number of different scales—some are percentages, some are rates, some are averages of survey responses, or other metrics. Standardizing each of these measures transforms them to the same metric—a mean (average) value of 0 and a standard deviation (measure of spread) of 1. We refer to these as Z-scores where:

$$Z = [(\text{County Value}) - (\text{Average of Counties in State})] / [(\text{Standard Deviation of Counties in State})]$$

Each Z-score is relative to the other counties in that state—not compared to an absolute standard—and shown in the metric of standard deviations. A positive Z-score indicates a value higher than the average of counties in that state; a negative Z-score indicates a value for that county lower than the average of counties in that state. For most of the measures, a higher Z-score score indicates poorer health, but for those that it doesn't, the sign is merely reversed.

The overall scores computed are weighted composites of the Z-scores for individual measures where the weights represent relative importance of the different measures.

ANNEXURE 2

INDICATORS FOR DISTRICT HOSPITAL RANKING

Indicator categories:

A-Indicators that are largely under the control of the State

B-Indicators that are largely under the control of the District hospital

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
STRUCTURE							
1	Number of functional hospital beds per 100,000 population	Number of functional hospital beds X 100,000 Inclusion- 1. Beds available in hospital for admissions Exclusion- 1. Floor Beds* 2. Trolley Beds* 3. Labour Room/ OT Tables 4. Observation Beds in Emergency/OT/Labour Room* *To be captured to the extent possible	Population of district according to census 2011 Special Consideration- If the district has more than one district hospital, the population denominator will be estimated in the same ratio as ratio of number of beds of particular DH to DH level beds	Positive	Numerator- HMIS Infrastructure format Denominator- Manual entry (Census of India 2011)	Index Value (HMIS composite index method)	3
A							

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
2.1	Ratio of doctors in position to IPHS norms	Number of doctors in position Inclusion- MBBS/BDS/AYUSH Specialist	IPHS norm for the respective category hospitals 500 beds – 68 400 beds – 58 300 beds- 50 200 beds – 34 100 beds- 29	Positive	Numerator – HMIS Infrastructure format Denominator Pre-entered value (IPHS for district hospital 2012 Page 37)	Index Value (HMIS composite index method)	1
A							
2.2	Ratio of staff nurses in position to IPHS norm	Number of staff nurses in position Exclusion- ANM	IPHS norm for the respective category hospitals 500 beds – 225 400 beds – 180 300 beds- 135 200 beds – 90 100 beds- 45	Positive	Numerator – HMIS Infrastructure format Denominator Pre-entered value (IPHS for district hospital 2012 Page 37)	Index Value (HMIS composite index method)	1
A							
2.3	Ratio of paramedical staff in position to IPHS norm	Number of paramedical staff in position Inclusion All categories included in IPHS	IPHS norm for the respective category hospitals 500 beds – 100 400 beds – 81 300 beds- 66 200 beds – 42 100 beds- 31	Positive	Numerator – HMIS Infrastructure format Denominator Pre-entered value (IPHS for district hospital 2012 Page 37)	Index Value (HMIS composite index method)	1
A							
3	Availability of support services	Proportion of the following support services available from the total: i. Hospital information system (At least OPD, IPD and Pharmacy Module)	10	Positive	Numerator – i. Manual entry ii.-x. IPHS Infrastructure format	Index Value (HMIS composite index method)	3

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
B		<ul style="list-style-type: none"> ii. Sterilization and Disinfection – CSSD (Central Sterile Supply Department) iii. Blood Bank iv. Waste management including biomedical waste v. Medico-legal / post-mortem vi. Dietary services for patient vii. Electric supply backup viii. Pharmacy ix. Water supply (plumbing) x. Refrigeration 			Denominator Pre-entered value (IPHS for district hospital 2012 Page 6)		
4	Availability of core healthcare services	<ul style="list-style-type: none"> Proportion of specialties from the list that are functional i. General Medicine ii. General Surgery iii. Obstetrics and Gynaecology iv. Paediatrics, including neonatology [as required for a Level II SNCU] v. Emergency (Accident and other emergency) (Casualty 24x7 basis) vi. Critical Care (ICU) vii. Anaesthesia viii. Ophthalmology 	14	Positive	Numerator – HMIS Infrastructure format Denominator Pre-entered value (IPHS for district hospital 2012 Page 6)	Index Value (HMIS composite index method)	3

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
A		<ul style="list-style-type: none"> ix. ENT x. Dermatology and Venereology (Skin and VD) RTI/STI xi. Orthopaedics xii. Dental Care xiii. Public Health Unit (may be collocated) xiv. Radiology 					
5	Availability of diagnostic testing services	<ul style="list-style-type: none"> Number of diagnostic services available i. Urine analysis ii. Stool analysis iii. PAP Smear iv. Sputum v. Haematology vi. Microbiology vii. Serology viii. Biochemistry ix. Cardiac Investigation x. Ophthalmology xi. ENT xii. Radiology xiii. Endoscopy xiv. Physiology (Pulmonary Function Test) Inclusion In-house lab Outsourced Laboratories Exclusion Test done through referral laboratories 	10	Positive	Numerator – HMIS format Denominator Pre-entered value (IPHS for district hospital 2012 Page 58-60)	Index Value (HMIS composite index method)	3
A							

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
PROCESS							
6 B	Kayakalp score	Total obtained score (on peer assessment) X 100	Total no of checkpoint X 2	Positive	Online where possible (Kayakalp score generated using Kayakalp assessment through peer review process validated by district kayakalp committee)	Index Value (HMIS composite index method)	5
7 B	Quality Score	Total Obtained Score X100	Total no. of Checkpoint X2	Positive	Online where possible (QA score generated using NQAS assessment tool for district hospital)	Index Value (HMIS composite index method)	5
OUTPUT AND OUTCOME							
8 B	Number of laboratory tests per technician	Number of lab tests conducted Inclusion- Test done in in-house laboratory Exclusion Lab test done bed side/Point of care Lab test done in outsourced laboratory	Number of lab technicians available in-house Inclusion- Lab technician available in house laboratory including Lab technician deputed under disease control program such as RNTCP, NVBDCP & NACP. Exclusion- Lab technician in outsourced laboratory Lab attendants	Positive	Numerator- Laboratory register Denominator Statement from Medical superintendent on Laboratory Technician in Position (taking into account exclusion criteria)	Index Value (HMIS composite index method)	8

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
9 B	Stock-out rate of essential drugs	Total no. of stockout days in the year X 100 Stock out days- Total no. of stock outs occurred daily added for the year	Total number of essential drugs X 365	Negative	Numerator- Drug and Vaccine Distribution Management System (DVDMIS) Denominator- DVDMIS	Index Value (HMIS composite index method)	8
10 B	Bed occupancy rate	Total number of Inpatient Bed days added for a year X 100 Exclusion- Day Care Patients Newborn admitted with mother in maternity ward	Total Functional Beds X 365 Exclusion - 1. Floor Beds 2. Trolley Beds 3. Labour Room/ OT Tables 4. Observation Beds in Emergency/OT/Labour Room	Positive with maximum limit (90)	Numerator- Statement from medical superintendent office (manual entry) Denominator- HMIS infrastructure format	Index Value (HMIS composite index method) Where maximum value of Max(Xid) & (Xid) = 90	9
11 B	C-section rate	Number of C-section deliveries performed in the year *100	Total number of deliveries in the year (Normal + Assisted Deliveries + C Section)	Positive with maximum limit (35)	Numerator & Denominator HMIS service delivery format	Index Value (HMIS composite index method) Where maximum value of Max(Xid) & (Xid) =35	8
12 B	Surgical Productivity Index	Total number of major surgeries in a year Exclusion - Obstetrics & Gynaecology, Ophthalmology Surgeries	Total number of surgeons excluding Obstetric/Gynaecologic al surgeon Ophthalmologist Dental Surgeon	Positive	Numerator- OT register Numerator - HMIS infrastructure format	Index Value (HMIS composite index method)	8

Number and Category	Indicator	Numerator	Denominator	Valence	Source of Information	Scoring	Weightage (%)
13 B	OPD per doctor	Total number of OPD patients in a year	Number of doctors X OPD days in that year	Positive	Numerator- HMIS service delivery format Denominator – HMIS infrastructure + Statement from medical superintendent office (manual entry)	Index Value (HMIS composite index method)	8
14 B	Blood Bank Replacement rate	Total no. of blood units issued on replacement in the year X100	Total no. of blood units issued in year Inclusion- Voluntary donation Replacement	Negative	Numerator & Denominator- Blood bank issue register	Index Value (HMIS composite index method)	8
15 B	Post-surgical infection rate	No. of surgical cases developed post- operative surgical site infection during the year Surgical site infection – Any purulent discharge around the wound or the insertion site of the drain, or spreading cellulitis from the wound	Total No. of clean surgeries performed in the year	Negative	Numerator- OT septic Register Denominator- OT Register	Index Value (HMIS composite index method)	9
16 B	Patient satisfaction score	Feedback score Obtained by patient satisfaction survey X100	Total no. of patients interacted X maximum score	Positive	As is calculated. Where the DH has no patient feedback system, score will be 0	Index Value (HMIS composite index method)	9