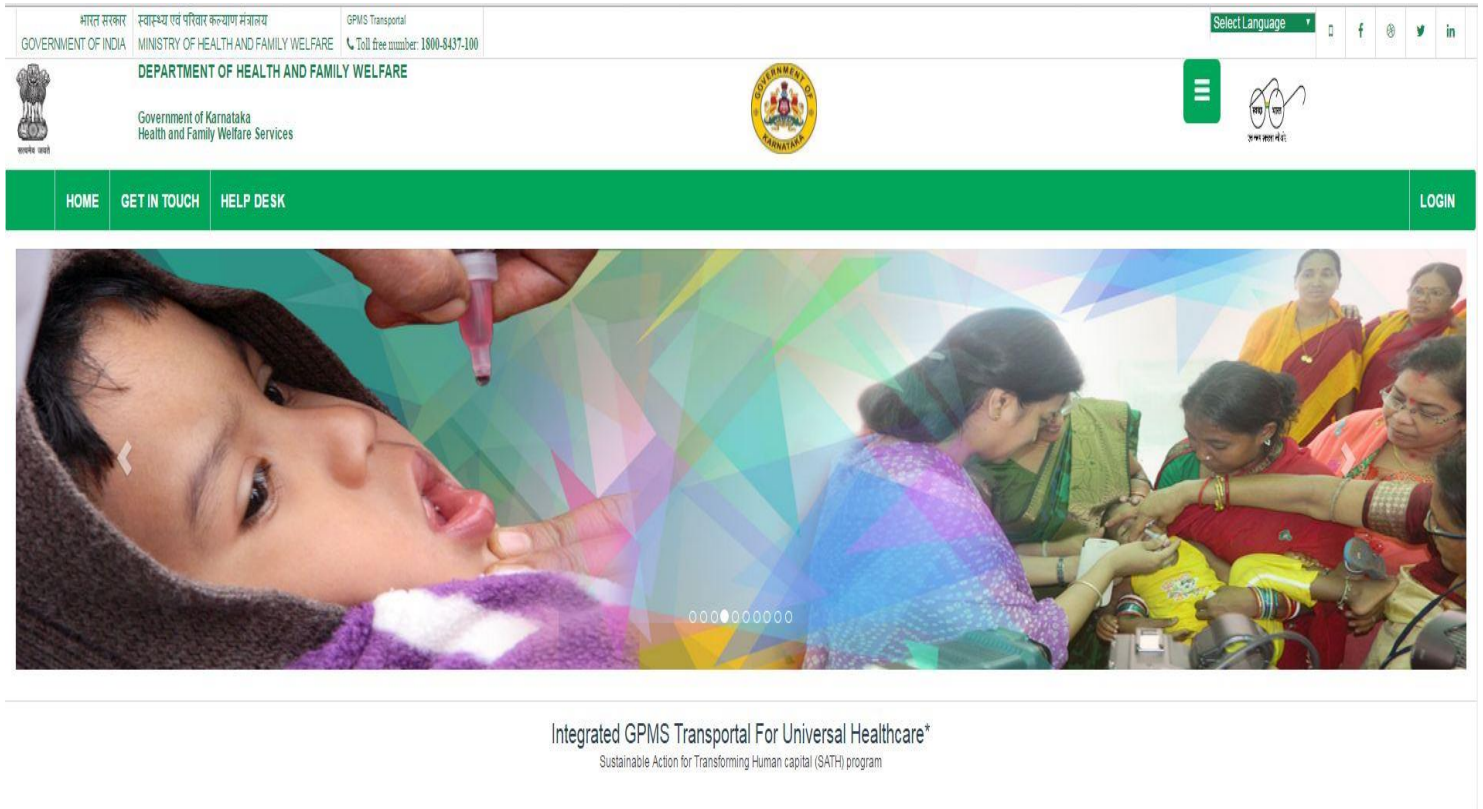
GPMS Universal Health Care Information Therapy Transportal
Common Integrated Dashboard

DEPARTMENT OF HEALTH AND FAMILY WELFARE – GOVT. OF KARNATAKA



Integrated GPMS Transportal For Universal Healthcare*

Sustainable Action for Transforming Human capital (SATH) program

Initiative by the Ministry of Health and Family Welfare, Govt. of India, NITI AAYOG, Govt. of Karnataka Powered by Indian CST.

Indian Centre For Social Transformation
A Public Charitable Trust (Regd.)

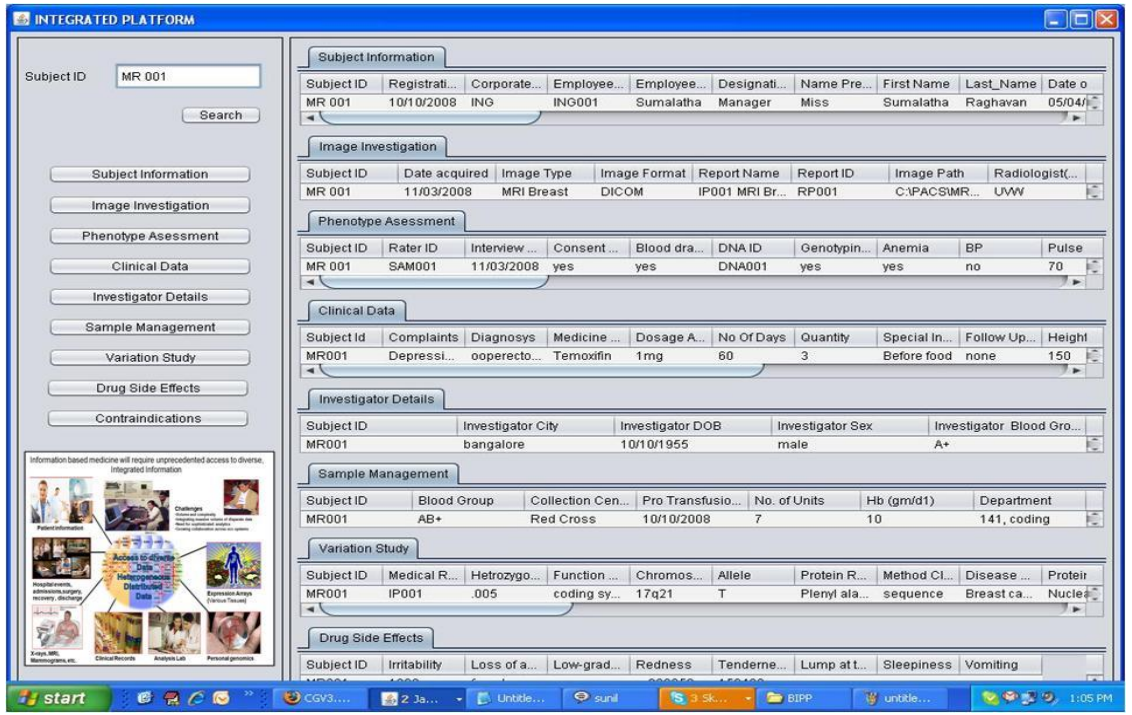
About Indian CST:

Indian Centre for Social Transformation (Indian CST) is a registered Public Charitable Trust (Registration No. HLS-4-00228-2009-10 dated 26/12/2009) whose mission is to work towards realization of a national vision set out in Article 51A (j) of the Indian Constitution- which prescribes the Fundamental Duty for Indian Citizens and exhorts them "to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavor and achievement."

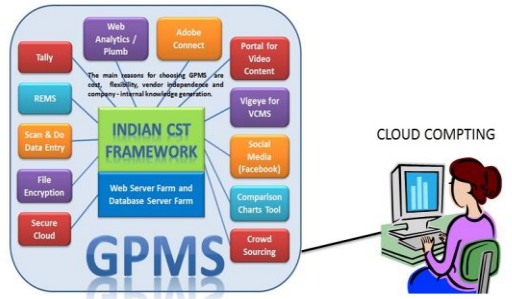
The goal of Indian CST is to promote through this one stop portal, a number of projects that will deliver cost effective computing, best practices, knowledge management systems and critical applications at affordable costs to masses across India. Indian CST truly believes in 'IT for Social Change'.

www.indiancst.in & www.indiancst.com

GPMS Universal Health Care Information Therapy Transportal
Common Integrated Dashboard



Indian CST GPMS Platform integrates various Tools & Techniques for Data Collection, Analysis and Decision Making



GPMS facilities enterprises whose requirements are not covered by standard software / platforms for real time monitoring

Initiative by the Ministry of Health and Family Welfare, NITI AAYOG, Govt. of India, Department of Health and Family Welfare Government of Karnataka (KARHFW), Powered by Indian CST

https://indiancst.com/India/universalhealthcare

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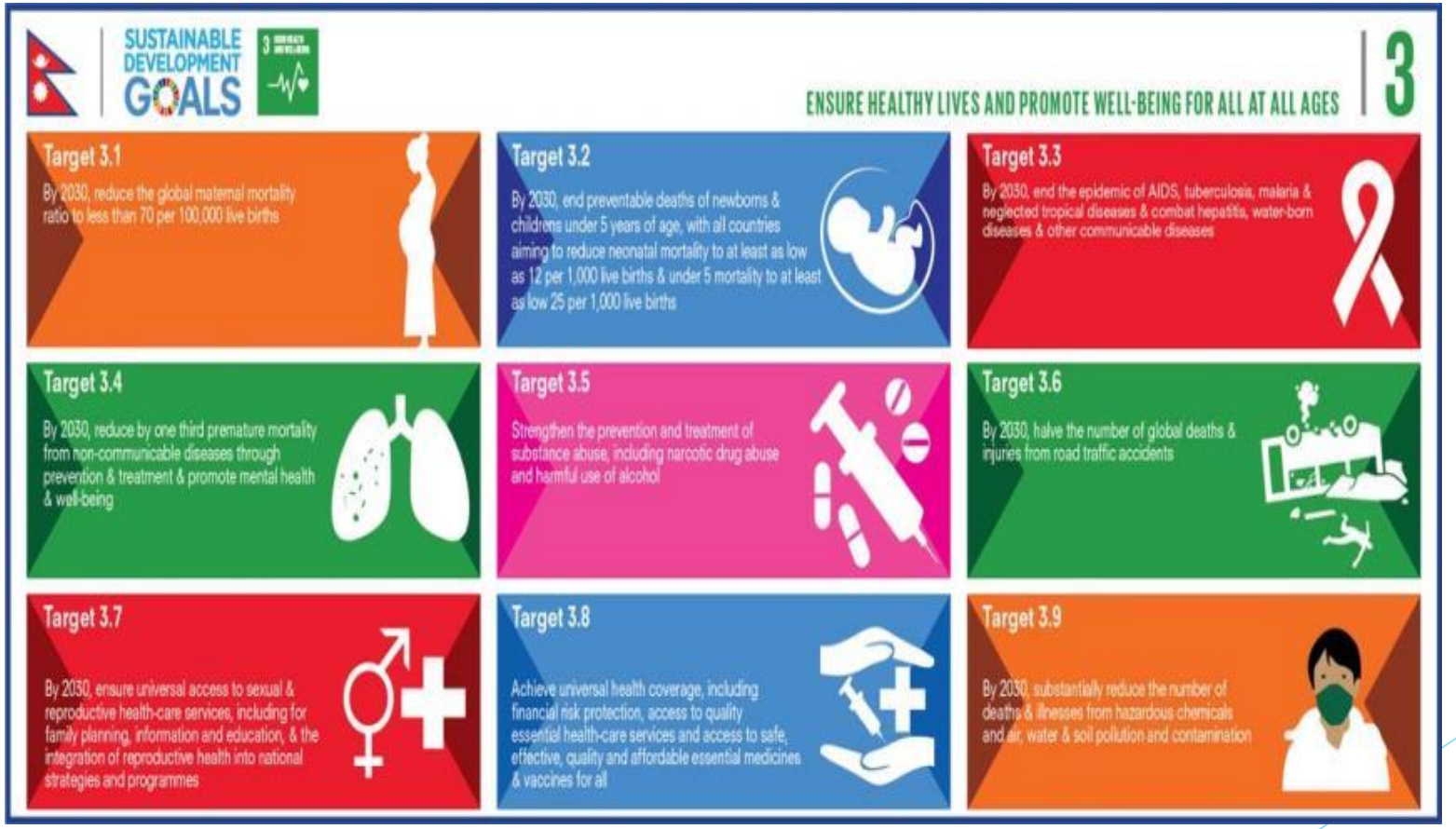
IMPLEMENTATION OF SDG 3: ENSURE HEALTHY LIVES AND PROMOTE WELLBEING FOR ALL AT ALL AGES IN KARNATAKA STATE



Patients to access records held electronically whenever and wherever they need it.

Ayushman Bharat is a National Health Protection Scheme, which will cover **over 10 crore poor and vulnerable families (approximately 50 crore beneficiaries)** providing coverage upto 5 lakh rupees per family per year for secondary and tertiary care hospitalization.

Improving Health for a Better Karnataka

GPMS Transportal for Universal Healthcare cloud computing platform has been further customized and developed for allowing digital access to Multiple Ministries at Central or State / District / Urban Level / Rural Level / All Stakeholders / Govt. and Private Hospitals / PHC's / Sub-Centers/Health and Wellness Centers / Doctors / GP's / Nurses / Pharmaceuticals / Drug Manufacturers / Hospitals / Physicians, Pharmacies, Laboratories and imaging centers, Application Providers, Device manufacturers / Health payers / Multiple Stake holders / Associated with Healthcare Projects / Programs/ Schemes etc. To Work on This Single Cloud Computing integrated Platform for Monitoring of Mother and Child with Citizens Electronic Health Record with all Clinical Parameters

Any Karnataka State Citizen's can access medical or ID records held electronically whenever and wherever they need it.

https://ind[illegible]ealthcare

CHALLENGES FACED BY– NITI AAYOG GOVERNMENT OF INDIA
NHPS Working Group on IT

Following are the key questions that emerged

1. How can we create a clean database of beneficiaries?
- 2. Is SECC a good starting point for creating the beneficiary database?
  - a. How can we fill the missing elements (address, date of birth, spouse name etc.), which are not a part of SECC?
  - b. How can we establish the accuracy of the SECC database?
  - c. Is leveraging Aadhaar a better option?
    - i. Can we explore the possibility of seeding SECC with Aadhaar?
    - ii. What is the feasibility (in reference to section 57 of the Aadhaar Act) of doing so?
    - iii. What are the long term implications (in reference to upcoming data protection low) of doing so?
- 3. Of the modules proposed for the IT system, what are the 3-4 critical/ high priority modules that should be fast-tracked?
- 4. What is the bare minimum set of standards that need to be complied with? Who can help in identifying this set?
- 5. What all needs to be fast tracked as per the '2 speed' model i.e. isolate short term priorities at the same time not sacrificing long term objectives?
- 6. Can we retrofit existing platforms with the identified set of standards?
- 7. Can we adopt an API based approach to create an inter-operable nationwide ecosystem?

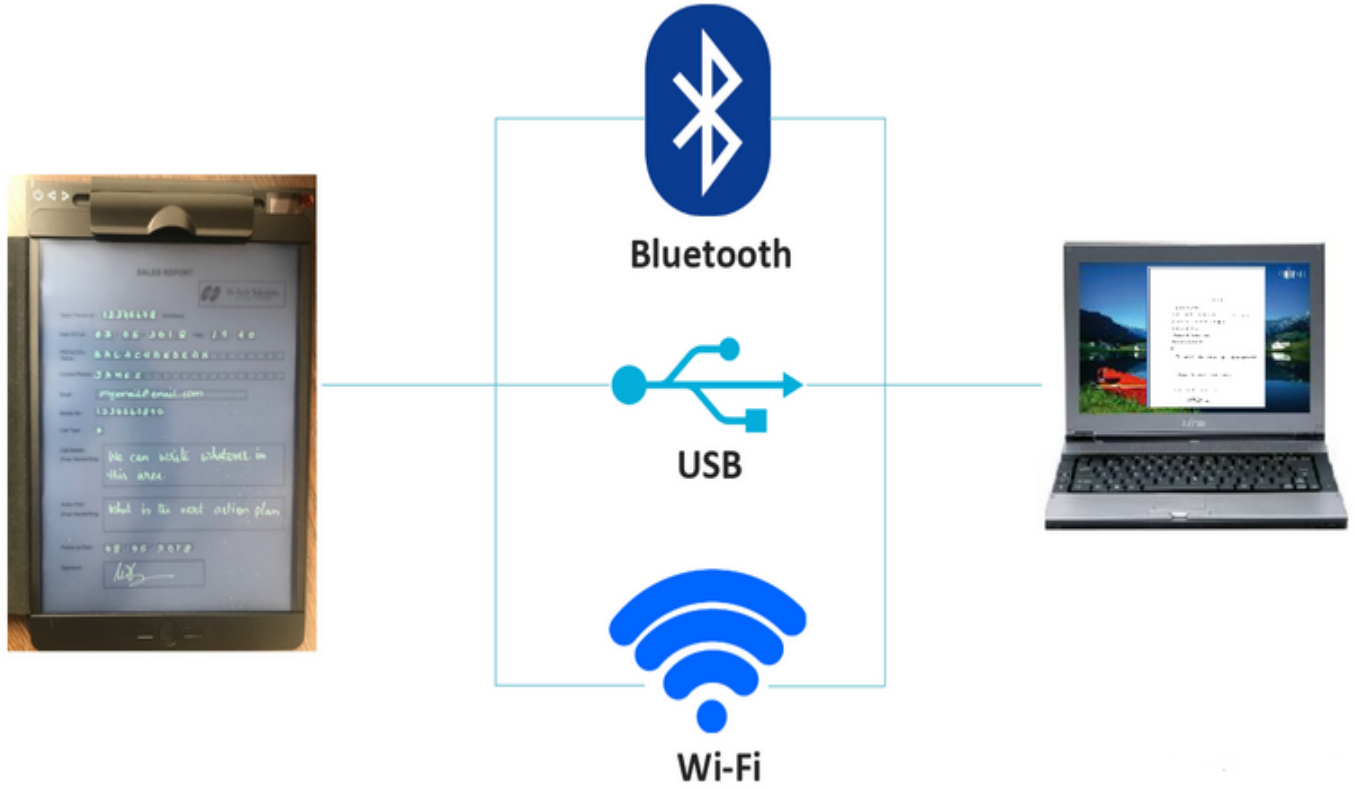
CHALLENGES FACED BY NHM HEALTH DEPARTMENT OFFICIALS GOVERNMENT OF KARNATAKA

1. NHM envisages a fully functional health information system facilitating smooth flow of information for effective decision-making. A robust health management information system is essential for decentralized health planning. Lack of indicators and local health needs assessment have been identified as constraints to effective decentralization.
2. The different health management information systems insilo's should be integrated to support regular decentralized analysis of data and for decision making at state, district, city and sub -district levels. The information systems will enable local users in management of health service delivery as well as help them in their routine activities.
3. Multiple information systems in various health programs need to be integrated for seamless data exchange to enable comprehensive decision making. This requires integration of service delivery data (both aggregate and granular, including HMIS, RCHS Hospital information Systems data, tracking data etc.), Nikshay with morbidity (IDSP), mortality (death reporting and MDR) and with other management information systems data (human resource management systems, finance management systems, drug inventory management systems, and information for private sector regulatory systems, e.g., Clinical Establishments Act, PCPNDT implementation).

ISSUES FACED BY CITIZENS, ORGANIZATIONS & HOSPITALS

- No digital access provided to Patients / Citizens individual medical records.
- No provision for uploading Patients / Citizens medical history .
- Doctors, dispensaries and Govt. or Private hospitals did not have access to patient data even if patient wanted to share his/ her own data during treatment.
- Escalating demands on health and social services leading to ever increasing costs year on year.
- Increasing costs to fund healthcare
- Ageing Populations
- Decreasing Government resources
- Increasing Consumer expectations
- Lack of a layered approach
- Need for a seamlessly integrated experience
- Obtain health services **Anywhere** in the country without suffering financial hardship or excessive indirect costs

CHALLENGES ADDRESSED IN THE INTEGRATED DASHBOARD
Further Customized and Developed by INDIAN CST



- Integrated State of the art digital Prescription Pad Paperless Handwriting Automated form processing solutions (PHAPS) useful for doctors integrated.

CHALLENGES ADDRESSED IN THE INTEGRATED DASHBOARD
Further Customized and Developed by INDIAN CST

- Integrated multiple applications data bases running under National Health Mission (NHM) in Karnataka integrated using API's .
- A fully functional health information system facilitating smooth flow of information for effective decision-making as needed by NHM.
- An Integrated platform to provide digital access to the all Karnataka citizens, Govt. or Private doctors, dispensaries, hospitals, etc. departmental officials and policy level makers.
- Registered **1,16,99,815** households under which **4,06,75,091** citizens registered in the GPMS Transportal for Universal Healthcare so that digital access after KYC to each citizen can be provided with an user name and password to access their medical records online.
- Integrated and enabled a free flow of Real time Data and Interoperability.
- Enabled platform that communicates with all the state and district, village level systems and other national health information systems.

GPMS Transportal Healthcare Information Therapy Cloud computing solutions initiative for the common man to store and accesses their medical records online a trendsetter for the world to follow

CHALLENGES ADDRESSED IN THE INTEGRATED DASHBOARD
Further Customized and Developed by INDIAN CST

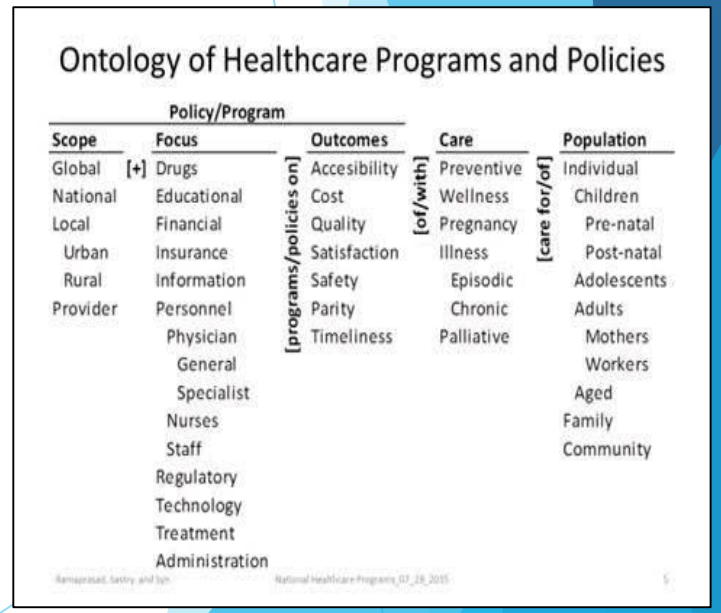
Patient has access to own data

- Integrating approximately around **148 APIs** into this dashboard.
- The feature of multi-functionality has been provided.
- Transparency in the health sector has been brought about.
- The ability of fraud detection due to the integration of various schemes under the government for insurance claims.
- Real time automatic Big data analytics reports with Block chain technology is being integrated the moment data is entered into the applications.
- Provides real time decision support system.

Health authorities to identify trends (eg. infectious outbreaks)
Doctors will increasingly turn to the Indian CST's GPMS healthcare Information Therapy cloud computing solutions to obtain information

Outcome's

1. Providing Various Types Healthcare Services at Citizen's Door Step
2. Cradle To Grave Solutions for mankind
3. Allows Multiple Ministry/Stakeholders/Hospitals/PHC's/Health and Wellness Centers/ Doctors/Associated healthcare Projects/Schemes to work on this single platform
4. Citizens can access medical or ID records held electronically whenever and wherever they need it
5. Fraud detection with regards to government schemes for insurance claims.
6. Feature of multi-functionality has been provided.
7. A fully functional health information system facilitating smooth flow of information for effective decision-making as needed by NHM.
8. Integrated and enabled a free flow of Real time Data and Interoperability.
9. Capable of strengthening of the rural health system
10. GPMS Transportal platform can integrate Multiple software's data's into a single dashboard for real time monitoring

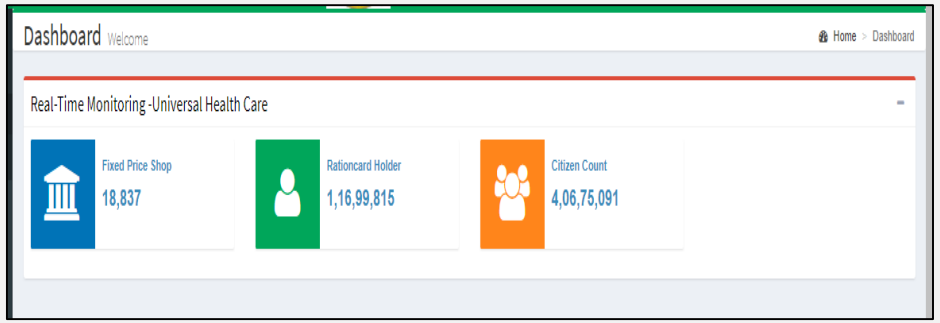


BENEFITS

INTEGRATED WITH RATION CARD, AaDHAAR ALONG WITH OTHER 150 Plus GOVT. ID'S

Only four levels of authorized users in the Cloud Platform who will have access :

1. National Level Users
2. State Level Users
3. District Level Users
4. Village Level Users



Whenever a patient or citizen enters any of the Government or Private healthcare facilities healthcare facility can search this Indian central medical records repoistroy online by entering any of the citizens ID's and search

Electronic patient registration software provides a solution for eliminating the need for manual entry of data in the health sector as a whole. It also enables a patient that is registered on this platform to have his medical records stored digitally that allows to access it whenever he intends in doing so at remote clinics or hospitals in interior parts of India.

https://indiancst.com/India/universalhealthcare

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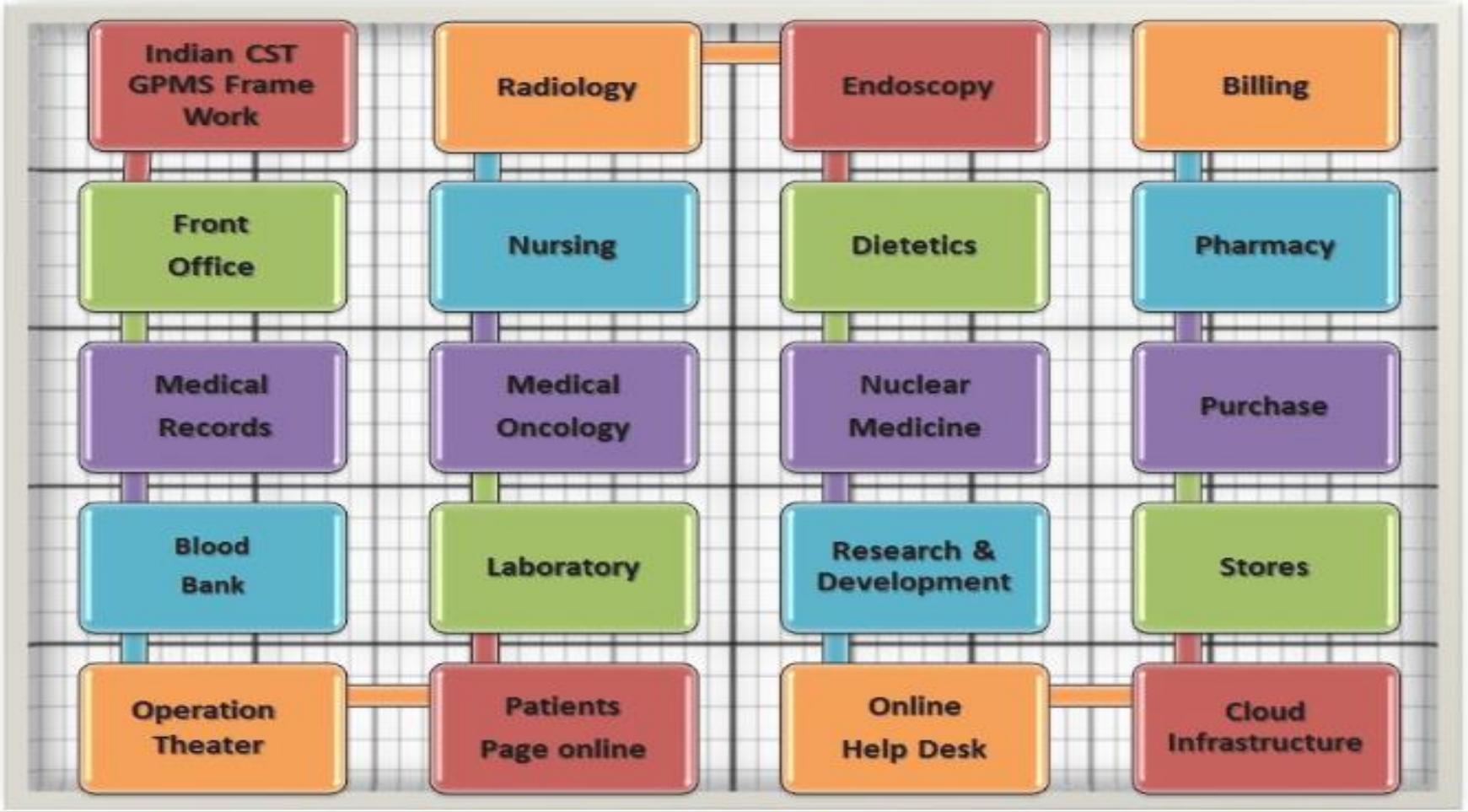
Common Integrated Dashboard

Project Nirmala GPMS Healthcare Information Therapy Cloud Computing Solution



GPMS Healthcare Transportal for Universal Health care Initiative of NHM and Indian CST - To provide citizen health digital record vault for affordable healthcare

http://health.indiancst.com/universalhealthcare/index.php?

Most of the Health informatics software's available in the medical domain approaches data management on administrative perspective rather than scientific research point of view and do not possess intuitive decision making capabilities

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Implementation Success Stories

Sl. No	Particulars	Details
1.	Patient registration information	1,26,302 Individual records
1.	In-Patient admission data	1,84,221 Individual records
1.	Out-Patient admission data	1,71,072 Individual records
1.	Discharged Patients	1,82,706 Individual records
1.	Hospital Ward	65 Wards
1.	Hospital Rooms	241 Rooms
1.	Hospital Bed	1,318 Beds
1.	Hospital Latest Tariff	33,885 Type of Tariff records
1.	Hospital Doctor lists	315 Doctors Profile records
1.	Hospital Departments	207 Type of Departments records
1.	Hospital Designations	As given from the Hospital System
1.	Hospital Employees	As given from the Hospital System
1.	Hospital Nurse	As given from the Hospital System
1.	Company Details	264 Company Profiles records
1.	Company employees	As given from the Hospital System
1.	Company Insurance Data	810 Type of Insurance records
1.	ICD codes	136 ICD Oncology details records
1.	Eligible Room Category	As given from the Hospital System
1.	Opted Room Category	As given from the Hospital System
1.	Hospital Category Type	3071 Type of Categories records
1.	Clinics Details	207 Clinic profile with details records
1.	**Scanned medical records**	**100,00,000 Scanned medical individual pages**
1.	Scanned medical records folders	2,92,000 Scanned medical folders
1.	Hospital Discharge Summaries	1,34,000 Patients Discharge Summary details

Provided integrated platform for affordable healthcare for oncology children patients and to maintain Donor's funds, payment gateway/Digital Signature/ Onsite payment credit/debit cards to be issued to patient for the use inside Hospital.

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Current software's do not provide means for accurate data capture, which are currently paper based, and analysis of patterns of environmental, behavioral, psychological and other measurements of probands and their possible correlation with genotypic and biomedical data.

https://indiancst.com/India/universalhealthcare

Initiative by the Ministry of Health and Family Welfare, Govt. of India, NITI AAYOG, Govt. of Karnataka Powered by Indian CST.

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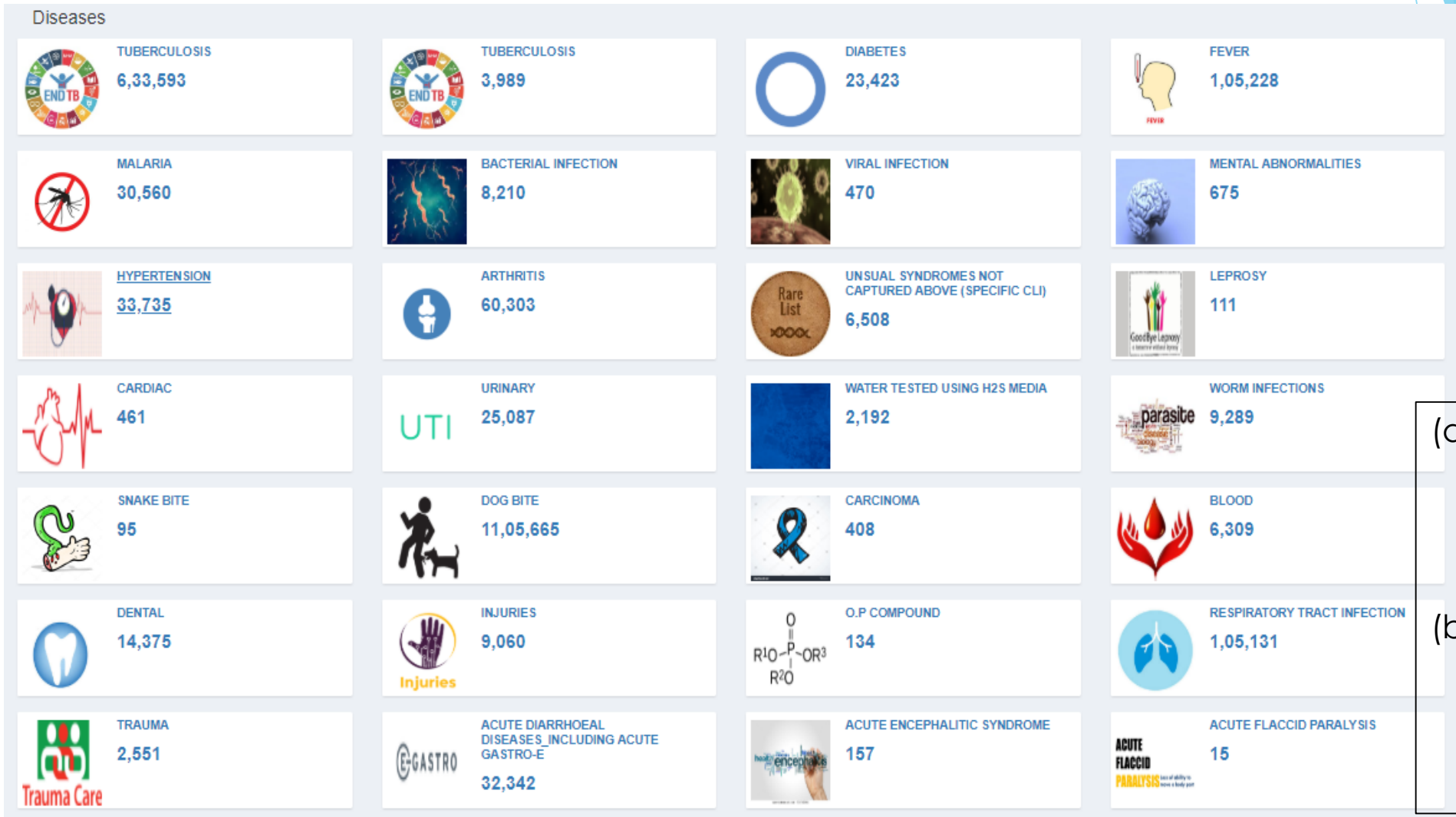

(a) Identification of infectious diseases: TB, Malaria, HIV etc for in depth study
(b) In depth study of COPD and NCD (targets – cancer, diabetes and CVD)

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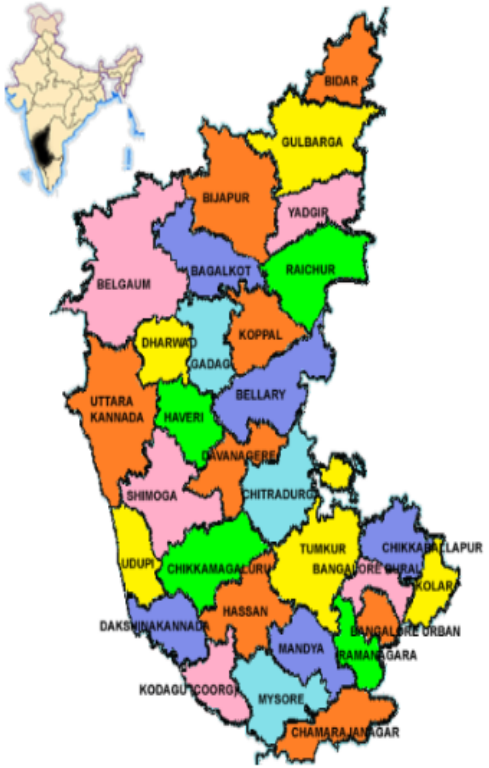
Analytics Dashboard for Universal Health Care

Home > analytics

India



State Demographics

GENERAL PARTICULARS

POPULATION
6,10,95,297

BIRTH
3,01,999

DEATH
11,212

Health Care Facilities And Infrastructure

GOVERNMENT HOSPITAL
12,086

PRIVATE HOSPITAL
3,087

PRIMARY HEALTH CENTER
2,478

SUBCENTER
9,121

ASHA WORKERS
32,860

For Affordable Healthcare : Fee-based cloud computing services is now available for all PHC's, hospitals, clinics, diagnostic labs, research institutes, doctors, medical students and for the common man use across India

1. Child Life Specialists
2. Clinical Social Workers
3. Dentists
4. Dieticians /Diet Technicians
5. Emergency Trauma Technicians
6. Fellows
7. Home Health Coordinators
8. Clinical Care Partners
9. Hyperbaric Technicians/Observers
10. Interns
11. Interpreters (Employees)
12. Lactation Specialists
13. Licensed Vocational Nurses
14. Medical Assistants
15. Medical Ethicists
16. Nurse Practitioners
17. Nurses employed by physicians (exceptions)
18. Occupational Therapists
19. Osteopathic Students
20. Pastoral Care Providers
21. Policy Makers
22. Corporate Compliance Policies and Procedures
23. Legal Medical Record Standards Policy Pharmacists
24. Physical Therapists
25. Physician Assistants
26. Physicians including MD's and DO's
27. Podiatrists
28. Psychologists
29. Registered Nurses
30. Mental Health Practitioners
31. Licensed Psychiatric Technicians
32. Midwives
33. Residents
34. Respiratory Therapists
35. School Teachers
36. Speech Pathologists
37. Students, e.g., MD, RN, Occupational Therapy, etc. (Notations in the record must be co-signed by a supervising clinician)
38. Students, e.g., MD, RN
39. Others as designated by Medical Center Policies and /or Medical Staff Bylaws

Initiative by the Ministry of Health and Family Welfare, Govt. of India, NITI AAYOG, Govt. of Karnataka Powered by Indian CST.

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How a typically GPMS Healthcare Information Therapy Cloud Computing Solutions would operate in future in the Rural areas is as follows

1. A patient from a rural area visits the local PHC for health consultation.

2. The physician diagnosis the patient and uploads the pathology reports and patient records into the GPMS Healthcare Cloud.

3. Depending on the case, the physician recommends secondary or tertiary consultation.

4. Patient history and medical reports are studied using the GPMS Cloud Healthcare Cloud by the secondary or tertiary medical consultant (a medical expert) on his/her laptop, PDA or mobile phone at his or her location.

5. GPMS Healthcare Cloud based application is accessed through an internet browser, which serves the purpose and the specialist is not required to be present.

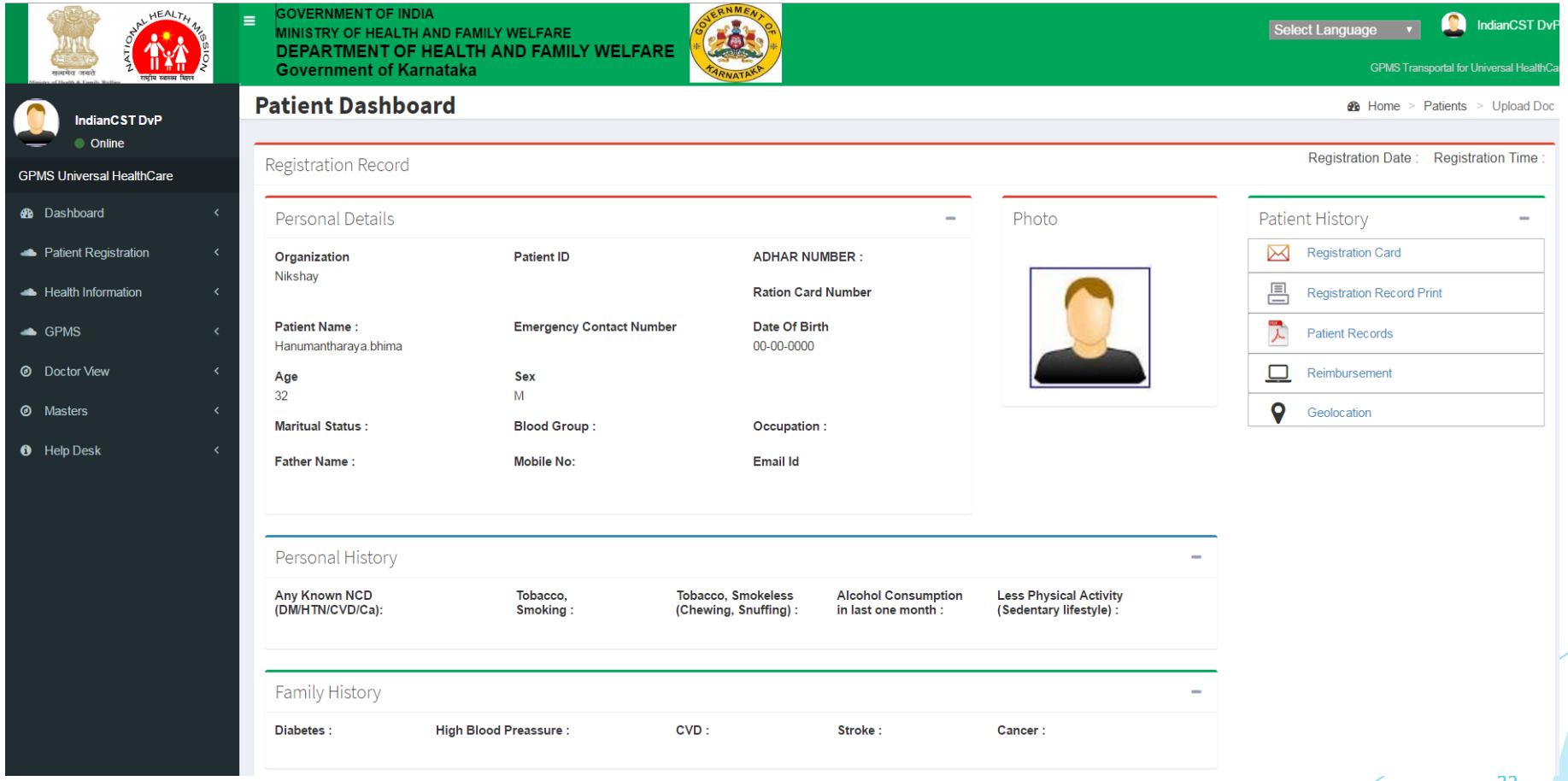
6. Expert advice is again communicated remotely through facilities like video-conferencing in the GPMS Healthcare Cloud.

7. The local doctor accesses any additional medical information or reports provided by medical experts through the GPMS Healthcare Cloud during follow up care.

Hence making GPMS Healthcare Information Therapy Cloud Computing Solutions useful in improving the quality of healthcare service being provided (at affordable rates) to the rural population.

GPMS Universal Health Care Information Therapy Transportal
Common Integrated Dashboard

Only the authorized healthcare facility personnel can access and register online this patient who has come for consultation or admission can view their legacy specific medical records online.



Ensures portability of data, avoids duplication and better documentation

Patients can access records online held electronically whenever and wherever they need it.

Physicians will have real time access to patient information

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GPMS Universal Health Care Information Therapy Transportal
Common Integrated Dashboard

Home > MCTS > Karnataka > 09/05/2017

Mother And Child Tracking System(MCTS)

Statistics

MONTH AND YEAR	2017 - 09 to 2018 - 01
REGISTERED CHILD	301999
CHILD DEATH	0
ABORT	4982
STILL BIRTH	623
HIGH RISK	18641
MOTHER'S AADAR	106726
MOTHER'S MOBILE	0
HOME DELIVERY	314
PRIVATE DELIVERY	2056
PUBLIC DELIVERY	19056
LOW CHILD WEIGHT	145651
PREGNANT WOMEN 18 YEARS	1253
ASHA COUNT	84160
ANM COUNT	26792

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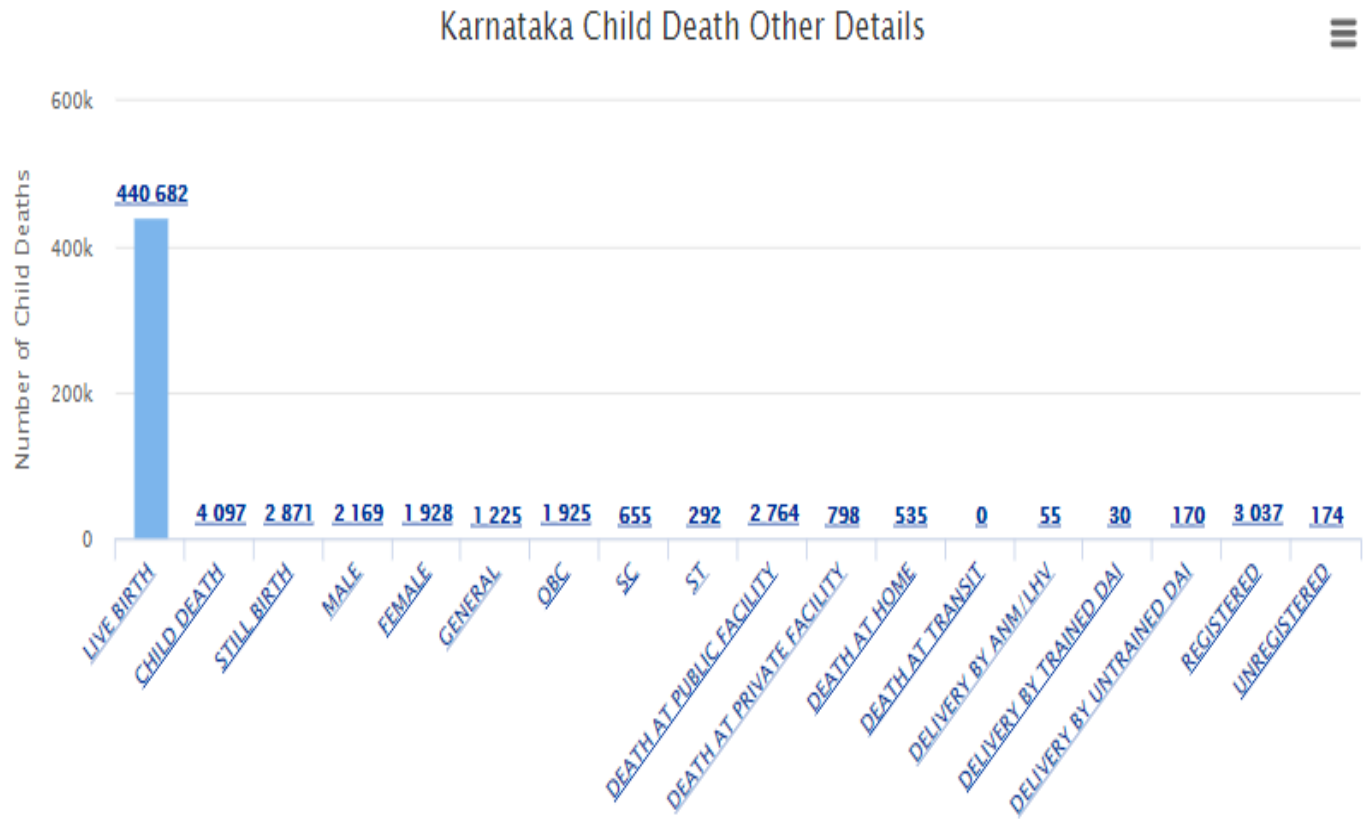
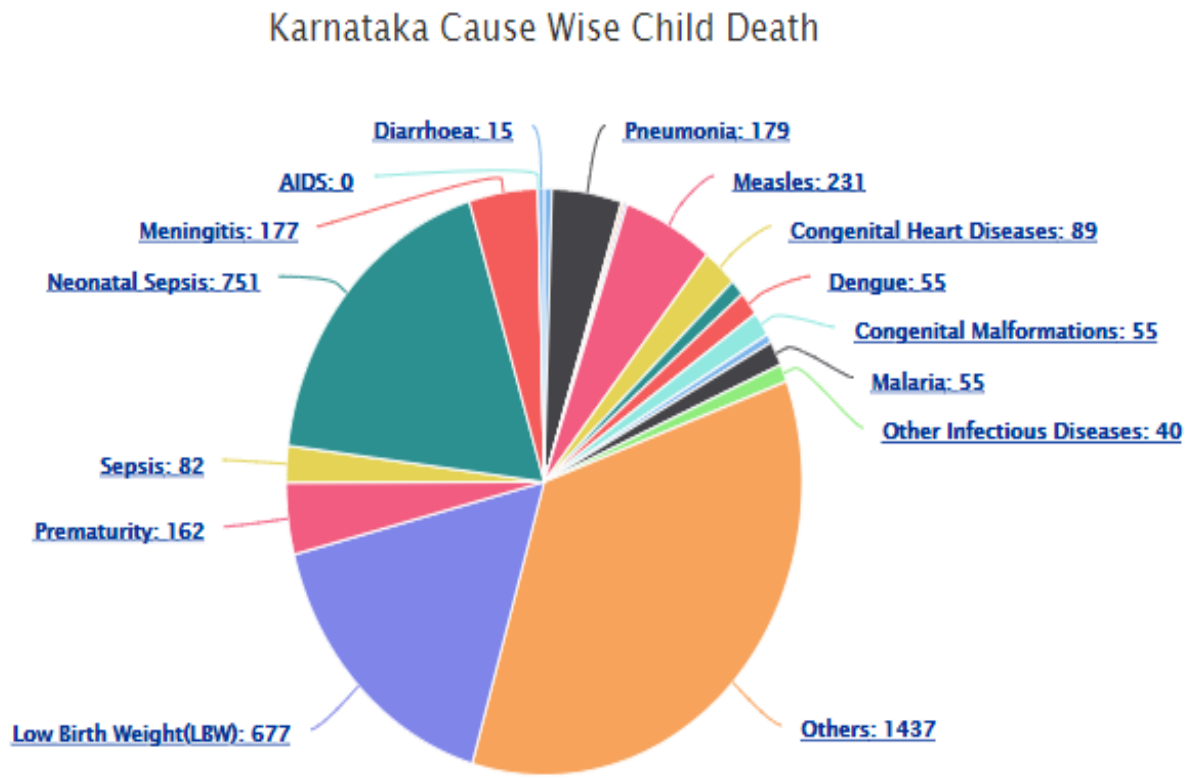
Common Integrated Dashboard

Real Time Analytics Dashboards
For Child Death Reports



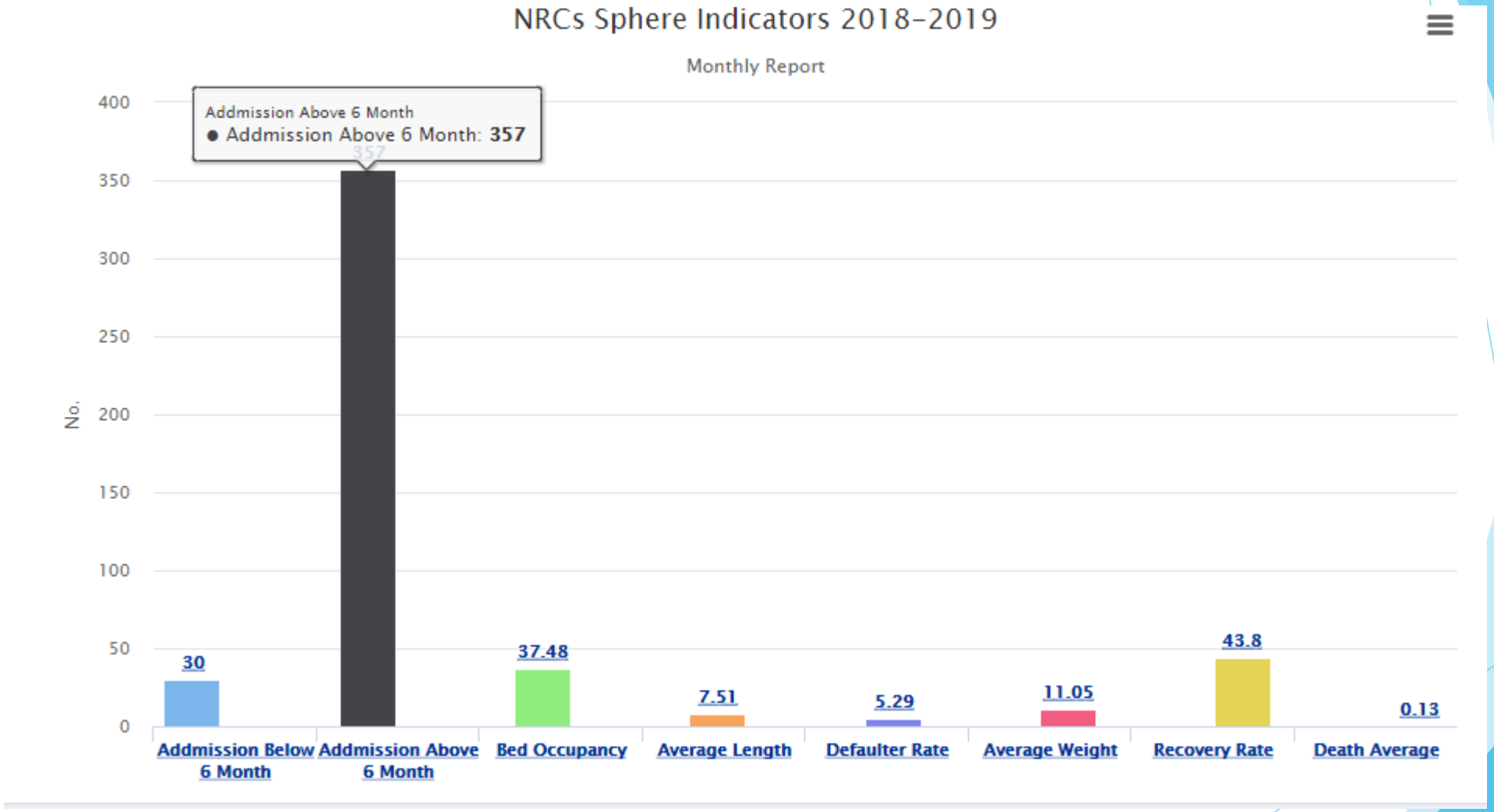
Provides a means to host various types of data for providing Patient services and also serves as a decision support system powered by data analytics tools such as big data analytics, Artificial Intelligence, Machine Learning and Deep Learning.

Real Time Analytics Dashboards
For Child Death Reports



Analytics framework to analyze health outcome data at
(a) Patient level
(b) Institutional level
(c) District level
(d) State level

GPMS Universal Health Care Information Therapy Transportal
Common Integrated Dashboard



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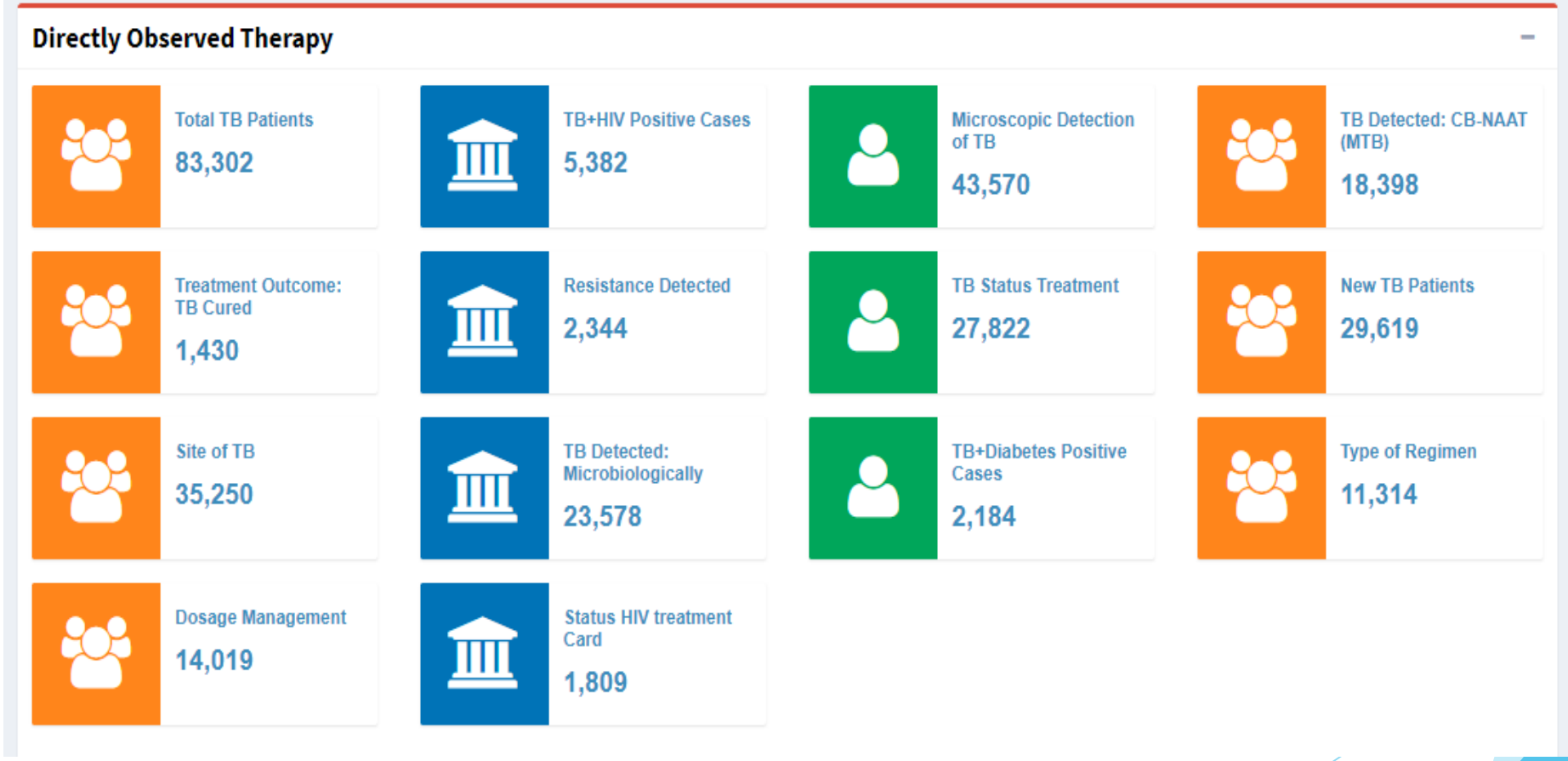
DIRECT OBSERVED THERAPY -STOP-TB ANALYTICS

Real Time Monitoring of TB Patients

Home > Dashboard



1. Predictions
2. Case Management Outcomes
3. Vector Responses
4. No One Gets left out
5. 100% Outcomes

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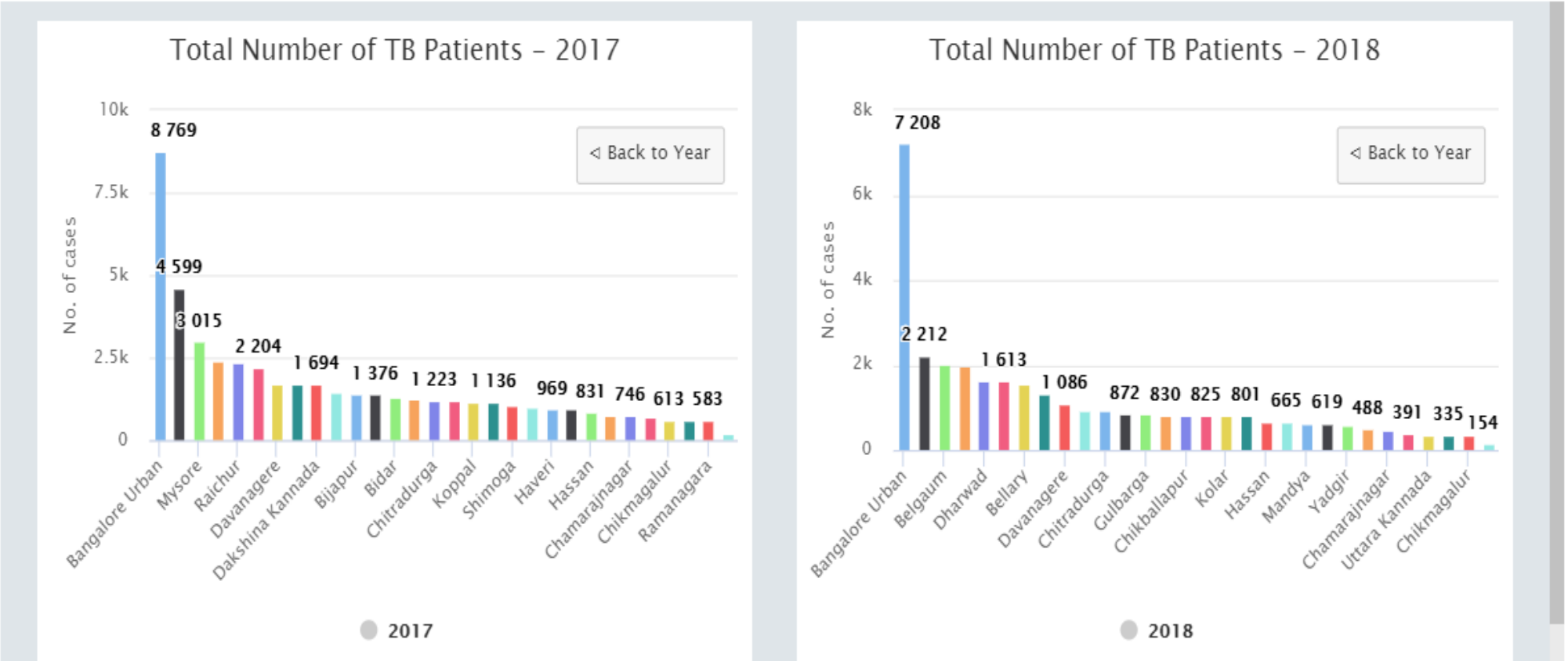
DIRECT OBSERVED THERAPY -STOP-TB

Common Integrated Dashboard

Total TB Patients: 83,302

GPMS Transportal for Universal HealthCare

Karnataka TB Details District wise Report 2017- 2018



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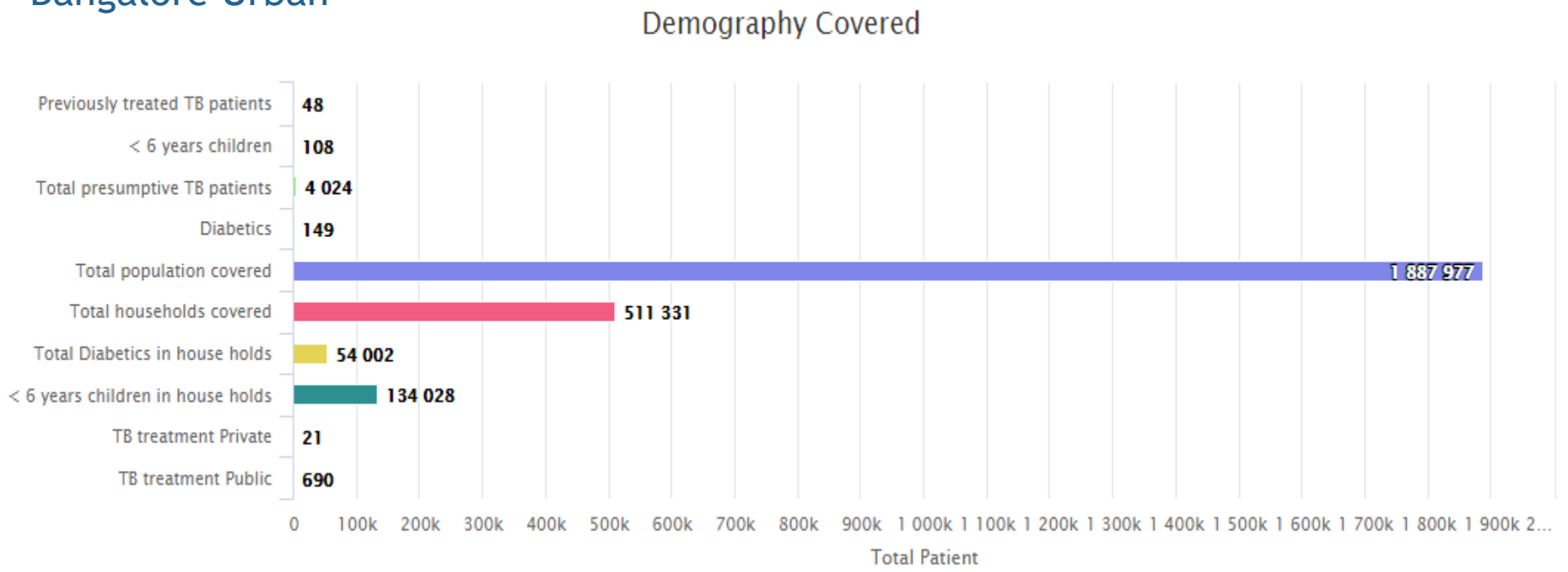
Government of Karnataka - Active Case Finding (ACF)
TB Survey January -2019

Bangalore Urban



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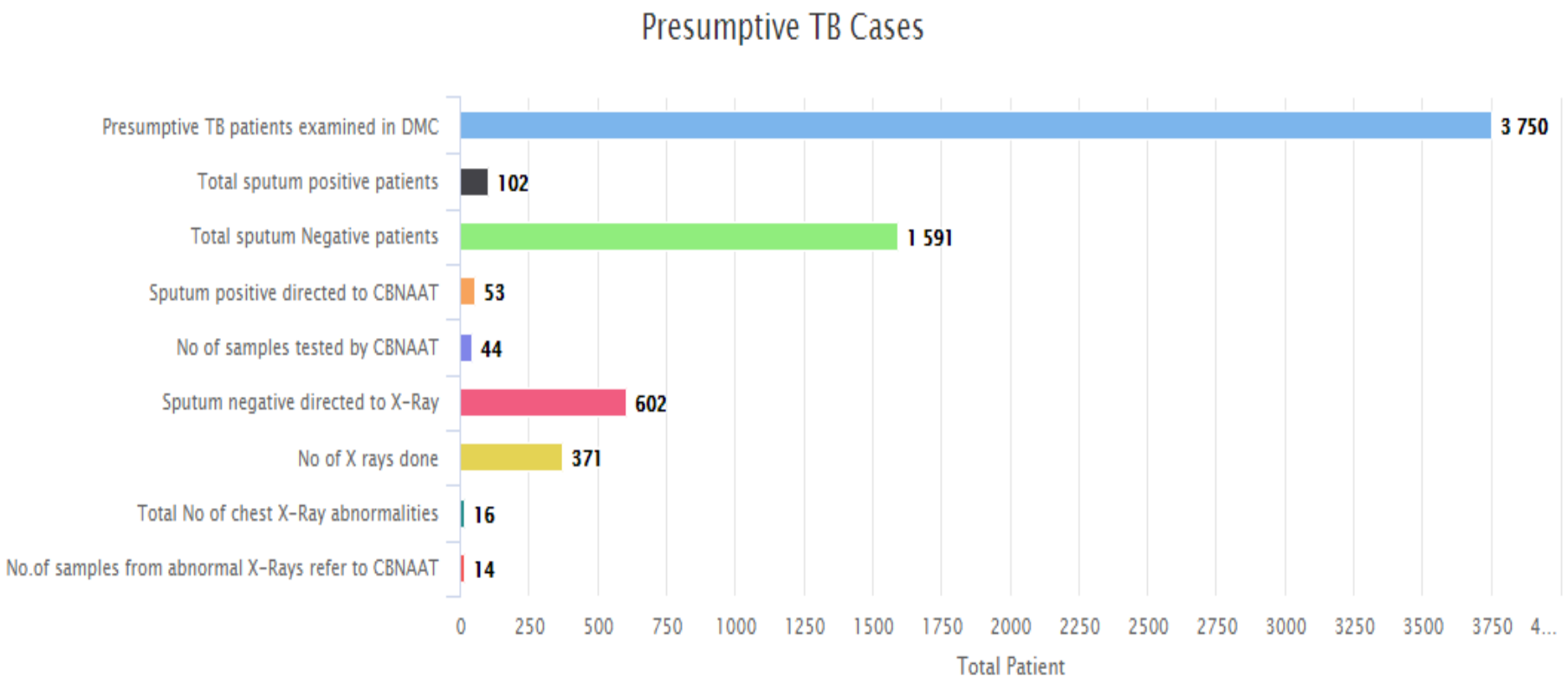

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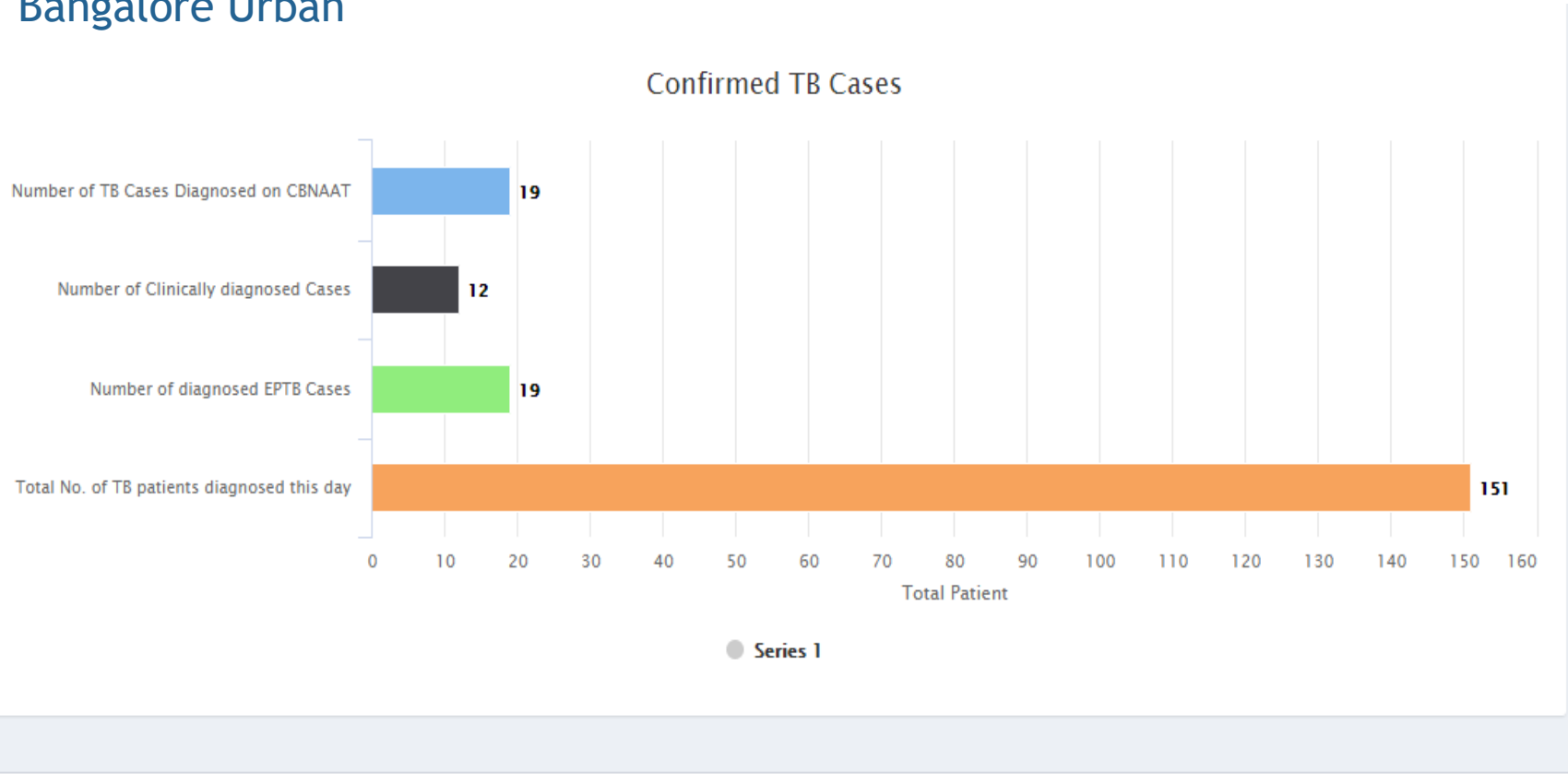

Powered by Indian CST

As per Govt. of India Standards National eHealth Authority (NeHA) 2015

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To reduce perinatal and neonatal mortality through quality improvement project Safe Care Safe Lives

Safe Care Safe Lives

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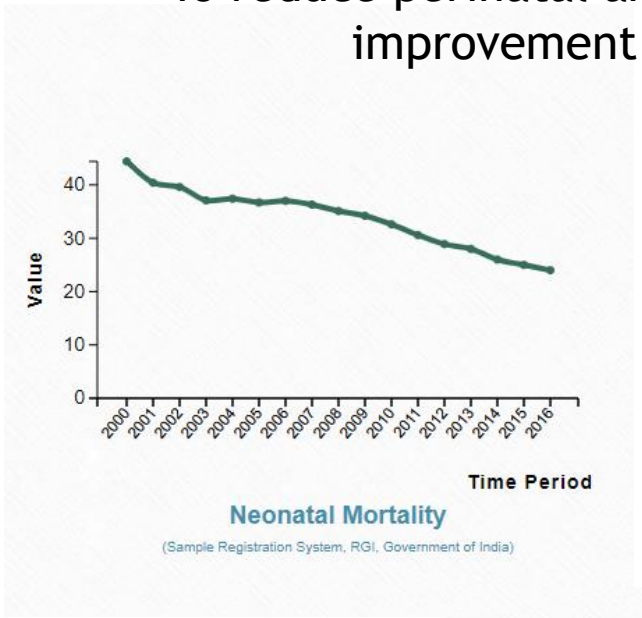
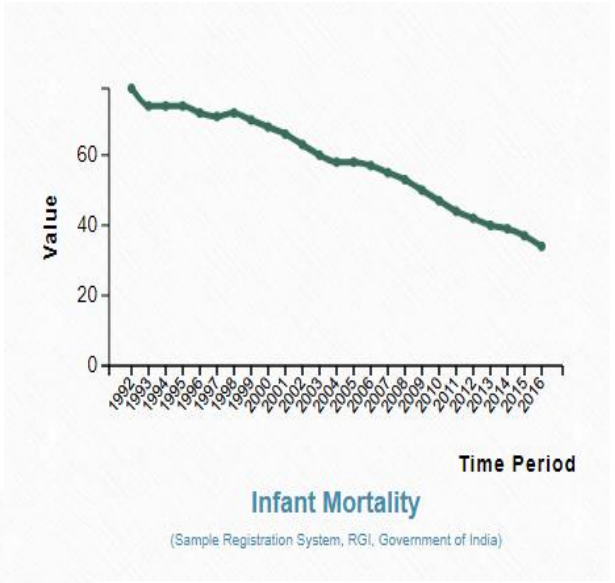
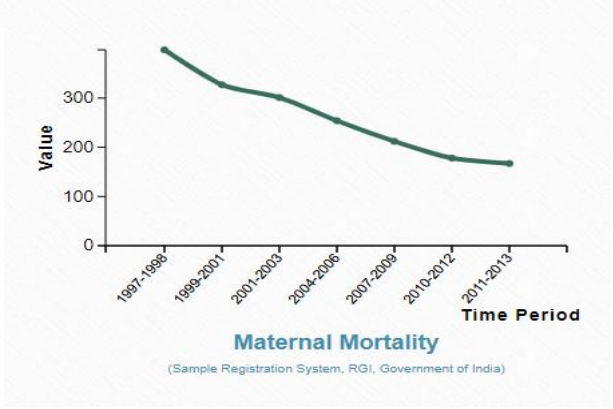
A Public Charitable Trust (Regd.)

To reduce perinatal and neonatal mortality through quality improvement project Safe Care Safe Lives

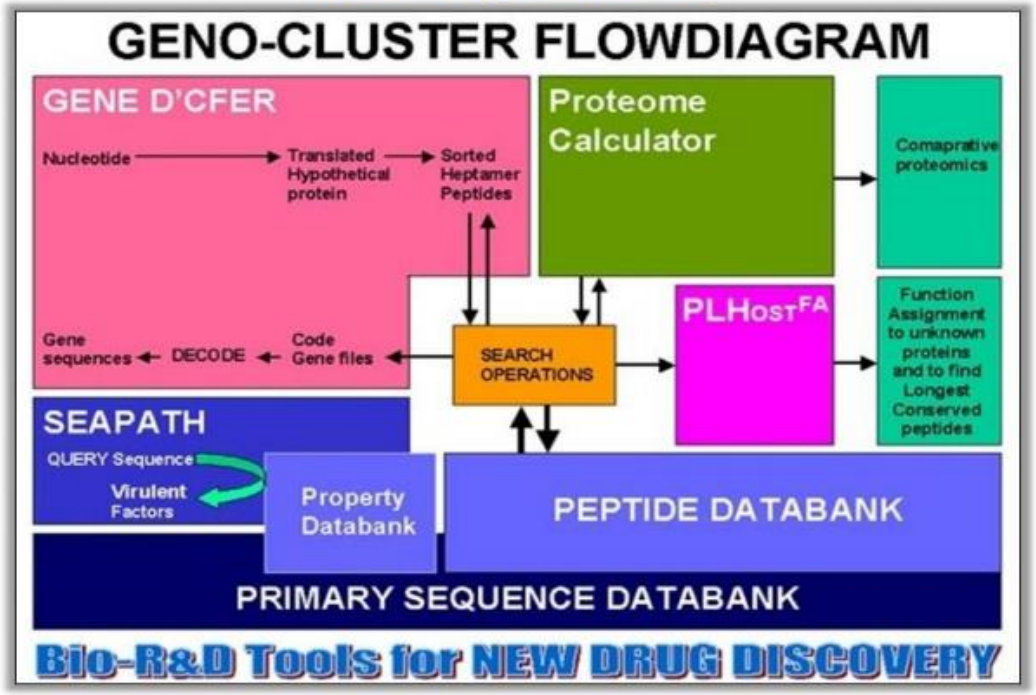




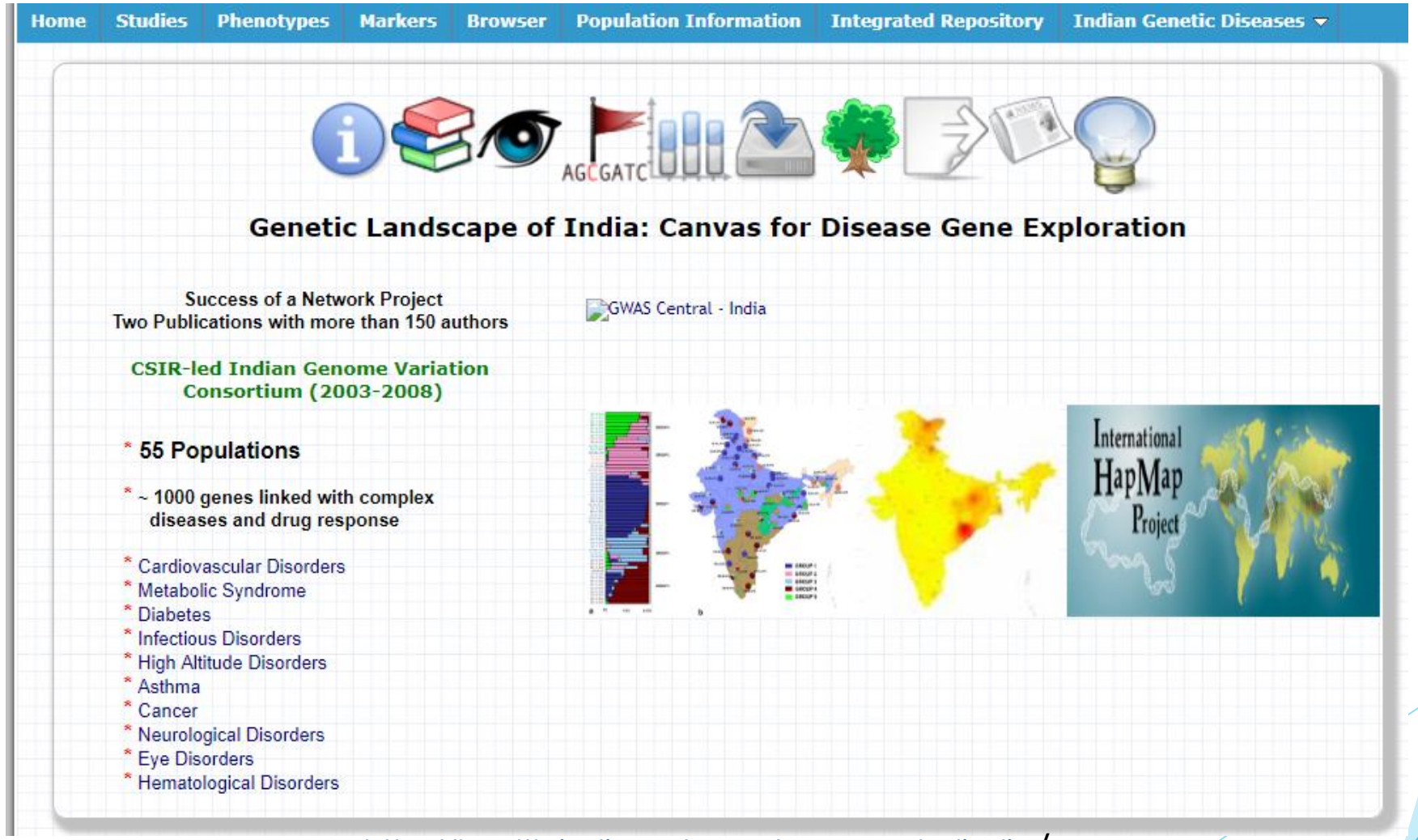


Safe Care Safe Lives

Geno-Cluster:
A novel platform software tool for facilitating new drug discovery



GPMS Universal Health Care Information Therapy Transportal
Common Integrated Dashboard



http://health.indiancst.com/gwascentralindia/

Initiative by the Ministry of Health and Family Welfare, Govt. of India, NITI AAYOG, Govt. of Karnataka Powered by Indian CST.

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Scientific Research Publications

The present study resulted in identification of 20 novel lead molecules including 4 FDA approved drugs (droxidropa, tetroxoprim, domperidone and nemonapride)

Kaur *et al. J Transl Med (2017) 15:261*
https://doi.org/10.1186/s12967-017-1363-9

Journal of Translational Medicine

RESEARCH Open Access

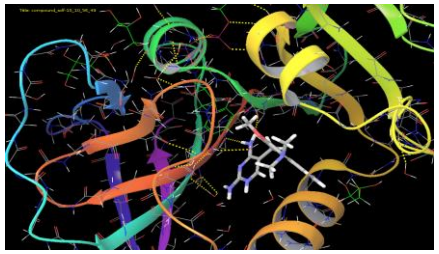
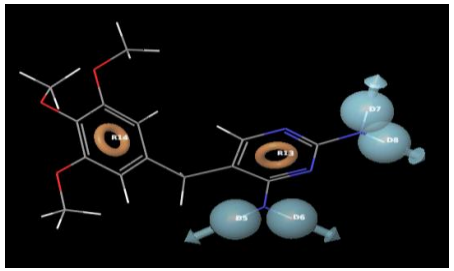
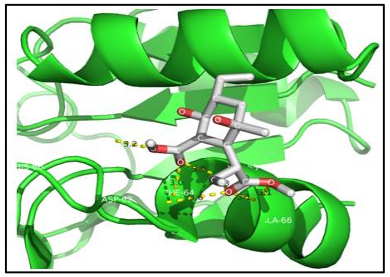
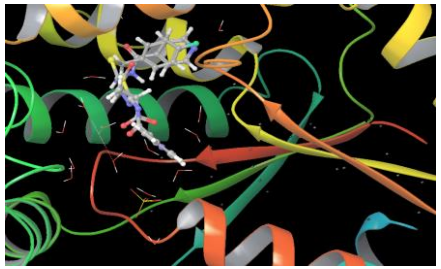
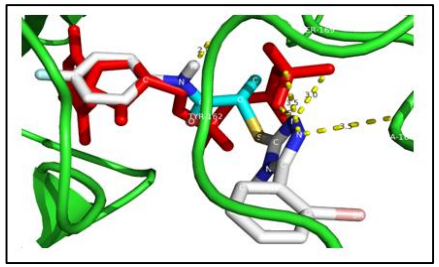
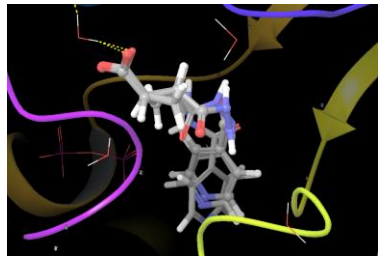
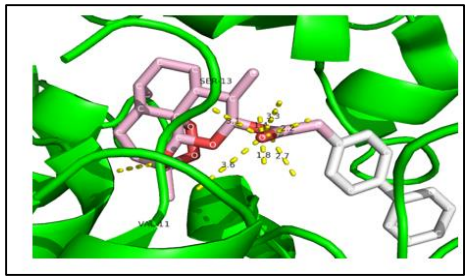
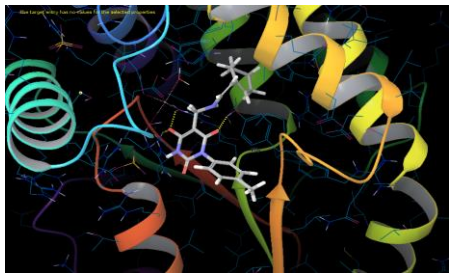
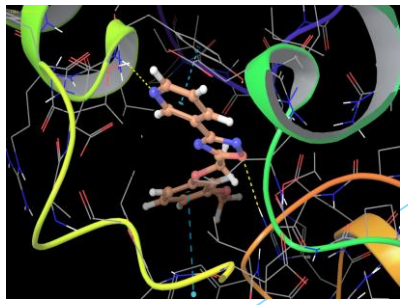
Structure based drug discovery for designing leads for the non-toxic metabolic targets in multi drug resistant *Mycobacterium tuberculosis*

Divneet Kaur[1], Shalu Mathew[2], Chinchu G. S. Nair[2], Azitha Begum[2], Ashwin K. Jainanarayan[1,5], Mukta Sharma[1] and Samir K. Brahmachari[1,2,3,4*]

Author details
[1] CSIR-Institute of Genomics and Integrative Biology, New Delhi, India. [2] Centre for Open Innovation-Indian Centre for Social Transformation, Bengaluru, Karnataka, India. [3] Academy of Scientific and Innovative Research, New Delhi, India. [4] CSIR-Open Source Drug Discovery Unit, New Delhi, India. [5] Present Address: Indian Institute of Science Education and Research (IISER), Mohali, India.

https://translational-medicine.biomedcentral.com/articles/10.1186/s12967-017-1363-9

Lead molecules identified based on the best docking scores, binding affinity calculations, and best superimposition with the natural substrate

Identified proteins belonging to 81 biological pathways, are targeted by 34 known FDA approved drugs that have distinct potential for treatment of neuropsychiatric disorders.

Multi-scale analysis of schizophrenia risk loci: Integrating centenarian genomes and spatio-temporal expression profiles suggest the need for adjunctive therapeutic interventions for neuropsychiatric disorders.

Anirudh Chellappa S, Ankit Kumar Pathak, Prashant Sinha, Ashwin Kumar Jainarayanan, Sanjeev Jain, Samir Kumar Brahmachari

doi: https://doi.org/10.1101/369090

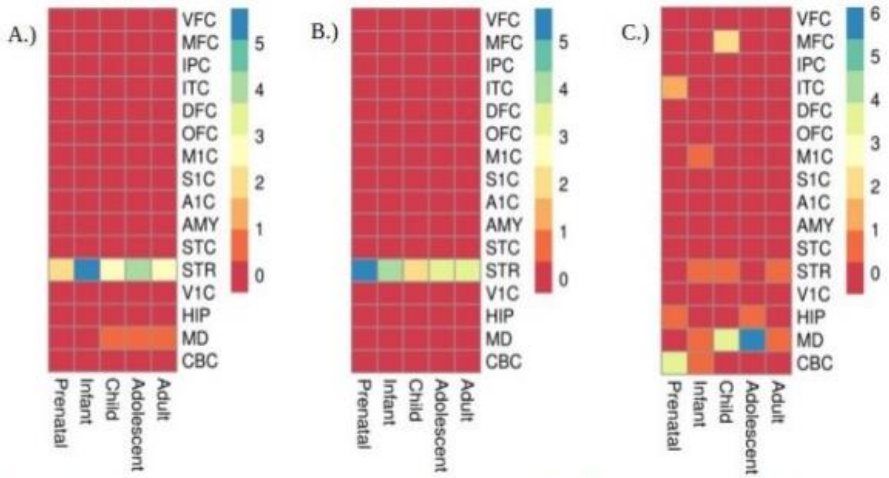
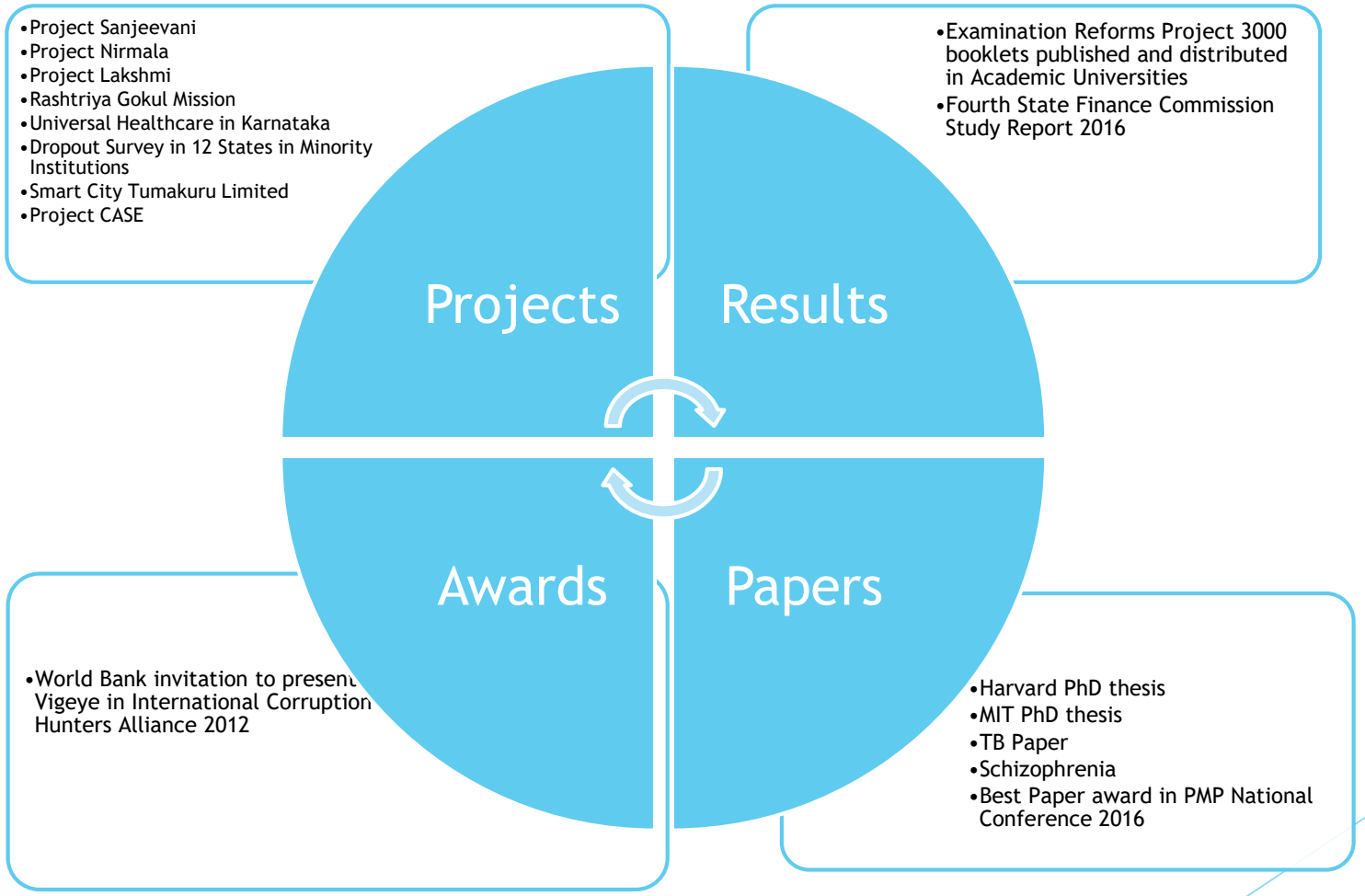


Figure 4: Spatio-temporal expression profiles (Z_score RPKM) of druggable SZ candidate genes A.) DRD2, B.) DRD3 and C.) SLC6A3 in a developing human brain.

Work Done By Indian CST



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For any clarification, please contact

Raja Seevan
Founder Trustee

Indian Centre for Social Transformation

Mobile no.+918073536006 or +919739047849

Email: rajaseevan@indiancst.in , rajaseevan@gmail.com

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