Department of Telemedicine

Prof. & Head	Dr. Meenu Singh	MD, FIAP, FCCP, FCAAI (Pediatrics)
Professor	Dr. Biman Saikia	MD (Immunpathology)
Professor	Dr. Nusrat Shafiq	MD, DM (Pharmacology)

Staff under RRC, NMCN, MoHFW, Govt. of India

Consultant &Coordinator	Dr. Amit Agarwal	MSc,Ph.D
Consultant (Health informatics Unit)	Dr. Anil Chauhan	MSc, Ph.D
Consultant (**Health informatics Unit**)	Dr Nishant Jaiswal	MBBS, Ph.D
Associate Consultant	Mr. Pankaj Pant	MSc
Telemed. Infra. and Net. Admn.	Mr. Munish Kumar	BA
Content Developer	Mr. Suresh Bhatt	BA

The Telemedicine Centre at the Institute is a pioneer in providing both basic telemedicine facilities as well as a highly specialized quality service to the people of this region i.e. Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Uttar Pradesh, Uttaranchaland Rajasthan. This Centre is connected to 24 district hospitals and 3 Medical colleges of Punjab for Tele consultations through and also to the Post Graduate Institute of Rohtak, SGPGI Lucknow, AIIMS Delhi, AIIMS Bhubneshwar, Jaslok Hospital Mumbai, DMC Ludhiana, Fortis hospital Mohali, PIMS Jalandhar, GMC Trivandrum, IGMC Shimla, Dr. RPGMC Tanda and many others for interactive sessions through Video Conferencing.

Regional Resource Centre (under National Knowledge Network)

Our Centre has been designated as Regional Resource Centre (under NKN) of North India in 2013. PGIMER is the Nodal centre of the North zone for the national knowledge network and is connected to the Medical colleges of J&K, Himachal Pradesh, Chandigarh, Punjab and Haryana. Following hospitals are coming under RRC, PGIMER, Chandigarh.

1. Dr. Rajendra Prasad Govt. Medical College, Tanda, Himachal Pradesh
2. Indira Gandhi Government Medical College, IGMC, Shimla, Himachal Pradesh

3. Postgraduate Institute of Medical Sciences, PGIMS, Rohtak, Haryana
4. Government Medical College, Jammu, Jammu & Kashmir
5. Government Medical College, Jammu & Kashmir
6. Guru Govind Singh Medical College, Faridkot, Punjab
7. Govt. Medical College and Hospital, Amritsar, Punjab

National Medical College Network (NMCN)

Department of Telemedicine, PGIMER is on the radar of becoming part of the NMCN and it will be facilitating tele-services in medical education and consultancy. We are working on the same and already in touch with the concerned medical colleges for their requirement.

Site Visit of concerned medical colleges for upgradation of existing Tele Medicine Centre and Tele evidence facility:

1.Dr Rajendra Prasad Government Medical College, Tanda, Himachal Pradesh (21.12.2017) (Attached)

Main Activities of RRC:

- Through NKN connectivity
    I. Tele education
    II. Tele consultation
    III. Tele evidence
- Through ISRO connectivity
    I. Tele education
    II. Tele consultation
- Evidence Based Health Informatics & Health Technology Assessment Unit

Tele-education through NKN connectivity

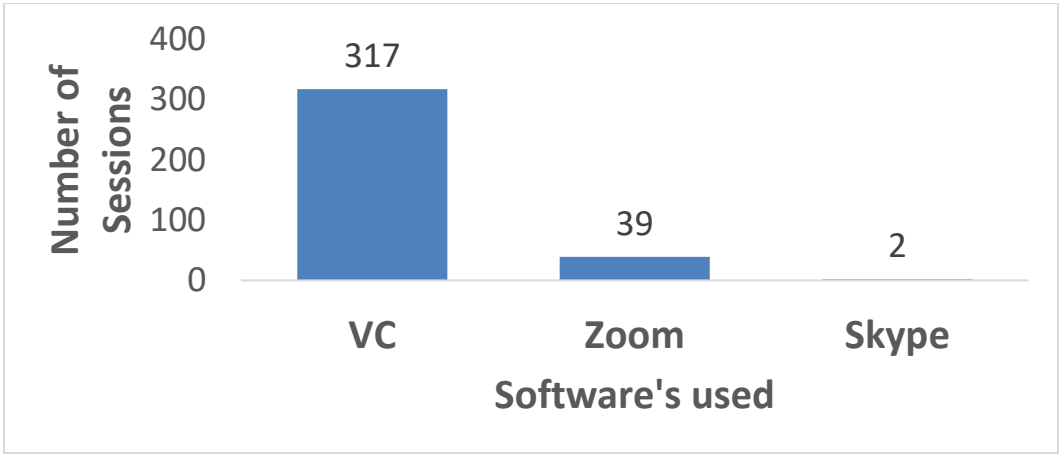
S.NO.	Sessions Name	No of sessions in the year 2019-20
1.	Clinic pathological conferences (CPC's)	31
2.	Pediatrics sessions with AIIMS, New Delhi	32
3.	Genetics Sessions with SGPGI, Luck now	4
4.	Hepatology Sessions	9
5.	Staff CME & Student CME	44
6.	General Surgery	51
7	North east EBM	27
8	Other interactive session	39

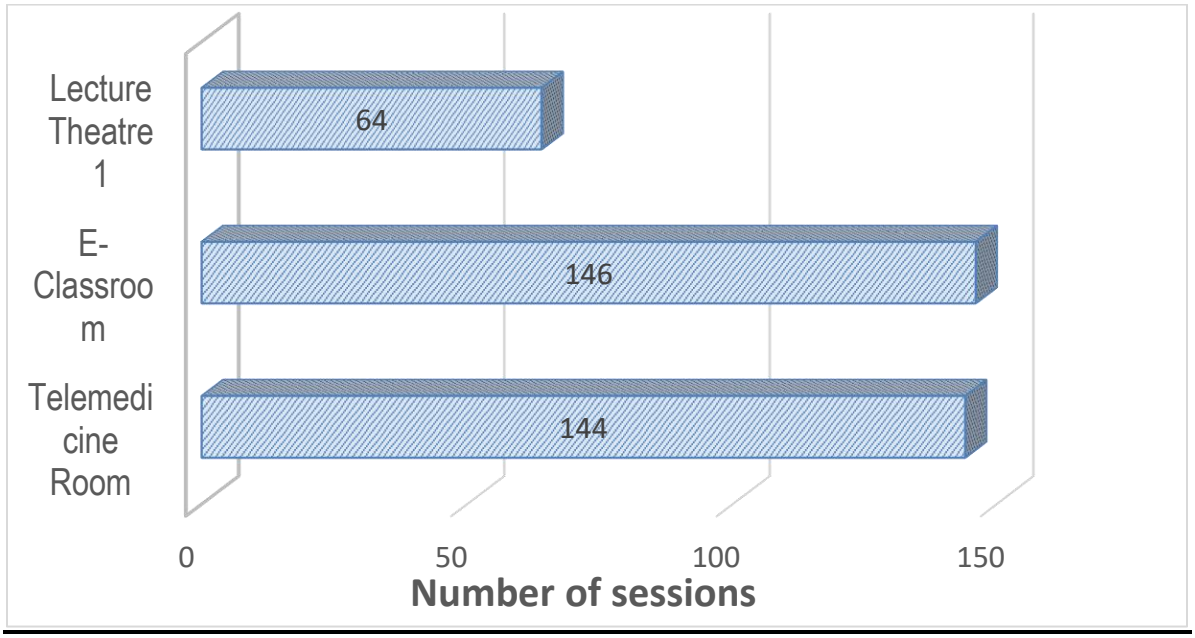
All the sessions are being webcast and recorded through NMCN portal: www.nmcn.in

Tele consultations through NKN connectivity via e-Sanjeevani Software:

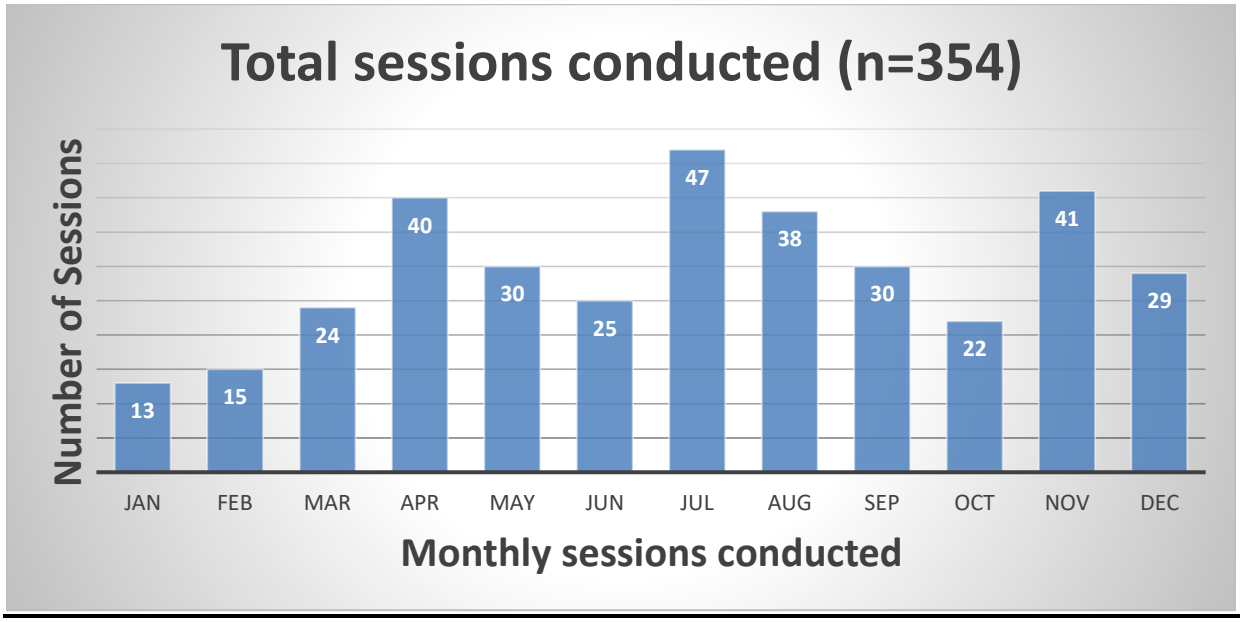
Department of Telemedicine is providing the on line consultation through **e-Sanjeevani** programme developed by the C-DAC Mohali to the 24 District hospitals and 3 Govt. medical colleges of Punjab

Software's used





SESSIONS CONDUCTED:

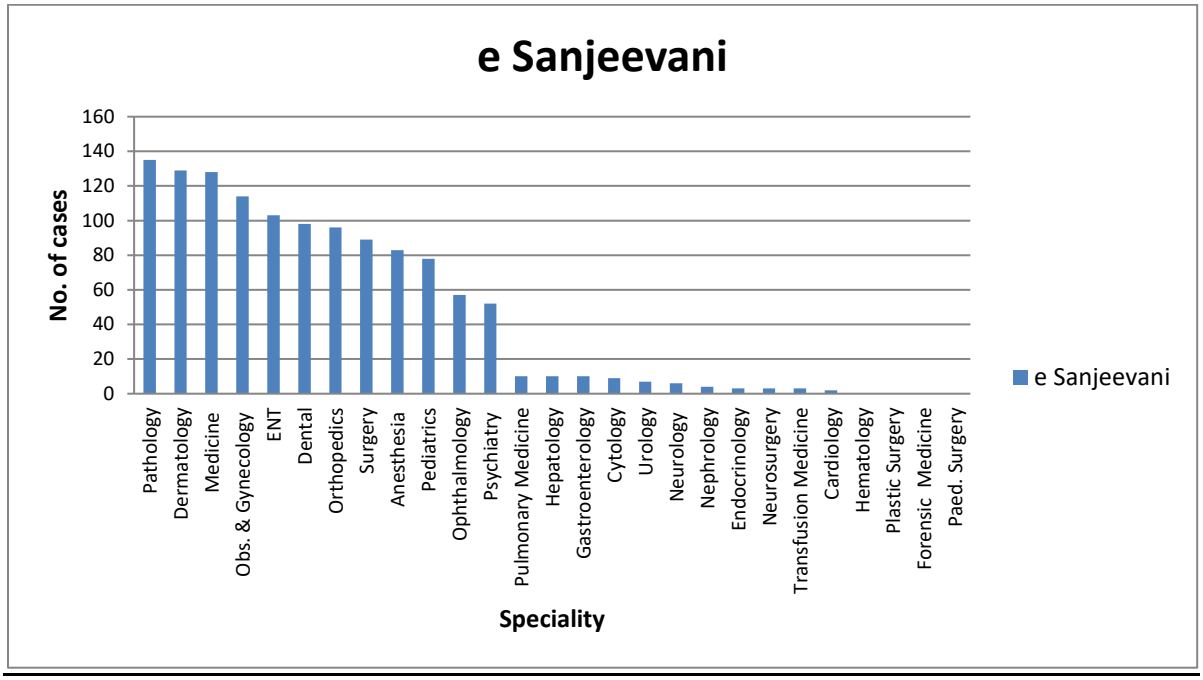


Details of Tele Consultations (e-Sanjeevani)

Under the project the department has given break up wise consultation to the various specialties and super-specialties during the year 2019-20 under Punjab Project, e-Sanjeevani.

Department	**e-Sanjeevani**	**Percentage**
Pathology	135	10.98
Dermatology	129	10.50
Medicine	128	10.41
Obs. &Gynecology	114	9.27
ENT	103	8.38
Dental	98	7.98
Orthopedics	96	7.81
Surgery	89	7.24
Anesthesia	83	6.75
Pediatrics	78	6.35
Ophthalmology	57	4.64
Psychiatry	52	4.23
Pulmonary Medicine	10	0.81
Hepatology	10	0.81
Gastroenterology	10	0.81
Cytology	09	0.73
Urology	07	0.57
Neurology	06	0.49
Nephrology	04	0.33
Endocrinology	03	0.24
Neurosurgery	03	0.24
Transfusion Medicine	03	0.24
Cardiology	02	0.16
Hematology	00	0.00
Plastic Surgery	00	0.00
Forensic Medicine	00	0.00
Paed. Surgery	00	0.00
Total	**1229**	**100.00**

Figure 1: Bar Chart representation of Tele consultations (e –Sanjeevani)



Civil Hospital, Mohali	13
Civil Hospital, Ropar	28
Civil Hospital, Kapurthala	00
Civil Hospital, Hoshiarpur	00
Civil Hospital, Ferozpur	41
Civil Hospital, Bathinda	108
Civil Hospital, Mansa	63
Civil Hospital, Moga	62
Civil Hospital, Sangrur	71
Civil Hospital, Ludhiana	138
Civil Hospital, Gurdaspur	41
Civil Hospital, Nawasahar	142
Civil Hospital, Muktsar	85
Civil Hospital, Jalandhar	59
Civil Hospital, Fatehgarh Sahib	106
Civil Hospital, Patiala	29
Civil Hospital, Ajnala	150
Civil Hospital, Dasua	23
Civil Hospital, Pathankot	11
Civil Hospital, Amritsar	06
Civil Hospital, Barnala	50
Civil Hospital, Tarantaran	3
Total	**1229**

Tele evidence through Video conferencing

Telemedicine centre is continuing providing video Conferencing facilities for the doctors of PGIMER, for giving evidence in District Courts of Punjab and Haryana and this is proving very useful in saving valuable time of the doctors. Already **3138 sessions** have been conducted successfully during the year.

PGIMER ISRO LINKAGE

PGI is having telemedicine facility with **111** medical institutes all over India via satellite connectivity provided by ISRO, Bengaluru. Regular transmissions on specialized clinical topics form ISRO Ahmedabad are being held and are being attended by the faculty of PGIMER.

PGIMER-ISRO Link-

CME Sessions attended through student's software- 8

Tele Consultation through ISRO connectivity

- PGIMER is recently been connected with 3 remote areas :

1. Pooh (Kinnaur, Himachal Pradesh) - 4

2. Aayapa Temple (Sabarimala, Kerala) - Nil

3. Sheshnag (Amarnath, J&K) - 5

Departmental Highlights

The use of telemedicine is strengthening the rural health services and providing medical education by specialists through Video conferencing. Telemedicine provides high quality clinically relevant medical updates and access to modern technology in diagnosis and treatment through educational programmes.

1. We have started online web streaming.

Transmission of Clinical Lectures

We are continuing with the transmission of clinical lectures on Monday, Tuesday and Thursday from 8 A.M to 9 A.M to all the three medical colleges of Punjab which started on 20 January 2014, and it is benefitting the faculty there. A total of **75** clinical lectures were transmitted during the year 2019-20.

Live transmission of Session

This Centre is also facilitating the live transmission of various sessions being held in our institute. We have successfully transmitted 339 sessions to all over the India.

Interactive Sessions

Interactive session between Department of Pediatric medicine of PGIMER and AIIMS, New Delhi has been transmitted every Monday and Interaction between the Pediatric Genetics of PGIMER and SGPGI, Lucknow on every Tuesday. Teaching sessions regarding Hepatitis C awareness have been transmitted through zoom software with district hospitals of Punjab by Department of Hepatology twice in a month.

Clinical-Pathological Conferences

Telemedicine Centre is transmitting the educational CPCs to the various medical colleges connected. A total number of **31 CPCs** were transmitted from April 2019to March 2020.Different educational sessions of various departments have also been transmitted to the connected centers.

ECHO project for North East Region

Project ECHO (Extension for Community Healthcare Outcomes) is an innovative model of healthcare education. ECHO uses widely available video conferencing technology to leverage specialty knowledge that may only exist in an academic medical center to empower community primary care clinicians. By way of ongoing telementoring, participating clinicians develop expertise in various fields and the model could be well adapted for online mentoring towards

Capacity building in the field of Evidence Based Medicine. This proposal aims at capacity building in the North Eastern region in the field of Evidence Based Child Health (Principles and Application) using the online mentoring platforms like ECHO model. Various modules has been conducted under this capacity. A total of 8 interactive sessions transmitted to North East region under this project.

Evidence Based Health Informatics & Health Technology Assessment Unit

1. **Online Course: www.acebch.org**

2. **Conduct of systematic reviews/studies**

3. **Workshops & Conferences**

    1. CME in telemedicine on the foundation day: April 14th, 2019. Venue: APC Auditorium Advanced Pediatric Centre, PGIMER, Chandigarh.
    2. Implementation of e-Sanjeevani in Health & Wellness centres on October 30th, 2019. Venue: lecture Theater 1, Nehru hospital, PGIMER, Chandigarh
    3. Teaching communication skills for residents: October 18th, 2019. Venue: lecture Theater 1, Nehru hospital, PGIMER, Chandigarh
    4. IAACON 2020- February 14-16th, 2020. Venue: Hotel Taj, Chandigarh
    5. Homeopathy workshop on Evidence Based Medicine. October 19th, 2019 Venue: Homoeopathic Medical College & Hospital, M-671, Sector - 26, Chandigarh.

4. **Workshops & Conferences participated**

    1. National Digital Health Blue print meeting at Delhi- August 6th, 2019
    2. A total no of five abstracts has been presented in Telemedicon 2019.

5. **Projects Undertaken**

    1. Science technology & Innovation hub in Leh district Ladakh UT (Funded by DST)

    2. e Aarogya Bharti project under Ministry of External Affairs

3. Development of Artificial Intelligence for the diagnosis and prognosis of children with asthma.
4. Health awareness camps for making tuberculosis free India, in the schools of Chandigarh

Online Courses

AIM

The main aim of this course is to familiarize course participants with evidence based medicine (EBM) basics to help incorporate evidence from systematic reviews into practice.

On the completion of the course, participants should be competently able to:

- generate structured questions arising from clinical problems in practice
- search relevant literature, identifying systematic reviews wherever possible
- assess the quality (validity) of systematic reviews and primary research included within them
- assess the applicability of research findings in clinical practice
- effectively implement the output from above activities into clinical practice

Participants

The target participants of this course are Health professionals in a clinical setting.

We have categorized this course into 8 different modules based on various steps and procedure involved in conducting systematic reviews.

1. Introduction to evidence based medicine
2. Framing research question & searching literature
3. Statistics in EBM
4. How to conduct Systematic Reviews
5. Critical appraisal of Diagnostic test accuracy study

6. Critical appraisal of Randomized control trail (intervention)
7. How to write a protocol
8. Critical appraisal of Systematic Reviews

Till date there are 40 participants who have registered for the course from the different medical colleges and institutes. Some of them have completed their course but yet to be submitted their protocol. Every participants need to go through and complete the Pre-test questionnaire uploaded in the course before start the lectures. E-certificate will be provided at the end of course after completion of post test.

National Digital Health Blue print meeting at Delhi- August 6th, 2019

Comments and suggestions

Key points of Chapter-1

National Digital health blueprint in mainly based on the National Health Policy and its goal is deployment of Digital Technology to enhance the health system performance.

The main aim of this is to ensure the Service delivery and citizen empowerment.

The main challenge in this to extend healthcare services to rural areas and provide better health care at low cost.

In this chapter it has been mentioned that health subject is more related to the state and NHM will be main key to provide health care delivery to all the rural areas by implementing Telemedicine, Tele Radiology, Tele Ophthalmology and Hospital information system.

The question arises in this that how to involve all the states under this as each and every state NHM have different guidelines and policy for health?

In the ayushman bharat yojna two main objectives are there-

1. To set up 1.5 lakh health and wellness centres
2. Pradhan Mantri jan arogya yojna

The chapter mentioned that after implementation of health and wellness centres, it will generate enormous amount of health data. So there are challenges in point of view of data safety, privacy and confidentiality. It has been also mentioned that now a days, multiple stakeholders are there and serious risk may arise in regard to health data.

Vision

"To create a National Digital Health Eco-system that supports Universal Health Coverage in an efficient, accessible, inclusive, affordable, timely and safe manner, through provision of a wide-range of data, information and infrastructure services, duly leveraging open, interoperable,

standards-based digital systems, and ensuring the security, confidentiality and privacy of health-related personal information."

Challenges arise from objectives

1. Creation and implementation of Personal health records is very challenging.
2. The use of clinical decision support system by health professionals.

One objective can also been added to provide training of the health professionals.

How to use clinical decision support system? so that it can easily be accessible and it should not be time consuming.

Key points of chapter 2.

The chapter 2 of the NDHM blueprint describes the building blocks required for the development of overall digital health ecosystem. These building blocks are interoperable with PHI as the main centric building block accessible with other building blocks.

It is very important for this NDHM that these building blocks are created prior to its implementation with its evaluation. The five layers of the building blocks: infrastructure (layer1), Data Hubs (layer 2), Technology building blocks (layer 3), application building blocks (layer 4), access and deliver (layer 5). Emphasis should be given to create more building blocks which could be added to the above mentioned layers. There should be a common NDHM app which contains all the building blocks but access should be provided to the end user (care givers and care seekers) according to their utility.

Clinical decision support system should be created for specific diseases by integrating with Evidence based health informatics using information from medical databases such as PubMed, OVID, EMBASE, Cochrane library etc. Evidence based health informatics unit should be established in tertiary care hospitals to create these Clinical decision support systems.

There is no lack of data of diseases in our country. But, it is embedded in patient files, registers, registration cards which are kept as hard copies in clinical record departments mostly in tertiary care hospitals. This vast amount of data could be decoded in a soft copy format by data entry

operators for creating clinical registries and data than should be stored in data hubs. Disease registries should be created at tertiary care hospitals which should be interoperable and integrated with HMIS.

Smartphones have revolutionized the world of digital health worldwide. It has a centric role in the establishment of NDHM in India. Other than patients, all the actors of NDHM can use the smartphones easily with all applications. Firstly, there is a need to strengthen the family member or patient itself with the usage of smartphones. Survey should be conducted to determine the usage of smartphones in rural and urban populations. It should be ensured that the apps created should also be in local languages so that the illiterate people can also access their health information. Educational sessions for using the apps in smartphones should be prioritized in rural population. Other than this government could plan for distributing cheaper smartphones integrated with healthcare apps of NDHM.

Key points of Chapter 3

The roadmap for capturing and using health records has been laid down in great details. The roadmap for inter-operability both technical and sematic have been explained and standard have been specified. There has been a clear mention of consents for data capturing and usage. A point to be made clear is about the data sharing. Consent for data sharing is very important with a clear note about the purpose of data sharing and stakeholders for the shared data. As may corporate players and international agencies will be into play.

A note of defining what is justified usage or what is not justified usage of individual or community health records should also feature in the consents. Defining misuse of the individual health records is required.

The use of the electronic health records for automated clinical decision support is a great initiative but it is also the duty to avoid misuse of AI for treating patients and it should not become an alternative to medical professional and care must be taken to not encourage self-medications using CDS. The access to such system should be defined.

The good thing is the incorporation of provision and guidelines related to immutability, versioning, non-repudiation, audit log and patient control. For the empowered individual it is

important that they (citizens) should have full control about their health records. As majority of India is in the villages therefore involving the Gram Panchayats and Zila Parishads for capacity building and training of individuals is very important although it is a tedious job but it is feasible.

About the hub and spoke model will be a breakthrough in making the national digital health a success and also is ensuring universal health coverage. A provision for the small(spoke) unit to communicate with any of the higher unit(hub) as per the availability should also be made.

Another important aspect is the integration of private clinics into the system and making the integration free or incentivized.

For e-signature facility the individuals should be fully trained users for its justified usage and avoid any sort of misuse. The areas for policy making are rightly identified and few of our comments above could be helpful in feeding these areas

Key points of Chapter 4

The success of NDHM relies heavily on the smooth interaction between Centre and State, public as well as private entities so the clear role and responsibilities of each party must be defined. The key components of NDHM are of National Health Electronic Registries to create a single nationwide health database, Federated Personal Health Records (PHR) Framework to make the health data available for both patient and health service providers as well as for the researchers working on medical science, National Health Analytics Platform for combining information on multiple health initiatives and feed into smart policy making and Capacity building on health informatics, safety and security. The role of the NDHM will be to provide information and data to different components of the health eco-system to work together and also provide the technological infrastructure for collection and storage of core/ master data through the various registries. NDHM will have to operate at two levels, namely the Governance level and the Implementation level. The Governance architecture of NDHM must comprise clear and well-defined leadership structure with reasonable autonomy as well as Clear demarcation of roles and responsibilities for it to be a successful enterprise. The implementation architecture of NDHM must incorporate key elements such as a clear leadership structure, convergence between core ministries and departments, citizen-centric approach and services, information management and

security, infrastructure expansion, planning, monitoring and evaluation in a comprehensive manner. Given the federal nature of Indian government and the fact that (a) Health is a State subject, and (b) it is necessary to incorporate private sector (both service providers and insurance), it is felt that an Institutional Framework which is a hybrid of GSTN, UIDAI and NPCI should be considered. While regulatory body takes care of policy making and policy administration, the implementation body should stay close to market for voluntary adoption; build best technical solutions and processes around products (building blocks), with security and privacy being of great importance. For the success of NDHM it is essential that both the Central and State Governments must be the joint owners or stakeholders and a combination of the GSTN and UIDAI models of institutional structure must be employed. The vision of NDHM is to be the best health care network globally and mission is to cater every Indian with access to digital health services. The services expected from NDHM comprised of PHR, Registries, health ID, Open API for insurance, Data management and technical architecture. NDHM should be a completely government owned body to ensure appropriate control within Govt. (Centre and States) as well as independence to deliver technology infrastructure within stipulated time frames and a business development orientation to co-opt the private players in the health eco-system. NDHM must Focus on providing concrete value to all players in the health ecosystem (Centre and State, private and public, service providers, insurance and citizens) through reduction in transaction costs, availability of infrastructure as public good and simple processes for easy adoption are more likely to bear desired results. There is requirement of setting up a new organization to implement the National Digital Health Blueprint following the model implemented by South Korea and England.

Key points of Chapter-5

Purpose of National digital health mission Action plan

1. It enables defining the scope and outcomes of the initiative and to identify the methods to be deployed for the implementation of the blueprint
2. Prioritization of various activities required to fulfil the vision and objectives of the initiatives.

3. Establishment of the Institutional Structure at the earliest.
4. Identifies the core building blocks of the blueprint and guides the action to put them in place in a logical sequence
5. Creation of the critical mass of the capacities and capabilities required for smooth implementation of NDHB.

Scope of NDHM

1. Health and wellbeing for all and all ages
2. Universal Health coverage
3. Citizen centric services
4. Quality of care
5. Accountability for performance
6. Efficiency and effectiveness in delivery of services
7. Creation of a holistic and comprehensive health eco-system

Expected Outcomes

1. Accessibility of Electronic Health Records to all citizens.
2. Single diagnostic test and integrated health service
3. Continuum of care
4. Framework for unified communication centre
5. National portability for healthcare services
6. Privacy of personal and health data and consent based EHR
7. Evidence based interventions in the area of public health
8. Data driven decision making and policy analysis.

Methods and Instruments recommended by NDHB

1. Federated Architecture
2. Universal Health Id (UHID)
3. Electronic Health Records (EHR)
4. Metadata & Data Standards (MDDS)
5. Health Informatic Standards

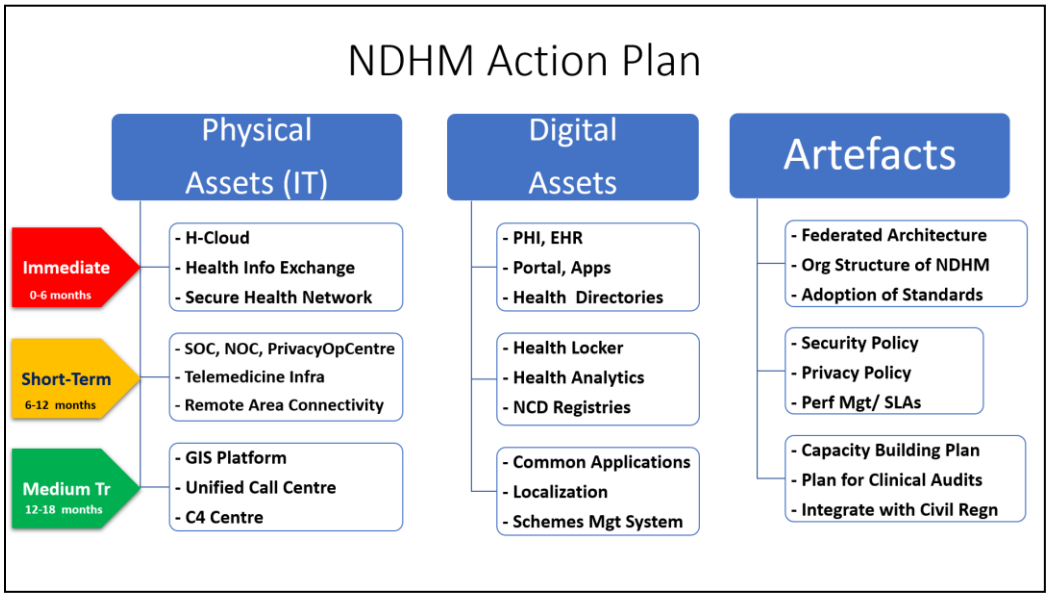
6. Registries for NCDs
7. Directories of Providers, Professionals and Para-medicals
8. Legislation and Regulations on Data Management, with focus on Privacy and Security
9. Data Analytics

Timelines and deliverables

1. Physical
2. Digital
3. Artefact

Challenges

1. Maintaining H Cloud
2. Making EHR and EMR more friendly
3. Identification and design most suitable Apps
4. Policy for adoption health informatic standards
5. Integration of Ayushman Bharat with NDHM.
6. Strengthening National Health Portal
7. Establishing Health call centre



First Foundation day celebration,

Department of Telemedicine PGI, Chandigarh

Health awareness camps for making tuberculosis free India, in the schools of Chandigarh

RRC, Department of Telemedicine starts providing Online Tele consultations to tackle the situation of Corona Pandemic

Video Conferencing with Dr Harsh Vardhan , Hon'ble Union Minister of Health & Family Welfare, Government of India in view of Corona Pandemic on March 28th, 2020