



Consultation Paper

on

Healthcare Professionals Registry

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Written Comments on the Consultation Paper are invited from stakeholders by 13th July. Comments are to be preferably provided electronically on the NDHM website via form available at <https://ndhm.gov.in/publication/consultationpapers>. The comments may also be sent to Vikram Pagaria, Joint Director (Coordination), National Health Authority, on the email ID ndhm@nha.gov.in. For any clarification/information, he may be contacted at Telephone No. 011-23468786.

Acronyms and Abbreviations

API	Application Programming Interface
EMR	Electronic Medical Records
FHIR	Fast Healthcare Interoperability Resources
HFR	Health Facility Registry
HPR	Healthcare Professionals Registry
HID	Health ID
HIMS	Hospital Information Management System
HPR	Healthcare Professionals Registry
HP	Healthcare Professional
LIMS	Laboratory Information Management System
NDHB	National Digital Health Blueprint
NDHE	National Digital Health Ecosystem
NDHM	National Digital Health Mission
NHA	National Health Authority
NHP	National Health Policy
PMJAY	Pradhan Mantri Jan Aarogya Yojana
UHI	Unified Health Interface
WHO	World Health Organisation

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Chapter 1

Introduction and Background

1.1 Objectives

1.1.1. This document has been published to invite stakeholder comment and consultation on the certain strategic and functional fundamentals of the Healthcare Professionals Registry (HPR). HPR is envisioned to be a nationally recognized registry of healthcare professionals of various types that operate within India's healthcare ecosystem.

1.1.2. In this document, an attempt has been made to frame and contextualize the issues for consultation and provide adequate context for the public to weigh in with their comments. A wide range of policy, strategic and technical matters are covered, some of which may depend upon the interpretation of the law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The approaches discussed henceforth are ideas and not decisions. Final decision shall be taken after considering suggestions and feedback received to this paper. Implementation, including necessary course-correction in the pilot, shall be done after that.

1.1.3. Multiple sources have been consulted to draft this consultation paper and information presented herein. However, NHA understands that there might still be gaps with respect to practical implementation. Hence, the desired outcome from this process of consultation is clear feedback and answers to the questions posed at the end of each chapter. Additionally, stakeholders are welcome to raise any other issues they deem critical for the development of such a platform.

1.1.4 This consultation paper is restricted to the Healthcare Professionals Registry building block of National Digital Health Mission. Information on other building blocks (Health Facility Registry, Unified Health Interface, Data Retention, etc) and issues within them may have been discussed in the other consultation papers published by NHA.

1.2 Evolution of NDHM

1.2.1. The National Health Policy (NHP), published in 2017, had the following goal -
"The attainment of the highest possible level of health and wellbeing for all at all ages, through a preventive and promotive health care orientation in all developmental policies, and universal access to good quality health care services without anyone having to face financial hardship as a consequence."

1.2.2. A key tenet of the NHP was the adoption of digital technologies in the healthcare ecosystem. To realize this goal, the Ministry of Health and Family Welfare constituted a committee headed by Shri J. Satyanarayana to develop an implementation framework for the National Health Stack. This committee produced the National Digital Health Blueprint (NDHB), laying out the building blocks and an action plan to comprehensively and holistically implement digital health.

1.2.3. To define the rationale, scope and implementation arrangements of the framework of digital healthcare ecosystem laid out in NDHB, National Digital Health Mission (NDHM), was then launched on August 15, 2020, with the following vision:

“To create a national digital health ecosystem that supports universal health coverage in an efficient, accessible, inclusive, affordable, timely and safe manner, that provides a wide-range of data, information and infrastructure services, duly leveraging open, interoperable, standards based digital systems, and ensures the security, confidentiality and privacy of health-related personal information.”

1.3 Building Blocks of NDHM

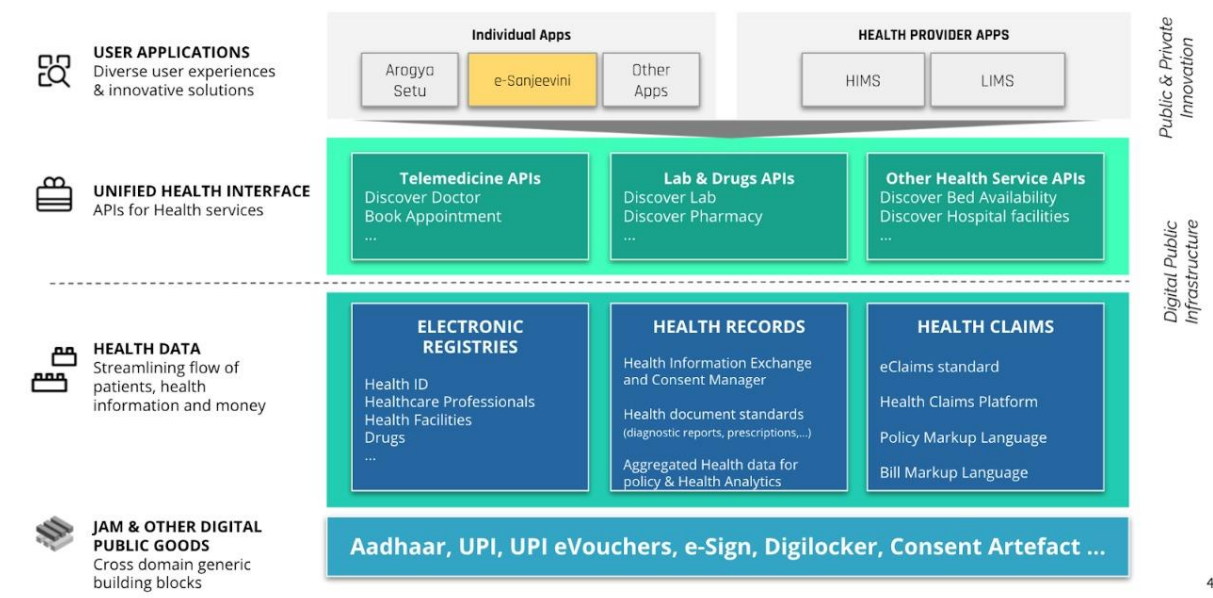


Figure 1: NDHM Architecture

1.3.1. The National Digital Health Blueprint (NDHB) outlined key building blocks for India’s Digital Health Ecosystem after detailed discussions with stakeholders and research on existing systems. Detailed information on each of these building blocks can be read in the official NDHB strategy document.

1.3.2. Some of these building blocks are registries. Registries are secure repositories of data of various types (on health facilities, healthcare professionals etc.) that users (individuals or organizations) may voluntarily enrol in. These registries shall be designed with strong data governance mechanisms, adhering to the principles of verifiability, accessibility, and identity management. In their respective domains, these registries are designed to emerge as nationally recognized and accepted databases. They will be considered successful if they are adopted by ecosystem stakeholders across the private and public sector as sources of truth. For example, the doctor’s registry that will be housed within HPR may be adopted as the National Medical Register that the newly formed National Medical Commission (NMC) is legally mandated to maintain. These registries will only achieve this vision if trust and verifiability of their data is paramount in design. Further, in order to drive adoption, these registries must be interoperable with other NDHM building blocks

1.3.3 In the initial pilot phase, the following registries were launched by NDHM in the 6 Union Territories:

1) **Health ID:** It is important to standardize the process of identification of an individual patient across healthcare providers. Therefore, every patient who wishes to have their health records available digitally must start by creating a Health ID. Each Health ID will be linked to a ‘health data consent manager’, a platform that will capture a user’s consent allow them to manage the personal information they release into the ecosystem. Multiple health data consent managers are likely to be available for patients to choose from, developed by both public and private players. Health ID will be designed to not require a physical card. Healthcare providers will be able to rapidly look up a Health ID by searching on the ID, alias, mobile or Aadhaar number. The Health IDs can be presented in e-card format(s) and issued to patients who need them. The Health ID card will also include a QR code that can be scanned to enable seamless patient registration at health facilities.

2) **Doctor’s Registry:** In the original NDHB, a Health Workforce Registry was proposed. This registry was envisioned to serve as a source of truth for information on doctors, nurses, paramedical staff, ASHAs and many other categories of healthcare professionals. In the initial pilot phase, this product was launched in **August 2020**, and would only serve as a registry of doctors. The Doctor’s Registry will be replaced with the **Healthcare Professionals Registry (HPR)** which will include several other categories of Healthcare Professionals, realizing the original NDHB vision. Registrants in HPR will be given a Healthcare Professionals ID (HPID) card, which will have a QR code allowing them to share details seamlessly. **The Healthcare Professionals Registry (HPR) will be the focus of this consultation paper.**

3) **Health Facility Registry (HFR):** The Health Facility Registry will consist of one record and a unique identifier for each healthcare facility in the country – hospitals, clinics, diagnostic centres, pharmacies etc, across all systems of medicine and covering both public and private health facilities. The initial version of HFR was launched as a part of the NDHM pilot in August 2020. Facility Managers will enrol their respective facilities in HFR, and will have access to a Facility Manager ID (FMID) with a QR code allowing for seamless sharing of details.

1.4 Doctor’s Registry and the Healthcare Professionals Registry

1.4.1. The National Digital Health Mission aims to strengthen the accessibility and equity of health services, including continuum of care with the citizen as the owner of data, in a holistic healthcare programme approach leveraging IT & associated technologies and support the existing health systems in a ‘citizen-centric’ approach.

One of the specific objectives of NDHM is “to establish registries at the appropriate level to create a single source of truth in respect of clinical establishments, healthcare professionals, health workers, drugs and pharmacies”.

1.4.2. The concept of a doctor’s registry was developed to achieve the above vision. In its current form, the Doctor’s Registry, it is a comprehensive repository of information on doctors practicing or teaching modern or traditional systems of medicine. This information broadly includes demographic, educational, registration and employment information. Enrolment in Doctor’s Registry is voluntary, and is a path for doctors to access the national digital health ecosystem. So far, enrolment of doctors

across 6 UTs where NDHM is currently in pilot phase (Andaman and Nicobar Islands, Lakshadweep, Puducherry, Dadra and Nagar Haveli & Daman and Diu, Chandigarh, Ladakh) has been enabled.

While Doctor's Registry has partially enabled a key objective of NDHM, the current registry needs to be expanded to include categories of Healthcare Professionals (HPs) other than doctors. The Healthcare Professionals Registry (HPR) is thus the envisioned platform to replace Doctor's Registry, and will include various categories of Healthcare Professionals beyond doctors, such as nurses, midwives and community health workers (e.g., ASHAs).

1.5 Consultation Process

1.5.1. Previous Consultations

A previous stakeholder consultation was conducted and drew participation from doctors across various systems of medicine, representatives of State Medical Councils and various professional bodies and registered medical societies. Through this prior consultation, the following broad themes emerged:

Concerns:

- **Infrastructural Gaps:** The prevalence of digital infrastructural gaps, lack of internet connectivity and geographical barriers may hinder implementation and adoption of the proposed platform, especially in certain hard-to-reach areas.
- **Existing Practices and Behaviours:** Due to infrastructural deficits and lack of digitized record keeping, accurate and timely maintenance of data on such a platform may be difficult and burdensome for healthcare professionals
- **Medico-Legal Concerns:** Doctors were concerned that legal actions against them may arise due to the technological malfunctioning of such a platform. Redressal and grievance mechanisms need to be developed to mitigate this.

Suggestions:

- **Legal Safeguards:** HPR should have safeguards for ensuring the legal and regulatory protection of all its registered members, especially for issues arising from technological malfunctions.
- **Inclusion of Allied Health Professionals:** All allied healthcare professionals should be included in HPR as they are key players towards delivery of health services and the management of health data records. Allied healthcare professionals refer to a wide body of associates, technicians, technologists or researchers trained and qualified to support doctors, nurses or other healthcare professionals in diagnosis and treatment.
- **Data Protection and Privacy:** Mechanisms to ensure data privacy and protection should be accorded the highest level of importance when designing these platforms, and clear, robust processes and control measures for incident management should be instituted.

- **Reference International Models:** Key learnings & mitigation strategies from other country models such as the National Health Services (NHS), United Kingdom should be reviewed and studied in detail and best practices should be adapted and incorporated.
- **Design for Adoption:** Functionally, the platform should be designed with usability in mind; key functionality such as tracking of CME (continuous medical evaluation) points, seamless license renewal should be added to increase adoption; behavioural interventions for creating and disseminating user awareness and understandings of the platform should be studied.

1.5.2. Issues for Consultation

When designing any national registry that aims to serve as a source of truth, there are several fundamental issues that must be discussed and deliberated. For Healthcare Professionals, there are a number of complex regulatory, functional, technical and operational challenges that will influence how such a registry should be designed and implemented. In recognition of these complexities, the various ecosystem stakeholders involved (detailed in Chapter 3) and the diverse viewpoints these stakeholders may have, inputs on the following key issues / questions have been invited. These issues shall be discussed in further detail in the subsequent chapters to provide a clear framework for analysis:

- Which stakeholders are we building the Healthcare Professionals Registry for? What are their incentives for adoption?
- Which categories of Healthcare Professionals should be included in the Registry?
- How should data on Healthcare Professionals be sourced, managed and governed?
- What types of data on Healthcare Professionals should be collected to drive adoption?
- Who should own the verification of this data? How should these verification processes be developed?

The HPR product will be shaped by this consultative process and the feedback received, hence all comments and inputs are encouraged, including those not outlined above.

1.6 Executive Summary

This consultation paper consists of five chapters. Chapter 1 provides an introduction to NDHM, the evolution of the doctor's registry, and the outcomes of the previous round of consultation, and a high-level summary of the key issues for consultation. Chapter 2 aims to create a framework for analysis by setting the current context of HP data in India, studying the regulatory framework and analysing selected international case studies. Chapter 3 will outline some of the stakeholders to be considered in the design and build of HPR, and provide an initial assessment for the value proposition for each. Chapter 4 will introduce and frame the question of who the HPR will be built for, and which categories are to be included in it; Chapter 5 will introduce and frame the debate on data governance models for healthcare professionals. In chapter 6, all the key issues for consultation will be consolidated.

Chapter 2

Setting the Context

2.1 Key Principles:

Data on HPs in India are governed by a complex network of regulatory, ethical and operational considerations. As such, NDHM acknowledges the various viewpoints that exist on the creation of a platform such as HPR. In this section, we will first examine some of the current technical and structural challenges faced by registries of HPs in India and the consequences for the healthcare ecosystem. Second, we will examine international case studies in the United States, the United Kingdom and the United Arab Emirates to synthesize key learnings, best practices and potential risks.

Before the current domestic scenario is studied, it is important to establish the following:

- The challenges and gaps of existing registries that have been outlined in this chapter are intended to provide a framework for consultation and are not an exhaustive list. **Public comments are invited to highlight the issues that exist in India today with respect to the management of data on HPs.**
- This consultation is designed to give stakeholders in India an opportunity to voice concerns, feedback and requirements for the HPR platform. These stakeholders may or may not have been included in consultations for the design of international registries, hence it is felt that a brief on these global efforts helps provide useful context and a framework for consultation.
- Requirements for such registries vary greatly from one country to another. These are influenced by the extent of digital adoption in healthcare, the level of economic development, public health needs and regulations (among other factors). As such, there is no globally acceptable solution or consensus on the right approach for such a platform.

2.2 The Indian Scenario

2.2.1. Existing Registries

When designing an approach for the healthcare professionals registry best suited to India, it is essential to keep certain key factors in mind. The following are certain observations on the current Indian landscape of registries that will influence the functional and technical design of the HPR platform.

- **Lack of a National Source of Truth:** Information on India's diverse health workforce is often considered fragmented and unreliable, despite recent efforts at standardized quantification (WHO 2007, GOI 2005). There are currently no official sources on the health workforce data that cover all categories of health professionals in the country.
- **Siloed Systems:** Regulatory councils typically maintain information on only certain categories of professionals. For instance, doctors and nurses have specialized councils at the state and national level that govern these professionals, but community health workers do not. Further

there is significant inconsistency / variability in how these registers are maintained across the country, both in terms of digital systems and processes. While some states or regions may have strong databases with robust verification mechanisms, others may have manually stored, outdated and unreliable data. Even across states that have comparable levels of digitization, the data attributes, identifiers and details captured often vary greatly, leading to siloed systems that are incapable of coordination.

- **Lack of Universal Identifiers:** While some categories of healthcare professionals (such as doctors and nurses) have registration numbers issued to them by national or state councils that are recognized across the country, several other categories (e.g., community health workers) do not have such identifiers. For instance, while certain states such as Rajasthan, have digital systems to enumerate and identify ASHA workers, there is no nationally recognized database of the same that can keep track of those who move across geographies but may still be qualified to serve as ASHA workers. Further, these identifiers may not be consistently used across various government health programmes, preventing programme officers from having an accurate picture of the availability of healthcare professionals in a certain area.
- **Diverse Systems of Medicine:** Diverse fields, specialties and the prevalence of both allopathic and traditional systems of medicine, further compound the problem. This level of diversity in the training, specialization, governance and regulatory mechanisms of various HP categories present several challenges for healthcare workforce planning, governance and transparency in India.

To summarize, there currently exists no nationally recognized source of truth for data on HPs in India that is trusted, digitally enabled and widely adopted by healthcare ecosystem stakeholders. The Healthcare Professionals Registry under NDHM aims to solve this problem.

2.2.2. Regulatory Frameworks

In order to understand the environment and challenges w.r.t the management of HPs in India, it is important to examine the current regulatory framework as well as anticipated changes. The provisions laid down by these laws will help define the scope of HPR, and therefore influence the direction of the product. After the examination of the current state, this is the second key dimension for analysis that must be understood.

At the outset, it is to be understood that the National Health Authority does not intend to encroach on the regulatory jurisdiction or domain of existing government departments, bodies or councils. NHA will only deliver a platform that will integrate in an interoperable manner with the broader NDHM health ecosystem as well as with the governing councils to manage and govern data.

A number of laws have been passed that lay down provisions for the governance of certain categories of HPs. Till recently, the focus of most legislation has been on HPs that directly interact with patients to administer health services, such as doctors and nurses. However, with the recent passage of the Allied and Healthcare Professionals Bill, the governance structures of several other HP categories shall soon be formalized and provided government support.

Existing Laws and Associated Authorities (*Not Exhaustive*):

1. **National Medical Commission Act, 2019** repealed the Indian Medical Council Act, 1956 and dissolved the Medical Council of India. NMC Act, 2019 set up the National Medical Commission (NMC) as an umbrella regulatory body with other bodies under it. NMC now regulates medical education and practice in India. The NMC has published the list of Registered Doctors with the various State Medical Councils across India up to 2019 with exception of a few states. There is currently an effort underway to create a National Medical Register for doctors that will serve as a consolidated master database of all doctors in the country. This is an immediate potential application of the HPR platform
2. **The Dentists Act, 1948:** Dental Council of India is a Statutory Body constituted under The Dentists Act, 1948 (XVI of 1948). It regulates dental education and practice in India. The DCI portal also presents a register of dentists with limited details such as Name, Registration Number and name of State Dental Council where respective practitioners have registered.
3. **National Commission for Indian System of Medicine Act, 2020** replaced the existing Indian Medicine Central Council Act, 1970 and the **National Commission for Homoeopathy Act 2020** replaced the Homoeopathy Central Council Act, 1973. Under the aegis of these Acts, a national portal of Ayurveda, Siddha, And Unani Practitioners has been launched in 8 states and is managed by the Central Council of Indian Medicine.
4. The **National Commission for Allied and Healthcare Professions Bill, 2020** was passed by Rajya Sabha on 16th March 2021 and the Lok Sabha on 24th March 2021. This law covers 56 categories of allied healthcare professions. The stated intention of the law is to mandate the establishment of a proper structure for the development and maintenance of standards of services and education of allied and healthcare professionals through a National Regulatory Body and other subsidiary councils.

Proposed Bills and Authorities (*Not Exhaustive*):

1. **National Nursing and Midwifery Commission Bill, 2020** proposes to repeal the Indian Nursing Council Act, 1947 for regulation and maintenance of standards of education and services by nursing and midwifery professionals, assessment of institutions, maintenance of a Central Register and State Register, and creation of a system to improve access, research and development and adoption of latest scientific advancement. Currently, the Indian Nursing Council manages the Nurses Registration and Tracking System (NRTS) for the registration of nurses and midwives, and has an integrated system across the country, NRTS also provides registered Nurses with a Unique Identity Number (NUID).

2.3 International Models

2.3.1. United States of America: CAQH and CAQH CORE

1. In the United States all credentialing entities for healthcare professionals must meet the standards of the Joint Commission, National Committee for Quality Assurance (NCQA) or the Utilization Review Accreditation Committee (URAC). These are bodies set up to ensure quality assurance in the management and accreditation of HPs.

2. The CAQH (Council for Affordable Quality Healthcare) maintains an online data repository of credentialing and licensing data for healthcare practitioners. Practitioners self-report demographic, education and training, work history, malpractice history, and other relevant information for insurance companies to access. Electronic access to this information is meant to reduce the burden of paperwork by eliminating much of the paper-based enrolment process involved with insurance network enrolment.
3. CAQH was formed by a number of the nation's largest health insurance companies (e.g., Aetna, UHC) with the goal of creating a forum where healthcare industry stakeholders could work together to reduce administrative burdens for physicians, patients and payers.
4. In 2005, CAQH codified CAQH CORE - a set of operating rules that various healthcare ecosystem players could adopt and follow:
 - CAQH CORE is a multi-stakeholder collaboration of more than 120 organizations – healthcare providers, health insurers, vendors, government agencies, and standard-setting / regulatory bodies – that codified operating rules to simplify healthcare administrative transactions. CAQH CORE organizations represent more than 75 percent of commercially insured lives, plus Medicare (national health insurance scheme for senior citizens) and Medicaid (national health insurance scheme for low income groups).
 - These rules support a range of existing standards to make electronic data transactions in healthcare more predictable and consistent, regardless of the technology.
 - A voluntary CORE Certification program drives value and return on investment for all partners by ensuring the rules are used consistently; thereby encouraging broader use of the rules. Health plans, providers, vendor/clearinghouses that create, transmit or use administrative data may become CORE-certified.
 - CAQH CORE has been designated by the Secretary of the Department of Health and Human Services (HHS) as the author for federally mandated operating rules per Section 1104 of the Patient Protection and Affordable Care Act (ACA).

2.3.2 United Kingdom: NHS and GMC

1. The General Medical Council (GMC) is a public body that maintains the official register of medical practitioners within the United Kingdom. The GMC is supported by fees paid by its members, and it became a registered charity in 2001. GMC sets standards, maintains a digital register, ensures quality assurance education and investigates complaints.
2. All the GMC's functions derive from a statutory requirement for the establishment and maintenance of a register, which is the definitive list of doctors as provisionally or fully "registered medical practitioners", within the public sector in Britain. The main objective of the General Council in exercising their functions is to protect, promote and maintain the health and safety of the public.”
3. The GMC also regulates and sets the standards for medical schools in the UK, and liaises with other nations' medical and university regulatory bodies over medical schools overseas, leading

to some qualifications being mutually recognised. Since 2010, it has also regulated postgraduate medical education.

4. Thirdly, the GMC is responsible for the licensing and revalidation system for all practising doctors in the UK. This is separate from the registration system, which was given legal effect by order of the Privy Council
5. The GMC is built and operated on four key principles:
 - Organisations create an environment which deliver effective clinical governance for doctors
 - Clinical governance processes for doctors are managed and monitored with a view to continuous improvement
 - Safeguards are to be in place to ensure clinical governance arrangements for doctors are fair and free from bias and discrimination
 - Organisations deliver clinical governance processes required to support medical revalidation and the evaluation of doctors' fitness to practise

2.3.3. United Arab Emirates: Sheryan

1. Standards of health care are considered to be generally high in the United Arab Emirates, resulting from increased government spending during strong economic years. Healthcare is currently free for UAE citizens.
2. The Dubai Health Authority (DHA) is the governing authority for Healthcare in the Emirate of Dubai. DHA managed a portal called Sheryan which is the digital gateway for registering and licensing professionals and facilities in Dubai.
3. Sheryan provides a number of functionalities to Healthcare Professionals that streamline credentialing, licensing and verification:
 - New Applicants can go through a self-assessment tool and activate their professional license.
 - Registered Professionals can renew or add/ update their professional registration.
 - Licensed Professionals can use the portal for activities like license card replacement, raise license cancellation issues etc.

2.4. Learnings

Examining the current Indian environment alongside select international case studies yields two key learnings. These conclusions will help set the context for the key issues proposed for public consultation in this paper:

1. **Focus on Patient Facing HPs:** Both in India and abroad, there has been a relative focus placed on ensuring digital infrastructure for patient facing HP categories such as doctors or nurses. Allied HPs have not received the same level of investment.
2. **Scope beyond Administrative Benefits:** Trustable registries of HPs have benefits beyond just for professionals and their administrators. They can be foundational for the development of telemedicine gateways, secure EMR sharing and other health-tech innovations. Till date, relevant legislation and digital systems in India and abroad have focused on the governance and administration of HPs, while the potential benefits of building such platforms may be far greater.

2.5. Key Issues for Consultation:

In this chapter, three key dimensions that lay the framework for analysis were discussed: (1) the challenges of existing registries and data management of HPs in India, (2) the current regulatory framework and laws that govern HPs, and (3) the models adopted by the US, UK and UAE to manage a register of HPs through digital systems. Before we launch into the next session, the below questions are posed for public comment:

- As referenced in Section 2.2.1 of this paper, are there any other technical, operational or structural challenges that exist in India that may be addressed with a nationally recognized platform such as the HPR?
 - How should these gaps be prioritized for solutioning?
 - Are there examples of robust digital registries of health professionals (other than for doctors, nurses and midwives) that are widely adopted and used at the state level or below?

Please elaborate.

- As discussed in Section 2.3, are there other international case studies or best practices that should be studied to inform the design of the HPR platform?
 - Which best practices should be adopted from these international models?
 - How do we tailor these best practices for the Indian context?

Please elaborate.

Chapter 3

Stakeholders

3.1. Stakeholder Assessment

The HPR aims to create a nationally recognized source of truth for information on various categories of healthcare professionals in the country. Alongside the other NDHM building blocks, such as the Health Facility Registry and Health ID, such a platform will form the digital infrastructure on the basis of which public, private and social sector stakeholders will build and innovate.

These various stakeholders broadly fall into two groups:

- **Core Registry Participants:** Stakeholders who will benefit from the enrolment of healthcare professionals in the registry, and the provision of e-KYC mechanisms and a Healthcare Professional ID (HPID)
- **Ecosystem Participants:** Stakeholders who will benefit from the creation of other business applications that will leverage the HPR database or other HPR digital services

Certain stakeholders may be both core registry participants or ecosystem participants depending on their mode of engagement with the HPR. For example, patients will directly benefit from a public, verifiable registry of healthcare professionals, and will also benefit from private telemedicine gateways that will leverage the HPID for credentialing and verification.

Based on NDHM analysis, the table below outlines some of these key stakeholders and a preliminary list of their incentives to adopt or enrol in the HPR.

Table 1: Stakeholders and Incentives

S. No	Stakeholder	Incentives (not exhaustive)
1	Healthcare Professionals	<ul style="list-style-type: none"> ● Streamlined / paperless licensing, relicensing and verification of healthcare professionals as the healthcare professionals ID (HPID) will be a proxy for these details that is continually verified and updated for use by governing authorities and verifiers ● Seamless issuance of NOCs for interstate transfers of HPs (especially pertinent for doctors) ● Live / Near Real Time tracking of professional training or compliance requirements e.g., Continuous Medical Education (CME) points for doctors ● Seamless employment verification, onboarding and offboarding from various healthcare facilities or government health programmes ● Seamless personnel management e.g., the use of a verified HPID can streamline the verification and incentive / honorarium payment process for ASHA workers, thereby reducing fraud and improving transparency ● By enabling and driving trust in secure EMR sharing, longitudinal health records of individuals/patients can be viewed by healthcare professionals upon consent of individuals/patients ● HPR will also serve to professionalize various categories of Healthcare Professionals who currently do not have digital registries ● The strong verification mechanisms of HPR data will ensure that quacks and fraudulent practitioners cannot be enrolled. As the ecosystem matures and trust in HPR is driven through network effects, bad actors will be driven out and may face barriers in hiring and credentialing.
2	Students / Apprentices / Professionals in Training	<ul style="list-style-type: none"> ● Incoming students may enrol on the HPR platform at the beginning of their courses. Post-graduation, their HPID may be used as a verified identifier of their completed educational credentials, and this will streamline the process of acquiring a new license to practice health services. Such students will have their lifecycle in the healthcare workforce managed end to end in a digitally enabled system, from education to retirement.

3	Patients	<ul style="list-style-type: none"> ● Reliable, nationally recognized source of truth on the educational, registration and experience data of HPs with which to make informed decisions about choice of healthcare provider. The HPR would provide easy searchability for details of healthcare professionals like education, license, experience, gender, place of practice, availability, malpractice history (if applicable) etc ● All data on HPR will be verified by appropriate councils and organizations, and not by NDHM or NHA. This drives trust and may grant an extra layer of credibility to HPR-enrolled doctors. Patients may feel more secure about sharing electronic medical records with these doctors ● HPR is a foundational platform which can enable the creation and adoption of several patient-facing health-tech innovations such as telemedicine solutions
4	Healthcare facilities including hospitals, clinics, diagnostic centres, laboratories etc	<ul style="list-style-type: none"> ● Facilities can seamlessly verify the educational and license credentials of HPs that wish to work with them through the HPID ● HPR will enable a functionality that allows facilities enrolled in the Healthcare Facility Registry (HFR) to link their facility IDs to the HPIDs of professionals working with them. This creates a digital platform whereby facility managers can keep track of and manage the HPs associated with them and can be leveraged as a personnel management system, which many smaller facilities may not possess
5	Regulatory bodies / Councils	<ul style="list-style-type: none"> ● Seamless licensing, relicensing, NOC issuance and compliance tracking creates value for regulatory bodies as well as for HPs ● Regulatory bodies can also leverage HPR to update and maintain the ‘Professional Status’ of HPs - whether they are active, retired, blacklisted, suspended etc. Currently, data on these statuses are inconsistently captured, even by State Medical Councils. HPR offers a frictionless way to track and manage these ● If needed, the HPR platform may potentially provide a digital system / software application that a medical council or other regulatory body can adopt to manage their own operational activities such as relicensing, renewals and the approval of new medical colleges
6	Pharmacies/ Pharma Companies	<ul style="list-style-type: none"> ● Readily dispense drugs by verifying the prescribing HP using their HPID, enabling a shift from handwritten / paper-based prescriptions ● Pharmacies / Pharma companies can leverage the HPR directory to manage their marketing and sales efforts to doctors ● A verifiable registry of HP data is an essential piece of digital infrastructure needed for online sales of drugs to consumers. HPR can be leveraged for prescription verification services and enable digitized pharmacies

		<ul style="list-style-type: none"> ● Digital prescription verification against an HPID may prevent fake / duplicate / repeated prescriptions from being accepted at pharmacies
7	Policy makers/Government	<ul style="list-style-type: none"> ● As discussed in earlier sections, consolidated data on the country's healthcare workforce is a significant gap in health service delivery. HPR can serve as this source of truth, and the database can be used by Central, State and Local governments to conduct workforce planning in two ways: <ul style="list-style-type: none"> ○ Workforce Predictability: As HPR is adopted and the incentives to HPs become clear, more users will join. Over time, the HPR will present an accurate picture of the supply of healthcare personnel in the country as it will emerge as a source of truth. Such a registry may be used by administrators to ensure that workforce needs are in line with strategic health policy goals and emergency response needs ○ Workforce Distribution: Areas with over or under-supply of HPs can be quickly identified, and the distribution of professionals can be adjusted accordingly
8	Industry Trade Groups / Professional Associations	<ul style="list-style-type: none"> ● Professional associations also stand to gain from an HPR platform. For example, most medical conferences or training seminars that provide CME points required for relicensing are organized by such associations. Through integrations with an HPR platform, such CME points may be more accurately and digitally tracked. ● For certain categories of HPs, professional associations may emerge as verifying authorities, especially for ones that currently do not have legally mandated governing bodies.
9	Insurers	<ul style="list-style-type: none"> ● As seen in the CAQH Case Study (see Chapter 2), a repository of credentialing information may enable paperless claims processing and reduces the administrative burden to introduce operational efficiencies for both insurers and third-party administrators
10	Educational Institutions	<ul style="list-style-type: none"> ● Educational institutions maintain the educational records and certificates of HPs. In this capacity, they are often asked to verify educational credentials. As part of the HPR ecosystem, NDHM will also be launching an application that can be used by such verifying entities to carry out verification services.
11	HealthTech	<ul style="list-style-type: none"> ● Private health-tech ventures rely on the existence of robust datasets in order to develop and scale their products. Currently, these data sets are highly fragmented, and HPR will offer a reliable alternative for data on healthcare professionals.

3.2. Key Issues for Consultation

In this chapter, various potential stakeholders in the creation of the HPR platform were outlined. In order to provide a basis for consultation, a number of potential incentives for each of these stakeholders were outlined as well. These incentives are not an exhaustive list - they are intended to be a list of potential applications of the registry. Public comments are requested on the following key questions:

- As discussed in 3.1, is this a correct list of stakeholders for the HPR platform?
 - Are there key stakeholders that have not been addressed?
 - Should any of the listed stakeholders be considered 'out of scope' for the HPR platform?

Please elaborate.

- As discussed in 3.1, is this the right set of product applications / incentives?
 - Are these potential incentives / product applications correctly framed?
 - What are the risks associated with these potential applications / incentives?
 - How should these potential applications / incentives be prioritized against each other?

Please elaborate.

Chapter 4

Who is the HPR Platform for?

4.1. Introduction

Having established the current context and stakeholders of the Indian Healthcare Professional (HP) ecosystem, a fundamental question is presented for consultation - which categories of Healthcare Professionals should be included in the Healthcare Professionals Registry? This is directly tied to a second key question - who is the Healthcare Professionals Registry for?

As NDHM is adopted nationally, HPR may emerge as a critical piece of digital infrastructure to enable various applications and incentive mechanisms. Some of these can directly enhance the patient experience (e.g., Telemedicine), while others can strengthen the broader administrative ecosystem for HPs. The choice of which HP categories are to be included will influence this direction, and will drive HPR's design and product roadmap. There are two potential approaches / models here that will be examined in detail.

Two key points are to be established at the outset:

- The two models outlined below are based on NDHM's analysis of the key issues surrounding the concept of the HPR platform. **The public is requested and encouraged to provide feedback as well as any other models or approaches.**
- The features and risks of each of the two models have been outlined based on NDHM's analysis of the potential implications of the HPR platform on various ecosystem stakeholders. The public is requested and encouraged to provide feedback as well as any other features or risks.

4.2. Patient-Centric Model

This approach presents a vision of HPR as a primarily patient / citizen centric platform. As such, design, functional and technical decisions are made with the goal of maximizing patient value.

4.2.1. Overview

This model would propose that only HP categories that **directly interact with** patients to provide health services should be considered for HPR inclusion. For example, in this model, medical doctors would be included, while a lab equipment technician would be excluded. The former is licensed to practice and administer medical interventions to patients, while the latter can typically only operate through a healthcare facility and has typically no direct interactions with patients.

4.2.2. Included HP Categories

Some of the key patient-facing HP categories that would be included under a patient-centric model of HPR are indicated below:

Table 2: Patient Facing HP Categories (not exhaustive)	
Doctors (Allopathic + AYUSH)	Physiotherapists
Dentists	Dieticians and Nutritionists
Nursing Professionals	Personal Care Workers
Midwifery Professionals	Paramedical Practitioners
Community Health Workers	

4.2.3. Potential Features / Implications

1. **Value of an HPID:** In a patient centric approach, ecosystem level concerns are secondary to the value created for patients. Healthcare Professional IDs (HPID) will only be generated for those HP categories that directly interact with the patient. The HPID will then serve as an attestation on the HPs record that will drive trust in citizens receiving health services. In such a scenario, a verified HPID will be seen as a government-backed attestation that HPs will actively seek, thereby driving adoption. Further, because this approach identifies a ‘core HP set’, - the value of HPR inclusion for individual professionals is boosted.
2. **Data Implications:** With a patient focus, the HPR will require and verify a leaner dataset that addresses only the fields that are useful from a patient value perspective, including registration, educational, experience and disciplinary / legal status. Further, limiting the amount and types of data to be included in the registry reduces the risk of data contamination / poor data quality while easing the task of data governance.
3. **Professionalization / Elevation of HPs:** Related to point (1), HPR inclusion for all categories that directly interface with patients elevates and professionalizes several key HPs who do not enjoy robust digital capabilities today. For example, HPR inclusion provides a nationally recognized identifier for ASHA workers, for whom data is currently very fragmented and non-uniform. Common identifiability of ASHA workers is a significant incentive for government health programmes and will streamline health service delivery. In turn, this benefits patients while creating ecosystem level efficiencies.
4. **Security / Governance Implications:** With a leaner, patient-centric HPR, fewer external entities will integrate with, manage and verify HPR data, leaving fewer points of failure in the event of a data breach or security vulnerability.

4.2.4. Potential Risks

1. **Limiting NDHM Ecosystem Value:** NDHM presents a transformative opportunity to create a digital ecosystem and professionalize categories of associated / allied healthcare professionals who may not interface directly with patients. If HPR is limited only to certain HP categories,

this opportunity is lost.

- 2. Neglecting Operational / Infrastructure Capabilities:** As outlined earlier, including only patient-facing HPs may change the overall product vision for HPR. Registries of other non-patient facing HPs (e.g., administrative professionals, data entry operators) are components that some stakeholders (e.g., policymakers) can use to build solutions such as a Healthcare Personnel Management System.
- 3. Managing Inclusion / Exclusion of HPs:** Restricting HPR to patient-facing HPs may create logistical and operational challenges. For instance, there may be HPs who register on HPR as doctors and at a later point, may retire from practice and take on a role as a full time hospital administrator. In the latter capacity they do not interface with patients, and hence their records would need to be excluded from HPR in order to maintain data quality. Currently, the ‘professional status’ of a HP i.e. whether he/she is Active, Retired, Blacklisted etc. is not maintained consistently in digital or physical registries. Therefore, this data would primarily be self-reported, and NDHM would have to develop strong mechanisms to ensure that changes in status or HP category are duly tracked, reported and updated in HPR.
- 4. IEC Challenges:** There may be several care contexts wherein a typically non-patient facing HP interacts with patients to administer health services. For example, ward boys perform a variety of duties and work across multiple wards. Depending on the particular situation, they may or may not interact with patients, and their roles and responsibilities are loosely defined. From both a communications and adoption perspective, such cases may prove challenging.

Even under a patient centric model for HPR, it must be noted that several ecosystem level benefits will be achieved. In order to build a robust patient facing platform, existing digital systems and databases must be strengthened and standards must be codified. These investments will yield benefits to other ecosystem participants as well.

4.3. Ecosystem-Centric Vision

This model envisions HPR as a platform that delivers value to patients, HPs as well as broader ecosystem-level stakeholders including government health programmes, regulatory bodies and private healthcare players. Here, design, technical and functional decisions are made with a view towards creating an integrated digital ecosystem to manage, govern and operate the healthcare workforce.

4.3.1. Overview

Under this model, HPR can include a much broader set of HPs who are involved with health services delivery either directly or indirectly. These HPs may operate independently or within healthcare facilities. This categorization will include, in addition to the categories outlined in the patient-centric model, health service managers and support staff, life sciences workers and researchers (among others).

4.3.2. Included HP Categories

Some of the key HP categories that would be included under an ecosystem centric vision of HPR are indicated below:

Table 3: Patient Facing HP Categories (<i>not exhaustive</i>)	
Doctors (Allopathic + AYUSH)	Physiotherapists
Dentists	Dieticians and Nutritionists
Nursing Professionals	Personal Care Workers
Midwifery Professionals	Paramedics
Community Health Workers)	Healthcare Facility / Lab Technicians
Support Staff (Housekeeping, Security etc.)	Health Service Managers
Environmental Safety Officers	

4.3.3. Features / Implications

- 1. Professionalization of the Entire Healthcare Workforce:** By including most categories of HPs involved in health service delivery, HPR will enable the professionalization / formalization of these occupations. This will serve two key purposes:
 - Enable / Empower Regulation:** As per the Allied Health Professionals Bill passed by Rajya Sabha and subsequently by Lok Sabha in March 2021, regulatory bodies and councils will be set up for various categories of allied health professionals who currently do not have robust / standard regulatory mechanisms. By creating a single source of truth for information on these professionals, NDHM can support the creation of councils and regulatory frameworks.
 - Digitization:** Currently, data on most non-patient facing HP categories is fragmented, outdated, inconsistent and undigitized. Their inclusion in HPR can kickstart the creation of a reliable data set that can be used by various ecosystem stakeholders.
- 2. Healthcare Workforce Planning:** With a nationally recognized source of truth integrated via APIs with ecosystem players, national and state level agencies can conduct more data-driven health workforce planning. For instance, HPR can be used to evenly distribute the healthcare workforce - areas lacking adequate medical personnel can be identified quickly, and HPs can be transferred quickly to meet demand.
- 3. Seamless Credentialing and Verification for Allied HPs:** Healthcare facilities employ various non patient-facing HPs aside from doctors and nurses. There exist robust mechanisms to verify the credentials of new doctors and nurses through State Medical Councils and State Nursing Councils respectively. However, for other HPs (e.g., support staff, technicians etc.) verification of employment and education information is more difficult as defined processes do

not exist. Granting these HPs a universal identifier tied to trusted, verifiable data in registries offers health facilities a way to verify and onboard their allied health workers seamlessly.

4. Inclusive HP Criteria: An inclusive HPR has no barriers to entry into the NDHM ecosystem. This is beneficial from two perspectives:

- **User Management:** If HPR strictly excludes certain HP categories, then it places a greater burden on NDHM to manage users and delete or update records as and when HPs change categories, or their ‘professional status’ (whether an HP is actively practicing, retired etc.)
- **Path to Digitization:** An inclusive HPR can enable the creation of the nation’s first, verifiable dataset of allied HPs. In the process, NDHM will build robust API-based verification mechanisms that can be leveraged by the various Allied HP Councils that are mandated to emerge following the passage of the Allied and Healthcare Professionals Bill.

4.3.4. Risks

- 1. Data Quality Implications:** The value of a registry is driven by public trust in the data. If HPR’s scope is expanded to other HPs (non-patient facing), data governance may become significantly more difficult. This is because most key patient-facing HP categories already have some digital registries e.g., through State Medical Councils for doctors. This allows for robust verification mechanisms by authorities legally mandated to maintain educational and registration data. On the other hand, several non-patient facing HP categories do not have digital registries, and the data is often fragmented and inconsistent. This increases the chances of poor-quality data entering HPR, and NDHM would be required to build and own verification mechanisms where they do not exist.
- 2. Security / Governance Implications:** Under this option, HPR must be more decentralized in terms of data governance, which creates more points of failure for a data breach. Further, an inclusive HPR implies that more HP categories will be included over time, exacerbating the issue of vulnerability
- 3. Potential Redundancy:** Under this option, HPR can serve as the basis for Personnel Management Systems for health facilities and government health programmes. Personnel Management Systems are applications that regulatory authorities or health programmes can use to govern and manage healthcare professionals. However, this digital capability gap may be filled by private vendors as various ecosystem players build these systems in house and use programme / facility specific identifiers. While HPR can enable inter-facility and inter-programme coordination, driving adoption of the single identifier system may pose challenges. A potential solution may be to adopt existing identifier numbers if applicable and use them as a Healthcare Professionals ID in digital healthcare transactions.

4.4. Key Issues for Consultation:

Two potential models for HPR have been presented. It must be noted that these two visions are not mutually exclusive, and the ideal approach for India may involve elements of both of these models as well as other models. The above insights are based on NDHM research and analysis, but the public is requested to comment and provide feedback on these fundamental issues:

- As discussed in 4.2 and 4.3, is this the right conceptual framework through which to address the question of who should be included in the HPR platform? Are there other potential models or approaches that can be considered?

Please elaborate

- As discussed in 4.2 and 4.3, are there other key features, implications or risks that must be addressed?

Please elaborate

Chapter 5

How should HPR data be managed?

5.1. Introduction

For the HPR platform a number of different data governance models are possible. Within each of these models, there are multiple possible implementation mechanisms, which will need to be adapted on a case-by-case basis.

The choice of data governance model will directly influence the design of NDHM registries, the policies and guidelines that NDHM will codify and the extent of NDHM adoption by various ecosystem participants.

Three key points are to be established at the outset:

- The mode for data entry, and the proposed options for mandatory, verified data are all proposed for consultation and open to feedback
- The two models outlined below are based on NDHM’s analysis of the key issues surrounding data and data governance. The public is requested and encouraged to provide feedback as well as any other models or approaches.

The features, benefits and risks of each of the two models have been outlined based on NDHM’s analysis of the potential implications of the HPR platform on various ecosystem stakeholders. The public is requested and encouraged to provide feedback as well as any other features or risks.

5.2. Lifecycle of an HPR Record

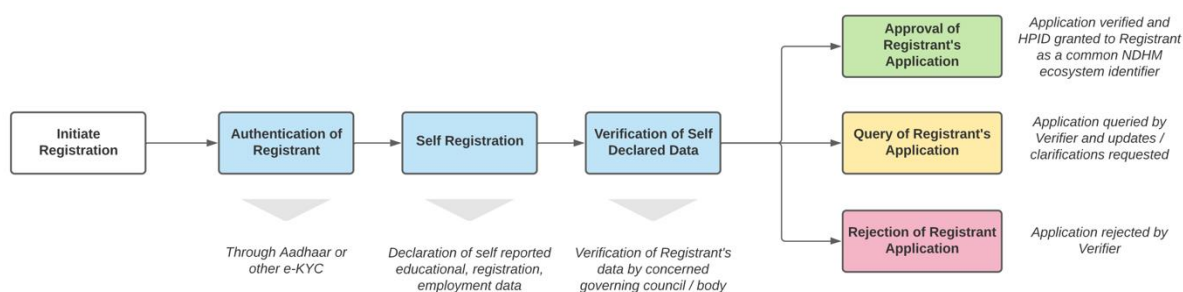


Figure 2: Creation of HPR Records

The above diagram outlines the process by which an HPR record can be created and verified at a high level. The individual elements of this process are expanded upon in greater detail below.

5.3. Mode of Data Entry

For the HPR platform, the Self-Registration mode below is proposed:

- **Self-Registration (Flow):** Through the HPR web or mobile application, a healthcare professional may voluntarily and with consent enrol themselves in the registry. The creation of new records using the new digital systems is the ‘flow’ of new data into HPR. As with all NDHM products, authentication is to be done through the NDHM ID service. Post authentication, the HP can provide their data (e.g., educational, registration and employment etc.) in a ‘Declared’ status on HPR and submit their application. Following this, the various data attributes will be verified by an appropriate verifying authority for the particular category of HP chosen (e.g., a medical doctors registration data will be verified against the State Medical Council register) and upon successful approval, the applicant will receive a verified HPID.

Comments or suggestions on other potential mechanisms are invited.

5.4. Data Types

The below table outlines the various types of data on HPs proposed for inclusion in the HPR platform, as well as the concerned authority for verification. Within each data type, there will be several specific data attributes, examples of which are outlined in brackets.

Table 4: Data Types in HPR			
Data Type	Mandatory / Optional	Verification Needed	Verified By
Demographic Information (Name, Gender, DOB, Address etc.)	Mandatory	Yes	Aadhaar OR other e-KYC
Language Spoken	Mandatory	No	N/A
Educational Information (Course Name, Awarding Institution etc.)	Mandatory for those HP categories that require secondary educational qualifications to practice (Categories such as ASHAs do not require a secondary degree)	If Mandatory, Yes	State Councils / Governing Bodies OR National Councils / Governing Bodies OR Educational Institution
Registration / Licensing Info (Registration Number, Registering Authority etc.)	Mandatory for those HP categories with governing bodies that issue registration / licensing numbers (Categories such as Lab Equipment Technicians may not have a govt issued reg. no.)	If Mandatory, Yes	State Councils / Governing Bodies OR National Councils / Governing Bodies
Place of Practice (Affiliated Health Facility, Affiliated Government Health Programme)	Optional	Yes	Health Facilities

Other (Any other entity-specific attributes requested by any external entities and approved by NDHM)	Varies	Varies	Varies
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Feedback is requested on the data types and characteristics proposed for collection in HPR as outlined above

5.5. Verification Mechanisms:

The below mechanisms for the verification of self-declared HPR records are proposed. It is to be noted that this is not an exhaustive list and comments and feedback are requested from the public on the same:

1. By Verifying Authority / Governing Council: Under this route, verification of HPR records is conducted by any external verifying authority. This verifying authority may be a medical council, state / UT official, governing nodal agency or professional association. For example, registration or licensing data of a particular HP may be verified by a State Council or Nodal Agency that is legally mandated to maintain a register or verify credentials. A digital process to ensure this can be defined and built collaboratively with NDHM. This is most suited to those HPs where external entities already have relatively robust digital systems and capabilities.

2. By Health Facility: Under this option, the healthcare facility assumes the responsibility for verifying the credentials of a particular HP. For example, allied healthcare professionals who may not have an existing council or governing body may require this mode of verification. By virtue of a confirmed association or employment with a health facility, an HPR record may be considered verified.

Alternative mechanisms for verification may also be considered. For example, under certain circumstances, the public may be called upon to verify HPs through crowdsourcing. However, there are several risks that may be introduced through such an option, primarily to do with data trust. The public is invited to provide comments and feedback on any other potential mechanisms for verification. Operational suggestions for how to implement these mechanisms are also welcome.

5.6. HPR – HFR Linkage:

A functionality will be enabled to allow all records verified in the HPR to be linked with records in the Health Facility Registry. Through this, a healthcare professional may declare themselves as affiliated with a particular health facility that is enrolled in the HFR registry. Following declaration, the facility manager may approve or deny this affiliation.

It is to be noted that this linkage is a two-way process – facility managers may declare that a certain HP is affiliated with them, and the declared HP may approve or deny this linkage. Through this bidirectional linkage facility, the interoperability of the national digital health ecosystem can be ensured.

Public comments are invited on potential applications or risks of this proposed functionality.

5.7. Decentralized Data Governance Model

5.7.1. Overview

Under this approach, the responsibility for data quality in HPR lies with the existing government councils / authorities / commissions that are legally mandated to regulate various categories of HPs. NDHM's responsibility is limited to providing an IT platform and integrating various datasets, and building digital verification mechanisms to ensure that these external bodies can view and verify these records.

5.7.2. Features / Implications:

- 1. NDHM Leverages Existing Verification Mechanisms:** Under a decentralized data governance model, NDHM / NHA will not be accountable for the veracity of HP data. NDHM will only assume the responsibility of collaborating with external entities to build tailored verification mechanisms, and indicating whether a particular data point is 'Declared' or 'Verified'.
- 2. Relationship to Existing Datasets:** NDHM will not assume responsibility for the veracity of HP data. Wherever regulatory bodies / authorities that have digital databases exist, HPR will only maintain a slave database that will be kept synchronized with the master database. All new entries / changes / deletions / updates are recorded in the external master database, following which they are reflected in HPR through the synchronization process.
- 3. Data Veracity Ownership:** As in the entire NDHM ecosystem, data ownership will rest with the registrant who has provided / declared their details during enrolment. However, the liability for data veracity will rest with the external regulatory body / entity. If grievances are raised regarding the veracity of HP data to NDHM, the external entity is notified and are placed in charge of resolution.

5.7.3. Benefits:

- 1. NDHM as an Aggregator:** In the decentralized data governance model, NDHM's role is limited to that of an aggregator. From a functional and technological standpoint, this eases the task of managing the HPR product after the one time build of the product.
- 2. Complements Patient-Centric Vision:** Under the patient-centric vision of HPR, only select patients facing HP categories are included in HPR such as doctors, nurses and community health workers. As a number of these groups already have robust digital systems in India with strong data governance processes, the overall trust in HPR data will be higher (provided strong verification mechanisms).
- 3. Encourages a Data Culture:** The NDHM registries are designed with the notion of a positive feedback loop. The greater the veracity of data in HPR, the more stakeholders (patients, HPs, administrators etc.) will trust and adopt it. As stakeholder adoption increases, the more valuable the registry becomes for other participants (e.g., greater amount of data). Under a decentralized data governance model, external entities will know that they are accountable for data veracity, and are then likely to make investments in their own digital systems and databases (standards

will be codified and enforced by NDHM) in order to participate. This will eventually encourage strong culture of data governance among healthcare ecosystem players.

- 4. Freedom for External Entities:** The devolved governance model ensures that external entities who may already have strong digital systems are not penalized. They can maintain control over their datasets as opposed to overhauling their existing systems and processes. This reduces stakeholder inertia and aids adoption.

5.7.4. Risks / Disadvantages:

- 1. Existing Process Issues:** Since verification remains the purview of existing entities, there may be certain HP categories, such as ASHA workers, Phlebotomists etc, who currently do not have governing bodies or councils or digital systems. Further, there may be significant variability in how these HPs are managed across states, leading to varying levels of data quality.
- 2. Incompatibility with Ecosystem-Centric Model:** In the ecosystem centric model, the inclusion of several non-patient facing HP categories may cause data quality issues if the decentralized governance approach is adopted. Given that many of the proposed HP categories in this model do not have legally mandated authorities in charge of data, poor quality data may enter the registry and may be difficult to verify .

5.8. Centralized Data Governance Model

5.8.1. Overview

Under this approach, NDHM will liaise with the concerned governing councils to maintain the HPR dataset. NDHM will be responsible for maintaining the Master Database of information on HPs, where any changes are initiated. It is to be noted that NDHM will not assume legal responsibility and/or infringe on the jurisdiction of existing government authorities that are otherwise responsible for regulation of any category of healthcare professional.

5.8.2. Features:

- 1. NDHM Facilitates External Verification:** Where available, NDHM will adopt the verification processes of governing councils or other external entities, and will digitally enable these verification mechanisms and implement them.
- 2. Relationship to Existing Datasets:** In contrast to the decentralized governance model, here NDHM will maintain the master database, with the governing councils / external entities maintaining replica databases. All changes to data are initiated in HPR, and later reflected in real time to the replica databases through a synchronization process.
- 3. Data Veracity and Coordinated Grievance Redressal:** As in the entire NDHM ecosystem, data ownership will rest with the registrant who has provided / declared their details during enrolment. If grievances are raised regarding the veracity of HP data, NDHM is will liaise with concerned governing councils to take action and set up appropriate processes to do so.

5.8.3. Benefits:

1. **NDHM as Central Body Maintaining Data:** In this model, NDHM a greater degree of control over the HPR product and ability to enforce codified standards. Further, NDHM can prescribe and enforce any new data points, attributes or features that are to be mandated in HPR.
2. **Complements Ecosystem Centric Vision:** If HPR is to open up to various HP categories for inclusion in order to enable ecosystem level incentives, data quality and uniformity to drive trust can be ensured through a greater degree of control over the registry, as digital systems for several categories of HPs may not be well developed.
3. **Tighter Management of Data:** Tighter management over the data in HPR ensures that NDHM can more easily direct the future applications of the HPR product. The quality of the database will not be impacted by the limitations of existing digital systems, and as the system matures NDHM can be more directive about how HPR data is to be in future integrations.

5.8.4. Risks

1. **Risk to Adoption:** In the centralized data governance model, NHA will maintain master data sets of healthcare professionals. States or other bodies that have robust data sets and digital systems may not be willing to release control of the same, leading to adoption resistance.
2. **Operational Challenges:** With responsibility for data maintenance resting with NDHM, mechanisms, committees and processes may have to be built to manage such a vast dataset. This may require significant investments in technology, human resources, communications efforts and process design.

5.9. Key Issues for Public Consultation

The proposed data types, mode of data entry and two potential models for HPR data governance have been presented for public consultation. These proposals are based on NDHM research and analysis and all the models and approaches presented are open for consultation and feedback.

- As discussed in 5.3, is the proposed mode for data entry appropriate? Are there other modes of data entry in India to be considered?

Please elaborate.

- As discussed in 5.4, are the HP data types proposed appropriate? Are there any other data types on healthcare professionals that must be collected from a public health, regulatory or legal perspective?

Please elaborate.

- As discussed in 5.5, are the proposed modes and conditions for data verification appropriate? Are there any other rules, regulations or operational challenges that should be considered?

Please elaborate.

- As discussed in 5.6, how can the HPR – HFR linkage functionality be implemented and approved? How can professionals and facilities be incentivized to link their records?

Please elaborate.

- As discussed in 5.7 and 5.8, are there alternative models for data governance that have not been addressed in this section?
 - Within the proposed models, feedback and comments on the proposed features, benefits and risks are invited
 - Within the proposed models, feedback and comments on potential security risks, vulnerabilities and strategies for mitigation are invited
 - Within the proposed models, feedback and comments on potential technology solutions to ensure robust data governance are invited

Please elaborate.

Chapter 6

Summary of Key Issues for Consultation

6.1. Setting the Context

- As referenced in Section 2.2.1 of this paper, are there any other technical, operational or structural challenges that exist in India that may be addressed with a nationally recognized platform such as the HPR?
 - How should these gaps be prioritized for solutioning?
 - Are there examples of robust digital registries of health professionals (other than for doctors, nurses and midwives) that are widely adopted and used at the state level or below?

Please elaborate.

- As discussed in Section 2.3, are there other international case studies or best practices that should be studied to inform the design of the HPR platform?
 - Which best practices should be adopted from these international models?
 - How do we tailor these best practices for the Indian context?

Please elaborate.

6.2. Stakeholders

- As discussed in 3.1, is this a correct list of stakeholders for the HPR platform?
 - Are there key stakeholders that have not been addressed?
 - Should any of the listed stakeholders be considered 'out of scope' for the HPR platform?

Please elaborate.

- As discussed in 3.1, is this the right set of product applications / incentives?
 - Are these potential incentives / product applications correctly framed?
 - What are the risks associated with these potential applications / incentives?
 - How should these potential applications / incentives be prioritized against each other?

Please elaborate.

6.3. Who is the HPR Platform for?

- As discussed in 4.2 and 4.3, is this the right conceptual framework through which to address the question of who should be included in the HPR platform? Are there other potential models or approaches that can be considered?

Please elaborate

- As discussed in 4.2 and 4.3, are there other key features, implications or risks that must be addressed?

Please elaborate

6.4. How should HPR Data be managed?

- As discussed in 5.3, is the proposed mode for data entry appropriate? Are there other modes of data entry in India to be considered?

Please elaborate.

- As discussed in 5.4, are the HP data types proposed appropriate? Are there any other data types on healthcare professionals that must be collected from a public health, regulatory or legal perspective?

Please elaborate.

- As discussed in 5.5, are the proposed modes and conditions for data verification appropriate? Are there any other rules, regulations or operational challenges that should be considered?

Please elaborate.

- As discussed in 5.6, how can the HPR – HFR linkage functionality be implemented and approved? How can professionals and facilities be incentivized to link their records?

Please elaborate.

- As discussed in 5.7 and 5.8, are there alternative models for data governance that have not been addressed in this section?
 - Within the proposed models, feedback and comments on the proposed features, benefits and risks are invited
 - Within the proposed models, feedback and comments on potential security risks, vulnerabilities and strategies for mitigation are invited
 - Within the proposed models, feedback and comments on potential technology solutions to ensure robust data governance are invited

Please elaborate.

If there are any other issues that the public would like to be raised or comment on, they are invited and encouraged to do so.

Disclaimer:

Please note that the above document is intended to be purely consultative in nature and is intended to provide an overview of the creation and operation of the Healthcare Professionals Registry. Nothing contained in this document should be considered to be legally binding in any manner. The NHA, its employees and advisors, make no representation or warranty and shall have no liability to any person, under any law, statute, rules or regulations or tort, principles of restitution for unjust enrichment or otherwise for any loss, damages, costs or expenses which may arise from or be incurred or suffered on account of anything contained in this document or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the document and any assessment, assumption, statement or information contained therein or deemed to form part of this document.