भारतीय गुणवत्ता परिषद्
QUALITY COUNCIL® OF INDIA
Creating an Ecosystem for Quality

राष्ट्रीय अस्पताल और स्वास्थ्यचर्या-प्रदाता प्रत्यायन बोर्ड
National Accreditation Board For Hospitals and Healthcare Providers

NABH DIGITAL HEALTH ACCREDITED

1st EDITION
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NABH DIGITAL HEALTH STANDARDS FOR HIS/EMR SYSTEMS

FOREWORD

NABH, a constituent board of the Quality Council of India, has been at the forefront of ensuring quality and excellence in healthcare services for the past 19 years. Over the years, NABH standards have transformed healthcare delivery, raising awareness among healthcare workers, patients, and their families about their rights and responsibilities. Dedicated to the SDG-3-Target 2030 and Viksit Bharat 2047, we aim to ensure healthy lives and promote well-being for all ages, with a special focus on patient safety and empowerment.

The evolving healthcare landscape, driven by technological advancements, has made Hospital Information Systems (HIS) and Electronic Medical Records (EMR) crucial for efficient patient data management and enhanced communication among healthcare providers.

With the mission to establish an accreditation program that sets a benchmark for the progress of the healthcare industry, fostering a culture of quality and safety in healthcare, I am delighted to introduce NABH's latest initiative—the first edition of standards for HIS and EMR systems in India.

These pioneering standards are aligned with NABH core standards and the NABH Digital Health Standards for Hospitals, marking a transformative shift in digital healthcare. This alignment places NABH in a globally unique position, where a single entity oversees all three standards, developed with consistent rigour. By upholding the highest standards in digital health, we are laying the foundation for a more efficient, transparent, and patient-centered healthcare ecosystem in India."

The new standards include Objective Elements (OEs) structured to be assessed across four levels: Core, Commitment, Achievement, and Excellence- mirroring the structure of our Digital Health Standards for Hospitals. Developed by a committee of technology specialists, NABH technical experts, and leading medical practitioner, these standards cover critical clinical and administrative workflows, data security, revenue management, interoperability, and scalability.

NABH acknowledges the commendable work being done by NHA and the significant role of the ABDM platform in promoting interoperability. We also value NHA's effort in evaluating and certifying Digital Health products for ABDM interoperability and ensuring necessary security certifications (including WASA testing). Hence NABH standards for HIS/EMR systems mandate that all products must be evaluated and approved by NHA for ABDM and security requirements, prior to applying for NABH certification. This alignment strengthens the collaboration between NHA and NABH ensuring that robust Digital Health solutions get certified and used by hospitals across India.

In developing the NABH certification for HIS/EMR systems, we have also drawn inspiration from global standards in Digital Health, as well as best practices in software development and security. We have also engaged extensively with industry experts, who have made valuable contributions to these standards. We are truly excited about the potential of NABH certification for HIS/EMR systems to accelerate the adoption of Digital Health in India, by driving standardization in product requirements and making it easier for hospitals to procure high-quality HIS/EMR products.

We recognize that developing these standards is an ongoing journey, and we welcome feedback from Digital Health companies, hospitals, and other organizations to continuously refine the standards. Additionally, we are working on the testing and certification approach for HIS/EMR systems including the selection of NABH-approved software testing agencies.

As we embark on this journey, I urge all clinicians, healthcare organizations, HIS and EMR system companies, other stakeholders, and policymakers for their support in the adoption of these standards. Together, we can elevate healthcare quality, promote patient-centric care, and contribute to a healthier India where every individual benefits from cutting-edge digital health solutions.

I extend my best wishes to all products adopting these standards and applaud their commitment to quality and patient safety. Thank you for your dedication to excellence, and I look forward to seeing the positive impact of these standards on our healthcare ecosystem.

The 1st edition of NABH Digital Health Standards for HIS/ EMR Systems serves as a valuable resource for organizations committed to providing safe, effective, and patient-centered care. May this edition inspire a new era of excellence in healthcare advancing our shared goal of ensuring that every patient receives the highest standard of care.

NABH remains committed to its mission of taking Quality, Safety and Wellness to the last in the line.

Dr. Atul Mohan Kochhar
CEO, NABH

ACKNOWLEDGEMENT

I would like to express my sincere appreciation and gratitude to all the individuals and organizations who have contributed their time, knowledge, and expertise in preparing the 1st edition of NABH Standards for HIS and EMR Systems.

I would place my heartfelt thanks and deepest gratitude to Shri Jaxay Shah, Chairperson QCI, for his vision to take quality to the grassroots and permeate the idea of quality in the DNA of every citizen in every part of India.

Mr. Rizwan Koita, Chairperson NABH, has been the guiding light throughout the development of this first edition of NABH Standards for HIS and EMR Systems. I thank him for his active participation, support, and invaluable suggestions despite his busy schedule.

I sincerely thank Mr. Chakravarthy T. Kannan, Secretary General of the Quality Council of India for his guidance and continuous support in making adequate resources available for this initiative.

I extend my heartfelt thanks to all the NABH board members for their invaluable suggestions, which have greatly contributed to the enhancement of the standards and their accompanying guidebooks.

The technical committee of NABH worked relentlessly and meticulously to accommodate the best practices in HIS/EMR space, referred to innumerable academic references, and incorporated suggestions made by all the stakeholders in bringing these standards to reality.

I thank the team of PricewaterhouseCoopers Private Limited (PwC) for their contribution in developing these standards.

I extend my deepest gratitude to team of Koita Foundation for their technical inputs and unwavering commitment to achieve this milestone.

I thank all our diligent assessors, owners of the HIS/EMR system companies, and various other stakeholders who gave us extensive feedback to improve upon the standards and their exhaustive interpretation.

I express my deep appreciation to the officers at the NABH Secretariat for their tireless efforts in completing the work on time. Their dedication and teamwork have been instrumental in delivering this guidebook with such thoroughness and precision.

Dr. Atul Mohan Kochhar
CEO, NABH

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About NABH

National Accreditation Board for Hospitals and Healthcare Providers (NABH) is a constituent board of the Quality Council of India (QCI), set up to establish and operate accreditation programs for healthcare organizations. NABH has been established with the objective of enhancing the health system & promoting continuous quality improvement and patient safety. The board, while being supported by all stakeholders, including industry, consumers, government, has full functional autonomy in its operation.

NABH provides accreditation to hospitals in a non-discriminatory manner regardless of their ownership, size, and degree of independence.

International Society for Quality in Healthcare (ISQua) has accredited NABH.

Vision: To be apex national healthcare accreditation and quality improvement body, functioning at par with global benchmarks.

Mission: To operate accreditation and allied programs in collaboration with stakeholders focusing on patient safety and quality of healthcare based upon national/international standards, through process of self and external evaluation.

NABH Activities:
NABH Accreditation Programmes: NABH offers accreditation to Hospitals, Small Healthcare Organizations/Nursing Homes, Digital Health, Blood Banks, Eye Care hospitals/clinics, Care Homes, Ayush (Ayurveda, Homeopathy, Unani, Siddha and Yoga and Naturopathy) hospitals, Medical Imaging Services, Dental Centres, Allopathic Clinics, Ethics Committees and Panchakarma Clinics.

NABH Certification Programmes: NABH offers certification to Medical Laboratory, Nursing Excellence, Emergency Department, Stroke Center, Dental Center, Entry Level for Hospitals, Entry Level for Small Healthcare Hospitals Entry Level Ayush Hospitals and Entry Level Ayush Centres.

NABH empanelment – NABH offers empanelment program for CGHS, ECHS and Medical Value Travel Facilitator (MVTF)

NABH International: NABH has started its operations overseas under NABH International (NABH I). It offers all accreditation programs as being offered in India. The program is unique as in addition to the accreditation standards it requires compliance with local regulatory requirements.

Training and Education: NABH conducts Education/Interactive Workshops, Awareness Programmes, and Programme on Implementation (POI) on a regular basis.

INTRODUCTION

The healthcare industry is in the midst of rapid evolution, driven by transformative digital innovations that are fundamentally reshaping the delivery and management of healthcare services. Recognizing the critical need for robust standards to ensure quality and interoperability across platforms, the National Accreditation Board for Hospitals & Healthcare Providers (NABH) has developed standards for HIS/EMR systems. These standards are pivotal in fostering a more efficient, interconnected, and technologically advanced healthcare ecosystem in India. They empower hospitals to leverage digital technologies effectively, thereby improving patient outcomes, optimizing operations, and elevating overall healthcare delivery standards.

Aligned with both the NABH Core standards and the NABH Digital Health Standards for Hospitals, these HIS/EMR standards uniquely position NABH as the sole entity responsible for these critical benchmarks, developed with a cohesive and consistent approach on a global scale. The NABH continues its hallmark methodology of Standards and Objective Elements, maintaining a structured approach to framework of standards. The categorization of Objective Elements into Core, Commitment, Achievement, and Excellence reflects a commitment to continual improvement. The total number of Objective Elements for HIS are 170, comprising 51 in the Core category, which are essential to be complied with during each assessment; 78 in the Commitment category; 26 in the Achievement category and 15 in the Excellence category. The total number of Objective Elements for EMR systems are 161, comprising 49 in the Core category, which are essential to be complied with during each assessment; 65 in the Commitment category; 27 in the Achievement category and 20 in the Excellence category. There are 8 objective elements (OEs) where Head has been mentioned either as Common/ HIS or as Common/ EMR. For these OEs, the categorization (i.e Core, Commitment, Achievement or Excellence) for HIS and EMR is different and is marked & colour coded accordingly in their respective standards. This streamlined approach ensures comprehensive evaluation while emphasizing ongoing enhancement of healthcare standards.

There are two certification levels offered by NABH namely Base Level and Advanced Level. For a system to qualify for Base Level certification, it would be required to comply with 100% Core, 60% Commitment, and 30 % Achievement requirements. For a system to qualify for Advanced Level certification, compliance to 100 % Core, 80% Commitment, 60% Achievement and 60% Excellence would be required.

NABH acknowledges and applauds the National Health Authority (NHA) for its pivotal role in driving interoperability through the ABDM platform. NHA's certification efforts ensure that Digital Health products meet rigorous ABDM interoperability and security standards, including comprehensive WASA testing. Consequently, NABH's standards for HIS/EMR systems mandate that products undergo NHA evaluation and approval prior to seeking NABH certification. This collaborative effort harmonizes NHA and NABH initiatives, ensuring that only robust Digital Health solutions are certified and widely adopted across hospitals in India.

The development of the NABH Standards for HIS/EMR systems certification has been a meticulously orchestrated endeavor, drawing inspiration from global Digital Health standards and integrating best practices from software development and security. Extensive collaboration with industry experts has enriched these standards, refining them to effectively meet the dynamic and evolving requirements of the healthcare sector.

The potential impact NABH Standards for HIS/EMR systems certification in advancing Digital Health adoption in India is profound. By establishing standardized product requirements, the certification streamlines the procurement process for hospitals, promoting the widespread adoption of high-quality HIS/EMR products nationwide.

While these standards represent a significant achievement, NABH recognizes that their development is an ongoing journey. Feedback and insights from Digital Health companies, hospitals, and stakeholders will continue to be instrumental in refining and enhancing these standards further. In parallel, NABH is diligently working on the testing and certification framework for HIS/EMR products, including the selection of NABH-approved software testing agencies. This proactive approach underscores NABH's commitment to ensuring the integrity and efficacy of certified products.

Together, these initiatives underscore NABH's steadfast dedication to fostering excellence and innovation in Digital Health, paving the way for a more interconnected and efficient healthcare ecosystem in India and beyond.

Deep Diving into HIS and EMR

In the vast and diverse healthcare landscape of India, the rapid integration of digital technology has the potential to revolutionize healthcare delivery. With a burgeoning population and increasing healthcare demands, the need for reliable and secure digital health solutions has never been more critical.

NABH has made significant strides in advancing healthcare quality by releasing its new standards for **Hospital Information Systems (HIS)** and **Electronic Medical Record (EMR)** systems in India. In this evolving landscape of digital technology, it is imperative that the systems being used in the hospitals are standardized, usable, scalable, ensure data security and at the same time ease the burden of the clinical and administrative staff. In this context, the HIS and EMR Standards plays a pivotal role in ensuring that these technologies meet the unique challenges and requirements of the Indian healthcare system.

It is pertinent to note that under these Standards, the systems associated with administrative features are categorized under HIS, while those with a predominance of clinical features fall under the EMR category. It is acknowledged that a single product may encompass both administrative and clinical features. In such instances, the product is eligible to apply for both HIS and EMR certifications. This **dual** certification allows for a comprehensive evaluation and recognition of the product's multifaceted capabilities.

Certification in the context of healthcare refers to the formal evaluation procedure by means of self - assessment and external peer review process to accurately assess one's level of performance in relation to established standards and to implement ways to improve the health care system continuously. Certification is the most important approach to improving the quality of healthcare organizations and serves as a guiding force to drive these organizations to follow standardized procedures to ensure patient safety and quality by way of establishing systems, protocols leading to a culture that is safe and patient centric. Certification is a systematic approach to do the rights things as per the right procedure to the right patient at the right time to have the right outcome.

This program is specifically designed for companies who have developed Hospital Information System (HIS) and Electronic Medical Records (EMR) systems within India. Compliance with these standards ensures that the products are standardized and equipped with all the essential functionalities required for efficient and effective healthcare service delivery. Obtaining the NABH certification enhances the brand value of the products, thereby making them more appealing to potential adopters.

Hospitals, in turn, are more inclined to adopt products that have been certified by NABH, as this certification serves as a testament to the product's quality, reliability, and adherence to established healthcare standards. Thus, NABH certification not only elevates the status of the product but also contributes to the overall improvement of healthcare service delivery in India.

1. The HIS and EMR systems would be tested against pre-defined test cases and validation criteria. Reputed third-party testing agencies, to be referred to as, NABH Empaneled Software testing agencies (NESTA)

would be onboarded. These established NESTAs would test the HIS and EMR systems based on the test cases and validation approaches defined by NABH, suggest corrective actions, if any, and submit their report to NABH. The NABH Software Assessor (NSA) would review the final HIS/EMR Test report and submit the recommendation to the NABH Certifying Committee. The NABH Certifying Committee will review the Final HIS/EMR Test report and NSA recommendation and make the final recommendation. Each successful certification will have a validity of 2 years.

The NABH Standards for HIS and EMR systems are designed to complete the loop of digital health standardization in India. With the 6th edition of hospital accreditation standards focusing on hospital processes, and the Digital Health Standards driving the digitalization of these processes, the HIS and EMR standards now aim to standardize the products and systems used in hospitals. Together, these efforts are building a robust and well-integrated digital healthcare ecosystem across the country.

HOW TO READ THE STANDARD?

The standard focuses on the key points required for providing patient-centered, safe, high-quality care. The interests of various stakeholders have been incorporated into the standard. They provide a framework for quality assurance and quality improvement. The focus is on patient safety and quality of patient care. It sets forth the basic standards that organizations must achieve to improve the quality of care.
The eight chapters are:

1. Access, Assessment and Care of Patient (AAC)
2. Care of Patients (COP)
3. Management of Medication (MOM)
4. Digital Applications Control (DAC)
5. Digital Operations Management (DOM)
6. Finance and Procurement Management (FPM)
7. Human Resource Management (HRM)
8. Information Management System (IMS)

Every chapter begins with an 'intent'. The intent states the broad requirements of what the organization needs to put in place and implement to improve the quality of care. This is followed by the 'summary of standards' which lists all the standards of that chapter. The standards and objective elements are explained after the summary.

WHAT IS A STANDARD?

A standard is a statement of expectation that defines the structures and processes that must be substantially in place in an organization to enhance the quality of care. The standards are numbered serially, and a uniform system is followed for numbering. The first three letters reflect the name of the chapter and the number following this reflects the order of the standard in the chapter. For example, AAC.1. would mean that it is the first standard of the chapter titled 'Access, Assessment and Care of patient'.

WHAT IS AN OBJECTIVE ELEMENT?

It is that component of standard which can be measured objectively on a rating scale. Acceptable compliance with objective elements determines the overall compliance with a standard. The objective element is scored during assessments to arrive at the compliance. The objective element is numbered alphabetically in serial order. For example, AAC.1.c. would mean that it is the third objective element of the first standard of the chapter titled 'Access, Assessment, and Care of patient'. Depending on the applicability of requirements, the objective elements have been identified as-

- HIS which means applicable only to HIS.
- EMR systems which means applicable only to EMR systems.
- Common which means applicable to both HIS and EMR systems.

WHAT IS AN INTERPRETATION?

The interpretation provides guidance on what the organization needs to do to ensure that the requirement(s) of the objective element is met. Where applicable, it provides references and suggests a specific methodology that the organization needs to adhere to. The word 'shall/should' or 'will/would' is used to reflect a mandatory requirement. The interpretation also lists out desirable aspects for the organization to implement, and the word 'can/could' be used to reflect this. During scoring, the desirable aspects are not considered, and they are only used to reflect on the overall achievement of the standard, which is reflected in the assessment report. At places, the interpretation would not be specific and would have used the words like 'adequate/appropriate'. This has been done keeping in mind the diverse nature of healthcare delivery and adhering to the intent of this standard which is to improve the quality of healthcare and at the same time, be feasible. The expectation is that whenever such a phrase has been used in the interpretation/objective element, the organization shall base its practice on evidence-based/best practice. In some places, the interpretation has listed examples. The examples are only illustrative in nature, and the organization has the liberty to decide what/how to implement. However, the requirement of the objective element would have to be adhered.

Core Objective Element

Certain Objective Element in the standard have been designated as Core. These are Objective Element that the organization should have in place to ensure the quality of care or the safety of people within the organization.

Categories of Objective Elements

The rest of the standards have been divided into three levels, namely commitment, achievement, and excellence.

Some requirements in the standards apply exclusively to HIS systems, some to EMR systems, and others are common and apply to both.

SUMMARY OF STANDARDS

NABH Standard for HIS Systems						
Chapter	Standard	Objective Elements	Core	Commitment	Achievement	Excellence
AAC	8	70	21	37	8	4
COP	13	20	7	7	3	3
MOM	4	7	4	2	1	0
DAC	2	9	2	3	2	2
DOM	5	16	11	4	1	0
FPM	4	29	5	16	7	1
HRM	3	14	1	6	5	2
IMS	3	6	0	3	0	3
Total	42	171	51	78	27	15

NABH Standard for EMR Systems						
Chapter	Standard	Objective Elements	Core	Commitment	Achievement	Excellence
AAC	8	70	22	37	6	5
COP	13	43	5	18	13	7
MOM	4	16	7	3	4	2
DAC	2	9	2	3	2	2
DOM	5	16	11	4	1	0
FPM	0	0	0	0	0	0
HRM	0	0	0	0	0	0
IMS	3	12	2	4	2	4
Total	35	166	49	69	28	20

MATURITY LEVEL SCHEMES

NABH's maturity level schemes for certification of HIS/EMR systems is as follows-

1. **Base Level**
2. **Advanced Level**

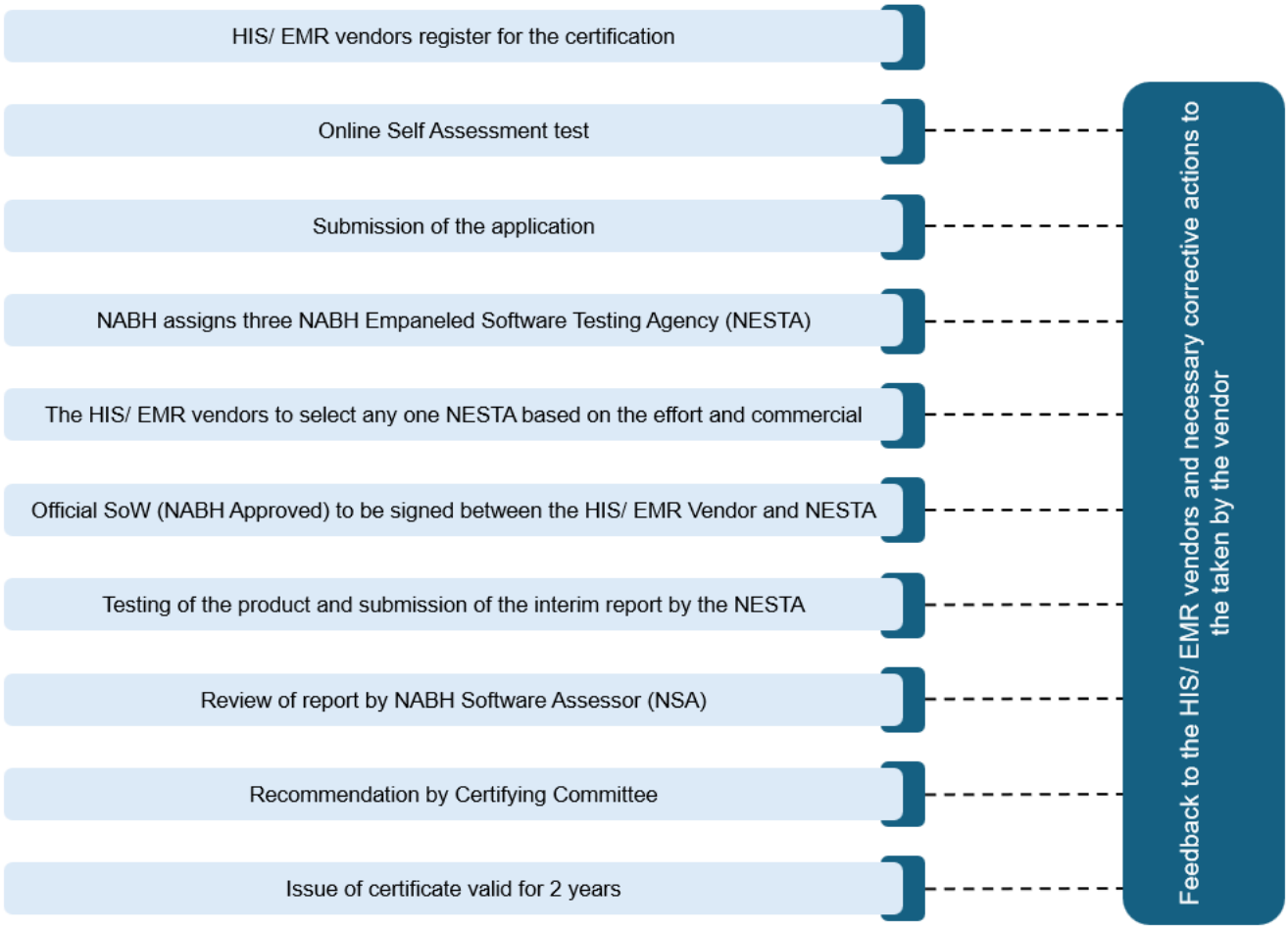
Base Level	
Category of OE	**Percentage**
Core	**100%**
Commitment	**60%**
Achievement	**30%**
Excellence	**NA**

Advance Level	
Category of OE	**Percentage**
Core	**100%**
Commitment	**80%**
Achievement	**60%**
Excellence	**60%**

Note:

1) In case a vendor has applied for certification of both the systems i.e. HIS and EMR they will be assessed for applicable OEs independently as per the respective requirements for certification. This stands applicable to common OEs which are mentioned in the standards as a requirement for both HIS/EMR systems.
2) A HIS/EMR vendor may concurrently apply for any combination For example Advance Level for HIS and Base Level for EMR, Advance Level for both HIS and EMR.
3) NABH will award independent certifications for HIS and EMR systems and separate certificates will be issued for each. For example, Advance Level for HIS and Base Level for EMR will be awarded as per the application and compliance demonstrated by the vendor.
4) Where the vendor has applied for certification of both the systems and meets NABH criteria for only one (HIS or EMR), it will be awarded a certificate only for the system that complies with the requirements. The vendor will have to apply afresh to NABH after taking appropriate corrective actions for the non-compliant system.
5) The certification will be awarded for two years for any given product/system version and vendors will have to apply for renewal of certification six months prior to the expiry of certification.

CERTIFICATION PROCESS



For more details, please refer to information brochure on NABH portal.

Chapter 1

Access, Assessment and Continuity of Care (AAC)

Intent of the Chapter:

The Access, Assessment, and Continuity of Care chapter covers administrative, and operational and clinical functionalities required by an HIS/EMR system. The chapter includes patient registration, admission, referral, discharge and transfer, patient education, and ancillary functions like laboratory, radiology, and patient feedback.

HIS/EMR system brings efficiency by gathering and sharing current and accurate information about patients including diagnostics, and clinical services.

HIS/EMR system enhances laboratory operations by enhancing the quality of test results, streamlining workflows and increasing process efficiency. Likewise, in radiology, technology adoption helps in the seamless management of imaging services in a systematic, practical, and efficient manner.

HIS/EMR enables the healthcare staff to monitor patient progress and plan admission, discharge, or transfer. With the help of digital systems, the entire patient journey gets well integrated.

Patient information through digital tools ensures that health-related information is easily accessible and understandable. This results in improved decision-making by patients and family members and a better perception of care at the healthcare organization.

Summary of Standards	
AAC.1.	The system manages patient registration and referral processes.
AAC.2.	The system supports patient appointments and the medical practitioner schedules.
AAC.3.	The system handles laboratory test orders and samples.
AAC.4.	The system handles radiology test orders and images.
AAC.5.	The system supports patient admissions.
AAC.6.	The system manages patient discharge and transfer processes.
AAC.7.	The system has the capability to disseminate information to patients.
AAC.8.	The system manages patient feedback and complaints.

Standard

AAC.1.	**The system manages patient registration and referral processes.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Functional
Core a.	The system registers a new patient and modifies the details as and when required.				
Interpretation	The system shall carry out patient registration. The system shall be able to configure mandatory & non-mandatory fields depending on the healthcare organization's requirements. Further the registration data can be qualified as editable/ non-editable by the healthcare organization. The system should be able to capture the essential details like demographics of the patients (e.g., date of birth, address, mobile number), their registered National ID details (for example, Adhaar, ABHA (ABDM), driving license etc.), insurance details and payment preference. The mandatory and non-mandatory fields shall be clearly marked. Some of the mechanisms of digital patient registration could be through kiosks, website, ABDM Scan & Share, mobile app or QR code a long with the inbuilt patient registration feature of the system.				

Category	Commitment	Head	Common	Type	Functional
Commitment b.	The system verifies the patient's mobile number.				
Interpretation	After a patient is registered in a system, a notification/ OTP shall be sent to the patient's registered mobile number for verification. This mobile number can then become the primary source of communication.				

Category	Core	Head	Common	Type	Functional
Core c.	The system generates a unique patient identification number.				
Interpretation	Every healthcare organization uses a unique patient identifier for all its patients. This number remains constant across all departments, services including laboratory and radiology processes, etc. and helps to identify the patient.				

Category	Core	Head	Common	Type	Functional
Core d.	The system has the capability to configure the unique patient identifier as per the healthcare organization's requirements.				
Interpretation	The unique patient identifier shall have a consistent format (numeric or alphanumeric). It can be configured on multiple parameters, some of the examples are: • Date (year, month etc.) • Hospital department • Hospital branch / location The unique patient identifier shall follow the predefined format across all locations of a given healthcare organization.				

Category	Core	Head	Common	Type	Functional
Core e.	The system has the capability to generate and capture the ABHA number of the patient and link it to the unique patient identifier.				
Interpretation	The system shall be able to generate and capture the ABHA number (Ayushman Bharat Health Account) which is a unique health identifier. This corresponds to Milestone 1 (M1) of ABDM. Additionally, the system should be able to link the ABHA number of the patient with their unique patient identifier.				

Category	Commitment	Head	Common	Type	Functional
Commitment f.	The system checks and flags duplicate patient registrations.				
Interpretation	The system shall be able to identify and merge duplicate patient registrations based on a set of unique patient identifiers (e.g., ABHA, Aadhar, any National ID number, name, and date of birth). This helps with correct patient identification and reduces the possibility of errors and improves the quality of care.				

Category	Commitment	Head	Common	Type	Functional
Commitment g.	The system supports-patient registration in offline mode.				
Interpretation	Digital systems may become unavailable temporarily due to Internet failure (e.g., network issues, system breakdown, or planned maintenance activities). During these unprecedented situations, HIS/EMR system shall be able to support patient registration process including capturing of key patient details (e.g., unique patient identifier, name, address, phone number, date of birth, gender etc.) and medical history in the offline mode. The offline data shall be accurately synchronized once the system gets back to online mode.				

Category	Commitment	Head	Common	Type	Functional
Commitment h.	The system groups multiple visits of the patient under episodes of care.				
Interpretation	The system shall identify multiple visits of the same patient for a specific condition as a part of a larger episode of care. An episode represents a continuous period during which the patient receives related healthcare services. For example, in the case of pregnancy: each prenatal visit, ultrasound, and postpartum check-up should be grouped into the same pregnancy episode. The system can use timestamps or other criteria to determine the start and end of an episode. This ability to bundle multiple patient visits helps in keeping accurate records of the patient's visits over time and ensures continuity of care. Additional Information: Building patient visits needs to be done as per the defined criteria which will vary for different specialties, conditions, diagnoses, etc.				

Category	Core	Head	Common	Type	Functional
Core i.	The system links all patient medical records to the respective unique patient identifier.				

Interpretation	The system shall ensure that patient records generated across different service areas (e.g., pharmacy, laboratory, radiology, etc.) are linked to the patient's unique patient identifier.

Category	Commitment	**Head**	Common	**Type**	Technical
Commitment j.	The system shares patient medical records with different facilities/ affiliates.				
Interpretation	The system shall ensure access to patient's medical records across different facilities/affiliates of a healthcare organization. Facilities/affiliates refer to specialized units, for example, blood bank, pharmacy, laboratories. Larger healthcare organizations may have facilities at different locations (Split locations).				

Category	Achievement	**Head**	Common/HIS	**Type**	Functional
Achievement k.	The system manages patient referrals across different specialties.				
Interpretation	Patient referral through the system shall allow medical practitioners to digitally refer patients to other specialists under same registration. The system shall allow medical practitioners to share relevant patient's clinical information with other specialists. The digital system of referral can improve the efficiency and accuracy of the process and streamline communication between the medical practitioners. The system may also highlight the urgency of referral needed.				

Category	Commitment	**Head**	Common/EMR	**Type**	Functional
Commitment k.	The system manages patient referrals across different specialties.				
Interpretation	Patient referral through the system shall allow medical practitioners to digitally refer patients to other specialists under the same registration. The system shall allow medical practitioners to share relevant patient's clinical information with other specialists. The digital system of referral can improve the efficiency and accuracy of the process and streamline communication between medical practitioners. The system may also highlight the urgency of referral needed.				

Category	Achievement	Head	Common	Type	Functional
Achievement I.	The system connects with external devices and stores captured information.				
Interpretation	For carrying out day to day administrative functions in a healthcare organization several devices may be required to be connected with HIS/EMR system. These devices could be • Biometric device (e.g. for attendance, access to the system) • RFID Reader (e.g. for restricted areas access, patient identification) • Scanners (e.g. for patient related documents) • Printers (e.g. for billing, reports) • Barcode scanners (e.g. for pharmacy, lab samples) The system shall have provisions to connect with such devices and capture data transmitted.				

Standard

AAC.2.	**The system supports patient appointments and the medical practitioner schedules.**

Objective Elements

Category	Commitment	Head	Common	Type	Functional
Commitment a.	The system creates and manages appointments.				
Interpretation	The system shall have provisions for booking, changing or cancelling patient appointments. The appointments can be: • New or follow-up. • Physical visit or teleconsultation. The system shall also capture details of the patient for example contact information, patient condition, doctor's name, appointment date and time, location				

Category	Commitment	Head	Common	Type	Functional
Commitment b.	The system generates and sends notifications to the patients.				

Interpretation	The system shall have a robust mechanism to generate notifications (including reminders). These notifications can be sent through SMS, online messaging platform, Web mail, or on a patient portal. For in-person appointments, notifications shall include the date and time of the appointment, the name of the doctor, and the location. For teleconsultation appointments, notifications should include a link for the same.

Category	Core	**Head**	Common	**Type**	Functional
Core c.	The system has the capability to record time stamps.				
Interpretation	The system shall capture time stamps for all important touchpoints both in OPD, IPD and diagnostics. For example, for outpatients, the touch points could be registration, the arrival of the patient to the outpatient department, and the start of consultation by the consultant. In case of diagnostics (at a minimum laboratory and radiology), the touch points could be the time at which the service is ordered, the billing time, the time at which the patient comes to the diagnostics service, the time at which the test is initiated and the time at which the report is signed and released. Similarly, in an IPD scenario, the touch point may include admission of the patient being carried out, arrival of the patient at the ward bed, the time at which the initial assessment was completed, the time when the care plan is countersigned, time of administration of medications , time of initiation of discharge and the time at which the patient left the ward. The time stamps should enable the organization to capture the various waiting times and the turnaround times.				

Category	Excellence	**Head**	Common	**Type**	Functional
Excellence d.	The system captures details of appointments made through external systems.				
Interpretation	There are many ways to book an appointment, e.g., through phone calls, healthcare organization's patient portals/websites, mobile applications, online messaging platforms, SMS email etc. The system shall have the capability to transfer appointment information into the HIS/EMR system. Patients may also book an appointment through third-party websites or mobile applications. Such websites/ mobile applications shall also be integrated with HIS/EMR systems.				

Category	Commitment	Head	Common	Type	Functional
Commitment e.	The system displays the available dates, times and the profile of the medical practitioners for booking appointments by the staff.				
Interpretation	The system shall display the available dates and time of medical practitioners for the purpose of booking appointments by the staff upon receiving requests from the patients. The system shall also display the complete profile of the medical practitioners including the years of experience, detailed educational qualifications, specialty, and additional certifications (if any).				

Category	Commitment	Head	Common	Type	Functional
Commitment f.	The patients are able to digitally book an appointment with a specific medical practitioner based on the dates and times displayed on the system.				
Interpretation	The system shall provide an interface through the healthcare organization's website or patient portal to book appointments with a specific medical practitioner based on request by a patient and the practitioner's availability. This also enables the patient to consult the same medical practitioner for follow-up visits, which can be important for care continuity.				

Category	Commitment	Head	Common	Type	Functional
Commitment g.	The system displays and prints the medical practitioner's schedule.				
Interpretation	The system used in the healthcare organizations shall have the capability to display and print the schedule of medical practitioners.				

Category	Achievement	Head	Common/HIS	Type	Functional
Achievement h.	The system has the capability of queue management for various healthcare services.				

Interpretation	The healthcare organization requires a system to manage queues for various healthcare services such as patient registration, OPD, pharmacy, laboratory, radiology, etc. The system may be able to manage and monitor patient types like - scheduled visits, walk-in, new visits, revisits, etc. Scan and share are good options to manage queues in the OPD area of any healthcare facility. The patient can scan the QR code and share their demographic details with the healthcare facility. Patients receive a token number against their transaction which is shared with the data entry operator of a Health facility. This makes patient registration faster and also reduces the chances of demographic error. A queue management system enables healthcare organization staff to monitor and control patient flow, assigning a digital token to track progress of queue Additionally, the system should have digital signage or display boards to provide patient's real-time information about the digital token status.

Category	Excellence	**Head**	Common/EMR	**Type**	Functional
Excellence h.	The system has the capability of queue management for various healthcare services.				
Interpretation	The healthcare organization requires a system to manage queues for various healthcare services such as patient registration, OPD, pharmacy, laboratory, radiology, etc. The system may be able to manage and monitor patient types like - scheduled visits, walk-in, new visits, revisits, etc. A queue management system enables healthcare organization staff to monitor and control patient flow, assigning a digital token to track progress of queue. Additionally, the system should have digital signage or display boards to provide patient's real-time information about the digital token status.				

Category	Excellence	**Head**	Common	**Type**	Functional
Excellence i.	The system displays estimated patient waiting times for various healthcare services.				

Interpretation	The system shall have the capability to connect with the display board and show the approximate waiting time for a patient for various healthcare services such as patient registration, OPD, pharmacy, laboratory, radiology, etc. The patient should get the estimated wait time information either through a notification or on a display board. This helps in relieving patient's anxiety and prevents overcrowding.

Standard

AAC.3.	**The system handles radiology test orders and samples.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Functional
Core a.	The system configures clinical and administrative workflow for laboratory management.				
Interpretation	Laboratory Management is an important part of a healthcare organization system, and this system should support the following features: Laboratory Management is vital for healthcare organizations, and the system should support: • Workflows: Setup of master data, process configurations, and information flow between practitioners, the lab, and billing. • Quality Controls: Configuration of essential quality controls. • Report Generation: Ability to generate specialty-specific reports (e.g., microbiology, biochemistry).				

Category	Core	**Head**	Common	**Type**	Functional
Core b.	The system automatically assigns a specimen number for every sample collected / received and links it to the patient's unique identifier.				
Interpretation	A unique sample identifier is required to link each sample to its unique patient identifier. A unique sample identifier is crucial for laboratory testing to ensure accuracy, traceability, and accountability in the diagnostics process. Each specimen number must be unique within the laboratory. The system shall generate a unique sample identifier based on some predefined rules. For example,				

	• Prefix: Specimen identifier starts with a department or location code (e.g., "LAB" for the laboratory) • Sequential Number: A numeric portion that increments with each new specimen. • Date and Time Stamp: Include the collection date and time (e.g., "LAB2105071230" for a sample collected on May 7, 2021, at 12:30 PM).

Category	Core	**Head**	Common	**Type**	Functional
Core c.	The system tracks specimens.				
Interpretation	With a unique identifier assigned to each sample, lab technicians can easily track and manage the sample, improving efficiencies, and reducing the risk of mix-ups or errors. The key features of specimen tracking include splitting orders, progress tracking, and data review & approval. Tracking allows increased visibility of the status of the sample, for example whether the sample has been processed rejected, or there is a mismatch, etc.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment d.	The system creates/ modifies templates for laboratory reports.				
Interpretation	The system shall have the capability to create , modify, and configure the reporting templates for different specialties like biochemistry, microbiology, etc. and for provisional and final reports.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment e.	The system enables sample label printing.				
Interpretation	As soon as the sample is collected, the system shall generate printable unique labels for the samples.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment f.	The system appends laboratory reports.				

Interpretation	A patient may give multiple samples during the visit, or a particular sample may be used for multiple tests. The reports from these multiple tests will be prepared at different times. The system should have the capability to append or consolidate these multiple test reports and issue one final report to the patient. There should be a clear audit trail regarding the changes made.

Category	Core	**Head**	Common	**Type**	Functional
Core g.	The system generates a non-editable final report once it is signed by the pathologist.				
Interpretation	The system shall have the capability to generate a final report with the ability of a pathologist to sign the report. Final reports generated and signed by the pathologist shall not be editable.				

Category	Core	**Head**	Common	**Type**	Functional
Core h.	The system clearly marks the damaged/ rejected samples.				
Interpretation	The system shall have the capability to mark a sample as damaged or rejected along with the reason. This could include adding a specific code or annotation to indicate the sample's status. For example, appending "DAMAGED" or "REJECTED" to the sample ID can help clearly distinguish it from other samples. This ensures that the samples are not used for further testing. Indicators: The system could use color coding/ icons to visually highlight damaged or spoiled samples. For example: • Red labels or tags could indicate damaged samples. • Yellow labels or tags could indicate samples that need retesting due to spoilage. • Green labels or tags could represent valid samples.				

Category	Core	**Head**	Common	**Type**	Functional
Core i.	The system displays the reference range for a test and highlights abnormal/out of range results.				
Interpretation	The system shall maintain reference ranges for each laboratory test. These ranges define normal values for a specific test based on factors such as age, gender, and health condition. For example: If a patient's cholesterol level is 200 mg/dL, the system should indicate whether this falls within the normal range (e.g., "Normal") or not. To draw attention to abnormal results, the system could use color-coding such as: Green: Normal results				

	Yellow: Borderline or cautionary results Red: Abnormal or critical results

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment j.	The system flags the incorrect tests/ reports that need to be repeated.				
Interpretation	The system shall have the capability to flag a test for which an incorrect report has been issued. In such cases, a repeat test is required. After the repeat test, a new report can be generated. In certain cases, the laboratory may be required to repeat a particular test. The system shall have the capability to flag such tests which are required to be repeated. This helps in improving the quality of laboratory tests and record keeping.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment k.	The system sends notifications to patients and medical professionals when their reports are ready.				
Interpretation	The system shall send notifications to the patients once the reports are ready. This can be done through email, online messaging platform, SMS, or a notification on the patient portal.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment l.	The system allows patients to view/download their reports.				
Interpretation	The system shall also have the capability to allow the patients to view/download their reports. A link to the reports should be sent to the patients by email, online messaging platform, SMS, or patient portal. The link should provide secure access to patients to view and download their reports.				

Category	Commitment	Head	Common	Type	Functional
Commitment. m.	The system identifies tests that have been referred to external laboratories and maintains the records of the results.				
Interpretation	The system shall maintain a list of tests sent to external laboratories and maintain digital records of these tests. These tests should be clearly identifiable and sample collection material clearly labeled accordingly.				

Category	Core	Head	Common	Type	Functional
Core n.	The system links the laboratory reports of the patients to their ABHA.				
Interpretation	The system shall have the capability to link a patient's laboratory reports to patient's ABHA. Linking patient's laboratory reports to their ABHA makes this information more sharable and helps healthcare providers to have acomplete and accurate understanding of patient's health status, allowing them to make more informed decisions about diagnosis, treatment, and care planning. This corresponds to Milestone 2 (M2) of ABDM.				

Standard

AAC.4.	**The system supports patient admissions.**

Objective Elements

Category	Commitment	Head	Common	Type	Functional
Commitment a.	The system configures clinical and administrative workflow for the management of the radiology department.				
Interpretation	The management of the Radiology department is an important part of healthcare organizations and the system being used should support the same. Radiology Management is vital for healthcare organizations. The system should support: • Workflows: Setup of master data, process configurations, and information flow between practitioners, radiology, and billing. • Quality Controls: Configuration of essential quality controls. • Report Generation: Ability to generate specialty-specific reports (e.g., CT, X-ray, USG etc.).				

Category	Commitment	Head	Common	Type	Functional
Commitment b.	The system creates/ modifies a new radiology request, generates a unique ID for the request, and link it to the patient's unique ID.				
Interpretation	The system shall create a unique ID for a radiology request for every radiological test or procedure. It should be able to link this unique ID with the patient's unique identifier. The system should also allow to book appointments of patients for investigation through the online portal (If available). This linkage helps create complete medical records for patients and provides better care.				

Category	Commitment	Head	Common	Type	Functional
Commitment c.	The system sends notifications to the radiology department as soon as any test is booked.				
Interpretation	The system shall send notifications to the radiology department as soon as any test is booked in OPD or IPD. These notifications should include details like the patient's name, age, type of test required, and the medical practitioner who has requested for the test.				

Category	Commitment	Head	Common	Type	Functional
Commitment d.	The system creates/ modifies templates for radiology reports.				
Interpretation	The radiology system shall have the capability to create and modify the reporting templates for different modalities (e.g., X-ray, Ultrasound, MRI, CT etc.). These different templates should be configurable and editable in the system. The system shall also display the reference range in the templates for radiology tests as applicable and highlights abnormal and out of range results.				

Category	Commitment	Head	Common	Type	Functional
Commitment e.	The system captures and shows the radiological test status for every radiology test order.				
Interpretation	The system shall have the capability to show the status of radiology tests ordered by the medical practitioners. The status options could include tests booked, on-going, completed, reported, etc.				

Category	Commitment	Head	Common	Type	Functional
Commitment f.	The system appends radiology reports.				
Interpretation	A patient may visit radiology multiple times for multiple tests. The reports from these multiple tests will be prepared at different times. The system should have the capability to append all the radiology reports.				

Category	Excellence	Head	Common	Type	Functional
Excellence g.	The system has the capability to book radiology test appointment slots based on equipment and staff availability.				
Interpretation	The ability to conduct radiology tests is dependent on the availability of radiology equipment and qualified staff. The system should be able to book radiology tests based on the radiology equipment and staff availability along with the patient's clinical condition. Such functionalities help in the optimal use of radiology equipment and staff and reduce wait time for patients.				

Category	Core	Head	Common	Type	Functional
Core h.	The system generates a non-editable final report once it is signed by the radiologist.				
Interpretation	The system shall have the capability to generate a final report with the ability of the radiologist to sign the report. Final reports generated and signed by the radiologist shall not be editable.				

Category	Commitment	Head	Common	Type	Functional
Commitment i.	The system flags the amended radiology reports issued by the radiologist.				
Interpretation	The system shall have the capability to edit the final report and issue an amended report to the patient. The system shall be able to maintain an audit trail of all original and revised reports.				

Category	Commitment	Head	Common	Type	Functional
Commitment. j.	The system sends notifications to patients and medical professionals when their reports are ready.				
Interpretation	The system shall be able to send notifications to the OPD and IPD patients and medical professionals as per the policy of healthcare organizations once the reports are ready. This can be done through email, chat platforms, online messaging platforms, SMS, or a notification on the patient portal.				

Category	Commitment	Head	Common	Type	Functional
Commitment. k.	The system allows patients to view/download their reports.				
Interpretation	The system shall also have the capability to allow the patients to download their reports. A link to the reports should be sent to the patients by email, online messaging platform, SMS, or patient portal. The link should provide secure access to patients to view and download their reports. The system should also have the capability to allow the patients to view/download their reports. A link to the reports should be sent to the patients by email, online messaging platform, SMS, or patient portal. The link should provide secure access to patients to view and download their reports.				

Category	Commitment	Head	Common/HIS	Type	Functional
Commitment l.	The system sends a notification when a test ordered is contraindicated based on the patient's condition.				
Interpretation	The system shall have the capability to raise an alert/ notification if the test ordered is contraindicated in certain conditions, e.g. some tests are not suitable for pregnancy, chest x-rays to be avoided for patients with pacemakers, tests not suitable for a specific gender, etc. The medical practitioner should also have the right to reject the alert based on the patient's condition. This can substantially help in reducing medical errors.				

Category	Core	Head	Common/EMR	Type	Functional
Core l.	The system sends a notification when a test ordered is contraindicated based on the patient's condition.				

Interpretation	The system shall have the capability to raise an alert/ notification if the test ordered is contraindicated in certain conditions, e.g. some tests are not suitable for pregnancy, chest x-rays to be avoided for patients with pacemakers, tests not suitable for a specific gender , etc. The medical practitioner should also have the right to reject the alert based on the patient's condition. This can substantially help in reducing medical errors.

Category	Core	**Head**	Common	**Type**	Functional
Core m.	The system links the radiology report/s of the patient to their ABHA.				
Interpretation	The system shall link a patient's radiology reports to their ABHA. Linking a patient's radiology reports to their ABHA number/Address makes the information more shareable and helps healthcare providers to have a complete and accurate understanding of a patient's health status, allowing them to make more informed decisions about diagnosis, treatment, and care planning. This corresponds to Milestone 2 (M2) of ABDM.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment n.	The system maintains a record of the tests that are outsourced to other radiology centres and maintains a repository of their results.				
Interpretation	The system shall maintain a list of tests sent to external radiology centres and maintain digital records of these tests. These tests should be clearly identifiable, and records of the reports should be maintained.				

Standard

AAC.5.	**The system supports patient admissions.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Functional
Core a.	The system configures rules/ workflow for patient admission.				
Interpretation	There are different types of admissions. The system should be able to generate admission documents and configure admission rules accordingly: • Emergency admission				

	• Planned admission. • Day care admission For example: In case of emergency admissions, the system should have the capability to admit the patient with limited information. The system should highlight only the critical fields to allow admission as soon as possible. These may include details like demographic details and brief medical history of the patient. In addition, if the case needs to be reported to relevant authorities, the system should have the ability to capture the required information needed to make the report and notify the medical practitioner to take the appropriate action. The system may have an option for choosing triage in case of emergency admissions.

Category	Core	**Head**	Common	**Type**	Functional
Core b.	The system configures templates for various healthcare services.				
Interpretation	The system shall configure and modify various templates that are used by the healthcare organizations during the admission process. The system shall clearly identify mandatory and non-mandatory fields in the templates.				

Category	Core	**Head**	Common	**Type**	Functional
Core c.	The system manages patient's admission related information.				
Interpretation	The system shall capture admission related information which may include patient demographics, preliminary diagnosis, medical history, care plan, date of admission, expected date of discharge, package details, payor details, etc. Additionally, the system should have capabilities to: • Capture both mandatory and non-mandatory patient data • Scan and upload patient documents (e.g., consent form) • Capture and track the insurance details of the patient				

Category	Achievement	**Head**	Common/HIS	**Type**	Functional
Achievement d.	The system creates and manages healthcare packages for patients with inclusion/exclusion of services.				

Interpretation	The system shall have the capability to create and manage different healthcare packages. The package information should capture the inclusion/exclusion of services, charges, etc. Healthcare packages can include charges based on the type of services availed, for example choice of bed/ room, ward, charges for medical treatment, medicines, ICU, operation theatre, ambulance services, consultation, physiotherapy, food etc. Fixed Package: Some healthcare organizations offer fixed package deals for specific treatments (e.g., maternity packages, cardiac surgery packages) that include a set of healthcare services at a fixed price.

Category	Commitment	**Head**	Common/EMR	**Type**	Functional
Commitment d.	The system creates and manages healthcare packages for patients with inclusion/exclusion of services.				
Interpretation	The system shall have the capability to create and manage different healthcare packages. The package information should capture the inclusion/exclusion of services, charges, etc. Healthcare packages can include charges based on the type of services availed, for example choice of bed/ room, ward, charges for medical treatment, medicines, ICU, operation theatre, ambulance services, consultation, physiotherapy, food etc. Fixed Package: Some healthcare organizations offer fixed package deals for specific treatments (e.g., maternity packages, cardiac surgery packages) that include a set of healthcare services at a fixed price.				

Category	Core	**Head**	Common	**Type**	Functional
Core e.	The system designates the treating medical practitioners.				
Interpretation	The system shall designate the treating medical practitioners along with the supporting team.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment f.	The system autopopulates all relevant data fields when a patient is admitted on entering their unique patient Identifier.				

Interpretation	Once a unique identifier of a patient is created, the system shall populate data on entering the unique patient Id entifier For example, for a repeat patient, all demographic details, medical history, etc. should be auto populated in as soon as the unique patient ID is entered. A similar workflow/process is expected to be followed in case a patient is transferred from OPD to IPD.

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment g.	The system sends notifications to all relevant departments and staff during the admission / transfer process.				
Interpretation	The system shall have the capability to send notifications to all departments and staff, for example floor a mangers/administrators/ registration desk during admission and transfer related processes in the healthcare organizations. These notifications should include: • Ward assignment, ward type, and details • Bed allocation, bed type, bed number, etc. • Transfer details				

Category	Commitment	**Head**	Common/HIS	**Type**	Functional
Commitment h.	The system displays details of occupied beds.				
Interpretation	The system shall provide real-time data regarding vacant, preoccupied, occupied and under maintenance, and information on reserved beds. The system shall also provide real-time insights into bed information, enabling employees and management to optimize capacity planning and make data-driven decisions. The system may also be able to reflect daycare, emergency beds etc.				

Category	Achievement	**Head**	Common/EMR	**Type**	Functional
Achievement h.	The system displays details of occupied beds.				
Interpretation	The system shall provide real-time data regarding vacant, preoccupied, occupied and under maintenance, and information on reserved beds. The system shall also provide real-time insights into bed information, enabling employees and management to optimize capacity planning and make data-driven decisions. The system may also be able to reflect daycare, emergency beds etc.				

Category	Excellence	Head	Common	Type	Functional
Excellence i.	The system has the capability to predict bed availability.				
Interpretation	From the data available in the system, the system shall be able to predict how the bed availability will change over the next few days / weeks. This information can be very useful during extreme situations (eg., during dengue outbreaks, pandemics) and for business / capacity planning purposes.				

Standard

AAC.6.	**The system manages patient discharge and transfer processes.**

Objective Elements

Category	Core	Head	Common	Type	Functional
Core a.	The system creates / modifies a discharge summary.				
Interpretation	The system shall have predefined templates for the discharge summary. The template for discharge summary should include (but not limited to): • Patient's name • Unique identification number • Name of the treating doctor • Date of admission and date of discharge • Reasons for admission • Significant findings, diagnosis and patient's condition at time of discharge • Information regarding investigation results • Any procedure performed • Medication administered • Any other treatment given				

Category	Commitment	Head	Common	Type	Functional
Commitment b.	The system shows the list of patients due for discharge.				
Interpretation	The system shall show the list of patients due for discharge on a daily basis. The discharges like LAMA, DAMA, and absconding shall be clearly marked in the system and a notification regarding the same should be sent to the relevant departments and staff.				

	The system should be able to reflect the stage of the discharge process for better visibility and faster discharge. The summary should reflect if it is at the draft stage, final stage, or completed but not finalized, finalized.

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment c.	The system creates and processes a checklist and manages clearances for patient discharge, if any.				
Interpretation	A discharge checklist should be available that captures all checkpoints before a patient is discharged. This checklist is needed for clearances across the healthcare organization prior to discharge, clinical clearance, financial clearance, and final clearance. The system should also reflect and be able to capture patient discharge turnaround time with time stamps. The entire activity should be downloadable for reference of hospital administration in improving their turnaround time.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment d.	The system manages the transfer of patients within the healthcare organizations.				
Interpretation	The system shall enable patient transfers and notify relevant staff of the healthcare organization and the treating medical practitioner. During the transfer, the handover of documents is duly given to the receiving medical practitioner/ staff. This information is vital in ensuring that the patient receives appropriate care during and after the transfer. The transfer protocol applies when the patient is transferred across two departments (for example, from the OT to post-operative recovery, and then from a post-recovery room to the ward, or from the emergency department to the ward); from one primary medical practitioner to another, or from one healthcare organization to another.				

Category	Achievement	**Head**	Common	**Type**	Functional
Achievement e.	The system raises interim bills upon the patient's request.				
Interpretation	The system shall generate an interim bill on request of the patient. The interim bill should be configured as online message, SMS or email where daily notification goes to the patient on timely basis.				

Category	Core	Head	Common	Type	Functional
Core f.	The system links the discharge summary of the patient with their ABHA.				
Interpretation	The system shall link a patient's discharge summary to their ABHA. Going forward, healthcare providers treating a patient can access their discharge summary to get a comprehensive overview of the patient's medical history, including any critical/ sensitive health issues and medications from the past. This corresponds to Milestone 2 (M2) of ABDM.				

Standard

AAC.7.	**The system has the capability to disseminate information to patients.**

Objective Elements

Category	Commitment	Head	Common	Type	Functional
Commitment a.	The system provides important care delivery information for patients.				
Interpretation	The system shall provide important care delivery information to patients through email, online messaging platform, SMS, patient portal etc. This information could include: • Appointment details (location, address, contact details) • Reports availability • Follow-up schedule • Daily status update on patient's health • Time of discharge in case of admitted patient With appropriate consent, the system shall send notifications to designated kin or relatives. This is especially useful for elderly patients or those with limited digital fluency. To cater to local preferences, the information could be provided in multiple languages.				

Category	Commitment	Head	Common	Type	Functional
Commitment b.	The system has the capability to display its NABH certifications.				
Interpretation	After achieving NABH certification, the HIS/EMR system shall clearly display the same on the system's login page/screen and other relevant pages/screens. The system should also allow the configuration of NABH mark across all the reports and consultation sheets in case the user hospital is NABH accredited/ certified.				

Standard

AAC.8.	**The system manages patient feedback, experience and complaints.**

Objective Elements

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment a.	The system has the capability to receive feedback and complaints from the patients/family members.				
Interpretation	The system should have the ability to capture patient feedback using online surveys. These surveys can be rolled out to patients during and after their visit or stay. The system should also allow the sharing of the questionnaires to patients on their mobile numbers, online messaging platform, SMS, or email for their feedback on these surveys and perform a rating analysis based on the following- **Patient Satisfaction Score:** The feedback form should, at a minimum, include the following five questions (but not be limited to), to be rated on a 5-point scale: 1. How would you rate your overall experience at the hospital 2. How would you rate the quality of care including doctor consultation, nursing care, etc. you received 3. How would you rate the healthcare staff's clarity of communication and explanation of the treatment plan 4. How would you rate the hospital environment including cleanliness and amenities 5. How would you rate the ease of registration/discharge processes The system should also have the capability to share the feedback form (as a URL or QR code) with the registered mobile numbers of the patients for collecting their feedback. Collecting patient feedback is important for healthcare organizations to continuously improve their service delivery and patient satisfaction. In case of complaints, the records of resolution of the complaints shall be captured by the system.				

Category	Achievement	**Head**	Common	**Type**	Functional
Achievement b.	The system analyzes the feedbackreceived and generates reports/ updates dashboards.				

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Interpretation	The system shall analyze and summarize patient experiences and satisfaction levels across various touchpoints, such as: • appointments • healthcare organizations stay • post-treatment follow-ups This data could identify areas of improvements as well as tracking progress over time.

Category	Achievement	**Head**	Common	**Type**	Functional
Achievement c.	The system captures Patient-reported outcome measures (PROMs) .				
Interpretation	Patient-reported outcome measures (PROMs) are standardized surveys that help patients report their health status and quality of life at a specific time. The system shall be able to collect and record data directly from patients regarding their own health conditions, symptoms, and overall well-being. PROMs are valuable because they provide insight from the patient's perspective about the effectiveness of treatments, the impact of diseases or conditions on daily life, and overall quality of life. This information can be used by healthcare providers to better understand patient experiences, tailor treatments, and improve the quality of care. The sample list of important PROMs is given in Annexure 2				

Category	Achievement	**Head**	Common	**Type**	Functional
Achievement d.	The system captures Patient-reported experience measures (PREMs) .				
Interpretation	Patient-reported experience measures (PREMs) are surveys that ask patients and their families about their experiences with healthcare services. The system shall be able to gather and record data directly from patients about their experiences with healthcare services. PREMs focus on the patients' perspectives regarding the quality and accessibility of care they receive, including aspects such as communication with healthcare providers, the responsiveness of the healthcare system, and overall satisfaction with the care process. The sample list of important PREMs is given in Annexure 1				

Chapter 2

Care Of Patients (COP)

Intent of the Chapter:

It is imperative for healthcare organizations to consistently provide superior quality care across all care settings. The "Care of Patients" chapter describes the essential specifications for EMR/HIS to support standardized care delivery, which is of critical significance as use of digital systems is becoming an increasingly important part of care delivery. The objective of this chapter is to foster and prioritize patient care and safety by using EMR/HIS.

Healthcare organizations need to adopt digital technology to effectively manage health conditions, diseases and foster preventive care. Such technology should support all facilities in a healthcare organization, including outpatient departments, daycare centres, and inpatient wards. Further, the system should support patient services in remote settings.

Digital systems must allow medical practitioners to access medical records and proficiently initiate orders for laboratory tests, radiological examinations, and pharmaceutical services. Systems should also manage dietary consultation and specific nutritional therapy. On the other hand, systems should also support infection related cases and sentinel events.

Digital systems can also provide clinical decision support – Clinical Decision Support Systems (CDSS) - for medical professionals, leveraging the data available in the system and the ability to apply evidence based guidelines to enhance care and patient safety.

Summary of Standards	
COP.1.	The system manages consultation services in OPD and IPD.
COP.2.	The system manages nursing care processes.
COP.3.	The system supports blood transfusion services.
COP.4.	The system manages emergency and medico-legal cases.
COP.5.	The system supports Intensive care services.
COP.6.	The system has the capability to record the surgical/procedure safety checklist in operating rooms/wards/OPD.
COP.7.	The system manages dietary consultation and specific nutritional therapy.
COP.8.	The system tracks and monitors all infection prevention and control related activities and sentinel events.
COP.9.	The system supports the risk assessment of patients.
COP.10.	The system supports patient services in remote settings.
COP.11.	The system manages the assessment and re-assessment of patients availing rehabilitation services.
COP.12.	The system provides a Clinical Decision Support System.
COP.13.	The system has the capability to create care plans.

Standard

COP.1.	**The system manages consultation services in OPD and IPD.**

Objective Elements

Category	Commitment	Head	EMR	Type	Functional
Commitment a.	The system records and reviews initial assessment in OPD and IPD and patient progress.				
Interpretation	The system shall record and review the initial assessment of patients undergoing treatment in OPD and IPD. During the initial assessment, a thorough review is conducted by a designated member of staff. The records of review include vital signs, medical history, physical examination findings, and diagnostic tests. The system shall maintain a comprehensive record of all these details. The system should be able to capture initial assessment and re-assessment for different categories of patients including antenatal, obstetrics, pediatrics, ophthalmology, ENT etc. The system shall allow nurses and medical practitioners to monitor and analyze the progress ofthe patient, enabling them to track trends in patients' condition over time. This feature empowers nurses and medical practitioners to make informed decisions regarding patient care.				

Category	Commitment	Head	EMR	Type	Functional
Commitment b.	The system provides a summary of the patient's condition, medication order and follow-up visit for OPD visit.				
Interpretation	The system shall generate a concise overview of a patient's health condition, thereby enhancing clinical efficiency and patient care in the OPD. The following shall be included in the overview: • Summary of the patient's condition: The summary could include relevant medical history, current symptoms, diagnosis, and any significant findings from physical examinations or tests. • Medication Order Management: The system should provide the history and details of the medications being prescribed along with the dosage, frequency, route of administration, any episode of allergic/ adverse reaction, etc. • Follow-Up Visits: The system should facilitate the scheduling and documentation of follow-up visits. This helps healthcare providers and patients to manage upcoming appointments and capture follow-up consultation notes.				

Category	Achievement	Head	EMR	Type	Functional
Achievement c.	The system creates order sets based on frequently prescribed medications.				

Core Commitment Achievement Excellence

Interpretation	The system shall have the capability for medical practitioners to view commonly prescribed medications and create order sets. The system should have a comprehensive medication database (drug names, dosage forms, routes, strengths, indications, contraindications, and potential side effects, as well as the categorization of medications into different classes or therapeutic categories). This information assists medical practitioners in making informed decisions. Order sets (also known as "abbreviated medication lists") help to organize and automate the process of placing orders. To facilitate the creation of order sets, the system should offer pre established templates tailored for common medical conditions or procedures. These templates can then be personalized by medical practitioners to suit their specific needs and the needs of individual patients.

Category	Excellence	**Head**	EMR	**Type**	Functional
Excellence d.	The system provides details of the medications, radiology and diagnostics.				
Interpretation	The system shall have a feature that allows the medical practitioner to get details of medication, radiology, and laboratory orders e.g., know about type, dosage ,and specific instructions related to a prescribed order. For example, a particular diagnostic test may carry information about the patient preparation, time of collection, site of collection, details or subcategories of the test deployed, expected report preparation time, etc. Similarly, a medication may carry details around different strengths and formulations available, potential side effects, potential contraindications, etc.				

Category	Achievement	**Head**	EMR	**Type**	Functional
Achievement e.	The system has the capability to capture the digital signatures of treating medical practitioners.				
Interpretation	The system shall have the capability to deploy digital signatures to identify the treating medical practitioner and ensure the authenticity of medical records. Digital signature methods may include biometric authentication, one time password (OTP) generated digital signatures, or digital signature keys, which help obliterate the need for a doctor to physically sign the documents. It is imperative to note that the copying/pasting of signatures onto records is permissible only with explicit permission from the respective medical practitioner. Digital signatures shall be time stamped for audit purposes.				

Category	Core	Head	Common	Type	Technical
Core f.	The system has the capability to generate Computerized Provider Order Entry (CPOE) for laboratory tests.				
Interpretation	The system shall allow medical practitioners to place laboratory orders for patients. This functionality empowers medical practitioners to electronically order a diverse array of laboratory tests. Computerized Provider Order Entry (CPOE) for laboratory services empowers treating medical practitioners with access to the catalogue of available laboratory tests. Medical practitioners can select the suitable tests, thereby mitigating potential confusion within both laboratory and billing departments. The system should also provide the trend of levels of the drug for doze alteration. CPOE should also provide workflows to fulfill these orders and enable collaboration across facilities.				

Category	Core	Head	Common	Type	Technical
Core g.	The system has the capability to generate Computerized Provider Order Entry (CPOE) for radiological examinations.				
Interpretation	The system should have the capability to allow medical practitioners to place radiology orders for patients. This functionality empowers medical practitioners to electronically order a diverse array of radiology tests. Computerized Provider Order Entry (CPOE) for radiology services empowers treating medical practitioners with access to the catalogue of available radiology tests. Medical practitioners can select suitable tests, thereby mitigating potential confusion within both radiology and billing departments. The system should give the schedules of the radiology tests while creating orders. The systemmay also providet he availability of slots for the use of radiology equipment/appointment list of the radiology department for preparation ofpatients for example time of fasting and shifting along with provision for special instructions.				

Category	Core	Head	EMR	Type	Functional
Core h.	The system has the capability to generate e-prescription or Computerized Provider Order Entry for medicines.				

Interpretation	The system shall allow medical practitioners to place medication orders for patients, as per regulatory guidelines, for example ePrescription in India etc. This functionality empowers medical practitioners to electronically prescribe medication. The system may also support safety checks (e.g., dosage, drug-drug interaction, conflict with patient condition) to reduce medication errors. The system should also provide the comparison if and when required with the radiology or laboratory reports while ordering medication for reactions and medication reconciliation. This functionality diminishes the likelihood of errors from illegible handwriting or lost documents, thereby ensuring patients receive precise prescriptions.

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment i.	The system creates order sets (laboratory and diagnostics) based on the patient's diagnosis.				
Interpretation	The system shall create order sets (laboratory and diagnostics) based on the patient's diagnosis. For example, when a medical practitioner encounters a patient with kidney disease and requests specific tests such as Kidney Function Tests (KFT), Complete Blood Count (CBC), and Ultrasonography (USG), the system should recommend pre-defined order sets for both laboratory and radiology procedures. This functionality empowers medical practitioners to select appropriate test sets for patients. The system helps streamline clinical workflows, saving time, and enhancing both the efficiency and quality of patient care.				

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment j.	The system allows importing patient specific information / results for review and comments.				
Interpretation	The system shall allow medical practitioners to import patient-specific information / results obtained from laboratory, radiology/imaging, or other departments for review and comments. This capability supports the creation of complete medical records in the system - needed for continuity of care and to ensure patient safety.				

Category	Commitment	Head	Common	Type	Functional
Commitment k.	The system notifies treating medical practitioners when placing duplicate orders.				
Interpretation	The system shall notify treating medical practitioners when placing duplicate orders (For example laboratory / radiology / pharmacy requests/other diagnostics procedures). There are chances of placing duplicate orders when patients consult multiple medical practitioners, who independently prescribe the same tests or medications. For example, two physicians making the same order or test ordered when a valid test result is already in the system. The system should notify the medical practitioner when a duplicate order is placed Additionally, the systems should allow medical practitioners to access and review tests and medications previously prescribed by other medical practitioners. The system should also be able to notify the medical practitioner to take into account the recent tests and interventions undertaken for the same patient to avoid unnecessary duplication.				

Category	Commitment	Head	EMR	Type	Functional
Commitment l.	The system allows patients to access their prescriptions.				
Interpretation	The system shall allow patients to access their prescriptions. This empowers patients to manage their medications more effectively and ensure adherence to prescribed regimens. For example, digital access to prescriptions via SMS, mobile applications, online messaging platform, email notifications, or patient portals, enables patients to retrieve and review their prescriptions at any time. Active involvement of patients in their health management ensures improved engagement and higher medication adherence.				

Category	Commitment	Head	Common	Type	Functional
Commitment m.	The system sends alerts in case of critical test results.				
Interpretation	The system shall notify critical laboratory values to relevant staff/departments such as the treating medical practitioner or health care providers involved in patient care. If a patient's laboratory findings indicate critical values (significantly exceeding or falling below the normal range), they are promptly identified as critical results. The system may also give the trend analysis for ICU /OT /CRITICAL patients, as a delta check. The system shall send notifications or alerts via SMS, online messaging platform, email, or a secure messaging system to the relevant staff.				

Category	Core	Head	HIS	Type	Functional
Core n.	The system allows medical practitioners to access past medical records within the healthcare organization.				
Interpretation	The system should have provisions for treating or referring medical practitioners to access patients' medical records within the healthcare organization. Patient records can be retrieved using key identifiers such as ABHA, patient name, mobile number, UHID etc. Access to comprehensive medical records, medical history, medication history, surgical history, and vaccination records, holds significant importance for treating medical practitioners. This longitudinal data aids in identifying patterns and trends for future care decisions.				

Category	Core	Head	HIS	Type	Technical
Core o.	The system has the capability to link patient's health records to their ABHA.				
Interpretation	The system shall have the capability to establish a link to the medical records of patients with their ABHA. These records can then be shared with other healthcare providers or other entities upon receiving the patient's consent. This corresponds to Milestone 2 (M2) of ABDM.				

Category	Core	Head	HIS	Type	Technical
Core p.	The system provides access to a patient's past medical records through ABHA.				
Interpretation	The system shall have the capability to access a patient's past medical records (including laboratory results, imaging studies, and clinical notes) using the patient's ABHA, once the patient gives consent to the healthcare organization. Medical practitioners can use past medical records to make accurate diagnosis and deliver optimal clinical care. This corresponds to Milestone (M3) of ABDM				

Standard

COP.2.	**The system manages nursing care processes.**

Objective Elements

Category	Core	Head	EMR	Type	Functional
Core a.	The system captures nursing notes for inpatients.				
Interpretation	Every patient admitted to a healthcare organization is placed under the care of a designated nurse, who is responsible for completing nursing notes during his/her shift hours. The system shall enable nurses to document nursing notes for patients. These notes typically include patient identification, nurse identification, an overview of the patient's condition, clinical findings, significant events, and observations regarding the patient's response to care. Nursing notes serve as comprehensive documentation outlining the nursing care administered.				

Category	Core	Head	EMR	Type	Functional
Core b.	The system facilitates digital handover between medical practitioners/ nurses during shift changes for inpatients.				
Interpretation	The system shall capture handovers between healthcare providers during shifts and maintain comprehensive records of nursing care plans for all inpatients. At the conclusion of each shift, the designated healthcare provider, whether a nurse or medical practitioner, conducts a verbal handover supplemented by a documented handover (in a standardized template) to the respective healthcare provider in subsequent shifts. This handover template shall at a minimum include essential details such as the healthcare worker's identification details (employee ID, name etc.) and patient-related information such as vital signs, procedures undergone, scheduled diagnostics or procedures for the day, information related to the patient's current condition, recent changes in condition, ongoing treatment and possible changes or complications and any other relevant information. The system shall enable the organization to monitor the compliance to hand over. The opportunities for handover shall be based on the staff ROTA. Refer to HRM 1.d.				

Standard

COP.3.	**The system supports blood transfusion services.**

Objective Elements

Category	Commitment	Head	EMR	Type	Functional
Commitment a.	The system maintains records of prospective donors.				
Interpretation	The system shall register and screen blood donors by creating a database at least for the rare blood groups like Bombay and O negative and securely stores donor information and medical histories. This database must be readily accessible to relevant healthcare staff during the screening process for potential donors. The database should also capture crucial details such as the frequency of blood donations, blood grouping, compatibility screening results and blood component analysis. Digital systems help in streamlining the screening process e.g., to identify high-risk donors-based travel history and underlying health conditions. This ensures that only eligible donors are accepted and minimizes the risk of transfusion-transmitted infections.				

Category	Commitment	Head	HIS	Type	Functional
Commitment b.	The system should support the calculation of turnaround time.				
Interpretation	The system should capture the start time (when the request is generated for the blood components) and end time (when the blood/blood component is cross-matched/ reserved and/or available for transfusion). The system should enable capturing of any sub-activity involved in this process as defined in the organization's policy and reasons for delay in issuing.				

Category	Achievement	Head	HIS	Type	Functional
Achievement c.	The system manages the stock of blood and blood components.				
Interpretation	The system shall report the availability of blood units, promptly verify requisitions, and manage dispatch times efficiently. Such capabilities empower blood banks to effectively manage their inventory, track blood donations and transfusions, and generate essential reports. The system should also manage the alerts for expiry, date and time of blood component formations. The system should also provide the records of blood discarded as per the blood discard policy of the healthcare organization.				

Category	Commitment	Head	HIS	Type	Functional
Commitment c.	The system supports safe transfusion of blood/blood components and captures blood transfusion related incidents.				

Core Commitment Achievement Excellence

Interpretation	The digital system shall maintain blood transfusion-related incidents, including errors during transfusions. The system should also have the capability to prepare an incident report for analysis and onwards submission to hemovigilance. The system should assist in carrying out transfusion audits to ensure the rational use of blood/ blood components.

Category	Excellence	**Head**	HIS	**Type**	Functional
Excellence d.	The system has the capability to check bloodstock information through the Unified Health Interface.				
Interpretation	The Unified Health Interface (UHI) is a platform designed to integrate various health information systems. Among other functionalities, it facilitates the sharing of blood bank stock information by connecting the blood bank information system with the UHI platform. The UHI platform aids in the integration of the blood bank information from various systems with UHI, healthcare organizations can effortlessly disseminate real-time updates on blood bank stock levels to other healthcare providers within the UHI network. This enables healthcare organizations to quickly identify available blood supplies in other facilities, potentially saving lives during emergencies.				

Standard

COP.4.	**The system manages emergency and medico-legal cases.**

Objective Elements

Category	Core	**Head**	HIS	**Type**	Functional
Core a.	The system manages the registration and record maintenance of patients in the emergency department.				
Interpretation	The system shall manage the registration of patients in the emergency department by enabling medical practitioners to register and retrieve patient information during emergency situations swiftly and accurately. This system should support an accelerated admission process, by allowing registration with compliance to mandatory information only. The system shall support capturing of information of return to emergency within 72 hours with similar presenting complaints. The system should also be able to send out communication to relevant departments about the condition of the patient received in the emergency department.				

Category	Core	Head	Common/HIS	Type	Functional
Core b.	The system has the capability to label a case as a medico-legal case (MLC).				
Interpretation	The system shall be able to label a case as a medico-legal case. For example, adding a checkbox that allows for streamlined identification of such cases. The system may provide a digital checklist for collecting and recording pertinent information within the system. The system may allow comprehensive documentation of the case and the accurate storage of relevant data, with a complete audit trail.				

Category	Achievement	Head	Common/EMR	Type	Functional
Achievement b.	The system has the capability to label a case as a medico-legal case (MLC).				
Interpretation	The system shall be able to label a case as a medico-legal case. For example, adding a checkbox that allows for streamlined identification of such cases. The system may provide a digital checklist for collecting and recording pertinent information within the system. The system may allow comprehensive documentation of the case and the accurate storage of relevant data, with a complete audit trail.				

Category	Excellence	Head	HIS	Type	Functional
Excellence c.	The system supports the monitoring and transmission of patient information from the ambulance to the emergency department.				
Interpretation	The system shall communicate patient information from the ambulance to the emergency department of the healthcare organization. To comply with this requirement, the ambulance needs to be equipped to record and monitor patients' vital signs, subsequently transmitting the same to the emergency department. To ensure integration with smart ambulances, healthcare organization's systems should be able to support real-time communication, biomedical sensing, telemedicine, and GPS enablement.				

Category	Commitment	Head	EMR	Type	Functional
Commitment d.	The system has the capability to capture emergency codes and staff response.				

Core Commitment Achievement Excellence

Interpretation	The system shall promptly alert and notify the relevant teams about the activation of various emergency codes. Emergency codes, such as Code Red, Yellow, Blue, Pink, and Black are commonly used in healthcare organizations to manage patient care during critical situations. The digital system could incorporate displays, announcements, notifications, and alerts through SMS and other online communication channels for the various emergency codes. The system should also provide protocols defined by the healthcare organization during the medical emergency codes announcement like code blue, code black etc. Some of the suggested ways by which systems can help manage or capture emergency codes/ staff response are as below: • By maintaining a list of team members/ respondents to the code and activating the mechanisms whenever a code is announced. • By maintaining a log or a record of different codes activated in a defined period and the respective corrective and preventive action taken thereof. • By integrating the healthcare organization's operations in the response system, for example, blocking of the healthcare organization's exit doors in case code pink or code yellow is announced. The sample list of Emergency codes is given for guidance in Annexure 4.

Standard

COP.5.	**The system supports Intensive care services.**

Objective Elements

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment a.	The system supports the rational use of intensive care services by adopting appropriate admission and discharge criteria.				
Interpretation	The system shall ensure that intensive care resources are used efficiently and effectively. By implementing clear and evidence-based criteria for admitting patients to and discharging them from intensive care units (ICUs), the system aims to optimize the allocation of these critical resources. This feature can help to ensure that only patients who truly need intensive care receive it, thereby improving patient outcomes, reducing unnecessary healthcare costs, and preventing the overburdening of ICU resources. This approach supports a more organized and judicious use of intensive care services, benefiting both patients and healthcare providers. The sample list of evidence-based criteria for admitting and discharging patients in ICU is given for guidance in Annexure 7				

Category	Excellence	Head	EMR	Type	Functional
Excellence b.	The system supports risk assessment and outcomes of patients.				
Interpretation	The system shall support calculating the predicted mortality rate using a validated scale (APACHE, SOFA, SAPS, MPM, PRISM etc.) for patients admitted in the Intensive care unit. The validated scale needs to be age - appropriate. The outcomes could be discharge, transfer, re-admission or death. In case of readmission, the system shall capture the time difference between the discharge/transfer and readmission.				

Category	Achievement	Head	EMR	Type	Functional
Achievement c.	The system supports the integration of patient care data from monitoring devices.				
Interpretation	The system shall be capable of connecting and transferring data collected from various patient monitoring devices directly into the systems. This integration ensures that real-time and accurate patient data, such as vital signs, laboratory results, and other health metrics, are seamlessly incorporated into the patient's digital health record. This capability enhances the continuity of care, allows for more comprehensive and up-to-date patient information, reduces the risk of data entry errors, and improves the efficiency of healthcare providers in monitoring and managing patient health.				

Category	Achievement	Head	EMR	Type	Functional
Achievement d.	The system supports the capture of various services provided as a part of patient care.				
Interpretation	The system shall be able to record and document important healthcare services and activities performed for patients. This includes but is not limited to: 1. Input-Output Chart: The system can log the amount of fluids and nutrients a patient consumes (input) and the amount they excrete (output). This is crucial for monitoring a patient's fluid balance, electrolyte levels, and overall health status. 2. Adherence to Care Bundles: The system can track and ensure that standardized sets of evidence-based practices, known as care bundles, are followed. These bundles are designed to improve patient outcomes and reduce the risk of complications. For example, a care bundle for preventing infections might include steps like timely removal of catheters and maintaining sterile techniques. 3. Change of Positions: The system can document the regular repositioning of patients, which is essential for preventing pressure ulcers and improving circulation, especially in bedridden or immobile patients.				

Standard

COP.6.	**The system has the capability to record the surgical/ procedure safety checklist in operating rooms/wards/OPD.**

Objective Elements

Category	Achievement	**Head**	EMR	**Type**	Functional
Achievement a.	The system records procedure/ surgical safety checklist in operating rooms/wards/OPD.				
Interpretation	The system shall have the capability to assist healthcare organizations in recording a comprehensive surgical safety checklist within operating rooms or a procedure checklist in various areas of the hospital to prevent adverse events like a wrong site, wrong patient and wrong procedure/surgery. The system should also capture the time stamp and name of the person filling the checklist.				

Category	Achievement	**Head**	EMR	**Type**	Functional
Achievement b.	The system captures notes related to pre-operative assessment and patient preparation for surgeries.				
Interpretation	The system shall capture detailed information during pre-operative assessments and patient preparation for surgeries. This includes medical practitioner clearance, documented consent from the patient, pre-anesthetic review and plan, arrangements for blood transfusion, and patient centric data comprising medical history, laboratory results, and imaging studies.				

Category	Excellence	**Head**	Common	**Type**	Technical
Excellence c.	The system maintains records of patient consent.				
Interpretation	The system shall have the capability to record patient consent for various healthcare activities, and procedures. Patient consent is a critical component of healthcare delivery, ensuring that patients are informed and empowered to make decisions about their care. The system facilitates the documentation of patient consent for treatment, medical procedures, sharing of health information, participation in research studies, and other healthcare-related activities in alignment with statutory requirements. The system should mark the records belonging to a minor or patient with disability and obtain consent from the legal guardian.				

	The system may also have the ability to provide the demo of any procedure or surgery pre and post requirements to patients in recording before obtaining consent. The system should also allow for updating the patient information based upon patient consent. The consent process could include Aadhar-based OTP/ fingerprints of the patient/ kin/ legal guardian. Refer to the Digital Personal Data Protection Act (DPDP) Act, 2023 where the HIS/EMR systems have been considered as Data Fiduciaries.

Category	Achievement	**Head**	EMR	**Type**	Functional
Achievement d.	The system schedules, re-schedules, or cancels interventional procedures/ surgeries.				
Interpretation	The system shall provide real-time OT availability status, assisting in scheduling upcoming surgeries and finalization of OT list as per the timelines defined by the organization. The system should allow for seamless booking of available slots as well as facilitate changes or rescheduling as necessary. In case a surgery is rescheduled the system shall capture the duration of delay. The system should flag any UHID undergoing a second surgery within a span of 30 days and have a provision for marking the surgery as planned or unplanned. While the OT is booked by designated staff, nurses and the billing department also play pivotal roles in facilitating OT clearances. For example, before a patient is transferred to the OT, nurses ensure that all preoperative patient workup is completed. The system could have the capability to notify other relevant departments, for example laboratory, radiology, and dietary departments about the forthcoming planned procedures. By streamlining the booking process and integrating designated staff/ department roles within the system, errors and miscommunications related to surgery scheduling can be significantly reduced.				

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment e.	The system records the start and end times of the planned operation.				

Interpretation	The system shall record the start and end time of the surgery as per the healthcare organization's policies. Accurate timestamps are indispensable for maintaining precise records of the entire surgical process, including the duration of the operation. This information serves as a valuable resource for future reference and analysis. By scrutinizing the time taken for specific procedures, healthcare providers can identify opportunities to optimize processes for greater efficiency.

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment f.	The system records the necessary details of the anesthesia/procedural sedation administered.				
Interpretation	The system shall maintain digital records of anesthesia/procedural sedation monitoring. The system shall incorporate records of pre-anesthesia and pre-induction assessment and intra-operative monitoring. The type of anesthesia like local, regional, spinal or general shall be captured. At a minimum, intraoperative monitoring should include regular recording of temperature, heart rate, cardiac rhythm, respiratory rate, blood pressure, oxygen saturation and end-tidal carbon dioxide. The system shall also capture the drug(s) used for procedural sedation. The system shall record the post-anaesthesia/ post sedation monitoring and status before shifting the patient on the basis of defined criteria.				

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment g.	The system records necessary details for surgical procedures / interventions undertaken.				

Interpretation	The system shall maintain digital records of intra operative notes for surgical procedures and interventions. At a minimum, the operative note shall include the surgery performed, the name of the surgeon (s), name of the anesthesiologist(s), nursing teams, salient steps of the procedure and the key findings intra-operative findings. The record shall provide information about the procedure performed, postoperative diagnosis and the status of the patient before shifting and shall be documented by the surgeon/doctor member of the operating team. The system shall incorporate various resources utilized during surgery, and any specimens collected. The system shall incorporate post-op plan which should address, as required advice on IV fluids, medication, care of wound, nursing care, observing for any complications, etc. This plan should be documented by the operating surgeon or a member of the operating team.

Standard

COP.7.	**The system manages dietary consultation and specific nutritional therapy.**

Objective Elements

Category	Achievement	**Head**	Common	**Type**	Functional
Achievement a.	The system captures dietary screening, manages dietary consultation and maintains records where relevant.				
Interpretation	The system shall incorporate validated screening and assessment tools to guide nutritional therapy. The system shall accommodate a range of diets, including specialized dietary requirements tailored for each in-patient. This ensures that all consultations and dietary recommendations are meticulously documented and readily accessible to the concerned staff. The system provides necessary linkages across clinical departments and the kitchen to ensure that patients receive diets as per their nutritional needs and dietary preferences, where relevant.				

Category	Achievement	**Head**	Common/HIS	**Type**	Functional
Achievement b.	The system maintains a record of the therapeutic diet given to inpatients.				

Interpretation	The system shall maintain a record of dietary options, catering to individual needs, preferences, and allergies, including specialized dietary requirements for patients. The system shall allow assessment by the dietician and the record of the prescribed therapeutic diets. The kitchen team shall have access to these records for ensuring availability of the prescribed diet for the respective in-patients.

Category	Commitment	**Head**	Common/EMR	**Type**	Functional
Commitment. b.	The system maintains a record of the therapeutic diet given to inpatients.				
Interpretation	The system shall maintain a record of dietary options, catering to individual needs, preferences, and allergies, including specialized dietary requirements for patients. The system shall allow assessment by the dietician and the record of the prescribed therapeutic diets. The kitchen team shall have access to these records for ensuring availability of the prescribed diet for the respective in-patients.				

Standard

COP.8.	**The system tracks and monitors all infection prevention and control related activities and sentinel events.**

Objective Elements

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment a.	The system captures, monitors, manages and reports, different types of infection related incidents.				
Interpretation	The system shall monitor and report various types of infection-related incidents i.e., Healthcare Associated Infections (HAIs). At a minimum these shall include- a. CAUTI b. VAP c. CLABSI d. SSI Documentation of these incidents should include reporting time, staff who reported, type of infection prevention measures taken to address the infection etc. The system shall enable infection control nurse/ designated staff to complete the HAI checklists, track results of test samples, and provide charting tools to monitor the progression of infections. The system should also enable documentation pertaining to prophylactic medications administered, improvements observed, and overall progress made.				

	The system shall update dashboards on a monthly basis. It is desirable that the data from preceding months is also displayed.

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment b.	The system supports the healthcare organization's antimicrobial usage policy.				
Interpretation	Antimicrobial policy provides detailed indications for antimicrobial usage, criteria for antimicrobial selection, appropriate dosing regimens, preferred routes of administration, the optimal duration of treatment, and timing considerations. The overarching objective is to achieve maximal clinical efficacy in curing infections or preventing their onset, while concurrently minimizing the risk of unintended consequences associated with antimicrobial use, such as antimicrobial resistance and adverse effects. The system should incorporate controls based on the antimicrobial usage policy defined by healthcare organizations. The antimicrobial usage policy shall be readily available to medical practitioners in a digital format. The system shall flag any restricted antimicrobial and mandate the medical practitioner to provide a justification for prescribing the same. The list of antibiotics among the restricted antimicrobials shall adhere to WHO's AWaRe classification. The system shall help the medical practitioner to identify the appropriate pre surgery prophylactic antibiotic based on the organization's policy. The system should also monitor selection of the right drug, duration of prophylaxis and administration of the first prophylactic dose in accordance with the organization's policy.				

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment c.	The system captures all patient care incidents and sentinel events.				
Interpretation	In the event of patient care incidents and sentinel events, the system triggers real-time alerts to staff, ensuring a swift response, and enhancing overall patient safety. Common patient care incidents and sentinel events include wrong site surgery, foreign body retention, falls, suicide, delays in treatment, and medication errors. The system should possess the capability to record and track the incidents to closure. In addition, the system should analyze the data and generate dashboards and reports. Through the examination of patterns, trends, and potential areas for enhancement, healthcare organizations can proactively identify opportunities to enhance patient safety and optimize care delivery processes.				

Category	Achievement	Head	EMR	Type	Functional
Achievement d.	The system maintains records of the healthcare organization staff, exposure to any infections at the workplace				
Interpretation	The system shall capture and maintain digital records of healthcare organization staff who have been exposed to infectious agents such as HIV, Hepatitis B, and Hepatitis C during their duty hours (e.g., needle stick injury, spillage). It should be able to maintain comprehensive digital health records detailing the post-exposure prophylaxis administered to affected employees. The same should be linked to the employee's personnel records and health records to enable due follow-up. By meticulously tracking exposed staff, the system facilitates the identification of individuals at risk due to potential infection exposure, enabling prompt intervention and implementation of preventive measures.				

Standard

COP.9.	**The system supports the risk assessment of patients.**

Objective Elements

Category	Achievement	Head	EMR	Type	Functional
Achievement a.	The system assists the organization to identify vulnerable patients, patients at the risk of fall or developing/worsening of pressure ulcers, or deep vein thrombosis.				
Interpretation	The system shall assist healthcare providers in recognizing patients who are vulnerable to adverse health outcomes. Vulnerable patients might include those with chronic illnesses, the elderly, individuals with multiple comorbidities, or those with socioeconomic factors that affect their health. The system shall also be able to assist healthcare providers in recognizing patients who have an increased likelihood of experiencing falls, developing pressure ulcers and deep vein thrombosis by using validated tools for the assessment of risk of fall, pressure ulcers and deep vein thrombosis and findings recorded in the system. Few examples of tools for assessing pressure ulcers are Branden Scale, The European and US National pressure ulcer Advisory panels (EPUAP and NPUAP) staging systems.				

Standard

COP.10.	**The system supports patient services in remote settings.**

Objective Elements

Category	Achievement	**Head**	EMR	**Type**	Functional
Achievement a.	The system has the capability to offer remote/virtual clinical consultations to patients when needed.				
Interpretation	The system shall assist medical practitioners in providing virtual consultations to patients at remote locations. These remote consultations can be provided through a variety of modalities e.g., desktop/laptop or mobile applications (including video conferencing / instant messaging) based on the available regulatory guidelines. The system should also have the facility to record the consultation sessions. One of the ways this can accomplished is by Unified Health Interface (UHI) which is a network of open protocols that enable interoperability in health services. UHI is one of the foundational layers in the Ayushman Bharat Digital Mission (ABDM) stack that focuses on the discoverability and delivery of health services.				

Category	Excellence	**Head**	EMR	**Type**	Technical
Excellence b.	The system supports effective homecare services.				
Interpretation	The system shall assist healthcare organizations to digitally manage homecare services. The system should facilitate booking and monitoring of homecare services, billing management and collection of patient feedback.				

Standard

COP.11.	**The system manages the assessment and re-assessment of patients availing rehabilitation services.**

Objective Elements

Category	Excellence	**Head**	EMR	**Type**	Functional
Excellence a.	The system supports functional assessment and re-assessment of patients who avail rehabilitation services.				
Interpretation	The system shall support functional assessments and reassessments for patients undergoing rehabilitation services, including physiotherapy, occupational therapy, speech therapy, and clinical psychology. These assessments are conducted using functional assessment scales, incorporated into the healthcare organization's system.				

Standard

COP.12.	**The system provides a Clinical Decision Support System.**

Objective Elements

Category	Excellence	**Head**	EMR	**Type**	Technical
Excellence a.	The system supports Clinical Decision Support System (CDSS).				
Interpretation	Clinical Decision Support System (CDSS) plays a pivotal role in enhancing clinical decision-making, promoting patient safety, and facilitating effective risk assessment and management within healthcare organizations. By providing evidence-based recommendations, alerts, and guidelines, CDSS tools empower healthcare providers to make informed decisions, thereby improving patient outcomes, reducing medical errors, and enhancing efficiency in care delivery processes. The system shall be equipped to offer CDSS functionality either internally or integrated with external CDSS systems. This functionality can be across a wide range of domains like diagnosis, drug prescriptions, and treatment planning. Refer Annexure-5 for a non-exhaustive list of common CDSS use cases.				

Category	Excellence	**Head**	EMR	**Type**	Functional
Excellence b.	The system triggers alerts to medical practitioners whenever critical interventions are required.				
Interpretation	The system shall provide alerts for critical scenarios such as duplicate therapy, drug interactions, allergy warnings, and other pertinent issues. By proactively identifying critical scenarios, the system significantly enhances patient safety. Refer Annexure-6 for a non-exhaustive list of Notifications/ Contraindicative Tests Alerts that can be raised by the system.				

Category	Commitment	**Head**	Common	**Type**	Functional
Commitment c.	The system triggers an alert for notifiable diseases as required by thealth department.				

Interpretation	The system should be configurable to incorporate a list of notifiable diseases applicable to specific states or union territories. A few examples of notifiable diseases include HIV/AIDS, tuberculosis, dengue fever, chikungunya, malaria, and others. The system shall trigger an alert when a patient with a notifiable disease is identified. The alert will ensure timely communication and compliance with notification requirements, thereby facilitating efficient coordination of care and adherence to regulatory guidelines. The systems shall also provide a consolidated list of all cases notified by the healthcare organization.

Standard

COP.13.	**The system has the capability to create care plans.**

Objective Elements

Category	Achievement	**Head**	EMR	**Type**	Functional
Achievement a.	The system has the capability to create customized care plans based on current standards of practice.				
Interpretation	The system shall be able to develop customized care plans for specific disease conditions in patients. For example, care plans for individuals with asthma, diabetes, COPD, etc. Care plans shall also include elements of assessment and evaluation, goal setting, interventions, monitoring and adjustments, documentation and communication, etc. They may also include aspects of preventive, promotive, curative, rehabilitative, and palliative care.				

Chapter 3

Management of Medication (MOM)

Intent of the Chapter:

This chapter highlights the digital systems requirements for management of medication. The system must have the capabilities to ensure consistent prescription, indentation, dispensing and safe administration of medications. The system should provide real-time clinical decision support to medical practitioners while prescribing medications. For example, with regard to drug interactions, allergies and contraindications.

Further, it is important for the system to issue alerts for high-risk medication orders and require the healthcare professional to re-confirm the correctness of prescribed dosage, frequency and route of administration. This is important for adherence to stringent safety protocols to reduce risks and protect both patients and healthcare professionals. For example, narcotics, chemotherapeutic agents and radioactive substances.

Summary of Standards	
MOM.1.	The system maintains inventory records for medicines and consumables in the pharmacy.
MOM.2.	The system supports the process of medication management.
MOM.3.	The system supports the safe administration of medications.
MOM.4.	The system manages and supports the implementation of emergency medication protocols and maintains records.

Standard

MOM.1.	**The system maintains inventory records for medicines and consumables in the pharmacy.**

Objective Elements

Category	Core	**Head**	EMR	**Type**	Functional
Core a.	The system has the capability to identify emergency medications, and high risk medications including look-alike sound alike medications.				
Interpretation	The system shall tag high alert, look alike and sound alike medications and have checks in place to ensure that different strengths of the same medications are easily identifiable by the prescribing physician and at points of their storage. The sample list of high-risk medication is given for guidance in Annexure-3				

Category	Core	**Head**	Common/HIS	**Type**	Functional
Core b.	The system has the capability to search, track and maintain inventory records of medicines and consumables in the pharmacy.				
Interpretation	The system shall manage the inventory of medicines and consumables, which helps in streamlining supply management. The system should be able to search and track inventory levels, monitor expiration dates, and quickly locate specific items when needed. This ensures that the supplies are readily available for patient care. The system should also maintain records of inventory with proper grouping and categorization of medicines. This could be done by utilizing Bar Code / QR code technology to enhance tracking accuracy. For example, high-risk medications (including sound-alike drugs) and varying concentrations of the same medications should be appropriately managed. The system should flag the stock out of any identified emergency medications.				

Category	Achievement	Head	Common/EMR	Type	Functional
Achievement b.	The system has the capability to search, track and maintain inventory records of medicines and consumables in the pharmacy.				
Interpretation	The system shall manage the inventory of medicines and consumables, which helps in streamlining supply management. The system should be able to search and track inventory levels, monitor expiration dates, and quickly locate specific items when needed. This ensures that the supplies are readily available for patient care. The system should also maintain records of inventory with proper grouping and categorization of medicines. This could be done by utilizing Bar Code / QR code technology to enhance tracking accuracy. For example, high-risk medications (including sound-alike drugs) and varying concentrations of the same medications should be appropriately managed. The system should flag the stock out of any identified emergency medications.				

Category	Achievement	Head	HIS	Type	Functional
Achievement c.	The system notifies and alerts the minimum re-order levels of medication to the relevant staff/ departments.				
Interpretation	The system shall notify and alert relevant staff/ departments such as pharmacists, supply chain, and purchase departments if inventory falls below the minimum re-order levels of a given medication. In addition, the system shall be able to track consumption and propose optimal re-order levels based on the trends observed. This will prevent outages and optimize stock usage.				

Standard

MOM.2.	**The system supports the process of medication management.**

Objective Elements

Category	Core	Head	EMR	Type	Functional
Core a.	The system manages the process of prescribing, indenting, dispensing and administration of pharmacy orders and maintenance of records.				

Interpretation	Based on the real time updates provided by the system on the availability of medications and stocks available, the medical practitioners should be able to prescribe medications. In case of low stocks, the practitioners shall be given a choice to prescribe alternate medicines. This feature shall also help in streamline the processes of indenting, dispensing, and administration of pharmacy orders in all the departments. The system shall maintain records of all activities.

Category	Core	**Head**	Common	**Type**	Functional
Core b.	The system provides a timestamp at the time of dispensing of medication or devices.				
Interpretation	The system shall capture the timestamp for dispensing of medicines and devices at different patient care stations such as at pharmacy, ward, ICU, emergency etc. With timestamp, healthcare providers can avoid duplication (giving the same medication twice) or omission (missing a dose).				

Category	Core	**Head**	EMR	**Type**	Functional
Core c.	The system alerts the prescription of a high-risk medication and has the capability to verify at the time of dispensing.				
Interpretation	The system shall alert the prescription and dispensing of high-risk medications (for example, narcotic drugs, psychotropic substances, chemotherapeutic agents, radioactive substances) to designated medical practitioners, nursing professionals, para-medical professionals, etc. The system could also implement a mechanism that is capable of visually tagging high-risk medications. The system should also support the verification of high-risk medication by two pharmacists, at the time of dispensing as per the policy of the healthcare organization.				

Category	Core	**Head**	HIS	**Type**	Functional
Core d.	The system generates reports of stock inventory.				
Interpretation	The system shall generate reports with medication stocks in the healthcare organization to facilitate the management of inventory levels. In addition, the system shall provide insights into inventory levels, usage patterns, and potential shortages. By analyzing this data, healthcare organizations can make informed decisions about stock management, prevent stockouts, and ensure that essential supplies are always available when needed.				

Category	Achievement	Head	EMR	Type	Functional
Achievement e.	The system suggests medication based on the healthcare organization's formulary.				
Interpretation	The system shall maintain and display the healthcare organization's formulary for the medical practitioners and other relevant staff/ departments. The system shall also capture updations in formulary from time to time whenever new drugs are introduced. It should also be able to provide suggestions while prescribing the medications by the medical practitioners. Maintaining formulary helps to ensure standardization of the treatment plan, cost effectiveness of treatment, compliance with any legal or regulatory requirement and use of therapeutic alternatives as needed. Additionally, medical practitioners should be able to access essential information about medications available at the healthcare organization. This includes details such as the generic name of drugs, dosage, indications, and potential side effects. Having this information readily available saves time and reduces errors, allowing practitioners to make informed decisions about patient care.				

Category	Excellence	Head	EMR	Type	Functional
Excellence f.	The system highlights the drugs and devices sourced from outside the formulary.				
Interpretation	The treating medical practitioners are encouraged to prescribe from the healthcare organization formulary list. In certain cases, the medical practitioners may be required to prescribe drugs from outside the formulary. For example, in emergency cases or in case of rare diseases where the desired drug or devices is not in the formulary list. In such cases, the treating medical practitioner should still be able to prescribe those drugs or devices. The system shall have the capability to highlight such prescriptions for necessary evaluation and record purposes.				

Category	Core	Head	Common	Type	Functional
Core g.	The system records the history of drug allergy/adverse reactions and alerts the prescribing medical practitioner.				
Interpretation	The system shall record any allergic reaction/ adverse reaction linked to any medication or other factors related to the patient and alert the prescribing medical practitioner. This feature promotes safer prescribing practices and leads to improved patient outcomes, as patients receive medications that are safe and compatible with their health conditions.				

Category	Commitment	Head	EMR	Type	Functional
Commitment h.	The system facilitates medication reconciliation.				
Interpretation	The system shall enable medical practitioners to review and reconcile all medications a patient is taking during hospitalization or clinical encounter, including the drug name, dosage, frequency, and route. The system shall also facilitate modification in the prescription based on this information received.				

Category	Commitment	Head	HIS	Type	Functional
Commitment i.	The system has the capability to notify about the medications or devices nearing expiry date.				
Interpretation	The system shall generate notification for the relevant staff/ departments when medications are nearing their expiry dates. The notifications can be sent through system dashboard, emails, online messaging platform, or other alert mechanisms integrated into the healthcare organization's workflow. This feature shall also be integrated with the pharmacy management for the purpose of records. By doing so, healthcare organizations can minimize medication wastage, dispose off medications promptly, and prevent their use beyond the expiration date.				

Category	Commitment	Head	HIS	Type	Functional
Commitment j.	The system maintains record of medications or devices that are returned or recalled.				
Interpretation	The system shall be able to track medications and devices that are recalled/ returned and capture the reason for such action. The system can also track returned or recalled medications by location/department, by supplier, or by date. This enables healthcare organizations to identify trends and take remedial actions. It benefits healthcare organizations in the following ways: • Accurate Record-Keeping: By digitally tracking returns and recalls, the system maintains precise records of the reasons behind these actions. This includes potential adverse reactions or quality issues associated with the product. • Patient Safety: Recording medication or product returns digitally helps healthcare organizations ensure patient safety. It prevents the use of expired, damaged, or defective items that could harm patients. • Reasons for Returns: Healthcare organizations may need to return medications or products for various reasons, such as expiration, recalls, damage, incorrect orders, or overstock situations.				

Standard

MOM.3.	**The system supports the safe administration of medications.**

Objective Elements

Category	Excellence	**Head**	EMR	**Type**	Functional
Excellence a.	The system correctly identifies the patient at the time of medication administration and captures records.				
Interpretation	The system shall offer a range of capabilities to ensure the correct identification and administration of medicines and allows record capturing thus enhancing patient safety and healthcare efficiency. Identification of the patient can be done using digital tools like bar code, RFID, unique patient identifier search for medication administration. The system shall provide digital options for labelling. injectables and intravenous infusions for example RFID and Bar code etc. The system should have the capability of correctly identify the patients and medications to be administered. By scanning the patient-identification and the medication barcodes, the system ensures that the right medication is administered to the correct patient. The system ensures that the right patient gets the right medication in the right dose (including right dosages calculation where relevant) at the right time, via the right route, right reason, and with the right necessary documentation. The system should have the capability to provide workflow to capture, and authenticate the drugs ordered verbally by the concerned physician.				

Category	Commitment	**Head**	EMR	**Type**	Functional
Commitment b.	The system has the capability of maintaining an electronic medication administration record (eMAR).				
Interpretation	An eMAR provides a comprehensive view of medication administration to the medical practitioners administering medications. The electronic Medication Administration Record (eMAR) system should have the capability to record drugs administered using a specific template. The eMAR should contain: • Dosage: The prescribed amount of the medication. • Route of Administration: The method by which the medication is administered (for example, oral, intravenous, subcutaneous). • Date and Time: When the medication was given. • Administering Personnel: The name or initials of the person who administered the medication and who verified the medication in case of high - risk medications.				

	• Record of any medication administered based on verbal orders.

Category	Commitment	Head	EMR	Type	Functional
Commitment c.	The system maintains records of medical implants.				
Interpretation	The system shall maintain record batch number, serial number, etc. of medical implants (including stents, prosthetics). The system shall also capture additional details of implants such as (implant identifier, type, size, manufacturer, lot number, and expiration date), The details should also include patient identifier and associated procedure details. This information should be documented in the patient's medical record as well as in the discharge summary. This information is vital for tracking individual implants, implant performance tracking and recall management (where needed).				

Standard

MOM.4.	**The system manages and supports the implementation of emergency medication protocols and maintains records.**

Objective Elements

Category	Core	Head	EMR	Type	Functional
Core a.	The system maintains record of emergency medications and supports regular updating of the list.				
Interpretation	The system shall have the capability to maintain records of emergency medications at various locations and in crash carts. The inventory of these medications shall be updated based on the policy of the healthcare organization. The system shall also be able to capture the usage and timely replacement of the emergency medications.				

Category	Core	Head	EMR	Type	Functional
Core b.	The system generates records of medication errors.				
Interpretation	The system shall assist the hospital in maintaining records of medication errors including near misses, medication errors and adverse drug reactions. The system shall also have the capability to do a detailed analysis of such errors for pharmacovigilance.				

Category	Achievement	Head	EMR	Type	Functional
Achievement c.	The system has the capability to create an analytical dashboard for consolidating data on medication error.				
Interpretation	The system should be able to create an analytics dashboard for consolidating medication error data, enabling trend analysis over time to guide quality improvement efforts.				

Category	Achievement	Head	EMR	Type	Functional
Achievement d.	The system supports the implementation of emergency medication protocols for critical scenarios.				
Interpretation	The system shall provide checklists to ensure accurate inventory tracking and management in order to implement emergency medication protocol for critical scenarios. It benefits healthcare organizations by: • Preventing Waste: By using checklists, healthcare organizations can systematically monitor stock levels. This proactive approach helps prevent shortages and minimize the wastage of essential medications. • Reducing Errors and Oversights: The checklist ensures that inventory-related tasks are consistently performed according to established policies. This reduces the risk of errors and oversights, enhancing patient safety. • Enhancing Efficiency: Digital checklists allow healthcare organization staff to access and update inventory information in near real-time. This streamlines process and improves overall efficiency. • Better Patient Care: With essential information at their fingertips, healthcare organization staff can focus on providing high quality patient care. Timely access to inventory details helps avoiding errors and ensuring smooth operations.				

Chapter 4

Digital Application Controls (DAC)

Intent of the Chapter:

With the increasing use of Digital technologies in a healthcare organization, it is imperative for HIS/EMR systems to provide secure and easy access to all stakeholders. This chapter focuses on ease of access and provisions to protect the security and privacy of personal health data. By prioritizing compatibility, security, and ease of use, the system can empower healthcare professionals to focus on patient care while maintaining data integrity.

The system should be designed to function seamlessly across major web browsers. The system should have controls in place to secure data i.e., data is encrypted at-rest (in all places, including back-up) and in-transit.

The system should have robust capability to ensure that all patient data sharing outside the healthcare organization (or with other departments within the healthcare organization) happens with appropriate patient consent.

The systems should take cognizance of India's Personal Data Protection Act 2023, which establishes a framework for the processing of personal data, ensuring the protection of individuals' privacy. It mandates the consent of individuals for data processing, outlines individuals' rights such as data access and correction, and imposes obligations on data fiduciaries regarding data handling and security. The act also introduces penalties for data breaches and non-compliance, and it establishes the Data Protection Board of India to oversee enforcement. There are special provisions for the processing of children's data.

Summary of Standards	
DAC.1.	The system provides secure and flexible access to users.
DAC.2.	The system has robust access and data security controls

Standard

DAC.1.	The system provides secure and flexible access to users.

Objective Elements

Category	Commitment	Head	Common	Type	Technical
Commitment a.	The system supports secure URL access.				
Interpretation	The system shall enhance the security and integrity of patient data by offering secure URL access. Authorized users with proper credentials should be able to access the system through designated URLs. This implementation mitigates the risk of unauthorized access, ensuring that patient information remains confidential and protected from potential security breaches. If there is an urgent need to provide access from outside the healthcare organization, it should be through a VPN/two-factor authentication for remote access, for example through OTP on mobile. This feature is relevant for web-based and hosted applications.				

Category	Achievement	Head	Common	Type	Technical
Achievement b.	The system supports the application usage on multiple devices.				
Interpretation	The system shall support users to seamlessly access the application through multiple devices including desktops, laptops, tablets, and mobile devices. It should be able to dynamically detect the device's resolution and adjust the display accordingly (a responsive design is recommended). This approach ensures a consistent and optimized user experience across various devices, enhancing accessibility and usability. This feature also empowers healthcare professionals to stay connected and efficiently perform critical tasks while on the move. Note: Specific modules of HIS/ EMR may not be accessible on tablet or mobile devices for security reasons. Also, some modules (e.g., patient portal) may be only designed for tablet or mobile devices.				

Category	Commitment	Head	Common	Type	Technical
Commitment c.	The system supports cross-browser compatibility where applicable.				
Interpretation	The system shall have the capability to be used with common browsers (including Chrome, Microsoft Edge and Safari) to ensure a consistent user experience across browsers.				

	The systems should provide details such as the preferred browser and specifications like compatible version, screen resolution, etc.

Category	Excellence	**Head**	Common	**Type**	Technical
Excellence d.	The system offers multiple digital channels for the patient to engage with healthcare organizations and avail of healthcare services.				
Interpretation	The system shall offer multiple digital channels for patients to engage with their healthcare organization and medical professionals, based on the user preferences. This helps healthcare organizations enhance patient engagement and service delivery. Key delivery channels may include: • Web • Email • Online messaging • Chatbot • SMS • Mobile/Tablets (Android, IOS) • PHR app • Kiosk				

Category	Excellence	**Head**	Common	**Type**	Technical
Excellence e.	The system supports single sign-on.				
Interpretation	The system shall be capable of providing Single Sign-On (SSO) functionality. This feature enables authorized users to access multiple applications and systems using a single set of login credentials. By streamlining the authentication process, SSO enhances user convenience, reduces the need for multiple logins, and improves overall system accessibility.				

Category	Achievement	**Head**	Common	**Type**	Technical
Achievement f.	The system supports a mobile application for medical professionals that is compatible with the prevalent mobile operating systems.				
Interpretation	The system shall support a mobile application that is compatible with the leading mobile operating system, for example Android and/or IOS operating systems. This enables healthcare professionals to efficiently manage common tasks from their smartphones or tablets.				

	The common tasks which should be supported on a mobile application include-View Patient history, Medication records, Records of laboratory and diagnostic investigations etc. Mobile applications should be updated regularly with the latest feature/ security updates.

Standard

DAC.2.	**The system has robust access and data security controls.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Technical
Core a.	The system is able to encrypt all the healthcare data at rest and that in transmission.				
Interpretation	To safeguard personal and sensitive data from unauthorized access and maintain confidentiality, the system shall ensure that all healthcare data at rest is encrypted (including backup data). Also, all healthcare data in transmission should be encrypted. The system should employ contemporary data encryption techniques. These techniques utilize encryption algorithms and protocols to securely encode sensitive PHI (Personal Health Information).				

Category	Core	**Head**	Common	**Type**	Technical
Core b.	The system provides role-based access to patient data in line with the role assigned to the healthcare staff.				
Interpretation	The system shall support role-based access based on rules configured by the healthcare organizations. Typical roles could be medical practitioners, nursing staff, administrative staff, and other authorized personnel. Each user should be granted permissions and data access rights based on their role and responsibilities within the healthcare organization to prevent unauthorized individuals from accessing sensitive patient information. The system should capture the outcome of regular reviews and update access controls to reflect changes in staff roles and responsibilities.				

Category	Commitment	Head	Common	Type	Technical
Commitment c.	The system configures rules to capture and retain audit logs.				
Interpretation	Administrators shall have the ability to configure rules within the system, specifying how audit logs should be collected and retained. These logs should capture details such as: User Information, Action Type, Actions performed, Timestamp, Status and IP Address login. Automated tools may be deployed for continuous monitoring and analysis of audit logs to detect and respond to security incidents promptly. Audit logs for key events and transactions should include successful log-in, unsuccessful log-in, patient registration, patient discharge etc. This capability allows control over the recording of system activities, ensuring compliance with requirements and facilitating any forensic analysis when needed.				

Chapter 5

Digital Operations Management (DOM)

Intent of the Chapter:

Given the need to build a robust HIS/EMR system, software development and support processes should need to adhere to best practices. Digital Operations Management chapter outlines the approach, controls, testing and documentation guidelines that software companies need to establish to ensure high quality deliverables.

The HIS/EMR vendor should be capable of providing maintenance and support in a timely manner with clearly defined service level agreements (SLAs). This is very important for building trust and comfort within healthcare organizations while using these systems in providing critical care delivery.

The software vendor should ensure the secure release of updates and patches to address identified software bugs and security issues. While systems go through ongoing enhancements, the vendor must be able to roll-back changes / upgrades, whenever they cause errors in operations or issues with system data.

Healthcare data needs to be preserved over time, both for care delivery and compliance to legal requirements. The system must have the ability to backup and retrieve healthcare data in a timely and efficient manner whenever required.

The system must also provide strong end-user controls e.g., password policy, auto-logout etc. to ensure that only authorized individuals are accessing the system.

Documentation is the backbone of effective software management. System documentation should be emphasized throughout the development process, and user manuals to support easy implementation and use should be available.

Finally, healthcare providers may desire to migrate to another HIS/EMR system based on their preferences or changing business needs. The HIS/EMR vendor must support the healthcare providers in achieving the migration to a new HIS/EMR system.

Summary of Standards	
DOM.1.	Standardized methodology is used to design and implement the system across the healthcare organization.
DOM.2.	The system provides software support and guidance to the users.
DOM.3.	The system captures and manages critical incidents.
DOM.4.	The system manages access controls to provide secure access to the users.
DOM.5.	The system supports the migration to new system whenever needed by healthcare organization.

Standard

DOM.1.	**Standardized methodology is used to design and implement the system across the healthcare organization.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Technical
Core a.	The system configures access rights based on the technical roles.				
Interpretation	The system shall have a role-based access control mechanism. Different technical user roles should be defined, each with varying levels of access privileges. This ensures that each user can only access information and functionalities relevant to their specific role. For example, a software developer and a technical support professional should have different access rights. One commonly used model for implementing hierarchical access control is Role-Based Access Control (RBAC). In RBAC, permissions are assigned to roles rather than individual users. Users are thereafter assigned to specific roles based on their responsibilities. The access privileges can be: Create Access: Allows the user to create records. Read Access: Allows users to view data. Update Access: Enables users to update data. Delete Access: Permits users to delete the data.				

Category	Core	Head	Common	Type	Technical
Core b.	The system provides a help section in the system to guide the users.				
Interpretation	The system shall include a help section designed to offer guidance and support for users. This feature should encompass documentation, frequently asked questions (FAQs), and tutorials. Its purpose is to assist users in understanding system functionalities, troubleshooting common issues, and optimizing their overall user experience.				

Category	Core	Head	Common	Type	Technical
Core c.	The system has a robust security mechanism to protect data against external vulnerabilities.				
Interpretation	The system shall be free from known technical vulnerabilities listed by various cyber security organizations. This requirement is similar to the requirements of WASA certification. The system should be WASA compliant and must obtain a formal WASA certification at least every 2 years or whenever there is a major upgrade of the systems, whichever is earlier. Apply regular updates and patches in the system to mitigate vulnerabilities. Monitor systems for suspicious activities and respond promptly to incidents. Good references for ensuring security in HIS/EMR systems could be OWASP and SANS guidelines, adhering to secure coding practices such as input validation, output encoding, and authentication controls as outlined in OWASP's Top Ten and SANS CWE Top 25 Most Dangerous Software Errors to avoid common pitfalls.				

Category	Commitment	Head	Common	Type	Technical
Commitment d.	The system is capable of sharing the master data across all the modules of the system.				
Interpretation	The system shall store and share master files and data across all modules. This feature is essential for maintaining consistent system performance, preventing data duplication, and ensuring that the master data remains efficient and responsive.				

Category	Core	Head	Common	Type	Technical
Core e.	The system is capable of taking a backup/ archiving old data.				
Interpretation	The system shall be capable of data backup/ archive, empowering administrators to systematically retain and access data for a specified retention period depending on the law of the state or healthcare organization requirements (e.g., 5 years or as notified by state laws). This will help the system to adhere to the data compliance requirements as per industry best practices. The system shall be capable of retrieving and restoring the backup whenever needed. The system shall follow the data backup/archiving policy/SOP as documented by the healthcare organization.				

Category	Commitment	Head	Common	Type	Technical
Commitment f.	The source code management processes are defined and practiced by the HIS/EMR vendor.				
Interpretation	The HIS/EMR vendor shall follow well-defined source code management processes. These processes should include organized versioning and thorough documentation (e.g., high level design, low level design, and solution architecture). By adhering to these practices, the vendor can enhance collaboration among developers, facilitate code review, and contribute to the overall stability and maintainability of the system.				

Standard

DOM.2.	**The system provides software support and guidance to the users.**

Objective Elements

Category	Core	Head	Common	Type	Technical
Core a.	The HIS/ EMR vendor disseminates timely patches or updates to address key functionality bugs or identified security issues.				
Interpretation	The HIS/ EMR vendor shall consistently provide timely patches and updates to address key functionality bugs or identified security and other issues. This proactive approach ensures that the system remains robust for care delivery and resilient against emerging threats, vulnerabilities, and evolving cybersecurity challenges.				

Category	Core	Head	Common	Type	Technical
Core b.	The HIS/EMR vendor provides maintenance and user support in a timely manner with clearly defined service level agreements (SLAs).				
Interpretation	The system shall ensure continuous functionality and prompt issue resolution. This should include regular updates, patches, and responsive customer support. The HIS/EMR vendor shall define service level agreement (SLA) with healthcare providers and track performance against these SLAs on a regular basis. Maintenance of an application should include several critical aspects such as performance monitoring, memory management, ensuring system availability and adequate documentation (user manual, design documents, code change history, installation guides, API services documents, etc.) of the application. Additionally, skilled IT support staff should be available to provide guidance, perform regular application maintenance, address technical issues, and ensure secure and smooth system operation. Support channels can include in application support, email, online messaging platform, or phone support. Levels of support, support process and resolution time should be clearly defined by EMR/HIS vendor: L0 Support: Well defined self-help process L1 Support: Base end-user support (for functionality or technical issues) L2 Support: Support related to system or admin configuration requirements or issues. Needs deeper expertise in handling technical problems, technology, and product L3 Support: Support related to software bugs or changes in software deployment. Needs in-depth expertise in computer hardware, software, system architecture, and network configurations. Tasks include diagnosing intricate software bugs, optimizing system performance, and addressing hardware issues. By adhering to well defined SLAs and support practices, the vendor can ensure reliable and efficient support to healthcare organizations. In many cases, L0 and L1 support can be managed by the healthcare organization themselves, whereas the HIS/EMR vendor can provide L2 and L3 support for the product.				

Standard

DOM.3.	**The system captures and manages critical incidents.**

Objective Elements

Category	Core	Head	Common	Type	Technical
Core a.	The system has the capability to log critical security incidents and events information.				

Interpretation	The system shall be able to log critical security incidents and events, enabling systematic issue resolution, audit trails, compliance with security standards, and post-incident analysis. This aids in improving the overall robustness of the system over time.

Category	Commitment	**Head**	Common	**Type**	Technical
Commitment b.	The system has capability to roll-back changes by a designated IT officer, whenever needed.				
Interpretation	The system shall be able to roll-back any changes made e.g., upload of patches, upgrades, and transactions. This roll-back functionality ensures that the system can be correctly restored to the previous working state in case of any errors / failures with the new changes rolled out in the system, and the staff/ departments can continue working on the previous working state with no loss of system data.				

Standard

DOM.4.	**The system manages access controls to provide secure access to the users.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Technical
Core a.	The system follows a defined password policy for user authentication.				
Interpretation	The system shall have password policy functionality, allowing administrators to define and enforce specific rules for user passwords. These policies may include requirements such as minimum length, complexity, and expiration intervals, password renewal timeframe, ensuring a high level of security and compliance with industry standards. The system must ensure that the password policy meets minimum requirements for example: • At least 8 characters (alpha-numeric, 1 special character) • Changes in passwords at least every 90 days • Avoidance of commonly used passwords (e.g., Password123)				

Category	Core	Head	Common	Type	Technical
Core b.	The system has the capability to configure auto screen lock feature.				
Interpretation	The system shall have the capability to set up an automatic screen lock feature (i.e., idle after a certain duration). This functionality enhances security by automatically locking user screens after a specified period of inactivity, thereby preventing unauthorized access in situations where users leave their workstations unattended.				

Category	Core	Head	Common	Type	Technical
Core c.	The system has the capability to block user-based security provisions.				
Interpretation	To enhance security measures, the system shall include a user block feature. This functionality should automatically block user access following a specified number of unsuccessful logins attempts or access from multiple locations, thereby reducing the risk of unauthorized entry resulting from password guessing.				

Category	Commitment	Head	Common	Type	Technical
Commitment d.	The system has effective centralized user management.				
Interpretation	The system shall have the feature for centralized user management, enabling efficient administration of user accounts, permissions, and roles from a single interface. This streamlines user management, simplifies account maintenance, and ensures security and consistency.				

Category	Achievement	Head	Common	Type	Technical
Achievement e.	The system has the capability to configure multi-factor authentication (MFA).				
Interpretation	The system shall offer a Multi-Factor Authentication (MFA) configuration. MFA adds an extra layer of protection by requiring users to verify their identity through multiple authentication methods. Administrators should be able to customize and configure MFA settings based on the healthcare organization's security policies, ensuring enhanced data protection and user verification. MFA can include mobile OTP, fingerprint reader, facial recognition software, etc.				

Standard

DOM.5.	**The system supports the migration to new system whenever needed by healthcare organisation.**

Objective Elements

Category	Core	**Head**	Common	**Type**	Technical
Core a.	The system supports the migration to new system whenever needed by healthcare organization.				
Interpretation	System vendor must provide a documented system and data migration plan. The plan must include list of data which will be made available during migration and what data will not be made available during migration to a new system. The system vendor must provide documentation with the details of the relevant data structures and definitions of all data element to healthcare provider. The system vendor must provide documentation on how the system data can be exported, and how it can be retrieved by a new system being implemented by healthcare provider.				

Chapter 6

Finance and Procurement Management (FPM)

Intent of the Chapter:

In today's rapidly evolving landscape, digitalization has become a cornerstone for efficient and streamlined business operations. For healthcare organizations, adopting digitalized finance, procurement, billing and insurance processes offers significant advantages - track finances and cashflows, manage procurement, patient billing and payment processes. This chapter focuses on how digital systems play a pivotal role in transforming finance and procurement processes as well as patient billing and claims processing, highlighting the various advantages and impact of these digital solutions for suppliers and for patients.

Finance and Procurement Process for Suppliers:

- **Asset Tracking and Management:** Systems should empower organizations to track assets such as medical devices, products, or supplies. Real-time visibility ensures optimal asset utilization and minimizes losses.
- **Stakeholder Communication:** Suppliers are the key stakeholders in any healthcare ecosystem. Digitalized finance processes ensure suppliers remain informed throughout the payment lifecycle. Automated notifications, status updates, and transparent communication enhances trust and fosters stronger relationships.
- **Supply Chain and Vendor Management:** Systems should extend their capabilities beyond finance to supply chain and vendor management. Real-time data on inventory levels, demand forecasts, and supplier performance enables proactive decision-making.
- **Vendor Collaboration:** Streamlined communication with vendors ensures timely deliveries, quality control, and cost-effective procurement.

Billing and Claims processes for patients:

- **Seamless Patient Billing:** The digitization of billing processes significantly enhances patient experience. Digital platforms should manage insurance claims electronically, reducing paperwork and processing time. Patients should have convenient options to settle bills through various channels including online banking, mobile apps etc. The system should be capable of performing automated calculations to minimize errors, ensuring accurate billing and prompt settlements.
- **Claim management:** Effective claim management involves handling insurance claims from initiation to resolution. Key steps include documenting and reviewing policy coverage, filing accurate and complete claims, responding to payor queries, and resolving the claims. The system plays a central role in automating claims processing, reducing burden for all stakeholders – healthcare organizations, patients and insurance providers.

Summary of Standards	
FPM.1.	The system provides the ability to manage the supply chain processes.
FPM.2.	The system manages vendor payments.
FPM.3.	The system performs patient billing functions.
FPM.4.	The system supports insurance payment functions.

Standard

FPM.1.	**The system provides the ability to manage the supply chain processes.**

Objective Elements

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment a.	The system configures masters, workflows and rules for procurement management.				
Interpretation	Procurement is a critical process through which healthcare organizations acquire medical equipment, products, or services they need. The procurement process comprises of following key capabilities: • Need identification • Supplier identification • Solicitation of bids • Supplier selection • Purchase order approval • Order placement • Order receipt & quality control The system shall have the ability to configure masters needed for procurement and inventory management, including material master, supplier master etc. The system should have the capability of configuring workflows for supplier onboarding, procurement, quality control and stock management. The system should provide flexibility to adapt workflows and rules of procurement and inventory management based on the specific product or services needs of a healthcare organization. For example, medical devices vs general supplies.				

Category	Commitment	Head	HIS	Type	Functional
Commitment b.	The system tracks the movement of stocks within the healthcare organization.				
Interpretation	The system shall capture the stock movements across healthcare organization units/ departments. It shall clearly indicate the available stock throughout these units/ departments for example OPD, IPD, day care, sub store, laboratory, pharmacy, OT, CSSD, Laundry, Kitchen etc. The system should be configurable to generate alerts when stock levels approach or fall below certain thresholds. This capability helps in preempting shortages and ensures optimal resource utilization across the organization.				

Category	Commitment	Head	HIS	Type	Functional
Commitment c.	The system generates and manages indents.				
Interpretation	The system shall have the capability of creating and managing indents. This capability enables healthcare organizations to ascertain available stocks and efficiently place orders.				

Category	Commitment	Head	HIS	Type	Functional
Commitment d.	The system creates and tracks the purchase order.				
Interpretation	The system shall have the capability to create, modify, and track purchase orders as per the healthcare organization's policy. The system should streamline the procurement process, minimizing the time and effort needed for creating and tracking the orders.				

Category	Commitment	Head	HIS	Type	Functional
Commitment e.	The system captures the receipt of items as per the purchase order and generates receipt notes, and flag discrepancies.				

Interpretation	The system shall generate a material receipt note to acknowledge the receipt of goods and services. This document enables healthcare organizations to accurately track goods and services received, including their quantity, quality, price and life span/expiry, etc. The system should be capable of issuing an alert when discrepancies are detected either in (a) quantity (b) price or (c) quality. This feature ensures accurate inventory management. The system shall include reconciliation functionality, reconcile with returned, discarded stocks and purchased stocks.

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment f.	The system records feedback about the quality of purchased goods.				
Interpretation	The system shall record quality concerns and feedback on goods received. This feature enables healthcare organizations to document and track issues such as item expiry dates, volume discrepancies, and SKU (Stock Keeping Unit) numbers. A scoring mechanism may be used to rate the quality of suppliers.				

Standard

FPM.2.	**The system manages vendor payments.**

Objective Elements

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment a.	The system configures rules and workflows to manage vendor invoices.				
Interpretation	The system shall capture, validate, and process vendor invoices as well as configure rules associated with these processes.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment b.	The system supports payments through multiple online/digital channels.				
Interpretation	The system shall support a range of commonly used digital payment channels for making payments. These channels include Electronic Funds Transfer (EFT), wire transfer, online bill payment through a bank's website, mobile payment applications, Unified Payments Interface (UPI), credit/ debit card payments, etc.				

	The system shall also have the capability to capture the mode of payment along with other relevant information for easy reconciliation.

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment c.	The system maintains a record of all payables and receivables.				
Interpretation	The system shall have the capability of maintaining comprehensive digital records of all payable and receivables. In the context of a healthcare organization this includes detailed financial transactions with suppliers.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment d.	The system generates debit/credit notes for suppliers.				
Interpretation	The system shall have the capability to generate both debit notes and credit notes for suppliers.				

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement e.	The system configures individual supplier payment scheduling.				
Interpretation	The system shall include a payment scheduling capability allowing users to schedule payments to individual suppliers at specific times, thereby preventing delays.				

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement f.	The system monitors and tracks vendor payables.				
Interpretation	The system shall incorporate vendor payment functionalities to streamline all vendor bill payments. It should include a dashboard for tracking payments and monitor the total payables in real-time.				

Category	Achievement	Head	HIS	Type	Functional
Achievement g.	The system issues notifications to the suppliers regarding their payment status.				
Interpretation	The system shall be able to send notifications to suppliers regarding payment status or updates including details of relevant invoices. This can be facilitated through a vendor portal or direct communication e.g., SMS, email, online messaging platform, etc.				

Standard

FPM.3.	**The system performs patient billing functions.**

Objective Elements

Category	Core	Head	HIS	Type	Functional
Core a.	The system configures rates for various services provided by healthcare organizations.				
Interpretation	The healthcare organization shall configure rates for all the services being offered. This flexibility allows for customized pricing based on the services provided.				

Category	Core	Head	HIS	Type	Functional
Core b.	The system configures patient billing templates.				
Interpretation	The system shall have the feature of configurable billing templates, tailored to the needs of healthcare organization sensuring consistency across all billing documents. The template includes at least the following but is not limited to- a) Patient unique identifier b) The date on which the bill was generated and the date(s) over which the services were delivered c) Details of the services availed In addition, the bill shall clearly mention whether it is an interim or final bill and bear all necessary disclaimers as per the healthcare organization's policy.				

Category	Commitment	Head	HIS	Type	Functional
Commitment c.	The system generates estimates for the care/services rendered.				

Interpretation	The healthcare organization system shall be capable of generating estimated costs for selected packages. These estimates should include all relevant parameters such as consulting physician fees, medication costs, surgery costs (if applicable), room charges based on the length of stay, and applicable taxes.

Category	Core	**Head**	HIS	**Type**	Functional
Core d.	The system generates patient bills as per the goods and services provided.				
Interpretation	The system shall generate bills based on the services provided, goods and services consumed, taxes, and discounts. The billing process begins by gathering essential information from patients or insurers, including insurance policy numbers and demographic data. After insurance clearance , the healthcare organization generates and sends patient bills or statements for any outstanding balances. The system should support discounts at various levels: individual item level, category level, or across the entire bill.				

Category	Core	**Head**	HIS	**Type**	Functional
Core e.	The system supports payments through various digital payment modes.				
Interpretation	The system shall support multiple digital payment methods for patients to pay their medical bills. These include cash, credit / debit cards, UPI, bank transfers and other digital payments.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment f.	The system manages the patient's account and provides details on payment transactions and other relevant details to the patient.				
Interpretation	The system shall manage the patient's account and captures episode or stepwise billing details. The system shall provide details of treatment charges, payment information to the patients through email, SMS, online messaging platform or using a patient portal.				

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement g.	The system has the capability to send out/receive system and workflow related triggers.				

Interpretation	System related notifications may include scheduled downtimes, and standardized process information and would usually be exchanged between the healthcare organization and the payer (to and from Payors, Patients, and any other interested parties (e.g., caregivers)). Workflow related notifications may include changes in the status of a claim step, need for additional information, etc., and would usually be sent to patients. To enable notification functionalities effectively, the system should ensure: • Receiving and Responding to Notifications: Capable of receiving and responding to system-related notifications such as scheduled downtimes and standardized process information exchanged between the healthcare organization and the payer. Additionally, able to handle workflow-related notifications, such as changes in claim status or requests for additional information, which are typically sent to patients. • Triggering Notifications to Patients: Able to trigger notifications to patients regarding changes in their healthcare processes or statuses, ensuring timely and relevant communication. • Safeguarding Patient Information: Ensuring robust measures to protect the privacy and security of patient information during all stages of notification exchange

Standard

FPM.4.	**The system supports insurance payment functions.**

Objective Elements

Category	Core	**Head**	HIS	**Type**	Functional
Core a.	The system captures patients' insurance details including their eligibility and coverage.				
Interpretation	The system shall capture insurance eligibility and coverage post-verification which could be performed either digitally or manually. This includes confirming the patient's insurance details such as policy number, coverage dates, co-payments, deductibles, and any applicable limitations or exclusions.				

Category	Commitment	Head	HIS	Type	Functional
Commitment b.	The system enables easy patient authentication.				
Interpretation	The system shall assist in smooth auto-verification via various digital modes available, for example digilocker. Auto verification enables the fetching of various KYC documents (with the help of an OTP from the patient) that are required as a part of the initial documentation process for an insurance patient at any healthcare organization.				

Category	Commitment	Head	HIS	Type	Functional
Commitment c.	The system captures pre-authorization details from the payor for planned treatment/procedures.				
Interpretation	The system shall be able to capture pre-authorization or pre-approval information for billing requirements. Pre-authorization from the payor could be performed either digitally or manually. Pre-authorization functionality allows the system to submit planned treatment details to payors for pre-approval on the estimated treatment costs done either digitally or manually. The payer category includes TPA/Insurance companies or any applicable government insurance schemes.				

Category	Achievement	Head	HIS	Type	Functional
Achievement d.	The system captures the claim submission for the payors.				
Interpretation	The system shall be able to capture the details and cost of the final treatment provided to the patient and as submitted for reimbursement purposes to the payor (can be done digitally or manually). In addition to the claim submission, the system should also have the capability to capture any associated or relevant correspondence made with the insurance company towards the claim settlement.				

Category	Achievement	Head	HIS	Type	Functional
Achievement e.	The system checks the status of the requests.				

Interpretation	The system shall be able to request the latest status information for specific payor transactions - Coverage Eligibility, Pre-Authorization and Claims. To enable this functionality, the system should be able to: • **Send Status Check Requests** to the payor for specific payor transactions. • **Receive and process status responses** from the payor and update the status of the request. • **Protect Patient Information** throughout the information exchange process.

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment f.	The system notifies the patients about the status of their claims.				
Interpretation	The system shall have the capability of sending notifications to patients regarding their claim status. These notifications can be sent by SMS, email, online messaging platform or made accessible through the patient portal.				

Category	Excellence	**Head**	HIS	**Type**	Functional
Excellence g.	The system receives payment reconciliation communication from the payor and responds to it.				
Interpretation	The system shall be able to receive payment reconciliation information from the payor, which allows healthcare organizations to keep track of the payment settlements for each adjudicated claim. To enable this functionality, the system should be able to: • Receive a payment reconciliation notice from the payor. • Process and respond to the payment reconciliation notice with the status. • Safeguards the privacy and security of patient information during the information exchange.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment h.	The system shows relevant dashboard(s) of all pre-authorization and claim statuses.				

Interpretation	The system shall provide dashboards displaying relevant information regarding pre-authorization requests and insurance claims. This functionality facilitates seamless claim reconciliations by presenting essential data and status updates in a consolidated format. This capability enhances operational efficiency, facilitates effective claim management, and contributes to improved patient flow within healthcare facility.

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement i.	The system has the capability to submit health insurance claims via the National Health Claims Exchange (NHCX).				
Interpretation	The system shall be able to submit health insurance claims via National Health Claims Exchange (NHCX). NHCX enables the standardization and automation of health claim-related information exchange between payors, healthcare organizations, beneficiaries, and other stakeholders. NHCX is supported by the National Health Authority (NHA) and aligns with the IRDAI guidelines. To support NHCX, the systems must have complied with the following: 1. M1 integration requirements of ABDM 2. Integration with NHCX APIs 3. Attain NHCX certificate from NHA To learn more about NHCX and how HIS/EMR can get certified, visit the NHA website.				

Chapter 7

Human Resource Management (HRM)

Intent of the chapter

Human resources are a vital aspect of any organization, serving as a key asset for effective and efficient operations. The Human Resource Management (HRM) chapter defines how leveraging HIS systems can optimize HR processes and enhance overall organizational efficiency. By digitizing routine tasks such as onboarding, records management, attendance tracking, and training administration, HIS frees HR staff from manual administrative burdens. This chapter highlights the capabilities designed to minimize manual data entry and processing, thereby enabling healthcare organizations to achieve operational efficiency.

A centralized database for staff information helps to ensure accuracy and compliance with privacy regulations.

The system should enable staff to independently manage their HR information, thereby reducing the workload of the HR team and allowing them to focus on more strategic tasks.

The system should be capable of providing critical information on demand. Access to workforce analytics and performance metrics empowers informed decision-making, driving organizational success.

The system should efficiently manage training needs, including induction programs and upskilling requirements, while maintaining comprehensive records of these activities.

Digital Human Resource Management goes beyond administrative functions, acting as a catalyst for organizational excellence. Embracing digitalization empowers the workforce, ensures compliance, and positions organizations for sustained growth.

Note: The term “employee” refers to all salaried personnel working in the organization. The term “staff” refers to all personnel working in the organization including staff, “fee for service” clinicians, part time workers, contractual personnel, and volunteers.

Summary of Standards	
HRM.1.	The system manages human resource administration.
HRM.2.	The system manages recruitment and exit related activities.
HRM.3.	The system manages the training needs of the staff.

Standard

HRM.1.	**The system manages human resource administration**

Objective Elements

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment a.	The system captures personal and professional data (master data) related to medical and non-medical staff.				
Interpretation	The system shall manage essential master data elements related to staff. This involves details such as names of departments, structures, staff master data, role master, and department master. The system shall also maintain staff's personal files which contain information such as their contact details, employment history, health records, credentialing and privileging performance evaluations, trainings and certifications, job duties and responsibilities, benefits and compensation, workplace related incidents, disciplinary action (if any) and other important documentation related to their employment with the hospital. The system should also include staff information forms, education forms, and professional record forms, enabling administrators to input and update essential staff details. These details encompass personal information such as names, addresses, phone numbers, emergency contacts, email addresses, gender, date of birth, salary bank account information, education, skills, certifications, degrees and registration. Additionally, the system should support the uploading of important documents such as birth certificates, Aadhaar cards, Healthcare Provider Registration number (ABDM-HPR), PAN cards, driving licenses, photographs, and registration certificates. The forms should include fields for personal information, job roles, qualifications, and other relevant data. Additionally, the system should maintain staff family details, including the names and ages of spouses and children, and information about parents. In terms of functionality, the system should support operations such as Create, Read, Update, and Delete for staff records including contractual staff. Additionally,				

	it should include management functions for controlling permissions and ensuring data security. The system should also extend its capability to include the setting up leave types and policies, as well as setting up parameters needed for attendance, payroll, skills & competencies, and training.

Category	Core	**Head**	HIS	**Type**	Functional
Core b.	The system assigns unique IDs and role/s to each staff.				
Interpretation	The system shall be able to assign a unique identifier to each member of staff within the healthcare organization. This unique ID is essential for organizing data efficiently and facilitating seamless retrieval of individual staff information. Upon creating a new staff record and providing the respective role, the system should automatically generate a unique staff ID, ensuring that each ID remains exclusive across the entire system.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment c.	The system has the capability to configure duty rules for the staff.				
Interpretation	The system shall have the capability to configure duty rules for the staff, which is essential for efficient workforce scheduling. Real-time parameters for this process may include dynamic adjustments to templates based on factors such as staff availability, skill sets, unexpected absences, urgent tasks, or operational changes and compliance with labour regulations. Additionally, the system should be configured to capture, store, perform, and execute operations in real-time based on available data. This includes staff-specific duty start and end hours for each shift and break, day offs, weekends, monthly leave allowance, additional shifts, shift codes, tour or event schedules, overtime, and extra shifts.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment d.	The system creates and manages a roster of the working staff.				
Interpretation	The system should be configurable to meet the staffing ratios as prescribed by the regulatory/statutory framework. The system shall enable administrators in the healthcare organization to create a staff roster based on regulatory/ statutory framework, staff availability, shifts assignment and workload distribution and historical workload patterns. The system				

	should be able to do shift swaps or changes on the staff request, with approval workflows managed by administrators to maintain roster integrity. The system may also be customized to offer automatic roster generation based on pre-defined templates that consider factors such as staff qualifications and compliance with labour regulations. The system should generate a report of the actual assignment of healthcare professionals for each location, each shift each day.

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement e.	The system communicates shift schedules to all staff.				
Interpretation	To streamline staff communication related to shift schedules, changes, swap requests, and important announcements, the system shall have robust communication capabilities. Such capabilities can include mobile notifications, a centralized announcement board, or an integrated messaging system. These tools facilitate seamless communication among staff members, promoting collaboration and addressing scheduling concerns in real-time.				

Category	Excellence	**Head**	HIS	**Type**	Functional
Excellence f.	The system predicts staffing needs based on historical data and workload.				
Interpretation	Predicting staffing needs, based on historical data and workload, requires analytics and forecasting demand/support capabilities based on historical data. The system should enable administrators input historical staffing data, patient volume data and develop staffing needs. The staffing models should provide easy to understand output and visual trends. The system may set up automated alerts and notifications for administrators when staffing levels deviate from predicted patterns or when immediate adjustments are needed based on sudden changes in patient volume.				

Category	Commitment	**Head**	HIS	**Type**	Functional
Commitment g.	The system manages staff attendance and maintains records.				
Interpretation	The system shall have a comprehensive attendance management module. This module should provide options for capturing attendance – manual entry, biometric verification (fingerprint or face detectors), integration with attendance tracking devices (access cards), or location-based recording (mobile apps or web interfaces). The system shall maintain records of attendance. The system will display the leave balance for the staff and give options for applying for leave.				

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Category	Excellence	Head	HIS	Type	Functional
Excellence h.	The system maintains performance appraisal ratings for all the hospital staff.				
Interpretation	The system shall facilitate the evaluation of the performance of staff and maintain performance appraisal ratings. The system shall include a performance rating form where administrators can input and update the ratings for individual hospital staff based on their performance evaluations. The system may also have a mechanism for gathering feedback from peers, subordinates, and supervisors to provide a comprehensive view of staff's performance. The system should ensure data accuracy, accessibility, and historical tracking of performance ratings over time.				

Category	Commitment	Head	HIS	Type	Functional
Commitment i.	The system has the capability to calculate, maintain, and share staff payroll.				
Interpretation	The system shall have the capability to compute and distribute staff payroll, based on preconfigured rules. The system should automate payroll calculations based on attendance, leaves, and deductions, ensuring accurate and timely salary processing. The system may be integrated within the payroll module which enables staff to view and download configured rules for salary components, tax calculations, pay slips, and other payroll-related documents.				

Standard

HRM.2.	**The system manages recruitment and exit related activities.**

Objective Elements

Category	Achievement	Head	HIS	Type	Functional
Achievement a.	The system configures and manages rules to manage the staff recruitment process.				

Interpretation	The system shall configure rules for the staff recruitment process which can be facilitated through a staff recruitment module. This may include various recruitment processes including requisition approval, candidate screening, interview coordination, offer negotiation, and acceptance onboarding documentation, background verification etc. Configurable workflows and notifications can be incorporated to ensure adherence to the defined recruitment process rules.

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement b.	The system configures and manages rules for the staff exit process.				
Interpretation	The system shall have the capability to manage the staff exit process. This module should feature an exit rule configuration that allows administrators to efficiently handle activities such as exit processing and may include exit interview scheduling, equipment return verification, knowledge transfer documentation, final clearance approvals, account deactivation, and documentation requirements. Reporting capabilities provide insights into exit trends, reasons for departure, and compliance metrics. Configurable workflows and notifications can be integrated to ensure adherence to defined exit process rules.				

Standard

HRM.3.	**The system manages the training needs of the staff.**

Objective Elements

Category	Achievement	**Head**	HIS	**Type**	Functional
Achievement a.	The system maintains records of induction training and feedback from the new joiners.				
Interpretation	The system shall capture onboarding training status and feedback of new joiners for effective onboarding. This feature enables the tracking of the progress of new staff through the onboarding process, ensuring completion of necessary orientation activities. Additionally, the system should provide a platform for new staff to share their feedback on the onboarding process, helping the organization identify areas for improvement. Typically, this functionality is incorporated into the onboarding module, using forms and workflows to collect induction status updates and feedback.				

Category	Achievement	Head	HIS	Type	Functional
Achievement b.	The system creates and manages training calendars for the staff.				
Interpretation	The system shall assist the human resource team to create and manage the training calendar for the staff. As per the healthcare organization policy, an annual training calendar can be planned for all the staff. These include trainings based on specific job descriptions, training on safety and quality and on-going professional training of staff. Further, training needs can be identified during the performance evaluation process. This feature enables the human resource team to schedule and communicate upcoming training programs, workshops, and events effectively. Typically, this functionality allows planning and scheduling of training and provides information such as dates, topics, modes, pre-requisites and trainer information to the staff.				

Category	Commitment	Head	HIS	Type	Functional
Commitment c.	The system supports the scheduling of the training programs for the staff.				
Interpretation	The system shall capture the attendance along with post training evaluation for each staff. The system shall also have provisions to collect feedback on the effectiveness of training initiatives. Human resource teams can use these reports to evaluate participation and the impact of training sessions. The human resource team can also generate customized reports based on criteria such as training type, date range, and staff attendance. This capability provides valuable insights for continuous improvement and strategic decision-making.				

Chapter 8

Information Management System (IMS)

Intent of the Chapter:

The intent of this chapter is to provide a comprehensive framework of standards and guidelines for Hospital Information Systems (HIS) and Electronic Medical Record (EMR). The primary objective is to ensure interoperability, security, privacy, and integrity of patient data. By adhering to relevant digital health standards, organizations can enhance the functionality and reliability of their digital solutions.

Key standards and guidelines covered in this chapter include:
1. Interoperability and Continuity of Care
2. Key Performance Indicators and Analytics
3. Compliance with Quality and Security Standards

Additionally, the chapter also emphasizes the importance of robust consent management mechanisms that are aligned with data privacy laws.

By following these guidelines, healthcare technology providers can build open systems that form the backbone of a resilient and efficient healthcare ecosystem, ensuring trust and reliability in digital health solutions.

The intent is to ensure safeguarding patient privacy while leveraging technology to enhance health care delivery.

Summary of Standards	
IMS.1	The system supports healthcare data and interoperability standards for patient, clinical, and administrative information to ensure continuity of care, including ABDM.
IMS.2	The system has the capability to support NABH defined key performance indicators and analytical dashboards.
IMS.3	The system complies with Information Security (ISO 27001:2022) and Safety and Security of Health Software Products (ISO 82304) standards.

Standard

IMS.1.	**The system supports healthcare data and interoperability standards for patient, clinical, administrative information to ensure continuity of care, including ABDM.**

Objective Elements

<table>
<tr><td>Category</td><td>Core</td><td>Head</td><td>EMR</td><td>Type</td><td>Technical</td></tr>
<tr><td>Core a.</td><td colspan="5">The system supports a minimum set of clinical ABDM FHIR profiles to exchange data with other systems.</td></tr>
<tr><td>Interpretation</td><td colspan="5">FHIR – Fast Health Interoperability resource is a globally accepted standard for healthcare information management and exchange. The system should support ABDM FHIR profiles to exchange data with other systems.

ABDM provides a framework for implementation and exchange of FHIR to create an interoperable digital healthcare ecosystem.

The system should implement capture and exchange of the following ABDM FHIR resource profiles as a core capability.

<table>
<tr><th>Profile</th><th>Description</th></tr>
<tr><td>Diagnostic Report Record</td><td>This profile represents diagnostic reports including Radiology and Laboratory reports that can be shared across the health ecosystem.</td></tr>
<tr><td>OP Consult Record</td><td>This represents the outpatient visit consultation note which may include clinical information on any OP examinations, procedures along with medication administered, and advice that can be shared across the health ecosystem.</td></tr>
<tr><td>Discharge Summary Record</td><td>Clinical document used to represent the discharge summary record for ABDM HDE data set.</td></tr>
<tr><td>Immunization Record</td><td>This represents the immunization records with any additional documents such as vaccine certificate, the next immunization recommendations, etc.</td></tr>
<tr><td>Prescription Records</td><td>This represents the medication advice to the patient in compliance with the Pharmacy Council of India (PCI) guidelines, which can be shared across the health ecosystem.</td></tr>
</table>

ABDM FHIR standards for a reference are available at the National Resource center for EHR standards: https://www.nrces.in/ndhm/fhir/r4/index.html</td></tr>
</table>

<table>
<tr><td>Category</td><td>Commitment</td><td>Head</td><td>EMR</td><td>Type</td><td>Technical</td></tr>
<tr><td>Commitment b.</td><td colspan="5">The system supports an extended set of clinical ABDM FHIR profiles to exchange data with other systems.</td></tr>
</table>

Core Commitment Achievement Excellence

Interpretation	The system shall have the capability to capture and exchange the following ABDM FHIR resource profiles: **Profile** / **Description** Observation Vital Signs — This profile sets minimum expectations for the Observation Vital Signs to record, search, and fetch the details of the vital signs of a patient. Observation General Assessment — This profile sets minimum expectations for the Observation General Assessment to record, search, and fetch the details of the general health assessment of a patient. Procedure — This profile sets minimum expectations for the Procedure resource to record, search, and fetch procedures associated with a patient. Diagnostic Report Imaging — This profile represents the set of information related to the imaging diagnosis report generated by imaging services like Radiology, Cardiology, Endoscopy, etc. are ordered for the patient. Family Member History — This profile sets minimum expectations for the Family Member History resource for searching and fetching significant health conditions of a person related to the patient in the context of care. ABDM FHIR standards for a reference are available at the National Resource center for EHR standards: https://www.nrces.in/ndhm/fhir/r4/index.html

Category	Achievement	**Head**	EMR	**Type**	Technical
Achievement c.	The system supports an advanced set of clinical ABDM FHIR profiles to exchange data with other systems.				
Interpretation	The system shall have the capability to capture and exchange the following ABDM FHIR resource profiles: ABDM FHIR standards for reference are available at the National Resource center for EHR standards: https://www.nrces.in/ndhm/fhir/r4/index.html **Profile** / **Description** **Health Document Record** — This represents the unstructured historical health records as a single of multiple Health Record Documents generally uploaded by the patients through the health locker and can be shared across the health ecosystem. **Wellness Record** — This represents regular wellness information of patients typically through the Patient Health Record (PHR) application covering clinical information such as vitals, physical examination, general wellness, women's				

		wellness, etc., that can be shared across the health ecosystem.
	Medication Statement	The Medication Statement resource can be used to record a patient's medication information. It is used to record the information about the medications consumed by the patient in the past, present, or future.
	Observation Lifestyle	This profile sets minimum expectations for the Observation Lifestyle to record, search, and fetch the details of the lifestyle of the patient.
	Observation Physical Activity	This profile sets minimum expectations for the Observation Physical Activity to record, search, and fetch the details of the physical activities of a patient.
	Specimen	This profile sets minimum expectations for the Specimen resource to searching for and fetching information regarding a sample to be used for the analysis of a patient.

Category	Excellence	**Head**	Common	**Type**	Technical
Excellence d.	The system has the capability to integrate with NHCX ABDM to submit and track health insurance claims.				

Interpretation

The system shall have the capability to support, capture and exchange NHCX ABDM resource profiles:

Reference: NHCX Profiles - FHIR Implementation Guide for ABDM v6.0.0 (nrces.in)

Profile	Description
Claim bundle	The profile is based on a Bundle of type collection, where all the supporting information required for processing claim can be shared. Multiple entries can be added in a bundle to provide information like financial, clinical, provision of health care services with payors and for reporting to regulatory bodies and firms which provide data analytics. The bundle can be generated depending on the nature of the request defined by 'use' element in a claim resource, like preauthorization, predetermination and claim and can be shared over NHCX ecosystem.
Claim Response Bundle	The profile is based on a Bundle of type collection, where adjudicated response to a Claim, Predetermination or Preauthorization related information is carried. Multiple entries included in a bundle carries the information and provides application level adjudication results.
Claim Eligibility Request Bundle	The profile is based on a Bundle of type collection, where all the information required to process Coverage Eligibility Request can be shared. Depending on the purpose of the request like validation, discovery, auth-requirement, and benefit data can be included in the entries of a bundle.

	Claim Eligibility Response Bundle	The Coverage Eligibility Response Bundle is a Bundle profile with type collection. The bundle profile provides the response and plan details from the processing of an Coverage Eligibility Request resource.
	Insurance Plan Bundle	This profile is based on a Bundle of type collection, providing a description of a health insurance package that consists of a comprehensive list of covered benefits (referred to as the product), associated costs (known as the plan), and supplementary details regarding the offering, such as ownership and administration, coverage area, contact information, and more.

Category	Core	**Head**	EMR	**Type**	Technical
Core e.	The system supports ICD 10/11 or SNOMED CT covering clinical terminologies for diagnosis, morbidity and mortality data accurately.				
Interpretation	The system shall support ICD 10/11 or SNOMED CT codes. The system should have the capability to prompt and recommend the relevant ICD 10/11 or SNOMEDCT codes. Implementation of ICD 10/11 or SNOMEDCT can be done through application user interface, backend matching services, or through dedicated medical coding service modules. The system shall support the following coding capabilities: • Implement upload, upgrade and deprecation and storage of codes by version into the system. • Populate applicable outbound FHIR data exchange messages with system supported codes.				

Category	Commitment	**Head**	EMR	**Type**	Technical
Commitment f.	The system supports laboratory tests and observation terminologies and implements coding of lab with LOINC codes.				
Interpretation	The system shall support laboratory tests and observation terminologies and implement coding of lab with LOINC codes. Logical Observation Identifiers Names and Codes LOINC is a standardized coding system used to identify and exchange laboratory test results and clinical observations across different healthcare settings and information systems. By integrating LOINC codes into its data architecture, the system ensures that laboratory data is uniformly coded and can be easily exchanged and interpreted by healthcare professionals, regardless of the healthcare facility or system where the tests were performed. NRCeS (National Resource Centre for EHR Standards) maintains a list of LOINC codes for the most common laboratory tests conducted in India. Implement of coding of laboratory results and observations can be done through application user interface, backend matching services or through dedicated medical coding service modules. The system should support the following LOINC related capabilities:				

	• Implement upload, upgrade and deprecation and storage of LOINC codes by version into the system. • Populate applicable outbound FHIR data exchange messages with system supported LOINC codes.

Category	Achievement	Head	EMR	Type	Technical
Achievement g.	The system supports DICOM (Digital Imaging and Communications in Medicine) standards for imaging datasets.				
Interpretation	The system shall provide the functionality for medical professionals to view captured images from multiple modalities, radiologist reports, readings and annotations relevant to the encounter and historical images. Medical imaging plays an instrumental role in diagnostics and quality of care. With increasing use of medical imaging, access to medical images along with clinical data of patients helps physicians provide better care. The system shall support following DICOM related capabilities • Support imaging visualization and storage of medical images • System should support modalities relevant to the medical specialties e.g., Ultrasound for mother and childcare, X-Rays/MRI/CT for orthopedics (viewing capabilities required for regular PC/laptop screens) • Implement the following ABDM imaging resource profiles a) DisgnosticreportImaging b) Imaging Study Reference: https://www.nrces.in/standards/dicom				

Category	Excellence	Head	EMR	Type	Technical
Excellence h.	The system supports SNOMED CT or NRCeS Drug Registry for coding of drugs and devices.				
Interpretation	The systems shall support use of SNOMEDCT or NRCeS Drug Registry for coding of drugs and devices. These terminologies enable healthcare systems to accurately identify and exchange information about medications and medical devices. The system shall support the following Drugs and Devices coding related capabilities: • Implement upload, upgrade and deprecation and storage of drug codes by version into the system. • Implement coding of prescriptions through application user interface, backend matching services or through dedicated medical coding service modules. • Populate applicable outbound FHIR data exchange messages with system supported drug codes.				

IMS.2	The system has the capability to support NABH defined key performance indicators and analytical dashboards

Objective Elements

Category	Commitment	Head	Common	Type	Technical
Commitment a.	The system electronically computes and publishes Key Performance Indicators (KPIs) per NABH accreditation standards for hospitals and healthcare organizations.				
Interpretation	The system captures relevant patient and administrative data, and computes KPIs as per NABH accreditation standards for hospitals. The system must have the ability to compute the KPIs based on end-user defined periods (start/end dates) and export the KPIs and underlying computation to end users for further analysis (in JSON, .csv, .xml, .xls, .pdf formats). The list of KPIs to be computed by HIS/EMR system based on NABH accreditation standards is given in Annexure-8. The format for exporting KPI data to NABH is given in 'Resource' folder on NABH portal. Link to report format				

Category	Commitment	Head	HIS	Type	Technical
Commitment b.	The system electronically computes and publishes Key Performance Indicators (KPIs) per NABH Digital Health Standard (DHS).				
Interpretation	The system has the capability of capturing relevant patient and administrative data, and computing KPIs as per NABH Digital Health Standard (DHS). The system must have the ability to compute the KPIs based on end-user defined periods (start/end dates) and export the KPIs and underlying computation to end users for further analysis (in JSON, .csv, .xml, .xls, .pdf formats). The list of KPIs to be computed by HIS/EMR system based on NABH Digital health standards is given in Annexure-9. The format for exporting KPI data to NABH is given in 'Resource' folder on NABH portal. Link to report format				

Category	Commitment	Head	Common	Type	Technical
Commitment c.	The system has the capability to publish NABH KPIs data every quarter as per the format defined by NABH.				

Interpretation	The system shall also publish the KPIs to be sent to NABH every quarter, as per the format defined by NABH. This ability to publish NABH KPIs will provide significant benefit to healthcare organizations and substantially reduce the effort needed by them to comply with NABH report needs. Similarly, by receiving NABH KPIs across thousands of hospitals in a pre-defined electronic format will save NABH significant effort in compiling and aggregating this information. The list of KPIs to be computed by HIS/EMR system based on NABH accreditation standards is given in Annexure-8. The list of KPIs to be computed by HIS/EMR system based on NABH Digital health standards is given in Annexure-9. The format for exporting KPI data to NABH is given in 'Resources' folder on NABH portal.

IMS.3	**The system complies with Information Security (ISO 27001:2022) and Safety and Security of Health Software Products (ISO 82304) standards**

Category	Excellence	**Head**	Common	**Type**	Technical
Excellence a.	The system complies with ISO 27001 – 2022 information security standards.				
Interpretation	With digital healthcare delivered in a connected model, healthcare information requires a comprehensive approach to privacy and cybersecurity. ISO 27001 provides the requirements for establishing, implementing, maintaining and continually improving an information security management system within the context of the organization. 1. The system should be built in adherence to applicable chapter 8 – Technological controls of ISO 27001-2022 standards. These include- • Secure Development lifecycle • Application security requirements • Secure system architecture and engineering • Secure coding • Outsourced development • Separation of Development, test and production environments 2. The system should support implementation of the following security requirements- • Tracking of user endpoint devices • Implementation of privileged access rights • Information access rights • Access to source code • Secure authentication • Protection against malware • Management of technical vulnerabilities • Configuration management – HIS/EMR security configuration • Information deletion • Data Masking • Data leakage prevention • Information backup • Redundancies of Information processing facilities • Monitoring activities				

	• Clock Synchronization • Use of privileged utility programs • Installation of system on operational systems • Use of Cryptography • Separation of development, test and production environment • Change management

Category	Excellence	**Head**	Common	**Type**	Technical
Excellence b.	The system adheres to ISO 82304 health software standards.				
Interpretation	ISO 82304 provides standards to enable the safety and security of health software products designed to operate on general computing platforms and intended to be placed on the market without dedicated hardware. The standard provides common requirements for health software manufacturers to ensure quality and safety of healthcare software. The software manufacturers should demonstrate testing and validation of HIS/EMR has been performed in adherence to ISO 82304 standard and guidelines • Demonstrate that the organization has defined quality processes, procedures, and controls defined and implemented • Demonstrate the software has been developed in adherence to the defined quality processes. The documentary evidence of adherence, implemented controls / stage-gates should be produced with appropriate authority approvals • Demonstrate documentary evidence of risk assessment, mitigation planning and implementation • Documented evidence of testing with traceability to requirements and design				

References

- https://abdm.gov.in/
- https://www.nrces.in/standards/ehr-standards-for-india#intro
- https://esanjeevani.mohfw.gov.in/assets/guidelines/ehr_guidlines.pdf
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Glossary

S.no.	Word	Definition
1	ABHA ID	Ayushman Bharat Health Account (ABHA) or Health ID is an initiative of the Indian government under the Ayushman Bharat Digital Mission (ABDM) for Indian citizens to establish a centralized database of all their health-related data.
2	Access rights	Access rights refer to the permissions an individual user or a computer application holds to perform specific operations on a computer file, object, or system. These permissions can include the ability to: Read from a file Write to a file Modify files or configurations Delete files Add or remove applications
3	Accreditation	A self-assessment and external peer review process used by health and social care organisations to accurately assess their level of performance in relation to established standards and to implement ways to continuously improve the health or social care system.
4	Antibiotic usage policy	An antibiotic usage policy is a set of guidelines designed to optimize the prescription and use of antibiotics. Some key components of an effective antibiotic usage policy are: **Antibiotic Stewardship:** This refers to coordinated efforts to improve and measure the appropriate use of antibiotics. The goal is to enhance patient health outcomes, reduce resistance to antibiotics, and decrease unnecessary costs. **Evidence-Based Guidelines**: Hospitals are required to implement at least two evidence-based guidelines to improve antibiotic use for the most common indications. **Prescription Guidelines:** Antibiotics should be prescribed only when there is likely to be a clear clinical benefit. For example, antibiotics should not be prescribed for viral sore throat, simple coughs and colds, and viral diarrhoea. **Use of Generic Antibiotics:** Whenever possible, simple generic antibiotics should be used first. **Addressing Overuse and Lack of Access:** The World Health Organization provides practical guidance such as the WHO Integrated Antimicrobial Stewardship toolkit, evidence-based policy recommendations, and tailored country-level support to optimize antimicrobial use through the implementation of antimicrobial stewardship (AMS) programs.

5	Audit log	An audit log, also known as an audit trail or audit history, is a chronological record of events, actions, and changes within a computer system, software application, network, or organization. It provides documentary evidence of the sequence of activities that have affected at any time a specific operation, procedure, event, or device.
6	CDSS	The hospital shall use a clinical decision support system (CDSS) to provide healthcare professionals with assistance in making clinical decisions by providing patient-specific information and recommendations. Some examples of CDSS include drug interaction alert systems, clinical guidelines, and diagnostic decision support systems.
7	Centralized user management	Centralized user management (CUOM) is a framework that helps IT departments manage user data, server requests, and user access and activity. It's part of the Centralized Identity and Access Management (IAM) system.
8	Certification	Formal recognition of compliance with set standards validated by external evaluation.
9	Chat platforms	Chat platforms are software applications that facilitate real-time communication between individuals or groups. They can be used for various purposes, such as personal communication, team collaboration, and customer support. Some examples include WhatsApp, Telegram, Microsoft teams etc.
10	CPOE	Computerized provider order entry, sometimes referred to as computerized physician order entry or computerized provider order management, is a process of electronic entry of medical practitioner's instructions for the treatment of patients under his or her care - including medication, laboratory, and radiology orders
11	CPT	Current Procedural Terminology (CPT) codes are numbers assigned to each task and service that a healthcare provider can perform. They are used to track and bill medical, surgical, and diagnostic services. For example, a routine check-up or a lab test has a specific CPT code attached to it.
12	Critical values	Critical values are results that indicate an urgent and often life-threatening health issue, such as extremely high or low levels of certain chemicals or substances in the body. By receiving these alerts, patients and physicians can work together to develop a treatment plan that addresses the issue quickly, potentially saving the patient's life or preventing serious complications. In addition, timely notification of critical lab value alerts can help improve patient satisfaction and trust in the healthcare system, as it

		demonstrates a commitment to patient safety and well-being.
13	DAMA	Discharge against medical advice
14	Data Fiduciary	According to the Digital Personal Data Protection Act (DPDP) of India, a data fiduciary is a person or group that decides how to handle personal data, either independently or with others.
15	Designated IT personnel	Designated IT personnel refer to individuals who are assigned specific duties related to information technology within an organization. These duties can range from managing and maintaining IT infrastructure, implementing security measures, troubleshooting technical issues, to overseeing software and hardware upgrades. These individuals are expected to have the necessary knowledge, skills, and training to effectively perform their assigned duties.
16	DICOM	DICOM is the standard for the communication, management and exchange of medical imaging information and related data. It is used in medical imaging to enable the integration of medical imaging devices, such as MRI machines, CT scanners, and ultrasound machines, with medical image processing and analysis software. DICOM enables the sharing of medical images and information between different healthcare organizations, ensuring that medical images can be viewed and analyzed by healthcare professionals around the world.
17	Digital signatures	There can be several options for digital signatures: a. Electronic signatures: These are the most basic type of digital signature. They involve using a digital image of a handwritten signature or a typed name as a way of indicating agreement or authorization. b. Advanced electronic signatures (AES): These are more secure than regular electronic signatures and are often used in situations where a higher level of security is required. AES typically involves using a digital certificate to encrypt the signature, making it more difficult to tamper with. c. Digital certificates: These are used to verify the identity of the signer and ensure the integrity of the signed document. Digital certificates are issued by trusted third-party organizations called Certificate Authorities (CAs).

		d. Biometric signatures: These involve using unique personal characteristics, such as fingerprints or facial recognition, to authenticate the signer. Blockchain-based signatures: These are a relatively new type of digital signature that uses blockchain technology to create a secure, tamper-proof record of the signature.
18	DPDP	The Digital Personal Data Protection Act, or DPDP Act, passed in August 2023, is legislation in India that balances the rights of individuals to protect their personal data with the necessity of processing such data for lawful purposes.
19	eMAR	Electronic Medication Administration Record
20	Emergency codes	Emergency codes are predefined systems used by emergency services to describe the priority and response assigned to calls for service. They are also used in healthcare facilities to alert all staff members of potential issues arising in a facility. These codes include unique prescribing criteria for how staff members should respond to a particular situation, ranging from an active shooter incident to cardiac arrest. Here are some common emergency codes: Code Blue: This typically means a medical emergency, such as cardiac arrest. Code Red: This is used to indicate fire or smoke. Code Black: This typically means there is a bomb threat. Code Silver: This is used to indicate an active shooter.
21	Employee	Employees of the organisation including temporary and permanent staff.
22	Encryption techniques	Encryption of hospital data is the process of converting sensitive patient information into an unreadable format that can only be deciphered with a specific key or assword. This is done to ensure the security and privacy of patient data, as it prevents unauthorized access and keeps the information safe from hackers or other outside threats.
23	FHIR	Fast Healthcare Interoperability Resources, or FHIR, is a standard for exchanging healthcare information electronically. It is designed to make it easier for different healthcare systems to share and exchange data with each other. FHIR uses modern web technologies, such as RESTful APIs, to allow healthcare organizations to securely access patient data from other systems. This can improve

		patient care coordination and enable more efficient healthcare workflows. FHIR is a set of rules and specifications for exchanging electronic health care data/ information electronically. FHIR provides a means for representing and sharing information among clinicians and organizations in a standard way regardless of the ways local EHRs represent or store the data. FHIR combines the best features of previous standards into a common specification, while being flexible enough to meet the needs of a wide variety of use cases within the health care ecosystem. FHIR focuses on implementation and uses the latest web technologies to aid rapid adoption.
24	FHIR profiles	A Fast Healthcare Interoperability Resources (FHIR) profile is a set of rules that define how different healthcare systems process resources. FHIR profiles are built on top of the base FHIR specification and can include requirements and constraints on a resource. They can describe the features a system supports for a resource, or the information it handles or produces for a specific use case.
25	Goods	Goods refer to tangible items or commodities used for various purposes.
26	HAI	Hospital-Acquired Infections (HAIs), also known as nosocomial infections, are infections that patients acquire while receiving treatment for other conditions within a healthcare setting. These infections are usually not present at the time of admission and typically occur within 48 hours in the hospital or 3 days after discharge. HAIs can be caused by bacteria, fungi, and viruses. The most common types of HAIs include urinary tract infections (UTIs), surgical site infections, gastroenteritis, meningitis, and pneumonia.
27	Health Exchange Platform (HEX)	The National Health Claims Exchange (NHCE) is a digital platform under the Ayushman Bharat Digital Mission (ABDM) in India that serves as a central repository for health insurance claims. It aims to digitize and streamline the process of health insurance claims by creating a paperless and secure environment for all stakeholders involved in the claims process, including insurers, hospitals, and beneficiaries. The NHCE will help in improving transparency, reducing fraud, and increasing efficiency in the healthcare sector. The HCX serves as a protocol for exchanging claims-related information among various actors, including payers, providers, beneficiaries, regulators, and observers.
28	Healthcare organization	In this document, healthcare organization refers to the organizations providing care delivery, like hospitals.

29	HL7	Health Level 7 (HL7) is a set of international standards for the exchange, integration, sharing, and retrieval of electronic health information. Its used in healthcare settings to facilitate communication between various healthcare systems, such as electronic health records (EHRs), medical devices, and other healthcare applications. The HL7 standards ensure that health information is transferred accurately, securely, and in a standardized format, which can improve patient care and help healthcare organizations operate more efficiently. The standards are produced by Health Level Seven International, an international standards organization, and are adopted by other standards issuing bodies such as American National Standards Institute and International Organization for Standardization.
30	HPR	Healthcare Professionals Registry, or HPR, is a comprehensive repository of verified and registered healthcare practitioners.
31	ICD	The International Classification of Diseases is a globally used diagnostic tool for epidemiology, health management and clinical purposes. The ICD is originally designed as a health care classification system, providing a system of diagnostic codes for classifying diseases, including nuanced classifications of a wide variety of signs, symptoms, abnormal endings, complaints, social circumstances, and external causes of injury or disease.
32	Inpatient days	Inpatient days refers to the total number of days that patients stay in a hospital or healthcare facility.
33	Incident	Events that are unusual, unexpected, may have an element of risk, or that may have a negative effect on patients, groups, staff or the organisation.
34	Inventory	Inventory, also known as stock, refers to the goods and materials that a healthcare facility has on hand.
35	IPD	Part of a healthcare facility or hospital where patients are admitted for over 24 hours. An IPD of the hospital is generally fitted with beds, medical equipment, and 24×7 availability of doctors and nurses.
36	IRDAI	Insurance Regulatory and Development Authority of India (IRDAI), is a statutory body formed under an Act of Parliament, i.e., Insurance Regulatory and Development Authority Act, 1999 (IRDA Act, 1999) for overall supervision and development of the Insurance sector in India.
37	ISO 27001	ISO/IEC 27001 is the international standard for information security management. Part of the ISO 27000 series, ISO 27001 sets out a framework for all organisations to

		establish, implement, operate, monitor, review, maintain and continually improve an ISMS (information security management system).
38	ISO/IEC 82304	The purpose of the IEC 82304-1 standard is to identify product requirements for health software manufacturers, such as : Risk management, product validation, installation instructions and instructions for use.
39	KPI	Key Performance Indicators are measurable and quantifiable metric used to track progress towards a specific goal or objective. These are the critical (key) quantifiable indicators of progress toward an intended result.
40	LAMA	Leave against medical advice
41	LOINC	Logical Observation Identifiers Names and Codes Logical Observation Identifiers Names and Codes, or LOINC, is a universal code system for identifying medical laboratory observations and clinical measurements. It is used to standardize the identification of test results and measurements, which helps to improve the accuracy and efficiency of medical data exchange between healthcare organizations and patients. LOINC codes are used to uniquely identify laboratory and clinical observations in electronic health records (EHRs), billing systems, public health reporting, and research studies.
42	Master data	Master data is the set of identifiers that provides context about business data such aslocation, customer, product, asset, etc.
43	Medical practitioners	In this document medical practitioners refer to the clinical service providers like doctors.
44	Medical reconciliation	Medical reconciliation, often referred to as “med rec”, is a crucial process in patient care that occurs during transitions in care—upon hospital admission, transfer from one unit to another during hospitalization, or discharge from the hospital to home or another facility. The process involves reviewing the patient’s complete medication regimen at the time of admission, transfer, & discharge and comparing it with the regimen being considered for the new setting of care. This is done to avoid inadvertent inconsistencies, such as unintentionally omitting needed medications, unnecessarily duplicating existing therapies, or prescribing incorrect dosages.
45	Medication	Medication, for the reference in this document, includes all medicines, medical devices, implants, consumables, vaccines and other items that are regularly used in a hospital pharmacy.

46	Medico legal case	A medico-legal case can be defined as a case of injury or ailment, etc., in which investigations by the law-enforcing agencies are essential to fix the responsibility regarding the causation of the injury or ailment.
47	Multifactor authentication (MFA)	Multi-factor authentication is a security process that requires users to provide multiple authentication factors to access IT systems. Typically, this involves something the user knows, such as a password, and something the user has, such as a mobile device or security token.
48	NHCX	The National Health Claims Exchange (NHCX) is a centralized platform developed by the government to streamline insurance claims processing. NHCX aims to streamline and standardize health insurance claim processing, enhancing efficiency in the insurance industry and improving the patient experience.
49	NRCeS	MoHFW has established a Centre of Excellence named as National Resource Centre for EHR Standards (NRCeS) at C-DAC, Pune to accelerate and promote adoption of EHR standards in India.
50	Nursing professional	A nursing professional, often referred to as a nurse, is a healthcare provider who is trained and licensed to practice nursing. Nurses integrate the art and science of caring and focus on the protection, promotion, and optimization of health and human functioning. They play a crucial role in the prevention of illness and injury, facilitation of healing, and alleviation of suffering through compassionate presence.
51	OPD	People with health problems who visit the hospital for diagnosis or treatment, but do not require a bed or to be admitted for overnight care are treated at the Outpatient department.
52	Operating System	An Operating System (OS) is a type of system software that manages computer hardware and software resources and provides common services for computer programs.
53	Order sets	Order sets, also known as medical order sets or abbreviated medication lists, are electronic documents that contain all the necessary instructions for healthcare professionals to follow during a procedure or treatment. They are a way to organize and automate the process of placing orders.

54	OWASP	The Open Web Application Security Project (OWASP) is a non-profit organization that provides free and open-source tools, projects, and documentation for web application security. It's an online community that produces freely available articles, methodologies, documentation, tools, and technologies in the fields of IoT, system software, and web application security. One of the most well-known projects of OWASP is the OWASP Top 10. It's a standard awareness document for developers and web application security. It represents a broad consensus about the most critical security risks to web applications. The OWASP Top 10 is globally recognized by developers as the first step towards more secure coding.
55	Patient identifier	A patient identifier is a unique data element that helps distinguish one patient from another, ensuring accurate identification and reducing the risk of medical errors. These identifiers help maintain patient safety and facilitate care coordination across healthcare settings.
56	Patient portal	A patient portal is an application through which the patient can perform several functions like booking appointments, viewing test results, downloading reports etc.
57	PHI	Protected Health Information (PHI) is any information that can be linked to an individual and relates to their health status, healthcare, or payment for healthcare services.
58	PREM	PREM stands for Patient Reported Experience Measures. These measures are tools used to capture patients' experiences with healthcare services. Unlike Patient Reported Outcome Measures (PROMs), which focus on the results of healthcare treatments and the patients' health status, PREMs are concerned with the patients' experiences and satisfaction with the healthcare process itself.
59	PROM	Patient Reported Outcome Measures, commonly abbreviated as PROMs, are tools used in healthcare to gather information directly from patients about their health status, quality of life, and the outcomes of healthcare treatments. These measures are typically collected through questionnaires or surveys that patients complete themselves, providing valuable insights into their own perspectives and experiences.
60	PSUs	Public setting undertaking -PSUs are entities owned or controlled by the government in various sectors. They are created to fulfil social and economic objectives.
61	Referral	In the medical context, a referral is the transfer of care for a patient from one clinician or clinic to another by request. It is a written order from a primary care physician arranging

		for a patient to see a specialist for a specific medical service.
62	Rehabilitation services	Rehabilitation services are a broad range of diagnostic, therapeutic, and supportive services that help individuals recover and improve their physical, sensory, and mental capabilities that have been lost or impaired as a result of disease, injury, or treatment. These services are designed to help patients return to normal life as much as possible by regaining their independence and becoming self-sufficient.
63	Role-based access control (RBAC)	Role-based access control (RBAC) is a system that limits access to resources based on a user's role within an organization. RBAC systems assign access and actions to users based on their job roles and designations, and everyone with a given role has the same rights. This approach can help protect sensitive data from improper access and misuse, while also ensuring that employees have the information, they need to do their jobs.
64	ROTA	A ROTA is used for workforce scheduling. It is a list or plan showing when each employee is supposed to work or be on duty.
65	SANS	SANS is the most trusted and largest source for information security training and security certification in the world.
66	Sentinel event	A sentinel event is an unexpected occurrence in a healthcare setting that results in death or serious physical or psychological injury to a patient, or the risk thereof.
67	Service delivery channel	Service delivery channels are the ways that patients interact with healthcare organisations, such as phone, email, chat, self-service, social media, or face-to-face.
68	Single sign on	Single sign-on (SSO) is a technology that enables users to authenticate themselves once, using one set of login credentials, to gain access to multiple applications and systems.
69	SLA	SLA stands for service level agreement. It refers to a commitment between a service provider and a client, including details of the service, the standards the provider must adhere to, and the metrics to measure the performance.

70	SNOMED CT	Systematized Nomenclature of Medicine Clinical Terms The Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) is a comprehensive and universal clinical terminology system used by healthcare professionals to accurately record, store, and exchange clinical information across different healthcare settings and systems. It consists of clinical concepts and terms that are organized into hierarchies and relationships, allowing health professionals to communicate clinical information in a more consistent and accurate manner. SNOMED CT is designed to support clinical decision-making, improve patient safety, and enhance the interoperability of healthcare information systems.
71	Specialist	In this document, specialist refers to the medical practitioners who have a specialization in a particular area, e.g., dermatology, gynaecology etc.
72	Stakeholder	A person, group or organisation that has interest or concern in an organisation. Stakeholders can affect or be affected by the organisation's actions, objectives and policies. Internal stakeholders are individuals who are already committed to serving the organisation such as board members, staff and volunteers, including surveyors. External stakeholders are individuals who are impacted by the work of the organisation such as clients and community partners.
73	Surgical safety checklist	The Surgical Safety Checklist is a tool developed by the World Health Organization (WHO) to improve the safety of surgical procedures. It was created with the aim of reducing errors and adverse events and enhancing teamwork and communication in surgery. The checklist is composed of 19 items and is used in operating rooms worldwide. The use of the checklist has shown significant reduction in both morbidity and mortality. The checklist is used at three critical points in the surgical process: Before induction of anaesthesia Before skin incision Before the patient leaves the operating room
74	System	In this document, system refers to the digital system or software that is deployed in the healthcare organizations.
75	Teleconsultation	Teleconsultation, also known as remote consultation or telehealth, refers to interactions that happen between a clinician and a patient for the purpose of providing diagnostic or therapeutic advice through electronic means. Its a type of telemedicine service, where digital information

		and communication technologies, such as computers and mobile devices, are used to deliver healthrelated information.
76	Therapeutic diet	A therapeutic diet is a meal plan that controls the intake of certain foods or nutrients. It is part of the treatment of a medical condition and is usually prescribed by a physician and planned by a dietician. A therapeutic diet is usually a modification of a regular diet and is modified or tailored to fit the nutrition needs of a particular person.
77	Time stamp	A "timestamp" is a sequence of characters or encoded information identifying when a certain event occurred, usually giving date and time of day, sometimes accurate to a small fraction of a second.
78	United Health Interface	United Health Interface (UHI) is a digital platform developed by the Indian government to facilitate the integration of various health information systems across the country. ABDM (Ayushman Bharat Digital Mission) is a flagship initiative of the Indian government aimed at providing affordable healthcare to the underprivileged sections of society. The UHI platform is part of ABDM and serves as a common interface for healthcare organizations, insurers, and beneficiaries. It enables the secure exchange of health information, including medical records, prescription details, and payment information, among all stakeholders in the healthcare ecosystem. The platform also incorporates various data analytics tools to provide insights into healthcare deliveryand utilization patterns, enabling policymakers to make informed decisions.
79	User	In this document, users refer to all the nonclinical professionals using the system like administration staff, technicians etc.
80	WASA	Web Application Security Testing is a process to identify the vulnerabilities present in a web application.

Annexure-1 Patient-Reported Experience Measures (PREMs)

Patient-reported experience measures (PREMs) is a critically important tool to ensure that the patient safety policies and protocols are being implemented by healthcare workers. If used effectively, this tool can provide plenty of benefits.

Why do we need PREMs?

Over the past two decades, patient-centered care has becomeimportant in the healthcare industry, with numerous initiatives, protocols, and processes being introduced to ensure patient safety and satisfaction. However, despite all these measures, we continue to encounter a high number of incidents of patient harm in our healthcare facilities.

Considering these factors, it highlights the opportunity for further advancements in patient safety protocols within the Indian healthcare system.

The Role of PREMs

Despite the development of various protocols and guidelines to prevent avoidable accidents, such events continue to be reported regularly. This suggests gaps in the implementation of these policies by healthcare workers PREMs, being direct feedback from patients, can validate the effectiveness of these policies and protocols.

Engaging with patients and families in care has been shown to provide numerous benefits, making it imperative for healthcare providers to ensure this involvement.

What are PREMs?

Patient reported experience measures are specific self-reporting instruments that measure patient's perception of experience while receiving care.

PREMs are basically a questionnaire-based survey that the patient is expected to take based on their perception. It is a tool that helps in assessing whether the intended actions are being performed by the healthcare workers. For example, if a question asks the patient whether all their questions related to a surgical procedure were answered to their satisfaction? An positive answer from all patients establishes that the surgeon is thoroughly explaining the surgical intervention to all patients whereas if some patients give a negative response, it implies that the surgeon needs to give more detailed explanations to answer the questions patients and/or their families may have.

This way PREMs act like constructive feedback directly from the patients and thus it is a useful measure of what happens during a care episode. It is a good tool to evaluate if healthcare professionals are following various safety procedures and protocols.

Potential uses of PREMs

PREMs can be used extensively for various purposes. A specific questionnaire can be designed to evaluate various aspects of the quality of care being provided to the patients throughout their journey. Some of the broad applications are enlisted below –

1. To evaluate the implementation of patient centered care policies – PREMs being feedback directly from the patients, offer an opportunity to evaluate the effective implementation of all patient centered care policies by healtcare organisations.
2. To identify areas for improvement- PREMs can be used as a proactive measure to identify potential areas for improvement rather than waiting for an incident to happen and then reactively taking corrective actions.
3. To assess the effectiveness of corrective actions– Whenever any corrective and preventive actions are implemented, the effective implementation of those actions can be evaluated using PREMs.
4. To assess and improve (if needed) communication with patients and families.
5. To ensure that, the patient's voice is documented and listened to provide individual care and enhance patient experience.

Implementing PREMs

- Finalizing the questionnaire

  There are two simple approaches to implementing PREMs –

  1. Utilizing readymade PREMs questionnaire – Various validated questionnaires are available either free of charge or on a payment basis or have been reported in peer reviewed journals. An organization can decide to opt for one of those questionnaires. The Agency for Healthcare Research and Quality (AHRQ) has published various questionnaires based on the type of facility or disease-specific questionnaires on their website. Some examples include the Accident and Emergency Department Questionnaire[4] (AEDQ), the National Inpatient Survey, the navigated Transcranial Magnetic Stimulation (nTMS) – PREMS[5], and the Consumer Assessment of Healthcare Providers and Systems (CAHPS) PREMS[6] amongst others.
  2. Preparing a bespoke questionnaire
     - Once the questionnaire is made, assess ease of understanding by conducting a pilot to ensure optimal usage. Remove any unclear or unnecessary questions.
     - If any changes are made after the pilot –retesting is recommended.
     - Test the questionnaire in small different groups of patients. Having a multilingual questionnaire is useful in view of global medical travelers.
     - Define the number of times the PREMs tool will be given to the patient. For example, for a patient who is planning to undergo surgery, the first PREM questionnaire can be given after the first meeting with the surgeon and the second time during the postoperative stay.
     - Various modes can be utilized like face-to-face interviews, email, over the telephone, or using electronic forms which comply with data security guidelines.
     - Sharing forms with patients using QR codes is another cost-effective and easy way for patients using a smartphone.
     - Asking the patient to fill in the form in front of the treating clinician or staff should be avoided.

- Analyse the validity of responses and measure the time taken to complete the questionnaire.

- Data Collection and Measurement
  - Educate patients on the purpose of PREMs and how it will benefit them.
  - Explain the importance of taking the survey and differentiating it from other service feedback is important to generate a good response rate.
  - Define the time frame of data analysis and share results with relevant stakeholders.
  - It is advisable to refrain from taking feedback from patients who may be unable to provide precise information due to their current condition.

Limitations of PREMs:

PREMs are an indicator of a patient's perception of the quality of healthcare, not a direct measure of patient outcome/ patient's clinical condition.
Interpretation of PREMs in conjunction with data from PROMs is recommended as best practice. However, availability of tools and challenges to capture multiple forms is practically difficult in the current scenario.
The patient's responses can be quite subjective and could be biased by their previous experiences.

Experiences in implementing PREMs:

PREMs about MRI safety –The MRI unit in the hospital is a busy unit as the hospital caters to huge orthopedic load. Usually, busy units in any hospital are prone to accidents due to miscommunication, and MRI is one such diagnostic facility where there needs to be very close and clear communication with the patients. Lack of clear communication of safety precautions inside the MRI suite can lead to disastrous consequences and hence it is recommended to use PREMs to assess the degree of clear communication with patients about MRI.

Example of Patient Reported Experience Measures (Prems) on MRI Safety

S. No.	Question	Patient Response
1	Did the doctor inform you about the need for the MRI in the plan of treatment?	Yes/ No
2	Did the hospital staff/ doctor explain to you about the cost of doing an MRI?	Yes/ No
3	Did the doctor inform you about the type of MRI and the part of the body involved?	Yes/ No

S. No.	Question	Patient Response
4	Did the staff inform you about the appointment (time & date) and estimated time duration of the MRI?	Yes/ No
5	Did the doctor get your permission (consent) for the MRI?	Yes/ No
6	Did the staff verify your name/ hospital registration number with the file or MRI request slip?	Yes/ No
7	Did the staff ask you about any history of allergies? (for Contrast Enhanced MRI)	Yes/ No/ Not Applicable
8	Did the staff/doctor explain the side-effects of doing a contrast MRI?	Yes/ No/ Not Applicable
9	Did the doctor advise blood tests, which are required before the contrast-enhanced MRI? (S. Creatinine & S. Urea)	Yes/ No/ Not Applicable
10	Have you observed the staff performing hand wash/hand rub during the procedure?	Yes/ No
11	Did the staff ask you about past surgery history with any metal devices like implants or pacemakers placed inside your body (in situ)?	Yes/ No
12	Did the staff inform you about removing all metallic wearable items like jewelry, coins, pen, watch, safety pins, belts etc. before doing the MRI?	Yes/ No
13	Did the staff screen you with a metal detector device before entering the MRI room?	Yes/ No
14	Did you notice the caution signage in the MRI room?	Yes/ No
15	Did the staff ask you to change to hospital clothes in the changing room?	Yes/ No
16	Did you have privacy in the changing room?	Yes/ No

S. No.	Question	Patient Response
17	Did the staff inform you not to move or lie still during the MRI scan?	Yes/ No
18	Did the staff inform you about the constraints of space where you lie down inside the MRI machine?	Yes/ No/ Not Applicable
19	Did they inform you about how to respond if you feel uncomfortable or scared during the MRI?	Yes/ No
20	Did the staff inform you about the occurrence of loud noise when the MRI is in the process?	Yes/ No/ Not Applicable
21	Did the staff tell you when and where the result/ report of MRI will be available?	Yes/ No

To summarize, PREMs offer great insights into what is happening on the ground. As it comes directly from the patients, the chances of any intentional/ unintentional bias are minimal. If implemented properly, PREMs can be a great proactive tool to ensure good quality of service than depending on near misses or incidents to happen and be reported. PREMs offer a unique opportunity to directly involve the patients in their own care as they are important stakeholders in the quality of care.

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Annexure-2 Patient-Reported Outcome Measures (PROMs).

Patient Reported Outcome Measures (PROMs) are a valuable tool for measuring the effectiveness of healthcare interventions from the patient's perspective. PROMs are defined as any report of the status of a patient's health condition that comes directly from the patient, without interpretation by a clinician or anyone else. PROMs can be used to assess a wide range of health outcomes, including symptoms, functional status, quality of life, and satisfaction with care.

Some of the commonly used PROMs include:

1. **The EQ-5D:** This is a generic measure of health- related quality of life that assesses five dimensions of health: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The EQ-5D is widely used in clinical trials and health economic evaluations.

2. **The SF-36:** This is a generic measure of health-related quality of life that assesses eight domains of health: physical functioning, role limitations due to physical health, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health.

3. **The Oxford Hip Score:** This is a disease-specific measure of hip function that assesses pain and function related to the hip joint.

4. **The Oxford Knee Score:** This is a disease-specific measure of knee function that assesses pain and function related to the knee joint.

5. **The Patient Health Questionnaire** (PHQ-9): This is a measure of depression that assesses the severity of depressive symptoms over the past two weeks.

6. **The Brief Pain Inventory (BPI)**: This is a measure of pain severity and interference with daily activities in patients with chronic pain.

7. **The EuroQol-Visual Analogue Scale (EQ-VAS)**: This is a measure of overall health status using a visual analogue scale where patients rate their health status on a scale from 0 to 100.

8. **The Chronic Obstructive Pulmonary Disease Assessment Test (CAT):** This is a disease-specific measure of health status in patients with chronic obstructive pulmonary disease (COPD).
9. **The Functional Assessment of Cancer Therapy-General (FACT-G)**: This is a disease-specific measure of health-related quality of life in cancer patients that assesses physical, emotional, social, and functional well-being.

10. **The Minnesota Living with Heart Failure Questionnaire (MLHFQ):** This is a disease-specific measure of health-related quality of life in patients with heart failure that assesses the impact of symptoms on daily activities and emotional well-being.

Method: PROMs can be administered in various ways, including paper-based questionnaires, telephone interviews, and web-based surveys. Some PROMs are also available in different languages, making them accessible to patients from diverse cultural backgrounds.

Benefits of PROMs as a Quality Tool

Patient-Reported Outcome Measures (PROMs) are becoming increasingly valuable tools for healthcare quality improvement because of the following benefits-

1. Direct Patient Feedback

2. Assessment of Quality of Life

3. Reduced Costs

4. Improved Patient Satisfaction

One of the PROMs used in India is **Clinical Outcome Measures.** These measures assess the clinical outcomes of specific procedures or treatments, such as post operative pain management or diabetes control. These measures help healthcare providers evaluate the effectiveness of their treatments & interventions and make necessary adjustments to improve patient outcomes. Clinical Outcome Measures are particularly useful in assessing the impact of chronic diseases on patients' lives, such as diabetes or hypertension.

Health-Related Quality of Life Measures are also an essential PROM used in India. These measures assess the impact of healthcare on patients' quality of life, such as physical functioning, emotional well-being, and social functioning. Health-Related Quality of Life Measures are particularly useful in assessing the effectiveness of long-term treatments and interventions, such as cancer treatment or chronic disease management.

Case Scenarios for Guidance

Case Scenario 1:

Patient: 65-year-old male with type 2 diabetes, hypertension, and coronary artery disease.

Chief Complaint: Chest pain on exertion.

History of Present Illness: The patient has a 10-year history of type 2 diabetes and hypertension. He has been taking oral medications for both conditions, but his blood sugar and blood pressure have not been well controlled. He also has a 5-year history of coronary artery disease, and he has had one stent placed in his left anterior descending coronary artery.

Physical Examination: The patient's vital signs are within normal limits. His physical examination is unremarkable except for a slightly enlarged heart.

Investigations: The patient's electrocardiogram (ECG) shows signs of ischemia. His stress test is positive for ischemia. His coronary angiogram shows significant stenosis in his right coronary artery.

Diagnosis: Coronary artery disease with stable angina pectoris.

Treatment Plan: The patient is scheduled for coronary artery bypass grafting (CABG) surgery.

Patient-Reported Outcome Measures (PROMs):

Before surgery:

- The patient's quality of life is impaired by his chest pain. He is unable to exercise without experiencing chest pain. He is also worried about the risk of a heart attack.

After surgery:

- The patient's chest pain is relieved. He is able to exercise without experiencing chest pain. His quality of life has improved significantly. He is also less worried about the risk of a heart attack.

PROMs can be used to assess the patient's outcomes in several ways:

- **Quality of life**: PROMs can be used to assess the patient's quality of life before and after surgery. This can be done by using a quality-of-life questionnaire, such as the Short Form-36 (SF-36).
- **Symptoms:** PROMs can be used to assess the patient's symptoms before and after the surgery. This can be done by using a symptom questionnaire, such as the Seattle Angina Questionnaire (SAQ-7).
- **Functional status:** PROMs can be used to assess the patient's functional status before and after the surgery. This can be done by using a functional status questionnaire, such as the Duke Activity Status Index (DASI).

Case Scenario- 2

Patient: 40-year-old female with rheumatoid arthritis (RA).
Chief Complaint: Pain and stiffness in her joints.
History of Present Illness: The patient has a 5-year history of RA. She has been taking oral medications for RA, but her pain and stiffness have not been well controlled. She has also experienced some joint damage.
Physical Examination: The patient's vital signs are within normal limits. Her physical examination shows swelling and tenderness in her joints. She also has some limited range of motion in her joints.
Investigations: The patient's blood tests show elevated inflammatory markers with CRP, ESR, RA factor and Anti CCP positive. Her X-rays show features of joint damage.
Diagnosis: Rheumatoid arthritis.
Treatment Plan: The patient is started on a new biologic medication for RA.
Patient-Reported Outcome Measures (PROMs):

Before treatment:

- The patient's pain and stiffness are severe. She is unable to perform activities of daily living without difficulty. She is also worried about the long-term effects of RA on her joints.

After treatment:

- The patient's pain and stiffness are significantly reduced. She is able to perform daily activities without difficulty. She is also less worried about the long-term effects of RA on her joints.

PROMs can be used to assess the patient's outcomes in a number of ways:

- **Pain and stiffness:** PROMs can be used to assess the patient's pain and stiffness before and after treatment. This can be done by using a pain and stiffness questionnaire, such as the Visual Analogue Scale (VAS) for pain and the Health Assessment Questionnaire-Disability Index (HAQ-DI) for disability.
- **Functional status:** PROMs can be used to assess the patient's functional status before and after treatment. This can be done by using a functional status questionnaire, such as the Health Assessment Questionnaire-Disability Index (HAQ-DI).
- **Quality of life:** PROMs can be used to assess the patient's quality of life before and after treatment. This can be done by using a quality-of-life questionnaire, such as the Short Form-36 (SF-36).

Annexure-3 High Risk Medications

Definition-

High risk / alert medications can be defined as those drugs that have a heightened risk for adverse events or have heightened risk of catastrophic harm whenever there is an error. These drugs generally have a low therapeutic index.

Some examples of high-risk medications include:

Anti-infectives: Amphotericin, vancomycin, and aminoglycosides.

Potassium and concentrated electrolytes: Injectable electrolyte preparations, such as potassium chloride and magnesium sulfate.

Insulin: All insulins.

Narcotics and sedatives: All opioids, and sedatives such as benzodiazepines.

Chemotherapy agents: Cytotoxic chemotherapy.

Heparin and other anticoagulants: Heparins and all anticoagulants, including the New Oral Anticoagulants.

Lithium, methotrexate, amiodarone, and phenobarbital: These are also considered high-risk medications.

The list of high-risk medications may vary across hospitals and healthcare settings.

Look-alike and sound -alike medications are also included in high-risk medications.

Reference :
For Example , https://www.intmedsafe.net/wp-content/uploads/2018/04/5.-High-Alert-Medications-2018.pdf

Annexure-4 Emergency Codes

Emergency Codes

Emergency codes in a hospital are standardized alerts used to quickly communicate specific types of emergencies to staff and coordinate responses efficiently. Codes are used to maintain patient privacy and to avoid causing unnecessary panic among patients and visitors. These codes can vary across regions and healthcare facilities, but there are some common ones used across many hospitals. Here is a list of frequently used emergency codes and their meanings:

1. **Code Red**: Fire
2. **Code Blue**: Medical Emergency (e.g., cardiac arrest)
3. **Code Black**: Bomb Threat
4. **Code Pink**: Infant or Child Abduction
5. **Code Orange**: Hazardous Material Spill or Release
6. **Code Silver**: Active Shooter or Hostage Situation
7. **Code Yellow**: Disaster or Mass Casualty Incident
8. **Code Brown**: Severe Weather
9. **Code White**: Aggressive or Violent Person
10. **Code Green**: Emergency Evacuation
11. **Code Purple**: Shelter in Place (e.g., external air contamination, external threat)
12. **Code Grey**: Combative Person

Note: The codes mentioned above in the annexure are only suggestive and may be changed as per the policy of the organization.

Annexure-5 Examples of Clinical Decision Support System in the healthcare system

Examples of Clinical Decision Support System in the healthcare system						
Sr. No.	**Type**	**Medical History**	**Current Medication**	**Prescribed Medication**	**CDSS Alert**	**Description**
1	Drug-drug Interaction	Patient has a history of hypertension and GERD (Gastroesophageal reflux disease).	Amlodipine 5mg once daily, Omeprazole 20mg once daily.	Prescribed with Clarithromycin for pneumonia.	Potential Serious Interaction: Alerts healthcare provider to potential adverse interactions between Amlodipine and Clarithromycin, which may cause increased risk of hypotension.	Monitor patients closely for signs of hypotension. Consider alternative antibiotics if interaction cannot be avoided.
2	Allergy Checking	Patient has a known allergy to penicillin.	None.	Prescribed with Amoxicillin for sinusitis.	Severe Allergy Alert: Flags Amoxicillin as potentially allergenic for the patient, reducing the risk of allergic reactions.	Avoid prescribing Amoxicillin to the patient. Consider alternative antibiotics.
3	Dosage Recommendations	Patient is an elderly individual with renal impairment.	None.	Prescribed with Digoxin for atrial fibrillation.	Dosage Alert: Provides dosage recommendations for Digoxin based on age and renal function, reducing the risk of toxicity.	Adjust Digoxin dosage according to CDSS recommendations. Monitor for signs of toxicity.
4	Clinical Guidelines Adherence	Patient presents with acute myocardial infarction symptoms.	None.	Prescribed with aspirin and statin therapy.	Clinical Guideline Alert: Helps ensure adherence to evidence-based clinical guidelines for acute myocardial infarction treatment, improving patient outcomes.	Follow CDSS prompts and recommendations for aspirin and statin therapy initiation.
5	Diagnostic Assistance	Patient complains of chest pain and shortness of breath.	None.	Prescribed with ECG and cardiac enzymes.	Diagnostic Test Alert Assists healthcare providers in diagnosing acute coronary syndrome by suggesting diagnostic tests	Order ECG and cardiac enzymes as recommended by CDSS. Interpret results promptly.

					based on patient symptoms.	
6	Alerts for Abnormal Test Results	Patient has a history of diabetes mellitus.	Metformin 1000 mg twice daily.	Abnormal renal function test results.	Abnormal Test Results Alert: Generates alerts for healthcare providers when renal function test results indicate potential complications in patients with diabetes.	Investigate abnormal renal function test results further. Adjust Metformin dosage if necessary.
7	Decision Support for Ordering Tests	Patient presents with symptoms suggestive of pneumonia.	None.	Prescribed with chest X-ray.	Diagnostic Test Alert Provides guidance on ordering appropriate diagnostic tests, such as chest X-ray, based on patient symptoms and clinical presentation.	Order chest X-ray as recommended by CDSS. Interpret results in conjunction with clinical findings.
8	Clinical Documentation Assistance	Patient admitted with a diagnosis of congestive heart failure.	None.	Prescribed with ACE inhibitor and diuretic therapy.	Assists healthcare providers with clinical documentation by suggesting appropriate codes for congestive heart failure and prescribed medications.	Utilize CDSS suggestions to ensure accurate documentation of congestive heart failure diagnosis and prescribed medications.
9	Clinical Pathway Adherence	Patient admitted with community-acquired pneumonia.	None.	Prescribed with antibiotics and oxygen therapy.	Clinical Pathway Alert Supports adherence to clinical pathways for community-acquired pneumonia, ensuring standardized and effective treatment.	Follow clinical pathway recommendations for antibiotics and oxygen therapy initiation.
10	Fall Risk Assessment	Elderly patient with a history of Parkinson's disease.	None.	Prescribed with Levodopa.	Assesses the patient's through fall risk assessment tool in EMR based on age, mobility, and medical history, guiding implementation of	Implement fall prevention strategies based on CDSS assessment. Monitor patient's mobility closely.

					appropriate fall prevention strategies.	
11	Pressure Ulcer Risk Assessment	Patient is bedridden with limited mobility.	None.	Prescribed with pressure-relieving mattress.	Assesses the patient's risk of developing pressure ulcers pressure ulcer risk assessment tool in EMR based on immobility, guiding preventive measures such as pressure-relieving support surfaces.	Implement preventive measures based on CDSS assessment. Ensure proper positioning and skin care.
12	Sepsis Screening and Early Detection	Patient presents with fever, tachycardia, and hypotension.	None.	Prescribed with blood cultures and antibiotics.	Sepsis Alert Helps healthcare providers screen for and detect early signs of sepsis based on clinical indicators, facilitating prompt intervention.	Act promptly on CDSS alerts indicating possible sepsis. Initiate appropriate management and monitoring.
13	Medication Reconciliation	Patient admitted from a long-term care facility.	Lisinopril 10mg once daily, Metoprolol 50mg twice daily.	Discrepancies in medication list between facilities.	Medication Reconciliation Alert Assists in reconciling the patient's medication list across transitions of care, identifying discrepancies and ensuring continuity of care.	Review and reconcile medication lists during transitions of care as recommended by CDSS.
14	Chronic Disease Management	Patient with poorly controlled diabetes mellitus.	Insulin glargine 20 units at bedtime.	Prescribed with additional oral hypoglycemic agent.	Supports the management of diabetes mellitus by providing recommendations for optimizing treatment and monitoring.	Follow CDSS recommendations for optimizing treatment and monitoring of diabetes mellitus.

Note: The alerts and notifications mentioned in the annexure are only suggestive and need not be incorporated verbatim by the digital system.

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Annexure-6 Few Examples of Notifications/ Contraindicative Tests Alerts

Examples of Notifications/ Contraindicative Tests Alerts						
Sr. No.	**Case**	**Patient Condition**	**Medical History**	**Prescribed Tests**	**Possible Effects**	**Notification**
1	X-rays or CT scans involving radiation exposure	Pregnancy	Pregnant woman in her second trimester	X-ray or CT scan for suspected injury	Risk of radiation exposure to the foetus, leading to potential developmental abnormalities or harm.	Patient is pregnant. Consider alternative imaging modalities or postpone the procedure, if possible, to avoid fetal radiation exposure.
2	Magnetic Resonance Imaging (MRI) with contrast dye	Severe kidney impairment	Patient with end-stage renal disease	MRI with contrast for evaluation of spinal injury	Risk of nephrogenic systemic fibrosis due to contrast dye, leading to potentially life-threatening condition.	Patient has severe kidney impairment. Use of contrast dye may increase the risk of nephrogenic systemic fibrosis. Consider alternative imaging techniques or non-contrast MRI.
3	Coronary angiography	Severe allergic reactions to iodine or shellfish	Known allergy to contrast dye	Coronary angiography for evaluation of chest pain	Risk of anaphylactic reaction to contrast dye, leading to severe allergic response and potential cardiovascular collapse.	Patient has a severe allergy to iodine or shellfish. Use of contrast dye may lead to anaphylactic reaction. Consider alternative diagnostic tests or pre-treatment with antihistamines and corticosteroids.
4	Mammography	Pregnancy	Pregnant woman in her first trimester	Mammogram for breast cancer screening	Risk of radiation exposure to the foetus, potentially causing developmental abnormalities or harm	Patient is pregnant. Postpone mammography until after pregnancy to avoid potential harm to the fetus from radiation exposure.
5	Prostate-specific antigen (PSA) test	Low risk of prostate cancer	Asymptomatic male with no family history of prostate cancer	PSA test for prostate cancer screening	Risk of false-positive results leading to unnecessary biopsies and treatment with potential adverse effects.	Patient has a low risk of prostate cancer. Consider the potential risks and benefits of PSA testing, including false-positive

						results and unnecessary interventions.
6	Pap smear (Cervical cytology)	Pregnancy	Pregnant woman in her third trimester	Pap smear for cervical cancer screening	Risk of discomfort, bleeding, or miscarriage due to cervical manipulation during the procedure.	Patient is pregnant. Postpone Pap smear until after pregnancy to avoid potential discomfort, bleeding, or risk of miscarriage.
7	Colonoscopy	Acute diverticulitis	Patient with severe abdominal pain and tenderness	Colonoscopy for evaluation of gastrointestinal bleeding	Risk of perforation or exacerbation of diverticulitis due to the invasive nature of the procedure	Patient has acute diverticulitis. Colonoscopy may increase the risk of perforation or exacerbate the condition. Consider alternative diagnostic methods or postpone the procedure until diverticulitis resolves.
8	Endoscopy with sedation	Severe respiratory compromise	Patient with chronic obstructive pulmonary disease (COPD)	Upper endoscopy for evaluation of gastrointestinal bleeding	Risk of respiratory depression or failure under sedation, leading to respiratory arrest.	Patient has severe respiratory compromise (e.g., COPD). Use of sedation during endoscopy may lead to respiratory depression or failure. Consider alternative approaches or closely monitor respiratory status during the procedure.
9	Ultrasound imaging with Doppler	Deep vein thrombosis (DVT)	Patient with suspected DVT in the lower extremities	Ultrasound with Doppler for DVT diagnosis	Risk of dislodging existing blood clots and causing embolism, leading to potentially life-threatening complications	Patient has a history of Deep Vein Thrombosis (DVT). Avoid Doppler Ultrasound due to risk of embolism. Consult with a specialist for alternative diagnostic methods
10	Bone densitometry (DEXA scan)	Pregnancy	Pregnant woman in her second trimester	DEXA scan for osteoporosis screening	Risk of radiation exposure to the foetus, potentially causing developmental abnormalities or harm	Patient is pregnant. Avoid DEXA scan due to risk of fetal radiation exposure. Consider postponing until after delivery or explore alternative screening methods
11	Positron Emission Tomograp	Breastfeeding	Lactating woman	PET scan for cancer staging	Risk of radioactive tracer passing into breast milk,	Patient is breastfeeding. Avoid PET scan due to risk of radioactive tracer

	hy (PET) scan				potentially exposing the infant to radiation.	transmission through breast milk. Consider delaying the scan or exploring alternative imaging techniques
12	Electroconvulsive Therapy (ECT)	Uncontrolled hypertension	Patient with severe hypertension	ECT for treatment-resistant depression	Risk of hypertensive crisis or cardiovascular complications during the procedure.	Patient has uncontrolled hypertension. Avoid Electroconvulsive Therapy due to risk of hypertensive crisis. Consult with a cardiologist or internist for blood pressure management before proceeding
13	Lumbar puncture (Spinal tap)	Increased intracranial pressure	Patient with suspected intracranial hemorrhage	Lumbar puncture for cerebrospinal fluid analysis	Risk of brain herniation due to pressure changes during the procedure, leading to neurological damage or death.	Patient has increased intracranial pressure. Avoid lumbar puncture due to risk of brain herniation. Consider non-invasive diagnostic methods or consult with a neurologist for alternative approaches
14	Electroencephalogram (EEG) with strobe light stimulation	History of seizures triggered by flashing lights	Patient with photosensitive epilepsy	EEG with strobe light stimulation for seizure evaluation	Risk of inducing seizures during the test, leading to potential injury or status epilepticus.	Patient has a history of seizures triggered by flashing lights. Avoid EEG with strobe light stimulation due to risk of inducing seizures. Consult with a neurologist for alternative seizure evaluation methods
15	Skin prick allergy testing	Currently taking antihistamines	Patient with allergic rhinitis	Skin prick test for allergy diagnosis	Reduced sensitivity of the test results due to the suppressive effect of antihistamines on allergic reactions	The patient is currently taking antihistamines. Avoid Skin Prick Allergy Testing due to potential suppression of allergic reactions. Consider discontinuing antihistamine use prior to testing or explore alternative allergy diagnostic methods

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1. Sutton, R.T., Pincock, D., Baumgart, D.C. *et al.* An overview of clinical decision support systems: benefits, risks, and strategies for success. *npj Digit. Med.* **3**, 17 (2020). https://doi.org/10.1038/s41746-020-0221-y
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Websites:

1. **National Institutes of Health (NIH):** The NIH provides resources and information on CDSS and its applications.
2. **Healthcare Information and Management Systems Society (HIMSS):** HIMSS offers resources and news on CDSS and other healthcare technologies.
3. **American Medical Informatics Association (AMIA):** AMIA is a professional organization focused on advancing medical informatics, including CDSS.

Annexure-7 Criteria for Admission in ICU

Admission to an Intensive Care Unit (ICU) is typically based on the severity of a patient's condition and the need for intensive monitoring and treatment that cannot be provided in a regular hospital ward. While criteria can vary slightly depending on the hospital and specific circumstances, here are some common criteria for ICU admission:

1. **Respiratory Failure:** Patients requiring mechanical ventilation or non-invasive respiratory support.
2. **Hemodynamic Instability:** Patients needing continuous monitoring and support for unstable blood pressure or cardiac conditions.
3. **Severe Sepsis or Septic Shock:** Patients with a systemic inflammatory response to infection that results in organ dysfunction or failure.
4. **Postoperative Care:** Patients requiring intensive monitoring and care after major surgery, particularly if complications are anticipated.
5. **Neurological Compromise:** Patients with conditions such as severe traumatic brain injury, stroke, or status epilepticus.
6. **Multisystem Organ Failure:** Patients with multiple organ systems failing who require complex and continuous management.
7. **Severe Trauma:** Patients with life-threatening injuries needing intensive monitoring and treatment.
8. **Acute Coronary Syndromes:** Patients with conditions like myocardial infarction that require intensive monitoring and intervention.

Criteria for Discharge from ICU

Discharge from the Intensive Care Unit (ICU) is generally based on clinical judgment and specific criteria indicating that the patient no longer requires the intensive level of monitoring and care provided in the ICU. Here are common criteria for ICU discharge:

1. **Stability in Vital Signs:** The patient has stable vital signs without the need for continuous invasive monitoring.
2. **Respiratory Stability:** The patient is able to maintain adequate oxygenation and ventilation without mechanical ventilation or with minimal respiratory support.
3. **Hemodynamic Stability:** The patient does not require continuous intravenous vasoactive medications to maintain blood pressure and cardiac output.
4. **Neurological Stability:** The patient's neurological status is stable or improving, and they do not require continuous intensive neurological monitoring.
5. **Resolution or Improvement of the Acute Condition:** The acute medical issue that necessitated ICU admission has resolved or significantly improved.
6. **Tolerating Oral Intake:** The patient can tolerate oral intake or has a manageable alternative for nutrition and hydration.
7. **Ability to be Managed in a Lower Level of Care:** The patient's care needs can be safely managed in a general ward or step-down unit.

Annexure-8 Key Performance Indicators (KPI) for 6th Edition Accreditation Standards for Hospitals

The concept of performance in health services represents an instrument for bringing quality, efficiency, and efficacy together. Performance represents the extent to which set objectives are accomplished. Performance is a multidimensional one, covering various aspects, such as evidence-based practice (EBP), continuity and integration in healthcare services, health promotion, and orientation towards the needs and expectations of patients.

Key Performance Indicators (KPIs) help to systematically monitor, evaluate, and continually improve service performance. By themselves, KPIs cannot improve performance. However, they do provide "signposts" that signal progress toward goals and objectives as well as opportunities for improvement.

Well-designed KPIs should help the organization to do a number of things, including:

- Establish baseline information, i.e., the current state of performance
- Set performance standards and targets to motivate continual improvement
- Measure and report improvements over time
- Compare performance across geographic locations
- Benchmark performance against regional and international peers or norms
- Allow stakeholders to independently judge health sector performance.

Healthcare organizations are encouraged to capture all data, which involves clinical and support services. The data needs to be analysed, and risks, rates, and trends for all the indicators must be demonstrated for appropriate action.

The intent of the NABH KPIs is to have comprehensive involvement of the scope of services for which an institution has applied for the accreditation program. Standardized definitions for each indicator along with numerator and denominator, have been explained. Each Healthcare Organizations (HCO) can have the data set, analyze the data and appropriate correction, corrective, and preventive action can be formulated. Each institution can also design their own methodology of data collection, but a broad guidance note has been given to facilitate the organization's compliance. Guidance has also been provided to explain how the data could be captured from the system (HIS/EMR). In all instances where the system is unable tocollate the numerator and/or denominator, at a minimum the system should have a provision for manual entry of the numerator and denominator to ensure that the indicator value is calculated automatically. Further, there are a few indicators for which it may not be possible for the system to collate the data. For such indicators, a specific note has been provided in the guidance.

The Department Specific key performance Indicators are to be captured from in - patients except where the indicator specifically mandates that all patients need to be included.

The suggested minimum sample size to be taken for various audits and KPIs as applicable has been specified.

Key Performance Indicators (KPI)

The Key performance indicators expected to be monitored by the healthcare organization

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
1	PSQ 3a	Time for initial assessment of indoor patients	The time shall begin from the time that the patient has arrived at the bed of the ward until the time that the initial assessment has been completed and documented by a doctor.	Sum of time taken for the assessment (in minutes)		Minutes	Monthly	This shall be captured either through the HIS or through an audit. In case of an audit, the sample size shall be as specified in the sample size calculation table. Daycare patients are not included. Sampling: Yes Sampling methodology: Stratified random For data captured through HIS- Sampling: No The system should track the number of records for which the initial assessment time could not be captured due to incomplete data.	The system generates a time stamp for the start time (time of the arrival of patient at the bed of the ward) and the end time (completion and documentation of initial assessment by doctor). The initial assessment is deemed to be completed when the data pertaining to chief complaint, history, examination findings, and provisional/ final diagnosis is captured. Any edits done subsequently to any of these fields shall not result in the alteration of the time stamp of the endpoint of the initial assessment.
				Total number of admissions					The denominator shall include all admissions except daycare.
2	PSQ 3a	Number of reporting errors/1000 investigations		Number of reporting errors	X1000	/1000 tests	Monthly	This includes reporting errors picked up after dispatch. This shall be captured in the laboratory and radiology. Reporting errors include transcription errors. For better analysis, the organization could capture the data separately for different laboratory departments (For example, Biochemistry/ Microbiology/Pathology) and imaging modalities (for example, X- Ray/USG/CT/MRI).	The numerator shall include any amendment or revision carried out after the report has been signed, and approved by the authorized signatory and the system has released the same.
				Number of tests performed					The denominator shall include the total number of tests performed until midnight of the last day of the calendar month.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
								modalities (for example, X-Ray/USG/CT/MRI). If a report has more than one error in it, the total number of errors should be counted. For example, 10 tests were performed, one report was generated for these 10 tests and if the results of two tests are revised, the value of the numerator shall be two and denominator shall be 10. Further, the organization could consider capturing data pertaining to reporting errors that were identified and rectified before the dispatch of the reports. This would enable the organization to improve its process. Although the indicator is collated on a monthly basis, immediate correction is to be initiated when such instances happen. Sampling: No	
3	PSQ 3a	Percentage of adherence to safety precautions by staff working in diagnostics.		Number of staff adhering to safety precautions Number of staff audited	X100	Percentage	Monthly	This shall be captured in the laboratory and radiology. This shall be captured by doing an audit on a monthly basis. The audit should be done by an individual outside of the department being audited. Even if the staff is not adhering to any one of the organization's/ statutory safety requirements, it shall be considered as non- PSQ3a Endocrinology>> Remarks section has these lines missing "For the calculation, if a patient has more than one hypoglycemic event during the stay and the targeted glucose level is achieved in all the events, then he/she is included in the numerator count." Sampling: Yes Sampling methodology: Stratified random	Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
4	PSQ 3a	Incidence of medication errors	A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer. (Ref: NCC- MERP).	Total number of medication errors Total number of opportunities	X100	Percentage	Monthly	The methodology for capture shall be as stated in NABH's document on medication errors. The indicator shall be captured for admitted patients. Sampling: Yes Sampling methodology: Stratified random	It is preferred that the data is captured through the system for all the sub-components of medication errors. Wherever there is a limitation in capturing the information through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
5	PSQ 3a	Percentage of in- patients developing adverse drug reaction(s).	Adverse Drug reaction is a response to a drug which is noxious and unintended, and which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or for the modification of physiologic function.	Number of adverse drug reactions Number of inpatients	X100	Percentage	Monthly	The organization needs to have a mechanism in place to ensure that all adverse drug reactions are captured and reported. Sampling: No	The organization can use or download PvPI software (Vigi Fow) to document and analyze adverse drug reactions. The numerator shall be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system). The denominator shall include the total number of inpatients until midnight of the last day of the calendar month.
6	PSQ 3a	Percentage of unplanned return to OT	Unplanned return to the OT is defined as any secondary procedure required for a	Number of unplanned returns to OT	X100	Percentage	Monthly	The data shall be captured with a delay of 30 days. This ensures that the organization has adequate time to capture complications that require an unplanned return to the OT.	The system shall count the total number of unplanned surgeries done within 30 days. Wherever there is a limitation in capturing the information through the

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
			complication resulting directly from the index operation during the same admission. For example, post-operative bleeding, debridement, secondary suturing, embolectomy, evaluation under anesthesia etc.					For example, the data which is collated in early January (assuming that the December data is being reported) would include surgeries done in the month of November. This also includes unplanned re-exploration. This shall not include surgeries under LA. However, if any such patient requires an unplanned return to the OT, the same shall be captured in the incident form. Sampling: No	system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
				Number of patients who underwent surgeries in the OT					The system shall count the total number of patients who underwent surgeries in the OT.
7	PSQ 3a	Percentage of surgeries where the organization's procedure to prevent adverse events like the wrong site, wrong patient, and wrong surgery have been adhered to.		Number of surgeries where the WHO safe surgery checklist was followed	X100	Percent age	Monthly	This should be done by a prospective audit. The audit shall be done when the surgery is being performed. A person(s) working in the OT complex could be entrusted with this responsibility. It is preferable that the identity of the person auditing is anonymized from the operating team. Sampling: Yes Sampling methodology: Stratified random (distributed across various days and operating surgeons).	Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
				Number of surgeries that were audited					
8	PSQ 3a	Percentage of transfusion reactions	Any adverse reaction to the transfusion of blood or blood components shall be considered as transfusion reaction. It may	Number of transfusion reactions	X100	Percent age	Monthly	The number of units includes whole blood and components. The denominator is the number of units transfused and not the number of units issued from the blood bank. Sampling: No	The numerator shall be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
			range from a mild allergic reaction (including chills/rigors) to a life-threatening complication like TRALI and Graft Versus Host Disease.	Number of units transfused					The denominator shall include the total number of units transfused until midnight of the last day of the calendar month.
9	PSQ 3a	Standardized Mortality Ratio for ICU		Actual deaths in ICU		Ratio	Monthly	Predicted death shall be calculated from models such as APACHE, SOFA, SAPS, MPM etc. Sampling: No	The system shall calculate the total number of deaths in all its ICUs until midnight of the last day of the calendar month.
				Predicted deaths in ICU					The denominator shall be captured through the system. Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data
10	PSQ 3a	Return to ICU within 48 hours		Number of returns to ICU within 48 hours	X100	Percent age	Monthly	This shall include data from all ICUs within the organization, excluding HDUs. Sampling: No	The system shall calculate the total number of returns in all ICUs within 48 hours until midnight of the last day of the calendar month.
				Number of discharges/transfers from the ICU					The system shall calculate the total number of discharges/transfers from all the ICUs until midnight of the last day of the calendar month.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
11	PSQ 3a	Return to the emergency department within 72 hours with similar presenting complaints		Number of returns to emergency within 72 hours with similar presenting complaints	X100	Percent age	Monthly	To capture this indicator, it may be a good practice to capture during the initial assessment itself if the patient had come within 72 hours for similar complaints. Sampling: No	The system shall calculate the total number of returns to an emergency within 72 hours with similar presenting complaints until midnight of the last day of the calendar month.
				Number of patients who have come to the emergency					The system shall calculate the total number of patients who have come to the emergency until midnight of the last day of the calendar month.
12	PSQ 3a	Incidence of hospital-associated pressure ulcers after admission	A pressure ulcer is a localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction.	Number of patients who develop new/ worsening of pressure ulcer	X1000	/1000 Percent age	Monthly	The organization shall use The European and US National Pressure Ulcer Advisory Panels (EPUAP and NPUAP) staging system to look for worsening pressure ulcers. Sampling: No	The numerator can be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).
				Total number of inpatient days					The denominator shall include the total number of in-patient days until midnight of the last day of the calendar month. To calculate the number of in-patient days only patients admitted in the wards and ICUs shall be included. Day care patients including patients undergoing dialysis, and emergency shall not be a part of this count.
13	PSQ 3b	Catheter-associated Urinary tract infection rate	As per the latest CDC/NHSN definition	Number of urinary catheter-associated UTIs in a month	X1000	/1000 urinary catheter - days	Monthly	Sampling: No	The numerator can be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
				Number of urinary catheter days in that month					There should be endeavors to capture the denominator data through the system.
14	PSQ 3b	Ventilator-associated Pneumonia rate	As per the latest CDC/NHSN definition	Number of "Ventilator-Associated Pneumonia" in a month	X1000	/1000 ventilato r- days	Monthly	Sampling: No	The numerator can be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).
				Number of ventilator days in that month					There should be endeavors to capture the denominator data through the system.
15	PSQ 3b	Central line-associated bloodstream infection rate	As per the latest CDC/NHSN definition	Number of central line-associated bloodstream infections in a month	X1000	/1000 central line days	Monthly	Sampling: No	The numerator can be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).
				Number of central line days in that month					There should be endeavors to capture the denominator data through the system.
16	PSQ 3a	Surgical site infection rate	As per the latest CDC/NHSN definition	Number of surgical site infections in a given month	X100	/100 procedu res	Monthly	Keeping in mind the definition of SSI, the numbers would have to be updated on a continual basis until such time that the monitoring period is over. For example, in January, the data for December would be reported. The denominator would be the number of surgeries performed in December, and that would not change. With respect to the numerator, there would be some data but it would not be complete data. Hence, whatever value the organization gets at	The numerator shall be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).
				Number of surgeries performed in that month					The system shall calculate the total number of surgeries performed until midnight on the last day of the calendar month.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
								this stage would at best be a preliminary value. The organization will continue to monitor the patients and by the end of January, will have complete data with respect to procedures which have a 30-day surveillance period. At this point in time, based on the data that the organization has collated the numerator may change and hence, the SSI rate. However, this again would not be the final data. The organization will continue to monitor procedures that have a 90-day surveillance period, and if there are new SSIs, it would get added to the numerator and thus the rate would change. The surveillance period for surgeries which are done in December and have a 90-day surveillance period would end on March 30th (give or take a few days). It is only at this point in time that the organization can have the final SSI rate for December. Sampling: No	
17	PSQ 3b	Compliance to hand hygiene practices		Total number of actions performed Total number of hand hygiene opportunities	X100	Percent-age	Monthly	Observation involves directly watching and recording the hand hygiene behavior of healthcare workers and the physical environment. A good reference is the WHO hand hygiene compliance monitoring tool. Please refer: http://www.who.int/gpsc/5may/tools/en/	Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
								http://www.who.int/entity/gpsc/5may/Observation_Form.doc?ua=1 Sampling: Yes Sampling methodology: Stratified random. However, the organization should try to ensure that all staff relevant categories of staff are covered at least once in a quarter.	
18	PSQ 3b	Percentage of cases who receive appropriate prophylactic antibiotics within the specified time frame		Number of patients who did receive appropriate prophylactic antibiotic(s) Number of patients who underwent surgeries	X100	Percentage	Monthly	The appropriate prophylactic antibiotic should be according to hospital policy. The numerator shall include patients who received the appropriate drug (and dose) within the appropriate time. A patient who was not given prophylactic antibiotic because it was not indicated (for example clean surgery) shall be included in the numerator. A patient who is given a prophylactic antibiotic even though it was not indicated, shall be considered as having received it inappropriately. Sampling: No	The system shall calculate the number of patients who did receive appropriate prophylactic antibiotic(s)until midnight of the last day of the calendar month. The system shall calculate the total number of patients who underwent surgeries until midnight of the last day of the calendar month.
19	PSQ 3c	Percentage of rescheduling of surgeries	Re-scheduling of surgeries includes cancellation and postponement (beyond 4 hours) of the surgery.	Number of cases re-scheduled	X100	Percentage	Monthly	Any case included in the OT list (including tentative/provisional) but rescheduled/canceled shall be included in the numerator. The start time for calculation of any delay shall be the first booked time for that particular case. Sampling: No	The system shall calculate the number of patients whose surgery was canceled or delayed beyond 4 hours from the planned time as per OT list.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
				Number of surgeries planned					The system shall calculate the total number of patients for whom the surgeries were planned until midnight of the last day of the calendar month. However, for the purpose of calculation, the system shall not include any planned surgeries of the subsequent month.
20	PSQ 3c	Turnaround time for the issue of blood and blood components	Time taken is to be calculated from the time the request is received in the blood bank till the blood is cross-matched/reserved and available for transfusion.	Sum of time taken (in minutes)		Minutes	Monthly	This will include blood outsourced from other Blood Banks, for those organizations not having in-house Blood Bank. Sampling: No	The system shall calculate the sum of time taken for the issue of all blood and blood components.
				Total number of blood and blood components cross-matched/reserved					The denominator shall include the total number of blood and blood components cross-matched/reserved until midnight of the last day of the calendar month.
21	PSQ 3c	Nurse-patient ratio for ICUs and wards		Number of nursing staff		Ratio	Continuous	The HCOs should calculate the staffing patterns separately for ICUs and the wards. The in-charge/supervisor of the area shall not be included for calculating the number of staff. It is preferable that in the case of ICU, the organization captures the ratio for ventilated and non-ventilated patients separately. To be calculated for each shift separately. Sampling: No	The system shall calculate the number of nursing staff in each location, each shift, each day. This data shall be used to calculate the average for a particular category (ward beds/ ICU ventilated/ICU non-ventilated) for each shift and day. The final step of the calculation involves capturing the average of all the categories of beds for all shifts.

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
				Number of occupied beds				The system shall calculate the total number of occupied beds in each location, each shift each day. This data shall be used to calculate the average for a particular category (ward beds/ ICU ventilated/ICU non-ventilated) for each shift and day. The final step of the calculation involves capturing the average of all the categories of beds for all shifts.
22	PSQ 3c	Waiting time for outpatient consultation	Waiting time is the length of time which one must wait in order for a specific action to occur after that action is requested or mandated. Waiting time for outpatient consultation is the time from which the patient has come to the concerned outpatient department (it may or may not be the same time as registration) till the time that the concerned consultant (not the junior doctor/resident) begins the assessment.	Sum total time (in minutes) for consultation Total Number of outpatients	Minutes	Monthly	In the case of appointment patients, the time shall begin with the scheduled appointment time and end when the concerned consultant (not the junior doctor/resident) begins the assessment. In cases where the patient has been seen ahead of the appointment time, the waiting time shall be taken as zero minutes. Sampling: No	The system shall calculate the sum of the total waiting time of all Outpatient consultations. The denominator shall include the total number of out-patient days until midnight of the last day of the calendar month.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
23	PSQ 3c	Waiting time for diagnostics	Waiting time for diagnostics is the time from which the patient has come to the diagnostic service (the requisition form has been presented to the counter) until the time that the test is initiated.	Sum total time (in minutes) Number of out-patients reported in Diagnostics		Minute	Monthly	Waiting time for diagnostics is applicable only for outpatients and for laboratory and imaging. In the case of appointment patients, the time shall begin with the scheduled appointment time and end when the diagnostic procedure begins. In cases where the patient's diagnostic test commences ahead of the appointment time, the waiting time shall be taken as zero minutes. Sampling: No	The system shall calculate the sum of total waiting time for patients for laboratory and imaging services. The denominator shall include the total number of out-patients who reported in laboratory and imaging until midnight of the last day of the calendar month.
24	PSQ 3c	Time taken for discharge	The discharge process is deemed to have started when the consultant formally approves discharge and ends with the patient leaving the clinical unit	Sum of time taken for discharge (in minutes) Number of patients discharged		Minute	Monthly	In case patients request additional time to leave the clinical unit that shall not be added. The discharge is deemed to have been completed when the formalities for the same have been completed. Day care patients are not included. Sampling: No	The system shall calculate the sum of the time taken for all the discharges. The denominator shall include the total number of patients discharged until midnight of the last day of the calendar month.
25	PSQ 3c	Percentage of medical records having incomplete and/or improper consent	Informed consent is a type of consent in which the health care provider has a duty to inform his/her patient about the procedure, its potential risk and benefits, alternative procedures with their risk and	Number of medical records having incomplete and/ or improper consent	X100	Percent age	Monthly	If any of the essential elements/requirements of consent is missing, it shall be considered incomplete. If any consent obtained is invalid/void (consent obtained from the wrong person/consent obtained by the wrong person, etc.), it is considered improper. Sampling: No	Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
			benefits so as to enable the patient to make an informed decision of his/her health care	Number of discharges and deaths				The denominator shall include the total number of patients discharged until midnight of the last day of the calendar month.
26	PSQ 3c	Number of stock-outs of emergency medications	A stock-out is an event that occurs when an item listed as an emergency medication by the organization is not available in the organization.	Number of stock-outs of emergency drugs	Number	Monthly	To capture this, the organization should maintain a register in the pharmacy and stores (and also, if necessary, in the wards) wherein all such events are captured. The organization shall capture the number of instances. In one instance, it is possible that there was a stock-out of more than one emergency drug. For example, if on the 7th there was an instance of stock out of two emergency drugs and on 24th there was an instance of stock out of one emergency drug, the value of the indicator would be two. Sampling: No	The system shall calculate the number of stock outs of emergency medications. In case the system does not capture this value, there should be a provision for entering the manually collected data
27	PSQ 3d	Number of variations observed in mock drills	A mock drill is a simulation exercise of preparedness for any type of event. It could be an event or disaster. This is basically a dry run or preparedness drill. For example, Fire -mock drill, disaster drill, Code Blue Drill.	Total number of variations in a mock drill	Number	Monthly	To capture the variation, it is suggested that every organization develop a checklist to capture the events during a mock drill. This shall also include tabletop exercises. Sampling: No	Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
28	PSQ 3d	Incidence of patient falls	The US Department of Veteran Affairs National Centre for Patient Safety defines fall as "Loss of upright position that results in landing on the floor ground or an object or furniture or a sudden, uncontrolled, unintentional, non-purposeful, downward displacement of the body to the floor/ground or hitting another object like a chair or stair." It is an event that results in a person coming to rest inadvertently on the ground or floor or other lower level.	Number of patient falls Total number of inpatient days	X1000	/1000 patient days	Monthly	Falls may be: • at different levels – i.e., from one level to ground level, for example from beds, wheelchairs or downstairs • on the same level as a result of slipping, tripping, or stumbling, or from a collision, pushing, or shoving, by or with another person • below ground level, i.e. into a hole or other opening in the surface All types of falls are to be included whether they result from physiological reasons (fainting) or environmental reasons. Assisted falls (when another person attempts to minimize the impact of the fall by assisting the patient's descent to the floor) should be included. (NDNQI, 2005). Sampling: No	The numerator shall be captured through an incident reporting module/software (stand-alone or integrated with HIS). The denominator shall include the total number of in-patient days until midnight of the last day of the calendar month. To calculate the number of in-patient days only patients admitted in the wards and ICUs shall be included. Daycare patients including patients undergoing dialysis, and emergency shall not be a part of this count
29	PSQ 3d	Percentage of near misses	A near miss is an unplanned event that did not result in injury, illness, or damage – but had the potential to do so. Errors that did not result in patient harm, but could have, can be categorized as near misses.	Number of near misses reported Number of incidents reported	X100	Percent-age	Monthly	A key to any near miss report is the "lesson learned". Near miss reporters can describe what they observed at the beginning of the event, and the factors that prevented loss from occurring. Sampling: No	The number of near misses can be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system). The number of incidents reported can be captured through an incident reporting module/software (stand-alone or integrated with HIS/EMR system).

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
30	PSQ 3d	Rate of needlestick injuries	Needlestick injury is a penetrating stab wound from a needle (or other sharp objects) that may result in exposure to blood or other body fluids. Needlestick injuries are wounds caused by needles that accidentally puncture the skin. (Canadian Centre for Occupational Health and Safety)	Number of needlestick injuries Average occupied beds	X1000	Rate	Monthly on a cumulative basis	The denominator is the average of the sum of the daily figures for the number of beds occupied by patients. The rate will be monitored on a monthly basis but reported cumulatively i.e. in the form of year to date. For example, in January it would be January data but in February it would be January + February data, in July it would be data from January to July, and so on so that by the end of the year the annual rate is obtained. Sampling: No	The number of needle stick injuries shall be captured through an incident reporting module/software (stand alone or integrated with HIS/EMR system). The system shall calculate the average occupied beds.
31	PSQ 3d	Appropriate handovers during shift change		Total number of handovers done appropriately Total number of handover opportunities	X100	Percent-age	Monthly	Handover is an important communication tool used by healthcare workers. The data can be collated together but it has to be captured separately for doctors and nurses. Handover documentation by each shift can be used as a guide to capturing the information. The handover information shared shall consist of the patient's current condition, recent changes in condition, ongoing treatment, and possible changes or complications. If the organization is using a standardized handover template (for example SBAR), for the handover to be deemed appropriate, all the components need to be filled. Though the organization shall use all or none	The system shall calculate the total number of handovers done appropriately. Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data. The system shall calculate the total number of handover opportunities based on the staff ROTA.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
								principle to report the numerator, organizations are encouraged to analyze the components and identify specific opportunities for improvement. Sampling: No	
32	PSQ 3d	Percentage of safe and rational prescriptions	Rational use of medicines requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.	Total number of safe and rational prescriptions Total number of prescriptions audited	X100	Percent age	Monthly	This includes only prescriptions for out-patients. This indicator shall be captured through the prescription audit. The methodology for audit shall be as stated in NABH's document on prescription audit. Sampling: Yes Sampling methodology: Stratified random	There should be endeavors to capture data through the system. Wherever there is a limitation in capturing the information through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

Department Specific key performance Indicators								
S. No.	**Standard**	**Indicator**	**Definition**	**Formula**	**Unit**	**Frequency of data collation/ Monitoring**	**Remarks**	**HIS/EMR system Guide**
Cardiology								
1	PSQ 3a	Percentage of Beta-blocker prescription with a diagnosis of CHF with reduced EF	Proportion of patients with Congestive Heart Failure for whom it is indicated beta blocker prescription at the time of discharge	Number of patients discharged with a diagnosis of CHF with reduced EF and prescribed a beta blocker at discharge / Number of patients discharged with a diagnosis of CHF	X100	Percentage	Monthly	Mandatory if specialty is in the scope and this is applicable only for admitted patients. The data has to be captured from the discharge summary. The 2022 AHA/ ACC/ HFSA Guidance for the Management of Heart Failure. 1. ACE/ ARB 2. Beta Blocker 3. Mineralocorticoid (MRA) receptor antagonist. 4. SGLT Inhibitor Step Ladder therapy guidelines	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
2	PSQ 3a	Percentage of patients with myocardial infarction for whom Door to balloon time of 90 minutes is achieved		Number of acute myocardial infarction (AMI) patients undergoing primary angioplasty for whom Door to balloon time of 90 minutes is achieved / Total number of AMI patients undergoing primary angioplasty	X100	Percentage	Monthly	Mandatory if specialty is in the scope. The start time shall be when the patient is diagnosed with AMI (STEMI at first ECG after arrival at the hospital) and the clinician decides to perform primary angioplasty as the first choice of treatment. The end time shall be the time of the first device activation. Reference: AHA Cardiac outcome assessment program (COAP)	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Endocrinology									
3	PSQ 3a	Percentage of Hospitalized patients with hypoglycemia who achieved targeted blood glucose level.	The definitions provided by the American diabetes association (ADA) from time to time shall be used to define hypoglycemia. The blood glucose level is detected by POCT as well as continuous glucose monitoring.	Number of patients with hypoglycemic events where the target glucose level was achieved post-treatment.	Number of patients with Hypoglycemic events	X100	Percentage	Monthly	Mandatory if the specialty is in the scope. As per the current ADA definition, the blood glucose level below 54 mg/dl requires immediate action. Hence for the purpose of this indicator only admitted patients experiencing an episode of blood glucose level below 54 mg/dl shall be included. The target glucose level is resolution of hypoglycemia namely glucose level greater than or equal to 70 mg/dl.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Obstetrics									
4	PSQ 3a	Spontaneous Perineal Tear Rate	A Perineal tear (Perineal laceration) is a tear in the tissue (skin and muscle) around the patient's vagina and perineum	Number of cases where a spontaneous perineal tear occurs	Total number of Vaginal deliveries	X100	Rate (per hundred vaginal deliveries)	Monthly	Mandatory if the specialty is in the scope. All four degrees of perineal tear should be included. An episiotomy may help to prevent a severe perineum tear during childbirth.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Ophthalmology								
5	PSQ 3a	Postoperative Endophthalmitis rate	Postoperative endophthalmitis is an inflammatory condition of the eye, presumed to be due to an infectious process from bacteria, fungi, or, on rare occasions, parasites that enter the eye during the perioperative period	Number of cases of postoperative endophthalmitis Total no of Ophthalmic surgeries	X100	Rate (per hundred ophthalmic surgeries	Monthly	Mandatory if the specialty is in the scope	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data
Gastroenterology								
6	PSQ 3a	Percentage of patients undergoing Colonoscopy who are sedated	**Minimal Sedation (Anxiolysis) -** A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected. **Moderate sedation (Analgesia) -** Indicates a drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation.	No. of patients sedated for the colonoscopy procedure Total number of patients undergoing Colonoscopy	X100	Percentage	Monthly	Optional Implementing sedation in GI Endoscopy will be considered good practice, However, the indicator pertains to Colonoscopy only as advised by the American Association of Gastroenterology. This includes all patients including out-patient and daycare.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Gastroenterology									
			No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained. **Deep sedation/ Analgesia -** A drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully after repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway and spontaneous ventilation is inadequate. Cardiovascular function is usually maintained. **General Anaesthesia -** A drug induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug induced depression or neuromuscular function. Cardiovascular function may be impaired.						

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Surgery									
7	PSQ 3a	Bile Duct injury rate requiring operative intervention during Laparoscopic Cholecystectomy	Bile duct injury during a Laparoscopic Cholecystectomy is an unintentional injury to the biliary tree that occurs during the operation.	Number of cases where bile duct injuries occurred during laparoscopic cholecystectomy and required subsequent operative intervention to repair the injury	Laparoscopic cholecystectomies performed	X100	Rate	Monthly	Optional. The injury may be detected intra-operative or in the postoperative period. All injuries requiring operative intervention shall be included for calculation of the indicator irrespective of the severity.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Biochemistry									
8	PSQ 3a	Percentage of POCT results which led to a clinical intervention.	Point of care testing is defined as laboratory testing conducted close to the site of patient care typically by non-lab personnel e.g. nurses, e.g. blood gases, electrolytes, troponin, and blood glucose.	Number of POCT tests which resulted in a clinical intervention where indicated.	Number of POCT tests where clinical intervention was deemed necessary.	X100	Percentage	Monthly	Optional The organization should have a mechanism to ensure that all POCT results are documented. Based on these results, it is preferable that the organization identifies results which require clinical intervention and documents the same.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Rehabilitation Medicine								
9	PSQ 3a	Functional gain following rehabilitation	Functional gain implies improvement in physical quality and activity.	The sum of the functional gain achieved before the discharge in patients undergoing neurorehabilitation. Total number of patients undergoing neurorehabilitation	X100	Rate (per hundred neurorehabilitation patients)	Monthly	Optional. This is applicable only to admitted patients undergoing neurorehabilitation (For example Stroke, Trauma, Spinal injuries, post-neurosurgery etc.). The organization shall use the Functional Independence Measure (FIM) scale. This assesses physical and cognitive disability. Ranges from 18 to 126. Higher scores indicate more freedom for patients. Further, this is a measure of disability for a variety of populations and is not specific to any diagnosis.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Sepsis Management								
10	PSQ 3a	Percentage of sepsis patients who receive care as per the Hour-1 sepsis bundle.	Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection	Number of sepsis patients who receive care as per the Hour-1 sepsis bundle. Total number of sepsis cases	X100	Percentage	Monthly	Mandatory if specialty (ICU) is in the scope The start time of the timeframe of one hour is when the patient reaches ER or ICU. In case the patient is shifted to the ICU from the ER, the start time is when the patient arrives at the ER.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Sepsis Management								
							The components of the Hour-1 bundle include measuring lactate obtaining blood culture before administering antibiotics, administering broad-spectrum antibiotics, beginning rapid administration of appropriate fluid, and applying vasopressors where appropriate. For the patient to be included in the numerator all the 5 components have to be met. Only if the organization does not have capabilities to measure the lactate level the same could be excluded. However, in all such instances the diagnosis of sepsis should be clinically proven.	entering the manual/ electronically collected (app/ online forms) data.
Respiratory Medicine/Pulmonary Medicine								
11	PSQ 3a	Percentage of COPD patients receiving COPD Action plan at the time of discharge	An action is a simple guide that helps patients to take care of patients their COPD.	Number of COPD patients provided with a COPD action plan at the time of discharge / Number of COPD patients discharged.	X100	Percentage	Monthly	Mandatory if specialty is in the scope. As recommended by GOLD standards. Some of the components of the action plan could include medications, advice regarding	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this

S. No.	Standard	Indicator	Definition	Formula		Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Respiratory Medicine/Pulmonary Medicine									
								smoking cessation and vaccination where appropriate.	indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Neurology									
12	PSQ 3a	Percentage of stroke patients in whom the Door-to-Needle Time (DTN) of 60 minutes is achieved.	Door-to-needle time is the time it takes for the stroke patient to receive thrombolytic.	Number of Stroke patients in whom the Door to needle time of 60 minutes is achieved. Number of stroke patients who receive thrombolytic therapy.	X100	Percentage	Monthly	Mandatory if the specialty is in the scope. The start time shall be when the patient arrives at the emergency and the end time is initiation of thrombolytic therapy.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Paediatrics									
13	PSQ 3a	Percentage of bronchiolitis patients treated inappropriately	In patients with bronchiolitis steroids, bronchodilators, and antimicrobials are not recommended and hence would constitute inappropriate treatment.	Number of patients treated inappropriately. Total number of patients with bronchiolitis	X100	Percentage	Monthly	Mandatory if specialty is in the scope American Academy of Pediatrics. This would be applicable mostly to children less than 24 months.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Paediatrics								
								Entering the manual/ electronically collected (app/ online forms) data.
Oncology								
14	PSQ 3a	Percentage of oncology patients who had treatment initiated following Multidisciplinary meeting (Tumour board	A tumor board is a multidisciplinary team including a group of specialists and other medical professionals who meet on a regular basis. The objective is to collectively choose the most effective course of treatment for a patient	Number of new oncology patients who had treatment initiated following multidisciplinary meeting (tumour board) Number of new oncology cases (all disciplines) treated in the month	X100	Percentage	Monthly	Mandatory if specialty is in the scope	If it is possible to retrieve data from his/emr, the data shall be captured through the system. However, considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Nuclear medicine								
15	PSQ 3a	Percentage of adverse reaction to radio-pharmaceutical	In general, the most common adverse reactions to radiopharmaceuticals are the following: nausea, dyspnea, bronchospasm, decrease in blood pressure, itching,f flushing, hives, chills, cough, bradycardia, muscle cramps, and dizziness.	Total number of patients who developed adverse reaction(s) to radiopharmaceutical Total number of patients receiving the radiopharmaceutical	X100	Percentage	Monthly	Mandatory if specialty is in the scope	If it is possible to retrieve data from his/emr, the data shall be captured through the system. However, considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Radiology								
16	PSQ 3a	Percentage of Intravenous Contrast Media Extravasation	Contrast extravasation is a problem that occurs when contrast dye leaks into the tissue around the vein where the IV is placed.	Number of Contrast extravasation Number of patients receiving contrast	X100	Percentage	Monthly	Mandatory if CT and/or MRI is in the scope. All patients undergoing intravenous contrast administration during CT or MRI are included in the calculation of this indicator	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data.
Emergency Medicine								
17	PSQ 3a	Time taken for triage	Triage is a process of prioritizing patients based on the severity of their condition so as to treat as many as possible when resources are insufficient for all to be treated immediately. The sorting of patients according to criteria which ensures that the most seriously ill or injured patient is treated before patients with less serious problems.	Sum of time taken (in minutes) for triage Total number of patients coming to the emergency		Minutes	Monthly	Mandatory The start time is when the patient arrives at the emergency and the end time is when the triage is completed.	The system generates a time stamp for the start time (time of the arrival of patient at the emergency) and the end time (completion of triage). The denominator shall include all patients coming to the emergency.

S. No.	Standard	Indicator	Definition	Formula	Unit	Frequency of data collation/ Monitoring	Remarks	HIS/EMR system Guide
Nephrology								
18	PSQ 3a	Percentage of patients undergoing dialysis who are able to achieve target hemoglobin levels		Number of patients undergoing dialysis who are able to achieve target hemoglobin levels / Total number of patients undergoing dialysis	X100	Percentage	Monthly	Mandatory if dialysis is in the scope. The target hemoglobin level in patients undergoing dialysis shall be between 11-12 gm/dl.	If it is possible to retrieve data from HIS/EMR, the data shall be captured through the system. However, Considering the challenges of data capture for this indicator through the system, there should be a provision for entering the manual/ electronically collected (app/ online forms) data

Sample size calculation (Monthly)

Screening Population#	Sample Size*
50	44
100	79
150	108
200	132
500	217
1000	278
2000	322
5000	357
10000	370
20000	377

#Screening population is the 'base' from which the samples would be selected. The 'base' shall be the average of the previous three months. For example, in the case of time for initial assessment of patients, this would be the average number of patients admitted per month in the preceding three months. Assuming that the average is 200, this would constitute the screening population and the organization would have to sample 132 patients over the entire month.

*For the recommended sample size, all the samples should be taken on a continuous basis.

Annexure-9 Key Performance Indicators (KPI) for 1st Edition Digital Health Standards for Hospitals

Key Performance Indicators (KPI)										
S. No.	Indicator	Indicator Brief	Inclusion Criteria	Exclusion Criteria	Formula	Unit	Frequency of data collation/	Corresponding Digital OE	Category	Remarks
1	Digital Appointment	The healthcare organization uses a digital system for patient appointments	OPD consultation s	All emergency visits, dialysis visits, chemotherapy visits, vaccination visits, wound-dressing or antibiotic therapy visits, diagnostic visits, i.e., all those consultations that do not require direct clinician consultation	{Number of OPD consultations booked digitally (either telephonically, through website or app) / Total number of OPD consultations including walk-ins} * 100	Percentage	Monthly	AAC 3.a The healthcare organization uses a digital system for patients' appointment.	Commitment	Healthcare organization should be using a HIMS/EMR system or any other digital system to book digital appointments
2	ABHA Creation	The healthcare organization uses ABDM compliant HIMS to create ABHA account for their patients.	New ABHA accounts created by healthcare organization	Existing patient ABHA account	Number of ABHA created by the healthcare organization	Number	Monthly	AAC 2.c The healthcare organization uses a digital system that has the capability to capture ABHA of the patient and link it to the unique patient identifier	Achievement	Healthcare organization should be using any ABDM compliant system to capture ABHA of the patient

3	Digital Prescription	Healthcare organization provides clinicians with a digital system to create prescriptions for OPD	OPD consultations	All emergency visits, dialysis visits, chemotherapy visits, vaccination visits, wound-dressing or antibiotic therapy visits, diagnostic visits, i.e., all those consultations that do not require direct doctor consultation	(Number of digital OPD prescriptions / Total number of OPD consultations) * 100	Percentage	Monthly	COP 3.a The healthcare organization uses a digital system for clinician to create OPD prescriptions and consultation notes.	Commitment	Healthcare organization should be using a HIMS / EMR system to create OPD prescriptions
4	Digital Nursing Notes	Healthcare organization uses a digital system for nurses to capture patient history and create nursing notes	IPD	NA	(Number of digital nursing notes / Total number of nursing notes prepared for patients) * 100	Percentage	Monthly	COP 2.b The healthcare organization uses a digital system for nurses to create IPD nursing notes.	Commitment	Healthcare organization should be using a HIMS / EMR system for nursing notes
5	IPD Digital Feedback	Healthcare organization uses a digital system to capture IPD patient feedback	Feedbacks collected by way of SMS, kiosk, IVRS, etc	Feedbacks collected on paper or verbal feedbacks are excluded	(Number of unique discharges that are accompanied by at least one digital feedback / Total number of unique discharges) * 100	Percentage	Monthly	AAC 8.a The healthcare organization uses a digital system to collect patient and/or family member's feedback.	Commitment	Healthcare organization should be using HIMS / EMR system to capture patient feedback

6	OPD Digital Feedback	Healthcare organization uses a digital system to capture patient feedback for all the OPD patients that avail the consultation facilities of the healthcare organization	Patients digital feedback	All emergency visits, dialysis visits, chemotherapy visits, vaccination visits, wound-dressing or antibiotic therapy visits, diagnostic visits, i.e., all those consultations that do not require direct doctor consultation	(Number of unique consultations that are accompanied by at least one digital feedback / Total number of unique consultations) * 100	Percentage	Monthly	AAC 8.a The healthcare organization uses a digital system to collect patient and/or family member's feedback.	Commitment	Healthcare organization should be using digital patient feedback system
7	Digital IPD Billing	Healthcare organization uses a digital system to create bills for IPD patients	Discharge Bills created on digital system for IPD	NA	(Number of discharge bills created digitally / Total number of discharges) * 100	Percentage	Monthly	FPM 3.e The healthcare organization uses a digital standardized billing template.	Core	Healthcare organization should be using HIMS or any digital billing system to generate patient bills
8	Digital Discharge Summaries	Healthcare organization uses a digital system to create digital discharge summaries	Digital discharge summaries include summaries captured on digital system and do not include the summaries created on paper	NA	(Number of discharge summaries created digitally / Total number of unique patient discharges) * 100	Percentage	Monthly	AAC 7.a The healthcare organization uses a digital system through which the primary clinician can request and update their patient's discharge information.	Achievement	Healthcare organization should be using a HIMS / EMR system to create patient discharge summary

9	System uptime	Average system uptime for critical healthcare systems/applications shall be 99% including scheduled maintenance	Critical healthcare systems	Non-critical systems and hardware	(Total system uptime in hours (for core healthcare application) / Total time) * 100	Percentage	Monthly	DOM 2.c The healthcare organization uses a digital system to monitor the performance of different healthcare applications.	Achievement	Healthcare organization must be using system monitoring applications to track application uptime and performance
10	Access and Security	A cyber-attack is an unauthorized system/network access by a third party that aims at destroying or stealing confidential information from the victim's system. Such unauthorized access attempts must be blocked, and logs must be maintained for reporting	Applicable to all digital systems	NA	Number of cyber or security attacks detected by Intrusion detection system, anti-virus, or firewall	Number	Monthly	DIS 2.c The healthcare organization uses a firewall that monitors incoming and outgoing network traffic.	Commitment	Healthcare organizations can use network logs and other security systems to access any suspicious activity and incidents.
11	IT support	Hospital provides support to manage IT related incidences	Applicable to all digital systems	Non-IT related incidences	Percentage of IT support tickets resolved within agreed SLA	Percentage	Monthly	DOM 3.c The healthcare organization uses a digital system to record and track IT security incidents, issues, changes, and problems.	Achievement	Healthcare organizations using ITSM platform can generate reports specifically related to SLA compliance.

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