A technology boost for achieving universal health protection

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Table of contents

Message from PwC

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The Indian insurance industry is expected to be worth USD 280 billion by the end of FY20,[1] owing to initiatives by the Government of India (GoI) and increasing awareness among the general population on the importance of insurance. Health insurance is one of the fastest growing segments in the insurance sector. With healthcare costs rising across the country and only a handful of the Indian population currently insured,[2] there is huge potential for growth of health insurance.

Realising this potential, GoI has launched multiple initiatives to support universal health coverage (UHC), including the Pradhan Mantri Jan Arogya Yojana (PMJAY)[3] and Mission Indradhanush.[4] PMJAY aims to provide medical coverage of INR 5 lakh to more than 100 million poor and vulnerable families, as identified by the Socio Economic and Caste Census 2011. Mission Indradhanush attempts to secure children against seven vaccine-preventable diseases. As health is a state subject, some state governments (e.g. West Bengal, Kerala, Telangana) have also taken similar, but independent, initiatives towards providing health insurance coverage to their citizens. In 2016, the Government of West Bengal launched a group health insurance scheme titled Swasthya Sathi,[5] which aims to cover more than 7.5 crore of the state's population. The scheme provides medical coverage for secondary and tertiary care for up to INR 5 lakh per annum per family. More than 1,500 private and government hospitals have been empanelled as part of the scheme.

This report reviews the Indian health insurance industry in a holistic manner and assesses the challenges faced by the key stakeholders (i.e. health insurers, healthcare providers and the insured). Key aspects of the Swasthya Sathi scheme have been reviewed, along with the current technological interventions being leveraged to operationalise it. The report also evaluates how digitisation can be used to reimagine the business and technology landscape and increase the operational effectiveness of the scheme. In addition, it shows how the envisioned business and technology landscape will address the key challenges faced by the stakeholders. The report also captures PwC's point of view on the current digital trends in the health insurance sector in India in general and, specifically, on how it can help in fulfilling the Government of West Bengal's vision to provide universal health protection to every resident of the state. Finally, we have presented our recommendations on the way forward for the state government and the key stakeholders, to enable an integrated digital health insurance ecosystem in West Bengal.

1. https://www.ibef.org/industry/healthcare-india.aspx
2. https://www.thehindu.com/news/national/rising-healthcare-costs-bankrupt-families-minister/article28335628.ece
3. https://pmjay.gov.in/about-pmjay
4. https://www.nhp.gov.in/mission-indradhanush1_pg
5. https://swasthyasathi.gov.in/

Introduction

State of the industry and global trends

The global health insurance industry has grown at a steady rate of growth and is expected to generate a revenue of USD 2.2 trillion by 2024, at a compound annual growth rate (CAGR) of 4.3%.[6] This growth is supported by increasing investment on healthcare by the government, high medical costs, increasing prevalence of chronic diseases and a growing geriatric population. Among health insurance providers, public players are ahead of the private ones and are expected to generate a revenue of USD 1.2 trillion by 2024.[7] Globally, the Asia Pacific (APAC) region is expected to witness the fastest growth in the healthcare industry and generate USD 0.5 trillion[8] in revenue by 2024.

State of health insurance in India

The health insurance sector in India is growing fast. There is growing interest among people in health insurance, aided by the increasing use of internet, higher disposable income among the working population, high quality of services from insurance companies, attractive products and competitive pricing options offered by insurance providers. With digital enablement, it has become easier to operationalise schemes and policies. Healthcare providers and insurance companies today not only need to meet the evolving needs of their customers but must also comply with the regulatory mandates from the government. At the same time, they must keep up with technological advancements to maintain a competitive edge.

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6. https://www.psmarketresearch.com/market-analysis/healthcare-insurance-market
7. https://www.globenewswire.com/news-release/2019/03/13/1752277/0/en/Healthcare-Insurance-Market-Size-to-Reach-2-2-Trillion-by-2024-P-S-Intelligence.html
8. https://www.globenewswire.com/news-release/2019/03/13/1752277/0/en/Healthcare-Insurance-Market-Size-to-Reach-2-2-Trillion-by-2024-P-S-Intelligence.html

Government initiatives to increase adoption of health insurance in India

One of the primary goals of the GoI is to further increase the number of people covered by health insurance. To increase awareness and healthcare penetration among citizens, the GoI has taken up multiple welfare schemes. The government-sponsored programmes, driven by the Rashtriya Swastha Bima Yojana (RSBY), are expected to provide coverage to nearly 380 million people by FY20.[9] RSBY was launched by the GoI in 2008 to provide health insurance coverage to people belonging to below poverty line (BPL) families and eleven other predefined categories.

The National Health Protection Scheme was also announced under Union Budget 2018–19, as a part of Ayushman Bharat,[10] which was introduced to improve healthcare facilities and insure 100 million Indian families. This scheme is expected to provide an insurance cover of up to USD 7,723 to more than 100 million vulnerable families of India. It offers cashless hospitalisation facilities in all public hospitals and select private hospitals. The insurance plan provides a coverage of INR 5 lakh for all the families in a year, without a cap on the number of family members.

As per Union Budget 2020–21, a fund of INR 69,000 crore has been allocated for the health sector.[11] Pradhan Mantri Jan Arogya Yojana (PMJAY), the world's largest social health scheme, was launched in September 2018. It is expected to provide coverage to around 50 crore people. Riding on the growing interest of people in health insurance, the Insurance Regulatory and Development Authority of India (IRDAI) was also in favour of 100% foreign direct investment (FDI) for all insurance intermediaries. The GoI allowed 100% FDI in the insurance sector while presenting Union Budget 2019–20.

9.   https://www.ibef.org/download/Insurance-October-2019.pdf
10.   https://www.ibef.org/industry/insurance-presentation
11.   https://www.downtoearth.org.in/news/health/union-budget-2020-21-unremarkable-for-health-sector-69113

About the Swasthya Sathi scheme

Applicability and coverage of the scheme

Health is a state subject as per the Constitution of India and all state governments have been striving to provide quality healthcare to their citizens. As part of these efforts, in 2016, the Government of West Bengal launched a group health protection scheme named 'Swasthya Sathi'. It offers basic health coverage for secondary and tertiary healthcare for up to INR 5 lakh annually, per family.

The scheme was launched to improve access to quality healthcare, protect beneficiaries against the burden of adverse health conditions and provide cashless, quality medical care. The beneficiaries include identified categories of regular/contractual/casual employees of various government departments in West Bengal, including various workers engaged in the implementation of state government schemes. The scheme covers an estimated 64 lakh families (7.5 crore people) across the state.[12]

The unit of enrolment for the scheme is a family. This unit is made up of the beneficiary, his/her spouse, dependent children and parents of both the spouses, and there is no upper cap on family size.[13] The scheme covers all pre-existing diseases and the entire premium is borne by the state government. The whole management of the scheme, right from issuance of Swasthya Sathi cards to keeping records of treatment and hospital claims settlement, is carried out on a paperless, digital platform.

12. https://www.wbhealth.gov.in/uploaded_files/tender/1633.pdf
13. https://www.wbhealth.gov.in/uploaded_files/tender/1633.pdf

Key enablers of the scheme

Such an ambitious vision of health insurance for such a large number of people is not without its unique challenges. Let us look at some of the key enablers of the Swasthya Sathi scheme and the role played by each of them in the long-term sustenance of the scheme.

1 Standardisation of healthcare facilities	**2** Economic viability for stakeholders	**3** Synergy with the pre-existing scheme(s)
4 Seamless enrolment of beneficiaries	**Key enablers of the Swasthya Sathi scheme**	**5** Seamless hospitalisation and claims processing
6 Identification of fraudulent cases	**7** Robust governance process	**8** Technology adoption

Source: PwC analysis

1. Standardisation of healthcare facilities

Apart from ensuring availability of adequate healthcare facilities across the state, it is equally critical to standardise facilities and services being offered to the beneficiaries of the scheme. Currently, more than 2,000 hospitals[14] are empanelled under the scheme. All state government hospitals with in-patient department (IPD) facilities are by default eligible to be registered. As for private healthcare providers, the eligibility criteria has been set out by the state government. During empanelment, all hospitals are graded based on marks obtained on the facilities and services available. There are four categories – Grade A (super/multi-speciality, etc.), Grade B (district hospitals, private hospitals with a 60–79% score), Grade C (score below 60% with a bed strength of minimum 30) and Grade R (bed strength 10 to 29) as per the facilities available.[15] The empanelment process is made simple enough to enable seamless enrolment of hospitals while ensuring that appropriate verifications and approvals are obtained.

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14.   https://swasthyasathi.gov.in/
15.   https://www.wbhealth.gov.in/uploaded_files/tender/1633.pdf

2. Economic viability for stakeholders

Healthcare providers, especially private hospitals, will look for incentives to continue participating in the scheme. Currently, more than 900 private hospitals across the state are empanelled under the scheme, having realised the potential of a large target consumer group of 7.5 crore people.[16] Private hospitals generally charge premium rates compared to government hospitals due to their upgraded infrastructure and services. But under this scheme, the hospitalisation rates have been defined by the state government. The rates are linked to the gradation of the hospital, irrespective of whether it is a private facility or a government one. The beneficiaries can avail the services of private hospitals without worrying about high charges.

While the scheme has considered the interests of beneficiaries as well as hospitals while defining the gradation categories and rates, it may also need to factor in the location of the hospitals. Cost of treatment is directly linked with the availability of local quality staff, i.e. doctors, nurses and technicians. At a later stage of the scheme, the health coverage amount and rates could be relooked at to factor in this aspect, if required. In the long run, the state government needs to maintain a balance between the sustainability of the scheme and the economic benefits to the stakeholders involved.

3. Synergy with pre-existing scheme(s)

Another important consideration for West Bengal's health insurance scheme is to maintain synergy with pre-existing schemes such as the RSBY.[17] The scheme was launched by the Union Ministry of Labour and Employment to provide health insurance coverage for BPL families. The primary objective of this scheme is to provide health insurance coverage to workers of unorganised sectors. Residents of West Bengal who work in unorganised sectors and are beneficiaries of the RSBY scheme are now covered under the Swasthya Sathi scheme. With a consumer base so wide, it is crucial to ensure appropriate transition from one scheme to another while ensuring awareness among the beneficiaries.

4. Seamless enrolment of beneficiaries

The state government has taken a proactive approach to enrol beneficiaries who are eligible for coverage under the scheme. For categories as notified by the state government's Department of Finance, data is collected from the head of the line department and verified by the district head. However, for extended categories such as those covered by RSBY and Socio Economic Caste Census (SECC)-deprived, physical enrolment forms are distributed by government representatives. The distinctive feature of this scheme is the availability of smart card based enrolment. Having considered the possibility of capturing incorrect beneficiary data, the state government has also made provisions to update existing beneficiary details via physical kiosks in hospitals.

5. Seamless hospitalisation and claims processing

Beneficiaries under this scheme are provided cashless services by healthcare providers, post verification of the smart card and fingerprint authentication. Beneficiaries are required to undergo an online pre-authorisation process, except for the maternity and day-care packages. The insurance company/third-party administrator (TPA) is mandated to respond within 24 hours else the pre-authorisation request is deemed approved. It becomes important for all involved stakeholders that the beneficiary enrolment data is updated in near real-time so that beneficiaries can avail hassle-free hospitalisation facilities. The entire claim-filing and reimbursement process is digital. The claim adjustment process is mandated to be completed within one month of receipt of the claim.[18]

16. https://swasthyasathi.gov.in/
17. http://rsby.gov.in/
18. https://www.wbhealth.gov.in/uploaded_files/tender/nit_2016_74.pdf

6. Identification of fraudulent cases

With such a large target consumer base and a wide network of hospitals, it becomes prudent for the state government and the insurer to prevent and detect fraudulent claims and malpractices. Cases such as false claims (for services which have not been provided), duplicate claims and forged identity of beneficiaries need to be detected and appropriate actions must be taken by the authorities. The state government has taken a forward-looking approach and mandated that some of these fraudulent cases and applicable penalties for these offences be part of the service-level agreement between the insurer and the network hospitals.

7. Robust governance process

Any large-scale implementation of a scheme calls for robust governance and seamless end-consumer support. The state government has taken multiple steps to ensure that its health insurance scheme is implemented well, and that beneficiaries are provided adequate support. Beneficiaries are provided with a self-help kit during enrolment which contains all information about the coverage of the scheme, list of empanelled hospitals, process of hospitalisation, etc. Additionally, in case of any query, beneficiaries may dial a toll-free number which is managed by a 24x7-centralised call centre.

To continuously improve its services with regard to the health insurance scheme, the state government has employed a grievance redressal mechanism for all the involved stakeholders. Beneficiaries may report their grievances against the insurer or hospitals or state government agencies to the District Grievance Redressal Committee (DGRC) or the State Grievance Redressal Committee (SGRC), depending on the nature of grievance. Similarly, hospitals and insurers may also report their grievances to the DGRC or the SGRC. Turnaround time and escalation matrix are defined by the state government to ensure timely resolution of grievances.

8. Technology adoption

Having realised the potential of technology, the state government has effectively leveraged it to create a connected ecosystem of stakeholders. All data such as details of beneficiaries, empanelled hospitals, health records of patients and claims settlement are digitised. The connected ecosystem is enabled through the usage of standardised business processes, a standardised IT platform and seamless data integration among different IT systems.

Digital adoption

## Current state of technology interventions

The Swasthya Sathi scheme is administered through a paperless IT platform which consists of a dedicated centralised database and a single window online system for various business processes. These processes range from collection, verification, and finalisation of data to enrolment of beneficiaries. Issuance of smart cards, empanelment of hospitals, claim management and reporting are also carried out with the help of this online system.

The scheme leverages technology in the following ways to support each of the enablers:

1. Standardisation of healthcare facilities

The finalised list of public and private hospitals prepared by the district administration is categorised into non-empanelled and empanelled by insurance companies. Hospitals are required to use the Swasthya Sathi portal to fill up the required information and upload all mandatory documents. The application is then authenticated through a one-time (OTP) based verification. Upon successful submission, the online details are duly verified and approved by the insurance company and/or the TPA, followed by final approval from the State Nodal Agency. The hospital grade is finally defined based on the verified infrastructure and manpower details and approved in the hospital empanelment database.
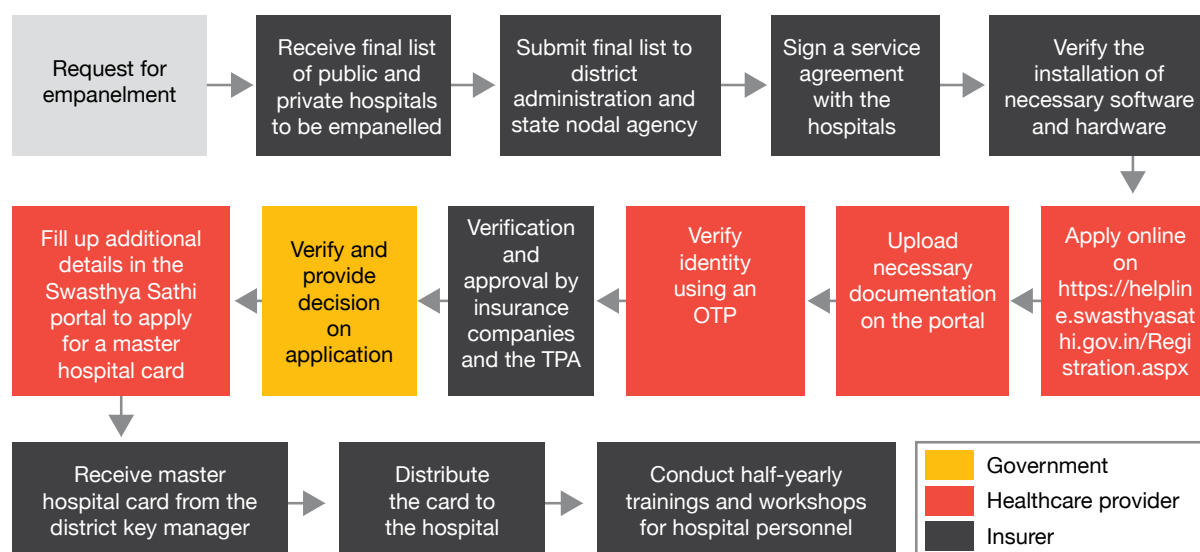
Hospital empanelment process[19][20]

Source: Department of Health and Family Welfare, Government of West Bengal

2. Economic viability for stakeholders

Service package rates of an empanelled hospital are determined by its grade. For each grade (i.e. Grade A, Grade B, Grade C and Grade R), a master rate sheet for various services is maintained at the back end. The service charge is automatically calculated once the healthcare provider inputs the service in the Swasthya Sathi portal during admission.

3. Synergy with pre-existing scheme(s)

Successful transition of pre-existing scheme(s) calls for single truth of data, i.e. maintenance of beneficiary master data in a single place to avoid data duplication, errors and inconsistencies. This is attempted through a data migration process to incorporate the details of RSBY beneficiaries in the Swasthya Sathi database.
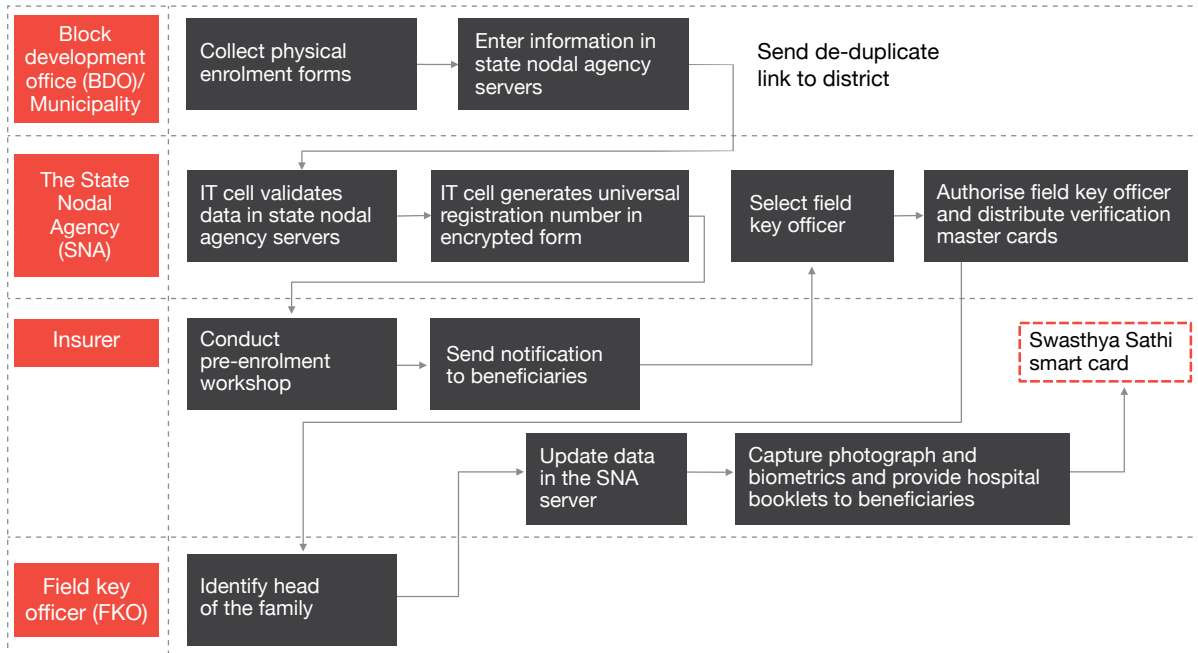
4. Seamless enrolment of beneficiaries

The State Nodal Agency/state government prepares the identified beneficiary database and uploads it on the portal. The process of enrolment is done with the help of 64 KB smart cards which are issued by the insurer to the beneficiary after encrypted beneficiary data is sent by the State Nodal Agencies. The smart card captures the beneficiary details such as photograph, biometric, address, mobile number, SECC ID, Aadhaar number (if available), etc. The use of technology also ensures deduplication of enrolment of beneficiaries. These smart cards are reverified by collecting fingerprints to ensure they are in working condition.

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19. https://swasthyasathi.gov.in/Content/HomeTabItems/Hospital_Empanelment_Process2020-08-1--11-12-302020-08-1--17-14-53.pdf
20. https://www.wbhealth.gov.in/uploaded_files/tender/nit_2016_74.pdf

However, this calls for appropriate security measures to ensure protection of sensitive data against ever-increasing cyberthreats.

Beneficiary enrolment and smart card distribution procedure[21]

Source: Swasthya Sathi official website

## 5. Seamless hospitalisation and claims processing

When a beneficiary visits an empanelled hospital, the healthcare provider first validates the authenticity of the smart card and then verifies his/her identity by using a family member's fingerprints. Then, using the smart card, the available balance is checked before admission. In certain cases, pre-authorisation is obtained from the insurer using the online portal. Upon approval, the hospital staff blocks the service charges (automatically calculated on the portal) on the smart card.

Post admission, if there is a change in diagnosis and the services rendered to the patient are different from those initially planned, there is a provision to update the charge in the same portal, along with diagnosis and clinical notes.

21.   https://swasthyasathi.gov.in/Content/HomeTabItems/BeneficiaryEnrolomentProcedure2020-27-1--17-27-54.pdf

On the day of discharge, a claim approval request is sent to the TPA/insurance company using the same portal. All communication related to the claim request, from approval until settlement, is handled through the portal, eliminating unnecessary ad-hoc communication. The real-time status of the claim is displayed on the portal. Finally, after claim approval, once beneficiaries are discharged from the hospital, the electronic health records are updated near real-time.
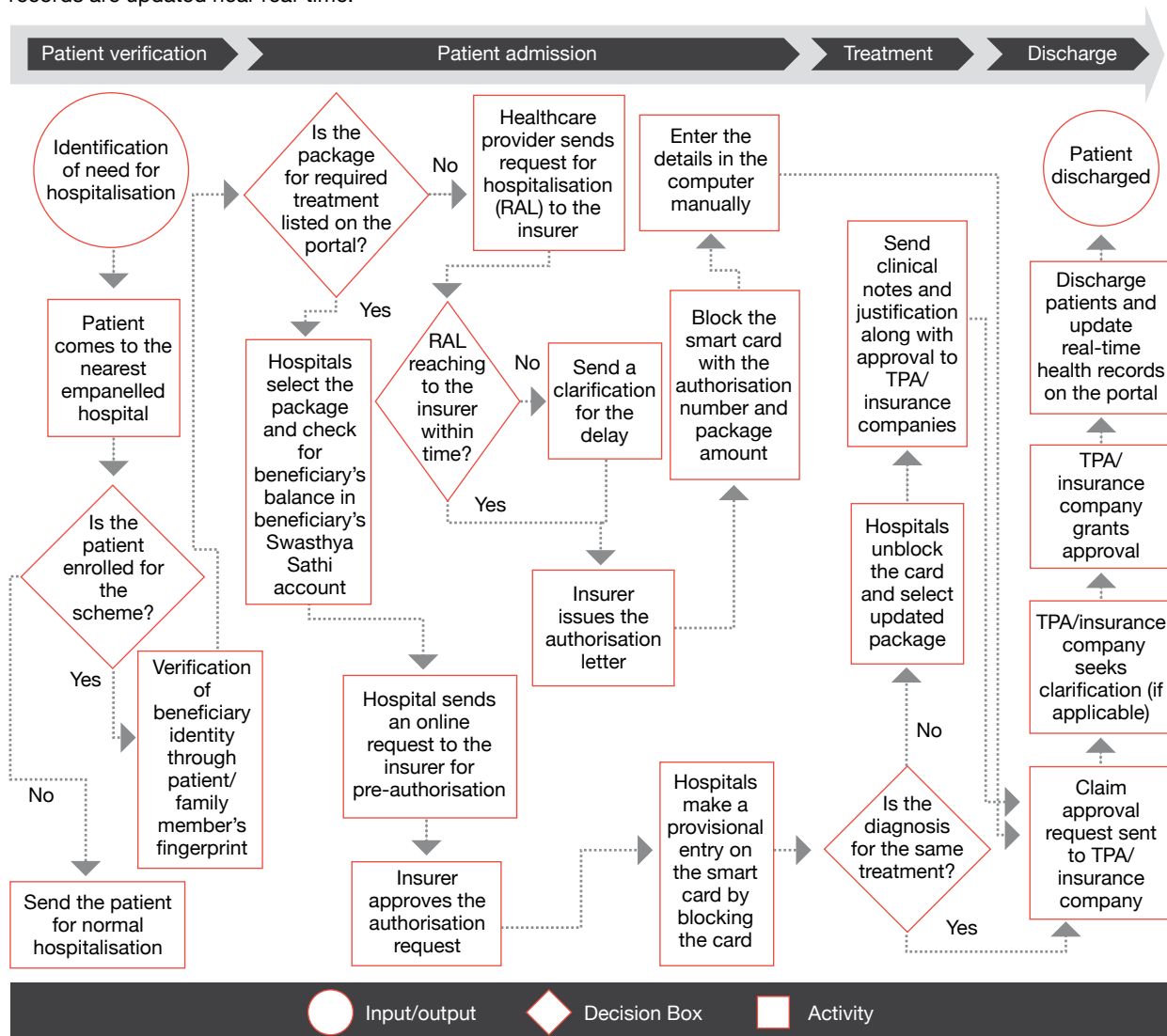
Claim management process[22]

Source: Department of Health and Family Welfare, Government of West Bengal

6. Identification of fraudulent cases

All the empanelled hospitals/healthcare service providers are required to install the requisite hardware and software to authenticate smart cards and validate the identity of beneficiaries and their insurance cover. The beneficiaries are considered eligible on the basis of their smart cards, which contain photographs and fingerprint details, and are read by the smart card readers. The patient's fingerprints are captured using biometric scanners and then cross-verified against the biometric data on the card. In the case of a newborn child, authentication is done using the fingerprint of any of the enrolled members on the card.

To analyse the data for improving the implementation of the scheme, the State Nodal Agency receives a detailed call log from insurers along with the responses from the insured persons on the last date of every month.

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22. https://www.wbhealth.gov.in/uploaded_files/tender/nit_2016_74.pdf

To avoid any discrepancy with the beneficiary card and chip personalisation, the smartcards issued after enrolment and the chips built on them are to be manufactured as per standard guidelines. These guidelines are already present on the Swasthya Sathi website.

7. Robust governance process

In order to maintain transparency, the grievance redressal platform is provided on the Swasthya Sathi website (swasthyasathi.gov.in). To streamline the process and avoid fraudulent entries, a beneficiary's identity is authenticated through an OTP. All grievances from beneficiaries are moderated prior to being published on the e-filing website. The moderation could be multilevel and is role based. In case of rejection, the content is reverted to the originator of the content for modification.

8. Technology adoption

As this scheme depends a lot on technology for most of its business operations, it is agreed with the insurers beforehand that they will have to ensure continuous servicing in cases of unforeseen technology and delivery issues. If any of the hardware devices or software stops working at the hospital premises, the insurer is responsible for repairing/replacing it within 72 hours[23] after the hospital files a complaint. This calls for a technology-enabled business continuity plan, including an automated disaster recovery capability (if not already planned).

Also, during the empanelment of hospitals, the required IT infrastructure is installed in the hospitals by the insurer. In that case, hospitals have to ensure that the system is continuously running at all times and in case of any usage problems, inform the concerned insurer.

All details regarding beneficiaries are updated regularly to avoid any gaps or inconsistencies. The insurer updates the daily enrolment data near real-time on the Swasthya Sathi database. Various reports and management information system (MIS) dashboards are built into the system, such as active hospital list, hospital facility details, transaction dashboard and universal registration number search.

Envisioned digital initiatives

Owing to changing business models, threats from competition and changing customer needs, the health insurance industry is going through a digital transformation and the Swasthya Sathi scheme is a part of this wider trend. The scheme provides a paperless platform to increase transparency and process effectiveness. Some of the technology use cases that have been planned in the future are discussed below.

1. Standardisation of healthcare facilities

#	Envisioned use case
1.A	Use of a digital platform to facilitate real-time change in gradation of hospitals Example: Grade B to Grade A due to upgrade of hospital infrastructure and facilities
1.B	• Incorporate real-time availability of bed feature in the online portal • Use of interactive voice response (IVR) in the existing call centre helpline, integrated with bed availability information on the nearest empanelled healthcare provider **Example:** An NGO in Mumbai has developed web and mobile application platforms to facilitate real-time availability of hospital services[24]
1.C	Virtual assistants/chatbots for real-time interaction between hospital and patients via mobile app or web interfaces

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23. https://www.wbhealth.gov.in/uploaded_files/tender/nit_2016_74.pdf
24. https://indianexpress.com/article/cities/mumbai/mumbai-now-an-app-to-locate-hospital-beds/

Bed availability
Show the number of beds available in the selected public/private hospitals

Submit request
Submit the request for the selected package/hospital/room/bed along with the smart card to initiate the application process before reaching the hospital

Type of room/request
Select the type of room required, e.g. intensive care unit (ICU)/outpatient department (OPD) or type of request, e.g. emergency

Initiate
Patient needs treatment and he/she goes to the portal first

Filters
Functionality for the patients to filter hospitals on the basis of grades/packages

Results
Show hospitals which are within 5 km radius and are a part of the Swasthya Sathi scheme

Detect location
Patient needs to enter his/her location or allow the location to be automatically detected through GPS

Hospital and bed availability for beneficiaries

Source: PwC analysis

2. Economic viability for stakeholders

#	Envisioned use case
2.A	Provision of analytical tools to beneficiaries to estimate the approximate cost of service/package in a healthcare centre, as per the rate chart fixed by the regulator
2.B	Provision of analytical tools to healthcare providers to estimate the probable volume of patients who are enrolled in the Swasthya Sathi scheme **Example:** A private hospital in the U.S. leverages data analytics to predict patient inflow in order to effectively manage staffing levels[25]
2.C	Use of analytics to consider the 'location' factor for deriving package rates of procedures

25. https://healthtechmagazine.net/article/2019/10/how-hospitals-use-analytics-staff-rush

3. Synergy with pre-existing scheme(s)

#	Envisioned use case
3.A	Use of data management tools to enable data cleansing and seamless migration of RSBY beneficiaries data to the Swasthya Sathi platform

4. Seamless enrolment of beneficiaries

#	Envisioned use case
4.A	Scheduled batch synchronisation of beneficiaries enrolment database for low-connectivity areas
4.B	Provision of service request facilities to beneficiaries to update incorrect details, if any
4.C	Use of appropriate cyber security measures to protect personal data and prevent data breach

5. Seamless hospitalisation and claims processing

#	Envisioned use case
5.A	Use of blockchain platform to facilitate secure health information exchange among healthcare providers and health insurers, increasing interoperability in the health insurance ecosystem **Example:** A U.S.-based medical billing company uses application programme interfaces (APIs) and blockchain seamlessly to connect patients, payers, labs, pharmacies, and other stakeholders of the patient journey. Patients will have the ability to track and allow transfer of their medical records from one healthcare provider to another.[26]
5.B	Use of blockchain to manage the end-to-end claims lifecycle starting from claim filing, adjudication and payment
5.C	Use of predictive analytics on the patient health records database to enable health profiling of patients and provision of preventive care

6. Identification of fraudulent cases

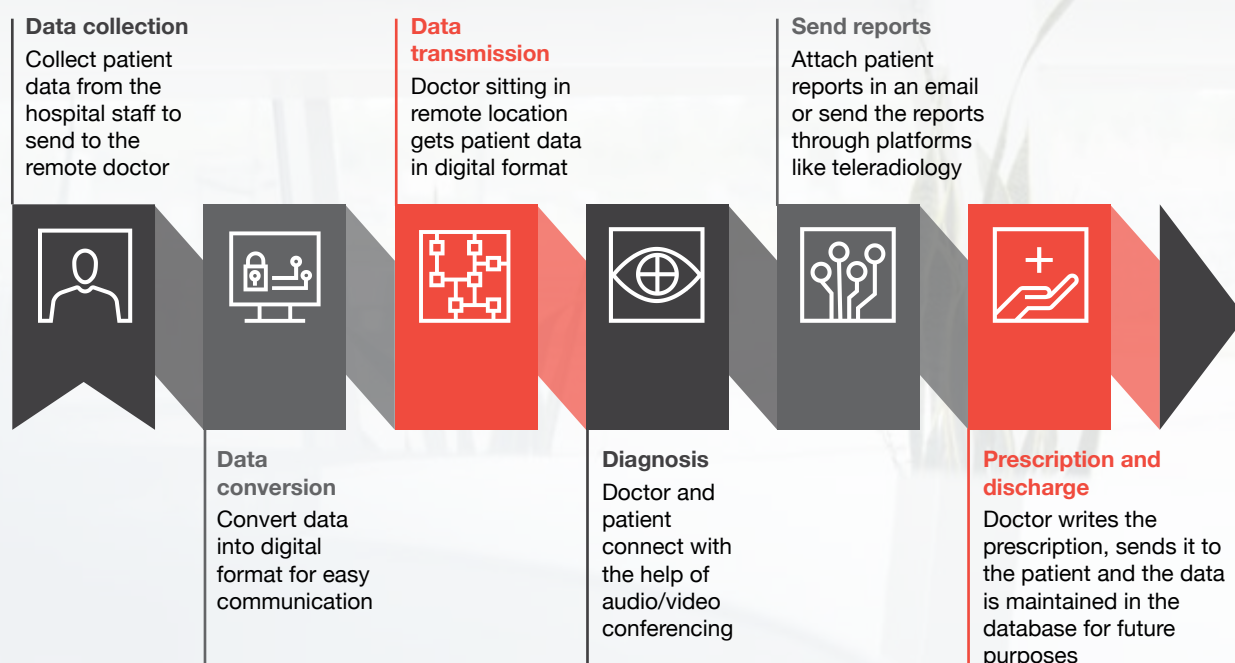| #	Envisioned use case
6.A	Use of blockchain technology by moving insurance claims onto an immutable ledger, to eliminate common sources of fraud in the insurance industry
6.B	Use of forensic technology to analyse historical transactional health data to identify irregularities and uncover potential criminal activity

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26. https://www.mtbc.com/products-services/electronic-health-records-ehr

7. Robust governance process

#	Envisioned use case
7.A	Use of chatbots/robotics process automation (RPA) and machine learning to intelligently respond to queries and grievances raised by stakeholders **Example:** Voice assistants are used to remind elderly people to take their medicines on time for timely recovery.[27]
7.B	Use of big data analytics to analyse grievances raised on the Swasthya Sathi portal and consumer sentiments on social media, etc.

8. Technology adoption

#	Envisioned use case
8.A	Secure exposure of interfaces for integration between provider/insurer systems and government database for verification, payments, etc.
8.B	Adoption of hybrid cloud computing technologies instead of the traditional on-premise model
8.C	Availability of disaster recovery facility and provision of automatic failover and failback in case of a declared disaster
8.D	Remote delivery of healthcare services (telemedicine) like health assessments and consultations **Example:** In West Bengal, telemedicine centres have already been established in two hospitals.[28]

Data collection
Collect patient data from the hospital staff to send to the remote doctor

Data conversion
Convert data into digital format for easy communication

Data transmission
Doctor sitting in remote location gets patient data in digital format

Diagnosis
Doctor and patient connect with the help of audio/video conferencing

Send reports
Attach patient reports in an email or send the reports through platforms like teleradiology

Prescription and discharge
Doctor writes the prescription, sends it to the patient and the data is maintained in the database for future purposes

Telemedicine process

Source: PwC analysis

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27. http://www.businessworld.in/article/How-Digital-Technologies-Are-Reshaping-the-Health-Insurance-Sector-to-Empower-Consumers-/06-10-2019-177111/
28. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2782224/

Challenges ahead

The following challenges are likely to arise during the implementation of the recommendations discussed in the previous section.

#	Key challenge	Description
1	Technological maturity	While some of the recommendations provided above leverage mature technology, others involve emerging technologies which are still evolving at their natural pace. Consequently, there is a higher degree of variability and increased risk of failure.
2	Prioritisation of initiatives	While there could be multiple available use cases, it is critical to prioritise and focus on the 'low-hanging' initiatives, i.e. those that have high importance and low complexity.
3	Operational challenges in rural areas	Any technological initiative requires reliable IT infrastructure. However, in certain rural areas, there might be frequent disruptions of network connectivity. If the overall system architecture does not factor this, the user experience will definitely be impacted.
4	'Digital-naive' end users	Even in the era of science and technology, there is a huge gap between users and non-users of digital government services. So, it is critical to ensure that the designed processes and technology interfaces are easy enough to be operated by 'digital-naive' users.
5	Privacy and security	In today's world of continuous cyberthreats, it has become extremely important for all involved stakeholders to take utmost care for protection of data. Any incident of data breach could have a severe impact on the entire ecosystem and beneficiaries could lose faith in the credibility of digital platforms.

Way forward

The Government of West Bengal has made clear commitments towards fulfilling the vision of universal health protection. In order to do so, an efficient digitally enabled ecosystem has been established. Business processes such as empanelment of healthcare providers, enrolment of beneficiaries, hospitalisation and claim processing have been computerised with the aim of efficiency and transparency. This report has discussed some additional technological recommendations which may further improve the ecosystem.

1.A	Real-time hospital gradation update	1.B	Real-time bed availability in hospitals	1.C	Interaction between hospital and patients using chatbots		
2.A	Service cost prediction for beneficiaries	2.B	Patient volume prediction for hospitals	2.C	Dynamic rate chart depending on hospital location		
3.A	Data management tools for migration of RSBY beneficiaries data to SS						
4.A	Batch synchronisation of data in low-connectivity areas	4.B	Online profile update facility for beneficiaries	4.C	Personal data protection using cyber security measures		
5.A	Health information exchange platform using blockchain	5.B	Claim lifecycle management using blockchain	5.C	Health profiling of patients and preventive healthcare using analytics		
6.A	Automated fraud prevention using blockchain	6.B	Fraud detection using forensic technology				
7.A	Automated intelligent responses to grievances using chatbots	7.B	Sentiment analysis of beneficiaries using big data analytics				
8.A	Secure integration among systems	8.B	Adoption of hybrid cloud model	8.C	Automated failover/ failback in case of disaster	8.D	Telemedicine services

Summary of our recommendations

Source: PwC analysis

Further, a qualitative assessment of the impact of each of the recommendations on the ecosystem has been provided, along with the possible complications posed by implementation. Based on these two factors (i.e. impact and complexity), the priority of implementation of the recommendations has been derived.

Impact	Complexity: Low	Complexity: Medium	Complexity: High
High	4.A 4.C 5.A 5.B 5.C 6.A 6.B	1.A 8.A 8.B 8.C	1.B
Medium	3.A	2.B	2.C
Low	2.A 4.B	1.C 7.A 7.B 8.D	

Priority: **High** (dark) / **Medium** (yellow) / **Low** (red)

Prioritisation framework

Source: PwC analysis

Basis the priority of the recommendation, we envision a phase-wise approach for implementation.

	Phase 1 (Short term) (0–6 months)	Phase 2 (Mid term) (7–12 months)	Phase 3 (Long term) (12–18 months)
1. Standardisation of healthcare facilities	1.A	1.B	1.C
2. Economic viability for stakeholders		2.A 2.B	2.C
3. Synergy with the pre-existing scheme(s)	3.A		
4. Seamless enrolment of beneficiaries	4.A	4.B 4.C	
5. Seamless hospitalisation and claims processing		5.A 5.B 5.C	
6. Identification of fraudulent cases		6.A 6.B	
7. Robust governance process			7.A 7.B
8. Technology adoption	8.A 8.B 8.C		8.D

Priority: **High** (dark) / **Medium** (yellow) / **Low** (red)

Roadmap for implementation

Source: PwC analysis

About BCC&I

The Bengal Chamber of Commerce and Industry (https://bengalchamber.com/), is one of the oldest institutions of its kind tracing its origins to 1833. The Chamber has played a pioneering role as a helmsman, steering the evolution of Commerce and Industry in India. The Chamber reviewed and commented upon some of the most critical legislation in the country. The Bengal Chamber was involved in the conceptualization of the airport in Kolkata and the Howrah Bridge and had lobbied for creation of overland trade routes with China through Tibet. The Bengal Chamber has helped in the formation of a slew of educational and cultural institutions – Indian Institute of Management Calcutta, Indian Institute of Social Welfare and Business Management (IISWBM), Nazrul Manch and the Academy of Fine Arts apart from bringing to Kolkata the son-et-lumiere at the Victoria Memorial.

Today, The Chamber is deeply involved in areas like Healthcare, Information Technology, Education, Energy and Environment, Finance and Banking, Corporate Governance, MSME Development, Manufacturing, Infrastructure, Tourism - to name a few and has now assumed a multi-faceted role.

The Chamber has a vibrant IT Committee consisting of the leading developers, consultants, corporates, academia. Start Ups have also been included. The focus has always been to communicate and create a bridge between the technology users and the developers on how the synergy may be enhanced with disruptive innovations. Towards this, the 10th Edition of our Business IT Conclave (BITC) was on "Synergy with Disruptive Innovations". BITC creates a platform for the stakeholders of technology including the providers, users, academia, incubators and startups to network, interact, brainstorm and share best practices on the emerging technologies and their applications.

There is always a constant focus of connecting the stakeholders with larger markets through dedicated B2B and B2G Meetings in partnerships in Embassies and Consulates in India, bilateral Chambers of Commerce and other similar organizations.

The Chamber has set up Webel-BCC&I Tech Incubation Centre to encourage entrepreneurship and facilitate deserving potential entrepreneurs a platform to initiate Start Ups which would be a contribution to the StartUp Movement of the State. The incubates are provided mentorship by the Mentor Group and Chamber's experts on the domain knowledge and ancillary areas of business like Taxation, Legal and IPR and others. The viable businesses are connected with financers and collaborators.

The Bengal Chamber's Health Committee has been playing an important role in addressing the critical aspects in the field of healthcare in the State and has been catalytic in bringing about significant corporate consciousness in healthcare management. It has organized Health Expos, Panel Discussions, Lectures on Health issues by leading and iconic personalities in Health from the fraternities of doctors, entrepreneurs and policymakers. The Chamber's National Health Debate also deserves special mention, which were addressed by national and international personalities. The Committee also organizes quiz on health & lifestyle to create awareness on healthy living. The Committee's activities also include B2B Meet with the IT companies to discuss latest offerings relevant to the healthcare sector, Medico Legal Workshop involving doctors, lawyers and hospital administrators to learn and share the experiences on medico legal issues & guidelines, Blood Donation Camp, Seminar on Deceased Organ Donation as a gesture of our responsibility to our Society. The Committee also celebrates Doctor's Day in a unique way by organising Panel Discussion, Quiz with the Doctors of our Society. The Committee also engages in Policy Advocacy.

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About Medica Synergie Group of Hospitals

Touching new heights in healthcare delivery in the east

Medica Hospitals, one of the most reputed and leading healthcare chains in eastern India today, has built and managed a number of Multispecialty and Superspecialty healthcare facilities across the region over the past few years.

Beginning its journey with Medica North Bengal Clinic (MNBC) in Siliguri in 2008, the Group launched its flagship Hospital – Medica Superspecialty Hospital (MSH) – in Kolkata in 2010. Soon after Medica Cancer Hospital in Rangapani, Siliguri, fulfilled the dire need of a comprehensive cancer facility in North Bengal, and the trust hospital R.C. Agarwal Memorial run by Medica in Tinsukia brought quality multispecialty healthcare to Assam.

Medica tied-up with Tata Steel in 2014 to run the operations of Kantilal Gandhi Memorial Hospital (an existing unit in Jharkhand) and with the Jain Samaj for Bhagwan Mahavir Medica Superspecialty Hospital (a new venture in Ranchi). Tata Steel Medica Hospital in Kalinganagar, Odisha, began operations in 2015. In 2017 Medica stepped into Bihar with a specialized heart care unit, Medica Heart Institute, in Patna, providing comprehensive heart care services in the region. The same year and the group's Burdwan unit (multispecialty hospital) also became functional. On the anvil are healthcare units in Asansol and Gopalpur. Medica is also coming up with a Superspecialty Cancer Hospital in Kolkata.

Medica Superspecialty Hospital, Kolkata

A unit of Medica Synergie, the Kolkata Hospital, located in Mukundapur, off EM Bypass, is today one of the most respected and trusted healthcare providers in Eastern India. Filling a huge lacuna in tertiary healthcare in the east, Medica has kept its promise of delivering quality healthcare using ethical practices in a transparent set up. Medica has revolutionized healthcare delivery in the region through not just technological advancements and innovative treatment techniques, but also in the area of patient care.

Our specialties

Medica has eight Centre of Excellence – Neurological Diseases, Cardiac Sciences, Orthopedics, Gastroenterology, Hepatology & GI Surgery, Kidney Diseases, Critical Care, ENT and Breast Diseases – headed by renowned specialists and surgeons, with comprehensive treatment facilities. The Hospital also has departments of Obstetrics & Gynecology, Pediatrics, Endocrinology & Diabetes, Dermatology, Plastic Surgery, Internal Medicine & Surgery, Bariatric & Metabolic Surgery, Comprehensive Hernia Surgery, Endocrinology & Diabetes, Psychiatry & Psychology and international standard Physical Therapy & Rehab services for post-surgery and medical management of patients along with specialized services in sports injury management and counseling.

Other locations

Medica operates a 150-bed multi-specialty hospital in Jamshedpur, and a 200-bed unit in Kalinganagar (Odisha) in collaboration with Tata Steel, a 300-bed Superspecialty hospital in Ranchi (Jharkhand), two hospitals in Siliguri (including the district's only comprehensive Cancer Hospital), a specialized Heart Hospital in Patna, and multi-specialty hospitals in Tinsukia, Assam, and in Burdwan, West Bengal. In the international arena, the Group has presence in Bangladesh, Bhutan, Nepal and Myanmar.

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About PwC

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 157 countries with over 276,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

In India, PwC has offices in these cities: Ahmedabad, Bengaluru, Bhopal, Chennai, Delhi NCR, Hyderabad, Kolkata, Mumbai, Pune and Raipur. For more information about PwC India's service offerings, visit www.pwc.in

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

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