

Prove. Accelerate. Demonstrate.

We are supporting technology solutions in ideating, conducting technical and commercial validation of the high-impact solutions and providing market access, business advisory support and raising capital for sustainable scale up towards creating deep impact.

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With nearly 72,000+ enterprises, the

**emergence** of startup culture in India is relatively new. We have over 4,500 startups in varied sectors ranging from Internet of Things (IoT), robotics, artificial intelligence, to analytics. This boom in entrepreneurship has expanded the job market and provided innovative solutions in domains like health, education, and infrastructure. However, tech enterprises continue to face challenges as well, including lack of access to capital and market intelligence, poor revenue-generating models, lack of infrastructure, and complicated compliances and regulations.

We recognise the need to create a growth conducive environment for enterprises ensure a sustainable scale up. Our team engages with tech enterprises to 'prove' efficacy of solutions, 'accelerate' growth and 'demonstrate' scalable impact. Through our agile, customer centric, innovative approaches, our team brings a unique opportunity for early-stage healthcare entrepreneurs to test solutions, discover right price point of offerings, get capital, mentoring, and access to a global network of operators, investors, & corporations to fast-track scalable healthcare solutions using technology and entrepreneurial innovation.

Our experts well understand the subject, including challenges faced by tech solutions, technical requirements, compliances and protocols, identifying price discovery, business models, market for solutions etc. to help enterprises embed scalability, sustainability into their growth agenda.

# OUR SERVICE OFFERINGS



**Technical Validation** 

Support solutions in scientifically proving the product/solutions



Business Intelligence Support solutions in understanding the market needs, target audiences





Any new solution requires a scientific technical validation (TV) where it is compared with existing Gold standard measurement yardstick or similar solutions in similar theme and/or the solutions is validated. It is followed by obtaining necessary regulatory clearances, certifications etc. Our team of experts develop the technical validation framework, regulatory compliances requirements, and leverage existing and forge new partnerships.

# Key enterprises to be supported: Enterprises at Technology Readiness Level of 3-5

# **KEY THEMES**

- Medical Equipments
- Software as a service (SaaS)
- Software as a Medical Device (SaMD)
- Artificial Intelligence (AI) Solutions
- other healthcare solutions

SUPPORT OFFERINGS	
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- Link with Subject Matter Experts/ Advisors
- **Conducting validation & evaluation**
- **Provide Technical Validation report**
- Regulatory Compliance Advisory (CDSCO, CE, Patent etc.)

# **Commercial Validation**

Commercial validation (CV) involves deploying the solution in different types of settings and finding out its acceptability, user feedback, accepted price point and planning a go to market strategy. We develop commercial validation frameworks, conduct evaluation studies, discovery of price point.

# Key enterprises to be supported: Enterprises at Technology Readiness Level of 5+

KEY TH	EMES	
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- Medical Equipments
- Software as a service (SaaS)
- Software as a Medical Device (SaMD)
- Artificial Intelligence (AI) Solutions
- Health products
- Supply chain solutions
- Other solutions

- SUPPORT OFFERINGS
- Identify the price point for the product/solution
- Go-to market strategy for the product solution
- Link with Subject Matter Experts/ Advisors (if required)
- Support in publications related to validation & evaluation
- **Provide Commercial Validation report**



A market accelerator brings a unique opportunity for early-stage entrepreneurs to get capital, mentoring, & access to a global network of operators, investors, & corporations. It is set to identify, fund, and fast-track promising tech start-ups working on scalable healthcare solutions using technology and entrepreneurial innovation. We leverage and forge partnerships to offer market accelerator services to early-stage healthcare solutions.

Partnerships: Healthcare facilities, Diagnostic & Hospital Networks, Donors, Pharma Companies, Not-for-profit organisations, Self Help Groups (CBO, FLW), Aggregated network models

# **KEY THEMES**

- Medical Equipments
- Software as a service (SaaS)
- Software as a Medical Device (SaMD)
- Artificial Intelligence (AI) Solutions
- Health products
- Supply chain solutions
- Hospital networks
- Community networks
- ✓ Other solutions



We identify and support solutions through Health technology Assessment (HTA) Policy advocacy, Cost effectiveness studies, Market feasibility support, Ecosystem needs assessment, Health Technology Assessment.

Key enterprises to be supported: Healthcare enterprises including early start-ups focusing on Digital health solutions, Medical Equipment, AI solution, Health products, supply chain solutions, hospital networks

Key enterprises to be supported: Enterprises at Technology Readiness Level of 7+

SUPPORT OFFERINGS			
0	Market access and linkages		
0 ( <u>c*</u>	Link with Subject Matter Experts/ Advisors (if required)		
₩ E E E E E E E E E E E E E E E E E E E	Market Positioning - Marketing and branding strategy		
	Fund mobilisation support		

# USAID

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# Sustainable Access to Markets and Resources for Innovative Delivery of Healthcare (SAMRIDH), India

SAMRIDH Healthcare Blended Financing Facility is supported by the United States Agency for International Development in technical collaboration with Atal Innovation Mission & Women Entrepreneurship Platform, NITI Aayog, Principal Scientific Advisor to the Government of India, the National Health Authority, Indian Institute of Technology, Axis Bank, IndusInd Bank, Caspian Debt, Rockefeller Foundation, and NATHEALTH, and is managed by IPE Global. This initiative combines commercial capital with public and philanthropic funds to drive greater resources towards market-based health solutions that improve access to affordable and quality healthcare services for India's most vulnerable. SAMRIDH with a commitment of \$350 million in grant and debt financing to healthcare enterprises and innovators, aims to augment their capacity to produce and supply high-impact health solutions. The support is complemented with substantial technical assistance and a capacitybuilding component, enabling enterprises to unlock new sources of capital through blended financing solutions for long-term sustainability and expansion.

#### To know more, visit: www.samridhhealth.org





**42+ enterprises** with high-impact solutions supported to scale



\$15 Million funded



fund leveraged



1200+ health facilities impacted



**20000+** medical

professionals, health workers trained



9 Mn+ people directly impacted



25 Mn+ people reached

# Innovations supported under SAMRIDH

# Jeevanlite: A smart portable & affordable ventilator for patients in critical care

#### **AEROBIOSYS**

384 million people suffer from Chronic Obstructive Pulmonary Disease (COPD) and 3 million die from it each year, making it the third leading cause of death worldwide. In India, with a prevalence rate of 1.6%-28% in the population aged 30+, we have a disproportionately high burden of Chronic Obstructive Pulmonary Disease (CoPD), making it the second most common cause of Non-Communicable Diseases related deaths in the country. Adding to these scenarios the outbreak of COVID-19 has led to a huge demand for ventilators, as infected patients especially those who suffer acute respiratory distress syndrome (ARDS) were in a dire need of this life support system to aid their respiratory functions.

A Ventilator is the most widely used short-term life support technique, specifically, it has been proven to be the defining intervention of intensive care medicine. During the recent pandemic, to save the lives of COVID-19 patients and safeguard healthcare providers, Aerobiosys Innovations – a start-up incubated at IIT Hyderabad's Centre for Healthcare Entrepreneurship (CfHE) – has developed a low-cost, portable emergency-use ventilator called 'Jeevan Lite'. Priced at just over INR 1 lakh per unit. Jeevan Lite utilizes an app-based mobile device with an IoT-enabled remote monitoring feature that efficiently controls the ventilator's functions, thereby reducing caregiver exposure to hospital-acquired infections. The design and features of Jeevan Lite comply with the requirements of the Ministry of Health and Family Welfare, Director General Life Sciences, Defence Research and Development Organization (DRDO), Chairman, Technical Committee and the Indian Council of Medical Research (ICMR).

IPE Global's support in the form of grants has enabled Aerobiosys to expand its manufacturing and operational capacity for the deployment of 150+ ventilators across tier 2/3 cities of the country. In addition, the support included market access support, cross linkages with industry associations and business advisory for unlocking capital for scale up and advisory support for the deployments in government and small private hospitals with Pradhan Mantri Jan Arogya Yojana (PMJAY) and other government schemes. IPE Global has also supported Aerobiosys in additional resource mobilization, quality assurance, capacity building, expansion strategy, analyzing the financial health of the organization, and adopting an approach for sustainability and creating a greater impact on the ground.

# SanMitra-1000 HCT- World's first triple powered defibrillator

#### **JEEVTRONICS**

Sudden Cardiac Arrest (SCA) accounts for more than 660K deaths annually in India. And only 1 in 50 emergency beds has a defibrillator in the country. Remote geographies, unreliable electricity, high-battery replacement costs, poor quality of refurbished devices, and lack of affordability increases the challenge and contribute as primary causes for inadequate access to defibrillators in India. Lack of reliable electricity, high-battery replacement costs, and poor quality of refurbished devices.

Jeevtronics offers low maintenance, cost-effective, lifesaving, hand-cranked defibrillator – SanMitra 1000 HCT Biphasic Defibrillator. It can be charged from the AC mains within 6-7 seconds and is priced at less than 25% of conventional defibrillators. Its longevity, affordability, and ability to operate without electricity enable healthcare workers to provide quality care and avoid preventable deaths. SanMitra is also the only ambulance-grade defibrillator in India with AIS 125 certification.

Our initial partnership with Jeevtronics entailed providing financial assistance to enhance the sales and distribution activities of SanMitra 1000 HCT Biphasic Defibrillator. This support has been further complemented with business advisory services to help Jeevtronics in designing a commercial strategy to increase its market presence and build a steady pipeline of orders. These initiatives have helped them onboard the dedicated sales support team, expand the dealer network, and further enabled them to secure affordable working capital loans from financial institutions to service the new order flow for long-term business operations and sustainability.

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### PoP-up Clinics & AI-based PoC diagnostics for Comprehensive Primary Healthcare

#### **SEVAMOB**

Indian healthcare system battles various issues, including the low number of institutions and less-than-adequate human resources at these institutions. Adding to this the underserved areas specifically have a toppled scarcity of trained medical staff and diagnostic services. This delays the diagnosis and treatment thus increasing the cost of care by up to 2X due to the need for patient and/or sample transportation. With the outbreak of COVID-19 pandemic, resulting in the diversion of resources and unavailability of trained doctors, the delivery of primary healthcare was further compromised in rural and semi-urban communities. The pandemic, therefore, has highlighted the need for sustained interventions to improve access to quality healthcare services in tier 2 & 3 cities and rural region. The COVID-19 pandemic highlighted the urgency of increasing access to affordable healthcare for rural and semi-urban communities at the bottom of the pyramid. Sevamob is addressing these challenges of infrastructure, availability of trained medical professionals and diagnostic services through their Al-powered point-of-care screening, patient data management, and telehealth interventions.

IPE Global support has enabled Sevamob to expand and strengthen the primary healthcare ecosystem across 5+ states in India by providing telehealth services, COVID-19 vaccination, PoC diagnostic, and counseling support. Financial support has also enabled Sevamob to raise matching grants or equal funding from leading corporates and philanthropies. The partnership further unlocked additional debt capital from a financial institution using an outcome-based financing mechanism called Social Success Note, where SAMRIDH provided the outcome payment upon achieving pre-agreed social impact goals, thereby reducing the overall interest component on debt and incentivizing expansion to tier 2 and 3 cities. With the help of additional financial resources, technical assistance, and strategic guidance offered by IPE, Sevamob will continue its program beyond the support, and deliver sustainable impact on improving the primary healthcare ecosystem in India.

# Emvolio- a portable medical-grade refrigerator designed to deploy vaccines under controlled temperatures

#### **BLACKFROG TECHNOLOGIES**

9 out of 15 vaccines commonly administered today are freeze sensitive and 25% of vaccines in India are wasted due to suboptimal cold chain practices. India's inadequate cold chain infrastructure is a key impediment to achieving the national goal of universal vaccine coverage.

Blackfrog Technologies has developed Emvólio, a portable medical-grade refrigerator designed to deploy vaccines under controlled temperatures for up to 12 hours. A single Emvólio device can carry 30-50 vials of vaccines, making it possible to administer up to 300-500 doses of life-saving vaccinations. Once charged for 3.5 hours, this 5.5-kg device can be used for 12-15 hours. The support from IPE Global has enabled Blackfrog to strengthen India's COVID-19 vaccination campaign by improving accessibility to vaccines in remote areas that have inadequate cold chain facilities and unreliable power supplies.

Through a blended financing structure combining credit enhancement instruments such as partial risk guarantee/ bank guarantee, returnable grant and interest subvention, is enabling Blackfrog to meet its funding requirements for manufacturing and deployment of 500+ units of Emvólio. The partial risk guarantee has enabled Blackfrog to avail working capital loan from a financial institution at an interest subvention, wherein IPE is bearing a portion of the interest cost that will be returned upon achievement of targeted social outcomes.

Along with financial support, Blackfrog has been provided with advisory support in form of mentorship, developing business expansion strategies, and operations expansion in the African continent by providing networking and liasoning support from the national government of Kenya and building a sales team. With all these support Blackfrog is expected to generate sufficient cash from its operations to achieve sustainability, upon settling the financial obligations.

# SAANS- A CPAP device for saving lives of neonates & infants in respiratory distress

#### **INNACEL TECHNOLOGIES**

Respiratory Distress Syndrome is responsible for ~1.5lac neonatal deaths per year in India. These deaths are preventable with the application of Continuous Positive Airway Pressure (CPAP) therapy in health facilities.

Saans is a patented multi-powered, multi-mode, infrastructure-independent neonatal non-invasive ventilation device that provides short-term breathing support for infants suffering from Respiratory

Distress Syndrome (RDS) in non-NICU settings. It is the world's first CPAP device with a manual powering option and is designed to work during transport as well as in secondary care settings. The device is conceptualized and developed in partnership with the Consortium for Affordable Medical Technologies (CAMTech) and the Department of Biotechnology, Government of India.

IPE Global provided Technical Assistance and advisory support for the development of training modules, organizing training for medical staff, pilot implementation, and liasioning support with state governments in Jharkhand, Assam, and Uttarkhand along with building a 'proof of concept' for expansion in other geographies and uptake by different state governments.

We have supported the team to implement the state-wide deployment of the 300+ SAANS devices in Special New-born Care Units(SNCUs) and Pediatric Intensive Care Units (PICU) of district hospitals and ambulances, and further providing a base to replicate the scale-up across other states. Further, the financial assistance has enabled InnAccel to scale up the manufacturing of SAANS and hire a dedicated commercial and support team to drive uptake of the device through private and public healthcare systems.

# Carenation: A Remote Tele-ICU carts for Critical Care

### **TESLON**

India has only 2.3 critical care beds per 100,000 population. This challenge is further exacerbated given the rising demand for healthcare services due to the COVID-19 crisis and transitions in the health profile of the population. There is a steady rise in caseloads and hospitalizations, and with having to shift patients to hospitals in remote as well as urban areas, there is also delay and increase in cost of treatment. Due to these roadblocks many patients do not receive timely intervention, leading to complications and preventable mortalities. Therefore, there is an urgent need for innovative and context-specific solutions to optimize the utilization of healthcare specialists and augment India's critical treatment facilities.

Carenation, a remote tele-ICU solution by Teslon is a single-unified tech-enabled platform that facilitates continuous data collection and monitoring from patients. It enables physicians and doctors to remotely monitor the patients and provide timely critical care to the patients specifically in remote geographies. The solution solves the problem of limited critical care infrastructure and workforce by using technology to reach the underserved parts of the country. It also reduces the risk of exposure to highly communicable diseases, especially for healthcare workers, doctors and specialists. This large dataset generated by carenations can be used to train AI models to assess the health risk of a patient, which in turn predicts the probability of complications and enables timely decisions.

With IPE's support, Teslon is enhancing the capability of intensivists to address a larger volume of patients from tier 2/3 cities by setting up ICU facilities in non-urban hospitals. The catalytic funding has enabled the entity to unlock additional scale capital, in the form of debt funds from a financial institution. Teslon is also provided with regular networking & collaboration opportunity with relevant stakeholders like government departments, and corporate houses along with the platform to showcase their concept and the product.

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# ReMeDi: A e-health and m-health technology solutions

### **NEUROSYNAPTIC COMMUNICATIONS**

In India, the shortage of nurses, technicians, and other healthcare workers has been a long-standing challenge. This gap has been further exacerbated with a rapid decline in nurses over the last three years. Similarly, there has also been a sharp fall in the number of surgeons in the healthcare landscape. This pinch is especially prominent in PHCs in Rural areas where there has been limited growth over the last decade, including inadequate community specialists and nursing midwives in PHCs. With so many challenges piling up, the last-mile access to healthcare in India has been a persistent challenge. Technologically driven solutions are the only way to bridge the gap and reduce the burden on healthcare systems in India.

Neurosynaptic Communications has created ReDeMi Nova<sup>™</sup> Kits, an indigenously developed telemedicine solution with a ground service kit. These kits are linked to a comprehensive end-to-end telemedicine platform providing home care, screening, doctor consultation and on-call nurses and technicians. The platform can diagnose up to 40 common health issues. The kit is designed as a briefcase that is carried by designated healthcare providers for community screening. The platform includes provisions to develop Electronic Medical Record (EMR), conduct Video/Audio conferencing and maintain workflows for telemedicine consultation, screenings as well as second opinions with specialists.

IPE Global has supported Neurosynaptic with a blended finance solution having a mix of- grants, returnable grants, and interest subvention for availed debt from financial institutions. The grant repayment period and method have been customized to serve the financial needs of NCPL and ensure its financial sustainability in the long run. As part of business advisory, Neurosynaptic is provided with networking opportunities, platform to showcase the product along with support building order pipeline, finance management etc.

### Waterless products for critical care and ICU patients

#### **CLENSTA**

Globally, ~1.7 million hospitalized patients annually acquire healthcare-associated infections (HCAIs). In India, 33 out of 100 hospitalized patients acquire HCAIs. Specifically during the COVID 19 pandemic, the increased incidences of hospital-acquired infections have reinforced the need to ensure patient hygiene in hospital settings. The Low-to-Middle Income Countries (LMICs), including India, have additional risk factors contributing to HCAI acquisition, such as lack of resources and personnel, overcrowding and lack of appropriate cleaning supplies including soaps. Due to climate change and decreasing groundwater levels across the globe, water scarcity is another considerable challenge when it comes to tackling HCAIs. Cost-effective, waterless technology innovation is needed to provide hygienic solutions in places with acute water shortages.

Clensta, has a portfolio of hygiene products using a novel waterless technology that enables cleansing and disinfection of the entire body without water. These products assist with the cleanliness and hygiene of bedridden individuals or patients in ICU care without water, making their application ideal for low-resource settings.

Financial assistance from IPE Global has enabled Clensta to avail affordable capital to expand its sales force and set up direct distribution channels with established networks and players to increase volumes and minimize distribution channel margins, thereby strengthening the revenue streams. The partnership will further unlock additional debt funds from a Non-Banking Financial Company, exclusively for the promotion of the sale and deployment of its products in medical facilities in tier 2/tier 3 cities. Thus, through the blended financing approach, the entity has been enabled to generate returns for the commercial investor, create leverage on the philanthropic and donors' funds, and lastly deliver high on-ground impact. Additionally, IPE Global has also extended gender diversity survey support and advisory for gender-inclusive operations.

### Drone based delivery network for healthcare

#### **REDWINGS LABS**

The geographical variations in India pose various supply chain challenges making it difficult to provide timely and reliable services in remote and hard-to-serve locations in India. This results in insufficient healthcare services in remote areas coupled with higher costs. This significantly impacts emergency services and leads to many preventable deaths across the country.

Redwing labs is an on-demand drone-based logistics solution company that helps in establishing autonomous drone supply chain systems to provide agile, guaranteed, and on-demand delivery of medical products to public health facilities. SAMRIDH supported Redwings to establish last-mile automated supply chain networks in two districts in collaboration with state and local governments for autonomous and on-demand supply chain coverage for all the CHCs and PHCs in the intervention geography.

SAMRIDH's financial assistance is enabling Redwing Labs by covering its operating expenses through a combination of validation grants and milestone-based funding, wherein they as a "risk investor" propose to pay an incentive to Redwing Labs based on defined outcomes. SAMRIDH is providing support to Redwings for commercial validation by supporting B2G and B2B projects, coordinating with State Governments for the overall implementation, and evaluating the impact of its initiatives with an objective to inform India's drone policy for future drone-based healthcare delivery projects.

#### **Telemetric Patient Monitoring System**

#### **CARDIAC DESIGN LABS**

Hospitals, in semi urban and rural regions of India, are invariably under-resourced and lack access to sophisticated medical equipment and devices to monitor vitals of patients suffering from serious ailments. Additionally, they do not have trained staff to interpret readings and data that can enable them to make informed decisions about patients. There is a requirement for reliable remote monitoring systems that allow medical specialists to monitor multiple patients simultaneously.

Cardiac Design Labs (CDL) developed Padma Vitals – A centralized monitoring system for ECG, respiration, Spo2 and body temperature. In addition to a wearable device that collects data from the patient, it consists of algorithms that analyze the data and an interface for healthcare providers to access and analyze the data of multiple patients. It deploys intelligent systems that enable automatic remote reporting, saving both time and costs, and allows healthcare workers to monitor vitals of patients remotely via cloud services.

SAMRIDH's financial assistance is enabling CDL to manufacture and deploy 2,500 Padma Vitals devices at district-level hospitals, CHCs, and PHCs. The enhanced sales have helped CDL to generate the required cash flows to support its operations and manufacture additional Padma Vital devices that will be deployed in hospitals located in tier 2 and 3 cities. SAMRIDH has further been catalytic in augmenting CDL's business capabilities by strengthening its marketing and sales effort toward reaching out to potential partners and customers for demos and trials. In addition, SAMRIDH has also supported CDL through different business advisory services which led to the better positioning of Padma Vitals in different markets for further market penetration of the product. SAMRIDH has been instrumental in providing necessary legal support to CDL for forging new partnerships for product launches and channel partners.

# Artificial Intelligence driven algorithm for chest x-rays

### **QURE.AI**

Large scale testing and tracking of diseases is crucial for deploying an effective public health response to combat highly infectious diseases like Tuberculosis (TB) and COVID-19. Rapid antigen tests and X-ray solutions can help detect these infections and produce guick results. However, hospitals with low-resource settings are unable to extend timely appropriate treatment to patients.

qXR Software is an AI-enabled chest X-ray solution by Qure.ai, that can identify up to 30 distinct lung abnormalities in under a minute. The gXR solution can be used by healthcare workers to identify, prioritize, and reduce the transmission of highly communicable diseases. Qure.ai is utilizing qXR to identify findings related to COVID-19 infections and use it as a triage tool in settings with limited diagnostic resources.

The financial assistance from SAMRIDH has enabled Qure.ai to raise commercial capital in the form of equity and debt for further expansion of their solution, gXR. Through this support, Qure AI has been able to provide free gXR licenses to assist in screening for radiological signs of COVID-19 and Tuberculosis on the Chest Xrays, across 29 sites in India. The public health attention received through this effort has led Qure.ai to get a commercial opportunity with PATH under its UNITAID funded project in Maharashtra. In addition, it has been able to raise \$40 million from healthcare investors, which will accelerate Qure.ai's global market expansion and support new product development for critical care and community diagnostics. SAMRIDH is also supporting Qure AI with business advisory services for market positioning, listing on Government e-Marketplace (GeM) portal, and market access through cross-linkages with other SAMRIDH supported entities.

# THE ROYAL NORWEGIAN EMBASSY Norway India Partnership Initiative (NIPI)

NIPI aims to provide strategic, catalytic, and innovative support to India's National Health Mission (NHM) by testing scalable interventions in four high focus states of Bihar, Odisha, Madhya Pradesh and Rajasthan and UT of Jammu and Kashmir. Aligned with the development goals of Government of India as outlined in its National Health Policy (NHP) 2017 for achievement of Sustainable Development Goals, the cooperation continues to innovate, improve and scale up quality continuum of care interventions at community and facility levels, and contribute effectively towards actualising the Indian Government's National Health Policy (NHPs) Goals.

### **NIPI Implementation Strategy**

# Scale up Strategic Technical

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Assistance for scale-up and demonstrating best practices

#### Innovate

**Development Capacity** and Establishment of Innovation Hub in a **Public Health System** 





# Innovations supported under NIPI

# Artificial Intelligence based Anthropometry App for detecting Low Birth Weight babies and detecting growth faltering

### WADHWANI INSTITUTE OF ARTIFICIAL INTELLIGENCE

Birth weight is considered to be an important indicator of child survival. It is the need of the hour to develop simple, inexpensive and practical methods to identify low birth weight among newborns, low weight babies and increase their chances of survival.

NIPI Project under IPE Global has been assigned to support the State Health Society of Rajasthan in collaboration with Wadhwani Institute of Artificial Intelligence to develop an AI powered anthropometric tool for accurate weight and height measurement of newborns and infants by using smartphone. This tool is a mobile application that captures the video of a baby for 10 seconds and estimates the height and the weight of the baby. The AI tool will be tested in select districts of Rajasthan through collection of anthropometric data of babies. After the development and the validation of this solution in the field settings, the AI tool will be an open source and free to use for Government programs like Home Based New Born Care (HBNC) and Home Based Care for Young Children (HBYC).

## Artificial Intelligence (AI) powered tool for triaging of COVID-19 suspected clients in Bihar

### WADHWANI INSTITUTE OF ARTIFICIAL INTELLIGENCE

COVID-19 has emerged as a pandemic that is posing a threat to the survival of hundreds and thousands of people. In the light of this situation, the Government of Bihar has been very proactive in responding to the global crisis and is taking several measures at the grass-root level to prevent this pandemic. The primary aim of the project is to mitigate the impact of the current crisis in the country and in order to implement the same, a standard operating procedure to roll out an Artificial Intelligence (AI) powered tool has been developed and the training of health managers and Lab technicians has been completed. Data collection of COVID-19 suspect cases has also started in the identified facilities in Bihar.

Norway India Partnership Initiative (NIPI) project under IPE Global has been approached to support the Government of Bihar in providing techno-managerial support to develop AI based solutions. Decision on scalability will be taken based on the results achieved. The team is in the process of developing an AI enabled tool for triaging COVID-19 suspect cases using cough sounds which would be utilized as screening/triaging tool in the state of Bihar and can possibly be integrated with 'Arogya-Setu' app developed by the Government of India.

# Health system strengthening through improved data analytics and visualization using DHIS -2 platform, Jammu and Kashmir, Bihar, Odisha Madhya Pradesh

Data Analytics and visualization are transforming the health care scenario in the country. As a new means of upgrading the health care system, a lot of program data is being generated and collected in the Indian health systems. This exercise can help derive insights on tracking individual practitioner performance and systematic wastage of resources.

Dearth of integrated data analytics and data visualization often result in lack of insight generation and unapprised decision-making, leading to sub optimal utilization of resources. In order to mitigate this challenge, NIPI project under IPE Global in collaboration with HISP India is leveraging DHIS-2 platform with an aim to build Data Analytics Platform for NIPI initiatives, Dashboards for NIPI supported interventions, Block level analysis & Dashboards for monitoring of 31 NITI Aayog Health Indicators in the Aspirational districts of Jammu and Kashmir, support Integrating ANMOL and DHIS-2 for data analysis and data visualization of MNCH indicators in Odisha.

# Mobile-based Decision Support tool for Community health officers in Madhya Pradesh

The National Health Policy, 2017 recommended strengthening the delivery of primary health care, through establishment of "Health and Wellness Centers" as the platform to deliver comprehensive primary health care. The Govt. of India with its commitment to 'leave no one behind' has launch the Ayushman Barat- Health and Wellness centers, an attempt to move from sectorial and segmented approach of health services delivery to a comprehensive need-based health care services. The Ministry of Health and Family Welfare (MoHFW) envisions upgrading 1, 50,000 Sub-Centers (SCs), existing Primary Health Centers (PHCs), and Urban PHCs across the country to HWCs in a phased manner by December 2022. Under this arm of Ayushman Bharat, a Community Health Officer (CHO) positioned at HWCs and expected to provide specific services, leadership, supervision, management and take pro-active role in all community level activities along with organizing various health programs and activities related to health promotion.

Norway India Partnership Initiative (NIPI) and Government of Madhya Pradesh are collaboratively working in developing a Decision Support System for Community Health Officers (CHOs). Digital tool will ease the complex decision-making system into a simple symptom and signs-based classification. This will drive CHOs from presenting symptoms of OPD patient to systemic assessment, possible classification /diagnosis and suggestive treatment as well as follow up. NIPI as a technical partner is developing decision support tool for community health officers. The Government of Madhya Pradesh will further integrate it with the digital platform for health care services delivery under digital health mission. In a series of this a technical brainstorming and road map development workshop was conducted with the technology partners Khushi baby at Jaipur Rajasthan. A road map for tool development was prepared. It was decided to launch the demo app by end of April 2021.

# Digital Decisioning for Primary Health Care- e-DSS (Decision Support System)

Under Ayushman Bharat, the wide network of newly upgraded Health and Wellness Centres (HWCs) are mandated to provide expanded range of services to all age groups including health care for pregnant women and children. Each HWC is manned by a Community Health Officer (CHOs) who is providing comprehensive primary health care which is sensitive to the health needs of the community being served. Odisha has set the target of operationalising HWCs in all its 6,688 Sub Health Centres (SHC) and 1,226 Primary Health Centres (PHC) by December 2022. Delivering quality health services via these newly established HWCs presents a potential challenge for newly posted CHOs as most of them are new in their roles and have insufficient public health system experience and exposure to complex decision making in delivery of health care in public sector. To address this challenge and to assist the CHOs in effective management of cases along the continuum of care, early diagnosis, treatment and referral, an e-DSS (Decision Support System) has been approved by NHM, H&FW Department Government of Odisha.

The eDSS will aid in strengthening capacities of CHOs in complex decision making and shall enhance the performance of CHOs throughout the patient management process at community level. This initiative will be piloted in the district of Mayurbhanj through the district innovation fund with the technical support from NIPI. A joint session on eDSS was organised by NHM, Odisha and NIPI under the Chairmanship of Director, Family Welfare to orient senior officers, policy makers of NHM and Directorate of Family welfare. The orientation covered the process flow of eDSS and deliberations on the Standard Treatment Guidelines (STG) covered by eDSS.



# USAID

# SAMVEG: Systems Approach for MNCH focusing on Vulnerable Geographies, India

A follow on to the USAID's flagship project Vriddhi, SAMVEG aims to fill critical gaps in health systems, encourage innovations, scale-up & sustain interventions to improve Maternal, Newborn & Child Health (MNCH) outcomes in identified vulnerable geographies of India. The project is implemented by a consortium of IPE Global, JSI, Dimagi and World health partners in 25 Aspirational Districts spread across 3 states (Jharkhand, Uttarakhand and Madhya Pradesh).



# Innovations supported under VRIDDHI

# Pulse oximetry in pneumonia: Generating evidence of using a Multimodal Device (MMD) at Health and Wellness Centers (HWCs)

The Integrated Management of Childhood Illnesses (IMCI) guidelines recommend counting respiratory rate and assessment of chest in drawing for all children with cough or difficulty in breathing and recording SpO2 in sick children. While SpO2 measurement is recommended by IMCI, pulse oximetry devices used to measure SpO2 are not widely implemented, more so in the peripheral health centers. The project is aimed at generating evidence on feasibility, acceptability, usability, impact, and cost effectiveness of pulse oximeter and its potential for scaling up.

Under the Vriddhi project under IPE Global introduced pulse oximetry in select Health and Wellness Centers (HWCs) in Aspirational Districts to aid the diagnosis and management of pneumonia. The project is collaborating with "Masimo" (a leading global Biomedical manufacturing company) RADG pulse oximeter. The RADG has a sensitivity and specificity of more than 95% and has been used across multiple countries to improvise pneumonia management.

# A mobile-based solution to reach High Risk Pregnancies in Remote Areas

High risk pregnancies are particularly, vulnerable for fatal complications. Project Vriddhi collaborated with the State Government of Himachal Pradesh to overcome challenges of early identification and continued follow up and care of HRPs especially at peripheral health sub-centres. The solution includes a Mobile App - SEWA - Systems E-approach for Women At Risk - designed for use by health workers, their supervisors and linked referral units including CEmOC services.

SEWA App provides standard protocols of detection and follow up of HRPs based on Gol's newly developed algorithms for HRP. The App has streamlined a systems-based approach for management of high-risk pregnancies. SMS reminders ensure safe delivery for 93.4% HRPs in remote, hilly areas of Himachal Pradesh.



# 13 Million+

Children (under the age of 5) to benefit from scale-up of MNCH good practices



Enhanced capacity building for public and private sector stakeholders

# The MOYO monitor: Generating evidence for improving FHR monitoring

# LAERDAL GLOBAL HEALTH

World Health Organisation recommends intermittent auscultation (IA) as the standard for fetal heart rate (FHR) monitoring. FHR is one of the most important procedures for preventing perinatal morbidity and mortality in the field of obstetrics.

Recognizing the importance of the situation and the need of improved measurement, the project under IPE Global in partnership with Laerdal Global Health introduced the "MOYO: FHR monitor" at select facilities to pilot and test its usability and applicability in the public health care setting in India. Through a Doppler device, MOYO offers considerable improvements over existing devices. It is SLAB approved, easy to use tool that provides both visual and auditory feedback. It detects FHR in 5 seconds, filters out maternal heart rate, has an alarm to detect abnormal heart rate, and provides a histogram of the last 30 seconds. It enables the mother to move freely due to its portability and lightweight.



# Safe Delivery App: Leveraging technology for capacity building of service providers

#### **MATERNITY FOUNDATION**

The modalities of capacity enhancement for service providers have always been a contentious issue. The Safe Delivery Application aims to provide skilled birth attendants direct and instant access to evidence-based and up-to-date clinical guidelines on Basic Emergency Obstetric and Neonatal Care (BEmONC). It contains the latest WHO clinical guidelines on BEmONC for infection prevention, post-abortion care, hypertension, active management of the third stage of labour, prolonged labour, postpartum hemorrhage, manual removal of placenta, maternal sepsis, neonatal resuscitation, newborn management and low birth weight management. The application is a compilation of 5-7-minute videos on the BEmONC guidelines which can be downloaded on smartphones and used for both self and peer learnings. The videos are designed for low literacy and low-income settings and are easy to understand with animated instructions and work offline.

The Vriddhi project under IPE Global has entered into a collaboration with the Maternity Foundation to pilot and test the usability of the SDA in select FRUs in project supported ADs. The project will also collaborate with the foundation and provide technical assistance on the development of new modules (e.g. normal delivery and FPC), thereby not only generating evidence on its usage but also enhancing its spectrum.



# **Bill & Melinda Gates Foundation**

Partner- George Washington University, USA Collaboration- Odisha Livelihood Mission, Department of Panchayati Raj, Government of Odisha

# **RANI: Reduction in Anaemia through Normative Innovations**

RANI was a clustered randomised controlled trial that tested the ability of a normsbased behaviour change intervention to reduce anemia. The project supported the National and State Governments' anemia reduction endeavours among Women of Reproductive Age (15-49 years). Using an innovative package of interventions, RANI promoted changes in social norms, knowledge, attitudes, and behaviours of WRA and pregnant women in Odisha to increase initial intake and adherence to iron and folic acid consumption and reduce anemia.

#### **Strategic Approach**

7-2021

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Lower rates of anemia among women in rural Odisha

Identify the social norms that impact behaviours related to anemia Design innovative social norms solutions that facilitate iron folic supplement use

# Geographical Reach ODISHA



To know more, visit: <u>https://rani.gwu.edu/</u>

Engage

with self-help groups, health workers and the general population in Odisha



**17,000+** women across 130 treatment villages participated in the RANI intervention.



**16,800+** WRAs were tested under the programme and were made aware of their hemoglobin levels.



Proportion of anemic women in the RANI project decreased by 12.5% in the treatment arm at the endline.



Self-reported iron folic acid consumption increased by 88% in the treatment villages as a result of the intervention.



Hemoglobin levels (g/dL) in the RANI project showed an improvement of 0.34 g/dL at the end of the intervention.

# Innovations supported under RANI

## Point-of-care community testing of Anaemia using a hand-held analyser, Odisha

Digital, Proximal, Instant, and Meaningful-four actionable characteristics of community-based anaemia testing in the Reduction in Anaemia through Normative Innovations (RANI) project, which aims to improve the intake of Iron Folic Acid (IFA) in Odisha, India.

The RANI project under IPE Global is increasing demand for Iron and Folic Acid (IFA) tablet by changing social norms through point-of-care community testing using the HemoCue Hb 301+ Analyser. The instantly available digital results are shared in a meaningful format at individual, group and inter-village levels with the beneficiaries, frontline workers, and other stakeholders. Furthermore, Real-time Program Monitoring for Knowledge (RPM4K) - a web and mobile application - has been designed to monitor and improve the SBCC intervention strategies for RANI. Leveraging insights generated from RPM4K, the project looks to continuously monitor the barriers we face. It also enables the use of monitoring and evaluation systems to improve individual and collective norms, policy making, governance, and accountability related to the prevention of anaemia among women of reproductive age in rural India.



### **Children's Investment Fund Foundation**

Collaboration - Department of Women & Child Development, Government of Rajasthan

# **RAJPUSHT: Strengthening Care in the first 1,000 Days**

RajPusht seeks to reduce the prevalence of low birth weight and wasting among children in five tribal districts of Rajasthan, India. The project follows a transformative pathway for improved maternal & child health by championing cash transfers for new mothers to help them purchase and eat a locally available nutritious diet and, focuses on a 360 degree Social & Behaviour Change Communication to create and enabling environment for adoption of recommended pregnancy care, childcare & nutrition practices.

### **Key Interventions**

7-202

Supporting Cash Transfers to pregnant and lactating women

Implementing evidence-led Social & Behaviour Change Communication (SBCC) interventions

Fostering innovations in public financing for tribal health and nutrition

Building capacities of frontline government staff in counselling for Maternal, Infant and Young Child Nutrition (MIYCN) outcomes

Udaipur

Dungarpur

**Promoting** technology integration to deliver health and nutrition services on time and without hassle to the citizens

Banswara

**Geographical Reach RAJASTHAN** 

To know more, visit: https://raipusht.in/





3,50,000+ women received cash benefits for buying nutritious food



3.00.000+ households counselled on the importance of nutrition for pregnant and lactating women and young children



21,000+ Frontline workers trained



2.00.000+ newborn's weighed accurately through innovative digital weighing machines



# Innovations supported under RajPusht

# Digital Weighing Machine – An IoT device that records real time accurate birth data along with image and upload on a cloud server, Rajasthan

Of the 28 million babies born in India annually, approximately 28% are born with low birth weight. However, an analysis of the birth data shows a peak at 2.5 kg (minimum acceptable data standard to identify low birth weight). Accurate identification and reporting of low-birth weight data is instrumental in following up on protocol of care for low-birth-weight children.

To address this challenge, IPE Global as part of the project RajPusht, designed, developed and produced a scalable and cost-effective solution which automatically captures the weight of an infant as well as its photograph with a timestamp at the click of a button. Records can be directly uploaded to the central server (if wi-fi available). The records can also be uploaded to a central server using a mobile application (when no data network is available where device is installed). Nominated/authorised users at each location are provided access to the data for day-to-day monitoring and uploading data when the device is located in remote area. In the first phase, the devices have been deployed in nearly 90 high birth load facilities and Special Newborn care units (SNCU's) in Rajasthan. A web-based dashboard is provided to the state department for monitoring and follow-up on the birth weight data.

# AntaraRaj - Web based management and decision support system for injectable contraceptive users, Rajasthan

The National Health Mission (NHM) Rajasthan has innovatively used information technology in the health systems to track the use of Antara, an injectable contraceptive. Antara helps in preventing pregnancy for three months and is an effective contraceptive for ensuring the desired birth spacing.

A management information system (MIS) has been developed and managed by IPE Global under project Udaan for the Government of Rajasthan. Selected as one of the best practices in "National Summit on Good and Replicable Innovations in Public Healthcare System in India - 2019" organized by the Ministry of Health and Family Welfare, the solution has been the most effective in tracking and following-up on the Antara (injectable contraceptive) users. With built-in intelligence to identify due patients, it uses both traditional text messages as well pre-recorded out bound dialling (OBD) as reminders and for tele-counselling. Some of the key features include the following:

- · Automated system for reminder SMS for next dose
- · Pre-recorded out-bound dialling for reminder and tele-counselling at fixed regular interval
- Supply side integration with progress messages to Medical Officers, district and state nodal officials
- Extensive dashboard and reports as decision support system providing age and parity wise distribution of clients along with longitudinal follow up trend of individual client.







# Making Development a Ground Reality

**IPE** Global is committed to impacting lives with a human touch. We are a leading global advisory & implementation organisation which partners with governments, businesses, and leaders in the society to create a better world for all.

Our business model integrates people, technology, and innovation to create value for all our stakeholders. Integrating **Human Development**, **Inclusive Growth & Resilience and Good Governance** in all our sectors, we bring to the table bespoke solutions.

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100+ Countries



**(B)** 





# CONTACT US

IPE Global House, B-84, Defence Colony, New Delhi - 110024



+91 11 4075 5900

www.ipeglobal.com

