



RIS

**Research and Information System
for Developing Countries**

विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

WORKFORCE READINESS FOR ARTIFICIAL INTELLIGENCE IN PRIMARY HEALTH CARE

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REPORT

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Concept Note

Background and Rationale

Digital health innovations and AI are reshaping triage, diagnosis, and population health management. Yet impact in primary health care (PHC) depends on whether frontline workers across cadres can adopt tools safely and effectively. In India and other LMIC settings, providers already navigate high caseloads, rolling digitization, and evolving data systems - creating risks that AI could widen urban-rural divides, increase worker burden, and reduce trust if workforce development is not deliberate and equity-centered.

Purpose of the Discussion

This panel will identify what it takes to build an AI-ready PHC workforce, using a pragmatic workforce-development framework. It will move the conversation from ad-hoc, software-specific training toward structured, role-based learning pathways spanning pre-service to in-service education and supportive supervision.

Core Framework

The panel will centre discussion on six linked components:

- **Organizational entities engaged:** Ministries (ICT/IT, Health, Education), public/private universities, medical/nursing/dental/allied associations, private education companies, software vendors, external technical support agencies.
- **Types of personnel:** Service providers (doctors, dentists, nurses, midwives), allied health professionals, policymakers, IT professionals/tech support, data-entry professionals and data managers.
- **Competency-based training (from basic ICT upward):** Basic computer skills/ICT awareness; data protection & cybersecurity; data management & analysis; leadership/management for ICT transformation; change management and software-specific training.
- **Modalities of training:** Pre-service integration; in-service training; cascaded and peer-led models; digital and hybrid platforms; accredited certification pathways.

- **Equity considerations:** Gender-sensitive training policies and targeted outreach to women; intergenerational learning (pair younger/older staff); geographic equity by deploying ICT professionals to underserved areas.
- **Barriers to advancing a digital workforce:** Need to change culture; fragmented vertical training initiatives; poor digital literacy among older workers; insecure communication tools (e.g., WhatsApp for patient data); limited integration of training into formal education.

Target Audience

Government policymakers, program managers, medical/nursing educators, digital health implementers, AI/healthtech developers, donors/technical agencies and researchers.

Expected Outcomes and Deliverables

Post-panel summary note including:

- A shared, practical definition of AI readiness in PHC across cadres
- A draft competency-and-training pathway
- 5–7 actionable recommendations for India + transferable insights for Global South settings
- A shortlist of policy levers (governance, financing, accreditation, partnerships) to sustain workforce transformation

Key takeaways and next steps for collaboration/centres of excellence

Agenda

Time (IST)	Details
10:30 AM – 10:35 AM	Welcome Remarks • Professor Sachin Kumar Sharma, Director General, RIS
10:35 AM – 11:10 AM	Panel Discussion Moderator: • Dr Smisha Agarwal, Associate Professor and Director, Center for Global Digital Health Innovation, Johns Hopkins University Panelists • Dr Mona Duggal, Director, ICMR-National Institute for Research in Digital Health and Data Science (NIRDHDS), New Delhi, India • Professor Anurag Agrawal, Dean, BioSciences and Health Research, Trivedi School of Biosciences, Ashoka University, India • Dr Titipol Phakdeewanich, Director, Regional Center for Human Rights, Faculty of Political Science, Ubon Ratchathani University, Thailand • Dr Ranjana Kumar, CEO, Centre for Health Applied Knowledge and Research Autonomy, Nashik, MEDD, Government of Maharashtra • Dr Monika Kochar, Advisor – Health, DAKSHIN, RIS • Professor Fuad, Education and Cultural Attaché, Embassy of the Republic of Indonesia, New Delhi, India
11:10 AM – 11:20 AM	Interactive Roundtable • Q&A session with Panelists & Audience
11:20 AM – 11:25 AM	Way Forward • Dr Smisha Agarwal, Associate Professor and Director, Center for Global Digital Health Innovation, Johns Hopkins University



Introduction

Artificial Intelligence (AI) is rapidly redefining the contours of healthcare delivery, education, governance, and research. Its applications now extend across diagnostics, predictive analytics, disease surveillance, supply chain optimization, electronic health records, and generative decision-support systems. While technological advancement has been swift, workforce preparedness has not evolved at the same pace. This widening gap between innovation and readiness presents both an opportunity and a systemic risk, particularly for primary healthcare (PHC) systems in the Global South.

Primary healthcare remains the backbone of universal health coverage. Yet PHC systems frequently operate under constraints of workforce shortages, high patient volumes, infrastructure gaps, fragmented digital systems, and uneven digital literacy. In such contexts, AI may either enhance productivity and equity or deepen existing disparities if introduced without institutional preparedness.

The panel discussion examined how health systems, academic institutions, governments, and innovation ecosystems must adapt. The conversation moved beyond narrow questions of technical training to address assessment reform, institutional culture, governance coordination, interoperability, entrepreneurship, misinformation management, decentralization, and trust-building. A central consensus emerged: AI-readiness is not a software upgrade but a structural transformation agenda requiring reform across education, policy, leadership, and service delivery systems.

Summary of Discussions by Speaker



“Real learning happens when thinking is problem-solving until your brain hurts. That productive struggle is where learning sits.”

DR SMISHA AGARWAL

Associate Professor and Director, Center for Global Digital Health Innovation, Johns Hopkins University

Dr Agarwal initiated the discussion by framing AI as a disruptor of traditional educational models. She posed a critical question: If information can be generated instantly through AI tools, what then is the role of medical education? She emphasized that true learning emerges from cognitive effort, the intellectual struggle that develops clinical reasoning and critical thinking. With generative AI now capable of producing essays, assignments, literature reviews, and even diagnostic suggestions, conventional assessment mechanisms are at risk of becoming obsolete.

She highlighted the growing difficulty in distinguishing between original student work and AI-generated outputs, arguing that this challenge necessitates a rethinking of evaluation frameworks. Institutions must redesign assessments to test applied reasoning, real-time decision-making, and problem-solving under supervised conditions. Digital-free examinations, oral assessments, case-based discussions, and AI-aware grading rubrics may become essential components of future curricula.

Dr Agarwal also emphasized that AI-readiness must be viewed through multiple dimensions: workforce categories (from frontline workers to specialists), institutional leadership, digital competency frameworks, pedagogical reform, infrastructure gaps, and equity considerations. She warned that unless education systems evolve rapidly, the gap between technological capability and human preparedness will continue to widen, potentially compromising quality of care.



“When we talk about AI, in many places even the basic digital divide is still there.”

PROFESSOR SACHIN KUMAR SHARMA

Director General, RIS

Professor Sharma grounded the conversation in the lived realities of health systems across the Global South. While global discourse often centres on advanced AI tools, many countries continue to face basic challenges such as limited internet connectivity, insufficient hardware, and constrained human resources. He cautioned that AI integration cannot occur in isolation from foundational system strengthening.

He emphasized that primary healthcare workers remain the cornerstone of service delivery. Any AI strategy must prioritize large-scale skilling and reskilling initiatives, ensuring that frontline providers understand how to use digital systems safely and effectively. Without adequate training, AI tools risk becoming underutilized or misapplied.

Professor Sharma also stressed that digital divides, both infrastructural and socio-economic, must be explicitly addressed. AI adoption strategies should include investments in connectivity, affordable devices, multilingual interfaces, and inclusive design. Otherwise, digital transformation may exacerbate inequities between urban and rural areas, public and private sectors, and digitally literate versus digitally marginalized populations.



“One must ensure they can do critical tasks without AI, but are empowered to use it to be the most productive version of themselves.”

PROFESSOR ANURAG AGRAWAL

Dean, BioSciences and Health Research, Trivedi School of Biosciences, Ashoka University, India

Professor Anurag Agrawal broadened the discussion to the future of work and the transformation of professional roles. He argued that while AI enhances productivity, professionals must retain the capacity to perform mission-critical tasks independently. Over-reliance on AI could undermine core competencies if foundational skills are not preserved.

He advocated cultivating an “engineering mindset” among healthcare professionals, one that emphasizes problem decomposition, systems thinking, interdisciplinary collaboration, and strategic use of AI tools. Rather than positioning clinicians as passive users of technology, he

encouraged preparing them as informed collaborators who understand both the strengths and limitations of AI systems.

Importantly, Professor Agrawal reframed AI-readiness as an economic and entrepreneurial opportunity. Global South countries should not remain passive consumers of imported digital health technologies. Instead, they should foster innovation ecosystems capable of designing, testing, and scaling AI-enabled solutions tailored to local contexts while remaining globally competitive. Preparing health entrepreneurs, data scientists, clinician-innovators, and regulatory experts is therefore central to workforce transformation.

He also highlighted that roles centered purely on routine data processing are increasingly vulnerable to automation. The workforce must evolve toward hybrid human-AI roles requiring judgment, adaptability, empathy, and leadership, the skills that AI cannot easily replicate.



“Everybody now has to upskill themselves.”

DR MONA DUGGAL

Director, ICMR-National Institute for Research in Digital Health and Data Science (NIRDHDS), New Delhi, India

Dr Mona Duggal emphasized that AI-readiness requires comprehensive upskilling, not only for frontline providers but also for senior professionals, program managers, academic faculty, and grant reviewers. Digital transformation must permeate every level of the system.

She advocated integrating statistics, epidemiology, research methodology, AI fundamentals, and electronic health record literacy into undergraduate and postgraduate curricula. Digital literacy must move beyond tool usage to include understanding data interpretation, bias, algorithmic limitations, and ethical implications.

Dr Duggal also addressed institutional culture. Hierarchical structures often discourage questioning, interdisciplinary collaboration, and innovation. AI integration demands flatter organizational cultures where clinicians, technologists, administrators, and researchers can engage in open dialogue. Breaking silos between disciplines is essential for meaningful and sustainable adoption.



“AI is just a platform – people are the most important part of the ecosystem.”



“How can AI digest and translate reliable information for frontline workers?”

PROFESSOR FUAD

Education and Cultural Attaché, Embassy of the Republic of Indonesia, New Delhi, India

Drawing from Indonesia’s experience managing one of the world’s largest national health insurance systems, Professor Fuad highlighted the importance of coordinated governance. AI integration cannot be confined to ministries of health alone; it requires collaboration across higher education, finance, digital communication, and regulatory authorities.

He emphasized that AI should function as an efficiency-enhancing platform, not as a substitute for clinical responsibility. The accountability for diagnosis, treatment, and patient safety must remain with human professionals. He cautioned against overwhelming already overstretched clinicians with additional digital tasks, using the analogy of “teaching someone to swim while they are already drowning.” AI systems must reduce administrative burden and improve workflow efficiency rather than introduce complexity.

Trust, he noted, is central. If frontline providers perceive AI as increasing workload or surveillance, adoption will falter. Systems must therefore be designed with user-centred principles.

DR TITIPOL PHAKDEEWANICH

Director, Regional Center for Human Rights, Faculty of Political Science, Ubon Ratchathani University, Thailand

Dr Titipol reflected on Thailand’s experience with universal health coverage and extensive networks of community health volunteers. While many frontline workers are familiar with mobile applications, deeper digital literacy remains uneven. Skills such as device maintenance, password protection, cyber security awareness, and safe data handling are often overlooked yet essential.

He underscored that many digital initiatives fail not because of flawed software but due to weak digital hygiene. Sustainable AI integration requires strengthening these foundational competencies.

Dr Titipol also addressed the growing influence of misinformation disseminated through social media influencers and informal digital channels. AI tools, if responsibly deployed, could help filter, summarize, and validate reliable health information for frontline workers. He advocated decentralization, arguing that regional authorities must have flexibility to adapt digital solutions to local epidemiological and socio-cultural contexts.



“Unless you embrace technology and the new tools coming, you will be completely overwhelmed.”

DR RANJANA KUMAR

*CEO, Centre for Health Applied Knowledge and Research
Autonomy, Nashik, MEDD, Government of Maharashtra*

Dr Ranjana Kumar highlighted practical efforts in capacity building through her experience at Gavi, the Vaccine Alliance and her leadership at Chakra in partnership with Maharashtra University of Health Sciences. She described structured digital health foundation courses, AI-integrated curricula, and faculty development programs aimed at embedding digital literacy into health professional education.

She stressed the importance of interoperability across digital platforms, including immunization registries, maternal and child health systems, and national digital health missions. Fragmented systems increase reporting burdens, duplicate efforts, and undermine universal health coverage objectives.

Dr Kumar also addressed fear and resistance among healthcare providers. Many professionals view AI as a potential threat to autonomy or job security. Change management strategies must therefore communicate AI as an enabling tool that enhances and not replace professional judgment.



“It is not just about technology. It is about systems strengthening.”

DR MONIKA KOCHAR

Advisor – Health, DAKSHIN, RIS

Dr Monika Kochar emphasized the importance of structured South–South Collaboration through platforms such as DAKSHIN. Many Global South countries face parallel challenges in digital transformation, workforce shortages, and governance constraints. Institutionalized cooperation can facilitate shared learning, evidence exchange, and policy harmonization.

She highlighted the need for structured gap analyses to assess digital preparedness, regulatory frameworks, workforce competencies, and interoperability standards. AI-readiness must move beyond short-term pilot projects to long-term ecosystem strengthening.

Dr Kochar also underscored the importance of trust among frontline workers. Transparent communication, ethical safeguards, and participatory design processes are essential for sustained adoption. AI integration must be framed within a broader agenda of health system resilience and equity.

KEY RECOMMENDATIONS

The panel concluded that building an AI-ready PHC workforce requires coordinated, long-term reform across education, governance, infrastructure, and culture. The following strategic recommendations emerged:

- **Define AI Readiness Across Cadres:** Develop a shared, role-based competency framework including digital literacy, data governance, bias awareness, ethics, and change management.
- **Institutionalize Competency-Based Learning Pathways:** Integrate AI and digital health into pre-service curricula and formalize structured in-service certification programs.
- **Strengthen Foundational Digital Literacy:** Address infrastructure gaps and basic ICT competencies before scaling advanced AI applications.
- **Promote Interdisciplinary Innovation Ecosystems:** Encourage collaboration between medicine, engineering,

and data science to foster entrepreneurship and scalable solutions.

- **Strengthen Governance and Accountability:** Establish clear policy frameworks defining ethical standards, procurement norms, and professional accountability.
- **Design Workforce-Centered Digital Systems:** Ensure interoperability and reduce administrative burden by integrating rather than fragmenting digital platforms.
- **Address Equity, Bias, and Misinformation:** Incorporate bias awareness and ethical training while leveraging AI to combat misinformation.
- **Institutionalize South-South Collaboration:** Facilitate structured exchange of knowledge, policy frameworks, and best practices among Global South countries.
- **Invest in Leadership and Change Management:** Equip institutional leaders and program managers with digital literacy and transformation management skills.

FINAL REFLECTION

The panel affirmed that AI in primary healthcare must remain human-centred, equitable, and accountable. Technology alone cannot deliver transformation. Sustainable progress will depend on deliberate investment in people, institutions, trust, and collaborative ecosystems.

AI-readiness, therefore, is not simply about adopting tools, it is about building resilient systems capable of harnessing innovation responsibly for universal health advancement.





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RIS specialises in issues related to international economic development, trade, investment and technology. It is envisioned as a forum for fostering effective policy dialogue and capacity-building among developing countries on global and regional economic issues. The focus of the work programme of RIS is to promote South-South Cooperation and collaborate with developing countries in multilateral negotiations in various forums. Through its following centres/forums, RIS promotes policy dialogue and coherence on regional and international economic issues.



The word “DAKSHIN” (दक्षिण) is of Sanskrit origin, meaning “South.” The Hon’ble Prime Minister of India, Shri Narendra Modi, inaugurated DAKSHIN – Global South Centre of Excellence in November 2023. The initiative was inspired by the deliberations of Global South leaders during the Voice of the Global South Summits. DAKSHIN stands for Development and Knowledge Sharing Initiative. Hosted at the RIS, DAKSHIN has established linkages with leading think tanks and universities across the Global South and is building a dynamic network of scholars working on Global South issues.



AIC at RIS has been working to strengthen India’s strategic partnership with ASEAN in its realisation of the ASEAN Community. AIC at RIS undertakes research, policy advocacy and regular networking activities with relevant organisations and think-tanks in India and ASEAN countries, with the aim of providing policy inputs, up-to-date information, data resources and sustained interaction, for strengthening ASEAN-India partnership.



CMEC has been established at RIS under the aegis of the Ministry of Ports, Shipping and Waterways (MoPS&W), Government of India. CMEC is a collaboration between RIS and Indian Ports Association (IPA). It has been mandated to act as an advisory/technological arm of MoPSW to provide the analytical support on policies and their implementation.



FITM is a joint initiative by the Ministry of Ayush and RIS. It has been established with the objective of undertaking policy research on economy, intellectual property rights (IPRs) trade, sustainability and international cooperation in traditional medicines. FITM provides analytical support to the Ministry of Ayush on policy and strategy responses on emerging national and global developments.



BEF aims to serve as a dedicated platform for fostering dialogue on promoting the concept in the Indian Ocean and other regions. The forum focuses on conducting studies on the potential, prospects and challenges of blue economy; providing regular inputs to practitioners in the government and the private sectors; and promoting advocacy for its smooth adoption in national economic policies.



FIDC, has been engaged in exploring nuances of India’s development cooperation programme, keeping in view the wider perspective of South-South Cooperation in the backdrop of international development cooperation scenario. It is a tripartite initiative of the Development Partnership Administration (DPA) of the Ministry of External Affairs, Government of India, academia and civil society organisations.



FISD aims to harness the full potential and synergy between science and technology, diplomacy, foreign policy and development cooperation in order to meet India’s development and security needs. It is also engaged in strengthening India’s engagement with the international system and on key global issues involving science and technology.



As part of its work programme, RIS has been deeply involved in strengthening economic integration in the South Asia region. In this context, the role of the South Asia Centre for Policy Studies (SACEPS) is very important. SACEPS is a network organisation engaged in addressing regional issues of common concerns in South Asia.



Knowledge generated endogenously among the Southern partners can help in consolidation of stronger common issues at different global policy fora. The purpose of NeST is to provide a global platform for Southern Think-Tanks for collaboratively generating, systematising, consolidating and sharing knowledge on South South Cooperation approaches for international development.



DST-Satellite Centre for Policy Research on STI Diplomacy at RIS aims to advance policy research at the intersection of science, technology, innovation (STI) and diplomacy, in alignment with India’s developmental priorities and foreign policy objectives.

— Policy research to shape the international development agenda —

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