BRIDGING THE GAP: LEVERAGING HEALTH DIPLOMACY TO ADVANCE DIGITAL HEALTHCARE IN PAKISTAN

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Abstract

Immunization campaigns against diseases have continued for more than a century. Presently, 112 countries have 90% DTP3 coverage, accounting for a majority portion of 8.2 billion people. Good health and well-being for all is identified as the third goal of the UN Sustainable Development Goals (SDGs), with Target 3.8 specifically calling for universal access to quality health services and essential vaccines.

Several countries have indicated and planned to introduce cooperation agreements on digital healthcare in their medical ecosystems, including immunization against prevalent diseases. The introduction of digital healthcare platforms to monitor and evaluate disease outbreaks and gauge vaccine drives in a country without prior artificial intelligence and digitization experience involves several sectors of civil society, healthcare professionals, governance bodies, and international partners. Pakistan can leverage the concrete studies and applications of integrating digitization in medical science from its international partners to support implementation of SDG Goal 3.

Pakistan is a member of Gavi-eligible countries with existing relationships with multilateral partners such as the World Health Organization, World Bank, International Vaccine Institute, and United Nations Children's Fund, each of which has a strong knowledge base and digital infrastructure to integrate and benefit Pakistan. Furthermore, Pakistan's National Artificial Intelligence Policy of 2025 is a governance framework found in only a few Low-Middle-Income Countries (LMICs). Pakistan also holds extensive cooperation agreements with China, which has over 38,000 patents on artificial intelligence in the healthcare spectrum, accounting for 60% of the global patent pool. Pakistan has signed over 70 MoUs with China; however, only a handful of these touch on digital cooperation in healthcare. Pakistan has strong prospects to increase its horizon and seek advanced knowledge sharing with China in the healthcare and ICT sectors.

However, fragmented governance — with healthcare being a provincial subject under the 18th Amendment — weak data infrastructure without a unified

national health information system, and cybersecurity gaps make international partners hesitant to share sensitive tools or platforms, creating a persistent gap between science and policy.

This paper contributes to highlighting the international partners required to pursue formal bilateral health cooperation agreements focused on digital health technology transfer. Pakistan shares strong relationships with over a dozen international partners specialised in healthcare and digital transformation; however, knowledge sharing and infrastructure building have not reached their optimum position.

Background

Kickbusch et al. define health diplomacy as "multi-level and multi-actor negotiation processes that shape and manage the global policy environment for health" (Kickbusch, Silberschmidt, & Buss, 2007). The published study defines and captures the transition of diplomacy from hard power issues such as war and trade to a focus on health as a central foreign policy concern in the 21st century. Furthermore, Kickbusch and Lozoya (2022) argued that global health diplomacy is an integral part of global health governance, and that COVID-19 showed health has become constitutive to geopolitics — the example of the US-China conflict leaving a void in healthcare during the COVID-19 pandemic that pushed the EU to step in and reshape the multilateral health order.

However, the reshaped multilateral health model did not benefit vulnerable communities; it exacerbated vaccine pile-up. As described by UN Secretary-General António Guterres, this amounted to a "global trust deficit order" (as cited in DGAP Policy Brief, 2024) — and analysis of global health governance shows this is central to why multilateral health responses fail, with COVID-19 demonstrating how nations retreated to nationalistic measures, competed for vaccine supplies, and engaged in blame games that further damaged international relations.

Pakistan relied heavily on its partners throughout the COVID-19 era to ensure the country had adequate vaccine resources. However, a general mistrust was observed within the population. Despite delivering 1.7 billion doses, 49% of the population was hesitant towards vaccination (PMC12392798, n.d.).

Similar trends were observed in other countries during the vaccine race. In Cameroon, vaccine hesitancy reached 84.6% among adults surveyed, with the most prominent determinants being the perception of the pharmaceutical industry, reliability of vaccine sources, and the communication environment (Dinga, Sinda, & Titanji, 2021).

The issue of mistrust between the public and policymakers was not limited to Pakistan and Cameroon; the same results were observed in Nigeria, where 72% of those surveyed cited mistrust in vaccine campaigns. They reasoned that political corruption was their main source of distrust and non-compliance with health recommendations, demonstrating that vaccine hesitancy is inseparable from broader institutional trust deficits (U4 Anti-Corruption Resource Centre, n.d.).

Furthermore, beyond mistrust between the public and policymakers, data framework gaps represent a second major barrier to collaboration within the healthcare sphere. As described by

Mahmood et al. (2023) as a "nascent field", the population and healthcare data in Pakistan exist in silos without a central repository.

The mistrust between the public and policymakers has halted campaigns. COVID-19 was the most recent example of how digital misinformation can reduce the impact of health initiatives. Therefore, countries like Pakistan are required to address these core problems. Mahmood et al. (2023) also highlighted the importance of data quality, stating that very few institutions record data at par with NHS or US systems.

Therefore, developing a central repository covering quality data is important for any country to initiate and maintain healthcare diplomacy. Data sovereignty remains an integral part of healthcare diplomacy; it has been argued that countries without centralised, high-quality health data repositories are structurally unable to assert data sovereignty in diplomatic negotiations, and that fragmented systems undermine a nation's standing as an equal partner in health data sharing agreements (Health Policy Watch, 2026).

Therefore, countries intending to establish international cooperation in advanced areas of healthcare diplomacy would need to strengthen core weaknesses ranging from general public mistrust to quality data usable by international partners.

Method

A desk-based policy analysis approach was used in writing this brief. Literature and policy review was conducted through reports published by UN specialized agencies and partners. Comparative case analysis was conducted by benchmarking development efforts against economies sharing similar traits with Pakistan — namely, vaccine hesitancy, fragmented governance, and similar economic categorization. Lastly, partner mapping was conducted by identifying relevant organizations and evaluating their impact in other locations, including Pakistan.

Pakistan's Healthcare Partners

Pakistan's existing relationships with international partners provide a foundation upon which formal digital health cooperation agreements can be structured. Table 1 provides an overview of eight key partners, their areas of expertise, the current status of Pakistan's relationship with each, and the recommended agreement type for formalizing digital health cooperation.

Table 1

Pakistan's Key International Partners for Digital Health Cooperation

Partner	What They Offer	Current Relationship	Recommended Agreement
World Health Organization	Normative frameworks, disease surveillance	Active — Pakistan's primary multilateral	Formal MoU on digital health data standards and DHIS2

Partner	What They Offer	Current Relationship	Recommended Agreement
(WHO)	standards, health data governance tools, DHIS2 platform integration	health partner with existing country office	national rollout
World Bank	Health system financing, digital infrastructure investment, results-based financing models	Active — ongoing health sector lending and technical assistance programmes	Technical assistance agreement on national health information system infrastructure
UNICEF	Immunization data systems, community-level health tracking, supply chain monitoring tools	Active — long-standing partnership on EPI and child health programmes	Data sharing and immunization monitoring agreement linked to EPI digitalisation
International Vaccine Institute (IVI)	Vaccine research, clinical evidence generation, disease burden studies	Existing — Pakistan participates in IVI-led research networks	Bilateral research cooperation agreement on vaccine evidence and surveillance data
China	AI healthcare patents (38,000+, representing 60% of global pool), digital health platforms, ICT infrastructure	Active — 70+ MoUs signed, only a handful cover digital health cooperation	Expand existing MoU framework to include dedicated digital health and AI technology transfer provisions
South Korea	Advanced eHealth systems, strong IVI institutional ties, experience in health data interoperability	Limited — primarily trade and diplomatic relations	New bilateral agreement on eHealth infrastructure and knowledge exchange
Estonia	Most advanced digital health governance model globally, experience in federated health data systems across decentralised governance	Minimal — no formal health cooperation framework	Pilot technology transfer agreement on digital health governance, relevant to Pakistan's post-18th Amendment provincial fragmentation
Germany (GIZ)	Active digital health programmes in LMICs, technical capacity building, health system strengthening	Active — GIZ has ongoing development programmes in Pakistan	Formal technical cooperation agreement on digital health capacity building and data quality improvement

The World Health Organization, World Bank, UNICEF, and the International Vaccine Institute represent Pakistan's major multilateral partners in healthcare. Each of these organizations provides a distinct knowledge base and infrastructure relevant to bridging the gap between science and policy. However, engagement with these partners has largely remained operational rather than structured around technology transfer and digital health governance, which limits the depth of cooperation Pakistan can draw upon.

Beyond cooperation agreements with intergovernmental organizations, Pakistan also shares bilateral relationships, particularly with China, which represents one of the most significant untapped areas for advancing within the digital healthcare ecosystem. China holds over 38,000 patents in AI healthcare, accounting for 60% of the global patent pool, and Pakistan has signed over 70 MoUs with China. However, only a handful of these agreements touch on digital cooperation in the healthcare sector, highlighting that existing diplomatic engagement is severely underutilized. Pakistan can expand the MoU framework to dedicate avenues for AI and digital health technology transfer, allowing Pakistan to leverage its strongest bilateral relationship in direct alignment with its National AI Policy of 2025.

Pakistan also has strong prospects for strengthening cooperation agreements with partners offering governance models directly applicable to its prevalent challenges. Estonia's digital health system serves as an important example; it is a decentralised governance framework that is extremely relevant, as healthcare remains a provincial subject under Pakistan's 18th Amendment. Using Estonia's model would ensure Pakistan follows an approach acceptable to its provinces and that provincial autonomy remains respected per the constitution. South Korea has implemented advanced eHealth infrastructure and, through its close institutional proximity to the International Vaccine Institute, offers an additional avenue for knowledge exchange benefiting a wider population. Germany, through GIZ, maintains active development programmes in Pakistan and represents an immediately actionable partner for capacity building and training in data quality and health information systems.

Therefore, Pakistan does not need to build its international healthcare cooperation infrastructure from scratch. Pakistan can strengthen its existing relationships with current partners by converting its existing MoUs and operational partnership frameworks into formal bilateral health cooperation agreements focused on digital health technology transfer, data governance, and cybersecurity infrastructure — all essential for data sovereignty and trust building within the international healthcare community.

Recommendations

Problem 1: Institutional Mistrust Between Public and Policymakers

Mistrust between the public and policymakers exists due to limited information on the benefits of healthcare initiatives. Therefore, a community-facing health communication framework is required. Pakistan can leverage its strong partnership with WHO and UNICEF to standardize a healthcare communication strategy defining dissemination of information at the provincial level to

counter misinformation and rebuild public trust in immunization campaigns.

Problem 2: Fragmented Data Infrastructure and Absence of a Central Repository

Absence of a central repository creates a barrier to evaluating healthcare interventions. Monitoring and evaluation is a significant component of gauging the impact of any intervention; therefore, issues related to data infrastructure need to be addressed. A formal technical assistance agreement with multilateral institutions such as the World Bank or GIZ can create a model based on Estonia's decentralized governance framework to ensure provincial compliance under the 18th Amendment is respected.

Problem 3: Underutilized Bilateral and Multilateral Cooperation Agreements

In 2025 alone, Pakistan signed over 100 MoUs; however, conversion of these into technical cooperation agreements remains limited. Pakistan must convert existing MoUs into formal digital health technology transfer agreements and initiate new bilateral frameworks with China, South Korea, and Estonia focused on eHealth governance and AI integration.

Conclusion

Pakistan has strong diplomatic relationships with over 190 countries and signed over 100 MoUs in 2025 alone. It has also extensively developed its policy architecture in healthcare and artificial intelligence, evidenced by the National AI Policy of 2025. However, the gap between science and policy persists because existing agreements have not been converted into concrete digital health cooperation.

It is evident that without centralised health data, cybersecurity infrastructure, and technology transfer agreements, Pakistan cannot assert data sovereignty as an equal member in international health diplomacy, thus keeping SDG Target 3.8 out of its reach.

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