Mapping the application of Artificial intelligence in Traditional Medicine

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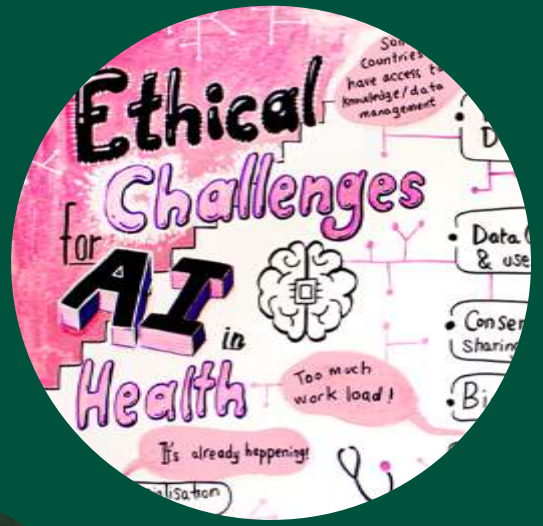


Global health strategy on digital health 2020-2025 (extended to 2027)

Governance for emerging technologies is at its heart

> ***Digital transformation of health care will be disruptive*** *and* ***technologies*** *such as the Internet of things,* ***artificial intelligence****, big data analytics, blockchain* ***have the potential to enhance health outcomes*** *by improving medical diagnosis, data-based treatment decisions and self-management of care.*

SO1	Promote global collaboration and advance the transfer of knowledge on digital health
SO2	Advance the implementation of national digital health strategies
SO3	Strengthen governance for digital health at global, regional and national levels
SO4	Advocate people-centred health systems that are enabled by digital health

World Health Assembly 77 | STRATEGIC ROUNDTABLE

AI for Health: Opportunities, Risks, and Challenges

- **Global Initiative on AI for Health**
- **Setting Standards** – Developing technical benchmarks, validation methods, and governance frameworks for safe & effective AI.
- **Trust & Transparency** – Ensuring AI tools meet rigorous quality, safety, and ethical standards.
- **Bridging Knowledge Gaps** – Empowering practitioners, policymakers & patients through knowledge-sharing and digital literacy.

Speakers L-R: *Prof. Dr. Matias Goyen (GE Healthcare), Dr. Karen DeSalvo (Google), Mr. Marco Marsella (DG Sante, EU), Dr. Tedros (DG, WHO), Dr. Magdalena Skipper (Nature), Dr. Atul Gawande (USAID), Prof. Dr. Effy Vayenda (ETH Zurich), Dr. Saia Ma'u Piukala (RD, WPRO)*

Journey to the GI-AI4H

A systematic approach for advancing the responsible use of AI for health

Source: ITU

5/2018 AI for Good Geneva

11/2018 Columbia University NYC

4/2019 World Expo Shanghai

9/2019 UCSAF Zanzibar

1/2020 PAHO/WHO Brasilia

5/2020 Online

1/2021 Online

9/2021 Online

05/2022 Berlin

12/2022 Douala

07/2023 Launch GI-AI4H

FG-AI4H

GI-AI4H

10/2018 WHO HQ Geneva

1/2019 EPFL Lausanne

5/2019 AI for Good Geneva

11/2019 ICMR & NICF New Delhi

9/2020 Online

5/2021 Online

2/2022 Online

9/2022 Helsinki

03/2023 Harvard/MIT

10/2023 KACST, Riyadh

Global Initiative on AI for Health (GI-AI4H)

World Health Organization

ITU

WIPO

Launched on July 6, 2023!

Enable

Standards, governance, policies, and guidance on evidence-based AI4H

Facilitate

Pooled Investments & a global community of experts

Implement

Sustainable models of AI ecosystem at the country level

Ribbon cutting of the Global initiative on AI for Health at AI for good summit on 6 July 2023

(L-R: Ms. Doreen Bogdan-Martin (SG ITU), Dr. Tedros Adhanom Ghebreyesus (DG WHO), Mr. Edward Kwakwa (ADG WIPO)

Enabling key guidance on AI for health

Guidance on Ethics and Governance of AI for Health

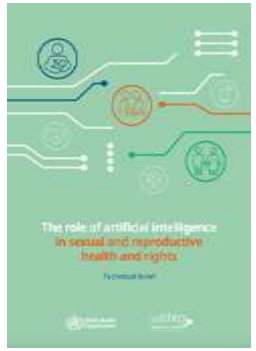
2021

Generating Evidence for AI-based Medical Devices

2021

Ethics and Governance of AI for Health: Large Multi-Modal Models

2023



The role of AI in sexual and reproductive health & rights

2024

Mapping the application of AI in traditional and complimentary medicine

2024

2021

WHO Online introductory course on Ethics and Governance of AI for Health

2021

Regulatory Considerations on Artificial Intelligence for Health

2023

Benefits and risks of using AI for pharmaceutical development & delivery

2024

WHO Online course for AI Designers, Developers, and Data Scientists

2025

Three types of groups under the Facilitation pillar

WORKING GROUPS (cross cutting areas)

- Ethics & Governance of AI4H
- Regulatory Consideration on AI for Health
- AI and intellectual property
- Clinical, operational and financial evaluations
- Data governance

Expert Group Consultation

TOPIC GROUPS (specific health topics)

- Point of care
- Oral health
- Ageing (Bone health)
- Maternal and reproductive health
- Malaria
- Traditional medicine
- …

Sexual & Reproductive Health Meeting, Geneva

TCIM Technical Meeting, India

FACILITATION GROUPS

Research and Academic institutes

Legal Fraternity

Industry Experts

Regulatory bodies

Youth and patient groups

Global summit in India, Saudi Arabia and Singapore

Implement sustainable models of AI programs at country level

1 Technical assistance

2 Knowledge dissemination

WHO online introductory course on ethics and governance of AI for health

WHO Online course for AI Designers, Developers, and Data Scientists

AMARA Case Study

3 Benchmarking and localization

TB Union Conference

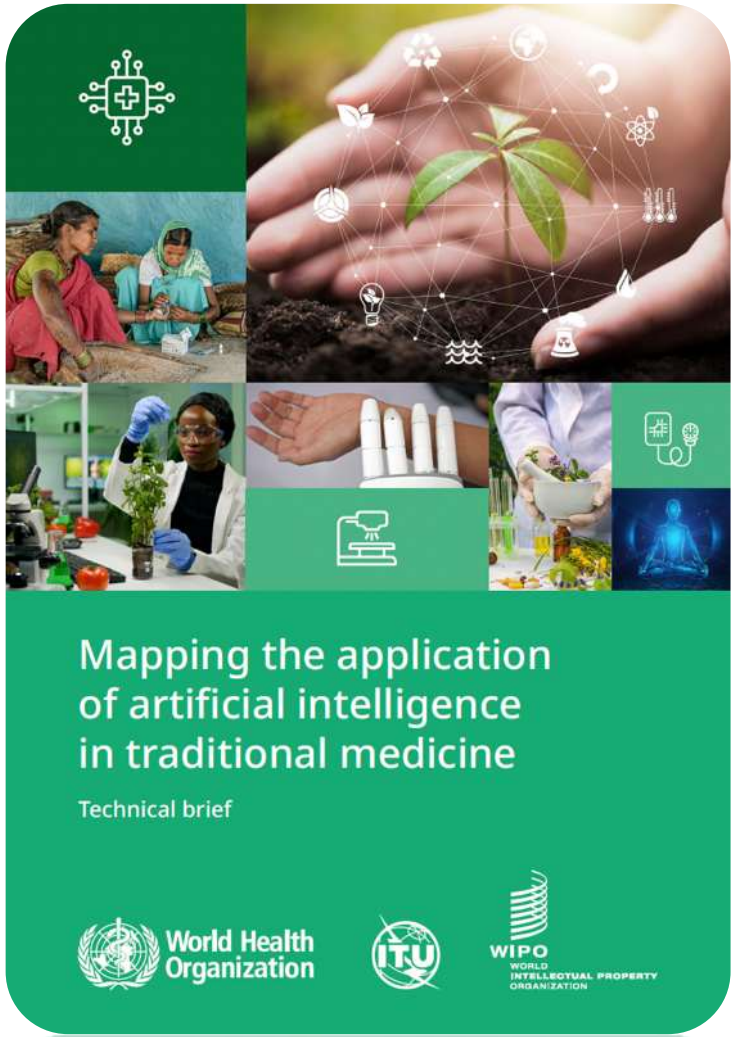
AIRIS, South Korea

GI-AI4H 2025

Increasing need to streamline the use of AI in a diversity of health programmes

- Exploration of collaboration with 20+ technical teams (Traditional medicine, Primary health care, TB, HIV, Bone health and ageing, Oral health, Evidence-informed policy making, Sexual and reproductive health research…)
- Flagship collaboration on traditional medicine
  - Policy brief
  - Formed an informal expert group and a topic group under the Global initiative on AI for health
  - In person and virtual technical consultations with experts from various countries

Intended users



- **Policy-makers and Government:**
- **Health Systems and Technical Experts**
- **Digital Technology Experts**
- **TM Practitioners and Users**

Emerging areas where AI is used in Traditional Medicine

Domain	Topics
Healthcare and clinical practice	• Diagnosis and prediction-based diagnosis • AI-based clinical decision support systems
Health research and drug development	• Pattern recognition • Genetic information analysis • Identification and direct utilization of TM plants
Health systems management	• Utilizing hospital management information systems
Preserving and advancing TM knowledge	• Online repositories for TM knowledge • Databases for protection against biopiracy • Conservation and identification of biodiversity
TM policymaking	• Data governance models • Agreements between national entities and Indigenous Communities in data advancement
Domains of interest where no or little evidence was found	• Docking-simulation studies • Pathway identification • Artificial chemical sensors

Emerging areas where AI is used in Traditional Medicine

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Health systems management	
Preserving and advancing TM knowledge	
TM policymaking	
Domains of interest where no or little evidence was found	

Ayurgenomics (India)

Topic	Diagnosis and prediction-based diagnosis
Purpose	Understand genetic basis of Ayurvedic principles and practices.
Use	Integrate genomic data with Ayurvedic principles to identify predictive markers for diseases, enabling targeted prevention through personalized health recommendations.
Technique	**Machine Learning (ML).**
Potential	Decipher genomic and molecular basis of herbal formulations for repurposing for modern disease conditions.

Emerging areas where AI is used in Traditional Medicine

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TCM Bank (People's Republic of China)

Topic	**Genetic information analysis**
Purpose	Provide standardized information about Traditional Chinese Medicines, ingredients, diseases and gene targets
Use	Establishes a network with intelligent document identification and live manual checks
Technique	**Artificial Intelligence (AI)**
Potential	Non-commercial purposes and for support of drug discovery using TCM plants

Rooibos genomics programme (South Africa)

Topic	**Diagnosis and prediction-based diagnosis**
Purpose	Advancing medicinal plant genome analysis.
Use	Generate a high-quality assembly of rooibos genome, identifying genes and conduct genome mining.
Technique	**Machine Learning (ML), Neural Networks**
Potential	Genome browser for comparative studies and prediction of plan protein functions

Emerging areas where AI is used in Traditional Medicine

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Preserving and advancing TM knowledge	
TM policymaking	
Domains of interest where no or little evidence was found	

Context-oriented directed associations (Republic of Korea)

Topic	Representation of complex biological interactions in traditional medicine
Purpose	Evaluate the therapeutic potential of chemical compounds from traditional Asian medicinal plants for treating blood disorders
Use	Construct networks of interactions between chemicals, proteins, and genes within and across organs
Technique	A specialized computer language for modelling biological systems
Potential	Supports drug discovery and therapeutic evaluation in traditional medicine

Textual analysis for medicinal plants identification (Ghana)

Topic	**Identification and direct utilization of TM plants**
Purpose	Log Gabor filters designed to mimic human eye's visual cortex
Use	Extracts leaf textural features across multiple data sets from the Centre of Plant Medicine Research.
Technique	**Deep learning (DL)**
Potential	Enhance plat classification by capturing both simple and complex image features

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Health research and drug development	
Health systems management	
Preserving and advancing TM knowledge	
TM policymaking	
Domains of interest where no or little evidence was found	

Virtual health library on TM in the Americas Region (Brazil/BIREME)

Topic	Online repositories for TM knowledge
Purpose	Promote the presence, access, use and publication of scientific, technical and education content relating to TM and indigenous knowledge.
Use	Knowledge gathering and management of multiple datasets and content.
Technique	**Data mining, big data, Artificial Intelligence**
Potential	Create a worldwide TM knowledge platform based on Brazilian TM library.

The traditional knowledge library, TKDL (India)

Topic	Databases for protection against biopiracy
Purpose	Digitization of text-based formulations of Ayurveda, Unani, Siddha, Sowa Rigpa and practices of Yoga.
Use	Data availability to leading patent offices with a multilingual option to prevent biopiracy based uses of prior art.
Technique	**Artificial Intelligence (AI)**
Potential	Critical for advancing research and development of TM practices

Emerging areas where AI is used in Traditional Medicine

Domain	Topics
Healthcare and clinical practice	
Health research and drug development	
Health systems management	
Preserving and advancing TM knowledge	
TM policymaking	**Adoption of multilateral treaties protecting genetic resources and traditional knowledge (WIPO)**
Domains of interest where no or little evidence was found	**Māori data governance model (New Zealand)**

Adoption of multilateral treaties protecting genetic resources and traditional knowledge (WIPO)

Topic	**Agreements between global and national entities and Indigenous Peoples, as well as local communities**
Purpose	Addresses the intersection of IP with genetic resources and traditional knowledge
Use	Includes specific provisions for indigenous peoples, as well as local communities, ensuring recognition of knowledge and practices
Technique	**Framework for data utilization (the basis for using AI)**
Potential	Upon implementation at country level, TM markets and industries can be enhanced

Māori data governance model (New Zealand)

Topic	**Data governance models**
Purpose	Guide public service agencies in managing Māori data, emphasizing self-determination and community data needs.
Use	Integrate the potential of indigenous data within the national statistics office for impacting in policymaking and implementation under the Indigenous Data Sovereignty legislation.
Technique	**Framework for data utilization (the basis for using AI)**
Potential	Similar potential frameworks for indigenous data sovereignty worldwide to protect knowledge and TM practices

Considerations for policy and practice

Regulatory frameworks and legislation

- Adapt WHO guidance on frontier technologies to TM
- Update TM survey to include digitalization and AI concepts
- Co-create mechanisms to inform policy-making

Empowerment and capacity-building

- Prepare training programmes targeting the integration of AI into TM
- Build and facilitate communities of practice (CoP) around TM and AI
- Build working groups on integrating TM into AI

Targeting biopiracy and data governance

- Tailor strategies to build robust data governance targeting Indigenous Peoples, as well as local communities
- Co-create and advance existing repositories on the applications of AI into TM

Cooperation and collaboration

- Enhance global collaboration for harmonizing the TM lexicon and diverse data formats to AI
- Utilize the Global Traditional Medicine Library as a pivot for facilitating collaborative environments

Public awareness and equity and promotion of inclusion

- Launch public awareness campaign
- Encourage participation and feedback from TM patients, caregivers and community stakeholders

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