

# ETHICS AND GOVERNANCE OF ARTIFICIAL INTELLIGENCE FOR HEALTH

WHO GUIDANCE



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## CONTENTS

Foreword	
Acknowled	lgements
Abbreviati	ons and acronyms
Executive	summary
1. Introduo	ction
2. Artificia	l intelligence
3. Applicat	ions of artificial intelligence for health
3.1	In health care
3.2	In health research and drug development
3.3	In health systems management and planning
3.4	In public health and public health surveillance
3.5	The future of artificial intelligence for health
4. Laws, po	blicies and principles that apply to use of artificial intelligence for health
4.1	Artificial intelligence and human rights
4.2	Data protection laws and policies
4.3	Existing laws and policies related to health data
4.4	General principles for the development and use of artificial intelligence
4.5	Principles for use of artificial intelligence for health
4.6	Bioethics laws and policies
4.7	Regulatory considerations
5. Key ethi	cal principles for use of artificial intelligence for health
5.1	Protect autonomy
5.2	Promote human well-being, human safety and the public interest
5.3	Ensure transparency, explainability and intelligibility
5.4	Foster responsibility and accountability
5.5	Ensure inclusiveness and equity
5.6	Promote artificial intelligence that is responsive and sustainable
6. Ethical c	hallenges to use of artificial intelligence for health care
6.1	Assessing whether artificial intelligence should be used
6.2	Artificial intelligence and the digital divide
6.3	Data collection and use
6.4	Accountability and responsibility for decision-making with
	artificial intelligence
6.5	Autonomous decision-making
6.6	Bias and discrimination associated with artificial intelligence
6.7	Risks of artificial intelligence technologies to safety and cybersecurity

6.8	Impacts of artificial intelligence on labour and employment	
	in health and medicine	
6.9	Challenges in commercialization of artificial intelligence for health care	
6.10	Artificial intelligence and climate change	
7. Building	an ethical approach to use of artificial intelligence for health	
7.1	Ethical, transparent design of technologies	
7.2	Engagement and role of the public and demonstration	
	of trustworthiness to providers and patients	
7.3	Impact assessment	
7.4	Research agenda for ethical use of artificial intelligence for health care	
8. Liability	regimes for artificial intelligence for health	
8.1	Liability for use of artificial intelligence in clinical care	
8.2	Are machine-learning algorithms products?	
8.3	Compensation for errors	
8.4	Role of regulatory agencies and pre-emption	
8.5	Considerations for low- and middle-income countries	
9. Elements	of a framework for governance of artificial intelligence for health	
9.1	Governance of data	
9.2	Control and benefit-sharing	
9.3	Governance of the private sector	
9.4	Governance of the public sector	
9.5	Regulatory considerations	
9.6	Policy observatory and model legislation	
9.7	Global governance of artificial Intelligence	
References		
Annex. Con	siderations for the ethical design, deployment and use of artificial	
intelligence	technologies for health	

## FOREWORD

### Ethics and Governance of Artificial Intelligence for Health WHO Guidance Foreword by Dr Soumya Swaminathan, Chief Scientist

#### "Our future is a race between the growing power of technology and the wisdom with which we use it." Stephen Hawking

This quote by the famed physics Nobel Laureate reminds us of the great opportunities and challenges that new technologies hold in the health sector and beyond. In order to harness the power of science and innovation, WHO's Science Division was created in 2019 to support Member States in achieving the health-related Sustainable Development Goals (SDGs) and emergency preparedness and response. The Division provides global leadership in translating the latest in science, evidence, innovation, and digital solutions to improve health and health equity for all. This is in keeping with WHO's 13th Programme of Work (2019-2023) which stipulates that "...WHO's normative guidance will be informed by developments at the frontier of new scientific disciplines such as genomics, epigenetics, gene editing, artificial intelligence, and big data, all of which pose transformational opportunities but also risks to global health."

Artificial intelligence (AI) has enormous potential for strengthening the delivery of health care and medicine and helping all countries achieve universal health coverage. This includes improved diagnosis and clinical care, enhancing health research and drug development and assisting with the deployment of different public health interventions, such as disease surveillance, outbreak response, and health systems management.

AI could also benefit low- and middle-income countries, especially in countries that may have significant gaps in health care delivery and services for which AI could play a role. With the help of AI-based tools, governments could extend health care services to underserved populations, improve public health surveillance, and enable healthcare providers to better attend to patients and engage in complex care.

At the same time, for AI to have a beneficial impact on public health and medicine, ethical considerations and human rights must be placed at the centre of the design, development, and deployment of AI technologies for health. For AI to be used effectively for health, existing biases in healthcare services and systems based on race, ethnicity, age, and gender, that are encoded in data used to train algorithms, must be overcome. Governments will need to eliminate a pre-existing digital divide (or the uneven distribution of access to) the use of information and communication technologies. Such a digital divide not only limits use of AI in low- and middle-income countries but can also lead to the exclusion of populations in rich countries, whether based on gender, geography, culture, religion, language, or age.

Many of the world's largest technology companies are investing heavily in the collection of data (including health data), the development of algorithms, and AI deployment. The proliferation of AI could lead to the delivery of healthcare services in unregulated contexts and by unregulated providers, which

might create challenges for government oversight of health care. Therefore, appropriate regulatory oversight mechanisms must be developed to make the private sector accountable and responsive to those who can benefit from AI products and services, and can ensure that private sector decision-making and operations are transparent.

If employed wisely, AI has the potential to empower patients and communities to assume control of their own health care and better understand their evolving needs. But if we do not take appropriate measures, AI could also lead to situations where decisions that should be made by providers and patients are transferred to machines, which would undermine human autonomy, as humans may neither understand how an AI technology arrives at a decision, nor be able to negotiate with a technology to reach a shared decision. In the context of AI for health, autonomy means that humans should remain in full control of health-care systems and medical decisions.

This WHO guidance document is the result of a two-year development process led by two Departments in the Science Division - Digital Health and Innovation and Research For Health. WHO has worked with a leading group of twenty experts to identify core principles to promote the ethical use of AI for health - these are the first consensus principles in this field. The six core principles identified by the WHO Expert Group are the following: (1) Protect autonomy; (2) Promote human well-being, human safety, and the public interest; (3) Ensure transparency, explainability, and intelligibility; (4) Foster responsibility and accountability; (5) Ensure inclusiveness and equity; (6) Promote AI that is responsive and sustainable.

To implement these principles and human rights obligations into practice, all stakeholders, whether designers and programmers, providers, and patients, as well as Ministries of Health and Ministries of Information Technology, must work together to integrate ethical norms at every stage of a technology's design, development, and deployment.

Finally, I would like to thank all experts, stakeholders, and partners in the UN family and beyond who made essential contributions to the development of this document. I hope that this report will help to ensure that the development and use of AI for health will be guided by appropriate ethical norms and standards, so all populations can equally benefit from the great promise of these technologies in the future.

Dr Soumya Swaminathan



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### External expert group

Najeeb Al Shorbaji, eHealth Development Association, Jordan Arisa Ema, Institute for Future Initiatives, The University of Tokyo, Japan Amel Ghoulia, H3Africa, H3ABioNet, Tunisia Jennifer Gibson, Joint Centre for Bioethics, Dalla Lana School of Public Health, University of Toronto, Canada Kenneth W. Goodman, Institute for Bioethics and Health Policy, University of Miami Miller School of Medicines, USA Jeroen van den Hoven, Delft University of Technology, Netherlands Malavika Jayaram, Digital Asia Hub, Singapore Daudi Jjingo, Makerere University, Uganda Tze Yun Leong, National University of Singapore, Singapore Alex John London, Carnegie Mellon University, USA Partha Majumder, National Institute of Biomedical Genomics, India Tshilidzi Marwala, University of Johannesburg, South Africa Roli Mathur, Indian Council of Medical Research, India Timo Minssen, Centre for Advanced Studies in Biomedical Innovation Law (CeBIL), Faculty of Law, University of Copenhagen, Denmark Andrew Morris, Health Data Research UK, United Kingdom of Great Britain and Northern Ireland Daniela Paolotti, ISI Foundation, Italy Maria Paz Canales, Derechos Digitales, Chile Jerome Singh, University of Kwa-Zulu Natal, South Africa Effy Vayena, ETH Zurich, Switzerland Robyn Whittaker, University of Auckland, New Zealand

Yi Zeng, Chinese Academy of Sciences, China

#### Observers

Tee Wee Ang, United Nations Educational, Scientific and Cultural Organization, France Abdoulaye Banire Diallo, University of Quebec at Montreal, Canada
Julien Durand, International Federation of Pharmaceutical Manufacturers & Associations (IFPMA), Switzerland
David Gruson, Jouve, France
Lee Hibbard, Council of Europe, France
Lauren Milner, US Food and Drug Administration, USA
Rasha Abdul Rahim, Amnesty Tech, United Kingdom
Elettra Ronchi, Organization for Economic Co-operation and Development, France

#### **External reviewers**

Anurag Aggarwal, Council of Scientific and Industrial Research, India Paolo Alcini, European Medicines Agency, Netherlands Pamela Andanda, University of Witwatersrand, South Africa Eva Blum-Dumontet, Privacy International, United Kingdom Marcelo Corrales Compagnucci, CeBIL, Faculty of Law, University of Copenhagen, Denmark Sara Leila Meg Davis, Graduate Institute, Switzerland Juan M. Duran, Delft University of Technology, Netherlands Osama El-Hassan, Dubai Health Authority, United Arab Emirates Tomaso Falchetta, Privacy International, United Kingdom Sara Gerke, Harvard Law School, USA Tabitha Ha, STOP AIDS, United Kingdom Henry Hoffman, ADA Health, Germany Calvin Ho, University of Hong Kong, China, Hong Kong SAR Prageeth Jayathissa, Vector Ltd, New Zealand Otmar Kloiber, World Medical Association, France Paulette Lacroix, International Medical Informatics Association, Canada Hannah Yee-Fen Lim, Nanyang Technological University, Singapore

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