



PHIRI

Population Health Information
Research Infrastructure

Healthcare and AI Telemedicine

Task 8.4:

COVID-19 related international
guidelines, initiatives, projects and
information sources

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REF meeting

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Can AI be used in telemedicine?

Artificial Intelligence (AI) is being increasingly used in telemedicine to allow doctors to make **more data-driven, real-time decisions** that may **improve** the patient experience and health **outcomes** by allowing them to work more toward virtual care alternatives throughout the care continuum.

A specific definition of AI in a recommendation of the Council on Artificial Intelligence of the **OECD** states:

An AI system is a machine-based system that can, for a given set of human-defined objectives, **make predictions, recommendations, or decisions influencing real or virtual environments**. AI systems are designed to operate with **varying levels of autonomy**.



What are the trends in telemedicine utilizing artificial intelligence?


The trends in the development of the utilization of this technology can be classified in to four:

- **patient monitoring,**
- **healthcare information technology,**
- **intelligent assistance diagnosis,**
- **and information analysis collaboration.**



**ETHICS AND GOVERNANCE
OF ARTIFICIAL INTELLIGENCE
FOR HEALTH**

WHO GUIDANCE



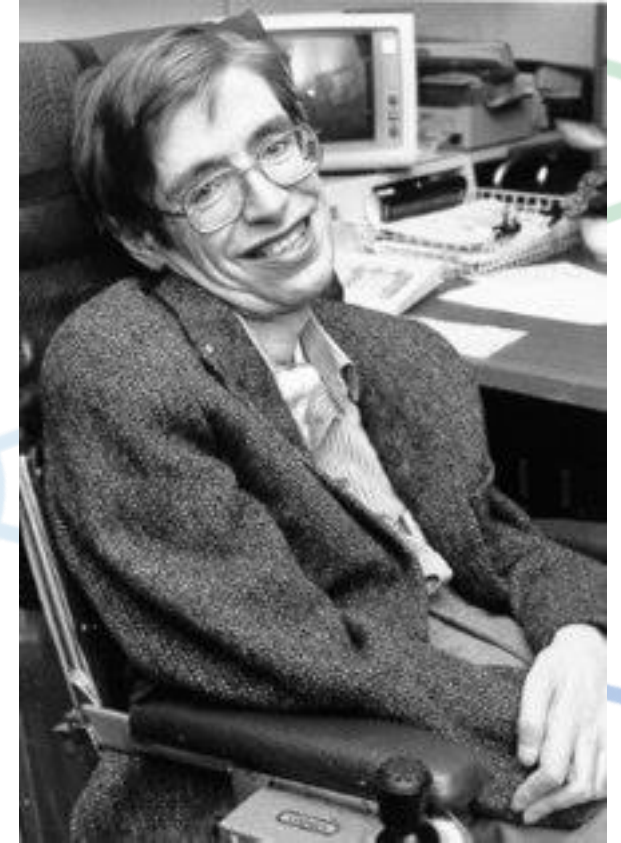
<https://apps.who.int/iris/bitstream/handle/10665/341996/9789240029200-eng.pdf>



Technology and wisdom with usage

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

Stephen Hawking



Benefits of AI in healthcare

Artificial intelligence (AI) has enormous potential for **strengthening the delivery of health care and medicine** and helping all countries **achieve universal health coverage**.

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**.

The 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.

AI and COVID-19

AI for health has been affected by the COVID-19 pandemic. Although the pandemic is not a focus of this report, it has illustrated the opportunities and challenges associated with AI for health.

Numerous new applications have emerged for responding to the pandemic, while other applications have been found to be ineffective.

Several applications have raised **ethical concerns** in relation to **surveillance**, infringement on the rights of **privacy and autonomy**, health and social **inequity** and the conditions necessary for **trust** and legitimate uses of data-intensive applications.

Shift to home-based care

Telemedicine is part of a larger shift from hospital- to home-based care, with use of AI technologies to facilitate the shift. Even before the COVID-19 pandemic, over 50 health-care systems in the USA were making use of telemedicine services.

COVID-19, having discouraged people in many settings from visiting health-care facilities, **accelerated and expanded the use of telemedicine in 2020**, and the trend is expected to continue.

The shift to home-based care has also partly been facilitated by **increased use of search engines** (which rely on algorithms) for medical information as well as by the **growth in the number of text or speech chatbots** for health care, the performance of which has improved with **improvements in natural language processing**, a form of AI that enables machines to understand human language. The use of chatbots has also accelerated during the COVID-19 pandemic.

The six core principles identified by the WHO Expert Group

- (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.

Principles I.

Protecting human autonomy: Use of AI can lead to situations in which decision-making power could be transferred to machines. The principle of autonomy requires that the use of AI or other computational systems **does not undermine human autonomy**. In the context of health care, this means that **humans should remain in control of health-care systems and medical decisions**.

Promoting human well-being and safety and the public interest. AI technologies **should not harm people**. The designers of AI technologies should **satisfy regulatory requirements for safety, accuracy and efficacy** for well-defined use cases or indications.

Ensuring transparency, explainability and intelligibility. AI technologies should be intelligible or understandable to developers, medical professionals, patients, users and regulators. Transparency requires that **sufficient information be published or documented before the design or deployment of an AI technology** and that such information facilitate meaningful public consultation and debate on how the technology is designed and how it should or should not be used.

Principles II.

Fostering responsibility and accountability. It is the responsibility of stakeholders to ensure that **AI is used under appropriate conditions and by appropriately trained people**. Responsibility can be assured by application of “**human warranty**”. Human warranty requires **application of regulatory principles upstream and downstream** of the algorithm by establishing points of human supervision.

Ensuring inclusiveness and equity. Inclusiveness requires that AI for health be designed to **encourage the widest possible appropriate, equitable use and access**, irrespective of age, sex, gender, income, race, ethnicity, sexual orientation, ability or other characteristics protected under human rights codes. AI technologies should **minimize inevitable disparities** in power that arise between providers and patients, between policy-makers and people and between companies and governments.

Promoting AI that is responsive and sustainable. Responsiveness requires that designers, developers and users **continuously, systematically and transparently assess AI applications during actual use**. AI systems should be designed to **minimize their environmental consequences** and increase energy efficiency.

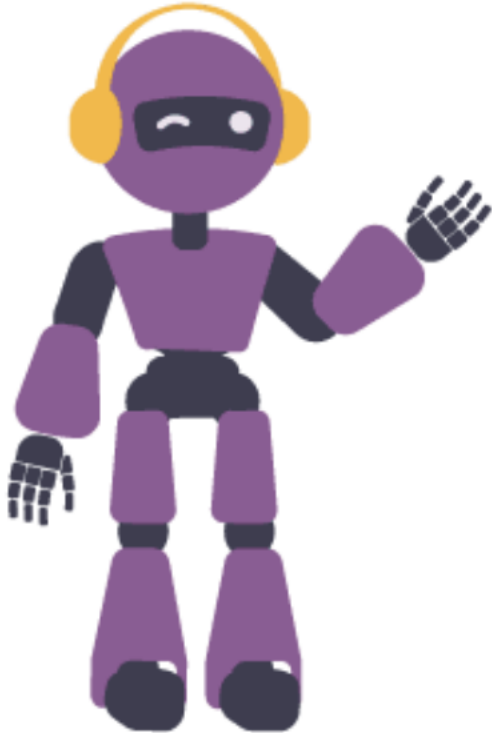
Provision of health care by the private sector outside the health-care system

The proliferation of AI applications for health outside the health-care system may extend access to some health-care advice; however, such **applications raise new questions and concerns.**

An application may be developed without appropriate reference to **clinical standards**; it may not be **user friendly**, especially for follow-up services or procedures; **patient safety may be compromised** if individuals are not connected to health-care services, such as lack of assistance to individuals with suicidal ideation who use an AI chatbot; the efficacy of applications such as **chatbots that may not have been tested properly may be inadequate**; and applications **may not meet the standards of privacy required for sensitive health data.**

Governments should **identify** these applications, **set common standards and regulations** (or even prevent some applications from being deployed to the public) and ensure that individuals who use the applications retain access to appropriate health-care services that cannot be provided online.

Chatbots in healthcare



CHATBOTS IN HEALTHCARE

- 01 Share Symptom Questionnaires
- 02 Answer Questions
- 03 Provide Reliable Information
- 04 Collect Patients Details
- 05 Provide Medical Assistance
- 06 Schedule Appointments

Advantages

1. More Efficient Patient Self-Service
2. Better Patient Engagement
3. Improved Efficiency
4. Ability to Scale More Easily
5. Fast and Personal Interactions With Fewer Errors
6. Provide Real-Time Assistance
7. Reduce Administrative Tasks for Hospitals
8. Provide Appointment Reminders
9. No More Hold Time
10. No Scheduling is Needed

Disadvantages

1. No Real Human Interaction
2. Limited Information
3. Security Concerns
4. Inaccurate Data
5. Reliance on Big Data and AI
6. Chatbot Overload
7. Lack of Trust
8. Misleading Medical Advice
9. Less Access to Specialists

<https://www.revechat.com/blog/healthcare-chatbots/>

What medicine should I take if I tested positive for Covid?




Chatgpt: If you have tested positive for COVID-19, it is important to **follow the guidance of your healthcare provider**, as they can provide personalized advice based on your specific situation and symptoms.

There is currently **no specific medication that has been proven to cure or treat COVID-19**, but there are some medications that may be prescribed to help **manage symptoms** or prevent complications. These may include:

1. **Over-the-counter pain relievers:** such as **acetaminophen (Tylenol) or ibuprofen (Advil)** may help to reduce fever and alleviate mild to moderate symptoms.
2. **Prescription medication:** such as antiviral medications may be prescribed for people with severe COVID-19 symptoms or for those at high risk of complications.
3. **Oxygen therapy:** For severe cases, supplemental oxygen may be given to help improve breathing and oxygen levels in the blood.

It is important to note that **you should not self-medicate or take any medications without consulting a healthcare provider**. Some medications, such as ibuprofen, may worsen symptoms in some people. Be sure to follow your healthcare provider's instructions and contact them if your symptoms worsen or if you have any concerns.



Do you have any ethical concerns with your activity providing healthcare related recommendations?



Chatgpt: As an AI language model, I do not have personal ethical concerns or beliefs. However, I am designed to operate within ethical guidelines and principles set by my developers and the broader community.

In terms of providing healthcare-related recommendations, I strive to ensure that the **information I provide is accurate, up-to-date, and evidence-based**. I am not a substitute for professional medical advice, and I always encourage individuals to **seek the advice of a qualified healthcare provider before making any decisions about their health**.

Additionally, I prioritize user privacy and confidentiality. **I do not collect any personally identifiable information** about users unless explicitly requested, and **I do not share any information** provided to me with third parties.

Overall, my developers and I strive to provide a helpful and ethical service to users seeking information and recommendations related to healthcare.