

Introduction

This is the LAST round of the questionnaire to establish a Delphi consensus among experts on an Ethical use of Medical-AI.

This last round includes only a few statements.

Questions are based on a Likert scale. State if you agree or disagree with each statement. Use the Statement space provided for any additional feedback.

Thank you for your time!

The questionnaire is divided into 5 blocks:

- Bioethical problems of using medical-AI.
- Ethical values.
- Guidelines for a bioethical use of medical-AI.
- Checklist for clinicians.
- Institutional Ethical Assurance

Before starting the survey, here are a few points and definitions we would like to make clear:

When answering the survey think about AI in the healthcare

setting, not AI in general. Also, think about healthcare professions in general, not only physicians, for example.

What we mean by Artificial Intelligence: there is no consensus on what is AI. Russell and Norvig, in their AIMA texts (1995, 2002, 2009), identify AI in relation to its goals. They identify 4 categories to define AI as a system that:

1. Thinks like humans.
2. Acts like humans.
3. Thinks rationally.
4. Acts rationally.

More recently, Stanford's AI100 defined AI as "getting a machine to carry out behaviors that we think of as requiring intelligence"

We hope this clarifies some ideas about AI. When answering the survey please take into account current healthcare AI technologies, as well as foreseeable, likely, future developments and uses of AI in Healthcare.

By autonomous AI we mean a system that is capable of carrying out its tasks without requiring direct human instruction or real-time supervision.

General Background Information

Gender

- Male
- Female
- Prefer not to say

Geographical location

- Africa
- Asia
- Europe
- North America
- Oceania
- South America

In what of the following fields is your main background

- Healthcare
- Business
- Policy maker
- Researcher / Academic
- Law specialist
- IT / AI specialist
- Pharmaceutical company representative
- Patient representative / Advocate
- Other

Other:

SOCIAL RESPONSIBILITY MARKERS

Block: Institutional Use of Medical-AI

We also aim at establishing markers for risk management and adverse event reporting by institutions (such as hospitals) that use Medical-AI.

When answering this section, think of a hospital (or other institution that uses Medical-AI) and state if you agree or disagree with each statement being used to evaluate or even audit their risk management and adverse event reporting, and in general helps to report that they are doing an ethical use of Medical-AI

In a sense, this could act as an institutional assurance checklist.

Please state if you agree or disagree with each item being used to guarantee an ethical use of AI by medical institutions. If you would like to comment feel free to do so in the Statements box provided below.

Note: by discrepancies we mean differences in proposed paths of action.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strong agree
Have there been any complains or notifications regarding unclear accountability and responsibility related to medical systems that use AI and Healthcare Professionals? If yes, how many? What measures have been taken to address future issues like this one? Explain these measures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has there been any breaches in informed consent where an AI system was involved? If yes, how many? What measures have been taken to address future issues like this one? Explain these measures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When were the medical devices that incorporate AI last maintained, supervised and updated? How regularly is this process done?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have there been any complains or notifications regarding lack of control over medical systems that use AI? If yes, how many? What measures have been taken to address future issues like this one? Explain these measures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have there been any complains or notifications regarding lack of trust on medical systems that use AI? If yes, how many? What measures have been taken to address future issues like this one? Explain these measures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement:

CHECKLISTS FOR CLINICIANS

Block: Checklist for Clinicians

Based on a previous review of the literature regarding the bioethical issues and solution proposals for a bioethical use of Medical-AI, we developed a checklist clinicians could use in their medical practice. This checklist aims to aid clinicians during moral deliberations regarding the use of Medical-AI, as well as help them identify bioethical problems they must avoid. Please state if you agree or disagree with this checklist. If you would like to add new points, remove some points or give any additional feedback, feel free to do so in the Statements box provided below.

	Dislike a great deal	Dislike somewhat	Neither like nor dislike	Like somewhat	Like a great deal
Does this decision taken with AI impact Human Rights?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do I Know if ethical issues were addressed during the development process?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement:

GUIDELINES FOR A BIOETHICAL USE OF MEDICAL-AI

Block: Guidelines For a Bioethical Use of Medical-AI

Here you will find a list of proposals to deal with the bioethical issues of Medical-AI. These proposals intend to guarantee an ethical use of Medical-AI. Please state if you agree or disagree with the following proposals to guarantee a Bioethical Medical-AI. If you would like to propose any other solutions, amendments to these proposals or any other further reasoning, feel free to do so in the Statements boxes provided below.

Guidelines - Responsibility

Responsibility

		Neither		
Strongly	Somewhat	agree nor	Somewhat	Strongly
disagree	disagree	disagree	agree	agree

There must be shared responsibility between all stakeholders mentioned

Responsibility should be decided based on the specific circumstances and the particulars of each situation

The degree of responsibility of each stakeholder should depend on the specific circumstances and the particulars of each situation

Statement:

Guidelines - Explicability

Explicability

Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree

Explicability should not be absolute, as healthcare professionals and patients do not have to understand and have an explanation for EVERYTHING the AI does, but rather just enough to take informed decisions.

Statement:

Guidelines - Embedded Ethics

Embedding Ethics into AI Design

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
<p>A value sensitive design could mitigate some ethical concerns regarding AI. This is, to introduce values directly into the AI during development.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement:

ETHICAL VALUES

Block: Ethical Values

To address the bioethical issues of Medical-AI, we must consider

important ethical values. Please state which values we should consider when addressing an ethical use of Medical-AI.

Take into account we are talking about values, more generally, not specific principles.

These are NOT values AI should reflect or represent, but rather, values healthcare professionals should integrate into their practice to make an ethical use of Medical-AI.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Teamwork and Cooperation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solidarity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Application of Human Values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Empathy and Compassion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vulnerability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relevance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contestability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement:

BIOETHICAL ISSUES OF THE USE OF MEDICAL-AI

BLOCK: Bioethical problems of using medical-AI.

Bioethical Issues

State if you agree or disagree with each of these categories being a bioethical issue of relevance:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Health Law: the increased used and development of Medical AI can cause problems with existing health laws and regulation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The effect of AI on clinical relationships can be a bioethical issue of importance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technological imperialism: AI developers having a monopoly over AI and gaining excessive power over healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement:

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