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Integrating AI into widening countries' culture and society: current challenges

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Overview

- Transparency
- Privacy
- Accountability and liability
- Continuous learning and adaptation
- Conclusions



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ChatMED Challenges

...Who will protect us from GenAI?...

- Challenges:
 - **predict** all the possible challenges before the project starts.
 - **avoid** any challenges as much as possible **by design**.
- This goal can be reached if certain **conditions** are met:
 - Transparency
 - Informed consent
 - Protection of sensitive personal data (privacy, security, copyright)
 - Avoiding the potential biases
 - Clinical oversight



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Transparency



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Enabling transparency

- The medical institution should be clear about the AI's capabilities, limitations, and decision-making processes.
- The **medical institution** should give an **explicit consent** of implementing generative AI for suggesting the diagnosis of the patients.
- All the medical staff should be **informed** about the **new approach**.
- They should **voluntarily decide** whether they will **use it or not**.
- No matter the decision, the **medical staff** should give an **explicit consent** for the use of GenAI.



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Unlocking transparency

- The project should be **endorsed by the Ministries of health of all involved countries.**
 - In the beginning, they should be informed about ChatMED.
- The discoveries of the researchers should be **transparently disseminated** among future users of GenAI so that the **decision** of the medical institution is **conscious** and **voluntary**.
- The three documents about the **informed consent** (the **hospital**, medical staff who **will** and who **will not use GenAI**) should be **created** and **approved**.



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Patient transparency

- [European Union](#): “Transparency is one of the EU’s key principles. It requires the EU to **disclose information on policy-making and spending** and to uphold the principle of **freedom of information.**”
- [EU Regulation](#): “... a more **patient-centred healthcare** where **transparency** and patients' information and choice are a **priority**, and where **patients can benefit from innovative, high-performing devices and new therapies.**”



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Can patients consult GenAI?

- Jerome K. Jerome: Three man in a boat (to say nothing of a dog)
 - The way **hypochondria** can turn a healthy person into a self-diagnosed invalid simply by reading about various illnesses...
- The patients who **insist** on using it GenAI should be warned that:
 - GenAI is **not reliable**.
 - The medical staff should always be **consulted** about the diagnosis.
 - Their **treatment** is not a GenAI decision.
- GenAI can be considered a **medical encyclopedia** rather than a real doctor.



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Mental state of patients

- The patients should be approached with **sensitivity** and **care**.
- ChatMED will achieve this through:
 - **Contextualization** - what can/cannot be directly presented to the patients
 - **Supportive communication** – explain clearly and with compassion
 - **Additional confirmation** – explain the context
 - **Encouragement of questions** - ChatMED suggestions are not definitive
 - **Additional resources** - provide information about support services



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Privacy

ChatMED – fair treatment of personal data



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- **Compliance** with the existing EU regulations (at least GDPR + [AI Act](#))
- **Minimization** of data collection
- **Limited access**
- **Right to access**
- **Data protection** (anonymization, pseudonymization, etc.)
- **Accuracy**
- **Accountability**
- **Security** measures
- **Written consent** for collecting and using vulnerable medical data.

Privacy and copyright of shared medical records



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- ChatMED plans to **share** sensitive medical records with **GenAI**.
- **Data privacy protection** strategies are already in place, they just need to be applied consistently.
- In such a way the **leakage** of sensitive personal data will be **avoided**, which will **protect** both the **hospital** and its **patients**.
- Copyright of medical data is not expressly part of [EU legislation](#).
- “The [ORD pilot](#) aims to improve and maximise access to and re-use of research data generated by Horizon 2020 projects”
- **ChatMED** has ambitions to **protect** its outcomes by copyright or patent.
- **Will copyright and patent be sufficient to protect intellectual property from infringement by GenAI?**



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Accountability and liability



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Accountability of GenAI

- GenAI should be **designed** and **trained**:
 - Responsibly
 - Without inherent biases
 - With safety measures to prevent misuse or errors
- GenAI systems should be **transparent** in their operations.
- Users should be **aware** when they are interacting with an AI system.
- Users should **understand** how it works.

Reasonable dependence on GenAI



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- **ChatMED** should only be used as **supportive** system in medicine that **provides recommendations or insights**.
- The final medical decision should involve **human judgment**, ensuring that **ethical considerations, patient preferences, and contextual nuances** are taken into account.
 - **ChatMED proposes specially designed Human Evaluation Framework!**
- Healthcare professionals need to **understand** how the GenAI models **generate** their outputs.
 - **ChatMED will address explainability!**



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Avoiding the potential biases

- Can there be **bias** in medical **diagnoses** and **treatment**?
- There are many examples related to **various causes**, discriminations, political views, own prejudice, stereotypes, gender influence etc.
- My master's thesis was related to **Balkan endemic nephropathy**.
- Prof. [Dimitar Hrisoho](#), who led this project, was **not biased** by the usual treatment of the disease and insisted on the role of genetic factors.
- It turned out to be extremely successful.

How to avoid the biases in ChatMED?



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- Steps must be taken to ensure that **ChatMED is trained on diverse data** to avoid biases that could affect patient care.
- [The five recommendations:](#)
 - Make bias-mitigation initiatives a **priority**.
 - **Mandate** your bias-mitigation initiatives.
 - **Source** your training data **broadly**.
 - **Diversify** the **fine-tuning** process.
 - **Evaluate** your model in operation.



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Continuous learning and adaptation

ChatMED and training activities



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- The recommended order:
 - **Healthcare professionals** should train the **computer scientists** about their experience.
 - Computer scientists should **evaluate** two or three **different GenAI models** on the collected data from the consortium of healthcare professionals.
 - **Computer scientists** should train **healthcare professionals** how to use GenAI.
 - Healthcare professionals should become completely **confident** in using GenAI.
 - If **patients** decide to use GenAI to check their health, the confident **healthcare professionals** should train them use GenAI.
 - All activities with patients should be supported by **constant clinical oversight**.



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Non-discrimination during training activities

- **Informed** participation
- Constructive **selection**
- **Diversity** and **inclusion** (age, gender, religion, background, experience etc.)
- **Critical thinking**
- Awareness of the **limitations** of generative AI
- Encouragement of **continuous learning**
- Establishing **feedback mechanisms**



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Conclusions



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Conclusions

- **Ethical standards** must be raised to the highest possible level and must be disclosed **by design**.
- **Informed consent** of the medical institution and patients ensures that all participants are aware of how their data will be used, benefits and potential risks.
- This process respects **patients' autonomy** and fosters **trust** in the healthcare system.
- **Clear communication** about data usage and the ability to opt out are important components of ethical practices in healthcare.



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Thank you for your attention

