Considerations of Ethics and Equity in deploying AI in healthcare

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Outline

- Background
- Ethics & Equity
- Design
- Responsible Innovation
World stumbling zombie-like into a digital welfare dystopia, warns UN human rights expert

NEW YORK (17 October 2019) – A UN human rights expert has expressed concerns about the emergence of the "digital welfare state", saying that all too often the real motives behind such programs are to slash welfare spending, set up intrusive government surveillance systems and generate profits for private corporate interests.
Background

Ontario
Ministry of Health
Ministry of Long-Term Care

Patients receive all their care, including primary care, hospital services, mental health & addictions services, long-term care, and home and community care from one team.

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Level-Setting: AI + Digital Health
# Level-Setting: AI

Artificial Intelligence and the Implementation Challenge

James Shaw1,2, PhD; Frank Rodzic3, PhD; Trevor Janieson4, MD, MBI; Avi Goldfarb5, PhD

## Table 1. Examples of use cases in each category of application.

<table>
<thead>
<tr>
<th>Type of use case</th>
<th>Clinicala</th>
<th>Operationalb</th>
<th>Epidemiologicalc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision support</td>
<td>Producing a more accurate prediction of the likely outcome of a particular intervention [20]</td>
<td>Identifying potential staff scheduling changes related to forecasted emergency room volumes [21]</td>
<td>Warning systems for disease outbreak [22]</td>
</tr>
<tr>
<td>Automation</td>
<td>Automatically altering insulin treatment in response to monitored glucose-insulin dynamics [23]</td>
<td>Use of robotics for operational tasks in dementia care, such as meal delivery [24]</td>
<td>N/A d</td>
</tr>
</tbody>
</table>

- a Tasks related to the assessment, intervention, and evaluation of health-related issues and procedures, generally performed by qualified health care providers.
- b Tasks related to activities that are ancillary to clinical tasks but necessary or valuable in the delivery of services.
- c Tasks related to more accurately identifying the health needs and outcomes of people within a given population.
- d Not applicable.
Level-Setting: AI

Decision-support (Prediction)

Automation

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Level-Setting: Digital Health
Level-Setting: Digital Health

*How is digital technology used for health care?*

1. To **find information** about health and health services
2. To **communicate** with health care providers
3. To **exchange and analyze data** for better care
"The defining feature of digital health, however, has to do with data rather than technology."
Atul Gawande @Atul_Gawande · 5h
My latest @NewYorker piece, in gestation for a couple years now, as you'll see. Something to read about other than the election, at least. It is on the state of health care information technology. In other words:
newyorker.com/magazine/2018/...
Level-Setting: AI + Digital Health

Digital Health

Artificial Intelligence
Level-Setting: AI + Digital Health

Digital Health

Artificial Intelligence
What are the issues?

Ethics

Equity
What are the issues?

Ethics

“well-founded standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues”

What are the issues?

Ethics

Owing Ethics: Corporate Logics, Silicon Valley, and the Institutionalization of Ethics

Jacob Metcalf (Data & Society), Emanuel Moss (Data & Society, CUNY Graduate Center), danah boyd (Microsoft Research, Data & Society)
What are the issues?

Equity

From an **ethical perspective**, equity primarily concerns the concept of “**justice**”.

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What are the issues?

**Equity**

**Justice:**

The **moral dimensions** of the distribution of **benefits + burdens, advantages + disadvantages**.

What are the issues?

Justice:

Distributive  Procedural  Relational

What are the issues?
1. Technology is **becoming** more pervasive, but **not all communities** have **equal access** to connected digital devices.
What are the equity issues?

1. Technology is becoming more pervasive, but not all communities have equal access to connected digital devices.

2. Not all problems are best solved by technology, but ethically designed innovation can play an important role.
What are the equity issues?

1. Technology is **becoming more pervasive**, but **not all communities** have **equal access** to connected digital devices.

2. **Not all problems** are best solved by technology, but **ethically designed** innovation can play an important role.

3. Policy and Procurement for digital health technologies should focus on **meeting the needs of providers and the public**.
What are the **equity** issues?

1. Technology is **becoming more pervasive**, but **not all communities** have **equal access** to connected digital devices.

2. **Not all problems** are best solved by technology, but **ethically designed** innovation can play an important role.

3. Policy and Procurement for digital health technologies should focus on **meeting the needs of providers and the public**.

4. **The fundamentals** of a digitized health system **need attention** before digital health can meet its potential.
So what next?

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So what next?

Product Design
Beyond “implementation”: digital health innovation and service design

James Shaw¹,², Payal Agarwal¹, Laura Desveaux¹,², Daniel Cornejo Palma¹,², Vess Stamenova¹, Trevor Jamieson¹,³,⁴, Rebecca Yang¹, R. Sacha Bhatia¹,² and Onil Bhattacharyya¹,²
So what next?

1. Empathize
2. Define
3. Ideate
4. Prototype
5. Test

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So what next?

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So what next?
So what next?

The Ethics Design Lab

Ethicist as Designer: A Pragmatic Approach to Ethics in the Lab
Aimee van Wynsberghe · Scott Robbins

A Trojan horse approach to changing mental health care for young people through service design
Louisa Szücs Johansson, Josina Vink, and Katarina Wetter-Edman

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So what next?

1. Technology is **becoming more pervasive**, but **not all communities** have **equal access** to connected digital devices.

   *Who will actually be able to use the technology to improve their health?*
   
   *Who will be left out?*

   *How might more equal access to the technology be achieved?*
   
   *What broader structures need to change to enable that?*
So what next?

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2. **Not all problems** are best solved by technology.

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“a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)”

Von Schomberg (2013). A vision of responsible research and innovation.
1. **Public Trust**: Does the public trust the institutions and the technology?

2. **Ethical Governance of Health Data**: What protections are in place for health data?

3. **Health Equity and AI Applications**: Is the technology being leveraged in service of an equitable system?

4. **The Future of Care**: How will the technology re-shape the practices that make up health care?
Thank you!

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