



KAISA-MARIA KIMMEL 26 Jan 2021

Artificial intelligence in personalized medicine – implications for priority setting and the right to health

Ethics of artificial intelligence



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Artificial intelligence in personalized medicine

PRESENTATION STRUCTURE

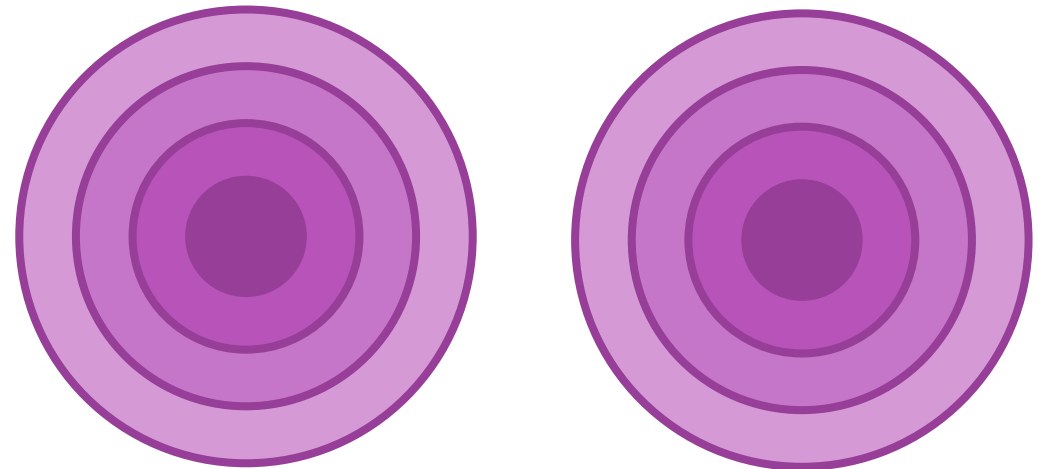
1. Personalized medicine
2. Principles of bioethics
3. Right to health
4. Priority setting
5. Opportunity cost
6. Decision making and equal access

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PERSONALIZED MEDICINE

“[P]ersonalized or “precision” medicine ... integrates **genomic** knowledge ... and other laboratory research with input from health records, along with social and environmental data, for the selection of the **optimal therapy** for the **individual patient**”

A.F. Gazdar and J.D. Minna (2013) Precision medicine for cancer patients: lessons learned and the path forward, *Journal of the National Cancer Institute* 105.

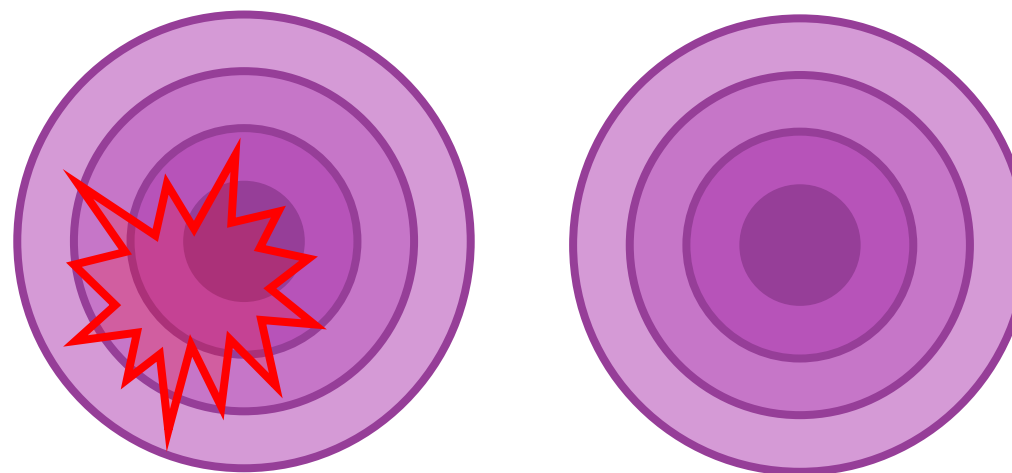


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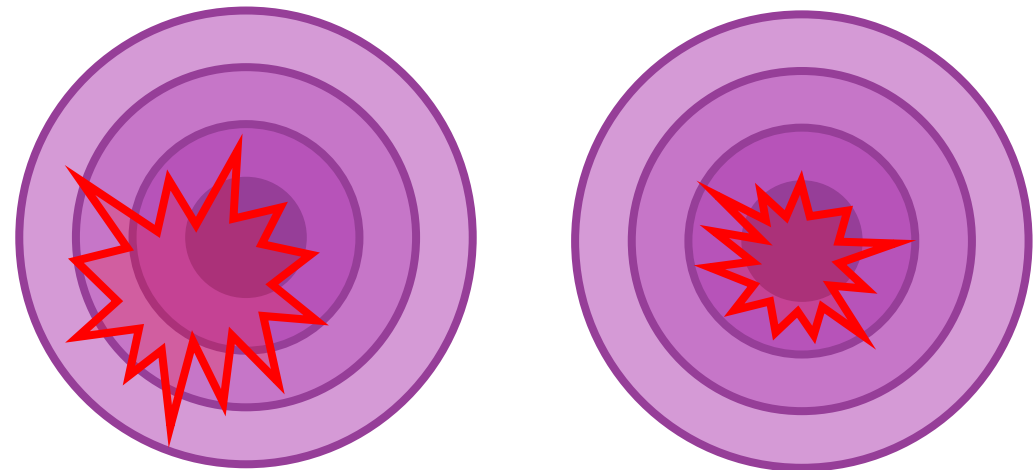


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PRINCIPLES OF BIOETHICS



Respect for autonomy

Informed consent, disclosure, human dignity, privacy



Non-maleficence

“Do no harm”, assessing benefits and risks



Beneficence

Curing disease, alleviating suffering



Justice

Principle of need, equal access, non-discrimination, decent minimum

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RIGHT TO HEALTH



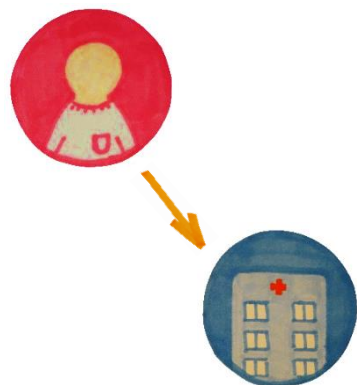
Availability

Sufficient staff, facilities, expertise, medicines, medical devices



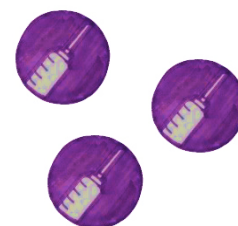
Acceptability

Respect for patient autonomy and convictions, decent minimum, minorities



Accessibility

Non-discrimination, physical, economic, information



Quality

Evidence-based medicine, safety, monitoring

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PRIORITY SETTING AS A PROCESS

“a process of fair and justified decisions between different interests, in order to steer health care provision in changing and complex settings”

Lammintakanen, J., Health Care Prioritization. Evolution of Concept, Research and Policy Process.
Kuopio 2005.



However, priorities can be set poorly, unsystematically, unequally, implicitly, against the law...

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OPPORTUNITY COST



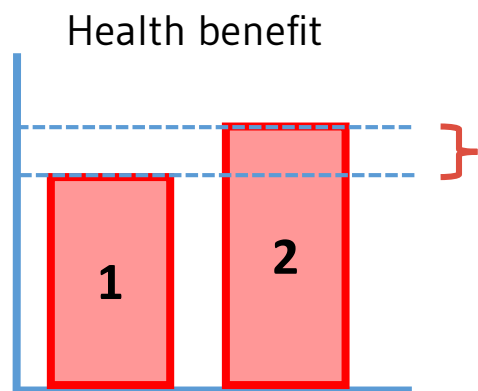
Harri Säynevirta, Kuvia Suomesta



Joona Kotilainen, Kuvia Suomesta

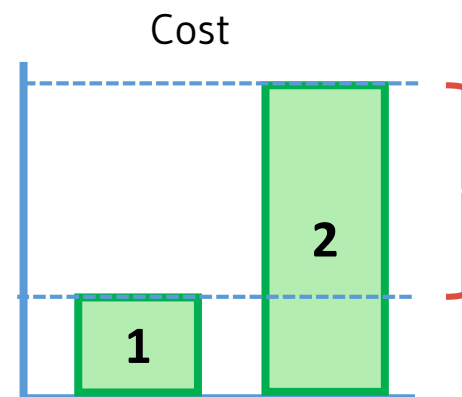
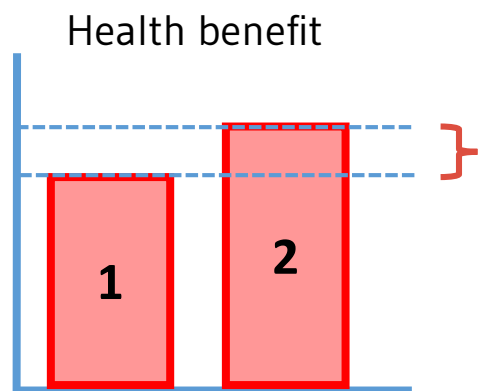
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OPPORTUNITY COST



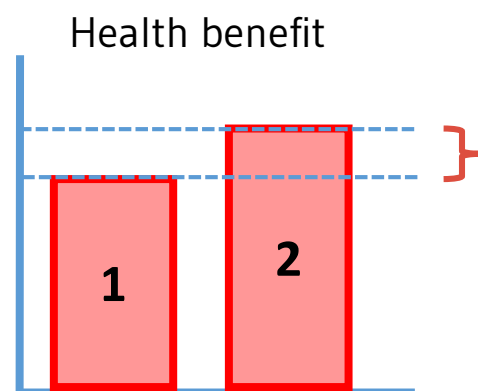
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OPPORTUNITY COST



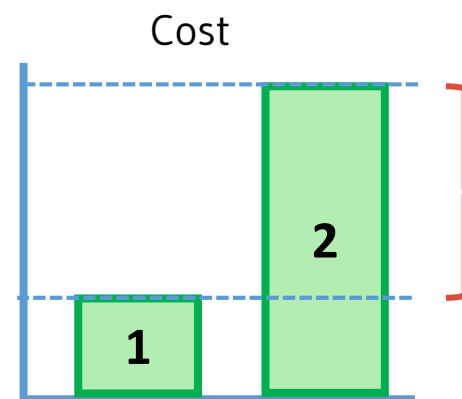
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OPPORTUNITY COST



MEASURING EFFECTIVENESS

How to deal with uncertainty?



MEASURING COST

How to estimate indirect costs?

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DECISION MAKING AND EQUAL ACCESS

Availability

Innovation priorities, opportunity cost

Accessibility

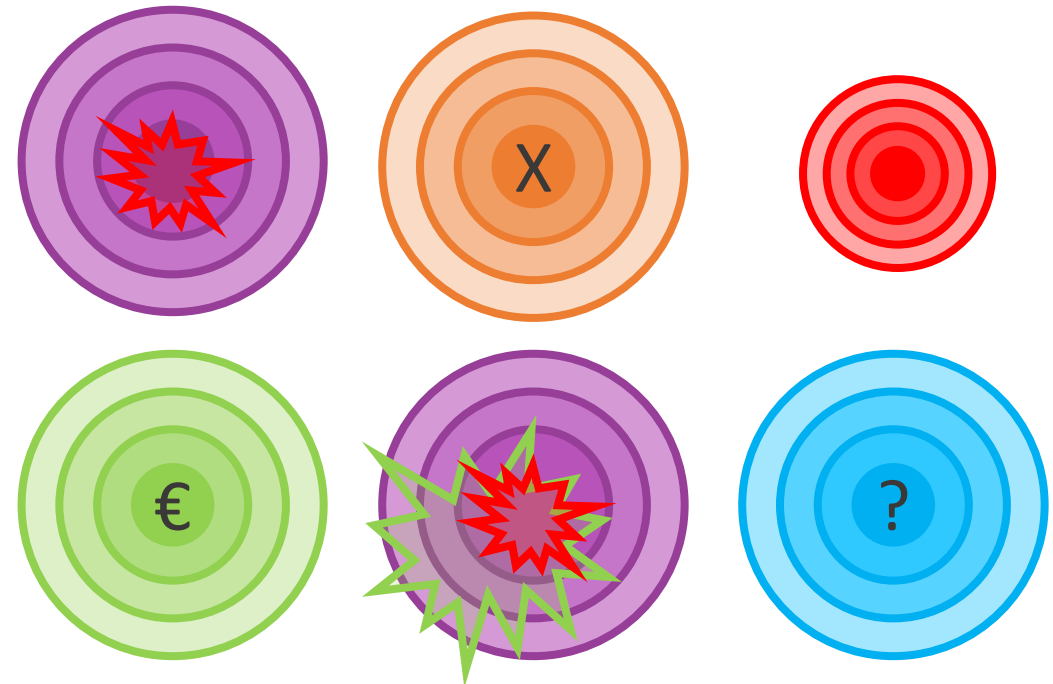
Orphan populations, ability to pay

Acceptability

Patient experience, informed consent, medicalization

Quality

Integrity and quality of data and algorithms, cost-effectiveness



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DECISION MAKING AND EQUAL ACCESS

Challenges in decision making

Biases, e.g.:

- Prominence effect
- Adoption addiction
- Complexity bias
- Imperative of action
- Technology placebo effect
- Imperative of knowledge

Hofmann, Bjørn (2020) Biases distorting priority setting, Health Policy 124.

Negotiating uncertainty

- uncertainty in AI-supported methods
- Role of trust among stakeholders

Calnan et al. (2017) Still Elegantly Muddling Through? NICE and Uncertainty in Decision Making About the Rationing of Expensive Medicines in England, International Journal of Health Services 47.

Value for money

- Risk-sharing, conditional reimbursement, market access agreements
- Difficulty of withdrawing after access

Wetering et al. (2017) The Challenge of Conditional Reimbursement: Stopping Reimbursement Can Be More Difficult Than Not Starting in the First Place!, Value in Health 20.

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DECISION MAKING AND EQUAL ACCESS

Developing decision making processes

- Complete right to health as basis for adopting new / disinvesting from ineffective methods
- Same process and principles for adoption of personalized medicine as other methods
- Accounting for biases in developing decision-making processes
- Accountability for reasonableness:
 - Relevant principles and criteria based on public dialogue
 - Transparent and justified decision making
 - Opportunity for reassessment of decisions and institutional learning
 - Enforcement of procedural principles through law or self-regulation

Daniels, N. & Sabin, J.E., *Setting Limits Fairly. Learning to Share Resources for Health.* Oxford, OUP 2008.

Kimmel, K.-M., Challenges in Regulating Priority Setting in Health Care: A Finnish Perspective on the Lawmaker's Dilemma, *Medical Law International* 19(2-3) 2019.

Kimmel, K.-M., Service Choices: Priority Setting in Finnish Health Care, *Retfærd* 163(4) 2019.

Questions & comments?

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