

# THE INTERFACES BETWEEN PERSONALIZED MEDICINE AND MEDICAL EDUCATION AND/OR PROFESSIONALISM

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# Personalized Medicine

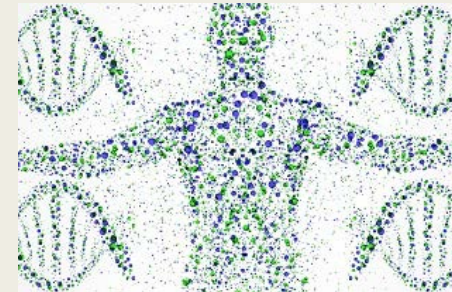
- Genetic tests
- Predictive medicine
- Farmacogenetics
  
- **Precision medicine** refers to the idea of delivering the right treatment to the right patient at the right time, usually with a focus on a data-centered approach to this task.

# Medical revolution?

- **individualized therapies** based on quantitative, patient-specific datasets, integrated via algorithmic analyses that can aid patient stratification, monitoring, and treatment design.
  - + *Artificial Intelligence* in the health care sector....
  - *Efficient treatment*
  - *Personalised treatment*

# Personalized Medicine

- Big Data + Medical File
  - *WHO Digital health technology...*
  
- Genomic Revolution
  
- Bioinformatics Revolution
  
- *Direct-to-consumer personal genetic tests?*
  - *Autonomy?*
  - *Or abandonment of the person without information and medical and psychological support?*



# Advantages?



- the beneficial potential to identify diseases earlier,
- to reduce burdens of treatment,
- and to improve screening by reducing false positives,
- and ultimately improve health,

# Genetic information –

- Unvoluntary
- Indestructible
- Permanent
- Unchangeable
- Family-related
  
- Pre-syntomatic
  - *(much) before illness/ handicap....*

# Dangers of “geneticized” medicine

- 1) Unfair Discrimination
- 2) Breach of confidentiality
- 3) The (adult) person is deprived from the right to make choices
- 4) The **right not to know**

- *Convention on Human Rights and Biomedicine*
  - *International Declaration on Human Genetic Data*
- 16 October 2003*



# Personalized medicine: Problems?

## 1) Safety issues/

1) cost/benefit analysis – minor clinical interest of some genetic variations

## 2) Inequality – ethnic minorities (in developed countries)

- Negative discrimination for some groups?
- No equitable access to healthcare?



# Personalized medicine: problems?



3) High cost – difficult access to personalized medicine

4) Reallocation of resources from more urgente medical areas?

## ***Principle of Justice***

- *Within the National System*

- *At the international level?*

5) Biobancs for biomedical protection and Data protection – Confidentiality?

# Risk 1 – No more privacy?



- ...
- “in the not-too-distant future, each patient will be surrounded by a ‘virtual cloud’ of billions of data points that will uniquely define their past medical history and current health status.
- the billions of data points from hundreds of millions of individuals to **generate algorithms to help predict the future clinical needs for each patient.**
  - *Colijn C, Jones N, Johnston IG, Yaliraki S and Barahona M (2017) Toward Precision Healthcare: Context and Mathematical Challenges. Front. Physiol. 8:136.*
    - doi: 10.3389/fphys.2017.00136

# Risk 2 - Unfair discrimination?

- quality-adjusted life year estimates...
- affecting which treatments are covered for whom, and guiding hiring, lending or health insurance decisions?
- negative discrimination according to e.g., postcode lotteries, socio-economic factors, social network data, past healthcare interactions, judicial and law enforcement history.

# Medical Education and professionalism

- Humane relation doctor-patient
- Empathy
- **Empathy** is the capacity to understand or feel what another person is experiencing from within their frame of reference, that is, the capacity to place oneself in another's position.
- Caring and curing

# Humanized Medicine

- International Ethics Guidelines?
- **The right to human contact**
- The right to confidentiality of medical data
- The right not to know
- The right to an open future and selfdetermination

# Summary

- Personalized medicine
- Genetics
- Big data
- Information Technologies
- Advantages
- Risks
- Debate

# Welcome back to Coimbra - Portugal!



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