Ethics in research: Principles

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Hello and welcome!

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Learning outcomes

At the end of this lecture you should:

- Understand what ‘research ethics’ refers to and know its different domains and layers of practice
- Know the most important general and domain-specific principles of research ethics
- Understand the development of modern research ethics practices as a reaction to historical human rights violations in scientific research
- Know why you have to fill in an ethics form for your own research projects

What is ‘ethics in research’?

3 Domains:

A) General conduct expected of scientists ‘re plagiarism, data falsification, conflict of interest… (a.k.a “research integrity”)

B) Ethics in research with human participants: how to not harm the people your research is about/for

C) The responsibility of science towards society: how to use public funds, make results applicable, avoid social harm

Three domains of research ethics.

Image credit: Reidun Tangen via Researchgate

Why do research participants need protection?

As early as 1620, Francis Bacon argued in *The Novum Organon* that **scientific research should benefit humanity**.

However, the history of (especially medical) research is a history of human rights abuses and the exploitation of vulnerable groups

The scientific method evolves…

Research and experimentation on humans has existed since the middle ages. One of the first recorded control group studies was described by 10th century physician Muhammad ibn Zakariya al-Razi – the treatment method being bloodletting:

"For I once saved one group [of patients] by it, while I intentionally neglected [to bleed] another group. By doing that, I wished to reach a conclusion. And so all of these [latter] contracted meningitis."

Early vaccine research was often conducted on orphans

- **1796** Edward Jenner inoculates eight-year-old James Phipps with fluid from a cowpox pustule to immunize him against smallpox.
- **1885** Louis Pasteur administers an experimental rabies vaccine to nine-year-old Joseph Meister without testing it on animals first.
- **1897** Giuseppe Sanarelli injects the yellow fever bacteria into five patients without their consent. All the patients developed the disease and three died.

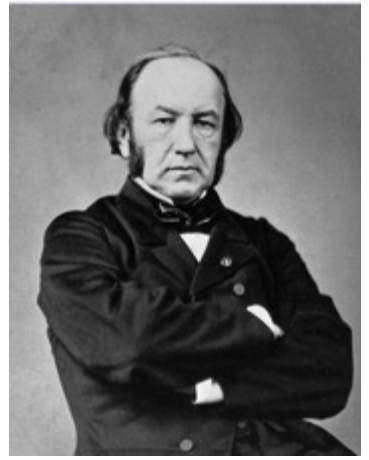
(source: https://www.niehs.nih.gov/research/resources/bioethics/timeline/index.cfm)

19th century: the beginning of research ethics

- Claude Bernard (France, 1813–1878), known as the ‘father of experimental medicine’ argues that before using vulnerable people for experimentation, researchers should first use themselves, and then their colleagues and family members.

- Albert Neisser (Germany, 1841–1912): fined after court found he failed to obtain consent from patients for research on syphilis. As a result, Prussia issued one of the first ‘unambiguous consent’ policies in 1900

- 1931, the German Ministry of the Interior issued new guidelines for therapies and scientific experiments involving people, reaffirming the requirement for unambiguous consent and stating that researchers shall not exploit "social emergencies”, such as children stranded on orphanages. (Ruyter, Førde and Solbakk 2000:251–253).



Claude Bernard

Albert Neisser

Nazi Human Experimentation

Between 1933 and 1945, the Nazis murdered more than 6 million people, including Jews, Romani, homosexuals, disabled people and communists.

At least 15,754 people were murdered in the course of medical experimentation on prisoners, many more remain undocumented. These include 1500 sets of twins, 200 of whom survived.

Experiments included surgery without anesthesia, exposure to extreme temperature, poison gas, pressure and infections, castration, forced sterilization and electrocution. They are today considered examples of medical torture.

The aftermath: Nuremberg doctor's trial

Dec 1946 to Aug 1947.

Of 23 defendants, seven received acquittals, seven death sentences; the rest prison sentences between 10 years and life.

Among the charges was medical experimentation on human subjects without their consent.

Some of the defendants argued that there was no law that said their experiments were illegal.

Image credit: Wikimedia commons

The Nuremberg Code

- Initiated by Dr **Andrew Ivy** and Dr **Leo Alexander**, as a response to attempts by Nazi doctors to defend their actions.

- Originally outlined **six points** for legitimate medical research, including the requirement for explicit voluntary consent from patients.

- Verdicts against the 23 defendants reiterated these points, which were **later expanded to ten**.

The Nuremberg Code

1. The voluntary consent of the human subject is absolutely essential.
   This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved, as to enable him to make an understanding and enlightened decision. This latter element requires that, before the acceptance of an affirmative decision by the experimental subject, there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person, which may possibly come from his participation in the experiment.
   The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.
2. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.
3. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study, that the anticipated results will justify the performance of the experiment.
4. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.
5. No experiment should be conducted, where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the
   experimental physicians also serve as subjects.
6. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.
7. Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.
8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.
9. During the course of the experiment, the human subject should be at liberty to bring the experiment to an end, if he has reached the physical or mental state, where continuation of the experiment seemed to him to be impossible.
10. During the course of the experiment, the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgement required of him, that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

["Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10", Vol. 2, pp. 181-182. Washington, D.C.: U.S. Government Printing Office, 1949.]

Declaration of Helsinki

Set of ethical principles developed since 1964 on the basis of the Nuremberg Code by the World Medical Association.

- "The **wellbeing of the human subject** should take precedence over the interests of science and society"
- **Consent** should be **in writing** and include information on **risks** and the **right to withdraw** from the study without adverse consequences
- Experimentation on humans should **follow studies in non-human animals**
- Researchers must be **qualified and trained**
- Research designs should be reviewed by an **independent ethics committee** and include explicit discussion of ethical aspects
- **Risks** must be assessed to be **proportionate to benefits**, research must not cause permanent harm, disability or death
- Limited use of **placebo**

However!

Nazi doctors were not unaware that ethical principles apply in research with human participants.

They circumvented this problem

by declaring their victims “subhuman”.

Experimentation on enslaved people

In the 18th century American South, white physicians and medical colleges conducted widespread experiments on Black people who were enslaved

One especially cruel example is James Marion Sims (1813-1883), also called the “father of modern gynecology”, who conducted medical research on Black women without anesthesia.

It was believed at the time that Black people do not feel pain

The Tuskegee Study

- Study of untreated syphilis in African-American men, conducted between **1932 and 1972** by the United States Public Health Service (PHS) and the Centers for Disease Control and Prevention (CDC)
- Involved **600 impoverished Black men**, 399 of whom had latent syphilis, the rest were controls.
- Participants were **intentionally deceived** about the purpose and duration of the study and their diagnosis and **falsely promised** free health care. **Placebos, ineffective methods and procedures** were falsely portrayed as effective treatment.
- By 1947, **Penicillin** was widely available for the treatment of syphilis, but was **intentionally withheld** from study participants
- The study caused the **deaths of 128 of its participants**, either directly from syphilis or from related complications.

The Belmont report

Created 1978 in response to the Tuskegee study by the US *National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research*.

Outlines ethical principles and guidelines for research involving human subjects.

Identifies three core principles: **respect for persons, beneficence, and justice.**

And three primary areas of application: **informed consent, assessment of risks and benefits, and selection of subjects (social justice)**.

Henrietta Lacks

Henrietta Lacks was a Black woman who underwent a cancer biopsy in the US in the 50s.

Without her knowledge or consent, cells from this biopsy were used for research. They became the foundation of the HeLa cell line, one of the most important cell lines in medical as well as commercial research to this day

Henrietta Lacks' family only learned about this in 1975. They were never given any compensation.

General principles…

- Informed Consent
- Beneficience and non-maleficience
- Respect for Persons
- Confidentiality and data protection
- Conflict of Interest
- Social Justice

Domain-specific principles

- Reflexivity
- Epistemic/cultural/moral relativism
- Cultural and intellectual property
- Anonymity vs. Recognition
- Trauma-informed approaches
- Political economy considerations

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Informed consent

Research participants must receive **information** about the research in a **comprehensible** format and **without duress** or inappropriate inducement

- ***Information*** should include: purpose of the research, anticipated risks and benefits, methods and procedures (in medical research including information about alternative treatments), information about right to withdraw, opportunity to ask questions and independent contact for complaints

- ***Comprehension*** means researchers must ensure to present information in such a way that participants can understand. This includes considerations of participant's language and literacy skill, level of education, maturity, social status and beliefs. Where sufficient comprehension is unlikely e.g. due to young age or mental disability, permission from other parties than the participant (e.g. a legal guardian) must be sought.

- ***Without duress*** means that participants must be able to make a decision freely, without any threat of harm, unjustifiable pressure such as requests from an authority, or undue influence such as inappropriate rewards. With vulnerable participants, extra care must be taken to ensure otherwise appropriate incentives do not become inappropriate.

Beneficience and non-maleficience

The **benefits** of research must **outweigh** any **risk or harm**. Researchers should aim to maximise benefit and minimise potential risk of harm to participants and researchers.

This includes risks of, **psychological, physical, legal, social and economic harm** and the corresponding benefits.

Where there is no direct benefit to research participants, the relationship between **risk to the individual** and **benefit to the community** must be carefully assessed.

Respect for Persons

Participation must be **voluntary** and **free from coercion** or undue influence

The **rights, dignity and autonomy** of the person must be protected at all times

Participants whose **capacity to consent** is limited must be protected from harm, including exempting them from research

Confidentiality and data protection

Data protection **policies and legislation**, as well as individual and group preferences regarding anonymity, should be respected

Informed consent should involve **consent to data use** and specify purpose and limitations (e.g. anonymisation)

Data generated by research must be **securely stored** and kept in accordance with relevant legislation and institutional policy

But: researchers must also mitigate **risk of harm from legal use of data**, e.g. when researching political activism in repressive contexts

Conflict of interest

Any conflicts of interest or partiality on part of researchers should be made explicit. A conflict of interest arises where researchers:

- obtain a personal gain, or a gain to a member of their family or another person to whom they have a close personal relationship arising from the research. This gain may be financial or otherwise

- have commitments and obligations to another person or body that may appear to act as a potential influence over their independent conduct of the research

Social Justice

Research should aim to treat different members or groups in society **equally and equitably.**

This includes especially the selection of participants: researchers must consider whether participants are **disproportionally selected** e.g. due to their race, gender, disability status or easy accessibility, and whether this may result in **disproportionate harm**

One ethics – or many?

In practice, ‘research ethics’ can refer to:

- **Institutional ethics procedures** (law-oriented, bureaucratic, ‘box-ticking’)
- **Professional ethics** systems in different disciplines (reflexive, qualitative, adaptive)
- **General ethics** (socio-culturally specific)

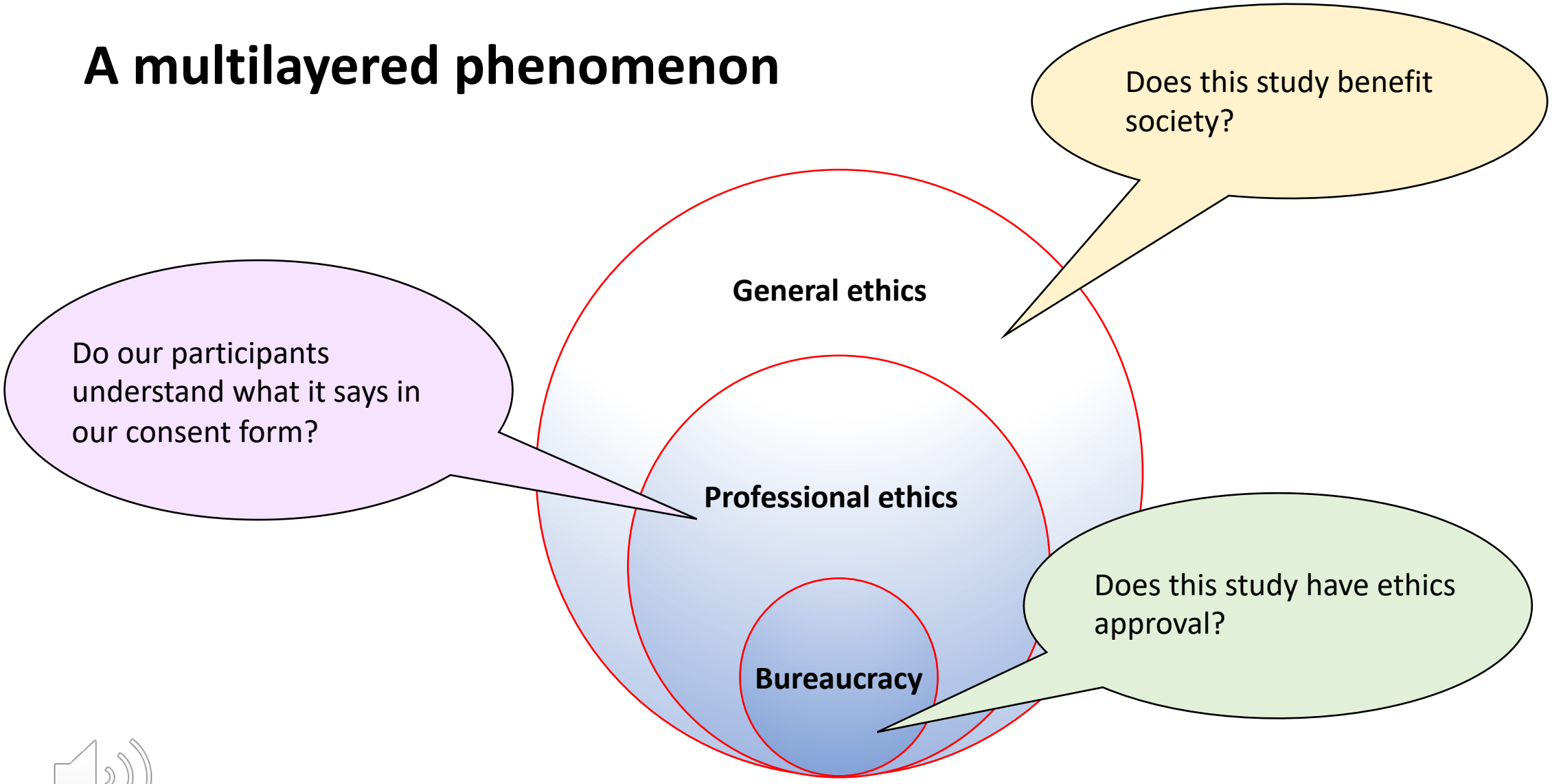
These levels **can and do come into conflict**!

Examples:

- Rigid bureaucratic procedures vs. the needs of culturally specific human subjects
- Legal liability vs. moral responsibility
- Managerial university governance vs. freedom of science

And: ‘for-profit’ science produces **inherent institutional conflicts of interest**

A multilayered phenomenon



‘…but we did everything the ethics committee asked for!’

In the early 1900s, **Walter Reed** (USA) conducted experiments to determine the cause of yellow fever.

He exposed Spanish immigrant workers in Cuba to the disease. Participants were promised **$100 (ca. $3500 today)**, twice that if they developed symptoms.

Image: public domain

Six participants died, including **two researcher-volunteers** (Reed himself declined to self-experiment).

The participants **all signed consent forms**, some translated into Spanish. Reed’s study today counts as the first use of consent forms in medical history.

Key takeaways:

- Research ethics as a field exists because of **historical human rights violations** in research
- Research ethics is a **multidimensional and contested** set of practices
- Research ethics draws on **general and domain-specific principles**, the most important of which is Informed Consent
- In practice, people use the term to refer to different ‘layers’ of practice: **institutional, disciplinary and general social**
- **Bureaucracy** can help to monitor ethics but it **does not replace a moral compass**

Thank you!!!

Questions? Comments? Want to discuss this lecture with someone?

Email steph.grohmann@ed.ac.uk