Is Medicine a Science?

Preliminary Remarks

- Thus far: Reductionism and Confirmation.

- What kind of relations exist between theories and between theories and evidence?

- Last unit: Philosophy of Medicine (today: Is Medicine a Science?)

Philosophy of Medicine

First Approximation:

Philosophy of Medicine: Concerned with epistemological, metaphysical, methodological & ethical issues arising in medicine.

Medicine: It is the art or science of restoring or preserving health.

Some central questions:

- Is Medicine a science?
- How are we to understand concepts such as disease, cure and health?
- Do we have revolutions in Medicine?
- What is the evidence-theory relationship in this context?

Philosophy of Medicine (2)

- Is Medicine a science?
- Suppose YES (e.g. L.A. Forstram):
  - Is it a social or a natural science?
  - Is it a hybrid science?
  - Is it an applied science?
  - Is it autonomous or reducible to other fundamental sciences?
- Suppose NO (e.g. R. Munson):
  - Is it a technē (i.e. art or craft)?
  - If not, what is it then?

Is Medicine a Science?

- Medicine seems:
  - Grounded on the biomedical sciences (especially biology and biochemistry).
  - Social and psychological dimensions (example: the doctor-patient interaction).
  - Ethical dimensions (example: who has rights to terminate life).
  - Practical dimensions (example: promoting health).
- Ronald Munson contrasts medicine with science on the basis of three criteria:

  (1) Ultimate aims
  (2) Criteria of success
  (3) Regulatory principles

Is Medicine a Science? (2)

(1) Internal Aims:

- Science: (i) epistemic aim: acquisition of knowledge of the world, and (ii) metaphysical aim: discovery of what exists.
- Medicine: Promote health through the prevention or treatment of disease. (NB: Scientific aims only subservient).

(2) Criteria of Success:

- Science: It gives us true or approximately true knowledge.
- Medicine: Prevention and eradication of disease or at least amelioration of health. (NB: Regardless of the truth content)

(3) Regulatory Principles:

- Science: Honest reports of observations/experimental results.
- Medicine: Moral obligation to promote individual patients' health (NB: Honesty plays a secondary role).

Reductionism in Medicine

- Can Medicine be reduced to the more fundamental sciences?
- Most philosophers of medicine seem to be anti-reductionists.
- Munson: Medicine is an 'enterprise' (i.e. an inherently social activity) as well as a discipline. Only the latter might one day be reducible to biology.

  Munson's two claims:

  (1) Medicine has an essentially social character

  (2) This social character is irreducible to biology.

- Rudolf Virchow: Medicine should be conceived as a social science.

Reductionism in Medicine (2)

- George Engel: Emphasis on the social and psychological dimensions of medicine.

  The Biopsychosocial Model: Better health care through proper attention to the psychosocial as well as the biological dimensions of illness.

  According to Engel, modern successes in biomedicine have contributed to a neglect of the psychosocial causes of disease.

  Example: Heart-attack patient is subjected to stress by a nurse who (in the process of taking blood for diagnosis) does not pay due respect to the patient's psychology. The patient's chances of suffering another heart-attack thus increase.

Reductionism in Medicine (3)

- Kenneth Schaffner:
  - Examines the way neuroscientists develop reductionist explanations of learning behaviour and the mind.
  - What kind of model of reduction can we use?
  - It's hard to find laws in biology so the standard models of reduction (Nagel, Nickles, etc.) are inapplicable.
- Schaffner's case study: Short and long-term learning in Aplysia
  - Aplysia is a marine mollusc.
  - Interlevel causal-mechanical explanations.
  - Partial reductions.
  - Theoretical unification where it exists is complex.

Reductionism in Medicine (4)

- The Neuro-Immune-Endocrine Connection

  - Exemplifies the Biopsychosocial model

  - Nervous system and immune system interact.

  Example: Some forms of stress result in a decreased immune response. Animals experiencing such stress become susceptible to bacterial and viral illnesses, and also appear to have a higher susceptibility of developing cancers.

  Indeed, a study at the Cancer Institute of the University of Pittsburgh suggests that psychology plays an important role in the prospects of recovery of cancer patients.

  Conclusion: We must seriously take into account the interaction between multilevel systems.

Reductionism in Medicine (5)

- Medicine also has a moral dimension (Munson, Engelhardt). It contains intrinsic normative/ethical features that make reductionistic approach difficult to defend.
- Examples of such issues:
  - Organ transplants (costs, allocation, black-market, etc.)
  - Euthanasia (should we keep terminally ill and/or comatose patients alive?)
  - Health care costs (what portion of gross national product?)
- Values, like ‘individual self-determination’ and ‘well-being’, are considered primitive desirables.
- Can these be reduced to the biological sciences?
- Hume’s objection: We cannot derive an ‘ought’ from an ‘is’.

Food for Thought

- Why should we care whether medicine is a science?

Reading

- Munson, R. (1981) 'Why Medicine Cannot Be a Science', *The Journal of Medicine and Philosophy*, vol. 6:183-208.
- Schaffner, K. (1999) 'Philosophy of Medicine', in M. Salmon et al. (eds.) *Introduction to the Philosophy of Science*, Indianapolis: Hackett Publishing Company, ch. 8, pp. 310-317, 323-343.