



C M E L

The University of Hong Kong
Centre for Medical Ethics and Law

Report:

The 2018 WYNG-HATTON Lecture: How medicine is changing – a perspective from a clinical scientist

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Technology is changing our lives. The potential of technology to change our approach to medicine and health is enormous. The potential impact of technology on the following three areas of healthcare, for example, is particularly significant.

Electronic Health Records

The biggest problem of paper records is that often the health records of patients do not catch up with the patients, in which case doctors have to see the patients without the updated health records and, in some cases, to start from scratch.

An electronic health record system was introduced in Cambridge about 3 years ago and is beneficial in many ways:

1. Doctors can access the patients' health records and data on a tablet or phone anytime anywhere in a secured way without speaking to anyone;
2. One can take pictures for medical purposes with an application on his/ her mobile phone and the pictures taken will be sent straight to the record system without being retained in the mobile phone such that confidentiality is not an issue;
3. There is a reduction in errors;
4. The processes work more quickly and smoothly;
5. Variation between individual doctors is reduced; and

6. Efficiency is improved (e.g. real-time bed occupancy information, automated letter creation and pathway automation).

The electronic health record system allows the clinical team to view the same information, which is vital for patient care and safety. Electronic health record systems have a huge potential for further development, but there is still a long way to go.

At present, the electronic health record system in Cambridge is not yet a system that can deliver much research usefully. To do good research on health and healthcare, ideally one needs to access the record of everything that happens to the patients from when they are born through to when they are dead, which means records that read across into primary care and, ideally, education and social care. However, the practitioners of primary care in the United Kingdom are largely independent and own their record. Consent from patients is also necessary should one use the record for research purposes. The concern over issues of confidentiality and consent in handling patients' information and data is also a limiting factor, and the problem of transferring the same is yet to be solved.

Imaging

An American company has developed algorithms which allow one to work out from CT scan images the effect of the narrowing of arteries on the blood flow (FFR-CT) and such information is very helpful in guiding decision making for patient care, leading to avoidance of unnecessary procedures (coronary angiogram) and cost savings.

It is expected that there will be more technological breakthroughs in terms of avoiding unnecessary investigation.

Genomics

The application of technology in genomics help doctors better understand diseases in the following areas:

1. Precise diagnosis – especially for genetic disorders;
2. Antenatal diagnosis from maternal blood;
3. Detecting and treating early cancer;
4. Selecting and monitoring treatments;
5. Tracking infectious diseases accurately and understanding how they evolve;
6. Understanding and manipulating the immune response;
7. Animal health and animal models of human disease;
8. Genome editing with complete precision – the CRISPR-Cas9 revolution; and
9. Synthetic biology.