Pathology informatics for safe and efficient patient care: Challenging the boundary!

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Outline

- Hypothetical case: discussion
- Is the future possible?
- Pathologists
- Clinicians
- Patients

Hypothetical case

Mrs. Future

- Rang the hospital, because of chest pain.
- Information gathered by a machine
- Asked to present to the hospital
- The doctor already know about the history.
- Tests requested
- A few hours later, given a diagnosis and treatment, with precise probability of diagnosis
- Data sent to patient at home.

Dr. Simple

- Clinic informatics system → pre-test probability.
- Genetic profiles and protein expression
- Results given through post-test probability.
- Tell the patient about the diagnosis
- Also prescribed treatment

Pathology service

- Blood sample received with a clinical probability.
- Exact tests which need to be performed.
- Analysed not only the results but also the post-test probability.
- Sent to clinician, GP, patients
- Pharmacy decision support.

Are we dreaming?

Is this possible?

- YES, it is possible.
- Laboratory medicine will continue to advance
- Technical aspect should be possible
- Continue automation due to staff shortages
- Machine learning/informatics advances

The future

The future

- Better equipment, better tests.
- Genetic prediction
- Standardisation
- From laboratory to bed-side
- Pathology informatics → communicate with other information systems.

Pathology informatics

- Genomics, proteomics, micro-arrays.
- Diagnostic and therapeutic implications and improvement
- Advances in information management, safety as a priority

Are we ready?

What are the socio-technical issues of future pathology informatics systems?

Socio-technical issues

- Technically, it is possible.
- Technology implementation in healthcare, however, will often create unforeseen issues
- The failure of IT in health if often due to the lack of socio-technical integration

Challenges

- Interoperability
- Interface with clinical system
- Integration with health records
- Workforce changes
- Skill shortages

Challenges

- Workflow changes → professional silos.
- Patient centred care and consumer involvement
- Individualised care → genetics, biomedical, clinical and social dimensions.

Walking out of laboratory

Pathology services

- Skill shortages
- Increase responsibility
- Changing role
- Training in health informatics and pathology informatics
- Safety and new training

Clinicians

Clinician: change

- Clinical autonomy
- Changes in the clinical reasoning and Bayesian's logic deductive method.
- Clinical responsibility
- Professional development
- Translational practice (from laboratory to bed-side)

Clinician: knowledge management

- Rapid rate of technology advances and proliferation.
- Local knowledge versus universal knowledge (laboratory availability)
- Shorter interval between research-practice
- Training requirement
- Know to keep up-to-date

Clinician: results presentation

- Currently, absolute value with a reference rate.
- Normal or abnormal
- Pattern of expression and probability
- Data presentation
- Knowledge representation

Clinician: responsibility

- Shared responsibility and shared expertise.
- Clinical-laboratory collaboration
- Professional boundaries
- Deliver expected care.
- Medico-legal responsibility

Patient

Patients (consumers)

- Security, privacy and confidentiality.
- Seamless transmission of information
- Sensitive data such as genomic testing → Big problem?.

Patient: security blanket

- Consumers have no understanding of the technology
- Will they embrace it?
- Patient empowerment and patient-centred care, but how?
- Differing expectations among patients: management of diversity
- What does this graph mean? And do I want to know?

Patients: Unexpected consequences

- Genomics → do you want to know?
- “for the greater good” but what about individual right.
- An element of trust in the healing relationship!

Safe patient care

Safety: system versus culture

- Will system ever be safe?
- Are people, i.e. us, liability to the healthcare system?
- Should we replace people with machines?

Systems

- Automation can help with some tasks.
- The healthcare system is about people!
- People make it safe!

Safe culture

- Safe culture starts from today!
- Safe culture requires education/training
- Safe culture requires collaboration and interaction

We need enthusiastic people to help, but they need a role to play

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