

Basic research/new technologies

An apology in advance.....

There are three types of pathologist:

1. Pathologists who can count
7. Pathologists who cannot count

Priority areas

- 1 Access to data
- 2 Measureable outcomes: parts 1 and 2
- 3 Making sense of it

Access to data

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| <ul style="list-style-type: none">• In the healthy• In the diseased• Longitudinal studies• “Mobile” data• Accounting for heterogeneity• Standardisation of methodology and quality | <ul style="list-style-type: none">• Pre-disease state• What is normal?• Prevention needs earlier data in disease evolution• Quality assurance underpins everything |
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Measureable outcomes I

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| <ul style="list-style-type: none"> • Imaging – body to subcellular • Inter-operability eg DICOM standards in radiology, chaos in pathology • Quantification | <ul style="list-style-type: none"> • Non-invasive • Near patient testing • Repeated measurements |
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Measureable outcomes II

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| <ul style="list-style-type: none"> • Genomics: from exome to WGS • Clinical validation • Other –omics including microbiome • Mass spec as a high throughput tool • Exploit data in exhaled breath, urine, saliva | <ul style="list-style-type: none"> • Non-invasive or minimally invasive • Near patient • Quality assured • Repeated measurements |
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Making sense of it

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| <ul style="list-style-type: none"> • New statistical techniques • Multi-scale data integration • Modelling • More than bioinformatics alone required | <ul style="list-style-type: none"> • The danger of confounding error by combining multiple flawed datasets • This is not precision medicine • Models to inform prevention • Least attractive to funders? |
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Links

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| <p>Regulatory</p> <ul style="list-style-type: none"> • Data ownership • Privacy • Access • Risk of mobile apps and data transfer | <p>Translational</p> <ul style="list-style-type: none"> • Validation • Cost • Intellectual property | <p>Healthcare</p> <ul style="list-style-type: none"> • Technology development • Technology adoption • Iteration – the systems principle |
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Patient and citizen

- Healthy participants
 - Pre-disease
 - To screen or not to screen
 - Expectations
 - Communication effectiveness
 - Privacy, consent, authorisation
- Partnership rather than patronise
 - Provide information that makes sense: outcomes and strategy
 - Explain why basic research still should be curiosity driven