The future and value of innovation in the NHS

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• A few words about NICE
• A few words about innovation
• What areas of newness are important in determining the value of medical technologies?
• What do we do when we don’t know everything about a technology?
The National Institute for Health and Clinical Excellence (NICE) provides guidance, sets quality standards and manages a national database to improve people's health and prevent and treat ill health.
What does NICE do? (1)

• **Public health** – guidance on the promotion of good health and the prevention of ill health for those working in the NHS, local authorities and the wider public and voluntary sector

• **Health technologies** – guidance on the use of new and existing medicines, treatments and procedures within the NHS

• **Clinical practice** – guidance on the appropriate treatment and care of people with specific diseases and conditions within the NHS
What does NICE do? (2)

• **NHS Evidence**
  – Google-style device that allows NHS staff to search the Internet for up-to-date evidence of effectiveness and examples of best practice

• **Quality standards**
  – standards of healthcare that people can expect because it is effective, cost effective and safe

• **Quality and outcomes framework (QOF)**
  – indicators used to show that GPs should be rewarded for providing good quality clinical care and improving health
There is no shortage of definitions of innovation. Their very number suggests an amorphous concept.

APPRAISING THE VALUE OF INNOVATION AND OTHER BENEFITS

(A short study for NICE)
Prof Sir Ian Kennedy, 2009
Section 2 (4) In exercising [its] functions the Institute shall have regard to the following factors –

• (a) the broad balance of clinical benefits and costs;  
• (b) the degree of clinical need of patients with the condition or disease under consideration;  
• (c) any guidance issued to the NHS by the Secretary of State  
• (d) the potential for long term benefits to the NHS of innovation.
Next Stage Review ("Darzi Report")  
June 2008

- New treatments are constantly redefining what high quality care looks like. We must support innovation to foster a pioneering NHS.

- For new medical technologies, we will simplify the pathway by which they pass from development into wider use, and develop ways to benchmark and monitor uptake.

• What approach should be adopted by NICE to ensure that innovation is properly taken into account when establishing the value of new health technologies?
• Should particular forms of value be considered more important than others?
• How should innovation in health technologies be defined?
• What is the relationship between innovation and value?
Pharmaceutical vs medtech

• Pharma:
  – Product is new
  – Improvement on existing products
  – Offers a step-change in outcome for patients
• But, doesn’t NICE evaluation already cover these?
• Medtech:
  – Use new programme to determine value
  – Recognise low evidence base
  – Develop methods accordingly
Give me a glass of wine!
What does it mean for medical technologies?
What sort of evidence does NICE use?

- Sponsor’s submission
  - Clinical evidence
  - Cost modelling
- Submission analysed by External Assessment Centre
- Expert advice (those using the technology and comparator)
- Information from patient and carer organisations
- Information about ongoing trials or registers
What sort of evidence does NICE use?

(2)

- Published evidence
  - Primary
  - Secondary, eg modelling or systematic review
  - Observational (eg registers)
- Unpublished studies, such as:
  - directly observed clinical outcomes, non-clinical studies, evidence synthesis, outcomes modelling
Cost modelling – cost consequences analysis

**Cost model – examples of inputs**

- **Acquisition costs**
- **Running costs eg disposables or concomitant treatment**
- **Staffing costs**
- **System savings (eg change in setting)**
- **Reduced costs of improved health outcomes**
- **Improved ease of use or patient acceptability**
What do we do if there’s not enough evidence to recommend?

...........a novel approach from NICE
• Extract outcomes from medtech guidance
• Consider feasibility
• Identify priority level

• Use research outputs to review guidance

• Translate into protocol
• Engage mfr and NHS
• Explore funding
• Find clinical research partners
• Establish infrastructure

• Research report
• Analyse data

• Recruit pts

• Generate data

Clinical Research Partners

External Assessment Centre facilitation role

NICE
Modelling innovation (1) – The Virtual Liver

a dynamic mathematical model that represents, rather than fully replicates human liver physiology, morphology and function, integrating quantitative data from all levels of organisation, from sub-cellular levels to the whole organ.
Modelling innovation (2) – knee replacement implants


- Model-based approach to device failure
- Examined increased risk of short-term failure/decreased risk of long-term failure in <60yrs and >70yrs
- Capture trade-offs between acceptable performance and cost
- Highlight suitable areas for post-market surveillance
Conclusions – the future

• Innovation will be defined in terms of benefits not “newness”
• Patients and technology users will have high expectations of tangible benefits
• It will increasingly depend on modelling – both in product development and value
• The earlier we try to bring benefits to patients, the more the need for evidence generation