Managing knowledge to support appropriate use of health technologies: some insights from the UK National Health Service

Professor Jeremy Wyatt

Professor of Health Informatics, University of Dundee

(previously Associate Director for Research, NICE)

j.wyatt@chs.dundee.ac.uk

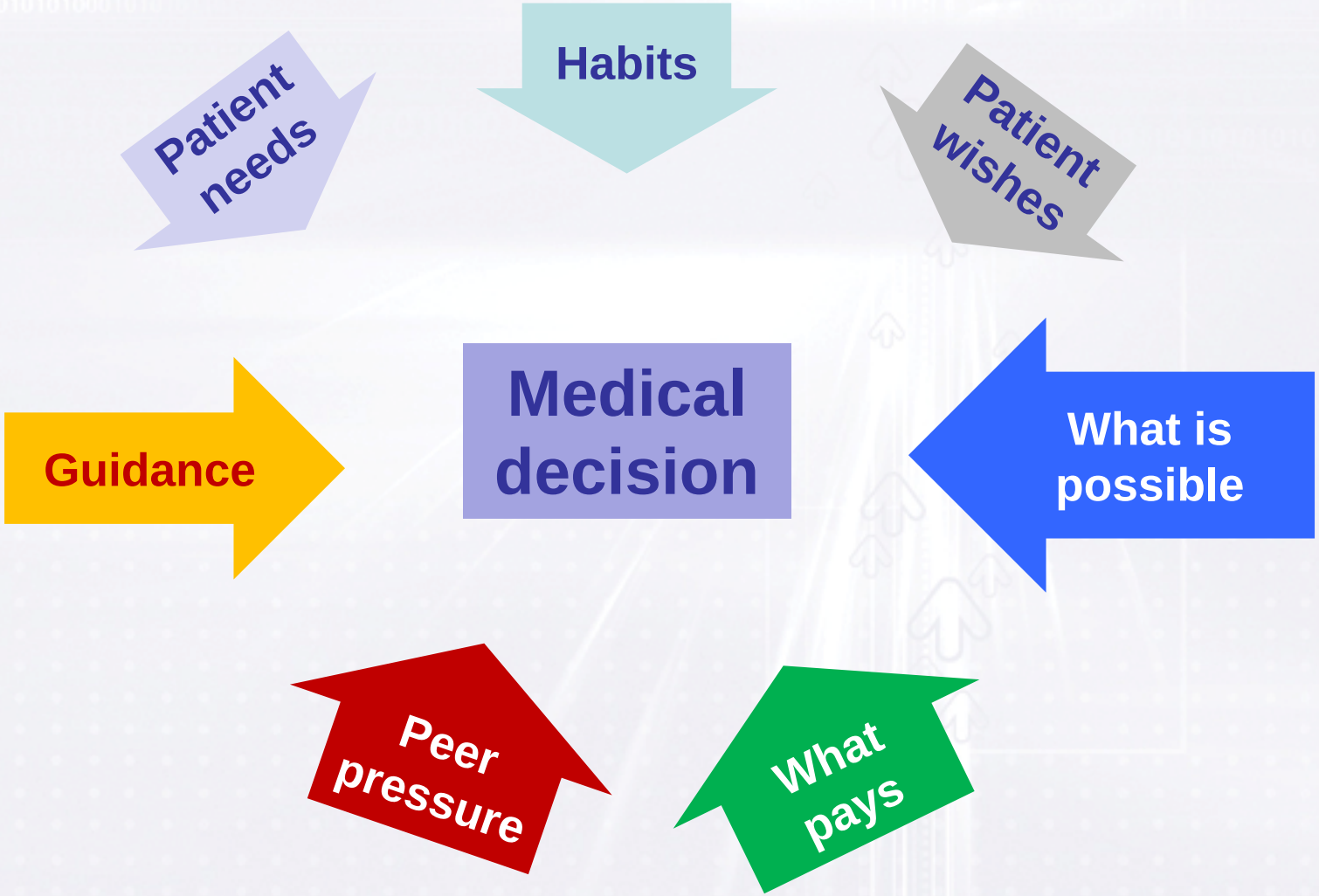
"Knowledge is the enemy of disease"

Sir Muir Gray, Oxford 2002

Innovative health technologies - new drugs, devices, procedures or models of care

- Great potential to improve clinical practice and or patient outcomes
- Concern about variation in availability and use of these technologies: *"postcode prescribing"*
- Most technology increases costs, but budgets fixed – so we need to promote *cost-effective* technologies

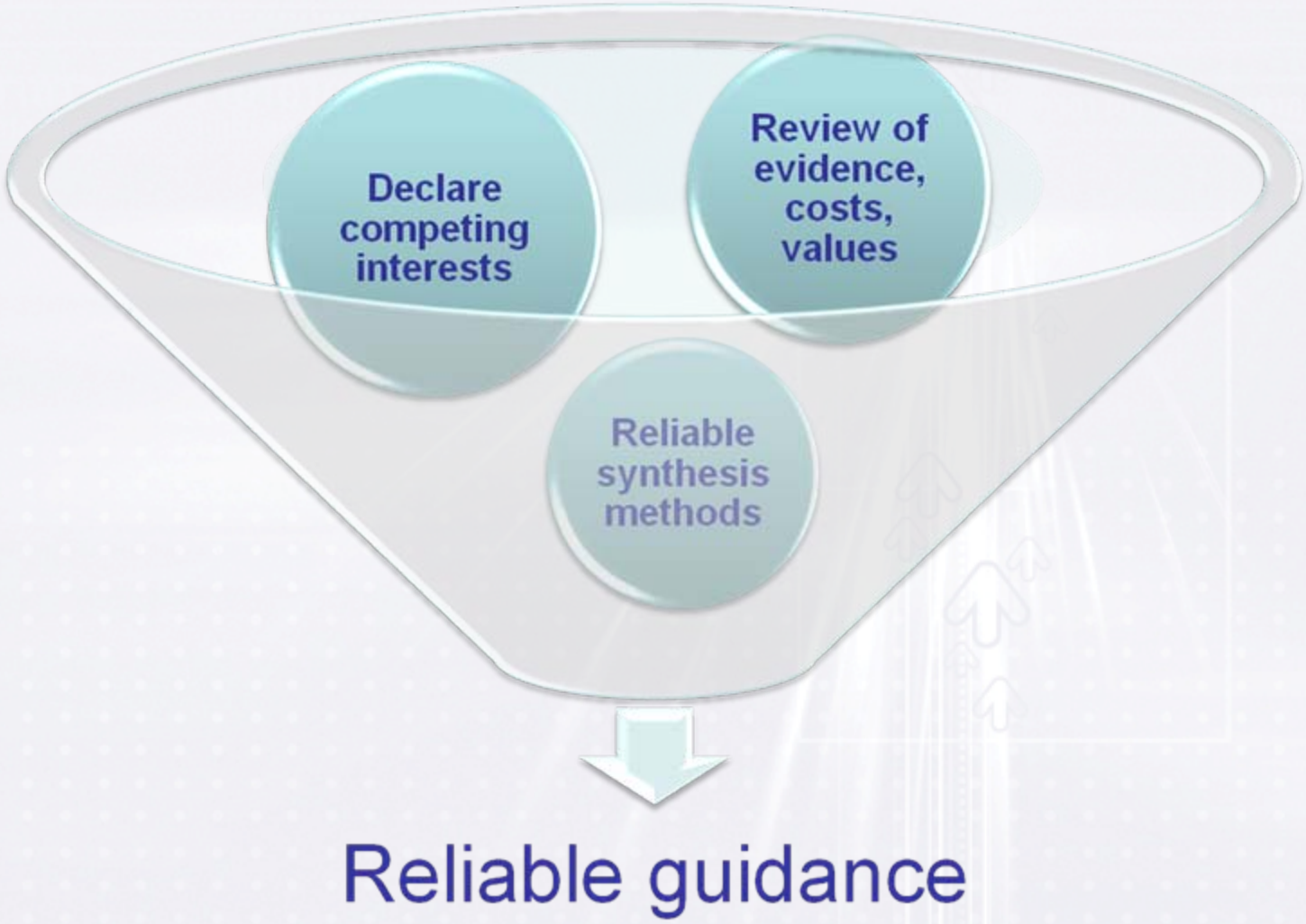
Influences on medical decisions



Some examples of NICE guidance

Type	Definition	Example
Practice guideline	How to manage a specific condition in a specific context	Asthma in children
Technology appraisal	Assesses the cost effectiveness of a technology	Insulin pumps in type 1 diabetes
Interventional procedures	Regulation on use of new surgical procedure	Microwave endometrial ablation
Public health policy analysis	How to address a PH problem	Passive exposure to cigarette smoke

Developing reliable guidance



Information used by NICE technology appraisal committee

Information needed	Sources
Burden of disease	Literature, expert patients
Clinical effectiveness	Systematic review of RCTs studying patient-relevant outcomes
Safety	Licensing body, registries…
Professional views	Expert witnesses
Cost effectiveness	Utility assessment, ICER from economic modelling using the reference case
Industry views	Submitted documents, industry consultation; Partner's Council
Social value judgments	Citizen's Council, consultation via Patient Involvement Unit

RCT: randomised controlled trial ICER: incremental cost effectiveness ratio

Results of first 80 NICE technology appraisals

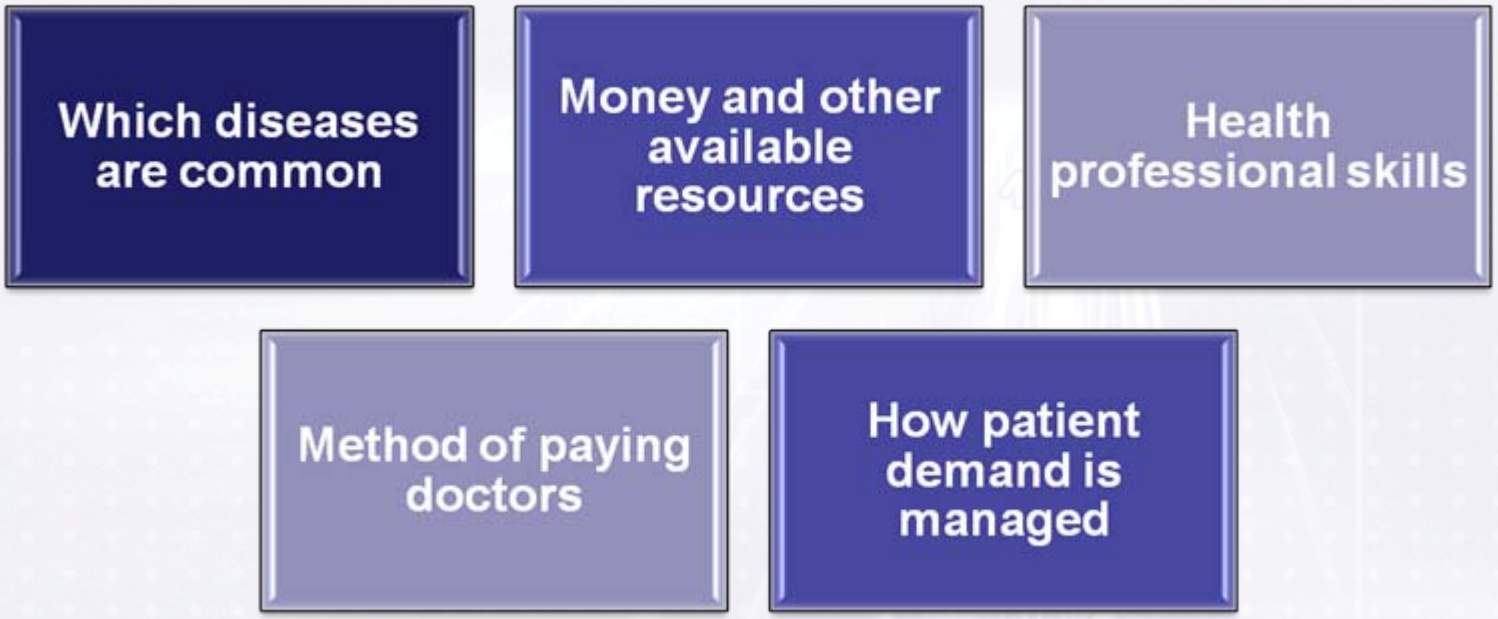
	Use routinely in NHS	Use in selected pts.	Use only in research studies
Drugs (53)	19	32	2
Devices (15)	5	9	1
Diagnostics (3)	1	1	1
Procedures (8)		6	2
Health promotion (1)	1		
Totals:	26 (33%)	48 (60%)	6 (7%)

Total annual cost to NHS of following NICE technology appraisal guidance: £800M (1% of NHS budget)

Sources of reliable guidance and HTA reports

- Global: Cochrane, HTAI, WHO HEN & essential drugs & technologies programmes
- UK: NICE, SIGN, SMC, national societies; NCCHTA, etc.
- Scandinavia: FINOHTA, etc.
- Canada: HTA, etc.
- Australia: Pharmaceutical benefits scheme
- USA: AHCQR EBP centres; Medicaid MED reports

Some important differences in health care systems



So, UK guidance cannot be applied to Central & S America without adjustments

Using guidance to improve health

Appraising guidance

Type of guidance	Appraisal tool
Practice guideline	COGS (Shiffman, Ann Int Med 2003)
Health economic analysis	Drummond checklist 1997

Where to start ?

Problems and opportunities that:

- Attract political, media & public attention and support
- Are common or serious
- Show large variations in clinical practice
- Attract high costs or have low cost effectiveness
- Offer fast results, eg. where pilots possible, good fit with other policies, strong incentives exist

Some possible ways to implement guidance

Tax private health care to pay for public health system

Tighter control over drug imports, sales & prescribing (Australian PBS)

Control drug advertising to public, to health professionals

Upgrade nurses / pharmacists / therapists to allow them to prescribe & manage LTCs (UK position)

Set up EB education for all health professionals (Gates / UNESCO / WHO funded, not pharma)

Tighten laws on public health problems: tobacco, alcohol, infant formulae (China), speeding, guns...

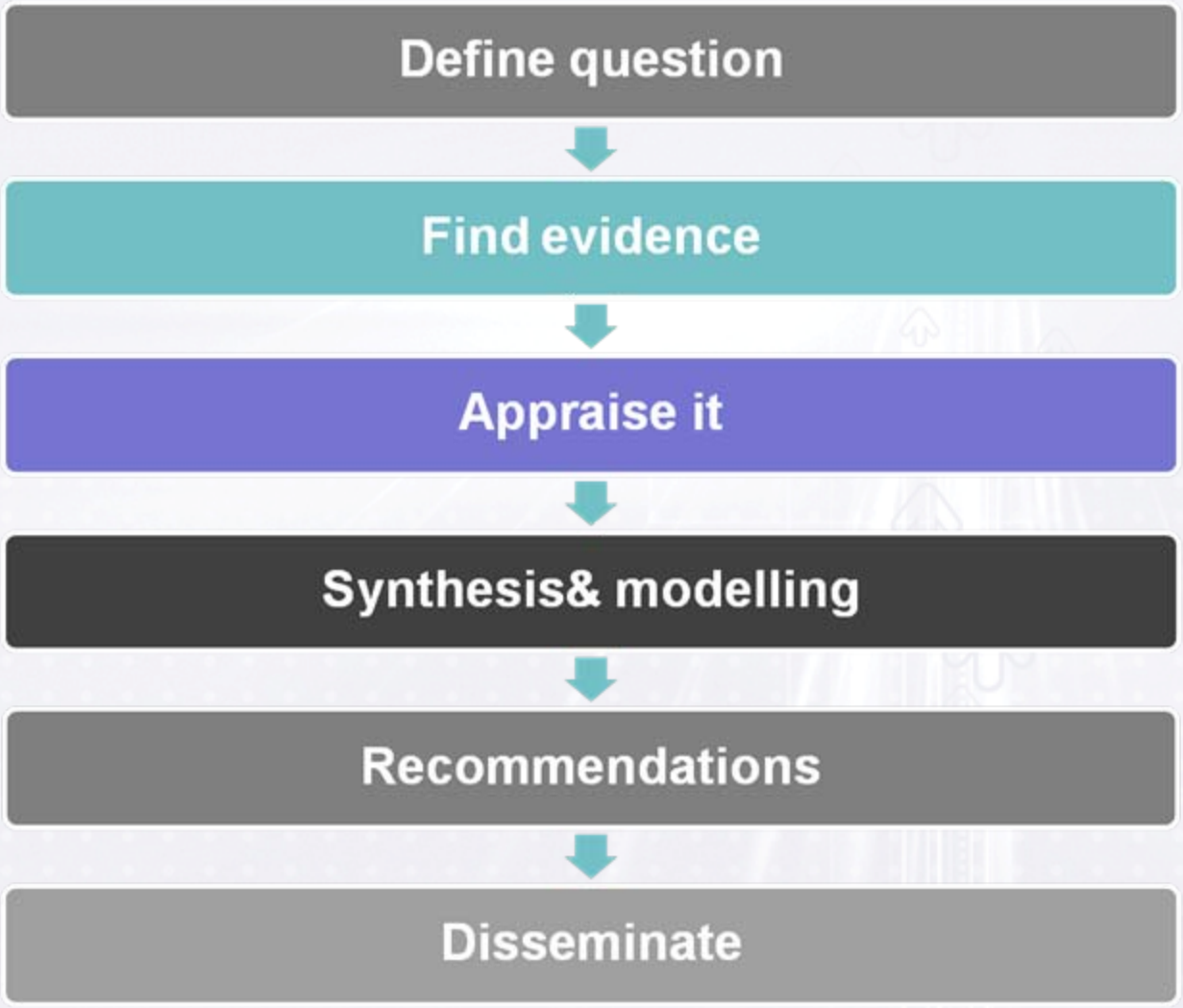
Conclusions

1. Cochrane and others find and appraise the evidence, disseminate systematic reviews
2. Health systems need unbiased recommendations from ***guidance***, as well as SRs
3. So, health systems should find, appraise & localise ***guidance***
4. Follow up with active implementation, not just dissemination
5. This may challenge authority of medical profession & industry
6. However, it's not anti doctor, it's pro ***appropriate use of health technologies***

"All effective treatment should be free"

Archie Cochrane, London 1948

Role is knowledge assembly & management



What is NICE?

NICE is the independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health in England & Wales.

NICE guidance areas

Guidance on specified health technologies:

- Guidance on the NHS use of medicines, devices and procedures
- Supported by a 3 month Directive on funding

Guidance on specific interventional procedures

Other guidance:

- Clinical practice guidelines - appropriate care of people with specific diseases or conditions
- Public health guidance - promotion of good health, prevention of ill health

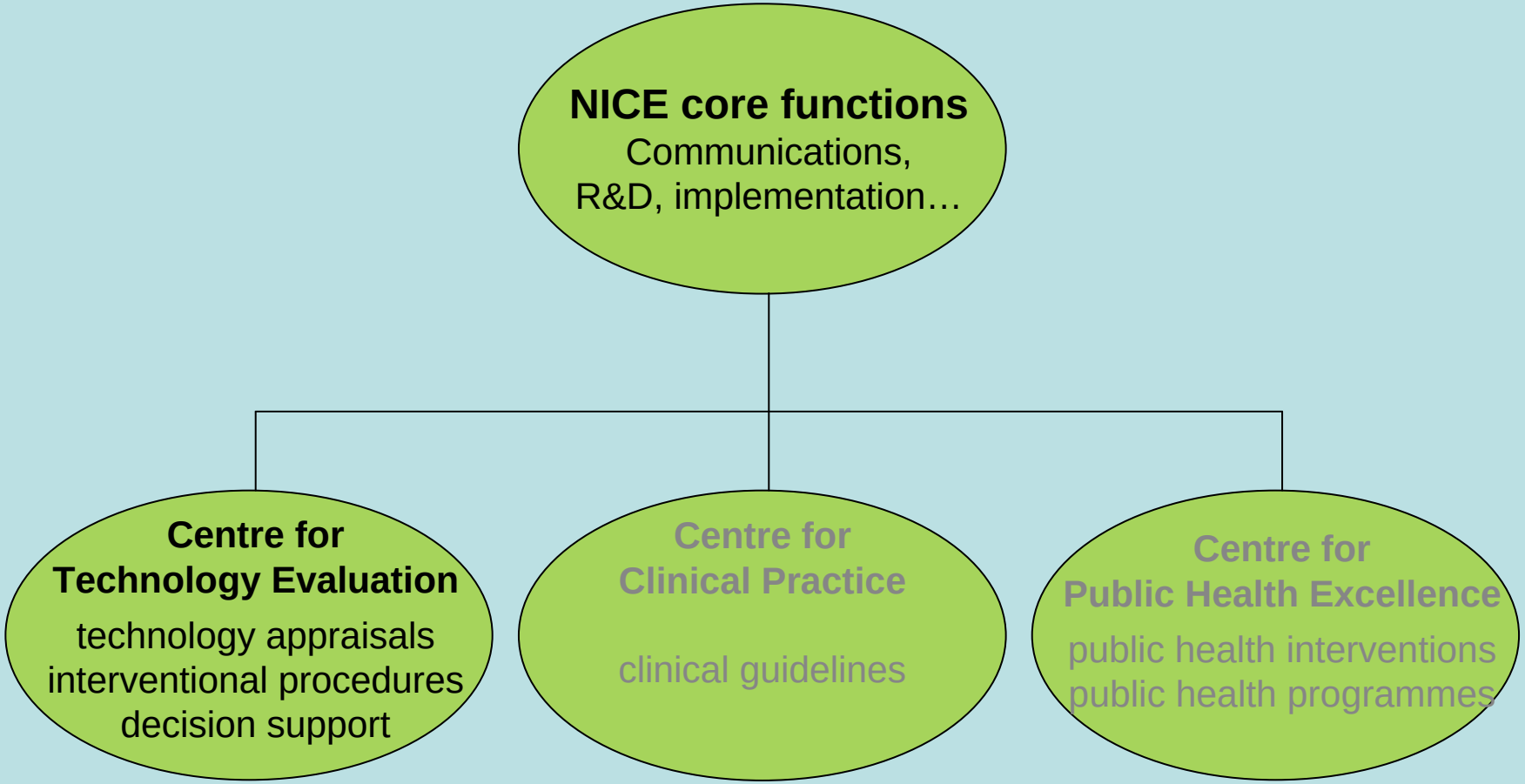
Who decides what topics NICE will consider ?

Anyone can suggest a topic via www.nice.org.uk

A Department of Health committee, ACTS, makes the final decision, using these criteria:

- a clinically important area
- significant UK morbidity / mortality
- evidence of variation in practice
- NICE can add value
- some evidence exists to underpin the guidance

The structure of NICE



Technology appraisals

Guidance on the clinical and cost effectiveness and appropriate use of specific new or existing medicines and treatments within the NHS.

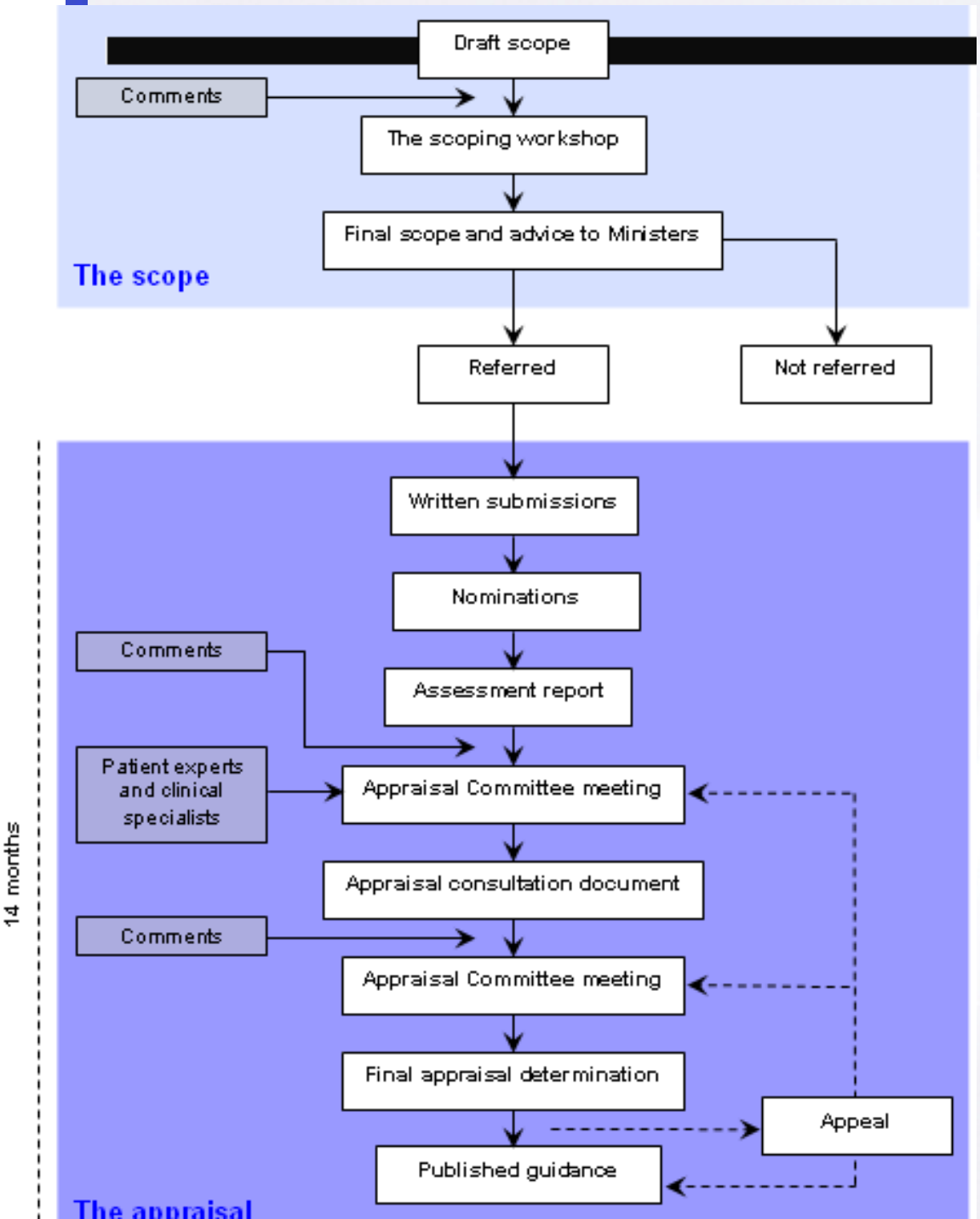
Technology appraisals examine…

- Pharmaceuticals (for example, beta-interferon for MS)
- Devices (for example, insulin pumps)
- Diagnostics (for example, liquid based cytology)
- Procedures (for example, surgery for morbid obesity)
- Health promotion tools (for example, patient education models for diabetes)

Published appraisals include…

- Atypical anti-psychotics for schizophrenia
- Nicotine Replacement Therapy and bupurion (Zyban) for smoking cessation
- Taxanes for breast cancer
- Imatinib (Glivec) for chronic myeloid leukaemia
- Cox II inhibitors for osteoarthritis
- Zanamivir (Relenza) and oseltamivir (Tamiflu) for influenza
- Laparoscopic surgery for hernia
- Orlistat (Xenical) and sibutramine (Reductil) for obesity
- Glitazones for diabetes
- Electroconvulsive therapy
- Methylphenidate (Ritalin) for Attention Deficit Hyperactivity Disorder

The technology appraisal process



Example: computer based cognitive behaviour therapy

- Five CCBT packages (using internet, phone menu or CD-ROM) for treating depression, panic or obsessive-compulsive disorder
- NICE recommends one package as an option in mild to moderate depression (cost per QALY gained £18k)
- NICE recommends one package as an option in management of panic & phobia (cost per QALY £18k)
- Insufficient evidence (no RCTs) to recommend two: “use only as part of a trial to assess clinical effectiveness”
- One package not recommended at all – less effective & less cost effective than normal CBT

Effectiveness evidence base for CCBT

Evidence: 14 studies (6 RCTs, 2 comparative studies, others had no controls)

Problems with the effectiveness studies:

Study design: 6 studies uncontrolled; RCTs not analysed by intention to treat, some confounded by drug therapy, were often small: 20 – 40 patients; did not include group therapy / bibliotherapy

Patients: often self-referred or 2° care; many more women than men; drop outs in eg. in 2/3 of patients or double rate in CCBT group - no reason given

Outcome measures: multiple but QOL rarely assessed; short follow up (eg. 1 month); unblinded assessment; differences reported but no data given

No head to head studies directly comparing CCBT systems

Technology appraisal guidance formats

Print:

- Quick Reference Guide
- Information for the public

Web only:

- Full guidance
- Assessment report, including systematic review of the evidence

Opportunities for patient and public involvement

- Consultation on all NICE products
  - Stakeholder process for consulting with national patient, carer and non-governmental organisations
- Direct participation
  - Individual membership of NICE committees and working groups
- Indirect input
  - Directly commissioned projects on people's experiences of care (eg, focus groups and surveys).

Opportunities for industry involvement in NICE activity

- Carry out or sponsor published research
- Register as a stakeholder with right of appeal (for technology appraisals only)
- Submit comments, other material eg. health economic model
- Comment via ABPI / ABHI representative on Partner's Council, R&D Advisory Committee
- Help implement & monitor uptake of guidance

NB. NICE always respects commercial-in-confidence data

Some challenges facing NICE

Practical issues:

- Rapid appraisal process, soon after licensing (Herceptin)
- Revising guidance: how to say no after yes ? (Aricept)
- Only in research guidance: who will pay ? (AAA grafts)
- Variations in the methods used by contractors to appraise evidence & build models…

Issues of principle:

- Can society afford to spend £20-30k per QALY on health technology when UK GDP is only £12k per person ?
- How many current NHS technologies & services meet the £20-30k per QALY criterion?
- Do patients value a QALY as much as we think they do ?

www.nice.org.uk

NHS
National Institute for
Health and Clinical Excellence

Welcome to the National Institute for Health and Clinical Excellence website

NICE is the independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health.

On 1 April 2005 NICE joined with the Health Development Agency to become the new National Institute for Health and Clinical Excellence (also to be known as NICE).

Clinical Excellence Public Health Excellence

MidCity Place, 71 High Holborn, London WC1V 6NA Tel: +44 (0) 20 7067 5800 Fax: +44 (0) 20 7067 5801

Why does clinical practice vary ?

UK National Health Service response

New organisations to establish priorities for use of health technologies:

- England, Wales and Northern Ireland: NICE, the National Institute for health & Clinical Excellence www.nice.org.uk
- Scotland:
  - The Scottish Medicines Consortium www.scottishmedicines.org.uk
  - Scottish Intercollegiate Guidelines Network www.sign.ac.uk