Rationing or Rationality? Health Economics in National Guidance

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The elephant in the room

Are you....

..a clinical purist? ..or a financial realist?

The responsibilities of health professionals:

1. To the patient in front of us
2. To all our patients to ensure equity
3. To the payer/ society to ensure best use of scarce resources

It’s all about words...

- I prioritise (appropriately after due consideration)
- You ration (inappropriately)
- They deny (quite unreasonably)
- NICE runs a death panel

It’s not just about the BUCKS...

It’s about the BANG for the BUCKS, and...

the other BANGs you then can’t have.

The problem: A fixed ‘budget’ and ‘opportunity costs’

Cost effectiveness evaluation: what we need

- A clear statement of the decision problem
- Good evidence (best available) of comparative effectiveness and adverse events (including long term)
- Understanding of all ‘downstream’ options and consequences, within a defined time horizon
- An estimate of HRQOL for all potential health states
- Costs to the system of all interventions and care
- An agreed ‘currency’ for comparisons across all health conditions

The Quality adjusted life year or QALY

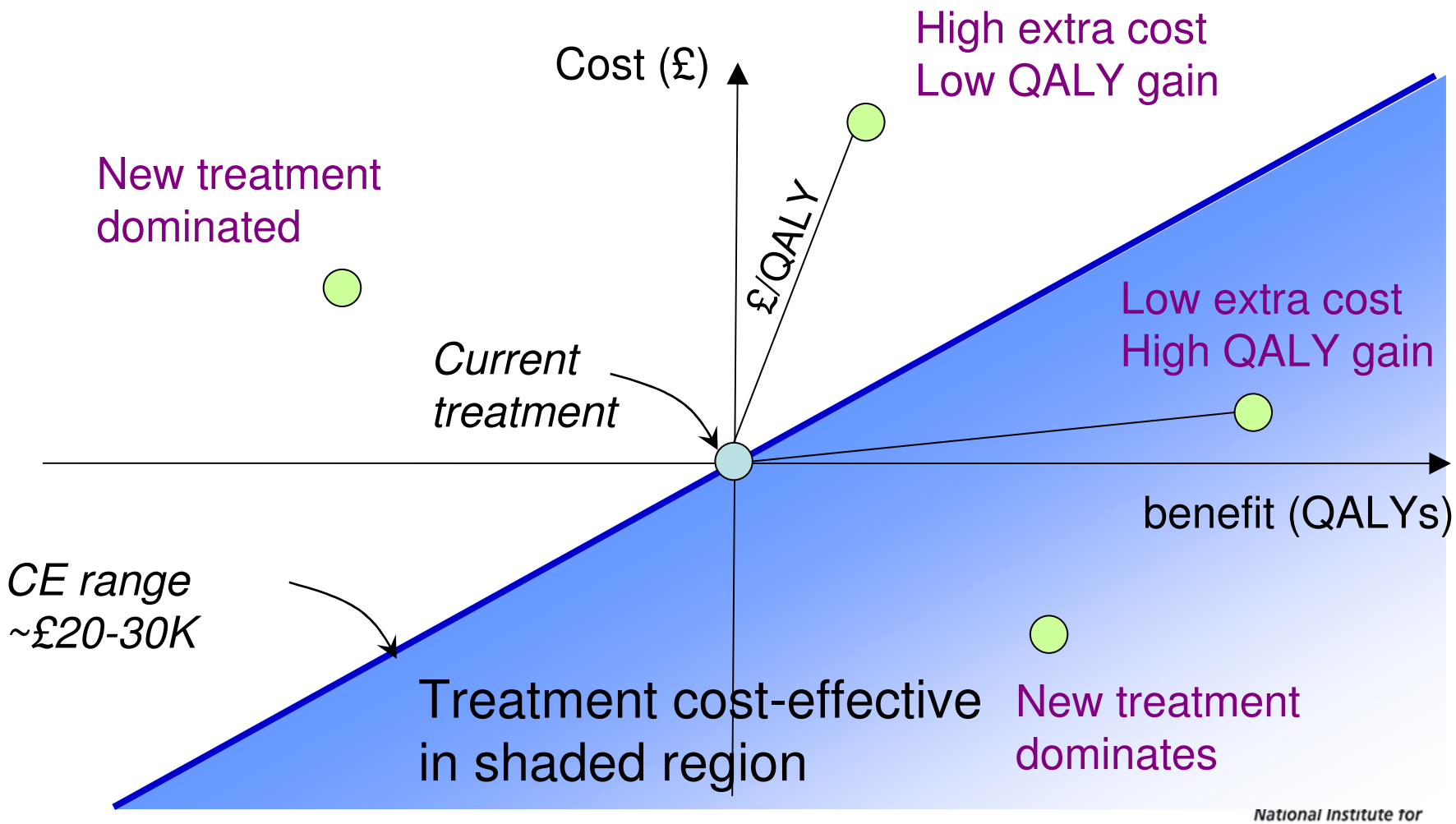
- 1 year of perfect health

  = 2 years of 50% health

  = 5 years of 20% health
- If HRQOL is measured on a scale of 0 (death) to 1 (perfect health) then:

  1 x 1 = 2 x 0.5 = 5 x 0.2 = 1QALY
- For an acute fatal condition the improvement may mainly be in average (mean) life years
- For a chronic debilitating condition the improvement may mainly be in average (mean) HRQOL

Assessing cost-effectiveness



Scientific and social value judgements: for example

- The strength, reliability and generalisability of the results of clinical studies
- The validity of the assumptions used in economic modelling
- The results of sensitivity analysis
- How should the severity of a condition be taken into account?
- Should the NHS be prepared to pay premium prices for drugs for ultra-rare conditions?

How has this been used on NICE clinical guidelines?

Two Examples

1. Prostate cancer: diagnosis and treatment (Feb 2008) http://guidance.nice.org.uk/CG58

2. Advanced breast cancer: diagnosis and treatment (Feb 2009) http://guidance.nice.org.uk/CG81

What is the most cost effective treatment for men with localised prostate cancer?

- Options:
  - Watchful waiting (WW)
  - Radical prostatectomy (RP)
  - Radiotherapy: standard (RT), brachytherapy (BrT), IMRT
  - HIFU
  - Cryotherapy (CrT)

- Evidence:
  - 1 RCT comparing WW and RP
  - Case series reports
  - 3 health economic studies – none adequate

Is RP more cost effective treatment for men with localised prostate cancer than WW?

Analysis based on 1 RCT, NHS cost perspective, 20 year time horizon

	Cost	Life years	QALYs (no complic)	QALYs (+ complic)
WW	£6,185	9.69	6.96	6.63
RP	£10,619	10.19	7.52	6.36
ICER		£8,868	£7,918	Dominated

Threshold analysis

If one was willing to pay £30k for an additional QALY, how much more effective would a treatment have to be in order to be considered cost effective compared to WW?

Treatment	Expected cost	QALY increase	Health gain (months)
RT	£8,288	0.07	1
BrT	£10,992	0.16	2
HIFU	£12,188	0.20	2.4
CrT	£12,630	0.21	2.6
IMRT	£14,688	0.28	3.4

- **Radical radiotherapy and radical prostatectomy**
  - no strong evidence to suggest one is better than the other
  - either intervention can be very cost effective even if the health gain is small
- **Cryotherapy** and **HIFU**
  - comparatively new treatments
  - very little evidence on their clinical and cost effectiveness over more established approaches
  - 'lack of evidence on quality of life benefits and long term survival'.
  - concerns about side effects
- Recommendations are presented in terms of options:
  - Factors to consider → tumour factors (extent and grade), fitness for surgery, patient wishes (length of life versus quality of life), etc

Treatment and management options for men with localised prostate cancer

		Low risk	Intermediate risk	High risk
	Watchful waiting	◆	◆	◆
	Active surveillance	✔	◆	✗
Radical treatments	Prostatectomy	◆	✔	✔*
	Brachytherapy	◆	◆	✗
	Conformal radiotherapy†	◆	✔	✔*
	Cryotherapy	✗‡	✗‡	✗‡
	High-intensity focused ultrasound	✗‡	✗‡	✗‡

* Offer if there is a realistic prospect of long-term disease control

† Conformal radiotherapy should be given at a minimum dose of 74 Gy (at a maximum of 2 Gy per fraction)

‡ Unless as part of a clinical trial comparing use with established interventions

Key:

✔ preferred treatment

◆ treatment option

✗ not recommended

What is the most cost effective sequence of chemotherapy treatments for patients with advanced breast cancer?

- Anthracyclines best first line, but what then?
- Many different agents shown to be effective either alone or in combination
- RCT evidence comparing some regimens but not all
- No strong evidence of differential clinical effectiveness
- Different costs and toxicity profiles
- What should the GDG recommend for the NHS?

Methods

- Considered treatment for those progressing *after* anthracyclines
- Comprehensive decision tree
- Review of direct comparisons in RCTs and network meta-analysis for indirect comparisons
- Estimates of probabilities for each branch of the tree
- Estimates of costs
- Four 1st line, two 2nd line and two 3rd line regimens considered plus 'no chemotherapy' option.
- Seventeen possible sequences

Results

- Calculations for all 17 strategies
- Incremental analysis comparing each against next best alternative
- Considered 2 'willingness to pay' thresholds: £20k and £30k

Strategy	1st line	2nd line	3rd line	QALYs	Costs	ICER
3	Gem + doc	Cap	Vin	1.2018	£30,313	£62,300
13	Doc	Cap	Vin	1.0853	£23,055	£23,332
14	Doc	Cap	No chemo	0.8737	£18,118	£14,979
9	Pac	Cap	No chemo	0.7785	£16,692	£7,796
12	Pac	No chemo		0.3615	£13,441	

Cap: capecitabine, Doc: docetaxel, Gem: gemcitabine, Pac: paclitaxel,Vin: vinorelbine

Recommendation

- Either:
  - Docetaxel – vinorelbine – capecitabine
- Or:
  - Docetaxel – capecitabine - vinorelbine

A health economic analysis

- Encourages rigorous thinking
- Clarifies all the consequences and costs of diagnostic or treatment decisions
- Explores the uncertainties
- Makes the trade-offs explicit
- Results in decisions more equitable and appropriate to the particular healthcare system

So...

- It is rational
- But is it rationing?

‘Rationing means a fair share for us all’

World War 2 slogan from British Ministry of Food

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