

Health impacts & appraisals & QALYs

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1985: Alan Williams: CABG

Economics of coronary artery bypass grafting, BMJ, 3 August 1985



Length of life (years)

FIG 2—Expected value of quality and length of life gained for patients with severe angla and one vessel disease.

FIG 1—Expected value of quality and length of life gained for patients with severe angina and left main vessel disease.



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Procedure	QALYs gained	Cost per QALY
CABG: severe angina; left main vessel disease	2.75	£1,040
CABG: severe angina; one vessel disease	0.25	£11,400
PTCA: severe angina; one vessel disease	1	£2,400
Heart transplant	4.5	£5,000
Kidney transplant	5	£3,000
Dialysis (hospital)	5	£14,000
Hip replacement	4	£750



EuroQol & EQ5D

5 Dimensions of health

3 levels on each

- Level 1: no problem
- Level 2: some problems
- Level 3: extreme problems



EQ5D - 243 health states: values

UK population preference weights; MVH project, York, 1995

Starting fro	m 100% , s	subtract:	
level 2 on mobility	7%	level 3 on mobility	31%
level 2 on self-care	10%	level 3 on self-care	21%
level 2 on usual activity	4%	level 3 on usual activity	9%
level 2 on pain/discomfort	12%	level 3 on pain/discomfort	39%
level 2 on anxiety/depression	7%	level 3 on anxiety/depression	24%
constant	8%	` N 3′	27%

Eg: Extremely anxious/depressed: `11113'

Subtract	<mark>8%</mark>	Constant
	24%	level 3 on anxiety/depression
2 5	27%	N3
	59%	total to be subtracted
Tariff 11113 =	3 = 41%	Extremely anxious/depressed
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Sources: 'Time Trade-Off'

8 QALYs = 8 years at 100% = 10 years at 80%





1999: NICE established

* to enable evidence of clinical and cost effectiveness to be brought together to inform a judgement on the value of the treatment relative to alternative uses of resources in the NHS

Guidance number	Technology	ICER			
39	Smoking	£430	15	Zenemenia At Dist.	620.400
28	Topecetan Yes	£1000	15 _a	Zanamavir At Kisk	£20 400
5	Cytology	£1100	22	Advanced colorectal 3	£20 500
38	Asthma inhalers	£5000	33_{a}	Sibutramine	£22,500
3	Taxane Ovarian	£8271	35	Arthritis iuvenile	£22 500
12	Glycoprotein	£9250	18.	Laparascope hernia (recurrent)	£25000
26 _a	Non-small cell lung (First line)	£9475	4	Stents	£25000
13	Methylphenidate	£12 500	11	ICDs	£28 500
25	Gemcitabine (First line)	£12950	33 _b	Advanced colorectal 1	£29 000
26 _b	Non-small cell lung (other)	£14000	36	Arthritis adult	£31 000
19	Alzheimers	£15000	23	Temozolamide (Second line)	£35000
30 _a	Taxane Breast 2 (Second line)	£15250	34	Trastuzumub (combination)	£37 500
6	Taxane Breast	£15 500	15 _b	Zanamavir All	£38 000
305	Taxane Breast 2 (First line)	£19000	20	Riluzole	£38 750
34	Trastuzumub (monotherapy)	£19000	22	Orlistat	£46000
	Hastazamas (monotionitap);;	219 000	18 _b	Laparascope hernia (primary)	£50 000
Those	shaded: rejected		27 _b	Cox II (Routine)	$\pounds 150000$
			32	Beta interferon	£187 000

N Devlin, D Parkin. Does NICE have a cost-effectiveness threshold and what other factors infuence its decisions? A binary choice analysis. Health Economics, May 2004 Health Protection Analytical Team



Optimal selection?

Imagine a PCT faced with these options for new programmes: which should they choose?

Max. benefit?

Option	Benefit	
Α	40	
В	20	
С	8	
D	12	
E	7	
F	10	
G	7	
н	4	
I	24	
J	4	
Κ	10	

Budget £1m: optimal selection? **Total Option Benefit Cost £k Total £ Benefit** 40 **40** Α 20 B 8 C 12 D Ε 7 10 F G 7 Н 4 24 960 £1m 64 4 10 Κ Health Protection Analytical Team

Optimal selection <> threshold

Cum'ltv

Option	Benefit	Cost £k	C/B	Cost
Α	40	40	£1k	£40k
В	20	100	£5k	£140k
С	8	80	£10k	£220k
D	12	180	£15k	£400k
E	7	140	£20k	£540k
F	10	250	£25k	£790k
G	7	210	£30k	£1m
н	4	140	£35k	
I	24	960	£40k	
J	4	180	£45k	
Κ	10	500	£50kealth	Protection Analytical Team

Optimal <> max benefit

Department of Health

				Total
Option	Benefit	Cost £k	C/B	Benefit
Α	40	40	£1k	
В	20	100	£5k	
С	8	80	£10K	
D	12	180	£15K	
E	7	140	£20k	
F	10	250	£25k	
G	7	210	£30k	104
н	4	140	£35k	
I	24	960	£40k	
J	4	180	£45k	
Κ	10	500	£50k-lealt	h Protection Analytical Team



DH: IA for HPV vaccination

QALYs gained

Total QALYs gained	101,000
Non-vaccine type infections prevented	8,000
Non-cervical cancers prevented	15,000
Unscreened cohort	7,000
Cancers prevented	61,000
Reduced lesion screening & treatment	10,000
(per 400,000 birth cohort)	rounded

Source: DH IA August 2008, using analysis by HPA



DH: IA for HPV vaccination

If 20 years' protection	Incremental Cost (£) per QALY
Girls aged 12	22,500
Catch-up aged 12-14	18,900
Catch-up aged 12-16	16,400
Catch-up aged 12-18	11,900
Catch-up aged 12-25	128,300
Girls+boys aged 12	172,900

Source: DH IA August 2008, using analysis by HPA