MAKING DIFFICULT CHOICES:

Are health care resources being deployed according to the principles of cost-effectiveness?

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BACKGROUND

The past three decades have seen a rapid growth in the discipline of health economics, particularly in the area of economic evaluation of healthcare interventions. This involves a systematic evaluation of alternative courses of action in terms of the costs and the health outcome (consequences). Cost-effectiveness analysis represents the most popular evaluative technique, where the additional costs of a particular intervention are compared with the additional benefits it achieves. In a publicly funded NHS, it is necessary to weigh these additional costs and benefits against the costs and benefits of alternative uses of scarce healthcare resources.

The aim of the research project reported here was to explore the extent to which the current deployment of resources within Oxfordshire region (formerly Oxfordshire Health Authority boundaries at project commencement), and recent decisions about deployments, are consistent with the principles of cost-effectiveness analysis. Our underlying hypothesis for the research was that for all those interventions that were reported to be very cost-effective, we would expect these to be undertaken in Oxfordshire, whereas, those reported to be of poor cost-effectiveness were expected not to be undertaken. We defined our cut-off value for the maximum acceptable cost-effectiveness ratio at £30,000 per life-year or Quality Adjusted Life-Year (QALY) gained, in line with the National Institute for Clinical Excellence's intrinsic values[1].

METHODS

Literature review

In order to explore the extent to which the current deployment of resources within Oxfordshire region is consistent with the principles of cost-effectiveness analysis we performed a literature search. The aim was to identify and review as many published studies reporting cost per life year or cost per QALY results as possible. The methods of our search were based on previous methods used by Briggs and Gray when undertaking a structured review of cost-effectiveness studies for a HTA report (1). We used five

[1] Of course, we should not be using the same cut-off value for both the cost per life-year and cost per QALY results, as these outcome values are not commensurate. We might expect more cost per life-year than cost per QALY values to fall below a common cut-off; however, as cost per life year analyses are most commonly used where survival rather than quality of life is the main outcome, this assumption of a common cut-off is a reasonable approximation.

electronic bibliographic databases, MEDLINE, CINAHL, EconLit, EMBASE and the Social Science Citation Index (SSCI). The search terms used in the review were: (year* of life) and cost; life-year* and cost; well year* and cost; healthy year and cost; and, cost utility. The term cost-effectiveness was omitted, as it is a "very non-specific term"(1), and its inclusion would have identified a very large number of inappropriate studies. The databases were searched for studies within a UK setting between 1997 and 2003. In addition to these searches, the NHS Economic Evaluation Database compiled by the Centre for Reviews and Dissemination (CRD) at the University of York (2) was also used. In order to ensure that as many UK studies as possible had been identified, we compared our search results with those from a comprehensive league table of cost-utility ratios for studies published from 1976 to 2001, which is being conducted by Harvard University, USA. All identified studies from the searches were then downloaded into a bibliographic database (Reference Manger^{TM}).

All identified studies were then reviewed using a checklist of questions adapted from a literature review proforma used by Briggs and Gray (1). The proforma categorised the following information: funding source; the country the results were relevant to; the currency in which the results were reported; a description of the disease with ICD-9 code classification; a description of the intervention and classification of this intervention (i.e. whether it was surgical, medical, diagnostic, screening etc); a description of the comparator; how the outcomes were reported, i.e. life-years, QALYs or both; the study design; whether the study used patient level data and how uncertainty was handled. This detailed review was also used as a second, more thorough, screen to exclude all the studies not fulfilling the selection criteria. In conjunction with this review, studies were also quality assessed using a quality assessment form containing ten key criteria used to determine the validity of the measures of effectiveness, of benefit, of costs, and the implications of the study. This was based on previous quality checklists and ensured that the criteria covered all those used by NICE in their guidance for undertaking economic evaluations (3). For each article, two reviewers independently read each article (with a third one reading a random selection of 10% of all studies), and either agreed or disagreed with the statements in the form, convening at the end to reach consensus on any discrepancies.

Review of NICE Technology Appraisals

All NICE Technology Appraisals published between 2000 and 2003 were reviewed. All those appraisals that had been superseded by more recent ones, those not reporting health outcomes as life-years or QALYs, and those not reporting cost-effectiveness or cost-utility ratios to support their decision, were excluded from the review. All eligible appraisals were then reviewed with a similar keyword proforma as the one stated above, albeit simpler, which also included the recommendations made by NICE, which were categorised as "Accept", "Restricted" and "Reject". Accept meaning that NICE fully recommended the intervention in question, restricted meaning that the intervention was only recommended in a number of circumstances, and reject meaning that NICE did not recommend the use of the intervention.

All identified appraisals were then entered into the same Reference Manager database as that used for the literature review. In this case, however, NICE appraisals were not assessed for completeness, transparency or quality.

Evidence of cost-effective procedures in the UK

The point estimate cost-effectiveness ratios for all interventions being compared in each UK based study and any reported measures of variability were entered into the database, these figures were updated to 2002/2003 costs using the Hospital and Community Health Services (HCHS) pay and price index. We were then able to rank the procedures/interventions according to their cost-effectiveness results, in effect compiling a cost per life-year and cost per QALY league table for all healthcare interventions reported in our database.

These cost-effectiveness ratios were then graphed in rank order, starting with the intervention with the lowest ICER and finishing with that with the highest. Due to the large number of interventions studied, initially one ICER and/or its range was derived for each study. If the study reported multiple similar interventions and comparators, ICERs were reported in a range, from the lowest to the highest. For example, Anyanwu *et al*.(4) compared single and double lung and heart and lung transplantation with medical management, with respective ICERs of £33,663, £22,890, and £20,434 per QALY. Hence these results were combined as lung transplantation compared with medical management, and results were plotted in the graph with a range of £20,434 to £33,633/QALY.

Finally, all interventions were grouped by disease using the ICD-9 Chapters I-XVIII. Those interventions dealing with more than one disease were placed in all relevant ICD-9 groups. Subsequently, for each ICD-9 group, cost-effectiveness ratios were graphed in ascending order.

Evidence of current deployment of resources in Oxfordshire

Based on all the health interventions reported in the literature and Technology Appraisals, we sought evidence on the current deployment of resources in the region by asking experts in each clinical field[2] whether the interventions or procedures identified in the literature were undertaken in Oxfordshire or not[3].

RESULTS

Results of the literature review

The literature review produced 201 results potentially meeting all the entry criteria and with a UK setting. After papers were screened for eligibility, a total of 52 studies were rejected, due to: 13 were not cost-effectiveness or cost-utility analyses; 16 derived their ICER results from other published literature; 7 did not have a UK setting; 1 was a letter; 3 were abstracts, of which the main article had yet not been published; 2 studies had already published their results in other studies included in the review; 8 were Health Technology Assessments used in NICE Technology Appraisals, results of which were captured when deriving the results from these reports; and 2 studies did not use QALYs or life-years as measure of health outcome. Furthermore, we were unable to obtain two articles; hence they were treated as being rejected. Thus, a total of 54 studies were treated

[2] Experts included clinicians, general practitioners, nurses, pharmacists, and hospital managers.

[3] Originally we wanted to establish actual numbers and proportions of eligible population in Oxfordshire receiving a defined intervention, however this proved impossible from the routine data available. For example routine Hospital Episode Statistic data could not provide information on the specific intervention level that we required, moreover, it only provides actual number of procedures undertaken in a given time period with no indication of proportions of eligible population. We had a similar problem with using prescription data, in that it simply reports the number of prescriptions dispensed (and this includes repeat prescriptions) and so makes it impossible to determine use at the population level. We therefore asked experts (clinicians, managers etc) for this information, however they felt unable to provide such detail, hence it was decided to simply ask experts in the defined clinical field whether such an intervention is performed or not performed in the region.

as being rejected, and a total of 147 studies were included in the review. Of these 147 studies, 61 (41%) reported health outcomes in QALYs, 72 (49%) in life-years, and 14 (10%) studies reported their results both in QALYs and life-years.

By disease, interventions dealing with diseases in ICD-9 Chapters II and VII (Neoplasms and Diseases of the Circulatory System, respectively) were the most popular with each accounting for 25% of all published studies.

Results of the NICE Technology Appraisals review

Between April 2000 (date of first technology appraisal) to December 2003 a total of 73 NICE technology appraisals have been introduced. Out of these, 9 appraisals have been superseded by new appraisals and one has been withdrawn. From the remaining 63, 11 appraisals were rejected: 8 were rejected on the grounds that no results of cost-effectiveness were reported; and 3 because results were based on other health outcomes. Thus a total of 52 NICE technology appraisals were included in the review: 35 (67%) reported outcomes in QALYs; 9 (17%) in life-years; and 8 (15%) appraisals reported outcomes both in QALYs and life-years.

Cost-effectiveness estimates derived from the literature

All studies and NICE Technology Appraisals

Figure 1 depicts the results obtained from 86 studies and 17 NICE appraisals reporting additional cost per life-year gained. In 6 studies, and 5 appraisals, more than one relevant comparison was found, which could not be grouped into one single estimate because the comparisons were systematically different. Hence, Figure 1 depicts results for 117 ICERs. Despite the wide variations and variability in the studies' results, 89 (76%) had ICERs below the threshold of £30,000 per life-year gained.

(Figure 1 here)

Figure 2 depicts similar results, this time for 75 studies and 43 appraisals reporting results as additional cost per QALY gained (a total of 118 ICERs), and as before a majority of studies reported incremental cost-utility ratios below the cost-effectiveness threshold. Of the 10 (8%) studies reporting ICERs higher than £100,000 per QALY, seven dealt with interventions on nervous system and sense organ disorders, with all except one, comparing the use of beta-interferon in the management of multiple sclerosis.

(Figure 2 here)

Appendices 1 and 2 report the life-year and QALY league tables for all the interventions identified in the literature review and NICE appraisals.

Interventions by ICD-9 disease classification

Numbers of interventions by disease group (ICD-9 chapters) are depicted in Tables 1 and 2. These also show the numbers and proportions (in brackets) of interventions found to be cost-effective (i.e. either dominant or with ICERs below the £30,000/(QA)LY threshold), those with ICERs above the acceptance threshold, and those dominated by the comparator[4].

Interventions dealing with infectious and parasitic diseases, neoplasms, and circulatory system diseases were the most numerous, irrespective of health outcomes being reported in QALYs or life-years. However, in those interventions dealing with nervous system and sense organ disorders, health outcomes were more usually expressed in QALYs than in life-years, reflecting the fact that most of these interventions will have a greater impact on quality of life rather than on life expectancy.

(Table 1 here)

Over 76% of interventions where the health outcomes were reported in life-years were deemed to be cost-effective, and for every disease group the majority of interventions were found to be cost effective. In the four instances where a cost minimisation analyses was performed, two interventions were found to be cheaper than the comparator, one was found to be equally costly, and one was found to be more expensive than the comparator.

(Table 2 here)

As depicted in Table 2, around 65% of all interventions, where health outcomes were reported in QALYs, were deemed cost-effective, significantly lower than for those where health outcomes were reported in life-years. This will probably reflect the fact that the denominator value for the cost per QALY is always less than that for the cost per life-year due to the process of quality adjusting life years gained.

[4] Some interventions and therefore ICERs were attributed to more than one disease classification

Evidence of current deployment of resources in Oxfordshire

More than 20 different experts from the Oxford Radcliffe Hospitals Trust were contacted to provide information on the current use of all health interventions reported in the UK literature. Results were obtained for 200 (78%) out of the 256 interventions whose health outcomes were reported in QALYs, and for 217 (67%) out of the 324 interventions where outcomes were reported in life-years. Hence, for approximately 72% of all interventions derived from the review, it was determined if the intervention was currently being "used/not used/low use".

We found that the majority of interventions identified in the literature were performed in Oxfordshire, as detailed in tables 3 and 4. These tables also depict the numbers and proportions (in brackets) of interventions found to be cost-effective, those with ICERs above the acceptance threshold, and those dominated by the comparator, by level of usage in Oxfordshire.

(Table 3 here)

The proportion of cost-effective interventions, including dominant cases, undertaken in Oxfordshire was 83% (table 3). In contrast, a lower proportion (75%) of interventions not being performed in Oxfordshire, were also cost-effective, despite this, these differences were not statistically significant (p=0.21). Interventions dominated by the comparator accounted for just 3% of the total number of interventions being performed.

(Table 4 here)

The proportion of interventions being performed (excluding low-use interventions) in Oxfordshire, which were cost-effective (i.e. dominant interventions and those with ICERs below £30,000 per QALY) was 72% (table 4). In contrast, of all interventions not being performed in Oxfordshire, a lower proportion (62%) of interventions, were also cost-effective. Again, these differences were not statistically significant (p=0.16). If we include low-use interventions in the analysis, then the proportion of cost-effective interventions being provided in Oxfordshire falls to 66%. We also found that virtually all interventions found to be dominant in the literature review, were being performed in Oxfordshire

Of those interventions being performed, two were found to be dominated (i.e. more expensive and less effective than the comparator). These were: the use of electroconvulsive therapy as opposed to clozapine in the treatment of depression and

mania; and the use of coronary artery bypass graft (CABG) in combination with percutaneous transluminal coronary angioplasty (PCTA) as opposed to CABG/PCTA in combination with abciximab. For the low-use interventions, six interventions being performed were found to be dominated also. These included the treatment of osteoporosis using raloxifen in women aged over 80 years, and fluoride.

DISCUSSION

From the results of our study, we can conclude that the current deployment of health care resources within Oxfordshire was not consistent with the principles of cost-effectiveness. However, it is important to propose some reasons for this apparent inconsistency, by further examining the available cost-effectiveness evidence and the reasons for implementing or not implementing particular interventions. From our analysis we identified several reasons that may explain this apparent inconsistency:

Adherence to NICE Guidelines

Even though certain interventions were found to have cost-effectiveness ratios greater than £30,000 per (QA)LY the use of these interventions was being undertaken based on recommendations by NICE. As an example, in Technology Appraisal no. 32 (5), NICE concluded that "on the balance of their … and cost-effectiveness neither beta-interferon nor glatiramer acetate is recommended for the treatment of multiple sclerosis". However, after much controversy with the Department of Health, NICE also recommended that those patients, who at the time of publication were receiving either treatment, should have the option to continue treatment until their consultant considered it appropriate to stop. Thus, following NICE guidelines, but not consistent with cost-effectiveness principles, beta-interferon was offered in Oxfordshire.

The same disparity in results exists in the use of riluzole for the treatment of motor neurone disease. In its appraisal no. 20 (6), NICE recommended its use for the "treatment of individuals with the amyotrophic lateral sclerosis form of motor neurone disease". However, the authors of the assessment report commissioned to support this appraisal, stated that the "evidence in favour of riluzole … is very weak" (7). Others also concluded that "instead of spending up to £7.5m per year, recurrently, on a treatment that may or may not work, the NHS would be better advised to invest in a further larger trial" (8). In

reply (9), NICE defended its decision on the basis that the institute's appraisal committee did not only take into account the assessment report, but also submissions from patients and professional organisations, when reaching its conclusions. Again, this intervention was being performed in Oxfordshire, in contradiction to the cost-effectiveness evidence reported in much of the literature, but following recommendations by NICE.

Lack of funding

Interventions such as surgery for morbidly obese patients, even though cost-effective, are projected to cost in excess of £5,000 per operation (10), hence the need to gradually adopt such resource intensive interventions to ease the resource impact in the NHS. Another example of lack of funding is the use of cochlear implants in children and adults with severe hearing problems. Oxfordshire at the moment only has funding for three implants a year with children rather than adults being prioritised. As the clinician put it "it would be wonderful to do cochlear implantations in adults but it is not possible".

Ethical considerations

Severity or rarity of the disease in question or the fact that no other effective drugs exist, may lead to the provision of interventions associated with very high cost-effective ratios. For example, in the treatment of cystic fibrosis in young children, rhDNase is available in Oxfordshire, which is not in line with cost-effectiveness principles. The only study (11) found, reported an ICER of £65,000 per LYS. However, cystic fibrosis affects around 7,500 patients in the UK, out of which; approximately 50% are children under 15 years of age. The fact that it is the UK's most common, life-threatening, inherited disease may help explain such a decision.

Nature of comparators chosen for analysis

It is important to examine the comparators chosen for the cost-effectiveness analysis, an example in Oxfordshire is both CABG and PCTA+ (percutaneous transluminal coronary angioplasty in combination with abciximab) and CABG and PCTA are being undertaken. In the published literature CABG and PCTA+ was found to be cost-effective (ICER = £19,000 QALY) when compared to medical management, however, when compared to CABG and PCTA it was found to be dominated (i.e. more expensive and less effective).

Hence the decision to implement both interventions in Oxfordshire appears to be incoherent.

Methodological issues with League Tables

Even though league tables provide comprehensive and valid information to inform resource allocation decisions, all incremental cost-effectiveness ratios need to have been calculated using standardised comparable methods (12). Thus in making sense of league tables such as the present ones, several methodological issues are important:

1. Discount rates used. To be comparable, all ICERs should be calculated using similar discount rates. In our review of the literature, we found that the discount rates varied widely, partly reflecting changes in HM Treasury guidelines on discounting over the years (previously 6% and currently at 3.5% for both health outcomes and costs).
2. Utility values of health states. Those studies reporting their health outcomes in QALYs used different populations to elicit quality of life, including patients, clinicians, and/or the general public. Thus, different approaches will generate different QALYs, hence generating ICERs that perhaps should not be directly comparable.
3. Utility values of health states. Those studies reporting their health outcomes in QALYs used different methods to elicit their utility values, (for example time-trade off or standard gamble or EQ-5D or HUI or expert judgement or previous published scores etc etc). Again, different approaches will generate different QALYs, hence generating ICERs that perhaps should not be directly comparable.
4. Range of costs included. From the review we found that different studies included different costs. Cost perspectives used included that of the patient, hospital and/or societal perspective. To be directly comparable, all cost-effectiveness estimates should be calculated from the same cost perspective, and other categories of cost being undertaken in the sensitivity analysis.
5. Comparator used. The intervention chosen for comparison can have a major impact on cost per QA(LY). ICERs obtained when the intervention is compared to no treatment will be very different to those obtained when it is compared to best available treatment.

Problems with using shadow price

In theory, the use of an explicit price rule should apply to all interventions, irrespective of whether or not they are currently provided. Therefore, the optimal shadow price rule could be set at the point that would just equate with the budget constraint. In practice, it is unlikely that the shadow price rule can be set at exactly the correct level. Furthermore, there may be problems associated with the systematic evaluation of existing services (it is less acceptable politically to withdraw a currently provided service on the grounds of cost-effectiveness than to not implement a new intervention on the same grounds). This is likely to lead to the decision rule being applied to new interventions only – which suggests that additional health care resources will have to be found.

CONCLUSIONS

From our analysis, we found that the current deployment of health care resources was not consistent with the principles of cost-effectiveness analysis. However, cost-effectiveness is one of a number of bases on which resource allocation decisions can be made. In fact decisions that look irrational from a health economics perspective, when looked at from a global perspective may well make sense. There is therefore an argument that there is a need for a broad perspective for good decision-making that takes multiple attributes into account.

TOPICS FOR DISCUSSION

- Should we merge cost per LY and cost per QALY results, and should we be using the same £30,000 threshold value for both league tables?
- Ideas on future work to undertake a regression of use and non-use of interventions in Oxon with variables such as cost-effectiveness, target population, disease rarity etc etc.
- Most of the CE estimates did not include the cost of technology implementation (training, culture change, adoption of technology by population (compliance), etc.). Hence, the results could be an underestimate that fails to get the real cost per additional health benefit.
- Implications of this research for NHS, issues of budget constraint and sensitivity of withdrawing currently provided cost-ineffective interventions.
- What implications have these findings for NICE in terms of the fact that resources are not being allocated according to the principles of cost-effectiveness.

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Figure 1. Incremental cost per life-year for UK studies and NICE reports, 1997-2003

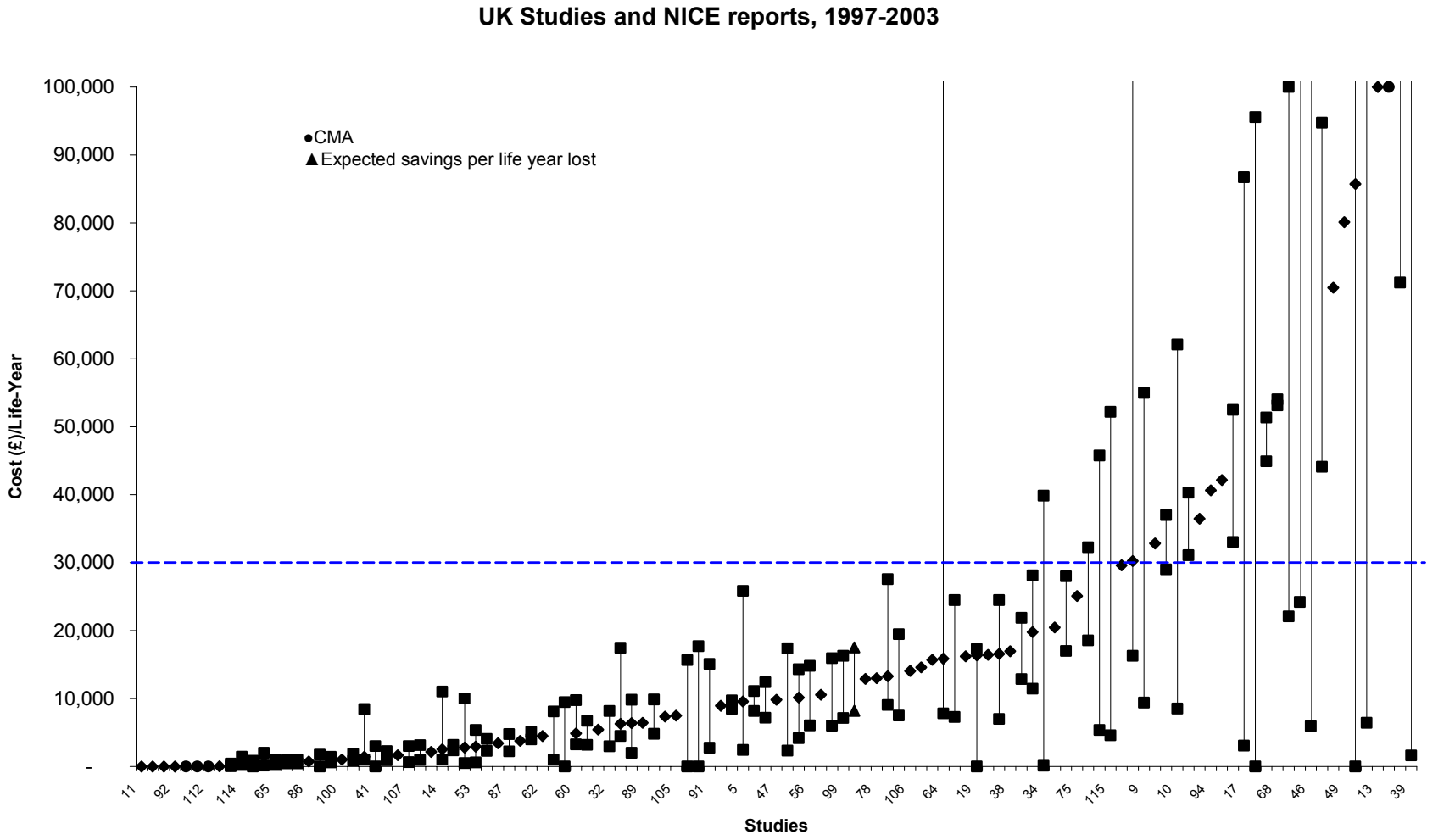

Figure 2. Incremental cost per QALY for UK studies and NICE reports, 1997-2003

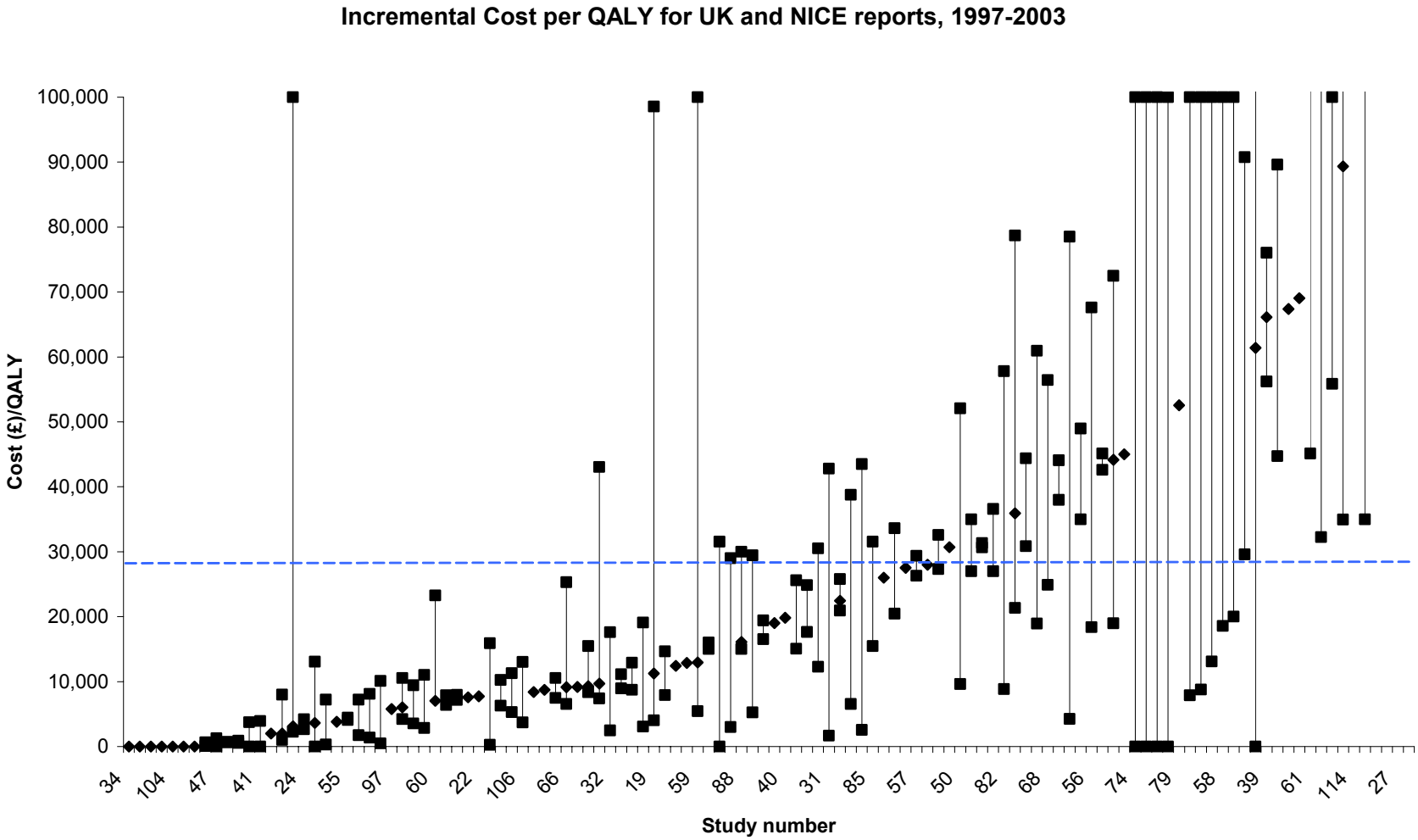

Table 1. Number of interventions by ICD-9 classification (life-years).

ICD-9 Chapter	Total	Dominant	ICER<£30k/LY	ICER>£30k/LY	Dominated	CMA
I. Infections & parasitic diseases	37	2 (5)	24 (65)	11 (30)	0	0
II. Neoplasms	92	3 (3)	71 (78)	14 (15)	1 (1)	3 (3)
III Endocrine, nutritional & metabolism	38	3 (8)	31 (82)	3 (8)	0	1 (3)
IV. Blood disorders	1	0	1 (100)	0	0	0
V. Mental disorders	2	0	2 (100)	0	0	0
VI. Nervous system & sense organ	12	0	9 (75)	3 (25)	0	0
VII. Circulatory system	99	3 (3)	80 (81)	11 (11)	4 (4)	1 (1)
VIII. Respiratory system	17	0	17 (100)	0	0	0
X. Genitourinary system	13	4 (31)	8 (62)	1 (7)	0	0
XIII Musculoskeletal&connective tissue	11	2 (18)	6 (55)	3 (27)	0	0
XVII. Injuries and adverse effects	2	1 (50)	1 (50)	0	0	0
TOTAL	**324**	**18 (6)**	**250 (76)**	**46 (14)**	**5 (2)**	**5 (2)**

Table 2. Number of interventions by ICD-9 classification (QALYs)

ICD-9 Chapter	Total	Dominant	ICER<£30k/QALY	ICER>£30k/QALY	Dominated
I. Infectious & parasitic diseases	28	0	22 (79)	4 (14)	2 (7)
II. Neoplasms	33	3 (9)	17 (52)	10 (30)	3 (9)
III. Endocrine, nutritional & metabolism	17	2 (12)	11 (65)	4 (24)	0
IV. Blood disorders	3	0	2 (67)	1 (33)	0
V. Mental disorders	14	1 (7)	9 (64)	3 (21)	1 (7)
VI. Nervous system & sense organ	33	0	11 (33)	22 (67)	0
VII. Circulatory system	42	0	34 (80)	4 (10)	4 (10)
VIII. Respiratory system	13	1 (8)	11 (85)	1 (8)	0
IX. Digestive system	6	0	2 (33)	4 (67)	0
X. Genitourinary system	8	5 (62)	3 (38)	0	0
XI. Pregnancy, childbirth	1	0	1 (100)	0	0
XII. Musculoskeletal & connective tissue	51	4 (8)	24 (47)	18 (35)	5 (10)
XVI. Signs and symptoms	6	0	3 (50)	3 (50)	0
XVII. Injuries and adverse effects	1	0	1 (100)	0	0
TOTAL	**256**	**16 (6)**	**151 (59)**	**74 (29)**	**15 (6)**

Table 3. Current resource deployment in Oxfordshire (life-years)

Undertaken in Oxfordshire	Total	Dominant	ICER<£30k/LY	ICER>£30k/LY	Dominated	CMA
YES	132	9 (7)	101 (76)	17 (13)	4 (3)	1 (1)
NO	85	5 (6)	59 (69)	20 (24)	0	1 (1)
TOTAL	217	14 (6)	160 (74)	37 (17)	4 (2)	2 (1)

Table 4. Current resource deployment in Oxfordshire (QALYs)

Undertaken in Oxfordshire	Total	Dominant	ICER<£30k/LY	ICER>£30k/LY	Dominated
YES	116	14 (12)	70 (60)	30 (26)	2 (2)
LOW USE	29	1 (3)	11 (38)	11 (38)	6 (21)
NO	55	1 (2)	33 (60)	18 (33)	3 (5)
TOTAL	200	16 (8)	114 (57)	59 (30)	11 (6)

Appendix 1

Incremental Cost per Life-Year results derived from UK studies (1997-2003) and NICE reports

ID	Reference	Disease	Intervention	Comparator	Mean	Low R	High R
11	Fenwick2002	Complications related to major elective surgery	Preoperative optimisation of oxygen delivery using adrenaline or dopexamine	Routine preoperative care	ID		
44	Sculpher 2000	Heart Failure	High dose lisinopril (Zestril) 32.5 - 35mg	Low dose lisinopril (Zestril) 2.5-5.0mg	ID		
88	Clarke 2001	Type II diabetes	Metformin	Conventional therapy (diet)	ID		
92	Postma 2000	HIV	Universal partner testing (partners were offered testing together with the mother in early pregnancy)	Current framework of universal voluntary HIV screening in early pregnancy	ID		
108	NICE 45	Advanced ovarian cancer	Pegylated liposomal doxorubicin hydrochloride	Topotecan	CMA		
111	NICE 61	Metastic colorectal cancer	Capecitabine with uracil	Intravenous fluoracil/folinic acid	CMA		
112	NICE 61	Metastic colorectal cancer	Tegafur with uracil	Intravenous fluoracil/folinic acid	CMA		
74	Baxter 1997	Coronary Heart Disease	Health Promotion	No intervention	£39		
27	Stevens2002	Smoking related diseases	Anti-smoking campaign targeted at high risk community	No campaign	£117	£37	£434
114	NICE 69	Invasive cervical cancer	Liquid based cytology 5-yearly	No screening	£360	£201	£1,433
73	Anon 1998	Cardiovascular diseases;Endocrine diseases	Tight blood pressure control	Less tight blood control		ID	£852
82	Munro 1997	Various health events	Regular physical exercise for the elderly (>65)	No programme	£446	£135	£2,027
65	Crealey 1998	Smoking	Pharmacists Action on Smoking model	No programme		£215	£914
58	Stapleton 1999	Smoking	Nicotine patches+GP counselling	GP counselling		£458	£904
84	Ratcliffe 1997	Smoking	Anti-smoking campaign	No campaign		£446	£962
86	Webb 1997	Advanced esophagogastric cancer	ECF regimen	FAMTX	£759		
79	Hendry 1997	Renal Failure in diabetic patients	Captopril	No captopril		ID	£1,747
25	Song2002	Smoking related diseases	Buproprion SR	Counselling		£598	£1,397
100	NICE 28	advanced ovarian cancer	2nd Line Topotecan	Paclitaxel	£1,042		
26	Song2002	Smoking related diseases	Buproprion SR+NRT	Counselling		£833	£1,843
29	Wilmink2003	Abdominal aortic aneurysms	Screening in men >50 years	No screening	£1,463	£984	£8,446
41	Varney 2001	Chronic Heart Failure	Bisoprol (bBlocker) + usual treatment	Usual treatment		ID	£3,006
24	Song 2002	Smoking related diseases	Nicotine replacement therapy	Counselling		£936	£2,245
79	Jordan 1997	Hepatitis B	Antenatal Screening	No screening	£1,670		
107	NICE 39	Smoking	Nicotine replacement therapy + buproprion+ advice; NRT + advice ; Buproprion + advice	Advice or counselling		£639	£3,000
3	Beutels2003	Measles	Two dose vaccination at 95% coverage; Two dose vaccination at 95% coverage + a campaign targeted at <15 year olds with <95% immune	Single dose vaccination at 90% coverage		£967	£3,145
6	Cleland2003	Severe low-output heart failure	Intravenous levosimendan	Dobutamine	£2,161		
14	Karnon2003	Advanced breast cancer in postmenopausal patients	Letrozole (1st line)	Tamoxifen (1st line)	£2,550	£1,032	£11,035
70	McCabe 1998	Rheumatoid Arthritis and Osteoarthritis	Nabumetone	Ibuprofen		£2,375	£3,180
45	Ades 1999	HIV	Universal antenatal HIV screening	Selective screening	£2,802	£508	£10,001
53	Nicolaides 1999	Deep-vein thrombosis	Desirudin (Revasc)	Enoxoparin	£2,931	£588	£5,368
80	McMurray 1997	Myocardial Infarction	ACE inhibitor treatment scenarios post-MI	ACE inhibitor treatment scenarios post-MI		£2,289	£4,062
72	Norum 1998	Colorectal cancer	Sigmoidoscopy in a population aged about 60yrs followed by polypectomy	No screening	£3,420		
87	Casciano 2001	Hypertension in type II diabetic patients	Doxazosin plus 2 antihypertension drugs	3 hypertensor drugs therapy		£2,224	£4,783
61	Boer 1998	Breast Cancer	Screening aged 50-69 every 3yrs	Screening women aged 50-64 every 3 years	£3,777		
55	Nuijten 1999	Breast Cancer	Letrozole	Megestrol	£4,418	£3,988	£5,094
62	Boer 1998	Breast Cancer	Screening women aged 50-64 every 2 years	Screening women aged 50-64 every 3 years	£4,478		
52	Mason 1999	Chronic lymphocytic leukemia	DiSC assay	No assay		£990	£8,108
50	Iveson 1999	Colorectal Cancer	Irinotecan (2nd Line)	5-FU (2nd Line)		ID	£9,475
60	Berger 1998	Advanced Ovarian Cancer	Paclitaxel+cisplatin (1st line)	Cyclophosphamide+cisplatin (1st line)	£4,877	£3,251	£9,754
42	Norum 2000	Breast cancer	Adjuvant CMF therapy	No Adjuvant therapy		£3,165	£6,700
8	Duggan2003	Suicide in patients with treatment resistant schizophrenia	Clozapine	Conventional neuroleptic drugs	£5,442		
32	Grover 2001	Dyslipidemia (Miocardial Infarction)	Simvastatin (statins)	No treatment		£2,953	£8,176
15	Karnon2003A	Advanced breast cancer in postmenopausal patients	Letrozole followed by tamoxifen	Tamoxifen followed by letrozole	£6,304	£4,504	£17,445
22	Roderick2003	Gastric cancer and peptic ulcer	Screening	No screening	£6,387	£2,023	£9,825
89	Bacquet 2001	Chronic Heart Failure	Bisoprolol as an adjunctive to diuretics, digoxin and ACE inhibitors	Placebo + Standard treatment	£6,423		
85	Vale 1997	Cardiovascular Disease	Community thrombolysis	Hospital thrombolysis		£4,790	£9,850
18	Martin2003	Cancer associated anaemia	Epoetin-Alfa	Placebo	£7,340		
105	NICE 34	Advanced breast cancer	Trastuzumab	Vinorelbine	£7,500		
69	Lightowlers 1998	Ischemic stroke	Anticoagulation in nonrheumatic atrial fibrillation	Placebo/no treatment		ID	£15,653
36	Moore 2001	Osteoarthritis	Rofecoxib(coxibs)	Conventional NSAIDs		ID	£17,719
91	Postma 2000	HIV	Universal Repeat Testing (mothers who tested -ve in the initial screening in early pregnancy will be offered repeat testing)	Current framework of universal voluntary HIV screening in early pregnancy		£2,744	£15,092
43	Kennedy 2000	Lung cancer	Radon remediation in schools	No intervention	£8,939		
113	NICE 65	Aggressive non-hodgkin's lymphoma in under 60s	Rituximab + CHOP chemotherapy regime	CHOP chemotherapy regime alone		£8,469	£9,721
5	Brown2002	Acute Coronary Syndromes	Eptifibatide	Placebo	£9,570	£2,455	£25,818
109	NICE 47	Acute coronary syndromes	Glycoprotein IIa/IIIa	Conventional management		£8,179	£11,079
110	NICE 55	Ovarian cancer	Paclitaxel/Platinum	Carboplatin		£7,173	£12,417
47	Caro 1999	Cardiovascular disease	Pravastatin	Diet alone	£9,823		
98	NICE 26	Non-small lung Cancer	Docetaxel, paclitaxel,gemcitabine, vinorelbine	Best supportive care		£2,345	£17,401

99	**NICE 27**	Osteoarthritis and rheumatoid arthritis	Cox II inhibitors	NSAIDS		£7,129	£16,304
37	**Phillips 2001**	Cervical Cancer	Early withdrawl from screening programme	Current practice (Mass population screening with withdrawl at 65yrs of age)		£8,183	£17,539
76	**Chancellor 1997**	HIV	Lamivudine/Zidovudine combination	Zidovudine monotherapy	£12,887		
78	**Hummel 1997**	Myocardial Infarction	Captopril	No ACEi	£13,012		
1	**Aristides 2003**	Pancreatic cancer	Gemicitabine	5-Fluorouracil	£13,291	£9,042	£27,566
96	**NICE 25**	Pancreatic cancer	Gemcitabine (1st line)	5-FU		£7,502	£19,485
106	**NICE 34**	Advanced breast cancer	Trastuzumab+Paclitaxel	Paclitaxel	£14,069		
97	**NICE 26**	Non-small lung Cancer	Docetaxel (2nd line)	best supportive care	£14,588		
51	**Kennedy 1999**	Lung Cancer	Residential radon programme	No remediation	£15,687		
64	**Cleland 1998**	Ischemic heart disease	CABG-Coronary Artery Bypass Grafting 10yrsFU	Standard treatment+Aspirin	£15,865	£7,802	£178,927
102	**NICE 30**	Advanced breast cancer	2nd line monotherapy of taxanes (Paclitaxel and Docetaxel)	Other standard chemotherapy regimens		£7,294	£24,487
35	**Miners 2001**	HIV in adults	HAART	Dual NRTI therapy	£16,218		
19	**Mason2002**	Gastric cancer and peptic ulcer	H.Pylori Screening and treatment	No intervention	£16,354	ID	£17,275
7	**Cunningham2002**	Metastic colorectal cancer	Irinotecan + 5-fluoracil & folinic acid	5-fluorouracil and folinic acid	£16,431		
4	**Billingham2002**	Advanced non small cell lung cancer	Chemotherapy	Standard palliative care	£16,556	£6,985	£24,474
38	**Sampson 2001**	Advanced Multiple Myeloma	High Dose chemotherapy, supported by autologous stem cell transplantation	Conventional chemotherapy	£16,953		
83	**Norum 1997**	Colorectal cancer (CRC)	Continued follow-up of patients treated for CRC	No follow up program		£12,871	£21,881
101	**NICE 30**	Advanced breast cancer	1st line combination Taxanes (Paclitaxel and Docetaxel)	Other standard chemotherapy regimens	£19,798	£11,462	£28,134
34	**Malik 2001**	Cardiovascular Disease	Ramipril (ACE inhibitors)	Placebo		£109	£39,853
40	**Tavakoli 2001**	Amyotrophic Lateral Sclerosis	Rilutek® (Rizulole-Antiglutamates)	Best Supportive care	£20,454		
104	**NICE 33**	Advanced colorectal cancer	2nd line irinotecan	Best supportive care		£17,000	£28,000
75	**Caro 1997**	Cardiovascular Disease	Pravastatin	No intervention	£25,088		
23	**Singhal2003**	Cytomegalovirus following liver transplant	Oral ganciclovir	No prophylaxis		£18,557	£32,276
33	**Kirby 2001**	End-stage Renal Disease	Hemodialysis (HD)	Continuous Ambulatory Peritoneal Dialysis (CAPD)		£5,379	£45,767
115	**Clegg2002A**	Non-small lung Cancer	New Chemotherapy regimens	Best supportive care		£4,581	£52,193
90	**Walker2003**	Prehospital cardiopulmonary arrest	Public place defibrillators (Major airports, railway and coach stations)	No public defibrillators	£29,625		
2	**Ashton2002**	Abdominal aortic aneurysms	Ultrasound screening	No screening	£30,247	£16,281	£155,127
9	**Edmunds2002**	Pertussis	Acellular pertussis booster vaccination at 4 years	Current practice		£9,400	£54,990
20	**McIntosh2003**	Paediatric Pneumococcal disease	7 valent pneumococcal conjugate vaccine in 0-10 year olds	No vaccination	£32,836		
103	**NICE 33**	Advanced colorectal cancer	1st line irinotecan + 5FU/FA	5FU Gramon regimen		£29,000	£37,000
10	**Edmunds2002**	Pertussis	Acellular pertussis booster vaccination at 15 years	Current practice		£8,509	£62,069
67	**Durand-Zaleski 1998**	Unresectable Colorectal Liver Metastases	Regional Chemotherapy (HAI)	Systemic Chemotherapy		£31,083	£40,290
95	**NICE 23**	Recurrent brain cancer (Glioblastoma Multiforme,Anaplastic Astrocytoma)	Temozolomide	Best supportive care	£36,470		
94	**NICE 20**	Motor Neurone Disease	Rilutek® (Riluzole)	Placebo	£40,638		
16	**Kennedy2002**	Radon induced lung cancer	Residential radon remediation	No programme	£42,142		
66	**Durand-Zaleski 1998**	Unresectable Colorectal Liver Metastases	Systemic Chemotherapy or HAI	Symptom control alone		£33,045	£52,462
17	**Marks2002**	Familial hypercholesterolaemia	Screening	No Screening		£3,084	£86,699
57	**Postma 1999**	HIV	Universal voluntary antenatal HIV screening	No screening		ID	£95,544
81	**Morris 1997**	Coronary heart disease in patients with Hyperlipidemia	Cholesterol-modifying therapy	No intervention		£44,918	£51,354
68	**Gray 1998**	ALS/MND	Riluzole	Placebo		£53,147	£54,023
63	**Cleland 1998**	Ischemic heart disease	CABG-Coronary Artery Bypass Grafting 10yrsFU	Standard Treatment+Aspirin+Simvastatin			£22,088
21	**Riedler2003**	Transfusion transmitted infections 0-70yrs old	Solvent/Detergent treated fresh frozen plasma	Untreated fresh frozen plasma		£24,215	£104,909
46	**Brown 1999**	Cervical Cancer	Pap Smear with AutoPap-assisted rescreen	Pap Smear with 10% random screening		£5,924	£126,801
93	**NICE 11**	arrhythmias	Implantable cardioverter defibrillators	Amiodarone		£44,100	£94,733
48	**Christopher 1999**	Cystic Fibrosis	rhDNase (Pulmozyme)	Placebo	£70,455		
49	**Gibb 1999**	HIV	Antenatal HIV testing	No test	£80,114		
12	**Jacklin2002**	Ischemic Heart disease	Preoperative positron Emission Tomography + CABG	Medical treatment for all	£85,728	ID	£255,105
30	**Brown 2001**	Osteoporosis (bone fracture)	Bone densimetry + Alendronate	Current Practice		£6,426	£167,502
13	**Johnston2003**	Coronary heart disease	Identification of patients with CHD which then follow a regular review by their GP or nurse	Audit and feeback	CD		
31	**Gray 2001**	Type II diabetes	Captopril (ACE inhibitors)	Atenolol	CMA		
71	**Messori 1998**	Chronic Myeloid Leukaemia	Long-term treatment with interferon-alpha	Standard treatments with cytotoxic drugs (busulphan or hydroxyurea)		£71,185	£172,549
39	**Sanderson 2001**	Coronary Heart Disease	Screening and treatment for Chlamydia Pneumoniae	No screening		£1,633	£750,354

Appendix 2

Incremental Cost per QALY results derived from UK studies (1997-2003) and NICE reports

ID	Reference	Disease	Intervention	Comparator	Mean	Low R	High R
34	**Clarke 2001**	Type II diabetes	Metformin (Biguanide)	Conventional therapy (diet alone)	ID		
38	**Griffiths 2001**	Chronic Obstructive Pulmonary Disease	Outpatient pulmonary rehabilitation programme + standard care	Standard care	ID		
70	**Manca2003**	Urodynamic stress incontinence	Tension free vaginal tape	Colosuspension	ID		
102	**NICE 54**	Advanced breast cancer	Vinorelbine	Taxanes (paclitaxel or docetaxel)	ID		
104	**NICE 56**	Stress Incontinence	Gynecare tension free vaginal tape after 10 years	Open burch colposuspension	ID		
108	**NICE 60**	Diabetes	Educational programme	Conventional treatment	ID		
109	**NICE 62**	Locally advanced or metastic breast cancer	Capecitabine	Vinorelbine/Docetaxel	ID		
53	**Ranson2002**	Smoking related diseases	Policy to curb smoking	No policy		£70	£633
47	**Iglesias2002**	Hip, vertebral and wrist fractures in patients with established osteoporosis	Risedronate (bisphosphate treatment)	No therapy or placebo		ID	£1,248
62	**Cunningham 2003**	Dentofacial disharmony	Surgery	No surgery		£625	£706
8	**Briggs 1998**	Hip fractures	New protheses	Standard charnley		£549	£874
98	**NICE 48**	End stage renal failure	Home Haemodialysis	Hospital & Satellite Haemodialysis		ID	£3,740
41	**Nicholson 2001**	Unstable coronary artery disease	Enoxoparin®(low weight heparin)	Unfractioned heparin		ID	£3,934
14	**Sculpher 1998A**	Menorrhagia	Abdominal Heysterectomy	Endometiral resection	£1,992		
99	**NICE 51**	Depression and anxiety	Cognitive behavioural therapy	Treatment as usual	£2,000	£1,000	£8,000
13	**Robinson 1998**	Acute myocardial infarction	Quality assurance programmes for thrombolysis	No intervention	£3,095	£2,266	CD
24	**Stolck 2000**	Erectil Disfunction	Sildenafil	Papaverine-phentolaime injections		£2,665	£4,165
16	**Chambers 1999**	Cardiovascular disease: recurrent stroke	Antiplatelet therapies: aspirin + dipyndamole	Placebo	£3,609	ID	£13,065
30	**Thomson 2000**	Stroke	Anticoagulant therapy: warfarin	No intervention		£300	£7,202
49	**Karnon2002**	Early breast cancer	Tamoxifen + chemotherapy	Tamoxifen alone	£3,814		
55	**Stein2002**	Hepatitis C	Combination therapy (Ribavirin + Interferon alpha)	No treatment/Interpheron alpha		£4,068	£4,425
15	**Whynes 1998**	Colorectal Cancer	Faecal occult blood screening	No screening		£1,740	£7,215
20	**Phillips 1999**	Menopausal Symptoms	Tibolone (HRT-Livial)	Continuous combined HRT		£1,379	£8,088
90	**NICE 39**	Smoking related diseases	NRT and bupropion	Advice alone		£473	£10,083
97	**NICE 47**	Acute coronary syndromes	Glycoprotein II b/IIIa inhibitors as part of inititial medical management	Usual care	£5,783		
46	**Grieve2002**	Hepatitis C	Combination of alpha interferon with ribavirin	No treatment	£6,017	£4,231	£10,523
25	**Norum 2000**	Breast cancer	Adjuvant CMF therapy	No Adjuvant therapy		£3,569	£9,434
84	**NICE 29**	B-cell chronic lymphocytic leukaemia	Fludarabine	CHOP		£2,838	£11,036
60	**Clegg 2003**	Morbid Obesity	Gastric bypass	Non surgical mgmt	£7,042		£23,256
100	**NICE 52**	Acute myocardial infarction	Alteplase/Tenectplase/Reteplase for early thrombolysis	Streptokinase for early thrombolysis		£6,385	£7,878
78	**NICE 14**	Hepatitis C	Ribavirin/ interferon alpha	Monotherapy/No active treatment		£7,188	£7,964
28	**Roberts 2000**	Colorectal Cancer	Quality management system for screening	No QM system	£7,584		
22	**Berry 2000**	Coronary artery disease	Intravascular ultrasound guided interventions	Non IVUS guided interventions	£7,729		
21	**Ament 2000**	Pneumococcal diseases	Vaccination for older people (>= 65)	No vaccination		£258	£15,895
96	**NICE 46**	Obesity	Surgery	Non surgical mgmt		£6,289	£10,237
103	**NICE 55**	Ovarian cancer	Paclitaxel + Cisplatin	Carboplatin		£5,273	£11,269
106	**NICE 58**	Influenza	Amantide/Oseltamivir/Zanamivir	Usual care		£3,700	£13,000
105	**NICE 57**	Diabetes	Continuous subcutaneous insulin infusion	Multiple-dose insulin	£8,400		
118	**NICE 73**	Angina and myocardial infarction, when low prevalence of CAD	Single photon emission computed tomography followed by coronary angiography (SPET-CA)	Stress electriocardiography-CA (sECG-CA)	£8,723		
112	**NICE 65**	Aggressive non-hodgkin's lymphoma	Rituximab + chop chemotherapy regime	Chop chemotherapy regime alone		£7,485	£10,540
66	**Karnon2003A**	Advanced breast cancer in postmenopausal patients	Letrozole followed by tamoxifen	Tamoxifen followed by letrozole	£9,136	£6,527	£25,279
37	**Griffin 2001**	Influenza A+B	Inhaled Zanamivir	Placebo	£9,155		
43	**Phillips 2001**	Relapse remitting multiple sclerosis	Interferon beta 1b (Betaferon)	Standandard treatment	£9,270	£8,354	£15,450
71	**Martin2003**	Cancer associated anaemia	Epoetin-Alfa	Placebo	£9,693	£7,382	£43,063
32	**Brown 2001A**	Advanced breast cancer	Docetaxel	Paclitaxel & Vinorelbine		£2,464	£17,615
36	**Gilmore 2001**	Hyperactive Disorders in children	Methylphenidate	Placebo		£8,957	£11,136
42	**O'Neill 2001**	Profound and severe deafness	Paediatric cochlear Implantation	No implantation		£8,729	£12,901
73	**Vella2003**	Coronary heart disease	CABG/percutaneous transluminal coronary angioplasty plus abciximab (PCTA+)	MM or CABG/stent		£3,073	£19,086
19	**Leal 1999**	Hepatitis C	Screening intavenous drug users using a combination enzyme (ELISA and PCR)	No screening	£11,257	£4,034	£98,575
54	**Sampson2002**	Severe spasticity	Intrathecal baclofen infusion	Not stated		£7,897	£14,637
26	**O'Neill 2000**	Laryngococcal disorder	Paediatric cochlear implant	No intervention	£12,412		
2	**Hummel 1997**	Myocardial Infarction	ACE Inhibitor (Captopril)	Conventional treatment	£12,865		
59	**Calvert2003**	Prostate cancer	Prognostic markers	Observation	£12,950	£5,420	CD
116	**NICE 71**	Coronary artery disease	Bare metal stent	Drug elutin stent		£15,000	£16,000
80	**NICE 19**	Alzheimer's disease	Donepezil	Placebo		ID	£31,530
113	**NICE 67**	Influenza	Amantide/Oseltamivir + vaccination	Vaccination		£3,000	£29,000
88	**NICE 35**	Juvenile idiopathic arthritis	Etanercept	Placebo	£16,082	£15,000	£30,000

4	**McMurray 1997**	Myocardial Infarction	ACE inhibitors	Standard treatment		£38,756	£6,555
6	**Norum 1997B**	Colorectal Cancer	Adjuvant chemotherapy (5 fluoracil and levamisole)	Surgery alone		£2,557	£43,482
85	**NICE 31**	Obesity	Sibutramine	Placebo		£15,450	£31,530
115	**NICE 70**	Chronic myeloid leukaemia	Imatinib	Interferon alpha	£26,000		
45	**Anyanwu2002**	End stage lung disease	Lung transplantation	Medical treatment		£20,435	£33,633
91	**NICE 40**	Crohn's disease	Infliximab	Standard care	£27,500		
57	**Tavakoli2002**	Amytrophic lateral sclerosis	Riluzole	Best supportive care (BSC)		£26,287	£29,372
92	**NICE 41**	Rhesus disease	Anti-D Immunoglobin	Conventional management	£28,000		
76	**NICE 11**	Arrhythmias	Implantable cardioverter defibrillators	Amiodarone		£27,326	£32,581
44	**Tavakoli 2001**	Amyotrophic Lateral Sclerosis	Rilutek® (Rizulole-Antiglutamates)	Best Supportive care	£30,700		
50	**Miners2002**	Haemophilia	Primary prophylaxis with clotting factor infusing	Treatment on demand with clotting factor		£9,630	£52,070
89	**NICE 36**	Rheumatoid arthritis	Etanercept & infliximab	Other DMARDS		£27,000	£35,000
10	**Durand Zaleski 1998**	Colorectal Cancer	Hepatic arterial infusion chemotherapy	Common practice		£30,677	£31,340
67	**Kobelt2003**	Rheumatoid arthritis	Infliximab (remicade) plus methotrexate	Methrotexate		£27,011	£36,575
82	**NICE 22**	Obesity	Orlistat	Placebo		£8,828	£57,805
64	**Forbes2003**	Medically refractory epilepsy	High level vagus nerve stimulators	Low level vagus nerve stimulators	£35,898	£21,320	£78,697
65	**Gordois2003**	Advanced stage chronic myeloid leukaemia	Imatinib mesilate	Combination chemotherapy & palliative care		£30,841	£44,393
81	**NICE 20**	Motor Neurone Disease	Rilutek® (Riluzole)	Placebo		£18,918	£60,958
68	**Longworth2003**	Liver diseases	Liver transplantation	BSC		£24,901	£56,445
1	**Gudex 1997**	Dystonia	Botulinum toxin	Placebo		£37,973	£44,081
35	**Edmunds 2001**	Herpes Zoster	Vaccine (attenuated VZ virus)	Current Practice-treatment		£4,237	£78,507
23	**Kendrick 2000**	Multiple Sclerosis	Beta-interferon	No intervention		£34,987	£48,975
56	**Summerfield2002**	Profound-to-total bilateral loss of hearing	Cochlear implantation	No intervention/Acoustic hearing aids		£18,370	£67,607
83	**NICE 23**	Recurrent brain cancer	Temozolomide	Best supportive care		£42,601	£45,109
75	**Walker2003**	Pre-hospital cardiopulmonary arrest	Public place defibrilators (majour hospitals, railway and bus stations)	Status quo	£44,153	£18,971	£72,484
111	**NICE 64**	Growth hormone deficiency in adults	Recombinant human growth hormone	Placebo	£45,000		
48	**Kanis2002A**	Established Osteoporosis	Treatment	No treatment		ID	CD
74	**Wight 2003**	Kidney failure	Pulsatile machine perfusion of kidneys for transplantation	Cold storage	ID	ID	CD
95	**NICE 44**	Advanced hip disease	Metal on metal hip resurfacing arthroplasty	THR		ID	CD
107	**NICE 59**	Depressive illness, schizophrenia, catatonia and mania	Electroconvulsive therapy	Conventional treatments		ID	CD
79	**NICE 18**	Inguinal Hernia	Laparoscopic	Open surgery	£52,550		
29	**Schermerhon 2000**	Abdominal Aortic Aneurysms	Surgery	Surveillance		£7,889	CD
94	**NICE 43**	Schizophrenia	Atypical antipsychotic drugs	(Head to head comparisons)		£8,778	CD
9	**Cleland 1998**	Ischemic heart disease	CABG	Some sort of MM		£13,110	CD
58	**Brisson2003**	Varicella and zoster	Infant vacciation	No vaccination		£18,574	CD
110	**NICE 63**	Type 2 diabetes	Rosiglitazone combination therapies (with metformin or a sulphonylurea)	Metformin + a sulphonylurea		£20,000	CD
63	**Duff2003**	Foodborne illnesses	Targeted disinfection program	No programme		£29,594	£90,744
52	**Nuijten2002**	Multiple Sclerosis	Preventive treatment with interferon beta	No preventive treatment	£61,393	ID	£161,996
39	**McIntosh 2001**	Groin Hernia	Laparoscopic Hernia Repair	Open Hernia repair	£66,113	£56,196	£76,036
51	**Noble2002**	Symptoms of benign prostatic enlargement	Noncontact laser therapy	Conservative management		£44,698	£89,625
117	**NICE 72**	Rheumatoid arthritis	Anakinra	Current practice	£67,400		
11	**Gray 1998**	ALS/MND	Riluzole 50mg/day	Placebo	£69,043		
61	**Chilcott2003**	Multiple sclerosis	Interferon beta/Glatiramer	Conventional management		£45,113	£104,770
101	**NICE 53**	Diabetes	Long acting insulin analogues (insulin glargine)	NPH insulin		£32,244	£118,214
3	**Liljegren 1997**	Breast cancer	Routine postoperative radiotherapy after resection and axilliary dissection	No radiotherapy		£55,856	CD
72	**Stein2003**	Hepatitis C	Screening in genito urinary medicine clinics	No screening	£89,335	£34,965	£879,896
114	**NICE 68**	Age related macular degeneration	Photodynamic therapy (PDT) verteporfin	Current Practice		£151,179	£181,188
86	**NICE 32**	Multiple sclerosis	Beta interpheron	Placebo		£35,000	£405,500
33	**Campbell 2001**	Refractory Angina Pectoris	Transmyocardial laser revascularization	Std Medical Management alone	£266,147		
12	**Parkin 1998**	Mutliple sclerosis	Beta interferon	Standard care		£280,211	£482,729
27	**Parkin 2000**	Multiple sclerosis	Beta interferon	Best supportive care		£274,032	£972,137
17	**Forbes 1999**	Secondary progressive multiple sclerosis	Beta-1b interferon	Best practice without Beta interferon	£1,326,021	£357,774	£1,922,383