

# The Economics of Health: How do we decide?



## Which Treatment?

Suppose a serious illness is currently treated with Drug X. Drug X works, but on average patients need to take it for a period of about 2 years in order to be free of the illness. It has some side-effects, but on the whole patients find it is effective.

Recently Make More Drugs Inc has started to market alternative treatments (Drugs A and C), while a group of doctors has also developed a surgical procedure (Treatment B) which they hope might be useful in some cases.

Treatment	Average duration of treatment	QALYs provided	QALYs gained (relative to treatment X)	Cost per patient per day (£)	Total cost of treatment (£)	Additional cost (relative to treatment X, £)	ICER
X	24 months	0.75	--	28.90		--	--
A	6 months	0.8		123.78			
B	Surgery and 6 days in hospital	0.4		450 per day plus 9,500 for the surgery			
C	18 months	0.92		48.67			
B + C	As B plus 6 months on Drug C	0.9		As for B and C			

QALYs are Quality Life Adjusted Years. These would generally be lower than those suggested here for a serious illness.

Complete the table above.

The incremental cost effectiveness ratio (ICER) for each treatment is given by:  
where X refers to treatment X, and T refers to alternative treatments.

$$ICER = \frac{\text{Cost}_T - \text{Cost}_X}{\text{Health gain}_T - \text{Health gain}_X}$$

# The Economics of Health: How do we decide?

1. Which treatment would you choose for:
  - (a) a middle-aged man in good health
  - (b) an elderly woman who is overweight and suffers from asthma, which means that general anaesthetics should be avoided as far as possible
  - (c) a small child, who cannot tolerate the side-effects of Drug A
2. An ICER of 30,000 is used by NICE to indicate when a new treatment is cost-effective. *(Beyond this figure, the number of QALYs gained by using the new treatment is less than the number of QALYs lost because other spending is no longer possible.)*  
Does this change any of your decisions?
3. Plot the position of each treatment on the Cost Effectiveness plane (right), putting Drug X at (0, 0).
4. Add the line which indicates an ICER of 30,000. What is its equation?
5. You have just made your decisions, when the budget is drawn up for the next financial year. Cuts in income mean that there is a ceiling of £20,000 for any one patient in any one year unless a strong medical case can be made.  
Does this change any of the decisions you made in questions 1 and 2?

