

Can PROMS help with efficient patient selection and commissioning?

- Not all patients who undergo an elective procedure benefit sufficiently to justify the expenditure.
- In a time of austerity there is increased interest in the prospects for identifying these patients to deselect them for treatment.
- If we can identify those patients who gain little or are worse off, the resources can be applied to other treatments with greater health gain.

Not all patients benefit

An analysis of the distribution of benefits in PROMS data shows a surprising proportion of patients do not derive benefit, in terms of before and after QALY.

Table 1: QALY change: proportions reporting QALY loss; no change; and gain								
Change in health status		hip %		knee %		VV %		groin hernia %
loss		6		11		15		18
no change		6		10		31		31
gain		88		79		54		51
		100		100		100		100
Unit cost		£7500		£7500		£1100		£1500

There is a strong case for improving patient selection.

The literature contains many condition specific score that might be used to improve patient selection for key elective surgery.

At least one major paper suggests that rejecting patients using a condition specific score is not appropriate.

Patients deemed ineligible under PCT criteria for knee replacement, eg Oxford knee score of 30, would actually be cost effective to treat under cost per QALY of £30,000.

Dakin H, Gray A, Fitzpatrick R, et al. Rationing of total knee replacement: a cost-effectiveness analysis on a large trial data set. *BMJ Open* 2012;2:e000332. doi:10.1136/bmjopen-2011-000332

A better model to select prospective patients is unavailable, for knee replacements at least, and we have not found any useful criterion in the literature which could be adopted.

We first consider how far the conclusion reached by Dakin et al is robust

- (i) in a larger dataset covering the whole country
- (ii) for a similar procedure, hip replacement, using the appropriate condition-specific score.

Secondly, we explore two alternative selection criteria.

Using PROMS:

- (i) We can confirm that in a much larger sample, no OKS level identifies a material proportion who do not qualify for treatment, judged by the NICE passmark of £30,000 per QALY.
- (ii) Result for hip replacement very similar.

Table 2: Proportion ineligible and mean cost per QALY for knee replacement under different levels of OKS threshold

OKS threshold	% ineligible	Mean cost per QALY
25	18.8	£7200
30	7.4	£8600
35	1.7	£11,600
41	0.1	£30,000

Table 3: Proportion ineligible and mean cost per QALY for hip replacement under different levels of OHS threshold

OHS threshold	% ineligible	Mean cost per QALY
25	18.7	£7300
30	7.8	£8500
35	2.7	£10,700
43	0.2	£30,000

The Dakin et al result holds for

- (a) the whole country and for different thresholds
- (b) for hips as well.

Would other criteria be more efficient at identifying those not meeting the £30k per QALY threshold?

A substantial proportion of patients show cost per QALY above £30,000. This is especially true for the minor procedures - varicose veins and groin hernia.

Table 4: Proportion with cost per QALY above £30k			
%			
hips	knees	vv	groin
14	23	46	49

We now ask:

Would other criteria be more efficient than condition specific score at identifying those not meeting the £30k threshold?

Table 5: Identifying ex ante patients whose cost per QALY exceeds £30,000
Threshold value of the criterion, mean QALY loss and percentage reduction in volume and expenditure

	Patient selection criteria	% reduction in volume	Threshold (3)	Mean QALY loss (2)	Expenditure saving £m pa
hips					
	QALY	0.5	0.850	-0.053	3
	Predictive score (1)	3.0	0.05	0.048	16
knees					
	QALY	0.4	0.796	-0.027	5
	Predictive score	11.4	0.05	0.047	67
varicose veins					
	QALY	22.3	0.848	-0.039	6
	Predictive score	21.1	0.007	-0.034	6
groin hernia					
	QALY	29.1	0.848	-0.048	35
	Predictive score	31.5	0.011	-0.044	37

Note 1 The predictive score is found from regressing QALY gain by condition, on several variables including baseline QALY , condition specific score, index of deprivation, and a list of comorbidities.

Note 2 This gives the mean QALY lost by patients not selected under the given criterion.

Note 3 Patient health gain/loss is assumed to persist for five years, and the cost of hip treatment is assumed to be £7,500. The threshold using (i) the predictive QALY of 0.05 the QALY baseline criterion is a value of 0.85.

Conclusions

- For minor procedures (varicose veins and groin hernia) the analysis suggests a straightforward conclusion. Physicians would apply a QALY baseline test to those otherwise allocated for treatment and reject those with QALY in excess of 0.85. This will save about £41million per annum and on average improve the welfare of those patients who are not treated as a consequence of the QALY constraint.

Conclusions continued

- For the major interventions, the use of a simple QALY criterion set at 0.8 in the case of knees and 0.85 in the case of hips will lead to a mean *improvement* of patient QALY for those excluded from treatment by the criterion of value about £8,000 in the case of hips and £4,000 in the case of knees. However, the total NHS saving due to cases no longer undertaken is very small since volume reduction is small, and amounts to about £8million p.a.
- The use of a model to predict QALY gain which is applied at a cost per QALY of £30,000 p.a. to exclude patients, rejects about 11% of knee candidate patients and saves £67million. It would save 3% of patient hip volume and £16million. However, in both of these procedures, mean patient QALY loss is positive although on average these patients would have acquired QALYs at a price in excess of £30,000 p.a.