

Cutting the cost of cataract surgery – a financial audit

J Filer, T J Roberts-Harry, J D Jagger

Abstract

We have analysed the cost of disposable equipment used during cataract surgery by eight different surgeons over a six-month period in the same hospital. By comparing the costs of single-use items used by each surgeon we highlight how significant savings can be made by change of technique (without an adverse effect on surgical outcome).

There is great emphasis on fiscal efficiency and making the National Health Service more cost effective. Cataract extraction with intraocular lens implantation is the commonest ophthalmic operation, and by costing the disposal items used by eight different surgeons at the same hospital we demonstrate how major savings may be made by modifying the amount and type of equipment used during surgery. This study is confined to

the cost of disposable equipment alone and we have made no effort to estimate the cost of non-disposable equipment, as the initial cost, depreciation, or revenue consequences in terms of maintenance and sterilisation was much more difficult to establish. Neither have we costed the theatre charge or complete episode of cataract extraction plus IOL from initial consultation to discharge.

We studied the cost involved for eight different surgeons operating at the Royal Free Hospital on uncomplicated extracapsular cataract extraction with intraocular lens implantation over a six-month period. There has not been a noticeable difference in clinical outcome, and the low incidences of postoperative complications have been broadly comparable. This is the subject of a future study.

Methods and results

The eight surgeons were divided into two groups. Group 1 were those who used automated cortical lens aspiration, and Group 2 were those who used manual cortical clean-up. Both groups used a different core of identical disposable equipment, and each surgeon had additional equipment depending on his or her preference. The core equipment in each of groups 1 and 2 is shown in Table 1. Table 2 shows the additional equipment used by each individual surgeon. It is thus possible to add together the automated or non-automated core to each individual's additional equipment price to give a total price per surgeon – Table 3.

The number of cataract extractions performed each month can be broken down into those individually for the eight different surgeons or taken as a whole. The number of cataract extractions per group and per surgeon over a six-month period is indicated in Table 4. The cost of disposal equipment on an individual and collective basis for each month and over the whole six-month period is shown in Table 5.

Discussion

The cost in terms of disposable equipment from surgeon to surgeon varies from £21.74 to £112.58. The average actual cost of performing 365 cataract extractions over the six-month period was £51.67 per case. If the least expensive surgeon had performed all the cataracts during this period and the figures projected for a 12-month period, the total cost would have been £15 870.20. If on the other hand the most expensive surgeon had performed the same number of cataract extractions over the same period, the cost would have been £82 344.00 – a difference of £66 313.20. If all eight surgeons had changed to adopt the disposable equipment of surgeon 5, the department would save

Department of
Ophthalmology, Royal
Free Hospital, London
J Filer
T J Roberts-Harry
J D Jagger

Correspondence to:
T J Roberts-Harry, Eye
Department, Royal Free
Hospital, Pond Street,
London NW3 2QG.

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Table 1 Core equipment

Equipment	Core 1	Core 2	Cost per item (£)
Viscoelastic agent	+		46.02
Automated aspiration Interkit	+		34.00
Balanced salt solution (20 ml)	+		2.15
Beaver micro blade	+	+	1.81
Ringer's solution (500 ml) +0.5 m adrenaline 1:100	+	+	1.37
Intravenous giving set		+	0.85
A60 extension set		+	0.84
Rycroft cannula	+	+	0.79
Lacrimal cannula	+	+	0.72
Irrigating cystotome	+		0.54
Jelonet 10×10	+		0.18
Cartella	+	+	0.12
Eye pad	+	+	0.10
Syringe×2 (2 ml)	+	+	0.06
Syringe×1 (5 ml)	+	+	0.05
Discardapad	+	+	0.05
Total cost per core	£87.91	£06.76	

Table 2 Additional equipment

Equipment	Cost per item (£)	Surgeon								
		1	2	3	4	5	6	7	8	
Viscoelastic agent	46.02									+
Coaxial cannula	9.20				+			+	+	+
Miocol	7.44	+	+	+						
Nylon Alcon	6.50		+	+	+			+	+	+
Steridrape 1060	5.37		+	+	+	+		+	+	+
Nylon W1770	5.01	+				+				
Ethibond W883	3.78			+						
Silk W606	2.45	+								
Steridrape 1040	2.26						+			
Steridrape 1020	2.18	+								
Balanced salt solution (20 ml)	2.15					+				
Marcaine 0.5%	1.52	+								
Irrigating vectis	2.16				+	+			+	
Beaver blade	1.15		+	+	+					+
Silk W501	0.51		+		+					+
Subconjunctival injection (i)	0.43	+		+						+
Subconjunctival injection (ii)	0.28							+		+
Monojet needle	0.25					+				
Jelonet 10×10	0.18									+
Syringe×1 (1 ml)	0.07						+			
Syringe×1 (10 ml)	0.06				+		+	+		
Melolin 5×5	0.04						+	+		
Blade no. 15	0.03	+								
Cost per surgeon		19.06	20.97	24.67	25.45	14.98	18.31	23.79	71.55	

Table 3 Total cost per surgeon of disposable equipment

Surgeon	Cost per cataract (£)
3	112.58
2	108.88
1	106.97
8	78.31
4	32.21
7	30.55
6	25.07
5	21.74

Table 4 Cataract extractions performed over a six-month period expressed on an individual and collective basis

Surgeon	Month						Total
	1	2	3	4	5	6	
1	5	10	6	10	7	9	47
2	5	2	10	2	11	6	36
3	1	2	2	2	0	1	8
4	9	15	11	17	7	5	64
5	5	5	3	11	10	11	45
6	9	12	5	13	6	12	57
7	9	20	16	11	10	16	82
8	8	3	5	5	0	5	26
Total	51	69	58	71	51	65	365

Table 5 Cost of disposable equipment (£) over a six-month period expressed on an individual and collective basis

Surgeon	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Total
1	543.85	1069.70	641.82	1069.70	748.79	962.73	5027.59
2	544.40	217.76	1088.80	217.76	1197.68	653.28	3919.68
3	112.58	225.16	225.16	225.16	0.00	112.58	900.64
4	289.89	483.15	354.31	547.51	225.47	161.05	2061.38
5	108.70	108.70	65.22	239.14	217.40	239.14	978.30
6	225.63	300.84	125.35	325.91	150.42	300.84	1428.99
7	274.95	611.00	488.80	336.05	305.50	488.80	2505.10
8	626.48	234.93	391.55	391.55	0.00	391.55	2036.06
Total	2717.48	3251.24	3381.01	3352.78	2845.26	3309.97	18857.74

£21 862.94 per year, whereas annual expenditure at present on disposable equipment is £37 733.14.

We fully accept that it would be entirely wrong to impose the cheapest alternative on all surgeons and are fully cognisant that different techniques, training experience, and possible long-term outcome have not been accurately assessed. Surgeons may feel that more expensive equipment may be superior in quality and improve the long-term outcome, with a lower risk of complications. We have illustrated that by careful assessment of the costs of the alternative equipment major savings may be made in those areas where surgeons may feel that there is more than one alternative. Moreover it may be possible to modify one's technique with a reduction in cost without the patient's being adversely affected. However, it is only by long term assessment of surgical quality and its relationship to cost that resources may not be squandered. Certainly today there is a greatly increased awareness of medical audit, departmental budgets, and overall cost effectiveness, enabling money to be better spent on patient care.



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