



## A REVIEW OF SELECTION CRITERIA USED BY MEDICAL SCHEME ADVISERS TO APPROVE OR DENY PROCEDURES WITH A COSMETIC COMPONENT

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**Objective.** To review and apply statistical tests to the selection criteria used by two medical advisers to approve or deny applications for three common cosmetic or reconstructive procedures within a large group of medical schemes.

**Design.** A retrospective descriptive study which applied multiple regression analysis, frequency analysis, comparison of means and simple correlations to the data sets for three procedures.

**Setting.** Administrative records from the clinical files of medical advisers and the administrator's claims database.

**Subjects.** Data were reviewed for 1 143 members who, between January and December 1996, submitted applications for breast reduction, excimer laser refractive surgery, or otoplasty.

**Main outcome measures.** The primary outcome measure was the statistical relationship between medical advisers' selection criteria and final decision. In addition, the financial implications of these cosmetic/reconstructive procedures were assessed.

**Results.** For the three procedures reviewed there was a statistically significant relationship between 5 of 13 pre-operative criteria requested and the medical advisers' opinion. Excimer laser surgery was generally approved on the basis of the refractive error (myopia > -3.00; astigmatism > -1.5 dioptres); otoplasty was generally approved for children aged ≤ 12 years; and breast reduction was usually covered for women with a sternal-nipple distance > 29.0 cm and with a cup size ≥ DD. The other data submitted were similarly distributed between the approved and denied groups.

**Conclusions.** Review of medical advisers' decisions is important in an era of protocols, guidelines and 'standard operating procedures'. Selection criteria for approval of applications for *medically necessary* cosmetic/reconstructive surgery must be reviewed and revised to provide a reliable, reproducible and statistically valid process.

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Medical aid schemes in South Africa have traditionally attempted to provide 'cradle-to-grave' cover for health services which are regarded as being medically necessary. In this regard, and in terms of the previous Medical Schemes Act No. 72 of 1967, efforts have been made to cover medical, dental, surgical, hospital and pharmacy costs for treatments carried out at the appropriate time and in the appropriate facility. In addition, over the past few years there has been greater recognition that 'medically necessary' services include those provided by practitioners in the 'supplementary disciplines' (psychotherapy, physiotherapy, occupational therapy, speech therapy/audiology, home nursing). To this list one must now add services which are increasingly being utilised as alternatives to conventional care (homoeopathy, chiropractic, acupuncture, etc.), and also recognise the groundswell of interest in and support for inclusion of benefits for services provided by traditional healers.

The transition from the original, relatively restricted approach which was concerned with established, mainstream medicine, to the expanded approach which includes disciplines and modalities not usually associated with evidence-based treatments, has led to support for altered structures in benefit packages, e.g. apportioning funds to savings plans which give members greater discretion in deciding where and how to spend money which is not directed towards the traditional and high-cost areas (i.e. medical specialists, hospitalisation, chronic medication, specialised dentistry, etc.). However, while this approach has given medical scheme members greater access to services which are frequently presented as cost-effective alternatives to conventional medical care, the actual experience of the medical schemes is that costs of conventional care have continued to escalate at well above the general inflation rate, while the alternatives merely represent additional expense.

This complex situation, in which medical schemes are committed to covering the costs of medically necessary and scientifically proven treatments and medical scheme members are demanding access to an ever-increasing range of health care services, is further complicated by an ongoing debate between members, their doctors and medical schemes regarding funding for treatments which are not clearly medically necessary, i.e. they are either cosmetic or are still experimental and awaiting scientific validation.

In the area of cosmetic surgery, advisers to medical schemes are continually engaged in reviewing applications for treatments which members and their doctors concede are within the cosmetic surgery domain, but are medically indicated. Most medical advisers have a process which must be followed by members and doctors in applying for benefits in these cases. The purpose of this study was to review the nature of the medical adviser review process within a number of medical schemes, and to determine the basis on which cases in the top three categories were approved or denied. These categories represent approximately 70% of the plastic and





reconstructive surgical applications regularly reviewed by medical advisers.

## SUBJECTS AND METHODS

Applications reviewed included those for excimer laser surgery for refractive errors, breast reduction, and otoplasty. Records for the period January - December 1996 were accessed for members of 37 medical schemes covered by two experienced medical advisers.

For each of the abovementioned procedures, data routinely required by the advisers were entered into a database. These procedures are usually detailed as exclusions or flagged for medical adviser review in the medical scheme rules, but there is a mechanism for appeal. In each case there is a clearly defined process by means of which members and their doctors submit 'letters of motivation' and provide answers to a specified set of questions, e.g. in the case of refractive surgery, details are required about the age and sex of the patient and the severity of the refractive error/s. For the three procedures under review, a total of 13 questions had to be answered to provide the medical advisers with information which was considered to be necessary for a decision.

Analysis of the data was carried out using Statpak Version 4.0 (Northwest Analytical, Portland, Oregon, USA), and was directed towards relating the responses to the specified questions to the final decision of the medical advisers (i.e. approval or denial).

Other data reviewed included the financial impact of the procedures under review, and the claims history of members applying for cover on the grounds of 'medically necessary cosmetic surgery'. The purpose of the latter review was to assess whether those who appealed for cover because of severe psychological disturbances, or excessive use of health services as a result of the underlying problem, actually had a history of claims above the norm.<sup>a</sup>

## RESULTS

Data were reviewed for some 425 000 members of 37 medical schemes served by the two medical advisers. Table I summarises the procedures reviewed, the potential cost to the medical schemes and the approval rate for each procedure. Expressed as a percentage of total payout to hospitals and specialists, the 632 procedures which were approved represented some R4.39 million of R1.030 billion, i.e. 0.43%. The financial implication of funding all applications would have been to contribute R7.96 million (0.77%) to the payout for hospitals and specialists.

Analysis of the data using multiple regression analysis, frequency analysis, comparison of means and simple correlations (Table II) showed that in all three categories there were criteria which correlated with the medical advisers' final

**Table I. Applications received for cosmetic or reconstructive surgery considered by applicant to be medically necessary**

Procedure	No. of applications	Average cost of procedure	Potential cost to schemes	Approval rate (%)
Excimer laser surgery	790	R3 729*	R5.891 m	62.2
Breast reduction	277	R6 689	R1.853 m	31.1
Otoplasty	76	R2 757	R212 572	72.4
Overall (Jan - Dec 1996)	1 143	R6 944 <sup>†</sup>	R7.956 m	58.8% <sup>†</sup>

\*Per eye.  
<sup>†</sup>Weighted average.

decision (otoplasty — approval for those aged  $\leq 12$  years; excimer laser surgery for myopia —  $> -3.0$  dioptres; astigmatism —  $> -1.5$  dioptres). In the case of breast reduction there was a significant correlation between approval and cup size ( $\geq DD$ ), and also sternal-nipple distance  $> 29.0$  cm. For each procedure there were also several denied cases that met the above criteria, and also approved cases that failed to meet the criteria. Therefore, of the 13 criteria assessed for the three procedures, only 5 correlated with the medical advisers' decision, while for the remaining criteria, frequencies or means were similar for approved and denied cases (Table II). These findings are the result of a process which has hitherto not been subjected to statistical review, and indicate that medical advisers' opinions are often subjective, relying on factors other than those which they themselves have 'established' as being of importance.

Table III shows the average claim profile for a random subset of members submitting a claim for breast reduction when compared with claims from members applying for excimer laser surgery. From the data it is clear that the often-used justification for breast reduction (i.e. psychological, dermatological and orthopaedic problems) is not supported by claims history, and amounts claimed for breast reduction candidates were similar to those claimed by refractive surgery candidates (who would obviously not be expected to have a history of claims for psychological, dermatological or orthopaedic problems).

## DISCUSSION

Plastic and reconstructive surgeons have defined cosmetic surgery as that which is performed to reshape normal structures of the body in order to improve the patient's appearance and self-esteem. Reconstructive surgery is performed on abnormal structures caused by congenital defects, developmental abnormalities, trauma, infection, tumours or disease. It is generally performed to improve function, but may also be done to approximate a normal appearance.<sup>1</sup>





Table II. Factors taken into account by medical advisers, and relationship of these factors to final recommendation

Procedure	Factors taken into account by medical advisers	No.	Approved	Denied	P-value
Excimer laser refractive surgery	Subjects	790	62.2%	37.8%	
	Sex (ratio M/F)		37:63	35:65	NS
	Age (yrs) (mean (SD))		37.6 (10.6)	36.5 (9.4)	NS
	Myopia > -3.0 (%)		92.3	50.2	< 0.0001
	Astigmatism > -1.5 (%)		33.9	26.2	< 0.05
Breast reduction	Subjects	277	31.1%	68.9%	
	Age (yrs) (mean (SD))		31.8 (13.4)	33.6 (12.4)	NS
	Weight (kg) (mean (SD))		70.8 (12.6)	70.9 (12.2)	NS
	Height (m) (mean (SD))		1.62 (0.08)	1.63 (0.08)	NS
	Bra size (mean (SD))		37.9 (3.5)	37.6 (3.0)	NS
	Cup size > DD (%)		66.2	50.8	< 0.02
	Sternal-nipple distance > 29 cm (%)		72.1	56.0	< 0.02
Otoplasty	Subjects	77	72.4%	27.6%	
	Age < 12 yrs (%)		63.6	9.5	< 0.001
	Doctor's report submitted (%)		74.5	80.9	NS
	Photographs submitted (%)		69.1	61.9	NS

Results expressed as %, ratio, or mean (SD).

Table III. Annual totals for members claiming breast reduction cf. excimer laser benefits (1996)\*

	Breast reduction (N = 78)	Excimer laser (N = 102)	Significance (P-value)
Mean member claims <sup>†</sup> for year (SD)	R10 743 (R9 773)	R10 355 (R9 064)	0.76 (NS)

\* Groups were similar in terms of gender and age.

† Claims history covered usual categories i.e. consultations, hospitalisation, medicines and procedures. Any excessive claims for treatment of chronic psychological, dermatological or musculoskeletal problems would have resulted in a significantly higher figure for the breast reduction group.

On the basis of these definitions it is reasonable to accept that for the procedures reviewed in this paper, breast reduction and otoplasty are most likely to be cosmetic procedures, while refractive surgery is performed to correct functional problems. In terms of the above definition excimer laser surgery is clearly not cosmetic, although it can be accommodated within the definition of reconstructive surgery. This categorisation of the three reviewed procedures would suggest that applications for breast reduction and otoplasty should always be excluded in terms of medical scheme rules. In practice, however, members and their doctors invariably cite medical and/or psychological reasons when requesting these two procedures. In the case of excimer laser surgery, the debate continues between medical advisers and ophthalmologists regarding the point at which surgery becomes truly 'medically necessary'. In the meantime, doctors and patients cite dysfunction, contact lens allergy and

occupational demands as reasons for requiring surgical correction.

The funder's dilemma of sorting the reasonable from the unreasonable claim is not unique to South Africa<sup>2,3</sup> and this has led to the development of selection criteria for the various procedures. As shown in this review, for the most part the selection criteria do not stand up to statistical scrutiny, since statistically significant correlations between medical advisers' selection criteria and medical advisers' decisions were found for only 5 of 13 criteria. In terms of the positive relationships, the cases accepted for excimer laser refractive surgery were largely on the basis of the refractive error, using a formula which takes into account both myopia and astigmatism, and, according to previous recommendations of the Ophthalmology Society of South Africa,<sup>4</sup> computes to a 'spherical equivalent' of > -4.5 dioptres. Breast reduction applications almost invariably cite dermatological, psychological, or orthopaedic reasons for requirement of the procedure. However, review of claims of applicants does not support such a history (Table III). The selection criteria required by medical advisers have therefore attempted to identify the most severe cases, but the process clearly needs to be refined, as indicated in Table II. In the case of otoplasty, review of applications reveals that approval is primarily age-dependent, and this reflects an acceptance that severe forms of protruding ears can indeed adversely affect the future functioning of children in society. The approval rate for breast reduction (31.1%) indicates that most applications were



rejected because they were ultimately considered to be cosmetic in nature, while the high approval rates for refractive surgery (62.2%) and otoplasty (72.4%) indicate that there is an awareness among members and doctors as to which cases are likely to be approved (spherical equivalent  $> -4.5$  dioptres,<sup>3</sup> age  $\leq 12$  years, respectively). Analysis of the data suggests that factors such as age and sex should be eliminated from the list in the case of refractive surgery. For otoplasty, the decision was ultimately based on age, and photographic evidence and doctor's letter (both routinely submitted in order to demonstrate severity) have little to do with the decision. Review of the data for breast reduction indicates that there are indeed objective physical measures that identify the worst cases, but they must be better defined, and the value of height, weight and age is questionable in this model.

The procedures reviewed in this paper represent a significant investment both in monetary terms (Table I) and in terms of time. Members, their doctors, medical scheme staff, medical scheme committees and medical advisers all spend many hours in preparing these cases for review. As demonstrated by the results, the process has some statistical merit, but for the most part decisions appear to have been made on more subjective grounds since only 5 of 13 criteria required by the medical advisers correlated with the final decision. On the basis of statistical analysis of a process which has hitherto not been subjected to scrutiny, steps have been taken to refine the selection processes, and it is hoped that such steps will clarify the requirements for approval of the various procedures. Refractive surgery and otoplasty already have clear guidelines for approval, while analysis of the breast reduction data has yielded modified criteria which will be applied to identify the most severe cases. Application of these revised principles will be subjected to statistical analysis, and will ultimately enable the most deserving cases to have access to surgery, while those who believe they qualify as extraordinary cases will always be entitled to appeal to the scheme committee for special review.

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