

Containing costs in public sector hospitals — a strategy for the future

Lessons from a large teaching hospital

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Summary

Escalating costs of providing health care are cause for world-wide concern. In South Africa there is increasing concern about expenditure in the public and the private health care sectors. Although public sector expenditure has increased in *per capita* terms over the past 2 decades, at the micro-level comparison of expenditure over a 14-year period in one major teaching hospital region indicates that, despite increasing complexity and sophistication, real costs have not escalated at a greater rate than the consumer price index, if extraordinary factors are discounted. The development and utilisation of productivity and performance indicators are reviewed and some mechanisms for containing costs in public hospitals are discussed. These include formalised strategic planning and allocation of resources, rationalisation and re-

organisation of services, improved productivity and utilisation of scarce health manpower, improved accounting and management information systems, and the development and use of measures of outcome. Concern is expressed regarding excessive quantification of costs and efficiency to the detriment of health care in general.

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South African public sector spending as a percentage of the gross domestic product increased from 14% in 1960 to 28% in 1989 (R. P. Wronsley, Auditor-General — opening address, 8th Conference of the Epidemiological Society of Southern Africa, 5 - 7 July 1989). In looking for an explanation for this substantial increase, some degree of blame is likely to be laid at the door of what are perceived to be expensive and inappropriately sophisticated health services.

This paper aims to review the experience of a large teaching hospital region in Cape Town in the present climate of severe restriction of expenditure. Special attention will be paid to mechanisms influencing cost escalation and cost containment.

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Comparison of costs between hospitals

Owing to differing accounting procedures the comparison of costs between different hospitals and different provinces is problematic, and available figures should be assessed with caution. Table I shows comparative figures for a variety of hospitals in the past 2 decades.¹ It is evident that patient-day costs have risen considerably in real terms but with variations between hospitals.

TABLE I. COMPARISON OF A SAMPLE OF PROVINCIAL HOSPITAL PATIENT-DAY COSTS,¹ INFLATION-ADJUSTED COSTS (1985 RAND) GIVEN IN BRACKETS

Hospital	Patient-day cost (1985 rand)		
	1969/70	1980	1986/87
Academic			
Addington	20 (112)	68 (131)	171 (144)
King Edward	8 (45)	30 (58)	113 (95)
Universitas	19 (107)	147 (283)	594 (500)
Pelonomi	8 (45)	42 (81)	174 (147)
Groote Schuur	33 (185)	72 (139)	209 (176)
Baragwanath	7 (39)	34 (65)	140 (118)
Johannesburg	13 (73)	94 (181)	401 (338)
Regional			
Eshowe	4 (22)	17 (33)	62 (52)
Odendaalsrus	9 (51)	24 (46)	71 (60)
Pietersburg	5 (28)	24 (46)	83 (70)
Frere	11 (62)	32 (62)	95 (80)
Smaller (< 250 beds)			
Newcastle	4 (22)	40 (77)	138 (116)
Harrismith	—	27 (52)	85 (72)
Middelburg	6 (34)	29 (56)	96 (81)
Craddock	7 (39)	18 (35)	67 (56)

The comparative adjusted patient-day costs for GSH reflected in Table I indicate that the 1986/87 deflated costs (R176) were less than the 1969/70 costs (R185). This global analysis is superficially reassuring, but in view of the recent Cabinet decision to constrain growth in expenditure on curative health care services² further mechanisms for improving resource utilisation and controlling costs are essential if standards of patient care, teaching, research and community service are to be maintained. In addition, global analysis is unable to distinguish highly productive services with cost-effective outcomes from less productive ones.

Wilson (E. Wilson — personal communication, 1988) has analysed crude financial data for the GSHR for the period 1975/76 - 1988/89. Table II and Fig. 1 present the breakdown and expenditure for each financial year according to the four votes: personnel, consumables, non-consumables and operating expenses, as well as the consumer price index (1985 aggregate = base 100). Expenditure for each financial year has also been adjusted to 1985 costs. The expenditure for GSH itself cannot be separated from the expenditure for the region, since all administrative, professional and technical personnel costs for most hospitals in the region are reflected in the GSH expenditure figures, and cannot be allocated to individual institutions.

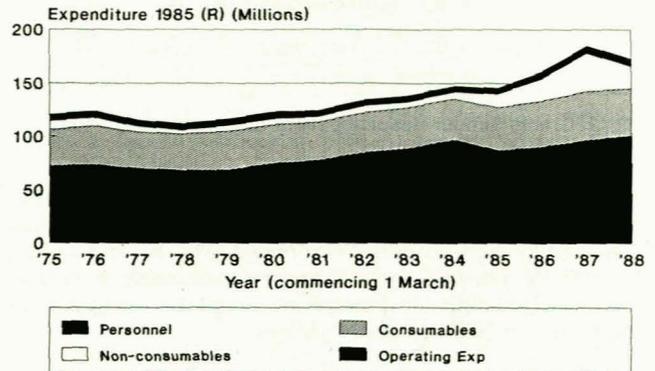


Fig. 1. GSHR total expenditure expressed in 1985 rand.

Expenditure trends in the Groote Schuur Hospital region, 1975/6 - 1988/9

The Groote Schuur Hospital Region (GSHR) consists of several hospitals, primary health care units and community services, providing comprehensive health care at all levels to communities in the Cape Peninsula. GSHR personnel in all disciplines also provide consultative, advisory and clinical services to many other hospitals throughout the Cape Province and Ciskei. The nature of the services provided has expanded considerably in the past 10 years and has also increased markedly in complexity and intensity. In addition, the planning and commissioning of the Groote Schuur Hospital Redevelopment Project has led to a significant increase in expenditure since 1985/86.

The data indicate that real expenditure over the 14-year period increased minimally until 1985/86. The marked increase from 1985/86 is due to expenditure on equipment (non-consumables), operating costs and personnel costs involved in commissioning the new hospital.

Additional explanations include general increases in public sector salaries and benefits, as well as equalisation of pay scales for all population groups.

A further observation (Fig. 1) is that the percentage of total expenditure attributable to each of the four votes has remained relatively constant, with personnel accounting for approximately 60%, consumables 27%, equipment 7% and operating expenses 4%. These percentages are consistent with hospital

TABLE II. GSHR ACTUAL AND ADJUSTED EXPENDITURE FOR SELECTED YEARS 1976/77 - 1988/89 (R)

	1975/76	1981/82	1984/85	1988/89
Personnel	23 925 663	45 910 417	82 873 022	160 034 880
Consumables	11 997 304	21 663 776	33 405 608	70 820 030
Non-consumables	2 601 066	3 250 886	5 646 312	32 775 877
Operating expenditure	2 043 615	3 269 719	4 660 223	10 944 841
Total expenditure	40 567 648	74 094 798	126 585 165	274 575 629
Cost per patient-day	50	87	136	346
Cost per patient-day (1985 = base 100)	153	146	158	217

expenditure reported world-wide and clearly indicate that savings can be achieved by reducing personnel and by controlling the utilisation of consumables.

Fig. 1 can be further adjusted for changes in patient activity, as shown in Fig. 2. This has been done utilising calculated patient days (inpatient days + one-third outpatient attendances), but does not adequately reflect the increase in admissions, throughput, complexity and intensity, nor the reduction in turnover interval. Valid indicators for measuring complexity and quality of care are also required, so that all factors can be quantified and brought into the equation.

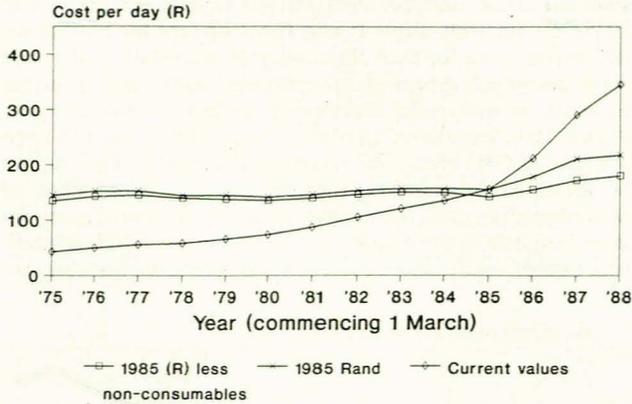


Fig. 2. Groote Schuur Hospital patient-day costs, 1975 - 1988.

Based on patient-day costs adjusted for inflation and variations in patient activity, calculations show that costs had increased by 9,3% between 1975/76 and 1984/85, and by 44% by 1988/89. The 9,3% increase may be attributable to increasing inpatient admissions, increasing complexity or to general improvements in public sector salaries.

Approach to containing costs in the GSHR

Developing a strategy

Strategic planning, using a recognised methodology and dedicated manpower, is essential for application of the systems model. Successful planning for any component of health services can only be achieved within the framework of a detailed national health plan with clearly stated and measurable goals

and objectives. Lacking this, the components must determine their own quantified objectives in relation to the available resources.

The GSHR has embarked on this process and is currently defining its mission, goals and objectives and compiling an 'inventory' of resources.

One element of the initial approach to cost containment was the development of indicators for measuring cost effectiveness, efficiency and quality. These measures were designed to enable comparison with similar institutions, and included the development of staffing, performance and productivity norms.

The development and use of indicators in the GSHR

The commonly used indicators of hospital activity are percentage occupancy, turnover intervals, throughput, stillbirth rate, maternal mortality rate, staff/bed ratios, and patient-day costs. These measure different aspects of input, process and output and can be standardised for various factors, but are of limited usefulness. At GSH attempts have been made over a period of several years to employ some of the recently developed UK Department of Health and Social Security indicators and to develop others. The crudeness of these tools is recognised and it is intended that they will be refined and improved after time.

Medical manpower productivity

Productivity indices other than simple ratios are proving problematic. Attempts have been made to analyse, by department, output of medical personnel in terms of inpatients and outpatients treated, procedures performed, teaching load and research. The validity of this analysis has been criticised and much work is still required to correct the methodological errors.

Blood and blood products utilisation

Blood and blood product utilisation has responded well to the development of indicators. Table III is a summary of data collected for a 12-month period. These figures have been analysed down to ward and unit level, and it has been possible to motivate clinical staff to approve and implement stricter protocols for the use of blood and blood products. This has resulted in reductions in the use of the more expensive products, and in generally wasteful practices.

TABLE III. BLOOD AND BLOOD PRODUCTS CONSUMPTION AND INDICATORS: GROOTE SCHUUR HOSPITAL REGION, 1988

	Surgery	Medicine	Obstetrics and gynaecology	Emergency	Totals
Total units	43 732	32 560	12 169	347	88 808
Rbc-containing	13 771	17 149	1 251	3	45 859
Non-rbc-containing	10 809	3 582	3 498	4	17 893
% cancelled — non-rbc units	56	30	47	1	46
Ratio rbc/non-rbc use	1,39	0,69	5,93	0,01	8,84
Indicators: cost (R) per					
Bed-day	11,73	13,81	3,41	—	11,13
Patient-day	12,89	13,74	4,09	—	12,15
Procedure	88,61	—	77,53	—	117,51
Surgical hour	68,18	—	21,80	—	101,30

rbc = red blood cell.

Discussion

Public and private sector hospitals are subject to cost-escalating pressures. Factors common to both public and private sectors include general price inflation, rapid technological development and societal demands for increasing sophistication in medical care. Certain factors specifically affect the public health sector in South Africa. These include rapidly escalating need and demand for health care, underutilisation of some facilities resulting from the policy of segregation, possible inefficiency in the many hospitals with more than 800 beds,^{3,4} and the excessive administrative costs and duplication of services that result from the present fragmentation of health services.

However, it is important to note that certain cost-containing factors are inherent in the public sector, and that these affect public hospitals as well. Among these are payroll constraints arising from the lack of wage-bargaining mechanisms and the illegitimacy of strike action, remuneration packages that lag behind increases in the consumer price index and are not market-related, constraints on expansion of personnel numbers, and the absence of the profit motive. The public health service also benefits from economies of scale, centralised servicing and group purchasing (i.e. the State Tender System).

Unlike several other public sector hospitals, the GSHR has successfully contained costs in most categories of expenditure over the last decade. This is in part attributable to the development and implementation of a planning strategy. The GSHR experience to date can assist in formulating certain principles applicable to private as well as to public sector hospitals and to the public health sector in general.

The planning process can usefully be discussed in terms of the 'inputs', 'process' and 'output/outcome' stages.

Inputs

The allocation of resources to meet defined goals and objectives must be determined in consultation with communities and health care professionals and must be in accordance with accepted ethical principles and humanitarian considerations. Information and accounting systems must be developed to support and improve management of resources. Indices or indicators that utilise routine data can be usefully applied, particularly in relation to reporting by exception. Information systems should provide for automatic feedback to the health care professionals who generate the data and determine resource consumption at the operating level, to calculate, inform and provide tools for continuing evaluation of their own performance.

Process

All organisational structures should be reviewed with a view to rationalisation. Within organisations, structures such as committees and work groups need to be instituted (if they are not already in existence) to plan, implement, monitor and evaluate cost-awareness programmes. These structures should form interlinking cells in the organisational matrix so that managers at all levels and in every discipline can participate in the process. These structures should be responsible, on a decentralised basis, for all management functions, not only those related to cost awareness. Utilisation review should be incorporated in their terms of reference.

Human resource management is of prime importance in regard to improving cost effectiveness and efficiency, and

must be directed towards ensuring the development of each individual's full potential. Education in general and specific training in interpersonal relations, and in economical and correct use of supplies, equipment and facilities, will greatly improve organisational effectiveness.

The application of epidemiological methods to improving hospital effectiveness and efficiency has been proven to be highly successful.⁵ Skilled epidemiologists could contribute to significant improvements in decision-making in hospital and health service management, and should be employed by all health authorities for this purpose.

Marketing cost-awareness concepts by means of 'commercial' campaigns aimed at specific targets is more likely to achieve the desired results than are directives from the central authorities.

Output/outcome

The development and use of measures of output and outcome in health care are essential for achieving health service objectives. If deliberate rationing is to be a strategy for cost containment, then cutbacks must be effected in the types of care which have the lowest expected value. Expected value is defined as the probability of improving the clinical outcome multiplied by the value placed on that outcome.^{6,7}

Finally, it must be stressed that containing costs in public sector hospitals, or in the health service as a whole, cannot be addressed simplistically or out of context. Even the most effective cost-containment measures will not achieve improvements in health services if political, social, economic and ethical issues that adversely affect the delivery of health care are not also addressed.

It is necessary, as well, to warn against too much reliance on quantification. Frequent measuring can distort organisational efforts because, as a rule, some aspects of output are more measurable than others. Excessive measurement tends to encourage overproduction of highly measurable items and neglect of the less measurable ones.⁸ Benefits, quality and the intangible attributes of compassion, care and beneficence cannot be quantified. These must be consciously and conscientiously preserved lest in weighing up and cutting down the costs of caring, health care itself hangs in the balance..

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