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VALUE ENGINEERING - A NEW CONCEPT IN REDUCING COST OF BURN CARE

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*SUMMARY : **An attempt was made to reduce the cost of burn care by adopting certain simple methods without in any way compromising the quality of treatment. The important factors which escalate the cost of treatment are the expensive dressing materials and high cost of antibiotics. By implementing the Value Engineering methods, savings in cost of dressing materials and antibiotics of 50.07% and 49.35% respectively were achieved.***

It is a well known fact that a reasonable standard of burn care is expensive and few can afford it. There had been significant advancements in various aspects of burn therapy in the last two to three decades, but not much attention has been paid to the cost factor. A developing country like ours has to consider this aspect seriously in order to optimise the burn facility to help the patient as well as the institution. Cost control is an emerging trend even in the Western world, where expertise of high order exists in most burn units.

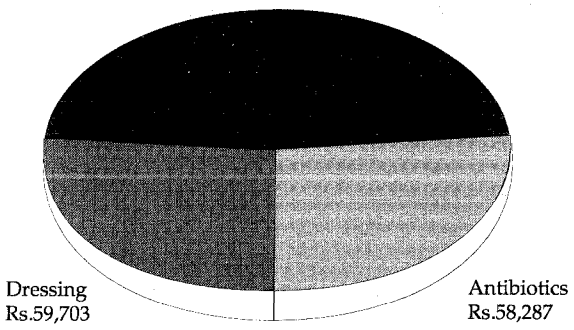
We had to adopt measures to bring down cost as a matter of policy when our organisation was passing through a lean phase, but gradually it became a routine even in better times. We could make it possible only by the useful and productive technique of value engineering.

Value engineering is a systematic approach aimed at achieving the desired functions of a product, a process, a system or a service at minimum overall cost, without in any way affecting the quality, reliability, performance and safety.

The prime objective of this paper is to introduce the concept of value engineering and highlight its application in a burn unit. The project was carried out in accordance with the standard value engineering job plan.

SELECTION AND INVESTIGATION OF PROJECT

Cost of all the consumable items used in the burns unit during a six month period from August '92 to January '93 was analysed. It was found that the cost of dressing materials and cost of antibiotics together were responsible for 50% of the total revenue budget of the burn unit (Fig 1).



Total Expenditure - Rs.2,35,992
Dressing + Antibiotics = 50.00%

(Fig - 1) Expenditure before Value Engineering Measures (Aug '92 - Jan '93)

Therefore it was decided to concentrate on these two items and rationalise their use.

The dressing materials included :-

A. Silver sulphadiazine cream, Furacin ointment and Soframycin cream.
B. Gauze Thaan, bandages and cotton rolls.
C. Savlon and Betadine.
D. Gloves and adhesive plasters.

The antibiotics included :-

A. Antibiotics drugs.
B. Disposable syringes.
C. Distilled water ampoules.

Cost analysis was carried out for one year period, April '93 to March '94 after implementation of value

engineering measures. Cost saving was calculated and other observations were noted.

ANALYSIS OF EXISTING FUNCTIONS AND COST

The high cost areas were indentified through brain storming sessions.

Dressing procedure:-

A. Use of large number of gamgee pads.

B. Prolonged use of silver sulphadiazine cream.

C. Large number of bandages particularly when used to secure gamgee pads covering torso burns.

D. Conventional delayed excision of slough requiring frequent multiple dressings and prolonged hospital stay.

COST ANALYSIS - DRESSING MATERIALS - AUGUST '92 TO JANUARY '93

Total cost		Rs. 59,703.19
Number of dressings	Indoor	324
	outdoor	139
	Total	463
Average cost per dressing		Rs. 128.95

Antibiotics :-

a. Use of prophylactic antibiotics ampicillin, cloxacillin and gentamycin, alone or in combination.

b. Use of combination of broad-spectrum antibiotics in the presence of dead tissue in the form of deep burn.

COST ANALYSIS-ANTIBIOTICS-AUGUST '92 TO JANUARY '93

Total cost	Rs. 58,287.47
Total admissions	58.00
Average cost per patient	Rs. 1004.95

A fact to be noted in regard to the above mentioned data is that, only one half of our burn unit was functional out of a total of 20 beds in the analysis period.

EVALUATION AND IMPLEMENTATION OF ALTERNATIVES

The most important fundamental principle of value engineering is to minimise cost without compromising the quality. Following alternatives were carefully evaluated and finally implemented after a trial period of six weeks.

Dressing procedure:-

a. Exposure technique was employed for all major burns. These cases were only washed and silver sulphadiazine cream applied for the first eight to ten post burn days. This strategy saved the cost of five to six dressings and helped constant observation of the wound to plan early excision of deep burn. Some of the cases of the torso burns were nursed on a CLINITRON support system to expedite healing without the need for bulky dressings.

b. Gamgee pads are essential for burn wound dressing and can be made in various sizes. It is customary to use the full thickness of commercially available cotton rolls for making gamgee pads. We have used only half the thickness of cotton rolls to make three different sizes of gamgee pads. This was found to be enough for most cases and wastage was eliminated.

c. One third jar of silver sulphadiazine cream is usually necessary to cover about 30% of body surface area burn. We restricted the use of silver sulphadiazine cream for the first five to six dressings on alternate days. However in many cases before this period early excision and skin grafting was performed which obviated the need for dressing. Multiple crisscross incisions over the eschar helped adequate penetration of the cream and ensured optimum utilization. For preparing a granulating area for grafting a combination of eusol in three parts and Betadine in one part soaked in gauze is very effective and inexpensive.

d. It was not necessary to use bandages in torso burns to secure gamgee pads and for each such dressing about 10 to 20 bandages were required costing about Rs.30/- to Rs.50/-. A suitably designed cotton sheet with shoulder strap could be wrapped around the trunk and secured with laces like abdominal binders. We found this to be cost effective and technically easy to use.

e. Primary tangential excision of deep burn followed by skin grafting in 28 cases in one year period saved cost substantially by

i reducing the number of dressing changes required.

ii reducing the days of hospital stay.

iii allowing early return to work, thereby reducing the loss of manhours.

COST ANALYSIS - DRESSING MATERIALS - APRIL '93 TO MARCH '94

Total cost		Rs. 1,56,327
Total number of dressings	Indoor	1425
	Outdoor	995
	Total	2420
Average cost per dressing		Rs. 64.60

Antibiotics:-

It was the routine to administer prophylactic antibiotics to all burn patients earlier. From March '93 we stopped this practice. Although this aspect of burn therapy is a debatable issue, on careful analysis of the outcome of these cases we found this practice to be safe and cost effective. However we do use a combination of injectable ampicillin and cloxacillin or gentamycin and cloxacillin in obviously infected cases.

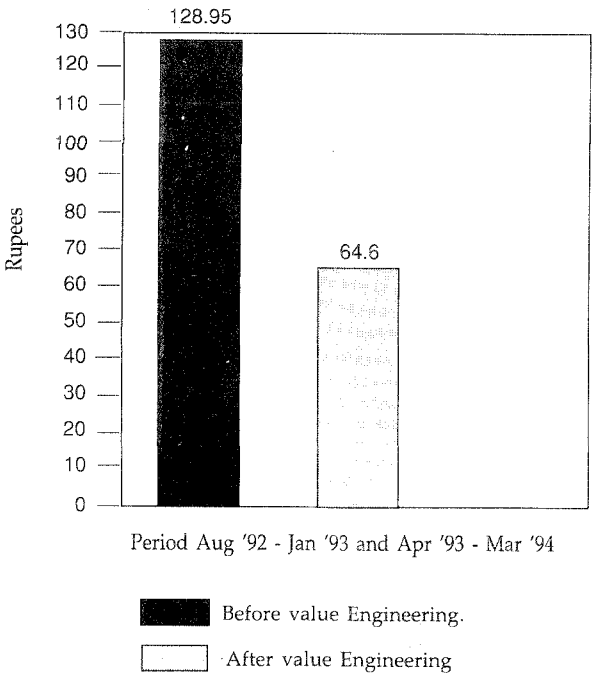
Patients with deep burn waiting for excisional surgery received broad-spectrum antibiotics alone or in combination for 10 days, starting one day prior to surgery. Choice of antibiotics depended upon surface swab studies.

COST ANALYSIS - ANTIBIOTICS - APRIL '93 TO MARCH '94

COST	Rs. 1,46,257.00
Antibiotics purchased by Non-entitled patients	Rs. 21,396.50
Total cost	Rs. 1,67,653.50
Total number of patients treated	338
Average cost per patient	Rs. 496.02

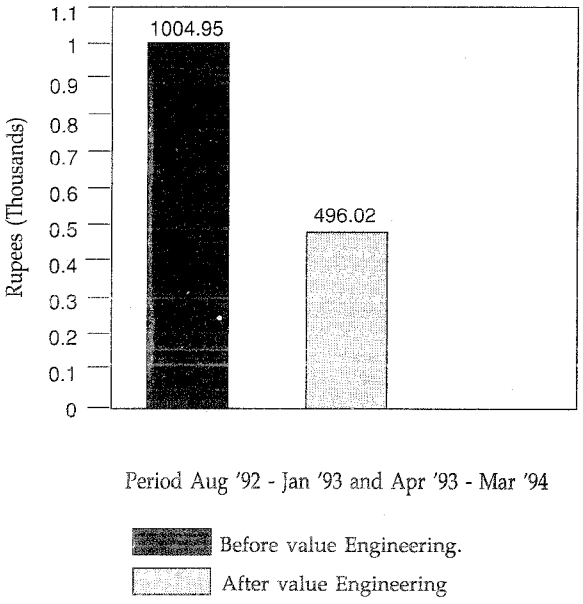
OBSERVATIONS

1. Cost of dressing materials saved per dressing after implementation of value engineering measure was 50.07% (Fig 2).



(Fig - 2) Average cost Per Dressing

2. Cost of antibiotics saved per patient after implementation of value engineering measures was 49.35 % (Fig 3).



(Fig - 3) Average cost of antibiotics per patient

3. Incidence of infection and ultimate healing time remained the same (Chart I).

Comparison of Mortality, Morbidity and Hospital Stay

Chart I

	Before VE	After VE
Mortality	21/58 - 36.2 %	119/338 - 35.2 %
Morbidity *	15/58 - 25.8 %	38/338 - 11.2 %
Average Hospital Stay	22.5 Days	11.4 Days

* Morbidity indicates frank infection, loss of graft and delayed healing.
VE - Value Engineering

4. The standard of working improved since the team was functioning according to a well laid down protocol. This factor was responsible for bringing down the morbidity and length of hospital stay.
5. Awareness was generated to provide quality service at low cost among the members of the burn unit including doctors, nurses, technicians and hospital attendants.
6. Initial unwillingness to accept the change by some members was the only problem encountered.

CONCLUSION

The various measures we have adopted for saving cost are by no means universal. Each hospital has to have its own policy depending upon the nature of set up and clientele. The aim of this exercise was to ensure effective cost control and to provide good quality treatment for burns in an organised manner through the principles of value engineering. Through this study we have successfully employed the concept of value engineering in two important aspects of burn care.

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