The cost of diabetic foot conditions

H D R C Siriwardana[1] and **D Weerasekera**[2]

Abstract

Objectives To estimate the cost of management of diabetic foot ulcers and the standards of foot-care practices.

Methods Patients admitted with diabetic foot ulcers (DFU) to the University Surgical Unit, Colombo South Teaching Hospital during 6 months were audited. Costs were obtained from the Medical Supplies Division, Central Blood Bank, Director General of Laboratory Services and 3 leading private hospitals.

Results 144 (4.3% of admissions) diabetic patients occupied 10.1% of hospital beds. Average stay was 10.9 days. 55 daily-paid workers lost Rs.1076.36 for each admission. Each family has spent Rs.1811.60. The State has spent Rs.14 936 during the hospital stay of each patient.

Majority of 61.8%, DFUs started as preventable minor trauma. 48% knew the importance of foot-care but practices remained poor. Worst affected were the patients followed up at peripheral units. Only 11.1% feet were completely assessed by a doctor.

Conclusions DFUs have a serious impact on patients and the State. Standards of foot-care remain poor among patients. A well planned foot-care program will be highly cost-effective.

[1]*Registrar, University Surgical Unit, Teaching Hospital, Colombo South,* and [2]*Senior Lecturer, Department of Surgery, Faculty of Sri Jayawardenepura.*

Correspondence: HDRCS, *e-mail <rohansiriwardana@yahoo.com>.* *Received 7 December 2006, and revised version accepted 29 March 2007. Competing interests: none declared.*

Introduction

In Sri Lanka there are no published data on the cost of managing diabetic foot ulcers. We decided to estimate the in-hospital cost and assess the foot-care practices in patients with diabetic foot ulcers (DFU) presenting to University Surgical Unit, Colombo South Teaching Hospital from October 2005 to March 2006.

Methods

Data collection was performed using a questionnaire and a data sheet filled by the patient and the doctor. The estimations were made according to the WHO manual for hospital cost analysis [1]. Three main cost centres were identified: 1) ward expenses 2) theatre expenses 3) patients' own expenses.

The cost in human resources was calculated according to 2006 salaries. Total life of the building was taken as 30 years, furniture as 10 years and machinery as 5 years. Inflation rate was taken as 5.8%. For calculation of unit costs, monthly average of the preceding year was estimated.

In calculating ward expenses drugs, investigations, dressings, salaries, blood products, meals, laundry, capital expenses, electricity and water bills were considered as inputs. Ulcers were categorised in to three groups (table1) based on "model costing" [2]. As there were no figures available for the state sector, cost of investigations were derived from the private sector. Prices of drugs and material used were based on 2006 Medical Supplies Division figures. The cost of meals was estimated using one months expenses in the hospital kitchen. Cost of transfusions was estimated according to 2005 Central Blood Bank figures. Laundry charges for one month in the surgical building were obtained. Expenses on electricity and water were calculated using the total hospital bill and the number of admissions for a month. Loss of income during hospital admission and expenses during the family visits were considered as the expenses on the family.

Table 1. **Arbitrary division of ulcers in to three models according to the resources consumed**

Materials	*Small*	*Medium*	*Large*
Gauze swabs	4	5-10 (7)	>10 (15)
Gauze towel	0	2	>2 (4)
Bandage	1	2	>2 (3)
Betadine	10ml	11-50ml (25ml)	>50ml (75ml)
Saline	100ml	100-200ml (150ml)	>200ml (250ml)
Gloves pairs	1	1	2
Nursing time	10min	15min	20min
Theatre time	20min	30min	40min

Foot-care practices

Foot-care practices were classified as: 1) wearing footwear at all times. 2) daily inspection of feet at least once. 3) washing and cleaning of feet at least once 4) using talc/cream/massaging.

Complete foot examination by a doctor implies sensory and motor examination, and measurement of ankle brachial pressure index.

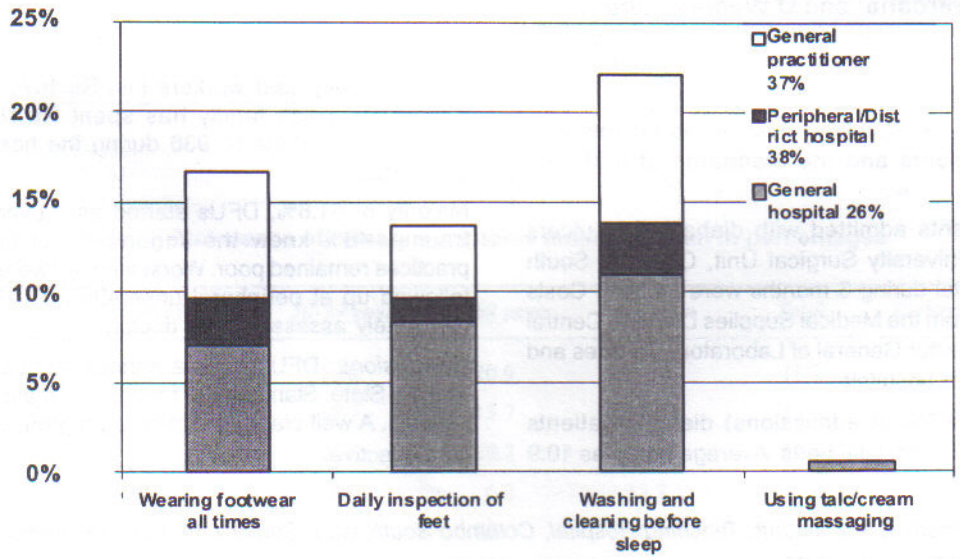

Figure1. **Level of foot-care practices and the institutions treating the patients**

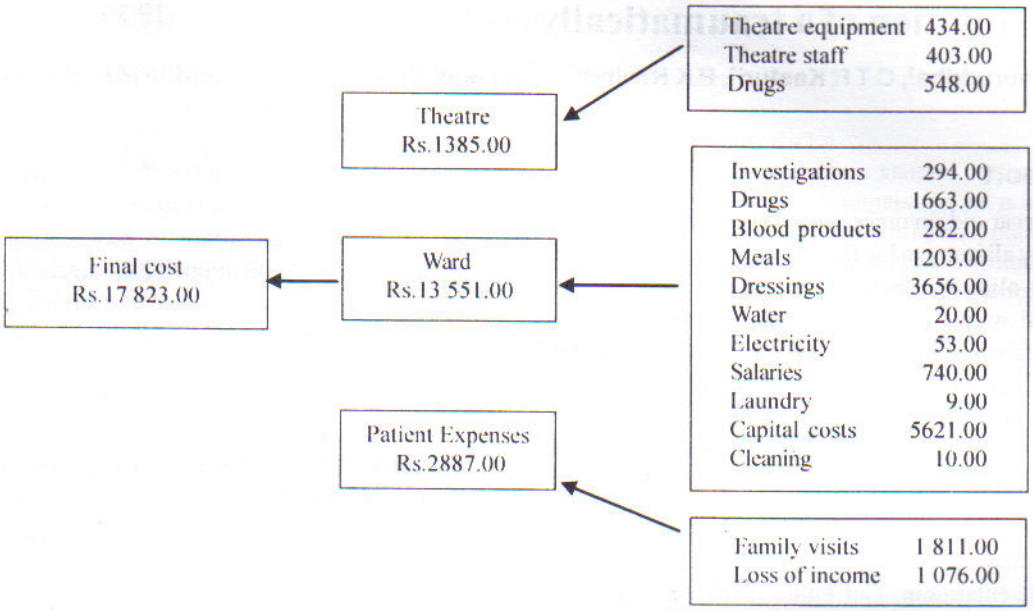

Figure 2. **The final in-hospital cost per patient and the inputs for the each cost centre (all in Sri Lankan Rupees per patient)**

Results

During the period 144 patients with DFU were admitted accounting for 4.3% of the ward admissions. The average stay was 10.9 days, occupying 10% of the beds. Only 11% of the feet had been assessed by a doctor. Overall foot-care appeared poor (figure1). Majority of DFU (62%) started after minor trauma.

A total of Rs.14 936 was spent as ward and theatre expenses (figure 2). Loss of income suffered by 55 daily-paid workers during admission was audited as Rs.1076 per patient. A total of 2572 patient visits were performed by the family members, averaging Rs.1811 for a family.

Discussion

A total of Rs.17 823 was spent for the patient management. Overall foot-care practices were poor among them. Majority of the foot conditions started after a minor trauma that could have been easily prevented with proper footwear.

In patents with diabetes, foot-care is as important as medical therapy. More than 50 % reduction in amputation rates is reported after implementation of foot-care programs involving a podiatrist [3]. Training and employing a podiatrist dedicated to diabetic foot-care, working at least in main centres with a referral system, would be a cost-effective [4, 5, 6, 7] long term proposition.

Conclusions

Diabetic foot conditions cause a serious impact on the health care system and the patients themselves. Foot-care practices remain poor among them. This emphasises the need of a properly planned foot-care programme for diabetes patients.

References

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