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Criteria for prosthetic provision: "he who pays the piper calls the tune"

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Abstract

Previously instituted policies regarding prosthetic limb provision had been deemed dependable. A follow-up home visit study showed that 18 of 60 patients that had been provided with prostheses, did not make use of them. Analysis showed that three categories of patients made up the large majority of the non-users; double amputees, blind persons and those with psychiatric disorders. In order to attempt to eliminate the wastage of prosthetic provision to non-ambulators a new policy decision was made. Doubtful ambulators and those from the three aforementioned categories will be initially provided with temporary prostheses. Only after a period of months of temporary prosthetic usage at home will a decision be made as to whether a permanent prosthesis will be issued.

Introduction

The Lewis Institute of Rehabilitation is responsible for the administration of the provision of prostheses, orthoses and orthopaedic shoes on behalf of the Ministry of Health. Throughout the country there are accredited doctors who are certified to order these provisions on behalf of the Institute. The great majority of these doctors are senior staff members who work within rehabilitation centres. It was anticipated that these physicians, in the light of their experience, would be able to predict which amputees had ambulatory potential and that prostheses would only be ordered for those that filled this criteria. The Ministry of Health does not supply cosmetic prostheses.

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A randomised study was carried out to examine whether the amputees who had received prostheses were in fact using them.

Material and methods

Two of the authors (AM and GM) were both final year physiotherapy students at the time and visited 60 patients in their homes. In order to simplify the logistics of carrying out such a study the only selective criteria were patient amputation due to diabetes and/or vascular disease and the patients' addresses. Sixty patients who had received their prostheses between 1991-1994 were included in the study. Patients were visited at their homes, interviewed as to their activities of daily living, their ambulatory capabilities and were then asked to perform certain tasks. Patients donned and doffed their prostheses, and walked within the home. Those that reported that they were able to use the prosthesis outside were then examined descending and climbing the stairs to their apartments and walking in the neighbourhood. Table 1 records the sex, average age of the group, and level of amputation.

Results

The use made by the amputees of the prosthesis was divided into four self-explanatory groups and the results are shown in Table 2. Of the 60 amputees reviewed only 42 used their prosthesis; the duration of usage is shown in Table 2. In order to understand more fully the relationship between the patients' intrinsic ability and prosthetic usage, three criteria were used to categorise the amputees. Patients were assessed as to whether they were independent, minimally handicapped (could walk if the prosthesis was donned by another person) and

Table 1. Age, sex distribution and level of amputation of the patients visited at home.

Sex	Number	Age	Level of amputation	
Female	17	35-90 Average 68	TF KD TT TF + TT	4 1 10 2
Male	43	45-90 Average 64	TF TT TT + TT TT + TF TF + TF	13 25 2 2 1

TT = trans-tibial KD = knee disarticulation TF = trans-femoral

Table 2. A summary of the findings regarding the use made of the provided prostheses.

	All day	Occasional – a few hours every day	Minimal – a few hours a week	Never wear the prosthesis
Prosthetic usage	19 of 42 31.6%	16 of 42 26.6%	7 of 42 11.6%	18 of 60 30%

whether they required constant assistance in almost all activities of daily living. Table 3 shows the patients' capabilities in the light of their prosthetic usage. Eighteen of the 60 patients never don a prosthesis.

Discussion

Most systems of health provision suffer from a common problem – insufficient funding – hence optimal value is essential in the spending of these valuable funds (Pruitt *et al.*, 1996; Perler, 1995). Many critical decisions need to be taken at an administrative level e.g. are all amputees entitled to receive a limb prosthesis? If the answer to this question is affirmative then no problem exists. The prosthesis will serve a cosmetic function in addition to being an ambulatory aid. If on the other hand a decision is made to save money and to provide prostheses only to ambulators then an effective patient assessment mechanism is necessary.

It had been presumed prior to this study, that this mechanism was in place. A limited number of trained physicians working within orthopaedic/rehabilitation departments were accredited to order prostheses on behalf of the Institute. Despite this controlled prescription almost half of the patients examined barely functioned with their prostheses.

In order to understand the pitfalls in the decision-making process the information on non-ambulatory patients was analysed to search for any common denominators (Cutson and Bongiorni, 1996). It became apparent that double amputees, other than bilateral trans-tibial amputees, patients with psychotic disturbances

Table 3. The usage made of the prostheses in the light of the patients' functional capabilities.

	All day	Occasional	Minimal	Non-users
Totally independent	19	3	1 (TT + TT)	1
Minimal handicap		11	2 (TT + TT)	3
Constant assistance		2	4	14 (4 x double amputation other than TT + TT)

TT = trans-tibial

and those who were blind dominated the non-ambulators.

Another group of patients who were non-ambulators can categorised as "change of status patients". They were patients who were provided with prostheses and ambulated until a further deterioration occurred in their medical status e.g. advancing claudication, a problem in the remaining limb or a cerebrovascular accident. When this change of status, which was not predictable at the time of prosthetic provision was eliminated from the group of non-ambulators, the aforementioned medical conditions represented the vast majority of the non-ambulators.

Because of the desire to provide a better method of assessment and to avoid the non-provision of a prosthesis to a potential ambulator an alternative modality of assessment was implemented. New amputees from the three problematic categories will be provided with temporary prostheses initially and only after they have proved their ability to walk over a number of months will a definitive prosthesis be prescribed. Any other amputee whose ambulatory potential is questionable will also initially receive a temporary prosthesis. Temporary prosthetic construction kits are commercially available. They contain interchangeable modular components including stump sockets and brims of varying sizes. These adaptive components (Nielen *et al.*, 1994) provide the main benefits of reusability and hence financial saving. It is hoped that this method of assessment will do away with the wasteful provision of unused methods.

Objective criteria are the essence of policy making decisions (Polliack and Moser, 1997) and although in medicine one should refrain from using words such as 'always' or 'never' one should understand that *he who pays the piper calls the tune.*

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