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Project Title

Economic Cost for Transfemoral and Transtibial Amputee Patients in Singapore Requiring Outpatient Prosthetic Care and Rehabilitation: A Retrospective Study One Year Post-Amputation

Organisation(s) Involved

Tan Tock Seng Hospital

Project Category

Research

Keywords

Research, Funding Model, Diabetics, Limb Amputation, Cost Effectiveness, Affordable Care, Quality Improvement, Prosthetic & Orthotics, Outpatient Care, Mobility Rehabilitation, Access to Care, Chronic Disease Management, Transfemoral and Transtibial Amputees, Tan Tock Seng Hospital,Retrospective Study, SOC Subsidy, Pioneer Generation, Medi-Save, Senior Mobility and Enabling Fund

Name and Email of Project Contact Person(s)

Name: Michelle Lai, Executive (Operations), Allied Health Services & Pharmacy, TTSH

Email: Michelle_SE_LAI@ttsh.com.sg

Economic Cost for Transfemoral and Transtibial Amputee Patients in Singapore Requiring Outpatient Prosthetic Care and Rehabilitation: A Retrospective Study One Year Post-Amputation

LAI Shi Eu[1] and ANUAR Khalid[2]

[1]Executive (Operations), Allied Health Services & Pharmacy, Tan Tock Seng Hospital;
[2]Head of Department, Foot Care & Limb Design Centre, Tan Tock Seng Hospital

Tan Tock Seng HOSPITAL

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BACKGROUND

With the growing epidemic of Type 2 diabetes and its complications such as limb amputation, economic burden to the individual and society will increase. Funding models for outpatient care has evolved to help reduce direct cost to patients who require long periods of outpatient rehabilitation. An additional burden would be the cost of suitable prosthesis in order for amputees to regain mobility and return to gainful employment.

This study investigates the estimated direct cost for outpatient prosthetic care and rehabilitation for transfemoral and transtibial amputees in Singapore.

METHODS

Retrospective data was extracted from patients referred to Foot Care & Limb Design Centre for prosthetic care and rehabilitation. Figure 1 below illustrates the scope of the study based on an amputee patient journey.

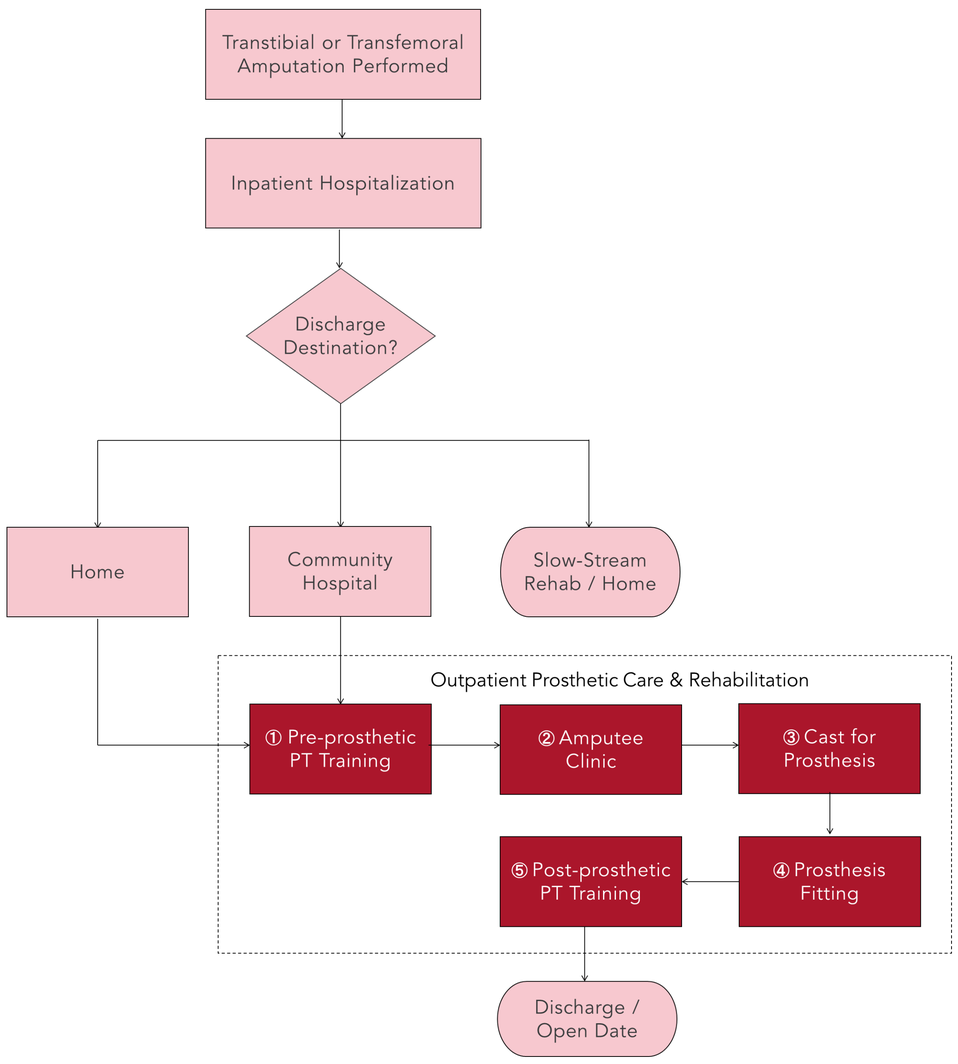

Figure 1: Patient journey post-amputation

Inclusion criteria includes single transfemoral or transtibial amputation done in 2014, fitted with category K2-level prosthesis and completed physiotherapy rehabilitation within one year post-operative. Table 1 below specifies the definition of the different K levels. Exclusion criteria include no major complications, incomplete rehabilitation sessions or mortality.

K Levels	Functional Description
K0	Has the ability or potential to ambulate or transfer safely with or without assistance and a prosthesis does not enhance their quality of life or mobility
K1	Has the ability or potential to use a prosthesis for transfers or ambulation on level surfaces at fixed cadence - a typical limited or unlimited household ambulator
K2	Has the ability or potential for ambulation with the ability to traverse low-level environmental barriers such as curbs, stairs, or uneven surfaces - a typical community ambulator
K3	Has the ability or potential for ambulation with variable cadence - a typical community ambulator with the ability to traverse most environmental barriers and may have vocational, therapeutic, or exercise activity that demands prosthetic use beyond simple locomotion
K4	Has the ability or potential for prosthetic ambulation that exceeds basic ambulation skills, exhibiting high impact, stress, or energy levels - typical of the prosthetic demands of the child, active adult, or athlete

Table 1: K Classification Levels[1]

RESULTS

Out of 80 patients reviewed, 31 met the criteria. The average total cost were SGD 154.21 (Rehabilitation Physician), SGD 3,644.98 (Prosthetics) and SGD 581.20 (Physiotherapy); with an average outpatient total cost of SGD 4,306.70. The average out-of-pocket cost for a patient receiving a K2-level prosthesis was SGD 2,737.

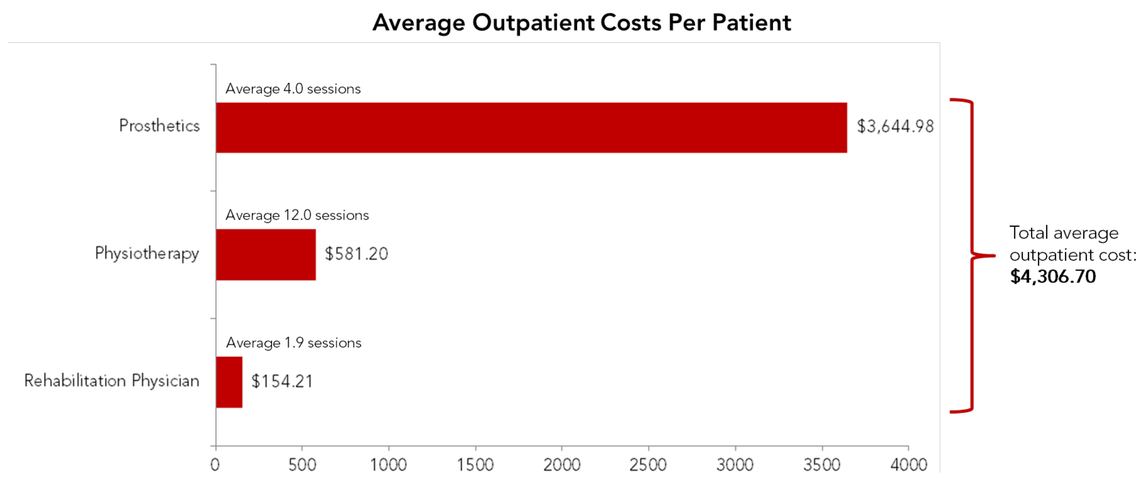

Figure 2: Average outpatient costs per patient

Pictures (left to right): Multi-disciplinary Amputee Clinic led by the Rehabilitation Physician at Foot Care & Limb Design Centre; Fitting of prosthetic limb by Prosthetist; Prosthetic physiotherapy training by Physiotherapist

DISCUSSION

Amputation is a costly consequence for diabetic patients. The procedure requires prolonged hospitalization and a lengthy rehabilitation process that may take 6 to 12 months. Of the 31 patients we reviewed, 15 (48%) of them required financial assistance for their outpatient prosthetic care and rehabilitation.

New funding models rolled out for outpatient care in Singapore includes the Enhanced SOC Subsidy and Pioneer Generation introduced in 2014; Flexi-Medisave and; expansion of the Chronic Disease Management Programme in 2015. The Senior Mobility and Enabling Fund started in 2013 allowed easy access for seniors to receive assistive devices such as motorized wheelchairs. More needs to be done to include expensive mobility devices such as prosthetic legs to better support our amputee patients.

Rehabilitation aims to assist the amputee patients to regain their function and resume their pre-morbid interests and work. It is important for these amputee patients to be provided the appropriate levels of funding in order for them to receive their prosthesis, complete their rehabilitation, optimize their recovery and hence transit to a successful re-employment or revocation.

Cost estimation of decreased productivity, non-participating in labour force due to employment loss, inpatient stay, surgery, transport and future prosthetic replacement costs were not investigated in this study. As such, the total economic burden to an amputee patient and society would be far larger.

CONCLUSION

Outpatient funding may require further augmentation to ensure amputee patients have the financial means to receive their prosthesis and attend rehabilitation in order to be functional again.

REFERENCES

1. Centers for Medicare and Medicaid Services. U.S. Department of Health and Human Services: HCFA Common Procedure Coding System (HCPCS). Springfield (VA): U.S. Department of Commerce, National Technical Information Service; 2001.