BACPAR

BRITISH ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS IN AMPUTEE REHABILITATION

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Contents

Welcome

Hello All

Welcome to the Spring Journal for 2015.

I hope you agree that the 2014 Conference was a resounding success despite some timekeeping issues which I promise the 2015 Conference organising committee and invited speakers will take on board.

The 2014 AGM was well attended and decisions were made re:

- No longer purchasing SAGE articles for the membership to access
- To disband the Trent and South West regions if the Regional Rep positions for these regions were not filled. Thankfully we have had offers to take on the Trent regional rep position, and at the time of writing the membership secretary is in negotiation with someone in the South West to take on that role.
- The membership agreed to support the Massive Open Online Course for Physiopedia re Amputee rehabilitation. The online course is due to run from June and BACPAR members have indeed signed up to create some of the content.
- An ARC motion was generated by Fiona Smith but was not accepted, the CSP ARC motion committee stating that the development of Consultant Physiotherapists was still an active project for the CSP.
- A new Honorary secretary was elected – welcome to Amy Lee. Go to http://bacpar.csp.org.uk/committee to find out more about Amy and the other Executive committee post holders and thanks again to Lucy Holt for her work in this role up until the 2014 AGM.

The minutes are available to the membership at http://bacpar.csp.org.uk/documents/2014-agm-minutes?networkid=36 so please take time to take a look in anticipation of the 2015 AGM.

2015 is a big year for worldwide networking in Amputee rehabilitation. Two opportunities to meet up with your peers from across the world are the WCPT Congress in Singapore in May http://www.wcpt.org/congress, where for the first time there will be symposium and networking sessions for amputee rehabilitation and then in June ISPO Lyon http://www.ispo2015.org/ispo-congress.php. BACPAR are proud to support members in their attendance at these conferences through their successful applications for Bursaries.
To those presenting in Singapore and Lyon- we wish you all the very best and hope that you will share your experiences with the membership at the 2015 BACPAR conference and/or through the Autumn edition of this Journal.

So see you in Lyon (I shall be there) or at the 2015 Conference, which we are currently planning.

As ever if you want more information re the running of the BACPAR Executive Committee or you have ideas re what BACPAR should be involved in please do not hesitate to contact me at Louise.Tisdale@nhs.net

Louise Tisdale - BACPAR Chair 2015

BACPAR Conference 2014

There was a buzzing atmosphere in the reception area for the BACPAR Annual Conference which was well supported by the sponsors. Great to see people using the time to both network meet new people and check out all the products available from the sponsors.

The first presentation by Mark Buckley took us back to when I used to know stuff (apologies to everyone else!) A tour round McMurrays tests etc.! Excellent revision and creaking brains thinking that perhaps I could remember if I tried! Possibly not so early at the start of conference! But it was a great reminder of all the things we should be looking for and the presentation will be on the BACPAR website.

The second presentation was by Talia Lea "My Stump looks like this should I panic?" There were plenty of gory pictures with excellent practical information. Information on acute phases and rehabilitation with PPAM aid use being mentioned. It generated a lot of questions and lots of discussion.

Next up was Louise Briggs talking about treating people with dementia. It was a fascinating talk with lots of pointers to think about when we are treating patients. In 2050 there will be 2 million people with dementia.

The talk had a lot of statistics which are concerning plus information about what the symptoms are and how they relate to our patients and how dementia will affect rehabilitation. The whole talk challenged your concept of how you treat people with dementia and looked at new ways to creatively accommodate people with dementia.

Louise deservedly won the Louise White Best Speaker award for her talk for this presentation.

ISPO was up next with Laura Burgess presenting an outline on specialist commissioning. The service Specification for prosthetics has been produced and is now being used. Then a quick run though what ISPO is about and its functions. The AGM followed next. Which was well attended and gave a comprehensive view of what BACPAR have been doing for the past year.

Lunch next on the agenda which gave some time for networking and viewing the stands again.

Carolyn Hirons was up next along with Helen Scott, Carolyn was presenting on the higher activity knee using Nigel as the demonstrator (he did very well only looking really nervous once!) There was an excellent level of information given out and again generation of a lot of discussion which is always good.

Helen's talk was aimed at getting the basics across to start the rehabilitation process. This was really well received and feedback showed that people felt they had learned something and felt they were able to apply this within their practise. Kate Lancaster was up next with her presentation about the Balance Group they have set up. It looked at normal falling and amputee falling and comparison of risk profiles. Using the BACPAR Falls guidelines a group was devised with 10 exercise at 2 minutes each suitable for all patients. Useful to know that this is working and that it can be adapted to each individual.

Phantom Limb Pain Relax sock feedback from the Randomised control trial. This was a feedback session from the controlled trial taking place in Leeds. The study started off with 30 people being screened but unfortunately only 13 were able to complete the trial. This meant that sadly there were not enough participants to draw any statistical significance from the trial. Which was a great shame as I know that more research was desperately needed to help provide some evidence base for these socks.

Nigel then finished off the afternoon with a quick run though the new PPAM aid pumps and bags and other items which they have been producing in line with the demands from therapists.
The evening there was then on optional dinner at the hotel which a number of the delegates were staying at. It was a great relaxed evening which gave people an opportunity to talk to other

members of BACPAR and the sponsors also attended so it was a good chance to network all round.

The second day opened with Rachel Neilson giving her experiences of being a prosthetist in the Winter games in Sochi and also in London 2012. It was a really excellent opening presentation with lots of pictures and Rachel was able to give a real sense of the pressure there was to perform and fix "everything now!"

Caroline Cater and Sarah Evans were on next explaining the changes they had made to their service to improve the patient experience with presentation of case studies at the Wirral Limb centre with examples of multi-disciplinary team working.

There followed Alice Harvey with an Overview of Handicap International. This was a presentation which compared things like discharge in the UK to abroad and support for rehabilitation teams already established. The main theme was about looking at what already exists and help to improve it and continue with this after the teams pull out.
Management of Phantom pain in the post-operative phase was an excellent presentation by Jennifer Fulton about dealing with phantom with a background explanation and progression onto why phantom happens. Then how it is managed at Stanmore and what to do with basic instructions.

The management of Post-operative Residuum oedema by Lizzie Torrance followed which was presentation of the MSc that she has completed.

This was followed by Liz Bouch presenting on the use of the Rigid Removable Dressing, looking at the Ossur vacuum dressing and the standard compression sock plus the dressing produced by the centre themselves. Liz then followed it up with Intermittent Claudication which gave an excellent overview and revision update for the rest of us.
Availability of a supervised exercise programme was next, telling us Intermittent claudication is reversible but on 35% of Trusts offer classes and there is no funding or resources available. In 92% of cases there is no onward referral and no guidance for this.

Amanda Thomas then gave an excellent lecture on exercise physiology and response to exercise in the lower limb amputee, which was a though provoking and interesting.

Penny Broomhead and Mary Jane Cole then followed on with their experiences in Gaza and how they personally dealt with the situation.

Last but certainly not least was Julia Earle with the Lower Limb Amputation Pathway Document Working together produced by NCEPOD. Julia produced an excellent presentation to finish off the afternoon emphasising what we as therapists bring to the amputation pathway and how important our role is.

So all in all an excellent conference which I hope many people took something positive home from and I look forward to being there again next year.

Online Membership Applications and Renewals

We're up and running with the online membership application and renewal process for individual, associate and student membership categories via our website. Simply go to http://bacpar.csp.org.uk, login and click on 'Join Bacpar now' in the upper left of the website. Follow the steps and renew in 3-5 minutes. Please ensure that you complete the professional profile form, following the link at the end of the renewal process, and email it to bacparmembership@gmail.com.

The new facility uses a secure, direct debit system called Go Cardless. It offers all of the protection applied to payments of this type under the Direct Debit Guarantee scheme. We strongly encourage you to join online as it will greatly reduce the substantial annual admin workload of processing membership renewals.

Members with a non-UK bank account, and those wishing to renew departmental membership, please complete the application form at http://bacpar.csp.org.uk/join-us-info and email it to bacparmembership@gmail.com. A safer way of paying the fees for these membership categories is by electronic bank transfer - please use the same email address to enquire about this method of payment.

Predicting Ability to Achieve Successful Mobility with a Transfemoral Prosthesis

The 6 week Femurett Extended Assessment:A Service Improvement Project Part A
Artificial Limb and Appliance Centre (ALAC), Rookwood Hospital, Cardiff.

Introduction

Every year over 6000 patient referrals are made to specialised rehabilitation and re-ablement centres, as a result of amputation or congenital limb deficiency. Over 90% of these relate to lower limb amputation/limb loss and almost 80% are for people aged 55 or over. The main cause of amputation is peripheral vascular disease, with diabetes mellitus being a considerable factor in up to 50% of cases.1 According to Cumming et al, 2 dysvascularity accounts for 75% of all lower limb amputations in the UK and 37% of these are transfemoral.

It has been reported that walking with a transfemoral prosthesis uses 65% more energy than bipedal walking. Also, older, dysvascular, unilateral transfemoral amputees do not achieve a high level of prosthetic mobility or function, particularly compared to transtibial amputees. 2 According to the literature, the proportion of transfemoral amputees that are successful with rehabilitation and use an artificial limb regularly at home, varies considerably. Recent studies have found that transfemoral amputees who achieved community mobility ranged from 25% 3 to just 4%. 4

Success with prosthetic rehabilitation can be influenced by a variety of factors, which can be difficult to assess. According to Roth, 5 the prevalence of cardiovascular disease in patients who have undergone lower limb amputation as a result of peripheral vascular disease, may be as high as 75%. Roffman et al 6 investigated predictors of prosthetic non-use in lower limb amputees 4, 8 and 12 months after discharge. They found that amputation levels above transtibial level and mobility aid use were common predictors for all three time frames. At 12 months, a delay of prosthetic use of >160 days was predictive of non-use.

An essay by Bouch,7 discussed the influence of various factors that may contribute to successful mobility after prosthetic rehabilitation. These include co-morbidities, age, contractures, residual and phantom limb pain, pre-prosthetic rehabilitation, previous mobility and social support. The author concluded that the rate of successful prosthetic use for transfemoral amputees is poor and that age over 60, the presence of contractures and poor previous mobility are the most important indicators of unsuccessful prosthetic mobility. Bouch 7 reported that other factors can influence individual cases and that full assessment and clinical reasoning remain crucial. Sansam et al 8 also carried out a literature review investigating walking ability following lower limb amputation and concluded that a large variety of factors influenced the potential to use a prosthesis. They found that cognition, fitness, the ability to stand on one leg, independence in activities of daily living, pre-operative mobility, a longer time from surgery to rehabilitation and problems with the residual limb all had an influence on walking ability. Distal amputation levels and a younger age were predictive of better walking ability.

Although a physical examination is essential, it can be difficult to make clear decisions based on this alone. Many patients also have unrealistic expectations about walking with a transfemoral prosthesis, which can affect patient engagement and prosthetic referral. One tool that can be used to aid assessment of potential prosthetic use is the Femurett (produced by Ossur). This is an adjustable early walking aid, which can be used by transfemoral and through-knee amputees. It can be used to assess an amputee's potential ability to walk with a prosthesis. Providing the opportunity for an amputee to walk, can give a more realistic idea of the energy expenditure involved and can help him/her to decide whether a transfemoral prosthesis is likely to improve their quality of life. Due to the complex interplay of the factors discussed above, the multidisciplinary team (MDT) based at ALAC, Rookwood Hospital, Cardiff, felt that a more thorough assessment was required for borderline transfemoral amputees. To aid decision-making regarding prosthetic referral, a 6 week Femurett extended assessment was developed. This aims to assess an amputee's physical ability to use the Femurett as well as providing an indication of how the other multiple factors may affect rehabilitation.

Methods and Components of the Femurett Extended Assessment

The extended assessment consists of 6 weeks of walking training using the Femurett twice a week. During the introductory session the purpose of the assessment is explained and the goals that need to be achieved by the end of the 6 weeks are discussed. These goals are the minimal physical requirements needed for a patient to be able to manage with a transfemoral prosthesis (see box 1) and they are practiced throughout the assessment, with supervision from the physiotherapist. The patient then takes a copy of these to encourage ownership of the goals and to facilitate engagement with the assessment.

Box 1: Femurett Assessment Goals

Advice

- To have an understanding of the purpose of the Femurett assessment
- To have an understanding of the time frame of the Femurett assessment

Rehabilitation

- To be able to stand safely from a chair to the parallel bars without the Femurett, pushing up from arms of the wheelchair
- To be able to stand for a minimum of 10 minutes in the parallel bars
- To be able to put on and take off the Femurett safely and independently
- To be able to stand from a chair safely and independently to a frame with the Femurett by pushing up from the arms of the wheelchair
- To be able to sit down safely and independently from standing with the Femurett using the arms of the wheelchair
- To walk safely and independently within parallel bars, including being able to turn
- To walk safely and independently indoors using a frame

At the end of the 6 weeks, the Transfemoral Fitting Predictor 9 is completed. This is a valid and reliable tool to measure the potential of transfemoral amputees to use a prosthesis and is aimed at the older, dysvascular population. It consists of 9 items, which assess physical activities that are routinely practiced during prosthetic rehabilitation. The items are assessed by the Physiotherapist and scored out of 36. This score is used with other factors, on the multi-disciplinary assessment form (see table 2), to aid the decision as to whether prosthetic referral is appropriate.

Table 1: Transfemoral Fitting Predictor 9

Answer each of the following questions by drawing a circle around the number of the response that best expresses your assessment of the patient					
Is the patient able to:	1 No	2 Yes with help	3 Yes with supervision	4 Yes Independent	Comments
1. Move from supine to sitting over the side of the bed?	1	2	3	4	
2. Transfer from bed to wheelchair and back?					
3. Transfer from wheelchair to a chair with arms?					
4. Both apply the brakes and move the footplates on their wheelchair while sitting in it? (Must be able to do both)					
5. Get from sitting to standing in the parallel bars, with or without an Early Walking Aid in situ, by pushing up from the arms of the wheelchair?					
6. Stand on the remaining limb for 5 seconds without holding onto the parallel bars?					
7. Stand with an Early alking Aid in situ, for 30 seconds with no upper limb support?					
8. Walk to the end of the parallel bars using the Early Walking Aid, turn and walk back?					
9. Walk, using appropriate walking aids, out of the parallel bars for 10 metres?					
Total /36					

Prior to the development of the Femurett assessment, the current literature was reviewed. Reviews by Bouch 7 and Sansam 8 suggested that the following factors can influence prosthetic success: cognitive impairment; the ability to stand on one leg; independence in ADL; the time from amputation to rehab; residual limb problems; social support;

psychological factors; co-morbidities; over 60 years of age *; fitness; contractures*; pain (residual limb pain and phantom limb pain); pre-prosthetic rehab; patient goals and motivation and previous poor mobility* 7 8 (* indicates clinical significance).

Consideration of these factors is therefore important when assessing whether a prosthesis would be appropriate. It is also essential that this is a decision made by the multi-disciplinary team. The patient is observed by another member of the MDT towards the end of the assessment (e.g. nurse, prosthetist), and their opinion is considered with the other aspects of the assessment. During the early development of the 6 week assessment, patients were referred to clinical psychology only if there were psychological concerns that affected their rehabilitation. As the assessment has progressed, it was felt by the team that routine psychological assessment is appropriate and this is to occur for future patients referred for the assessment.

The Clinical Psychologist plans to assess patients routinely using the Montreal Cognitive Assessment (MoCA). This is a rapid screening instrument for mild cognitive dysfunction. It assesses attention and concentration, memory, visuoconstructional skills, calculations, executive functions, language, conceptual thinking and orientation. The Femurett Multidisciplinary Clinical Assessment form was compiled and is completed at the end of the 6 weeks. The form ensures that the above factors are assessed and considered when making an overall decision about prosthetic referral. None of the factors alone are an indication of prosthetic unsuitability; rather they are used together, with the clinical reasoning of the MDT (see Table 2).

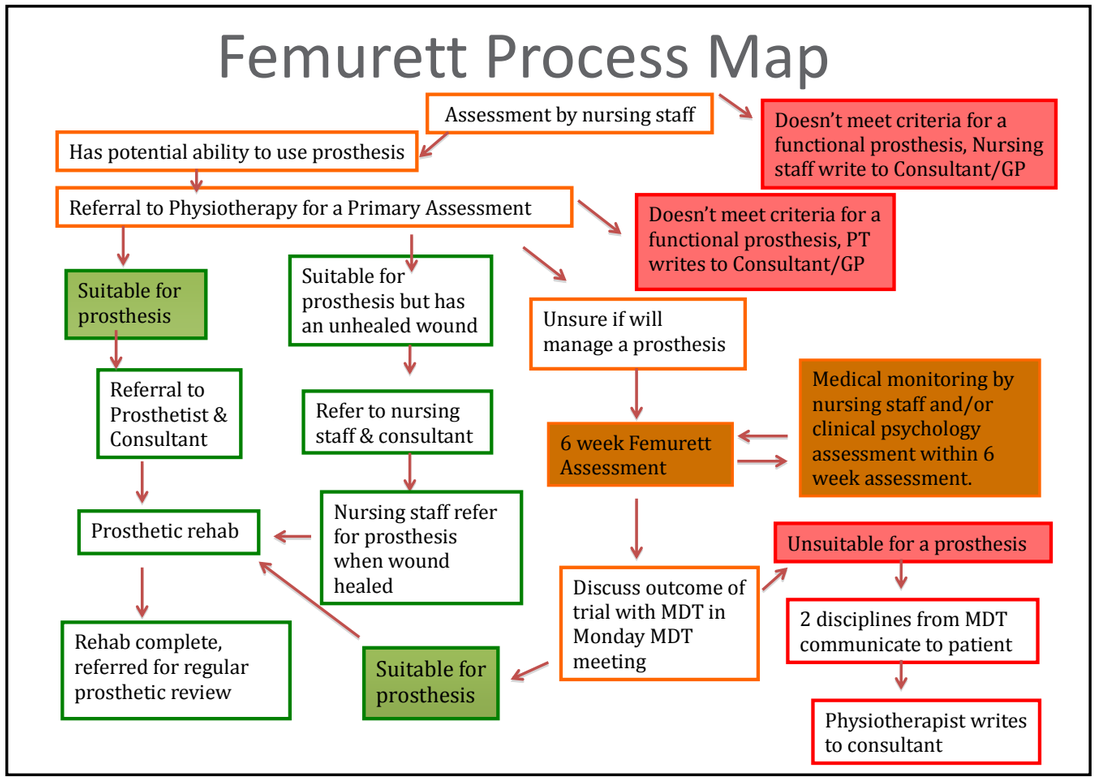
Table 2: Femurett Multidisciplinary Clinical Assessment form

Predictive factors	Areas to consider	Comments
Time surgery to rehab	Date of amputation	
Pre-operative mobility	Indoor walker, outdoor walker, distance able to walk, use of walking aids, active/inactive hobbies, working	
Personal care and social support	Lives alone, lives alone with support, lives with carer/spouse, independent in personal care	
Medical history	Numerous co-morbidities, significant cardiac disease, respiratory disease, neurological problems, hemiparesis	
Body Mass Index (BMI)	BMI > 25 (overweight), shape and anatomy	
Cognition	Able to follow instructions, able to retain information between sessions, ACE 3/MoCA result.	
Goals	Patient sets a specific goal(s) that they would like to achieve using a prosthesis.	
Mood	Are there any mood difficulties that may impact on walking with a prosthesis?	
Patient perceptions	What types of goals have been set by the patient – aspirational verses practical/realistic? What is the level of understanding of walking with an above knee amputation?	
Falls	Has there been a recent history of falls.	
Joint contractures	Residual limb or contralateral limb.	
Residual limb problems	Phantom/residual limb pain, pain 0-10.	
Transfemoral fitting predictor result	Score between 0-36. Higher score indicating greater ability.	
Pre prosthetic rehabilitation	Has patient completed Femurett goals as per goal sheet? Demonstrates ability to retain skills between sessions, any limitations by claudication, walking observed by another member of the MDT.	
Outcome		
Start Date	Finish Date	
Suitable for prosthesis		
Assessors name and job title	Date	

Progress during the assessment is discussed at the weekly ALAC multidisciplinary meeting and concerns are discussed with the relevant member of the team (e.g. if concerns are regarding a wound, nursing staff will be consulted. If concerns

arise regarding the shape of the residual limb, a prosthetist will be consulted).To date, the patient has been referred for a Consultant review only if appropriate. For example, this might be if decision-making amongst the team is difficult, if the patient is unhappy with the decision made, or if rehabilitation is affected by medical concerns. Regular review of the structure of the assessment has resulted in this being modified to a routine referral for all patients. Figure 1 illustrates how the assessment is structured within the ALAC Service.

Figure 1: Femurett Process Map



Outome of the Femurett Extended Assessment in November/December 2014

Between November 2011 and June 2014, 35 patients were referred to the 6 week Femurett assessment. Of these, 21 were referred for a prosthesis and 14 were not referred. Of the 14 patients that were not referred for a prosthesis, this was due to a variety of reasons. Common reasons were being medically unwell, the deterioration of the contralateral limb or deciding not to continue with the assessment.

Follow-up of the 21 patients who were referred for a prosthesis, was completed over the telephone and through electronic records of prosthetic and consultant reviews in November/December 2014. At this time, only 7 patients were still using the prosthesis and 11 had abandoned its use (Figure 2). The common reasons for abandonment included choice, physical limitations, the patient deceased, problems with the contralateral limb, poor medical health, pain and prosthetic issues (e.g. fit, weight of prosthesis).

The outcome was unknown in two patients, who had moved out of area and had not attended follow-up prosthetic reviews. One patient was unclear about current prosthetic use, reporting he had 'not really worn the prosthesis' and when he did, this was for 5-10 minutes only. It was therefore difficult to categorise this.

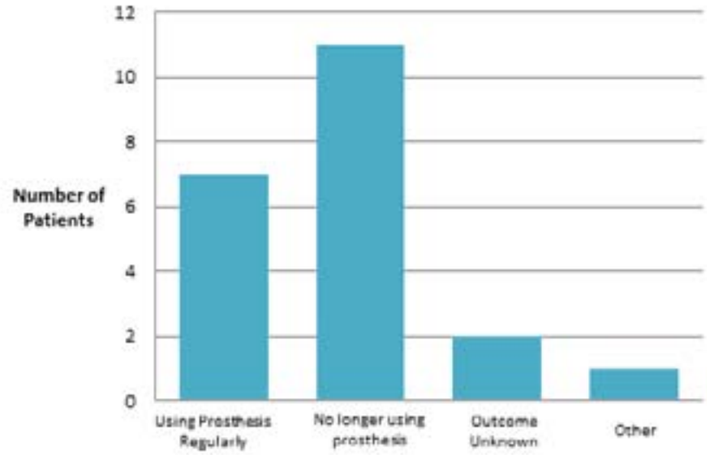


Figure 2: Prosthetic Use at Follow-up in 21 Patients who were referred for a Prosthesis

Of the 7 patients who were still using a prosthesis at follow-up, the SIGAM mobility grade was calculated. The patient's description of their current regular walking distance and mobility aid was used to do this (Figure 3). Five patients were at the mobility level of Ca, one patient was Cb and one was Da. (Figure 4).

Figure 3: SIGAM Disability Mobility Grades

The SIGAM scale is a simple yet fully validated scale10 of Disability Mobility Grades.

Grade	Disability	Definition
A	Non-limb User	Those who have abandoned the use of an artificial limb or use only non-functioning prostheses
B	Therapeutic	Wear prostheses ONLY in the following circumstances; for transfer, to assist nursing, walking with the physical aid of another OR during therapy
C	Limited/Restricted	Walks up to 50M on even ground with or without walking aids; a=frame, b=2 crutches/sticks, c= 1 crutch/stick, d=no walking aids
D	Impaired	Walks 50m or more on level ground in good weather with walking aids; a=2 sticks/crutches, b=1 stick/crutch
E	Independent	Walks 50m or more without aids except to improve confidence in adverse terrain or weather
F	Normal	Normal or near normal walking

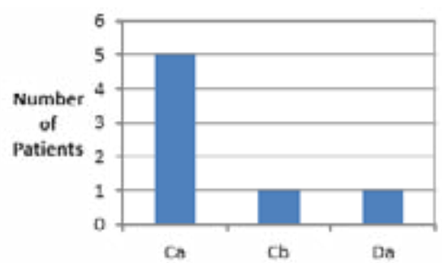


Figure 4: SIGAM Mobility Grade for the 7 Prosthetic Users at Follow-up

The Transfemoral Fitting Predictor (TFP) scores taken during the Femurett assessment were documented. Due to the ongoing development of the Femurett assessment, some patients attended the assessment prior to the use of this outcome measure. Some patients were also unable to complete the assessment and therefore the TFP was not assessed. An average TFP score for four patient groups was calculated: patients not referred for a prosthesis (n=5), patients referred for a prosthesis (n=12); patients referred for a prosthesis and then abandoned (n=4) and patients who were referred for a prosthesis and were still using in November/December 2014 (n=5). (Figure 5).

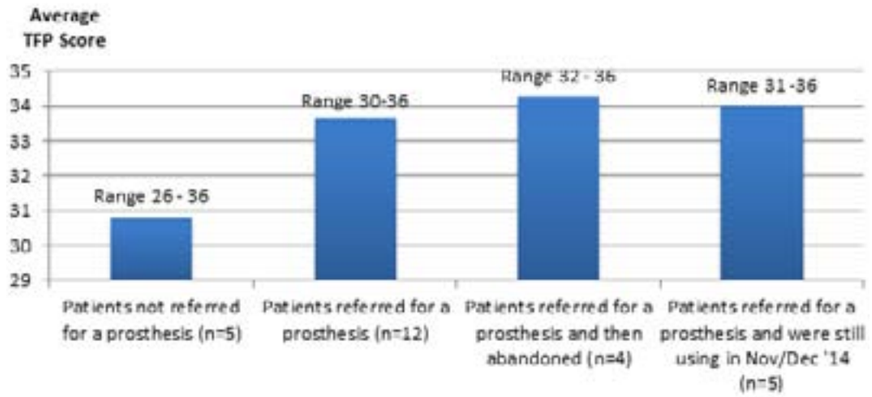


Figure 5: Average Transfemoral Fitting Predictor Scores for Patients who were both referred and not referred for a Prosthesis

There is a higher average score in patients who were referred for a prosthesis compared to those who were not. When considering the outcome of patients at follow-up, the highest average TFP score was the group of patients who were referred for a prosthesis and then later abandoned it. The number of patients from each group also varied considerably. Due to a significant amount of missing data and the large range of scores across all groups (scores ranged to as high as 36), statistical analysis was not carried out and further data is needed.

On discharge from Physiotherapy, the Timed up and Go (TUAG) Test, the 10M Timed Walk Test and the Locomotor Capabilities Index - 5 (LCI-5) outcome measures were carried out. These scores were then reviewed in the patients who had participated in the Femurett Assessment (Figure 6).

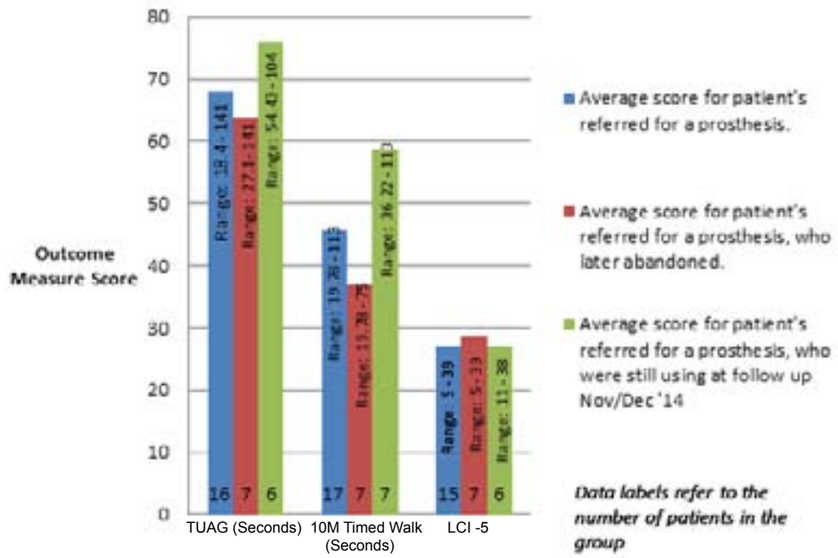


Figure 6: Outcome Measure Scores (on Discharge from Physiotherapy) for Patients who were referred for a Prosthesis.

For the same reasons as discussed above (a large amount of missing data and the large range of scores across all groups) it is difficult to compare the average score of the outcome measures across the three groups. Statistical analysis was not carried out but trends observed. For both the TUAG and 10M Timed Walk tests, the slowest average time taken (seconds), was achieved by patients who were referred for a prosthesis and were still using it at follow up. The fastest average time taken was achieved by patients who were referred for a prosthesis and then later abandoned its use.

Some patients were unable to complete all outcome measures on discharge and therefore the number of patients in each group varies. Again, this makes comparison of data difficult. As the outcome measures were carried out on discharge from Physiotherapy, these were not assessed in those patients who were not referred for a prosthesis.

Conclusions So Far

This service improvement project has demonstrated a number of interesting insights. It is important to highlight that this is not piece of research and robust data collection, study design and statistical analysis have not been carried out. The data that has been collected are clinical outcomes and there are many variables that have not been controlled for, which are likely to affect the accuracy of the information that has been obtained.

Of the 35 patients who attended the extended assessment, 14 patients were not referred for a prosthesis. Had these patients been referred for a prosthesis, it is likely it may not have been used. As a consequence, 14 transfemoral prostheses that might have been abandoned by the patient were not manufactured. This resulted in savings for the service that equate to the cost of componentry and the resources (Physiotherapy, Prosthetic, Nursing, Occupational Therapy and Clinical Psychology clinic appointments) that may have been required. Following the introduction of the Femurett Extended Assessment in the service, it is likely that fewer patients receive a prosthesis and later abandon them. It is important for services to be aware of this type of cost avoidance.

When considering prosthetic use at follow up, this relied on patient recall and therefore SIGAM scores may not be a true reflection of prosthetic use. The length of time between discharge from Physiotherapy and verbal follow up in November/December 2014 was not controlled and varied considerably between patients. For patients who commenced the assessment at an earlier stage (from 2011 to the early part of 2014), there was a considerable period of time between discharge from Physiotherapy and follow up, therefore potentially a greater likelihood that they could become unwell or other limitations to prosthetic use may occur. Patients who were referred to the assessment at a later date, only had a number of weeks between discharge from physiotherapy and follow up. This variable could have influenced the outcomes significantly.

Of the patients who were referred for a prosthesis, 11 patients had discontinued with prosthetic use at follow-up, despite completing the Femurett Extended Assessment. This suggests the sensitivity of the assessment could be improved to provide a more accurate indication of long term prosthetic use. Of those patients that were still using a prosthesis, most patients (5 in 7) had a SIGAM score of Ca, which is the lowest level of mobility on the scale (for amputees walking with a prosthesis). This highlights the challenges to walking in this group of patients

Although no firm conclusions can be made, the most interesting observations were that the average TFP score was higher in patients who were referred for a prosthesis compared to those who were not. Furthermore, there did not seem to be a notable difference in average scores between those who abandoned the prosthesis and those who were still using it at follow up. LCI-5 scores were similar for all three groups of patients referred for a prosthesis and in both the TUAG and 10M tests, the average time taken was actually slower in those that continued to wear the prosthesis. When considering trends in all of these outcome measure scores, the data needs to be interpreted with significant caution as the range of scores varied widely across all groups (all outcome measure scores) and the number of patients in each group varied due to considerable missing data.

It was speculated that patients who were still using the prosthesis at follow up were more likely to have greater physical ability and fewer medical problems, compared to those who were not referred for a prosthesis and those who were referred but later abandoned its use. It would therefore be reasonable to assume that the outcome measure scores of these patients were more likely to be higher than the latter two groups. The data is very difficult to compare, due to the reasons mentioned above and no firm conclusions can be made. The observations may be due to limitations with the data and the wide range of scores, or it may be due to the complex clinical picture of borderline transfemoral amputees. It is likely that the relationship between physical ability and sustained prosthetic use is a very individual picture. Due to the various medical problems and other variable factors that can affect rehabilitation, the performance in physical outcome measures and in long term prosthetic use is difficult to predict. Further data, collected in a more controlled manner, along with a study design that is likely to reduce the variables observed here, is recommended.

The Femurett Extended Assessment is a work in progress. The MDT at ALAC are working towards a process that helps the service and the patient work in partnership to decide if a transfemoral prosthesis is right for them. It is hoped that the use of resources has been more efficient since its development. The assessment is a chance for the patient to experience walking and assists with decision-making. For patients who have not continued with the assessment and use a wheelchair for their mobility, a longer period of physical assessment can provide them with the insight into the difficulties of using a prosthesis. This can result in a greater acceptance of being a wheelchair user and can sometimes help patients make a more informed decision about prosthetic use. For those who continue with prosthetic referral, the physical assessment can provide an opportunity to experience the reality of using a prosthesis and can assist with realistic goal setting during prosthetic rehabilitation. In addition, patients often require prosthetic rehabilitation for a shorter period of time, as much of their rehabilitation has been carried out using the Femurett.

Psychological Considerations of Prosthetic Referral in Transfemoral Amputees

During the development of the Femurett Extended Assessment, frequent reflective sessions were carried out with the Clinical Psychologist. A number of themes arose regarding the psychological impact of participation in the assessment on the patient, their family and the multi-disciplinary team. The psychological aspects of decision-making seemed very relevant. Some of these reflective themes are summarised in Part B.

Improvements to the Service for the future

The development and frequent evaluation of the Femurett Extended Assessment is ongoing and a number of improvements to the service have been initiated. Previously, the ALAC Consultant only reviewed pre-prosthetic patients if there was a specific medical concern. Patients are now to be referred routinely towards the end of the assessment so that the outcome can be discussed. The discussion of the progress of patients attending the assessment is being discussed more formally in weekly multi-disciplinary meetings so that concerns can be expressed and input can be obtained from other team members. Referral to the Clinical Psychologist has also become routine and more efficient, with Femurett Extended Assessment patients being prioritised so they are seen more urgently. It may also be beneficial to obtain further information about the reasons for prosthetic abandonment (when this is apparent) through interviews with the Clinical Psychologist.

It was noted that the follow-up of patients after discharge from Physiotherapy varied considerably and to date, there has been no formal Physiotherapy review of patients who have participated in the assessment. A system is being developed so that these patients attend a Physiotherapy appointment 6 months after discharge. Mobility will be reassessed to determine a SIGAM mobility grade and the outcome measures; TUAG, 10m Timed walk and LCI-5 will be carried out. This will enable the service to monitor the outcomes of these patients more formally, to gain an improved understanding of the long term prosthetic use of these borderline patients.

Despite 14 patients not being referred for a prosthesis following the extended assessment, 11 patients who were referred still had abandoned its use at follow up. This suggests that the sensitivity of the Femurett Extended Assessment could be reviewed and developed further. Further monitoring of these patients and the improvements discussed above could assist in obtaining more information about this complex group of patients and potential for long term prosthetic use. Despite the difficulties in obtaining firm conclusions, it is clear that this experiential, multi-disciplinary, patient-centred approach can assist decision-making between patients and the MDT. It can also help us to be more resource aware.

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Part B

The Femurett Extended Assessment: A Journey toward Person-Centred Resource-Aware Care

Throughout our work to develop the Femurett Extended Assessment we have used joint Psychology and Physiotherapy reflection sessions. Our aim was to use our thoughts, reactions and feelings as useful information about the experience of rehabilitation following an above knee amputation. We particularly focussed on the difficult decision of whether a transfemoral prosthesis was useful for a person. We were keen to understand the human side of this process. These reflection sessions led to the creation of a dialogue and language about the patients' and multi-disciplinary team's experience of the assessment and decision making. We used our reflections to create and adapt the process. Over time a number of themes and ideas emerged from our reflection sessions. We found these helpful and thought they might be of interest.

The Grey Area. We first began to reflect on how we seemed to talk more about certain patients; those where the process of rehabilitation was difficult and did not seem to follow a usual path. We were aware of other patients where decisions were clearer – it was agreed by all parties to pursue or not to pursue walking with a transfemoral prosthesis. For the people in the "grey area" we found ourselves thinking about the patients more, our own emotional reactions being stronger, talking of "unrealistic goals" being set, being anxious that the prosthesis would not be used and become "a waste of resources" in difficult financial times. We talked about the patient not fully understanding how difficult walking was to achieve and as if patient decisions were not based on logic or evidence.

The Search for a Score. We noticed our initial attempts to overcome the "grey area" and decide who could use an above knee prosthesis led us to look for the definitive objective measure. If we could only find "the test" decisions would be much simpler. Our own reactions would settle and the right decision would be made for all. Perhaps this was a measure of physical function, or we noticed that in the absence of clear physical/medical contraindications, professionals hoped for a measure of cognitive function that would give us a clear pass or fail. However, we realised that whilst there are useful, informative measures, no such definitive objective measure exists. We also found whilst cognitive measures were relevant, we had plenty of experience of helping people to learn to use artificial limbs despite significant cognitive impairment.

Decision Makers. Our reflections helped us to realise that we often found ourselves in an "expert" position – as if we could make the decision easily based on clinical assessment and measures. When we were uncertain, we would feel the pressure and sometimes personalise things. For example, we were not being "expert" enough; we did not have enough knowledge, or know enough about the patient. At times we felt as if there was a lot of pressure to make the right decision – the patient wanting to pursue the rehabilitation, the service wanted us to use limited resources well, be productive and have no waste. We found that we began to shift from lone "expert" (Physiotherapist) approach to a shared MDT approach and further than this toward a shared decision making approach with the patient (and sometimes their families). The Femurett Extended Assessment became a chance for the person to experience walking post-amputation and use this experience in decision making.

The Walking Instinct. Often our reflections were about people making illogical decisions. Surely it was obvious to all that someone with such a high level, lower limb amputation, with many other comorbidities, would not walk. It was helpful here to consider that often people are not making decisions based on rules of logic but rather in an emotional way. We also thought about whether people's desire to walk, sometimes against the obvious facts, may be based in a deep instinctual/emotional drive. The drive seemed very human. We thought about the natural drive and determination a child has to stand and walk – is this drive still with us in adulthood? Considering this "walking instinct" helped us as we realised that an attempt to get a person to see the logic would not help. It was more about accepting this"natural" drive. We also paid attention to action rather than words – so rather than spend time with logical argument we offered chances to "do" and experience walking.

Unrealistic goals. Our initial reactions at the start of this process were often peppered with the statement, "unrealistic goals" and an exasperated tone. It was as if it should be obvious to all, including the patient, that the goals set where unachievable and perhaps not the business of our NHS rehabilitation programme. However, at the same time as thinking the goals were unrealistic we felt split because our experience in rehabilitation has given us many examples of people achieving amazing things against the odds, of us helping people to do this, and of us being surprised by people. Our initial idea that we had to confront people and change these unrealistic goals did not seem right or useful. When this approach was taken we risked an "us and them" situation. People do not let go of their own ideas easily and the goals set were often linked to a person's identity, coping style, and hopes for the future. Through our reflective consultations we decided it was important not to enter a direct challenge of people's goals and to find a way to accept these goals as future possibilities. We began to acknowledge the goals and use a process of goal setting to list aspirational goals and functional "here and now" goals. We emphasised that the NHS focus was on these functional goals in the first instance and that these may be the stepping stone to aspirational goals.

Other Voices. Another theme emerging from our reflections was concerned with who wanted the patient to walk with an artificial limb. We noticed that on occasion the patient made statements that suggested they were trying walking training because their family/friends wanted them to. The patient seemed less keen then the family. The reverse could also be true – family members did not see walking as likely, useful, or safe. Relatives were sometimes present in Physiotherapy sessions but more often not, yet they were still influential voices. We began to use the phrase of "paying attention to the network", and rather than becoming another voice giving an opinion we used a systemic approach. We deliberately became interested in who was saying what and exploring the positions and narratives of the patient and their families/ friends. When it seemed useful we engaged with the network, for example inviting people to join sessions. In this way we found a more helpful way to acknowledge the different perspectives and how that might influence the patient. The approach also uncovered the complexity of decision making about walking – for example there may be pressure on a patient to walk because this may alter the need for care. Engaging with the network opened up possibilities for helping; including decision making about walking for all parties but also other areas for focus (for example, carer burden).

Overall we have found incorporating this reflective element into our work on the Femurett Extended Assessment very useful. We have characterised our shift in thinking as away from the expert gatekeepers making judgements about people - we often used the idea of being the Nightclub Bouncers (like the old Hale & Pace characters "You can't come in"); towards a model of being alongside someone as they experienced adjustment to amputation and made a decision about walking and artificial limbs. We were not the nightclub bouncers but took the role of "honest temporary travelling companions" giving enough information and (importantly) actual experience to aid the patient in a difficult decision. To us we have aimed to offer a person-centred approach whilst being mindful of the use of NHS resources.

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Calcanectomy Case Study- Therapy Rehabilitation

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HPC

- Left calcaneal ulcer. Osteomyelitis present.
- Managed with Negative Pressure and Antibiotics.
- Over 5 years- Exhausted all options for non surgical treatment options.
- Remains painful, patient on oxycodone.
- Risk of infection flare.
- Ref to vascular surgery? Requires BKA?

Initial Presentation

Vascular Surgery

- No revascularization possible.
- Patient offered BKA
- Patient reluctant for this.
- Vascular and Podiatric Surgeon decided upon calcanectomy.

Circulation

- ABPI- the ratio of blood pressure at the ankle to the brachial blood pressure.
- R > 1.4
- L>1.4
- Both falsely elevated due to calcified arteries consistent with diabetic/renal presentation.

PMH

- Hysterectomy
- OA
- Chronic Anaemia
- Type 2 DM
- Carpal tunnel syndrome with bilateral surgery.
- Mild renal impairment.
- Obesity- High BMI; 32.

Heel Damage

- 25% of pressure ulcers occur on the heel (McGinnis, et al, 2014)
- Elderly patients with decreased mobility and impaired circulation at high risk.
- Often leads to Osteomyelitis.

Calcanectomy

- Calcanectomy procedure is a foot salvage alternative in patients with extensive chronic osteomyelitis of the calcaneus.
- People with diabetes have a 25% lifetime risk to develop a foot wound. Typically, more than half of these ulcers will become clinically infected (Lavery et al. 2006).
- Lavery et al (2009) have recently shown that the risk factors for developing osteomyelitis in patients with diabetic foot wounds include deep wounds, penetrating to bone, a previous history of foot ulceration, or recurrent or multiple foot wounds.
- Plantar heel ulcers in people with diabetes represent a difficult challenge to the treating physician.
- They become even more difficult with underlying osteomyelitis. When this infection is in the calcaneus, it typically results in a partial or total calcanectomy or, even more frequently, high-level amputation (Perez et al. 1994)

Partial Calcanectomy (Smith et al. 1992)

- 12 patients who had a large ulceration over the heel were managed with a partial calcanectomy, in lieu of a below-the-knee amputation, after unsuccessful non-operative treatment of the ulcer.
- Strict criteria for partial calcanectomy, including ABPI of more than 0.45.
- The primary diagnosis was diabetes in seven patients and PVD in 3 patients.
- The wound healed after the partial calcanectomy in 10 of the 12 patients. The duration of follow-up averaged thirty-three months and ranged from seven to sixty-four months.
- 9 of these 10 patients maintained the level of mobility that they had had preoperatively. (One patient was unable to walk because he was quadriplegic before the operation). The wound did not heal in two patients, and those patients ultimately had a below-the-knee amputation and a decrease of one grade on the scale that was used to evaluate walking ability. (Smith et al. 1992)

Pre admission

- Lives in ground floor flat.
- Mobile with WZF short distances, decreased over the past weeks. Indoors only.
- No immediate family.
- Has POC in place x 4 calls a day.

Admission

- Elective admission 5/05/2014.
- Calcanectomy 08/05/2014.
- Back to ward post op from extended recovery.
- No respiratory complications.

Rehab

- Initial SOEOB with assistance of 3.
- Patient hoisted to sit out in 20" W/C.
- Standing practice in paralell bars with 3 therapists with quick progression to 2. Limited by swollen legs.
- Difficulty with stepping due to ankle discomfort on unaffected side.

Footwear

- LEEDer boot to left heel.
- Ideal for posterior heel ulcer/calcanectomy.
- Offloads wound site.

Right Foot

- DH Pressure Relief Shoe™
- Can reduce plantar pressures by 51% compared to a canvas shoe (Raspovic, et al., 2012)
- Can be closed or open toed.
- More support across the ankle.
- Optional removal of hexagons in sole as required.

In bed

- Heelift boots to both feet.
- Dynamic mattress
- Bed positioning & repositioning patient when required
- Encourage to sit out

Wound

- Managed with Vac VeraFlo Therapy. Combines the benefits of Va therapy with automated solution distribution and removal in the wound bed. Can help to;
- Cleanse- the wound with the installation of topical cleansers in consistent controlled manner.
- Treat- the wound with the installation of the appropriate topica antimicrobial and anti-septic solutions and removal of infectiou materials
- Heal- the wound and prepare for primary or secondary closure. (KCI, 2014).

Wound- 12/05/2014. **Wound 15/05/2014**

23/05/2014 **04/06/2014** **Wound 14/07/2**

Transfer to rehab ward

- X3 weekly sessions of rehab in therapy gym.
- Progression to taking a few steps in the parallel bars with assistance at 6 weeks post op.
- 9 weeks post op, progression to walking within the parallel bar
- Swollen legs much improved. Osteoarthritis in ankle remains problematic.
- Difficulty with sit to stand. Requiring assistance of 2 to stand a step round transfer with WZF.
- Mobile with WZF short distances with assistance of 1.
- Sitting out daily with feet elevated and foot protection in-situ.

Discharge

- D/C to Intermediate Care in Salford 31st July 2014.
- Ultimate aim to return home with increased POC.
- Calcanectomy wound site almost healed on D/C.
- In patient length of stay 84 days.
- Acute- 39 days. Rehab- 45 days.

Limiting factors to rehab

- Decreased mobility pre admission.
- Obesity/ High BMI
- Painful unaffected heel/ankle- due to Osteoarthritis.
- Oedematous Legs- due to lymphoedema and renal impairment.

Conclusion

- Calcanectomy wound almost healed.
- Osteomyelitis absent on x-ray.
- Ultimately avoided major amputation.
- Patient had reduced mobility on admission hence inpatient reha was prolonged.
- Calcanectomy is an alternative procedure to trans-tibial amputation in patients with chronic osteomyelitis of the calcane Eradication of infection and preservation of functional ambulati can be achieved.

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Care of the contra-lateral limb in unilateral lower limb amputees audit. Comparing the BACPAR guidelines against current physiotherapy practice at the West Kent Vascular Unit

Supervisor / Audit team

Jennifer Fernandes/ Vascular and Surgical Physiotherapy Team

Background/Rationale

In 2009, the British Association of Chartered Physiotherapists in Amputee Rehabilitation (BACPAR) developed a guideline; 'Risks to the contra-lateral foot of unilateral lower limb amputees: A therapist's guide to identification and management'. This guideline was intended to be used as a practical guide for therapists when assessing and treating unilateral amputees in order to prevent deterioration of the patient's remaining limb.

It has been widely documented that unilateral amputees are at significant risk of losing their remaining limb due to their pre-existing medical conditions that resulted in them losing their amputated limb (Carrington et al, 2001; Galley, 2003; Nather et al, 2008; Rith-Najarian et al, 1992). Research reports a wide range of 26-53% of unilateral dysvascular amputees will require a second amputation to their remaining limb within 1-5 years after the primary amputation (Izumi et al, 2006; Morris et al, 1998; Torres and Esquenazi, 1991). For bilateral dysvascular amputees, literature reports high rates of disability, depression and mortality with a lower rate of prosthetic use following their second lower limb amputation (Torres and Esquenazi, 1991; Van Gils et al, 1999).

Following the release of this guideline, the physiotherapists at the West Kent Vascular Unit amended the care of the contralateral limb in-service teaching to include the new recommendations. In August 2011 and July 2012, two surveys were carried out comparing current physiotherapy practice against the guidelines.

The West Kent Vascular Unit is based at Medway Maritime Hospital in Kent. It was established in 2006 to provide vascular services to the patients living in the west Kent area. The West Kent Vascular Unit works closely with the East Kent Vascular Unit, which is based at Kent and Canterbury Hospital. At Medway Maritime Hospital, there are approximately 66 major lower limb amputations per year and 7 second lower limb amputations to unilateral amputees (11% uni to bilateral amputations). The main contributing reason for patients to require an amputation is dysvascular (67%), 28% trauma and 5% other. The average age for lower limb amputation is 66years old. A large number (71%) of unilateral amputees at Medway Maritime Hospital suffer from multiple generic risk factors associated with second lower limb amputations (e.g. cardiovascular factors, diabetes, obesity, previous ulcers/amputations and smoking). These figures are based on hospital data collected between 2009 and 2012.

Considering, the significant impact a second lower limb amputation has on a patient's quality of life and subsequent cost associated to the health and social care services. It was considered to be highly important that an audit was established based on the guideline to ensure a high level of care is provided to unilateral amputees. Audit standards, criteria and an audit tool were developed in conjunction with therapists at West Kent Vascular Unit and East Kent Vascular Unit. Many of the audit standards were set at 100% due to the risk of patients becoming bilateral amputees.

Audit Aim

To provide a high level of care to unilateral amputees to prevent deterioration in their remaining limb.

Audit criteria & Guidelines

Guidelines used – Risks to the Contra-lateral Foot of Unilateral Lower Limb Amputees: A Therapist's Guide to Identification and Management. Appendix 1 BACPAR guideline - see website.

Criterion	Exceptions	Standard	Data source
To identify all diabetic amputees	None	100%	Documentation in Case-notes
To ensure poorly controlled diabetic patients have been referred to the appropriate diabetic specialist.	Already referred or under a diabetic specialist	100%	Documentation in Case-notes
To identify all PAD or PVD amputees	None	100%	Documentation in Case-notes
To ensure all PAD/PVD patients have had a peripheral arterial assessment by a therapist	None	100%	Documentation in Case-notes
To carry out a visual and sensory assessment of the foot by a therapist.	Unable to assess foot due to bandaging, patient not alert/ uncooperative	100%	Documentation in Case-notes
To identify risk factors for the foot and refer/ give advice on; - footwear - foot-care (podiatry)	Unable to assess foot due to bandaging, patient not alert/ uncooperative	 100% 100%	Documentation in Case-notes
To assess foot and ankle range of movement	Unable to assess foot due to bandaging, patient not alert/ uncooperative	100%	Documentation in Case-notes
To educate the patient on modifying their risk factors e.g. foot-care, footwear, glycaemic control, obesity, smoking, controlling hypertension and hyperlipidaemia.	Unable to educate patient as too drowsy/ confused.	100%	Documentation in Case-notes
To assess transfer and/ or mobility	Patient too unwell	100%	Documentation in Case-notes
To assess the patient's ability to perform self care by a therapist	Patient too unwell	100%	Documentation in Case-notes
To educate patients on maintaining a safe environment and using a wheelchair.	Unable to educate patient as too drowsy/ confused.	100%	Documentation in Case-notes

Method

Method	
Sample/ Patient group / diagnosis:	Patients, who have had a major unilateral lower limb amputation; Trans-tibial (TTA), Trans-femoral (TFA), Knee disarticulation (KDA) or hip disarticulation amputation (HDA).
Procedure:	Retrospective analysis of clinical notes using the audit tool and the help table. The answers on the audit tool can then be used to assess compliance with the standards.
Age range:	Adults, 18+ yrs
Time period to be audited:	August 2013
Sample size:	All cases in time period

See Appendix 2 for Audit Tool
See Appendix 3 for Audit Tool Help Table

Results / Compliance

There were a total of 6 unilateral amputees over a one month period; August 2013 at Medway Maritime Hospital. All patients were included in the audit.

Table 1. Results of Care of the contra-lateral limb in unilateral lower limb amputees audit.

Table Key –
N/A: 2 and continue to next part of the question, answering 2 for the remainder of the parts of that question
Yes: 2 and continue to next part of question
Partly: 1 and continue to next part of question
No: 0 and continue to next question

1. Intrinsic risk factors

	1	2	3	4	5	6	Totals	Audit Standard Met?
1. If the patient has diabetes, has this been documented?	2	2	2	2	2	2	12 100%	Yes
1a. Is the patient under the review of an appropriate diabetic specialist if their blood sugars are unstable?	2	2	2	2	2	2	12 100%	Yes
2. If the patient has PVD, has this been documented?	2	2	2	2	2	2	12 100%	Yes
2a.Therapist Assessment of PVD signs and symptoms?	2	2	2	2	0	2	10 83%	No
3. Visual and sensory by therapist?	2	2	2	2	0	2	10 83%	No
3a.Specialist footwear referral or advice?	2	2	2	2	2	2	12 100%	Yes
3b. Foot care (Podiatry) referral or advice?	2	2	2	2	0	2	10 83%	No
4. Foot ROM Assessment?	2	0	2	2	0	0	6 50%	No
5. Modification of risk Assessment advice e.g. foot care, glucose control, obesity, smoking, controlling HTN or hyperlipidaemia.	2	2	2	2	2	2	12 100%	Yes

2. Extrinsic risk factors

	1	2	3	4	5	6	Total	Audit Standard Met?
6. Transfer or mobility Assessment?	2	2	2	2	2	2	12 100%	Yes
7. Self-care Assessment?	2	2	2	2	2	2	12 100%	Yes
8. Education on wheelchair/ maintenance of safe environment?	2	2	2	2	2	2	12 100%	Yes

See Appendix 4 for the Care of the Contra-lateral Limb Audit Results Table 2011- 2013

Discussion

When reviewing the results, they show that the West Kent Vascular Unit is not fully adhering to the guideline. The non-adherent areas include therapist assessment of arterial disease signs and symptoms, visual and sensation assessment, foot-care advice or podiatry referral and range of movement assessment. However, the number of unilateral amputees included in the audit was small (6 patients) and the non-compliant areas represent just one failed assessment. None the less, the audit standards for all four of the failed criteria are set at 100%.

The non-adherent audit criterion, include assessments requiring patient participation e.g. arterial, visual and sensation,

foot care advice/referral and range of movement assessment. However, if patients are not medically stable during their initial assessment then this part of the assessment may get missed during later assessments. Some of the less experienced therapists in the team have reported not feeling confident carrying out an arterial assessment and this is also likely to be a contributing factor. When compared to the previous year's survey results, these standards have been consistently not achieved.

Looking back at the previous survey results, one of the standards has now become adherent; 'To ensure poorly controlled diabetic patients have been referred to the appropriate diabetic specialist'. This has improved from 50% to 100%. However, out of the 6 patients included in the audit, only one patient had poorly controlled blood sugars but he was already under the diabetic specialist. The other diabetic patients included in the audit had well controlled blood sugars. The audit result is therefore compliant without intervention from the physiotherapy team. Other standards have also improved in comparison to previous survey results, these include education on modifying risk factors, self-care assessment and education on maintaining a safe environment.

The audit's aim was 'To provide a high level of care to unilateral amputees to prevent deterioration in their remaining limb'. Out of the 12 criteria, 8 standards were met and 4 not met. This shows that the West Kent Vascular Unit does provide a high level of care but does have significant room for improvement.

In future, it would be essential to carry out the audit over a longer time frame so that it includes a larger patient sample. This will enable the results to be more generalisable and less of a snap shot. A therapist questionnaire could be used to collect information about confidence when completing an amputee contra-lateral limb assessment. This may provide information to improve adherence to the guidelines.

Recommendations

Action to be taken	By whom	Timescale	Completed
Update the in-service training on 'Care of the remaining limb' to include advice on regular assessment.	J. Fernandes	By Dec 2013	Jan 2013
Feedback results to the team	J. Fernandes	By Dec 2013	Dec 2013 during CSG by J.Fernandes
Reiterate the importance of completing the entire pre-op or post-op sheet and updating the referrals made section.	J. Fernandes	By Dec 2013	Dec 2013 during CSG by J.Fernandes

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Appendix 2 - Audit Tool for the Care of the Contralateral Limb in Amputees

Guidance for use

This audit tool is based on the 2009 BACPAR guidelines 'Risks to the contra-lateral foot of unilateral lower limb amputees: A therapists guide to identification and management'.

The audit tool is designed to be used to audit a patient's clinical notes against the standards identified from the above guideline. Any therapists' clinical note entries can be used from pre-assessment to 2 weeks post-op to answer the audit tool questions.

Audit Tool for the Care of the Contralateral Limb in Amputees

Intrinsic risk factors

1) Is it documented that the patient has diabetes?
Yes No Does not have diabetes

If the patient is a diabetic, please answer the next question. If not a diabetic, jump to question 2.

1a) If the patient has unstable BMs, have they been referred to a diabetic specialist?
Yes No N/A

2) Is it documented that the patient has PAD/PVD?
Yes No No Does not have PAD/ PVD

If patient has PAD/ PVD, please answer the next question. If not a PVD/ PAD patient, jump to question 3.

2a) Has there been a therapist assessment of the peripheral arterial disease signs and symptoms? E.g. colour, temperature, capillary refill, hair growth.
Yes No

3) Has there been a visual and sensory assessment by a therapist?
Yes No

If no, jump to question 4. If yes, was a problem identified from the visual and sensory assessment (e.g. callus, foot deformity, ulcers or trauma) and was the patient referred to or advice given on:

3a) specialist footwear?
Yes No No problems identified

3b) foot care? E.g. podiatrist
Yes No No problems identified

4) Has the ROM at the foot and ankle been assessed by a therapist?
Yes No

5) Has the patient received education on modifying their risk factors? E.g. foot care and footwear, glycaemic control, obesity, smoking, controlling hypertension and hyperlipidaemia.
Yes No

Extrinsic risk factors

6) Has the patient had a transfer and/ or mobility assessment by a therapist?
Yes No

7) Has the patient's ability to perform self care at home been assessed by a therapist?
Yes No

8) Has the patient received education on using a wheelchair/ maintaining a safe environment?
Yes No

Appendix 3 - Audit Tool Help Table

Criterion	Question	Audit Tool Help	Exceptions
To identify all diabetic amputees	1-Is it documented that the patient has diabetes?	If the patient has diabetes, 100% should be documented within the pre-op or post-op assessment.	None
To ensure poorly controlled diabetic patients have been referred to the appropriate diabetic specialist.	1a) - If the patient has unstable BMs, have they been referred to a diabetic specialist?	Of the unstable diabetic patients, 100% should have been referred to the diabetic specialist e.g. diabetic nurse. Definition – Poorly controlled diabetic =	Already referred or under a diabetic specialist
To identify all PAD or PVD amputees	2- Is it documented that the patient has PAD/PVD?	If the patient has PVD, 100% should have this documented within the pre-op or post-op assessment	None
To ensure all PAD/PVD patients have had a peripheral arterial assessment by a therapist	2a)-Has there been a therapist assessment of the peripheral arterial disease signs and symptoms? E.g. colour, temperature, capillary refill, hair growth.	Of the PVD patients, 100% should have had an assessment by a therapist. Peripheral arterial disease signs and symptoms include; Pain, pulselessness, pallor, paraesthesia and paralysis.	None
To carry out a visual and sensory assessment of the foot by a therapist.	3-Has there been a visual and sensory assessment by a therapist?	100% of patients should have had a visual and sensory assessment. Visual assessment includes observation and documentation of any abnormalities or deformities of skin or foot. Sensory assessment includes light touch sensation and/ or proprioception assessment.	Unable to assess foot due to bandaging, patient not alert/ uncooperative
To identify risk factors for the foot and refer or give advice on footwear and foot-care.	3a)- Specialist footwear 3b)-foot care? E.g. podiatrist	100% of responses should be either 'Yes' or 'No problems identified'	Unable to assess foot due to bandaging, patient not alert/ uncooperative
To assess foot and ankle range of movement	4-Has the ROM at the foot and ankle been assessed by a therapist?	100% of patients should have had a ROM assessment.	Unable to assess foot due to bandaging, patient not alert/ uncooperative
To educate the patient on modifying their risk factors e.g. foot-care, footwear, glycaemic control, obesity, smoking, controlling hypertension and hyperlipidaemia.	5-Has the patient received education on modifying their risk factors? E.g. foot care and footwear, glycaemic control, obesity, smoking, controlling hypertension and hyperlipidaemia.	100% of patients should have received education in the form of the Amputation Information Booklet and/or verbal advice	Unable to educate patient as too drowsy/ confused.
To assess transfer and/ or mobility	6-Has the patient had a transfer and/ or mobility assessment by a therapist?	100% of patients should have had a transfer or mob assessment.	Patient too unwell
To assess the patient's ability to perform self-care by a therapist	7-Has the patient's ability to perform self-care at home been assessed by a therapist?	100% of patients should have had a self-care assessment by OT or physio.	Patient too unwell
To educate patients on maintaining a safe environment and using a wheelchair.	8-Has the patient received education on using a wheelchair/ maintaining a safe environment?	100% of patients should have received education on using a wheelchair and safety advice.	Unable to educate patient as too drowsy/ confused.

Appendix 4 - Care of the Contra-lateral Limb Audit Results Table 2011 - 2013

Criterion	Exceptions	Standard	Data source	Audit Tool Question that Criterion applies to	Standard Achieved		
					2011	2012	2013
To identify all diabetic amputees	None	100%	Documentation in Case-notes	1	100%	100%	100%
To ensure poorly controlled diabetic patients have been referred to the appropriate diabetic specialist	Already under a diabetic specialist	100%	Documentation in Case-notes	1a	60%	50%	100%
To identify all PAD or PVD amputees	None	100%	Documentation in Case-notes	2	80%	100%	100%
To ensure all PAD/PVD patients have had a peripheral arterial assessment by a therapist	None	100%	Documentation in Case-notes	2a	80%	83%	83%
To carry out a visual and sensory assessment of the foot by a therapist.	Unable to assess foot due to bandaging, patient not alert/ co-operative	100%	Documentation in Case-notes	3	40%	83%	83%
To identify risk factors for the foot and refer/ give advice on; - footwear - foot-care (podiatry)	Unable to assess foot due to bandaging, patient not alert/ co-operative	 100% 100%	Documentation in Case-notes	 3a 3b	3a – 100% 3b- 60%	3a – 89% 3b- 100%	3a- 100% 3b- 83%
To assess foot and ankle range of movement	Unable to assess foot due to bandaging, patient not alert/ co-operative	100%	Documentation in Case-notes	4	20%	89%	50%
To educate the patient on modifying their risk factors e.g. footcare, footwear, glycaemic control, obesity, smoking, controlling hypertension and hyperlipidaemia.	None	100%	Documentation in Case-notes	5	40%	89%	100%
To assess transfer and/ or mobility	Patient too unwell	100%	Documentation in Case-notes	6	40%	100%	100%
To assess the patient's ability to perform self care by a therapist	Patient too unwell	100%	Documentation in Case-notes	7	50%	94%	100%
To educate patients on maintaining a safe environment and using a wheelchair.	None	100%	Documentation in Case-notes	8	100%	100%	100%

St George's Healthcare NHS
NHS Trust

Treatment of Phantom Limb Pain using Graded Motor Imagery: a Case Study

Kate Lancaster, Physiotherapist – Queen Mary's Hospital, Roehampton, London

GMI background

Graded Motor Imagery (GMI) evolved as a treatment approach from the growing understanding of the underlying neurobiology of complex pain states such as phantom limb pain (PLP) & chronic regional pain syndrome (CRPS).

GMI is a sequential process of rehabilitation where the therapeutic targets are synapses in the brain. It is a graded treatment approach all about re-educating the brain to normalise signals it receives so as not to interpret them as pain when the body part is no longer in danger. It is a brain based treatment, targeting the activation of different brain regions in a gradually increasing manner.

Patient background

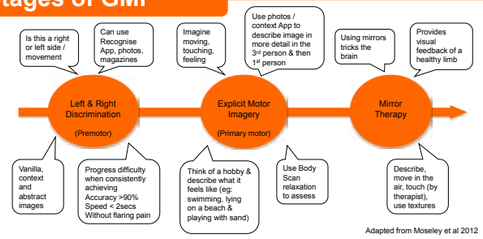
- 33 yr old male
- Right Hemipelvectomy – RTA – 2005
- Prosthetic Rehab March – July 2005
- Initially no PLP but started 1 month post amputation
- Unsuccessful treatment techniques tried:
  - TENS
  - Massage
  - Acupuncture
  - Mirror
  - Nerve block to spine
- Also on significant amount of pain medication with limited effect
- Oct 2012 team found out he was suffering from PLP +++

Initial assessment

November 2012

- McGill Pain Assessment
  - Pain descriptor = 44/78
  - Phantom leg in full flexion, unable to move
  - PLP VAS least = 6/10, worst = 8/10 – flares every minute
  - Woken ~2x per night
  - Worsened by fatigue, sustained postures
  - Improved by hard massage to stump & medication
- PLP – 2 types
  - 1st = gradual build → starts fuzzy builds to extreme pain → meds+++ & unable to function for 2+ days – happens 3-4x per month
  - 2nd = lightening bolt with no warning – happens 1-2x per month or not for a few months.

Stages of GMI



Adapted from Moseley et al 2012

- Allows each stage to gradually ↑ firing of brain regions involved without flaring pain
- Grading can occur between and within stages – altering amounts & activity

McGill Pain Score

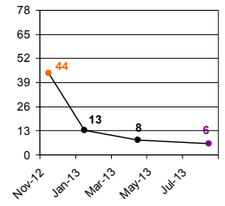


Figure 1: As part of the McGill pain questionnaire the patient is asked:

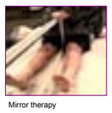
"**What does your pain feel like?** Some of the words below describe your *present* pain. Circle only those words that best describe it. Leave out any category that is not suitable. Use only a single word in each appropriate category – the one that applies best."

Orange = words identified at initial assessment (44/78)
Purple = words identified at final assessment (6/78)

1 Flickering Quivering **Pulsing** Throbbing Beating Pounding	2 Jumping Flashing **Shooting**	3 **Pricking** Boring Drilling **Stabbing** Lancinating	4 Sharp Cutting **Lacerating**
5 **Pinching** **Pressing** Gnawing Cramping Crushing	6 Tugging Pulling Wrenching	7 Hot Burning Scalding Searing	8 **Tingling** Itchy Smarting Stinging
9 **Dull** Sore Hurting Aching Heavy	10 Tender Taut Rasping **Splitting**	11 Tiring **Exhausting**	12 Sickening Suffocating
13 Fearful **Frightful** Terrifying	14 Punishing Grueling Cruel Vicious **Killing**	15 Wretched **Blinding**	16 **Annoying** Troublesome Miserable Intense **Unbearable**
17 Spreading Radiating Penetrating **Piercing**	18 Tight Numb Drawing Squeezing Tearing	19 Cool Cold Freezing	20 Nagging Nauseating Agonizing Dreadful **Torturing**

Treatment

Recognise App screen shot



Mirror therapy

- Nov 2012 Education, information leaflet, websites, explanation of GMI, assessed Left / Right discrimination
- Homework = read up on pain, play vanilla cards / App – 20 images 5secs each
- Nov – Jan 2013 Gradual progression of Left / Right discrimination as accuracy & speed improved
- Introduced relaxation – 'Colours' and 'Floating on a Cloud' – had not realised how stressed he was & found relaxation very helpful
- Some evidence of vanilla App helping to delay a flare (1st type PLP)
- 16/01/13 reviewed McGill Questionnaire - Pain description = 13/78
- 23/01/13 trialled body scan relaxation script – felt hard to think about right leg initially
- 07/03/13 progressed onto imagery – found hard to grasp concept at first – helped by imagining a hobby & describing it
- 24/04/13 – pt back from 2/52 hols = VAS 2/10 but had 2nd PLP flare on 23/04/13
- Reviewed McGill Questionnaire – no longer kept awake every night – only 1-2x per week
- Pain description = 8/78
- Started mirror therapy – reaction after 1st session odd – reignited some feelings of grief which he thought he had dealt with – following week ok
- Always did body scan relaxation before mirror therapy to enhance sensations
- Trialled various techniques in mirror:
  - In shorts
  - with prosthesis off & on
  - foot off floor → on floor
  - moving foot & leg
  - touching leg & foot
  - using different textures, etc
- 6x weekly mirror sessions with Physio, but also doing mirror 3x/day + relaxation + App + imagery as homework

Left and right discrimination

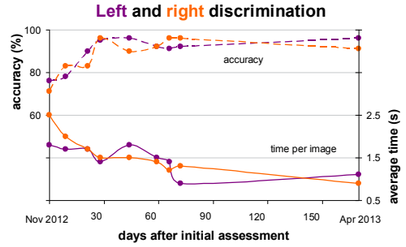


Figure 2: Progression of speed and accuracy in completing left and right image discrimination using the GMI Recognise App through the period of treatment

Final assessments

June and August 2013

- Able to move phantom leg from full flexion to -35 extension
- Easier to accept image in mirror & more vivid sensations
- Now on ↓ medications (consultant lead)
- Last McGill Pain Assessment Aug 2013 = 6/78
- VAS ↓ from 6/10 minimum at initial assessment to 2/10 minimum
- PLP reported to no longer control him. Fatigue & sustained postures no longer always fire PLP.

Reflections

- Not been a smooth progression, patient has been good with homework, but at times has pushed the boundaries
- Don't try to reduce the medication until finished GMI process and PLP stable
- Don't be afraid to take a 'step' back within treatment if needed to then be able to progress forwards
- The importance of education about pain, PLP and GMI treatment
- The patient needs to accept education, have support at home & do the homework
- Definitely requires patience, persistence, courage and commitment – from both patient and therapist
- There is no set regime for GMI – every patient is different, therefore you need to know your patient and work out together what will work for them
- The use of relaxation scripts to assess if the patient is ready to progress onto explicit imagery stage
- Don't stop the previous stage as homework just because you have progressed on to the next stage
- Take care when progressing onto mirror therapy
- GMI is a good treatment for PLP for the right patient

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- Melzack. 'The McGill Pain Questionnaire: major properties and scoring methods', Pain, 1975,1, 277-299
- Neuro Orthopaedic Institute (NOI) - **www.noigroup.com**: App – Recognise hands / feet

Acknowledgement

- A big thank you to Tom Collins for helping to format the poster

UK International Trauma Register

Abi Aston is a physiotherapist at the Royal National Orthopaedic Hospital in Stanmore. Here, she talks about her involvement with the UK International Emergency Trauma Register and her deployment to Gaza in October last year. Most of Abi's career has been spent working in paediatrics, in the community and now in a specialist orthopaedic hospital. She is currently seconded for 6 months in to an amputee and orthopaedic oncology team.

Why I joined the UKIETR

Since I was a teenager, I have had an interest in relief and development work in middle and low-income countries. This has grown alongside my love of travel and enjoyment of working with people from different cultures. Over the years, I have worked on a number of projects overseas (Thailand, Kazakhstan, Morocco, Uganda) where I have been able to use my physiotherapy skills from 1 week to 1 year at a time. I didn't think twice about signing up with the UKIETR as it was an opportunity to use my skills and continue to develop my experience in relief work.

What is the UKIETR?

The UKIETR is a government funded register of UK based health professionals who are interested in responding as part of a multi-disciplinary team to global disasters. Members receive both clinical and humanitarian training to prepare them for possible deployments. It has the support of the NHS and the Department of Health. The register also serves as a resource for other organisations who are seeking specialised staff to deploy to emergency situations.

How can a physiotherapist apply to be on the UKIETR?

The following website: www.uk-med.org has all the information you need. There is a simple form where you can register your interest.

How I was recruited to be deployed:

After signing up to the register in October 2013 I was invited to attend a core training course for physiotherapists. This was run by Handicap international who are responsible for the clinical training of therapists on the UKIETR. Over a long weekend in the summer of 2014, we received teaching on a number of subjects, including an introduction to the management of amputees (run by BACPAR) and psychological first aid. I also attended a pre-deployment safety and security course.

In August 2014, I received an email from the UKIETR inviting me to consider a deployment to Gaza. We had not expected to be requested to deploy to an ex-conflict zone, so I expressed my interest cautiously. After more security training, I was deployed with the third team from the UKIETR. We were a team of 5 physiotherapists and one nurse. Mary Jane Cole and Penny Broomhead were our two amputee specialists.

Who did we work for in Gaza?

We were hosted by the local Gazan Handicap International office. Each day we either provided teaching to local physiotherapists and occupational therapists or we accompanied them on their home visits. The local therapists had caseloads of patients ranging from fractures to amputees to peripheral nerve injuries. As a team, we worked in pairs seeing the patients and teaching on topics that best fit our experience. It was a privilege for me to support Mary-Jane and Penny for a day when they co-facilitated a day of teaching with a team from the International Committee of the Red Cross.

What difference has this experience made to my practice?

My confidence has increased in a wide range of areas including problem-solving a patient with polytrauma to working as a team cross-culturally. I was also privileged to learn a few new skills in amputee management as I had only done one week of my rotation before I was deployed to Gaza!

Would I recommend signing up with the UKIETR?

Yes, if this has tickled your interest!

Length of Stay Audit 2008/2011 Amputee Rehabilitation, Musgrave Park Hospital, Belfast

Purpose of Audit

The Withers Unit in Musgrave Park Hospital has 8 beds for amputee patients attending RDS for limb fitting and daily rehabilitation. Patients are usually admitted to the ward on a Monday morning and leave on Friday afternoon for temporary discharge over the weekend to return the following Monda.

Specialist nurses manage the ward and the patients have easy access to the consultant and multidisciplinary team. Patients travel, by hospital transport, a few hundred meters to the Regional Disablement Services building 4 in the morning and 4 in the afternoon to attend for prosthetic fitting and physiotherapy in the specialist Amputee Rehabilitation unit.

Each patient also has daily occupational therapy and has access to clinical psychology, social worker, and podiatry sessions as required.

It is felt that in the ward setting these patients benefit from the camaraderie and group support of other amputee patients at various stages of rehabilitation.

The purpose of this audit was to determine whether recent changes in the NHS and waiting list initiatives had affected the length of patients' hospital stay.

Method

It was decided to do an audit of length of stay for amputee patients in Withers attending RDS for limb fitting and gait re-education. A comparison of patients' length of stay was made between 2008 and 2011. Other information recorded was the patient's age, gender, number of sessions of Physiotherapy each patient received during their stay and outcome measures on discharge.

Exclusion criteria

Patients were excluded if they were inpatients only for a short time before choosing to continue the rest of their treatment as an outpatient.

Patients were also excluded if they were admitted to the ward for femurette assessment only and did not continue for limb fitting.

Outcome measures SIGAM, LCI/LCI5

Outcome measures regularly recorded were SIGAM mobility scale and the Locomotor Capability Index score. Both of these outcome measures are recognised as appropriate for amputee patients who have been fitted with a prosthesis. The LCI is a self reported outcome measure which assesses the lower limb amputee's perceived capability to perform 14 locomotor activities while wearing a prosthesis. It is scored out of a total of 42 points. However by 2011 the LCI had been updated to a newer version- the LCI5 score out of 56 points, so unfortunately these scores were not comparable.

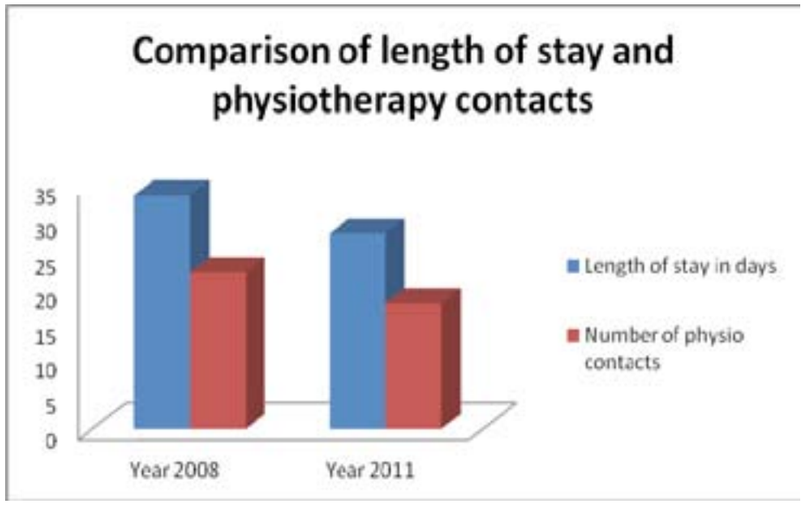
Summary of findings

- The average length of stay per patient in 2008 was 33 days and in 2011 was 28 days.
- Both trans tibial and trans femoral patients stayed an average of 33 days in 2008.
- Trans tibial patients stayed an average of 26 days compared to trans femoral patients staying 30 days in 2011.
- The average number of physiotherapy contacts that these patients received during their inpatient stay reduced from 22 in 2008 to18 in 2011.
- Trans tibial patients received on average 22 physiotherapy sessions in 2008 and trans femoral 24 sessions. In 2011 this reduced to 17 and 21 sessions.

- The SIGAM scores for 2008 and 2011 appear very similar across the range.
- The average trans tibial LCI score in 2008 was 30 compared to 25 for trans femoral patients.
- The average trans tibial LCI5 score in 2011 was 32 compared to 32 for trans femoral patients.

Table of summary of results

Year	2008	2011
Number of patients	61	78
Age	59	63
Length of stay in days	33.5	28
Number of physio contacts	22.5	18
LCI score	35/42	30/56
M:F ratio	46:15	29:10
SIGAM Score	%	%
A	5	3
B	7	8
Ca	10	12
Cb	3	5
Da	22	23
Db	38	38
Dc	15	6
E	0	5



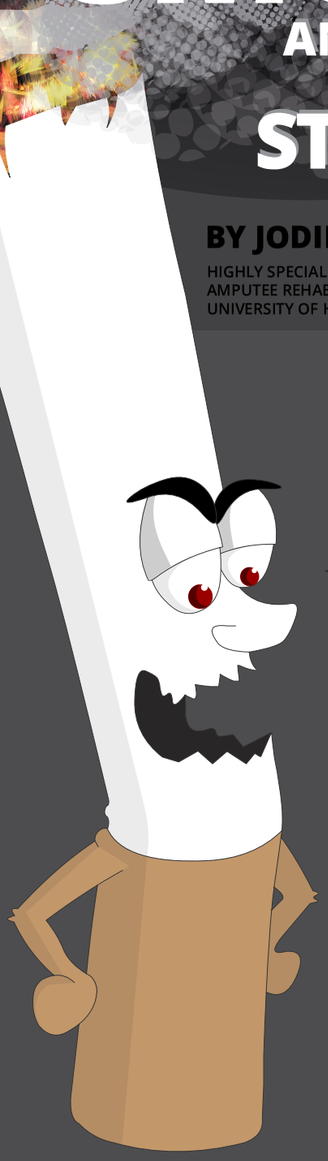
SMOKING AND THE EFFECTS ON STUMP WOUND HEALING

BY JODIE GEORGIOU

HIGHLY SPECIALIST AMPUTEE PHYSIOTHERAPIST, GUY'S AND ST THOMAS' NHS FOUNDATION TRUST, AMPUTEE REHABILITATION UNIT, IN PART FULFILMENT WITH MSC SKIN INTEGRITY AND TISSUE REPAIR, UNIVERSITY OF HERTFORDSHIRE, 2015.

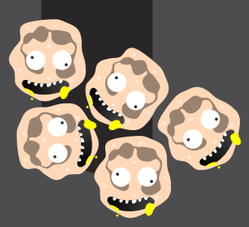
THE FACTS

- DYSVASCULARITY +/- DIABETES CAUSES 75% OF AMPUTATIONS IN THE UK (2)
- THESE CO-MORBIDITIES ALREADY COMPROMISE WOUND HEALING (1)
- 1/3 OF BELOW KNEE AMPUTATIONS FAIL TO HEAL AND 1/3 RESULT IN FURTHER AMPUTATION (6)
- **SMOKING CAUSES CHANGES TO THE PATHOPHYSIOLOGY OF WOUND HEALING. THIS FURTHER INCREASES ACUTE STUMP WOUND HEALING COMPLICATIONS SUCH AS INFECTION, WOUND DEHISCENCE (4) AND DELAY IN FULL WOUND CLOSURE**



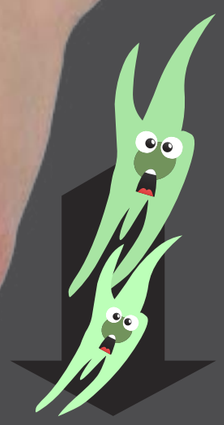
REDUCED MACROPHAGES

THESE WHITE BLOOD CELLS RELEASE CYTOKINES WHICH TRIGGER NEUTROPHILS TO SEEK THE SITE OF INFECTION. THEY ARE ALSO ESSENTIAL FOR REMOVING TISSUE DEBRIS, BACTERIA AND DYING NEUTROPHILS (5)

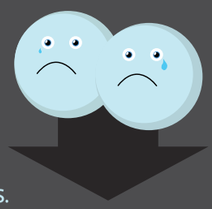


INCREASED NEUTROPHILS

AFTER COMPLETING THEIR ROLE THESE ARE NOT REMOVED DUE TO THE REDUCED MACROPHAGES. DYING NEUTROPHILS PRESENT AS SLOUGH ON THE WOUND. THEY CONTINUE TO PRODUCE PROTEASES AND RELEASE TOXINS FROM THE BACTERIA THEY HAVE INGESTED. THIS DELAYS PROGRESSION FROM THE INFLAMMATION PHASE TO THE PROLIFERATION PHASE OF WOUND HEALING (4) (3)



REDUCED OXYGEN



SMOKING CAUSES AN INCREASE IN CARBON MONOXIDE WITHIN HAEMOGLOBIN (6), THIS TAKES THE PLACE OF OXYGEN MOLECULES. SMOKING ALSO CAUSES VASO-CONSTRICTION OF BLOOD VESSELS, REDUCING OXYGENATED BLOOD FLOW TO THE WOUND BED. RESULTING TISSUE HYPOXIA INTERRUPTS ALL ASPECTS OF THE PHYSIOLOGICAL RESPONSE OF WOUND HEALING (3)

REDUCED FIBROBLASTS

THESE ARE ESSENTIAL IN RELEASING STRUCTURAL PROTEINS NEEDED FOR GRANULATION TISSUE FORMATION AND EPITHELIALIZATION (3)

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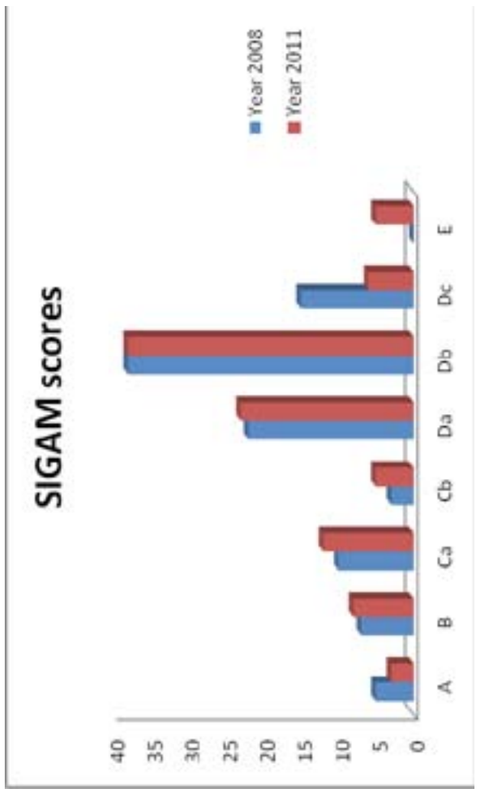

Comparison of levels of amputation 2008 and 2011

	2008		2011	
Average	Trans tibial	Trans femoral	Trans tibial	Trans femoral
N=	43	18	54	24
Age	58	60	63	62
Length of stay	33	33	26	30
Inpatient contacts	22	24	17	21
LCI or LCI5 scores	30/42	25/42	32/56	24/56

Discussion

Between 2008 and 2011 our patients' length of stay in hospital and amount of physiotherapy treatment has reduced. However the relevant outcome measures do not appear to be negatively impacted. As pressure increases within the health service to reduce waiting lists and reduce length of hospital stay in order to save money, it is important to ensure that our service is not compromised. By continuing to monitor our patients' outcome measures we can ensure that we maintain a quality service while maximizing throughput and capacity.

An increase in physiotherapy staffing levels, anticipated before the end of 2014, may well impact further on numbers of treatment sessions and on length of stay. Patients currently receive one physiotherapy session per day. With the increase in staffing, we may be in a position to offer twice daily treatment to fitter patients. This has the potential to result in a shorter hospital stay. The intention is to repeat the audit in 2015 in order to assess the impact of these changes on the service.

Carolyn Wilson, Claire McPeake & Pam Mercer

Moira Burrows – Queen Mary's Hospital, Roehampton, 2014

St George's Healthcare NHS

Strength and conditioning in the Lower Limb amputee – clinical practise review

What we wanted to do…….

Strength exercises have been shown to give increases in strength of up to 40% in untrained individuals and improvements in performance measures[2]. The most recent BACPAR guidelines recommend that a personalised exercise programme incorporating specific muscle strengthening exercises should be prescribed by the physiotherapist[1]. At Roehampton, the amputee therapy team felt that we would benefit from a refresher on the topic in order to gain up to date evidence-based knowledge to ensure effective use of strength exercises as part of our treatment.

How we did this…….

Following the attendance of strength and conditioning course run by APPI (Australian Physiotherapy & Pilates Institute), in-service training was delivered in order to review our current practise and how we could improve this based on up to date recommendations.

Improvements we made……

These are the changes we have implemented following this review based on current evidence;

1.The production of a table with recommendations for sets/reps based on the most current exercise prescription guidelines *(Table 1)*.

2.An increased focus on multi-joint, functional exercises.

3.More focus on prescription of sets/reps/intensity when using P.I.R.P.A.G. exercises in order to work towards the desired goal.

4.Inclusion of an exercise to work on power during our balance circuit.

5.The consideration of the neural responses to strength exercise when planning an exercise program.

1.

Training Dosage Guidelines

	Muscle Endurance	Strength Endurance	Strength	Power
Sets	2 to 3	3 to 10	3 to 5	3 to 5
Reps	12 to 20	8 to 12	4 to 6	2 to 3
Days/Week	3 to 4	3 to 4	3 to 5	3 to 5
Times/Day	1 to 3	1 to 3	1 to 3	1 to 3
Weeks	2 to 3 / 1	2 to 3/ 1	2 to 4 / 1	2 to 3 / 1
Intensity	Low	Low	High	High
Volume	High	High	Mod to high	Low

Table 1 – adapted from Garber et al. (2011)

2. Multi-joint & functional exercise

3. Hip abduction in side lying (P.I.R.P.A.G. exercise 10)

Lie on your side
- Bend the bottom leg
- Keep hips and top leg in line with your body
- Slowly lift your top leg up, keeping your knee straight
- Slowly lower

- NB Try not to let your hips roll forwards or backwards. Repeat the above with the other leg.

Prescription to focus on **strength** of the hip abductors:

Sets = 4 Reps = 5 Days/Week = 3 Times/Day = 1

Intensity = 10kg (High) Volume = Mod

*1RPM = 13kg

4. Power exercise during balance group

- Horizontal shoulder flexion in standing
- Resistance is provided by the theraband station which has different strength theraband attachments
- Variations included; standing on one leg, sitting on a Swiss ball or kneeling on a Bosu ball

5. Neural response to strength exercise

- **Cross education** – strength gains in non-trained limb (8-22% increase).
- **Bilateral deficit** – strength using both limbs is less than sum of single limb strength, higher strength gains from unilateral training.
- **Post activation potentiation (PAP)** – activated muscle fibres stay primed after use.
- **Central activity** – prior to movement there is activity on the cortex, with training activity is more specific within cortex, therefore less ineffective activity/movement.
- **Reflex potentiation** – stretch reflex increase (quicker response which can aid falls prevention)[3].

Progressive overload is required for adaptations

Outcome measures…….

In order to monitor the effects of our change of practise, manual muscle testing and 1RM will be used as an outcome measures to monitor any strength changes. In addition to this, the TUAG (Timed up and go) will be used to measure any changes in functional performance.

Timed up and go (TUAG)

1 Repetition Maximum (1RM)

One repetition maximum can be used for determining an individual's maximum strength. It is the maximum that can be lifted one time. This can be used as a repeated outcome measure throughout rehabilitation to ensure that progressive overload is achieved.

References

[1]Broomhead et al. (2012) Evidence Based Clinical Guidelines for the Managements of Adults with Lower Limb Prostheses, 2nd Edition. Chartered Society of Physiotherapy: London.

[2]Garber et al. (2011) Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: Guidance for prescribing exercise, *American college of sports medicine*, 43(7), pp1334-1359

[3]Hakkinen et al. (1988), Neuromuscular and hormonal adaptations in athletes to strength training in two years. *Journal of Applied Physiology* 65(6), pp2406-2412

Minutes For BACPAR AGM 2014

Held Thursday 13th November 2014 at BACPAR 2014 Conference, Wolverhampton Science Park

Attendance: Julia Earle, Penny Broomhead, Louise Tisdale, Ruth Woodruff, Rachel Neilson, Jennifer Fernandes, Kate Primett, Rhian Duffus, Maria Manock, Louise Whitehead, Sue Flute, Elizabeth Bouch, Andrew Oldham, Tim Randell, Carolyn Hirons, Gillian Atkinson, Lynn Hirst, Mary Jane Cole, Katharine Atkin, Kim Ryder, Maggie Uden, Amanda Hancock, Emma Kidner, Margaret Wilson, Caroline Cater, Hilary Smith, Philippa Joubert, Anne Harrill, Fiona Smith, Marion Gimson, Anna Rose, Kate Lancaster, Christine Snaylam, , Robert Shepherd, Tracy Millar, Matthew Fuller, Claire Jeffreys, Nikki Bradbrook, Helen Scott, Melissa Berry, Debbie Chilman, Rachel Humpherson, Laura Burgess, Kirsty Rivett, Laura Newcombe, Kathryn Osborne, Gill Wright, Peter Robinson, Louise Eichert, , Kirsty Worden, Katy Ebanks, Sarah Holden, Gail Murray, Fiona Grant, Dalena Christian, Karen Bending, Sarah Bradbury, Ed Morrison, Liz Wood, Rachel smith Jason Robinson, Jess Withpeterson, Lucy Parker, Gohy Berangere, Louise Johnson, Peter Ross, Marie Hulse, Nicola Senior, Jayne Watkin, Christine Willingale, Joanne Heberton, Linsay Clark, Jennifer Bullock, Claire Worgan, Sophie Gammie, Hayley Freeman, Amy Lee, Laura Creighton, Chris Walker, Jane Guilford, Jenni Palser, Emma Rogerson, Wendy Leonard, Jo Barnes, Nicola Snowden, Carolyn Wilson, Lucy Holt

Minutes of the Previous AGM November 2013 Wolverhampton.
Were agreed as a true record.
The AGM minutes for 2013 are available on http://bacpar.csp.org.uk/documents/bacpar-agm-2013
The AGM is open to BACPAR members only. Only full members and 1 representative from a Departmental membership are eligible to vote.

Chairs Report

The 2014-2015 work plan was drafted at the March 2014 BACPAR Executive Committee meeting and then made available for comments by Committee members. The results and comments from the BACPAR membership survey were used in the development of this document. The results of the survey are available in the Spring 2014 Journal- available online to members at http://bacpar.csp.org.uk/group-journal/bacpar-journal-spring-edition-40.
The work plan report was disseminated in advance of the meeting. A summary of the report in the form of key issues was presented on the 13th November as part of the AGM agenda.

Treasurer's Report

The CSP is ready to proceed with an online renewal and join feature for the PN websites hosted by the CSP. BACPAR have been asked if we want to run our 2015 renewals through the online process. It will provide the following:

- Enable members to join and renew vis the website
- Provide BACPAR with changes to contact details
- Send email prompts and reminders to our members (that are members)
- Able to set the renewal period and manage membership categories and fees
- Provide some reports (contact details report – Journal and report for CSP capitation fees)
- Automatically add a years' worth of member website access to the user account
- Remove a member's access when membership has lapsed
- Enable us to collect additional data about members vis a web form
- Use of online direct debit based system which charges 1% fee monies go into the BACPAR account

The BACPAR membership voted in favour of supporting this for the next membership year.

BACPAR Accounts from 1st July 2013 – 30th June 2014

Income		Expenditure	
Subs	6837.00	Room hire	754.00
Capitation Fees	324.00	Catering	29.69
Course Fees	16110.00	Travel	4537.55
Course sponsorship	3910.24	Postage and Stationary	267.45
Journal Advertising	5419.23	Course Costs	13531.40
		Bursaries	6652.00
		Gifts	160.63
		Printing	3310.58
		Other	933.62
Income	**32600.47**	**Expenditure**	**30176.92**
Surplus	**2423.55**		
Opening Reserves	**19718.70**		
Bank Reconciliation	**22,142.25**		

BACPAR objective	BACPAR work plan related item	Progress against the work plan
1.To encourage, promote and facilitate interchange of knowledge, skills and ideas between members of BACPAR	Dissemination and implementation of evidence based practice across the membership through access to relevant online articles published by SAGE, promoting discussion re the same.	Last SAGE article posted in April 2014. 1 comment added on behalf of the WM region following WM study day. Q1: Does the level of access to and discussion re the SAGE articles warrant the continued purchase of articles from SAGE? The majority voted that BACPAR will discontinue purchasing SAGE articles.
	Plan and deliver BACPAR 2014 Conference.	Conference 13th and 14th November 2014
	Regional Reps to provide study days and be a resource for their members. (Cross reference with Objective 4).	Study days offered by North Thames, North West, South Central, West Midlands (per feedback to Exec Committee)
	'M' level study – Exploring potential of and collaboration with various HEIs for the development of an 'M' level amputee rehabilitation course.	BACPAR education working Group sought offers of interest, assessed applications, shortlisted 3 HEIs-interviewed those shortlisted and then selected the University of Southampton as the HEI with which to work on the development of M level training in amputee rehabilitation. Working group members; Penny Broomhead, Anne Berry, Peter Ross, Hannah Slack, Liz Bouch and Mary Jane Cole(lead)
	Encourage members to be part of Exec and Sub-committees both at AGM and via regional reps.	New regional reps and Hon Officers at Exec Committee meetings in March and September 2014 (Rachel Humpherson, Emily Hancock, Andrew Oldham, Rachel Neilson, Katharine Atkin and Amy Jones)
	To maintain the BACPAR website and Amputee rehabilitation iCSP sites as valid and current resources for the membership. Generating timely bulletins and email circulars as appropriate.	The BACPAR website has been visited by 76% of its current members. Amputee Rehabilitation iCSP has had 100+new items of content added since the last AGM. Bulletins are produced every 2 weeks – edited to reflect important issues by the iCSP facilitator. BACPAR has recently set up a Twitter account and has a Facebook page. To encourage members and non-members to visit the BACPAR website. 2 issues of the BACPAR Journal have been printed and disseminated. The Journal is a membership benefit both in print and accessible to members on the BACPAR website at http://bacpar.csp.org.uk/group-journal The content fully supports BACPAR Objective 1.

2. To establish and promote the implementation of best practice in the field of amputation and limb deficiency rehabilitation.	Update 2006 Clinical Guidelines for the Pre and Post-operative Physiotherapy Management of Adults with Lower Limb Amputations	The Guideline update group is made up of; Heidi Baker, Karen Clark, Fiona Gillow, Amanda Hancock, Amy Jones, Clare Moloney, Lauren Newcombe, Claire Norman, Heather Pursey, Tim Randall, Anna Rose, Carla Shaw, Hannah Slack, Sara Smith (co- coordinator), Gemma Springate, Sarah Verity and advised by Penny Broomhead. Current draft of the Guideline has been shared with Users for feedback. More volunteers required to complete the Delphi questionnaire and more users are required to review the updated version.
	Membership Secretary to encourage/ remind membership of the availability of Education bursary to support CPD	2 bursary applications supported in the current year. Exec committee to agree the value of the Bursary pot for ISPO World Congress 2015 in Lyons (June 22-25) in addition to Educational bursary fund. Bursaries are open to current Full members who have had membership for 1 full year (2 consecutive years)
	Research officer to encourage/remind membership of availability of Research bursary with suggestions on how this money can be used to support CPD and development of best practice.	No applications for the research bursary launched in January 2014. The Research bursary fund is £3000. Details about the bursary are found at http://bacpar.csp.org.uk/news/2014/01/05/bacpar-research-bursary-launch
	Development of an education training package in collaboration with Handicap International for use in areas of emergency e.g. environmental disasters	The first training weekend has been delivered with positive feedback received. The development of the Practical and E learning training elements still in progress. Kat Sizer ,Penny Broomhead, Pip Joubert, Sarah German (past) Emily Hancock (past), Anna Rose, Anne Vickerstaff, Pete LeFeuvre and Mary Jane Cole (lead) (and OT Joy Rendell)
	Investigating collaboration with SPARG re the use of the SPARG Database – possible pilot by East Anglia region	East Anglia region are in the planning stages of the pilot.
	Involvement in consultations and working parties related to Specialist Commissioning for the assessment and provision of prosthetics. (Cross reference with Objective 3)	Laura Burgess representing Physiotherapy issues at Specialist Commissioning meetings. BACPAR provided feedback to the latest draft of the Specification document.
	Continued updating of the Outcome Measures Toolbox to include recommendations for the acute phase and non-limb wearers. Continue to develop consensus within the Amputee Rehabilitation MDT.	Version 2 of the Outcome Measures Toolbox completed. The process of development of the Toolbox is offered as an abstract to WCPT Congress Singapore. Working Party is Judy Scopes (lead), Mary Jane Cole, Jane Cumming, Nancy Golland, Sue Hayes (OT), Chantel Ostler and Louise Tisdale.
	Dissemination and implementation of evidence based practice across the membership through access to relevant online articles published by SAGE, promoting discussion re the same.	See Objective 1 Discussions with the founder of Physiopedia started in September re collaboration with BACPAR. BACPAR members can contribute to Physiopedia and/or BACPAR can collaborate with Physiopedia to develop an Amputee Rehabilitation Course. Penny Broomhead leading on response to this request. Q2: ISPO Lyon – who is attending this conference? 5 members confirmed they were attending.

3. To improve communication and understanding between all disciplines working in the field of amputation and limb deficiency rehabilitation.	Active representation in NHS England Specialised Commissioning	See Objective 2
	Continued representation and/ or consultations with CSP, APLLG, Vascular Society, Royal College of Surgeons , Handicap International, and others	BACPAR representatives attend meetings with the CSP and Client Group Alliance and NICE. Representatives and reports are sent to APLLG. Kate Primett has attended meetings in 2014. Representatives required for 2015 onwards. Any interested members should approach Lou Tisdale directly. Evidence of collaborative work with Handicap International, ISPO, SPARG and NCEPOD. NCEPOD report to be disseminated to conference tomorrow, 14th November 2014. Thanks to Mary Jane Cole, Julia Earle and Amanda Hancock for their work in this project.
4. To improve post registration education in this speciality.	'M' level study – Exploring potential of and collaboration with various HEIs for the development of an 'M' level amputee rehabilitation course. Regional Reps to provide study days and be a resource for their members. Plan and deliver BACPAR 2014 Conference. (All cross ref with Objective 1).	See objective 1 and 2 outcomes
5. To encourage research in this speciality.	Research Officer to encourage membership to continue to send information regards research development (currently a small database of audit/ research projects) and its dissemination. Encourage uptake of research bursary Encourage students/post registration members to undertake research – use CSP research priorities to inform research proposals. Make the research database available for students/members to be aware of what is being done and help encourage/ streamline ideas	Posters to be printed in journal and presented at conference.
	BACPAR regions to consider developing a poster on a topic /project. BACPAR to support the cost of the printing of the poster.	Posters presented at 2014 Conference Q3: Which BACPAR members are involved in research related to amputee rehabilitation? 5 members confirmed they were involved in research. These members were requested to contact Penny Broomhead, BACPAR Research Officer, so that their research projects could be added to the BACPAR research database.

6. To provide support and information between members and contact with similar organisations nationally and internationally.	On-going review of support mechanisms to and the role of regional representatives.	Regional representative pack updated in 2014. Outlines the Responsibilities and Role of a regional representative. Regional reps have a slot to feedback at the Exec Committee meeting.
	Supporting the regional representatives with a networking opportunity at Conference	Networking opportunity- 13th November at Conference.
	Undertake a review of the Trent region.	The Trent region is currently being looked after by neighbouring regions. Still aiming to find a rep for the region if not successful, region will be disbanded and membership offered options of EA/WM and Yorkshire.
	Update of the Regional reps pack and identify how to best use this as a useful resource	As above
	Chair to continue representing BACPAR at the Client group alliance and professional network chair forum meetings at the CSP.	No representative at meeting Nov 2014. Otherwise BACPAR present at all meetings.
	To continue to support the WCPT Amputee Rehabilitation network through sharing appropriate information with its members.	BACPAR Chair is Primary Contact for WCPT AR. BACPAR website and its non-member content is linked to WCPT AR homepage. BACPAR South West region currently does not have a regional rep. Current efforts to establish a rep for the region. Potential collaboration with Physiopedia see Objective 2 Collaboration with SPARG- East Anglia data collection pilot - see Objective 2 Q4: The membership was asked to vote on disbanding the Trent and SW regions if no-one volunteered to become regional reps for these regions. The majority voted to disband these regions. However following the meeting Robert Shepherd and Chris walker agreed to become joint Trent Regional Representatives. This will be put to the Trent membership for a vote. If following further contact with the members, there is no volunteer, the South West region members will be given the option of joining West Midlands, Wales or South Central regions. Q5: BACPAR members have been invited to join in the development of MOOCs (massive open online course) for Physiopeadia. Any interested members were requested to contact Penny Broomhead, BACPAR Research Officer.

7. To support CSP policy and strategy where relevant to amputation and limb deficiency rehabilitation. (not all CSP objectives need to be evidenced by BACPAR) 7.1 Support all members in their challenging working environments	Active representation in NHS England Specialised Commissioning	See Objective 2
	Encourage membership to use Amputee Rehabilitation iCSP to alert other members re any issues and provide network support	See Objective 1. Amputee Rehab iCSP also used to canvas themes for the development of ARC motions. Regional meetings allow the opportunity for members to discuss workplace issues.
7.2 Develop and use evidence to demonstrate Physiotherapy's clinical and cost effectiveness in changing environments.	Possible collaboration with SPARG and use of database (Cross reference to objective 2)	See Objective 2
	Continued development and use of the Outcome Measures Toolbox (Cross reference to objective 2)	See Objective 2
	Update of pre and post op guidelines (Cross reference to objective 2)	See Objective 2
7.3 Strengthen the public profile, reputation and influence of Physiotherapy.	Continue to ensure BACPAR website is current/up to date and relevant	BACPAR website moderated by the PRO and Chair and reviewed on a regular basis.
	To investigate the use of Twitter	@BACPAR_officialTwitter account set up. Facebook page also set up BACPAR_Official Considering the development of a Social Media lead role.
7.4 Motivate members to actively influence on behalf of the profession.	Active representation in Specialised Commissioning	BACPAR members are encouraged to attend PhysioWorks events.
	Collaboration with other organisations (Cross reference to objective 3)	See Objective 2 and 3
7.5 Ensure sustained financial and organisation success	Maintain a healthy membership	Membership numbers below
	Continue with robust financial protocols and policies	BACPAR advertising standards of practice (includes price structure for advertising)
	Utilise any developments in the CSP website platform to develop the membership application process.	Liaison with the CSP re setting up an online membership renewal function on the BACPAR website. Q6: Does the membership have any ideas for ARC motions? Fiona Smith has volunteered to write a motion promoting the role of physiotherapy consultant roles within amputee rehabilitation. Lou Tisdale to email all relevant papers to Fiona. The majority of the membership agreed with this motion. Laura Burgess is opposed to the motion as she feels it will weaken the international voice of doctors. Q7: Do any members want to attend ARC representing BACPAR? No members came forwards today. If anyone is interested, please contact Lou Tisdale to complete an ARC nominations form. Q8: Does BACPAR need a social media rep role? The membership agreed that this should become an integral part of the PRO role when it is up for election in 2015. Jodie Georgiou and Ed Morrison will continue with the sub role until then.

Membership numbers 2014

Membership Category	Number of members	Detail
Full (including CSP associate members)	137	Includes 3 CSP Associate members
Departmental	13	Each departmental membership supports 2 CSP members
Allied associate	19	7 non UK physios 9 non physios 3 students

SPARG Report

Last full meeting 30.10.2014 at National Centre. General meeting in am and focus in pm on reports from each local centre and presentations on Specialist Prosthetics Service and reliability of FCI. Care of remaining Foot competency agreed.

- **DONM 24.4.2015 at NCPO.** Afternoon session will be a workshop on writing for publication with a view to set up 2-3 working groups to use 2012 and 2013 to write up for publication in addition to producing the standard annual report.

- **BACPAR's financial aid: how has the money been used?**
  Following BACPAR's generous financial aid of £6372.00 last year the 2011 Annual Report has been published, 2012 is in final draft form for distribution before the end of the year. All BACPAR members will receive an electronic version and the executive summary will be forwarded for consideration for the BACPAR spring journal.

  The data base has now been re sited and is sitting on a virtual server at Strathclyde University as they came up with a last minute offer to house it in such a way that it is automatically backed up and we only have to re-new the operating software rather than server thus still reducing our ongoing costs.

  Following publication of the 2012 report our data analyst will be working on the data base upgrade to improve functionality and in particular the facility to calculate medians in the custom queries. The plan is also to expand our OM collection.

  Louise Whitehead and a team from the 'east' organised our first SPARG conference which has generated funds to help keep the data collection project going and Helen is still working to secure recurrent funding from other sources including funding for specific pieces of research.

- **Expand collection of OM data**
  At the last meeting in October SPARG members from 5 specialist centres have agreed to expand the data set to include TUAG and 2'TWT with all LF amputees at d/c from rehab at the same time as completing the final LCI5 score. This will start on 1.1.2014 for 6 months. The aim of this is assess the feasibility of including these timed tests in our routine data collection and to get population norms for our Scottish amputees.
  Use of SPARG data base by BACPAR members
  We have agreed to carry out a pilot with East Anglia Why but they are waiting approval from their Hospital trust to participate in the project.

- **SPARG Constitution: approved in April and posted on website.**

- **Data control manual finalized to ensure correct procedures are followed with data use for joint projects.**

- **SPARG Study Day 20.6.2014** EARLY POST-OPERATIVE MANAGEMENT OF THE AMPUTEE - MULTIDISCIPLINARY APPROACH
  Dundee, great success both from financial and learning perspective. Well attended and well supported by prosthetic companies. Next Conference will be in June 2016 and is being organized by 'West team', topic and venue to be confirmed.

- **Associated projects**
  Collaborative project with Glasgow Vascular Surgeons. SPARG data from 2008, 2009, and 2010 have been analysed using a regression model to determine the relationship between adverse outcome and failure to limb fit. The relationship between social deprivation and amputation/amputation outcomes is also being explored. A paper has been written and publication is being sought.

  Proposed collaborative project with NCPO using SPARG data to investigate the impact of Prosthetic Centre early mobilisation protocols with delayed healing on patient outcomes.

  HTA application: joint proposal with NCPO to look at how models of care in Scotland impact on rehabilitation outcomes for lower limb amputees was unsuccessful.

- **Multimedia Patient Information**
  School of Physiotherapy, Caledonian University, Glasgow are developing / updating SPARG's and Murray Foundation's multimedia educational resources. DVD's and subsequently new patient information packs, are being created to replace the Murray Foundation DVD's and will be used for education of students as well as patients. DVDs are in the process of being finalized.

- **PPAM aid Research project**
  Joanne Hebenton, Helen Scott and Fiona Smith were successful, on behalf of SPARG, in securing a small grant from the CSP Research Foundation to investigate how different models of care in Scotland impact on the use of the PPAM aid. Joanne is the chief investigator and started on 1.9.2014, the project will be run from Westmarc for 10 months ending June 2015. Her post has been backfilled for the 2 days a week she is working on the project.

Elections

Secretary Amy Lee
Proposed Amanda Hancock
Seconded Penny Broomhead
Unanimous

AoB

None

EDITOR'S NOTE: This page of acknowlegdements was missing from the last jouranl and in accordnace with the auithors wishes it was agrred it would be reproduced in the next Journal.

Reliability of the Six Minute Walk Test and Timed Up & Go Test in Persons with Transfemoral Amputation

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No disclaimers

2011- Poster presentation at the 16th World Congress of Physical Medicine Rehabilitation (Amsterdam) organized by World Confederation of Physical Therapy (WCPT): "Reliability of the Six Minute Walk Test and Timed Up & Go Test in Persons with Transfemoral Amputation".
http://repositorio.hff.min-saude.pt/handle/10400.10/1027

2011– Abstract publication "Reliability of the Six Minute Walk Test and Timed Up & Go Test in Persons with Transfemoral Amputation", Physiotherapy, 97, Supplement 1, June 2011, p: S18-S1415 - Special Interest Report Abstracts, pages. S227. (IF=0.641)

We certify that no party having a direct interest in the results of the research supporting this article has or will confer a benefit on us or on any organization with which we are associated.
We certify that all financial and material support for this research and work are clearly identified in the title page of the manuscript.
No authors' conflicts of interest were found

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