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BRITISH ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS IN AMPUTEE REHABILITATION

AUTUMN 2019 **ISSUE 52**

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An ideal opportunity for you to strengthen your relationship with your patients, share experiences and improve clinical outcomes! We hope you can join us!

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The aim of this one day event is to provide a fun and engaging platform for amputees to improve their overall mobility, to meet and socialise with other amputees and Össur ambassadors.

- Connecting amputees with support structures
- Real-life stories
- Sharing current evidence-based experiences with amputees
- Shared challenges and solutions
- Empowerment through education and training
- Techniques to maximise prosthetic capabilities

Date : Sunday 29th March 2020

Time : 10am - 4pm

Venue : University of Birmingham Sport & Fitness, Edgbaston, Birmingham B15 2TT

To register your interest, please email **ukevents@ossur.com**

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CONTENTS

HOW FAR HAVE WE COME?

Julia Earle

BACPAR Chair

Clinical Specialist Physiotherapist in Amputee Rehabilitation

Gillingham DSC
Medway Maritime Hospital

bacpar.chair@gmail.com

CHAIR'S MESSAGE. SPRING 2019

Welcome to the latest BACPAR Journal, as always packed with interesting and informative articles of all types. Thank you to our 2 editors for the new developments in this issue and to all those who have contributed.

At our latest exec meeting one of our members, who has been around since the early days, commented on how far we have come in the last 26 years. Initially, from a few limb centres and acute setting physios, getting together to talk about local issues and training, to the subjects we are now discussing; NICE accredited guidelines, regular international conference presentations by members, collaboration with the Vascular Society and the International Society of Prosthetics and Orthotics, research being undertaken by members and active partnerships with various research groups, involvement teaching for international charities, an initiating stakeholder in an MSc course at the University of Southampton, regular well attended 2 day conferences as well as regional study days, membership of 248 this year and counting, provision of education and research bursaries, our own website as well as active social media and other interactive discussions groups..... The list could go on. **WELL DONE BACPAR.**

On more mundane matters - hopefully you will have already received information about the proposed constitutional changes which we will vote on at the AGM, these are as a result of the PN changes I reported in the Spring Journal, and will include widening our membership out to non CSP members. The exec will also be proposing a new bursary for post graduate education so we can support our members even further.

I hope to see you all at Conference in a few weeks and look forward to another great year at Wolverhampton.

Julia Earle

BACPAR Chair.

WELCOME

EDITORIAL

Mary Jane Cole

Joint Journal Officer

bacparjournal@gmail.com

Sue Lein

Joint Journal Officer

bacparjournal@gmail.com

Welcome to the Autumn Journal! We are now onto our second edition as new editors and hoping what we learnt first time round will make for an even better end-product for you the members.

We have a new 'Letters to the Editor(s)' feature – this will only work if you write to us to comment on things in the Journal or raise new discussion points. Keep thinking about what YOU can add to the Journal content - even small ideas for the 'Pinboard' are most welcome. Please use the BACPARjournal@gmail.com email to contact us.

We hope that many of you are able to come to the BACPAR Conference in November; the programme is looking great and bookings are coming in. In fact one of our 2 letters refers to the value of last year's conference towards practice.

We thank all contributors to this edition – you've been fantastically responsive to our call for content. There's a great variety of articles for you to appreciate, **all of which support our practice with amputees.** Features include an overview of the medico-legal process in amputee rehab, various case studies illustrating innovative practice, posters (two – and a project – from members on the MSc course at the University of Southampton), a reflection on the upper limb element of the TIPS, ISPO and BACPAR conference this march, an account of developments in surgical trauma management, reports from various regions including Scotland, a new amputee role, guidance on the use of social media and a book review – more reading for you! The strength of the BACPAR journal lies in its range of content.

Enjoy your journal and let us know what you think!

Best wishes,

Mary Jane and Sue

GUIDANCE NOTES FOR FUTURE SUBMISSIONS:

DEADLINES for the biannual Journals (Spring and Autumn) will be announced via iCSP and our 'BACPAR Members Only' Facebook page

CONTACT the joint Journal Officers Mary Jane Cole and Sue Lein via email: BACPARjournal@gmail.com

WORD COUNT The approximate word for major articles is 2000 or 1500 words if you have the addition of figures and/or, tables, photos and references

PICTURES should be supplied as high resolution (300dpi) jpegs or PDFs as images. They should be emailed as separate files, ideally not already embedded in your text

LAYOUT Include your name (and any co-authors) and work-setting at the top of your article after the title. You may wish to add your job role/ title

TO ACCOMPANY YOUR SUBMSSION you will need to return a completed Article Submission Form and Image Consent Form (if applicable)

LETTERS TO THE EDITORS

July 2019

Conference

Dear Editors,

I would like to thank Abi Aston for her report on last years BACPAR conference. I did attend the conference but the report was a very useful reflection tool and I've had a good think about which lessons have had a long term impact on practice. Frailty and pre-habilitation are a hot topic within my department at the moment so it was useful to have a reminder of Dr Elizabeth King's session. I've also realised that I am more confident with advising repetitions needed for exercises and not afraid to push my patients that little bit more which is down to Simon Hanna! A very useful article for those who did attend as well as for those who missed it.

Hayley Crane

PhD Student (and bank physio!)

Hull University Teaching Hospitals NHS Trust

Dear Hayley,

Thank you for your letter and constructive feedback to Abi Aston, highlighting it's value as an aid to reflect upon your practice. We value members' making the time and effort to share their experiences via the Journal, what ever the event.

Sue Lein and Mary Jane Cole

September 2019

Oedema Management

Re: 'Minimal Change in the Oedema Management Approach for Trans-Tibial Amputee Despite The Evidence' poster in the Spring 2019 Journal (Issue 51).

The consensus from responses appears to be use of compression socks. Apart from the BACPAR Guidelines in 2012 has there been any further guidance as to the use of compression socks on a national level where rigid dressing are not used?

Wendy Leonard, Physiotherapist, Lincoln.

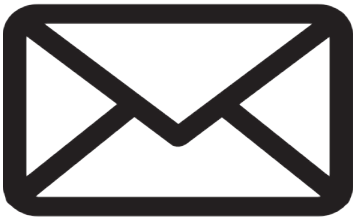
Dear Wendy,

What a good question! Despite this small study illustrating compression socks being the preferred choice for oedema management, it is the editors' understanding that 1. no further guidance has been developed on a national level since 2012 and 2. the specifics of the use of compression socks varies across the UK.

A survey of their application across Scotland has taken place this year, the results of which may prompt further work towards developing national guidance for use.

Following on from your question, the editors welcome views on the use of relative little use of the rigid dressing, despite recommendations as 'gold standard', and the opportunity for training (see Rigid Removable Dressings Course at Manchester Royal Infirmary, Spring 2019 Journal (Issue 51). There's a sense that its use might be increasing....?

Mary Jane Cole and Sue Lein



TIPS / ISPO / BACPAR CONFERENCE "MOVING BEYOND THE LAB" – MARCH 2019

Kate Lancaster
Physiotherapist, Queen Mary's Hospital, Roehampton.

I have been working with upper limb amputee / congenital limb loss patients for the last 9 years, but had never been to a TIPS (Trent International Prosthetic Symposium) conference other than to co-present a workshop about 7-8 years ago. So I had the fortune to attend conference earlier this year at The Lowry in Salford Quays.

I was, I think, one of two physios attending the TIPS part of the conference, with several others joining us for the last 2 days for the ISPO / BACPAR element of the conference.

I was intrigued to see what was to be presented at TIPS and how it would influence me clinically as well as hopefully improving my understanding of upper limb prosthetics and whether there was anything else that I should be doing with my MDT to improve the treatment and management of this patient group.

There were a lot of scientific update presentations, which although they were fascinating to listen to, were not necessarily clinically applicable to me as a physio, but may influence the future in terms of prosthetic development. Examples of these were 3D printing, use of robots to influence design, virtual reality, socket linings, EMG, electrode development, etc. However, there were definitely some thought provoking presentations in regards to my practice.

The Lowry, Salford Quays

One of the early presentations that really inspired me was by Debra Latour who not only had congenital limb loss, but was also an Occupational Therapist. Her presentation was entitled "60 Years of active prosthesis use: Self-reported case study with recommendations".

Debra spoke passionately about how being "encouraged" by her parents to use her prosthesis as a child meant that she had learnt how to do things with and without a prosthesis. This therefore gave her choices throughout her life as to when to use or not use her prosthesis and their devices.

She also spoke how her prosthetics / devices had become her friends. Initially they were acquaintances, but the more she got to know them, they were now her friends. It made me wonder if we as an MDT should try to be more "encouraging" of parents to persuade their children to use their prostheses even when they say they don't want to or try to throw them away like Debra said she did on countless occasions .

As Debra stated; "children know what feels good, but not always what is good for them". To give these children choices in later life and to also try to prevent secondary complications and overuse injuries (which we as physios are then presented with to try and "fix"), should we not be more encouraging?

Debra also spoke about the importance of education,

engagement and ultimately empowerment for our patients. I like to remember this as the 3 "E's". To have an open mind, be creative with solutions and adaptive strategies, and to listen to our clients. To speak of ability and what you can do, rather than disability and what you can't do. This is surely a great message for all of us to remember when working with all of our patients.

Another interesting talk which highlighted the massive challenge for upper limb prosthetics, was the keynote lecture by Aaron Dollar on "Understanding human grasping and manipulation and the design of low dimensional mechanical hands".

The research team used cameras to assess how people used their hands and identified around 3,200 unique grasps! The normal population showed an approximate equal use of both hands, but the non-dominant hand was used more for prehensile grasps – in other words grasping an object to stabilise.

When the team used the cameras on prosthetic limb users, they saw a heavy dependence on the unaffected hand and lots of indirect grasping in the prosthesis where the unaffected hand was used to place the object into the prosthesis to grasp. More static use of the prosthesis was identified and the prosthesis was used more for non-prehensile grasps – in other words not grasping but pushing objects around or placing the prosthesis on top of an object to try to stabilise it.

Have a go at picking up an object you want to use. I bet you have to manipulate it in your hand before using it! How challenging is that for a prosthesis!

It made me think back to watching Debra Latour give her talk and how she so naturally used both her arms and hands to gesticulate and manipulate things. It once again highlighted the importance of prosthetic embodiment which only comes with usage.

There was also an excellent manufacturer's workshop lead by Ossür on the "Effective use of Physiotherapy and Occupational Therapy to optimise i-Limb and i-Digit use". This essentially highlighted the importance of both professions being involved early in prosthetic training to try to prevent secondary complications, by ensuring patients maintain good posture and movement patterns when learning how to use their prosthesis / devices functionally and, if available, to ensure patients use their wrist rotators to help achieve this.

Johnny Parr presented on the study; "Gaze training enhances prosthetic hand learning, visual control and neural efficiency", aimed at reducing the high cognitive burden which is associated with prosthetic hand abandonment. Here they encouraged patients to NOT focus on the hand but on the object – in other words to focus on the target. This is a form of implicit learning and is used a lot in sports. It reduces brain activity to produce a superior performance. I also felt it reinforces the importance of training our patients to not look at their feet when relearning how to walk, which could then reduce their risk of falls as they be better able to focus on what is going on around them.

That leads nicely onto the talk by Matthew Major on "Falls and balance control of persons with upper limb loss". Arm dynamics help to aid stability which in turn helps to redirect centre of mass and increases the available window of response time in the event of a fall.

Unfortunately poor prosthetic embodiment creates postural disturbance. This study had 3 parts to it, as follows:

They sent out a questionnaire and had responses from 109 upper limb loss patients and this showed a 6 fold increase in falls likelihood with upper limb prosthetic usage;

They looked at upper limb loss patients standing balance. They showed that although prosthetic usage did encourage symmetry, it also increased centre of pressure sway; and

They looked into Gait Dynamic methods. This showed that upper limb loss patients using prosthetics had reduced transverse rotation and step width and that asymmetrical stability dynamics was not acutely affected by the prosthesis.

None of this meant that we should not prescribe upper limb prosthetics as they have many other pros, but it does highlight the importance of physio involvement with upper limb loss patients in falls prevention through balance and gait re-education and training.

The TIPS part of this conference was indeed interesting and has made me determined to be more involved with our upper limb patients in their training to try to prevent complications, which ultimately must surely make their lives and ours easier.

NATIONAL PLASTIC SURGERY & ORTHOPAEDIC SURGERY REGISTRAR TRAINING DAY, JUNE 2019

ORTHOPLASTIC SURGERY – CURRENT AND FUTURE STRATEGIES

Amy Jones
Clinical Lead and Head of Service
Guys and St Thomas' NHS Trust Community Amputee Services.
amy.jones1@gstt.nhs.uk

Hosted at Kings College Hospital London, this study day saw over 80 orthopaedic and plastic surgeon trainees in attendance. The day was organised by Mr Edmund Fitzgerald O'Connor, Consultant Plastic & Reconstructive surgeon at Guys and St Thomas' Hospital and lectures were given from North Bristol NHS Trust, St George's, Royal London, Kings College Hospital, Guys and St Thomas' and Walter Reed (National military medical centre; USA).

The morning focussed on the most recent British Orthopaedic Association (BOA) guidelines; trauma and development of orthoplastic services and specific surgical techniques (frames, plates, anti biotic nails, tunnelling, free flaps and vessel selection). The afternoon focussed on debridement of bone infection post trauma, amputation surgery, management of bone loss, osseointegration, targeted muscle reinnervation (TMR), prosthetic and rehab services.

The 'zone of injury' in complex trauma cases was demonstrated and discussions arose regarding how historically, when faced with trauma cases, surgeons have kept away from the zone of injury but now, due to complexity of major trauma, they can't do this and need to go into the zone of injury in order to achieve a salvageable limb. The trainees were taught the need to identify both the zone of injury and zone of fixation to plan surgery e.g. External fixation pins need to be in the zone of fixation, not injury. A change of mind set has been needed and this has helped lead to innovative methods being used in limb salvage services. The need to understand fracture patterns and the direction of fragment sections was highlighted as being essential; as was getting good X Rays; not settling for less. If the X Rays aren't clear, better ones must be obtained.

The use of and development of antibiotic nails, frames and plates with open fractures was outlined in a number of lectures. My take home learning points are that plates are good at pushing but not good at holding and maintaining; therefore they should be placed on the lateral aspect in comparison to the fractures to obtain most effective long term stabilisation of a fracture segment.

Victoria Rose (Guys and ST Thomas', London), Sara Philips (Kings College Hospital, London) and Jonathon Lohn (ST Georges, London) spoke in detail about different flap techniques, vessel selection and bone infection post trauma. They presented

their experiences via case studies and the long term outcome; shaping their surgical techniques and clinical practice.

Di Back (Guys and St Thomas') defined myodesis and myoplasty; making it clear that myodesis should always be the favoured choice of amputation technique and that closure should always occur in extension. Myodesis involves the direct suturing of muscle or tendon to bone, resulting in greater stabilisation of the divided muscles. This can be seen to have a positive influence on prosthetic control, especially in the transfemoral amputee. The myoplasty technique does not create stability of the muscles as the opposing muscles are attached to each other. This technique should only be used for patients with poor vascular health who require a shorter surgery time and is often used for the elderly dysvascular transfemoral patient. (2). Miss Back informed the audience that muscle mass significantly reduces in women over the age of 60 and in men over 50. Patients should be informed of this when considering transfemoral amputations so they know what the future may hold. This is information is pertinent to prosthetic MDTs when carrying out pre amputation consultations. She gave a clear message to her to surgical colleagues and trainees not to loose sight of the patient when considering amputation Vs reconstruction.

The MESS Score was presented, which estimates viability of a limb after trauma to determine salvage or amputation.

Originally published in 1990, the work was a retrospective review of 250 long lower limb bones. The 4 elements of MESS were identified and agreed. A prospective study was then carried out at 2 different medical centres using the MESS score; finding that all salvaged limbs had a MESS of ≤6. The authors found MESS of ≥7 to be 100 % predictive of amputation; however, the sample size was small (1).

In 2001, a multi centre prospective validity study was carried out comparing different scoring systems including MESS. They looked at the outcomes of 556 limbs, using a MESS of 7 as a cut off. They found the MESS to be 91 % specific for predicting amputation (3). Johansan (1) has been noted more recently to inform colleagues that due to advances in revascularisation, use of VAC (negative pressure vacuum dressings), free tissue transfer and Ilizarov frames, the MESS scoring to indicate amputation may now be as high as 8 or 9.

MESS has also been used in the upper limb. A 1994 study (3) of 37 patients and 43 injuries found that all 9 patients who underwent amputation had a MESS of ≥7. Togawa et al presented 2 case series with a MESS score of 11 and 7 where successful limb salvage was carried out (5). MESS therefore needs to be reviewed and updated for both lower and upper limb injuries, taking advances in surgical technique and equipment into account.

Between 2011 – 2018, Lieutenant Commander plastic surgeon Jason Souza (Walter Reed National Military Facility) saw a reduction in the amount of limb salvage but an increase in limb restoration. He reviewed surgical techniques and attributes the change in practice to aiming to improve function with osseointegration, reduce pain using TMR and using sensate flaps and nerve transfers to maximise sensation. It is Souza's opinion that utilising limb salvage techniques to provide good quality residuums.

Regarding neuroma management, Souza explained that 'everything works sometimes'. Historical research data is poor but some of his own work indicates that TMR reduces PLP and neuroma pain. His retrospective study looking at 28 upper limb patients over a 10 year period with a follow up at 6 months showed 15/26 had PLP or residual limb pain (RLP) post amputation and prior to TMR. 14/15 had total resolution of their PLP following TMR surgery. In his lecture, Souza quoted Valerio's 2019 findings of PLP and RLP with TMR at the time of major amputation. He explained the apparent need to give a cut nerve somewhere to go and something to do; elements lacking in other neuroma treatments (6).

		Scoring Criteria
Mangled		Injury of mechanism
Extremity	≥ 7 amputation is indicated	Shock
Severity		Age
Score		Limb Ischaemia

Souza's own recent clinical experiences have found him using TMR in the lower limb amputee. Taking the superficial peroneal into the toe extensors or lateral gastrocnemius and the tibial nerve to soleus. This work has not as yet been published.

The aim of my own lecture at the study event was to educate the surgeons and trainees of prosthetic rehabilitation services in south east London and nationally, and what our role is (as outlined in our BACPAR, COT and BSRM guidelines). I informed the audience how our services are specialist funded and of recent funding for micro processor knees but not multi articulated upper limb prosthetics. I suggested that they do not inform primary amputees about MPKs but defer patients' questions to the local prosthetics team who are responsible for delivering this service within the NHS in accordance with NHS England eligibility criteria.

Our own local services have seen an increase in complexities of wounds relating to complex trauma and orthoplastics input – e.g. skin grafting, flaps, which highlighted the importance of collaborative working, study events and shared learning. Our surgical colleagues need an insight into the long term issues between the residuum and socket interface and the challenges their patients face for many years when using a prosthesis following skin grafting and flaps. All of which I outlined in my presentation. I discussed developments in prosthetic componentry but how there is less development in socket materials and design; showing examples and giving them the opportunity to examine products more closely during the breakout sessions.

For me, the opportunity to network with key surgeons involved with some of our most complex patients was invaluable. I have since read more up to date papers referenced in some of the presentations and have listed them below. I would recommend similar events taking place around the country and if at all possible, getting the vascular surgeons involved would further improve shared learning and outcomes for our patients.

Perhaps this is an area that can be explored for future BACPAR study days.

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REGIONAL REPORTS

SCOTLAND

See SPARG Report

WEST MIDLANDS

From Louise Tisdale....

The West Midlands region had a meeting hosted by the team at the West Midlands Rehabilitation Service in Birmingham on the 8th July. Attended by 5 members- all of us working in Prosthetic rehabilitation we discussed the draft programme for the 2019 Conference, the use of CHAMPs with our higher activity patients and exercises to develop these patients. The NHSE quality indicators were discussed - including gaining feedback from Users and the Outcome measures required to meet the QI's. Documents were shared relevant to these discussions using the Shared Google drive. This was followed by general peer support discussion.

The next meeting will be held in Stafford. A date to be arranged in January or February 2020.

IRELAND

From Carolyn Wilson....

Our new amputee coordinator Michelle O' Meara, took up post earlier this year and is developing this new role within vascular services.

We have commenced a pilot multidisciplinary 'interim visit' scheme. At discharge, patients with outcome measures outside the predicted normative values and at high risk of falls or prosthetic abandonment, are offered a home visit by the OT and Physio.

A multidisciplinary study day specifically targeted at community therapists, is planned for November.

WALES

SOUTH CENTRAL

From Tim Randell....

Member numbers have remained static. Although no regional study days have been completed, quarterly clinical supervision sessions have been running at Southampton Hospital. If you would like any further information on this, please contact me.

The Dorset Prosthetic Centre hosted its second Children's sports/fun day in August. The day involves letting the children experience different sports in a relaxed and friendly environment, where they can meet each other and hopefully have a good time! It is a great opportunity for them to use their new blades and also gives the parents a chance to talk.

If you have any questions about patients, amputee pathways or want any advice please contact me on: tim.randell@rbch.nhs.uk, or 01202 704363.

NORTH WEST/MERSEY

From Sophie Racz....

We have a study day booked for the 9th October at the Specialised Ability Centre, Manchester focusing mainly on acute amputee management based on feedback. We then plan to do a future one on prosthetic rehabilitation.

YORKSHIRE

From Jack Cawood...

Basic Lower Limb Amputee Rehabilitation course held in April 2019 aimed at community therapists and assistants in Leeds. We received some very positive feedback from this course and therefore aim to repeat this in the near future for other staff that maybe interested.

Regional Therapy Meeting held in March was well attended with approx. 15 attendees looking at wound care and scar management. Also reviewed the new pathway for the provision of MPK at Seacroft and gave feedback on a recent audit completed by Seacroft Hospital regarding outcomes of the regions Trans-Femoral amputees 1 year post delivery of their prosthesis.

Next meeting planned for 9/10/19 at Seacroft Prosthetics Department with a planned presentation to be completed by a prosthetist on trouble shooting when working with Semi-Automatic and Hand Operated Knee Locks. We also plan to feedback on some current projects that are on-going within the region however are still looking for any further topics that people wish to be presented or discussed.

TRENT

From Wendy Leonard....

Trent region met earlier in the year and all centres within our region were represented.

A good meeting was held and ideas for future meetings included benchmarking services between limb centres and peripheral units. There was also a focus on teaching and training for us and community colleagues. A lot of updating was done as we have not managed to meet for a long time and some services had changed whilst others were in the process of - or had recently- appointed psychologists to their centres.

Nottingham have just reported they are starting Nordic walking with some of their patients, so we look forward to the results from this.

EAST ANGLIA

From Jess Withpetersen....

We are a small group of clinicians covering a large geographical area and this makes meeting a challenge. We planned a meeting in May 2019 but staffing issues and workload pressures led this to be cancelled. We correspond regularly via email and are planning another meeting soon.

The East Anglia Regional Reps have been busy planning the content for the 2019 BACPAR conference which is shaping up to be really good.

If you have any queries you can contact us at jess.withpetersen@nhs.net

SOUTH THAMES

From Hayley Freeman....

I'm Hayley Freeman and I am one of your South Thames Regional Reps: Pip Joubert is my other half who is currently on Maternity Leave. I work at Gillingham Disablement Services Centre in Kent and am always happy to chat!

We are a large group of members covering quite a large area so it is tricky to please everyone but would love to run some more study days that would benefit you.

This year at Conference there will a scheduled "Regional Huddle" run by the regional reps and I would love to meet you all there and together come up with some ideas for study days and peer review sessions. If you can't make conference this year but have some burning desires for study day topics, please don't hesitate to contact me.

If you ever have any questions, need advice or would just like a catch-up chat please feel free to email us on souththames.bacpar@gmail.com. Looking forward to meeting some of you soon at conference.

"If you're passionate about your work, it makes the people around you want to be involved too."

Wanda Sykes.

SPARG

SCOTTISH PHYSIOTHERAPY AMPUTEE RESEARCH GROUP

REPORT SUMMER 2019

We had our 57th SPARG meeting on 25th April 2019 which was well attended by 18 SPARG members, with 3 extras after lunch for the presentations

The 2016 report is now finalised and distributed – see the executive summary in this journal. Helen thanked the group for getting all the data in and especially Fee and Joanne for analysing and writing the report. Portsmouth data is reported for the first time

PPAM aid research project: models of care article accepted by Physiotherapy. Well done to Joanne & Fee

Congratulations to Fee for another successful publication "The influence of socio-economic deprivation on mobility, participation and QOL following major lower limb amputation in the west of Scotland" Eur J Endovasc Surg (2019) 57, 554-560

Guideline review and updating is required – Louise and Sally are taking the lead with the PPAM aid guidelines; Mairi & Susan IC guidelines

Helen is retiring Nov 2020!!!! All posts are up for re-election in April 2020 (end of 3 year period as per constitution)

Various changes in service model were reported – Forth Valley amputations all getting done at QEUH in Glasgow; centralisation of vascular services in Lanarkshire at Hairmyres

SPARG conference 2020 Friday 5th June in Govan, Glasgow with a theme of "Post amputation pain & management strategies"

Finding your Feet gave an update of their IP support groups, Amp-u-tea get togethers, and sporting opportunities across Scotland. Groups set up include swimming, pilates, yoga, gardening, fishing, hypnotherapy..... Emotional support is also provided over the phone by in-house counsellor, and they are looking at mindfulness as a further adjunct.

Mary Jane gave a comprehensive report on all the excellent work being done by BACPAR

Fee reported on the Scottish Specialist Prosthetics Service – a user survey had been sent out and feedback will be forthcoming when analysed and reported back to all the centres

Compression sock use – work in progress to make a national guideline document for the use of compression socks following on from Catriona's questionnaire re usage across Scotland – lots of variation and would be good to have consensus

Round the table discussions re current local issues completed the day – another very productive and inspiring meeting!

SPARG REPORTS AND DOCUMENTS

Annual Report: Electronic copy available from Helen Scott or from SPARG website: http://www.knowledge.scot.nhs.uk/sparg.aspx

Clinical Guideline for the Physiotherapy Management of Intermittent Claudication (revised 2012 edition) Cost £20.00. Available from Louise Whitehead

PPAM aid Guidelines Cost £15.00. Available from Louise Whitehead

SPARG/FYF Patient Information Leaflets: patient information leaflet for prosthetic users and wheelchair users available from Helen Scott or Joanne Hebenton at WESTMARC

All payments by BACS or cheque made payable to SPARG and sent to Louise Whitehead

Louise Whitehead
Contact details: lwhitehead@nhs.net

A SURVEY OF THE LOWER LIMB AMPUTEE POPULATION IN SCOTLAND 2016 – EXECUTIVE REPORT

Dr F Davie-Smith
SPARG Research Officer
Ms J Hebenton
SPARG Executive Committee Chair
Ms H Scott
SPARG Chairman

Executive Summary (Full Report see: https://bacpar.csp.org.uk/publications/sparg-report-2016)

This is the 24th Annual Report on data collated from all major lower limb amputations in Scotland by the Scottish Physiotherapy Amputee Research Group (SPARG). All major amputations carried out in 2016 are included, that is, ankle disarticulation (AD), transtibial (TTA), knee disarticulation (KDA), transfemoral (TFA), hip disarticulation (HD), and transpelvic (TP). Patients having partial amputations of the feet and amputation of the toes are excluded. Amputations at the knee disarticulation (through knee) level are reported within the transfemoral amputation numbers due to their similar rehabilitation needs.

All data are entered locally onto the SPARG web-based Database. The Database has reporting facilities which allow for local data checking and analysis.

National and individual hospital data are presented in this report. All outcomes are reported according to final level of amputation. Individual hospital data are summarised to facilitate comparison of outcomes and the benchmarking of services. The comparative data items or key performance indicators (KPIs) for each hospital were identified by a previous, multidisciplinary benchmarking exercise (Scott and Patel 2009). Each of the larger centres' (n≥10) models of care have been described according to criteria identified in the benchmarking report and agreed following consultation with SPARG members.

New additions to this report are as follows: -

- Revised reporting of aetiology (see Sections 3.2.2 and 3.2.4)
  - "Immediate cause of amputation" has been added and now reported as "ischaemia", "infection", "combination" (of ischaemia and infection) or "not applicable"
  - "Orthopaedic" category has been split into non-union, failed joint replacement and acquired deformity; "Chronic Regional Pain Syndrome" (CRPS) and "Acute Vascular Incident" (AVI) have been added; and "other" removed
- Falls (see Section 3.2.13)
- Final Outcome by aetiology (see Table 14)
- Key Performance Indicators (KPIs) by Limb Fitting Centre (see Section 8)
- Data from Portsmouth Enablement Centre Data (see Section 8 and Appendix J). Portsmouth began collecting SPARG data in 2016 as part of a

joint project with British Association of Chartered Physiotherapists in Amputee Rehabilitation (BACPAR)

National demographic data appear to be similar to 2015; any changes and trends are noted below. Where possible, comparisons are given in the body of the report for at least 6 years from 2011-2016.

For a second year due to restrictions on data governance there are no descriptions of those patients who underwent an amputation in the Grampian region, though the final number of amputees does include them.

RESULTS

In 2016, there were 780 amputees in total. However, due to Grampian patients being excluded (n=93) and 2 other missing data sets, this report will discuss results in reference to 685 amputees. These 685 patients underwent 722 amputation procedure; some patients having had a re-amputation (to a higher level), or bilateral amputations during the same episode of care.

The quality management "data checking" system introduced in 2003 continues to be highly successful. The percentage of returned records which are complete in every respect is 99.1%.

The median age in 2016 was 67 years at time of amputation, which is the same as 2014 but slightly lower than 2015 (68 years). The population were 69.5% males and 30.5% females, which is an increase in the % male from 2015 (66.5%) but still less than 2014 (71.9%). Peripheral arterial disease (without diabetes) and diabetes accounted for 86.9% of all amputations in this population.

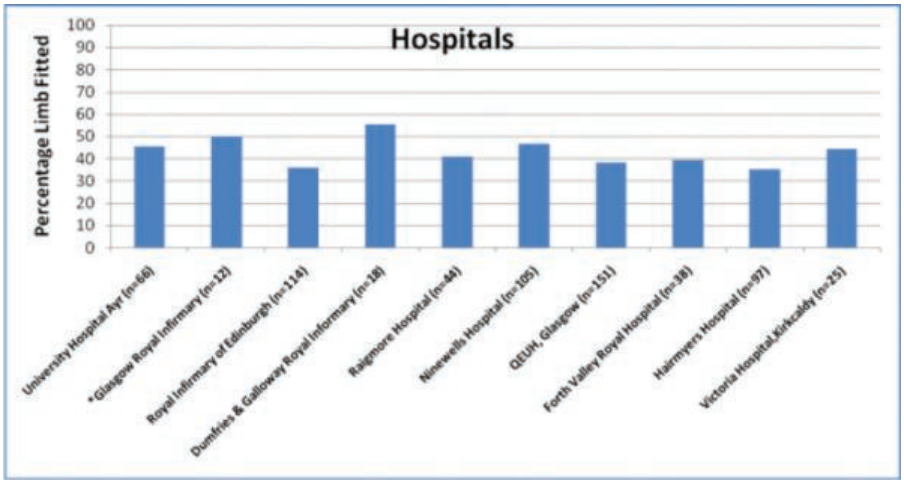
Analysis of 'immediate cause' has revealed ischaemia to be the cause of amputation in 58% of all amputations, infection in 19% and a combination of infection and ischaemia in 18% (immediate cause was not applicable for 5% of all amputations). Further analysis showed that the immediate cause of amputation was ischaemia in 82% of those with an aetiology of peripheral arterial disease without diabetes (PAD) and in 48% of those with diabetes.

The proportion of patients with diabetes was 4% higher in 2016 (49.8%). The median age for both groups remains the same as 2015; the group with diabetes remain 4 years younger than those with amputation due to PAD (without diabetes).

There has been no change in the number of amputations following a failed joint replacement (n=4) since it was last recorded in 2004. It should be noted that the number of amputations with an aetiology of blood bourne infection has increased from 8 to 18, which is the highest ever recorded and there has also been an increase in venous disease from 5 in 2015 to 15 in 2016.

The percentage of amputations carried out at a transtibial (TTA) level in 2016 was 56%, however individual hospital data (centres, n≥10) show significant variation, from 29.9% to 66.6%.

The proportion of patients (all levels) fitted with a prosthesis is 44.6%. When examined by level, 66.9% of TTA and 20.9% of transfemoral (TFA) were fitted. When individual hospital data are examined, the differences in proportions of patients being successfully fitted are large, varying from 35.1% to 55.6% (centres, n≥10) (Figure 1). There has been an increase in the percentage of females limb-fitted (all levels) see table 10.



**No amputations for PAD (+/-DM)*

Figure 1 Percentage of patients who were limb fitted in each of the hospitals (n>10)

(Total number of patients with lower limb amputations at each hospital is shown in brackets)

When grouped by aetiology, the greatest percentage of patients not being fitted with a prosthesis were those with PAD (without diabetes), 49%, blood bourne infection, 59%, and CRPS, 60%, and the highest mortality rate was in the group with diabetes, 16%.

The figures for prosthetic rehabilitation being abandoned during the rehabilitation period are reported (6.8% of all patients (n=22)), this is similar to 2014, following an increase in 2015. These were unilateral TTA=3.5% (n=9), unilateral TFA 14.3% (n=9) and bilateral 8.5% (n=4).These are the lowest figures recorded since 2001 at both transtibial and transfemoral levels.

Falls have been reported for the first time, 19% of patients had a fall as an inpatient, 13% fell at home and 5% had a fall both at home and in hospital. The majority of falls occurred at home at bilateral level.

In should be noted that there has been little variation in days from casting to delivery at transfemoral level however, there has been a steady reduction in days at transtibial level. This is thought to be due to limbs being delivered at fitting stage and cosmesis being added at a later date if requested.

Inpatient length of stay (LoS) for limb-fitted unilateral patients has risen by 6 days for TTA to 49 days and reduced by 2, for TFA to 41 days. However, it should be noted that there has been an increase in the LoS for non limb-fitted patients. LoS for non limb fitted patients at transtibial level increased by 19 days and by 10.5 days at transfemoral level in 2016 (TTA 59 days and TFA 53.5 days).

DISCUSSION AND CONCLUSIONS

Factors not currently accounted for in data analysis: -
- Pre-amputation vascular reconstructive surgery
- Incidence of palliative amputations, that is, life-improving surgery for patients who were previously and, in the long-term, immobile with no prospect of rehabilitation
- Social deprivation
- Final outcome at a defined point in time after surgery and longer term follow up

Key messages from the 2016 report are: -
1. There is a slight reduction in the number of amputees, 803 in 2015 to 780 in 2016.
2. The immediate cause of amputation is ischaemia in 65% of all patients, in those with diabetes the cause is recorded as ischaemia in 48%, infection in 27% and as a combination of both in 25%.
3. There is an ongoing increase in the number of amputations with aetiology of diabetes from 39% in 2011 to almost 50% in 2016.
4. Patients with aetiology of Diabetes have the highest mortality rate at final discharge.
5. 2016 has the highest % of amputation at transtibial level since 2011 (56% in 2016) and a 4% reduction at transfemoral level, with little change in the number of re-amputations (11.1% in 2015, 10% in 2016).
6. There has been an overall increase in the number of patients limb-fitted (all levels) and at transtibial level but a 3% reduction in those fitted at transfemoral level.
7. The percentage of females limb-fitted has increased at all levels with 12% increase in those limb-fitted at TTA level. This now matches the percentage of males with TTA limb fitted.
8. Patients with PAD (without diabetes), CRPS or blood bourne infection have a lower rate of limb fitting than other aetiology groups.
9. There has been a reduction in the % abandoned at all levels but the largest reduction is at transfemoral level (21.7% in 2015, 14.3% in 2016)
10. There has been an increase in the use of rigid post-operative dressings for the first time since 2013, those with a TTA: 18.2% in 2015, 21.6% in 2016.
11. Limb fitted patients with bilateral TTA reported a similar mobility change score (LCI-5 = -8) to unilateral TTA (LCI-5 = -7) and a smaller change score than TFA (LCI-5 =-15, which is indicative of an improved recovery compared to unilateral TFA.
12. There has been a reduction in time to cast at both TT and TF levels, lowest for TF since 2011.
13. There has been a steady reduction in days cast to delivery at transtibial level since 2009 (14 days in 2008, 8 days in 2016). This may be due to limbs being delivered at fitting stage and cosmesis being added at a later date if requested.
14. Inpatient LoS has increased for limb-fitted TTA by 6 days but the greater increase in LOS is in the non limb-fitted group where it has increased by 19 days for TTA and 10.5 days for TFA.
15. Median days from inpatient to outpatient discharge have increased to 126 days for TFA and remain higher than TTA (91 days) and Bilateral (76 days), as they have reduced function and require more rehabilitation. This is also dependent on the available outpatient treatment time as defined by the models of care.

16. The % of patients receiving compression therapy in ≤ 10 days has increased to 84.6% for TTA but reduced to 15.4% for TFA.
17. There remains a wide variation in the KPI's between hospitals.
18. Portsmouth data shows slower rehabilitation milestones than in the Scottish centres. This may be due to a shorter inpatient LoS which results in delays to commencing compression therapy and EWA, which further impacts on days to casting and delivery, the days to outpatient discharge being almost double. Rates of limb fitting are slightly higher than in the Scottish centres and this appears to be related to more patients with TFA being fitted and more women with TTA being limb fitted.

Points for further investigation/action:
• The large variation in the proportion of amputees successfully limb fitted between centres continues to warrant further investigation by the local multidisciplinary teams
• Key aspects of services that appear to improve speed and outcomes of rehabilitation after lower limb amputation, in particular, impact on limb fitting outcomes of inpatient rehabilitation and reasons for variations in prosthetic fabrication times between centres
• Reducing median age and increasing proportion of people with diabetes and amputation
Increase in drug abuse as reason for amputation
Impact of standard sizes for TFA shrinker socks on time to starting compression therapy
Impact of change in pre-prosthetic assessment on the rate of abandonment for TFA

The full report can be accessed from the SPARG website (SPARG website: http://www.knowledge.scot.nhs.uk/sparg.aspx), the BACPAR website: https://bacpar.csp.org.uk/publications/sparg-report-2016 or from the authors.

SOCIAL MEDIA – A BRIEF OVERVIEW OF BENEFITS, CHALLENGES AND USE FOR BACPAR

Adam El-Sayed,
The Specialised Ability Centre Manchester. Joint BACPAR Education Officer

INTRODUCTION

As the name suggests, social media is a platform wherein a global community gathers to communicate, collate and disseminate information, explore options, collaborate, and share experiences through various technological approaches such as blogs, microblogging, social networking, video and file sharing.

Since the turn of the 21st Century access to the internet has gradually become readily accessible across the globe, over time leading to a turn away from the more traditional methods of data and information collection that clinicians had previously frequented to as cyber technology advanced to the fibre optic and 5G world in which we currently reside. Essential textbooks or research articles which were once only accessible through archives in libraries, purchasing of hard physical copies, or the delivery of monthly subscriptions were soon to be a thing of the past as The Cloud, other online databases, and

servers soon became common place amongst the international sciences and research communities.

eBooks, E-journals and ePub files quickly emerged as go to sources of publication and dissemination of information over the last decade, not only due to economic and environmental reasons, but due to ease of access. The exponential growth of social media (see figure 1.1) followed the successes of platforms such as Facebook back in 2004. Subsequent technological development along with growth of multiple other platforms soon led to the acknowledgement that social media was not only a gateway to simplified global communication, but that it also enabled simplified methods through which dissemination of information could be completed on this same global scale, sometimes without boundaries or restrictions.

BENEFITS OF SOCIAL MEDIA

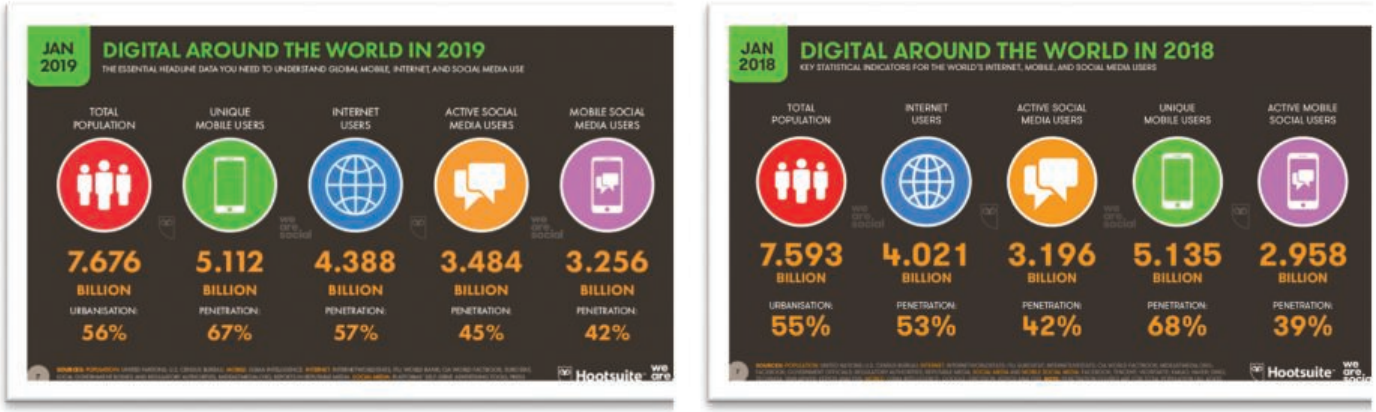
So, how can BACPAR benefit from social media? Should we enter the social media rabbit hole, or are traditional methods of communication and information sharing still more preferred? As always, it is down to individual preference, but yes would be my answer.

Communication with colleagues, friends, and family can be maintained with ease on an international level through social media. We can follow other experts or organisations in the field and potentially form professional links, collaborate with one another, share research findings or express interest to engage in new research, or even just learn more about local practices and initiatives in other environments.

Social media is an easy and free way to raise awareness for BACPAR. Promote upcoming local or international conferences or even use social media to discuss what you may like to see at these conferences. Discuss current projects of which BACPAR is involved in, or even look to recruit participants for research by either contacting colleagues or advertising appropriately in dedicated forums, i.e. Facebook Groups, of which the targeted audience would utilise. Individuals can also refer to social media as a medium through which they can promote their own achievements and develop an online professional profile.

Due to the ease of access and user-friendly interfaces and functions, sharing of knowledge through different forms of multi-media orientated platforms has never been easier. Social media can provide instant information which at times is filtered and scrutinised by enthusiastic peers, often leading to constructive debate and interactions from a potentially global audience. Online webinar and drop-in like sessions with guest speakers from around the world could be provided through methods such as Facebook Live, or YouTube Live. Live chat rooms could be utilised as clinical reasoning sessions to assist with more complex scenarios.

Some research suggests social media can be effective for patient care through use of informal support groups on platforms such as Facebook orTwitter wherein both patients and professionals alike can interact with one another. Empowering the patient with sound underpinning evidence-based knowledge theoretically can only be something positive, but the scenario through which this empowerment is achieved is extremely significant. Ultimately, the role of the clinician in these forums should be to police misinformation as opposed to providing professional clinical advice, something of which cannot be



Source https://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/]

overlooked. Baring this in mind, it remains up for debate just how involved BACPAR should be in such forums which involve the patient population.

In some Universities, students have also started to move away from the more traditional open-source learning platforms, e.g. Moodle, migrating to more user-friendly interfaces accessible on social media platforms.

CHALLENGES OF SOCIAL MEDIA

Unfortunately, it cannot all be positive with social media, there are of course significant shortcomings which can often deter individuals from engaging with the platform. Some research suggests that social media contains addictive properties and can often lead to increases in narcissistic and low self-esteem behaviours, particularly amongst adolescents. Due to the immediate impact of posts on social media, it is quite likely someone will be able to view any errors or defamations you post prior to you editing or removing the original post. Social media still has low acceptance in the workplace, and it is quite common to find that social media websites and/or use has been banned in professional environments.

Social media can lead to what is known as 'Information Anarchy', a concept which refers to the fact that anyone can post almost anything on social media without there being any immediate regulation or validation of what is being posted, leading to lack of trust and predictability, and often leading to fake news, sponsored content and ultimately misinformation – due diligence is essential.

Another challenge or disadvantage of social media are issues surrounding user privacy. Most social media platforms by default have very open privacy settings, meaning almost anyone can view your personal content and posts until you actively change these privacy settings.

Separation of personal and professional lives cannot be overlooked and is something I urge all social media users to consider prior to making any posts – a potential work around is to have a personal account as well as a professional account should you have concerns.

Lastly, maintaining the confidentiality of not only our patients but our peers and colleagues is imperative. Please refer to the "HCPC Guidance on the use of Social Media", available on their website, should you have concerns about the standards and procedures of posting on social media.

PLATFORM SELECTION

Unfortunately, this article will not examine the step by step processes involved in setting up social media accounts nor discuss every function utilised within each of the main social medial platforms as this would also be significantly beyond the scope of this article. Links have been included at the end of this article for more step by step guides.

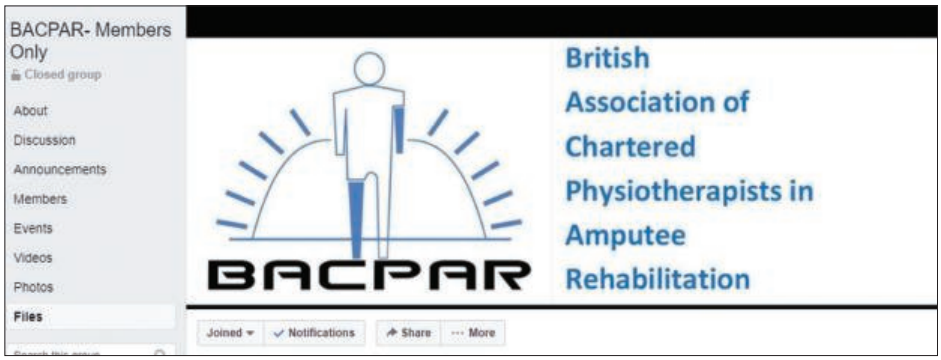
For the purpose of this article, I have opted to briefly discuss the three platforms of which I utilise the most. In doing so, I hope this article will succeed in giving the readers confidence in their understanding of the core capabilities associated with each of the platforms discussed while simultaneously demonstrating how we, as BACPAR members, could take advantage of these capabilities. Evidently, given the high volume of platforms available, social media users may find it difficult to select which platform they wish to work with, therefore, referring to the acronym POSTmayenable a more systematic approach to selecting the correct platform.

FACEBOOK

Facebook is a social networking platform and is currently the most used social media website in the world and second most visited website in the world after Google. Setting up an account is easy, and users can connect with family, friends and colleagues globally.

At this point, I feel it is important to refer all readers to the BACPAR Facebook Group and urge all members to request to be added to the group if not already a member - this can be done by providing your e-mail address associated with your Facebook account to a member of the BACPAR Executive Committee who will then be able

People:	select and know your target audience
Objective:	define your goals/purpose for posting on social media
Strategy:	determine how to intend to act with others on social media
Technology:	select the appropriate platform to achieve your objectives.



to invite you to join the group.

Unlike Facebook as a whole, Facebook Groups are mainly setup with clear objectives and specific target audiences in mind. Privacy settings are adjustable which can ensure a level of exclusivity where membership and/or interaction is on an invite only basis if this was the desired effect.

The most useful functions Facebook has to offer can be accessed directly from the BACPAR Facebook Group once joined (see Figures 1.2 and 1.3). Essentially, this site has the potential to be used as a one stop shop for all things BACPAR if used in the right manner.

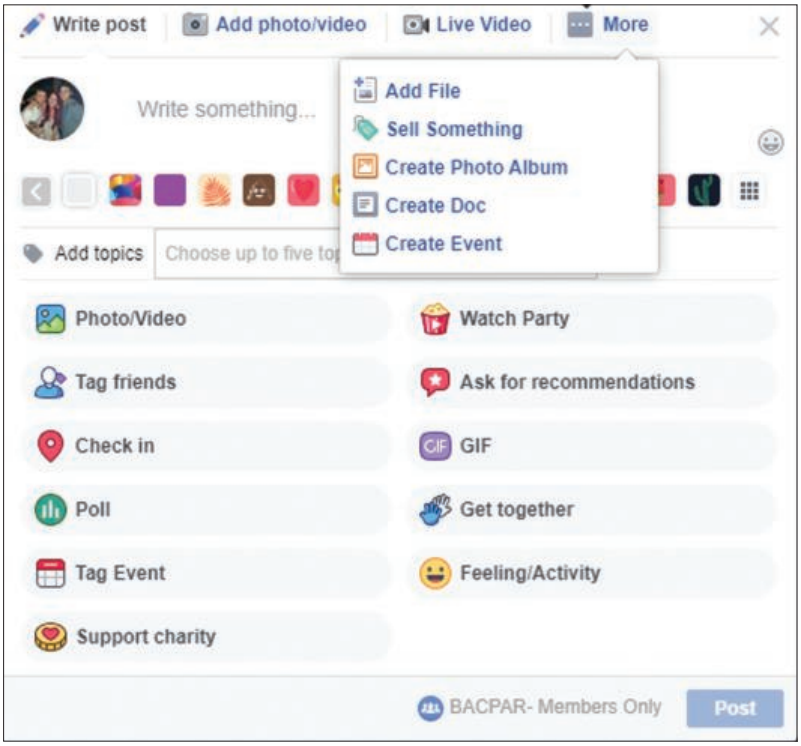
Simply add a post, photograph, video, weblink or other multimedia files such as eJournals to the group. Start a live video, e.g. a live interactive Q&A session. Access files, event information and announcements with ease through navigating the sidebar (see fig 1.2.). Polls can be started to generate discussions about topics at upcoming conferences or can be used to vote on important issues discussed at the BACPAR AGM to give an example.These are but some of the functions of which BACPAR members could benefit form.In order to ensure you are kept up to date with activity on the BACPAR Facebook Page, ensure you have notifications enabled (See Fig. 1.2, click on the box which says Notifications and select 'All Posts').

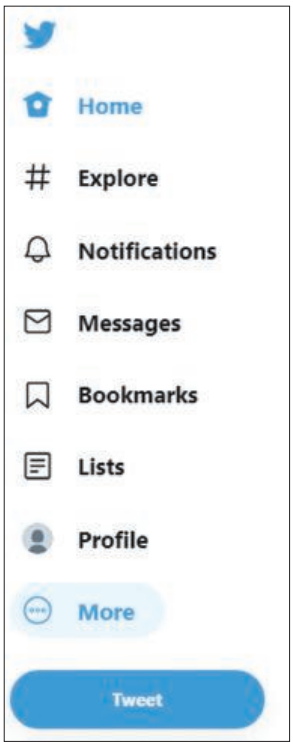
TWITTER

Twitter is a microblogging platform, where it is possible to post what are called 'Tweets', where users can share images, videos, weblinks or other text up to 280 characters in length. Like Facebook, it is extremely easy to setup. Twitter has been more widely accepted by the professional community when compared to Facebook, often having experts in the field contributing to discussions. Twitter also prides itself on its ability to illustrate global trends, using algorithms which promptly analyse traffic on the website, often sourced from 'hashtags'.

Twitter was the first to make use of this now widely used function. By Tweeting a #hashtag e.g. #BACPAR, the users' post acts as a handle and instantaneously links with all other posts which contain the same hashtag. This function enables users to search for and follow a specific topic by entering a hashtag in the search toolbar, further enabling the user to engage with the community and discussions associated with the specified hashtag.

Recently, Twitter has enabled improved privacy settings for its users, meaning we can choose who





can view our Tweets by setting your account as private through account settings – details of how to do this can be found in the useful links section.

YOUTUBE

YouTube is a highly acclaimed service which enables its users to watch, like, share, comment on, and upload their own videos. Users can create their own YouTube channels and develop an online presence.

Users may develop an online archive of videos by simply creating playlists of videos you have viewed or uploaded. We can refer to YouTube for educational purposes and to have specific techniques demonstrated to you by experts in the field.

Either live or archived private video sessions can be produced on YouTube with ease.To provide a hypothetical example, BACPAR could film a conference which could later be uploaded to YouTube following the event and a private link could be shared to those who could not attend the live conference for a reduced fee.

In recent years, YouTube has become even more profit orientated and has introduced a premium service in order to avail of advertisement-free viewing, through a whopping £17.99/month subscription, otherwise the user is exposed to a high level of advertisements even when watching their own content. Nonetheless, YouTube is still the go to platform for video-based media.

As a leaving message, ultimately social media is powered by its users. Active engagement is what makes social media the powerhouse that it is. For BACPAR members to truly benefit from these platforms, individuals must be willing to contribute their knowledge and experiences by communicating with one another through these interfaces. There really is a lot BACPAR can achieve through social media, so please do participate.

OTHER PLATFORMS WORTH MENTIONING:

Social Networking:
- Linkedin: https://www.linkedin.com/

Blogs/Forums:
- Reddit: https://www.reddit.com/
- iCSP:https://www.csp.org.uk/icsp
- Physiopedia:https://www.physio-pedia.com/home/

Video/Image Sharing:
- Instagram:https://www.instagram.com/
- Snapchat:https://www.snapchat.com/

Instant Messengers:
- Facebook Messenger:https://www.messenger.com
- WhatsApp:https://www.whatsapp.com/

Useful links

https://www.wikihow.com/Make-Your-Twitter-Account-Private

https://blog.hubspot.com/marketing/how-to-use-facebook

https://blog.hootsuite.com/facebook-groups-business/

https://www.lifewire.com/youtube-101-3481847

https://www.drsoft.com/2018/03/21/how-to-start-youtube-channel-for-beginners/

https://www.drsoft.com/2018/04/16/youtube-tips-for-beginners/

https://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/

https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

https://www.hcpc-uk.org/globalassets/resources/guidance/guidance-on-social-media.pdf

MEDICO-LEGAL CASES FOR AMPUTEES AND THE ROLE OF THE PHYSIOTHERAPIST

Sofie Toft and Natasha Fairs
Irwin Mitchell Solicitors

By the nature of an amputee's injury, the funds involved in providing maximised rehabilitation can be substantial. Personal injury claims canbe an effective mechanism to obtain the funding required and there is scopeis these casesfor expenditure that would often not be available otherwise. Within the claims process there are two central and related roles for the amputee physiotherapist;the treating physiotherapist and medico-legal physiotherapy expert.

THE PRINCIPLE OF COMPENSATION AND THE TWO ROLES OF THE AMPUTEE PHYSIOTHERAPIST

The legal principle behind compensation is to restore an individual "to the position they would have been in had their injury not occurred". Within a claim for an amputee this is frequently simplynot possible; the effects of the injury cannot just be reversed.

As such, the Court will entitle theindividual to an award for such compensation that will ensure that their life best resembles the life they would have had 'but for' their injury. This involves piecing together a package of rehabilitation and therapies, care and support, equipment and accommodation that best maximises their independence. This is a highly individualised assessment and there is no 'one size fits all'. It is an assessment of the life an injured person enjoyed before their accident, of their individual priorities and preferences,and in turn an assessment of the interventions that can be shown, practically and in evidence, to facilitate quality of life and independence. If the interventions cannot be shown to work for an individual, irrespective of best intentions, it will not be accounted for by the Court in the financial settlement.

Once liability for an accident or illness has been proven against a Defendant in a personal injury claim, the Claimant becomes entitled toearly payments fromthe compensation known as 'interim payments' which can be used to fund rehabilitation. On funding being secured a case manager, typically an experienced occupational therapist or physiotherapist, is appointed to put together an individualised package of support. It is through the delivery of this package and showing how it works for that individual in practice to restore them to the independence they enjoyed before their injury, that personal injury solicitors are able to put together the evidence required by the Court to substantiate their claim.

Within this process, there is the primary role of the treating physiotherapist to maximise rehabilitation

to achieve the best possible result for the individual. There is then a separate role of the expert physiotherapist who is required to objectively asses the individual, their current and their long term needs, and to provide a recommendation for that individual's physiotherapy needs for the remainder of their life.

THE TREATING PHYSIOTHERAPIST IN A MEDICO-LEGAL CASE

The treating physiotherapist in a medico-legal case will typically be required to work within a multi-disciplinary team of therapists, coordinated by the case manager. The teamwill typically include an occupational therapist, psychologist and treating prosthetist in addition to the physiotherapist. It can also include a vocational therapist, pain management consultant, family therapist or music therapist, depending onthe individual's needs. As such, the role requires joint working with other therapists to ensure the individual is making progress towards their goals in a very broad sense. This involves taking a joint approach to tackling challenges such as an individual's difficulties with engagement, psychological issues around adjustment or issues in the family environment. It can involve supporting discharge from an inpatient setting, adjustment to an adapted home environment, supporting the use of new a new prosthetic ora return to work. It is the MDT's role to share information and approaches and to work together to adapt an individual's package of therapy and support to best meet their challenges and needs over time.

Secondary to that treating role, but of central importance in the medico-legal context, is record keeping. As above, the compensation awarded to a Claimant is highly individualised and tailored to meet precise, specific and individual needs. In order to obtain funding for a rehabilitation request, for example an increase in physiotherapy input or the provision of a specific prosthetic, either during the lifetime of a case or in the final assessment of compensation, specific documentary evidence is required. This evidence must show that:-
(1) There is a documented need,
(2) The Claimant will make use of the recommendation,
(3) The cost of the intervention and
(3) That the intervention will bring about cost-effective benefit.

By documenting the issues, needs and progress that arise in clinical therapy, the treating physiotherapist directly feeds into this process and provides the specific evidence that an expert can comment upon when they make immediate or long term recommendations to the Court. In those cases where expenditure for an intervention is incurred but theclinical evidence for it is not provided, the Claimant runs a real risk that they are not compensated for it in their financial settlement. In those casesa physiotherapist may be asked by the Claimant's solicitor to give witness evidence to the Court to justify their input.

THE ROLE OF THE PHYSIOTHERAPY EXPERT

The role of the physiotherapy expert in a medico-legal case is very separate to that of the treating therapist. As opposed to the treating physiotherapist's clinical duty to the individual, the expert has an overriding duty to the Court to provide full, fair and correctevidence to assist a Judge on all such matters within their expertise. This duty overrides any duty the expert has to the Claimant and their legal team.

In providing evidence for either the Claimant or Defendant's legal team, the expert is required to provide an objective assessment of an individual's physiotherapy needs, the necessity and effectiveness of the physiotherapy input to date and the individual's long term physiotherapy and equipment needs into old age. It involves a detailed assessment of the further expert evidence in a case, usually comprising orthopaedic, pain management, prosthetist, psychology, accommodation and employment expert evidence, to consider the scope of the life the Claimant is likely to have and their physiotherapy needs in that context. For example, it may well involve commenting on a lower limb amputee's ability to use a prosthetic in later life, or the demands of a return to work in the long term, and the physiotherapy implications of this. It is the personal injury solicitor's role to coordinate theclinical documentary, witness and expert evidence to ensure the physiotherapy expert is equipped to provide a full and reasoned view.

Due to the complexity and value of claims involving amputees, it is typical for both parties to the litigation to have their own physiotherapy expert. Each expert will provide a report on their views and recommendations.Following on from this, the experts are required to prepare a Joint Statement of the Experts which sets out those aspects of their clinical opinion on which they agree and disagree, and the reasons for any such disagreement. Whilst it is increasingly the case that most claims settle outside of Court, where there is significant disagreement between the parties around a central issue such as physiotherapy and prosthetics provision, the case may go to trial. In that case the expert must be sure that they are prepared to defend their views to the Court and vis-à-vis the alternative positions of their opposing expert.

CASE STUDY

David* was an active and healthy 29 year old man when his motorbike was hit by a van that failed to stop in August 2008. David sustained injuries including a traumatic transfemoral amputation of the right leg with a very short right residual limb, fracture to the right femoral remnant, fracture to the left femur, left knee dislocation, fracture to the left tibial plateau and ligament damage to the left knee.

David remained an inpatient at a major London Trauma Centre for 10 months before being transferred to a regional prosthetic centre for rehabilitation. He achieved minimal walking with prosthesis due to ongoing problems with fracture healing, pain and limited movement in the left knee. These issues made functional rehabilitation at the time virtually impossible.

With interim payments obtained through his personal injury claim, David underwent quadriplasty surgery to the left knee. On discharge he had flexion of 90 degrees but lacked full extension of the knee. David underwent surgery to replace the nail in his right femur and then a period of inpatient rehabilitation at a private inpatient rehabilitation centre funded by a further interim payment. Following each surgery, David underwent weekly physiotherapy sessions to work on the newly acquired range of motion and to maintain the level of flexion in his knee. He had further sessions with a sports massage therapist for soft tissue release work, strength and conditioning.

Due to the continued use of crutches, David developed shoulder and low back pain. His treating physiotherapist was able to assist him with an exercise programme and education on how to prevent these issues from developing.

Following rehabilitation, David still had significant impairment, ongoing pain and limited range of movement, particularly in his left leg. He had reduced range of movement of the knee, reduced muscle power, stability and pain on weight-bearing. Through the claim, he was assessed by an independent prosthetics provider and fitted with an Ottobock C-Leg microprocessor controlled knee. He later trialled the Genium and Genium X3, receiving physiotherapy to help him learn how to use the prosthesis.

At this stage, David is using a combination of his prosthesis, wheelchair and elbow crutches to address his mobility needs. His level of mobility is that of a limited community ambulatordue to fatigue and socket discomfort. David has had to cope with ongoing pain and the orthopaedic injuries to his remaining intact limb which have limited his functional rehabilitation potential with prosthesis. David has been very focused on his rehabilitation, working daily to maintain the function that he has acquired. Living with a long term condition is challenging and it is important to David totake responsibility for his own management via self-care such as obtaining and using a spinning bike daily. The benefit of this has been to maintain the cardio-vascular fitness required to walk with his prosthesis and further his weight. With the assistance of his treating private physiotherapist, he has been educated and given the skills to manage his long term health needs.

An expert physiotherapy report was obtained in David's claim to comment on his long term needs in respect of ongoing physiotherapy and equipment provision. Due to his improvements to date, as documented in the clinical records, the physiotherapist was able to support the past outlay for private input and this was recovered through his claim. The physiotherapist could not however justify the ongoing need for twice-weekly therapeutic intervention as David's range of motion had not changed significantly, the scar tissue had matured and no further improvement was anticipated. In the circumstances, the expert recommended 12 ongoing sessions of physiotherapy annually. The expert supported the continued use of the spinning bike

and an allowance for an Annual Health and Fitness Inclusive Membership at a local leisure centre.

The physiotherapy expert also reported on the need for further specialist prosthetic rehabilitation to optimise prosthetic limb use should further surgery result in functional improvement in the left knee. They made provision for crutches to assist with mobility with his prosthesis, referral to an OT for assessment of his wheelchair seating/cushion, and an appropriate wheelchair and power assist device. Provision was also allowed for physiotherapy to manage the musculo-skeletal problems which are a direct result of the accident.

*not his real name

CONCLUSION

There in great scope for rehabilitation within personal injury claims, both during the lifetime of the case and in the long term. The role of the physiotherapist is central to this process, in terms of facilitating that rehabilitation and maximising independence and in providing the evidence that will ensure the gains made can be maintained for the rest of an individual's life.

Sofie Toft is a Senior Associate Solicitor and Natasha Fairs is an Associate Solicitor within Irwin Mitchell's London Serious Injury Team, specialising in bringing claims for catastrophically injured Claimants.

CASE STUDY – WHAT A DIFFERENCE A WEEK MAKES

Mary Tebb
Physiotherapist Dorset Orthopaedic

INTRODUCTION

My role as physiotherapist in a private prosthetics company is to enable our clients to make the most of the prosthetics provided to them. Many of our clients are going through complex legal cases and have had interim payments to support the provision of new prosthetics which would otherwise not always be provided by the NHS. I am in the fortunate position whereby I can support a client for a full week of rehabilitation, working with them through a schedule designed to return to some of their previous activities, often by finding alternative ways to achieve this. This case study is an example of one such client.

BACKGROUND

Sharon (not her real name), a 55 year old female, had been a transfemoral amputee for nine months. Her amputation was elective and resulted from failed knee replacement surgery. She had done very well through her local NHS centre who had provided her with a Rheo knee, enabling her to walk with a stick around half a mile. She had other difficulties to contend with, such as the results of a gastric bypass resulting in excess skin, and she lived alone with only occasional family support. Her home town was fairly rural and she had a large dog which needed regular walks. Sharon was keen to return to work and was studying for a degree via the Open University.

"Sharon" on her new prosthetic leg with custom coloured socket and Genium knee.

Summary of Outcome Measures

TEST	DAY 1	DAY 5
6 MWT	**186m**	**247m**
Video analysis	Leaning to the right Requiring a stick. Not using stance yield.	Improved symmetry. Can walk without stick, transitioning off stick with use of a pole as an interim.
Strength testing (prosthesis on)	Right hip flexion 4/5 Right hip extension 2/5 Right hip abduction 3/5 Right hip adduction 3/5 Left hip flexion 4/5 Left hip extension 3/5 Left hip abduction 3+/5 Left hip adduction 4/5 Left knee flexion 5/5 Left knee extension 4/5	4/5 3/5 3/5 3+/5 5/5 4/5 3+/5 4/5 5/5 4/5
Pain – stump	30/100	20/100
Pain – back	40/100	50/100
Satisfaction rating	81/100	86/100
Socket comfort	60/100	90/100
EQ5D	75	85
PLUS M	46	69
ABC-UK	38	71

Her prosthetist suggested she trial a Genium microprocessor knee over a two-week loan period. Alongside this, I was able to spend three hours with her to give her a taster of the Genium functions. Sharon was immediately astounded by her new leg – both the Genium and the socket fit resulted in her feeling that "I've got my leg back". She was able to purchase one with an interim payment via her solicitor. Sharon was also offered a week's rehabilitation under my care which commenced the following month. There was a delay in commencing rehabilitation as Sharon had done a little too much too quickly on her new leg which resulted in bruising to the end of her stump.

Sharon's week commenced on the Monday with a physiotherapy and prosthetic review whereby both subjective and objective outcome measures were taken (See Summary of Outcome Measures below) and minor adjustments were made to the lining of the socket. I then put her through a circuit session of 3 x 1 minute stations which consisted of a variety of balance, lower and upper limb exercises. That afternoon, we abandoned the crutch to walk around a local garden centre, including in and out of summer houses, discussing how one of these could work as a therapy room at home. The last half hour was spent working on using the stair function of the Genium knee – Sharon had to learn to slide the foot back and quickly place it on the stair, enabling her to walk up the stairs in a more normal step over manner. This clearly identified the need for stronger hip extensor muscles.

Recumbent bicycle

Day two was spent out and about. In the morning, we went into The New Forest to try out a variety of accessible bikes under the care of a local company called Pedall. Sharon tried a tricycle initially, then a side by side recumbent bike and went on to manage a single recumbent bike as shown below. Also pictured is the strap we used to connect her prosthetic foot to the bike. This demonstrated to Sharon that cycling could be possible to achieve independently, probably with a pedal-assist bike. A cycling specific foot with a cleat attachment might also be a possibility but the Velcro strap pictured worked fine on the day and was something that Sharon could manage to do up herself.

That afternoon, we travelled to Boscombe beach to work on the zig zag slopes down to the beach promenade. Sharon preferred the use of a stick but managed to achieve a good yield function in the Genium knee. She also had a go at walking on the sand and covered a 1 ¼ mile course.

A longer walk in the forest was planned for day three. This was largely in drizzly rain but she managed a good two mile loop with inclines, mud and small streams to step over. On returning to the clinic, Sharon wanted to spend some time on working on how she would enter a consultant's office the following week for an appointment – a consultant

who had told her that she would not be able to walk again if she chose to have her leg electively amputated. We had some fun role playing this event and it gave Sharon a chance to perfect walking through the door whereby she has to take a step or two backwards to open the door.

That afternoon was taken up with swimming at a local pool. Sharon wanted to see if she could manage to access and egress the pool safely and independently. She had no problem leaving the leg behind in her locker and using crutches to walk to the pool and was also able to exit from the side ladder of the pool. The main problem was managing to carry her clothes and prosthetic leg to the locker whilst using crutches. This made us realise that a water activity leg would be advantageous here, even if she decided not to take it into the water itself.

Throughout the week, we worked on improving the quality of Sharon's gait pattern but on the morning of day four, we specifically did a variety of gait and balance challenges out in the car park: changing speed, stride length, direction, carrying a weight and resisted walking. This was followed by a relaxation half hour with guided imagery and contract-relax sessions to see what might work best for Sharon. As amputees have increased energy demands when walking, learning successful relaxation methods may be helpful to access during the day.

Velcro strap attachment for prosthetic foot

In the afternoon, we drove over to a busy shopping centre to practise being in crowds, around a multi-storey car park and repeated use of escalators. We found that going up wasn't a problem, but stepping onto a descending escalator was much more of a challenge.

On Friday, the last day, I went through a variety of gym ball exercises with Sharon and then a home exercise programme to continue with including strength training on 2-3 days of the week, balance activities most days and cardio-vascular activities which we felt she could do. All outcome measures were repeated and a prosthetic review was also undertaken.

DISCUSSION

It is interesting to note these improvements over just five days and clearly there cannot be much in the way of physical adaptations during this time. However, improvements in confidence and gaining skills by focused repetition seem to have made some of the difference in Sharon's case. Also, improvements in outcome measures could also be due to improved socket comfort.

Following a week of residential or other intensive rehabilitation, our normal practise is to update the client's case manager or solicitor and make recommendations for future care. In Sharon's case, we have recommended provision of a water activity leg which she would use for beach walking and paddling with her dog, using swimming pools on holiday and accessing a local pool. We felt justified in recommending a Genium X3 which has the same microprocessor knee as Sharon's Genium. An alternative would be a locked knee rather than a mechanical knee which would not be considered safe having mastered the microprocessor knee functions. However, a locked knee would result in a different and unnatural walking pattern, which would have adverse effects on Sharon's musculoskeletal system. Following provision of a water activity leg, Sharon was keen to return to our facility to try various water activities, such as kayaking, water-based exercises and going to the beach.

We also recommended that Sharon explore osseointegration surgery and she is shortly due to have an informal discussion with a consultant regarding this. This is relatively new to the UK but we felt that Sharon should at least be made aware of this procedure as an option for her.

CONCLUSION

Intensive rehabilitation at Dorset Orthopaedic has been a service which we have offered to our clients for a few years. This has usually been for a week but, for some, has been repeated on a number of occasions to assist in their re-integration back into society. Most have made significant gains during the week which can be explained by having a combined prosthetic and physiotherapeutic approach.

PINBOARD

BACPAR CONFERENCE 2019

Life after limb loss: 14-15 November 2019

Programme (Final Draft)

9.00	Chair's Welcome Interactive media screen	**Julia Earle** **Hayley Crane**
9.15	Limb Power Champions – role and development	Andy Brittles – National Sports Development Officer
9.45	Recovery trajectories following major lower limb loss and their impact on rehabilitation practice	**Phoebe Sanders & Fiona Leggat**
10.45	Coffee	
11.15	Against All Odds – A complex case.	**Rachel Malcolm**
11.35	Benefits Talk	**Emily Foskett**
12.05	Guidelines update	**Sara Smith**
12.15	AGM	
13.00	Lunch	
14.00	Sepsis - good practice	**Dr Bhaskar Basu**
14.30	Sepsis – patient experience	**Dr Jaco Nel**
15.00	Coffee	
15.30 and 16.15 17.00	Workshops x 2: Intermittent claudication rehab Mindfulness Close	**Sean Pymer** **Louise Byles**

9.00	Welcome	**Carolyn Young**
9.15	NHS update	**Kat Atkin**
9.45	Comparative Analysis of Subjective and Objective Out-come Measures on Mechanical and Micro-Processor Controlled Knees.	
10.15	Coffee	
10.45	Symposium MPK, low activity users	**Fiona Davie-Smith**
11.45	SPARG data collection	**Chantel Ostler & Joanne Hebenton**
12.05 12.15	Me amputee Social media update 'outside the room'	**Chantel Ostler** **Naheed Ahmed**
12.30	Lunch	
13.10	Regional Huddles	**Regional Reps**
13.30	Workshops: Gait Analysis (practical) Bridges self-management	**Anna Housley** **Paul Marshall-Taylor**
14.30	Break	
14.45	Workshops: Gait Analysis (practical) Bridges self-management	
15.45 16.15	Question Time Close	

BACPAR GUIDELINES UPDATE

Look out at Conference to collect your copy of the new BACPAR Poster advising our users of the guidelines work and where to get further information

BACPAR USER INFORMATION

The new page is ready on the BACPAR website to which patients will be directed from our new 'Guidelines' poster……nothing on there yet, but it's coming!

See: https://bacpar.csp.org.uk/content/user-information

NEWS! SEPTEMBER 2019:

Blatchfords have announced their global rebrand - *Mobility Made Possible* - saying:

"The word mobility means different things to different people. Blatchford has collaborated with some incredible people in their new film, sharing what mobility means to them and how they are able to do what they love and get the most out of every day."

See https://www.youtube.com/watch?v=ot6lh1_eMa4

#MadePossible #MobilityMadePossible

https://www.blatchford.co.uk/brand/

Save the date

SPARG

MDT Conference 2020: *'What a pain!'*

Strategies and solutions to help people with amputation manage their pain.

Friday 5th June @ William Quarrier Conference Centre, Glasgow G51 4QD

Join us to learn from experts on the theory and evidence for: -

- pharmacologic, surgical and prosthetic management
- fat injection therapy
- graded motor imagery and mindfulness (including practical)

Cost: £95 (early bird £75 before 31.03.2020)

Contact: for application and payment details email westmarc.physiotherapy@ggc.scot.nhs.uk

ELECTION OF BACPAR OFFICERS 2019 - POSTS FOR NOMINATIONS

There are 2 posts up for election at the AGM in November:

Public Relations Officer – End of first term

- Promoting the activity of the group to its members, the profession and to the public
- To respond to enquiries via the BACPAR website from professionals and members of the public
- To be responsible for any material on display at meetings and other events
- To manage the BACPAR stand and its content

Membership Secretary – End of first term

- Receive and process all membership applications
- Maintains an up to date list of current members
- Liaise with regional representatives about members within their region
- Provides new members with 'welcome' pack
- To ensure diversity and equality issues are upheld within BACPAR

Please email any nominations for the above posts to the BACPAR secretary bacpar.secretary@gmail.com prior to the next AGM to be held on 14th November 2019 where voting will take place.

Please provide the following information:

- Post being nominated for
- Name and address of the nominee
- Name and contact address of proposer
- Name and address of seconder

AMPUTEE REHABILITATION CO-ORDINATOR – A NEW ROLE

Hi Michelle! Thank you for agreeing to be interviewed for the BACPAR Journal! Perhaps you can tell us a little bit about yourself and introduce yourself to the BACPAR community

My name is Michelle O'Meara and I am the new Amputee Rehabilitation Coordinator working in the regional vascular unit in the Royal Victoria Hospital, Belfast. This post was created to meet service needs identified through the regional vascular review following NCEPOD.

How long have you been in post and what is your clinical background?
I started this post just over 5 months ago so I am still very much trying to get my head around it! I began my career in Scotland working as a rotational physiotherapist throughout acute and community services. This is where I developed a love for all rehabilitation. I then moved to Belfast and continued to rotate within rehabilitation until this post came up at the end of last year. During my rotations in Belfast, I was asked to move to the regional vascular unit to cover a vacancy. It was a steep learning curve and it was very a fast paced,but I loved it! The staff on the unit were very welcoming and always willing to help each other so it was a very comfortable place to work and learn.

What attracted you to this post?
As a physiotherapist on the unit, I could see that there were quite a lot of service development opportunities throughout the whole amputee pathway,but never any time to do anything about it. While working on the ward, I often felt that the patients and families could be better informed about the rehabilitation journey they were about to embark on. There was a sense of disconnection between the community and the acute services in relation to expected ongoing rehabilitation, and we needed more information about our amputees after they left our care. There was also limited support for the amputee patients in the early stages after their surgery. When I saw this post advertised, it presented a great opportunity to improve the service provided to amputee patients. I have always loved assisting with service development projects as a physiotherapist,and felt there would be a lot of support from the staff on the vascular unit in developing this post. I also felt I had a good understanding of what the role was setting out to achieve, so I took the plunge and applied for the post! The post was advertised with 0.5 of the post remaining in the post holder's profession within the vascular unit, so it is great to be able to continue to develop as a physiotherapist within the post.

What is your main role and what does it look like on a day to day basis?
At the moment, every day is different as I am still finding my feet and doing a lot of fact finding. On the vascular unit, I now do the majority of the physiotherapy pre assessments which includes taking time to give a detailed explanation of the rehabilitation journey and discussing any concerns raised by the patient and their family. Where patients are admitted electively, I attend pre assessment with the aim of preparing the patients as much as possible and encourage them to consider predictable small changes needed at home prior to admission. I also begin identifying and arranging equipment needed by the patients on discharge home.

I attend ward rounds on the unit and discuss the level of amputation with the surgical team where appropriate if the level is going to result in significant limitations, orhave specific impacts on the patient such as increased care needs or reduced functional and mobility opportunities.

Once the amputee patients leave the regional unit, I give them my direct contact number to contact

me with any concerns or questions in the future. I continue to monitor and contact the receiving units to give them my contact number for any queries andto ensure patients continue to receive the expected rehabilitation after leaving the regional unit. After patients return home, I make contact with them directly to ensure they are coping and that they are managing all transfers etc as predicted prior to discharge.

I am also starting to implement changes in some referral processes, information booklets and the use of post-operative backslabs and auditing to identify whether the changes result in service improvements prior to implementing permanent change.

What are your biggest challenges?
Coming from a physiotherapy background, I am used to outcome measures and being able to measure improvement resulting from treatments relatively quickly. In this post, you can't assess the impact or improvement resulting from your actions quickly, which makes it difficult to know for sure that what you are doing is actually going to result in service improvements.

Being a brand new post, there is limited guidance and understanding on how the post should look. This is both a challenge and honour to be able to develop and shape a new service.

As the unit is the regional vascular centre, it is very busy. At the moment, there seems to be new ideas identified for service improvements each week, and it can be overwhelming and frustrating that I can't start to implement everything at once!

As always, change itself is always a challenge within a service, and there are always people who embrace it and people who don't.

What do you enjoy most about your new post?
I love that I can dedicate a lot of time to sitting down with the amputee patients and their family prior to the surgery, discuss the whole process with them and help easesome of their concerns. It also affords me the opportunity to develop a good rapport with each patient which makes it easier for them to pick up the phone to me at any stage during the pathway. I also love the variety within this post.

How would you like to see the post develop?

My mind is full of ideas at the moment so it is difficult to know where the limits of this post are but in the future;

I would love to create stronger links between the community services regionally and the acute vascular unit, and help streamline and improve amputee rehabilitation regionally by provide training within each locality.

I would also love to help establish streamlined links between the acute vascular unit and the amputee rehabilitation centre

I would love to improve the peer support available to patients, particularly in the early stages after amputation.

Finally, I would also love to help increase the awareness of 'the critical limb', to assist with intervention as early as possible, and hopefully result in a reduction in major amputations in the future.

This post is still in the very early stages so who knows what it will look like this time next year!

USE OF A KNEE WALKER: A CONSIDERATION FOR THERAPY

Naheed Ahmed
Senior Physiotherapist, Manchester Royal Infirmary
Elizabeth Bouch
(co-author), Clinical Lead Physiotherapist, Manchester Royal Infirmary

The Manchester Vascular Centre at the Manchester Royal Infirmary (MRI) saw approximately 65 minor amputations during the 2018-2019 financial year.

Minor amputations can include single digit, multiple digits, trans-metarsal (TMA), Lisfrancs and Chopart procedures. Limb salvage surgery and an excellent MDT has enabled us to encourage early mobilisation of patients following these procedures. We, alongside our consultant podiatrist and the wider MDT have produced protocols for patients following partial foot amputations. These encompass timescales, weight –bearing status and provision of footwear to allow mobilisation. Through the use of these protocols, education on foot protection and gait re-education we have managed to get patients home safely despite extensive foot wounds.

Although early mobilisation is often the preferred option, there are some instances when patients must remain non- weight bearing (NWB) for some time following surgery. These patients include those who have extensive plantar wounds / incisions and those having reconstructive surgery for Charcot deformities. These patients are often diabetic and NWB with a walking aid can prove problematic and difficult as they may have further issues regarding their remaining foot.

At the MRI we have attempted to reduce these issues and alleviate the inconvenience caused to patients; and have subsequently trialled the knee walker. See Figures 1 and 2. We have found this device relatively easy and simple to use and have provided patients the freedom to mobilise effectively and functionally on the ward whilst remaining NWB.

Knee walker Drivedevilbiss

Photo above of therapists on ward demonstrating Knee walker

CLINICAL SCENARIO

Mr W weighs 111kg, is a type 2 diabetic and has had previous surgery including a left Charcot reconstruction and a 5th metatarsal amputation. He was admitted for a right Charcot reconstruction including a plantar exostectomy (surgical removal of bone spurs). The post-op instruction stated that the patient must remain NWB until review 5 days later.

Mr W was provided with the knee walker post operatively to use in the interim. Once reviewed and deemed appropriate to weight bear, he was provided with suitable offloading footwear and assessed with walking aids to allow his discharge.

Feedback from Mr W was very positive as it allowed him to maintain independence and dignity whilst on the ward as he was able to access toilet and bathing facilities.

The use of the knee walker is still relatively new to the MRI, but I feel may be able to provide additional benefits and needs exploring further. Myself and Liz (Clinical Lead Physiotherapist) are looking to gather patient feedback, but so far the knee walker has been greatly appreciated by both the MDT and the patients.

If you have had any experience in using a similar device, we would be interested to share ideas and maximise the benefits for our patient population. Please feel free to contact us directly and reply to the editor.

It potentially begs the question of whether this can be used for some of our below knee amputees to provide respite from their prosthetic limb or chair whilst still allowing mobilisation. It could increase morale and assist to reduce hip flexors deformities associated with long periods in the chair. What do you as BACPAR members think about this?

Comparison of three Early Walking Aids (EWAs) used in lower limb amputee rehabilitation

Amy Souster MCSP

University of Southampton

NHS Royal Devon and Exeter NHS Foundation Trust

- **When** - EWA's should be considered for all patients in early stages of amputee rehab for assessment and treatment. (1)
- **Where** – In-patient wards for post operative patients, Specialist mobility centres, out reach mobility centres, community environments with specialist physiotherapists (1,3,5).
- **Who** - Physiotherapists using EWAs must be competent in their use(1). Patients must be either Transfemoral (TF), Through Knee/Gritti Stokes (GS) or Transtibial (TT) amputees to use these aids (1,2,3,4,5,6,7).
- **What** - There are 3 types of EWAs used in the United Kingdom:- Pneumatic post amputation mobility aid (**PPAM Aid**), **Femurett** aid and the Amputee Mobility Aid (**AMA**). (2,3,4,5,6,7)
- **Why** – Use of EWAs in early stages of amputee rehab shows benefits in decision making for prosthesis suitability, quicker time from amputation to prosthesis casting, reduced hospital length of stay, reduced post-op complications, psychological benefits, early prosthesis tolerance and competence, quicker rehabilitation and independence with a prosthesis. (1,2,4,5,6)

Ppam Aid (1,2,3,4,5,6,7) A pneumatic bag, non articulated metal support frame, and rocker foot. Developed in 1978.	**Femurett** (5) An adjustable plastic socket on metal adjustable tube, a single axis hinge and prosthetic foot. Developed in 1987.	**AMA** (1,3,5) A plastic adjustable socket with a hinge element and prosthetic foot. Designed in 1993.
Advantages: • Can be used <10 days after surgery. • Beneficial for Oedema and wound healing. • Adjustable to fit most stump sizes and levels from TF, GS to TT. • Helps reduce post-op complications.	Advantages: • Has a hinged knee for normal gait pattern. • Dons/Doffs like TF prosthesis. • Can aid decision between free or fixed knee joint. • Only for TF and GS amputees. • Rigid socket and prosthetic foot aids stability.	Advantages: • Allows hinging at knee for normal gait pattern. • Prosthetic foot aids stability. • Thigh corset provides stability.
Disadvantages: • Unnatural gait pattern for any level as no knee flexion. • Less stability around stump.	Disadvantages: • Wound must be fully healed. • Less comfortable due to rigidity of socket.	Disadvantages: • Hyperextension of the knee poorly controlled. • Short TT stump required.
Evidence base: • Mentioned in all articles related to EWA use in the UK including best practice advice from BACPAR. • Broad evidence types used including literature reviews, a longitudinal study (n54), observational study (n66), a randomised controlled trial (n29), • Ppam aid compared with both Femurett and AMA in literature.	Evidence base: • Minimal evidence in literature. • Paper used from 1989 so very dated research. • Only article available is retrospective study with no control group (n51). • Compared with Ppam aid only.	Evidence base: • Randomised controlled trial used with standardised outcome measures and inter/intra group analysis performed (n29). • Literature review with author interpretation. • Compared with Ppam aid only. • Minimal literature available.
Conclusion:- • Most favoured and widely used EWA from surgery to prostheses fitting. Best evidence base for use.	Conclusion:- • Used widely for later stages of rehabilitation and decision about prosthesis suitability. Minimal evidence available.	Conclusion:- • Not widely used, some benefits from articulated knee but not enough evidence to increase its uptake and use.

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UNIVERSITY OF Southampton

Eligibility Criteria for Prosthetic Limb Use in Lower Limb Amputees

AIM: To assist with establishing positive functional outcomes post-surgery by determining eligibility criteria for prosthetic limb use in lower limb amputees(LLA)

By Eleni Tsafandakis - Physiotherapist

1. WHY IS THIS IMPORTANT?

- Lack of eligibility criteria makes it difficult for therapists and those in the multi-disciplinary team(MDT) to manage expectations of those who have had a LLA. This can have a major psychosocial effect on the patient and lead to depression, frustration and distress(1-3).
- Clear eligibility criteria provides therapists with strong evidence-based information as a basis for clinical decision making, especially in cases where patient expectations do not match clinical decisions(1,4,5).

2. WHO IS RESPONSIBLE?

- Currently, clinical reasoning of the MDT and past patient experience has been the major determinant of the decision for onward referral to prosthetic services(4,5).
- According to good practice guidance, the decision for onward referral must be made with the full MDT involved and must involve the patient(4,5).

3. WHAT DOES THE EVIDENCE SHOW?

- Two broad scoping systematic reviews of the literature up to 2016 have been done to show the predictors of walking ability following lower limb amputation (6-8). This can provide clinicians with an overview of the factors that will affect patient outcomes for mobility with a prosthesis.
- When this is linked with the BACPAR guidelines(4), the below factors that have strong support, moderate support and minimal support of walking ability after LLA can be used to determine prosthetic candidacy(6-8):

Factors with Strong Support (6+ references in literature reviews)	Factors with Moderate Support (3-5 references in literature reviews)	Factors with Minimal Support (1-2 references in literature reviews)
Amputation level	Cognition/Mood disturbance	BMI
Age*	Aetiology (dysvascular)	Motivation
Physical Fitness(Pre-op walking ability + ADL independence)	Physical fitness(VO2 max)	Gender*
Comorbities*	Ability to stand on one leg	Smoking
Shorter time to rehabilitation	Pre-amputation living status and perceived social support	Stump/phantom pain*
Stump length	Contracture (hip and knee)	Hip extensor strength

**Conflicting evidence in research*

- A comprehensive review of these factors is needed in an MDT prior to decision for referral to prosthetic services. These factors also affect later rehabilitation (7)
- Over-prescription vs. under-prescription

4. ARE THERE ANY OUTCOME MEASURES TO AID DECISION MAKING?

- AmpNoPro and Trans-femoral amputee predictor(1,2)
- Simple tests can give insight into patients ability to cope with the prosthesis: Standing for 30 seconds with early walking aid (EWA), being able to walk and turn in parallel bars with EWA, Timed walking tests(6 minutes) with EWA, FIM Scores(1,7)-NB: Test-retest reliability.
- Cognitive assessment tools for e.g: Addenbrookes cognitive exam(4,7)
- The International Classification of Functioning, Disability and Health to group factors.

5. CRITICAL APPRAISAL OF THE RESEARCH TO DATE:

- Good background on predictors of walking ability, but some evidence is conflicting and further research is needed to obtain more reliable information.
- Minimal research is available on outcome measures that can be used to support clinicians in decision-making regarding use of a prosthesis. The outcome measures available at present have not yet been thoroughly assessed for their validity and reliability, and are difficult to implement in practice.
- There are no clearly defined eligibility criteria for use of a prosthesis.

6. CONCLUSION:

- There is no clear eligibility criteria that can determine a patients potential for prosthetic use.
- While there is good background on predictors of mobilising successfully with a prosthetic after LLA, Evidence is conflicting and needs further clarification.
- Due to this, patient eligibility is decided from the available guidelines and in a MDT on a case-by-case basis. Therapists experience in the field is paramount to assist the team and the patient in decision-making for a referral to prosthetic services.

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Pain Management Following Lower Limb Amputation

Kimberley Fairer - Vascular Physiotherapist

University of Southampton

Oxford University Hospitals NHS Foundation Trust

Intro: Postoperative pain (PP) has been demonstrated to lead to poor functional rehabilitation engagement, severely effect quality of life and has been associated to chronic pain, including phantom limp pain (PLP) following lower limb amputation (LLA) (5,6,8,9 & 11). The most commonly used analgesics are opioids after LLA however due to the variety of pain pathologies that occur, this modality is commonly ineffective in addition to having a range of side-effects (4-6 & 11). With a range of pharmacological or non-pharmacological treatment options available, the incidence of PP surely should be less frequent. So why in clinical practice is pain still such a barrier to rehabilitation and delay functional independence? (5,6,8,9 & 11)

Aim: To review 3 different treatment modalities and their effects on pain scores, opiate use and Feasibility measures.

Analgesia Method (Author)	Method	Finding's	Critique
Continuous Regional Analgesia (Ayling et al 2014) (1)	Retrospective review of inpatient charts. 4 Year period reviewed.	Continuous perineural catheter (CPC) placement resulted in reduced cumulative postoperative opioid use compared to those without CPC. However, no difference in pain scores within the first 24hour postoperative period.	Participants not blinded, would be aware of CPC therefore possible placebo effect. No records to clearly state why CPC chosen, surgeon preference, previous issues in medical history. No pain scores recorded after 24hours, therefore no indication as to whether effective for analgesia. No long term follow-ups in regard to pain management. A Systematic review from 2015 found that pain scores were reduced using CPC however many of the studies were of poor quality and lacked statistically significant results (2).
Tactile Desensitisation (Horne et al, 2017) (7)	Pre-experimental, repeated measure design of 12 participants. Self-reporting of pain, anxiety and depression descriptors. Pain was recorded pre and post self-administered intervention.	Statistically significant reduction in pain level found when using tactile desensitisation up to 6 days following amputation. Participants reported the treatment easy to complete themselves.	Minimal participants, therefore lacking power. Population mostly women which is significantly different those in most lower Limb Amputations (10). Self-reporting and self-intervention gives room for bias and could lead to inaccurate recordings. Lacking pain score information pre, immediately post and after day 6 post-operatively. Therefore unable to compare chronic and acute symptom changes. Range of pharmacological medication was reported, unsure whether one better than others. Potential of placebo effect when participants directly receiving intervention.
Oral Ketmine (Buvandran et al, 2018) (3)	Pilot Study involving 3 participants having elective LL amputation. Oral Ketamine at a dose of 1.0mg per Kg was administered pre-op and following surgery at regular intervals, with a reduction on each day post operatively of 50%.	No adverse effects as a result of Ketamine use were recorded.	Pilot of 3 participants, therefore no power. Significant range of exclusion criteria, which may rule out a number of vascular amputations, which is the leading cause of amputations in the UK and rule out those who are higher risk of complications (9 & 10). Therefore, may not be generalisable to the majority of LL amputations. 1 participant only had toes amputated and therefore may have experienced reduced pain symptoms compared to the 2 who had BKA. 1 Participant had diagnosed chronic pain which may effect pain mechanisms and alter sensitivity to analgesics. (5, 6, 8 & 9)

Conclusion:

CPC placement demonstrated reduction in opioid use whilst tactile desensitisation appears to be an affective adjunct to medical analgesic options to reduce pain scores in the early post-operative phase. Reduction in pain scores has also previously been associated with use of CPC placement in other studies and Ketamine was found not produce adverse effects in a minimal group of reasonably healthy participants, with varying causes of amputation.

The evidence for effective, analgesia following LLA is lacking in quality, long term, multi-centred RCT studies. However the findings above suggest a combination of local, oral and non pharmacological analgesia may be effective in the acute post-operative period.

Key Considerations:

- Amputation is major surgery and inflicts trauma to soft tissue, blood vessels and nervous system – therefore pain management can be difficult.
- A range of analgesia methods may be the best option when treating the multiple pain mechanisms which occur following amputation.
- Patients medical background and sensitivity to analgesics should be considered.
- Treatment can include non-pharmacological options.

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Amputee Strengthening and Conditioning Programme.

Bwrdd Iechyd Prifysgol Abertawe Bro Morgannwg University Health Board
Swansea University Prifysgol Abertawe
Laura Braithwaite

Introduction:

There are 2 Physiotherapists working at Swansea ALAC and an increasing number of amputees requiring physiotherapy. As a result of this, waiting times from hospital discharge to first outpatient physiotherapy appointment have been increased resulting in 3 informal complaints. To address this issue, along with many others (such as poor compliance with home exercise programmes and post surgical weakness) a 6 week physiotherapy lead strengthening and conditioning group was implemented for all new amputees post hospital discharge.

Methods:

Each patient was identified on the ward or in consultant clinic and invited to attend the programme of 6 x 1 hour sessions over the course of 6 weeks. The sessions consisted of a group warm up followed by a 10 station circuit (2mins per station) involving a variety of upper limb, core and lower limb strengthening and ROM exercises. As well as this, the sessions were used to inform patients about ALAC. Outcome measures (10m timed self propel, number of sit to stands in 1 minute and grip strength) were completed before the first session and after the last session. The patients were also asked to complete an anonymous satisfaction / feedback questionnaire at the end of the 6 weeks. Upon completion of the group a DC report was written for each patient including the plan for that patient e.g. return to clinic for R/V or appoint for primary physiotherapy assessment.

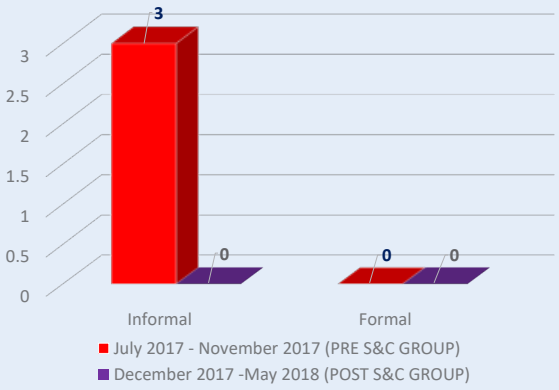

Figure 1. A graph showing the number of formal and informal complaints 6 months pre and 6 months post implementation of the strengthening and conditioning group.

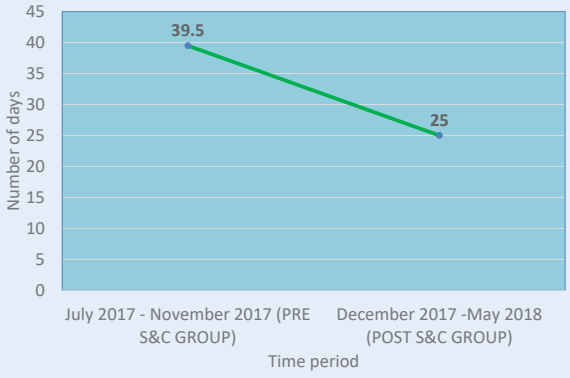

Figure 2. Average waiting time for first outpatient physiotherapy appointment as a new amputee.

Results:

25 patients were invited to attend the course (13 transtibial amputees, 2 through knee amputees & 10 transfemoral amputees). Figure 3 shows the outcomes of the patients; 3 did not complete the programme (2 due to poor health & 1 declined to attend), 2 completed the programme but were awaiting either prosthetic assessment or orthotic footwear, 5 were returned to clinic for padding and 15 completed the programme and had their primary physiotherapy assessment.

From the data collected it was noted that:

- The number of informal complaints was reduced from 3 (6/12 prior to group starting) to 0 (6/12 after group commenced). Figure 1.
- Average waiting time for Pts reduced from 39.5days 6/12 prior to 25days 6/12 post. Figure 2.
- Outcome measures: Sit to stand increased from 9.68 initially to 13.6 on discharge. 10m self propel time decreased from 12.76secs initially to11.9secs on discharge. Grip strength increased for both left and right hand (right initial = 24.57kg, right DC 25.79kg. Left initial 23.4kg, left DC 24.1kg).
- Positive feedback from the questionnaire – main themes being patients found transfers and ADLs easier, had increased confidence, increased independence and enjoyed the social aspect of the programme.

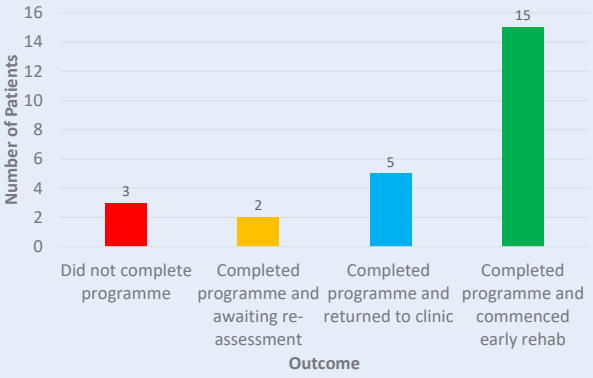

Figure 3. A graph showing the outcomes of patients that attended the 6/52 strengthening and conditioning group.

Conclusion:

The programme was never designed as a research project, but as a clinical service improvement project to reduce waiting times and increase patient satisfaction and this must be recognised when interpreting the results.
It has been effective in reducing the number of complaints received and reducing waiting time. As well as this, all outcome measures showed a positive trend suggesting patients are also gaining a physical benefit from attending. Patients have reported they have enjoyed attending and it has allowed a thorough assessment of patients over a 6 week period by the MDT. Furthermore it has not cost the service additionally financially.

In the future it would be of interest to investigate the impact of attending the group on the length of patients prosthetic pathway and possibly validate the group further by completing a more vigorous study including a control group for comparison.

Acknowledgements:
Thank you to the Swansea ALAC team for supporting the implementation and continued running of this programme.

AMPUTEE & PROSTHETIC REHABILITATION MSC – MY EXPERIENCE SO FAR

THE MSC PATHWAY AT SOUTHAMPTON UNIVERSITY

Rosie Carr
Physiotherapist, Pace Rehabilitation (rcarr@pacerehab.com)

The following is an account of my experiences of the MSc pathway at Southampton University where my most recent module was kindly supported with an education bursary from BACPAR.

I started the pathway by signing up to a stand-alone module for personal CPD when I initially moved into a senior amputee rehabilitation role within the NHS. One led to another, and another, and another until I decided I may as well do the whole thing!

The pathway is well designed to fit around your work and personal life. The modules are mainly based over weekends to minimise time needed off work, and with 5 years to make your way through there is plenty of breathing space in-between. For me, I only really remain engaged in academic work if I am researching something that is applicable to my clinical practice. Therefore, the way the module assessments are structured is perfect as it allows individual interpretation of the question allowing you to focus on a topic relevant to you.

THE E-RESEARCH METHODS MODULE AND LITERATURE SEARCH

Most recently I have completed the e-research methods module. This was made up of 'skype style' group tutorials and online learning resources allowing you to work through the material at your own pace and to your own schedule. For my assignment I compiled a literature review exploring the benefits of the Empower foot. The Empower foot is a component that we often trial in the private sector but the literature behind it is sparse, so prescription tends

Theme	Key findings
Metabolic Cost	16% reduction in oxygen consumption with Empower than ESR foot on level ground [1] 5% reduction on 3° and 6° slopes [2] When Empower is tuned to ≥50% of the recommended power settings, significant reduction in metabolic cost [3]
Gastro-soleus complex	5 articles [4,5,6,7,8] expressed that the Empower was reproducing the action of soleus but was unable to mimic the biarticular gastrocnemius. They believed that until the action of gastrocnemius can be reproduced, many of the compensatory movements seen higher up the kinetic chain cannot be resolved
Weak musculature	2 papers alluded to weak quadriceps being a bigger issue than the lack of power in a prosthesis [5,9] Rectus femoris in amputated leg generated 49% less power when ascending slope to the contralateral limb even when using Empower [5]
Ground reaction forces	Empower reduces sound limb ground reaction forces and peak knee flexion moment [1]
Tuning of the Empower	One study [3] specifically looked at the tuning of the Empower and found that a power setting of 50% or above the manufacturer setting reduced metabolic cost of walking the most. This setting means the device is producing far more power than a biological ankle at push off

CASE STUDY

BACKGROUND

- 52-year-old male
- RTA July 2013 – polytrauma including right side sciatic nerve injury with resultant foot drop, left lower limb crush injury – multiple salvage surgeries, developed CRPS, amputation 15th June 2017
- Started prosthetic provision in the NHS then transferred to Pace in November 2017. Pace Everyday prosthesis foot prescription of Endolite Echelon [10] as he was a high impact user that needed a reliable foot that could manage multi-terrain
- Goals: returning to cycling, dog walking, previously ran heating and ventilation business but now planning to run small holding of rescue animals
- Empower trial between 7th August 2018 and 29th August 2018

Trial Procedure

There are two tiers to our component trial including both objective and subjective data collection. Depending on the component and expected functional use of the component we vary the objective and subjective measures used depending on the individual trial. In this case we used the following:

Objective:

- 3D gait analysis
- Outcome measures (2MWT, ABC and Plus-M)
- 2 ½ mile timed multi-terrain walk with an elevation of 440ft. Examples of the terrain can be seen in Figure 5

Subjective:

- Visual gait analysis
- Feedback from the client
- Feedback from the clinicians

By collecting a wide array of data, we can then provide a concise summary of our findings which either supports the provision of the component or the contrary.

RESULTS

Objective:

- 3D gait analysis key findings: ↑walking speed (10%), larger prosthetic stride length, improved symmetry between sound side and prosthetic side when using Empower.
- 9% increase in 2MWT distance
- 8.14% increase in ABC score (Activities-specific balance and confidence scale-UK)
- 15.2% increase in Plus-M score
- 8 minutes faster on timed multi-terrain walk

Subjective:

- Reduced effort when ascending hills and steps
- Able to walk further and for longer periods, feels comfortable, less effort
- Eradicated hip/back pain which occurs with Echelon foot
- Allowed him to join partner on longer dog walks
- Sitting down is a lot more comfortable as less pressure on the stump through the socket, as the empower foot lowers (plantarflexes) at rest
- Unable to wear variety of footwear – due to the bulk of the component

OUTCOME

- The outcome of the trial was that we did recommend the Empower as a second prosthesis for this gentleman
- Although there were really positive improvements both subjectively and objectively, the weight of the Empower, necessity to charge the foot and carry spare batteries, not being water proof or being suitable for muddy environments meant that the Empower was not able to meet his everyday functional needs and could not replace his Echelon as his main prosthesis. Our recommendations were therefore based on what it could achieve, which was: longer multi-terrain walks with his dogs, everyday community-based walking when not on the small holding and resolution of the secondary musculoskeletal complaints as result of the combination of drop foot and transtibial amputation
- It is important to note that the changes documented above were solely based on the change of component, the socket remained the same during the trial and physiotherapy was limited to outcome measures and teaching of new features only during the trial period

to be quite subjective. I presented my findings as five key themes which I felt were important to clinical practice; these are detailed in the table below:

Please note that some of the points above were from slightly less rigorous study designs, so are not conclusive arguments. If you would like further information on the literature review itself, please email me.

EMPOWER TRIAL AT PACE REHABILITATION

It is usual practise to trial a component before prescribing it. The following case study demonstrates a typical example of when and why we trial the Empower at Pace. The two feet discussed in the case study below are the Echelon foot with an articulating ankle that hydraulically controls 9° of movement divided between both dorsiflexion and plantarflexion, and the Empower foot that produces power at push off to aid propulsion in walking and has 22° of plantarflexion range.

Fig 1 – multi-terrain walk with Echelon

Fig 2 – multi-terrain walk with Empower

Fig 3 –plantar flexion range - Empower (24° slant)

Fig 4 – plantar flexion range - Echelon (24° slant)

Fig 5 – multi-terrain walk on Empower

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A PERSONAL PERSPECTIVE OF MANAGING THE PLUS SIZED AMPUTEE

Jill Stokes
Band 7 Highly Specialist Vascular Physiotherapist, Northwick Park Hospital.

TERMINOLOGY

Currently the term bariatric is used for equipment required and the term plus size (PS) relates to individuals. This individual may have a large apple shaped abdomen, or large pear shaped bottom and thighs, large lymphoedematous legs or a large abdominal pannus (lower abdominal dense layer of fatty tissue hanging on thighs impeding walking and movements). They may be tall meaning extra weight is not unduly apparent or may be short and therefore not very heavy but indeed very large. Those with altered shapes are deemed higher risk for manual handling tasks and it is vital both patient and staff are safe. The PS individual will have their own unique way of moving. Many use their legs as a counter lever; by quickly dropping them over the edge of the bed, strong hip flexors with hamstring fixing will pull themselves up into sitting. Some get up by moving into prone and crawling off the bed. Ensure your assessment reveals the exact way the PS patient moves before interventions.

REHABILITATING THE PS PERSON

When we first see these PS patients in hospital, what goes through our mind? Personally I believe we all think similarly and question how big individuals move. What will happen if he falls with me? Will I be in trouble?

Have you thought what PS patients think as they lie in hospital; embarrassed and feeling everyone is staring, avoiding them, or ashamed the hospital gowns don't fit and have no clothes to wear? Their bed is too small to get out of and no chair is wide enough; just how can they get to the toilet? These patients are most likely to stay in bed hiding from reality under sheets; saying 'I will be fine at home', until the day of discharge when they can't do so and discharge home is cancelled.

How will you manage patients if they will not get and are too weak to manage? Maybe use 6 strong staff to assist sitting; 3 pushing from behind and 3 pulling from the front? Before you do these please always ask yourself 'what is their sitting and standing balance? Are they weaker and off baseline? What will you do if they fall to the floor? How will you get them back into bed?' In my experience the bed bound PS patients are high risk, need appropriate equipment and involvement of the Moving and Handling team.

The amputee is already a complex patient with co-morbidities such as age related conditions, diabetes (neuropathy, myopathy and poor tissue healing), poor eyesight, renal function and cardiovascular fitness, to name a few. An amputee therapist has the skills of managing the weak, frightened and unsteady amputee who has to quickly adapt to limb and balance loss that has been an integral part of

Figure 1: Baros Acute Bariatric

Figure 2: Sizewise Sapphire 1100

them. How do Physiotherapists adapt their skills with PS amputees with all of the above, plus the extra risk considerations of manual handling and safety issues?

CASE STUDY OF A PLUS SIZED AMPUTEE

Sam was a 63 year old primary amputee under my care. His PMH included diabetes, HTN and long standing Charcot foot. Sam weighed 186kg; his BMI was 40 and classified morbidly obese. He was 6 foot tall with a mixed apple and pear body shape and bilateral leg lymphoedema. He had hyperkeratotic skin (leathery texture) below the knee which delayed primary healing and almost required a higher amputation.

Sam received counselling six months earlier as he was frightened by the prospect of amputation. His painless foot had not stopped him from being independent with 1 stick and therefore he viewed an amputation 'too extreme'. Sam described himself as 'fit and fiercely coping alone' in his ground floor council flat and was adamant to have an artificial leg to maintain independence on the bus for shopping.

At the time of surgery Sam believed his only issue was the 'smelly wound and daily district nurses'. However, surgery became essential with increasing medical concerns of cellulitis, osteomyelitis and sepsis; infections no longer responded to antibiotics.

PRE-AMPUTATION STAGE

Prior to admission Sam attended a routine pre-amputation meeting with the Physiotherapist and Occupational Therapist to get a social and functional history, assessment of limb power, joint range of movement and physical ability. Sam had very poor exercise tolerance and was breathless with simple tasks so his perceptions of being 'fit and fiercely' independent were not demonstrated. Sam required a 28 inch wheelchair with stump board for the proposed transtibial amputation (TTA) and the wheelchair referral was made immediately for this nonstock sized chair. Using the Blatchford Leicester Allman Russell tool (BLART), Sam scored 13 which suggested the outcome to be potentially prosthetic standing and transferring only.

Whilst Sam had fair joint range of movement and was relatively strong, it was important he was realistic with the demands of becoming a PS amputee and the need to adapt to a new way of life with a wheelchair and sometimes without prosthesis. The meeting was concluded with a summary; Sam was clearly informed that the commitment required for prosthetic rehabilitation was immediate and was given exercises to start pre-admission.

An access visit revealed that Sam's flat was not wheelchair accessible as no doorways were

Figure 3: Bariatric Shuttle advance

Figure 4: Baros Acute Bariatric Bed

wide enough for his required wheelchair. Micro environment living was not feasible as the room size would not take a bed, chair, commode as well as his belongings. He was referred to the social work team for housing.

SPECIFIC BARIATRIC EQUIPMENT REQUIRED FOR ADMISSION

An expandable bariatric bedframe and sapphire mattress provided a safe pressure relieving base. See Figures 1 and 2. These could be adjusted to provide a secure surface to participate in rehabilitation; rather than a rotation turning mattress which is indicated for bedbound patients.

The expandable bed frame enabled altering bed width to suit the variety of activities performed by PS patients. Extra width offered comfort and maximised space for arms to relax, room for rolling for toileting and a comfortable sleep. By day it was narrowed to reduce the distance to get to the edge of the bed, allowing independence. The narrower width allowed staff to stand closer to patients reducing bending and reaching during personal care and wound management. Furthermore it enabled the bed to access narrow lifts and smaller doorways to X-ray and theatres to optimise patient care.

Bariatric slide sheets were the same width as mattresses and were inserted using the fold down technique from head downwards; requiring no rolling so fewer staff to reposition. The cardiac chair setting on the bed provided additional air support in the mattress maximising sitting comfort when unsafe to get out of bed.

Whilst we had no intention of hoisting Sam, we ordered an XXL Liko sling in case he fell or collapsed in the chair and needed hoisting to bed. The ward had a bariatric hoist (300kg weight limit) with 2 spreader bars making hoisting the PS more comfortable. In my experience some riser recliner chairs are not compatible with manual hoists and so always ensure equipment is fully functional pre-treatment.

Figure 5: ReTurn7600

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INITIAL POST OPERATIVE STAGE

The TTA surgery was uneventful; the open wound due to the hyperkeratosis and marked lymphoedema was managed with a vac pump. Sam required support from acute pain team for several weeks. The goal to sit out on day 1 was unachievable however using slide sheets; mattress and bed frame optimally meant Sam could achieve a good upright position in bed to start exercising with a few staff. Motivating Sam was hard but early sitting was engaging, maintained core strength and prevented complications. As pain settled the PIRPAG exercise regime was started; these are specific amputee exercises as recommended by BACPAR to maintain range of motion and optimise lower limb power.

Sam was unable to pull up into sitting using bed rails due to pain and core weakness therefore the mini baros shuttle chair (MBSC) was hired. See Figure 3. This electrically controlled chair flattens to a trolley (with arm rests easily removed). See Figure 4. Sam was transferred horizontally using a PAT slide (sliding board) and slide sheets. The MBSC has sturdy arm poles that Sam was could to pull him onto the chair and to readjust posture and relieve low back pain which is common with PS individuals. Sitting tolerance was essential considering his initial goals were wheelchair independence.

PROGRESSION OF REHAB PATHWAY

Using the riser recliner mode of the MBSCand ReTurn 7600 (Figure 5) standing was practiced. The ReTurn was stabilised by 2 staff every time Sam pulled up to stand, the knee block reduced falls risk. He became quickly confident with standing, managing to progress by pushing up from the bed and was able to practice mini squats. Knowing that Sam had core strength, lower limb antigravity power and cardiovascular reserve, a bariatric slide board was now introduced for slide transfers. He became independent with slide transfers and quickly progressed to stand and swivel transfer from the bed to the commode. Increasing single leg stand tolerance was the pivotal outcome measure for Sam to appreciate his strength and balance; he progressed to use the bariatric zimmer frame for transfers.

Wheelchair delays frustrated Sam and he perceived it as slowing rehabilitation. In reality it did not; on delivery Sam was immediately wheelchair independent. Sam was psychologically low in mood with the realisation of difficulties of his wide chair and inaccessibility at home. Social services found temporary accommodation whilst he was put on the housing list.

In my experience lying to sitting on the edge of the bed can be unsafe and Sam expressed fears of rolling off the bed therefore this was the last activity to practice. By deflating the air mattress the residual foam mattress provided a safe and stable base for sitting activities. Sam was initially hoisted to the edge of the bed until he was able to lift his legs in and out of bed unaided.

PRE-PROSTHETIC REHAB

Sam practiced kneeling activities for core strength, balance re-education and weight shifting in preparation for prosthetic work. As Sam's main goal was for a limb he needed to manage falls; backward chaining and crawling was practiced until he was independent getting from the floor.

The stump remained open with a vac dressing but with advice from the limb fitting centre (LFC) we ordered a bespoke Juzo sock for Sam. This required specific stump measurements and delivery took 3 weeks. The bariatric PPAM Aid fitted him well but fatigue limited walking distance.

The LFC agreed to take over his care for prosthetic work up. He only coped with rehabilitation for a short while choosing to be a permanent wheelchair user due to ill health and stresses of housing difficulties.

CONCLUSION

PS amputees follow similar rehabilitation pathways as normal sized amputees but the consequences of being PS must not be underestimated and realistic goal setting is even more essential. Appropriate equipment provides safety; manage the falls risk and the patient and staff can be confident during rehabilitation to achieve the maximum potential. .

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BOOK REVIEW

Sue Lein
BACPAR Treasurer and Joint Journal Officer
BACPAR.treasurer@gmail.com

A Bobath Tutor colleague passed me this book saying she was sure my BACPAR colleagues would enjoy it – and I certainly couldn't put it down once I started reading it.

Written by a military medical historian it explores the war in Afghanistan (2001-2014) from her unique perspective. Tracing back to the 41,000 strong amputee cohort from the First World War and subsequent developments in orthopaedic and plastic surgery in those times she then describes all aspects of the modern soldier's care. Explored from the moment of injury, through care in the field hospital, to repatriation to the UK and rehabilitation – at the time of writing at Headley Court - she shows the developments and hence improvement over time in all aspects of the care given. And of course, amputations feature frequently in this book.

There is an inspiring description of the development of 'Patient Diaries' started quietly by a nurse in the field hospital in which all those involved in care record their thoughts, actions and involvement in the patient's journey often well before the patient is conscious, right from the helicopter team evacuating the casualty immediately after the injury. The diary proves invaluable later to the patient, and their family, trying to make sense of what has happened to them.

Most fascinating to me – but I'm sure those of you working in this field are up to date on this – is the phenomenon of 'blast injury'. Described as an invisible wave passing through the body she explains its importance in chronic pain, and new developments with a possible link with injury to the brain's Astroglia cells producing symptoms previously mistaken for PTSD.

The author gives a lovely description of Physiotherapist as "first contact practitioners" – contact in the sense of 'touch'! - and says "physios talking about new legs going in where the space in the bed is meant more to the patient than any other conversation they had since they arrived in Birmingham [when repatriated to the UK]".

I would strongly recommend this book, not just to amputee specialists but anyone with a medical interest. Some parts of it are tough to read but it is inspiring but challenging both to our practice and the whole issue of warfare in the 21st Century.

'A Heavy Reckoning - War, Medicine and Survival in Afghanistan and Beyond'

by Dr. Emily Mayhew

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BACPAR Executive Officers 2018-2019

CHAIR
Julia Earle
Gillingham DSC, Medway Maritime Hospital, Windmill Road, Gillingham, Kent ME7 5PA
Tel 01634 833926
bacpar.chair@gmail.com

VICE CHAIR
Louise Tisdale
Physiotherapy Dept, Maltings Mobility Centre, Herbert Street, Wolverhampton, WV1 1NQ
Tel 01902 444721
Louise.Tisdale@nhs.net

SECRETARY
Amy Tinley
Clinical Lead Physiotherapist, Artificial Limb unit, Sykes Streetl, Hull, HU8 2BB
Tel 01482 325656
bacpar.secretary@gmail.com

TREASURER
Sue Lein
Tel 01474 361789
bacpar.treasurer@gmail.com

JOURNAL OFFICER
Sue Lein and Mary Jane Cole
bacparjournal@gmail.com

PRO
Hannah Foulstone
Artificial Limb Unit, Sykes Street, HU2 8BB
Tel 01482 325656
bacparpro@gmail.com

Hayley Crane
Physiotherapy Department, Hull Royal Infirmary, Anlaby Road, Hull, HU3 2JZ
Tel 01482 675007
bacparpro@gmail.com

MEMBERSHIP
Lynsey Matthews
SECRETARY
Physiotherapy Department, Portsmouth Enablement centre, St Mary's Community Health, Campus, Milton Road, Portsmouth, Hants, PO3 6AD
Tel:02380 540412
bacparmembership@gmail.com

EDUCATION
Sarah Bradbury and Adam El-Sayed
OFFICER
Specialised Ability Centre, Ability House, Altrincham Road, South Manchester, M22 4NY
Tel 0161 6113769
bacpar.education@gmail.com

SPARG
Mary Jane Cole,
REPRESENTATIVE
Tel 07884232330
maryjrcole@aol.com

GUIDELINES
Sara Smith
CO-ORDINATOR
Amputee therapy team lead, St Georges Healthcare NHS Trust, Queen Mary's Hospital, Roehampton Lane, London, SW15 5PN
Tel 020 8487 6139
sarah.smith2@stgeorges.nhs.uk

Rachel Humpherson
rhumpherson@ossur.com

RESEARCH OFFICER:
Chantel Ostler
Physiotherapy Department, Portsmouth Enablement centre, St Mary's Community Health Campus, Milton Road, Portsmouth, Hants, PO3 6AD
Tel:02392680162
bacpar.research@gmail.com

Dr Fiona Davie-Smith
Clinical Co-ordinator Specialist Prosthetics Service, WestMARC, Queen Elizabeth University Hospital, Govan Road, Glasgow, G51 4TF
Tel:0141 201 1881
bacpar.research@gmail.com

SOCIAL MEDIA
Naheed Ahmed
OFFICER
Manchester Royal Infirmary, Oxford Road, Manchester, M13 9WL
Tel:07460337771
bacpar.socialmedia@gmail.com

Bacpar regional representatives 2018-2019

NORTHWEST
Sophie Bates
MERSEY Specialised Ability Centre Ability House, Altrincham Road, Sharston, South Manchester, M22 4NY
Tel:0161 6113769
bacpar.northwest@gmail.com

TRENT
Wendy Leonard
Physiotherapy Dept, Lincoln County Hospital, Greetwell Rd, Lincoln, LN2 5QY
Tel 01522 512512
bacpar.trent@gmail.com

WEST MIDLANDS
Louise Tisdale
Physiotherapy Dept, Maltings Mobility Centre, Herbert Street, Wolverhampton, WV1 1NQ
Tel 01902 444721
bacpar.westmidlands@gmail.com

NORTH THAMES
Kate Conneally,
Royal Free Hospital, Hampstead Heath, Pond Street, London, NW3 2QG
Tel 020 779 40500 Bleep 2368
kate.conneally@nhs.net

YORKSHIRE
Jack Cawood
Physiotherapy,Prosthetics Service, Seacroft Hospital,York Road, Leeds, LS14 6UH
Tel 07891109164
bacpar.yorkshire@gmail.com

EAST ANGLIA
Anna Cue
Pine Cottage,Colman Hospital, Unthank Road, NORWICH, Norfolk NR2 2PJ
Tel 01603 251260
anna.cue@nchc.nhs.uk

Jess Withpetersen
Rehabilitation Services, North West Anglia NHS Foundation Trust, Rehabilitation Department 007, Peterborough City Hospital, Edith Cavell Campus, Bretton Gate, Peterborough, PE3 9GZ
Tel 01733 678000 ext 3659
Jess.withpetersen@nhs.net

SOUTH CENTRAL
Tim Randell
Dorset Prosthetic Centre, Royal Bournemouth Hospital, Castle Lane East, Bournemouth, Dorset, BH7 7DW
Tel01202 704363
tim.randell@rbch.nhs.uk

SOUTH THAMES
Hayley Freeman
Gillingham DSC, Medway Maritime Hospital, Windmill Road, Gillingham, Kent, ME7 5PA
Tel 01634 833926
souththames.bacpar@gmail.com

Philippa Joubert
Bowley Close Rehabilitation Centre, Farquhar Road, Crystal Palace, London, SE19 1SZ
Tel 0203 049 7724
souththames.bacpar@gmail.com

IRELAND
Carolyn Wilson
RDS, Musgrave Park Hospital, Belfast, BT9 7JB
Tel 02890638783
bacpar.irelandrep@gmail.com

WALES
Jennie Jones
ALAC, Croesnewydd Road, Wrexham, LL13 7NT
Tel 01978 727383
jennifer.jones4@wales.nhs.uk

Rachel Malcolm
Rachel.malcolm@wales.nhs.uk

SCOTLAND
Louise Whitehead.
(SPARG REP), Amputee Gym, East Block, Level 5, Ninewells Hospital, Dundee, DD19SY
Tel 01382 660111 bleep 4069
lwhitehead@nhs.net

Designed 2Move

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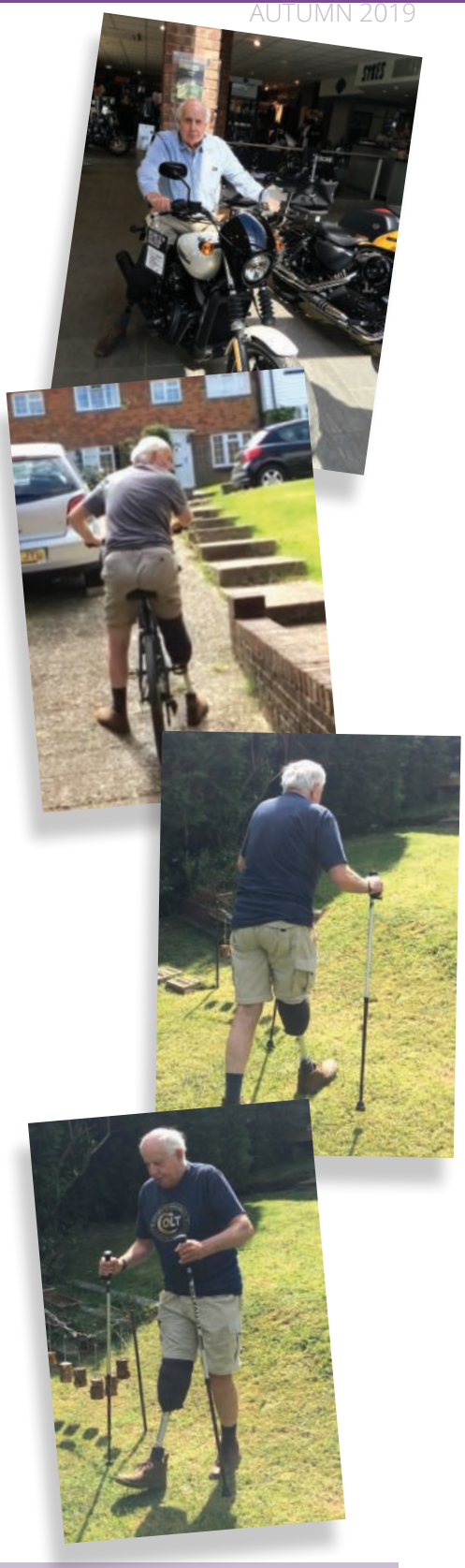

Designed 2 Move are a rehab company with a difference. We provide functional restoration programmes wherever the patient's needs take us! Scaling someone's function from where they are to where they want to get to is THE most rewarding part of therapy. At D2M, this is central to every part of our care. As specialists in functional restoration, we are frequently involved in the care of amputee patients whose lives have been upturned by life-changing surgery and the preceding events.

For example:

In the summer of 2018, 66-year-old motorcyclist Ian was involved in a non-fault accident on the road and suffered complex lower limb fractures. Medical complications in surgery and as an inpatient led to the necessity of a right sided, below knee amputation in August 2018. By March 2019, Ian had been discharged from NHS services as he was coping well at home, walking independently over short distances and managing stairs. At this stage Ian **existed** but he wanted to get back to **living**. Prior to his accident, Ian was a target shooter and a keen motorbike rider so, like many at this stage, Ian was wondering **'is this it?'**

Fortunately, Ian's case manager arranged for an assessment with Designed 2 Move and he was soon introduced to specialist Physiotherapist and Designed 2 Move associate Rory whose thorough assessment revealed that Ian had huge potential, if he was properly supported. Ian's progress over the next six months has been phenomenal! Especially considering that he had been discharged from standard therapy. Ian's rehab has been designed to scale his function in environments relevant to him. Rory and Ian have hiked hills, visited a motorbike dealership, and practiced how to reverse a bike down his steep driveway! During his rehabilitation Ian also started weekly sailing lessons and has recently purchased a small dinghy to continue this new hobby!

With Designed 2 Move's support, Ian has improved his functional capacity across every measure! His Patient Specific Functional Score of 16/30 climbed to 22/30 and he demonstrated improvement in his two-minute walk and timed sit to stand tests. Most importantly, Ian is getting back to doing what he loves and is increasingly able to live life to his full potential.

Our amputee cases are overseen by highly regarded amputee specialist Penny Broomhead, whose experience across all aspects of amputee care makes her an invaluable resource for our team. A supportive team of clinical managers and associates ensure the highest quality care and make Designed 2 Move the preferred company for therapists who wish to supplement their income with the most interesting and rewarding cases in the industry.

We are looking for like-minded associates with amputee rehab experience to join our dynamic team!

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