POSTURE & MOBILITY GROUP

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Autumn 2008

Wheelchair Stability and reports from NTE 08

POSTURE & MOBILITY GROUP

New Payment Rules for Attending PMG NTE

Many of you will be aware of the problems experienced in collecting payments from delegates attending the annual NTE. PMG administration staff spend months chasing unpaid invoices every year, and the group cannot afford to waste its limited resources in this way. It's now such a serious issue that the PMG committee has agreed the following for NTE 2009 in an effort to minimise the problem:

Book Token Incentive
Only those members who book and pay for their attendance by February 14th 2009 will receive the £25 book token to spend at the conference.

As bookings will be opening in early November 2008, this allows a full 3 months for delegates to arrange funding, book, pay, and take advantage of this valuable incentive. Purchase orders will be regarded as proof of payment.

No Payment, No admittance
No-one will be admitted into NTE 09 unless full payment, or proof of payment, has been received BEFORE the event. Regular reminders will be sent automatically via email to delegates whose invoices remain unpaid up to the week of NTE, so you will be aware beforehand if there is a problem with your payment. There will be facilities to pay by card and cheque at registration for booked delegates whose payments have not been received in time. (PMG undertakes to sort out queries immediately after the event and to pay back any double payments where they may occur).

You are responsible for your own delegate fee – do not assume someone else has paid it for you!

Volunteering at NTE

There are a limited number of free places for support/administrative staff from your places of work to attend NTE 09 as volunteers. In return for free attendance, bed and meals, we would ask them to join a team of volunteers helping to keep the event running smoothly – for example shepherding delegates, collecting meal tickets, monitoring parallel sessions, covering registration/help desks.

We are still working on ideas and operational details, but if you think someone from your support staff would be interested in this opportunity, please get in touch with us: olwen.ellis@pmguk.co.uk

Front Cover: New chair of PMG, Nigel Shapcott, 'Segwaying' at IPEM meeting, June 2008. Photograph by Dr. Dimitar Stefanov.

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Editorial

Welcome once again to the Autumn Journal (very confusing these seasons as I don't recall a summer?). A very warm welcome to any of you who are receiving this journal for the first time, as you may be one of our new members. Anyway, if you are a first time reader or a long standing oldie, I hope we have something of interest for you in this issue. If not, then please let us know.

We, the editorial team, love to hear from you, and we especially welcome "letters to the editor" and as you will see on page 6, we have a letter from Barend ter Haar to get us into the swing of things. So if you are not wanting to write for the journal yourself, you could simply comment on one of the articles you enjoyed, or maybe there is a point raised that you disagree with? We have standardised the style of the journal, adding abstracts at the top of articles along with the contact details of the authors so that you can easily get in touch with them. We have a template to help you shape your article, and we will offer help where needed.

I cannot stress enough that this is your journal, so please make use of it. Anyone who has ever worked on such a journal will know how many hours it takes to produce, and to PMG it is a costly exercise, so we hope you agree it's worth it?

The Publications and Marketing sub-committee, which I have stepped down from chairing, is now in the safe hands of Jane Chantry (née Harding), who has been very busy both at work and outside of work as she took the plunge and got married on September the 13th. I am sure any of you who know Jane will join me in wishing her every happiness for the future.

I am happy to still remain editor and am delighted to have such a dedicated team to work with. Along with the old faithful Barend, whom I always turn to for advice and editorial guidance, we have Geoff Harbach who has done a grand job working on our new membership flyer which will soon be ready to use. Carolyn Nichols has even been proof reading from her extended vacation in her home country (USA), and we have two exciting new recruits who bring with them a wealth of experience and enthusiasm. Jane Menzies joins us from Oxford and is a very experienced therapist working in the world of posture and mobility, with a strong PMG background from working with Dave Long. Finally we are fortunate to have been joined by Julianna Arva who has a wealth of commercial and clinical expertise and has been heavily involved with writing RESNA position papers and delivering excellent training courses in the UK, the USA, and Europe. She also knows Nigel Shapcott very well, so I am sure we will be seeing more of Julianna at PMG and NTE.

This edition has traditionally been an NTE/Conference edition, as it includes articles from the bursars. It is a great time to reflect on your own experiences and hopefully your own learning from the NTE. You will see that we also have a theme of Wheelchair Stability for this issue, and we have some excellent reading and food for thought from Dave Long "Is a stable wheelchair dysfunctional and unsafe?" on page 9 and an interesting piece from WizzyBug, with the pictures from both authors bringing the reality into our everyday practice.

I hope you all enjoyed the Newsletter in the Summer and thanks again to Jane and Olwen for producing this. Olwen is now PMG super woman and she must be in high demand as she is supporting Kirsty-Ann in the vital work of preparing for another NTE. I am as always in debt to her as she gives me so much support and we all know that we wouldn't be reading this now if it wasn't for her pulling it all together. Diolch yn Fawr Olwen.

Happy reading, and please consider a little writing too!

Joanne McConnell, September 2008

Deadline for copy for the Spring 09 issue is 28th February 2009, and the focus will be **Meeting the Needs of People with Neuro-Degenerative Disorders**. The aim of the Posture & Mobility journal is to keep members in touch with current events in the world of posture and mobility and to provide the opportunity to share ideas and learn of new initiatives. Articles submitted can be between 500 and 2,000 words.
For details on format, or if you need to write a longer article, please contact **Olwen Ellis** at **olwen.ellis@pmguk.co.uk** or **Telelephone: 0845 1301 764**.

Chair's Column

Nigel Shapcott

It's really good to sit down after a weekend of fine weather, lots achieved in the garden, and a 60s evening at the village hall to boot!

Well it has been a very busy summer for your PMG Executive Committee; there is a lot going on and I will headline the major activities. First of all though I must say that you have a really committed group of people working on your behalf in the Executive Committee and in the sub-committees, and I would like to take this opportunity to thank them for all their hard work and support. I have not mentioned all the Executive Committee activities, but rest assured this is the hardest working group of volunteers you are likely to come across.

The various responsibilities and sub-committees are outlined at the end of this article and you will see that there have been some changes. If there are any questions please let me know and I will do my best to answer.

Although there has been a lot of committee, sub-committee, and other activity, we are striving to keep costs, as well as CO_2 emissions, down by using telephone conferencing wherever possible.

Our main activity has always been our annual conference, now National Training Event. This has been PMG's main source of funding for our administrative support, Journal, Research and Development activities, and website development. The last two NTEs have been successful and well-attended, but have not been sufficiently financially successful to support these activities at the level we would like. Our new NTE chair, Kirsty-Ann Cutler, also has membership of the Finance sub-committee and is working very closely with our treasurer Henry Lumley and the other members of the NTE sub-committee to deliver a NTE which is successful as an educational event and as a source of funding for our activities.

One of the new developments for the NTE in 2009 is the availability of training sessions on the day prior to the main conference. These are being organised by the Education and Training sub-committee, now jointly chaired by Monica Young and Jo Jex, who took over after the resignation of Martin Moore *(see Monica's tribute to Martin in the sub-committee report section)*.

The Education and Training sub-committee is also involved in looking at the feasibility of developing a Europe-wide Assistive Technology credential(s) alongside colleagues in Ireland, England, and Wales from a variety of different organisations in education and service delivery. This is a complicated business and a large task which, if feasible, will require obtaining external government and/or European Union funding.

PMG is actively seeking alliances with other organisations and is in the early stages of negotiation with the Irish Posture and Mobility Network (IPMN) which has about 60 members and is very keen to work with us. Additionally we are talking to the Scottish Posture and Mobility Network (SPMN) about consolidating our already-strong relationship. The upcoming International Conference in 2010 will be an ideal opportunity to work with others to strengthen links in order to help us achieve our goals. The International Conference co-chairs are Barend ter Haar, Dave Long, and Bart Van der Heyden; also on the steering group is Kirsty-Ann Cutler in her role as PMG NTE chair and Donna Cowan on behalf of RAaTE; our partner organisations are BRSM and SPMN as before, and we will be working again with our colleagues in Scandinavia and across the rest of Europe.

Are you still following me?! Since Dave Long is now co-chairing the International Conference, he has dropped his responsibilities for Government Relations

Journal Production Team:

Editor: Joanne McConnell

Editorial Team: Julianna Arva, Jane Chantry, Barend ter Haar, Geoff Harbach, Jane Menzies and Carolyn Nichols

Editorial Assistant: Olwen Ellis

Printer: SPS Communications, Ilford, Essex.

and these have been eagerly taken on by Helen Hislop (vice-chair of PMG). Helen is based in London, which helps a lot with attending the various meetings and functions associated with this particular role.

Under the leadership of James Hollington, the website sub-committee has been working very productively putting together a detailed plan, currently being costed, for revamping the website. All being well, work will start on this next year. Associated with this, James Foy is working with the NTE sub-committee to make sure that the current website reflects their needs: there are plans too for reduced rates for retirement-aged PMG members to be incorporated into the membership system. James Foy has also been working with Clare Wright who is in charge of getting the Special Interest Groups (SIGs) ready for the next NTE. SIGs are going to be a very important feature of PMG, and I am hopeful that we will soon have a simple and reliable means for SIGs communication, courtesy of James Foy. See Clare's article elsewhere in the journal.

We are moving ahead with our webcasts from NTE 08 presentations, and I hope you have had a chance to view the earliest postings from the sponsors at the NTE 2008. I think we have a star in Helen and a great production team in Monica – one wonders what they will be doing for 2009!

So, that's it for now, with kind regards

Nigel Shapcott, September 2008

PMG Committee & Sub-committee Members

PMG Committee	Sub-committee duties
Jane Chantry	Chair, Publications and Marketing
Donna Cowan	Co-chair, Research and Development
Kirsty-Ann Cutler	Chair, NTE
	Finance
Craig Egglestone	NTE
James Foy	Website
Barend ter Haar	Finance
	Government Relations
	Publications and Marketing
Helen Hislop	PMG Vice-chair
	Chair, Government Relations
	Finance
	NTE
James Hollington	Chair, Website
Jo Jex	Co-chair, Education and Training
Dave Long	Finance
	Government Relations
Henry Lumley	Hon Treasurer
	Chair, Finance
	Government Relations
	NTE
Martin Moore	NTE
David Porter	Co-chair, Research and Development
Nigel Shapcott	PMG Chair
	Education and Training
	Finance
	Government Relations
Monica Young	Co-chair, Education and Training

Co-opted Members

Main Committee:	
Clare Wright	Chair, SIGs
	Research and Development
Sub-committees:	
Julianna Arva	Publications and Marketing
Nicola Brain	NTE
Dave Calder	NTE
Geoff Harbach	Publications and Marketing
Paul Hewett	Website
Alison Johnston	Research and Development
Linda Marks	Government Relations
Jane Menzies	Publications and Marketing
Joanne McConnell	Publications and Marketing/ Editor of PMG journal
Carolyn Nichols	Publications and Marketing
David Punt	Research and Development
Steven Rolfe	Research and Development
John Tiernan	Education and Training
Fiona Walker	Website
Helen Yarrow	Research and Development

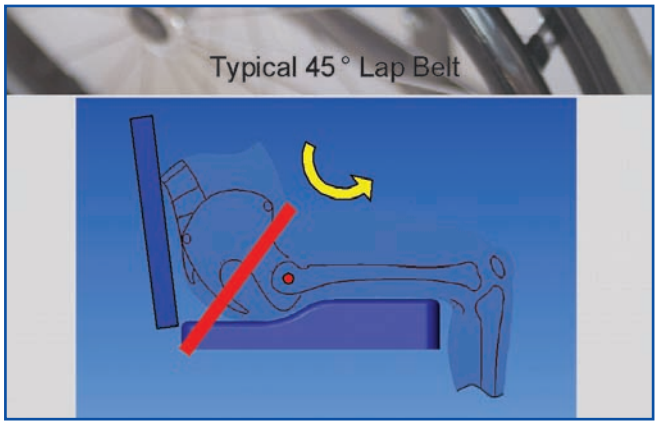
Letter to the Editor

Dear Editor

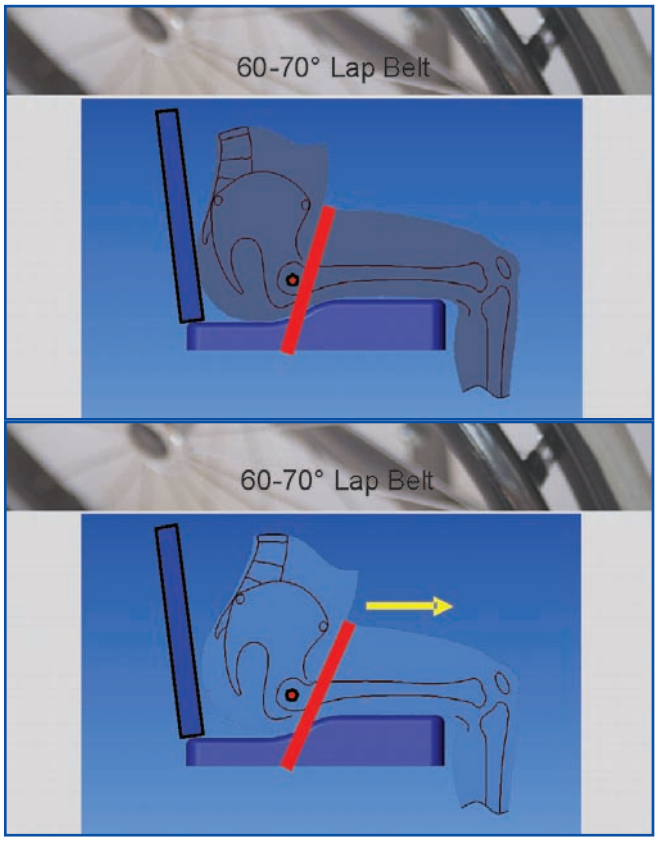
In June this year the MHRA issued a Medical Device Alert (MDA/2008/037) relating to the use of posture/safety belts fitted to seating, stair lifts, hoists, and wheelchairs. The advice in the MDA was aimed to reduce the risk of someone slipping down. However, the MDA recommends that the belts are fitted at a 45° angle. We have written to the MHRA advising that their recommendation still leaves the individual at risk, but also is not in the best interests of the tissue viability or positioning of an individual when used in seating or a wheelchair, but have not had a response.

The 45° angle has come into practice reflecting the use of lap belts as restraints in cars and aircraft to keep the individual in place in the case of impact accidents. On wheelchairs the belts are usually provided for a different purpose – to reduce the chance of someone slipping out of the chair, and to encourage an ergonomic seating position.

A 45° angle can still give rise to 'submarining' as the individual is often still able to slip down, thereby encouraging the belt to push into the abdominal soft tissues or, worse, lead to strangulation. If the belt is tight enough to stop this occurring, the 45° angle will add extra forces through the ischial tuberosities (ITs), to the detriment of the individual's skin integrity. If not tight enough, the slipping can additionally lead to shear which will also be potentially damaging to skin integrity.



For those with a pelvic tendency towards a posterior tilt, the ideal position is to have the belt pulling down in front of the greater trochanters. This will help position the individual better, will reduce the risk of submarining, and, by releasing the pelvis from restraint,



allows the individual more forward range of movement. The latter also permits pressure relief for the ITs.

(For those with a tendency towards an anterior pelvic tilt, then a four point belt pulling towards the back support across the ASISs is recommended, but with the secondary straps anterior to the greater trochanters).

I trust that your readership can see the biomechanical justification of what I am proposing, and that the MDA recommendations thereby still leave the individual at the risk of what they are trying to avoid.

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Wheelchair Stability

Wheelchair Stability: Do The Benefits Outweigh The Risks? IPEM Meeting, 12th June 2008

Craig Egglestone, Rehabilitation Engineer, Regional Rehabilitation Mobility Service
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Abstract: *A follow up event took place to one held by IPEM eight years ago, also in York, on Wheelchair Stability. Attended this time by 48 delegates from a wide range of disciplines from both the commercial and public sector, with 11 invited speakers, the event had to be relocated from its intended venue due to demand for places.*

The number of incidents of wheelchairs tipping whilst in use reported to the MHRA increases, as a result of numerous factors, both environmental and possibly because of user error. Could we as clinicians do anything to reduce this, while still issuing equipment which could meet the diverse range of differing disabilities?

We have all seen the move away over the years from "Ministry Specification" 8 and 9Ls to more modular wheelchairs with adjustability built-in to suit a varying range of patient lifestyles. With ever-increasing legislation and standards we must not lose sight of the patient who has to use the equipment.

Over the years much work has been done by several centres of excellence, using various methods of testing to predict angles of instability, such as the traditional 12 and 16 degree static testing, and force platforms to determine weight distribution over front castors/rear wheels. Some work was also undertaken to produce an audible alarm to warn of instability (Remploy R+D).

This type of technology is now commonplace in agricultural machinery such as tractors. However, to implement this into wheelchair design at a low cost which is both reliable and robust may be difficult. It may be easier to implement on a powered chair as the wheelchair batteries could provide the necessary power supply.

How does a patient using a wheelchair determine what is a safe slope to climb or traverse before the wheelchair becomes unstable, if they have not had the experience before? Also what do we consider to be a reasonable and foreseeable use of a wheelchair? A static pneumatic tilt ramp at least provides some form of test which the patient can relate to, and it is a piece of equipment which can be used in a variety of settings. Whereas the force platform rigs are not easily transportable at present and are also very expensive.

The study day provoked a lot of debate on questions and methods sampled in this report, which I am sure will lead to further discussions on the topic!

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Is a stable wheelchair dysfunctional and unsafe?

David Long, Clinical Scientist, Oxford Centre for Enablement, Nuffield Orthopaedic Centre NHS Trust
Windmill Road, Headington, Oxford, OX3 7LD

Abstract: *The primary aim of a wheelchair is for mobility. This article explores the relationship between mobility and stability. Placement of the centre of gravity of the wheelchair system (and occupant) over the wheels of the wheelchair is crucial to mobility. The clinical and technical implications of this are discussed.*

Background: *Providers of wheelchairs are duty bound to ensure issued equipment is as safe as reasonably practicable. Wheelchair stability is a key component of these considerations, as tipping over in a wheelchair is likely to cause injury. However, the implications of making a wheelchair stable are not always fully considered.*

Current techniques: *There is a variety of (static) stability testing techniques available, ranging from the traditional 12/16 degree ramp and adjustable angle ramps, through to fully functioning force plate systems. There are no absolute rules for determining whether the actual level of stability is acceptable: each system must be assessed on its own merit. Adjustments are made to the wheelchair chassis in order to improve stability where it is deemed necessary. Ultimately, this form of testing is limited since it only measures stability under static conditions where wheelchairs seldom tip over. Formal testing for dynamic conditions is in its infancy.*

Defining the problem: *Where alterations have been made to the wheelchair chassis in order to improve stability, difficulties can be experienced with mobility due to an altered weight distribution between front and rear axles. Occupants may find push rims too far away for efficient self propulsion, attendants may find increased difficulty with pushing where weight has been transferred over the front axle, and powered wheelchair occupants may have difficulty negotiating uneven or slippery surfaces. Not only is function reduced, safety may also be compromised.*

Conclusion: *Challenges exist for clinicians, technicians and manufacturers alike if mobility is to be considered as important as stability. These challenges centre around stability assessment techniques, equipment usage habits and product development.*

Definitions and characteristics

The dictionary defines stability as "steady in position or balance; steadfast, or firm of purpose". Synonyms include non volatile, immovability, unwavering. Interestingly, and perhaps not surprisingly, the antonym to stability is mobility! So there must be a compromise if we are to achieve a reasonable level of both.

Stability has three main characteristics:

- Centre of gravity within base of support
- Wide base of support
- Low centre of gravity

The centre of gravity will move under dynamic conditions: the stability of wheelchairs can be *reduced* e.g. where castors become lodged in a drain cover, throwing the occupant and centre of gravity forward; stability can be *improved* e.g. leaning the trunk forward when propelling up a kerb. There are many other similar examples.

The conflict of environment and wheel

Our environment has many barriers to the wheel:

– Uneven surfaces such as undulations caused by tree roots
– Slopes which can be short and steep, or long without interval
– Steps taking the form of kerbs or flights, being variable in height and depth
– Surfaces can be soft, hard, loose, or slippery.

Wheels turn most easily on smooth, flat, and level surfaces; limbs are usually more able to cope with obstacles. How important is it, then, to ensure mobility is optimised when considering wheelchair provision?

Wheel size

Large diameter wheels negotiate obstacles more easily than those with small diameters: those with small diameters tend to fall down every rut in the road, whereas larger diameter wheels are more able to bridge the gap. The radius of smaller wheels also limits the height of obstructions that can be climbed.

It is logical, then, that the combined weight of the occupant and wheelchair should be mostly over the axle with the largest diameter wheels and away from those with small diameter i.e. castor wheels. An additional complication is found in loading castor wheels in that they also have to swing in an arc on their stems; more load over these wheels means more force has to be provided to turn wheel and stem concurrently. We have

all seen castors struggling to turn on thick carpet or similar surfaces.

Castors might best be considered as a necessary evil, i.e. to stop the wheelchair tipping over, being viewed primarily as stabilisers and not weight bearers.

Stability assessment

As discussed above, assessment of stability is often undertaken using a fixed angle ramp, variable angle ramp, or force plate system. The fixed system gives a simple pass/fail result which can be both helpful and unhelpful in demonstrating stability/instability to the occupant/carer. Variable angle ramps provide an actual tip angle which is more helpful. Force plate systems reduce manual handling and occupant alarm, but fail to provide a physical indication of tip angles which can be a useful educational tool.

There are two issues arising from use of these systems:
1. How to interpret the result
2. How to address dynamic (real life) conditions

While there are no hard and fast rules to answering these questions, both must be addressed using a systematic technique. At this point I need to say that I have struggled to find a definitive, pragmatic tool that can be used on a day to day basis in clinical practice. There is, however, an increasing wealth of resources available to help:

- British Standard *BS EN ISO 14971:2007 Risk Management Applied to Medical Devices* contains a lot of useful information and is well worth reading. Note that the 2007 version (as opposed to the previous 2001 edition) has a lot of useful and practical information in the appendices.
- The Medicines and Healthcare products Regulatory Agency (MHRA) has issued guidance on the stability of wheelchairs in their publication DB2004(02). This is a very helpful booklet and explains wheelchair stability in much more detail than is possible in this article.
- The Institute of Physics and Engineering in Medicine has produced a document entitled "Risk Management and its Application to Medical Device Management" (2007). I have only recently purchased this, so cannot give any indication of content at the time of writing. However, given the authorship it is likely to be a very useful document.
- NHS Trusts will have risk management procedures, but my experience is that they tend to lend themselves more to a traditional hospital setting than to an outpatient equipment provider.

All these references can be used to assist in the analysis of wheelchair stability to judge benefit against risk. Bear in mind that benefit might not necessarily occur immediately – it takes time to learn how to drive a powered wheelchair or back wheel balance. One cannot obtain a UK driving license without first going through a learning and testing process.

It is crucial, then, to analyse wheelchair stability within the clinical, physical, and environmental context, bearing in mind the body's capability to learn and develop a skill, especially with training and experience, and in conjunction with the user/carer.

Mobility assessment too?

The above section addresses the requirements for stability testing but, as is central to this article, consideration must be given to mobility requirements at the same time. Unfortunately, stability is often viewed in isolation and as the ability of a device to resist tipping over regardless of context. If we are to facilitate mobility, this cannot be good practice. We must ensure equipment is safe, but at the same time remember that the primary reason for supplying a wheelchair is for mobility.

Returning to the (unhelpful) use of castors as load bearers, too much weight over this axle can be induced through the use of rear wheel set back (commonly noted as RWSB), poorly positioned seating systems, and/or a poorly set up wheelchair chassis. It leads to:

- Difficulty turning the chair due to increased leverage required (weight further away from fulcrum)
- Difficulty getting round tight turns due to long wheelbase (analogous to parking a large estate car vs parking a Smart car)
- Difficulty getting up kerbs/over obstacles due to extra leverage required at push handles or prevention of a rear wheel balance
- Loss of traction to (rear) drive wheels
- Increased wear on the castors often leading to dysfunction and, ultimately, failure
- Increased chances of castors digging into soft surfaces.

Clearly modifications like RWSB and castor outriggers address specific safety needs and are done for good reason. The challenge, I believe, is to look at other ways of achieving the same result, but with improved mobility. I appreciate there are also budgetary considerations to be made, but at least let's start with considering the alternatives.

'Improved' safety

I will take this opportunity to challenge briefly the generalised assumption that more stability is safer than less stability. Clearly the two are closely interlinked and as a practitioner one would want to ensure safety, but increased stability is not always the means through which this requirement can be met. Take these examples – there are many more:

1. 'Improved' rearward stability can cause rear wheel drive powered wheelchairs to slip down cambers on pavements (when driving across the camber) due to a loss of traction over the higher drive wheel and thus the inability of that wheel to provide a braking effect.
2. 'Improved' rearward stability can induce forward instability as more weight is placed over the front castors, rendering them more likely to act as a pivot once caught up on obstructions such as drain grates.
3. 'Improved' stability can cause enormous strain on the frame of the wheelchair **and** the frame of the user/attendant!

So what can we do?

Some practical steps and some thoughts for the future…

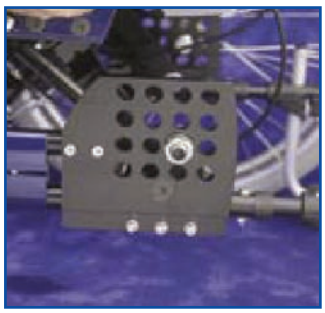
The first step must be to optimise use of the equipment and techniques we currently have available to us. Specifically we must:

- Use risk management techniques to enable mobility whilst maintaining safety. This might involve **reducing** rearward stability where it is safe to do so
- Engage the user/family/representative/carer in the process
- Transfer the combined weight of wheelchair, seating and occupant over the large diameter wheels. In other words avoid loading the castors
- If all else fails, **consider using a different wheelchair!**
- Many wheelchairs have adjustable axles like those shown above. The trouble is that often they remain in the position set by the manufacturer, usually right at the back. Why don't we adjust them more?
- Front and mid wheel drive powered chairs generally offer improved access around smaller spaces and often improved traction over rougher ground. The rear position of the castors allows accommodation for tight hamstrings, especially in front drive, and accommodation for long legs.

The second step must be to develop new designs and techniques:

- Three wheelers can offer:
  - improved access over rougher terrain
  - clinical advantages such as in the accommodation of tight hamstrings – how often do feet want to sit right where the castors spin?

- Castors are not necessarily needed as can be seen in the following two photographs:

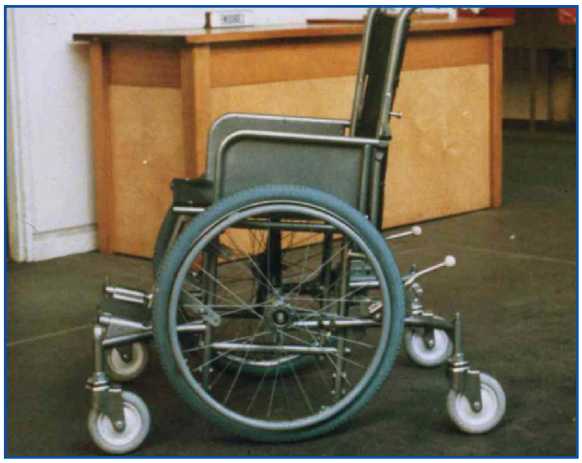


"Beyond boundaries" – BBC

1980's Honda four wheel steering

- Lately I have been involved with a client who uses an ancient Carters front drive manual chair. She cannot see why anyone would want the large wheels at the back. The designs shown below, although limited outdoors to an extent, could teach us a thing or two. The single rear castor lends itself well to tight indoor environments.

- Whatever happened to…



Sadly, this chair never made it into the mass market. This is a real shame as it overcomes a lot of the problems we get when fitting seating to standard wheelchair bases. Surely it would be possible to combine some of the more recent advances in kerb climbing and articulating chassis technology in order to make it suitable for outdoor use?

- One idea I came across on the Internet offers a completely different take on mobility. Might not be so good for the carpet in the front room…

- Anti-tippers fitted to the back of a wheelchair can prevent rearward tips, but get in the way of attendants' feet on narrow chairs and can prevent access up (and down) kerbs which often leads to them being left in the up position, i.e. not operational. Shown below are front anti-tippers which I had not come across before:

There are many ways these devices could be developed further. The photograph below shows a spring-loaded anti-tipper which maintains contact with the ground, but flexes to accommodate variations in surface.

Mercedes-Benz developed a roll bar for their SL model in the 1980's which deployed automatically in the event of the car rolling over. Could we develop this technology for wheelchairs?

In recent years we have seen the use of gyroscopic control in the development of the likes of the iBot wheelchair. This requires no anti-tipping devices at all (most of the time…)

- One of the problems often presented with tilt-in-space wheelchairs is rearward instability caused by a rear mounted, fixed pivot, causing the centre of gravity to move backwards as the chair is tilted and the combined weight of user and seating is transferred backwards. The way around this problem is to utilise a swinging mechanism which maintains the position of the centre of gravity largely in the same place, but not all manufacturers have taken up the design. Notice how the intersection of the two dashed red lines below has moved forwards and downwards in Fig X compared to Fig Y.

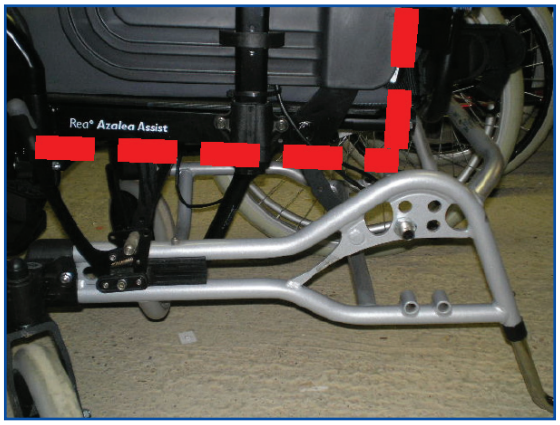


Fig X

Fig Y

"Active user" manual chairs

This article has not specifically addressed the issues around provision of these chairs and their stability/mobility relationship. The principles discussed all apply, but I would suggest that if you want to gain a deeper understanding, consider attending a course run at the Spinal Injury Unit at Stoke Mandeville Hospital in Aylesbury, Bucks. There may well be other, similar courses run at other centres.

Conclusions

At the start of this article I suggested that we face a number of challenges in relation to wheelchair stability. These, I believe, are the most crucial ones:

Challenge 1 – practice

- Think beyond stability and into functional mobility. Remember why someone asked for a wheelchair in the first place
- Use risk management positively. We must ensure the safety of our, clients but have tools available that

enable us to manage risk in a positive way
- Consider dynamic scenarios. Think through how the wheelchair will respond to different environments Don't forget that movement of the occupant will impact the stability and mobility of the wheelchair
- Explore other wheelchair and chassis options where you find or foresee problems (if needs be, challenge the 'powers that be' to provide these solutions)

Challenge 2 – product development (This section not only applies to manufacturers but also to practitioners)
- Develop alternative wheel layouts on manual wheelchairs. Whilst for the majority a rear drive, front steering layout works very well, there is, I believe, a large number of people for whom a front or mid-wheel drive manual wheelchair would better meet their needs
- There is considerable room for development in anti-tip technology
- Look beyond this field at developments in other industries such as automotive
- We need a better understanding of how dynamic conditions affect stability. Research is required to answer this question

Afterword

This article has sought to raise a number of issues around the relationship between stability and mobility. It is hoped that the science, technology, and practice surrounding this area will develop further in the coming years. The PMG research fund offers a chance to undertake preliminary work on projects that could answer some of these questions.

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BIME WizzyBug – Does Stability Restrict Ability?

Simon Halsey, Design Engineer, BIME,
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Abstract: *BIME has been making and selling paediatric powered mobility devices for 15 years, and has recently completed the latest version, the WizzyBug. The new Wizzybug incorporates many new features and functions. Wizzybug is for disabled children aged from 2-5 years old, and will likely be their first experience of powered mobility. Safety is of course an important consideration, but must always be weighed against any restrictions those safety measures would impose on the child's mobility. Wrapping the child in bubble wrap would obviously be safe, but not beneficial to their development and mobility requirements.*

WizzyBug is a mobility device that has the capabilities to drive over lawns and parks. It has large rugged tyres and good ground clearance to allow it to negotiate these areas. However, when we looked at how WizzyBug behaves when it drives off a kerb some of the features that make it able to cope outdoors can work against it in this situation (Fig 1).

Fig 1

We performed a number of tests to study how Wizzybug behaved when negotiating a kerb. We varied approach speeds and angles, as well as the profile of the bodywork coming into contact with the kerb.

We found that changing the body shape just behind the front wheels determined whether it sat down on its belly on the edge of the kerb, or slid down the kerb edge. Although having the buggy stop on the edge prevented it actually going off the kerb, it did increase the risk of it tipping forwards which is the most dangerous mode of instability. As a result of this the buggy was designed to slide down the kerb edge without attempting to slow it down (Fig 2).

When looking at how the Wizzybug behaved when reversing back off a kerb it was found that there was a tendency to tip backwards. In order to prevent this we began developing a passive kerb detection device to detect kerbs in an attempt to stop it before going off them. The device we designed could be fitted to the rear castored wheels and worked by passively detecting edges and applying a brake to the wheel when it did.

After careful consideration, involving a risk assessment and consultation with our advisory team of senior paediatric occupational therapists, we decided not to implement these devices in the final product as it was considered too expensive and impractical to provide such a high level of safety. More importantly we found that the safety devices reduced the mobility capabilities of the buggy in some situations by reducing ground clearance and obstacle negotiation. Instead we consider it the responsibility of the parent or carer to keep the child away from any kerbs or thresholds.

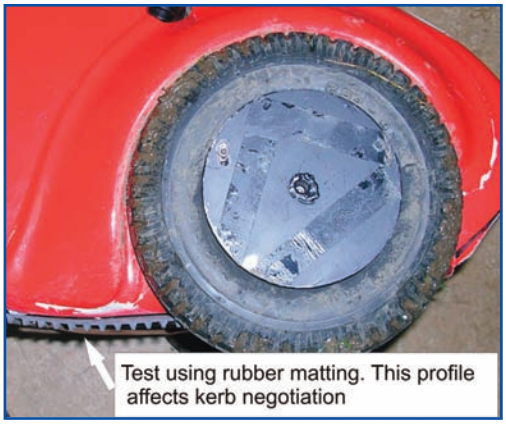

Fig 2

All this work on stability has prompted the interesting question of how to reach a compromise between a device that allows complete freedom of movement and one that provides maximum user safety. At BIME we are confident that as a result of this work we have a design that brings together both of these requirements in a fun and child-friendly package.

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Wheelchair Stability – The King's Perspective: Past, Present and Future

James Currell, Rehabilitation Engineering Manager and Terry Stevens, Rehabilitation Engineer,
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Abstract: *The accurate assessment of static wheelchair stability has provoked much discussion. The current methods of 12° and 16° tilt testing, 'tilting until it tips', and measurement of ground reaction forces are used with varying success. Safety concerns regarding patient and operator involvement were apparent in the 12° or 16° tilt test. Sensible communication of stability test 'results' to the end-user has also been questionable. King's Rehabilitation Engineering Division responded with a programme of research and development into ground reaction force measurement of static wheelchair stability. This report summarises approximately 5 years of research and development, and discusses the need for further research into dynamic stability assessment. This work was presented at the Institute of Physics and Engineering in Medicine (IPEM) Wheelchair Stability Meeting in June 2008*[1].

The simplest method of wheelchair stability assessment involves a 12° or 16° ramp with pass/fail criteria. Risk of injury to the occupant or operator through manual handling is apparent, and it is unnerving for the wheelchair user. The adjustable ramp method ('tilt until it tips') is also difficult to conduct safely. Both methods provide questionable results and are difficult to interpret to the user/attendant.

Anton Wawrzinek proposed calculating of the ground reaction force under each wheel of a wheelchair at the Dundee International Conference in 1997[2]. Simply, this technique manipulates mass measurements under the four wheels used in conjunction with supplied dimensions of the wheelbase, front track, rear track, wheel diameters, and castor trail to calculate the centre of gravity. The wheelchair is tipped through a small angle resulting in a second set of figures and a different centre of gravity position. Extrapolating these results can predict instability when the centre of gravity falls outside of the footprint of the contact surface of the wheelchair. This prompted the Rehabilitation Engineering Division (R.E.D) of Kings College Hospital to carry out research and development in applying this technique.

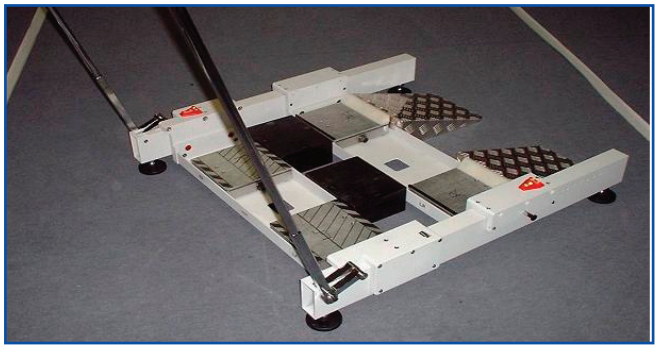

Fig 1

The initial system – Pro Stable 1 (Fig 1) utilised motorsport force pads to measure each wheel load. The wheelchair and occupant were introduced, and initial measurements taken. The front two pads were raised mechanically and further readings obtained. Results were extrapolated on a laptop computer. This system provided accurate predictive values for fore, aft, left, and right instability. The system could be disassembled for transport, but was bulky. System cost was approximately £2,500.

A cheaper, more portable version would facilitate field use. Salter bathroom scales provided a cheaper alternative with acceptable accuracy trade-offs. The scales were modified to communicate with a laptop PC for result calculation. Placing the scales on a wooden base-board with coded indexed scale positioning allowed assessment of a wide range of wheelchairs. Measurements were recorded, and the test repeated with wooden blocks used to raise the front scales. The "Budget Scale Weigher" (Fig 2) provided a simple,

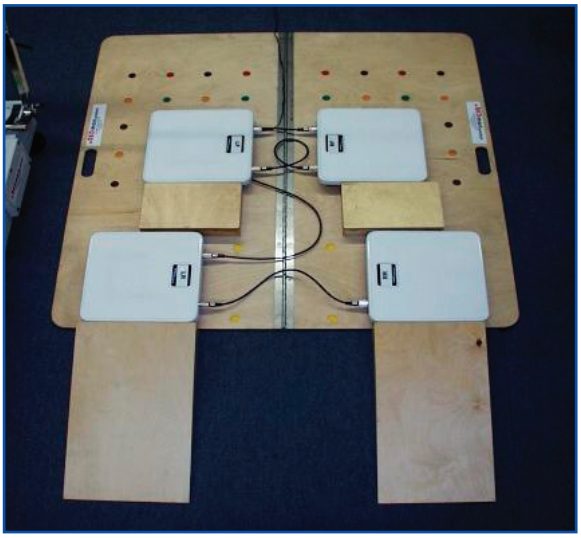

Fig 2

portable method for approximately £1000 per system. However, accuracy was significantly less than Pro Stable 1, but always conservative. This was a move forwards, but other transducer sources were required.

Fig 3

The MK III (Fig. 3) brief was to be portable, drive-on drive-off (same direction), minimal weight and height, allowing one person to carry the system, smaller footprint, and easy to setup and operate. We aimed to replicate the layout and size of the Marsden® wheelchair weighing scales. Our design included two load cells for the fixed height rear wheel plate and a single load cell for the rising front plate (55mm stroke as Pro-Stable 1). The front plate was lifted by a 12V DC motor powered scissor mechanism. Flintec load cell (low profile, 150kg rating) testing, PCB, and software design was passed onto the Medical Engineering and Physics department. Test results gave a maximum discrepancy of < 1% using bespoke software developed using LabView 8.5.1 for signal processing. 3D CAD modelling software developed the lifting mechanism. The front lifting mechanism was tested lifting 75kg. Further software development, and sourcing more powerful motors to increase lift speed are required, followed by field trials. This system presents our best solution to date with excellent accuracy, ease of use, and portability for approximately £1,500 unit cost.

There are still concerns about interpretation of the stability results to the user. All these methods described assess static stability only. It is widely accepted that instability incidents occur at much reduced angles in dynamic situations. Therefore, our research and development continues, investigating methods of dynamic stability assessment. We are currently looking at commercially-available sensors used in off-road vehicle applications.

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Wheelchair Stability: Current Problems and Challenges

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Abstract: *This is a summary of a presentation given at the IPEM conference in June 2008, which looked at some of the adverse incident data where instability in dynamic situations has been a major or contributory factor. The present approach to the needs of users by some manufacturers and prescribers along with the ISO/CEN standards in this area were also included. The risk management approach from the Medical Devices Directive (i.e. "any risks which may be associated with their use constitute acceptable risks when weighed against the benefits to the patient") was also explored. The present challenges of wheelchair stability are listed.*

Following the IPEM Stability meeting in 2000, MHRA worked with interested parties to compile a general guidance document on wheelchair stability. Copies of DB2004(02) are still available from the MHRA website at www.mhra.gov.uk. The document is due for review in 2009 and this article should help in the review process.

There is a high level of reporting on wheelchair incidents compared with the remainder of assistive technology (see Fig 1). Fatal incident reports showed that over the past 3 years, 16 out of 28 fatalities reported involved some form of tipping of a powered or non-powered wheelchair (see Fig 2).

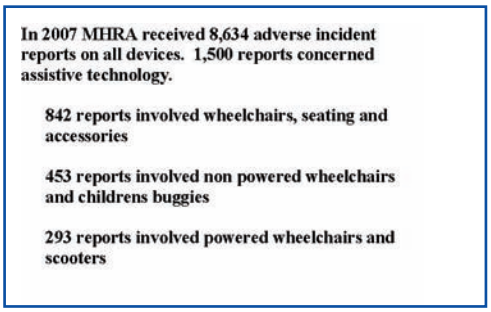

Fig 1

Fig 2

Manufacturers and others have tended to rely on published standards. The main International Standards are ISO 7176 part 1 which is static testing for all wheelchairs and ISO 7176 part 2 which is dynamic testing for powered wheelchairs only. Both of these standards produce results of specific tests at a range of inclines. The results allow comparison between different wheelchairs, but do not establish a safe maximum slope for a particular model.

The lack of dynamic testing for non-powered wheelchairs, and the lack of the outcome of an overall safe maximum slope for all wheelchairs, are potentially major obstacles in relying on these standards. The background work used to help draft ISO 7176 part 1 in particular, acknowledged the potential shortfall in static testing. There was much discussion at the time on how the content required to be improved, after the standard was issued, to cover use in a dynamic situation.

In the UK, the Building Regulations supported by BS8300 set limits for ramp access gradients (see Fig 3).

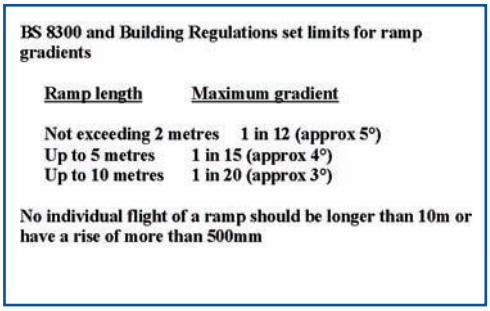

Fig 3

From provisional testing at MHRA Blackpool, there does not appear to be any direct relationship between static stability results and the requirements of dynamic real world use. The maximum safe slope in a dynamic situation could be as little as 25% of the result found by static testing. In addition, inappropriate loading, uneven surfaces, small obstacles, or movement of the occupant or attendant could invoke a tip at lower angles.

Within the Medical Devices Directive the risk/benefit concept is a major subject (see Fig 4).

Wheelchairs could be designed to be extremely stable and very safe, but the outcome may be quite large and heavy (see Fig 5).

Essential Requirement 1 of the MDD

"The devices must be designed and manufactured in such a way that, when used under the conditions and for the purposes intended, they will not compromise the clinical condition or the safety of patients, or the safety and health of users or, where applicable, other persons, provided that any risks which may be associated with their use constitute acceptable risks when weighed against the benefits to the patient and are compatible with a high level of protection of health and safety".

Fig 4

Fig 5

Alternatively, a different approach in design could give stability in the dynamic situations required by a wheelchair user (see Fig 6).

Fig 6

The previous reliance on the results of static stability testing does not appear to be an appropriate way forward if the risk versus benefit approach is to be embraced fully.

For wheelchair stability the challenges at the present appear to fall into five main categories. These are:

1. Meeting the user's needs for independent mobility in the real, 'dynamic' world.
2. Wheelchairs having appropriate levels of dynamic stability forwards, sideways, and rearwards for the user in all configurations of wheelchair set up.
3. Ensuring that safe maximum slopes for all outdoor wheelchairs can accommodate building regulation access ramps as a minimum in all direction of travel and in all configurations of set up.
4. Giving users adequate understandable information such as a visual/audible warning of approaching instability (e.g. an alarm?).
5. Improve reporting of actual and potential safety problems to MHRA so that incidents and trends can be investigated. (Ref MDA/2008/001

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Stability testing of wheelchairs for MDD compliance: Bugzi

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Abstract: *MERU (www.meru.org.uk) is a small, but highly resourceful, charity dedicated to the manufacture of mainly custom-made equipment for disabled children and young people. In 2001, in response to calls from professionals in the field, we set about designing what was eventually to develop into Bugzi, an electric wheelchair for very young children. An important part of that process was stability testing and this article outlines some of the work that was involved.*

We had never built an electric wheelchair before, had little knowledge of the Medical Devices Directive and very little money. We soon found out that a huge amount of testing is required to prove that an electric wheelchair is safe and fit for purpose. Paying certified test houses to do this is expensive, so we had no choice but to do most of it ourselves, especially given that Bugzi is an unconventional wheelchair design and wouldn't even fit onto most of the equipment at a conventional wheelchair testing centre.

Fig 1

A substantial chunk of requirements, set out in detail in ISO 7176, parts 1 and 2, concern static and dynamic stability. Clearly, for a wheelchair to be safe it must be stable both at rest and while moving, and climbing up and down the slopes that it might reasonably be expected to encounter. A wheelchair that is unstable and liable to tip over could cause its occupant serious injury or even death, so this is to be taken very seriously. In order to test for stability an ISO Standard test dummy of a suitable size is required, and a "slope", preferably with an adjustable gradient, and with a coefficient of friction between 0.75 and 1.00. Fortunately ISO 7176 part 11 tells you how to make a test dummy and part 13 deals with Determination of coefficient of friction of test surfaces.

Fig 2

We were lucky in as far as the maximum payload for Bugzi was set at 25kg, so our test dummy was relatively small and reasonably easy to make (Fig 1). Also Bugzi was only ever intended for "indoor" use (Class A). Outdoor wheelchairs have to contend with much more demanding requirements.

The small size of the Bugzi meant that our test ramp could be a manageable 2.4m (8ft) square, and therefore made from two sheets of plywood with a suitable support framework. In this area it is quite possible to accelerate Bugzi to maximum speed (about 3kph), turn it through 180º and stop it again. Typical of the tests that have to be performed are 'Travelling forward down a slope onto a horizontal surface', 'Turning on a slope', 'Braking when travelling backwards' and many more. Some of them have to be repeated at different gradients, usually 3º, 6º, and 10º, depending on the class of wheelchair.

We were fortunate to have the assistance of Susan Raiser, now an experienced designer of products for disabled people, and the guidance of John Watts, a specialist in medical devices regulation. The testing was mostly conducted over a week-long period in the summer of 2003 (Fig 2).

Most of the tests went very smoothly but they did reveal a tendency for the Bugzi to tip forwards on a downhill gradient of only 4º. As a result we modified the prototype and retested it with the front wheels set about 80mm forward of their original position. This improved the situation considerably and the forwards tipping point shifted to 18º. An important lesson in the value of international standards! For CE approval, a production model must be used, so when the first production batch of Bugzies was made many of the tests had to be repeated! The minimum requirement for a Class A wheelchair is 6º for static stability (in all directions) and 3º for dynamic stability. Bugzi eventually achieved in excess of 17º in all directions for static stability and was successfully tested up to 10º for dynamic stabilty. We are currently manufacturing our fourth batch of Bugzies and they have been in the field since 2005 without any serious reported problems.

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General Articles, Reports and News

Postural management for children with physical disabilities in mainstream primary schools – a pilot study of the views of teachers and teaching assistants.

Eve Hutton, Senior Lecturer, Canterbury Christ Church University,
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Abstract: *This article presents the findings from a small pilot research project. Based on interviews with a small sample of teachers and teaching assistants (TAs) in Kent the article explores their views about postural management. The study has highlighted significant gaps in the knowledge and understanding of postural management amongst teachers and TAs.*

Introduction

A consensus statement on postural care underlined the importance of delivering a consistent and integrated 24-hour programme of postural management to children with physical disabilities (Gericke 2006). A postural management programme requires specialist equipment and daily exercises that are incorporated into the children's routine at both home and school. Success depends on every environment in which the child spends time being enabled to provide 24-hour postural management (Humphreys & Pountney 2006).

Schools play an important part in delivering postural management to children, yet the majority of teachers and TAs are inexperienced and untrained. Insufficient occupational therapists and physiotherapists are available to provide consistent support to schools. Recent policy, aimed at improving services for children with physical disabilities, focuses on the need to increase the knowledge and skills of all those working with disabled children and their families (HM Treasury and DES 2007).

Design

This qualitative pilot study explored teachers' and TAs' views and their experiences of delivering postural management in mainstream primary schools. A purposive sample of four schools was identified with assistance from the specialist teaching service and therapy managers. Data gathered from interviews with 36 teachers and TAs has been used to generate an explanatory framework around their experiences.

Research questions

RQ1 Explore the knowledge and understanding of teachers and TAs about postural management.
RQ2 Identify what barriers and facilitators exist in the delivery of postural management programmes in the mainstream primary school environment.
RQ3 Investigate what types of information and support teachers and TAs require in delivering postural management programmes to children with physical disabilities in mainstream primary schools.

Findings

RQ1 Teachers and TAs in schools regarded postural management as a 'health' issue. It is not therefore a term widely used within schools. Those interviewed thought it meant 'how you sit or stand'. Teachers and TAs did understand the idea of 'good' posture, they observed children sitting uncomfortably and recognised when they were insufficiently supported. TAs had been given instruction about how to carry out therapy programmes, but didn't necessarily understand the reasoning behind the programme. This resulted in a rigid adherence to instructions; for example focusing on how long a standing frame should be used rather than on its appropriate integration into the curriculum. Teachers and TAs lack a conceptual framework to help them make sense of the information and advice they receive from many different sources about managing the needs of the child. Very few teachers or TAs had personal experience of the longer-term benefits of postural management, and therefore had nothing to weigh against the, as they perceived it, discomfort and restrictions the programmes imposed on the child. Currently there is no formal training available to teachers or TAs.

RQ2 Teachers and TAs described the emotional impact of caring for a child with physical disabilities, and shared with us their anxieties about possibly causing the child discomfort. This is not an issue currently addressed within schools; there are no counselling or support services for teachers or TAs. Postural equipment was viewed by many as bulky,

uncomfortable and restrictive. This contrasts with the more positive attitude of therapists and parents, who viewed equipment as enabling the child and having longer-term benefits. In some cases it seemed that equipment had been recommended and provided without careful consideration of where or how it was to be used in the school. Children's own views on equipment and postural care programmes are unknown. There were many positive examples of teachers and TAs helping children who were reluctant to use equipment or engage in programmes. These teachers and TAs had made therapy sessions fun, involved other children and integrated therapy into the everyday routine of the class. Other strategies involved allowing the child choice and control in the use of equipment.

RQ3 Most identified practical solutions when asked about the types of support they wanted. This included additional space to store equipment, additional TA support, and additional space for the children to have what was described as a 'quiet area' for privacy and relaxation. Few teachers or TAs identified training as a specific need, although most wanted more advice from therapists and closer working relationships between health and education to be established. Both teachers and TAs wanted planned, regular visits from therapists. In some cases therapists were described as having built good working relationships with the school and providing an excellent level of support and advice. However, some therapy visits in certain schools were described as sporadic, and teachers and TAs felt they were rushed, and that there was insufficient time to ask questions.

Summary

Acknowledging the limits of this small scale study, several key findings have emerged. These have led to the development of recommendations intended to bring about positive change in how postural management programmes for children with disabilities are implemented and supported in schools in Kent. Principle amongst these recommendations is the need to develop a postural awareness resource pack for schools. This would raise awareness of the importance of good posture for all children across a wide spectrum, thus engaging all school staff in issues which currently are largely the responsibility of untrained TAs. The research has provided greater insight into the experiences of teachers and TAs, highlighting the emotional impact of this work which has gone largely unrecognised. The study has also highlighted the dependence of schools on support from overstretched therapy services and the urgent need to address gaps in service. We currently lack insight into and understanding of the child's perspective. Further research should be commissioned in order to explore their views and to ensure that future initiatives are child-centred.

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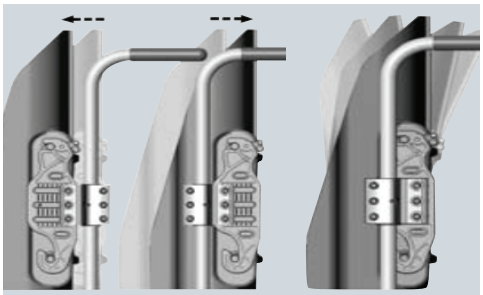

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NTE Training Day, 15th April 2009

The Arts Centre, University of Warwick

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We are delighted to welcome leading practitioners from Europe and North America:

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- Julianna Arva – *Ultra-light manual mobility, design, function and current research*: ½ day
- David Long/Pat Postill – *Special Seating ~ where did it all go wrong?* 1 day
- National Spinal Injuries Centre
  AM: *Whose responsibility is it to teach wheelchair and life skills to the non-spinal unit patient?*
  PM: *Video Diary of an active user*
- Peter Watson/Lorna Tasker – *Digital Seating Service*: ½ day
- Roy Wild – *Practical Wheelchair skills*: ½ day

These presentations will enable you to reflect, debate and share good practice with colleagues.

Course costs include an attendance certificate:

½ day – £50.00 + vat; full day – £90.00 + vat.

Lunch is not included, but there are several food outlets on the campus:

Bookings open in mid-November 08 via the PMG website www.pmguk.co.uk where you will also find further information about each course and the facilitators.

PMG Launches New Logo

After many years of deliberation about a new Logo for the group, the PMG committee has finally approved the new design, and here it is!

NEW LOGO

You may have spotted it in various announcements throughout the journal, although it arrived too late for the front page graphics for this edition.

However, it was just in time to be incorporated into the new membership leaflet designed by Geoff Harbach and approved by the publications and marketing sub-committee last week! If you would like some membership flyers to help you encourage colleagues to join PMG, please contact olwen.ellis@pmguk.co.uk who will be happy to send you a supply.

Our thanks go to James Hollington for pushing forwards with the logo design change when he is so busy with the PMG website redesign, and to Designer's name for giving his time and skills to PMG free of charge.

designer details

Co-ownership in the NHS

Fiona Walker, Occupational Therapist, Central Surrey Health, Central Surrey Wheelchair Service
Leatherhead Hospital, Poplar Road, Leatherhead, Surrey, KT22 8SD

Abstract: *Central Surrey Wheelchair Service is within Central Surrey Health (CSH). CSH is the first of a new kind of not-for-profit organisation that provides therapy and community nursing services to the people of central Surrey. It has been developed as a social enterprise to provide ongoing support to its local communities. The company has 750 co-owners (a bit like John Lewis), and it is run by the nursing and therapy teams that it employs. This means that the people who are most in touch with patients' needs are now in charge of providing the services.*

CSH went live on 1st October 2006, after about 18 months of research, meetings, and lots of hard work! We have recently celebrated our second anniversary.

The Prime Minister visited CSH recently to celebrate the 60th anniversary of the NHS and to launch Lord Darzi's 'NHS Next Stage Review'. CSH was chosen as it is seen to reflect the Government's drive towards more clinical leadership in shaping and running health services (Fig 1).

Fig 1

We have recently changed the structure within CSH, to encourage joint working and sharing of clinical expertise. The wheelchair service has been grouped in the 'long term care' category, and we are now with teams including Community Hospitals, Neurorehab and specialist nurses. This will help to streamline and coordinate services.

So what is different for us at the Wheelchair Service (WCS) now that we're part of CSH?

CSH has enabled us to hold our budgets more locally and have greater insight into how and where our money is being spent.

For example, we can now send purchase orders directly to the suppliers instead of going through a supplies department, ensuring quicker delivery of the equipment.

We can also now make decisions about recruitment, and have recruited a part time admin assistant which has speeded up our recording of referrals, orders, stats etc, meaning we can adhere to National Standards. In addition, we have a training budget again and so can apply to go on training courses which, as well as improving clinical skills, also improves morale within the department.

Over the past year, CSH has reviewed our IT systems, and we now have a new provider as well as laptops and 3G mobile phones that can connect up to our WCS system, statistical programme, and network drives. We can work remotely with access to the documentation; for example we can look things up when at clients' homes and pass on information instantly, which improves communication and efficiency.

In terms of benefits for clients, we have more flexibility to respond to urgent referrals, and are more proactive and forward thinking when looking at equipment available to meet clients' current and future clinical needs.

On a personal level, there is a feeling of being more involved within CSH than we were before. We have a 'voice' in the form of an elected group of co-owners – one from each constituency – which has regular meetings with the directors and the Board, and is the 'channel of information' between the co-owners and the directors and executive team. This helps us to contribute to strategy and is a channel for communication.

My colleagues all say that they want to be able to do more and that they enjoy the 'can do culture'. We want to find ways of using limited NHS funds to the very best effect.

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Special Interest Groups

Clare Wright, Clinical Research Manager, James Leckey Design,
19d Weaver's Court, Linfield Industrial Estate, Belfast BT12 5GH

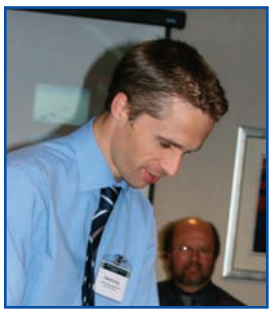
As we move with unnerving speed through autumn, it's time for an update on our Special Interest Groups (SIGs). You may recall from your PMG summer bulletin that SIGs were in the process of development following your overwhelming support at this year's National Training Event. The PMG Executive Committee took your top eight topics and used them as a basis for SIGs. Each of the eight groups needed a temporary chair to get them started, and at the time of the summer bulletin, we were looking for temporary chairs for three unfilled roles. We had also introduced the concept of an online forum as the way SIG members would communicate with each other.

Since then, we have been making progress towards our goal of launching SIGs, and now have temporary chairs for all eight SIGs. This group now forms the SIG sub-committee – our members are listed below (regretfully we don't have photographs of them all yet). The diagram (Fig 1) also shows how the SIG sub-committee fits into the overall PMG organization.

Chair of SIGs and R&D and Outcomes
Clare Wright
Clinical Research Manager,
James Leckey Design,
Belfast

SIG Vice Chair and Communications
James Foy
Rehabilitation Engineer,
King's College Hospital,
London

Posture Management
Jo Jex
Physiotherapist,
Active Design,
West Sussex



Posture Management
Dave Long
Clinical Scientist,
Oxford Centre for Enablement,
Oxford

Manual and Powered Mobility
Jon Ward
Senior Rehabilitation Engineering Manager,
King's College Hospital,
London

Transportation
Craig Egglestone
Rehabilitation Engineer,
James Cook University Hospital,
Middlesbrough

Education & Training
Monica Young
Rehabilitation Engineer,
St. Leonard's Community Hospital,
Hampshire

Pressure Ulcers
Kim Chaney
Clinical Specialist in Posture & Pressure Care,
Invacare
Bridgend

Government Relations and Legislation
Helen Hislop
Senior Physiotherapist,
St. Ann's Hospital,
London

Service Delivery
James Hollington
Rehabilitation Engineer,
Brighton General Hospital,
Brighton

The SIG sub-committee is delighted that all SIG chair posts are now filled; it means that we can launch all eight groups as soon as we are ready. But please remember – the chairs are temporary at this stage, so it's not a long-term arrangement. We will need chairs for all SIGs to be elected at NTE 2009 for a term of office. More details will follow soon. If you would like to be nominated, please email me at clare@leckey.com. This is a fantastic way to become more involved in the ongoing work of PMG as we move from strength to strength.

One of the biggest challenges for the successful launch of SIGs is ensuring the technical infrastructure is in place to support the online forum – our communication tool. The forum will run from the PMG website, but this needs a little development work to enable it to cope with SIGs. It has been a learning curve for most of us to realise that it's not just a matter of tagging SIGs on at the end! So please bear with us – we plan to have the vital "techie" bits done by December for you to register your SIG preferences when you renew your PMG membership in January 2009. Once the web-based forum is up and running, the SIG chairs will participate in and moderate online discussions, and act as a communication channel both to their group members and to the Executive Committee.

In the meantime, however, we are not resting on our laurels. The SIG sub-committee is working hard to develop and agree SIG Guidance including SIGs' Statement of Purpose, Objectives, and the broad scope of each SIG. We aim to have these documents ratified by the Executive Committee in December so that they will be available on the website for you at the time of your SIG registration. This will give you a fuller picture of SIGs and how they are structured, and should also help you decide which one(s) you wish to join. We will continue to keep you informed at every stage.

Clare Wright, Chair, SIG Sub-committee

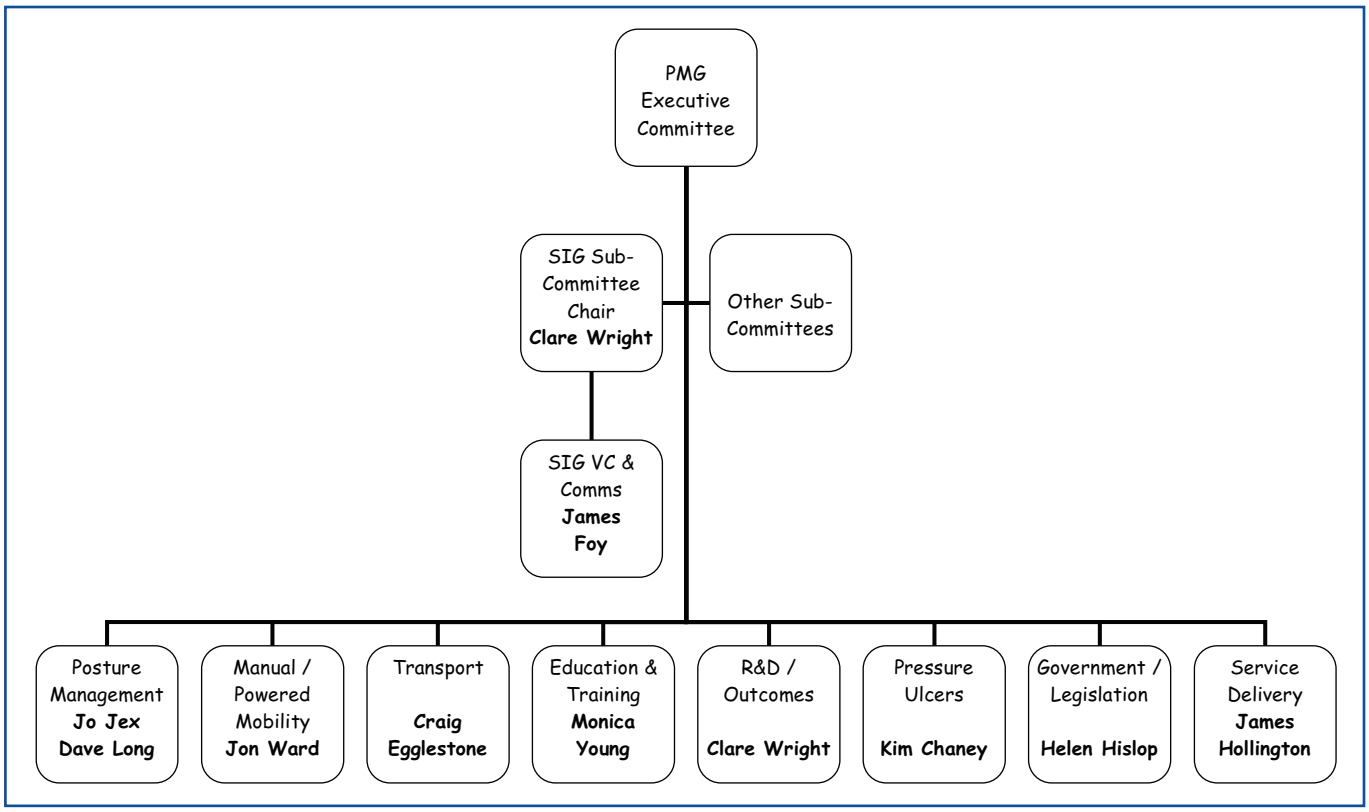


Fig 1

News from Ireland

Phelim Quinn B.Eng MSc, Senior Clinical Engineer,
Seating and Mobility Dept. Central Remedial Clinic, Vernon Avenue, Dublin 3, Eire

Abstract: *Phelim Quinn from the Central Remedial Clinic in Dublin has kindly provided the following information about current developments in Ireland.*

The Irish Posture and Mobility Network (IPMN)

The IPMN continues to grow from strength to strength. Membership continues to grow. The IPMN committee has successfully organised two Education Days in February and September 2008 for clinicians and others with an interest in mobility and postural management.

Looking forward to 2009, IPMN plans to increase opportunities for members to share information and experiences – through the organisation of further Education Days, through the development of a web-based information forum, and by participation in initiatives to develop courses leading to accreditation of clinicians working in the area of postural management and mobility.

For any comments or for more information regarding the IPMN, please contact

Aidan McGarry, IPMN Chair
Email: amcgarry@enableireland.ie

The Seating and Mobility Interest Group (SMIG)

The SMIG was set up in November 2006 and comprises Engineers from academia, industry, and clinical backgrounds working and involved in the field of seating, transport and mobility in Ireland. The group meets three times a year to network and discuss research, problems, and solutions in the field. SMIG also has links with the Institute of Engineers Ireland (IEI) and with the Irish Posture and Mobility Network (IPMN).

For further information regarding SMIG please contact John Tiernan, Senior Clinical Engineer, Enable Ireland – Email: jtiernan@enableireland.ie

Biomedical/Clinical Engineering Association of Ireland (BEAI)

For more information about BEAI please visit the website: www.beai.org

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NTE 2008

NTE 2008: Exhibition review

Helen Hislop, Service Manager, Haringey Wheelchair Service

Abstract: *This article is a review of the NTE exhibition 2008 through my eyes. I have highlighted the products that were new to me and I felt likely to be able to use in my wheelchair service. It is impossible to include everything I saw, so my apologies to those companies I have missed.*

Introduction

The National Training Event exhibition continues to grow, with 48 companies this year choosing to display to our audience their new products and developments.

Buggies

I was happy to see that **Tendercare** have updated the **Snugseat** by offering new covers and new bases: the Snappi and Jazz (Fig. 1). It remains the only buggy with a centrally mounted gas strut and offers 35 degrees of tilt on the Snappi frame.

RMS are now offering a wider range of buggies which includes the **Ito, Pixi, New Bug,** and **Clip**. Getting a child assessed with one of these buggies should also be easy as RMS offer national rep coverage.

Fig. 1: Snugseat – Tendercare.

TWBL

It is **BES** that won the competition for most acronyms in product names this year. Stealth's **TWBL (The World's Best Lateral)** (Fig 2) offers FSC (full surface contact), which I'm sure BES would like you to buy ASAP! BES claim this name is justified as, with the use of links, the lateral can be positioned exactly where you want it. It is however a challenge for other companies to compete against – I look forward to seeing TTWBL (Truly the world's best lateral) at next year's NTE.

Fig. 2: TWBL – BES Rehab.

Qbitus

Qbitus have been updating the **Mercury range** of cushions. The foam used in the Mercury 50 has become softer to increase comfort and lower the cost. The Mercury 300 foam is also softer and the overall cushion weight decreased. A new more aggressive version of the Mercury is also under development incorporating increased lateral support as well as gel and air sacs. All these updates were to be released three months after NTE so should be available now.

xlt

One of the products I found most interesting was the new **xlt** titanium manual chair from **Invacare**. Priced to be affordable for the NHS market and available now, I hope it will fill a gap for our users who do not want to utilise the voucher scheme, but want a lightweight rigid chair. A wide range of options is available, including a fixed foot tube, or swing in and out separate footplates.

JCM

A further option in children's modular seating entered the market with **JCM** launching their **Triton** range of seating. This range of customisable seating offers 20 seat models over 7 sizes (as you can see from Fig. 3 a and b, the size range is very wide!). Basic postural needs can be managed by the **primo** seat, whilst needs of increasing complexity can be managed by the **custom** and **dynamix** seats. The seats can be fitted to any base and have a maximum user weight of 125kg.

Fig. 3a: the smallest Triton seat – JCM.

Fig. 3b: a fully grown Triton! – JCM.

Jay 3 back

This product was launched at the National Training Event with much interest. The improvements offered by the Jay 3 in comparison to the Jay 2 include:

- easier fitting and removal
- a change to the clamp hardware to allow fitting to any back support tube
- a greater range of sizes allowing the back to support up to the lower thoracic or all the way to shoulder
- an accessory kit to take up any spaces

Other products/updates in brief

The **Spectra Blitz** from **Invacare** is now available on NHS contract…**Blatchfords** have developed a **new interface** which allows easier transferral of one seat between bases (Fig. 4)…and **Chunc** now have add-on **power assist** units available for their wheelchair.

Fig. 4: Interface – Blatchfords.

Conclusion

This year's exhibition again provided a great opportunity for updating product knowledge and contributing to new developments. I look forward to seeing more product updates and developments next year.

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Minutes of PMG Annual General Meeting 2008

Warwick University, 11th April 2008

Chair: David Long
Chair Elect: Nigel Shapcott
Vice-chair: Martin Moore
Treasurer: Henry Lumley
Minutes: Olwen Ellis (PMG administrator)

1. Apologies were received from Clare Wright

2. Minutes of the AGM 2007

Nicola Brain proposed that the minutes of last year's AGM be accepted as correct. Don Esslemont seconded and the minutes were approved by those present.

3. Matters arising not covered elsewhere

None.

4. Chair's Report

The chair's report had been provided for all those present, and the chair gave a brief resume:

(a) **Website** – Thanks to James Hollington for creating and chairing the new website sub-committee.

(b) **NTE** – thanks to commercial partners, Dave Calder, Patricia Marks and the NTE sub-committee for the great success of this year's NTE. Dave standing down from main committee this year, but will remain another year on the sub-committee to oversee handover of NTE management.

(c) **Research & Development** – the large scale PMG research project agreed at last year's AGM has been put on hold because of financial constraints.

(d) **Education & Training** – 2 smaller training events were organised by PMG during 2007, both highly successful.

(e) **Publications & Marketing (previously Communications)** – thanks to Joanne McConnell for consolidating the work of this sub-committee during her 3 year term as chair. Although standing down from main committee this year, she will remain as editor of the journal to ensure continuity.

(f) **Administration** – On behalf of the group the chair thanked Olwen Ellis (PMG administrator), Liz Lumley (PMG book-keeper) and Patricia Marks (NTE co-ordinator) for their very great contribution to the group.

(g) **SPMN** – links between the groups strengthened in 2007 with SPMN chair Catherine Mathieson attending two PMG committees during the year.

(h) **Executive Committee** – chair thanked all members of the committee for their team effort and support over the year. Those standing down at this AGM are Dave Calder, Linda Marks, Martin Moore and Joanne McConnell.

(i) **Political Activity** – Chair reported on the recent appointment of Mark Oaten MP as political advisor to PMG as agreed at last year's AGM. The regular parliamentary digests provided by Mark Oaten's office are now available on the website. A new PMG Political Action sub-committee has been formed to work with Mark.

Questions from the floor

(i) James Hollington concerned that the CSED people had not come to NTE as planned and feels that PMG is being ignored by them.

(ii) The chair could not provide any reassurance on this, agreeing that the process of consultation has been unsatisfactory.

(iii) Anne Harris requested that PMG respond to the final model recommendations when they are announced. Agreed.

(iv) Linda Marks asked that the membership help the committee in raising the issues. She announced also that Lord McColl has been approached to lobby on the opposition benches.

(v) Barend ter Haar felt reassured that there was no government announcement yet forthcoming, especially in light of the poor results of the DoH pilots in the North West of England. Perhaps a rethink is occurring at ministerial level.

(vi) Julia Rhodes, who worked at the DoH for 8 months on the Wheelchair Service side of the project, reported that the team there did listen to views from all sides.

(vii) Henry Lumley presented some startling evidence to suggest that the data provided to the DoH was being at least misinterpreted, with the figures published in their final report therefore likely to be wrong.

(viii) All present agreed to provide information to PMG if their data has been represented wrongly by DoH.

(ix) Chair requested a show of hands on whether PMG should continue with its current political activity format. With only one abstention, the motion was carried.

(j) **Position of Chair** – Dave Long announced that after 5 years as chair of the group, he was now standing down. He thanked members of the 5 committees he had chaired and particularly Martin Moore for his

support as vice-chair; Roy Nelham who had persuaded him to take on the role in 2003; King's College Hospital and the Special Seating Service in Stanmore, and the Nuffield Orthopaedic Centre in Oxford, for supporting him throughout; and finally the PMG admin staff.

Linda Marks proposed that the Chair's report be accepted by the meeting; seconded by Barend ter Haar. Chair's report unanimously approved by those present.

5. Treasurer & Membership Secretary's report

(a) 2007 accounts provided for those present. A summary will be published in the PMG Spring publication.

(b) Henry Lumley thanked Liz Lumley, Patricia Marks and Olwen Ellis for their perseverance in chasing payments from NHS trusts who are generally appalling at settling invoices and providing sufficient information to track payments to members. He requested that members take personal responsibility for ensuring that payments are made by their own trusts.

(c) 2007 had been financially testing for the group, with further investments made in administration and in developing the website. There had also been a small loss on the NTE last year, and the total loss shown for the group for 2007 is £43,000. However, a profit is expected on NTE 08, and the picture is brighter looking forward.

(d) Since its inception in 2005, the PMG Research Fund has approved £55,000 on pump-priming research, and this will remain a flagship scheme for the group for the foreseeable future.

(e) The online membership system came on stream in June 2007 as promised, and is proving worth the investment. As well as savings on administration time spent doing membership renewals, the new system provides the tools for making instant contact with the membership.

(f) Following extensive investigations, it was shown that putting in place a Direct Debit facility for membership subs would prove far too costly with little benefit, especially given that around 500 members have renewed successfully with the credit/debit card facliity. On this basis the committee voted against implementation. If anyone wishes to pay their subs by cheque instead, there is currently a £15 admin charge for this on top of the £25 membership fee.

(g) In 2008 there will be discussions about developing the website further; how to improve the bookings system for NTE and generating income from the website.

(h) The accounts had already been approved by the auditors and the treasurer stated that there continues to be a sound financial basis for the group. Phil Swann proposed that the 2007 accounts be accepted and James Hollington seconded. Approved by all those present.

6. Elections to committee, 2008/9

(a) Martin Moore, vice chair, reported that there were 6 people nominated for the 5 vacancies on committee. The members elected to the 2008/9 committee are: *Donna Cowan, Craig Egglestone, James Foy, Jo Jex and Martin Moore.*

(b) No objections were raised to these members joining the committee and the meeting approved the election result.

(c) The vice chair reported that only 160 members had voted out of a total membership of over 500; he asked all members to vote in any future elections.

7. Announcement of election of new PMG chair

(a) Dave Long congratulated Nigel Shapcott on being elected to replace him as chair of PMG as from today.

(b) The new chair had presented his paper on Special Interest Groups (SIGs) at the opening plenary session of the NTE and asked if there were any comments from the floor.

(c) Jo Jex stated that the great strength of PMG is its diverse membership and she requested that if the SIGs do come about, they should not be profession-based. There was strong support from the floor for this proposal

(d) Robin Luff agreed that any SIGs should be process-based, although he feels that PMG's priority should be training and accreditation. He also feels that to replicate the RESNA model may not be appropriate and that the group should be looking for guidance across the Channel rather than across the Atlantic, especially as European accreditation is imminent.

(e) The new chair acknowledged that there are many discussions to be had and he is ready to listen to all members' concerns and ideas.

8. Any other business

(a) **International Conference 2010**

(i) Barend ter Haar asked members to read his article about plans for the 2010 International Conference in the forthcoming Spring journal. He explained the proposed model of the 2010

event which will have Best Practice as its theme, and asked for volunteers to come forward to lead the various topic groups. So far these include:- Assessment, Research Design, Drug treatments, 24-hr postural management, Early Paediatric Mobility, User empowerment, Risk v choice, Dynamic Interaction

(ii) He also suggested that the Special Interest Groups could be recruited to create guidelines for topics, which could then be used to influence political thinking.

(b) **Webcasting** – Nigel Shapcott informed the meeting that all plenary sessions at the NTE have been recorded together with the wake up sessions and should be available to view on the PMG website in about a month's time. This would be a facility for members only.

9. Date of next meeting

Next year's PMG AGM will take place at this same venue on **17th April 2009**.

Before the meeting closed, Martin Moore presented Dave Long with gifts from the membership and staff of PMG to thank him for his dedication and hard work as Chair of the Group over the previous 5 years.

Bursar Report: Is Different Better?

Presenters: Nicky Ellis and Tracy Freeman
Clinical Lead OT and Specialist OT, North East Essex Wheelchair Service

Reporting Bursar: Lisa Farrand, Occupational Therapist, ACE Centre, Hollinwood Business Centre, Albert Street, Oldham, OL8 3QL

Abstract: *The therapists delivering this paper gave an engaging and friendly account of organisational challenges they have faced within a busy wheelchair service and strategies they have introduced to address these. The session was well attended with a high level of empathy from the audience as many people acknowledged similar challenges. A major key to their success was…'good will of minimal staff remaining loyal to the service'. Such a level of loyalty is also seen within the charitable organisation I work for (ACE Centre North) which, in its mission to support people who require assistive technology to enhance their communication and/or learning, is highly dependent on the same positive attitude from a small staff team in the face of an insecure financial future.*

The challenges presented by the North Essex Wheelchair service were chronicled back to a bleak situation in 2000 when budgets were frozen and working conditions poor, with a very small staff team to meet the needs of 8,000 service users. This led to increasing complaints, a 3 year waiting list and low staff morale and called for radical changes.

It was recognised that any changes would not be successful with such a small staff team and this was consequently expanded and the newly formed team were given increased control to plan and implement new systems of working and it was these subsequent changes that were presented during the session.

The newly expanded team had a common aim for the service… 'to run a client-centred, team-focused service that local users found supportive, accessible, and innovative'. Provided with the opportunity to direct the future of the service they initially sought to improve accessibility, waiting times, client choice, budgetary control, service profile, and staff morale.

A duty telephone system was introduced allowing the team to be more proactive as opposed to constantly reactive to telephone enquires, whilst also providing a systematic approach to dealing with enquires. This style of telephone system as an approach to support workload management has been discussed at ACE Centre North, but has yet to be implemented. Monitoring is underway to see what percentage of time is allocated to responding to telephone calls/enquiries, and having listened to this successful account it is certainly worthy of further consideration.

A major advantage for the Wheelchair Service came when the service moved to a more accessible environment providing improved working conditions for staff and improved accessibility for those accessing the service. Again, comparisons can be drawn with ACE Centre North that moved location in Summer 2007 with a positive impact on the team and the people it intends to support.

Ideas of good practice were gathered from other

wheelchair services and initially the team agreed to develop and implement the following: validation of waiting lists; telephone assessments; residential pool chairs; double paediatric clinics, and neurological and learning disability clinics.

The waiting list was initially validated by telephone, leading to a reduction from 462 to 244. Those remaining on the list were then designated to one of three strands: see urgently, provide advice, or place on a more specific list in chronological order.

Telephone assessments were successfully introduced. This was acknowledged as a risky decision, and used cautiously for referrals only where a standard wheelchair was required without specialist seating and under very clear instruction and direction. Although there was some debate around the appropriateness of telephone assessments, the benefits of getting much needed wheelchairs to people as early as possible was the prevailing priority.

A pool system of chairs was introduced for residential homes. They were provided with a ratio of wheelchairs to clients and blocks of technical support time and regular reviews. This allowed for the technician's time to be used more effectively as they were not being bombarded inappropriately with administrative duties that could be more effectively addressed, in part, due to the revised telephone monitoring system.

Routine clinics were established both at the new site and within local provisions, such as schools. This again proved effective in reducing waiting times and ensuring patient focused outcomes. Closer working relationships were established with dealers/reps providing a forum for exchanging ideas and imparting knowledge.

All the above changes were implemented without the need for additional budgets. However it became apparent that the team required more insight and control into the budget allocation and budgetary decisions. Honest discussions were encouraged regarding costs of equipment and what the service could and couldn't fund and this was openly discussed with clients.

This level of financial discussion is something, as health professionals, many of us are uncomfortable to embark on, but with changes to health services it is something many of us will have to embrace. Various systems were introduced to allow creative use of finances leading to an increase in equipment recycling, improved relationships with dealers, and support for joint funding with charities. The main aim was to offer a more open and flexible approach to working with clients to achieve the best and most preferable outcomes for their individual needs.

All of these identified changes in structure and vision placed the client at the centre of the decision making process and expanded choice and creativity. The increased control the team had been given allowed them to make appropriate and effective modifications to service delivery and this seemed to improve morale directly. In addition, formalised supervision was established to support staff to continue this positive momentum, allowing everyone to contribute their ideas and opinions.

It was evident that the team had greatly enhanced their professional development and sense of achievement and established an improved work balance; they were having more fun (and more nights out!). This was reflected in the feedback sought from clients and in the fact that the service was meeting the 18 week target, had a waiting list of 22 clients and was receiving fewer complaints.

From this much more stable base the team continues to grow and raise its profile, with the introduction of more exciting developments for the future including a test track, drop in clinics, and a buddy system for training EPIOC users. The final innovation presented was the short term wheelchair loan service. This scheme was necessary as the local Red Cross service had ceased to provide short term wheelchair loans and those requiring short term loans do not meet the wheelchair service's criteria. Withdrawal of the Red Cross is occurring in many areas and therefore this element of the presentation was eagerly attended to by the audience who seemed keen to learn more and replicate this model.

The model involved cross agency, health, council, and charity working to seek funding and design the service and corresponding loan conditions/agreement, and this seemed to facilitate its success. The appointment of a volunteer trained by the OT to prescribe wheelchairs with additional training by an approved repairer to complete maintenance tasks was a further factor critical to the success of the scheme, which has proved very popular and well used, and is applying for charitable status.

This presentation managed to convey many positive strategies within a small period of time. It is difficult for

me to comment on many aspects of the service delivery as I work for a very different organisation outside of the NHS and without direct involvement with wheelchair assessment and provision. However as a therapist within a small team, there were parallels that could be drawn and key points identified including:

- the need to adapt styles of service delivery regularly to meet the needs of the people using the service and the staff team delivering the service
- decisions regarding change to services are often best made by those directly involved in delivering the services
- the changes and magnitude of work that can be accomplished with a small but dedicated team of staff

There appears to be a need to tackle some of the issues raised within this session on a wider scale and at a higher level, working with commissioners so that individual services do not need to be continuously fighting their own individual battles. This was raised as a potential area for further discussions and support from PMG.

My current work at ACE Centre North involves supporting people with physical and/or communication disabilities through the use of assistive technology to support their learning and/or communication. Many of the people I see use a wheelchair and have regular contact with their local wheelchair services. The flexibility and quality of the local wheelchair provision has implications for the introduction of assistive technology. Hence my interest in the area and desire to attend this, my first, PMG conference.

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Bursar Report: Presentation Skills

Presenter: Neil McCain, Cognis Consulting

Reporting Bursar: Rachael King, Clinical Technologist Trainee, Posture and Mobility Department, West Midlands Rehabilitation Centre, 91 Oak Tree Lane, Selly Oak, Birmingham B29 6JA

Abstract: *This session was presented by Neil McCain from Cognis Consulting. The aim of the session was to give guidance on how to present anything from an abstract to a conference. The session consisted of a power point presentation outlining some useful tips and guidelines on how to prepare for a presentation, as well as some practical advice on how to deal with nerves. It was well organised, providing clear rules that can be followed (or bent) depending on the style of presentation being given.It gave a very good structure on how this would be done and I would now feel more confident giving a presentation.*

Neil explained that he had presented previously at PMG on the same topic. After looking though the current literature available on presentation skills he had found no new information or techniques. He therefore decided to focus on how to prepare for a presentation, what the rules are (and how to break them) and how to deal with nerves, as this is a common problem for many people giving presentations. Finally, he discussed the different levels/classes of presenters and how you can give good presentations even if you are a novice.

The Rules

The main point from this presentation was FIRES!!! Which stands for:

F resh: Think about new ways to present what you are trying to say. For example, relate concepts to examples that people can understand, such as relating a distance to a journey you might take.

I nformative: Outline what your presentation is trying to change and explain what your conclusion means for the people listening.

R elevant: Is what you are saying worth saying? Does it need to be said? If it doesn't, leave it out.

E nthusiastic: You need to enjoy what you are doing/talking about. And if for any reason you are presenting on something you do not like, at least appear to enjoy it!

S tory: Every presentation needs to have a clear story. If your presentation does not have a story you need to make one. If there is no story, it is not worth presenting.

Rule of 3 – You should try and think of a way to get the message across using only three points. As with all rules, this rule can be bent or even broken.

How to Prepare

These are simple rules that can be used when you start to think about what will need to go into your presentation and how you are going to present the information.

Context – Whom are you presenting to? Where and when are you going to be presenting? What are you presenting?

You should try to find out how many people you are going to be presenting to. If it is a small group the presentation can be more informal. As the group grows you need to concentrate more on your script and practise what you are going to say. Also try to find out the mood of the audience and where you are on the agenda.

Content – Your presentation should have a beginning, middle and an end.

Before you start to write your presentation you should know where you are heading and the main point you are trying to get across.

Also think of how you are going to present the data using graphs or anecdotes.

Slides – The story is more important than how the presentation looks. However, you should make sure that it looks good. Don't change font part way through, make sure bullet points line up, and try to keep the slide clutter free (less is more) and concise

Performing – When you're presenting try to be yourself, make eye contact, and consider the tone and volume of your voice. Also try to avoid using too much jargon and most importantly PRACTISE.

Nerves

Nerves are a common problem when you are asked to present. When you are nervous your body produces adrenaline and serotonin. These shut down your brain and can make you feel like you are having a heart attack.

Neil outlined 10 tips to try and overcome the problem of nerves and make presenting a more enjoyable process:

- Breathe: breathe in for 4 and out for 8
- Sing, it will relax you.
- Imagine yourself doing the presentation well
- Feel comfortable (wear sensible shoes!)
- Prepare well
- Practice in the nude!!!!! (if you can do that, then you can present anywhere)
- Don't drink before the presentation (alcohol slows the brain)
- Exercise, sit up straight (helps with breathing)
- Remember you are not going to die
- Think about the audience, they are normally on your side.

Five levels of Presenter and How to Improve.

Dave Hall (2005) has outlined 5 different levels of presenter: Novice, Apprentice, Craftsman, Star, and Brilliant. Most people will be a Novice or an Apprentice. Craftsman and above tend to be people who are paid to do presentations nationally or internationally. Neil outlined a few pointers on how to improve if you are a novice or an apprentice. If you are a novice (only doing presentations very rarely), try to add some colour and de-clutter your slides. Also think more about your audience and what they are going to get from the presentation. If you are an apprentice, you should try and spend more time on your slides and think about the visual effect. Also come up with a tight script, considering drama and ways to lighten up the presentation.

Although I have previously had to present projects and journal articles whilst studying at university, I have never had any formal training in this area. I found this presentation very useful, with clear step by step instructions, which would allow one to tackle a presentation oneself.

I will take what I learnt from this session and apply it in my work practice, as I am likely to have to present projects I have carried out to the managers group and at various training days.

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Bursar Report: Wheelchair Seated Passenger Transport – Examination of current 'Common Practice' & desired 'Best Practice'

Presenters: Bob Appleyard, Technical Advisor, Unwin Safety Systems, and Chair of BSI Committee CH173/1: Assistive Products for People with Disabilities – wheelchairs; Alison Johnston, Physiotherapist, Bromley Wheelchair Service

Reporting Bursar: Lynley Page, Lecturer in Physiotherapy, Manchester Metropolitan University, Elizabeth Gaskell Campus, Hathersage Road, Manchester M13 0JA

Abstract: *This article reports a presentation aimed to examine and identify common difficulties with the application of correct techniques for restraining wheelchairs and passengers to ensure safe transportation in a motor vehicle, to understand how standards, rules and regulations developed for an able-bodied population are applied to wheelchair users, and to examine statistics taken from real-life to investigate whether 'common practice' really does equal 'best practice'.*

Speakers Bob Appleyard and Alison Johnston gave this presentation which highlighted the many standards that must be met by wheelchairs during transport to allow safe transportation of the user and how current practice doesn't stack up.

Prior to attending this presentation, I have to admit that I knew very little about passenger transportation. In my previous role as a Community Paediatric Physiotherapist, school therapy began and ended when the kids passed through the main entrance to the school. I had never thought about what happens to the children between school and home.

I was amazed at the number of standards there are for safe transportation, and also how many clearly come from the automotive industry. Therefore, all wheelchairs used in transport have to comply with all the standards normally applicable to a normal car seat in a normal car. Which, of course, most of our clients don't use. Bob explained many of the rules and regulations that apply. There are so many that if you want a complete list, I suggest you talk to Bob! Some of the most important rules indicate that seats need to be symmetrical, have minimum seat back strength, meet rules outlining the number, location and strength of seat belts, and also meet requirements for a safe head support to prevent whiplash. Each seat must pass each individual standard separately with a special 'surrogate' base for assessing seating systems.

Bob also explained how these regulations fit within the British standards and the EU. EU law also applies in all situations but the British and ISO standards fit together (hopefully) to make car travel safe. An important element of this process is Risk Management and vigilance after the seat has been purchased. After all, safety in a wheelchair seat in transport has to equal safety in a normal car seat. However, as Bob pointed out, our clients have special considerations to take into account, like transfers not being possible, clients having decreased injury tolerance, not to mention our clients not being symmetrical. The videos of the crash tests were definitely a highlight, and reinforced how potentially dangerous equipment that doesn't comply with all the standards could be!

Alison went on to explain an audit that she undertook as part of her Masters dissertation in conjunction with Special Educational Needs (SEN) Transport Coordinators in Bromley. She explained that Bromley has a population of 295,000 with an estimated 3,500 wheelchair users, with 10% of this population being under 20 years of age and therefore likely to use local education authority transport to and from school. Alison surveyed transport buses to see if they met all the standards, including those for anchoring the wheelchairs, seatbelt use, and distance between wheelchairs. She gave some horrifying examples of current practice and also figures outlining how very few of the wheelchairs were being used in transport correctly. I was stunned to hear these stories and was left pondering whether the correct policies and procedures were in place, or whether they were just not being followed. I also wondered whether the people involved in following the procedures were aware of the potential consequences should they be involved in a collision.

Together, Bob and Alison suggested some strategies for improving current practice, including more training for staff so that they understand the standards, how to use the wheelchairs correctly, and also possibly showing crash test video failures as examples of what happens if you don't. They also suggested that wheelchair, seating, and bus design could be moved forward to include fully

integrated systems and integrated lap belts. Another idea is to have a 'travel warrant' so that wherever a client goes, their 'warrant' with instructions specific to that client's wheelchair can go with them. I think all these strategies would go a long way to improving the safety for our clients when travelling, and I know that I will never look at a bus the same way again.

Unfortunately, Alison has yet to feedback to the SEN coordinators the results of her audit, although she intends to do this in the near future. It would be great to hear if Bromley use this audit outcome to implement change for the better safety of their wheelchair users. It would also be great to hear how transportation strategies work in other areas of the country. Since I no longer work clinically, I don't know whether I will get the chance to use the things I learned from this presentation. However, I hope it inspires all therapists to think carefully about our role in ensuring safe transportation of our clients, and also about whether therapy should indeed stop at the main school entrance.

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Bursar Report: Design and Ergonomics – is something better than nothing?

Presenter: Sarah Frost, Clinical Advisor, Motivation

Reporting Bursar: Jennifer Roberts, Occupational Therapist, Wirral and West Cheshire Wheelchair Service, Poole Centre, New Grosvenor Road, Ellesmere Port, Cheshire, CH65 2HB.

Abstract: *The session I attended was entitled "Design and Ergonomics". This was based around the charity Motivation set up by David Constantine, Simon Gue and Richard Frost. Physiotherapist Sarah Frost led the session. She works for Motivation and is based in the UK and involved with their overseas projects. The charity aims to address the need for affordable wheelchairs in developing countries. They supply wheelchairs to around 35 countries with over 65,000 beneficiaries. The organisation aims to provide a complete service to all individuals involved, addressing need, disability, and environment. They take these factors into consideration throughout the process of developing the wheelchairs. The session involved exploration into wheelchair provision in these countries, and factors which have to be taken into consideration throughout the process of design and provision of chairs incorporating the needs of individuals.*

The session was based around the very specialist service that Motivation provides in overseas countries. The key principles of seating, posture, and pressure discussed matched those which appear in everyday practice around the UK, but with different influencing factors.

The organisation is holistic and client-centred, adapting the wheelchairs to meet cultural needs. Chairs are specifically designed to take into consideration environment and aesthetics; they also address other factors including social integration, employment opportunities, vocational, and peer support.

The charity helps facilitate peer support: they enable individuals who have been wheelchair users for a substantial amount of time to share their experiences and techniques with others, and encourage a supportive network between users.

Design

Therapists and designers work together in Motivation to produce chairs that can function in the harsh environments of developing countries, whereas in our daily practice here in the UK most of us are not directly involved with the design of the wheelchairs we prescribe. We are presented with ready-designed chairs from companies, choosing ones which are appropriate to meet our service users' needs.

The Motivation designs include a three-wheeled wheelchair developed to maximise stability over rough ground, based on the theory of a 3-legged milking stool; a low rider wheelchair which was designed for women in India where daily activities are carried out nearer floor level.

A valid point raised in the session was that something as simple as the design of the chair is important, and

that a chair should be a perch not a cage. The wheelchair should enable function and provide a means of mobility, not restrict the activities of daily living.

Ergonomics

Ergonomics play an important role in the provision of any wheelchair, and the fundamentals are used daily within any practice, as they encompass the theory of wheelchair provision. This involves ensuring that the chair is compatible with the needs, abilities and limitations of people.

The ergonomics of propelling a wheelchair and how seating has an impact on the individuals using it have the same principles for any user in any country. My knowledge of assessment and effective positions for propelling match that of the presenter, but the application to service users and other influencing factors of practice vary dramatically.

Medical and wheelchair provision is poor in developing countries, particularly in isolated rural areas, therefore the cost of the wheelchairs is a fundamental issue for the charity. The materials and technology must be local to where the chairs are produced, so that the local area can accommodate repair needs. This then creates opportunities for locals, as vocational training is part of the charity's work. They address issues relating to social and economic situations with the ultimate aim to improve quality of life for other locals as well users.

My knowledge of overseas wheelchair provision was limited prior to this session. I was aware of schemes where unwanted NHS provision chairs are shipped out to developing countries, but unaware of the limited use of these chairs and the waste incurred due to limited local resources. The chairs can't be repaired due to lack of materials and expertise. Their use is restricted as they aren't specifically designed for individuals or for the sometimes extreme environments they have to negotiate, therefore the majority end up being abandoned and unused. A significant statement raised by the presenter was "Is something better than nothing?" Prescribing a chair which doesn't meet someone's needs is detrimental to an individual's posture and does not effectively enhance mobility. The design and ergonomics are important wherever wheelchairs are being assessed and issued, therefore are we creating more problems by sending out unwanted chairs from this country?

According to Disability World, the definition of an appropriate wheelchair is when it meets the individual's needs and environmental conditions; providing proper fit and postural support, it is also safe and durable and can be accessed, maintained, and sustained in the country at the most economical and affordable price. Motivation takes into consideration all these factors. They are providing appropriate wheelchairs in the countries they cater for and give an efficient and effective service. Although they cover a great many countries, there are still many more that would benefit from their input.

This presentation won't change my practice in relation to ergonomics or design of wheelchairs, but it did challenge my thinking in relation to everyday practice, and what can be achieved with so little finance and materials in developing countries, compared with the mass market in the western world.

I feel the main controversial point raised from the presentation is what to do about people requesting old NHS chairs for overseas provision. Do we send out wheelchairs knowing that they aren't suitable or sustainable? Or rely on charities and organisations like Motivation to provide wheelchairs to the millions of people with a disability that need some sort of mobility aid. As effective and wide-reaching as Motivation are, there is still a limit to how many people they can assist. Would the people in developing countries, who don't have a service from anyone at all, prefer something rather that nothing?

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www.motivation.org.uk
www.disabilityworld.org
www.beaconfellowship.org.uk

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Bursar Report: Riders on the Storm

Presenter: Bart Van der Heyden, PT, Consultant, Director Training & Education Europe, The ROHO Group

Reporting Bursar: Elaine Tucker, Lead for Equipment and Wheelchair Services,
Wharf House, West Kent PCT, Tonbridge, Kent

Abstract: *Bart van der Heyden is a Consultant Physiotherapist from Belgium with his own practice, and he also provides a clinic resource for Roho. Bart utlised real life case presentations and theoretical approaches to posture and movement challenging the audience to reconsider the way we approach the assessment of patients with complex neurological conditions.*

This was Bart's second presentation at the NTE this year and he drew the short straw by being in the unenviable position of giving the last lecture to the conference delegates, many of whom were a little jaded from a very enjoyable gala evening the night before. To keep our attention, Bart presented a humorous and informative narrative, at a fast pace, punctuated by a range of video clips. It was quite a challenge to make notes on this packed presentation and I admit that I have had to ask Bart to furnish me with a copy of his slides in order to offer an accurate report.

Bart used case examples of individual patients to share his knowledge on practical seating interventions for people with spasticity. He talked us through some of the theory of posture and movement that needs to be considered when assessing a patient for seating.

Posture was defined as *'a reciprocal relation built up between the segments that make up the body'* (Ferrari 1997). Posture is dynamic and must follow movement, *'each movement starts with a posture and ends with a posture'* (Sherrington Unknown). Bart also considered movement using the Process Orientated Approach (Smit-Engelsman 2001) and The System Orientated Model (Bernstein 1967). The former considers that we adapt our movements constantly by comparing purpose, sensory information, body activity and changes in the environment. The latter considers that movements exist through self-organisation and dynamic interaction. Bart suggested that movements on their own do not make sense – we need to understand the purpose of the movement.

The International Classification of Functioning, Disability and Health (ICF) (WHO 2001) was presented as providing a basis for the areas to be considered during patient assessment. These include the following:

Impairment - Spasticity, range of motion etc.
Activity - Motor and functional skills
Participation - ADL and social interactions
Environment - Opportunities, support, school
Personal factors - Drive, goals, development, age, self awareness

Bart stressed the importance of careful observation and gave some examples of observing patients in different situations. One such example involved removing the wheels from a patient's wheelchair to lower her seating position, giving her feet direct contact with the floor and offering a new position with a lower visual field. This allowed Bart to observe the patient's reaction to the altered environment and stimuli. He emphasised the importance of thorough physical assessment and the trialing of different positions and options in order to discover the best solution. He again used case examples and talked us through some patient assessments.

During a full plinth assessment, the therapist can consider and observe a patient's posture, check for fixed deformity, consider how fixing the pelvis or positioning with various amounts of hip flexion affects posture and tone. The therapist can also trial different positions and support options to observe what gives the best result. When considering factors affecting tone, we should look at the cognitive demands on the patient as well as the physical effort of the task. Environmental factors and changes in position will affect tone as will emotional factors. It is important that we consider these factors during our assessments and incorporate our findings into the final seating solution.

In concluding his presentation, Bart encouraged us to maximise our current knowledge and seating technology, to define what we want through thorough assessment and to look to the next generation of products to provide solutions for clinical needs.

Many thanks to Bart for an informative presentation which has improved my knowledge of factors to consider in the assessment process, and I have applied this knowledge to the clinical aspects of my role. Thanks also to PMG for giving me the opportunity to attend this year's conference.

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PMG Sub-committee News

If you wish to contact any of the sub-committee chairs or members, please do so in the first instance via PMG administration: ***olwen.ellis@pmguk.co.uk***

Education and Training Sub-committee

Monica Young, Co-Chair

I begin my first update on the Education and Training Committee by thanking and acknowledging the hard work of the outgoing chair Martin Moore. As many of you will know Martin has put an enormous amount of work into PMG and our training events. He is dedicated to promoting the field of posture and mobility and has chaired the E&T subcommittee for the past two years. I would like to personally thank Martin for his contributions and support, and although he has resigned his chair of the E&T sub-committee, he remains active on the main PMG committee.

With Martin's departure I would like to welcome three new members to the sub-committee who many of you will already know: Jo Jex (as co-chair), John Tiernan and Nigel Shapcott. They have a wealth of experience between them in posture and mobility and in Education and Training issues.

At the time of writing we are working on selecting and organising the preliminary courses for the National Training Event in 2009 – practical courses to supplement the main event. More information will be available on the website in November.

There is an exciting future ahead for the Education and Training sub-committee, as we are in discussion with a number of other organisations to look at the possibilities of accredited training in the field of Assistive Technology. There are also some developments in the pipeline for the PMG website which will offer information and support with CPD ideas.

Finally, as work gets underway for the PMG Special Interest Groups, I would like to encourage any member with an interest in education and training issues, regardless of your experience, to join the Education & Training SIG and help contribute to the exciting field of Assistive Technology.

We look forward to any ideas or comments you may have for the sub-committee.

Monica Young

Government Relations Sub-committee

Helen Hislop, Chair

The Government relations sub-committee has undergone some change: Dave Long has stepped down as chair to take on a role on the International Conference committee. I thank Dave for his efforts on the TCEWS project and in starting our working with Mark Oaten.

Dave has continued to try to get answers on the status of the TCEWS project. As you may have seen from the digests we receive from Mark's office (available on the PMG website), any parliamentary questions we ask on this topic are met with answers that make us none the wiser. Dave wrote to the Minister and the TCEWS team regarding the concerns shared by services about the data on which the business case has been based. This letter received a similar non-committal response. We have discussed what we can do next with Mark Oaten, and are now considering several options to ensure that wheelchair service development and investment does not get forgotten!

Now that the usefulness of political liaison has been established, the sub-committee is becoming more organised and sorting out mundane but necessary things such as terms of reference and communication channels so we can then get on with the more interesting bits!

Mark Oaten has offered training for some of the committee on the ins and outs of Westminster. Completing this will be one of our first goals so that we can then be more effective in our presentation of PMG in this arena.

If you feel passionately about PMG's political forays, don't forget to sign up for the government relations/legislation special interest group. That forum will be your chance to learn about this area and input into the way PMG takes its political agenda forward – I look forward to working with you there.

Helen Hislop

National Training Event Sub-committee

Kirsty-Ann Cutler, Chair

The NTE sub-committee is working hard to finalise the programme and budget for NTE 2009. With our title of 'Pay now – Save later' I am hoping that our conference in 2009 will be stimulating and thought provoking. All the usual components of the programme have been included, along with the special interest groups introduced to us by Nigel Shapcott during NTE 2008. Look out for more information in PMG publications and on the website.

Following much discussion the PMG committee has taken the decision to change the way you book and pay for your place at conference, to reduce the amount of time chasing payments from NHS trusts and the risk of not getting paid! See page 2 and look out for further announcements via ebulletins and on the website.

Our message is ' Book early'!

There is no NTE in 2010; instead there is the next International Conference, and I shall be part of that organising committee. We have finalised a venue and starting to formulate a programme *(see page 47)*.

Many thanks to Olwen Ellis who is now our administration support for NTE 2009 and International 2010 and who keeps me aware of my deadlines!

See you all at NTE 2009!

Kirsty-Ann Cutler

Publications and Marketing Sub-committee

Jane Chantry (née Harding), Chair

It has been another busy year for the Publications and Marketing sub-committee. Sadly we have said goodbye to Helen Hislop, who had to step down from this sub-committee due to her increased commitments as vice chair of PMG. We are sorry to lose her but are very grateful for all her hard work whilst on this sub-committee.

Thanks also needs to be given to Joanne McConnell for her continued hard work and dedication as editor of this wonderful journal, which under her careful guidance I really feel is going from strength to strength.

The committee has also been hard at work redesigning the PMG membership flyer to help attract new members to the group. We have a number of companies who have kindly agreed to include our new flyer in their mail shots, and hopefully this will provide us with a wider distribution base, so watch out for it coming through your door sometime soon!

Thanks to every member of this sub-committee for their commitment and hard work over the past year.

Jane Chantry

New Year's Resolution!

January 1st 2009: Renew PMG membership

This is a reminder to go online as soon as possible in January to renew your PMG membership for another year. Go to www.pmguk.co.uk/members/login and have your payment card ready. Membership subscription is £25.00.

It is particularly important to renew early if you are planning to go to NTE in April, so that you pay the discounted delegate rate to attend; you would then also be eligible for a book token to spend at NTE if your delegate invoice is paid by **14th February 2009.**

Research & Development Sub-committee

Donna Cowan and David Porter, Co-chairs

The main work of PMG's R&D sub-committee continues to be the administration of the small research study funding scheme. Since 2005 the sub-committee has overseen the provision of funding to 11 projects. These are listed below. Some of the studies are now completed, and you will find full reports on the PMG website in the Research section. For the projects still in progress, there are outline abstracts available to read there.

1. *Wheelchair mobility for people following stroke with perceptual problems.* **David Punt** (completed)

2. *Balancing manual wheelchair stability and 'tippiness' for functional independence.* **Lynne Hills** (completed)

3. *A study of the biomechanics and kinematics of standing during development and in children with cerebral palsy. A three phase study.* **Alice Wintergold**

4. *What is the effect of postural management at night on hip stability and quality of sleep in children with bilateral CP and how do the children and their parents view it?* **Ginny Humphreys**

5. *A single blind controlled study to assess advantages of power assist wheelchairs (E-motion project),.* **Dave Harrison**

6. *Postural management programmes for children with physical disabilities – a pilot study of teachers' views and experiences.* **Eve Hutton** (completed) See Eve Hutton's article on page 24.

7. *Can generic shape patterns be obtained by examining a series of customised postural support systems?* **Lorna Tasker**

8. *Wheelchair navigation and unilateral neglect: can the use of technology improve performance?* **Geoff Harbach/David Punt**

9. *The impact of caregiving for physically disabled children who use wheelchairs on their caregivers' occupational performance, health and satisfaction.* **Jackie Casey/Rachael McDonald**

10 *Positioning patients in low awareness states in wheelchair and bed – experiences of nurses and health care assistants (HCA's).* **Rasheed Ahamed Meeran**

11 *What does a wheelchair represent to its users? A phenomenological study into the experiences of a group of adult permanent wheelchair users.* **Linda Walker**

There is a further round of funding in 2009. If you have a project you wish considered for funding by this scheme, please submit your outline proposal via the PMG website by December 31st 2008.

www.pmguk.co.uk/Research/Information

Donna Cowan and David Porter

Website Development Sub-committee

James Hollington, Chair

The Website Development sub-committee has been working extremely hard over the last year and we are currently working on four main areas: improving the conference booking system; creating and discussing the website redevelopment brief with development companies; continuing plans for future webcasting of conferences; exploring communication methods for the PMG Special Interest Groups.

We are very happy that Paul Hewett of Active Design has agreed to lead our work on webcasting and he will probably be looking for volunteers to help out at NTE09, so please let me know if you are interested and I will forward your details onto Paul.

I would like to thank James Foy and Fiona Walker for all their hard work. We've taken on a lot and they've put so much into this PMG work in their own time. Thanks.

James Hollington

Society for Research in Rehabilitation

Winter Meeting

3rd February 2009, Derby

Symposium 1: Behaviour Change in Rehabilitation
Dr Alison Hammond – University of Salford

Symposium 2: Severe Stroke – a missed rehabilitation opportunity?
Professor Cath Sackley – University of Birmingham
Professor David Barer – University of Newcastle

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4th Nordic Seating Symposium

Seating, Mobility and Participation

7th – 9th May 2009

Reykjavik, Iceland

Contact:
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ADVANCE NOTICE

NEW PMG LOGO

a n d

INTERNATIONAL CONFERENCE on POSTURE AND WHEELED MOBILITY June 7th – 9th, 2010

"Best Practice - Hit or Myth?"

Scottish Exhibition & Conference Centre
(SECC)
GLASGOW
www.secc.co.uk/

POSTURE & MOBILITY GROUP

3rd Announcement and Call for Papers

National Training Event

Warwick Arts Centre, Warwick University

15th – 17th April 2009

"Pay Now, Save Later"

We wish to invite you to PMG's next annual NTE, being held again at Warwick Arts Centre, University of Warwick, Coventry.

Papers (for platform and/or poster presentation)

Contributions are invited from the PMG membership and all professionals working in the fields of rehabilitation, posture and mobility. Abstracts should be submitted online via the PMG website: www.pmguk.co.uk/NTE+(Conference)/Speaker+Abstracts.

Closing date: December 31st 2008.

Bursaries

The Posture & Mobility Group will be offering a limited number of funded places at the NTE again in 2009. This is an opportunity for PMG members working in the wheelchair and special seating fields, or those who have a particular interest in this specialist area, to apply for a funded place to attend the event. Successful candidates will receive free attendance, including lunch and conference refreshments, plus bed & breakfast accommodation and evening meals at the venue. Travel expenses will not be paid.

As a condition of being awarded a bursary, all bursars agree to write a report on one of the sessions they attend at the event. Bursar reports will be submitted for publishing in the Autumn 09 edition of the PMG journal.

Apply for a bursary online at www.pmguk.co.uk/NTE+(Conference)/Bursaries

Closing date: December 31st 2008.

NEW! There are a limited number of places for interested support/admin staff from members' places of work to attend NTE 09 as volunteers.

For further details see Page 2, or contact Olwen at the PMG office:

Email: olwen.ellis@pmguk.co.uk Tel/Fax: 0845 1301 764

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