Recent Advances in Assistive Technology and Engineering

RAATE 2003

BRINGING AT PROFESSIONALS TOGETHER

CONFERENCE PROGRAMME

Birmingham Botanical Gardens

10th & 11th November 2003

RAATE 2003
BRINGING AT PROFESSIONALS TOGETHER

Contents

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Welcome to RAATE 2003.

This is the third year for RAATE and, despite the rather late start in planning, we have an exciting programme again. There have been many conferences on assistive technology during this last year, but RAATE is the original and, we believe, still the best interdisciplinary conference for the whole spectrum of assistive technology.

It has been good to see publication of some of the best papers from RAATE2001 appear at last in the special edition of Technology & Disability (Volume 14 no. 4, 2002). Three papers were eventually accepted from RAATE2002. The same offer is open again to presenters this year. If you think you have a presentation that can be turned into a paper for Technology & Disability we can guide it on its way (although it will still be subject to the normal peer review process, of course).

This year has given rise to more important debates. The National Occupational Standards rumble on and are about to be tested in practice; Paul Richardson will be filling us in during Session S13. No one quite knows what the impact of "Agenda for Change" will be; Keith Ison will be presenting a view from a major London teaching hospital in Session S10. Statutory registration of clinical technologists grows closer and there is a renewed interest in conducting appropriate education and training for the field; we have arranged for a number of course organisers to set out their approaches during the lunch-time sessions. User involvement remains a central concern to all our services; Keren Down of FAST and Julie Fernandez will be leading a discussion in Session S1, which also includes more news about the AT Forum – which can now boast government support for its federation of all UK organisations that are stakeholders in AT provision.

Check the programme out and choose what to attend with care. Give yourself time for the exhibition and networking – coffee is available most of the time.

Finally, please remember to complete your feedback form so that we can plan to meet your needs next year. If you need an attendance certificate, we can provide it at the registration desk on receipt of your completed feedback form. We wish you a most enjoyable and useful meeting.

Alan Turner-Smith and the organising committee:
Colin Clayton, Moira Mitchell, Donna Cowan and Gary Derwent

Plenary Sessions

Welcome and opening

Julie Fernandez of The Office
Monday 10.00 to 10.45 am

Health Technology Assessment

Gill Grimshaw, Warwick University
Tuesday 9.30 to 10.15 am

Beginners Sessions

Two beginners sessions will cover basic information and are aimed at people with little or no experience in that area. They are intended to allow people who work primarily in another area of EAT to broaden their knowledge.

The sessions are as follows:

Beginners Guide to Computer Access

Jane Bache & Gary Derwent, Royal Hospital for Neuro-disability
Monday 2.00 to 3.45pm

Beginners Guide to Environmental Control

Alan Woodcock, Rehab Engineering, Kings College Hospital
Monday 4.15 to 5.45pm

DAY ONE PROGRAMME—MONDAY 10th NOVEMBER

10-10.45	Plenary: **Welcome and Opening** *Julie Fernandez, The Office*		
10.45-11 15	Coffee and exhibition		
11.15 - 12.45	**S1 User and Specialist Services** (a) Building a partnership with users—Keren Down, FAST and Julie Fernandez (b) RCP-IPEM Working Party on Specialist Services—Alan Turner-Smith, CoRE (c)AT Forum—Moira Mitchell, FAST		**S2 Wheelchair Service Issues** (a) Whizz-Kidz / DoH Wheelchair Training Project: An Evaluation of the second 'Keep on moving' Scheme—Sarah Jefkins, Whizz-Kidz (b) Wheelchair Service Mapping Project—Aisling Devlin, emPOWER (c)Them and Us: The relationship between wheelchair services and speech Therapy—Dave Rogerson, Hull Royal Infirmary
12.45 -2pm	**Lunch, exhibition and lunchtime presentations** **S3** (a) Courses for AT and rehabilitation engineering: UniS / Biomedical Engineering—David Ewans & George Marinakis (b) Courses for AT and rehabilitation engineering: CoRE Certificate—Douglas Cartwright (c)SRS Lite—Jurek Sikorski, SRS Technology Ltd		
2-3.45 pm	**S4 Beginners Guide to Computer Access** Jane Bache, Gary Derwent, Royal Hospital for Neuro-disability	**S5 AT in the Home** (a) EAT at Home: A simple Recipe—Guy Dewsbury, Lancaster University (b) Sound Advice on the Isle of Wight—Joyce Love RNID (c)AT for Older Peoples Public Housing—Donna Cowan, Chailey Heritage	**S6 Prosthetics and Orthotics** (a) Upper Limb Orthoses for Patients with Brachial Plexus Lesions—Krishna Patel, Salford (b) Clinical Gait Analysis in Rehabilitation—Denis May, Kings College Hospital (c)Audit or Risk Assessment of Non-approved Artificial Lower Limb Builds—Colin Dance, Kings College London (d) Custom-made attachments for a commercial pilot: A case study—James Regan, Otto Bock and Dominic Feely, Sussex Rehab Centre
3.45-4.15	Tea and exhibition		
4.15-5.45	**S7 Beginners Guide to Environmental Control** Alan Woodcock, Rehab Engineering, King's College Hospital	**S8 Biomechanics and Systems** (a) Biomechanics of stair Climbing—Carlos Galvan Duque, CoRE (b) I-Match Project: Selecting the Interface—Marie Kelman, FAST (c)The Use and Oversight of Hospital Profiling Bed Features—Helen Pain, DEAC, Southampton	**S9 Mobility** (a) Effect of Powered Mobility for Non-driving Children—Sarah Vines, Kings College Hospital (b) The SCAD Assistive Mobility System—Martin Langner, Chailey Heritage (c)Measurement of Mobility in Wheelchair Users—Susan Wilson & Malcolm Granat, Strathclyde
6 00 pm	Reception and Conference Dinner		

DAY TWO PROGRAMME—TUESDAY 11th NOVEMBER

9.30-10.15am	Plenary: **Health Technology Assessment** **Gill Grimshaw, Warwick University**	
10 15-10.45	Coffee and exhibition	
10.45 -12.00	**S10 AT in Society** (a) SARA stands for Self Assessment Rapid Access—Ian Salt, ICES (b) Implementing Telecare—David Wardle and Dick Currie, FAST (c) Agenda for Change—Keith Ison, Guys and St Thomas' Hospital	**S11 AT Devices** (a) Eye Blinks for Control (Case Study) - Neil Gregory et al, West Midlands Rehab Centre (b) Controlling a Computer with head Movement—so whats new? Mark Saville, ACE Oxford (c) Novel Control for a Patient with Motor Neurone Disease—Neil Gregory et al, West Midlands Rehab Centre
12-1.30 pm	**Lunch, Exhibition and Lunchtime Presentations** S12 (a) Courses for AT and rehabilitation engineering: MSc in Clinical Engineering—Len Nokes, Cardiff (b) Courses for AT and rehabilitation engineering:MSc in Assistive Technology—Ruth Mayagotia-Hill, CoRE, Kings College London	
1.30—3.00	**S13 Competencies for AT Specialists** (a) Clinical Competency in Assessing for EC and AAC—Neil Gregory et al, West Midlands Rehab Centre (b) National Occupational Standards, Into practice—Paul Richardson, Kings College Hospital (c) BHTA Matters—Ray Hodgkinson BHTA	**S14 Are you sitting comfortably?** (a) Guidelines for Wheelchair Stability—Alan Lynch, MHRA (b) Wheelchair Tilt Safety Alarm System—Hamed Ezzatizadeh et al, University of Surrey (c) A Potty Seat for Children with Brittle Bone Disease—Michael Hillman, BIME
3.00—3.30	Tea and exhibition	
3.30—5.00	S15 Integrating Systems (a) Case Studies of EAT on a Ventilator Unit—Gary Derwent, Compass, RHN (b) Case Study—provision of an integrated system—Marcus Friday, Barnsley DGH © A New Concept in Robotic Assistance : The User View—Clive Thursfield, ACT, west Midlands Rehab Centre	S16 Update on Standards and a chance to tell MHRA what you really think (a) Update on Wheelchair and seating standards—Alan Lynch, Chairman ISO Committee (b) What do you want from MHRA? Interactive Question and Answer—Alan Lynch MHRA

Building a partnership with users

Keren Down, FAST
Julie Fernandez

There is no abstract for this sessions as it will be interactive and encourage participation from the audience in exploring issues regarding the relationships between service users and service providers.

AT Forum

Moira Mitchell, FAST

This session will provide an update on the progress and goals of the AT Forum and will allow an opportunity for discussion of the issues involved.

RCP-IPEM Working Party on Specialist Services

Alan Turner-Smith

The principle of the ICES initiative (Integrating Community Equipment Services) is to create a rational relationship between social services and healthcare in the supply of assistive technology. This principle, and the energy and vision with which the initiative is being pursued are commendable. However questions remain about how clients with more specialised needs are best supported within this new framework. A hub and spoke model has been proposed, but interpreted in different ways according to the perspective of the interested parties. Simply categorising equipment into, for example basic technology, complex technology, and bespoke technology does not help a Service meet complex needs.

The Institute for Physics and Engineering in Medicine (IPEM) is the professional body principally responsible for the clinical engineers and technologists in rehabilitation engineering. The Royal College of Physicians and IPEM have set up a working party on specialist equipment services for independent living to examine these matters and recommend suitable models for provision.

This presentation will present some of the issues in the provision of assistive technology, report on some of the findings of the working party, and seek the views of the audience.

Dr Alan Turner-Smith
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London

NOTES

Whizz-Kidz / Department of Health Wheelchair Training Project : An evaluation of the second *Keep on Moving* scheme

Sarah Jefkins

In 2001 national children's charity, Whizz-Kidz, was awarded a three year Department of Health Section 64 grant to develop a national, standardised wheelchair training programme. Since June 2002 four pilot wheelchair training schemes, named *Keep on Moving*, have been run. The main aims of the training scheme are to help disabled children and young people:

1. Make safer journeys
2.Develop confidence to use their wheel chairs in a variety of settings
3. Increase their social interactions and autonomy.

These main aims were derived as a result of previous research that has shown disabled children and young people are less likely to have active social lives, nor take part in out of school activities, clubs or sports, and are more likely to stay within the home environment (Hirst & Baldwin, 1994). The paper will give an overview of the London scheme run in April and May 2003 (the second pilot). It will examine how the project was set up with local partners, and cover issues relating to participant recruitment and the involvement of experienced adult wheelchair users. It will also present the findings of the evaluation of the scheme. The scheme was evaluated in the main by questionnaires to participants, their parents and volunteer helpers. Specific wheelchair skill improvement was measured by analysing video recordings of participants at the beginning and end of the scheme. Participatory techniques were also employed to ensure all participants were included in the evaluation.

Conclusion: Overall**,** the evaluation results have been extremely positive, especially those based on self-assessment. All parents felt that their child's wheelchair skills and confidence had improved. One parent explained "*she's quicker in her chair and learnt that a wheelchair can do more for her in her life."*. Pre and post scheme comparisons also show that participants' perceive that their skills and confidence have improved. The paper will end by examining the main learning outcomes and looking at how *Keep on Moving* can be sustained.

References: Hirst M & Baldwin S (1994). Unequal opportunities, growing up disabled. London: HMSO.

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Wheelchair Service Mapping Project

Aisling Devlin

The Wheelchair Service Mapping Project was launched in July 2002 and scheduled for completion in July 2004. The project is funded by a Section 64 Grant from the Department of Health and is managed by *em*POWER. e*m*POWER is the charities consortium of Users of Prosthetics, Orthotics, Wheelchairs and Electronic Assistive Technology and campaigns for a "national look" based on individual needs.

The Aims of the Project are to:

1. Gather evidence about the NHS Wheelchair Service in England
2. Identify Best Practice within the Wheelchair Service
3. Spread Best Practice.

The project pictures eligibility criteria, referral, assessment and service user involvement throughout England. A Steering Group composed of professionals and wheelchair users from various areas involved with the NHS Wheelchair Service is monitoring the project.

The project is working alongside other initiatives that the Government is funding with the Modernisation Agency. There is regular flow of information between *em*POWER's project and collaborative work that is already being conducted by the Modernisation Agency, also aimed at spreading best practices.

A Questionnaire was mailed to all NHS Wheelchair Services in England at the end of February, responses to which are intended to paint as clear a picture as possible of the current service, identify good practice and areas that need improvement as well as any work that is needed to clarify existing policy.

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Them and Us: The relationship between Wheelchair services and Speech Therapy

David Rogerson

I have worked as an RE in the local Wheelchair Service for 11 years before escaping to now cover Technical Aids which includes support for Speech Therapy, Environmental Controls and computer access.

I propose to contrast the past "them and us" attitude between these service with the present patient centred co-operation.

The Past: Wheelchair Service staff found mounting blocks attached chairs on change over, or in the way of repairs to brakes etc. Speech Therapy staff found that chairs changed without warning, sometimes losing mounting blocks or no longer being able to mount equipment. Both sides worried about stability and transport issues.

Now: Most of the time we discuss changes of wheelchairs and how the transfer of brackets will take place. Most of the time we let each other know what is to be fitted to who's equipment and when. We have a few integrated access systems, but the process is not easy. Joint assessments are arranged for complex cases. We worry about stability and transport issues together.

The Future: We are making efforts to change the "most of the time" into "all of the time" but avoiding the excessive use of forms and yet more paper. We would like to make the integrated systems more common and less painful. We would like to worry less about stability and transport issues.

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NOTES

Courses for AT and Rehabilitation Engineering University of Surrey / Biomedical Engineering

David Ewins and George Marinakis

The University of Surrey MSc in Biomedical Engineering was founded in 1964, and is fully accredited by the Institute of Physics and Engineering in Medicine for its National Health Service clinical engineering training scheme.

The Masters Course is offered on a full time or part time basis. It is divided into 3 main components; the core modules covered in the autumn semester, the specialist modules covered in the spring semester, and the project.

The core modules cover fundamental material in anatomy and physiology, instrumentation, fluids, biomechanics, biomaterials, statistics and research techniques. The specialist modules cover applied topics in safety, physiological measurement, biomaterials, microengineering, orthopaedic biomechanics, gait analysis and human movement, and rehabilitation engineering. Assistive technology topics, such as functional electrical stimulation, prosthetics, orthotics, wheelchairs and seating, are covered during the rehabilitation engineering two-week intensive module. The taught element of the course gives approximately 400 hours direct teaching time. Project work begins towards the end of the autumn semester, and there is an extensive, full time period, following the main examinations held after the spring semester.

The MSc course is organised and directed by the **Centre for Biomedical Engineering,** and supported by staff throughout the University, in particular the School of Engineering and the European Institute of Health and Medical Sciences. The Centre was one of the first in Britain to offer advanced level education in Biomedical Engineering. Our activities remain focused on postgraduate research and teaching involving over 30 people. The main research activities of the Centre for Biomedical Engineering can be divided into 5 areas: Human Movement and Gait Analysis, Functional Electrical Stimulation, Microengineering, Osseointegration, Blood Flow and Vascular Grafts. Most MSc projects therefore follow the activities in these areas, with a number being directly related to work in our Clinical Biomedical Engineering Centre at Queen Mary's Hospital, Roehampton.

For further information, please contact:

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CoRE Certificate in Rehabilitation Engineering

Douglas Cartwright

The King's College Undergraduate Certificate in Rehabilitation Engineering is an in-service qualification for rehabilitation engineers that provides a suitable educational programme for the Institute of Physics and Engineering in Medicine (IPEM) Clinical Technologist Training Scheme. Subject areas covered by the course include professional engineering, functional anatomy and physiology, rehabilitation engineering in the NHS, posture and mobility and electronic assistive technology.

Most of the teaching on the intensive residential modules is by leading practitioners and experts in the various sub-disciplines, and this together with the small class sizes helps to promote a very lively and interactive learning environment.

The course comprises three one-week residential units, a one-week clinical placement, and a significant distance learning element which includes a workplace project, library assignment and worksheets. Distance learning elements complement in-service training and work commitments, and are designed to encourage students to explore the subject beyond their immediate job role and organisational structure. The distance learning assignments are assessed and there is also a final examination.

The course is run annually and may be completed in one year, or over a two-year period if the clinical placement and workplace project are deferred to the second year.

Doug Cartwright
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The SRS Lite
Jurek Sikorski

SRS has a record of introducing new products developed in response to what customers have asked for. In 2003 so far SRS has introduced a mobile telephone through collaboration with Motorola and a range of intercoms in collaboration with Videx.

Customers also asked SRS to develop a remote controller with fewer functions than the SRS 100 that is easy to use, simple to install and above all is inexpensive. Having spoken to many of its customers SRS designed a totally new personal environmental controller' that meets these requirements and is, in its own right, an attractive product.

The product is the SRS Lite a compact, lightweight and stylish device that provides remote control of a wide range of home appliances including lights, doors, TV, video, curtains, and telephone. The SRS Lite is programmable up to 65 functions and 25 telephone numbers. It communicates by IR and radio (433 MHz) so there is no need to add devices to extend capability as with other controllers and unlike other controllers it has a built in social alarm trigger (1 73MHz) that allows users to call for help.

The SRS Lite has direct selection of functions as well as single or dual switch scanning access unlike many controllers that only provide scanning access. It also has voice announcement through a built in speaker alternatively it can be used with an earpiece.

SRS Lite is due to go on sale from the autumn of 2003.

Jurek Sikorski
SRS

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EAT at Home: a simple recipe?

G. Dewsbury, M Roucefield, E Sergeant and I Sommerville

Current practice for Electronic Assistive Technology (EAT) implementation in relation to home systems, tends to be patchy and a fairly hit and miss affair often due to lack of a co-ordinated structure. There are no standard specifications from which designers can draw inspiration and specifier's can specify accurately to ensure end users have their needs accurately met. As a consequence, home installations of networked systems to support people fail on a number of levels, through not being dependable, not being generalisable and often inaccurately specified/installed. Currently there is little dissemination of systems that have been proved to work that can be adapted to specific users or used as template systems. This paper attempts to resolve some of these omissions by describing the work undertaken on a project (DIRC: www.dirc.org.uk and www.smartthinking.ukideas.com) in designing appropriate, dependable EAT for residents with autistic behaviours. In many ways this is one of the most difficult groups of people to design for as individual communication patterns are limited. Therefore the designers must rely on a number of tools to achieve a satisfactory and accurate design specification. Moreover, the design of socio-technical systems for people with autism and behaviour that challenges others is required to be consistent and meet the needs of current and future residents. The technology provided must be quiet, seamless, futureproofed and effective to support both residents and carers. We try to show that simple design criteria can be used to enable and empower carers as well as residents within community living accommodations and we intend to demonstrate that good building design can be complimented by good technology design to assist residents and/or carers. The two aspects are integrally entwined and are required to co-exist. This means that architects, social care workers, designers, installers of technology and housing providers all have important parts to play in the design process and no part can be excluded if successful designs are to be ensured. We therefore advocate a co-operative design method.

We also introduce the notion of ensuring a dependable network and the notion of dependability into socio-technical systems design. In this, our intention is to adapt classical computer science notions of dependability criteria to the socio-technical applications inherent in domestic settings. We conclude that a readaption of classical dependability theory can be applicable, useful and usable within the design of EAT in the home.

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Sound advice on the Isle of Wight

Joyce Love

The Sound Advice Project has been running on the Isle of Wight for 12 years as a Royal National Institute for Deaf People service, working closely with the local authority.

Its aim is to provide information and demonstrations of Environmental Equipment for deaf and hard of hearing people of whom we estimate there are around 20,000 on the Island. Professionals make the assessment for service but trained volunteers deliver many services.

Many people with hearing problems find areas of daily living extremely difficult. Problems can arise in family situations when one member starts to lose hearing and equipment can help with things like TV/smoke alarm/ phone/ doorbell etc.

Clients can be assessed at home or at the Sound Advice office. The project has been very successful and has now seen over 4000 clients, many of whom come back time and time again for help and advice.

A Lottery Award in 1999 enabled the scope of the work to increase to include:

1. Basic hearing aid maintenance – especially in people's homes
2. Support for new hearing aid wearers by an existing user
3. Basic communication skills training for families and carers
4. Provision of portable loop systems to enable hard of hearing people to take a full part in community activities

A second lottery award was received in 2003 to continue the work and add the following tasks:

1. Identify the ethnic community on the Island and make sure that deaf members have access to our services
2. Work with young people to help prevent damage to their hearing by exposure to loud noise
3. Establish a network of local call in centres around the island where people can get hearing aid support

The lottery funding has enhanced the service provided to Island inhabitants and we consider it is a model that could be tried elsewhere. The service is currently the only one of its kind in the UK.

The work the volunteers do cannot be overstated. The project could not run without them. There are

around 35 working volunteers who undertake such tasks as:

Equipment fitting in clients' homes e.g. TV listeners, doorbells, phones etc.
Supporting elderly and vulnerable people in the use of equipment
Support for new hearing aid wearers
Office support
Attending meetings
Hearing aid maintenance
Manning exhibition stands

This year a successful bid was made to take over the Social Services contract to assess and supply equipment

We are a recognised provider under the 'Supporting People' scheme, which came into force in April 2003 (possibly the only one in the UK providing hearing aid support).

Joyce Love
Project Manager

AT for Older Peoples Public Housing
Abstract not available at time of going to print.

NOTES

Design of upper limb orthosis for patients with brachial plexus lesions

K. Patel, S. Rithalia, L. Kenney & G. Heath

This abstract describes work at the University of Salford addressing the limitations with current orthotic approaches for patients with brachial plexus lesions. Upper limb orthoses are used by this patient group to assist or supplement lost upper limb function.

Anecdotal evidence suggests that patients are dissatisfied with the amount of functional gain provided by current BPL orthoses and therefore this study aims to review these design limitations. The work began with a literature review focussing on the nature and extent of the problems with present day orthoses. This has been followed by a design review, based on the use of an approach known as the House of Quality model. The House of Quality is a Quality Function Deployment tool, used by designers to prioritise user needs and to convert them into engineering deliverables. In our case, these engineering deliverables will be technical features an improved orthosis should possess in order to meet the user needs. This approach has already been applied successfully to the design of other rehabilitation aids, including a powered prosthetic hand.

The input to the House of Quality model has been gathered through 2 postal questionnaire surveys, amongst patients using BPL orthoses and their clinicians, throughout the UK. This work will form a basis for the development of a design specification for an improved upper limb orthoses for brachial plexus lesions.

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Clinical Gait Analysis in Rehabilitation

Dr Denis May

Introduction: Crystal Palace Rehabilitation Centre is one of the few clinical facilities which routinely use Clinical Gait Analysis as part of the Rehabilitation Management of their Patients. Since the gait facility was opened in 1997 some 5378 sets of clinical measurements have been conducted on various groups of patients.

Objectives: This work is an ongoing study to build up a major data base of hard scientific measurements of the performance of patients with various locomotor dysfunction such that histories of performance can be immediately interrogated to compare and contrast with subsequent outcomes. This enables the Clinicians to assess the effectiveness of the current management of their patients.

Techniques: The Gait Laboratory is housed in the Physiotherapy Gym at crystal palace and consists of a Bertec embedded force plate with Averpro+5.17 Visual vector overlay and Pro-Vec5_0 software, Panasonic split screen Video recorder together with Two Camera Mac Reflex Qualisys Kinematics system. Rigorous protocols are always adhered to so that comparisons between different runs and indeed different patients can be achieved, taking into account the individual capabilities of each patient.

Measurements: Clinical measurements have been recorded to date on patients ranging in age from 3.4 to 97 years. These are full data measurements (OV4) enabling subsequent interrogation and analysis to be conducted. In addition Scroll Vector Overlays (SVO) have also been recorded to enable Clinicians to visualise the ground reaction vectors on the video recording and these will be summarised.

Results: Outcome measures indicate that virtually all the patients have benefited from the analyses. Indeed I would assert that for the more complex cases with multiple deficiencies or several concurrent disabilities, clinical gait analyses are the only ways of optimising their management.

Conclusions: Several studies will be presented to illustrate the benefits of Clinical gait analysis resulting in immediate corrective action for cost effective management.

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Audit of Risk Assessment Of Non-Approved Artificial Lower Limb Builds

C. Dance, R. Batchelor, D. Feely, T. Pond, D. May, I. McGee

Introduction: The "Inter-Regional Prosthetic Audit Group" is the joint initiative of 8 Limb Fitting Centres around London (Luton & Dunstable, Stanmore, Harold Wood, Charing Cross, Roehampton, Crystal Palace, Gillingham and Brighton). The 8 centres meet 4 times a year to agree new audit projects and review the results of those in progress. These are multi-professional meetings involving all staff. In June 2002 it was agreed to audit whether Risk Assessments had been generated for non-approved artificial lower limb builds.

Method: A designated auditor at each of the 8 centres was tasked with auditing 60 medical files. New lower limb prescriptions prescribed between June 1998 and October 2002 were checked and if a non-approved limb build had been issued, the presence or absence of a risk assessment was recorded. The quality of the risk assessment was not rated at this stage.

Results: Seven Centres finally participated in the audit. A total number of 474 risk assessments had been raised in the 4 ½ year period. 15% of the issued new limbs during the period were non-approved builds. 30% of the non-approved builds had not had a risk assessment carried out. Of the 422 approved builds originally prescribed, 23 were subsequently changed to non-approved and of these, only 30% had a filed risk assessment.

Conclusions: Audit findings indicated a wide variation of compliance with the Medical Device Regulations. P&T companies should be encouraged to share risk assessment information between centres. Other interesting data was noted: a significant number of patients had not been weighed, there was a significant variation between centres in the proportion of non-approved builds prescribed and there is undoubtedly room for improvement in terms of traceability of componentry. The changed requirements of the NHS Controls Assurance Standards with respect to Risk Management indicate that further audit in this area will be advisable.

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The development of custom made attachments for a commercial pilot—a case study.

J. Regan, D. Feely

In May '99, a 31 year old male pilot transferred to the Sussex Rehabilitation Centre. He had suffered traumatic loss of his left arm, at upper third transradial level, in an air accident in Australia during 1989. He moved to the UK and secured employment piloting a Dash 8, carrying up to 50 passengers on short haul routes. Initially, he required an attachment for his prosthesis that would enable him to 'co-pilot' the aircraft with Civil Aviation Authority approval. Subsequently, two more custom-made attachments were developed to enable him to 'captain' the plane. Their development is described. The three devices are demonstrated on video by the user:

Hook Fitting: To operate the "co-pilot's" throttle levers, latches and go-around button.

Clamp fitting: To grip the "captain's" control yoke to guide the plane in flight.

Steering Tiller Fitting: To steer the aircraft on the ground via the steering 'Tiller'.

The user is believed to be the only commercial pilot with an upper limb deficiency in the UK. Throughout, there was close liaison between the CAA, the pilot and his employer and the rehabilitation centre. Each device was proof tested to check it could sustain the loads to be exerted. The CAA assessed their use in a simulator then in flight trials. Inspection and servicing procedures were agreed to ensure the devices remained serviceable. Documentation was generated to meet the requirements of the CAA and Medical Devices Directive. This included risk assessments, handover documents, and inspection programs.

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Biomechanics of Stair Climbing

C. Galvan-Duque, R. Mayagoitia and F Wakil

INTRODUCTION. Stair climbing is an essential activity of daily living. It requires a fair amount of muscle force and coordination to accomplish safely. It is often associated with falls in the elderly but it also has cardiovascular benefits. Assessing performance during this task has proved particularly difficult since the usual biomechanical assessment tools of camera systems and force platforms cannot be adapted easily to use in and around flights of stairs. Therefore a system based on body-worn sensors has been developed and tested to study stair climbing.

METHODS. A commercial sensor combining accelerometers and gyroscopes oriented in all three orthogonal directions was placed at the small of the back (Xsens MT9, Xsens Technologies B.V.). This place is approximately level with the centre of mass of the body when standing and was chosen to represent the overall movement of the person. Ten young healthy subjects were tested ascending and descending a flight of 13 steps. Only the middle eight steps were used in the analysis. The data from the accelerometers was corrected for the acceleration of gravity due to the sensor's varying inclination. From the vertical accelerometer signal peak to peak amplitudes were obtained as they are associated with joint loading. From the lateral accelerometer signals the area under the curve was obtained as it is associated with balancing effort. In the anterior-posterior direction the cycle time duration was obtained as timing differences between left and right legs as well as between ascent and descent are of interest.

RESULTS. Clear landmarks related to specific events during stair climbing were found in the signals, allowing a division of the task into stages. A new biomechanical model of the task was created. Descending heel strike peak accelerations were significantly larger than ascending ones. This was expected as the acceleration of gravity is added to that due to movement while descending. The area under the medial-lateral curve while descending was significantly larger than while ascending. This was expected as there is more risk of falling during descent and therefore more balancing movements are made. The cycle time duration going down was significantly shorter than while going up. This was expected as more momentum must be generated to ascend.

DISCUSSION. Some examples of the diagnostic value of the performance parameters follow. The differences in peak vertical loading while ascending and descending may be of special interest when assessing people with lower limb arthritis as they may be reducing the impact while descending to avoid pain. The area under the lateral curve may be increased with age or after head injury, reflecting an increase in the balancing effort. Cycle time duration in combination of the vertical acceleration can be used as a tool for balance control assessment for population with a psychomotor disability or elderly people. Asymmetry in left and right cadence will be present after stroke. Further performance parameters such as trunk inclination can be tested in future studies. A deeper inclination will help to reduce the lever arm length between the centre of mass and the front foot increasing the mechanical advantage the same muscle contraction can generate to help lift a person in stair ascent. A backwards inclination can also be used to increase the length of the resistance arm to aid in lowering against gravity in descent. This is a strategy often seen in older people. The system is portable, easy to use, low cost and the results are easy to interpret. It allows an assessment of stair climbing to be made in any environment.

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I-Match: A software based system to allow matching of an optimum interface to a User of Assistive Technology.

Dr M. Kelman

Many people with disabilities rely upon assistive technology for independence. In many cases, the potential of a particular piece of technology is restricted by the difficulties of user operation. i.e. the impairments which lead to the recommendation of a device prevent its very operation because of the difficulties of interfacing with the user. I-Match is a 3 year EU FP5 project which concentrates on the development of techniques to optimise the selection of an interface for a user by measuring both the functional characteristics of the device (e.g. joystick, switch, mouse etc) and the upper limb skills of the user. The project includes consultation with users and providers to understand their success with assistive technologies and their unmet demands. A key activity is to define and measure physical and functional characteristics of available interfaces; the resulting data is put into a publicly available database for use by providers and users. A second activity is to measure the hand and arm skills of users. This involves development of simulations of devices to be controlled (e.g. powered wheelchairs, rehabilitation robots, computers). It will be possible to operate this system with any type of interface (including a haptic device). Using a set of exercises and tests, it allows quantification of the abilities of users and, therefore, choice of the optimum interface. The use of a haptic interface with the system allows the identification of user skills in response to more sophisticated force feedback.

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The use and oversight of hospital profiling bed features

Helen Pain

Profiling bed frames reduce manual handling and may assist skin pressure care. Many hospitals buy or lease these beds in large numbers, but little is known about how the beds are selected or their features used.

Eleven NHS Trusts, selected to represent different types and sizes of NHS Trust geographically spread across the UK, were visited as part of a study funded by the Medicines and Healthcare products Regulatory Agency, an executive agency of the Department of Health. At each Trust, semi-structured interviews were conducted with one or more staff that had been involved with the procurement, management or use of profiling beds. The interview schedule included reflection on the profiling bed features identified as important at the time of acquisition, and an evaluation of the utility and usage of these features in practice. A ward with profiling beds was then visited, and staff asked for informal feedback about their use.

Many Trusts reported that despite their careful market research either a feature had been omitted that consequent experience showed to be valuable, for example auto-regression, or a stipulated feature proved to be little needed on the wards. Some key features seemed to be little used by staff even after training, such as the knee break.

The data showed that to establish accurate requirements, field trials in relevant settings are important; to equip staff to fully utilize the bed features, training is vital; and to ensure staff incorporate the beds' advantages into their daily practice, constant 'refresher' input is needed.

Helen Pain
DEAC Southampton

The SCAD Assistive Mobility System.

Martin C Langner.

The SCAD system is being used in special schools and rehab centres around the country and was first created in 1996. The presentation will chart the development of the SCAD and how it has been applied to a variety of powered wheelchairs. The conditions in which the system is expected to operate will be discussed highlighting some of the practical issues with this compact robust system and suitability for its operating environment.

The level of automated guidance and the appropriate support to assist the learner has been reflected in the design of the system. The talk will highlight some of the continuing issues concerning the balance between assertive control and subtle assistance and the possible side effect's on child development.

The development of the system has evolved to include proportional joystick control function The system is currently being trailed with an older population who may not require the system as a learning tool, instead a supportive and labour saving system.

Some of the later systems are providing opportunities for the driver to select assistive driver support. The driver does not have to feel that the system has been imposed on them for reasons low driving competence, however they have the choice of system engagement for their own energy conservation.

Other related issues including considering the constraints imposed by the system on driver exploration and the balance between the barrier margins and drivable access will be discussed.

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Effect of powered mobility for non-driving children

Abstract not available at time of going to print

Measurement of Mobility in Wheelchair Users

Susan Wilson, Malcolm Granat

Mobility levels following a spinal cord injury are greatly reduced and a wheelchair is often used for mobility. Additionally, the SCI (spinal cord injured) person may be uprightly mobile although still use their wheelchair as a faster and more convenient method for covering distances.

There are no standard evaluation tools to measure the mobility levels in the SCI population because of the variety of modes of mobility. The activPAL™ (PAL Technologies Ltd) is a small lightweight activity monitor that has been validated for quantifying upright activities. It measures the frequency, intensity and duration of the sitting, standing and stepping activities of the wearer.

The aim of this study was to demonstrate that by using a wheelchair sensor in addition to the activPAL™ the free-living activity of both wheelchair dependent and partial walking SCI patients could be measured.

Free-living activity was monitored in 18 SCI subjects who used a variety of mobility methods. Activity levels were recorded for wheelchair dependent patients, both manual and powered, patients who used both a wheelchair and upright locomotion for mobility, and a patient who was mobile through upright locomotion only.

We found a significant difference in the total activity levels in partial walkers between the daytime and evening. It was also found that moving in a wheelchair, standing and stepping were all significantly higher during the daytime.

We describe a powerful new technique for determining the total free-living mobility of the spinal cord injured patient, be they wheelchair dependent, partial walker or independent of wheelchair use.

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SARA stands for
Self-Assessment-Rapid-Access.
Ian Salt

A Department of Health Project, funded under the ICES programme, to set up and evaluate the use of an IT based self assessment for the provision and purchase or loan of basic equipment to help older and disabled people remain more independent.

A key part of the project is:

- to evaluate the use of an IT based self assessment made available in retail stores and other public sites
- to evaluate if people would purchase the recommended equipment if it were available in the stores
- to signpost people to more specialist retailers including mail order where appropriate
- to signpost people to their local Community Equipment Store where they might be able to loan the equipment

The pilot is expected to take place in four sites:

- In Derbyshire there are discussions to see if the self assessment system can be used to link the rural library service and possibly a library building based service with access to equipment.
- In the other three areas, Gateshead, Manchester and Sandwell, the Community Equipment Service will have PC terminals but there may also be retailers in the area who will provide terminals, and stock equipment for sale.

There are a number of high street retailers who have expressed an interest in developing the service for the pilot and contact is also being made with mail order providers. The IT self assessment software, will be accessed by touch screen, user friendly and disabled person's accessible, kiosks.
It is intended that the pilot will begin to operate in September 2003, actively running for three months. Following evaluation using both collected hard data and user satisfaction surveys, an evaluation report will be produced for the Department of Health by March 2004.

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Agenda for Change
Keith Ison

The modernisation agenda in the NHS, driven by changing patient demands, developing technology and shortages of skilled staff, requires a rethink of traditional demarcations and roles. As part of this drive, the NHS is in the process of implementing a new system for setting the terms and conditions of its employees - Agenda for Change. As the title implies, the new system comes with the intention of simplifying current arrangements and making flexible working and new roles easier to introduce. It also integrates the idea of structured career and personal development, through the Knowledge and Skills Framework. Details of the new system are available on the Department of Health website (http://www.doh.gov.uk/agendaforchange).

Agenda for Change is being introduced by 12 Early Implementer sites. This talk will describe briefly how far implementation has progressed at the largest acute hospital Trust, and will identify issues that need to be considered by other engineering and physics groups thinking about how to introduce the scheme.

Keith Ison
Guy's & St Thomas' Hospital

Implementing Telecare
Abstract not available at time of going to print

Case Study in Eye Blinks for Control

N. Gregory, C. Thursfield, O. Gorodnichy

This is a case study of a man, Ron, who had a brain-stem stroke and is limited to only being able to eye blink. Various technologies have failed in the past to help Ron communicate using a high-tech method. Recent advances in facial recognition and the feasibility of using a non-expensive web-cam to capture images has led to the development of software that can enable Ron to access AAC and Environmental Control.

We have tried eye blink systems and EMG systems without success. This led us to use the vision-based perceptual technology developed at NRC-CNRC, which is claimed to have the most reliable eye blink detector to date. This detector recognises Ron's eye blinks using an off-the-shelf webcam in front of Ron's face. This makes it possible for Ron to send commands to a computer by blinking.

In this case study, we detail Ron's case giving an up-to-date picture of the technological developments and the plans for implementation of the technology.

Neil GREGORY – *Clinical Engineer, ACT*
Dr. Clive THURSFIELD – *Consultant Clinical Scientist (Head of Service), ACT*
Dr. Dmitry O. GORODNICHY - *Computational Video Group, IIT, NRC-CNRC*

Controlling a computer with head movement – so what's new?

Mark Saville

For decades it has been possible to use head movement in conjunction with electronic 'headpointers' to control computers and some communication aids, but now there's now a real choice in the headpointer market as new technologies like webcam-based software challenge the reliability of long-established headset-based regulars. This presentation gives an overview of the technology behind a number of different systems such as the HeadMaster, SmartNav and CameraMouse in an attempt to inform the AT user and professional of the capabilities and pitfalls of each particular product.

The presentation will look at the tilt-switch, infrared, ultrasonic, gyroscopic and webcam technologies that are behind the current crop of products. It will also touch on the software features required for effective mouse-clicking with headpointer control – ie cursor speed control, jitter control and dwell-clicking facilities.

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Case Study: Novel Control for Patient with Motor Neurone Disease

N. Gregory, C. Thursfield

This is a case study of a 19-year-old ventilated lady with Motor Neurone Disease. She now has very little physical movement, except some lip movement, eye movement and jaw clenching.

ACT's intervention was to enable this lady to access the Internet, email, face-to-face communication and Environmental Control.

The control was achieved by using an EMG switch connected to special software developed at ACT to control The Grid software.

She is presently an accomplished user of the whole system.

Her head positioning was and continues to be very difficult to accomplish and the challenges are described here.

Neil GREGORY – *Clinical Engineer, ACT*
Dr. Clive THURSFIELD – *Consultant Clinical Scientist (Head of Service), ACT*

NOTES

MSc Clinical Engineering - Cardiff School of Engineering
Len Nokes

The MSc in Clinical Engineering is a joint venture between Cardiff University (CU) and the University of Wales College of Medicine (UWCM).

It originated from a proposed MSc in Rehabilitation Engineering but as it covered subjects relevant to Clinical Engineering, it was decided to broaden the scope of the scheme and make it a postgraduate degree in Clinical Engineering. With accreditation from the Institute of Physics and Engineering in Medicine (IPEM), the course has been very successful in attracting candidates from various disciplines within the Health Care Sector from the UK and Europe.

The course, which has just seen its 3rd cohort of students successfully graduate, is run on a part-time basis involving a total of eight contact weekends spread over an eighteen month period. Successful completion of this Part I stage enables the student to enter a six-month project stage which is completed by the submission of a dissertation of approximately 20,000 words.

The modular structure of the scheme enables a degree of flexibility of study. For example it is possible to undertake the entire degree scheme or select individual modules on a stand alone basis for Continuing Professional Development purposes.

The course is open to those individuals working in the Health Care sector. These include candidates pursuing chartered status, Grade A trainees and healthcare professionals, with a general interest in CPD, who wish to broaden their knowledge of Clinical Engineering. The course is open to non-graduates over 25 with relevant experience and opens up the prospect of postgraduate study for mature clinical engineers who otherwise may not have had the opportunity to obtain a postgraduate qualification.

Len Nokes
Cardiff University

MSc in Assistive Technology
Ruth Mayagoitia

Assistive technology (AT) is a system or piece of equipment that addresses the gap between an individual's functional ability and the load imposed by his or her environment. The increasing demand for AT brings with it an expectation on the part of the AT user that the professionals who supply or advise them will be well informed, competent and have a clear understanding of all their different needs.

The need for an MSc in Assistive Technology has therefore grown out of:

- The continuing growth of demand in the field of AT
- The increasing sophistication of AT equipment and the legislation surrounding it
- The occupational standards now being introduced into the NHS and elsewhere
- The repeated call for an integrated (multi/inter disciplinary approach) to the provision of AT for disabled and older people.

In recognition of this need the EPSRC awarded the Centre of Rehabilitation Engineering a four-year grant in 2000 to set up and deliver a masters programme in assistive technology that is both academic and vocational in nature. Therefore, we are committed to developing competent AT professionals who are equipped with the personal skills required to be self-directed, autonomous learners and the professional skills required to take a user-centred, multidisciplinary approach to AT design, development and delivery.

The masters programme aims to produce AT specialists who are:

- Able to understand the potential and possibilities of assistive technologies
- Able to develop and apply assistive technologies with an understanding of the needs and desires of older and disabled people
- Able to understand the competence, language and values of others in the rehabilitation team and become effective members of multidisciplinary groups
- Able to apply research evidence to professional practice.

This programme is for those who have a background in the fields of physical science, engineering, medicine, social work, therapy or education and wish to gain a qualification to practice as an AT specialist. Graduates with degrees but no relevant work experience in the field study alongside

Continued from Session 12

students who have diplomas or certificates and relevant work experience. For the part time programme, students complete the MSc in two years, being taught along side the full time students. All students also do three one-week placements each in a specialist area to choose from: mobility and manipulation, seating and positioning, sensory impairment, alternative and augmentative communication, daily living technology.

Being a new MSc programme, it has been designed incorporating the latest best practice guidelines and benchmark statements of the Institute for Learning and Teaching and the Quality Assurance Agency for Higher Education in aspects of content, skills and competencies development, teaching delivery and assessments. Also, all teaching materials, including those available in electronic format, are fully accessible according to the Special Educational Needs and Disability Act 2001.

Ruth E. Mayagoitia
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Session 13

Clinical Competency in Assessing for EC and AAC

N. Gregory, P. Palmer, *C. Thursfield*

Access to Communication and Technology (ACT) is a regional assessment service based in the West Midlands Rehabilitation Centre (WMRC), Birmingham, England. ACT assesses needs for Augmentative and Alternative Communication (AAC) and Environmental Control (EC). The ACT model of EC assessment[1] involves assessment by either an Occupational Therapist (OT) or a Clinical Engineer (CE). Because of this interdisciplinary model, ACT determined the need for a measure of competency that would be applicable to clinicians working in the field regardless of professional background. This has been used as a training tool and in the future could be used as a tool of quality assurance for supervisor, Head of Department and patient.

Initially three areas of competency were identified: Clinical, Technical and Process. This was later adapted to follow the assessment chronology as follows: Clinical Planning, Expectations, Assessment, Synthesis, Goal Setting, Actions, Evaluation and Resources.

Each property of competence is associated with a dimension ranging from 0 (no knowledge) to 6 (working independently on specialised cases).

Future validation will include reference to National Occupational Standards[1] and professional competencies.

Neil Gregory – *Clinical Engineer, ACT*
Phil Palmer – *Clinical Specialist Occupational Therapist, ACT*
Dr. Clive Thursfield - Consultant Clinical Scientist (Head of Service), ACT

National Occupational Standards
And
BHTA Matters
Abstract not available at time of going to print

MHRA Guidance on wheelchair stability

Alan Lynch

MHRA (Devices) continue to receive reports where users and/or carers have been injured or have died as a result of wheelchairs tipping in use.

Approximately 51% of stability related incidents reported to MHRA were concerned with rearwards stability. 39% involved forwards stability and 10% involved sideways stability.

Some investigations show that there is a lack of understanding of the potential effects of the use of wheelchairs on slopes, ramps or uneven ground. Others show a lack of understanding of reduced stability due to the movement of the user or the effects of the addition of accessories or other equipment to the wheelchair.

With the ever expanding use of wheelchairs and their accessories combined with other assistive technology such as communication aids, environmental controls, personal computers etc the potential for problems concerning the stability of wheelchairs is unlikely to diminish.

MHRA believes that the far ranging subject would benefit from one guidance document covering all the issues involved. The intention is to give guidance to all concerned including users, purchasers, service providers, prescribers and it aims to highlight areas of risk and provide guidance on reducing or removing these risks whilst maintaining independent mobility for an individual wheelchair user.

The presentation will give an overview of the subject area and give details of the draft guidance document compiled so far.

Alan Lynch
MHRA

A wheelchair tilt safety alarm system

D. Ewins, H Ezzatizadeh, T. Best

Children and young adults with multiple and complex disability often have a high need for assistive technology. The majority of them will be wheelchair users and much assistive technology will need to be used in conjunction with the wheelchair. Wheelchairs are primarily designed to convey the user from A to B, but not to fit all requirements for the user. An important requirement for a wheelchair is its stability. Epidemiologists have acknowledged that wheelchair incidents are a significant problem and that the majority of serious wheelchair users' injuries result from tipping or falling out of the chair. This highlights the limited stability of current indoor/outdoor wheelchairs and importance of designing a device to control its stability and keep it in a safe position.

Wheelchair tilt safety alarm system is designed as a part of requirement for the degree of Master of Science in biomedical engineering in center for biomedical engineering, school of engineering, university of surrey to achieve this goal.

The purpose of this project is to develop a device to provide a real time monitoring of wheelchair tilt and to provide a warning to the user if safety could be compromised.

This device in fact controls dynamic stability of a wheelchair in all conditions and checks whether it is in a safe position or not.

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A Potty Seat for children with Brittle Bone disease

Michael Hillman

The handling of children with brittle bone disease is extremely difficult, since their bones can easily fracture if any bending is applied to them. If such children are to use a potty seat (or any similar chair) it is important that parents and other carers can safely handle the children onto and off of the seat. Initially a wooden potty seat was modified. Subsequently we have developed a potty seat which takes into account this difficulty. The back-rest folds flat, the leg support can be raised to a horizontal position and the armrests can be moved level with the seat allowing easy access for the carer or patient to move the child. An important aspect of the project is that besides correct function, the device should be an attractive piece of equipment. Throughout the development, the prototype devices have been tested by an occupational therapist who works with the Brittle Bone Society with her clients. Development has now been completed and a batch will soon be delivered to the Brittle Bone Society.

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NOTES

Case Studies of EAT on a Ventilator Unit

Gary Derwent

Compass, the EAT service at the Royal Hospital for Neuro-disability, works extensively with residents of a long term ventilator dependent unit at the hospital.

Residents at the unit use EAT for environmental control, computer access, powered mobility and communication. Voice output communication aids are used infrequently as most residents are able to communicate verbally, however computer based single switch scanning is used for written communication, email and leisure activities.

A combination of more cost effective 'off the shelf' equipment and simple custom made solutions are sometimes used to achieve a limited amount of environmental control while residents are on the waiting list for full environmental controls.

The session will examine general issues surrounding the use of EAT on the unit and will use several case studies to illustrate issues and decisions on integration of equipment and how the ventilator equipment itself impacts on the provision of EAT.

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Case Study - Provision of an Integrated System

Marcus Friday

An integrated system is described as using the same input for several applications (1). Despite technology changes, some of the same questions will have been asked for at least the last fifteen years of integrated system provision (1, 2 and 3):

1) Does the same control site provide the most efficient access to each of the assistive technology devices?
2) Is the client physically and cognitively able to control the integrated system?
3) Is the integrated system at least as safe and reliable compared to separate devices each with their own input?
4) Is the solution acceptable to the client and carers?

These questions cannot be considered in isolation and as with most technical solutions, compromises are often made.

This case study describes an integrated system provided by our Clinical Engineering Service. It is a combination of commercially available and custom made equipment.

The system has been working successfully for several months. The process has required assessment of the client's needs, identification of possible solutions, use of commercially available equipment, design and manufacture of custom made equipment, configuration of communication aid software, configuration of environmental control software, configuration of wheelchair control system and training.

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Marcus Friday
Barnsley DGH

A New Concept in Robotic Assistance
The User View
Clive Thursfield

A new concept for a robotic aid for the disabled is currently being developed by a European consortium. The device, known as Flexibot, is a symmetrical robot arm which moves around the home under direct user control or by predetermined patterns to carry out a variety of tasks. It moves by translating between sockets that span the required work area, including onto a powered wheelchair.

To determine the operating and design characteristics of the Flexibot a two part user survey was carried out with 90 potential users. The initial survey determined the content of a simulation video which was then used to solicit attitudes and principle requirements of the users in the second phase.

This presentation will demonstrate the Flexibot using the video employed in the user survey and will present the results of the survey.

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NOTES

Update on Wheelchair and seating standards

Followed by question and answer session:
What do you want from the MHRA (Devices) ?
Alan Lynch

The MHRA (Devices) aims to prevent adverse incidents happening and, where they have already happened, to prevent them happening again. No device should ever be considered 100% safe and constant effort is therefore required to reduce both the rate at which adverse incidents occur and the severity of the outcome. Reporting incidents to the Agency provides information that may be directly responsible for preventing similar incidents from happening again.

During 2002 MHRA (Devices) received over 8,700 adverse incident reports covering all types of medical devices. Although approx. 2,500 of these were reports concerned with the safety or quality of assistive technology devices such as wheelchairs, artificial limbs, aids for daily living, walking aids, orthoses etc., there still appears to be confusion about what should actually be reported.

The variety and use of assistive technology is continuing to increase and is not expected to decrease in the near future as the elderly population increases and improvements in healthcare continue to occur. With this background is it surprising to see that during the first 9 months of 2003 there was a reduction in the number of adverse incident reports received by MHRA (Devices).

There may be problems with the existing reporting system or you may not be aware of the full role of MHRA or that MHRA is not actually doing what you want it to do.

This interactive session is to give you the chance to raise anything that you want directly with representatives from MHRA.

Alan Lynch
MHRA

NOTES

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