THE CANADIAN SEATING AND MOBILITY CONFERENCE
... a forum for professionals in seating, mobility and rehab technologies to share information, enhance their knowledge, and increase their skills.

MAY 6, 7 & 8, 2013
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CANADIAN SEATING & MOBILITY CONFERENCE

MAY 6, 7 & 8, 2013

TORONTO CONGRESS CENTRE
Toronto, Ontario, Canada
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PC = Preconference Exhibitor Seminar  P = Paper Presentation  K = Keynote
CS = Case Study Presentation  W = Workshop
The most effective leaders in society are those rare individuals who can inspire their audience with a passion that can only come from personal experience. As the President and CEO of an extremely successful multimedia company, Joe Roberts has faced and overcome key business challenges, which confront every modern organization.

Joe’s business solutions have made millions of dollars for his clients, across a variety of business sectors. It is from this experience that Joe draws when addressing Fortune 500 companies, boards of trade and professional associates internationally.

Joe is a college graduate with two business diplomas from Loyalist College in Ontario, where he won the coveted Laurie H. Cameron Memorial Award for academic excellence. After which he began his professional career making cold-calls in the gritty world of photocopier sales. He quickly found himself promoted into a leadership and management position with a major audio-visual company.

With a track record of proven business success, Joe formed his own multimedia company, Mindware. In less than four years, he led his company to a phenomenal 800% increase in business, and made his first million before he was 35.

What is most amazing about this young man however is that in 1989 he was living on the streets of Vancouver as a homeless skid row derelict. Through perseverance, determination and his resilient human spirit, Joe pulled himself out of the darkness and despair, to become a highly respected business and community leader of today.

Drawing on the tremendous courage and determination necessary for his dramatic personal transformation, Joe now uses his amazing story, insightful humor and solid business experience to inspire individuals and organizations to achieve their own remarkable goals!
ALL ABOUT SPECIALTY CONTROLS!
RON CLAUGHTON AND SHEILAGH SHERMAN, OT REG. (ONT.)
Sunrise Medical Canada

A joystick is the most commonly used input device to operate a power wheelchair, but not everyone has the physical ability to operate a wheelchair using a joystick and for these people specialty controls, or alternative input devices, are required. This paper will review the differences between proportional and non-proportional drive controls; describe the difference between mechanical and electronic switches; and identify some available specialty control options.

A standard joystick is an example of a proportional input device. This means that the amount of deflection on the joystick gimble will correspond with a given rate of movement of the wheelchair, similar to how a gas pedal on a car works. Thus, the further the joystick is pushed out of the neutral position in any direction, the faster the wheelchair will go. Alternative joysticks, which require very little force for activation, are available. These include the MicroPilot and Touch Drive by Switch-It, Inc. and the Proportional Mini and Micro Mini Joysticks by ASL, Inc.

A switch is an example of a non-proportional drive control. This means that the switch is either “on” or “off”, similar to how a light switch works. Each switch is pre-programmed for one direction and speed. Thus, activating the switch activates the movement of the wheelchair for a set speed and direction. Other examples of non-proportional drive controls include sip and puff and head array with switch control. (A proportional head control also is available.)

Switches can be either mechanical or electronic. Mechanical switches require a depression of the switch to activate. There are numerous choices available in mechanical switches, ranging in size and amount of force required to operate the switch. In comparison, electronic switches, such as Fibre Optic Switches (Switch-It, Inc), do not require direct touch to operate. Depending upon the programming, the fibre optic switch may be activated when an object either is detected within the adjusted range or moves from the adjusted range.

Deciding upon what is the most ideal input device for a power wheelchair user starts with the assessment of the individual. Part of that assessment will include evaluation of the access point, or the part of the body that will be used to control the wheelchair. The access point is the point on the body for which the person can move reliably in two directions. Potential access points include the head, cheek, temple, mouth, chin, finger, thumb, elbow, knee, foot, and toes. Whether a proportional or non-proportional input device is chosen for an individual depends on what type the person has the most success with using. Training with and trial of equipment is the key to ensuring proper prescription of a specialty control. What is also important, but beyond the scope of this seminar, is the postural stability of the individual in the wheelchair to ensure consistent access to the specialty control.

References:


**Speaker Bio:**

Ron Claughton and Sheilagh Sherman both work for Sunrise Medical Canada. Ron has been an Account Manager with Sunrise Medical for the past 6 years. Ron has over 11 years of experience presenting clinical and technical in-services throughout Canada and the United States on power wheelchairs and custom powered seating, manual wheelchairs and standard and custom seating. Sheilagh has been the Clinical Educator for Sunrise Medical Canada for the past 2 years. Sheilagh, an occupational therapist, leads seminars and workshops on the clinical aspects of seating and mobility for therapists in Canada.
CONSIDERING THE CLINICAL PRACTICE GUIDELINES IN THE SELECTION OF BED SUPPORT SURFACES

TRICIA GARVEN, MPT, ATP
ROHO, Inc.

This interactive presentation will discuss the advantages and limitations of various bed support surface designs and technologies. Following discussions, the participants will be more informed of the various types of bed support surfaces, and all the clinical decision making that is required to provide the most appropriate surface for their clients.

A brief overview of the four extrinsic risk factors for pressure ulcers will be discussed, with an emphasis on how bed support surface design can affect the different risk factors. While discussing bed support surface selection, different clinical practice guidelines will be referenced for guidance in the use and support for the use of different technologies. Bed support surface features and categories, as defined by the National Pressure Ulcer Advisory Panel’s Support Surface Standards Initiative, will be highlighted; as will preventative and treatment surfaces in an effort to reinforce appropriate clinical decision making regarding bed support surfaces.

References:


Speaker Bio:

Tricia Garven, MPT, ATP is currently the Clinical Applications Manager for ROHO, Inc. Tricia has an extensive background in SCI rehab and seating, and now travels speaking on topics such as wheelchair seating, pressure imaging, and wound prevention at local facilities and various conferences.
BACK IT UP! BASICS OF BACK SUPPORTS
BRENLEE MOGUL-ROTMAN, OT
Toward Independence

This presentation will outline the basics of back supports and the importance of their use as a part of the seating system. What are the postural issues that the client may have that will lead to the consideration of a back support being prescribed? How does the pelvic stability and positions effect the client’s spine? How do we determine the features in a back support that will be most beneficial to assist the client with postural alignment, stability, skin protection, comfort and function? Determining an overall seating system starts with the full client assessment, including the mat assessment. Outcomes of the mat assessment will assist in determining how much support the client requires and where the support should be applied. Evaluation of products allows the team to best decide on the prescription that will meet as many of the client’s needs as possible. Back supports range from upholstery to modular to custom. There are variations within each category of support and often there is a combination of styles and features used in a single prescription. The back support is an essential component of the overall seating system. Its height, contour, weight, adjustability and cosmetic appearance all affect how the client will be supported, how they will function and how they will feel.

References:


3. Wheelchair.ca .wheelchair.ca/seating/backrests.php


Speaker Bio:

Brenlee Mogul-Rotman is an Occupational Therapist and ATP who owns a private practice in the Toronto area. She provides assessment and treatment to a variety of client populations, most specifically brain injured and spinal cord injured clients. Brenlee has a special interest in the area of seating and mobility and is involved with manufacturers and vendors with product development, clinical trials and product application. Brenlee is a well known presenter and has presented internationally on various topics related to seating and mobility. Brenlee is a member of the Professional Standard’s Board of RESNA.
BARIATRIC SEATING AND HANDLING: ALL ABOUT BODY TYPES 
AND BARIATRIC AIDS 
MALENE ALEXANDROWIZ, OT 
XXL Rehab

Consider the principles of rehabilitation and seating connected to the different body types and movements. These principles are crucial and fundamental to know before choosing and designing solutions and equipment for bariatric persons. At the seminar we will show different special made suits (fat suits) to illustrate the different body types needs and options. We will discuss ways of working safely with bariatric persons and the important dialogue between the bariatric persons/patients and the care team. We will give our input and experience how to manage those situations. Result: Everyone can be safe and comfortable.

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6. Michael Dionne; Among Giants; Courageous Stories of Those Who are Obese and Those Who care for them; 2006
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10. G iterative BÅ,gedal og Lene Plambech; Etik og kommunikation I behandlingen af svÅ¡rt overvÅ¡gtige patienter; Ergoterapeuten 09:08; 26-29
11. Bengt Engstram Ergonomi sittande &amp; rullstolar ; En bok om priniciper vid sittande och rullstolsanpasning; 2002; 113;

Speaker Bio:

Malene is an Occupational Therapist with the Danish company XXL REHAB. When not teaching and speaking, she works as a consultant, head of the BRC committee and member of The Danish Obesity Board. During the last few years Malene has participated at: Emwa Helsinki - Pain Management (Finland) May 2009, European Seating Symposium (Dublin, Ireland) September 2009, Annual
WHY WE DO THE THINGS WE DO? TRANSFER OF LEARNING TO CLINICAL PRACTICE

PATRICIA E. TULLY, OT
TIRR Memorial Hermann Hospital

LOIS BROWN, MPT, ATP/SMS
Invacare US

This presentation will explore what learning and teaching methods are being used to train those therapists becoming involved in this intervention. How is the service delivery model designed to retain and support the continued learning of the more experienced therapist? Data and feedback from therapists, and rehab equipment providers and manufacturers will be collected via survey/questionnaire. Decision making methods will be discussed; and a comparison of service delivery models will shared. Conclusions and recommendations resulting from the feedback can be used to enhance Mobility and Seating Service delivery programs. This information can be utilized to implement staff training as each therapist has responsibility to address mobility and seating equipment interventions.

References:


Speaker Bio:

Lois Brown, MPT, ATP/SMS is a physical therapist with 20 years experience, and the Rehab Clinical Education Manager for Invacare. Her professional experience includes adult and adolescent rehab and wheeled seating and mobility in several well-known rehab hospitals and wheelchair clinics in Philadelphia, PA. Lois also has extensive experience in working with clients with Brain Injuries, other Neuromuscular Diseases, Developmental Disabilities and Pressure Management. Lois has presented in national and international conferences on Wheeled Seating and Mobility and Assistive Technology, including the International Seating Symposium, European Seating Symposium, and RESNA conference. She holds an Assistive Technology Professional and Seating and Mobility Specialist Credential from RESNA, and professional memberships including the APTA and RESNA. Lois has been published in a variety of Rehab Publications and is considered an expert in her field.

Patricia Tully is an Occupational Therapist working at a TBI / SCI Model Center. She has worked in this profession 11 years in which she has mentored students and staff, presented various topics at a state & local level, performed program development and education, and acted as clinical specialist in developing an outpatient seating and mobility clinic.
THE MAT ASSESSMENT FOR SEATING AND MOBILITY
MARLENE HOLDER, PT
Holland Bloorview Kids Rehabilitation Hospital

The basis for any seating intervention is a comprehensive mat assessment. To achieve a thorough picture of your clients seating and mobility needs, it is essential to complete and comprehend each component of the assessment. This session will review the steps to a mat assessment while guiding participants to identify the rationale behind each assessment component and interpret how the results guide their decision making process.

Speaker Bio:

Marlene Holder is a physiotherapist working in seating services at Holland Bloorview Kids Rehabilitation Hospital. Her position is split between the outpatient seating clinic at Holland Bloorview and working on-site at The Hospital for Sick Children in a seating services partnership project. Her strong interest in the area of seating and mobility began 15 years ago while working at Sunny Hill Centre for Children in Vancouver. Marlene has presented at both local and international conferences.
WHEN GOOD CHAIRS GO BAD: WHY SEATING AND WHEELCHAIR MAINTENANCE ISN’T A BAD THING!
TRICIA GARVEN, MPT, ATP AND DOUG GARVEN
ROHO and TiLite

Why is my chair so hard to push? Why am I always falling over in my chair? This interactive program will offer insight into various types of seating and wheelchair adjustments and components that might change over time; and their effect on the wheelchair users function, safety, and health. Client education strategies on how to identify, when, and what routine adjustments and maintenance are necessary; thus, increasing the wheelchair users’ quality of life.

After a general overview of what defines adjustments and maintenance, and what the benefits can be, considerations to the wheelchair seating components; such as seat cushions, backrests, and other accessories will be discussed. Basic adjustments, readjustments and strategies to identify when the seating system is not performing optimally will be identified, along with the potential ramifications (poor posture, pressure ulcers, over use injuries) on the wheelchair user will be discussed.

Discussion of adjustments and maintenance will also focus on manual wheelchairs. Maintenance effects on chair performance will include; overall wheelchair alignment (are all 4 wheels on the ground, tire wear patterns), rear wheels/tires (inflation, axles spinning freely, toe alignment), front casters (free from hair, wobble, alignment), along with general seating components and their direct effect on perceived weight and difficulty using the wheelchair. The health and safety complications (poor posture, wheelchair efficiency, mechanical failures of the wheelchair) that may occur as a result of ignoring signs that regular maintenance and adjustments are required will also be discussed.

References:

Speaker Bios:
Doug Garven is the lead designer for new product development at TiLite, Inc. Doug trained as an industrial designer and has since been a leader in wheelchair design for over 20 years, designing for a variety of companies ranging from the large, well-established companies to small start-ups.

Tricia Garven, MPT, ATP is currently the Clinical Applications Manager for ROHO, Inc. Tricia has an extensive background in SCI rehab and seating, and now travels speaking on topics such as wheelchair seating, pressure imaging, and wound prevention at local facilities and various conferences.
IMPLEMENTING SMART TECHNOLOGY: THE REAL CHALLENGES
TINA ROESLER, PT, MS, ABDA
TiLite

KATHRINA PROSTKA, PT, ATP
Marionjoy Rehabilitation Hospital

In the past five to ten years, there have been a variety of advances in clinical tools that aid in the assessment and provision of seating and wheeled mobility. However, the implementation in the clinical setting is often challenging because it requires a paradigm shift for many therapists; time constraints and productivity requirements make it difficult for clinics to accept new technology and use it to its potential. This presentation will give examples of how to implement new assessment techniques for wheelchair propulsion and configuration and discuss real and perceived barriers to implementation.

Speaker Bio:

Tina Roesler has 18 years of experience as a Physiotherapist in seating and positioning. She is currently the Director of Education at TiLite, a manufacturer of ultralight wheelchairs. She has presented at a variety of conferences worldwide including ISS, RESNA, PMG, ARATA and Nordic Seating Symposium.

Kathrina is a Physiotherapist who currently works in the Seating and Assistive Technology Clinic at MarionJoy Rehabilitation Hospital outside of Chicago Illinois. She is responsible for seating and mobility assessments for out-patients and assists in-patient therapists with appropriate equipment provision. She also implements the use of new clinical tools related to seating and wheeled mobility. She is an active member of the Smartwheel User Group.
ALTERNATIVE ACCESS FOR MOBILITY AND COMMUNICATION

ARLENE JAMES, PT

Adaptive Switch Labs

Arlene James is a physical therapist with more than 15 years of experience in pediatrics. She earned her Masters degree in Physical Therapy from Texas Tech Health Science Center. She has practiced in a wide range of settings including, hospital, private practice clinics and the school district where she served as an assistive technology specialist in addition to proving physical therapy services. Arlene is certified by the university of Misericordia in Pennsylvania in pediatric seating. For the past eight years she has focused on providing severely involved clients access to power mobility, computer and communication devices.

References:

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Speaker Bio:

Arlene James is a Physical Therapist with more than 15 years of experience in pediatrics. She earned her Master's degree in Physical Therapy from Texas Tech Health Science Center. She has practiced in a wide range of settings including, hospital, private practice clinics and the school district where she served as an assistive technology specialist in addition to proving physical therapy services. Arlene is certified by the university of Misericordia in Pennsylvania in pediatric seating. For the past eight years she has focused on providing severely involved clients access to power mobility, computer and communication devices. Arlene is the Clinical Educator for Adaptive Switch Labs.
Bodies were designed to move. Once an individual is unable to move independently it is important that we consider seating and mobility systems that will allow for position change. Often seating alone in a mobility device cannot relieve pain, reduce negative effects of gravity or effectively redistribute pressure. There are many positioning systems built in to both manual and power wheelchairs to allow clients the opportunity to change position independently or with the assistance of a caregiver. These include tilt, recline, leg elevation, lateral tilt and standing. Clinically, there are a number of issues to consider during the seating evaluation and trial of equipment. Using a problem solving and goal-oriented approach will best assist the team to meet the client needs and achieve outlined goals. Method of propulsion or driver control is the first step in building a functional system. Then opportunities for position change can be considered. Using case studies this presentation will provide an opportunity to explore not only clinical but functional benefits of both power and manual dynamic positioning systems. A variety of client diagnostic and age groups will illustrate creative solutions for managing client’s physical and functional needs. The presentation will provide the client goals and perspectives around why and how they utilize their positioning options for functional tasks, activities of daily living and other reasons, not necessarily related to clinical/medical status.

References:


Speaker Bio:

Brenlee Mogul-Rotman is an Occupational Therapist and ATP who owns a private practice in the Toronto area. She provides assessment and treatment to a variety of client populations, most specifically brain injured and spinal cord injured clients. Brenlee has a special interest in the area of seating and mobility and is involved with manufacturers and vendors with product development, clinical trials and product application. Brenlee is a well known presenter and has presented internationally on various topics related to seating and mobility. Brenlee is a member of the Professional Standard’s Board of RESNA.

Kathy Fisher has worked with a variety of age and diagnostic client groups supplying primarily seating and mobility equipment. Kathy currently works for Canada’s largest equipment supplier as Clinical Educator, Seating and Mobility Specialist. Together with the company’s education team she has developed an education program for clinicians and business partners. Kathy has presented at a variety of international conferences.
IN PURSUIT OF PERFECT BALANCE

JAIME ZEHR
Quantum Rehab

LEE JOHNSON
Kids UP Quantum Rehab

Starting from the earliest wheelchairs sporting wicker seating and “bed pillow” augmentation, to today’s complex rehab seating rife with gels, air cells, and high tech fabrics, we have battled back and forth in pursuit of the perfect balance between clinical goals and sustainable mechanical longevity. Using the development of dynamic seating and principles as a descriptive process, a perspective is charted that provides a framework for evaluating durable medical equipment in relationship to clinical goals.

References:


1. “A Dynamic Seating System for Children with Cerebral Palsy” Michael E. Hahn, Sheri Simkins, Jacob K. Gardner, Gaurav Kaushik. Irving P. Herman


6. “Dynamic Seating Poised to Move Mobility Market Forward”; By Julie Sturgeon, Mobility Management, May 05, 2010

Speaker Bio
Jaime Zehr has a combined 15 years of experience in the Rehab Mobility Industry working as a seating and mobility equipment specialist with two providers, and has spent the last 10 years working as a Rehab Mobility consultant with Quantum Rehab. In her current role as Sr Rehab Product Manager she is responsible for rehab product development, sales and education throughout Ontario and Manitoba.

Lee Johnson joined the Kids UP Corporate team as Director of Marketing in 2009, prior to its acquisition by Quantum Rehab. He has traveled and presented extensively during that time as a specialist in Dynamic Seating Technology, speaking in DME provider and clinical environments as well as both the New Jersey and Los Angeles Abilities Expos. He is currently the Manager of Production, Planning and Control for Kids UP and is a part of the Quantum Clinical Development Department. He travels as a CEU presenter for Kids UP by Quantum in the areas of Reaction Dynamic Seating technology and pediatric mobility. In addition to his position with Kids UP, he is the founder and managing partner of Kingdom Strategic, a consulting consortium dedicated to the development of functional and dynamic corporate cultures.
TRANSPORTATION SAFETY FOR INDIVIDUALS WITH DISABILITIES

TERESA PLATT O.T. REG (MB)
City of Winnipeg Transit Department, Client Services Division

Education is one key role for occupational therapists working with clients, families, funders and/or other community stakeholders regarding transportation. Making an informed choice about safe, viable transportation is essential to all those involved in the process of obtaining a wheelchair intended for transportation.

Transportation:

The multifaceted issues of transportation have an effect on populations from pediatrics to geriatrics. No matter the demographic, or the agency providing transport, the goal remains the same – enabling safe transportation for wheelchair users.

Making an informed choice about safe, viable transportation is essential to all those involved in the process of obtaining a wheelchair intended for transportation.

There are a myriad of points to consider, that are familiar to therapists, regarding the wheelchair assessment process. There are the essential components of the assessment that is typical in a seating assessment such as determining the type of disability and the coinciding symptoms for an individual, if seating components are required currently and projecting for future use, the ROM available for an individual, the length of time during a day the client will be in the wheelchair, the ability for the individual to transfer, to name a few.

Another crucial component, which may not be as familiar to most, is to ensure a travel chain perspective is considered. The travel chain perspective moves beyond the individual positioned in the wheelchair to the actual mobility and function of the chair within the community and how the individual and their equipment will be safely transported.

When using these essential components; 1) the information from the seating assessment 2) the material from the travel chain perspective in conjunction with 3) the safety standards for mobility aids intended for transportation the therapist will be choosing the wheelchair that is safest and ultimately best suited for the needs of the client accessing their community.

As was stated earlier, education is key. The list below is but a few of the salient points to be considered when prescribing mobility aids intended for transportation safety for individuals with disabilities.

- Travel chain perspectives
- Transportation Safety standards within Canada (CSA)
- Wheelchair securement procedures and standards
- Occupant restraint procedures and standards
- Mobility devices designed and manufactured for transportation
- Key terms and definitions of equipment and safe transportation

References:

**Speaker Bio**

Teresa Platt is an Occupational Therapist involved in various roles and initiatives throughout Winnipeg. She works with the City of Winnipeg Transit Department supervising a team of dedicated occupational therapists involved in assessing applicants registering for Paratransit services with a strong emphasis on education and commitment to safe transportation for individuals with disabilities.
BEST PRACTICES IN PRACTICAL PRESSURE MANAGEMENT

JENNIFER BIRT, OT REG(MB)
Health Sciences Centre, Specialized Seating Services, Winnipeg, MB

Introduction
Seating therapists that work with individuals who require the use of wheeled mobility full-time are frequently consulted to address issues related to pressure ulcer development. In most situations, addressing seating issues alone will not eliminate the multitude of factors that have contributed to the pressure ulcer’s formation. Awareness and understanding of the clinical best practice guidelines for pressure ulcer prevention and treatment is only the first step to applying this information practically in a clinical setting. It is important for therapists to be aware that they have a large role to play in the functional application of pressure management practices and as a result need to be approaching pressure-related interventions in a more systematic way.

Pressure Management Best Practice
Several best practice guidelines exist regarding pressure ulcer prevention and treatment which provide healthcare professionals with a wealth of information and resources to be incorporated into their clinical practices. Upon review of these best practice guidelines several themes tend to emerge, including:

- Importance of identifying risk for pressure ulcer development
- Necessity of healthy skin habits
- Good positions are just as important as bad positions
- Repositioning schedules and support surfaces need to be individualized
- Importance of distinguishing between mobility that is effective and mobility that is ineffective
- Wound management and wound evaluation are critical components
- Nutrition plays a key role in pressure management
- Importance of managing extrinsic forces at the body-support surface interface

Bottom line: identify and treat the causes of skin breakdown

The Practical Side of Pressure Management
The challenge for therapists working with clients who have pressure issues is figuring out how to interpret and apply these best practice guidelines into a clinical context.

Practical pressure management refers to the application of best practice principles into the functional and environmental context of an individual’s life. This allows therapists to consider both the tasks that individuals carry out over the course of 24 hours as well as those they have the potential to learn and the impact those tasks have on the extrinsic factors related to pressure ulcer development.

Pressure Management Assessment Tool (PMAT)
The PMAT was developed in 2008 with the goal of providing clinicians with a practical framework for systematically investigating and evaluating the functional factors that commonly lead to pressure ulcer development from a 24 hour perspective.

The PMAT consists of 3 parts:
1. Part 1: The Interview- information gathering from client and/or caregivers regarding a variety of pressure ulcer causative factors. The purpose of Part 1 is to gauge a client’s level of insight and awareness into pressure management behaviours and to generate a list of red flags for those tasks and behaviours that are likely contributing to pressure ulcer development. Topics covered in Part 1 include:
   (a) Pressure ulcer history
   (b) Physical status
   (c) Positioning
   (d) Support surfaces
(e) Repositioning strategies  
(f) Mobility, friction and shear  
(g) Microclimate  
(h) Self-management behaviours  

2. **Part 2: Assessment** - clinical evaluation of the potential pressure ulcer causative factors discussed in Part 1. The purpose of Part 2 is to cross reference actual performance with what an individual reports to further gauge insight and awareness. This portion of the tool also allows clinicians to identify further red flags, problem solve potential alternative solutions, and target areas that should be prioritized for intervention. The assessments completed in Part 2 include:  
(a) Functional wound evaluation  
(b) Positioning evaluation  
(c) Postural screen in sitting  
(d) Repositioning evaluation  
(e) Support surface evaluation  
(f) Mobility, friction and shear evaluation  
(g) Cognitive screen  

3. **Part 3: Findings** - written documentation of the assessment summary and recommendations based on the outcome of Parts 1 & 2. The purpose of Part 3 is to:  
(a) Highlight key areas of concern  
(b) Explain changes that would be required to address pressure ulcer issues  
(c) Obtain necessary accountability and buy in from client and relevant team members  
(d) Prioritize the intervention strategies that can be implemented to eliminate these contributing factors  

By outlining the buy-in that will be necessary from clients themselves, as well as any other healthcare professional involved with that person’s care, there is an opportunity to get upfront accountability and clearer delegation for the interventions that will need to occur.  
This session will utilize a case study scenario to illustrate the PMAT and its application in a clinical setting. The importance of multi-disciplinary involvement and practical solutions for various healthcare settings will be discussed.  

**References:**  
7. *International review. Pressure ulcer prevention: pressure, shear, friction and microclimate in*

Speaker Bio:
Jennifer Birt is the Specialized Seating and Mobility Clinical Specialist at the Health Sciences Centre in Winnipeg, Manitoba. She has worked since 2001 and has specialized in the provision of seating services for SCI and complex adults for her entire career. Jen has presented at numerous local, national and international events on a variety of seating and pressure management topics. She is currently involved in several provincial and national initiatives related to pressure management practices across various healthcare settings.
CLINICAL CONSIDERATIONS OF CUSTOM MOLDED SEATING

JILL SPARACIO, OTR/L, ATP/SMS, ABDA
Sparacio Consulting Services

As with all seating and wheeled mobility evaluations, care needs to be taken to gather all pertinent information. Clinicians rely on that information to generate specific recommendations that will meet the consumer’s goals. When considering the use of custom molded seating, the evaluation process should be no different. However, the seating team needs to have a vision of the outcome, specifically the individual’s ideal posture that will facilitate optimal function and comfort. Many factors need to be considered that can lead to a recommendation for custom molded seating. These need to be addressed throughout the process instead of viewing the use of custom molded seating as a last resort. Care also needs to be taken to insure that the molding process and wheelchair set up is completed in the manner that will meet the team’s expectations of the seating.

When discussing the use of custom molded seating, a description of custom molded seating needs to be agreed upon. There are varying levels of custom seating. Customized seating refers to the modification/adaptation of ready made seating, altering leg length, accommodating a pelvic obliquity.

Custom made seating is seating that is fabricated per specific dimensions and specifications. In addition to the unique client measurements, specific foam types, coverings and shapes can be selected to meet the goals. Custom molded seating offers two different options – direct molded and indirect molded. With direct molded seating, the actual cushion is created around the consumer, using his/her body to create the shape. This includes foam in place processes. In-direct molding relies on the use of some type of simulation/shape capture. This can be done through the use of a variety of simulators, usually specific to the manufacturer of the system. Once the shape is captured and saved (through electronic files, plaster casting, etc), the data is then sent to the manufacturer for the production of the components.

The consideration of use for custom molded seating starts at the initial interview and data gathering phase of an evaluation. Previous, current and future diagnoses/conditions need to be explored. For individuals with rapidly changing needs, custom molded may be not the best option whereas a system that is modifiable might be a better choice. Other factors that need to be considered at this point include respiration, feeding/growth and motor status. A consumer’s age is significant in regards to product selection due to growth and skeletal change potential. The use of orthotics are also significant, often duplicating imposed postural support. However, if a body jacket is going to be used for a short time, that information can alter product recommendations.

During the initial interview, other areas need to be addressed. These include the consumer’s means of transportation as well as transportation options for the equipment. Transportation in a school bus is very different than having to break down a system for transportation in the trunk of a vehicle. The environments of use can be vital in the decision process as well. Since custom molded seating options often go hand in hand with tilt in space bases, if a consumer resides in a third floor walk up apartment, the use of a larger, heavier seating system may limit his/her ability to come and go as needed.

Once the interview process is completed, the physical assessment needs to be done. One of the obvious factors in product recommendations includes client measurements. Custom molded seating offers the ability to provide intimate contact for a 14” wide trunk with a 20” wide seat. Ready made components cannot offer this. The obvious rational for custom molded seating is for providing postural support and control for individuals with extremes of muscle tone and skeletal asymmetries.

When these asymmetries are fixed and severe, non-traditional seated positions need to be considered. At this point, a hands on assessment is required, identifying the need for total contact versus contact in key points of control. Pressure redistribution can also be managed more effectively through the use of custom molded seating without compromising postural support.
Additional factors that are available in custom molded seating include varying foams/surface material as well as coverings. Most ready made cushions come with few options while custom molded options often have different foam and covering options. Once a decision has been made to pursue custom molded seating, the specific type and specifications need to be addressed. Systems vary by manufacturer, each with its own benefits and drawbacks. Utilizing manufacturer representatives can help assist is selecting the most appropriate product. Varying levels of support can also be provided based on specific evaluation findings. This can be “tested” through the use of simulation during the evaluation process. Most simulators have the ability to maintain the desired shape while allowing the consumer to “feel” what the contact and support will feel like. During these times, offering functional tasks to the consumer help identify if function has been preserved or limited through an overly aggressive mold. Once the team is in agreement, the final shape can be captured and transferred to the manufacturer for the fabrication of the actual components.

At the time of delivery, custom molded seating systems can either be successful or detrimental just through the set up of the entire system. If client measurements, seat to back angles and ancillary support surfaces are not properly documented at the time of the mold, they usually lack in the final delivery. This results in unsuccessful seating. Consumers and families are often quick to judge comfort by the initial “sit”. However, with explanations that adjustments might be needed, the tweaking process can result in improved fit and alignment. It remains imperative that custom molded seating systems, like all complex rehabilitation technology, be delivered by the therapist and supplier who were initially involved in the process.

With the development of new custom molded systems, manufacturers have allowed seating and mobility teams to continue to seat individuals with extreme postural needs. More simple and beneficial uses of custom molded seating should not be overlooked for those with less involvement. Consideration of custom molded seating should be done throughout the evaluation process instead of merely as a last ditch effort when all other options fail.

References:


Speaker Bio:

Jill is an occupational therapist in private practice in Chicago, IL. A graduate of Western Michigan University, she has over 30 years of experience working with a variety of diagnoses. Currently, Jill provides consultation to long term care facilities for developmentally disabled and medically fragile children and adults. In addition, she provides clinical education for a leading seating and wheeled mobility company throughout North America and as well as international experiences. Jill is a faculty member for RESNA’s Fundamentals in Assistive Technology course, presenting both nationally and internationally. Jill has presented at numerous seating and mobility conferences. She is also involved with funding issues at both the state and federal levels. She is an executive board member of the Clinician Task Force.
PAEDIATRICS: INTERVENTION WITH ADAPTIVE EQUIPMENT

LORI POTTS, PT
Esopus Medical, LLC and Consultant, Rifton Equipment

This session discusses the evidence-base regarding the detrimental effects of immobility on physical health, and highlights the benefits of physical activity for bone, muscle, and joint development. The use of adaptive equipment to promote active mobility and postural development for children with severe disabilities will be explored. Functional purposes of adaptive products that promote ambulation and active sitting for health and participation will be explained, including positioning of accessories to optimize skill development and independence.

Immobility versus Physical Activity

This segment will contain research evidence as regards secondary impairments occurring with cerebral palsy and other neuromotor disorders that impact bone, muscle, and joint health. Research evidence and current trends in treatment approaches for severe neuromotor delay will be discussed, emphasizing the importance of physical activity, mobility, and fitness.

Applications of Adaptive Equipment

This segment will discuss adaptive equipment and the application of accessories to promote active muscle use and development during functional activities.

Questions and Answers

Questions, comments, and interaction will be encouraged throughout the session. Designated time at the end of the session will accommodate any unanswered questions.

References


Speaker Bio

Lori Potts PT is a certified MOVE International Trainer who works as a private practice physical therapist with Esopus Medical, LLC and has implemented MOVE with patients in PT practice. Since 1999, Lori has been a consultant for Rifton Equipment, providing online resources for consumers and clients, and conducting equipment-related workshops in the US, Canada, and Europe.
THE SHAPE OF THINGS TO COME: THE IMPORTANCE OF FRAME GEOMETRY TO RIDE CHARACTERISTICS

TINA ROESLER, PT, MS, ABDA
TiLite

While we often make frame selection based on the tangible items such as weight, number of options and, let's be honest, what we feel comfortable with, it is important to consider the design and shape of the frame as well. In the past 10 years, there have been a variety of material innovations in wheelchair design that allow us to make wheelchair frames lighter, stronger and better looking than ever before. With the wider variety of choices, we must look beyond the basics and consider the functional benefits and ride characteristics of the frame itself. During this presentation, we will look at a variety of factors: 1. Basic material science and the benefits of a variety of materials on wheelchair design 2. Configuration options: custom configuration vs. made to measure options 3. The engineering behind the frame: why do we offer a variety of frame styles and how do they differ in regards to ride characteristic, weight and style. In examining these items, we will identify a variety of frame styles and discuss the functional benefits that specific clients may gain from choosing one frame vs. another. It is not an attempt to identify the "best" frame type in general, but to broaden our understanding of manufacturing and design and how it impacts outcomes for the client.

References:


Speaker Bio:

Tina Roesler has 18 years of experience as a PT in seating and positioning. She is currently the Director of Education at TiLite, a manufacturer of ultralight wheelchairs. She has presented at a variety of conferences worldwide including ISS, RESNA, PMG, ARATA and Nordic Seating Symposium.
CONSIDERATIONS WHEN SEATING CLIENTS WITH DEMENTIA AND CHALLENGING BEHAVIOURS
CARMEN MURRAY, OT REG.(ONT.) & KATHERINE MOROS, OT REG.(ONT.)
Hamilton Health Sciences - St. Peter's Hospital

Seating in the population of clients with a diagnosis of dementia with behavioural disturbance can be a challenging prospect. The occupational therapist needs to balance many goals: comfort, function, safety and ensuring that the prescribed equipment can meet current and future needs due to the declining function that is expected from the diagnosis of dementia. This presentation will utilize the Canadian Practice Process Framework (CPPF) to describe the process of assessment, trial and prescription of seating and positioning equipment for this population. The presentation will focus on the importance and challenges of completing a MAT assessment with the clients; the clinical reasoning related to selection of equipment; the balance between the client’s physical presentation and behavioural management; meeting current and future needs; and discussion of risks related to equipment setup and use of restraints and positioning devices and strategies to mitigate the risks. The presentation will also include a description of the discussion that occurs between the prescribing therapist and relevant stakeholders (i.e. client, client’s POA, caregivers, LTC facilities) during the process to assist with identification of the client’s functional goals, caregiver’s goals and risks related to the client’s behaviours and cognitive impairment. The documentation and communication of the occupational therapist’s recommendations will also be reviewed. Two case studies will be used to highlight the application of this process in a clinical setting.

References:

Enabling occupation II: Advancing an occupational therapy vision for health, well-being & justice through occupation. Ottawa, ON: CAOT Publication ACE.

Speaker Bio

Carmen Murray is an Occupational Therapist on the Behavioural Health and Medically Complex Programs at St. Peter's Hospital. She has over 10 years of clinical experience.

Katherine Moros is an Occupational Therapist on the Behavioural Health Program at St. Peter's Hospital. She has over 25 years of clinical experience and is a leader in the development of an extensive falls management program and restraint minimization process within the organization.
CUSTOMIZED SEATING: GETTING YOUR HANDS DIRTY!
SHEILA BUCK B.SC.(OT), OT REG. (ONT.), ATP
Therapy NOW! Inc. Milton, ON, Canada
www.sheilabuck.ca

Learning Objectives
1. Identify parameters of seating/mobility devices related to asymmetrical shapes/limited physical capacity
2. Increase awareness of the ability to modify systems to enhance function
3. Understand techniques and measurements to utilize when creating custom modified systems.

Does contour, shape, size, performance, programming, and/or set-up make a difference when determining functionality as well as comfort and pressure management of a seating and mobility system? What happens when what is available doesn’t work, but you know that there is greater potential? It is important to review and understand the decision-making process utilized in determining what seating or mobility system will work when “standard off-the-shelf systems” don’t. How do you know if you can change things? How do you know what is available? Can you modify, adapt and create new systems that allow your client to move or sit comfortably and functionally? It is the clinical presentation of the clients, not the diagnosis in particular that will allow you to use your assessment/simulation data, to set up trial fittings required to achieve a final result. Utilization of “off-the-shelf” is the place to start, but not necessarily the place to end when designing custom configured systems. Critical techniques must be utilized in achieving the desired end result.

When prescribing seating and mobility devices, the support surface and chair design must address physical, perceptual, cognitive and social needs. However, in order to allow the person to then become functional and complete tasks other factors must be accounted for. A secure and comfortable seated position must be created in order for a functional movement to begin. If this does not occur, a client will tend to slide out of position during function. As a result, the client no longer attempts activity and often restraints are applied to “hold” them in the chair. Often, however, sliding or lack of activity and function may also be a result of poor chair set up and design related to propulsion, seating angles, and power driving control set up.

Determining if your client requires a contoured surface is often seen as a challenge when it doesn’t meet the generic shape of an “off the shelf” product, but does not need to be. Contoured seating can minimize the risk of peak pressures and shear on weight bearing surfaces, especially over bony prominences. It can also provide the best postural support and control where a generic shape does not match the client’s contours. By customizing the shape, it often decreases the need for additional lateral and anterior supports. Contoured seating is good for prolonged sitting where postural support and pressure relief is required, or for clients with inadequate sensation. Specific shape contours can also prevent friction/shearing from occurring from downward migration often seen with modular systems. As a result, the client no longer needs to “hold on” and therefore this frees their hands for functional activity. By following a critical pathway from assessment to prescription you will be able to identify the steps to follow when completing a more contoured customized seating system.

Prescribing Customized Seating And Mobility Systems
* be aware of basic postural and seating principles
* understand ergonomic and biomechanical principles for mobility
* complete a mat assessment
* test out and simulate posture and the support required to maintain that posture
* record body measurements and consider their impact on the seating and then on the mobility base
* consider environmental factors and system functionality for the client and caregivers
* simulate movements for propulsion whether manual or for power control and determine if changes are required for postural control
*think outside the box! If standard “positioning” doesn’t work consider alternate locations. With fully supported seating do the angles or orientation of the seating system need to change to maximize the use of gravity and centre of gravity positioning for mobility. What other areas of the body may work better for REPEATED and SUSTAINED activity ie. foot propulsion vs. hand propulsion, low arm extension mounts/midline tray mounts for power control.

The seating/mobility system must respect the client’s current bio/psychological needs, while allowing for potential change in the client’s status, the orthopedic limitations of the client, the contours of the body, the client’s level of function, the lifestyle of client and family/caretaker and the environment. When assessing a client for contoured seating it is important to look for potential areas that may be affected by alterations in their seated position. This may include at risk skin areas, tonal changes or contractures from long term tonal changes, reflexes (normal/abnormal) and the client’s use of reflexes in postural support, bony protrusions, respiratory and circulatory changes or changes in body position and orientation in space, incontinence, swallowing, eating, drooling problems, the client’s ability to sit unsupported, and finally the client’s ability to reposition or weight shift.

Contoured/custom seating may begin at the basic level of adding carved foam support to an already pre fabricated back shell. This is good for the client who requires minimal accommodation to back curvatures, but the overall shape of the back shell provides adequate support. This may also be seen as customizing an off the shelf cushion by adding additional adductor, abductor or obliquity pieces, or carving back one leg trough for discrepancies. Again this is good for the client who is more actively mobile or needs minimal adjustments in shape to match their contour or maximize their surface contact. If more aggressive accommodation is required, then custom forming the seating insert from a generic back/seat shell may be the way to move forward. Always consider whether or not the seating shape and size will change the dimensions and set up in the mobility base.

Often customization of systems occurs due to secondary functional concerns which may include transfers, transportability, and attendant supervised mobility. When completing customized seating/mobility systems, transfers and use of mechanical lifts and slings can become more difficult for care givers due to the close contact of the curvatures or changes in orientation and centre of gravity as well as positioning for access to power controls. It is important to consider how the transfer is completed prior to finishing a system in order to ensure that the transfer will be able to be completed such that the client ends up being where you need them to be consistently. Customization of seating can also impinge on catheter and condom drainage or urinal use if it is too contoured or these factors are not taken into consideration. Dressing a client can be more difficult if done in the seating system as the client cannot be shifted as easily. Custom seating systems may be more difficult to move and place in/out of a mobility base. Additionally customized mobility bases may impact the capacity to move around the home, and in/out of a van/car. Therefore the transport of a system must be addressed prior to finalizing a custom script.

The wheelchair should be considered for adjustable for centre of gravity, wheel access, floor access for foot propulsion which can be increased with slight anterior tilt. Seat depth and width will affect positioning as well as seat to back angles and overall chair orientation in space. Armrest height is important for trunk control and may need to be adapted higher or lower than “standard” armrest heights. Footrest positioning is very critical. Too often this is the last “set up” of the chair when indeed it may fully change the whole seated position. Consider under cuts on the seating with a shorter wheelchair seat/frame depth to allow for foot loading on 90 degree footrests, or custom hangar attachments which allow for the footrests to be angled to accommodate a windswept position.

When considering manual wheelchair mobility one must investigate varying methods of propulsion and the benefits of each and the requirement to maximize set up for performance. Ensuring the appropriate prescription and set up of a manual wheelchair will ultimately preserve function and posture, reduce the use of restraints and promote a sense of well being and quality of life for our clients. The prescription and functionality of lightweight adjustable axle wheelchairs, as well as manual dynamic tilt wheelchairs must be reviewed for safety, agitation reduction and self propulsion. When looking at chair frame design and weight it is important to remember the client’s balance point
within the chair as well as safety with propulsion. Remember that centre of gravity is affected by axle position, caster placement, and caster orientation and is with respect to the client’s centre of gravity when they are sitting in their final seated orientation and seating system.

It is important that trunk stability, skin integrity and transfers are assessed to determine the use of a power wheelchair. Once a cognitive, perceptual and full MAT assessment is completed, the client must also be assessed for back and pelvic supports that will maintain posture and balance points for driving access control. An assistive technology access site must be determined based on the client’s range of motion, consistency of positioning, fatigue, and repetitive coordination and strength at the access site. This site, usually at a distal point of the body, must then be supported proximally to maintain function without fatigue. However, if a site cannot be found distally...don’tgive up. There may be an alternate location that will provide more consistent driving capacity but may be “outside the norm” of where we traditionally consider site locations. The site access may be in more than one location if the client fatigues throughout the day and needs an alternate site of control. It is important to recognize the variety of controls available and how to mount these for maximum control of the client with respect to their wheelchair, seating and functional level. Just because there are arms on a chair, does not mean that a client may have the best control in a 90 degree elbow positioning. Driving trays, arm extension supports and drop mounts, midline positioning and lateral arm supports may all allow for improved driving capacity. Chair design (front, mid, rear wheel drive) may also influence the type of controls that are utilized based on the smoothness of drive, vibration reduction and decreased cognitive requirements, or simply for mounting equipment extras such as ventilators, oxygen, feeding poles, supply kits, etc. Utilizing secondary cognitive perceptual aids or attendant controls may be required initially to facilitate driving skills. These may include sensors for maintaining driving control for depth or peripheral perception and visual flags for depth perception/left neglect.

By considering that humans are dynamic, and function is a continual, ongoing process, customizing mobility and seating systems can allow a client to more easily travel through life’s many hills and valleys, but maybe not in the “norm” that we think of day to day.

Reference:

Speaker Bio:
Sheila is an Occupational Therapist from Ontario, Canada and has been actively working in the field of seating and mobility for over 20 years. She provides consultation, assessment and treatment in the area of seating & mobility, accessibility, and ergonomics, through her company Therapy NOW! Sheila has spoken extensively across Canada, the US and Ireland on seating and mobility issues. She has also authored, “More Than 4 Wheels: Applying Clinical Practice to Seating, Mobility and Assistive technology”, a practical guide to seating and mobility for dealers, manufacturers and therapists interested in the field of assistive technology.
BED SAFETY AND ENTRAPMENT – REFERENCING CORONER’S REPORT AND MEDICAL DEVICE GUIDELINE

TRISH DUNPHY
Quart Healthcare Inc.

Bed Safety and Entrapment is a growing concern throughout the health sector in North America. Injuries and deaths are increasing due to improper side rail positioning and ill-fitting mattresses.

In Canada, between 1980 and 2006, there were 51 reported incidents of bed entrapment with 26 resulting in death. In the USA, between 1985 and 2006, there were 691 reported incidents of bed entrapment with 413 resulting in death. This difference between numbers can be explained through population size, regulations and/or reporting requirements.

It is important to consider that entrapment usually occurs when a side rail and mattress do not fit together. Very rarely will you have entrapment risks without a side rail. Entrapment risks increase in areas with large gaps or openings where an individual’s neck, head or chest become trapped. These gaps or openings can be caused by mattresses that are not the recommended size, loose side rails and design characteristics.

Although there are 7 Zones of Entrapment, normally Zone 1 to Zone 4 are considered the most detrimental zones that can lead to a fatality. Zones 5 – 7 generally do not cause injuries that result in death. When testing a bed for areas of risk the norm is to test Zones 1 to 4, Zone 5 – 7 are optional.

Once a bed has been identified as an area at risk for entrapment there are several options available to correct this risk area. These range from gap fillers, bed bumpers, side rail covers, removing the rails, etc.

In 2010, the Chief Coroner for Ontario issued a press release stating that when choosing a therapeutic surface one must consider if the risk outweighs the benefit.

This is imperative and supports the idea that all parts of the bed (mattress, side rails and bed frame) must be viewed equally to find a solution if any risk does exist. It is also important for the bed and mattress manufacturer/importer and vendor would together with the caregivers to identify areas of risk and implement solutions.

**Speaker Bio:**
During the past 16 years, Trish has been involved in many aspects of the healthcare industry, including IT, administration, clinical software sales, reimbursement consulting and education. She joined Quart Healthcare in 2007 and established herself as a reliable, knowledgeable resource for therapeutic surfaces, bed safety and entrapment, and medical devices guidelines.

Trish is often contacted by facilities that have experienced entrapment events to review procedures and make recommendations. She has presented at CSMC in 2009 and 2010.
FACILITATED STRETCHING AND HOW IT WILL BENEFIT FLEXIBILITY, COMPLIANCE AND PNF PATTERNS
KEVIN DUGUAY DIP. HEALTH SCIENCES, ATHLETIC TRAINING AND MANAGEMENT, SPORTS REHABILITATION SPECIALIST
Newmarket Hurricanes Junior A Hockey Club

The purpose of this workshop is to show in both a theoretical and practical component how this active assisted flexibility technique will benefit the care of your client. The benefits of flexibility have been shown time and time again to play a key role in proper joint function and mechanics of movement.

The strategy for a successful home program and one that can be utilized by the patient and the health care provider is that it needs to be simple. The beauty and simplicity of this technique will be showcased in both the theoretical review and more importantly through the practical application in the workshop.

We will look at issues with cross body symptoms, postural syndromes and muscular dysfunction patterns due to inactivity and common muscular restrictions.

The practical component will be the majority of the presentation in giving you the participant ample time and opportunity to apply this technique with proper instruction to your partner. You will also be able to experience first hand how it dramatically improves range of motion with minimal effort on behalf of the patient and provider.

References:


Speaker Bio:

Kevin is currently the Head Trainer for the Newmarket Hurricanes Junior A Hockey Club. He is a Sports Rehabilitation consultant and is an instructor for the CPTN organization with their post rehabilitation courses. He has been practicing in the field of Sports Medicine for over 30 years.
Effective seating and mobility prescriptions are a combination of art and science. Dissemination of the science not only takes time to be integrated, but is sometimes absent in the clinical reasoning. The result is that solutions that are meant to solve problems are applied with good intentions, but with disastrous results. This session will take a look at commonly held beliefs in seating and mobility, apply science to dispel the myths and provide solid solutions to address the clients seating and mobility needs, based on current clinical and scientific theory.

**Speaker Bio**

Stefanie Laurence is an Occupational Therapist who has been working with people with special needs of all ages in a variety of settings and roles for over 30 years. She is the Education Manager for Motion Specialties across Canada. Prior to joining Motion Specialties, Stefanie was the Coordinator of Seating, Mobility and Equipment for all inpatients at the Bloorview MacMillan Children's Centre for 16 years. In this role, Stefanie gained a specialty in the area of custom seating and hands on experience with the full range of equipment, now with application in the home, long term care and rehabilitation settings. Stefanie is an experienced speaker in both North America and Europe.

Sheila is an Occupational Therapist from Ontario and has been actively working in the field of seating and mobility for over 20 years. Sheila provides consultation, assessment and treatment in the area of seating and mobility, accessibility, and ergonomics, through her company Therapy NOW. Sheila has spoken extensively across Canada, the US and Ireland on seating and mobility issues. Sheila has authored, "More Than 4 Wheels: Applying Clinical Practice to Seating, Mobility and Assistive Technology", a practical guide to seating and mobility for dealers, manufacturers and therapists interested in the field of assistive technology.
MOUNTING RESPIRATORY EQUIPMENT ON POWER WHEELCHAIRS

PAM MCCASKILL

Stan Cassidy Centre for Rehabilitation

Clients requiring power wheelchairs and respiratory equipment such as BiPAPs and ventilators can create a challenge for equipment prescription. The following challenges will be addressed:

- Where do we mount respiratory equipment on a power wheelchair?
- When the power chair has power positioning features such as tilt and recline, how do we maintain the physical orientation of the respiratory equipment?
- How does the respiratory equipment draw power on the wheelchair?
- If a client uses non invasive mouthpiece ventilation, how do we attach the tubing and mouthpiece so it is always reachable by mouth for a client with no upper extremity function?
- How do we address overall system length, balance, and home/vehicle accessibility?

Some case studies will be presented to highlight the differences between prescribing a new power wheelchair for a client on a ventilator (for instance, a client with a spinal cord injury in the cervical area) versus retrofitting an existing power wheelchair for a client progressing to using a ventilator or BiPAP through the day (for instance a client with neuromuscular disease). We will also discuss planning for future ventilation on equipment prescriptions for those clients not currently using ventilation but with a high probability of requiring daytime ventilation in the future (neuromuscular disease and ALS in particular).

Although this topic can seem overwhelming, it is not just an Occupational Therapist's role. Power wheelchair prescription for the ventilated client truly needs to be a team approach, where the input of the manufacturer, vendor, and respiratory therapist (either on the acute care team or with the agency providing the equipment) are essential.

References


Speaker Bio

Pam McCaskill is an Occupational Therapist with 15 years of experience. She works in the Adaptive Seating Service where she assesses, prescribes, and customizes seating and mobility equipment for children and adults across New Brunswick.
SENSORY SYSTEMS: A LOOK AT THE IMPACT OF SEATING AND POSTURAL SUPPORTS

JILL SPARACIO, OTR/L, ATP/SMS, ABDA
Sparacio Consulting Services

Sensory processing issues can impact all individuals in varying degrees. Included in this are those individuals with developmental impairments, making the seating and wheeled mobility evaluation process even more challenging. Although professionals often look at basic sensory function, i.e. vision and sensation, other sensory systems are often overlooked. These include tactile, proprioception and vestibular function. In consumers with developmental impairments, these systems can dictate movement, mood and orientation in space. In order to fully understand the impact, one must understand the basic functions of these systems.

Sensory processing is a complex neurological process that organizes sensations from one’s own body and from the environment, making it possible to use the body effectively within his/her environment. This is also the goal of seating and mobility systems – the provision of specified equipment that leads to improved function and interaction with one’s environment. A sensory processing disorder allows for misinterpretation of everyday sensory information. As a result, a nervous system becomes overwhelmed and unable to use the information as designed. According to A. Jean Ayres, PhD, there are 4 steps of sensory processing: 1. The ability to relieve or take in sensory stimulation; 2. The ability to interpret the stimulation; 3. The ability to process the stimulation into a purpose response and 4. The ability to adaptively respond to the stimulation. With individuals with developmental impairments, there is often malfunction at some point in the cycle. Previous studies have shown that 1 in 20 children experience sensory processing disorders. This number appears much higher in those with developmental impairments however actual statistics cannot be found.

With all sensory systems, individuals can have a hyper-responsive (over active) or hypo-responsive (under active) response. The extremes are both equally disruptive in one’s ability to function. In those with hyper-responsive reactions, so much sensory input is received that the nervous system is unable to discriminate and use the input effectively. With hypo-responsive responses, the input needs to be heightened in order to make an impact on the nervous system. These reactions are common with the tactile, proprioceptive and vestibular dysfunction.

The tactile system is the largest sensory system in the body. With receptors located throughout the skin, the tactile system helps us perceive our environment. Receptors offer information regarding touch, pressure, temperature and movement of hair on the skin. Receptors are much more prominent in the fingers and around the mouth and nose area. Within the tactile system, there are 2 different components: discriminatory and protective. Protective responses are designed to protect from danger while discriminatory responses help one understand the world. Individuals with hyper-responsive responses often react negatively to unexpected touch. Emotional outbursts can occur as the stimulus is viewed as noxious. The fight or flight response is then triggered. Hostility and withdrawn behavior can be observed, pulling into oneself to protect against the unexpected contact. The brain attempts to respond to all tactile input that it gathers, causing overstimulation. Once this occurs, the brain becomes very disorganized. As a result, all other sensory systems can be impacted.

Hypo-individuals often crave extra stimulation and gain it through constant touching of others or objects, show decreased responses to pain and decreased awareness around the mouth/nose. In an attempt to play, they may hurt others through their tactile interaction, grabbing for or playing with others. On the other hand, they might drop things without awareness. In individuals with developmental impairments, these areas are heightened and can create further issues as their cognitive abilities often lack the ability to compensate. Tactile defensiveness can lead to oral motor difficulties with avoidance of particular textures. Because of the increased number of receptors in the hands and face/mouth, washing of these areas can be distressful. The nervous system often
interprets touch contact as pain however the individual may be very attached to objects that offer
certain sensory input through favorite blankets, toys, etc. To assist, the use of deep pressure can be
easier to process. It is often more calming and organizing than light touch.
When providing seating and positioning services to those with tactile issues, care needs to be taken
to insure that the support surfaces do not over or under stimulate the individual. Cushion mediums
and surface coverings need to be considered throughout the evaluation process. A foam that is very
soft will result in greater immersion increasing the total amount of contact the consumer will receive.
The surface cover might feel soft to caregivers however if it is interpreted as noxious to the consumer,
behavioral changes and desire to use the equipment might result. Since these factors are integral to
the recommendations of final products, consideration needs to be given to these issues throughout
the process.

Proprioception is another frequently overlooked sensory system. Latin for “one’s own” perception, it
provides a sense of relative position of body parts and the strength of effort being employed in
movement. Although almost as large as the tactile system, proprioceptors are located in muscles and
joint surfaces. Through the contracting and stretching of muscles and the bending, straightening, pull
and compression of joints, input is received by the receptors and transmitted through the spinal cord
to the cerebellums and cerebral hemispheres. Although most of this information goes unnoticed, it
allows individuals to know where his/her body is in space as well as how to move it. Proprioception
is needed for the learning of and execution of all motor tasks. There are times when cognitive attention
is paid to proprioceptive information. This occurs during the learning of new motor tasks or correction
of a motor task. This system works hand in hand with the visual system; if visual limitations are
present, the balance of the proprioceptive system will be upset. The terms kinesthesia and
proprioception are often used interchangeably.

There are differences. Kinesthesia provides the awareness of position and movement of body parts
using sensory organs. It focuses on body movement and tends to be more behavioral. Proprioception is a more cognitive awareness of the body’s movements and position. Impairment of
this system can occur during growth, body building or when increased range of motion is present in a
joint. The new ranges need to be experienced in order to gain a benefit from it. Individuals with
developmental impairments have a difficult time providing the cognitive focus on proprioception,
leaving him/her with a limited sense of self. If unaware of one’s body, skill in movement cannot be
developed.

As with other sensory systems, hypo or hyper-responses can be observed. For individuals with hypo-
responsive proprioceptive systems, additional movement to increase stimulation is needed. From a
seating perspective, rigid and firm seating components tend to offer limited input. On the other hand,
softer and less stable seating components can lead to increased movement while in the seated
posture, enhancing the proprioceptive feedback.

The vestibular system contributes to balance and one’s sense of spatial orientation. With the
receptors located in the inner ear, the vestibular sense is key in the development of balance,
coordination, eye control, attention and relates ultimately to some aspects of language development.
The receptors for the vestibular system are activated through rotational and transitional movements of
the head. The sensory feedback is directed to the visual system, assisting in keeping one’s position
upright. When visual limitations are present, vestibular function is often limited. In consumers with
developmental impairments, vestibular dysfunction often results in a forward head position that is
difficult to impact. Other issues observed include head shaking, rocking or spinning in attempts to
provide extra input to the vestibular receptors. Dysfunction in the vestibular system can cause
anxiety, nausea and muscle tone abnormalities.

To address vestibular dysfunction in individuals with developmental impairments, the use of dynamic
components in mobility bases can offer additional proprioceptive stimulation to help modulate a
consumer’s imbalanced system.
Due to the nature of somatosensory processing, many of these systems overlap with other systems. It is difficult to fully isolate the cause of the dysfunction as well as identify the proper course to provide solutions. Because of this overlapping, seating and mobility solutions are often similar.

**References:**

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Eat, Breathe and Move. A 2 day course looking at a review of the impact of seating and immobility on basic body function. Sponsored by Freedom Designs, Pindot, Altimate Medical.
Faculty.Washington.edu/chudler/twopt.html


**Biography:** Jill is an occupational therapist in private practice in Chicago, IL. A graduate of Western Michigan University, she has over 30 years experience working with individuals with developmental disabilities and medical fragility. In addition, she provides clinical education for Pindot as well as RESNA. She has taught extensively throughout North America as well as internationally. Jill has been involved with funding issues at both the state and federal levels.

**Speaker Bio:**

Jill is an Occupational Therapist in private practice in Chicago, IL. A graduate of Western Michigan University, she has over 30 years of experience working with a variety of diagnoses. Currently, Jill provides consultation to long-term care facilities for developmentally disabled and medically fragile children and adults. In addition, she provides clinical education for a leading seating and wheeled mobility company throughout North America and as well as international experiences. Jill is a faculty member for RESNA's Fundamentals in Assistive Technology course, presenting both nationally and internationally. Jill has presented at numerous seating and mobility conferences. She is also involved with funding issues at both the state and federal levels. She is an executive board member of the Clinician Task Force.
MONITORING PATIENT REPORTED OUTCOMES FOLLOWING WHEELCHAIR ATTRIBUTIONS USING AUTOMATED CALLS: THE EXPERIENCE OF A CLINICAL COORDINATOR IN THE MOVIT PILOT PROJECT

ÉLISE JOBIN1,2, CLAUDINE AUGER2,3

1Constance-Lethbridge Rehabilitation Centre, 2Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal, 3Université de Montréal

As wheelchair providers, our concern should be to give the appropriate equipment to users in order to enhance autonomy and maximize mobility. A recurring question is: how many of our clients use them to their maximum potential? Being involved as a clinical coordinator in the Mobility Outcomes via Information Technologies (MOVIT) research project was an opportunity to search for answers to that question, and to objectively identify problems requiring our attention, in order to enhance the safety of our clients and the quality of our services.

Background

The purpose of MOvIT is to optimize mobility and community participation of older wheelchair (WC) users, by systematically monitoring outcomes using computerized calls. The MOvIT monitoring questionnaire addresses nine potential adverse WC outcomes (pain/discomfort, skin condition, positioning, incidents, WC skills and knowledge, psychosocial distress, device satisfaction, restricted WC use, and non-use). One of the challenges in designing computerized automated calls was to maximize the usability of the monitoring intervention by clients and clinicians. The main objective of this presentation is to report the perceptions of a clinician who participated in the pilot study.

Methods

The new monitoring intervention was pilot tested by 3 clinical coordinators with 71 adults between 50 and 90 years of age. The screening questionnaire was programmed with an interactive voice response system (IVRS) to allow participants to answer pre-recorded questions on the phone, either verbally or using the number pad. Calls were sent out 1 and 3 months after their manual or power WC delivery. Specific answers to the questions were automatically identified by the system as requiring clinical assistance, in order to offer an intervention to optimize the use of the WC.

Results and discussion

The results showed that 77% of eligible individuals accepted to participate and 92% of them completed the study. The potential adverse WC outcomes that were most frequently identified by the system were: technical problems, dissatisfaction with the device, pain, and positioning issues. The types of recommendations made by the clinical coordinators involved mainly clinical revision, mechanical revision and referral to other services.

The monitoring intervention created a number of opportunities such as providing feedback to clinicians about the outcomes of their interventions. It also allowed reaching clients that would not contact their rehabilitation center otherwise, highlighting service delivery process weaknesses, and identifying adverse outcomes related to specific WC models and WC components. We observed opportunities for a better continuum of care through problem solving and orientation of clients towards appropriate resources according to their needs. The fact that three rehabilitations centers shared this experience created new connections between the clinical coordinators and it led to the idea of creating a network in this field of intervention.

Some of the challenges encountered were communicating with elderly WC users with multiple comorbidities and defining the involvement of the clinical coordinator in the monitoring intervention.
Communication was an issue when the clinical coordinator called back participants to validate the call result. For example, it was sometimes difficult to reach clients during working hours, or caregivers insisted on answering on participants' behalf. Some of the clients had speech impairments or cognitive limitations that limited their ability to understand the goal of the monitoring calls. Some calls raised issues that were not related to the WC delivery. This led the clinical coordinators facing issues where they had limited information to judge about the appropriate intervention to suggest.

**Conclusion**

In conclusion, the clients were willing to participate in a monitoring program and it had positive impacts on improving the usage of their WCs. The clinicians had feedback about their interventions and felt it lead to improvements in the service delivery process. Collecting routine follow-up data that encompasses multiple WC related issues would be important and novel in our field of work, since healthcare teams rarely know if they are meeting their client’s mobility needs beyond the WC delivery.

**References:**


**Speaker Bios:** Élise Jobin is an Occupational Therapist who has been practicing since 1998. She has worked in the Technical Aids Department at Constance Lethbridge Rehabilitation Centre since 2001 as an Occupational Therapist and Clinical Coordinator. Her field of expertise is the prescription of mobility aids and positioning devices, specifically with a geriatric population. She is a guest lecturer at McGill University. She has been involved in the MOvIT project since 2011. Élise also holds a masters degree in health law and policies.

Dr. Claudine Auger is an Associate Professor in the Occupational Therapy Program at Université de Montréal. She has completed a postdoctoral fellowship in epidemiology and biostatistics in 2012 (McGill University) and is part of the CanWheel research team led by Dr. William Miller (University of British Columbia) since 2009. Her present research focuses on the measurement of rehabilitation outcomes in older adults (instrument development and rehabilitation outcome indicators), and the use of information technologies to systematically follow-up on the impact of mobility assistive technologies. She is the primary author of the MOvIT intervention.
A keystone is something on which associated things depend for support. In any seating system, the back support is the keystone on which posture, pressure physiology & function depend. Understanding the relationship between the pelvis and spine is the basis for comprehending the asymmetries and orthopedic changes which can occur in seated posture. For example, if the consumer sits kyphosed or oblique with a scoliosis, we determine if the orthopedic change is fixed or flexible. Based on that, the approach is accommodation of posture or correction.

In many rehabilitation settings, close attention is paid to the wheelchair prescription. Several different mobility bases may be trialed and a variety of seat cushions may also be evaluated. Just as important, perhaps even more important in the assessment process is the back support.

In 1988, Shields and Cook examined the effects of both seat angle & lumbar support on the seated buttock pressure of 20 able-bodied individuals. They found that the use of lumbar support reduced the seated pressure at the ischial tuberosities. Since then, other studies with able bodied and non-able bodies subjects have supported those findings (Makhsous, et al, 2003, Sprigle, S, Wootten, M. et al). My own experience as a prescribing clinician and as a rehabilitation technology supplier further validated these published findings. In discussions with consumers and consumer-providers with the field, I continue to hear similar philosophies.

The pelvis is undisputedly the basis of seated support. Structurally it is the point of primary interface with the wheeled mobility device. But the pelvis is not alone; the lower extremities provide increased stability and weight distribution while the torso and upper body extend vertically from the pelvis with 360 degrees of possible deviation. Pelvic stability is not simply from a contoured seat surface. For the vast majority of consumers who utilize wheeled mobility devices, some type of posterior support is required.

Stabilizing the pelvis requires applying support at the level of the posterior superior iliac spine. In most instances, failure to apply contact at the PSIS would mean the back support was above the pelvis allowing room for the consumer’s pelvis to rotate anteriorly and possibly to slide posterly (beneath the back support). When the PSIS and lumbo-sacral spine is stabilized, additional parameters must be accessed and specified.

Back support angle influences trunk stability in the sagittal plane. The majority of ‘after-market’ rehab focused back supports have some amount of angle adjustment via the mounting hardware. The amount of back angle (open or closed from a ‘neutral’ 90 degree orientation) will have a direct bearing upon static & dynamic trunk stability and therefore many functional activities.

Back support height also affects stability in the sagittal plane. The shape of the top of the back, the contour through the vertical aspect of the back support and the orientation of the back support in relation to the vertebral levels and scapula all impact the spinal alignment orientation of the body in the sagittal plane. If the back height is too high, the consumer may be unable to sit with an upright posture. Their upper trunk may be forced anterior. A back height that is too low may not provide adequate thoracic support and the consumer’s upper body may fall over the back support with the head and shoulder girdle moving posterior of their pelvis.

Back support circumference determines trunk stability in the coronal or frontal plane. Back supports are available in planar and contoured variations. The consumers’ thoracic radius can be matched to a
similar back support radius with consideration for the amount of lateral thoracic support the individual requires.

Poor seated posture can lead to orthopedic issues, but keep in mind that there is much more going on than structural changes. Seated posture influences physiological systems; respiration, digestion, circulation, bowel and bladder function, skin integrity and active range of motion can all be effected. Research has identified the importance of seated posture to all of these bodily functions.

Posture also impacts the performance of functional activities such as propulsion and transfers. In addition, skin integrity is impacted by pressure distribution and is also dependent upon physiologic systems to maintain or regain that integrity.

All aspects of posture, support, pressure and function must be considered in the equipment selection process. Because these factors are interrelated and often influence each other, it would be shortsighted to think of seating & positioning as simply 2+2=4. Understanding the relationship between the pelvis and the spine is crucial to maximizing the benefit of the cushion as well as the mobility equipment.

References


WORKING WITH A REHABILITATION NGO IN HAITI: COALEScing
AS A TEAM TO PROVIDE SEATING AND TEACHING TO SOME OF
THE WORLD’S MOST VULNERABLE PEOPLE.

BRENDA MACALPINE
Stan Cassidy Centre for Rehabilitation, Fredericton, NB

Background

Volunteerism, has expanded beyond the borders of our country for many clinicians across Canada. Not for profit organizations provide a mechanism to assist in this endeavour. One in particular is Canadian originated and based, Team Canada Healing Hands (TCHH). TCHH is a not-for-profit organization dedicated to the provision of rehabilitative education, training, and care in areas of need. It was founded in 2002 and has deployed several teams of professionals annually since inception to teach and provide rehabilitation services in areas of need.

The needs driven approach.

The first ever World report on disability, produced jointly by WHO and the World Bank in 2011, suggests that more than a billion people in the world today experience disability. People with disabilities have generally poorer health, lower education achievements, fewer economic opportunities and higher rates of poverty than people without disabilities. This is largely due to the lack of services available to them and the many obstacles they face in their everyday lives. In many poor nations, medical care and rehabilitation services for people with disabilities are less than optimal or simply do not exist. This is due in part, to a lack of training for health professionals in the provision of appropriate medical care and rehabilitation services for people with disabilities. There is a pressing need to develop the capacities of a variety of trained health professionals and training institutions in this area. (World Bank. 2011. Main report. Vol. 1 of World report on disability)

Since 2002 TCHH has deployed several teams annually to address some of the needs for education about and provision of rehabilitation. With a mandate, as listed below, it is a well developed provider of services geared towards achieving the suggestions of the World Report on Disability.

The TCHH mandate is indicated as follows on their website:

To organize and conduct international rehabilitation outreach projects, with a focus on training, in areas identified as having a need.

To increase education about disability and rehabilitation in underdeveloped and developing regions.

To create opportunities for Canadian rehabilitation professionals and skilled volunteers who are willing to volunteer time and/or resources to projects in underdeveloped and developing regions both nationally and internationally.

To provide support, via partnerships with non-government organizations in areas of need, to children and adults with disability to obtain education and rehabilitative care. (www.tchh.org)

TCHH began in 2002 when Healing Hands for Haiti International (HHHI), an American based NGO, contacted Colleen O’Connell, a physiatrist in Fredericton, NB. They were hoping to recruit some Canadian volunteers to help with teaching and providing rehabilitation services in Haiti. With that contact, a spark was lit that would lead to the development of a separate Canadian based NGO that would go on to have great impact in Haiti and other nations.

TCHH has grown to include volunteers from across Canada and teams are deployed several times per year with different goals in mind. Some teams assist in the training of therapy assisstants and
clinicians through partnership with HHHI and other organizations. In the past three years this author has participated in a variety of roles in Haiti from that of teacher/mentor to clinicians in stroke rehab, seating for SCI clients as well as for children with a variety of congenital diagnoses, and to assist with teaching of SCI management workshops. These are only a few of the varying roles fulfilled by team members from all rehab disciplines. The clinical roles vary by team deployment and as such a broad skill base is being cultivated through the volunteer list. Volunteering does not mean you must leave the country to help TCHH. Within Canada, equipment repair, storage and shipping and fundraising have been familiar roles for many volunteers.

TCHH has developed beyond the role of service provider and teacher blossoming into an organization with a focus on helping Haiti develop an in country, sustainable rehabilitation plan. For more details on this one can explore the website www.tchh.org.

This paper was developed for presentation at the Canadian Seating and Mobility conference in 2013 with the theme of “Engage” in mind. It is to explore the opportunity to engage in volunteer work within the special skill set of seating. Volunteering within your realm of expertise to share your specific skills can help shape the knowledge base of local clinicians to then engage them to impact future generations of Haitians.

The wheelchair is one of the most commonly used assistive devices for enhancing the personal mobility of people with disabilities. An estimated 1% of the world’s population, or just over 65 million people, need a wheelchair. In most developing countries, few of those who need wheelchairs have access, production facilities are insufficient and wheelchairs are often donated without the necessary related services. Providing wheelchairs that are appropriate, well-designed and fitted not only enhances mobility, but also opens up a world of education, work and social life for those in need of such support. (Guidelines on the provision of manual wheelchairs in less resourced settings.)

This quote provides the perfect segue into the topic at hand. Seating in Haiti and other developing nations provides an opportunity for a multidisciplinary team to coalesce around the specific goal of providing, appropriately fitted, functional seating. If disability is worsened by poverty you can only imagine the impact it has on a disabled orphan in the poorest country in the western hemisphere. Consider the impact of a properly set up wheelchair on such a child’s life. It allows these children to engage in life on a different level.

In 2011 and 2012 a team specifically identified to address seating needs was deployed to Port au Prince to provide seating services mainly for children living in orphanages or attending schools. In 2012 approximately 60 wheelchairs and a tremendous amount of seating products were shipped to Port au Prince and provided to children who either had ill-fitting solutions to seating or no seating/wheelchairs at all. At a school, adolescents of varying sizes were carried to clinic by parents in hopes of getting their first chairs ever. It would be the first opportunity for some to be supported in an upright position while they interact with their environment.

To facilitate seating team deployments, wheelchairs and seating products are gathered through donations from individuals, companies and departments by the seating team members. These products are well refurbished used or new. As necessary, the equipment is repaired, inventoried, stored and then shipped by the team in advance of their arrival in Haiti. This requires a significant amount of time and effort providing an opportunity to volunteer within Canada for TCHH.

On the ground in Haiti, seating teams work very long hours in hot conditions to provide life changing systems to some of the world’s most vulnerable people. Each discipline relies on the other like a well-oiled machine as it plows through need after need until they run out of product or time. Seating teams of physiotherapists, occupational therapists, general volunteers and most critically, seating technicians are an impressive force to watch descend upon a lineup of children in need. Seating technicians’ combined skill in product knowledge and adjustment soars to the forefront of required team members for successful seating teams. Adjusting and set up is an all play type team activity but the efficiency and effectiveness of a skilled technician (most of our techs are actually vendor sales people) is critical to the effectiveness of a seating outreach team in Haiti.

**Conclusion**

There are many NGO’s that welcome the expertise of rehabilitation professionals around the world. This paper briefly outlines the roles within one NGO. The opportunity to engage in a volunteer role within your field of expertise can be very rewarding for you and the recipient of your knowledge and skills. To engage in your profession away from the bonds of email, telephones, faxes, pagers, stats
and overwhelming amounts of paperwork can be remarkably refreshing. Add to this the tremendous change you can make in so many lives and you come away with a renewed sense of purpose. A week can be life changing.

References:


3. Team Canada Healing Hands website www.tchh.org

Speaker Bio

Brenda is an OT working in outpatient, adult neuro in a tertiary neurorehab center. She recently became a board member for Team Canada Healing Hands.
MICROPOINT STIMULATION FOR ENHANCING MOBILITY AND OVERALL FUNCTION
TAMRA ELLIS, OCCUPATIONAL THERAPIST
CENTRE FOR REHABILITATION AND HEALTH

Linda is a 65 year old female, with a 21 year history of diabetes, CVA with resultant left sided weakness 4 years ago, and uterine cancer surgery 30 years ago. She had a right BKA (below the knee amputation) about 1 year ago secondary to decreased blood flow. Prior to the amputation her MD’s tried to restore blood flow by surgical intervention to the upper mid thigh. This was unsuccessful and she underwent amputation surgery 11/29/11. About this time her left lower extremity started to turn red. She had progressive decreased use of her foot. She called it her “dead foot” and it was on the same course as her right foot had been on prior to the surgery. She was resigned to the fact that it too would have to be amputated. The MPS clinician, David Lust (PT), my colleague in Florida saw her initially about four months ago when she returned home from the hospital secondary to an infection of MRSA in the right BKA. It was about this time that he had ordered the MPS machine from one of the course advertisements. On his first home health visit with her, she complained of generalized pain of her right BKA stump.

A single treatment of Gb31, Gb34, extraordinary paired points Xiyan, as well as extra point Heding resolved the pain. When he returned two days later, she reported the knee pain was gone and she no longer needed to take her pain meds for the knee pain.

Initially when he saw her left foot he didn’t want to touch it because it looked so bad. She had trace movement in her big toe only. He treated most of the points on her foot, especially the Jing Well points, as well as St36, Sp6, and Gb34. She was very responsive to treatments and at times during treatment her entire leg would rise up in the air like it was possessed. They called this the exorcist reaction.

David saw her 3x/week and each time he returned her foot looked better. She soon began to get increased movement, as well as increased sensation and a normalization of the color of her foot. Liv3, Gb34, SP6, all seemed to have very powerful effects with her. She was very pleased and eagerly awaited his return visits with her.

It was a few weeks into treating her that he took the introductory MPS class. He learned about scar release at the course, and purchased a second MPS machine.

It was about this time that she asked if something could be done about a pain that -rather unbelievably- she had been suffering with for the last six years. She would consistently be awakened two to three times a week with “horrible, horrible pain” on her left inguinal region around Gb28. When she inquired about this pain to doctors they would say perhaps she “pulled a muscle” or had slept wrong. An ultrasound had revealed no abnormalities. Upon examining the painful area I noted a horizontal scar running the entire length of her abdomen which was a result of a uterine cancer surgery performed approximately thirty years ago. The pain was located just below her abdominal scar. He did a scar release utilizing the two MPS units to repolarize the region of the scar and treated
the local ahi shi point which coincided with Gb28. He has since learned that this is an important point on the Girdle Vessel (one of the eight extraordinary vessels), which encircles the leg channels, and if impaired, can lead to decreased circulation in the legs and feet. Following this treatment she has not had any reoccurrence of the pain, which at the time of this writing is now approximately six months. Her excitement with this result equals that of her leg being saved from amputation.

She had her initial fitting of a prosthesis in mid November 2012. She is very excited about beginning to walk again. She now has dorsiflexion to all of her toes and is improving with her ankle dorsiflexion to where she no longer needs to wear an AFO (ankle foot orthosis). She also had some flexion lag in her left index finger that has markedly improved with MPS treatment, enabling her to fully grip her walker for her initial gait training with her prosthesis.

She has just recently asked if anything could be done for her daughter who suffers from severe migraine headaches, and that no MD has been able to help her with. I assured her that MPS treatment has had remarkable success with migraines and look forward to helping her daughter with this soon.

**Speaker Bio**

Tamra Ellis is an occupational therapist who has been practicing MPS for approximately 5 years with clients with chronic pain. She is certified instructor for introductory MPS training. Tamra is the Owner of the Centre for Rehabilitation and Health and has been successfully using MPS and psychosocial intervention to help clients with chronic pain regain quality of life and productivity and ultimately return to work.
MOBILITY EQUIPMENT: FUNCTION, COMFORT AND APPEARANCE
JOE THIEME
Amigo Mobility International, Inc.

Our goal is for people to look good, feel good and be fully functional in their mobility equipment. As a certified ATP, Joe Thieme focuses on providing function, customization and specialized seating for manual wheelchairs, power-operated vehicles (POVs)/scooters and power wheelchairs.

Outline

1. Important body measurements
   a. Seat depth & lower leg
   b. Hip measurement
   c. Chest
   d. Top of back
   e. Top of lateral
   f. Hip flexion
   g. Spinal cord flexion & deformities

2. The manual wheelchair – how to apply measurements taken above to wheelchair
   a. Seat depth & lower leg
   b. Top of wheel bottom to elbow
   c. Center of gravity
   d. Chair width & depth
   e. Back height
   f. Front wheel vs. rear wheel
   g. Size of wheels
   h. Rigid vs. folding frame
   i. Tilt & recline
   j. Armrest, mudguards, footrests

3. Seating & positioning
   a. Solid seat
   b. Back support
      i. Adjustable tension back
      ii. Straight back, biangle, 3-plane, reverse biangle
      iii. Foam in place & contour molded
   c. Pelvic support
      i. Pelvic belts, single, dual pull
      ii. Rigid pelvic stabilizer
      iii. Research on rigid pelvic stabilizer
   d. Body supports
      i. Hip blocks
      ii. Rigid, swing away, sliding trunk
      iii. Pommels
      iv. Knee blocks
   e. Head support
      i. Contoured head support
      ii. Occipital bar
      iii. Head & neck total support
   f. Harnesses
      i. Butterfly, fastex & cam buckles
      ii. Chest pads
      iii. Back pack
      iv. Rigid shoulder pads
g. Pressure cushions  
   i. Air  
   ii. Gel  
   iii. Honeycomb  

h. Miscellaneous items  
   i. Trays  
   ii. Foot straps  
   iii. Elbow pads  

4. Motorized chairs  
   a. 3-wheeled motorized vehicles  
      i. Swivel seat  
      ii. Maximum wheel base for function  
      iii. Power seat lift  
      iv. Transportability  

5. Power wheelchairs  
   a. Joystick placement  
   b. Alternative controls  

6. Alternative motors  
   a. Seat to floor  
   b. Power seat lift  
   c. Standing

**Speaker Bio:**

Joe Thieme has conducted numerous workshops and lectures in North Carolina, Michigan, Illinois and Florida and has been a featured speaker at the National Spina Bifida Conference on proper wheelchair fitting for the last several years. Thieme’s passion for providing the right product for the individual began when caring for his mother. Diagnosed with multiple sclerosis at a young age, Marie Thieme often relied on an Amigo POV/scooter for mobility, which helped her lead an active life.

For more information, visit [www.myamigo.com](http://www.myamigo.com) or call 989.777.0910. To place order an Amigo in Canada, contact Premier Mobility at [www.premiermobility.ca](http://www.premiermobility.ca) or 905.889.2336.
MULTI-FACETED APPROACH TO WOUNDCARE IN TREATMENT OF CLIENTS WITH CEREBRAL PALSY

SUSAN HERSCOVITCH B.SC. OT
Centre de réadaptation Marie Enfant

Client Background

Rosalie is a 20-year-old woman who has been followed by our centre since 1995. Born at 26 weeks of gestation, weighing 660 grams, Rosalie has experienced most of the significant complications associated with severe spastic, dystonic cerebral palsy. Medical history includes: inguinal hernia repairs, recurrent aspiration pneumonias, lower extremity contractures, hip dislocation, bilateral adductor and hamstring release, obturator neurectomy, right hip osteotomy, post-operative purulent sacrococcygeal wound, Baclofen pump, gastrostomy, spinal arthrodesis to correct scoliosis (August 2007), and a persistent stage 4 wound at left groin, (October 2007 to present). Rosalie lives with her parents and sister. The home, school and vehicle are adapted to her needs.

Current Issues

Soon after her back surgery Rosalie developed a wound. Between 2007 and 2010 the sore has improved and worsened. By 2010, despite close monitoring by the community nurse, it deteriorated into a stage 4 ulcer with sinus. Discomfort and risk of infection were serious concerns and threatened participation in her daily activities. Consultation with orthopaedics was done to rule out post-operative osteomyelitis. Plastics consult recommended surgery. Palpation of the hip near the ulcer illustrated that the anterior superior iliac spine was in contact with the femur due to anterior pelvic tilt and hyperlordosis. The spine was fused in this position. This observation was critical in uncovering the cause of the ulcer and subsequent equipment selection.

Goals for Prescription

• Identify and provide an optimal position that relieved the pressure point at the left hip, promoting healing of the ulcer.
• Maintain optimal postural alignment for comfort and participation in significant activities.
• Ensure that the prescribed equipment allowed access to adapted van and elevator.
• Maintain overall skin integrity.

Equipment-Solutions

Close observation of optimal seat-back angle revealed that at 115 degrees the area around the ulcer was not being pinched by the pelvis. This angle was obtained with a tilt-in-space chair equipped with an adjustable seat back angle and a seat cushion with an asymmetrical surface allowing more extension of the left hip. A Zippie Iris tilt-in-space and recline base was selected for compactness and for ease of angle adjustment. An Iscus II seat cushion accommodating asymmetrical leg length and different degrees of hip flexion was prescribed. The Zen backrest, a well-padded back with moderate trunk support was chosen to promote alignment and skin integrity. A unilateral abductor component was added to align the right thigh. In the summer of 2011 Rosalie also benefited from wound debridement, vacuum pump, and treatment in a hyperbaric oxygen chamber.

Outcomes

A multi-disciplinary approach to wound treatment involving nursing care, hyperbaric oxygen therapy and appropriate equipment selection resulted in almost complete wound closure, progressing from a Stage IV to a small Stage II ulcer. The family is satisfied with the equipment and the goals for prescription were attained.

Susan is a graduate of McGill University and has vast experience in seating. She is the Clinical Coordinator of the Seating Program at CRME, a paediatric rehabilitation center in Montreal.
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