

Hello and welcome to our presentation today on power mobility and access methods presented to you by myself and Ruth Hanley and my colleague Scott Burns
We are senior occupational therapists in the ATSS department of the CRC and we are based in the Dublin and Limerick offices.

Mobility: a Human Right

- UN Convention on the Rights of Persons with Disabilities (UNCRPD)
- Irish National human Rights Disability Strategy 2025-2030



- Ensure personal mobility and independence for disabled individuals,
- Includes access to affordable assistive technologies such as wheelchairs.

- https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities
- https://www.youtube.com/watch?v=Z6fnXQ62DnI
- https://social.desa.un.org/issues/disability/crpd/convention-on-the-rights-of-persons-with-disabilities-crpd
- https://www.gov.ie/en/department-of-children-disability-and-equality/campaigns/the-national-human-rights-strategy-for-disabled-people-2025-2030/

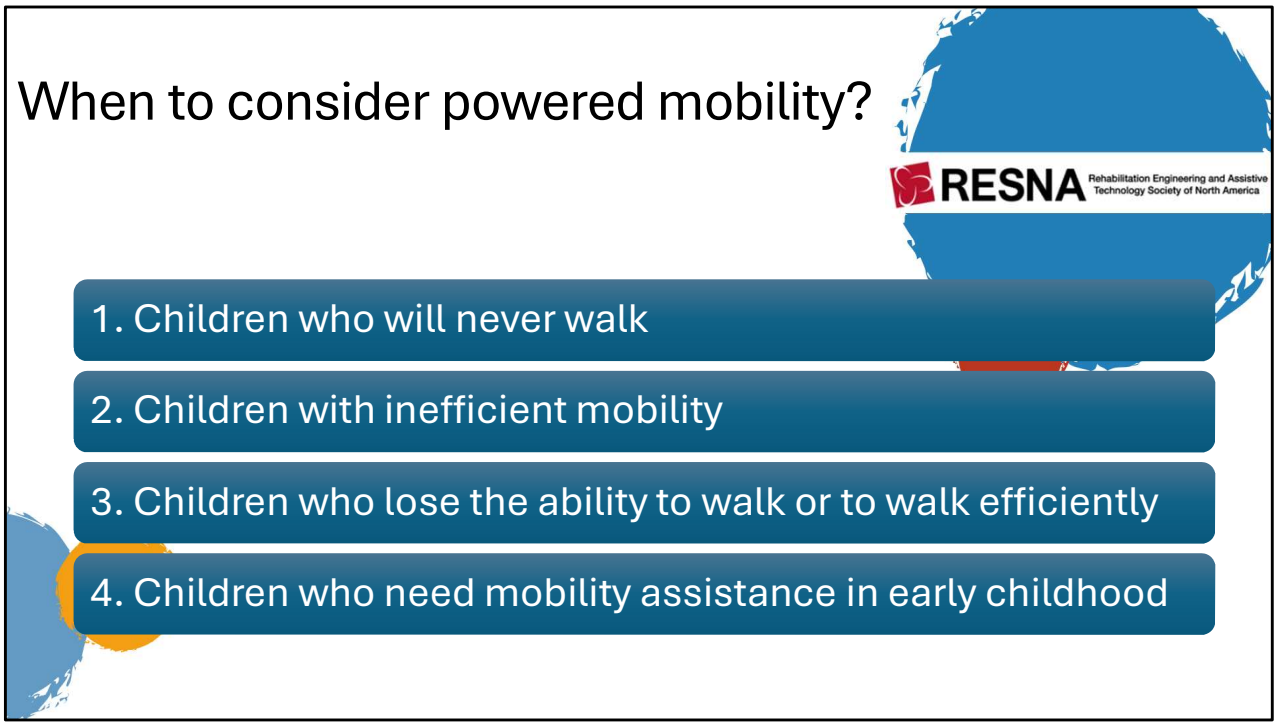
The Convention on the Rights and Freedoms of Persons with Disabilities is a framework to change attitudes and approaches to people with disailbities. Specifically looking to change viewing people with disaiblities as objects of charity, medical treatment, and social protection to “subjects” with rights who are capable of claiming rights and making decisions for their lives based on free and informed consent as being active members of society. (https://social.desa.un.org/issues/disability/crpd/convention-on-the-rights-of-persons-with-disabilities-crpd)

Enabling mobility and access to mobility is a key component of participation. As OT’s we have a responsibility to support our client’s participation in their daily lives.

Priorities
- Full and equal participation in society
- Participate fully and equally across all aspects of society on an equal basis.
- UNCRPD calls on euroepean member states to promote development and availability and use of new technologies. Particularly ones that are affordable.

- Means that the rights can be realized.
- Advance participation, independence and inclusion in daily life
- Ireland – national human rights strategy 2025 – 2030
- Equal access of equipment and trained persons in providing it.
- Potential to transform the life of people with disaiblities.
- Innovation should expand choice.
- Liberating and empowering – the opportunity to live life on own terms.
- Enable people to participate fully in their family, communities and wider society
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. RESNA is the Rehabilitation Engineering and Assistive Technology Society of North America. It is a non-profit membership organization maximize the health, independence, and well-being of people with disabilities and older adults through technology. This aligns nicely with the UN convention that we just discussed.

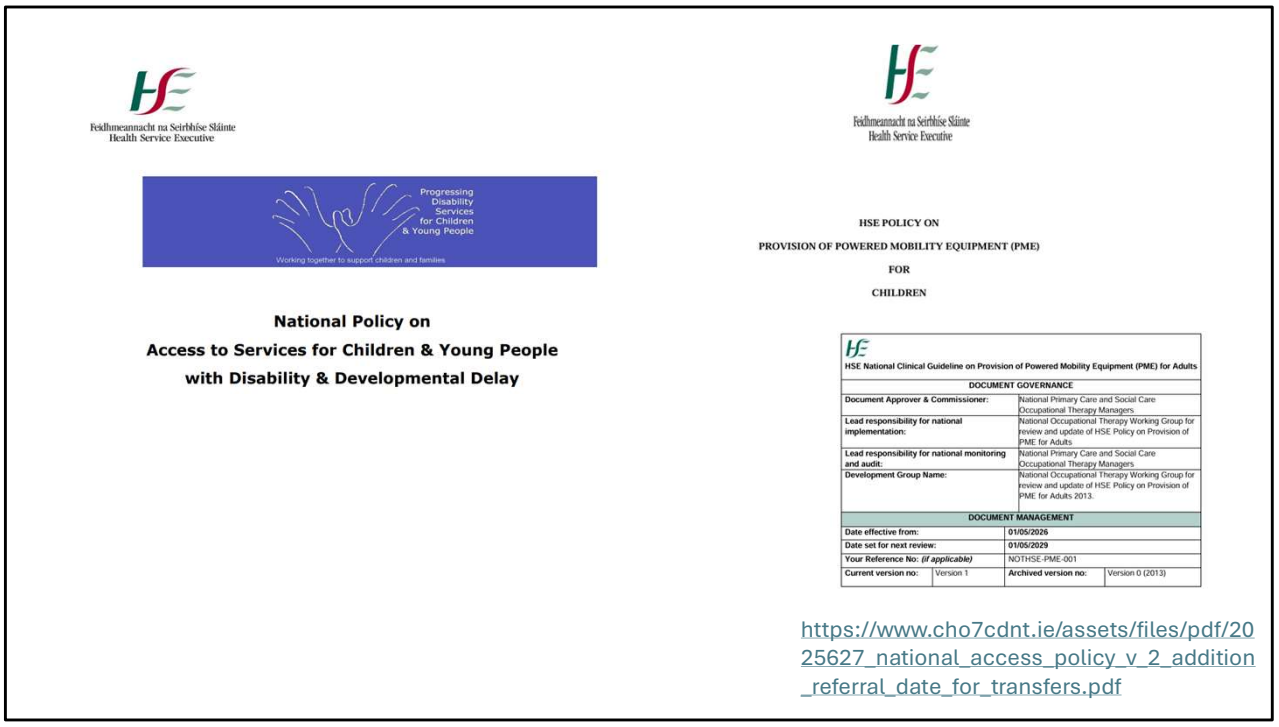
Who would benefit from power mobility?

- Cerebral Palsy – GMFCS III-V
- Spina Bifida
- Spinal Muscular Atrophy
- Spinal Cord Injury
- Motor Neurone Disease
- Multiple Sclerosis
- Muscular Dystrophies
- Friedreich's Ataxia

From some of the conditions above you can see that some are congenital, such as CP, Spina Bifida, and SMA
Some are progressive, some are acquired. Each has functional but also personal considerations to consider during assessment.
For example – in a person with CP, SCI, or spina bifida, a power chair can play an important role in prevention and preservation to reduce pain, conserve energy and protect the joints.

With Progressive neuromuscular conditions such as muscular dystrophy or MS, you must consider future proofing for example the capacity for alternative access methods and powered seating options.
Inequality of access to services and equipment.

When considering powered mobility Community therapists must be familiar with the HSE guideline on the provision of powered mobility for both adults and children. There are certain steps that need to be taken to review the home, school, work for access and medical clearance (GP, vision) that may prohibit the use of powered mobility, such as poorly controlled seizures for example.



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Progressing Disability Services for Children & Young People
Working together to support children and families

National Policy on
Access to Services for Children & Young People with Disability & Developmental Delay

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

HSE POLICY ON
PROVISION OF POWERED MOBILITY EQUIPMENT (PME)
FOR
CHILDREN

HSE National Clinical Guideline on Provision of Powered Mobility Equipment (PME) for Adults

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https://www.cho7cdnt.ie/assets/files/pdf/20250627_national_access_policy_v_2_addition_referral_date_for_transfers.pdf

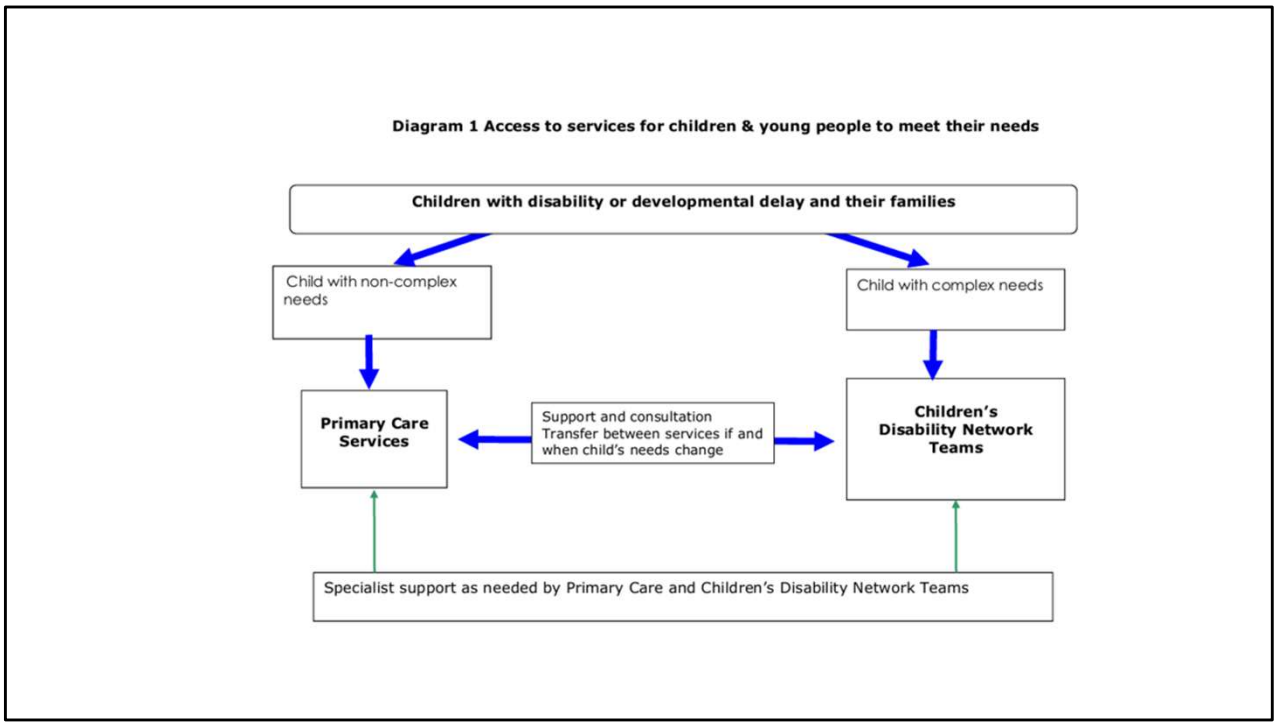
There are policies and guidance on how services link in with each other and how powered mobility should be introduced to our clients.

Specialist service that supports the community team in pursing mobility. We offer specialist for community therapists. Powerchair, manual chairs, and alternative access. The HSE has a national policy for health care professionals on not only how services can be accessed, but what their roles should be to support services.

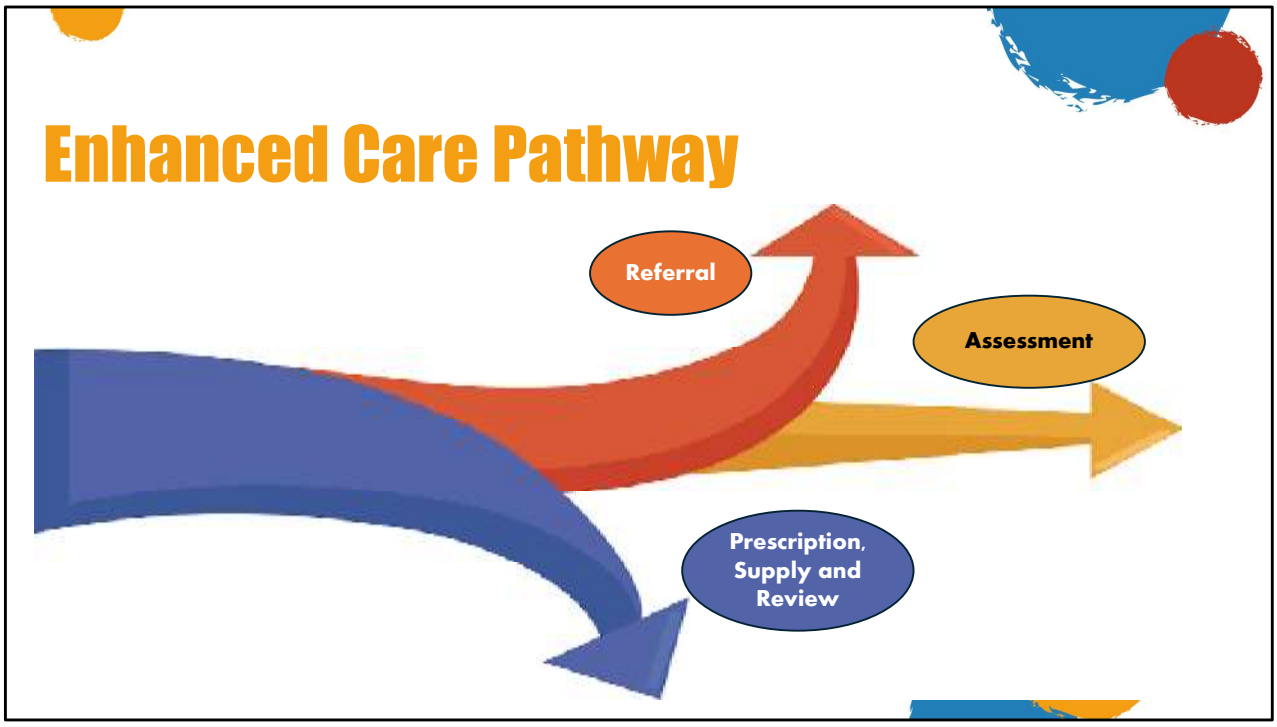
Today we are going to talk through power wheelchairs and what we, in ATSS can address. Because there is a lot to cover, we are going to focus on the powerchairs and access methods. The client's community therapist may refer the person to us if they need a more complex power mobility prescription that is outside of their knowledge base. The person may require a bespoke power wheelchair base and access method to address their postural and functional needs. The community therapist is a critical partner for this process and is needed to support the adoption of equipment with community training.

HSE Specialist Services Guidance

- 2.4 Specialist Supports Specialist Supports
- Provide the highly specialised expertise that a small number of children, young people and their families may require,
- To support the Children's Disability Network Teams and Primary Care Services, who remain the service provider for the child with disability and their family.



This is outlined here in this flow diagram from the document. You can see here that the service is at the center of the flow between primary services and CDNT. Specialist services link into the teams and provide support to the teams.



What is the Enhanced care pathway?

Each clinic follows a standardised process from referral receipt to discharge:

From REFERRAL that includes
1. Triage and prioritisation (Admin & Clinical); - Community therapist to assess home and get medical clearance.
2. Pre-clinic preparation and information gathering (Clinical & Admin)

ASSESSMENT
3. Assessment (Face to Face or consult) (Clinician x2), referring therapist or other relevant people

PRESCRIPTION, SUPPLY AND FOLLOW-UP – that will be covered later in the session.
4. Prescription of (Clinician)
5. Supply (Clinician x2, Technician AT x1, Seating Tech x1)
5. Review and follow-up (Clinician, AT Tech x1, Seating Tech x1) or a telephone

call.
6. Conclude the Episode of care or step-down to local services (Clinical & Admin)

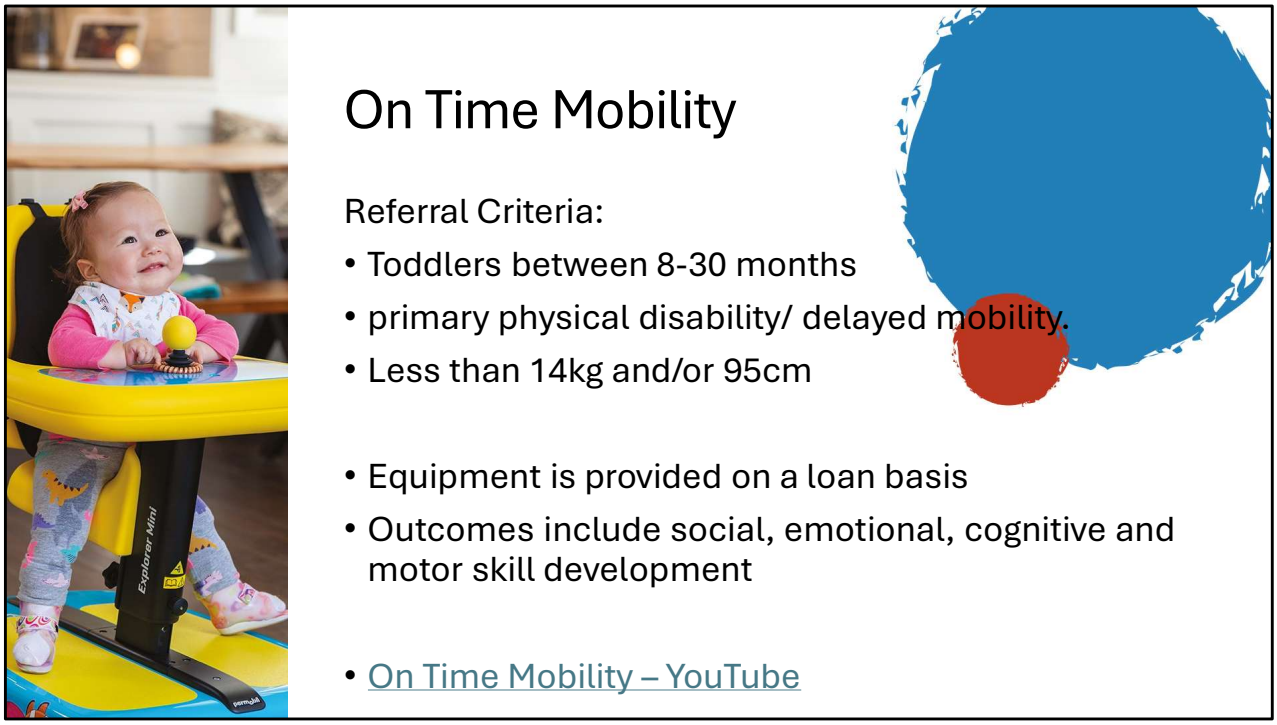
Enhanced Care Pathway Referral Stage

Any person with:

- a primary complex physical disability,
- dual diagnosis (physical and intellectual disability),
- a complex neurological and/or neuromuscular disorder

Who requires:

- specialised postural support and mobility to optimise function within their daily lives,
- Access to On Time Mobility programme for early mobility support.



From 2 min 22

On the topic of early mobility, I would like to give you a quick snapshot of our on time mobility project. This is a video of one of our clients learning to use the explorer mini.

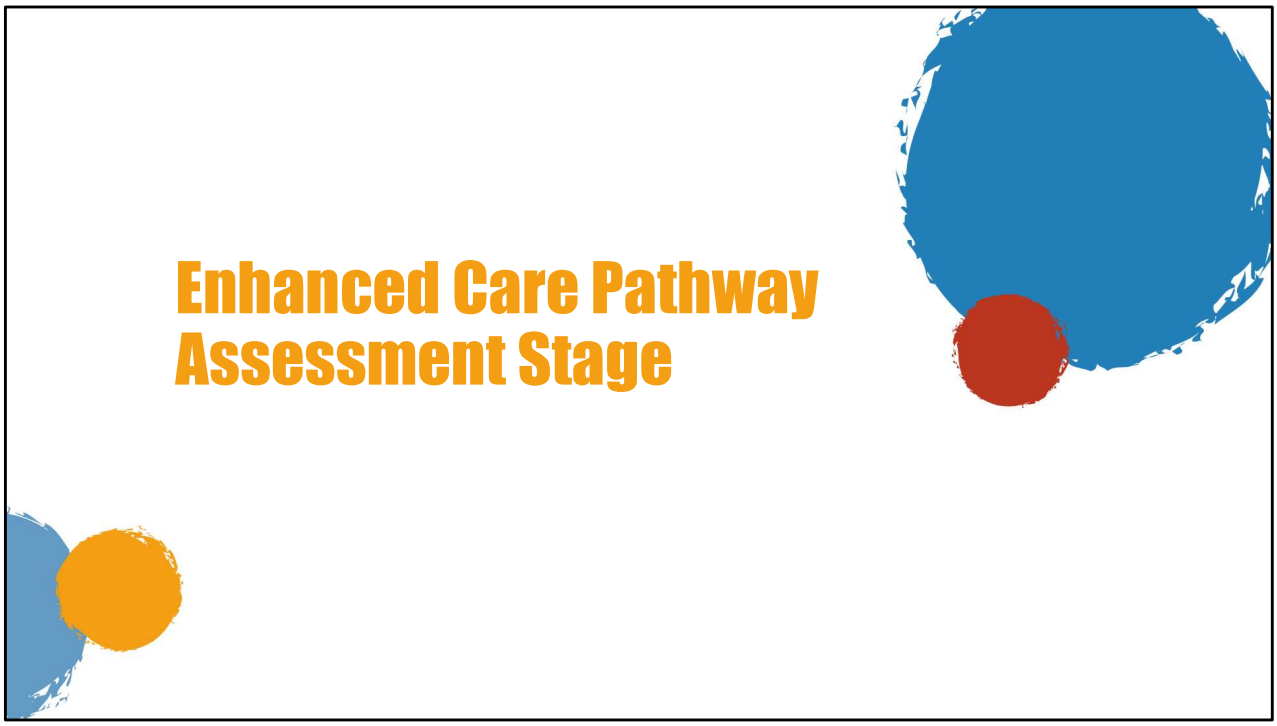
Research promotes the use of a power mobility device as young as 8 months old with 18-24 months indicated for use of a joystick. When we are looking at power mobility training, we need to compare it to a child learning to walk, having falls and bumps and getting back up, rather than learning to drive a car. Training should be play based and not direction based. For example playing hide and seek or chase rather than directing the child to turn left/right or stop on command.

Children who have more complex access methods may need longer to learn and more specialised training. Children with intellectual disability may always require supervision.

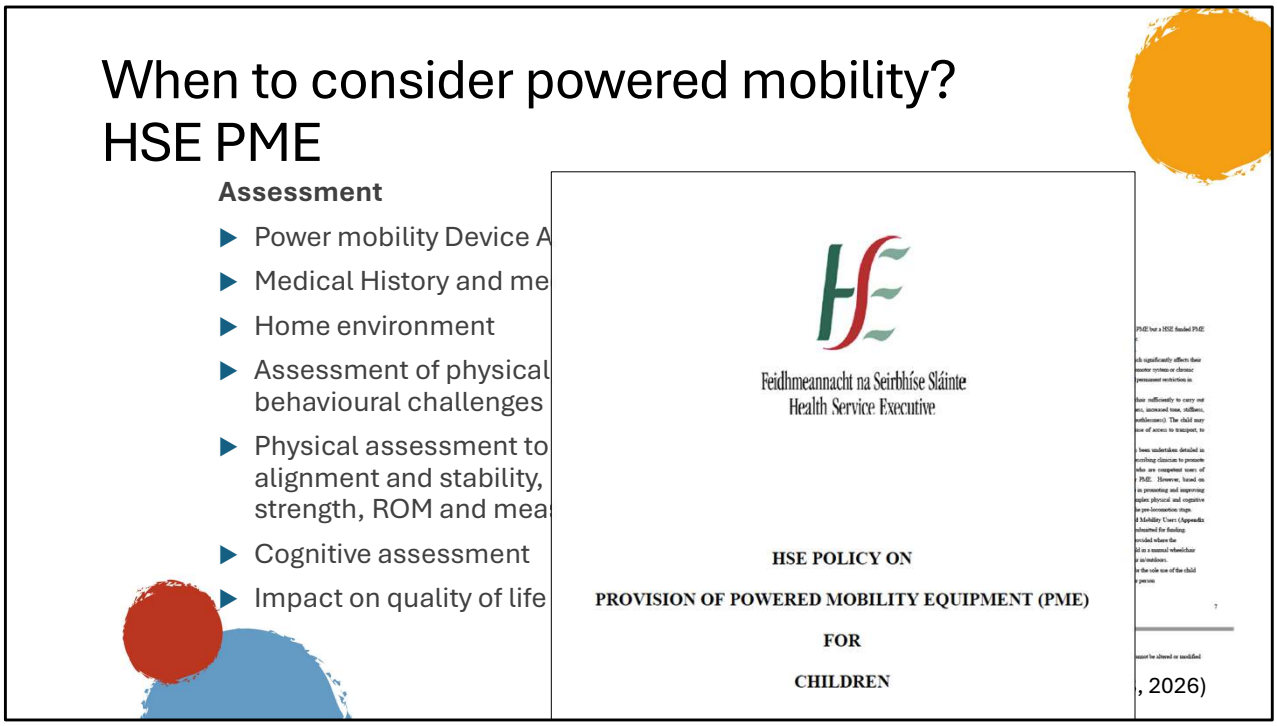
On time mobility referral criteria is forprimary physical disability or delayed mobility. They must weight less than 14kg and be less than 95cm. The device is provided on a loan basis and the outcome tool used is the CREDI at the initial, 3 month and 6 month points. As part of the project, we have seen positive effects on the child's social,

emotional, cognitive and motor skill development. Children have developing their ability to separate from their caregiver and interact with others, developed their use language or augmented language use to communicate needs. Its also a great tool to enable kids to develop their problem solving and cause and effect skills.

In this video you saw how this young boy figured out that he can have take a look in the fridge for snacks, move to get a toy himself without relying on caregivers and he can choose where he wants to explore.



After referral, the next stage in our pathway would be to attend for an initial assessment. I am going to briefly go through what would be involved in an assessment for a power wheelchair. Depending on a client's needs, this may be one or multiple appointments and follow-up may be required with their primary therapist to complete an environmental assessment and the PME assessment form. This would all need to be completed before a requisition for funding was sent ot the HSE.



Power mobility devices increase efficiency by conserving physical energy, there is much less physical exertion in comparison to propelling a chair over a long distance. There is also higher movement speed which reduces travel time, This is important when we think about preserving function and maintaining independence with activities that people are required or desire to do within their every day lives.

The HSE has national guidelines on provision of powered mobility equipment for adults and children. It covers the requirements for assessment, prescription, training and handover of the device. It has been created by experts in the field, taking into account national and international best practice guidance and evidence based research. The paediatric version was created in 2013 and the adult version has just been updated this year. It covers power wheelchairs, power add-ons and scooters but would not cover the adapted paediatric devices such as the explorer mini.

The Power Mobility Device Assessment Training Tool is a standardised tool which can be used by Occupational Therapists to determine the service users' competence to operate powered mobility equipment. It also provide guided training so that the service user can improve their driving ability.

It is important to consider the person's medical diagnosis e.g. epilepsy, side effects

from medication which may impact their ability operate a PME. Medical clearance from the GP is required
And The person's Environment needs to be considered such as accessibility, turning space, terrain and transporation requirements.
Physical, cognitive or sensory/behavioural challenges are assessed which may impact on their driving skills. This may require further standardised assessments or clinical observations

If cognitive assessment is indicated the montreal cognitive assessment tool is recommended (MOCA)

Following Ax there may be restrictions for use indicated e.g. supervision, speed, time of the day that the chair can be used.

Information Gathering

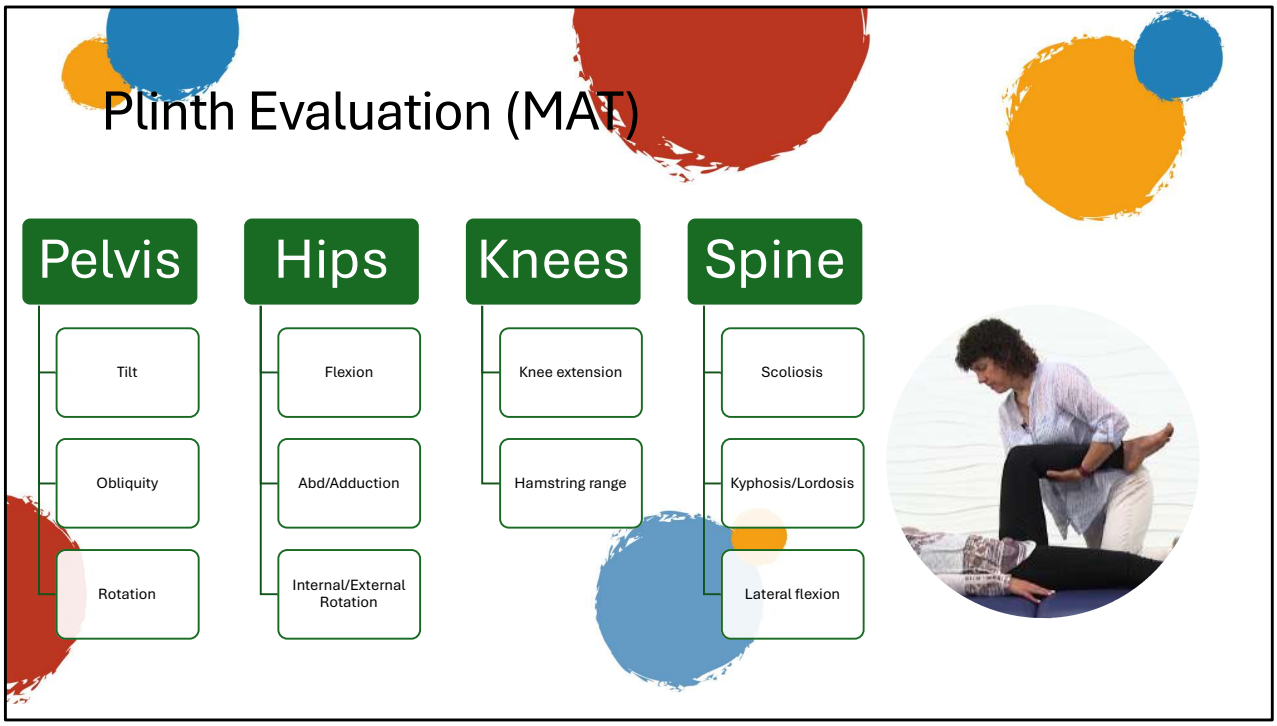
FUNCTIONAL STATUS

- Mobility (ambulant/non-ambulant/full-time/part-time wheelchair user)
- Propelling method (self, attendant, power, power attendant, power assist)
- Transfers
- Level of assistance in ADL's/ADL's and activities performed in seating
- Feeding
- Communication
- Functional hand use
- Continence
- 24-hour postural care

Seating Assessment is an information dependent process. The most successful outcome for the client may be achieved by gathering and analyzing relevant information in a structured and comprehensive manner. Here are some of the pieces of information that we look out for. Rachel, Saoirse and Danika went into detail on this in the previous presentation which you can access via our youtube channel.

these are some questions we may consider:

- Is the person ambulant? Are they a full-time or part-time wheelchair user?
- Do they self propel or are they dependent on others for propulsion? Do they already use powered mobility?
- Are they hoist dependent? If so, does the client use a leave in sling? Can the client complete standing or side to side transfers?
- Is the client fed orally and are there any positioning considerations for this?
- How does the client access the toilet? Are they catheterized or do they use a bottle?
- Does the client use alternative seating? Night positioning? Orthotics? A DMO suit or second skin?
- What is there functional hand use? If not, what could their access method for power mobility be? This is an area that ATSS can really support the local team.



As part of our seating assessment, we complete a plinth evaluation or MAT which is a Mechanical Assessment Tool. Rachel, Danika and Saoirse covered this nicely in their MWC presentation. This consists of us completing a musculoskeletal examination of the client's body, reviewing things such as range of motion, joint flexibility, asymmetry and muscle tone. It is usually conducted by two therapists in the Department giving the significant manual handling.

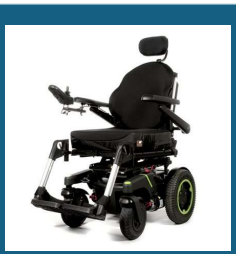
The first part of the plinth evaluation involves the client lying in supine on a firm surface. Here we look for the available pelvic/spine/lower extremity joint ranges and flexibility **as related to the seating position.** This includes assessing the pelvis, hips, knees and spine.

We need to assess the individual in sitting, if possible to determine their sitting balance, head position, affect of gravity on their spinal position.

We also need to understand an individuals skin integrity, any surgeries that may have taken place and any positioning requirements for function such as respiration, feeding, communication.

All this information will guide us on the seating supports we need to put on the PWC

for comfort and positioning.

		
Front wheel drive PWC • Four wheels; drive wheels at the front • Obstacle climbing • Large turning radius • Difficult to get used to • Alternate drive control users	**Mid wheel drive PWC** • Six wheels; drive wheels in the middle • Four casters increase stability • Smallest turning radius • Intuitive to drive • Casters mitigate risk of tipping • Majority of prescription; suitable for indoor and outdoor use	**Rear wheel drive PWC** • Four wheels; drive wheels at the back • Power from the back • Good for rough and uneven terrain • Good shock absorption • Suitable for heavy duty users who use it mainly outdoors • Limited indoor use

Lets take a look at types of power wheelchair bases. There are 3 options available, front, rear or mid wheel drive chairs. This refers to the position of the largest wheels. This would impact the turning circle, manoverability and driving force of the chair.

Front: These are the least popular type of base. They are great for obstacle climbing or uneven terrain, they have a larger turning circle and can feel less intuitive to drive if you are learning. We tend to like these bases for alternative driving such as using your head or mouth or with a standing function. They can also work well with bariatric clients.

Mid: These are the most popular bases as the prescriptions nowadays enable them to be used both indoors and outdoors. The COG is over the drive wheels which greatly improves stability. The turning radius is smallest making it good for tighter spaces and they can be more intuitive to drive. They have 6 wheels which increases the stability and reduces the risk of the chair tipping.

Rear: These are very stable bases and great for uneven terrain. They tend to have very good shock absorption which results in a smoother drive. They are a great choice for outdoor driving such as on farms. They can be a bit trickier to use indoors due to the turning radius which is the biggest of all the bases.



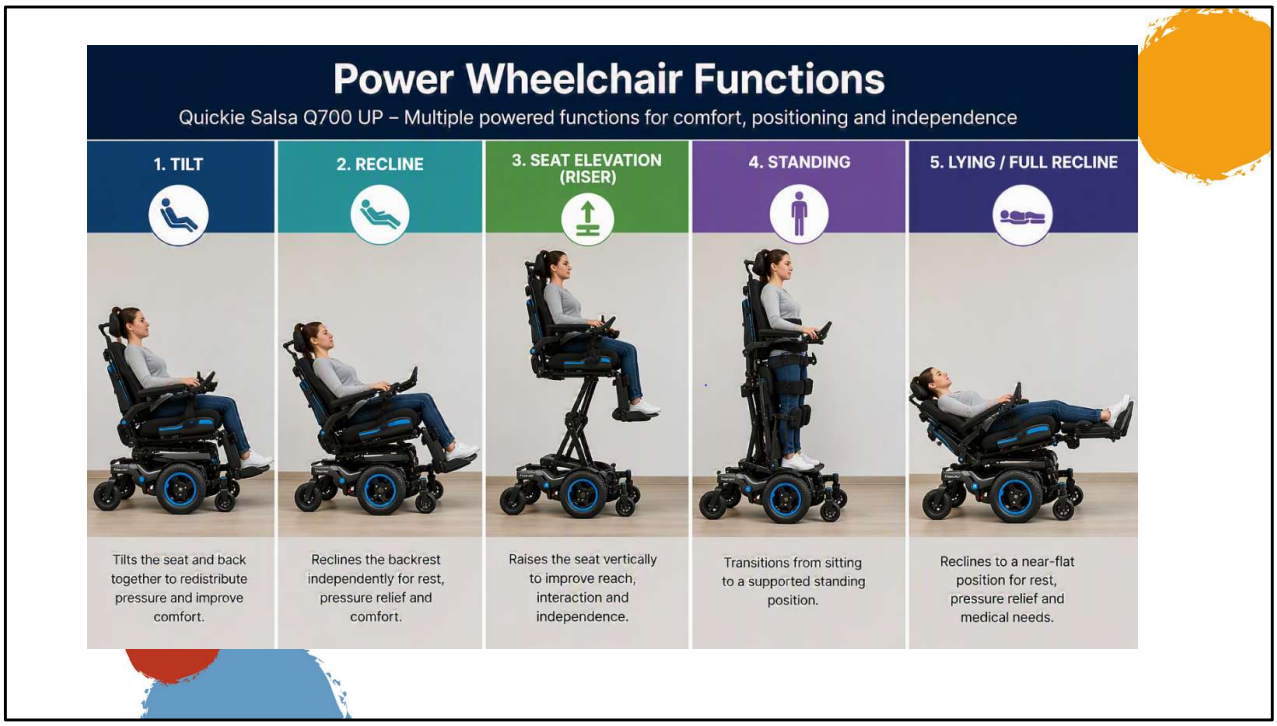
When we are assessing for a power wheelchair, we need to take a lot of things into consideration. We focus on the person, their environment and the occupations they are engaging in or hoping to engage in.

Posture and positioning is so important to enable control of their chair and functional use. The seating and positioning is key for an individuals comfort, reducing the progression of deformities such as scoliosis and to maximise their independence such as offering proximal stability to allow them to use their hands or position their head to the best of their ability. The differences with seating in a PWC versus a MWC is that we tend to go with a higher back support as the scapulas do not need to be free for self propelling. We are fortunate to have skilled technicians as part of our team meaning that we can mount third party seating to a power wheelchair base so a wide variety of options are available to us.
A head support is also needed for use of tilt.

We are always considering future proofing chairs which may mean having a joystick which can adapt for an individual if their function improves or declines in line with their diagnosis or age. We may programme a chair a specific way initially but make adjustments as their skills improve such as increasing speed, torc.

Functions such as tilt or anterior tilt along with the position of the footplates and the way they can be removed can promote easier transfers for the individual or the care givers.

Environmentally we take into account the wheels, suspension and motors and how this will impact on indoor or outdoor use, depending on their individual requirements.



A power chair offers a range of powered functions which may or may not be indicated based on the persons needs.

Tilt is a great function for pressure relief, change of position and also to assist with caregivers putting on and off a sling. It is the most common function in a power wheelchair. Anterior tilt can assist with forward reach such as when cooking or baking or working with your hands.

Recline can be beneficial for some clients for comfort and change of position when they cannot independently weight shift. It is a function we tend not to use too much as it can increase the risk of sliding in the chair.

Seat elevator is a lovely addition to a wheelchair base for interaction with peers, independently reaching items around the home and community. For school or college aged individuals, this can enable them to reach desks in labs, science or home economics. It is great for concerts, matches, talking to peers at high tables such as in a bar.

Standing function in a chair is suitable for a very specific group of individuals. It can give them a chance to stand at various times throughout the day without the need to

transfer into a stander. There are further assessments required such as bone density, standing tolerance and cognition needed before this function is considered.

Lying position is one we don’t see too much but some individuals like this as a change of position without the need to transfer out of the chair into other equipment.



Something to be aware of is the HSE wheeled mobility contract. The HSE Framework Agreement for Wheeled Mobility Contract covers manual and power wheelchairs in the community

There are a selection of power wheelchairs available through the contract which can meet a variety of clinical presentations.



I am going to take you through some of the access methods that we may consider as part of the assessment process.
A standard joystick is the ideal access method for control of speed and direction but, what is your client is unable to use one? I'm going to go through a snapshot of alternative control options for power wheelchairs. If you are considering alternative access you can refer to us in ATSS, we have some very experienced clinicians and technicians that can offer support in relation to this.



LED

- Entry level control
- Appropriate as attendant controller
- Lights/no lights
- NO switch input
- NO remote switch
- Bluetooth can be programmed

- NOT SUITABLE FOR:

- access issues
- Progressive conditions



LCD

- Full colour or Monochrome
- 2 switch input
- Switch input for on/off & Mode
- Bluetooth available



LCD Advanced/CJSM 2

- Large, high-resolution 3.5” VGA color display
- Infra-Red (IR) Control and Bluetooth control available
- Stylish and ergonomic design
- Built-in light sensor to automatically adjust screen brightness
- Toggle switches for easy access to user controls
- Enhanced programming and customization options

When prescribing a power wheelchair, there will be a number of different joystick options available to you. The ones on this slide are from Rnet which is the most popular drive system and is programme friendly. VR2 controllers cannot be future proofed so we try to avoid these where possible. Qlogic is another option but these are not always compatible with some switches which is something to be aware of before prescribing in case you may need switches.

LED: Entry-level option suited for basic driving and standard seating or lighting controls. This is Not something we would pick for someone who may have access issues or a progressive condition as it cannot be future proofed. If in doubt, it may be best to choose one of the other options for your client. It may be more expensive initially but will make the chair easier to adjust and adapt as needed.

2. LED: is the Mid-tier option. It features a small basic screen with text and icons. You can use switches with this for on/off or modes and can use Bluetooth to connect to other devices.

3. LCD: is the Most advanced joystick with the most advanced features but also the highest cost. It enables simultaneous seating adjustments, environmental controls

and multi-device connectivity. The screen can be more distracting for paediatric clients which is something to be aware of. This joystick has a lot of programming or customisable options available to you.

Joysticks

- Best option when suitable
- Positioning of the individual
- Mounting/placement of the joystick
- Alternative joystick knobs (shape, texture, height)
- Programming adjustments (ie. throw, dampening, deadband, etc)



Some clients may have difficulty using a standard joystick and the first step is to try and identify why this may be happening and to see if there are any modifications that may solve the problem:

Positioning of the individual – are they well supported in their seating to give them the best opportunity to use their upper limbs

Mounting/placement of the joystick – is the location of the joystick in a position the client can reach and access? Maybe it would be more manageable in a different position or by moving it more midline.

Maybe there is a grasp issue and we need to consider an alternative joystick knob –. The picture shows some of the body point options that we may use from tall and skinny to larger ball shapes, u shaped and t bars and these can accommodate a variety of difficulties in relation to grasp.

Maybe it's a programming adjustment that's required - More standard programming – speed, acceleration, turning or deceleration speeds.

Or is it a little bit more complex, perhaps they have reduced initiation of movement and the Throw or how far the joystick has to be push forward needs to be reduced.
If someone has tremors or involuntary movement the Dampening may need to be adjusted to reduce the sensitivity of the joystick

Or maybe the deadband which is an imaginary circle around the neutral zone of the joystick needs to be reduced to allow someone with reduced hand strength to initiate movement

Changes like these Can really reduce frustration for people attempting to manage a joystick and it can also open up the door for some people who you may think standard isn't an option

But sometimes clients don't have the upper extremity control, endurance, or coordination to use a standard joystick. In this case we consider alternative access and we are going to go through some of them in the upcoming slides

Mini Proportional Joysticks

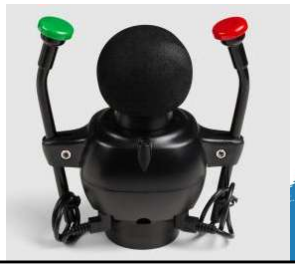
- Suitable for people with reduced strength or range of motion
- Require less force and travel distance to access





Remote joystick

- Joystick no buttons
- Compact and robust design
- Connects directly to most specialty control interfaces
- Variety of mounting options





For some clients, a standard joystick wont be an option. For those who find a joystick too difficult to move due to strength or range of motion, a mini proportional joystick may be an option.
A standard joystick would need around 200 grams of force to activate. The mini proportial joysticks, in comparison would need between 10-50 grams of force.

The microguide is one such mini proportial joystick. This gives tactile feedback so when you push the joystick, the joystick moves slightly. This joystick is best for people who can manage some physical movement and like the feedback of a joystick. It also comes with joystick knob options which you can see in the picture.

The micropilot then has no physical movement. When force is applied, it purely relies on force sensing. This is ideal for those with profound physical weakness or minimal range of motion.

The remote joysticks then are a stand alone, simple design and compact version of a standard joystick. They can be operated by various parts of the body depending on the person's movement ability. You can get these with firm, medium or soft spring resistance. So perhaps the soft spring may be used for those who need a more simplified joystick in an alternative position and the heavy duty one may be chosen by

a client with excessive force such as our CP client group with high tone or spasticity.

Chin Control

- Operated by jaw movement or tongue





Foot Control

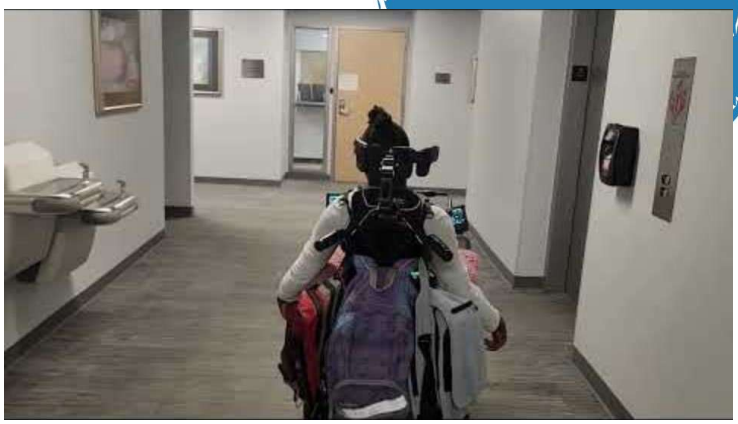
- Placed on the footplate and connected directly to an alternative access source

Chin controls are usually a light touch mini proportional joystick mounted in front of the chin. One of the main things to be aware of is that They can be tiring for clients due to the jaw or tongue movements needed to operate.
They can be mounted either on a swing in and out mount or on a harness. They can be used in combination with stand alone switches to control functions such as on/off or tilt. Chin controls are
mostly used with those have upper body weakness, limited hand or arm function but retain good head and neck movement. So an example of this is clients with High level spinal cord injury or muscular dystrophy

A foot control is placed on the footplate and used by a person with reduced hand and arm function but good foot control. The options for this, have greatly improved over the years and should be considered next when hand access has been ruled out. Its operated by planter or dorsiflexing the foot and internally/ externally rotating at the ankle for direction. You can add extra switches for modes. This is a nice option for motor neuron, stroke or MS clients.

Head array

- Can be proportional/ switch/ combination of both
- Limited hand or arm movement but good head and neck control
- 3 main pads – occipital and lateral pads
- Can add additional switches for functions



Head arrays can be proportional or switch activated or a combination of both.

These are for people who have limited hand or arm movement but good head and neck control. Its important to ask in relation to head and neck pain, particularly in progressive conditions such as MND as this would not be an option for them

This consists of 3 pads; Occipital is for forwards and back and lateral pads for directional input which are adjustable

So as I had mentioned depending on the head array there are a variety of sensor types, some may be proximity sensors or some may be mechanical pressure switches that react when the head touches the pad.

In relation to programming, this is very important to maximise the user experience. Also everything can be programmed to be completed using the head array or it can be used in conjunction with switches.

These would be used for clients with Spinal cord injury, MND, cerebral palsy or

Muscular dystrophy

Can be difficult to get right but worth it when it works well. They also can look well aesthetically, it leaves the users face completely open for a clear field of vision and ability to interact with others.

Switch tray array

- Proximity switches can be mounted under tray
- When client runs hand over tray they activate switch.
- Fiber optic Switch Array
- When the client interrupts the light beams it activates of light
- Reduces need for vertical movement
- Leave space between switches for resting

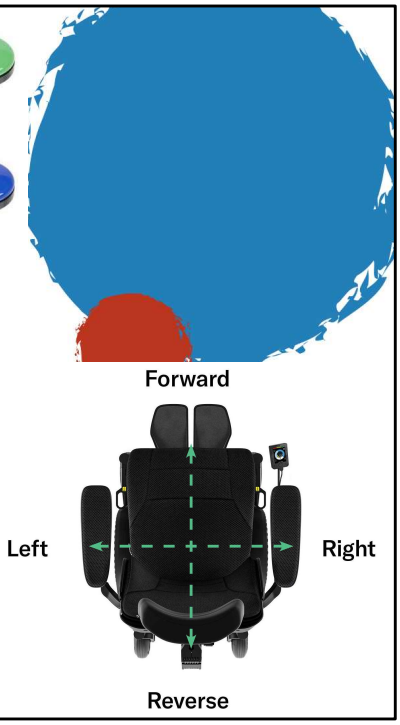




A switch tray array is a group of switches disguised in a tray. They are a nice option for those with limited upper limb range or motion or low motor control such as with SMA, DMD or progressive MS. They operate by touching the tray and, similar to a tv remote, breaking the invisible beam of light to active. They require zero physical force to active but need linear movement of the hand or fingers.

Switch access

- Reduced strength, range of motion or coordination
- Not proportional
- Multi switch array or switch scanning
- A speciality control interface is required
- One switch typically used for switch scanning
- Programming is key to success



When an individual does not have the strength, range of motion or coordination the switches previously discussed may not be suitable. We may then consider switch scanning using a single switch.

So how does this work?
A single switch activation starts the scan on the display

The directions are scanned

When it highlights the desired option, the client then activates switch and holds it for as long as movement in that direction is required.

To stop the client releases the switch and it commences scanning again, back through the directional options.

This is a basic form of switch scanning but there are many other ways that this can be adjusted in the programming to make it easy and efficient for the client.

Switch scanning can have a high cognitive load and does require good concentration

and processing skills. To operate they need to be vigilant to the scanning, anticipate and have good timing to hit the switch at the desired time.

It can be extremely frustrating if they miss the timing window as they have to wait for the scan to go through the cycle again.

Typically would be a last resort, most other options may have been trialed and ruled out.

Again this method can be used for a wide variety of clients including high level spinal cord injury, ALS/MND, late stage of MS where tremors can significantly impact on use of joystick Muscular dystrophies, CP or severe ABI



The new steps in the process is prescription, supply and review of the power mobility device.

Once it is agreed what is clinically essential, a prescription request is placed with the HSE for funding.
All criteria for provision for the PME must be met before the equipment is sanctioned.
This would be completed by the clients primary therapist





Supply and Review

Before a PWC is supplied, the prescribing clinicians must ensure that they are satisfied that the client demonstrates safe skills to operate the device. The PME documentation needs to be signed off locally, led by the primary occupational therapist, prior to any PWC being supplied.

On supply, restrictions of use identified in the PME must be discussed for the safety of the user and those around them. Restrictions may include the level of supervision, time of the day, speed, environments of use. These must be clearly documented in the terms of use document.

Safe use of the chair, transportation and care of the device are discussed. The user manuals, HSE loan agreement and information on the HSE repairs service are provided. The driving position, such as in slight tilt is advised and positioning and repositioning in the chair is discussed.

During the supply appointment, adjustments may be made to the clients seating and set-up in the chair. The programming will be reviewed and adjusted as needed such as speed, torc, turning speeds. The client should get an opportunity to drive the chair, trial all functions such as tilt/ riser etc.

Depending on the client, The primary therapist may need to provide follow on training sessions or practice use in their own environment, particularly for a 1st time power wheelchair user.

A review appointment in CRC may be needed, particularly for a 1st power wheelchair, to adjust the programming as the person's ability improves with practice.

As part of the PME, the primary therapist would be responsible for reviewing the clients suitability for power mobility should their presentation change. If changes are noted, this is where ATSS can come in to make changes to their seating, access method, programming depending on their needs.



Scotts case study

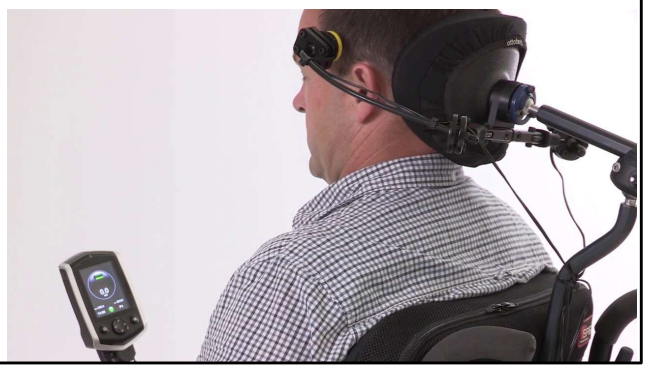
Case study: Thomas

Client: Thomas, aged 47

Dx: Motor neuron disease

Concerns: shoulder pain, neck pain, sciatic pain, reduced UL function and progressive condition

Current equipment: Scooter, stock MWC



Thomas is a 47 year old man with a diagnosis of motor neuron disease. This was diagnoses about 2 years ago. He was referred to us around 1 year post diagnosis. At the time of referral he was using a 4 wheel walker to mobilise but was experiencing multiple falls. He was also using a privately purchased scooter but was finding this difficult to use due to shoulder pain. His primary care occupational therapist issued him with a stock manual wheelchair in the interim.

So when we met Thomas we started by gathering background information. Thomas lives in an accessible bungalow which was adapted for an older relative a number of years ago. He has very good supports around him in terms of caregivers and family. He transfers via standing transfer. In terms of occupations, he spends a lot of time working on a computer during the day. Physically he experiences neck pain, sciatic pain and shoulder pain. He has weak hand grip, limited finger movement but good thumb control. Orla, his primary care OT, had commenced the PME with Thomas and was satisfied with his medical and cognitive ability to operate a power wheelchair. We completed a MAT evaluation with Thomas to assess his physical presentation. He tended to

sacrally sit with an overall kyphotic spinal posture and chin poke. He used a neck collar to assist with head positioning. His legs tended to abduct outwards. He tended to reposition himself by extending fully in the chair but this resulted in him sitting away from the backrest, causing back pain.
Thomas was eager to explore power mobility options to enable him to move around his home independently again and to access outdoors as his world had become very small in the last year.
It is worth mentioning here that he also attended our service for assistive technology intervention for computer, tv and communication access but I won't go into that here as Sinead, Simon and Donal will be covering these topics next week.
Due to limited space around his home, a mid wheel drive was identified as the most appropriate base. 45 degrees of tilt was recommended for repositioning in the chair and pressure care relief. We were able to find a recycled wheelchair base from IMNDA stock which was a mid wheel drive, with 45 degrees of tilt and an LCD controller. In terms of seating we prescribed and ordered a gel cushion with contouring to reduce the risk of sliding in the seat and abduction of the lower limbs. The backrest was shoulder height with lumbar and lateral support. We also chose a curved headrest with sub occipital support for use when resting or in tilt. These seating supports could be interfaced with the IMNDA chair by our technician in our workshop.

The joystick access was the next challenge for us. We trialled it in his left and right hand, with a golf ball shaped and a U shaped joystick knob. He found the u shaped joystick knob the easiest to control but could not turn on and off the chair or access modes. For this, we added 2 buddy buttons to the side of the joystick which he could access with his fist. We also set up a swing in mount so that the joystick was more centrally located to address his shoulder pain. And finally we reduced the throw of the joystick, meaning he didn't need to push it as far to initiate movement.

When he returned to us 2 months later, his hand function had reduced further. He was now using a sara steady for transfers and occasionally using a hoist. He was not able to drive his chair using the joystick anymore. At this point we trialled a mini proportional joystick, the microguide mounted within a tray and also trialled a head array system. These needed to be set up with an omni on his chair. He found the head array easiest to control so this was set up for him on the day. We went through positioning of this and use with his primary care OT and caregiver who attended the appointment. Orla then went on to do further training at home with additional caregivers to ensure that the equipment is correctly positioned after transfers.

Case study: Luke

Client: Luke, aged 60

Dx: Spinal cord injury t12 and osteoporosis

Concerns: shoulder pain, difficulty transferring, increased isolation and postural deterioration

Current equipment: RGK with flotech cushion and smart drive



Luke is a 60 year old man with a diagnosis of spinal cord injury, t12. The image on this slide is a stock image.

Luke has been a full time manual wheelchair user for 20 years. He uses an RGK wheelchair with a flotech cushion and smart drive power assist device. He is a very active manual wheelchair user, transfers independently via side transfer. He has a history of pressure injuries and broke his leg a number of years ago. He also has a previous rotator cuff injury.

He drives independently and transfers his chair cross body.
Luke is finding it increasingly difficult to transfer and is experiencing shoulder pain when self propelling. He is finding this is impacting his daily activities, ability to go out with his family and engage with his friends. He is finding himself increase isolated as he cannot use his MWC over long distances. He is also increasingly leaning to the side in his chair.

We broached the subject of a PWC with Luke. He was open to the idea of power mobility as he is aware that his pain has increased and transferring has become more difficult. This was a move he was reluctant to make as he felt like it was ‘giving in’ in quotation marks. We took time to listen to his concerns and spoke about the PWC

being used in combination with the MWC, depending on his needs.

During the assessment, we had Luke sit into a PWC and drive around our centre indoors and outdoors. He was presently surprised by the comfort, speed and ability to get from A to B with ease. We could go with a higher back support as we do not need to keep the scapula free for self propelling. This meant that we could increase the postural support in his backrest and this, in combination with tilt, was a great help for him.

One area that came up for Luke was driving. He will be looking at a new vehicle soon so the PWC can be pre-drilled for a docking station to allow him to remain seated in the PWC when he drives. His car is also set up for hand controls with pulling back used as a motion for driving. We programmed his own PWC so that pulling back was for forward acceleration to allow for ease of transition from driving the car to driving the PWC.

Luke will have both a MWC and PWC available to him and will choose when to use a PWC and MWC depending on his daily needs and environments access. Using a PWC can help to maintain function for transfers at times that he needs to use his MWC.



Case Study 1

Referral from CDNT

- 6-year-old Ukrainian boy
- SMA Type 1, Scoliosis is advancing
- No surgical date yet.
- Had been using a moulded seat mounted onto a manual wheelchair
- Consider specialist seating and parents want to explore powered mobility

Lets look at the functional considerations – talk with audience.

Goals
Would like to explore potential for powered mobility to increase independence . Has not been explored in the past.

Assessment
Apartment is adapted but small space and school is accessible. Adapted school bus.

Plinth – oblique pelvis lower on left that has some correction. Posterior tilt.
Hips – functional range for sitting, but tight hamstrings.
Spine – convex on right side that is correctable.
Low tone trunk but has some head control.
Upper limbs – some active use of hands and elbow with gravity reduced.

Case Study

Assessment:

- Goals
- Would like to explore potential for powered mobility to increase independence . Has not been explored in the past.

Home

- Apartment is adapted but small space and school is accessible. Adapted school bus.

Assessment - Person

- Plinth – oblique pelvis lower on left that has some correction. Posterior tilt.
- Hips – functional range for sitting, but tight hamstrings.
- Spine – convex on right side that is correctable.
- Low tone trunk but has some head control.
- Upper limbs – some active use of hands and elbow with gravity reduced.

Assessment – Trial equipment in ATSS clinic.

- Q300 mini midwheel drive with settings dampened . Why would be pick a midwheel over a rear wheel
- Center mounted joystick on table tray.
- Trial in clinic and determine if this is suitable option. Or do we need to consider alternative.

Prescription

- Considered Direct access vs Alternative access options
- Client was able to manage a center mounted movis - microlite joystick on a table tray effectively that reduces gravity and the force needed to access.
- OT will get the medical clearance and will support training.
- A training chair will be arranged – ATSS can help with this.
- Once client has cleared training, a chair will be spec-ed with ATSS and a report will goto HSE. Consider whether new mould will be needed for powerchair.

Supply and Review

- New powerchair and mould will be supplied at ATSS appt to client. COT will be included at every step.
- Followup appt with ATSS.



Thank you for attending our presentation on power mobilty and alternative access methods. If you feel your client would be suitable for our service, you can always refer them into us.

We are available, via email or phone for consultation also so if you have a specific question about a prescription don't hesitate to get in touch.

References/ Resources

World Health Organisation Wheelchair Provision Guidelines (2023)

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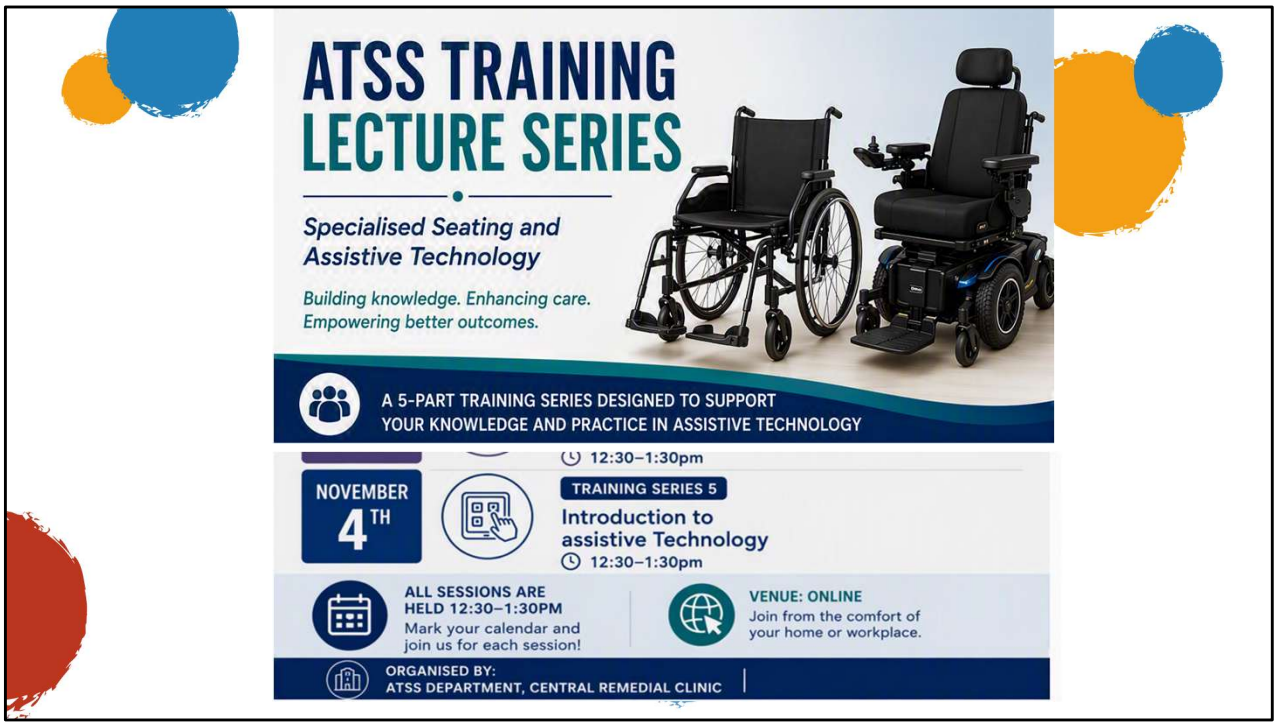
Rosen, L., Plummer, T., Sabet, A., Lange, M. L., & Livingstone, R. (2023). RESNA position on the application of power mobility devices for pediatric users. *Assistive Technology*, *35*(1), 14–22. https://doi.org/10.1080/10400435.2017.1415575

Powered Mobility Device Assessment Training Tool – PoMoDATT

- https://hub.permobil.com/alternative-drive-controls#switched
- https://stealthproducts.com/481/
- https://www.mo-vis.com/



The ATSS department is keen to provide future training opportunities as required. On screen there is a QR which links to a training needs survey. I would encourage attendees to scan this code and complete the questionnaire identifying areas of topics that they would like further training or information on.



Add QR code for training needs questionnaire