

**Case Study Presentation: Dynamic  
Arm support prescription for a  
paediatric client with Spinal  
Muscular Atrophy**

# What is a Dynamic Arm Support?

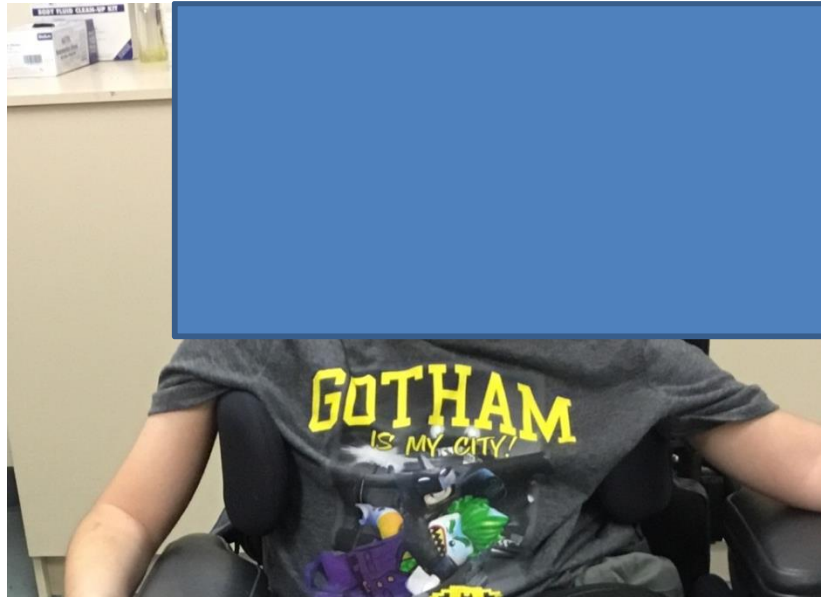
A device that supports the arm allowing users with limited arm movement, but good hand function to participate in activities of daily living including feeding and facial hygiene.

- “ Dynamic
- “ Requires active movement of the user
- “ Provides anti-gravity support/movement
- “ Adjustable resistance - can be manual by external support person or electronic allowing user to adjust the resistance.
- “ Manual or powered (electric)



# Case Study

J



- “ 9 yo at time of trial and recommendation
- “ J was originally diagnosed with SMA type 3 when he was 20 months old. Recent deterioration in James’s condition had led to a revision of SMA type 2.
- “ Lives with parents and 2 older sisters.
- “ Attends local mainstream Primary School supported by SSO’s. Typical cognitive function
- “ Received first PWC in 2013
- “ Rapid deterioration end 2014-early 2015. No longer walking and in PWC for all independent mobility. Dependent for all transfers. Similar deterioration in UL strength and function (R>L) resulting in difficulty with self-feeding, drinking and grooming activities.

# Functional Goals

- ” Throwing balls/other items*
- ” Eating and drinking independently*
- ” Brushing teeth and hair*
- ” Typing on the computer*
- ” Reaching for items such as library books.*

*” J 5/8/2016*

# Timeline

May 2016	Information on arm supports provided to family
Jul-Nov 2016	Trial of Various arm supports
Nov 2016	Multiple concurrent AT prescriptions – Dynamic Arm Support, New PWC, ceiling hoist, NTPE, home modifications
Dec 2016	Application to NDIS
Feb 2017	Received new PWC and funding for Dynamic Arm Support approved
1/3/2017	Revised UL module for SMA completed (baseline)
June – July 2017	Appointments at Novita Tech to look at mounting of arm support.
July 2017	Quote for additional funding for mounting of arm support provided
Sept 2017	Mounting of DAS approved by NDIS
Oct 2017	Appointment at NovitaTech and arm support mounted to PWC

# Timeline cont.

Oct-Nov 2017	Home visits to review and adjust DAS
Feb 2018	School meeting
24/4/2018	Email received from Fa regarding issues with DAS
10/5/2018	DAS collected for repair
June 2018	Approved for Spinraza treatment
13/6/2018	Pre-Spinraza Revised UL module completed - DAS not available as still away being repaired
June 2018	Modification to seating due to weight loss (DAS still away for repairs).
16/7/2018	Repaired DAS replaced on PWC - new R lateral supports interfering with rotation of DAS.
5/9/18	Seating appointment to reconcile issues between support needs of R lateral and movement of DAS. Revised UL module for SMA conducted with DAS



# Review of Goals

- “ Throwing balls/other items – *Met*
- “ Eating and drinking independently - *Met*
- “ Brushing teeth and hair - *James reported that he doesn't often brush/comb his hair, but can if he wants to. Used regularly to brush teeth.*
- “ Typing on the computer – *Not used for this*
- “ Reaching for items such as library books. - *James reported that he is able to reach for items on a shelf however stated that "now I am in year 5 and read novels and most of the books I like are on the top shelf or down low and only the boring books are in the middle".*

8<sup>th</sup> March 2018

# Prescription

## Gowing Arm Support (Focal)

- Electric with hand held control panel
- Adjustable resistance – active or passive raising.
- Adjustable tilt of main upright section
- Removable arm on mounted base.
- Different forearm supports available +/- elbow bracket/hand support
- Can set 'floor'
- Locking function





## Magic Mobility V6 MWD Power Wheelchair (Flame red)

- Joystick on LHS (previous PWC on RHS)
- Swing up arm rest on L; T-bar arm rest on R
- Removable knee block
- Lift and Tilt, elevating footrests
- All terrain tyres

# Challenges

- “ Complexity of prescribing new and unfamiliar AT - it is always going to be more complicated than you think!
- “ Multiple simultaneous AT prescriptions  
[PWC and DAS - also bathroom mods, ceiling hoist prescription, mobile shower/toilet chair, NTPE, school toilet chair, slings, cloud chair]
- “ Competing, but equally important priorities - eg toileting and mounting of DAS; postural support needs and rotation of DAS.
- “ Use in different environments – eg school
- “ Changes in client function - weight loss, Spinraza treatment

# Discussion Points

## - Learning for future prescriptions

- “ What can it realistically assist with? – Need for functional goals (Van der Heide and De Witte 2016)
- “ Adjustable resistance – different activities

# Discussion Points cont

## - Learning for future prescriptions

- ” Mounting - likely to be complicated. Easier to mount on an existing piece of equipment, however be aware that it may require some changes to the seating such as changing arm rests, lateral supports etc
- ” Footprint of Power wheelchair

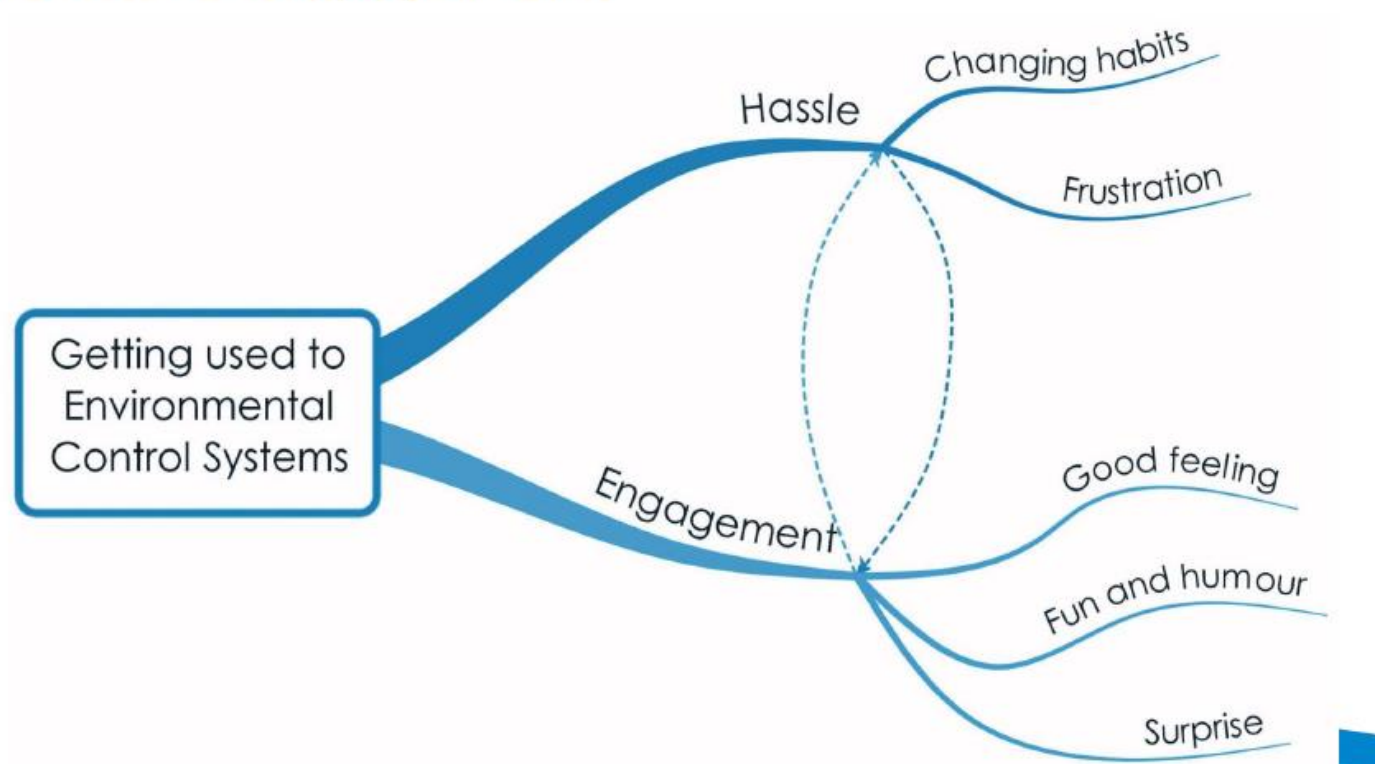


# Discussion Points cont

## - Learning for future prescriptions

- “ Learning to use the device and implementation into daily life including use with other AT (similar to other complex AT - Verdonck et al 2013)
- “ Use in different settings
- “ Use of Revised UL module for SMA as outcome measure

## Hassle vs engagement



Verdonck et al 2013



# References

- “ Van Der Heide, L and De Witte, L (2016). The perceived functional benefit of dynamic arm supports in daily life. *Journal of Rehabilitation Research and Development*, 53 (6), pp 1139-1150
- “ Verdonck, M., Steggles, E., Nolan, M. and Chard, G. (2013). Experiences of using an Environmental Control System (ECS) for persons with high cervical spinal cord injury: the interplay between hassle and engagement. *Disability and Rehabilitation: Assistive Technology*, 9(1), pp.70-78

**Thank-you**

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