

A pilot for a mobile arm support service in south Wales

Introduction

A mobile arm support (MAS) pilot has been running since January 2017 from within Cardiff and Vale UHB's Rehabilitation Engineering Unit (REU), part of the Artificial Limb and Appliance Service (ALAS). Mobile arm supports are devices designed to reduce the effort required to move the arms and increase their range of movement (ROM). Patients with arm weakness, often as a result of neurodegenerative disorders like motor neurone disease (MND), struggle to perform activities of daily living (ADL). MAS make it easier for patients to perform ADL, increasing their independence and improving their well being [1]. This pilot's objectives were to improve patient independence, quality of life (QOL) and also test the feasibility of providing a MAS service in south Wales. Most patients wanted to feed themselves, some also used MAS to access their computers or tablets.

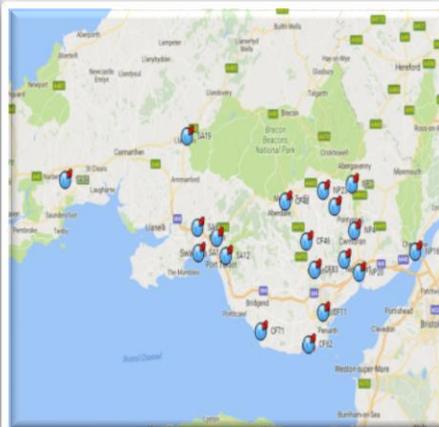


Figure 1: Patients' estimated locations

Methods

Referrals were received from healthcare professionals across south Wales; **Figure 1** shows the patients' geographical spread. Assessments for arm muscle strength and joint ROM, based on the Oxford muscle-grading scale, were carried out at the initial visit and equipment issued where possible. Two MAS devices were available for issue: the Jaeco table mounted MAS [2] (**Figure 3**) and the Ergorest arm support (Ergorest, Siilinjärvi, Finland). Additional bespoke adaptations were made where necessary and equipment delivered in follow-up appointments. Adaptations included attaching modified spoons, forks, wrist support or a stylus for use with touch screen devices (see **Figure 4**). All patients were reviewed every 6-8 weeks and QOL was assessed by unstructured patient feedback.



Figure 4: Custom Adaptations and Forearm support cover

Referrals received	19
Assessed	17
Issued with MAS	10
Returned equipment	6
Currently using MAS	4

Table 1: Pilot Summary

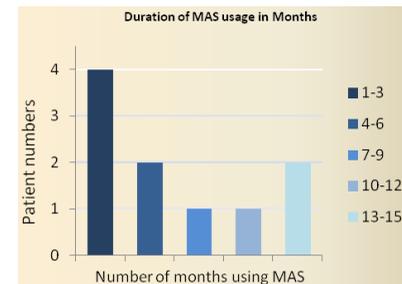


Figure 5: Patient numbers and duration of usage.

Results

The pilot is summarised in **Table 1** and **Figure 5**. 17 of the 19 patients referred had an MND diagnosis, one had multiple sclerosis (MS) and one Duchenne muscular dystrophy (DMD). These MS and DMD patients, when assessed were not able to utilise the MAS because they had very limited pain-free ROM. A total of 10 patients were issued with and used MAS. The duration of MAS use in months is shown in **Figure 5** for the 10 clients issued with equipment. Three of the four individuals currently using MAS are experiencing slow progression of MND and have been able to utilise them for their independence for over 12 months. Four users deteriorated quickly and used MAS for less than three months. **Figure 6** shows a client using two Jaeco Table Mounted MAS on both arms. Four patients issued with MAS required adaptations to the device; all having a mechanism to attach a spoon, fork or wrist support and one also using a modified stylus on a tablet computer. Three clients who returned equipment had deteriorated and lost too much strength, two had passed away, one exhibited very slow progressing MND and felt they could still manage most ADL without MAS.



Figure 3: The Jaeco Table Mounted MAS [2]. (Jaeco Orthopaedic, Hot Springs, Arkansas, USA)



Figure 6: A patient using two MAS

Discussion

Patients with slowly progressing MND benefitted the most as they were able to use MAS for longer periods without fatigue. Feedback suggested that they had a positive impact on patients' lives, indicating an improved QOL. The MAS enabled users to perform at least one ADL independently which they otherwise would not be able to. One user described it as a "God send" and said "It has changed my life, I wouldn't know what I would do without it". Material and staffing resources are available to provide a service, financial feasibility may not be easily demonstrated from this pilot but QOL improvement could be judged by users' feedback.

Conclusion

Providing and sustaining such a service is feasible with careful planning, sufficient resources and ability to respond quickly. Health and social care cost savings are difficult to demonstrate when assessing feasibility. A detailed cost-benefit analysis, considering staff, time and equipment resources will be required to develop a robust business plan. Expanding the service to non-ambulant clients e.g. wheelchair users, could benefit a larger patient group. Increased independence was evident but more structured QOL measuring tools may further validate the patient-reported benefits.

References

- [1] Neater (2015). *Clinical Evidence: Dining assistive technology for people with physical disabilities*. Available at <http://www.neater.co.uk/clinical-evidence/>. Accessed 27 December 2017.
[2] Jaeco (2017). *Table Mount MAS*. Available at: <http://jaecoorthopaedic.com/products/products/Table-Mount-MAS-.html>. Accessed, 27 December 2017.