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**Mrs Sarah Hiller<sup>1</sup>**

<sup>1</sup>*State-wide Equipment Program*

### **Washable Incontinence Products vs Landfill**

In 2016 it was estimated that 4.8 million people in Australia were living with incontinence. This number is expected to rise to 6.5 million by 2020. How many of these people use disposable products that go straight into landfill? It can take up to 500 years for one product to breakdown in landfill. There is an estimated 450,000 tonnes of incontinence products going into Australian landfill sites yearly. In Australia alone 3.75 million disposable nappies are used each day and it takes approximately one cup of crude oil to make one nappy.

Not only does this place stress on our landfill sites but also creates emissions increasing our carbon footprint. Due to the high volume of untreated human waste that is not able to biodegrade naturally, there is concern of possible spreading of viruses and contamination of the earth and soaking into groundwater.

Washable products are just as dependable and user friendly and in many cases not as bulky as the equivalent disposable. Washable briefs are more cost effective with an average cost of \$22.00. One pair of disposable briefs can be washed and worn at least 100 times which is an estimated 22 cents per wear. The cost of one pair of disposable briefs at \$2.85 then equates to \$285.00 for the equivalent usage.

Switching just one person to washable underwear would save approximately 2,200 disposable items from landfill a year. In the State of Victoria, DHHS and SWEP are leading the way by funding only washable products for consumers eligible for State continence funding. SWEP also offer these same items to those NDIS participants who choose us as their Supplier.

**Ph.D Katsutoshi Oe<sup>1</sup>**, Ph.D Kohji Kariya<sup>1</sup>, Mr. Takato Mori<sup>1</sup>, Mr. Samiullah Utmanzai<sup>1</sup>

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#### NEW TYPE HEARING AID SYSTEM WITH FUNCTION OF SOUND SOURCE DIRECTION PRESENTATION

**Aims:** Development of new type hearing aid system. This system consists of ear-hook unit and drive unit. The main topic of this system is that the information of sound source direction only is presented to user by vibration. The information of direction is estimated from sound detected by microphone in the ear-hook unit. This device is suitable for the sensory unilateral deafness patients. In this report, we aim to develop the new shape ear-hook unit with compact, comfort and high performance.

**Findings/Results/Outcomes:** In this report, the compact ear-hook unit with ultra-small microphone and micro vibrator was made. From the results of comfort and performance evaluation, we could find the better shape and material for compact ear-hook unit.

#### Abstract (250 words)

The unilateral deafness patients lose their hearing ability of unilateral ear. The healthy subjects identify the direction of sound source by time and phase difference at their both ears. Therefore, the unilateral deafness patients can not identify the direction of sound source, and can not identify the person who speaks to them and the object that sounds an alarm. If the cause of hearing loss is conduction, the conventional hearing aids show the effectiveness. But, in case of the cause is sensory, these devices do not have enough effect. These patients need the information of sound source direction, the device that has the function of sound source direction presentation is desired.

In our previous report, we proposed the new-type hearing aid system with the function of the sound source direction presentation. This system consists of two parts: ear-hook unit with microphone and vibrator and drive unit with the function of the sound source direction estimation. Furthermore, it was confirmed that this system could present the sound source direction to the user.

In this report, we aimed to refine the ear-hook unit in the viewpoint of downsizing, comfort and performance. At first, new ear-hook unit was designed for ultra-small microphone and micro vibrator. After that, the prototype units with 3 kinds of shapes and 2 kinds of materials were made, and their comfortability were evaluated. At last, the effect of the vibrator's noise to the microphone was evaluated. From the results of above-mentioned evaluation, the better dimension and material was determined.

**Ph.D Katsutoshi Oe<sup>1</sup>**, Mr. Kazutaka Hosokawa<sup>1</sup>, Mr. Ryoya Nakamura<sup>2</sup>

<sup>1</sup>*Daiichi Institute Of Technology*, <sup>2</sup>*Kyushu Institute of Technology*

#### PROPOSAL OF TRAINING DEVICE FOR ESOPHAGEAL SPEECH METHOD WITH MYOELECTRIC SIGNAL

**Aims:** Development of the esophageal speech method training system by using of myoelectric signal. The esophageal speech method is an excellent speech method for laryngectomy person, but this method is difficult to acquire, because of there is no scientific training method. In this research, we aim to establish the systematic training method with bio (myoelectric) signal measurement.

**Findings/Results/Outcomes:** In this report, the following results were clarified by bio signal measurement.

1. The esophageal speech users used tongue and diaphragm for taking air to esophagus.
2. The spots suitable for myoelectric signal measurement were lower jaw and the lowest part of intercostal.
3. The sequence of each muscles activation and voice generation was same, not depended on trial.

#### Abstract (249 words)

The patients who undergo the laryngectomy lose their voice. The voice is very important communication method for human, and these patients become to feel inconvenient. For these patients some speaking method are developed and used. One of them is the esophageal speech, this method uses the air from esophagus to generate the primary tone. This method has good characteristics at voice quality and convenience. But learning of this method is difficult, the acquisition rate of a simple conversation is about 60-70%, and the training term is more than 6 months. One of the reasons is the scientific training method is not established.

In this research, we aim to establish the training method of esophageal speech with bio monitoring. The esophageal speech method use some muscles for taking in air to the esophagus. Therefore, it is important that the clarification of "what muscle" is activated in esophageal speech. And "when" the muscle activates is important, too.

In this report, we took a survey to esophageal speech users, for clarification of "what muscle" is activated in esophageal speech. From the result, it was clarified that the muscles of mouth and abdominal were tensing up, we guessed the tongue and diaphragm were activated in esophageal speech. Based on these results, the myoelectric signal of the lower jaw and the lowest intercostal were measured, at the same time, the voice was measured, too. From the result of measurement, it was clarified that the sequence of each muscle activation and voice generation was same.

**Alison Schneider<sup>1</sup>, Jessica Moller<sup>1</sup>**

*<sup>1</sup>Djerriwarrh Health Services*

**Title:**

Spotlight on siblings: Implications for home modification practice

**Aims:**

- To identify siblings as the forgotten consumer of home modifications
- To increase knowledge of how home modifications can impact siblings in a positive and negative manner.
- To present a case study that reviews how home modifications impacted on siblings and how this was addressed.
- To provide guidance for community-based occupational therapists when prescribing home modifications, that is inclusive of both the client and sibling's needs.

**Findings/Outcomes:**

Disability is a unique, shared experience for a family, and can affect all aspects of family functioning. Home Modifications are often required for people with disabilities to enable improved safety, independence and for support services to be provided in the home.

Modifications to the home have the potential to change the way "home" is experienced by all members of the family. Siblings are often a forgotten consumer of home modifications, as government policies espouse a focus on the needs of the client and carer(s). Unfortunately, limited research is available to guide occupational therapists with how to include siblings when prescribing home modifications.

This poster presents a case study of a 7-year old client who required a major bathroom modification and the impact of these modifications on the clients' four siblings aged 3 to 13 years. It provides guidance for practice developed for our occupational therapy team to ensure siblings are not forgotten. This guidance is framed around the "S's for Siblings", which are: safety, space, structure, support and style.

**Dr Natasha Layton<sup>1</sup>**, Dr Diane Bell<sup>2</sup>

<sup>1</sup>ARATA, <sup>2</sup>University of Stellenbosch

Poster Session

**TITLE An 'ARATA' for Africa? Supporting the development of a Southern African community of practice for assistive technology.**

### **Aims**

International Assistive Technology Professional Associations operate in many regions to connect and support AT users, researchers, practitioners, suppliers and supporters. The WHO Global AFRO Region has extensive unmet need for AT, as well as exciting innovations and developments in appropriate and sustainable AT development and delivery. Australia's International Assistive Technology Professional Association, ARATA, offered its structure and resources to African stakeholders who may choose to establish an African AT Association. ARATA also seeks to learn from African innovations relevant to service delivery in similar environments (rural and remote) and climactic conditions (heat, humid/arid, salt, dust).

### **Outcomes**

The Global Cooperation on AT (GATE) Network supports global and regional actions to progress the Global priority research agenda to improve access to high-quality affordable assistive technology. A vision for a community of practice in assistive technology in Africa was proposed at the GREAT Summit, 2017 and further explored during the recent ISO meeting in Kenya, May 2018. A Listserv and Dropbox have been established and over thirty participants across fifteen countries are involved. Initial outcomes include the sharing of affordable and sustainable AT design, service delivery strategies and evidence-into-practice information across participants. Reciprocal exchanges based in the uniquely African concept of 'ubuntu' or equality of value among participants, resonate with ARATA's philosophy of valuing equally the diversity of AT stakeholder perspectives. Interest and involvement is welcomed from all Poster viewers.

**Dr Natasha Layton<sup>1</sup>**, Liz Nade<sup>1</sup>, Libby Callaway<sup>1</sup>

<sup>1</sup>NATA

FOCUS AREA 5. ***Policies and systems*** ... AT policies, funding and service development

TITLE OF PAPER Australia's National Assistive Technology Alliance

Once a highly specialised field, assistive technology (AT) has become more broadly used in the wider community, with an expansion of people using AT as well as recommending and prescribing AT. Government spending on AT is now occurring beyond the traditional areas of disability, aged care and community into education, early childhood, job access, housing and beyond. This burgeoning environment of AT use, funding and practice requires sector connection and collaboration.

**Aims** The National Assistive Technology Alliance Is a community of nearly 20 peak national stakeholders. Established by several Independent Living Centres and Australian Rehabilitation and Assistive Technology Association (ARATA) as an unincorporated entity, NATA aims to foster collaborations and connections across the AT sector in response to rapid policy change.

#### **Outcomes**

This poster describes the work of this broad-based Alliance of nationally-focussed organisations concerned with assistive technology use, innovation, manufacture, supply, provision, service delivery, research, education or oversight. Eighteen months after its inception, NATA includes Australian peak bodies across five broad stakeholder groups:

- AT Consumers
- AT Practitioners
- AT Services
- AT Suppliers
- AT researchers/ educators

As a centralised point for knowledge sharing and a portal for communication across the diverse sector, the Alliance's activities are strategically prioritised by NATA participants. A range of outcomes will be presented.

**Jane Sander<sup>1</sup>**, Stacey Burr, Alex Hayes, Richard Sutton

<sup>1</sup>*Rehabilitation Engineering Clinic*

Title: An innovative approach to providing customised commode seating

No author information to be included in the submission.

Aims: To develop a custom commode seat for a client with high pressure care needs

Findings/Results/Outcomes

Assessment of 3 available commode seats all of which pressure mapped with high pressure over the posterior pelvis. The development of a customised commode seat was proposed which was went through a process of moulding, scanning and 3D design. A prototype customised commode seat was produced using a robot carver. The custom seat was checked again using the pressure mapper and refinements made. A final product was then covered and checked again on the pressure mapper. The results showed improved pressure distribution away from the vulnerable areas. The outcome was that the client could continue to use commode seat with reduced risk of developing pressure injury.

Abstract (word count)

Standard commode seats are fine if you don't need to spend long on them and your skin is in good condition. Pressure injury is a common complication for people with Spinal Cord Injury. It is essential that all support surfaces provide the best available pressure redistribution. This client had a major pressure injury and spent 7 months in hospital as a result of having to have 2 surgeries (debridement and rotation flap) then extensive rehabilitation to get back to normal sitting regime and functional activity  
Commode seats typically can cause pressure injury and in this case pressure mapping indicated these were not providing adequate pressure distribution

A customised commode seat was needed

The process involved pressure mapping using the, taking an impression using a bean bag mould technique, scanning the impression and using a Qube<sup>®</sup> design program to manipulate the object to come up with a design. This was then carved using a robotic CNC machine to produce a prototype. This was then checked again with mapping and improved pressure distribution noted vs commercial products. The result was a commode seat that enabled the client to complete daily functional tasks with reduced risk of pressure injury.

**Miss Rachael Russell<sup>1</sup>, Mrs Sarah Solomon<sup>1</sup>, Mrs Stephanie Williams<sup>1</sup>**

<sup>1</sup>*Calvary Health Care Bethlehem*

AATC 2018

Australian Assistive Technology Conference - Experiences, Opportunities and Innovation

**ABSTRACT**

**Title: Passenger vehicle modifications for clients with Progressive Neurological Diseases: Considerations for both Therapists and Clients.**

**Introduction:**

Clients with a Progressive Neurological Disease (PND) may lose the ability to independently transfer in and out of a vehicle. A modified vehicle enables individuals to regain their freedom without reliance on other modes of transport.

It is essential to consider whether proposed modifications will suit the client now and into the future. This is especially important for clients with a PND.

**Aim:**

We will share our experiences of prescribing passenger vehicle modifications for clients with a PND and outline considerations for clients and therapists to ensure the most appropriate decision is reached. There are many factors to consider when investigating appropriate vehicle modifications for a client, these factors include and are not limited to:

- Diagnosis and prognosis/disease progression
- Carer supports
- Type of vehicle required
- Funding options
- Other transport options
- Psycho-social and emotional aspects

Certain passenger vehicle modifications can be appropriate for use in early-mid stages of a PND. Discussing the limitations of these modifications with clients can be challenging for clinicians as some modifications can have limited longevity.

**Outcome:**

The OT's at our service have assisted many clients to access appropriate passenger vehicle modifications. We identified that our clients and fellow OT's could benefit from the development of a clinical reasoning guide when making the decision on an appropriate passenger vehicle modification.

This passenger vehicle modification guideline aims to ensure clients with PNDs achieve functionally appropriate, timely and cost effective vehicle modifications. This can result in provision of a modification that enhances community living, quality of life and social participation