# Usability evaluation of application forms for augmentative & alternative communication (AAC) technology in Canada

Jillian Henderson[1], Spencer Blahey[1], Shane Pinder[1], Tracy Shepherd[2], Beata Batorowicz[2], Claire Davies[1]

[1]*Department of Mechanical and Materials Engineering, Faculty of Engineering and Applied Science,* [2]*School of Rehabilitation Therapy, Faculty of Health Sciences, Queen's University*

## BACKGROUND INTRODUCTION

The American speech- language- hearing association (ASHA) defines alternative and augmentative communication (AAC) technology as any technique or tool that helps individuals express thoughts, wants and needs, as well as feelings and ideas [1]. For the system to be categorized under "alternative", the technology must be used in place of the user's speech [1]. For the classification to be augmentative, the technology must be used to supplement existing speech by improving transmission and message understanding, enhancing communication itself [1, 2]. Examples of AAC include, but are not limited to: picture communication boards, line drawings, speech-generating devices (SGDs), tangible objects or eye-gaze technology.

Studies have shown that the use of AAC technology can result in improved employment outcomes [3, 4, 5]; as well as promote independence, facilitate development of social relationships, and enhance educational opportunities [6, 7]. It has also been recognized that funding is an essential element in accessing assistive devices [7], and that AAC device selection is limited through provincially funded and charitable organizations and/or service provider programs [7]. However, caregivers and experts have expressed concern that some of these organizations and programs, such as the government of Ontario's Assistive Device Program (ADP), are difficult to access and to apply for funding [8] which introduces a barrier for individuals to obtain and use AAC technology.

In June of 2018, the government of Canada introduced Bill C-81, an act to ensure a barrier-free Canada, "The Accessible Canada Act " [9]. This act received Royal Assent on June 21, 2019, and requires the identification, removal, and prevention of barriers in federal jurisdictions by 2040 [9]. While Ontario's Assistive Device Program (ADP) has been reviewed [8], the other government funded and charitable organizations and/or service programs in each province and territory have not been revised for usability and accessibility.

## PROBLEM STATEMENT

The objective of this research is to evaluate websites and the application process for financial assistance of organizations across Canada that provide AAC technology access.

## METHODOLOGY

First, the organizations that provide support for individuals who required AAC were identified for each province and territory across Canada. Each of the websites for the organizations were reviewed then uploaded into NVivo to evaluate themes. Additionally, evaluation matrices were developed within Excel, to determine the accessibility of each website and application forms. The evaluation matrix criteria were generated using the themes established during the NVivo analysis as well as previous background research [7, 8]. The Web Content Accessibility Guidelines, WCAG, score of each website was determined using an additional resource [10]. A quantitative analysis was completed within Excel.

## RESULTS

There was at least one assistive program specific to each of the 10 provinces (15), while only one specific to a territory (Nunavut), lastly, 2 which are Canada wide, however Non-insured Health Benefits (NIHB) requires a Northwest Territories or Nunavut health care number and ALS Society of Canada does not include any territories. It was undetermined on what Yukon has available for AAC technology assistance. Eighteen organizations were reviewed in total and can be seen within Table 1, alongside their respective province or territory and determined WCAG score.

**Table 1 – Following table contains each of the reviewed governemnt funded and charitable organization and/or service provider program, alongside their respective province or territory and WCAG score.**

| Province /Territory | Name of Organization | WCAG Score |
|---|---|---|
| Canada Wide (CW) | Non-Insured Health Benefits - NIHB | 96 |
| | ALS Society of Canada | - |
| Alberta (A) | Alberta Aids to Daily Living - AADL | 84 |
| British Columbia (BC) | Communication Assistance for Youth and Adults- CAYA | 87 |
| Manitoba (M) | Winnipeg Regional Health Authority | 90 |
| | Open Access Resource Center - OARC | 87 |
| New Brunswick (NB) | Stan Cassidy Center for Rehabilitation - SCCR | 65 |
| Newfoundland (NF) | Government of Newfoundland and Labrador Education and Early Childhood Development | 96 |
| Nova Scotia (NS) | IWK Health Center | 56 |
| | Hearing and Speech Nova Scotia - HSNS | - |
| Nunavut (N) | Clinic for Augmentative Communication - CHEO | 96 |
| Ontario (ON) | Easter Seals Ontario | 87 |
| | March of Dimes Canada | 96 |
| | Assistive Devices Program -ADP | 100 |
| Prince Edward Island (PEI) | AccessAbility Supports | 96 |
| Quebec (QU) | PMATCOM | 96 |
| Saskatchewan (S) | SaskAbilities | 71 |
| | Angels and Friends Foundation | 81 |

The average WCAG score for all 18 organizations were 86.5 out of 100, however, two websites (HSNS & ALS Society of Canada) were not able to be evaluated. One website, ADP, had a WCAG score of 100/100, while 6 received 96/100. The lowest WCAG score was a 56 for the IWK Health center, followed by 65 (SCCR) and 71 (SaskAbilities). The evaluation matrix criteria used to review each website can be seen in Table 2 below. Eight of the 18 websites offered a French option. It is important to note that 13 of the 18 organizations required an external recommendation or prescription to be able to apply to the assistive program. This includes assessments and referrals from doctors, nurse practitioners, speech language pathologists and occupational therapists. One required referral from teacher or educator.

**Table 2 – Website Evaluation matrix results. Where yes, refers to the number of organizations which do meet the respective criteria, no meaning it does not and Unclear, meaning it could not be determined.**

| | Criteria | Yes | No | Unclear |
|---|---|---|---|---|
| **AAC Application Process** | Requires Direct Contact (AAC Device) | 7 | 3 | 8 |
| | Requires company assessment | 5 | 6 | 7 |
| | Requires Recommendation | 13 | 3 | 2 |
| | Costs money to apply | 2 | 16 | 0 |
| **Eligibility** | Easy to find on the website | 8 | 8 | 2 |
| | All Ages | 5 | 8 | 5 |
| | Minimum skills requirement | 1 | 7 | 10 |
| | Cannot already have/purchased device | 5 | 2 | 11 |
| | Device must be trialed | 3 | 5 | 10 |
| | Clear timeline | 2 | 16 | 0 |
| | Based on "Urgency" | 2 | 6 | 10 |
| | Waiting list | 5 | 0 | 13 |

Three organizations did not have application forms available to be filled out and required contact through phone or email (CHEO, AccessAbility Supports and PMATCOM). Four of the foundations had forms that were easy to find and did not require external links. One (ADP) required the individual to download Adobe Reader to access the form and the adobe reader had to be version 10 or better otherwise the form could not be downloaded and edited. Six

were easy to download and immediately edit.  Five could not be edited directly and required to be converted to an editable format or printed and scanned. Five organizations allowed for online submission such as email, while 7 allowed faxing, 4 allowed both; the ADP would only accept mail in applications. The number of forms required within the application was often difficult to determine as only 5 made the process clear to the clients with only 1 or 2 forms with an average of 4.5 pages. The average size of the files were 473 KB, where the largest file was 1967KB (ADP).

## DISCUSSION

The study reviewed the current organizations in Canada for individuals to gain access to AAC technology. Although there are 18 assistive programs available in Canada, Yukon did not appear to be eligible for assistive aid, leaving an entire territory without support in accessing AAC technology. Thirteen of the 18, 72%, requires a recommendation, assessment, or prescription from a health care professional to be eligible for applying for assistance, however these appointments can cost the induvial up to $190 for an hour [11], a cost which is not covered by the programs [8]. These assessments also do not guarantee any assistance will be given and often several meetings are needed, with various people involved, before a prescription can be made [8]. The lack of timeline and series of waitlists can also provide a barrier in accessing the technology. CAYA can have a wait list of up 26 months. It has been reported by clinicians that individuals can be "using dated technology by the time that it actually gets into their hands" [8]. There were also some issues discovered within the eligibility such as the NIHB requiring the device not be used in "acquiring new communication skills", or PHATCOM where the applicant is "required to overcome a disability" in order receive funding for assistive technology device.

## CONCLUSION

There were 18 government funded and charitable organizations and/or service provider programs analyzed during this review. It was undetermined what Yukon has available for AAC technology assistance, and of the territories and provinces which are provided with assistance, it is evident there are some barriers that can prevent an induvial from gaining access to AAC technology. This research is significant as AAC device selection is limited through government funded and charitable organizations and/or service provider programs [7], it is important that the process of which to apply to these programs are clear and barrier free.

## ACKNOWLEDGEMENT

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