



Accessibility of Australian government online cancer screening information for people with intellectual disability

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Abstract

Aim Public health campaigns, including Australian cancer screening programs, are increasingly promoted online through government websites. The accessibility of these initiatives for people with intellectual disability is unknown. However, a lack of accessible information about available services is an important barrier to cancer screening for this group. This study aimed to investigate the accessibility of online information for cancer screening programs.

Subject and methods Australian government health websites promoting the national breast, bowel, and cervical screening programs were identified and web pages were evaluated for their compliance with Web Content Accessibility Guidelines 2.0, cognitive accessibility guidelines, readability recommendations, and where relevant, compliance with Easy Read guidelines.

Results The most common accessibility errors included low-contrast colors, missing alternative text, broken links, and excessive content. Readability was a consistent issue, with most materials written at levels considered too high for both people with intellectual disability and the general population. The limited number of documents that were readily available in Easy Read did not follow guidelines.

Conclusion These findings demonstrate that government public health initiatives currently fail to meet the communication and information needs of people with intellectual disability. This places the population at risk of continued under-screening and fails to uphold their right to information about their healthcare. The creation and dissemination of accessible materials should be a priority for governments and health services.

Keywords Intellectual disability · Health information · Cancer screening · Accessibility

Introduction

Background

Intellectual disability is defined by significant limitations in intellectual functioning and adaptive behavior, with an estimated global prevalence of 1% (Maulik et al. 2011). While

the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) asserts the right to equitable access to healthcare (United Nations 2006), people with intellectual disability experience persistent health inequalities. For example, deaths from cancer in people with intellectual disability as a proportion of all deaths is high, yet there are barriers to—and lower uptake of—cancer screening (Cuypers et al. 2022; Reppermund et al. 2020; Sullivan et al. 2004). Strengthening the accessibility of preventive health information can address these inequalities. People with intellectual disability and their supporters report limited knowledge about cancer screening services and poor access to relevant information (Cuypers et al. 2022; Reppermund et al. 2020; Sullivan et al. 2004). Likewise, the Royal Commission into Violence, Abuse, Neglect, and Exploitation of People with Disability (the Disability Royal Commission) (2023) identified health information as a major domain of inaccessibility. This issue is of particular concern in digital spaces where

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the online promotion of preventive health initiatives occurs. Indeed, Australian governments have extensively promoted the National Bowel Screening Program, BreastScreen Australia, and the National Cervical Screening Program online.

Accessible health information is essential to developing health literacy among people with intellectual disability and their support networks. Health literacy is how people access, understand, and apply health information to make choices (Sørensen et al. 2012). It is influenced by organizational efforts to *respond to* structural barriers experienced by different groups accessing and engaging with health information and services. Most public health initiatives to improve the accessibility of health information target the general public. Structural barriers for people with intellectual disability are comparatively overlooked (McIlfatrick et al. 2011). Failures to consider accessible communication and digital design in the online promotion of national cancer screening programs reinforce the exclusion of people with intellectual disability (van Holstein et al. 2021). As such, the current study aimed to examine the accessibility of online Australian government cancer screening information for people with intellectual disability.

Web page accessibility

Website accessibility evaluations flourished following the World Wide Web Consortium (W3C) releasing its first iteration of the Web Content Accessibility Guidelines (WCAG) (W3C 2008). These international guidelines provided clear technical standards for assessing semantic markup in web pages and identifying potential issues for users with disability. There are four assessable categories: Perceivability, Operability, Understandability, and Robustness. Compliance with criteria for each category ranges from Level A (minimum) to Level AAA. The Perceivability guideline requires the provision of text-based alternatives to images and time-based media (e.g., videos). Operability requires that people have enough time to read content and can access help navigating websites. Understandability emphasizes that content should be readable, and users should be assisted in avoiding mistakes. Failing to meet these criteria can result in people with intellectual disability struggling to find, see, and process information. Robustness assesses web page compatibility with assistive technology. Violating this criterion may render websites inaccessible to the many people with intellectual disability who rely on these technologies (Tanis et al. 2012).

Failure by government health websites to use guidelines such as WCAG or consider online accessibility can exacerbate health inequalities by creating significant barriers to information for people with intellectual disability (Billingham 2014; Bunning et al. 2013; Gartland et al. 2022).

A Swedish survey examined the use and perceived difficulty of eHealth among people with and without disability. The authors found that people with intellectual disability reported the greatest difficulty with—and as a result the least use of—eHealth (Pettersson et al. 2023). Furthermore, where WCAG has been used to evaluate university, health service, and state and federal government websites, accessibility errors were found to be pervasive (Conway et al. 2012; Ismail et al. 2020; Kuzma 2010; Scanlon et al. 2021; Shi 2006; Solovieva and Bock 2014).

To address issues in web accessibility, Australia's Web Accessibility National Transition Strategy (NTS) required all levels of government to meet Level A compliance with the WCAG 2.0 iteration (Australian Government Information Management Office 2010). Some departments have aimed for compliance with the more recent 2.1 or 2.2 iterations, the latter of which was released in 2023 (W3C 2023a, b). These iterations consider touchscreen accessibility and criteria for people with cognitive disabilities, respectively. Importantly, WCAG criteria are broad and do not necessarily capture *all* the accessibility features that may be relevant to people with intellectual disability. This includes the amount of content on a web page or reliance on memory processes in verification and log-ins. Both are relevant features for people with intellectual disability but not fully addressed in WCAG. To address this gap, W3C created a set of supplemental cognitive accessibility criteria relevant to people with cognitive disability (W3C 2021). These guidelines have not previously been used in web accessibility audit studies but could provide further insight into the accessibility of web pages hosting cancer screening information.

Web page readability and Easy Read

Online health information must be readable for diverse audiences. Readability is a reliable measure of text difficulty, with information written at higher reading grades being difficult for most audiences (Lipovetsky 2023). Readability formulas evaluate characteristics like sentence and syllable length to estimate the reading grade level (often corresponding to school grades) of the text (e.g., the Flesch–Kincaid reading grade formula) (Australian Government 2021; Flesch 1948; Lipovetsky 2023). Studies have demonstrated that online health information from both governments and leading health organizations is written at levels higher than the recommended reading grade for the general population (Buell et al. 2020; Pett et al. 2021; Saletta and Winberg 2019). One Australian study demonstrated that web-based government information about breast and bowel cancer was written above reading grade 9 (Cheng and Dunn 2015). This is higher than both the grade 7 suggested by the Australian government for public-facing information (Australian Government 2021) and the grade 2–5 range typically targeted

for people with intellectual disability (Buell et al. 2020; Pett et al. 2021; Saletta and Winberg 2019).

Alternative communication formats such as Easy Read support the health literacy of people with intellectual disability. Easy Read is a writing style that aims to make information easier for people with intellectual disability to understand, especially when used with a trusted supporter (Chinn 2019; Chinn and Homeyard 2017). It does so by using simplified language, images accompanying texts, short sentences, active voice, and definitions of difficult words. Australian health service documents for COVID-19 were found to have higher readability levels than would be considered accessible for people with intellectual disability (Mac et al. 2021). This suggests that there have been problems in adhering to Easy Read guidelines.

This study

The accessibility of the Australian government online cancer screening information for people with intellectual disability is relatively unknown. This study investigated the accessibility of commonwealth and federated government web pages providing information for the National Bowel Screening Program, BreastScreen Australia, and the National Cervical Screening Program.

The research asked the question, *how accessible was Australian online cancer screening information to people with intellectual disability in 2023–2024?* Web pages were assessed for compliance with WCAG, supplemental cognitive accessibility criteria, readability recommendations, and the use and quality of Easy Read.

Method

Search and retrieval

A systematic search was performed on all Australian government websites to locate relevant web pages and associated documents (e.g., brochures, fact sheets) or videos (e.g., promotional videos, client stories). This included pillar organizations, which are agencies responsible for a particular area of priority in government. For example, BreastScreen Australia is the pillar organization responsible for the national breast screening program, and has a federated structure (e.g., BreastScreen Tasmania oversees the program in Tasmania).

Websites were searched for information relating to bowel, breast, and cervical cancer screening, by clicking through relevant links and conducting a search query within each website using keywords. To be included, items had to be aimed at the public (rather than service providers), provide information specific to screening as prevention (e.g., what screening is, how to access screening), and

be written in the English language. Items were excluded if they focused on information about cancer rather than cancer screening (e.g., definitions and symptoms of cancer), managing cancer after diagnosis, policy or legislative documents, national statistical data, or archived screening campaigns. Items were collected between 12 May and 28 June 2023 and evaluated between 29 June and 31 July 2023. Web pages were checked again for any updates between 17 and 24 May 2024.

WCAG and WAVE

There is variability between state, territory, and federal websites regarding the iteration of WCAG they are aiming to comply with. WCAG 2.0 is outlined as the target iteration within the NTS, and we selected it for this audit as it provides an opportunity to evaluate governments against the minimum standards to which they have committed (i.e., compliance with WCAG 2.1 or 2.2 also complies with WCAG 2.0). Compliance with criteria under the categories of Perceivability, Operability, Usability, and Robustness may be at Level A (i.e., *must* comply with this level), Level AA (i.e., *should* comply with this level), or Level AAA (i.e., *may* comply with this level). W3C argued that Level AAA criteria are not always possible or even necessary, so we will focus on Level A and AA criteria for this audit.

The WAVE software developed by WebAIM was used to evaluate the WCAG 2.0 criteria for each web page (WebAIM 2024). The WAVE tool has been applied in prior research (Ismail et al. 2020; Mason et al. 2021; Solovieva and Bock 2014). It automatically identified WCAG violations (identified as “errors”) and facilitated human evaluation of the web page by flagging where possible problems exist in the web page (providing a “warning”). Microsoft Narrator was also used to explore errors (WebAIM 2022). Narrator is an open-source screen reader software that reads information on the screen (including links, buttons, and text alternatives for images) and lets people navigate apps and web pages (Microsoft Corporation 2024). Where a WCAG 2.0 violation was identified using these approaches, the respective criterion was allocated a “1” and a note was made about the number and type(s) of error(s). If no error existed for that criterion, then the web page was allocated a “0.”

Evaluating videos

Video content was assessed for three features: integrated descriptions, captions, and transcripts (see Fig. 1). Integrated descriptions refer to visual information from a video being integrated into the main audio. For example, if the video

presented a graph, then the audio described the graph and how to interpret it. Automatically generated captions were not considered valid, as they often have errors and can lead to greater confusion for people who rely on them.

Supplemental guidelines

This audit examined six of eight criteria from the W3C supplemental cognitive criteria. To avoid double counting, the criteria “use clear and understandable content” and “help users avoid and correct mistakes” were not used. We evaluated understandability through Easy Read and readability, and helping users avoid mistakes was assessed in the WCAG guidelines. As before, a “1” was noted if there was an error present for a particular criterion, with a note made about the nature of the error. Unlike WCAG 2.0, these guidelines provided qualitative criteria about user experience rather than specific semantic markups (e.g., “*does not provide too much content*” is a criterion).

Readability

The Flesch–Kincaid (FK) reading grade score was used to evaluate the readability of written information on web pages and in documents. The FK score is a widely used readability measure, calculating readability using both sentence length and number of syllables (Daraz et al. 2018; Flesch 1948; Lipovetsky 2023). The score reflects the estimated grade level (i.e., number of years of education) required to understand the text. To obtain the score, content was copied from each of the web pages and documents and pasted into blank Word documents. The samples were edited to minimize errors in assessment such as placing periods at the end of dot-points to not arbitrarily inflate sentence lengths. FK has demonstrated utility for online health content (Cheng and

Dunn 2015), as it encourages shorter sentences and words, consistent with online reading preferences of people with intellectual disability (Sauvé et al. 2023). Readability was assessed against recommendations of grade 7 for the general population and grades 2–5 for people with intellectual disability.

Easy Read

We evaluated the Easy Read information using the Easy English Style Guide from Scope, a leading disability service provider in Australia (Scope 2013). If written materials were identified as being in Easy Read, they were then assessed for the following features: (a) short sentences and use of headings, (b) explained hard words/has a glossary for hard words, (c) 14-pt font minimum, (d) use of white space, (e) images to the left, (f) no more than 20 pages, (g) active voice, (h) minimal punctuation, and (i) left aligned.

Lived experience researcher advice

To check that the audit approach was comprehensive and appropriate, two meetings were held with a team of two intellectual disability lived experience researchers. In the first meeting the lived experience researchers were given information about the audit tool and goals of the project. Following this initial meeting, they were given time to think about what feedback they had about the tool. A second meeting was held 2 weeks later, where the team members confirmed that they thought the approach covered the key areas of web-based health information accessibility. They also produced their own list of accessible features, which overlapped with features in the audit tool. For example, the team identified navigation, layout, and use of colors as important (WCAG 2.0), easy-to-understand information (Easy Read



Fig. 1 Example of accessible features in video content. Note. This is from a cervical screening video by the Department of Health and Aged Care (URL: <https://www.youtube.com/watch?v=CRNI-vyLjIw>)

s. This figure demonstrates how videos were examined for this audit. Three features were examined: integrated descriptions, transcripts, and captions

and readability), and the amount of content and the layout of content (Cognitive Supplemental Criteria). The full list and its comparability to the audit tool are provided in Table S1 of the Online Resource.

Results

Search results

A complete list of websites and the number of items retrieved from each can be found in the Online Resource (Table S2). Breast screening information returned 162 items from across 12 websites (79 web pages, 46 videos, and 37 documents). This was followed by 74 bowel screening items across 10 websites (30 web pages, 35 videos, 9 documents). Finally, there were 72 items for cervical screening across 10 websites (39 web pages, 13 videos, 20 documents).

WCAG 2.0

Table 1 provides both the total number of web pages where at least one WCAG 2.0 error was present and the mean number of errors observed across all web pages for each criterion. Across all 148 breast, bowel, and cervical screening web pages, 134 (91%) featured errors. Stratified by screening program, errors were found on 69/79 of breast, 29/30 of bowel, and 36/39 of cervical screening web pages. Errors in the Perceivability category were the most frequent. Documentation of specific error types can be found in the Online

Resource (Table S3). To summarize the common issues, of the 1672 total errors, 792 (47%) were low-contrast errors, 327 (20%) empty links, 228 (14%) missing Accessible Rich Internet Application (ARIA) reference labels, and 133 (8%) related to missing form labels. All web pages adhered to criteria to provide sufficient time to read content, avoid designs that induce seizures, and appear and operate predictably.

Supplemental criteria for web pages

Errors identified according to the W3C supplemental criteria for people with cognitive disability are displayed in Table 2. Across 148 web pages, there were 174 cognitive accessibility errors, with an average of 1.35 errors per page (range=0,3). These error rates were driven almost entirely by a failure to help users focus. Web pages had a large amount of written and visual content (e.g., advertisements, links to unrelated topics). Many web pages also failed to provide contact information for relevant teams or organizations or mechanisms for people to obtain assistance with understanding content. None of the web pages required participants to rely on memory processes to engage with the content, and all web pages had features in place (e.g., breadcrumb navigation, clear iconography) to help users find what they needed.

WCAG 2.0 for video content

As illustrated in Table 3, 54 of the 94 included videos (57%) featured at least one accessibility error. The most

Table 1 Number of bowel, breast, and cervical cancer screening web pages with WCAG 2.0 errors for each criterion, and mean number of errors observed

WCAG 2.0 criteria	Bowel screening (n = 30)		Breast screening (n = 79)		Cervical screening (n = 39)		Total (n = 148)	
	n	M (SD)	n	M (SD)	n	M (SD)	n (%)	M (SD)
1. Perceivability								
Provide text alternatives	24	1.2 (1.03)	43	1.48 (2.24)	31	2.05 (1.93)	98 (66%)	1.57 (40.55)
Provide alternatives for time-based media	0	0 (0)	11	0.15 (0.36)	2	.05 (0.22)	13 (9%)	0.09 (6.43)
Content can be presented in different ways	23	1.67 (2.23)	31	2.01 (3.30)	31	3.67 (4.37)	85 (57%)	2.38 (58.86)
Easy to see and hear content	9	1.6 (6.21)	55	9.32 (16.46)	7	0.36 (1.04)	71 (48%)	5.39 (407.39)
2. Operability								
Keyboard functionality	5	0.3 (0.70)	29	0.71 (1.16)	1	0.05 (0.32)	35 (24%)	0.45 (29.37)
Time to read through content	0	0 (0)	0	0 (0)	0	0 (0)	0 (0%)	0 (0)
Design does not cause seizures	0	0 (0)	0	0 (0)	0	0 (0)	0 (0%)	0 (0)
Help users navigate content	23	1.43 (1.50)	50	5.51 (7.05)	32	2.64 (2.06)	105 (71%)	3.93 (211.14)
3. Understandability								
Content is readable and understandable	0	0 (0)	11	0.28 (0.70)	0	0 (0)	11 (7%)	0.15 (12.70)
Web pages appear and operate predictably	0	0 (0)	0	0 (0)	0	0 (0)	0 (0%)	0 (0)
Help users avoid mistakes	17	0.7 (0.95)	10	0.61 (1.51)	28	1.64 (1.91)	55 (37%)	0.90 (21.73)
4. Robustness								
Maximize compatibility with assistive technology	8	0.93 (2.24)	30	1.72 (3.13)	10	1.69 (3.81)	48 (32%)	1.55 (54.78)

Table 2 Number and percentages of bowel, breast, and cervical cancer screening web pages with features that are difficult for people with cognitive disability according to W3C

Supplemental cognitive criteria	Bowel screening (<i>n</i> = 30) <i>n</i> (%)	Breast screening (<i>n</i> = 79) <i>n</i> (%)	Cervical screening (<i>n</i> = 39) <i>n</i> (%)	Total (<i>n</i> = 148) <i>n</i> (%)
Help users understand what things are and how to use them	2 (7%)	21 (27%)	0 (0%)	23 (16%)
Help users find what they need	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Help users focus	28 (93%)	55 (70%)	35 (90%)	118 (80%)
Ensure processes do not rely on memory	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Provide help and support	14 (47%)	30 (38%)	23 (59%)	67 (45%)
Support adaptation and personalization	1 (3%)	2 (3%)	3 (8%)	6 (4%)

Table 3 Number and percentages of bowel, breast, and cervical cancer screening videos without accessible features

Audiovisual accessibility	Bowel screening (<i>n</i> = 35) <i>n</i> (%)	Breast screening (<i>n</i> = 46) <i>n</i> (%)	Cervical screening (<i>n</i> = 13) <i>n</i> (%)	Total (<i>n</i> = 94) <i>n</i> (%)
Integrated descriptions	9 (26%)	3 (6%)	0 (0%)	12 (13%)
Captions	11 (31%)	7 (15%)	0 (0%)	18 (19%)
Transcript	18 (51%)	32 (68%)	2 (15%)	52 (55%)

common error was a failure to provide transcripts or only including automatically generated captions. Integrated descriptions tended to be applied consistently.

Readability

Bowel ($M = 8.84$, $SD = 2.11$), breast ($M = 7.81$, $SD = 1.79$), and cervical ($M = 8.57$, $SD = 1.45$) screening web pages were above the recommended reading grade of 7 for the general population, and the 2–5 range typically used in written information for people with intellectual disability.

Documents had more variability. Bowel screening items approached a more accessible readability level for people with intellectual disability ($M = 5.03$, $SD = 1.76$). Readability of breast ($M = 7.07$, $SD = 1.35$) and cervical ($M = 6.29$, $SD = 1.50$) screening documents were still higher than is typically recommended for use with people with intellectual disability, but within the readability level for the general population.

Comparing readability of disability-specific information and general information

The readability of documents and web pages providing information for people with disability was compared with that of the general public documents and web pages (see Table 4). Disability-specific information may include information relevant to people with disability (e.g., reasonable adjustments, wheelchair accessibility), information addressed to people

Table 4 A comparison of the Flesch–Kincaid readability of disability-specific and general information on web pages and in documents

Type	Disability-specific	General
Documents	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Breast	6.6 (2.14)	7.17 (1.15)
Cervical	5.8 (1.18)	6.41 (1.58)
Web pages	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Breast	8.71 (1.75)	7.70 (1.78)
Cervical	8.2 (1.59)	8.60 (1.46)

Sample sizes are as follows: *Documents* – breast screening disability-specific documents, $n = 6$. Breast screening general documents, $n = 31$. Cervical screening disability-specific documents, $n = 3$. Cervical screening general documents, $n = 13$. *Web pages* – breast screening disability-specific web pages, $n = 8$. Breast screening general web pages, $n = 66$. Cervical screening disability-specific web pages, $n = 3$. Cervical screening general web pages, $n = 36$

with disability (e.g., “if you have a disability” headings), and information marketed as being in Easy Read. Comparisons could not be made for bowel cancer screening as there were no identified web pages or documents specific to people with disability. Breast and cervical screening documents and web pages did not follow readability recommendations for people with intellectual disability. Compared to breast and bowel screening, the disability-specific cervical screening documents approached a more accessible grade of 5. Breast and cervical screening web pages also did not follow recommended levels for the general public.

Use of Easy Read

No web pages were in Easy Read or featured evidence of codesign with people with intellectual disability. Twelve out of 62 documents (19%) were identified as being written in Easy Read (two bowel, five breast, and five cervical screening documents). Seven of these 12 (58%) documents were created for culturally and linguistically diverse (CALD) audiences rather than people with intellectual disability. Easy Read for CALD communities had an FK of 4.83 ($SD = 1.38$), and for people with intellectual disability the FK was 4.7 ($SD = 0.26$). Table 5 demonstrates that the quality of Easy Read was inconsistent for both groups. Documents for CALD communities less frequently featured accessible font sizes and more frequently used acronyms and full sentences.

Discussion

This study explored the accessibility of Australian government online cancer screening information. Results indicated that web pages did not meet minimum accessibility and readability recommendations, suggesting that accessibility needs to become a priority for web designers and public health policymakers to avoid failures in reaching critical groups. The findings of this audit are relevant to any nation committed to upholding the UNCRPD-stated right to equitable access to healthcare, especially given that online health information inaccessibility has been documented as a widespread issue (Cheng and Dunn 2015; Daraz et al. 2018; Friedman and Hoffman-Goetz 2006). Below we discuss the implications of the current findings and make recommendations for improving accessibility.

Accessibility issues in online health information impede efforts to achieve health equality for people with intellectual disability, by limiting the capacity of people with intellectual disability to autonomously search for and find information. The issues identified in this study were consistent with audits of other government and health web pages (Ismail et al. 2020; Scanlon et al. 2021; Shi 2006), underscoring their ubiquity. Evaluating content against the supplemental guidelines revealed issues typically unexamined in WCAG audits, namely, the frequent use of excessive and distracting content creating a significant barrier for people with intellectual disability. Web-based content tends to be text-heavy and lack images, which presents accessibility challenges to people with cognitive disability (Gartland et al. 2022). Promoting guidelines to health services and web designers that consider people with intellectual disability could support reductions in web page complexity.

While government strategies like the NTS are a good starting point for equitable digital design, it is evident that more is needed to support the right to information of people with intellectual disability as outlined by the Disability Royal Commission (Royal Commission into Violence 2023). Health topics can be difficult to discuss. Information that cannot be easily accessed risks creating a barrier to finding information altogether rather than seeking support to navigate websites. Transparency in the evaluation and follow-up of initiatives like the NTS may facilitate accountability and the resourcing required for their success. Unfortunately, there is still insufficient understanding of universal design principles to support users with intellectual disability on a global scale (Kennedy et al. 2011).

Cancer screening information likewise did not follow readability recommendations, consistent with previous studies (Mac et al. 2021). Information was frequently written at

Table 5 Comparison of the number of documents for people with intellectual disability and CALD communities that include typical features of Easy Read

Easy Read feature	Documents for people with intellectual disability ($n = 5$)	Documents for CALD communities ($n = 7$)
Short sentences (15 words maximum)	2	1
Information is sectioned	2	7
Explains hard words	1	0
14-pt minimum font	5	1
Avoids acronyms (defines them if needed)	5	5
White space	2	1
Images to the left, which relate to the information	2	1
No more than 20 pages	4	7
Dot points	4	2
Active voice	4	7
Minimal punctuation	5	7
Left aligned text	4	7
Clear headings	3	6

too high a grade, even when targeted to people with disability. Bowel screening information for people with disability seemed to be neglected entirely. Documents marketed as Easy Read failed to follow guidelines and were not always designed for people with intellectual disability. This pattern of findings suggests a need for training and resourcing services to make accessible health information readily and publicly available. Easy Read guidelines can also be enforced through policy audits and mandatory assessments of guideline compliance prior to publication of documents.

Accessible information alone may not be sufficient, as support networks often play an active role in supporting or gatekeeping of health understanding (Chinn 2019; Chinn and Homeyard 2017). This study found that information is also being written at levels above recommendations for the general public. Support networks could therefore struggle to understand online cancer screening information, impacting their ability to support people with intellectual disability in making screening decisions (Chinn 2019). In addition, the effectiveness of Easy Read materials for increasing health knowledge is still largely unknown, and some people with intellectual disability may not find Easy Read accessible. They may prefer the use of other alternative communication strategies such as pictograms or audiovisual formats (Chinn 2019; Chinn and Homeyard 2017), or prefer to read plain English or easy English. State governments like Queensland provide bowel screening information through animated videos, audio, and transcripts of simple texts. If these types of multimodal formats are accessibly designed, including aiming for lower reading grade levels and providing informative imagery, they could facilitate greater reach to people with diverse communication preferences.

Recommendations from the Disability Royal Commission provide pathways to addressing digital barriers, namely, the implementation of a disability rights act that not only acknowledges the right to equitable access to health services but also guides strategies for action to improve the accessibility of services (Royal Commission into Violence 2023). Legislation provides the impetus for implementing universal digital design as a matter of policy, and for existing inaccessible designs to be subject to remedial action. Policies can go beyond WCAG criteria to also recognize guidelines for at-risk populations (e.g., the supplemental guidelines, Easy Read guidelines) (Tanis et al. 2012). Codesign is an effective tool for designing accessible online health information, particularly given the current dearth of knowledge in intellectual disability and accessible design (Grama et al. 2005). Indeed, while there is a lack of good web-based codesign practice exemplars internationally, evidence does demonstrate that when web designers had the opportunity to work with people with intellectual disability, this improved the understanding of accessibility issues in design (Kennedy et al. 2011).

Primary health networks (PHNs) and healthcare providers can also address these issues by incorporating communication needs for people with intellectual disability into their service design. This may look like the development of clear processes for adhering to Easy Read and readability guidelines, which can support the creation and dissemination of accessible health information (Chinn 2019). If Easy Read alternatives were consistently and readily available online, they would reduce the challenges in accessing these items. While some health web pages stated that users could contact them for alternative formats of information, this still creates a barrier for people who do not feel confident reaching out to services, and who may struggle to navigate contact details, email accounts, or phone calls (Pettersson et al. 2023). It also creates a system where information is readily available for some members of the public, but not others.

Likewise, integrating an evaluation element in web design processes by which both expert and user testing allows for a full assessment of the functionality of websites for people with intellectual disability is needed, as compliance with certain criteria is not guaranteed to translate to accessibility. That is websites can be compliant with WCAG but still difficult to use (Conway et al. 2012). Another option may be designing web pages that provide different versions of formatting and display, and Easy Read web page alternatives. Examples of such web page design were found on the Women With Disabilities Australia (see Fig. 2) (2024) and Council for Intellectual Disability (2024) websites. While creating these websites is resource-intensive (particularly retrospectively), efforts to consider these options at the beginning of web page design can support their integration.

Resolving digital inequalities will take time, and in the meantime, people with intellectual disability need support to access online health information. Support networks (e.g., family, carers, teachers, health professionals, and formal supports) play an essential role in how people with intellectual disability navigate the online environment (Tanis et al. 2012) and understand online health information (Watfern et al. 2019). Where possible, support networks can use cancer screening web pages to facilitate conversations about what may be difficult topics with the people they support, as they collaboratively navigate information on these sites together (Chinn 2019). However, online information in this study was also inaccessible to the general population and may be difficult for supporters to use.

Primary health networks can assist primary health providers in taking proactive approaches to initiating screening conversations and providing their own accessible printed information about screening to patients with intellectual disability (Chan et al. 2022; Swaine et al. 2013). Health providers can also assist support networks in navigating information, so that they may be better equipped for having

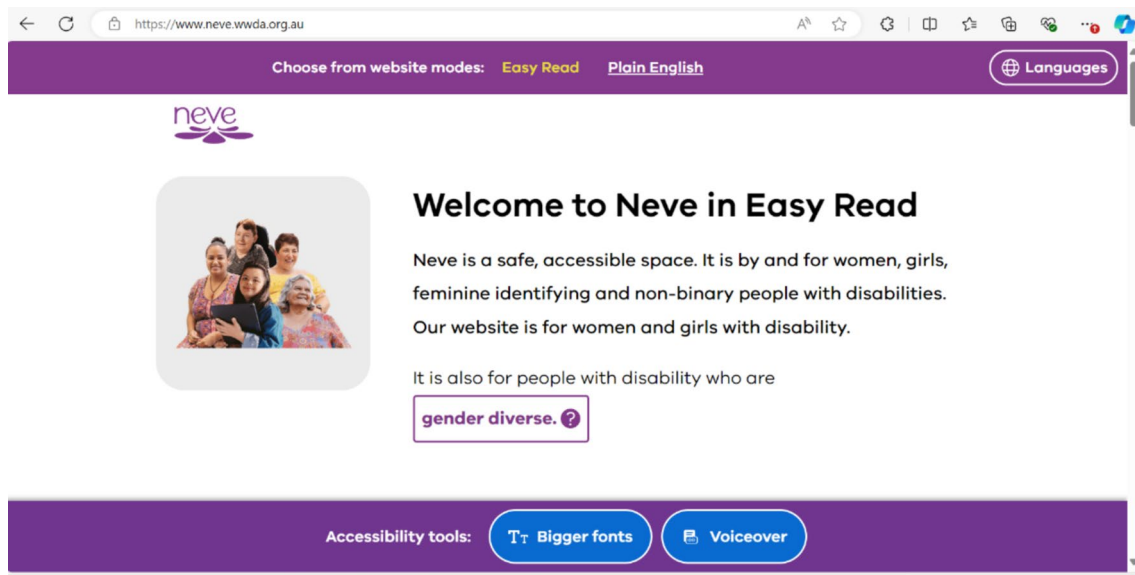


Fig. 2 Example of Easy Read website design from Women With Disabilities Australia's Neve website, which provides Easy Read and plain English options for their website (URL: <https://www.neve.wvda.org.au/>)

conversations around preventive health and screening. This could be through community education, extended consultation times, and active follow-up efforts. More broadly, community services such as public libraries can play a key role in developing the digital skills and confidence of people with intellectual disability and their support networks and providing spaces for health education sessions (van Holstein et al. 2021).

This study is the first to assess the accessibility of online government-based cancer screening information in Australia for people with intellectual disability. Strengths of the study include the multidimensional approach to accessibility, not only assessing compliance with WCAG but also considering readability, Easy Read, and the supplemental criteria for cognitive disability from W3C. The approach used in this study was developed in partnership with lived experience team members. The criteria used here reflect the important aspects of accessibility identified by the team.

This audit's scope was limited in that it focused on information accessibility from the perspective of its web accessibility and readability. These measures, while informative, are not necessarily specific to intellectual disability. Moreover, this approach did not examine aspects of how information is accessed and used in partnership between people with intellectual disability and their supporters (Swaine et al. 2013). An examination of the 308 total items in this study showed that only five (three documents and two web pages) advised how to use the information and its purpose. This indicated that information was not always designed in a way that guided people to discuss the information or have conversations about these topics with others.

Furthermore, this study did not incorporate user testing in the audit. Having people with intellectual disability use the web pages and provide their feedback on their experience can support the identification of which features translate to easier use for people with intellectual disability. That is, it is possible that a web page could comply with WCAG and be within a reasonable level of readability, but still be difficult for people with intellectual disability to use (Billingham 2014). User testing can validate audit tools used and identify aspects of accessibility that may not be traditionally considered.

Online Australian cancer screening documents and web pages are generally not fit for purpose, falling short of being accessible not only to people with intellectual disability but in many cases also to the general public. People with intellectual disability have a fundamental right to information, including accessing health information through the same digital platforms as the general public and being informed about their healthcare options (United Nations 2006). Online accessibility issues on government health websites undermine this right and perpetuate health inequities. At the point of website design, there must be careful consideration for meeting the diverse health information needs of members of the public. This can improve access to screening for people with intellectual disability, as well as the ability of support networks—who may also have low health literacy—to facilitate access and understanding (Chan et al. 2022).

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Declarations

Ethics approval This review did not involve human or animal subjects and utilized publicly available data. As such, it did not require approval from an ethics committee.

Consent to participate Not applicable.

Consent for publication Not applicable.

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