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review articles

Patient Information Resources on Cardiovascular Health After Cancer Treatment: An Audit of Australian Resources

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abstract

PURPOSE Up to one third of patients with cancer are thought to experience adverse cardiovascular events after their cancer diagnosis and treatment. High-quality information about cancer treatment-related cardiovascular disease can prepare patients and reduce anxiety. The aim of this project was to systematically identify Australian online information resources about cardiovascular health after cancer and assess the readability, understandability, actionability, and cultural relevance for Aboriginal and Torres Strait Islander patients.

METHODS We conducted systematic Google and website searches to identify potentially relevant resources. Eligibility was assessed using predefined criteria. For each eligible resource, we summarized the content and assessed readability, understandability, actionability, and cultural relevance for Aboriginal and Torres Strait Islander people.

RESULTS Seventeen online resources addressing cardiovascular health after cancer were identified: three focused solely on cardiovascular health and the remaining 14 dedicated between <1% and 48% of the word count to this topic. On average, three of 12 predefined content areas were covered by the resources. Only one resource was considered comprehensive, covering eight of 12 content areas. Overall, 18% of the resources were deemed readable for the average Australian adult, 41% deemed understandable, and only 24% had moderate actionability. None of the resources were considered culturally relevant for Aboriginal and Torres Strait Islander people, with 41% addressing only one of the seven possible criteria and the remainder addressing none of the criteria.

CONCLUSION This audit confirms a gap in online information resources about cardiovascular health after cancer. New resources, especially for Aboriginal and Torres Strait Islander people, are needed. The development of such resources must be done through involvement and collaboration with Aboriginal and Torres Strait Islander patients, families, and carers, through a codesign process.

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INTRODUCTION

In Australia and globally, advancements in cancer treatments have contributed to significant improvements in cancer survival rates.[1,2] However, many cancer treatments can adversely affect the structure and function of the heart (known as cardiotoxicity).[3-5] Although there is no universal definition, patients with cancer and pre-existing cardiovascular disease and/or risk factors (eg, smoking, hypertension, and diabetes), and those considered for potentially cardiotoxic treatments are considered high risk and are recommended to undergo assessment of their cardiac function before commencing cancer treatment.[6-8] Assessment results may inform the frequency at which a patient is monitored for cardiotoxicity during and after cancer treatment to ensure early detection and timely treatment of such side effects. The results may also assist in cancer treatment decision making and inform primary and secondary preventive care to reduce cardiovascular risk.[7,8]

Providing patients with publicly accessible information to increase their knowledge and understanding of cancer, treatment options, and side effects is a fundamental aspect of patient-centered care.[9] Access to high-quality information about cardiotoxicity may assist patients to prepare for medical investigations and procedures to monitor and treat cardiotoxicity, identify and seek help for early signs and symptoms, and take actions to reduce risk. As such, the provision of high-quality and accessible information about cardiotoxicity may lead to reduced treatment-related anxiety and improved outcomes.

A determinant of health,[10] health literacy is the cognitive and social skills required to obtain, understand, and use health information.[11] Almost half of Australians age

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CONTEXT

Key Objectives

This study aimed to identify and evaluate online text-based information resources about adverse cardiovascular effects of cancer treatments.

Knowledge Generated

There is a dearth of Australian online information resources on this issue, with very few of the 17 identified resources found to be readable (18%), understandable (41%), or actionable (24%). None of the resources were made for, or were inclusive of, Aboriginal and Torres Strait Islander people.

Relevance

The design of any new information resources for Australians needs to consider readability, understandability, actionability, and inclusivity to ensure they are accessible by all who need them. Given the persistent inequalities in cancer and cardiovascular disease for Aboriginal and Torres Strait Islander people, we argue that targeted resources need to be developed through a codesign process.

15-75 years have low literacy skills,[12] and literacy levels vary across population groups, such as by socioeconomic status, education level, and primary language.[10] To improve population literacy regarding cardiotoxicity in an equitable way, information must be accessible to all. That is, information must be readable, understandable, and must contain clear advice on steps a person can take to improve their chances of good health outcomes (actionable). It is recommended that health information be presented at a grade 8 reading level or lower, the average reading age of Australian adults, to ensure people from diverse backgrounds can read it.[13,14] However, an Australian evaluation found that online health resources were designed at a grade 10 to grade 12 level on average.[15]

In addition to readability, understandability, and actionability, for an information resource to be accessible to a particular population group, it must be designed in a way that is perceived by that group as relevant and respectful to them. It is well documented that cancer and cardiovascular disease age-standardized incidence and mortality rates are higher among Aboriginal and Torres Strait Islander people than among other Australians.[16,17] Aboriginal and Torres Strait Islander people are diagnosed with these diseases at a younger age, on average, and are more likely to be diagnosed with both conditions.[18,19] Aboriginal and Torres Strait Islander people have different experiences of cancer care[20,21] and have unique supportive care needs during their survivorship.[22] As such, there is a need for high-quality, accessible health information resources on cardiovascular health after cancer that are relevant, appropriate, and respectful of Aboriginal and Torres Strait Islander people.

To our knowledge, the accessibility of Australian health information resources on cardiovascular health after cancer has not yet been assessed either generally or in terms of their relevance for Aboriginal and Torres Strait Islander people. This paper describes a resource audit that aimed to identify and assess the readability, understandability, actionability, and relevance to Aboriginal and Torres Strait Islander people.

METHODS

Positionality and Context

Our team acknowledges the sovereignty of the Turrbal and Jagera peoples of the lands now known as Brisbane, Australia, and the Larrakia people of the lands now known as Darwin, Australia, where most of the project was conducted. Furthermore, we acknowledge the importance of reflexively considering and describing our backgrounds, perspectives, and values that we each bring to the project.[23,24] The research team includes Aboriginal and Torres Strait Islander and non-Indigenous researchers, from across career stages, all of whom work in Indigenous health research, including a senior Aboriginal researcher (G.G.). The team has both quantitative and qualitative research experience, and senior members of the team (G.G., J.C.) have experience in developing and codesigning information resources for Aboriginal and Torres Strait Islander people with cancer. The team, in particular the lead author (A.D.), worked closely with the Indigenous Cardio-oncology Consumer Advisory Group to identify the need for the study, gain guidance on study direction, decide on the approach, and gain insight into what the findings may mean for Aboriginal and Torres Strait Islander people.

The need for an audit of existing Australian cardio-oncology resources was raised by a member of the Indigenous Cardio-oncology Consumer Advisory Group (CAG), Mr Trevor Watkins, who has authorized his name to be shared here. The CAG was established by our research team to provide governance and input into our cardio-oncology research program. During the development of our research program, Mr Watkins, a prostate cancer survivor and Aboriginal man, identified a concerning lack of patient information resources on adverse cardiovascular events associated with cancer treatments. From these discussions, it was decided that identifying and assessing existing resources was the first step toward creating high-quality and accessible patient information resources on cardiovascular health for Aboriginal and Torres Strait Islander and other people with cancer. The results of this audit will inform the codesign of a new resource(s).

Search Strategy

We identified resources through two approaches: a targeted website search and a broad internet search.

Targeted search. We searched the websites of Australian authorities in cancer and cardiovascular health (list in Fig 1A). These websites and their subpages were systematically scanned for resources labeled with key terms, such as "cancer treatment," "side-effects," "follow-up care," or similar, to identify potentially relevant resources. If a search function was available for the website, we also searched "heart," "cardiac," "cardio," "stroke," and "clot" on cancer-related websites, and "cancer" on cardiovascular-related websites, to identify potentially relevant resources. Each potentially relevant resource was scanned using the document search functions to determine if the resource provided any level of information about cardiovascular health after cancer; if it did, it was deemed eligible and was included in the audit.

Broad search. We used the advanced search settings in Google Australia to search for other resources on cardiovascular health after cancer diagnosis that may have been missed from our targeted search. The search strategy is outlined in Figure 1B. For each search, we scanned the first five pages to identify any relevant resources and continued until we reached two consecutive pages that did not produce potentially relevant resources.

Eligibility Criteria

Online resources were included if they were text-based, published by Australian sources deemed by the research team to be credible, included at least one mention of cardiovascular health after cancer, and were written for patients with cancer, health care consumers, or the general public. Online resources that were not text-based, such as podcasts and YouTube videos, were not included, nor were resources that were written for health professionals, such as clinical guidelines and position statements. Online research articles, academic textbooks, news articles, blogs, and social media posts were also excluded. Which sources were deemed credible was discussed by the authors to reach consensus, and was broadly defined as government agency, health-related nongovernment agency, and health service sources, including Aboriginal and Torres Strait Islander peak health organizations and community-controlled health services.

The search was initially conducted in 2021 (J.M.) and again in September, 2022 (A.D. and M.H.J., independently). Where there were uncertainties in eligibility, the author team discussed until consensus was achieved.

Audit Assessments

We initially summarized key design features and content coverage of the included resources. Then, we assessed each resource for readability, understandability, actionability, and cultural relevance. Generally, these assessments were based on the entire resource, regardless of the proportion of the resource dedicated to cardiovascular health after cancer, as we felt this was important to enable people to navigate to and understand the section of the resource on cardiovascular health. However, actionability was assessed based only on the information in the resource pertaining to cardiovascular health after cancer, as we were particularly interested in whether practical advice was provided to empower patients to advocate for optimal cancer care that includes assessing and monitoring patients' cardiovascular health, make informed cancer treatment decisions, reduce their cardiovascular risk, identify early signs and symptoms of adverse cardiovascular events, and seek timely and appropriate health care for such symptoms.

Content analysis. Key design features were summarized, including size (total word count, and proportion dedicated to cardiovascular health), mode (downloadable booklet, downloadable information sheet, and webpage), voice (whether stories of patient experiences were used to complement professional advice), and number of visual aids used throughout the resource. We then summarized content coverage, including identifying whether there was a focus on a specific cancer and treatment type(s), and whether the resource covered any of 12 predefined content areas related to cardiovascular health after cancer. We did not assess the depth in which each content area was covered, nor the accuracy of the information provided.

Readability. Two readability measures were used in this audit to increase the reliability of the readability results.

- The Simple Measure of Gobbledygook (SMOG),[25] developed in 1969, is considered a simple but reliable method to determine the number of years of education a person would need to be able to read a given text. The calculation is based on the number of words with three syllables or more in a sample, or samples, of the text. Ideally, at least 30 sentences will be tested, with samples taken from the front, the middle, and the end of the text.
- The Flesch Reading Ease (FRE) Formula[26,27] produces a reading score, ranging from zero (hardest-to-read) to 100 (easiest-to-read), on the basis of the average number of syllables per word and the average number of words per sentence.

Both the SMOG and FRE have been validated against the McCall-Crabbs Standard Test Lessons in Reading and have been used to assess existing and develop new health information resources,[28,29] including for cancer[30] and for Australian audiences.[15] SMOG is considered the gold standard for the assessment of text-based health information

A

Websites included in targeted search

Specific Websites

Indigenous HealthInfoNet
Heart Foundation Australia
Cancer Australia (Government)
Cancer Council Australia
Cancer Council of every state
Cancer Institute NSW
Daffodil Centre
Australian Cancer Survivorship Centre
Concord Cancer Centre/ Sydney Cancer Survivorship Centre
Victorian Comprehensive Cancer Consortium
Clinical Oncology Society of Australia
Breast Cancer Network Australia
Lung Foundation Australia
Peter MacCallum Cancer Centre
EviQ
Health Direct

B

Google search strategy

Search terms:

Heart AND cancer
Cardio* AND cancer
Cardiac AND cancer
Coronary AND cancer
Stroke AND cancer
Clot AND cancer
Arrythmia AND cancer
Side effects AND cancer
Late effects AND cancer
Treatment effects AND cancer

Filtered by:

Australian
Target Audience: Patient/Client
Purpose: Educate Patient/Client

FIG 1. (A) Websites included in targeted search. (B) Google search strategy.

resources[15] and has been recommended to evaluate cancer information by the US National Cancer Institute.[31]

An online calculator was used to generate the SMOG and FRE readability scores.[32] This allowed for a minimum of 100 words and a maximum of 3,000 words to be assessed. If texts were <3,000 words, the entire text was assessed. If the text was >3,000 words, multiple samples were included, totaling approximately 3,000 words. We took samples from the start, middle, and end of the text, and were able to include all text on cardiovascular health after cancer. The reading scores represent the reading score for the entire text.

The recommended reading level for Australian health information resources is at a grade 8 reading level.[13,14] So, resources in this audit were assessed as being readable if at a grade 8 reading level or lower. The online calculator automatically converted the SMOG score to a school grade equivalent. Similarly, the FRE score was categorized as very difficult (0-30), difficult (31-50), fairly difficult (51-60), standard (61-70), fairly easy (71-80), easy (81-90), and very easy (91-100).[33] A 'fairly easy' score (71-80) is considered equivalent to a grade 8 reading level.

Understandability and actionability. The Patient Education Materials Assessment Tool (PEMAT) for text-based (printable) materials[34] was used to systematically assess understandability and actionability. According to the PEMAT user guide, understandability refers to the ability of readers to process and explain the key messages of an information resource (comprehension), while actionability refers to the ability of a reader to identify actions (recommended behavior or instruction) they can take on the basis of the information provided in the resource.

The PEMAT includes 24 items (17 measuring understandability and seven measuring actionability).[34] These are scored as disagree, agree, or not applicable by two researchers (J.M. and V.S.) and differences adjudicated by a third researcher (A.D.). The two scores are the proportion of the items scored as 'agree' and expressed as a percentage. The higher the understandability and actionability scores, the more understandable and actionable the information resources are considered to be for the general public.[34] Resources were deemed as understandable if they scored 70% of higher, a threshold used previously. For the purposes of this study, resources were deemed moderately actionable if they scored 50% of higher.[35]

Cultural relevance. To our knowledge, there is no existing tool to assess the relevance of health information resources for Aboriginal and Torres Strait Islander people. Therefore, the author team devised seven criteria on which to assess the included resources. A senior author (G.G.) guided this process. Additional feedback for the criteria was provided by two research fellows from our broader First Nations Cancer and Wellbeing Research team, who were not directly involved in the research, including one Aboriginal research fellow. This measure is not validated nor exhaustive but is used more to provide an indication of whether the included resources in this audit could be considered to be specifically for, or inclusive of, Aboriginal and Torres Strait Islander people.

The criteria used were:

1. Does the resource include visual aids (photographs, animations, infographics, and charts) that depict or contain information about Aboriginal and Torres Strait Islander people?
2. Does the resource include data about Aboriginal and Torres Strait Islander people?
3. Does the resource include Aboriginal and Torres Strait Islander design/artwork?
4. Does the resource provide evidence of leadership, involvement, and/or governance by Aboriginal and Torres Strait Islander people, communities, and/or organizations?

5. Is the resource available in Aboriginal and Torres Strait Islander languages or is there a translation service available?
6. Is the language used strengths-based and respectful to Aboriginal and Torres Strait Islander people?
7. Does the resource include a contact (phone number, e-mail, and website) for further support and information specifically for Aboriginal and Torres Strait Islander people?

As there would be some level of subjectivity in answering the criteria, it was important that the cultural inclusivity of the resources was assessed from the perspectives of Aboriginal and Torres Strait Islander people. Three Aboriginal and Torres Strait Islander members of the FNCWR team with experience in developing Aboriginal and Torres Strait Islander resources assessed the included resources using the above criteria, as did a non-Indigenous member of the author team (V.S.).

Analysis

The length, content, and inclusion of visual aids of the resources were summarized. The average SMOG and FRE scores were calculated, as well as the proportion of resources that obtained a SMOG score of eighth-grade or less and a FRE score of 70 or higher. The average understandability and actionability PEMAT scores were calculated, as well as the proportion of resources that scored 70 or higher for understandability and 50 or higher for actionability. The average number of cultural inclusivity criteria met by the resources was calculated, as was the proportion of resources that did not meet any of these criteria.

RESULTS

A total of 17 online health information resources that contained information on cardiovascular health after cancer were identified from four sources: Breast Cancer Network Australia, Cancer Australia, Cancer Council Australia, and the Alfred Hospital in Victoria, Australia. Five were downloadable booklets or fact sheets, while others were webpages that generally had a print-friendly option. Only three resources were specifically about cardiovascular health after cancer, with the word count ranging from 221 to 1,009. An additional 14 resources were identified about cancer, cancer treatment, and/or treatment side effects more generally, of which between <1% and 48% were dedicated to information about cardiovascular health after cancer (Table 1).

Table 2 summarizes the content related to cardiovascular health after cancer diagnosis and treatment that were covered by the included resources. Most resources (14/17) had at least a brief statement that cancer treatments may cause adverse cardiovascular events. Other topics were not as frequently covered, including what to expect in terms of cardiovascular assessment and monitoring before, during, and after cancer treatment (n = 6); signs and symptoms of adverse cardiovascular events (n = 6); strategies to reduce cardiovascular risk after cancer diagnosis (n = 6); cardiovascular events may be experienced as late effects, many years after treatment completion (n = 5); and cardiovascular risk factors (n = 5). Only one resource was considered comprehensive, addressing eight of the 12 predefined content areas and three were considered moderately comprehensive, as they addressed five or six of the content areas (Table 2).

Readability, understandability, and actionability of the included resources are summarized in Table 3. The mean SMOG score was 10.0 (SD 2.3), corresponding to a grade 10 reading level. The mean FRE score was 51.3 (SD 7.9), corresponding to a 'fairly difficult' reading level. Three (18%) resources were assessed to have a SMOG reading level of eighth-grade or lower. No resources had a FRE score considered fairly easy; three had a FRE score above 60 (standard/average). Only two resources had a SMOG reading level of grade 8 *and* standard/average FRE reading score. The mean understandability and actionability scores were 67.9 (SD 15.8) and 35.4 (SD 16.6), respectively. Seven (41%) resources had an understandability score of 70% or higher, considered to be understandable to the average adult, and four (24%) had actionability scores of 50% or higher, considered moderately actionable. None of the resources had a actionability score of 70% or higher.

None of the studies were deemed to be culturally relevant for Aboriginal and Torres Strait Islander people (Table 3), with six resources only meeting one criterion, namely the provision of contact details for a translation service. It is unclear if Aboriginal and/or Torres Strait Islander languages were included by these services.

DISCUSSION

We have identified a dearth of Australian online information resources about cardiovascular health after cancer. Generally, available resources were assessed to be neither comprehensive nor accessible to the average Australian, on the basis of readability, understandability, and actionability. Although most resources mentioned that cancer treatments can affect the heart, few went into further depth. Provision of high-quality health information is critical for patient-centered care,[53] as it empowers patients to make informed decisions about their cancer care and treatment and may reduce psychologic distress associated with this phase of the cancer trajectory.[9,54] Good-quality information on cancer, cancer treatment, and side effects has been shown to be valued,[55-57] but perceived to be lacking.[58]

Given the lack of comprehensive and accessible online resources on cardiovascular health after cancer, it is likely that health literacy on this topic is low among Australian patients with cancer and the general public. To optimize prevention and early detection of cardiovascular disease among patients with cancer, cancer care professionals should conduct a cardiovascular risk assessment with the patient before they commence any cardiotoxic cancer treatments.[8] For patients without prior cardiovascular disease, the assessment may assist health professionals to

TABLE 1. Summary of Included Australian Online Text-Based Information Resources on Cardiovascular Health After Cancer

No.	Resource	Source	No. of Words	% Words on CVD	Focus of Research		No. of VA	Includes Patient Experiences	Mode	Link to Source
					Cancer Type	Treatment Type				
1	Managing symptoms and side effects (for metastatic breast cancer)	Breast Cancer Network Australia	6,083	<1%	Breast	No	No VA	Yes	Webpage	[36]
2	My Journey: Heart problems related to metastatic breast cancer treatment	Breast Cancer Network Australia	445	100%	Breast	No	No VA	No	Webpage	[37]
3	Breast cancer: Side effects	Cancer Australia	2,134	<1%	Breast	Chemotherapy	No VA	No	Webpage	[38]
4	Long-term follow-up and issues	Cancer Australia	480	48%	Childhood cancer	No	No VA	No	Webpage	[39]
5	Breast cancer: Trastuzumab	Cancer Australia	416	42%	Breast	Trastuzumab	No VA	No	Webpage (subpage)	[40]
6	Breast cancer: Less common side effects of hormone treatment	Cancer Australia	401	7%	Breast	Hormone therapy	No VA	No	Webpage (subpage)	[41]
7	Managing physical changes due to vaginal cancer	Cancer Australia	1,031	10%	Vaginal	No	No VA	No	Webpage (subpage)	[42]
8	Managing physical changes due to vulval cancer	Cancer Australia	897	12%	Vulval	No	No VA	No	Webpage (subpage)	[43]
9	Mesothelioma cancer: Treatment options	Cancer Australia	747	6%	Mesothelioma	No	No VA	No	Webpage	[44]
10	Living well after cancer: A guide for people with cancer, their families and friends	Cancer Council Australia	20,630	<1%	No	No	~3.5 per 1,000 words	Yes	Downloadable booklet	[45]
11	Understanding chemotherapy: A guide for people with cancer, their families and friends	Cancer Council Australia	16,748	<1%	No	Chemotherapy	~2.5 per 1,000 words	Yes	Downloadable booklet	[46]
12	iHeard: Can radiation treatment for breast cancer cause heart problems?	Cancer Council Australia	221	100%	Breast	Radiotherapy	No VA	No	Webpage	[47]
13	Understanding radiotherapy: A guide for people with cancer, their families and friends	Cancer Council Australia	18,181	1%	No	Radiotherapy	~3 per 1,000 words	Yes	Downloadable booklet	[48]
14	Understanding surgery: A guide for people with cancer, their families and friends	Cancer Council Australia	15,269	1%	No	Surgery	~3 per 1,000 words	Yes	Downloadable booklet	[49]
15	Understanding immunotherapy: A guide for people with cancer, their families and friends	Cancer Council Australia	4,580	11%	No	Immunotherapy	~2 per 1,000 words	No	Downloadable fact sheet	[50]
16	Common cancer symptoms	Cancer Council Australia	1,587	4%	No	No	No VA	No	Webpage (subpage)	[51]
17	Late effects: Heart Health	The Alfred Hospital	1,009	100%	No	No	~1 per 1,000 words	No	Webpage	[52]

Abbreviations: CVD, cardiovascular disease; VA, visual aids.

provide primary preventive care to reduce and/or maintain health promoting behaviors. For patients with existing cardiovascular disease, the assessment may inform the provision of secondary preventive care to reduce risk and increase the chances of early detection should cardiotoxicity occur. The availability of health information about adverse cardiovascular effects of cancer treatments may assist health professionals with these conversations and support patients after their consultations.

We did not identify any resources that were designed by or specifically for Aboriginal and Torres Strait Islander people, and none of the resources identified were considered inclusive of, or relevant to, this population. Aboriginal and Torres Strait Islander people are more likely to be diagnosed with and die of cancer,[59] and of cardiovascular disease,[60] than other Australians. Aboriginal and Torres Strait Islander people diagnosed with cancer are more likely than other Australians to have comorbid chronic disease at the time of their cancer diagnosis, with cardiovascular disease and diabetes being the most common.[61,62] As such, the risk of cancer treatment-related adverse cardiovascular events may be greater for Aboriginal and Torres Strait Islander people.[63]

The delivery of high-quality and patient-centered care for Aboriginal and Torres Strait Islander patients must include

TABLE 2. Summary of Content Areas Covered by the Resources

	Resources*																	
Relevant Resource Topics	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**Total**
General information about the heart	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	1
Cancer treatment may cause heart damage	☑	☑	☑	☑	☑	☑	☐	☐	☑	☑	☑	☑	☑	☑	☑	☐	☑	14
Physiologic explanations for treatment-related heart damage	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☑	3
Types of heart problems experienced after cancer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	1
Treatment-related heart damage may arise later (after treatment)	☐	☑	☐	☑	☑	☐	☐	☐	☐	☑	☐	☐	☑	☐	☐	☐	☐	5
Heart health may affect cancer treatment options and decisions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	1
Monitoring of heart health before, during, and after cancer treatment	☑	☑	☐	☑	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	6
Signs and symptoms of heart problems after cancer	☐	☐	☐	☐	☑	☐	☐	☐	☑	☑	☐	☐	☐	☐	☑	☑	☑	6
Advise cancer treatment team of heart symptoms	☐	☐	☐	☐	☐	☑	☐	☐	☐	☑	☐	☐	☑	☐	☐	☐	☐	3
Cancer treatment is part of your health history	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	2
Risk factors of heart problems after cancer	☐	☐	☐	☐	☑	☐	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☑	5
Strategies to reduce risk/prevent heart problems after cancer	☐	☐	☐	☑	☐	☐	☑	☑	☐	☐	☐	☑	☐	☑	☐	☐	☑	6
Total topics covered by each resource	2	4	1	5	5	2	2	2	2	6	3	3	3	2	2	1	8	

*The resource numbers listed here correspond to the resource numbers in Table 1, which contains the resource title and reference to the weblink.

resources that are culturally relevant and meet the information needs of these patients and their caregivers. A Queensland cross-sectional study of unmet supportive care needs, using the culturally relevant Supportive Care Needs Assessment Tool for Indigenous People, found that about one in 10 Aboriginal and Torres Strait Islander patients with cancer have unmet informational needs, with patients most commonly reporting unmet needs regarding information about the side effects of cancer treatments and ways to manage the illness and side effects, including self-management.[22] To address the information resource gap, culturally relevant information resources must be codesigned through respectful partnerships with Aboriginal and Torres Strait Islander peoples.

Written health information resources are commonly identified through the internet,[15,30] and part of the health professional's

TABLE 3. Accessibility of Online Text-Based Resources on Cardiovascular Health After Cancer: Summary of Audit Findings

No.*	SMOG Readability	FRE Readability	PEMAT—Understandability, %	PEMAT—Actionability, %	Cultural Inclusivity (out of 7)
1	11th grade	Difficult	<70	<50	1
2	10th grade	Fairly difficult	<70	<50	1
3	8th grade	Fairly difficult	<70	<50	0
4	10th grade	Fairly difficult	≥70	<50	0
5	9th grade	Difficult	<70	<50	0
6	12th grade	Difficult	<70	<50	0
7	10th grade	Fairly difficult	<70	<50	0
8	9th grade	Difficult	<70	<50	0
9	10th grade	Difficult	<70	<50	0
10	College level	Difficult	<70	<50	1
11	7th grade	Standard/average	≥70	≥50	1
12	10th grade	Difficult	<70	<50	0
13	9th grade	Fairly difficult	≥70	≥50	1
14	10th grade	Fairly difficult	≥70	≥50	1
15	9th grade	Fairly difficult	≥70	≥50	0
16	9th grade	Standard/average	≥70	<50	0
17	8th grade	Standard/average	≥70	<50	0

*The resource numbers (No.) listed here correspond to the resource numbers in Table 1, which contains the resource title and reference to the weblink. Abbreviations: FRE, Flesch Reading Ease; PEMAT, Patient Education Materials Assessment Tool; SMOG, Simple Measure of Gobbledygook.

role, arguably, is to direct patients to credible online sources. The limited availability of online information resources about adverse cardiovascular effects of cancer treatments may be due to a delayed broad recognition and uptake of this issue in Australia. However, as cardio-oncology services emerge in Australia and given greater value, the creation and provision of high-quality information is expected to increase too. A recent study found patients reported an increase in knowledge and understanding of the relationship between cancer and cardiovascular disease after referral to a new cardio-oncology clinic in Australia, with some patients reporting gratitude and relief at having their cardiovascular health being closely monitored.[64]

Health professionals should be able to refer Aboriginal and Torres Strait Islander patients with cancer to online sources that are accurate, accessible, and culturally relevant. However, health professionals' ability to discern what is culturally relevant would require an understanding of the historical context of Aboriginal and Torres Strait Islander health and the role the health system and health professionals have played in this history. A recent review found a lack of consistent and good evidence on how well these topics are taught in medical curricula.[65] It may be that an important step of codesigning patient information resources about cardiovascular health after cancer diagnosis and treatment for Aboriginal and Torres Strait Islander patients with cancer is to also provide complementary education to health professionals about Aboriginal and Torres Strait Islander peoples' experiences of cancer, including their likely informational needs and communication preferences.

Although the current study has a focus on information provision for Aboriginal and Torres Strait Islander people, the general lack of high-quality information highlights the urgent need to improve public health awareness of cancer treatment–related cardiotoxicity. We urge those involved in creating such resources to consider the inclusiveness of their design. Although resources for specific populations, such as Aboriginal and Torres Strait Islander people, may be required, this audit serves as a reminder that information made for the general public must be readable, understandable, actionable, and relevant to the diversity that exists within it. Without access to high-quality and relevant information, existing health inequalities in cardio-oncology care will persist.

This audit was comprehensive in its search of online health information resources from sources that we deemed credible as recognized health authorities in Australia. Although decisions on what sources were included were made by multiple members of the research team, these were still subjective decisions and, therefore, it is possible that some credible sources were inadvertently excluded. For example, a decision was made to exclude blogs or websites of individual practitioners, as we felt the information on these sites may not always be subjected to rigorous scrutiny before being published.

Because of our focus on resources for Aboriginal and Torres Strait Islander people in Australia, we did not include international resources. However, although local websites are generally prioritized when using Google in Australia, it is possible that patients will find international resources when conducting a Google search for health information and these could be relevant and appropriate. It was also out of scope for this audit to formally assess the accuracy of the included resources, although no information about cardiovascular health after cancer was flagged as dubious during our assessments of the resources.

This audit addressed an important community need, as identified and supported by the CAG for our cardio-oncology research program. It forms the first step in codesigning a new resource on cardiovascular health after cancer for Aboriginal and Torres Strait Islander people and clearly confirms a gap in patient resources and the need for a new resource to be developed. Working in partnership with the CAG will help ensure that the resulting resource is accessible and relevant to Aboriginal and Torres Strait Islander people.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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Open Payments is a public database containing information reported by companies about payments made to US-licensed physicians (Open Payments).

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