Towards equitable cancer outcomes for rural and remote communities: reflections, lessons and recommendations

Anna Ugalde,[a,*] Hannah Jongebloed,[a] Charlene Wright,[a] Helena Rodi,[a] Anna Chapman,[a] Skye Marshall,[a] Drew Aras,[b] Rebecca J. Bergin,[a] Sophie Boffa,[c] Anna Boltong,[d] Michele Conlin,[e,f,g] Fiona Crawford–Williams,[h,i] Carl de Wet,[j] Wasek Faisal,[k,l,m] Lan Gao,[e] Harry Gasper,[n,o,p,q] Kate Gunn,[r] Nicolas H. Hart,[h,s,t,u,v] Theresa Hayes,[w,x,y] Florian Honeyball,[z,aa] Elizabeth A. Johnston,[ab,ac] Deme Karikios,[ad,ae] Nicole Kiss,[af] Lucy Leigh,[ag,ah] Patricia M. Livingston,[e] Carmel O'Kane,[ai] Rebecca Perry,[aj] Joel Rhee,[ak] Sharina Riva,[a] Laura Sergeant,[e] Camille E. Short,[al] Ruth Stewart,[am] Victoria Turner,[c] Megan Varlow,[an] Kate Whittaker,[ao] Anna Wong Shee,[ap,aq] Serene Yoong,[e] and Laura Alston[aq,ar,as]

[a]Institute for Health Transformation, Centre for Quality and Patient Safety Research, School of Nursing and Midwifery, Faculty of Health, Deakin University, Victoria, Australia
[b]Western Alliance, Victoria, Australia
[c]Equitable Cancer Outcomes Across Rural and Remote Australia (ECORRA) National Consumer Program, Faculty of Health, Deakin University, Geelong, Australia
[d]Department of Nutrition, Dietetics and Food, School of Clinical Sciences at Monash Health, Monash University, Victoria, Australia
[e]Institute for Health Transformation, Deakin University, Victoria, Australia
[f]Violet Vines Marshman Centre for Rural Health Research, La Trobe University, Mildura, Victoria, Australia
[g]East Grampians Health Services, Victoria, Australia
[h]Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, South Australia, Australia
[i]McGrath Foundation, New South Wales, Australia
[j]Medical Services and Clinical Governance, South West Hospital and Health Service, Queensland Government, Queensland, Australia
[k]Dept of Medical Oncology, Grampians Health, Ballarat, Victoria, Australia
[l]School of Medicine, Faculty of Health, Deakin University, Victoria, Australia
[m]The John Richards Centre for Rural Ageing Research, La Trobe University, Victoria, Australia
[n]Sunshine Coast University Private Hospital, Doherty Street, Birtinya, Queensland, Australia
[o]Noosa Hospital, 111 Goodchap Street, Noosaville, Queensland, Australia
[p]School of Medicine, University of Queensland, St Lucia, Queensland, Australia
[q]Centre for Health Research, University of Southern Queensland, Ipswich, Queensland, Australia
[r]IIMPACT in Health, Department of Rural Health, Allied Health and Human Performance, University of South Australia, South Australia, Australia
[s]Human Performance Research Centre, INSIGHT Research Institute, University of Technology Sydney (UTS), New South Wales, Australia
[t]Cancer and Palliative Outcomes Centre, School of Nursing, Queensland University of Technology, Queensland, Australia
[u]Exercise Medicine Research Institute, School of Medical and Health Sciences, Edith Cowan University, Western Australia, Australia
[v]Institute for Health Research, University of Notre Dame Australia, Western Australia, Australia
[w]South West Regional Cancer Centre, South West Oncology, Oncology, Victoria, Australia
[x]Barwon South West Regional Integrated Cancer Services, Barwon Health, Victoria, Australia
[y]Deakin Medical School, Deakin University, Victoria, Australia
[z]University of Sydney School of Rural Health, Dubbo, New South Wales, Australia
[aa]Western Cancer Centre- Dubbo Western New South Wales Local Health District, Dubbo, New South Wales, Australia
[ab]Viertel Cancer Research Centre, Cancer Council Queensland, Queensland, Australia
[ac]School of Exercise and Nutrition Sciences, Faculty of Health, Queensland University of Technology, Australia
[ad]Sydney Medical School, University of Sydney, New South Wales, Australia

---

DOIs of original articles: https://doi.org/10.1016/j.lanwpc.2025.101744, https://doi.org/10.1016/j.lanwpc.2025.101732, https://doi.org/10.1016/j.lanwpc.2025.101731, https://doi.org/10.1016/j.lanwpc.2025.101737

*Corresponding author. Deakin University Melbourne Burwood Campus, 221 Burwood Highway, Burwood, Victoria, 3125, Australia.

E-mail addresses: a.ugalde@deakin.edu.au (A. Ugalde), h.jongebloed@deakin.edu.au (H. Jongebloed), charlene.wright@deakin.edu.au (C. Wright), helena.r@deakin.edu.au (H. Rodi), skye.marshall@deakin.edu.au (S. Marshall), drewaras@westernalliance.org.au (D. Aras), rebecca.bergin@deakin.edu.au (R.J. Bergin), sophie.boffa@gmail.com (S. Boffa), anna.boltong@monash.edu (A. Boltong), m.conlin@deakin.edu.au (M. Conlin), fiona.crawfordwilliams@flinders.edu.au (F. Crawford–Williams), Carl.deWet@health.qld.gov.au (C. de Wet), Wasek.Faisal@gh.org.au (W. Faisal), lan.gao@deakin.edu.au (L. Gao), Harry.gasper@health.qld.gov.au (H. Gasper), kate.gunn@unisa.edu.au (K. Gunn), nicolas.hart@uts.edu.au (N.H. Hart), thayes@swh.net.au (T. Hayes), Florian.Honeyball@health.nsw.gov.au (F. Honeyball), LizzyJohnston@cancerqld.org.au (E.A. Johnston), deme.karikios@health.nsw.gov.au (D. Karikios), nicole.kiss@deakin.edu.au (N. Kiss), Lucy.leigh@hmri.org.au (L. Leigh), trish.livingston@deakin.edu.au (P.M. Livingston), Carmel.O'Kane@gh.org.au (C. O'Kane), rebecca.perry@healthtranslationsa.org.au (R. Perry), J.Rhee@unsw.edu.au (J. Rhee), sharina.riva@deakin.edu.au (S. Riva), Laura.sergeant@deakin.edu.au (L. Sergeant), camille.short@unimelb.edu.au (C.E. Short), ruth.stewart3@health.qld.gov.au (R. Stewart), victoriaturner61@gmail.com (V. Turner), Megan.Varlow@health.nsw.gov.au (M. Varlow), kate.whittaker@cancer.org.au (K. Whittaker), Anna.WongShee@gh.org.au (A.W. Shee), s.yoong@deakin.edu.au (S. Yoong), laura.alston@deakin.edu.au (L. Alston).

[as]Senior author.

[ae]Department of Medical Oncology, Nepean Hospital, New South Wales, Australia
[af]Institute for Physical Activity and Nutrition, Deakin University, Victoria, Australia
[ag]Hunter Medical Research Institute, New South Wales, Australia
[ah]School of Medicine and Public Health, University of Newcastle, New South Wales, Australia
[ai]Wimmera Cancer Centre, Grampians Health Horsham, Victoria, Australia
[aj]Health Translation South Australia, South Australian Health and Medical Research Institute, Australia
[ak]Discipline of General Practice, School of Clinical Medicine, University of New South Wales, New South Wales, Australia
[al]Melbourne Centre for Behaviour Change, Melbourne School of Psychological Sciences and Melbourne School of Health Sciences, University of Melbourne, Victoria, Australia
[am]South West Hospital and Health Service, Queensland, Australia
[an]Prevention and Screening, Cancer Institute NSW, St Leonards, New South Wales, Australia
[ao]Cancer Care Policy, Cancer Council Australia, Sydney, New South Wales, Australia
[ap]Grampians Health, Deakin Rural Health, Deakin University, Victoria, Australia
[aq]Deakin Rural Health, Deakin University, Victoria, Australia
[ar]Research Unit, Colac Area Health, Colac, Victoria, Australia

The Lancet Regional Health - Western Pacific 2025;■: 101756

https://doi.org/10.1016/j.lanwpc.2025.101756

Summary

People living in rural and remote areas continue to face significant inequities in cancer outcomes compared to their metropolitan counterparts. Despite advances in cancer control, these disparities persist across the cancer trajectory. This personal view consolidates findings from our *Equitable Cancer Outcomes for Rural and Remote Communities* series, highlighting survival disadvantages, challenges in measuring and reporting rurality, barriers to implementing evidence-based interventions, and shortcomings in historical policy. We argue for place-based, system-level reform that genuinely partners with rural communities, leverages local strengths, and embeds rural voices in research, policy, and service delivery. Key recommendations include adopting a formal partnership position statement to guide collaboration across sectors, strengthening rural data infrastructure, harmonising rural-urban classifications, tailoring implementation strategies, and prioritising geographical equity within cancer policy. Achieving meaningful progress requires coordinated cross-sector action and sustained investment in rural capacity. Equitable cancer outcomes will only be achieved by recognising and addressing the responsibility to deliver best practice care for all people affected by cancer, regardless of where they live.

Keywords: Rural health services; Rural health; Cancer survivors; Oncology service hospital; Health inequities

Although rates of cancer incidence and mortality have declined at national levels, these improvements have not been equitably distributed. People with cancer living in rural and remote areas often experience delays in receiving a diagnosis and commencing cancer treatment which can compromise survival.[1,2] Living in a rural area presents unique care challenges, including shortages of healthcare professionals, underfunded and under resourced facilities, and access issues related to distance such as limited public infrastructure including transport, accommodation, and internet availability.

Rural communities are an integral part of, and make significant contributions to their country, and like all people, are deserving of timely and high-quality cancer care tailored to their needs. In Australia, approximately 28% of the population (seven million people) live in rural and remote areas,[3] with a notably aging demographic, where 36% of rural residents are aged 65 and over which is a higher proportion than in metropolitan centres.[4] Rural populations experience considerable social and economic disadvantage, with higher disease burden compared to metropolitan areas.[5] There are lower survival rates for several cancer types among residents outside major cities, including oesophageal, stomach, colorectal, liver, pancreatic, lung, ovarian, prostate, and kidney cancers.[6] Rurality can be defined both culturally, reflecting social, economic, and community characteristics that influence health access and epidemiologically, based on geographic remoteness and population density, which allows measurement of health outcomes and resource allocation.[7–9] There is strong evidence that people from rural communities internationally, including in the Western Pacific region, experience poorer cancer survival and that the odds of survival worsen with increasing geographic remoteness.[10]

Intersectionality recognises that overlapping social identities and circumstances can interact to create complex and compounded experiences of disadvantage.[11–13] For people living in rural and remote areas, inequities often intersect across multiple dimensions, including Indigeneity, age, socioeconomic status, and cultural or linguistic diversity. Aboriginal and Torres Strait Islander Australians, many of whom live in rural and remote settings, are particularly affected by these intersecting inequities. The 2023 Australian Cancer Plan identifies a range of population groups,[14] including Aboriginal and Torres Strait Islander people, and people living in rural and remote areas, as distinct priority populations requiring focused and sustained effort to achieve equity.[15] At the same time, it is important that policy and practice approaches also account for the intersectionality between these groups, ensuring strategies are responsive to overlapping experiences. While this series focuses primarily on rural and remote communities, we acknowledge the critical need for dedicated initiatives to improve cancer outcomes for all priority populations in Australia, and particularly Aboriginal and Torres Strait Islander peoples. These dedicated initiatives must be designed with and led by Aboriginal and Torres Strait Islander peoples.[16]

In this series, we present papers that examine cancer equity in rural and remote communities. These studies describe the association of rurality status with all-cause and cancer-specific survival,[10] articulate the challenges of measuring rurality to assess cancer equity globally,[17] identify implementation strategies for embedding evidence-based healthcare interventions in rural and remote settings,[18] and examine the historical evolution of cancer policy in Australia.[19] Each paper makes recommendations to improve cancer equity in rural areas relevant to its specific focus; however, when examined collectively, a suite of recommendations to advance cancer equity for rural and remote communities can be made.

This paper summarises the challenges in rural and remote cancer care. Informed by the *Equitable Cancer Outcomes for Rural and Remote Communities* series papers and reflecting on the literature and our experience in cancer care in rural and remote communities, this paper brings together recommendations to ultimately drive improvements in rural and remote cancer care. For this paper, we adopt an inclusive definition of rural and remote; reflective of the broad content covered within this paper. This is consistent with the recommendations in a paper in the series which examines the challenges of defining rurality, requiring consideration for subjective cultural interpretations and objective epidemiological considerations.[17] Ultimately, judgements on the relevance of the statements within this paper lies with the communities we aim to represent. This paper draws upon international literature and is informed by a collaboration across Australia to address rural and remote cancer disparities. A summary of recommendations from this paper is presented in Table 1.

Towards equitable cancer outcomes for rural and remote communities

This series has addressed critical research gaps toward equitable cancer outcomes for rural and remote communities yet has identified many more. Moving forward, policymakers, funders, researchers, healthcare providers, and rural communities must align to meaningfully partner on the next steps to address these gaps and achieve equitable cancer outcomes for rural and remote Australia.

Although people living in rural and remote areas globally have recently been recognised as a group more likely to experience inequitable cancer outcomes in some national cancer policies,[14,20] strong data to demonstrate the inequity was lacking. Our meta-analysis and meta-regression showed that people of any age living in a rural or remote area, when diagnosed with cancer of any type, showed a survival disadvantage. They are therefore a priority population for equity-focused research, policy, and healthcare delivery reform. Additional research and systematic reviews examining confounding explanatory factors such as socioeconomic status, race, cancer stage, health insurance, health behaviours, age, and sex are worth investing in, to ensure that health equity targeted policy, research investment, and system reform can appropriately support rural and remote communities who often sit at these intersections.

Recommendation	Description
Strengthen evidence base for rural cancer inequity[10]	Future research should explore cancer outcomes beyond survival (e.g. quality of life, treatment completion) while considering rurality status, and examine intersectional factors such as socioeconomic status, race, and cultural background that compound rural disadvantages.
Apply standardised rural-urban classification systems[17]	Cancer researchers should adopt the Rural-Urban Classification System Harmonisation Framework to ensure consistent measurement and reporting of rurality, enabling meaningful evidence synthesis across studies and countries.
Use multiple implementation strategies beyond education[18]	Implementation efforts should move beyond education-dominant approaches (used in 93% of studies) to employ systematic, multi-strategy approaches targeting system-level determinants for sustainable change in rural settings.
Incorporate rural-specific design features[18]	The design of implementation strategies should explicitly incorporate rural-specific design features including place-based research approaches, online training/education, resource tailoring to local communities, and local workforce engagement strategies.
Prioritise equity in cancer policy development[19]	Cancer policy development should embed equity assessment from inception, learning from Australia's historical experience where delayed recognition of inequities may have perpetuated disparities through selective prioritisation of certain cancer types.

Table 1: **Summary of key recommendations from papers in the *Equitable Cancer Outcomes for Rural and Remote Communities* Series.**

The narrative review which examined both the cultural and epidemiological constructs of rurality and how they can be measured, then applied a systematic approach to harmonise rurality classification systems used in cancer research. The Rural-Urban Classification System Harmonisation Framework was developed based on the findings, with accompanying implementation recommendations.[17] This will enable future researchers to improve both the measurement and reporting of rurality in original research studies while also enabling future meta-analyses and meta-regressions by controlling for rurality status and geographical remoteness.[17]

Strengthening our understanding of the cancer inequity experienced by rural and remote communities is one critical step forward, but the next must involve actively addressing the inequity. The review focusing on how to change practice uses an implementation science lens to generate practical guidance on how initiatives, interventions, and programs aimed at improving healthcare in the rural and remote setting might be effectively translated into practice for real impact.[18] Rural and remote settings are distinct and highly diverse, both within and between countries, yet few studies reported incorporating rural-specific design features. In particular, engagement with rural stakeholders, including communities and healthcare professionals, fell short of expectations.

With the release of the Australia Cancer Plan in 2023, Australia now has one of the world's strongest national cancer plans addressing inequitable outcomes for rural and remote communities.[14] In our paper on cancer policy in Australia[19] we assess how the lens through which policy can impact equity outcomes. Despite a long history of inequitable outcomes for priority populations, policy in Australia can be slow to recognise and address this and, in some cases, may have perpetuated the inequitable outcomes through selectively prioritising certain cancer types or promoting population-level interventions. Although Australia's cancer policy now has equity at its centre, cancer research funding is still misaligned, undermining the ability of research to deliver against the policy priorities.[19]

Inequity across the cancer trajectory

People living in rural and remote areas experience inequity across the entire cancer trajectory, from prevention and early detection through to survivorship and end-of-life care. Those from rural and remote areas can experience a range of protective health factors which are to be celebrated and leveraged to support positive health outcomes, including being more likely to meet fruit consumption guidelines and having have lower consumption of takeaway food.[21,22] However, compared to their metropolitan counterparts, people from rural and remote communities also experience a higher prevalence of behavioural cancer risk factors, including smoking, alcohol consumption, and lower levels of physical activity.[23–25] Participation in national screening programs is also lower,[26–29] influenced by barriers including longer travel distances to screening services,[30] lower levels of knowledge and awareness of screening,[31,32] and reduced health literacy.[31,33] These same barriers to screening, as well as long wait times to access primary care and socio-cultural characteristics of optimism, stoicism, and machismo, may also lead to delays in seeking help for cancer symptoms.[34–36] There can also be fear of a lack of anonymity associated with smaller populations.[37,38]

As a result, people from rural and remote communities are more often diagnosed with cancer at a more advanced stage, requiring more intensive treatment regimens and negatively impacting survival and quality of life.[39,40] Even when symptoms are recognised, there are a range of factors associated with later stage diagnoses, including limited access to diagnostic services due to distance, availability, and cost.[34,41,42] The impact of distance continues into treatment and post-treatment care, with many people living in rural areas required to frequently travel and/or relocate to larger regional or metropolitan areas.[41] This significantly burdens the person with cancer and their carers, sometimes leading to consequential decisions to decline treatment.[43] For example, radiation therapy is best practice treatment for many types of cancer yet is predominantly available in metropolitan settings; meaning access and coordination across other treatment components is complex.[44,45] Even when hospitals have the infrastructure to administer chemotherapy, a resident medical oncology service is not necessarily present. Radiation oncology and surgical oncology are even more uncommon.[46] Other components of best practice cancer care, including clinical trials access,[47,48] allied health involvement[46,49] and multidisciplinary meetings,[50] can be less common in rural and remote areas. These inequities impact not only survival but also quality of life.

Psychosocial impacts associated with cancer are also known to be unique to people living outside of metropolitan areas. While the data are mixed on whether people from rural and remote communities with cancer experience higher levels of psychosocial distress than their urban counterparts, it is clear they have unique, unmet needs and less access to formal psychosocial supports.[51–53] They also experience financial toxicity associated with cancer and its treatment,[54] and are known to lack knowledge about available support services.[41,49] Furthermore, coordination between the place of cancer treatment and local health service or primary care practitioner support can be lacking.[55] People from rural and remote communities also have barriers associated with access to specialist palliative or end of life care, with lower rates of inpatient palliative care utilisation[56,57] and higher rates of emergency department visits in the months prior to death compared to people from metropolitan areas.[58]

The unique challenges of rural cancer care compel place-based research

In generating solutions to deliver equitable cancer care, it is important to consider the diversity of rural and remote communities and the infrastructure that supports cancer care. Beyond the recognised heterogeneity of patient populations, rural and remote communities are diverse in terms of landscape, local infrastructure, surrounding resources, culture, and workforce.[59] The nature of each rural and remote community requires consideration when developing solutions to deliver equitable healthcare, the driving factor for the move towards place-based research.[60]

People from rural and remote areas often work in primary industries such as farming and agriculture, professions associated with particular barriers to accessing cancer care.[61] Barriers to health-related help seeking for farmers are unique when compared to the rest of the rural community.[62] They are known to be attitudinal (valuing privacy, independence and strength), farm-related (the notion that 'the farm comes first', or 'farm work is never done') and health system-related (time, cost, lack of choice, professionals' lack of understanding of farm life).[63] Farmers face considerable challenges in leaving properties, especially for extended periods of time, due to demands of agricultural production cycles and associated debt. Agricultural work is tied to seasonal rhythms, and critical periods such as planting and harvesting require sustained attention and time to ensure optimal yields. Unlike employees in many other sectors, most farmers, and a large proportion of rural people, are self-employed or work within family run enterprises, where labour substitution is difficult to arrange, or unaffordable and sick leave is non-existent. Disruption to the essential operational tasks of a farm or other rural business can result in immediate and future income loss and these structural constraints limit the ability to take time away from work, even for critical health concerns. The supports required and considerations for someone who manages a farm, or another business from a distance during cancer treatment, are likely to be different to those who have regular employment, are close to treatment centres, and health services.[64,65]

Travel requirements may be frequent for cancer diagnostics, treatment, and follow up, leading some people to relocate. Both frequent travel and relocation may result in loss of family and community support networks, and isolation during extensive and demanding treatment regimes.[65–67] Beyond the logistical complexity of coordinating multiple appointments and travel arrangements, travel to metropolitan areas has also been associated with anxiety and financial toxicity.[43]

Cancer care is becoming increasingly complex.[68] Cancer care may not only be shared across different providers and locations but between both private and public health services, with coordination required across a range of settings. Additionally, multimorbidity may require coordination across different providers and health services. Efforts to improve the delivery of cancer care to address cancer inequities in rural and remote areas must therefore consider such diversities and account for the individuality of rural communities.[16] Although feasibility may be a concern, a one-size-fits-all solution is unlikely to address the local challenges (e.g. access to workforce), receive engagement from rural communities themselves, be culturally accepted, or be successfully implemented. Instead, the tailoring of programs and supports for local delivery and co-design of initiatives with rural communities is crucial to ensure suitability to the unique setting but requires investment in engagement to understand the local context. Such investment in place-based research and genuine engagement with rural and remote communities prior to intervention, including the scaling of models implemented elsewhere, is essential.[60,69] Along with chronic funding deficits for rural place-based research, there has been a pervasive and inaccurate perception that rural communities and health services do not have the resources or capacity to engage with and lead research. Increasingly there are examples that rural health services are not only willing to drive place-based research but they have successfully translated research evidence into improved cancer care in rural areas.[70–72] This is a key opportunity to undertake and deliver impactful and novel research interventions in rural areas. We advocate for working with, and investing in, local communities to understand the local context and determinants, unique resourcing and infrastructure needed for the delivery of programs, initiatives, or interventions aiming to address the inequitable cancer outcomes in rural and remote areas. We consider partnership with rural communities to align efforts with local priorities and opportunities as essential, as this will lead to real improvements in rural and remote cancer outcomes. Understanding the diversity of rural communities suggests local solutions, co-designed with the community using best practice co-design methods,[73] holds promise to drive improvements in cancer care.

The need for system level change

Many interventions developed to improve cancer care are not designed in a way that is feasible in practice, resulting in interventions that are unlikely to be adopted or sustained.[74] Interventions are also often patient-facing,[75] requiring the person affected by cancer to change their approach to generate better cancer outcomes. Focusing on individual behaviours, such as expecting patients to drive long distances[65] or expecting doctors and other health professionals to fill workforce gaps, places significant and unrealistic burden on individuals. Barriers related to the delivery of optimal cancer care are often systemic and relate to policy and funding, rather than individuals.[37,76,77] The potential for system level change to drive better cancer outcomes for people from rural areas have been recognised.[78] This includes new models of care, hospital policy, rural health infrastructure, national policies, transportation options, adequate internet access and connectivity, culturally appropriate care, and embedded strategies capable of shifting the system. Transport initiatives, patient navigation, care coordination, models of peer support, and digital health solutions may be particularly relevant in the rural setting.

Understanding the system-level barriers and facilitators to improving rural healthcare is essential and the implementation of healthcare interventions requires specific consideration of the context, guided by established implementation frameworks.[37,79] For the implementation of initiatives in rural settings, system intervention, staff, and patient level barriers and facilitators have been identified. Major barriers to implementation of interventions in rural communities include environmental resources (such as workforce shortages or budget constraints), geographical vastness, the lack of intervention feasibility and intervention complexity, privacy and confidentiality considerations given the smaller population sizes, staff attitudes, beliefs, knowledge and confidence, and patient characteristics and attitudes.[37] Adaptation of existing interventions to local contexts and leadership have been recognised as facilitators to support implementation in rural areas.[37]

To achieve system level change, dedicated resourcing and evaluation is required. Strategies which solely or primarily rely upon interventions targeted at individuals, such as staff education, are unlikely to address system change.[80] The need for multiple strategies that are feasible, and target the appropriate barriers and enhance facilitators to implementation, given the complexity of the problem, has been established.[59] Ultimately, the reliance on interventions aimed at addressing individual factors may perpetuate rural health disparities. We endorse addressing system level barriers through integrated, scalable, tailored, and policy driven approaches to drive improvements for people affected by cancer in rural areas, that also seek to address chronic deficiencies in investment in these communities.

The potential that comes with understanding and leveraging different models

Addressing the inequities across the cancer trajectory and the diversity of rural cancer care requires moving beyond the challenges to focus on practical solutions. One possible direction is to systematically identify and consider the appropriateness of existing programs and interventions already proven effective within the Australian healthcare system for adaption. This approach aligns with national strategies emphasising “building upon existing policies and plans while considering their implications in rural and remote settings” and “leveraging existing investments and resources”.[81,82]

The process to decide when new innovations should be developed and where adaptations can be made to existing programs requires close consideration. However, in some instances, it is possible to effectively support delivery of existing programs to reduce resource and research waste particularly in rural contexts. Environmental scanning provides a systematic method for identifying existing healthcare initiatives that could be adapted to enhance cancer care in rural and remote areas. Environmental scans can identify initiatives across cancer care pathways that may have components transferable to rural settings with appropriate adaptation.

The adaptation of existing interventions requires systematic approaches that preserve core effectiveness components while modifying contextual elements to fit the rural setting. When identifying and considering initiatives for scaling to rural communities, practical elements (resources, workforce, technology, licencing) and values-based factors (cultural fit, strategic alignment, sustainability)[83] require assessment. Having such assessments led by, or in partnership with, rural health services and communities will ensure adaptations are feasible, culturally appropriate, and aligned with local priorities.

Documenting successful models already meeting gaps in cancer care is essential for such research translation and scaling. Hub and spoke models, networked cancer care systems, decentralised clinical trial access, patient navigation programs, and digital health solutions offer potential components for adaptation.[59,78] However, digital approaches require consideration of infrastructure and literacy challenges, alongside broader system-level implementation barriers in rural settings.[37,84] There is opportunity to learn from approaches developed for other chronic diseases, recognising that cancer care sits within broader healthcare systems, and patients often experience multiple comorbidities.[85,86]

In developing models, programs, and initiatives to enhance rural cancer care, we advocate for detailed evaluation and documentation of implementation processes, including clear articulation of core components that must be preserved and contextual elements with modification potential. This approach builds adaptation capacity within rural health services while contributing to broader evidence for rural healthcare implementation science.[37] Consideration for how initiatives can be effectively embedded within existing rural healthcare infrastructure is important. We note the need to balance local preferences and co-designed initiatives with opportunities to leverage existing initiatives.

Making progress informed by quality data

Utilising timely and appropriate data to guide the development of recommendations, models, and policies is essential to inform the delivery of best practice cancer care. This is especially important in the rural and remote context, where challenges are unique, resources can be constrained, and appropriate responses are required to achieve equitable care.[87] The current data infrastructure in Australia has limitations and there is a need for a fit-for-purpose data ecosystem for cancer care.[88] Understanding how to measure cancer care to assess changes in outcomes in response to interventions, and applying indicators of adherence to best practice frameworks such as the Optimal Care Pathways, are important steps through the collection and use of quality and safety data.

Another example of the need for quality data is the challenge of the optimal place for cancer treatment. There is insufficient evidence to determine the most effective location for cancer treatment for people diagnosed with cancer while residing in rural or remote areas. Treatment at high volume centres in metropolitan areas can be beneficial for some cancer types[89] but local care is often safe and appropriate.[90,91] This also means data on the outcomes and experience of rural patients is lost into the large metropolitan datasets and often not stratified in analysis. Given travel is extremely challenging for many people and brings substantial implications and costs, decisions about optimal place of treatment for given clinical scenarios should be driven by quality datasets to support the delivery of best practice cancer care. Evidence to inform treatment referral decisions for rural Australians diagnosed with cancer is lacking. Similarly, optimal models of follow up in rural communities could be informed by data. In developing recommendations informed by quality data, we call for the improved availability of nationally linked datasets, the contextualisation of large datasets and linked data through understanding the local settings and infrastructure, with involvement from people with a lived experience in rural communities. Where possible, adopting a rural lens and reporting on outcomes for rural patients separately, will add to the evidence base for these communities.

Embedded rural engagement and representation

The development of new cancer policies, programs, and trials in any setting, whether metropolitan, regional, rural, or remote, require early and deliberate consideration for their applicability in rural and remote communities. We advocate for meaningful involvement of people from these communities across research teams, consumer panels, and expert groups, throughout the life of an initiative, program, policy or intervention, ensuring that the outcomes are appropriate and fit for purpose. In Australia, the Optimal Care Pathways are frameworks outlining safe and quality cancer care tailored to specific cancer types or priority population groups,[92] such as Aboriginal and Torres Strait Islander peoples.[93] Ensuring rural representation on working groups developing and revising all Optimal Care Pathways will enhance the diversity and promote relevance across all settings.

Similarly, in research, rural representation in the development and conduct of clinical trials and other research programs is essential to ensuring applicability across settings.[68] People from rural and remote areas are less likely to participate in clinical trials, largely due to not having access to, or being aware of, these opportunities.[94,95] The Australasian Teletrial Model, supported by the Australian Teletrial Program, aims to bridge this gap by supporting the delivery of clinical trials closer to home.[96] However, the sustainability of Teletrials requires investment in infrastructure, workforce training, and executive support within rural health services.[97] Clinical trials are an essential component of best practice cancer care, potentially benefiting current and future population groups with cancer, enhancing institutional research capacity and are associated with better patient outcomes. Academic literature is dominated by research conducted exclusively in metropolitan areas. Partnerships with rural clinicians, researchers, policy makers, health service managers and people with a lived experience of cancer are essential to broad dissemination across a range of settings and will enhance the sustainability and scalability of new initiatives. Place-based research not only overcomes barriers created by the diverse rural and remote healthcare landscape, but meaningful engagement with rural communities can improve the public trust in scientific endeavours.[98] Place-based initiatives connect with local resources, services, and expertise, and builds capacity for the future in rural areas.

We advocate that all new cancer care initiatives, policy, and trials, regardless of geographical setting or focus, should include rural and remote healthcare and consumer representation to ensure the preferences of people from these communities are properly considered and the initiatives are developed as fit-for-purpose for Australia's rural landscape.

A strengths-based approach

In acknowledging the poorer cancer outcomes for people from rural and remote communities, it is equally important to recognise the strengths of these regions. Rural communities are typically characterised by strong social cohesion, established relationships with primary and community care, the health workforce's knowledge of local challenges, and robust community networks.[99,100] In addition, given rural health services are often the sole health organisations in rural communities, they provide significant health leadership in rural areas. Rural health services are agile and able to adapt to system-level interventions for implementation research, making them ideal testbeds for interventions that can improve cancer care, with less complex infrastructure that can be more adaptable to system-level interventions for implementation research.[69,101] Challenging the traditional, rural deficits discourse, and considering how strengths can be leveraged to deliver better outcomes and reduce health inequities offers opportunity for meaningful improvements.[102] Geographical narcissism, the often-unconscious devaluation of rural knowledge and conventions alongside urban attitudes of superiority, is a harmful and inaccurate view, and a driver of rural health inequities.[103] Geographical narcissism has impacted the delivery of healthcare and in medicine has led to a belief that the best healthcare is delivered in urban areas.[104] This may be perpetuated by health care decision-making and policy development being led in metropolitan centres, with compounding downstream effects. For example, increasing reliance on specialised care and services that are unavailable in much of rural Victoria, perpetuates rural workforce shortages and access issues.[104] Relationships between organisations, including academic and government organisations, and rural and remote health services require genuine partnership to deliver appropriate and impactful solutions. Partnerships between rural and metropolitan organisations are important, similarly, partnership between rural organisations allows teams to work together to address complex problems. People from rural and remote communities have a wealth of local knowledge, and genuine investment in supporting positive outcomes for their local communities. Understanding, acknowledging, and integrating through genuine partnership is likely to result in effective solutions which are tailored to the needs of the community for which they are intended to serve.

Knowledge within rural communities should be empowered through collaborative relationships across the sector. Partnerships reduce barriers to improving rural outcomes; for example, academic affiliations via a partnership can improve a hospital's ability to access new knowledge and drive research agendas that fit community need.[105] Advocacy organisations have had successes in driving meaningful and sustained change; an example is the Breast Cancer Network of Australia's advocacy work to determine the prevalence and count cases of metastatic breast cancer.[106,107] In Australia, the Australian Comprehensive Cancer Network has launched,[108] establishing a network to drive connections across the sector. Implementation of the Australian Cancer Plan to deliver world class cancer outcomes for Australians requires coordinated effort.[88] To support this collaborative approach, the Coalition Development Framework provides a structured methodology through four phases with associated actions: engagement, discovery, unification, action and monitoring, specifically designed to support the development of alliances and coalitions to address challenges in cancer care.[109] This framework offers a practical roadmap for building the genuine partnerships essential for improving rural cancer outcomes.

Reducing complex inequities requires sector-wide engagement and participation; however, the rural setting offers many strengths which can be leveraged to address these. Meaningful engagement and partnership across the sector to enrich place-based research will leverage the strength of healthcare in rural and remote Australia.

Summary of key recommendations highlighted in the series

In this *Equitable Cancer Outcomes for Rural and Remote Communities* series, we present papers that examine cancer equity in rural and remote communities. The studies describe the association of rurality status with all-cause and cancer-specific survival, articulate the challenges of measuring 'rurality' to assess cancer equity globally, identify implementation strategies used to embed evidence-based healthcare interventions in rural and remote settings, and examine the historical evolution of cancer policy in Australia. Each paper makes recommendations to improve cancer equity in rural areas relevant to its specific focus (Table 1); however, when examined collectively, a suite of recommendations to further rural and remote cancer research, policy, and healthcare can be made (Table 2).

The collective findings call for a fundamental shift toward place-based, systems-focused approaches that prioritise genuine partnership with rural communities and address structural barriers, rather than placing burden on individuals. Achieving equitable cancer outcomes for rural and remote populations requires coordinated, cross-sectoral action, with rural voices embedded throughout research, policy, decision making, advocacy and service delivery. We recommend the adoption of a formal position statement that explicitly recognises partnership as a core principle as well as the commitment of all parties to build upon the existing strengths of rural communities. Only through such integration can initiatives be truly fit-for-purpose across diverse rural contexts.

Our call to action (Table 2) outlines specific responsibilities across policy, practice, research, and

Action area	Responsibility
Policy	
Invest in and strengthen digital infrastructure and workforce capability within rural health services to enable high-quality data collection, management, and use.	Whole of government, health departments, and health services
Establish mechanisms for the routine collection, linkage, and transparent reporting of rural-specific data, including workforce, service delivery, and outcomes to inform policy, monitor equity, and ensure accountability, as part of the development of National Cancer Data Frameworks.	Whole of government, health departments, and data custodians
Adopt a formal position statement that explicitly recognises partnership with rural and remote key partners as a core principle, aligned with national cancer plans.	All stakeholders
Establish comprehensive rural cancer equity frameworks that integrate health services with social determinant sectors including employment, housing, transport, and education.	Whole of government
Adopt systematic rural cancer impact assessment across all government policy development.	Whole of government
Create interdepartmental working groups to coordinate rural cancer control equity activities and monitor emerging issues affecting rural and remote communities.	Whole of government
Improve coordination and communication between rural, regional, and metropolitan cancer services by strengthening shared care arrangements, standardising referral pathways, and enabling timely information exchange to ensure continuity of care.	Health services, policymakers, and professional bodies
Invest in rural cancer equity programs including place-based research, system-level interventions, Optimal Care Pathway monitoring, and targeted supports for priority populations, ensuring alignment with National Cancer Plan implementation priorities.	Departments of health
Develop and resource sustainable rural cancer workforce strategies, including training pipelines, post-graduate education in cancer care for nurses and allied health professionals, incentives for recruitment and retention, and professional development opportunities to enable quality cancer care delivery closer to home.	Whole of government, health departments, universities, and professional bodies
Embed rural representation in all cancer policy development, clinical trial design, service and research initiatives.	Departments of health, and research organisations
Develop, resource and optimise national transport and accommodation support, to improve access to specialist services and clinical trials for rural, regional, and remote patients	Whole of government
Prioritise addressing system and structural level barriers through integrated, scalable, tailored, and policy-driven approaches rather than relying on interventions aimed at individual factors.	Whole of government, health departments, with support from health services and researchers
Practice	
Establish place-based, tailored approaches to rural cancer care that understand local contexts must be established to enable the intervention delivery to enable effective intervention delivery.	Health services, researchers, and rural communities
Systematically adapt existing evidence-based interventions where appropriate through environmental scanning and co-design methodologies, rather than creating new programs.	Health services, researchers, and intervention developers
Apply multiple and appropriate implementation strategies, that are feasible and acceptable, targeting system-level determinants and co-designed to address identified barriers and enhance facilitators to implementation, rather than relying solely on education-based approaches.	Health services, academic institutions, researchers, and implementation organisations
Document and celebrate successful models of cancer care including implementation context, barriers, and facilitators to enable sustainability, scaling and adaption across rural settings.	Health services, academic institutions and researchers
Leverage rural community strengths and local knowledge through genuine partnerships between metropolitan and rural organisations.	Health services, researchers, consumers, academic institutions, and government
Ensure rural-specific design features are incorporated into interventions, including online access, access to further study, remote specialist support, and culturally appropriate resources.	Health services, researchers, consumers and intervention developers
Research and evaluation	
Resource rural cancer equity research, particularly health services research and implementation science to increase adaptation and translation of innovations.	Government departments, philanthropic organisations, granting bodies, consumers
Challenge perceptions about rural research capacity and invest in rural health services as leaders and partners in place-based research initiatives.	Researchers, funding bodies, and academic institutions
Establish genuine partnerships with rural communities and advocate for place-based research that invests in engagement to understand local context, determinants, and priorities before intervention delivery.	Researchers in collaboration with rural communities
Apply standardised rural classification systems using the harmonisation framework to enable meaningful evidence synthesis across studies.	Researchers
Ensure rural-specific data analysis and reporting in large datasets to prevent rural patient outcomes being obscured within metropolitan samples.	Researchers, data analysts, and health system leaders
Examine intersectional factors affecting rural cancer outcomes, including socioeconomic status, race, health insurance, and other social determinants.	Researchers in collaboration with rural communities
Develop and evaluate metrics for measuring adherence to Optimal Care Pathways and identifying barriers to consistent application in rural settings.	Health services, researchers, and policy makers
Establish fit-for-purpose data ecosystems that enable detection of emerging priority populations and flexible monitoring of equity outcomes, contributing to National Cancer Data Framework objectives.	Researchers, data analysts, and health system leaders
Advocacy	
Champion rural cancer equity prominence on political agendas nationally and globally, with particular attention to addressing geographical inequities and supporting implementation of national cancer plans.	All stakeholders
Ensure that people with lived experience of cancer in rural areas, rural communities, and rural healthcare providers have genuine involvement in all policy, practice, and research actions.	All stakeholders

Table 2: **Call to action to drive rural and remote cancer equity.**

advocacy domains to drive meaningful progress in rural cancer equity.

Conclusion

People living in rural and remote areas of Australia make significant cultural, social, and economic contributions to the nation, and embody values that are central to the Australian identity. Despite this, they have long experienced persistent inequities in health outcomes, including cancer care, and now is the time for action.

The *Equitable Cancer Outcomes for Rural and Remote Communities* series provides new evidence on the survival disadvantage faced by people with cancer in rural and remote areas, proposes a harmonised approach to measuring cancer equity in rural areas, identifies strategies for implementing evidence-based care in diverse contexts, and traces the historical evolution of equity across Australian cancer policy. Together, this series generates a set of recommendations that call for place-based, system-level reform, genuine partnership with rural communities, and alignment of policy and funding priorities with demonstrated need.

The recommendations developed through this work present a roadmap towards achieving equitable cancer outcomes for rural and remote Australians. A key action is the adoption of a formal position statement that recognises partnership as a core principle to guide collaboration across sectors. Achieving this requires coordinated action across research, policy, practice, and advocacy domains, and sustained investment in rural voices, services, and infrastructure. Ensuring that all Australians, regardless of where they live, have access to world-class cancer care is both an urgent policy priority and a national responsibility.

Contributors

AU developed the study concept with contributions from HJ, CW, HR, AC, SM, LA and through input from and discussions, collaborations, and partnerships with the broader authorship team. AU led manuscript drafting with contributions from HJ, SM, CW, HR and LA. All authors contributed to manuscript revision. Our diverse, multidisciplinary authorship team brings together many individuals with lived and professional experience in rural settings, representing researchers, clinicians, policymakers, health service leaders, partners, advocacy organizations, and consumers.

Data sharing statement

Not applicable.

Declaration of interests

JR has received a grant from the Australian Government National Health & Medical Research Council/MRFF (Multidisciplinary Models of Primary Care Research Grant) and honorarium from Merck Sharpe & Dohme (MSD) and Pfizer for advisory panel duties, chairing and speaking at clinician educational events. JR has received travel support from Pfizer for chairing and speaking at clinician educational events. JR reports roles in the Royal Australian College of General Practitioners, including Expert Committee-Research (Member), Cancer and Palliative Care Network (Chair), National Research and Evaluation Ethics Committee (Deputy Chair), and roles in Australian Journal of General Practice Editorial Advisory Committee (Member), Australian Government National Bowel Cancer Screening Program (Clinical Advisory Committee Member), Australian Government National Lung Cancer Screening Program (Advisory Committee Member), National Bowel Cancer Screening Program Education and Engagement Advisory Group (Chair), Palliative Care Australia—Quality Use of Medicines in Palliative Care Project (Advisory Panel Member), Australian Medical Council—Medicine Written Questions Writing Group (Deputy Chair), Primary Care Collaborative Cancer Clinical Trials Group (PC4) (Scientific Committee Member), and Living with and Beyond Cancer Stream (Co-Chair). JR is an Associate Editor of Family Practice (Oxford) and Editorial Board Member of BMC Primary Care. LA has received funding from The Rural Health Multidisciplinary Training program funded by the Australian Government Department of Health and Aged Care which contributes to the funding of LA's role. COK has received support from Novartis for attending meetings. CES is supported by a Victoria Cancer Agency Mid-Carrer Fellowship. DA reports roles in the Australian Health Research Alliance (AHRA) (Deputy Chair), the AHRA rural sub-committee (Chair), and the Australian Clinical Trials Education Centre Steering Committee (Chair). FH reports roles in Western Cancer Centre Foundation (Chair), and Equitable Cancer Outcomes Across Rural and Remote Australia Optimal Care Pathway Working Group (Chair). MV is an employer of Cancer Council Australia, and reports role in Financial Toxicity Working Group of Clinical Oncology Society of Australia (Co-chair). NHH is supported by an NHMRC Research Fellowship (APP2017080). NHH participates in on a Data Safety Monitoring Board or Advisory Board of an MRFF funded trial, the CANCAN trial, and reports roles in COSA Survivorship Executive (Chair) and Asia–Pacific Journal of Clinical Oncology (Editor-in-Chief), outside the submitted work. All other authors declare no conflicts of interest.

Acknowledgements

We acknowledge and thank the rural and remote communities across Australia that have informed this work, particularly those in Queensland, Victoria, and South Australia who have generously shared their experiences and knowledge. We are grateful to the healthcare professionals, people diagnosed with cancer, carers, academics, and community members who provided invaluable perspectives. Their expertise has been fundamental to shaping our understanding of rural cancer care challenges and opportunities.

This study was funded by the Commonwealth of Australia's Medical Research Future Fund (MRF2030313). AU, CS, RJB and LG are supported by Victorian Cancer Agency fellowships. NHH is supported by an NHMRC Investigator Fellowship (APP2017080). Contents of the published material are solely the responsibility of the participating institutions and/or individual authors and do not reflect the views of the Commonwealth.

References

1 Ayre S, Ireland M, Taglieri-Sclocchi A, et al. *Time from diagnosis to treatment: are rural cancer patients receiving optimal care in Australia?* 2025.
2 Bergin RJ, Emery J, Bollard RC, et al. Rural–urban disparities in time to diagnosis and treatment for colorectal and breast cancer. *Cancer Epidemiol Biomarkers Prev*. 2018;27(9):1036–1046.
3 Australian Institute of Health and Welfare. *Rural and remote health*. 2024.
4 Davis S, Bartlett H. Healthy ageing in rural Australia: issues and challenges. *Australas J Ageing*. 2008;27(2):56–60.
5 Stewart RA. Building a rural and remote health workforce: an overview of effective interventions. *Med J Aust*. 2023;219:S3–S4.
6 Afshar N, English DR, Chamberlain JA, et al. Differences in cancer survival by remoteness of residence: an analysis of data from a population-based cancer registry. *Cancer Causes Control*. 2020;31(7):617–629.
7 Bhopal RS. *Concepts of epidemiology: integrating the ideas, theories, principles, and methods of epidemiology*. Oxford University Press; 2016.
8 Ching B, Creed GW. *Knowing your place: rural identity and cultural hierarchy*. Routledge; 2013.

9 Whitehead J, Davie G, de Graaf B, et al. *Defining rural in Aotearoa New Zealand: a novel geographic classification for health purposes*. 2021.

10 Marshall S, Wright C, Leigh L, et al. Association of rurality status with all-cause and cancer-specific survival: a systematic review and meta-analysis adjusting for clinical factors, demographics, and geographical remoteness. *Lancet Reg Health West Pac*. 2025. https://doi.org/10.1016/j.lanwpc.2025.101744.

11 Collins PH. Intersectionality's definitional dilemmas. *Annu Rev Sociol*. 2015;41(1):1–20.

12 Shannon G, Morgan R, Zeinali Z, et al. Intersectional insights into racism and health: not just a question of identity. *Lancet*. 2022;400(10368):2125–2136.

13 Estupiñán Fdez de Mesa M, Marcu A, Ream E, Whitaker KL, Whitaker KL. Understanding and tackling cancer inequities: what opportunities does intersectionality offer researchers, policy-makers, and providers? A scoping review. *J Psychosoc Oncol*. 2025;43(1):105–132.

14 Cancer Australia, ed. *Australian cancer plan*. Australian Government; 2024. www.australiancancerplan.gov.au.

15 Chaji D, Boltong A, Der Vartanian C, et al. Setting the policy agenda for cancer control reform: Australia's first national cancer control plan. *Med J Aust*. 2023;219(10):451–454.

16 Elston J, Nehill C, Keefe DM. Strengthening cancer education evidence to achieve equity in outcomes for First Nations Australians. *Lancet Reg Health West Pac*. 2025;61:101565.

17 Wright C, Riva S, Crichton M, et al. Measuring cancer equity globally: harmonising international rural-urban classifications for exploring cancer outcomes. *Lancet Reg Health West Pac*. 2025. https://doi.org/10.1016/j.lanwpc.2025.101737.

18 Chapman A, Gaskin CJ, Beks H, et al. Implementation strategies for evidence-based healthcare interventions in rural and remote settings: a scoping review. *Lancet Reg Health West Pac*. 2025. https://doi.org/10.1016/j.lanwpc.2025.101732.

19 Rodi H, Chapman A, Bergin RJ, et al. Examining the historical evolution of cancer policy in Australia: impact of key initiatives on equity and outcomes. *Lancet Reg Health West Pac*. 2025. https://doi.org/10.1016/j.lanwpc.2025.101731.

20 Health Mo, ed. *New Zealand cancer action plan 2019–2029 – te mahere mō te mate pukupuku o aotearoa 2019–2029*. Wellington: Ministry of Health; 2019.

21 Jacobs J, Strugnell C, Becker D, et al. Understanding weight status and dietary intakes among Australian school children by remoteness: a cross-sectional study. *Public Health Nutr*. 2023;26(6):1185–1193.

22 Gunn KM, Berry NM, Meng X, et al. Differences in the health, mental health and health-promoting behaviours of rural versus urban cancer survivors in Australia. *Support Care Cancer*. 2020;28(2):633–643.

23 DiSipio T, Rogers C, Newman B, et al. The Queensland cancer risk study: behavioural risk factor results. *Aust N Z J Public Health*. 2006;30(4):375–382.

24 Riddell J, Hempenstall A, Nakata Y, et al. The high burden of comorbidities in Aboriginal and Torres Strait Islander Australians living with chronic hepatitis B in Far North Queensland, Australia, and the implications for patient management. *PLoS One*. 2023;18(4):e0284151.

25 Laaksonen MA, Arriaga ME, Canfell K, et al. The preventable burden of endometrial and ovarian cancers in Australia: a pooled cohort study. *Gynecol Oncol*. 2019;153(3):580–588.

26 Dasgupta P, Cameron JK, Goodwin B, et al. Geographical and spatial variations in bowel cancer screening participation, Australia, 2015-2020. *PLoS One*. 2023;18(7):e0288992.

27 Martini A, Javanparast S, Ward PR, et al. Colorectal cancer screening in rural and remote areas: analysis of the National Bowel Cancer Screening Program data for South Australia. *Rural Remote Health*. 2011;11(2):1648.

28 Slimings C, Moore M. Geographic variation in health system performance in rural areas of New South Wales, Australia. *Aust J Rural Health*. 2021;29(1):41–51.

29 Ward PR, Javanparast S, Matt MA, et al. Equity of colorectal cancer screening: cross-sectional analysis of National Bowel Cancer Screening Program data for South Australia. *Aust N Z J Public Health*. 2011;35(1):61–65.

30 Gadd N, Lee S, Hughes J, Sharman MJ, Hoang H, Obamiro K. Barriers and enablers to bowel cancer screening participation in remote Tasmania: a qualitative study using the theoretical domains framework. *Aust J Rural Health*. 2024;32(5):1041–1053.

31 Ireland K, Hendrie D, Ledwith T, Singh A. Strategies to address barriers and improve bowel cancer screening participation in Indigenous populations, particularly in rural and remote communities: a scoping review. *Health Promot J Austr*. 2023;34(2):544–560.

32 Azar D, Murphy M, Fishman A, Sewell L, Barnes M, Proposch A. Barriers and facilitators to participation in breast, bowel and cervical cancer screening in rural Victoria: a qualitative study. *Health Promot J Aust*. 2022;33(1):272–281.

33 Porter JE, Miller EM, Prokopiv V, Sewell L, Borgelt K, Reimers V. Providing a localised cervical cancer screening course for general practice nurses. *Aust J Prim Health*. 2024;30.

34 Hall SE, Holman CD, Threlfall T, et al. Lung cancer: an exploration of patient and general practitioner perspectives on the realities of care in rural Western Australia. *Aust J Rural Health*. 2008;16(6):355–362.

35 National Rural Health Alliance. *Rural Health in Australia Snapshot 2025*. 2025.

36 Taglieri-Sclocchi A, Bindicsova I, Ayre SK, et al. Rural cancer survivors' perceived delays in seeking medical attention, diagnosis and treatment: findings from a large qualitative study. *Cancer Med*. 2025;14(14):e71036.

37 Chapman A, Buccheri A, Mohotti D, et al. Staff-reported barriers and facilitators to the implementation of healthcare interventions within regional and rural areas: a rapid review. *BMC Health Serv Res*. 2025;25(1):331.

38 Kristman-Valente AN, McCarty CA, Walker DD, Walker-Harding L. Barriers to implementing a cannabis focused SBIRT in adolescent primary care. *Subst Abuse*. 2022;16:11782218221111837.

39 Andrilla CHA, Moore TE, Man Wong K, Evans DV. Investigating the impact of geographic location on colorectal cancer stage at diagnosis: a national study of the SEER cancer registry. *J Rural Health*. 2020;36(3):316–325.

40 Williams F, Jeanetta S, James AS. Geographical location and stage of breast cancer diagnosis: a systematic review of the literature. *J Health Care Poor Underserved*. 2016;27(3):1357–1383.

41 George M, Smith A, Ranmuthugula G, Sabesan S. Barriers to accessing, commencing and completing cancer treatment among geriatric patients in rural Australia: a qualitative perspective. *Int J Gen Med*. 2022;15:1583–1594.

42 Diaz A, Whop LJ, Valery PC, et al. Cancer outcomes for Aboriginal and Torres Strait Islander Australians in rural and remote areas. *Aust J Rural Health*. 2015;23(1):4–18.

43 Wercholuk AN, Parikh AA, Snyder RA. The road less traveled: transportation barriers to cancer care delivery in the rural patient population. *JCO Oncol Pract*. 2022;18(9):652–662.

44 Delaney G, Jacob S, Featherstone C, Barton M. The role of radiotherapy in cancer treatment: estimating optimal utilization from a review of evidence-based clinical guidelines. *Cancer*. 2005;104(6):1129–1137.

45 Maroongroge S, Wallington DG, Taylor PA, et al. Geographic access to radiation therapy facilities in the United States. *Int J Radiat Oncol Biol Phys*. 2022;112(3):600–610.

46 Underhill C, Bartel R, Goldstein D, et al. Mapping oncology services in regional and rural Australia. *Aust J Rural Health*. 2009;17(6):321–329.

47 Ford JG, Howerton MW, Lai GY, et al. Barriers to recruiting underrepresented populations to cancer clinical trials: a systematic review. *Cancer*. 2008;112(2):228–242.

48 McPhee NJ, Nightingale CE, Harris SJ, Segelov E, Ristevski E. Barriers and enablers to cancer clinical trial participation and initiatives to improve opportunities for rural cancer patients: a scoping review. *Clin Trials*. 2022;19(4):464–476.

49 Gunn K, Turnbull D, McWha JL, Davies M, Olver I. Psychosocial service use: a qualitative exploration from the perspective of rural Australian cancer patients. *Support Care Cancer*. 2013;21(9):2547–2555.

50 Lamprell K, Arnolda G, Delaney GP, Liauw W, Braithwaite J. The challenge of putting principles into practice: resource tensions and real-world constraints in multidisciplinary oncology team meetings. *Asia Pac J Clin Oncol*. 2019;15(4):199–207.

51 Goodwin BC, Zajdlewicz L, Stiller A, et al. What are the post-treatment information needs of rural cancer survivors in Australia? A systematic literature review. *Psychooncology*. 2023;32(7):1001–1012.

52 Kavanagh BE, Corney KB, Beks H, Williams LJ, Quirk SE, Versace VL. A scoping review of the barriers and facilitators to accessing and utilising mental health services across regional, rural, and remote Australia. *BMC Health Serv Res*. 2023;23(1):1060.

53 van der Kruk SR, Butow P, Mesters I, et al. Psychosocial well-being and supportive care needs of cancer patients and survivors living in rural or regional areas: a systematic review from 2010 to 2021. *Support Care Cancer*. 2022;30(2):1021–1064.

54 Skrabal Ross X, Gunn KM, Olver I. Understanding the strategies rural cancer patients and survivors use to manage financial toxicity and the broader implications on their lives. *Support Care Cancer*. 2021;29(9):5487–5496.

55 Lundstrøm LH, Johnsen AT, Ross L, Petersen MA, Groenvold M. Cross-sectorial cooperation and supportive care in general practice: cancer patients' experiences. *Fam Pract*. 2011;28(5):532–540.

56 Conlon MS, Caswell JM, Santi SA, et al. Access to palliative care for cancer patients living in a northern and rural environment in Ontario, Canada: the effects of geographic region and rurality on end-of-life care in a population-based decedent cancer cohort. *Clin Med Insights Oncol*. 2019;13:1179554919829500.

57 Cerni J, Rhee J, Hosseinzadeh H. End-of-life cancer care resource utilisation in rural versus urban settings: a systematic review. *Int J Environ Res Publ Health*. 2020;17(14):4955.

58 Greenwood-Ericksen MB, Kocher K. Trends in emergency department use by rural and urban populations in the United States. *JAMA Netw Open*. 2019;2(4):e191919.

59 Levit LA, Byatt L, Lyss AP, et al. Closing the rural cancer care gap: three institutional approaches. *JCO Oncol Pract*. 2020;16(7):422–430.

60 Alston L, McFayden L, Gupta TS, Payne W, Smith J. Creating a sustainable and supportive health research environment across rural and remote Australia: a call to action. *Med J Aust*. 2023;219:S27–S30.

61 Emery JD, Walter FM, Gray V, et al. Diagnosing cancer in the bush: a mixed-methods study of symptom appraisal and help-seeking behaviour in people with cancer from rural Western Australia. *Fam Pract*. 2013;30(3):294–301.

62 Hull MJ, Fennell KM, Vallury K, Jones M, Dollman J. A comparison of barriers to mental health support-seeking among farming and non-farming adults in rural South Australia. *Aust J Rural Health*. 2017;25(6):347–353.

63 Hull MJ, Gunn KM, Smith AE, Jones M, Dollman J. "We're lucky to have doctors at all"; A qualitative exploration of Australian farmers' barriers and facilitators to health-related help-seeking. *Int J Environ Res Publ Health*. 2022;19(17):11075.

64 Johnston EA, Craig N, Stiller A, et al. The impact on employment for rural cancer patients and their caregivers travelling to major cities for treatment. *Health Soc Care Community*. 2023;2023(1):1–14.

65 Ugalde A, Blaschke S, Boltong A, et al. Understanding rural caregivers' experiences of cancer care when accessing metropolitan cancer services: a qualitative study. *BMJ Open*. 2019;9(7):e028315.

66 Gunn KM, Weeks M, Spronk KJ, Fletcher C, Wilson C. Caring for someone with cancer in rural Australia. *Support Care Cancer*. 2022;30(6):4857–4865.

67 Johnston EA, Collins KE, Vicario JN, Sibthorpe C, Goodwin BC. "I'm not the one with cancer but it's affecting me just as much": a qualitative study of rural caregivers' experiences seeking and accessing support for their health and wellbeing while caring for someone with cancer. *Support Care Cancer*. 2024;32(11):761.

68 Xavier Stevens S, Jackson CG, Karikios D. What is the role of common sense oncology in the Western Pacific? *Lancet Reg Health West Pac*. 2025;61:101660.

69 Alston L, Versace VL. Place-based research in small rural hospitals: an overlooked opportunity for action to reduce health inequities in Australia? *Lancet Reg Health West Pac*. 2023;30:100682.

70 Alston L, Field M, Buccheri A, et al. Establishment of a research unit in Colac, a medium rural town: an update on progress and guidance for rural health service research strategy development. *Aust J Rural Health*. 2025;33(1):e70005.

71 Alston L, Pu D, Wood S, et al. Embedding research into the organisational structure of smaller rural hospitals: building research culture and capacity and understanding perceived rural health workforce benefit. *BMC Health Serv Res*. 2025;25(1):1008.

72 Fennell KM, Turnbull DA, Bidargaddi N, McWha JL, Davies M, Olver I. The consumer-driven development and acceptability testing of a website designed to connect rural cancer patients and their families, carers and health professionals with appropriate information and psychosocial support. *Eur J Cancer Care*. 2017;26(5):e12533.

73 Kiss N, Jongebloed H, Baguley B, et al. *Meaningful consumer involvement in cancer care: a systematic review on co-design methods and processes*. JNCI Cancer Spectrum; 2024.

74 Ugalde A, Gaskin CJ, Rankin NM, et al. A systematic review of cancer caregiver interventions: appraising the potential for implementation of evidence into practice. *Psychooncology*. 2019;28(4):687–701.

75 Lamort-Bouché M, Sarnin P, Kok G, et al. Interventions developed with the Intervention mapping protocol in the field of cancer: a systematic review. *Psychooncology*. 2018;27(4):1138–1149.

76 Sabesan S, Piliouras P. Disparity in cancer survival between urban and rural patients–how can clinicians help reduce it? *Rural Remote Health*. 2009;9(3):1146.

77 National Rural Health Alliance. *The forgotten health spend: a report on the expenditure deficit in rural Australia*. 2025.

78 Munhoz R, Sabesan S, Thota R, Merrill J, Hensold JO. Revolutionizing rural oncology: innovative models and global perspectives. *Am Soc Clin Oncol Educ Book*. 2024;44(3):e432078.

79 Wang Y, Wong EL-Y, Nilsen P, Chung VC-H, Tian Y, Yeoh E-K. A scoping review of implementation science theories, models, and frameworks—an appraisal of purpose, characteristics, usability, applicability, and testability. *Implement Sci*. 2023;18(1):43.

80 Ugalde A, White V, Rankin NM, et al. How can hospitals change practice to better implement smoking cessation interventions? A systematic review. *CA Cancer J Clin*. 2022;72(3):266–286.

81 Australian Government. *The national strategic framework for rural and remote health*. Canberra Australia: Standing Council on Health; 2016.

82 State of Queensland (Queensland Health). *Digital strategy for rural and remote healthcare: 10 year plan*. Brisbane Australia: eHealth Queensland; 2021.

83 Thokala P, Devlin N, Marsh K, et al. Multiple criteria decision analysis for health care decision making—an introduction: report 1 of the ISPOR MCDA emerging good practices task force. *Value Health*. 2016;19(1):1–13.

84 Jongebloed H, Anderson K, Winter N, et al. The digital divide in rural and regional communities: a survey on the use of digital health technology and implications for supporting technology use. *BMC Res Notes*. 2024;17(1):90.

85 Albreht T, Dyakova M, Schellevis FG, Van den Broucke S. Many diseases, one model of care? *J Comorb*. 2016;6(1):12–20.

86 Flieger SP, Thomas CP, Prottas J. Improving interorganizational coordination between primary care and oncology: adapting a chronic care management model for patients with cancer. *Med Care Res Rev*. 2021;78(3):229–239.

87 Bergin RJ, Thomas RJS, Whitfield K, White V. Concordance between optimal care pathways and colorectal cancer care: identifying opportunities to improve quality and reduce disparities. *J Eval Clin Pract*. 2020;26(3):918–926.

88 Chaji D, Malloy L, Meredyth D, et al. Implementing Australia's first national cancer control plan to shape Australian cancer control policy for the next decade and beyond. *Holist Integr Oncol*. 2024;3(1):40.

89 David JM, Ho AS, Luu M, et al. Treatment at high-volume facilities and academic centers is independently associated with improved survival in patients with locally advanced head and neck cancer. *Cancer*. 2017;123(20):3933–3942.

90 Crawford-Williams F, Goodwin B, March S, et al. Cancer care in regional Australia from the health professional's perspective. *Support Care Cancer*. 2018;26(10):3507–3515.

91 Birch EM, Haigh MM, Baxi S, et al. Exploring treatment decision-making in cancer management for rural residents: patient and provider perspectives on a recently established regional radiotherapy service. *Asia Pac J Clin Oncol*. 2018;14(5):e505–e511.

92 Bergin RJ, Whitfield K, White V, et al. Optimal care pathways: a national policy to improve quality of cancer care and address inequalities in cancer outcomes. *J Cancer Policy*. 2020;25:100245.

93 Chynoweth J, Daveson B, McCambridge M, et al. *A national priority: improving outcomes for Aboriginal and torres Strait Islander people with cancer through an optimal care pathway*. American Society of Clinical Oncology; 2018.

94 Barrett NJ, Rodriguez EM, Iachan R, et al. Factors associated with biomedical research participation within community-based samples across 3 National Cancer Institute–designated cancer centers. *Cancer*. 2020;126(5):1077–1089.

95 Williams CP, Senft Everson N, Shelburne N, Norton WE. Demographic and health behavior factors associated with clinical trial invitation and participation in the United States. *JAMA Netw Open*. 2021;4(9):e2127792.

96 Graffini J, Johnston K, Farrington A, McPhail SM, Larkins S. The Australian clinical trial landscape: perceptions of rural, regional and remote health service capacity and capability. *Health Res Policy Syst*. 2024;22(1):171.

97 Clinical Oncology Society of Australia (COSA). *Australasian teletrial model: access to clinical trials closer to home using tele-health a national guide for implementation*. Sydney: COSA; 2016.

98 Beaty F, Domínguez-Sánchez PS, Nalven KB, et al. Centering relationships to place for more meaningful research and engagement. *Proc Natl Acad Sci*. 2024;121(25):e2306991121.

99 Farmer J, Prior M, Taylor J. A theory of how rural health services contribute to community sustainability. *Soc Sci Med*. 2012;75(10):1903–1911.

100 Kenny A, Hyett N, Sawtell J, Dickson-Swift V, Farmer J, O'Meara P. Community participation in rural health: a scoping review. *BMC Health Serv Res*. 2013;13(1):64.

101 Innis J, Barnsley J, Berta W, Daniel I. Do hospital size, location, and teaching status matter? Role of context in the use of evidence-based discharge practices. *Int J Healthc Manag*. 2021;14(4):1011–1017.

102 Freeman M, Mills J, Skaczkowski G, Gunn KM. Investigating the use of strengths-based approaches for health research in rural communities: a scoping review. *Prog Palliat Care*. 2025;33:178–201.

103 Fors M. Geographical narcissism in psychotherapy: counter-mapping urban assumptions about power, space, and time. *Psychoanal Psychol*. 2018;35(4):446–453.

104 Partanen R, Eley D, Ostini R, McGrail M. Identifying the experience of geographical narcissism during medical education and training. *Adv Health Sci Educ*. 2025.

105 Harrod M, Manojlovich M, Kowalski CP, Saint S, Krein SL. Unique factors rural veterans' affairs hospitals face when implementing health care-associated infection prevention initiatives. *J Rural Health*. 2014;30(1):17–26.

106 Durston V, Mills S, Smith A, Rae J, Lord S, O'Connell D. Making metastatic breast cancer count. *Breast*. 2024;74:103640.

107 Smith A, Durston V, Mills S. Long term risk of distant metastasis in women with non-metastatic breast cancer and survival after metastasis detection: a population-based linked health records study. *Med J Aust*. 2023;218(3):141.

108 Meredyth D, Joshi A, Chaji D, et al. The Australian comprehensive cancer network: a framework for networked, patient centred comprehensive cancer care. *Aust J Cancer Nurs*. 2024;25(1).

109 Hyatt A, Chan B, Moodie R, et al. Strengthening cancer control in the South Pacific through coalition-building: a co-design framework. *Lancet Reg Health West Pac*. 2023;33:100681.