









BMJ Open Clinicians' attitudes to oncology clinical practice guidelines and the barriers and facilitators to adherence: a mixed methods study protocol

Mia Bierbaum ¹, Jeffrey Braithwaite ^{1,2}, Gaston Arnolda ^{1,2},
Geoffrey P Delaney ^{2,3,4}, Winston Liauw,^{2,5,6} Richard Kefford ^{2,7,8},
Yvonne Tran ^{1,2}, Bróna Nic Giolla Easpaig ^{1,2}, Frances Rapport ¹

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For numbered affiliations see end of article.

Correspondence to

Mia Bierbaum;
mia.bierbaum@hdr.mq.edu.au

ABSTRACT

Introduction Clinical practice guidelines (CPGs) are designed to reduce inappropriate clinical variation and improve the quality of care. Barriers to CPGs include a lack of awareness of CPGs, access to them, time pressures and concerns regarding the evidence underpinning CPG development, implementation and dissemination. The objectives of this study are to assess clinicians' attitudes to CPGs for cancer treatment and the perceived barriers to and facilitators of CPG adherence in order to inform the implementation of cancer treatment CPGs.

Methods and analysis A mixed methods study will be conducted using a three-phase, sequential design, with each phase informing the next. In phase 1, a qualitative study using recorded interviews will investigate clinicians' attitudes to CPGs for cancer treatment and perceptions of barriers and facilitators to CPG adherence (n=30); interview transcripts will be analysed thematically. In phase 2, a survey will quantify the frequency of attitudes, barriers and facilitators identified in phase 1, in a broader clinical sample (n=200). In phase 3, a workshop forum will be held to facilitate discussions examining the implications of phase 1 and 2 findings for cancer CPG implementation strategies (n=40) leading to recommendations for improvements to practice. The workshop discussion will be recorded, and the transcript will be analysed thematically.

Ethics and dissemination This study has received ethics approval in New South Wales, Australia (2019/ETH11722, #52019568810127). Study findings will be published in peer-reviewed journals and will form part of a doctoral thesis and be presented at national and international conferences.

INTRODUCTION

The burden of cancer is substantial in Australia with 141 538 new diagnoses of cancer and 48 840 cancer-related deaths in 2018,¹ similar to the rates observed in North America and Europe.² Clinical practice guidelines (CPGs) are promulgated to reduce inappropriate clinical variation and expedite the embedding of evidence-based practice into routine care, improving the

Strengths and limitations of this study

- This study will identify clinicians' attitudes towards cancer clinical practice guidelines (CPGs), and their perceived barriers and facilitators to CPG adherence, in Australia.
- Associations between attitudes towards CPGs and clinician characteristics will be analysed to inform targeted CPG dissemination and implementation strategies.
- Key stakeholders will be engaged during the conference workshop to validate initial study findings and to further refine recommendations for future cancer CPG implementation strategies.
- This study only includes clinicians working in Australia, and therefore findings may not be applicable elsewhere.
- Clinician self-selection bias may also influence findings. We will assess potential for bias by comparing differences between hospital-recruited clinicians completing the survey and the broader sample, such as age, if they are found to be important determinants of attitudes.

quality of care provided to patients.³ There is evidence that some CPG-adherent cancer treatments are associated with higher survival rates, compared with CPG non-adherent treatment.⁴⁻⁸ For example, in a South Australian study, stage C colon cancer patients who received CPG adherent treatment between 2000 and 2010 were found to have a higher 5-year survival (71.2%) than those who did not (53.2%),⁵ although selection bias can be a limitation in these types of studies if comorbidity is not controlled for.

CPG-adherent care has been found to be low for some cancer treatments, in both Australia and other countries.^{5 6 9-14} While CPG adherence is often used as a measure of quality of care, a lack of CPG adherence may not necessarily represent suboptimal care if

there is reasonable justification for variation from CPG recommendations.⁴

Known barriers to CPG adherence include: a lack of clinician awareness of, and familiarity with, CPGs; low outcome expectancy of CPGs; accessibility to them; clinical time pressures; and limited resources to implement the recommendations.³ In addition to individual clinician barriers, organisational, structural and communication barriers may also limit CPG adherence.¹⁵

Implementation strategies targeting context-specific barriers and using facilitators of CPG adherence are more likely to be effective.¹⁶ Education, use of reminders and the provision of print material regarding CPGs,¹⁷ along with dissemination of implementation tools to promote CPG uptake,¹⁸ and the use of local opinion leaders¹⁹ are commonly used implementation strategies, with multifaceted interventions using such strategies achieving greater behaviour change in guideline adherence.^{20 21} The development and dissemination of quality CPGs are important factors in CPG adherence; however, the implementation and uptake of CPGs is a multifactorial and complex process that remains an ongoing challenge.¹⁷ Consideration of context-specific barriers as well as the plethora of behaviour change frameworks need to be considered when developing implementation interventions to increase CPG adherence.²²

While the literature on implementation of CPGs in general is substantive, the knowledge regarding barriers and facilitators specific to oncology CPG adherence is minimal. There is also limited research on clinicians' views of CPGs for cancer treatment in Australia, while the rates of adherence to cancer treatment CPGs in Australia continue to vary. The primary objective of this study is to assess clinicians' attitudes towards cancer treatment CPGs in Australia and to clarify perceived barriers and facilitators to CPG adherence, including individual clinician, environmental and organisational factors. The findings from this study will inform recommendations for future CPG implementation strategies, with the aim of improving the translation of high-quality clinical evidence into practice.

METHODS AND ANALYSIS

Overall study design

This three-phase, sequential, mixed methods study²³ using interviews, followed by a survey and a workshop, will involve integration at the design stage, with the results of each study phase informing the data collection and analysis in proceeding phases (see [figure 1](#)). The study is planned to be conducted between November 2019 and December 2021. Phase 1 of this multisite study will be conducted across seven hospitals in New South Wales (NSW), Australia, including six public and one private hospital. Phases 2 and 3 will involve the recruitment of clinicians from around Australia via survey promotion through hospitals, medical associations and conference attendance. Research will be conducted primarily by a

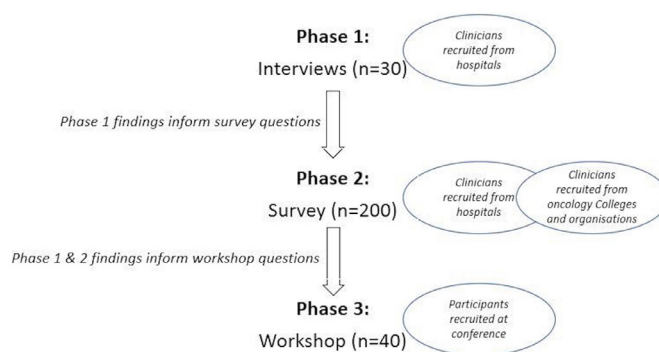


Figure 1 Study sample size diagram.

trained researcher (MB) who has experience conducting qualitative and quantitative research who has no previous relationship with the participants.

Phase 1: a qualitative study based on individual interviews

Semistructured interviews with clinicians who meet the eligibility criteria ([box 1](#)) will provide in-depth, rich data about clinicians' attitudes to CPGs and their perceptions of barriers and facilitators to CPG adherence. The interview findings will inform the development of a survey in phase 2 and workshop discussion topics in phase 3.

The interview topic guide (see online supplementary appendix 1) will be pilot tested with 2–3 clinicians. If no amendment is necessary, pilot data will be included with the main dataset.

Interviews of approximately 30 min duration will be conducted by the lead researcher (MB), either face to face, in clinician's offices or via the telephone, or teleconference, according to participant preference. All interviews will be audio recorded and transcribed verbatim, and transcripts will be deidentified. Participants who commence an interview will be offered a gift voucher, as a token of appreciation for study participation. A summary of the results will be sent to participants for 'member-checking', verification and confirmation of researcher interpretation of key issues and thematic understanding.^{16 24} Clinician feedback will be returned to the research team and incorporated into the data analysis.^{16 24}

Phase 2: a cross-sectional study based on surveys

The survey will build on the interview findings to quantify the frequency of clinician attitudes towards cancer CPGs and perceived barriers and facilitators to CPG adherence and to assess variation according to clinician characteristics, while informing discussion topics for the phase three workshop.

Open-ended and closed multiple choice survey questions will be based on the findings from phase 1, further informed by the published literature and discussions with expert clinicians and a methodologist working in the fields of oncology and oncology CPG development.^{25 26} Demographic questions regarding the clinicians' age, state and/or local health district in which they practice in, medical specialty, professional title and length of time

Box 1 Inclusion and exclusion criteria

To be eligible for inclusion, participants must be:

- A. A medical clinician (eg, medical oncologist, radiation oncologist, surgeon, haematologist, urologist and lung physician, etc) or trainee/registrar completing oncology training, who currently treats patients with a cancer diagnosis, in Australia (phases 1 and 2).
- B. An attendee at the Centre for Research Excellence in Implementation Science in Oncology conference (eg, a clinician, policy maker or consumer) (phase 3).
- C. Willing to provide written informed consent (all phases).
- D. Willing to participate in the study (all phases).
- E. Willing and able to complete the interview and survey in English (all phases).

Exclusion criteria:

Individuals who do not meet the inclusion criteria (such as clinicians who work in medical fields other than oncology, non-clinical oncology services or research) will be excluded from phase 1 and 2. Conference participants who are not willing to participate in phase three will be excluded.

since graduation as a specialist, will be included in the survey. Survey questions will be pilot tested with a small sample of 2–3 clinicians to ensure they are appropriate and acceptable. If survey questions are amended, ethics approval will be sought. If no amendment is made, pilot survey data will be combined with the main dataset.

The survey will take approximately 10 minutes to complete and will be available in hardcopy format, or online, or over the phone. The questions asked in the different survey formats will be identical, regardless of whether the survey is conducted online, using the Qualtrics (2019) survey tool, in hard copy, or over the phone. The hardcopy version will be a printed version of the online version, with participant answers uploaded into the online Qualtrics (2019) survey tool data base by the researcher (MB). The telephone format of the survey will involve the researcher reading the hardcopy questions over the phone and inputting the participants' answers into the electronic database, verbatim. Data will be downloaded from Qualtrics (2019) and managed in Microsoft Excel (2020). Participants will be offered the chance to win a gift card or a donation to a charity of their choice, which have been shown to be effective incentive strategies for oncology clinician recruitment.²⁷

Phase 3: a qualitative study based on workshop group discussions

The workshop will present the results from phases 1 and 2 as a basis for consultation and discussion with key stakeholders working in oncology across the Australian health-care system. This discussion will critique the findings from phase 1 and 2, validating the findings against participants' experiences and considering whether proposed implementation strategies resulting from phase 1 and 2 findings are feasible and acceptable. The workshop will also elicit additional strategies to overcome identified barriers to CPG adherence and improve cancer CPG implementation.

Workshop discussions will take place in the style of a forum, a facilitated data capture event, during a planned conference convened by the Centre for Research Excellence in Implementation Science in Oncology conference (CREISO). Conference attendees will include policy makers, consumers, researchers and clinicians. Discussions will be facilitated by a team of researchers (MB, FR, JB, GA, YT, BNGE), will take approximately 1 hour and will be audio recorded and transcribed verbatim.

Recruitment and sample size

Phase 1: interviews

Purposive and snowball sampling methods will be used to recruit eligible participants (see [box 1](#)) for the interviews. Key contacts from participating hospitals will be approached by study researchers to invite eligible clinicians and registrars (junior medical officers who are undergoing specialist training) to participate in interviews. Study promotion by key contacts will occur via email, flyers, staff meetings or alternative staff communication methods. Invited clinicians and registrars will be asked to contact the study team for more information, and clinicians will be encouraged to promote the study to colleagues (snowball sampling).²⁸ This indirect recruitment will minimise the potential for coercion. Purposive sampling will be used to ensure a range of clinicians are interviewed,²⁹ with varying seniority (registrars and specialists) and disciplines (medical oncologists, radiation oncologist, surgeons and so on). If these methods are not successful in recruiting the target sample size and mix of clinicians, the researchers will attend staff meetings within the hospitals to promote the study. Clinicians will be able to approach the researchers for more information or arrange to be interviewed. All interviews will be conducted by the lead researcher (MB). All participants will complete a consent form prior to data collection (see online supplementary appendix 2). At the end of each phase one interview, participants will be invited to enrol in phase 2.

It is expected that up to 30 clinicians from the participating hospitals will be interviewed, and interview transcripts will be analysed, with continuing recruitment until thematic data saturation is achieved²⁹ ([figure 1](#)). This sample size is in line with previous qualitative research on CPG adherence.³⁰ Data saturation is defined as the point in data collection and iterative analysis when no new themes or concepts come to light.³¹

Phase 2: surveys

Key contacts at participating hospitals will be asked to invite all eligible clinicians ([box 1](#)) from participating hospitals to complete the survey, indicating that a hardcopy survey will be posted to clinicians. Invitations will be sent by email, letter or other preferred staff communication methods and will include an electronic link to the survey and the option to complete the survey over the phone or by hard copy. The link to the online survey will include the participant information sheet, and the

consent form will be required to be completed electronically before the survey begins. The surveys will not be linked to the consent forms, thus remaining anonymous. Researchers may also promote the survey during staff meetings. Participants will self-select to participate in the study, by choosing to complete and return the hard copy survey or by completing the online survey.

The research team will track which clinicians complete the online survey from completed online consent forms. A follow-up hard copy of the survey will be sent by the research team to the remaining eligible clinicians at participating hospitals, following the invitation, to prompt completion on the survey, along with a participant information sheet and consent form and a reply-paid envelope. Clinicians' work postal addresses will be extracted from the publicly available Cancer Institute of New South Wales CanRefer website.³² CanRefer contains a list of practicing oncology clinicians in NSW, with details about the multidisciplinary teams to which clinicians belong and the hospitals at which they practice. Clinicians may also elect to complete the survey over the phone with a researcher. On receipt of hardcopy surveys, or telephone-based surveys, data will be entered into the Qualtrics (2019) online survey tool database by researchers.

The study is seeking to estimate the frequency of barriers to and facilitators of cancer treatment CPG adherence (of unknown percentage, anywhere from 20% to 90%) and attitudes towards CPGs (where the literature indicates that 80%–90% of clinicians are in agreement with statements about attitudes towards CPGs).^{33 34} The sample size was calculated using the Australian Bureau of Statistics sample size calculator,³⁵ targeting a confidence level of 0.95 and an estimated proportion of positive attitudes towards CPGs of 85%, calculating a sample size of $n=196$. Given the expected response rate of 32%, based on a similar study surveying medical oncologists,³⁶ approximately 500 clinicians will be invited to complete the survey. All eligible clinicians at the seven participating hospital sites will be invited to complete the survey, targeting similar numbers from each discipline, for example, surgeons, medical oncologists and radiation oncologists. This estimated number of clinicians was identified in an analysis of data on the CINSW CanRefer website.³² Additionally, clinicians who are members of professional oncology organisations will be invited to complete the survey, targeting a total of 200 responses. Clinical oncology colleges and professional organisations will also be approached and asked to promote the study to their members via a range of communication platforms (eg, email, websites, social media and newsletters), with a link to the electronic survey. Members of these organisations will be offered the option of completing a phone-based survey, or a hardcopy survey, and will be encouraged to share the survey invitation with eligible colleagues.

The study is seeking to estimate the frequency of barriers and facilitators to cancer treatment CPG adherence (unknown percentage) and attitudes to cancer CPGs. The literature indicates that 80%–90% of clinicians

agree with statements regarding attitudes towards CPGs that have been used to study clinician attitudes to general CPGs.^{33 34} If 200 clinicians are successfully recruited, the estimated precision will result in a CI of $\pm 6.9\%$ regarding clinician attitudes towards cancer CPGs, if 50% agree, with the CI narrowing as the agreement moves towards 0% or 100%.

Phase 3: workshop

Expert stakeholder attendees at the CREISO conference will be invited to participate in the study workshop via a flyer, which will be displayed at the conference venue, by the research team, on the day of the conference workshop.

Approximately 40 conference attendees are expected to participate in a lunchtime workshop for dissemination of study findings and recommendations, and discussion about the implications for CPG implementation. This sample size is in line with previous workshop-based research looking at clinician attitudes towards chemotherapy.³⁷ All workshop participants will be required to complete a consent form prior to the workshop discussion beginning.

Data analysis plan

Qualitative data

All interviews and the workshop discussion will be audio-recorded, transcribed verbatim and analysed using thematic analysis³⁸ by the primary researcher (MB). Phase 1 interview data will be analysed iteratively, with earlier interviews informing the delivery and analysis of proceeding interviews, ensuring interview questions and their delivery can be refined if necessary, over time. An initial coding framework will be constructed in line with the main aims, and refined as themes emerge. The framework will be reviewed and finalised by qualitative research members of the team, and once finalised, the primary researcher will finalise coding interview transcripts using NVivo 12.0 software (QSR). A second researcher will validate a 20% random sample of coded transcripts to ensure trustworthiness of working methods, and a thematic framework will be finalised through team consensus group working methods. Results from the interviews will also inform the content of the phase 2 survey. Qualitative data from the open-ended questions in the survey, which will elicit rich information from participants,³⁹ will be collated and analysed using thematic analysis,³⁸ creating a coding framework guide, and using NVivo to code.

Multiple coding and data triangulation techniques will be used to enhance the rigour of the qualitative data analysis (see online supplementary appendix 3).⁴⁰ Multiple coding involves multiple qualitative data analysts working in close collaboration to code the same sample of interview transcripts, to support the development and corroboration of a thematic framework and to agree on coding terminology.^{16 24} Triangulation of data findings will also be conducted when survey and workshop findings are compared with interview findings to identify similarities and differences between datasets.^{16 24} Member checking

of phase 1 data will enhance data credibility, whereby findings from interviews will be summarised and returned to interview participants for checking, consideration or amendment, as required. These member checks will be returned to the research team with new or redefined data incorporated into the analysis process.^{16 24}

Quantitative data

Demographic characteristics of survey participants will be analysed using SPSS V.23.0, as well as the proportion of clinicians identifying positive or negative attitudes towards CPGs, and barriers and facilitators to cancer CPG adherence. A secondary analysis of the survey data will examine how attitudes towards cancer CPGs and perceived barriers to and facilitators of CPG adherence vary with clinician characteristics using logistic regression.⁴¹

The hospital-based survey sample will allow for intensive recruitment within a limited geography, reducing the risk of self-selection bias while being restricted to a maximum number of potential respondents. The broader sampling strategy recruiting clinicians from clinical oncology organisations will increase the sample size of the survey. However, with less intensive recruitment, there is a potential for self-selection bias motivated by attitudes to CPG use. The results from the clinicians at participating hospital sites will therefore be compared against results from clinicians recruited through the oncology colleges and organisations. If the two groups are similar in clinician characteristics and attitudes, they can be aggregated to increase the precision of the final estimate of positive and negative attitudes and the frequency of identification of specific barriers and facilitators; if the two groups appear to be different (using a two-sided *p* value of 0.05), they will be analysed and interpreted separately, resulting in wider CIs.

The study findings will reveal how cancer treatment CPGs are perceived by clinicians, including perceived barriers and facilitators to cancer CPG adherence. The study will also explore whether there are relationships between attitudes towards cancer CPGs and barriers and facilitators to CPG adherence, and clinician characteristics. The study findings will inform future cancer treatment CPG implementation strategies and highlight ways to meet clinicians' needs and preferences regarding cancer CPGs. Enhanced implementation may lead to increased CPG adherence, which has been found to be associated with improved patient survival, in some cancers.⁴⁻⁶

No patients were involved in the design of this study.

Ethics and dissemination

Ethics statement

This study has received approval from a NSW-based local health district HREC (2019/ETH11722) and from Macquarie University HREC (52019568810127), as well as governance approval from seven hospital sites. No published data will identify clinicians, and confidentiality will be upheld throughout. All study documentation will

be stored securely for 5 years after publication of results, and only research team members (MB, FR, JB, GA, YT and BNGE) will have access to the data. Participants will be provided with a detailed summary of the study, including researcher, and ethics committee contact details. Participants will be required to read the participant information sheet and to sign the consent form before any data are collected and will be reminded that participation is voluntary and that they have the right to decline or withdraw participation at any time without repercussion.

No harm or adverse events are anticipated during the interviews, surveys or workshop, and it is unlikely that these discussions could cause distress. However, should any participant express distress as a result of the study, data capture will be paused immediately, and the necessary support will be offered.

Dissemination

Anonymised study results will be disseminated through a doctoral thesis (MB), an executive summary of study findings for participants, published manuscripts in peer-reviewed academic journals or book chapters, presentations or abstracts presented at conferences, along with presentations to consumers and in teaching material.

Author affiliations

¹Australian Institute of Health Innovation, Macquarie University, Sydney, New South Wales, Australia

²Centre for Research Excellence in Implementation Science in Oncology, Australian Institute of Health Innovation, Macquarie University, Sydney, New South Wales, Australia

³Liverpool Cancer Therapy Centre, Liverpool, New South Wales, Australia

⁴University of New South Wales South Western Sydney Clinical School, Liverpool, New South Wales, Australia

⁵Translational Cancer Research Network, Lowy Cancer Research Centre, University of New South Wales, Sydney, New South Wales, Australia

⁶Cancer Services, South Eastern Sydney Local Health District, Kogarah, New South Wales, Australia

⁷Department of Clinical Medicine, Macquarie University, Sydney, New South Wales, Australia

⁸Melanoma Institute Australia, North Sydney, New South Wales, Australia

Twitter Mia Bierbaum @Mia_R_Bierbaum

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Contributors MB conceptualised and designed the study, wrote the manuscript and critically reviewed the protocol. FR, JB, GA, YT and BNGE contributed to the conceptualisation of the research study design, critically evaluated the study protocol, provided guidance to refine the methods and data analysis plan and provided feedback on the manuscript. GPD, WL and RK provided clinical expertise, reviewed the study design and contributed to the revisions of the manuscript. All authors reviewed and approved the final manuscript.

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ORCID iDs

Mia Bierbaum <http://orcid.org/0000-0002-7037-4708>

Jeffrey Braithwaite <http://orcid.org/0000-0003-0296-4957>

Gaston Arnolda <http://orcid.org/0000-0003-4948-7633>

Geoffrey P Delaney <http://orcid.org/0000-0002-1829-396X>

Richard Kefford <http://orcid.org/0000-0001-9251-9229>

Yvonne Tran <http://orcid.org/0000-0002-1741-4205>

Bróna Nic Giolla Easpaig <http://orcid.org/0000-0001-6787-056X>

Frances Rapport <http://orcid.org/0000-0002-4428-2826>

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