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Comparing Pathways to Diagnosis and Treatment for Rural and Urban Patients with Colorectal or Breast Cancer: a Qualitative Study

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Abstract

Purpose: Colorectal cancer patients living in rural areas have poorer outcomes than urban counterparts, but such disparities are not found for breast cancer. Although time to care may contribute to rural-urban disparities, few studies examine patient experiences to understand how and why delays may occur. We compared rural and urban patient experiences of pathways to colorectal or breast cancer diagnosis and treatment in Victoria, Australia.

Methods: Semi-structured telephone interviews were conducted with 43 patients (49% colorectal; 60% rural, median 7 months post-diagnosis). A framework analysis was applied using the Model of Pathways to Treatment.

Findings: Rural and urban patients expressed similar attitudes and reasons for prolonged symptom appraisal and help-seeking triggers. However, some rural patients reported long waiting times to see a Primary Care Practitioner (PCP) and perceived greater gatekeeping to diagnostic services. Patient perceptions of the urgency of PCP referral could impact behavior, such as waiting longer to book appointments.

Colorectal cancer patients reported more variable types of symptoms, interpretation and coping strategies, as well as diverse presentation routes and reduced sense of urgency, compared to breast cancer patients. Waiting time for colonoscopy could be long, particularly in the public health system, but mammograms were quickly arranged.

Conclusions: Pathway variation was more evident by cancer type than residential location. However, access to primary care and diagnostic services for rural patients with colorectal cancer may be important policy targets. Future research should investigate the impact of diagnostic service accessibility on PCP referral behavior to further understand rural–urban disparities.

Key words: cancer, pathways, qualitative research, rural health, time to treatment

Rural-urban disparities in cancer outcomes are a global problem.[1,2] However, differences vary by cancer type, with more consistent evidence of rural survival disadvantage in colorectal, prostate, and lung cancer than other cancers.[1] In Australia, colorectal cancer mortality is higher for rural than urban patients, but these differences are not evidenced for breast cancer.[3] Rural-urban inequities are, therefore, "not an insurmountable problem."[4]

One potential mechanism for poorer cancer outcomes for rural populations is longer time to diagnosis and treatment. There is growing evidence that prolonged colorectal and breast cancer pathways are associated with later stage disease and poorer survival,[5] and that rural patients wait longer than urban patients for diagnosis and treatment.[6-8] Understanding how and why longer pathways occur and whether these factors are more common in rural areas could help identify targets to reduce inequities. Furthermore, comparing pathways for cancer types with, and without, rural-urban outcome differences could provide additional insight into what may be driving disadvantage for rural patients in one group but not the other. Although quantitative research measuring the length of pathways is important, understanding why time to care can be prolonged is best examined with qualitative methods.[5]

Previous qualitative research has identified rural attitudes, help-seeking behaviors, and health service access issues as potential reasons for prolonged pathways. Stoicism, machismo, and fatalism, a self-reliant culture, and "implicit faith" in the health system have been linked to longer help-seeking time amongst rural Australian cancer patients.[9,10] In Scotland, rural patients with colorectal cancer were found to be less "consumerist" in accessing primary or secondary care, and less demanding of care providers.[11] Reduced access to medical practitioners, health services, and cancer diagnostic tests are also suggested to lengthen time to cancer diagnosis and treatment for rural populations.[11,12]

While these studies highlight potential delay mechanisms, as most explored the experience of rural patients alone, whether these mechanisms also influence the experience of urban patients is not clear. Further, as much of the previous research has focused on a single interval in the time to treatment, such as the time from first symptom to seeing a doctor, it is not known whether or how these factors operate across different intervals in the cancer pathway. In addition, previous studies rarely incorporate quantitative data on interval length, and none have compared rural and urban patient experiences for 2 cancers that differ in rural-urban outcome profiles in the same study.

To address these limitations, we contrast rural and urban patient experiences of the pathway from first symptom or screening test to treatment of colorectal or breast cancer in the state of Victoria, Australia. Both these cancers are common, high-burden diseases with organized screening programs in Australia.[13] Survival is poorer for Victorians with colorectal cancer living in rural compared to urban areas (5-year relative survival 66% vs 69%),[14] but it is no different for women with breast cancer (89%).[15] We aimed to inform strategies to reduce rural-urban inequities by exploring how and why pathways may differ by residential location for these cancers with different rural-urban disparity profiles. Qualitative results are supplemented with interval information collected from patient, Primary Care Practitioner (PCP), and specialist surveys as part of the International Cancer Benchmarking Partnership (ICBP), Module 4 study.

Method

Ethics

Ethical approval was obtained from Cancer Council Victoria's Human Research Ethics Committee (Project Number: 1125) and participants provided informed consent.

Setting

Victoria covers an area similar in size to the United Kingdom (UK) but has 10 times fewer people with a population of 6.5 million. Around a quarter of Victoria's inhabitants live outside the capital Melbourne. Australians have universal health care with optional private health insurance—uptake of which is lower in rural areas.[16] PCPs provide referral for access to specialist or hospital services, a gatekeeping function similar to that in health systems like the UK, Netherlands, and Canada.[17] Treatments for colorectal and breast cancer are available in large regional and urban centers of Victoria.

Design

This study used a qualitative, descriptive interview design with patients selected from Victorian participants in the larger ICBP Module 4 study investigating time to cancer diagnosis and treatment in 6 countries.[18] Reporting follows the consolidated criteria for reporting qualitative research (COREQ) guidelines.[19]

Eligibility and Recruitment

Following procedures for the ICBP project,[18] the population-based Victorian Cancer Registry sent ICBP surveys to colorectal and breast cancer patients aged 40 years or older within 6 months of diagnosis. Those with synchronous or multiple primary cancers or whose specialist advised not to approach were excluded. Specific to Victorian patients, surveys included an expression of interest form for participation in further research.

Participants interested in further research were purposively selected and mailed an information sheet regarding the interview study. Purposive sampling was based on demographic and clinical information provided on ICBP surveys, and it aimed to ensure representation of people from urban and rural areas, of different ages, sex, health insurance status (public and private), diagnostic route (screening or symptomatic), and treatment (surgery, chemotherapy, radiotherapy). Residential location was classified as urban (major city) or rural (inner or outer regional) using the Australian Statistical Geographic Standard that classifies areas into categories (major city, inner regional, outer regional, remote) based on road distance to the nearest service center of various population sizes, with larger populations indicating less remote locations.[20]

Of the 388 responders to the ICBP survey, 132 (34%) expressed interest in further research. Of these, 60 were contacted, and interviews completed with 21 colorectal (75% of approached) and 22 breast (69% of approached) cancer patients. Reasons for no interview included being unable to contact the patient (n=11); patient was too unwell, tired or uninterested (n=4); preferred in-person interview (n=1); or had died (n=1). Interviews averaged an hour in length.

Interviews

Semi-structured telephone interviews were conducted from November 2013–October 2014 by a doctoral candidate (Author 1) with experience in qualitative and oncology research. Participants had no prior relationship with the interviewer.

Interviews began with an open question regarding patient experiences before diagnosis, followed by questions tracing the patient's cancer story. Main topics explored how and why patients came to be diagnosed and treated. For example, "Can you tell me what was happening before being diagnosed with cancer? What prompted you to seek help? What was the reaction of the doctor to symptoms/test results? What tests did you have?" Questions were informed by similar previous studies but not pilot-tested.[9] Interviews were recorded and transcribed, de-identified, and managed by the interviewer in QSR NVivo 10 software.[21]

Analysis

A framework analysis of interview data was undertaken using the Model of Pathways to Treatment.[22-25] The model describes key events and processes for 4 intervals: the appraisal interval (time from first symptom to decision to seek medical help), help-seeking interval (time from decision to seek help to first presentation to a health care professional), diagnostic interval (time from presentation to diagnosis), and pre-treatment interval (time from diagnosis to first treatment).[24,25] Contributing factors to timeliness of care as described in the model include patient, health care provider and system, and disease factors. Similar to previous research, the appraisal and help-seeking intervals were analyzed together (the "patient" interval) given difficulties separating the 2 time periods.[26] Hence, 3 intervals were examined in the framework analysis: patient, diagnostic, and pre-treatment intervals.

The process for framework analysis of interviews was broadly followed, beginning with familiarization with data through descriptive, line-by-line coding then deductively structuring themes according to the major concepts in the pathways to treatment model. This was followed by charting and interpretation of themes by cancer type and residential location.[23] To enhance study rigor and trustworthiness, the interviewer wrote reflexive memos after each interview which were reviewed during analysis; 4 early interviews were coded by 2 authors; and developing themes were discussed in regular meetings with co-authors.[27] To increase credibility, later interviews included prompts to clarify and confirm emerging themes, a form of member-checking.[27] Theoretical saturation was observed when no new, major concepts arose from interviews.

Summary statistics for intervals were calculated from survey data. Using established procedures, 2 additional intervals were calculated from survey data: primary care (presentation to referral) and total intervals (symptom to treatment).[18,28]

Results

Participant Characteristics

Median time from diagnosis to interview was 7 months (Table 1). Most lived in urban (n=17) or inner regional (n=18) areas. Eight were from outer regional Victoria. Rural patients tended to be older, have less education and no private health insurance compared to urban patients (Table 1). Median time for each of the pathway intervals was generally longer for rural than urban patients (Figure 1).

Themes

Results of the framework analysis are presented for each of the 3 intervals examined. Supporting quotations are shown in matrix displays with geographic and cancer-specific differences highlighted in blue (rural-urban) or yellow (colorectal-breast).

1. APPRAISAL & HELP-SEEKING (PATIENT) INTERVALS

Overview: Several themes were identified in the appraisal and help-seeking intervals (Table 2). Most related to perceptions of symptoms and barriers or triggers to help-seeking. Overall, rural and urban patients had similar attitudes, interpretation of symptoms, reasons for prolonged appraisal time, and triggers to help-seeking or screening. However, some rural patients noted difficulties with access and longer appointment waiting time to see a PCP.

1.1. Presentation

How and why patients presented to a health care professional was more varied for colorectal than breast patients. Most women with breast cancer either attended screening or saw a PCP regarding their symptom. In contrast, colorectal cancer patients presented via 5 main routes: screening; emergency presentation; planned presentation to the PCP for symptoms; opportunistic disclosure of symptoms while attending the doctor for another reason; or an incidental sign during a regular check-up, such as anemia. Both rural and urban residents presented via these pathways.

1.2. Symptom interpretation, attributes and coping

This was an important theme impacting time to seeking help across breast and colorectal and rural and urban populations. Patients reported various perceptions and coping mechanisms for symptoms, with interpretations changing over time. Patient worry was low if they had a prior experience of similar symptoms for a benign condition, such as breast cysts or hemorrhoids, or attributed symptoms to natural causes, such as aging, stress, or work. Non-specific symptoms like fatigue and weight loss, and symptom attributes such as slowly evolving or intermittent symptoms, were difficult for patients to notice and monitor. Lacking a persistent problem also made it hard to justify attending the doctor for help, and patients were more likely to “wait and see” how such symptoms evolved or seek help from alternative health providers. These symptom attributes were more common amongst colorectal than breast cancer patients.

Across all populations, several patients reported having a healthy lifestyle so did not consider themselves a candidate for cancer or other serious illness. This could prolong the time to seek help: “I’ve always been very healthy…so I don’t expect to have any health issues.” (CRC6, F, U, PI: 206 days)

1.3. Emotions and Attitudes

Emotions such as fear and embarrassment could postpone help-seeking, screening, or diagnostic test completion. Two patients reported only visiting a doctor occasionally, lengthening the time to presentation. Some patients expressed fatalistic or stoic attitudes or recognized these traits in others. However, such attitudes were relatively rare and were expressed by both urban and rural patients. For example, an urban man described his reluctance to seek help as, “like a typical bloke, oh it’ll go away” (CRC9, M, U, PI: 14 days), while a rural man described extreme fatalistic attitudes to cancer where he lived: “…a couple of blokes have put a bullet through their head up here when they found out they had it [cancer]” (CRC5, M, R, PI: 3 days).

1.4. Scheduling and Practical Issues

Scheduling or practical issues included being too busy with work or family commitments, being away from home, on holidays, or living overseas. Screen-detected patients also noted inconvenience as a practical barrier.

1.5. Health System and Clinician-related Delays

Some rural patients reported long waiting times (several weeks) to see a PCP, whereas no urban patients had this issue. Other system issues were PCP continuity, with patients preferring to consult the same PCP. Not seeing a PCP regularly or short consultations were sometimes mentioned as barriers to help-seeking. Without access to a reliable PCP, patients could seek help in other ways, such as one woman who attended the breast screening program for her breast lump. One screen-detected colorectal cancer patient delayed making a colonoscopy appointment due to potential costs.

1.6. Help-seeking Triggers

Similar help-seeking triggers were identified for symptomatic and screen-detected patients, including social sanctioning for symptom or screening checks, family history of cancer, and community awareness of cancer symptoms or services. Other triggers related to the nature of symptoms, which, once perceived to be abnormal or serious, elicited prompt presentation.

For emergency cases, symptoms were often severe with rapid onset, leaving little appraisal time.

1.7. Breast Screening as Help-seeking

Three women contacted breast screening services because they had a breast lump or change, all from rural areas. Women knew the program offered free mammograms but were unaware it was for asymptomatic cases only.

2. DIAGNOSTIC INTERVAL

Overview: Major themes in the diagnostic interval include clinician, patient, and health system factors with several sub-themes (Table 3). Gatekeeping or delayed referral by PCPs was more common among rural than urban patients. Some rural patients with colorectal cancer also noted local resource issues accessing colonoscopy, but it was unclear whether this lengthened the diagnostic interval. Rural women whose breast cancer was detected through screening were particularly positive regarding the diagnostic process, finding it organized, rapid and convenient.

2.1. Perceived Urgency, Diagnostic Difficulty and System Factors

Clinicians had an influential role in the diagnostic interval, particularly the PCP. Perceptions of the urgency of PCP responses to the presenting complaint and initial actions differed by cancer type. Most symptomatic breast patients perceived high urgency from their PCP at presentation and for referral to diagnostic services. In contrast, colorectal patients perceived a range of responses, including low urgency with no initial referral, or low urgency but still a referral for diagnostic test.

The nature of symptoms impacted PCP care more for colorectal than breast cancer. Some patients with non-specific symptoms reported multiple PCP visits, and described how doctors offered advice, prescribed new or modified medications, ordered various investigations or procedures in their diagnostic pathway. System factors such as short PCP appointments or lack of follow-up for ongoing symptoms could lead to prolonged diagnostic intervals.

2.2. Patient Responses to Perceived Urgency and System Factors

Some patients reported being unconcerned about their symptoms given a low sense of urgency from their PCP. This could lead to delays if, for example, patients had to organize their own diagnostic test appointment: “I didn’t do it urgently because I didn’t get a sense of urgency.” (CRC12, F, U, DI: 64 days).

2.3. Clinicians Facilitating Rapid Access

PCPs or other doctors could facilitate rapid access to health services, specialists, or investigations. This was often through direct communication, contacting patients personally, and directly calling specialists or hospitals.

2.4. PCP Gatekeeping and Responses to Diagnostic Delay

Although clinicians could facilitate access to services, some patients perceived PCP gatekeeping—when a PCP was felt to prevent or delay access to appropriate investigations, results or services. Only rural patients noted PCP gatekeeping, such as one patient who reported: “So I went back again – because he kept on saying irritable bowels…and I had the same symptoms. I went back and I said, look I'm not leaving this chair until you write out a referral for a colonoscopy.” (CRC18, F, R, DI: 138 days)

Patients had negative or forgiving responses to perceived gatekeeping and delays. Negative responses included anger, frustration, anxiety, and a loss of faith in their doctor. When asked about the potential reasons for PCP gatekeeping, patients perceived that PCPs were incompetent or complacent, wanted to avoid difficult conversations, or did not want to care for a complicated cancer case. Some patients also expressed regret and partly blamed themselves for delays, such as not changing doctors when they were unable to secure a referral. Other patients were more forgiving. They noted that doctors were very busy, were trying their best, that symptoms were vague and the disease uncommon, leading to difficulties making a diagnosis.

2.5. Patient Factors

Other patient factors contributing to longer diagnostic intervals were similar to barriers identified in the appraisal and help-seeking interval (Table 4). For example, there were scheduling, practical, or access issues, such as work or lack of transport; fear of cancer or disgust with the diagnostic procedure; and lack of social support. Patient preference for a specific doctor or desire to change specialists could also result in longer time to diagnosis due to appointment waiting times.

2.6. System Factors

Health system factors influencing timely diagnosis included long waits to access diagnostic tests, particularly in the public health care system (Table 4). Some rural patients with colorectal cancer noted resource issues at their local hospital where colonoscopy facilities or funding was not available. However, the impact on interval length was uncertain as patients attended other services.

Costs of appointment and tests could also influence patient decisions, potentially impacting time to care. For example, a colorectal cancer patient had private health insurance but chose to have a colonoscopy in the public sector to avoid out-of-pocket costs.

Waiting time and costs of diagnostic tests were less prominent for breast than colorectal cancer patients. However, patient perceptions of acceptable waiting times for diagnostic tests varied, with some reporting waiting up to 4 weeks was reasonable, while others perceived waiting a week was too long.

2.7. Breast Screening Experiences

Screen-detected women were mostly happy with the screening process which involved a waiting period for recall, then all diagnostic tests conducted at the one recall appointment. Rural women found the process rapid and convenient, requiring less travel and urgent appointments organized for them. However, 2 urban and 1 rural woman perceived the diagnostic process to be highly procedural, a “cattle-call,” and that staff lacked empathy. Some women also felt the 3- to 4-week recall waiting period was too long.

2.8. Experiences of Diagnosis

The experience of receiving news of a cancer diagnosis was similar for rural and urban patients but differed by cancer type. This was related to the nature of symptoms and perceived urgency from PCPs, which could increase or lower expectations regarding serious illness.

Most symptomatic women with breast cancer received their diagnosis from their PCP. While many felt shock, women were often not completely surprised to discover they had cancer. This was possibly due to greater awareness of breast cancer-related symptoms, higher urgency of PCP referral, and being better informed of the reason for referral. In contrast, very few colorectal cancer patients suspected cancer prior to diagnosis. One exception was a rural man who had a protracted time in primary care with worsening symptoms.

Instances of good and poor communication regarding diagnosis were found across cancer types and residential locations. Having a private space and receiving information with family present were related to more positive experiences. Negative experiences occurred when patients received conflicting messages, the deliverer lacked empathy, family were not present, or when the news was withheld.

3. TREATMENT INTERVAL

Overview: There were minimal rural-urban differences in 5 themes identified in the treatment interval (Table 5). The first theme describes patients’ desire for and perceptions of rapid time to begin treatment. Some rural patients felt that time to treatment was quicker in rural or regional areas than in urban centers, but others thought care was quicker in the city. The second theme identifies different referral pathways for colorectal compared to breast patients into specialist care, with colorectal cancer patients referred by endoscopy specialists more often than PCPs. The third theme describes system and clinician factors that facilitate rapid access to cancer treatment, though some patients made their own oncology appointments. Clinicians largely facilitated rapid pathways to treatment, such as through direct communication with other clinicians or changing schedules. Some patients were aware they were a “priority one” case on public hospital waiting lists and had tests arranged where access was fastest.

The final 2 themes explore patient, clinician, and system factors that can delay treatment commencement. Some patient factors were uncontrollable, such as having a comorbidity that requires additional workup tests. In other cases, patients chose to delay starting treatment due to social commitments or events, and one patient chose to explore alternative therapy. Preferences to delay were related to patient prior experiences with cancer, early stage of disease, perceived lack of urgency, or approval from specialist. Clinician and system factors that delayed treatment start included: inappropriate referral to private system when patient did not have private health insurance; time of year when services close or specialists are away (eg, Christmas); or private specialist unavailable, such as on conference or maternity leave, and the need for another referral with associated appointment waiting time.

Discussion

This is the first study to qualitatively contrast the pathways to diagnosis and treatment of rural and urban patients with breast or colorectal cancer. Results demonstrate modest rural-urban differences in pathways, with variation more evident by cancer type than residential location. However, some rural patients noted primary care access issues and perceived delays in referral for diagnostic services. While we found that patient perceptions of acceptable waiting times varied, this was at the individual rather than residential location level. We also identified a new factor impacting diagnostic intervals, the perceived urgency of PCP referral affecting patients’ time to arrange a specialist appointment.

Rural-Urban Pathways

In contrast to research in rural Western Australia, we found little evidence of a distinct set of rural attitudes such as stoicism, machismo, and fatalism.[9] Our findings suggest such rural-specific beliefs may be less apparent in rural Victoria, perhaps due to the less isolated nature of Victorian geography compared to other Australian states. However, primary care access issues that we identified for rural patients are consistent with national, population-based survey data,[16] and may reflect reduced workforce resulting in less availability and higher demand for PCPs in rural settings.[29]

In the diagnostic interval, PCP gatekeeping was more common for rural than urban patients. Rural PCPs may wait longer to refer patients for diagnostic tests and exert a higher disease threshold before referral because of access and system capacity constraints, such as long distance to services and waiting times.[30] In line with this hypothesis, an Australian study of PCP referral practices for gynecological cancer symptoms found that rural PCPs waited longer to refer patients with symptoms of endometrial cancer and had poorer access to specialist gynecological oncologists than urban PCPs.[31] Research from the UK has also shown resource issues and a fear of “clogging the system” may cause PCPs to delay patient referral,[32] and work from Australia found rural PCPs reported longer waiting time and less direct access to endoscopy than urban PCPs.[33] A Victorian study also found that colorectal cancer patients in rural areas had significantly longer diagnostic intervals than urban patients, pointing to potential issues in timely PCP referral and diagnostic assessment.[7] In the US, areas with reduced endoscopy capacity have less colorectal cancer screening,[34] and with density of endoscopy and cancer specialists lower in rural than urban counties,[35] access to diagnostics may be an important moderator of colorectal cancer rural-urban disparities.

Breast-Colorectal Pathways

Consistent with previous literature, pathways were longer for colorectal than breast cancer patients.[36] The more specific nature of breast cancer symptoms, higher perceived urgency of PCP referrals, and reduced complexity of diagnostic pathways for breast compared to colorectal cancer, are consistent with literature on cancer symptoms, number of PCP visits and quicker patient intervals for breast than other cancer types.[37-40] Our finding that colorectal patients expressed greater shock to receive a cancer diagnosis than breast patients is similar to findings from previous studies[41,42] and suggests that PCPs might play a greater role preparing patients for a potential colorectal cancer diagnosis.

Time to access diagnostic tests differed between cancer types in the current study. Mixed methods research in rural Australia has also identified differential access to diagnostic tests as a reason for variation in time to care between cancer types.[9,12] This could be due to differences in capacity or availability of colorectal and breast diagnostic services, particularly for public patients. Research from Queensland found longer time from presentation to diagnosis for public patients compared to privately insured patients with colorectal cancer, suggesting access barriers to colonoscopy for those in the public system.[43] We also found variable perceptions of waiting time for diagnostic tests, highlighting the importance of quantitatively measuring time intervals.

Perceived Urgency of Referral

A novel finding from our study was that patients' perceived urgency of referral for diagnostic tests differed by cancer type, and could impact patient behavior, such as patients who perceived little urgency delaying making an appointment. The influence of patient-related factors in the time from referral to diagnosis has received limited research attention. Some studies identify patient non-attendance or preference to delay diagnostic tests as reasons for prolonged diagnostic pathways,[40] and empowering patients has been suggested to reduce missed diagnostic opportunities.[30] Indeed, patient empowerment is becoming increasingly important as health systems push for patients to be more active in their health care.[44,45] However, this has potential problems if patients lack confidence to navigate the health system or are not adequately informed about, for example, how quickly they need to seek an appointment and instead rely on perceptions of urgency from their PCP. Better communication between PCP and patient is required, and appropriate follow-up protocols for monitoring completion of tests and action on results is also needed to ensure timely cancer detection.[30]

Strengths and Limitations

This was a large qualitative study comparing rural and urban pathways for 2 cancer types. The analysis was underpinned by a theoretical framework following recommendations in the Aarhus statement[28] and the demographic and clinical diversity of participants ensured a range of perspectives were captured. Use of reflexive memos, collaborative data analysis, and theoretical saturation enhanced study rigor, while survey data regarding interval length provided additional descriptive information to supplement qualitative data.

There were some discrepancies in the length of intervals reported in qualitative and quantitative sources. Others have also identified variability in the patient interval between interview and survey data, with intervals generally longer in interviews.[46] In our study, inconsistency between interview and survey data were not biased by residential location or cancer type. Future studies might explore interval variation by data collection method in more depth. The current study did not include patients from remote areas. Attitudes and barriers to care in more isolated settings may differ from those found in our study. However, issues of access to PCPs and diagnostic services that we identified are likely to be greater for people from more remote areas.

Conclusion

We found modest differences in pathways to colorectal or breast cancer treatment between rural and urban patients, with variation more apparent by cancer type than residential location. However, rural patients reported issues with timely access to primary care and diagnostic services. Future research should investigate the potential impact of PCP accessibility, gatekeeping, and access to diagnostic services on PCP referral behavior to further understand rural–urban disparities. In addition, future studies should consider how patient factors such as perceived urgency of referral can impact timely cancer diagnosis and treatment.

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FIGURE LEGEND

Figure 1: Interval Median (range) Number of Days in the Pathway to Diagnosis and Treatment for Interviewed Rural and Urban Patients by Cancer Type.

The sample size is also provided. Intervals were calculated from survey data where available. Abbreviations: CRC, colorectal cancer; BC, breast cancer

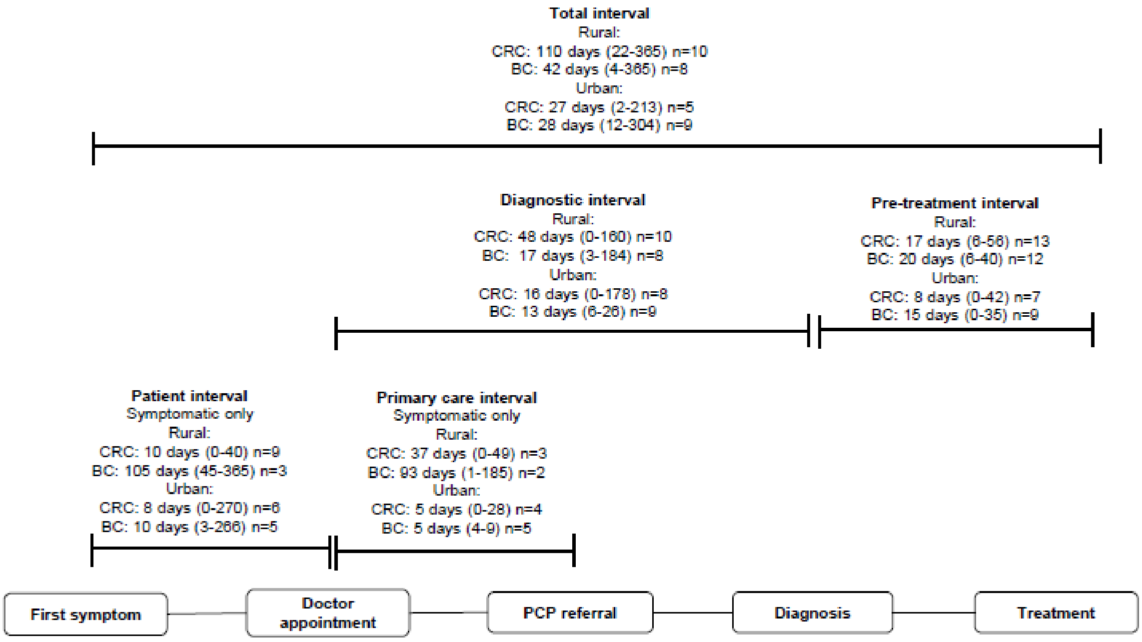

Table 1: Interview Participant Characteristics

		Colorectal cancer (n=21)		**Breast cancer (n=22)**	
		%		**%**	
Residence	Major city	38		41	
	Inner regional	48		41	
	Outer regional	14		18	
Time from diagnosis to interview: Median months (range)		7 (5 – 10)		7 (5 – 9)	
		Urban (n=8)	**Rural (n=13)**	**Urban (n=9)**	**Rural (n=13)**
Age	Mean (SD)	61.2 (12.7)	66.6 (10.7)	56.8 (11.9)	62.7 (12.1)
	Range	42, 78	48, 87	41, 74	49, 87
		n (%)	**n (%)**	**n (%)**	**n (%)**
Sex	Female	4 (50)	6 (46)	9 (100)	13 (100)
Comorbidity	>1	4 (50)	8 (62)	1 (11)	9 (69)
Highest	Secondary school	2 (25)	8 (62)	0 (0)	6 (46)

education	Vocational training	3 (38)	4 (31)	4 (44)	4 (31)
	University	3 (38)	1 (8)	5 (56)	3 (23)
Health Insurance	Public	2 (25)	6 (46)	4 (44)	5 (38)
	Private	6 (75)	7 (54)	5 (56)	8 (62)
Travelled >90km for treatment		0 (0)	9 (69)	0 (0)	9 (69)
Primary site	Colon	8 (100)	8 (62)	.	.
	Rectum	0 (0)	5 (38)	.	.
Stage	Local (I & II)	4 (50)	9 (69)	9 (100)	10 (77)
	Regional/Advanced (III/IV)	3 (36)	4 (31)	0 (0)	3 (33)
	Unknown	1 (13)	0 (0)	0 (0)	0 (0)
Treatment	Surgery	5 (63)	9 (69)	0 (0)	1 (8)
	Surgery & chemo	3 (38)	3 (23)	1 (11)	1 (8)
	Surgery & RT	0 (0)	0 (0)	4 (44)	5 (38)
	Surgery, chemo, RT	0 (0)	1 (8)	4 (44)	6 (46)
Diagnostic route	Screen-detected	1 (13)	2 (15)	4 (44)	9 (69)
	Symptoms to doctor	4 (50)	8 (62)	5 (56)	4 (31)
	PCP visit then to Emergency	1 (13)	1 (8)	0 (0)	0 (0)
	Emergency	1 (13)	1 (8)	0 (0)	0 (0)
	Other (anemia)	1 (13)	1 (8)	0 (0)	0 (0)
Number of symptoms	Median (IQR)	1 (0)	1 (1)	1 (1)	1 (0.8)
	Range	0 – 4	0 – 4	1 – 2	1 – 2

Abbreviations: Chemo: chemotherapy; PCP: Primary Care Practitioner; IQR: Interquartile range; RT: radiotherapy; SD: Standard Deviation.

Table 2: Themes and Subthemes in Appraisal and Help-seeking Intervals with Comparison by Residence and Cancer Type

Themes, subtheme	**Colorectal cancer**		**Breast cancer**		**Quotations**
	Urban	*Rural*	*Urban*	*Rural*	
SYMPTOM INTERPRETATION, ATTRIBUTES & COPING					
Symptom interpretation					
Non-urgent/non-cancer sign	++	+	-	+	…dimpling in my breast which at first I ignored because I didn't know that that was a sign of breast cancer. BC1, R (PI: n/a). …I mean I had no idea…But you know you don't think of that sort of thing…you wouldn't think you've got bowel cancer through pains in the stomach, I wouldn't even give that a thought…CRC9, M, U (PI: 14 days).
Prior experience	None	++	+	+	And I'd had a lump previously, just a fibroadenoma, and so I just assumed it was the same thing. BC4, U (PI: 266 days). I didn't worry about that very much…because for as long as I can remember I've had not bad hemorrhoids, but they flared up from time to time and that seemed to be the solution or the answer as far as I was concerned. CRC3, M, R (PI: 40 days).
Natural cause	+	+	-	++	I was just working and getting very tired at work, and just thought it was my work. BC7, R (PI: missing). I was very tired but I put it down to age, you see, because I'm an old guy. CRC17, M, R (PI: n/a).
Healthy lifestyle/not a candidate for cancer	+	+	++	++	Well I thought I was quite fit and healthy. BC14, R (PI: n/a) My job entails six hours of walking a night, so I was pretty fit before that. CRC9, M, U (PI: 14 days).
Symptom attributes & coping					
Non-specific symptoms: intermittent, vague, slow change	++	++	None	+	But all of a sudden people at work had started to subtly say that I was losing weight dramatically and I wasn't even aware of it. CRC12, F, U (PI: 0 days). Anyway it happened again…I was in in January, February and in March…CRC20, M, R (PI: 0 days). …but I did have a bit of swelling under my left arm. It started off very small and the more it got bigger, the more I kept going to the doctors and asking what it was. BC6, R (PI: 365 days).
Self-manage symptoms	+	+	None	None	Then maybe I've got an intolerance cause I stopped having milk…CRC19, M, R (PI: 22 days). I'd actually sought the help of a naturopath cause I was exhausted. I felt I had no energy whatsoever and she was helping me to increase my energy levels…CRC12, F, R (PI: 0 days).
Monitor, wait to resolve	-	-	-	-	…and it would resolve itself, I just sort of put it off, put it off. CRC6, F, U (PI: 206 days).
EMOTIONS & ATTITUDES					
Embarrassment/ disgust	None	+	None	-	…I was embarrassed because I have large breasts…BC7, R (PI: n/a). I've never been to the toilet at work in my life, never in my life…I don't even like toilet humor. CRC3, M, R (PI: 40 days). …because it's a revolting thing to do. That's why. Yuck, you know. CRC13, F, R (PI: n/a).
Fear of tests/investigations	None	-	None	None	I thought this test is definitely going to say you need to go and have a colonoscopy…CRC1, M, R (PI: 0 days).
Fear of doctor response	None	None	None	-	…It's probably just cellulite and I'm going to feel like a real idiot…BC1, R (PI: n/a).
Irregular help-seeker	-	-	-	None	…I'd probably only see her every six months, if not nine-monthly. So I don't see her very often. BC22, U (PI: 3 days). ..and because I hardly ever go near a doctor, and it would resolve itself, I just sort of put it off, put it off. CRC6, F, U (PI: 206 days)
Fatalism	None	-	-	None	I felt pretty sure that it was breast cancer…I wasn't totally distressed because, as I said, I've reached 74. I felt very lucky to have had a really good life. BC18, U (PI: 15 days). I have known people with it [cancer]…have put a bullet through their head. CRC5, M, R (PI: 3 days).
Stoicism	-	None	None	None	On the Saturday I felt terrible, like, really sick, but I had to take my daughter out shopping, as you do, because she had her formal…CRC2, F, U (PI: 2 days).

Machismo	-	None	None	None	Like a typical bloke – oh it'll go away…CRC9, M, U (PI: 14 days).
SCHEDULING & PRACTICAL ISSUES					
Away from home, holidays	None	None	+	-	Whilst we were away actually I did notice that I had a breast lump so I was really just sitting on it until I got home. BC4, U (PI: 266 days). …so towards the middle of the year I found a bit of a little lump, in July, before I was going away. It sort of disappeared…it was there then it was gone and it wasn't very big, but then I went overseas…BC10, R (PI: n/a).
Other priorities/busy (e.g. family, work)	-	-	-	+	At the time just before I was diagnosed, we'd had some real major staffing issues and I was put under a lot of pressure and strain at work because we couldn't find a quick answer and I was put under a lot of pressure and I was working like 12 hour days. BC12, R (PI: 45 days). I was working at the time and it was a bit inconvenient to try and do the test because when you have to go, there might not be a place you can do it. CRC1, M, R (PI: 0 days).
Transport, cost	-	None	None	-	…as a result of that lost his driver's license. Now we live out on a farm. Our only vehicle is a large ute, which I will not drive in Melbourne, and this was a major issue for me. BC11, R (PI: n/a). I must say the first 12 months that I put it off I thought oh crikey, so I'll have to pay for this, how am I going to pay for it sort of thing and that may have been one of the motivating factors of putting it off. CRC16, M, U (PI: n/a)
HEALTH SYSTEM & CLINICIAN-RELATED DELAYS					
Lack of PCP continuity	-	-	-	-	…I didn't have a – you know in these clinics, where the doctors keep changing over all the time, it makes it very difficult, because there's no continuity and I've got a few underlying health problems…and they don't see the whole picture, they just see the one thing you go for that time. BC10, R (PI: n/a) The problem being these days you've got a PCP, but if you can't get in you go and see one of the others in the medical centre and that's pretty much what happened to me. CRC19, M, R (PI: 22 days).
PCP waiting time	None	+	None	+	…it's pretty hard…at times to get into the doctors. Most times when you ring up it's at least three weeks…BC1, R (PI: n/a). And which, I have to admit, look it's hard for him, my doctor. It takes me at least three weeks as a rule now, getting to see him. CRC17, R (PI: n/a).
HELP-SEEKING TRIGGERS					
Symptom interpretation: change, abnormal, severity; intuition	++	++	-	+	…I thought, no, I don't like the look of that because it looked so different to the other side. BC13, R (PI: 105 days). …I was just dying with this pain. It was really agonizing…CRC20, M, R (PI: 0 days).
Context: Social sanctioning/awareness	-	++	++	++	But a friend of mine was diagnosed with breast cancer a few weeks before me and it was her diagnosis that made me really be alert to the lump that I had. BC4, U (PI: 266 days). And I was conscious that people of a certain age were getting things sent to them, test kits, et cetera, so bowel cancer was becoming more of a talking point. CRC3, M, R (PI: 40 days).
Scheduling	-	None	-	None	Normally before I go away I like to go to my PCP and get some antibiotics and sleeping tablets just as a precaution to take away while we're away and she always says to me please do your own breast examination before you come…BC22, U (PI: 3 days). We were going to go overseas at the end of May …and I thought, maybe I better see somebody about this rather than go overseas and have the problem there…CRC6, F, R (PI: 206 days).
Health literacy	None	+	None	None	…sometimes I would be constipated, other times I wouldn't be. I just thought because of my background in nursing, I thought this is not right...CRC18, F, U (PI: 15 days). I'm married to a nurse, my brother's a nurse, mum's a nurse, sister's a nurse, so I was starting to get a little bit back from them, but go down and tell them you want this, this and this done…CRC19, M, R (PI: 22 days).

Coding: ++ common (>=3 cases); + present (2 cases); - uncommon (1 case). Yellow highlight: different between colorectal and breast. Blue highlight: difference between urban and rural.

Note: Patient quotations are accompanied with a participant number and cancer type: CRC for colorectal cancer and BC for breast cancer. In parenthesis, participant sex, area of residence and relevant interval length are also reported if available: sex, M: male, F: female for colorectal cancer patients; area of residence, R: rural or U: urban; and the length of intervals reported in days with abbreviation, PI: patient interval. As the patient interval was not calculated for screen-detected cases, this is indicated as not applicable (n/a).

Table 3: Clinician-factor Themes in the Diagnostic Intervals with Comparison by Residence and Cancer Type.

	Colorectal cancer		**Breast cancer**		**Quotations**
	Urban	*Rural*	*Urban*	*Rural*	
Perceived urgency (excl. BreastScreen patients)					
High urgency – immediate/rapid referral or investigation	++	++	++	+	So she said yes definitely a breast lump and referred me straight away for an ultrasound. BC22, U (DI: 7 days). He said [PCP], 'Look, I know this man who's very good and I'll see how quickly he can see you,' so that was pretty impressive that I was seen that night. CRC6, U (DI: 10 days).
Low urgency – but referral for diagnostic test	+	++	None	None	…she didn't think that anything was wrong but she said 'Let's have a colonoscopy and just make sure' CRC11, F, R (DI: 37 days). ...interesting, she didn't seem to be too worried, she said ah look, let's have a colonoscopy, she didn't actually suggest I had it the next day, she suggested I had it in the next month…CRC12, F, U (DI: 64 days).
Low urgency – no initial referral for diagnostic test (multiple visits)	-	++	None	+	…the more I kept going to the doctors and asking what it was. They were just telling me that it was fluid under the arm that women are prone to have, not to worry about it, it will just eventually go away. BC6, F, R (DI: 184 days). So all I was, was tired and got progressively more tired as time was going on. I spoke to the doctor about it and she said, 'oh you're not fit'. CRC7, F, R (DI: 70 days).
Diagnostic difficulty and system factors	++	++	None	+	I did have a bit of swelling under my left arm. It started off very small and the more it got bigger, the more I kept going to the doctors and asking what it was…I started getting very heavy periods…really bad headaches...BC6, R (DI: 184 days). But if you're not really locked into a permanent PCP then there's a big problem with the process…nobody knows what they're doing and everyone thinks someone else is doing it and you don't know…you've got no idea really. BC10, F, R (DI: missing). The problem being these days you've got a PCP, but if you can't get in you go and see one of the others in the medical center and that's pretty much what happened to me. CRC19, M, R (DI: 58 days). …but one thing about PCPs these days…is they're trying to get you through as quickly as possible. So, you know, a 15-minute kind of conversation is often the most common. CRC12, F, U (DI: 64 days). No, I just went back. Well I did have an appointment, but I didn't have any time set to go back to see him [PCP]. CRC15, M, U (DI: 22 days).
Patient responses to perceived urgency and system factors	-	-	-	-	Well she just felt it and just said, 'Look, I don't think it's anything, but I'll give you this number so you can get it checked out'…So in the meantime, because I was so busy at work…BC12, R (DI: 33 days). …but I didn't worry too much, and the PCP wasn't worried…CRC11, F, R (DI: 37 days). …because there was no sense of urgency from the PCP I kind of went oh god, I'll do this in a couple of weeks. CRC12, F, U (DI: 64 days).
Clinicians facilitating rapid access	+	++	++	+	…you've got to wait a while but I as I said as soon our PCP got that result he called me in.…but they worded it as suspiciously…and that's why I think he got straight onto the oncologist, surgical oncologist and we saw him that day…BC21, U (DI: 13 days). …the first time ever in my life that I have had a call to say doctor would like to see you, yeah. CRC1, M, R (DI: 28 days). It was quite good because the day I saw him he rang this fellow, the gastroenterologist and he agreed to see me that night, that evening. CRC6, F, U (D: 10 days).
PCP gatekeeping and responses to diagnostic delay					

Gatekeeping	None	+	None	+	So, I went back again – because he [PCP] kept on saying irritable bowels…and I had the same symptoms. I went back and I said look I'm not leaving this chair until you write out a referral for a colonoscopy. CRC18, F, R (DI: 138 days). …I think he sat on them [iFOBT results] for nearly two weeks. I was ringing them going what the hell's going on, where's the results and they just sat there. CRC19, M, R (DI: 58 days). I'd felt like a bit of a mass in my right breast in about July and I'd been to the doctor and she said, 'Oh, I don't think it's anything, but I'll give you this number' and I didn't realize it was just…the BreastScreen number. BC12, R (DI: 33 days). I don't know what her [PCP] problem was, I don't think she really wanted to have a patient with cancer…It really surprises me, but I think when you get these few complications, some of them, if they're not in their field as well or their area that they're interested in, I think they just want to get rid of you, some of them. BC10, R (DI: missing).
Negative: anger, frustration, anxiety, loss of faith, regret, self-blame, disappointment.	-	+	None	+	Because every day it was like a month for me at that stage and nobody was doing anything, days were going by and weeks were going by…I was so upset. I said You can't just diagnose someone with cancer and then just say 'We're all too busy to get back to you' you just can't do that, so that was really upsetting, but that was the PCP…BC10, R (DI: missing). …how I feel about it and I said well I was in shock, I'm angry, I was angry at the doctors. They neglected the situation, the three doctors neglected me. BC6, R (DI: 184) I look back on it and I go, why the hell didn't she [PCP] give me a sense of urgency? CRC12, F, U (DI: 64 days). I might one day go back, but I think I lost so much faith in him, I've got no wish to go back and see him…I think the biggest mistake I made was when I couldn't get a referral straight away, was not going to someone else to ask. I think if I had my time over again, I would have to go to someone else and ask, and not try and persevere with the same one. CRC18, F, R (DI: 138 days). …frustrations with the PCPs is whether or not they listen to you and particularly the one I'd been seeing for 20 years…I would suggest that probably 50 to 60 per cent of PCPs have got absolutely no bloody idea and don't really care…That's what I'm talking about complacency. CRC19, M, R (DI: 58 days).
Forgiving: busy, difficult diagnosis.	-	-	None	None	I don't blame anyone for not diagnosing it immediately, it was just a tricky one for them. CRC5, M, R (DI: missing). I don't think she was being unsympathetic I think she just was being a doctor. And it wasn't until my iron started to go down, my iron reading, that she said we need to investigate this further. CRC7, F, R (DI: 70 days).

Coding: ++ common (>=3 cases); + present (2 cases); - uncommon (1 case). Yellow highlight: different between colorectal and breast. Blue highlight: difference between urban and rural.

Note: Patient quotations are accompanied with a participant number and cancer type: CRC for colorectal cancer and BC for breast cancer. In parenthesis, participant sex, area of residence and relevant interval length are also reported if available: sex, M: male, F: female for colorectal cancer patients; area of residence, R: rural or U: urban; and the length of intervals reported in days with abbreviation, DI: diagnostic interval.

Table 4: Patient and System-factor Themes in the Diagnostic Interval with Comparison by Residence and Cancer Type.

	Colorectal cancer		**Breast cancer**		**Quotations**
	Urban	*Rural*	*Urban*	*Rural*	
Patient factors					
Scheduling, practical issues	-	+	None	+	Between my initial mammogram and my diagnosis, in fact on the day I was scheduled to have my biopsy, my partner came down with shingles. So the biopsy got postponed for a couple of weeks. Ten days after that…he had a massive seizure…and as a result of that lost his driver's license. Now we live out on a farm. Our only vehicle is a large ute, which I will not drive in Melbourne, and this was a major issue for me. BC11, R (DI: missing)
Fear of cancer or procedure/ disgust	-	-	None	None	…I actually put it off because I was petrified of having a colonoscopy!...I do have an absolute phobia of needles…And let's face it the worst part of a colonoscopy is the day before when you take all the preparation it's so revolting. CRC12, F, U (DI: 64 days).

Waiting time for preferred specialist	None	-	None	-	So I had to go back to my PCP and get referred to a different surgeon…So I went back to this chap and of course being a first time seeing a specialist I had to wait about a month. BC11, R (DI: missing). So by the time I got that, that was in March I rang Melbourne, and the doctor down there was going on a month's holiday, so I had to wait. CRC18, F, R (DI: 138 days).
Social sanctioning /encouragement of help-seeking	None	-	None	-	Yeah because my family started saying to me 'That looks like it's getting bigger. You have to go see about it' so I went to my family doctor in Melbourne and then I moved up to [regional town], I went to the two family doctors here…BC6, R (DI: 184 days). I'm married to a nurse, my brother's a nurse, mum's a nurse, sister's a nurse, so I was starting to get a little bit back from them…go down and tell them you want this, this and this done. CRC19, M, R (DI: 58 days).
System factors					
Diagnostic test: perceptions of acceptable waiting time	++	++	++	+	…but the place where she [PCP] referred me to have scans was busy …it might have been ten days before I actually was able to get in…BC4, U (DI: 6 days). …it was six months to get the tests done and then all of a sudden two and a half weeks I'm having an operation. CRC9, M, U (DI: 178 days). He just said no, he said you have to have a colonoscopy and I want it done as quickly as possible…it was only a couple of weeks later that I had the colonoscopy. CRC13, F, R (DI: 87 days). It would've been inside four weeks. That was from referral to doing the colonoscopy was inside four or five weeks…very quick. CRC19, M, R (DI: 58 days).
Diagnostic test /clinician access: public/private, waiting times and costs	-	++	+	-	…I chose to go as a public patient because my health insurance for a colonoscopy – I've got one of those health insurance policies…that I have to pay $500 if I go to hospital once a year. But there is a clause in the policy that…even day hospital procedures, and they actually refer to a colonoscopy, is classed as a hospital visit and embraces the $500 as well. So I went there as a public patient...CRC3, M, R (DI: 38 days). Yes, I was very lucky to be able to – for him [private surgeon] to accept me as a patient. Because sometimes they close their books and they won't accept any new patients. CRC19, F, R (DI: 58 days).
Resource issues: regional hospital	None	+	None	None	…couldn't have it [colonoscopy] up here because at the time no funding had come through for the hospital. CRC4, F, R (DI: 0 days). I went in there [Emergency]…they keep you hanging around for a couple of hours …then they just said 'we're going to have to transfer you to [Regional hospital]…so I rode in one of them rotten ambulances…It was pretty hard. It was like being in a stagecoach I reckon. CRC20, M, R (DI: 160 days).
System flexibility	None	-	None	None	I was originally referred to [doctor] but he only does colonoscopies he doesn't do gastroscopies as well. So they [public hospital] said oh well we'll swap you over to [surgeon], which means that you'll get seen and dealt with quicker when he does both oscopies. CRC7, F, R (DI: 70 days).

Coding: ++ common (>=3 cases); + present (2 cases); - uncommon (1 case). Yellow highlight: different between colorectal and breast. Blue highlight: difference between urban and rural.

Note: Patient quotations are accompanied with a participant number and cancer type: CRC for colorectal cancer and BC for breast cancer. In parenthesis, participant sex, area of residence and relevant interval length are also reported if available: sex, M: male, F: female for colorectal cancer patients; area of residence, R: rural or U: urban; and the length of intervals reported in days with abbreviation, DI: diagnostic interval.

Table 5: Treatment Interval Themes

Theme	Sub-theme	Description	Quotation
Urgency, disease factors and perceptions of system speed	Urgency	Most patients wanted to act quickly after diagnosis; perceived urgency from clinicians; perceived time to begin treatment was rapid; were satisfied with treatment interval.	*Then we done the bowel kit test and that come back and then as I say it was only a matter of about three weeks and I was diagnosed, in the hospital, operated and that's it. Which you wouldn't have been able to do that in Melbourne…we just haven't got the waiting time that you do in the city. CRC8, M, R (TI: 15 days)*
	Disease factors	Those more likely to have later stage disease (e.g. Emergency admission, extensive disease at diagnosis) were treated more quickly.	*…but I think I could get in a lot quicker too because down at Hospital [urban] whereas at Hospital [regional] I probably would have been admitted and then booked in for surgery and everything, at Hospital [urban] when I saw them, it's done as a day procedure so you're not taking a hospital bed at all. BC1, R (TI: 15 days)*
	Perception of treatment interval	Rural vs urban - variable. Some rural patients thought care quicker in rural areas, while others thought this was faster in the city.	*Then we done the bowel kit test and that come back and then as I say it was only a matter of about three weeks and I was diagnosed, in the hospital, operated and that's it. Which you wouldn't have been able to do that in Melbourne…we just*

		Actual experiences also variable - one woman began treatment more quickly in rural vs regional area; one found treatment and recovery was faster in city vs local regional area.	*haven't got the waiting time that you do in the city. CRC8, M, R (TI: 15 days)* *…but I think I could get in a lot quicker too because down at Hospital [urban] whereas at Hospital [regional] I probably would have been admitted and then booked in for surgery and everything, at Hospital [urban] when I saw them, it's done as a day procedure so you're not taking a hospital bed at all. BC1, R (TI: 15 days)*
		Public vs private - many believed care was faster for those with private health insurance. However, patients generally thought time in public system was already fast and were often unable to compare systems. Even when able to compare, waiting time not perceived to be significantly different.	*I could have gone into a private hospital 10 days earlier, but I didn't think 10 days was going to make any difference, and it would have cost quite a bit more…BC11, R (TI: 32 days)*
Referring clinician	Colorectal cancer	Endoscopist provided diagnosis and organized access to specialist care. Positive aspects of not needing to return to a PCP - there was no chance to ignore the diagnosis, and no need to navigate the health system that might delay progress.	*I think that's brilliant because otherwise I would have thought, will I go, what do I do, you know, do I have to go back to my PCP and make an appointment and then he puts me onto someone, I didn't have a concern about any of that. CRC1, M, R (TI: 13 days)*
	Breast cancer	Most returned to PCP for diagnosis (symptomatic) and specialist referral (symptomatic and screen-detected).	*I found it quite frustrating to have to go back to my PCP and that I just didn't get a referral then and there on the Friday when I got those test results. I found that quite frustrating. Because then I meet my PCP and then he just picks someone, it's not like I've got a relationship with anyone. Anyone could've given me a name because at that point you do have a sense of urgency. You feel like you don't want to waste a day or a weekend waiting to see your PCP. BC15, U (TI: 35 days)*
		BreastScreen patients: negative aspects of returning to a PCP: waste of time/unnecessary extra step in the pathway to a specialist at a time of heightened anxiety and urgency; particularly after diagnosis and given patients rarely had a preferred specialist. Positive aspects: BreastScreen organized PCP appointment for within a few days, helping patient navigate the health system.	*I found it quite frustrating to have to go back to my PCP and that I just didn't get a referral then and there on the Friday when I got those test results…then I meet my PCP and then he just picks someone, it's not like I've got a relationship with anyone. Anyone could've given me a name because at that point you do have a sense of urgency. You feel like you don't want to waste a day or a weekend waiting to see your PCP. BC15, U (TI: 35 days)* *That's why I just think they're absolutely brilliant, I mean I would have fluttered my way through not knowing anything about what was happening. So, it was good. BC8, R (TI: 22 days)*
System and clinician factors facilitating rapid treatment interval	Clinician-directed pathways	Clinicians facilitated rapid access to cancer specialists and treatment, e.g. specialist referral arranged for patients, sometimes before told of cancer diagnosis. Patients appreciated having appointments organized for them, finding it reassuring at a very stressful time. Not having a choice of treatment provider was not of great concern.	*By the time I woke up, they already had my appointment in [Regional town] made…Well I actually probably found that probably pretty reassuring to be honest because as soon as they said that word [cancer], your brain just shut off…so that was probably the best thing that they could have done. CRC21, F, R (TI: 1 day)*
	Self-directed appointments	A few patients had to make their own specialist appointments - cancer diagnosis an incentive organize this quickly.	*As you can imagine, once you're told that you have a tumor and that it needs to be looked at, I just when I got home made an appointment straight away to go and see [the surgeon]. CRC16, M, U (TI: 21 days)*
	Complex arrangements: system flexibility; personal communication; priority diagnosis; location of workup	Flexibility in the health system allowed prioritization of urgent cases. Personal, direct communication between clinician facilitated faster access to care. Some patients aware they were 'priority one' in the (public) system and would be treated within 30 days. Workup tests could be performed at different health services. These factors could facilitate faster care but created complex pathways to treatment.	*He'd indicated to me at that point that I could have my surgery within 36 hours if I wanted it and I chose to take that option. BC20, U (TI: 0 days)*
Patient factors – delay	Uncontrollable factors	E.g. comorbidity, age: require additional tests, specialist appointments to assess fitness for surgery/treatment. Could prolong treatment start, but not perceived to be a long delay.	*He [the surgeon] pushed me down a bit and it [stomach] was really sore, and he said, 'is that very sore' I said, 'yeah it is'. He said, 'look hang on a moment.' He went out for about ten minutes, he came back and said, 'okay we'll do the surgery on the 24th' and I thought he meant June. I said, 'oh 24th June' he goes 'no, the 24th of May', I said 'that's next Friday',*

			he said 'that's right. I've changed my surgeries around'…CRC9, M, U (TI: missing)
	Controllable factors	Patient preferences: social commitments/lifestyle and events (e.g. moving house, holiday); alternative therapy	*… I was sort of trying to negotiate when the surgery would be because I had some reasonably important things in my diary... CRC14, M, U (TI: 42 days)* *…[regarding alternative therapy] I talked to my surgeon about this by the way, and I said is it ok if I put off my surgery for a month, just to give this a go…CRC12, F, U (TI: 33 days)*
		Reasons: prior experience with other cancer (e.g. prostate, patient later changed their mind); early-stage disease; perceived lack of urgency from doctor; approval from surgeon to delay 4-5weeks.	*…and because the cancer was fairly small, it had been detected early, it was not entirely aggressive and it was easy to get at, the team more or less said 'yeah okay, you can decide when it's going to be.' There was no great urgency about it. CRC14, M, U (TI: 42 days)* *[surgeon] said 'Look, bowel cancer grows so slowly it's not going to be life-threatening for you, that's ok with me.' CRC12, F, U (TI: 33 days)*
Clinician and system factors - delay	Referral incorrect	Private referral but patient not insured	*So, by the time I got to her office she'd actually made an appointment for me to see a surgeon…But I was a public patient, so she had to ring and cancel that because she thought I was a private patient…BC04, U (TI: 32 days)*
	Time of year	Christmas -limited availability of specialists and services.	*…it was leading up to Christmas and the surgeons were going away and I had to be a public patient…and so they couldn't do anything until January. So, after having that one-month wait from finding the lump, I then had another month nearly waiting to have the surgery. By then it had spread, it had started to spread into the lymph glands, so that wasn't a good thing. BC10, R (TI: 40 days)* *I just wanted an opinion…and they actually were closing down for Christmas, even at the start of December they were mostly closing their books for Christmas…So it was going to be a month before I could see anybody and then I thought, Well that's putting me behind; by the time I see somebody, have surgery, it could be three months down the track and I could have secondaries by then. BC14, R (TI: 18 days)*
	Specialist availability	Private specialists unavailable: maternity leave, conference, retirement.	*… she told me that she was pregnant and going on maternity leave in a month or two anyway. Then she referred me to her practice partner. Then I then went back and saw that practice partner… then I had to come back and basically repeat that again with the new surgeon…I felt like it was conflicting, I felt like there was a sense of urgency and that I wanted to move quickly on it and I just felt like I was wasting time doing this double up…Equally also I think it is handy to slow that process down a little bit in that there is so much information for you to absorb in such a short period of time...BC15, U (TI: 35 days)*

Note: Patient quotations are accompanied with a participant number and cancer type: CRC for colorectal cancer and BC for breast cancer. In parenthesis, participant sex, area of residence and relevant interval length are also reported if available: sex, M: male, F: female for colorectal cancer patients; area of residence, R: rural or U: urban; and the length of intervals reported in days with abbreviation, TI: treatment interval.