Treating cancer in Queensland public hospitals:

Service improvement starts here…..

Authored by the Queensland Cancer Control Analysis Team (QCCAT)
under the auspices of the Queensland Cancer Control Safety and Quality Partnership

1st November 2006

Treating cancer in Queensland public hospitals: Service improvement starts here…

Message from the Chair of the Queensland Cancer Control Safety and Quality Partnership

The Queensland Cancer Control Safety and Quality Partnership was established by the Minister for Health as a Gazetted Quality Assurance Committee in 2004. The role of the Partnership is to identify where service improvement could enhance the patient's experience of the cancer services we provide and improve outcomes. To fulfill this role the Partnership requires reliable information on cancer care processes and outcomes. Information on issues such as the number and type of treatments delivered, waiting times and the uptake of currently accepted practice are all critical. For the first time in Queensland, statewide information on these issues is provided in this report, Treating Cancer Patients In Queensland Public Hospitals: Service improvement starts here……

The report identifies three key issues, the benefits of multi-disciplinary review, documentation of stage in the medical record and waiting times.

The study demonstrates the significant benefits of a review by a multi-disciplinary team (MDT) for patients. However, even for cancers where there are well established multi-disciplinary clinics, unacceptably low numbers of patients are reviewed. These low rates have taken us by surprise. They present our cancer networks with a significant service improvement challenge; to increase the number of patients reviewed by a MDT.

Clinicians are the strongest advocates for documenting cancer stage at diagnosis. Yet cancer stage was recorded in only 30% of the medical records reviewed in this study. This shows that cancer stage data was not reliably recorded despite being used to drive patient care decisions. Good patient care involves a multi-disciplinary review. Review by a multi-disciplinary team increased the likelihood that cancer stage was documented in the medical record. Ideally therefore, the capture of cancer stage should occur during the multi-disciplinary review.

Longer than desirable wait times from the time a patient is diagnosed with cancer to their first treatment is not a new issue. We struggle to deliver timely treatment to the increasing numbers of patients diagnosed with cancer. Meeting the needs of these patients will be addressed in the longer term through our service planning. However, in the short term we need to use our cancer networks to identify new and smarter ways of working that will allow us to better manage the demand for cancer services.

There is obvious value for clinicians in having this information. Collecting data using the patterns of care approach is unsustainable and does not make use of existing data. A sustainable approach to the collection of cancer information is systematic, statewide and uses smart technology to make available existing data. Delivering this approach is now possible through the establishment of the Queensland Cancer Control Analysis Team.

Finally, I would like to emphasise that this report only helps to fill the information gap. We must now apply this information to our local context and take advantage of new Commonwealth and State funding initiatives to deliver service improvement. The issues highlighted in this report are within the power of our cancer networks to change.

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Queensland Cancer Control Safety and
Quality Partnership

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Acknowledgements

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Executive Summary

This is the Queensland (Qld) Cancer Control Safety and Quality Partnership's first report which represents an important milestone for the improvement of cancer services in Qld. With the support of the Oncology Rural Access Program and under the guidance of a clinician working party on behalf of the Partnership, the Qld Cancer Control Analysis Team (QCCAT) conducted a Patterns of Care Study to identify specific areas for improvement in cancer services at Qld Public Hospitals.

Medical records from more than 1,500 Qld public patients diagnosed with breast, head and neck, colon, rectal, and prostate cancers were collected and analysed. Cancer patient care was measured using length of waiting times, documentation of stage, and utilisation rates for surgery, chemotherapy, radiotherapy, and hormonal therapy. These measures were then used to identify specific issues about the patient journey, the benefits of joint patient management by a multidisciplinary team (MDT) of clinicians, and cancer care for residents of rural areas.

This study has identified the following quality issues for cancer patients admitted to Qld Public Hospitals.

- Based on the UK standards for cancer treatment waiting times, at least 20% of patients may be waiting too long for treatment.

- Waiting times for radiotherapy are of particular concern, with 85% of patients who received radiotherapy as their first treatment waiting longer than 1 month to start treatment.

- Prostate cancer patients wait much longer than other cancer patients for specialist review and diagnosis. More than 75% of prostate cancer patients wait longer than 2 weeks for specialist review and longer than 1 month for diagnosis.

- Stage, a key part of clinical decisions for cancer patients, is poorly documented in the medical charts. Stage is clearly recorded for only 30% of patients, and even when it is inferred from other clinical information, the proportion of patients for whom stage could be obtained is only 52%.

- Less than 20% of patients are reviewed by a MDT. Patients managed by a MDT have stage documented more frequently and have higher radiotherapy utilisation rates.

- Rural breast cancer patients have lower radiotherapy and higher hormonal utilisation rates than urban patients. For all other cancers, treatment rates are similar. The documentation of stage and the extent of MDT reviews are low for all patients regardless of residence.

In view of these findings, this report proposes initiatives to establish and monitor standards for waiting times and MDT review, facilitate access to radiotherapy, and accelerate specialist review and diagnosis for prostate cancer patients.

Introduction

This report provides a snapshot of cancer care provision in Qld which:

- acts as a baseline for cancer care providers, the clinical networks and Qld Health to monitor the impact of service improvement interventions, assist with service planning and benchmarking; and will

- support clinicians to provide patient focussed care with an evidence base that is relevant to Qld Health

This study has identified significant quality issues for cancer patients in Qld Public Hospitals. It has been prepared to provide Qld Health with specific direction on those areas where cancer services can be immediately improved and the extent of the service improvement that is required. The report is intended to stimulate discussion between clinicians, Area Health Services and the clinical networks and facilitate the prioritisation of resources and the targeted service improvement efforts of the cancer networks.

Key Issues

This report provides definitive data on four issues which are core to delivering high quality patient care and optimising outcomes for patients. The issues are:

1. How long do patients wait from the time their cancer is suspected to definitive diagnosis and treatment?

2. To what extent is the stage of the cancer at diagnosis documented in the medical records?

3. What are the benefits of a multidisciplinary review for patients?

4. Do patients who live in rural areas have equal access to cancer services as urban patients?

The study was funded by the Oncology Rural Access Program and implemented by the Qld Cancer Control Analysis Team (QCCAT) under the guidance of a clinician working party on behalf of the Partnership.

Within the report, the symbol ♫ highlights significant points which are meant to initiate discussions and motivate service improvement within the cancer networks.

Methods

Cancer sites

This study aimed to characterise the patterns of care for cancer patients in Qld. Initial discussions with clinicians from both public and private hospitals indicated that this could be achieved most efficiently by focusing on five tumour streams: breast, head and neck, colon, rectum, and prostate. These five sites together account for more than 40% of all new cancer cases in Australia. Lung and skin cancers rank next to breast cancer in terms of incidence; however a study similar to the present one was already underway for lung cancer, while the use of admitted patient database for sample selection in this study meant that selection of skin cancer patients, the majority of whom are not admitted for their cancer, would most likely be biased towards the more severe forms of this tumour.

Pilot study

To determine the availability and quality of cancer patient data at both public and private facilities in Qld, a sample of medical records from eight public hospitals and six private facilities was initially reviewed. Information sufficient for the purposes of this study was obtained from public but not from private medical charts. Referral dates, for instance, were obtained for almost 70% of public patients, compared to only 10% of private patients. There was no recorded evidence of radiotherapy or hormonal therapy for any of the 51 private facility patients in the pilot study, and only two of these patients had a documented TNM stage. The full study was therefore deemed feasible for public but not for private cancer patients.

Sample selection

Patients were selected from Qld residents aged over eighteen who were diagnosed with breast, head and neck, colon, rectal, or prostate cancers and admitted to a Qld public hospital between January 1 and December 31, 2004. The patient's residence was classified as either urban or rural following the Rural, Remote and Metropolitan Areas (RRMA) classification system of the Australian Commonwealth Department of Health and Ageing. In this system, urban areas in Qld include Brisbane, Logan, Redlands, Pine Rivers, Beaudesert, Ipswich, Redcliffe, Caboolture, Sunshine Coast, Gold Coast and Townsville, while rural areas include all other regions in the state. At least 100 urban and 100 rural patients were then selected for each of the five cancer streams. This sample size was calculated to detect a relative difference of 50% for urban versus rural cancer patients (i.e., a risk ratio of 1.5), with a power of 80% and a level of significance of 5%.

Data collection

Trained hospital employees abstracted patient information from medical records and electronic sources of pathology and radiology information. If a patient was admitted to more than one facility, then the relevant data for that patient was collected from all of the facilities to which he or she was admitted. A quality assurance process was then undertaken to validate the abstracted data. For a random selection of patients, data was re-abstracted by equally trained employees. Specific data elements were reviewed for accuracy, with an average concordance of 91%.

As stage is vital in determining appropriate treatment and interpreting variation in treatment rates, particular effort was made to capture staging information. If stage was not documented in the medical records, where possible, it was inferred using descriptions recorded in pathology and radiology reports about the patient's primary tumour, nodal and metastasis status following the TNM Classification of Malignant Tumours (International Union Against Cancer, 2002).

Analysis

Outcome - Cancer patient care was assessed using waiting times for specialist review, diagnosis, and treatment, documentation of cancer stage, and utilisation rates for surgery, chemotherapy, radiotherapy, and hormonal therapy.

Analysis groups - For each cancer, the measures were compared between urban and rural patients and according to whether patients were reviewed by a multidisciplinary team (MDT).

Confounders - The distribution of age and cancer stage was similar across the main analysis groups (see Appendix). In background analyses using logistic regression, these factors had little effect on the primary comparisons. Two other measures of patient condition – Charlson comorbidity index* and ECOG performance status[†] – were also evaluated as potential confounders, but neither had a significant effect on the main comparisons.

Confidence intervals - The majority of the results in this report consists of proportions of patients who received a particular aspect of care such as treatment or MDT review. All such proportions are reported with actual numbers of patients and 95% confidence intervals (CI). The CI provides, for any given measure, the range of plausible values for that measure in the population of publicly admitted cancer patients in Qld.

Ratio of probabilities - The potential benefits of a MDT review are expressed as a relative risk ratio, which is simply the proportion of patients in the MDT group who received a specific aspect of care divided by the same proportion in the non-MDT group. For example, 71% of MDT patients had documented stage, compared to only 48% of patients in the non-MDT group. This equates to a risk ratio of 1.48 and suggests that patients reviewed by a MDT are 48% more likely to have recorded stage than non-MDT patients.

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* Charlson ME, Pompei P, Ales KL, MacKenzie CR. 1987. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chron Dis 40(5): 373-383

[†] Oken MM, Creech RH, Tormey DC, Horton J, Davis TE, McFadden ET, Carbone, PP. 1982. Toxicity and response criteria of the Eastern Cooperative Oncology Group. Am J Clin Oncol 5:649-655

Study population

♫ These results are relevant to all public cancer patients in Qld

A total of 8,527 patients diagnosed with breast, head and neck, colon, rectal, or prostate cancer were notified to the Qld Cancer Registry in 2004. Around 44% of these were notified upon admission to Qld public hospitals, while 44% were notified by private hospitals. The remaining 12% were notified by non-hospital sources other than death certificates; while there is no evidence that these patients were admitted to a public hospital for their cancer, they could have received outpatient care such as radiotherapy or specialist review from a public facility. The proportion of Qld cancer patients who may be dependent on public health services for at least part of their care could therefore be as high as 56%, which is equivalent to around 4,800 new cancer cases per year.

This study included 1,534 patients with the above cancers who were admitted to Qld public hospitals in 2004. As shown in the following table, the age, gender,

and residential distributions of this sample are similar to those of all Qld public admitted cancer patients.

This report gives specific recommendations for improving the quality of care for cancer patients. While it is based on public admitted patients, improvements in services for this group will benefit those who receive treatment in a public facility but are never admitted. Furthermore, since many clinicians treat both public and private patients, the issues identified in this report present a unique opportunity for collaboration between the public and private sectors to solve problems such as long treatment waiting times for public patients.

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* Although breast cancer affects both men and women, men account for less than 1% of the breast cancer incidence in Qld. To avoid gender-related confounding in subgroup analysis, male breast cancer patients were excluded from this study.

† These are the patients notified to the Qld Cancer Registry by a Qld public hospital; the patients in this study are a subset of this group.

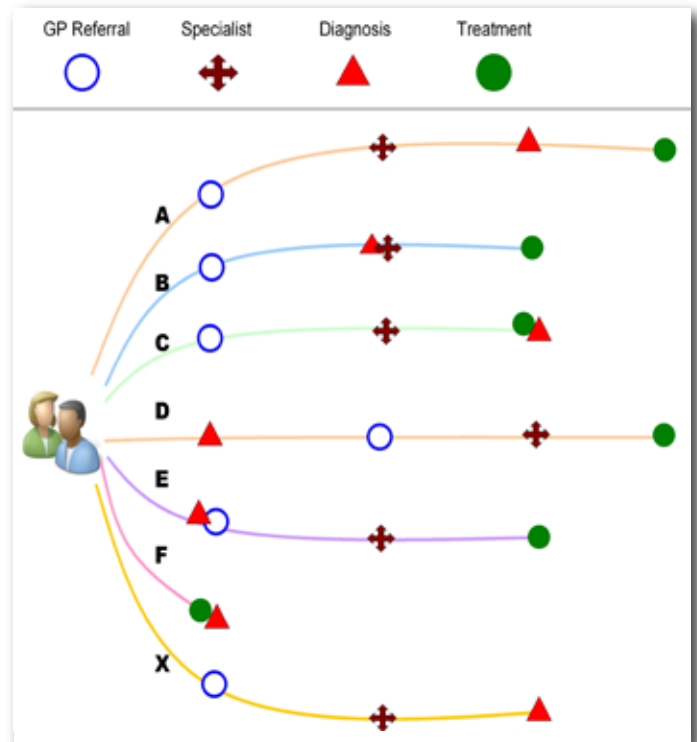| Number of new cancer cases notified to the Qld Cancer Registry in 2004					
	Breast	**Colon**	**Head & Neck**	**Prostate**	**Rectal**
Total number of cases	2,398	1,713	649	3,068	699
Notification source					
Public hospital †	1,177 (49%)	889 (52%)	418 (64%)	898 (29%)	391 (56%)
Private hospital	1,074 (45%)	717 (42%)	83 (13%)	1,589 (52%)	280 (40%)
Non-hospital	147 (6%)	107 (6%)	148 (23%)	581 (19%)	28 (4%)
Characteristics of patients in Qld Patterns of Care study and its source population					
	Breast	**Colon**	**Head & Neck**	**Prostate**	**Rectal**
Patterns of Care sample					
Number of patients	370	365	247	331	221
Median age (yrs)	58	71	62	69	66
Male : Female (%) *	0 : 100	54 : 46	83: 17	100 : 0	67 : 33
Urban : Rural (%)	61 : 39	61 : 39	62 : 38	62 : 38	59 : 41
Qld public hospital patients diagnosed in 2004					
Number of patients	1177	889	418	898	391
Median age (yrs)	59	72	63	70	67
Male : Female (%) *	0 : 100	55 : 45	78: 22	100 : 0	66 : 34
Urban : Rural (%)	61 : 39	59 : 41	55 : 45	56 : 44	58 : 42

Patient journey

The interval between the first indication of cancer and the start of treatment is a stressful period for all cancer patients. In the UK, significant advances have been made towards shortening this interval and avoiding unnecessary delays in the provision of important medical services to cancer patients*. This report provides the first detailed account of this issue in Qld.

♫ Cancer patients have different journeys

This study focused on four events along the cancer patient's journey within the public health care system – referral to a specialist, review by a specialist, diagnosis, and active treatment. The latter includes surgery, chemotherapy, radiotherapy, and hormonal therapy. Although "watchful waiting" is typically the initial mode of care for prostate cancer, data for this non-active form of treatment was not collected. The analysis of patient journey for prostate cancer in this report is therefore limited to waiting times for specialist review and diagnosis.

Seven different patient pathways were identified based on the order of the earliest dates[†] for each of the above events, as illustrated by the diagram on the right, with the events listed, unless indicated otherwise, in their order of occurrence.

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* UK Department of Health. Departmental Report 2006. Website as at 01 November 2006: www.dh.gov.uk/PublicationsAndStatistics/Publications/AnnualReports/fs/en

[†] Referral dates were taken from the GP letters to the cancer specialist. Diagnosis dates were based on the earliest histological diagnosis; where there was no pathological diagnosis, a clinical diagnosis date was substituted. Treatment dates were based on the date of first active treatment, regardless of modality.

The various patient journey pathways

A: GP referral, specialist review, diagnosis, then treatment

B: GP referral, diagnosis shortly before specialist review, then treatment

C: GP referral, specialist review, then treatment and diagnosis on the same date, e.g. patients diagnosed during surgery

D: Diagnosis, GP referral, specialist review, then treatment

E: Diagnosis and GP referral on the same date, specialist review, then treatment

F: Treatment and diagnosis on the same date, but no prior referral or specialist review, i.e. emergency colorectal cancer patients

X: No treatment, but have prior GP referral, specialist review, and diagnosis, in any order

The following figures describe in detail the different patient pathways found in this study. Each horizontal line represents a group of patients on a particular pathway, with the number of patients in the group shown to the left of each line and the relevant events denoted by various symbols along the line. The lines labelled "Scr" on the breast cancer graph represent screen detected patients. The position of a symbol on each line marks the number of days from the first event (at day 0) when 80% of patients on the same path obtained the indicated service. For example, 80% of breast cancer patients on path A were seen by a specialist (+) around 30 days after GP referral.

As might be expected, patients who were diagnosed at the beginning of their journey (paths D and E and breast screen patients) were treated sooner. To a lesser extent, patients who were diagnosed later in their journey, but before they saw a specialist (path B), were also treated earlier. Patients who were issued a referral on the same

day as their diagnosis (path E) also had a shorter overall journey than patients who were not issued a referral until a few days after diagnosis (path D).

○ Referral   + Specialist   ▲ Diagnosis   ● Treatment

COLON cancer

BREAST cancer

RECTAL cancer

HEADNECK cancer
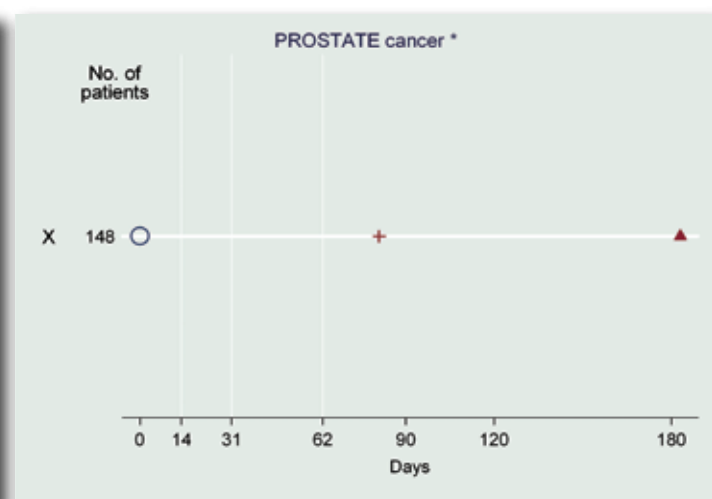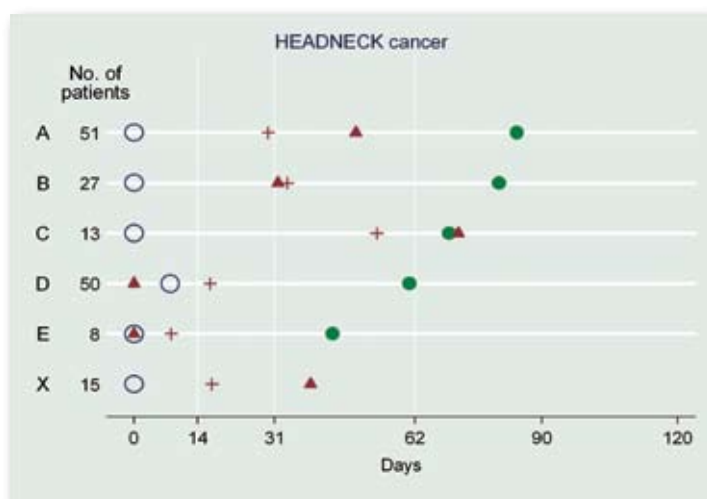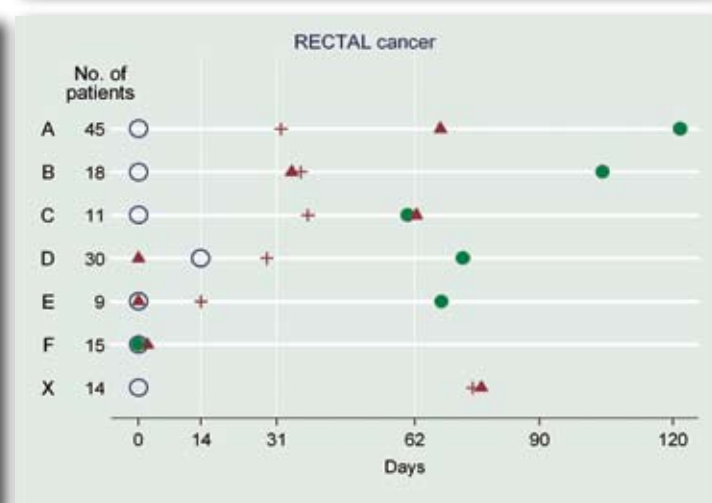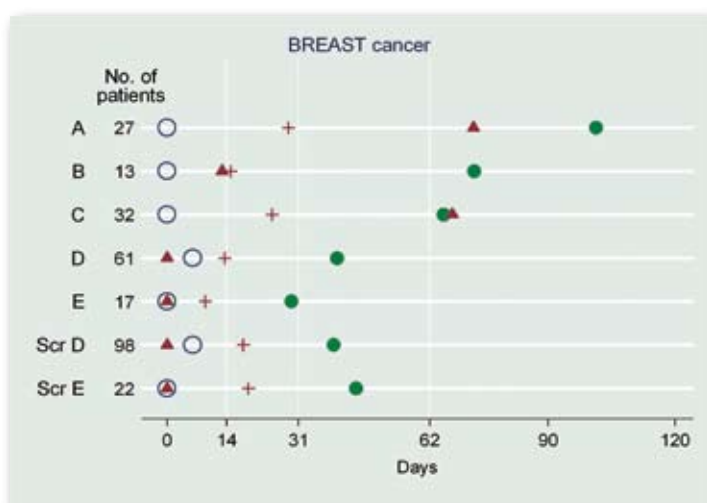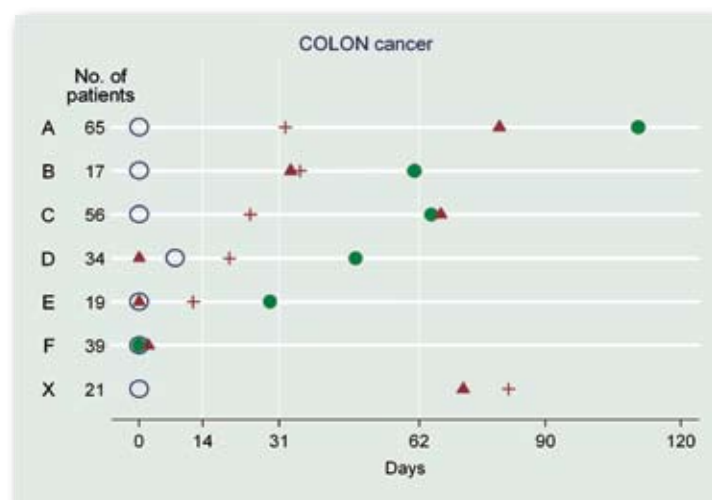
PROSTATE cancer *

♬ The relative importance of the different patient pathways in Qld

The graph shows the estimated proportions of Qld public cancer patients on the various pathways for all of the cancers in this study except prostate cancer. As pointed out in the next section, prostate cancer patients deserve special attention as they seem to go through a markedly longer journey than other cancer patients.

The diversity of pathways means that any effort to reduce delays in cancer service provision could have varying effects on patients depending on which segment of the patient journey is affected. Experience in other countries suggests that improvements in one

segment of the journey can occur at the expense of another, e.g. faster access to specialists can result in longer treatment queues*. Likewise, efforts to meet service targets based on a specific pathway could force clinicians to give less priority to patients on a different pathway rather than accommodate a greater number of patients[†].

○ Referral + Specialist ▲ Diagnosis ● Treatment

Breast, head & neck, colon and rectal cancers

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* Robinson D, Bell CMJ, Møller H, Basnett I. 2003. Effect of the UK government's 2-week target on waiting times in women with breast cancer in Southeast England. Br J Cancer 89: 492-496.

[†] Jones R, Rubin G, Hungin P. 2001. Is the two week rule for cancer referrals working? Br Med J 322: 1555-1556.

♫ The length of journey varies between cancers

While the details of their journey may vary, it is in the interest of all cancer patients that the interval between the first indication of cancer and the onset of treatment be kept as short as possible. The time at which cancer is first suspected cannot be determined exactly since many patients do not immediately see a doctor when they first feel the symptoms of their tumour. However it can be approximated using the dates of referral to a cancer specialist or diagnosis. In this study, the earliest of the following dates was taken to be the date at which cancer was first suspected, herein abbreviated as the startjourney date:

- ✍ Initial referral to a cancer specialist for further investigation of suspected cancer; or

- ✍ Confirmed diagnosis by a GP, screening service or other medical professional where this is the first indication of cancer.

As shown by the diagrams, there is a wide range in the length of patient journey, with breast cancer patients having on average shorter journeys compared to other patients. Prostate cancer patients, on the other hand, have the longest waits for specialist review and diagnosis. Almost a quarter of prostate cancer patients were still waiting for a diagnosis 3 months after their startjourney date, by which time nearly all of the other cancer patients already had a definitive diagnosis.

Cumulative waiting time distribution for patients with recorded dates of referral, specialist review, histological diagnosis and start of first active treatment.
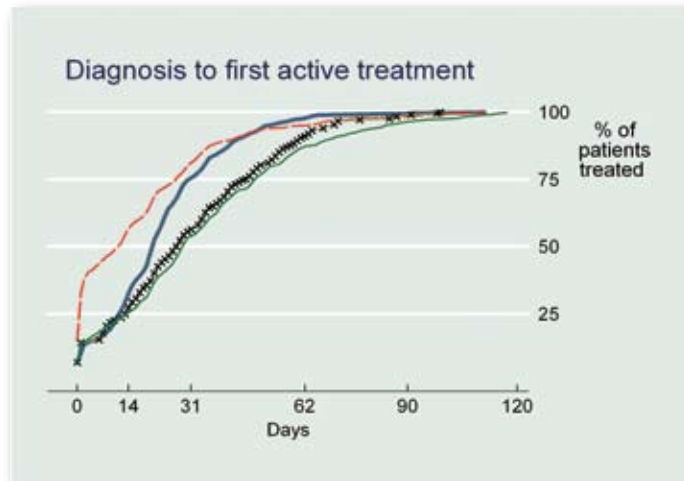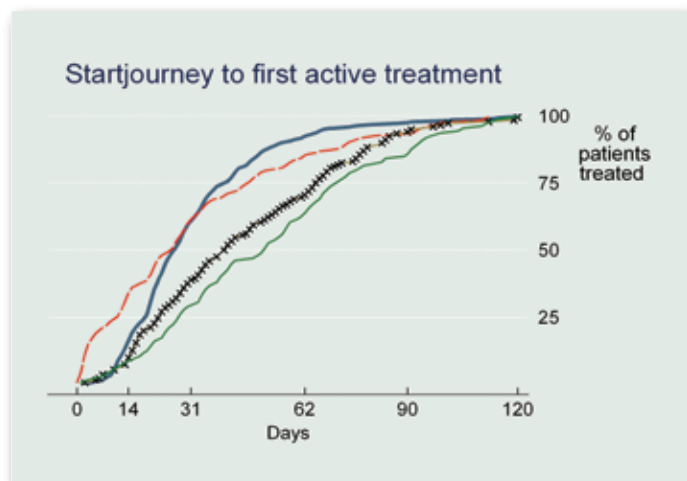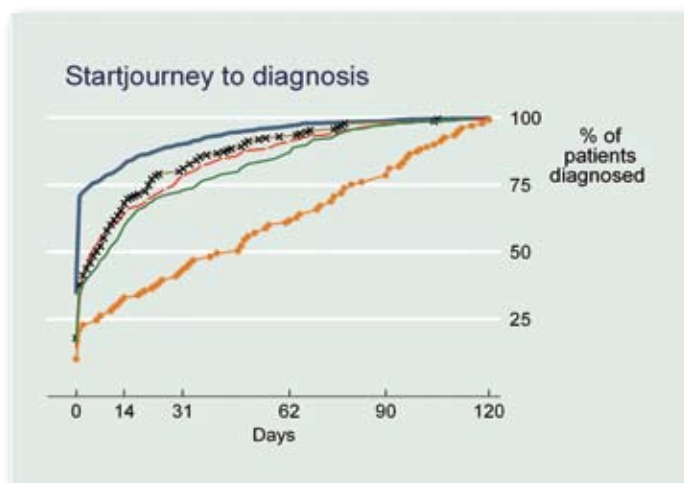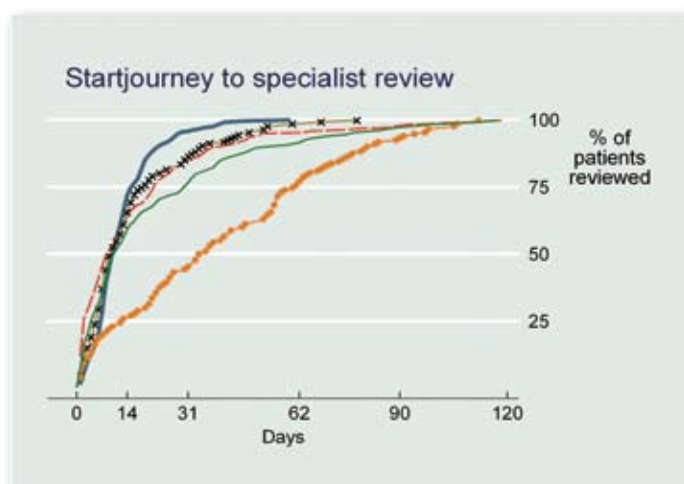
♬ There are standards for cancer waiting times

The UK National Health Service (NHS) has waiting time standards for cancer patients:

✍ Maximum 14 days wait from an urgent GP referral to date first seen by a specialist

✍ Maximum 31 days wait from diagnosis (decision to treat) to first definitive treatment regardless of route of referral, i.e. urgent or non-urgent through GP or screening

✍ Maximum 62 days wait from an urgent GP referral to first definitive treatment

In the present study, the earliest referral to a cancer specialist was used in lieu of urgent GP referral. All of the patients in this study had a confirmed diagnosis of cancer and therefore:

✍ at the very least should have been identified as urgent; and

✍ it is reasonable to expect close to 100% of these patients should have been diagnosed and treated within internationally acceptable waiting times

In contrast to the NHS guidelines, however, patients who were diagnosed at surgery, for example emergency colon cancer patients, were excluded from the count of people who were waiting for treatment. Likewise, patients diagnosed at the same time as referral, many of whom were breast cancer patients detected at screening, were not included in the count of patients waiting for diagnosis*. Waiting time, as defined in this report, is therefore a measure of the system's responsiveness to individuals who have a suspected cancer and make the journey through the full spectrum of diagnosis and treatment.

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* Because of these exclusions, the proportions of patients waiting longer than the NHS targets in the following table are higher than indicated by the previous graphs, which includes all patients.

♬ 47% of patients in this study waited longer than the NHS waiting time targets

Around half of the patients in this study waited longer than at least one of the waiting time standards described above.

Proportion of patients who waited longer than recommended waiting periods for specialist review, diagnosis, and first definitive treatment

	Breast	Colon	Head & Neck	Prostate	Rectal
Specialist review					
> 14 days from startjourney	**27%**	**36%**	**33%**	**76%**	**40%**
n / Total	78 / 290	83 / 229	57 / 175	119 / 156	54 / 135
95% CI	22 - 32%	30 - 43%	26 - 40%	69 - 82%	32 - 48%
Diagnosis					
> 31 days from startjourney	**35%**	**36%**	**29%**	**81%**	**42%**
	33 / 93	65 / 180	33 / 115	113 / 140	42 / 99
	27 - 46%	29 - 43%	21 - 38%	73 - 86%	33 - 52%
Treatment					
> 62 days from startjourney	**9%**	**22%**	**31%**		**42%**
	26 / 291	50 / 224	50 / 161		54 / 129
	6 - 13%	17 - 28%	24 - 39%		34 - 50%
> 31 days from diagnosis	**28%**	**27%**	**51%**		**54%**
	87 / 311	63 / 233	99 / 194		90 / 167
	23 - 33%	22 - 33%	44 - 58%		46 - 61%

♫ **At least 1 out of 5 Qld public cancer patients may be waiting too long for treatment**

When applied to the population of patients diagnosed with these cancers and admitted to a Qld public hospital in 2004, these results indicate that:

🖎 43% of patients waited longer than 14 days from their startjourney date to review by a specialist.

🖎 31% of patients waited longer than 31 days from their startjourney date to diagnosis.

🖎 22% of patients waited longer than 31 days from their diagnosis date to first treatment.

🖎 16% of patients waited longer than 62 days from their startjourney date to first treatment.

🖎 These results indicate that more than 800 newly diagnosed cancer patients admitted to Qld public hospitals in 2004 waited longer than 31 days between diagnosis and treatment.

Based on projected cancer incidence rates, this number could increase to around 1,000 new cancer patients in 2011.

Estimated number of Qld public cancer patients who waited longer than NHS standards in 2004 (Percentages are proportions within each cancer group or column)						
	Breast	**Colon**	**Head & Neck**	**Prostate**	**Rectal**	**TOTAL**
Total number of newly diagnosed cancer patients admitted to Qld public hospitals in 2004	1,177	889	418	898	391	3,773
	100%	100%	100%	100%	100%	100%
Specialist review						
> 14 days from startjourney	318	320	138	683	156	1,615
	27%	36%	33%	76%	40%	43%
Diagnosis						
> 31 days from startjourney	128	234	79	626	113	1,179
	11%	26%	19%	70%	29%	31%
Treatment						
> 62 days from startjourney	106	196	130		164	595
	9%	22%	31%		42%	16%
> 31 days from diagnosis	285	170	184		183	822
	24%	19%	44%		47%	22%

♪ Radiotherapy delays treatment

Access to radiotherapy appears to be a bottleneck in the treatment of head & neck and rectal cancer. Nearly all head and neck cancer patients and majority of rectal cancer patients whose first treatment was radiotherapy waited longer than 31 days from diagnosis to start of treatment.

Radiotherapy waiting periods were much longer than those for surgery and chemotherapy.

Proportion of head & neck and rectal cancer patients who waited longer than 31 days from diagnosis to treatment		
	Head & Neck	**Rectal**
First treatment		
Surgery	**20%**	**38%**
n / Total	30 / 148	47 / 123
95% CI	14 - 28%	30 - 47%
Radiotherapy	**97%**	**70%**
	61 / 63	32 / 46
	90 - 97%	54 - 82%
Chemotherapy	**57%**	**46%**
	8 / 14	11 / 24
	29 - 82%	26 - 67%

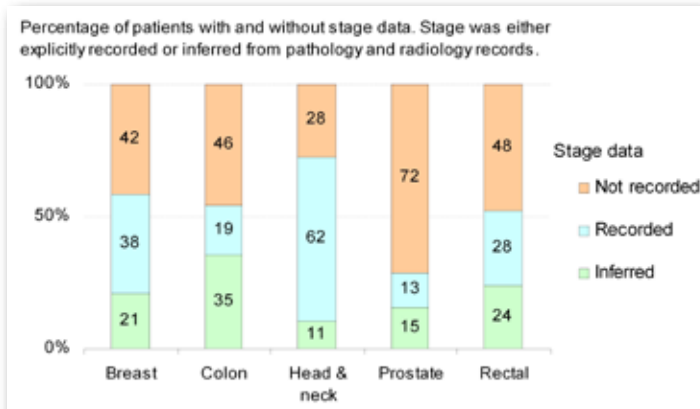| Median waiting times (in days) from diagnosis to first active treatment				
	Breast	**Colon**	**Head & Neck**	**Rectal**
First treatment				
Surgery	**23**	**19**	**22**	**29**
95% CI	(21-24)	(16-21)	(20-26)	(26-37)
Radiotherapy			**49**	**43**
			(46-55)	(37-49)
Chemotherapy	**24**	**32**	**39**	**30**
	(10-31)	(23-46)	(18-50)	(20-38)

Stage documentation

The stage of cancer determines the treatment plan for most patients. Its documentation is essential to the assessment of cancer service effectiveness, as well as in the interpretation of any observed variation in treatment rates.

♫ Stage is poorly documented

Stage was recorded in the medical charts for only 30% (CI: 28% to 33%) of patients in this study. When stage was inferred from other pieces of information such as pathology and radiology data, the proportion of patients for whom stage could be obtained increased to 52% (CI: 48% to 55%).

Stage was recorded more often for head and neck cancer patients compared to other cancer patients. Similarly patients under the Northern Area Health Service had a higher rate of documented stage compared to patients under Central and Southern Area Health Services*.

Percentage of patients with and without stage data. Stage was either explicitly recorded or inferred from pathology and radiology records.

* Majority of the population in Qld reside in areas under the Central and Southern Area Health Services. In this study, Northern, Central, and Southern Area Health Services respectively account for 15%, 44%, and 41% of all patients.

Proportion of patients with documented stage or whose stage were inferred from medical charts					
	Breast	**Colon**	**Head & Neck**	**Prostate**	**Rectal**
Overall	**58%**	**54%**	**72%**	**28%**	**52%**
n / Total	216 / 370	197 / 365	179 / 247	94 / 331	115 / 221
95% CI	53 - 63%	49 - 59%	67 - 78%	24 - 33%	45 - 59%
Residence					
Urban	**55%**	**54%**	**69%**	**27%**	**50%**
	123 / 224	119 / 221	105 / 153	56 / 206	65 / 131
	48 - 61%	47 - 60%	61 - 75%	22 - 34%	41 - 58%
Rural	**64%**	**54%**	**79%**	**30%**	**56%**
	93 / 146	78 / 144	74 / 94	38 / 125	50 / 90
	56 - 71%	46 - 62%	69 - 86%	23 - 39%	45 - 65%
Area Health Service					
Central	**53%**	**52%**	**64%**	**27%**	**50%**
	91 / 172	85 / 165	54 / 84	46 / 171	45 / 90
	45 - 60%	44 - 59%	54 - 74%	21 - 34%	40 - 60%
Northern	**76%**	**70%**	**96%**	**66%**	**64%**
	39 / 51	40 / 57	48 / 50	19 / 29	23 / 36
	63 - 86%	57 - 80%	86 - 100%	47 - 80%	47 - 78%
Southern	**59%**	**50%**	**68%**	**22%**	**49%**
	86 / 147	72 / 143	77 / 113	29 / 131	47 / 95
	50 - 66%	42 - 58%	59 - 76%	16 - 30%	40 - 59%

Multi-Disciplinary Team (MDT) review

A multi-disciplinary team is a group of oncology specialists who jointly discuss and manage care of cancer patients. MDT reviews are an important part of good clinical practice for cancer patient care.

♪ Very few patients are reviewed by MDT

Only 19% (CI: 17% to 21%) of patients in this study were reviewed by a MDT. The low MDT review rates among breast and colorectal cancer patients are a particular concern, since clinical guidelines for these cancers now specifically call for MDT review.

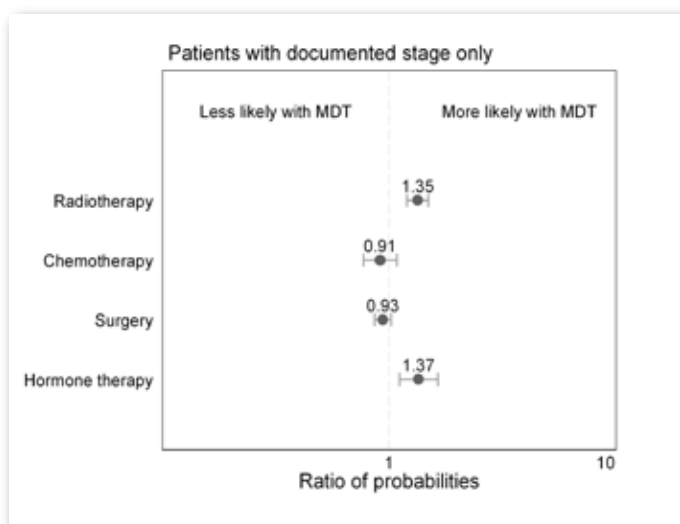| Proportion of patients reviewed by MDT					
	Breast	**Colon**	**Head & Neck**	**Prostate**	**Rectal**
Overall	**26%**	**6%**	**54%**	**4%**	**11%**
n / Total	95 / 370	23 / 365	133 / 247	12 / 331	25 / 221
95% CI	21 - 30%	4 - 9%	48 - 60%	2 - 6%	8 - 16%
Residence					
Urban	**36%**	**6%**	**52%**	**3%**	**11%**
	80 / 224	13 / 221	79 / 153	6 / 206	15 / 131
	30 - 42%	3 - 10%	44 - 59%	1 - 6%	7 - 18%
Rural	**10%**	**7%**	**57%**	**5%**	**11%**
	15 / 146	10 / 144	54 / 94	6 / 125	10 / 90
	6 - 16%	4 - 13%	47 - 67%	2 - 10%	6 - 20%
Area Health Service					
Central	**29%**	**4%**	**50%**	**5%**	**11%**
	50 / 172	6 / 165	42 / 84	9 / 171	10 / 90
	23 - 36%	2 - 8%	40 - 60%	3 - 10%	6 - 20%
Northern	**20%**	**5%**	**92%**	**10%**	**6%**
	10 / 51	3 / 57	46 / 50	3 / 29	2 / 36
	11 - 33%	1 - 15%	81 - 97%	3 - 27%	1 - 19%
Southern	**24%**	**10%**	**40%**	**0%**	**14%**
	35 / 147	14 / 143	45 / 113	0 / 131	13 / 95
	18 - 31%	6 - 16%	31 - 49%	0 - 4%	8 - 22%

♫ MDT patients have different patterns of care

71% (CI: 65%-76%) of patients reviewed by a MDT had a documented stage, compared to only 48% (CI: 45%-51%) of patients who were not reviewed by a MDT.

For each treatment, comparison of treatment rate between MDT and non-MDT patients was restricted to those cancers for which that treatment is a typical mode of care. Surgery is a major treatment for all cancers, so all patients were included in the comparison of surgery rates; however radiotherapy is not a common treatment for colon cancer, so this cancer was excluded from radiotherapy rate calculations. Likewise prostate cancer was excluded from chemotherapy rate comparisons, while all cancers except breast and prostate cancers were excluded from hormonal therapy rates.

Patients reviewed by a MDT have higher rates of radiotherapy, chemotherapy, and hormonal therapy. Radiotherapy and hormonal therapy rates of MDT patients remained higher than those of non-MDT patients when the analysis was restricted to patients with documented stage.

MDT review did not affect the overall journey, but appears to have increased the chances of being seen by a specialist within 14 days and having a diagnosis within 31 days of the startjourney date.
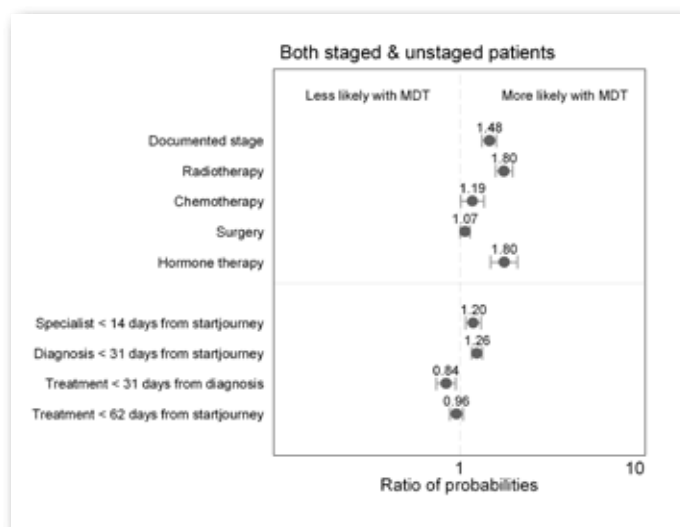
♫ MDT patients have higher radiotherapy rates

Patients reviewed by a MDT have higher radiotherapy (RT) utilisation rates (indicated by labelled points in the graph below; unlabelled points represent RT rate of patients not reviewed by MDT). Despite the small numbers of MDT patients in this study, their RT utilisation rates are close to evidence-based optimal levels determined by Delaney et. al. (2003)*.
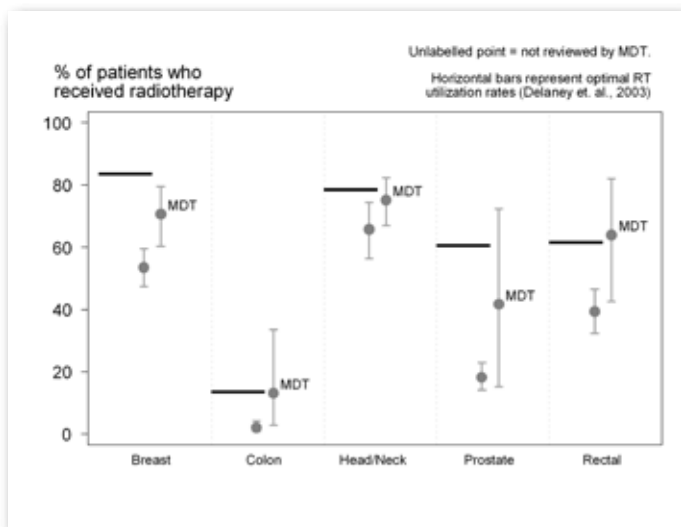
MDT-reviewed patients also appear to have different utilisation rates for other treatment modalities (see graphs on the right). However there are currently no evidence-based estimates of optimal rates for these treatments similar to those for radiotherapy.
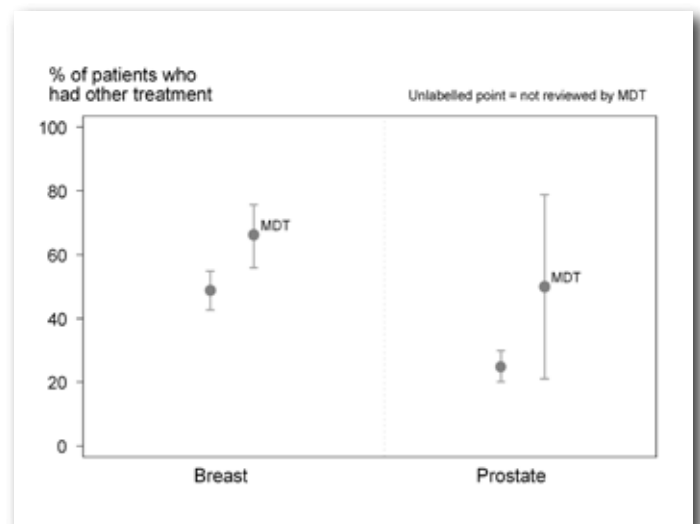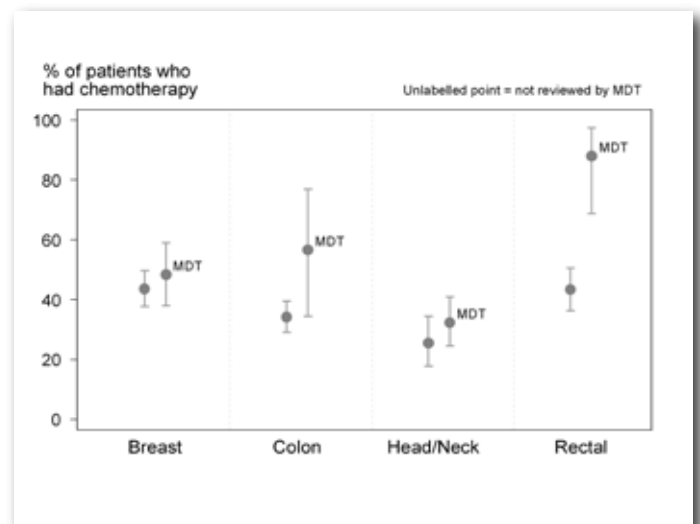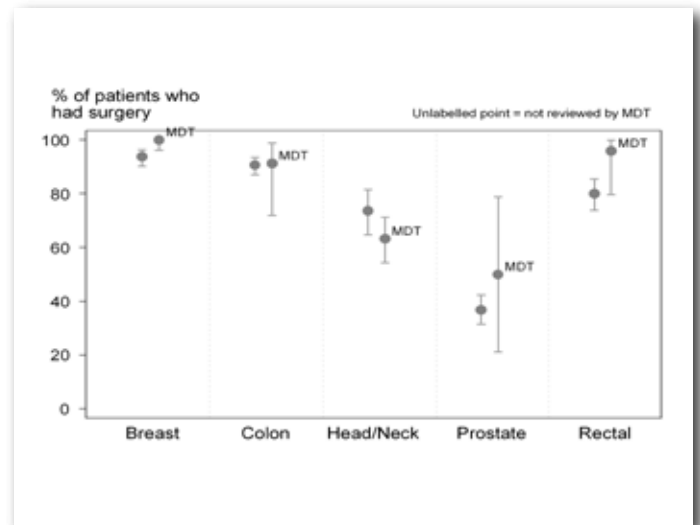
* Delaney GP., Jacob S., Featherstone C., Barton MB. Radiotherapy in cancer care: estimating optimal utilisation from a review of evidence-based clinical guidelines. Collaboration for Cancer Outcomes Research and Evaluation (CCORE), Liverpool Hospital, Sydney, Australia, 2003.

Rural versus urban patterns of care

In Australia and other countries, cancer patients living in rural areas generally have poorer survivals than those living in the cities (AIHW, 2003)*. The exact reason for this is currently unknown.

♫ **Rural cancer patients do not present at a more advanced stage**

Stage data was available for only half of the patients in this study (see Stage Documentation and Appendix for details). The available data indicates, however, that rural patients do not present at a more advanced stage than urban patients.

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* Australian Institute of Health and Welfare and Australasian Association of Cancer Registries (AACR) 2003. Cancer survival in Australia 1992-1997: geographic categories and socioeconomic status. Canberra (AUST): AIHW
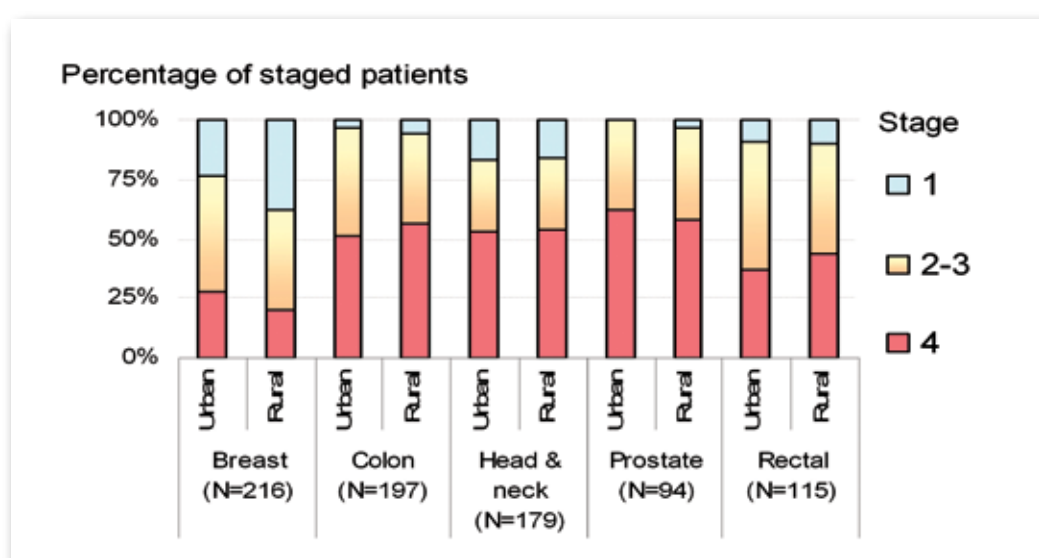
♫ **For cancers other than breast, treatment rates are similar for urban & rural patients**

		Urban	Rural
Total number of patients (all cancers except breast)		711	453
Surgery		**67%**	**73%**
	n	473	330
	95% CI	63 - 70%	69 - 77%
Radiotherapy		**30%**	**28%**
		214	127
		27 - 34%	24 - 32%
Chemotherapy		**28%**	**26%**
		197	118
		25 - 31%	22 - 30%
Hormonal therapy		**9%**	**8%**
		61	36
		7 - 11%	6 - 11%

♫ Rural breast cancer patients have different patterns of treatment

	Urban	Rural
Number of breast cancer patients	224	146
Radiotherapy	**62%**	**51%**
n	139	75
95% CI	56 - 68%	43 - 59%
Hormonal therapy	**46%**	**65%**
	102	95
	39 - 52%	57 - 72%
Chemotherapy	**47%**	**42%**
	105	61
	40 - 53%	34 - 50%
Surgery	**95%**	**97%**
	212	141
	91 - 97%	92 - 99%
Breast conservation	**58%**	**46%**
	131	67
	52 - 65%	38 - 54%
Mastectomy	**33%**	**45%**
	73	65
	27 - 39%	37 - 53%

♫ Stage documentation & MDT review rates are equally low for urban & rural patients

	Urban	Rural
Total number of patients (N) (all cancers combined)	935	599
MDT review	**21%**	**16%**
n	193	95
95% CI	18 - 23%	13 - 19%
Documented Stage	**50%**	**56%**
	468	333
	47 - 53%	52 - 60%

♫ Waiting times are similar for urban and rural patients

		Urban	Rural
Specialist review			
> 14 days from startjourney*		**39%**	**40%**
	n / Total	228 / 581	163 / 404
	95% CI	35 - 43%	36 - 45%
Diagnosis			
	> 31 days from startjourney	**46%**	**45%**
		163 / 351	123 / 276
		41 - 52%	39 - 50%
Treatment			
> 62 days from startjourney		**20%**	**26%**
		91 / 466	89 / 339
		16 - 23%	22 - 31%
> 31 days from diagnosis		**38%**	**36%**
		217 / 569	122 / 336
		34 - 42%	31 - 42%

* Startjourney is defined as the earlier of GP referral or histological diagnosis dates.

Call for action

The service improvement agenda for cancer services in Australia is significant. The National Service Improvement Framework alone identifies 19 critical intervention points which will require significant effort and resources to address. Faced with the challenges of workforce shortages, increased demand for cancer services and increased consumer expectations, it is critical that we monitor the impact of our service improvement efforts. This study provides Queensland with baseline data to monitor progress on the National Service Improvement Framework critical intervention points and the Qld Cancer Control Strategic Directions 2005–2010.

There are 3 categories of recommendation: service delivery, monitoring and evaluation, and health systems research.

Service delivery

Patient journey

According to NHS standards, waiting times for review by a specialist, diagnosis or treatment are unacceptable for 47% of all public cancer patients. This issue deserves Government consideration as a matter of urgency.

Multi-disciplinary care

There is adequate justification to adopt multi-disciplinary care as a core principle of quality cancer care: multi-disciplinary review widens the range of treatment options for patients and increases their chances of being diagnosed earlier and having their stage recorded. Every cancer patient should ideally be given the opportunity of having their treatment determined by a MDT. With only one fifth of patients being reviewed by a MDT, there is a significant opportunity for improvement.

Staging

Given that stage is so critical to treatment planning, multi-disciplinary teams have a responsibility to routinely stage every patient and document this information. Staging and the documentation of stage should be implemented as routine practice by all MDTs. For example, less than 20% of patients across all five cancers in this study received a documented stage under the direction of a MDT. If 80% of patients receive multi-disciplinary care (compared to 19% in this study), around 60% of public cancer patients will have their stage decided and documented by a MDT. Therefore simply by implementing MDT as a strategy to improve staging, we can increase the rate of MDT-determined stage documentation by at least 40%.

Radiotherapy

This study shows that radiotherapy services in Qld public hospitals fall short of standards in terms of both utilisation rates and waiting times. Improving radiotherapy services should therefore be targeted as a priority, with opportunities for system redesign and cross Area Health Service coordination fully explored.

Monitoring and evaluation

The NHS (UK) standards and data have been used in this study to evaluate whether current practice is acceptable. The applicability of these standards to Queensland clearly requires further consideration. The development and adoption of Queensland specific standards would assist cancer services and the clinical networks to routinely monitor quality and evaluate whether their service improvement efforts are in fact improving services for patients.

It is recommended that Queensland standards and targets for waiting times and review by a multi-disciplinary team be developed and adopted within 12 months. With adequate resources, the clinical networks are ideally positioned to lead the implementation, monitoring and reporting of these service standards. Clinician-led networks have the expertise to interpret the data, they understand the issues and can initiate the appropriate response.

Health Systems Research

Outcome measures

This study examined various process measures of health care for cancer patients. The relevance of any observed variation in these variables will eventually have to be supported by outcome measures such as survival and quality of life. In particular, research is needed to determine the effect on survival of multidisciplinary care and delays in treatment, particularly delays in radiotherapy. An objective assessment of the psychological stress of waiting for diagnosis and treatment may also be necessary, since the need to alleviate such stress is a key motivation behind efforts to shorten waiting times.

Patterns of care for private patients

Almost half of all Qld cancer patients are admitted and treated at private facilities. The patterns of care at these facilities should be examined to more accurately assess the quality of cancer care for the whole of Qld.

Cancer care for rural patients

This study suggests that crude process measures such as treatment utilisation rates and waiting times may not be sufficient to explain the difference in survival between urban and rural cancer patients. Additional quality measures need to be investigated to resolve this issue.

Appendix

Numbers of patients in 2004 Queensland Patterns of Care Study according to residence – urban vs rural
(Values in parentheses are percentages within each column)

	Breast Urban	Breast Rural	Colon Urban	Colon Rural	Head & Neck Urban	Head & Neck Rural	Prostate Urban	Prostate Rural	Rectal Urban	Rectal Rural
TOTAL	224 (100)	146 (100)	221 (100)	144 (100)	153 (100)	94 (100)	206 (100)	125 (100)	131 (100)	90 (100)
Gender										
Male			125 (57)	71 (49)	123 (80)	82 (87)	206 (100)	125 (100)	91 (69)	57 (63)
Female	224 (100)	146 (100)	96 (43)	73 (51)	30 (20)	12 (13)			40 (31)	33 (37)
Median age (yrs)	56	59	71	70	65	60	69	69	64	67
Age group										
18-49	66 (29)	33 (23)	17 (8)	12 (8)	18 (12)	13 (14)	3 (1)	2 (2)	10 (8)	6 (7)
50-59	63 (28)	42 (29)	36 (16)	19 (13)	37 (24)	32 (34)	30 (15)	16 (13)	25 (19)	15 (17)
60-69	51 (23)	39 (27)	43 (19)	38 (26)	56 (37)	31 (33)	72 (35)	47 (38)	50 (38)	30 (33)
70-79	31 (14)	21 (14)	75 (34)	44 (31)	30 (20)	15 (16)	70 (34)	40 (32)	28 (21)	28 (31)
80+	13 (6)	11 (8)	50 (23)	31 (22)	12 (8)	3 (3)	31 (15)	20 (16)	18 (14)	11 (12)
Stage										
I	29 (13)	35 (24)	4 (2)	5 (3)	18 (12)	12 (13)		1 (1)	6 (5)	5 (6)
II	43 (19)	32 (22)	17 (8)	11 (8)	18 (12)	11 (12)	14 (7)	13 (10)	16 (12)	11 (12)
III	17 (8)	7 (5)	37 (17)	18 (13)	14 (9)	11 (12)	7 (3)	2 (2)	19 (15)	12 (13)
IV	34 (15)	19 (13)	61 (28)	44 (31)	55 (36)	40 (43)	35 (17)	22 (18)	24 (18)	22 (24)
Unknown	101 (45)	53 (36)	102 (46)	66 (46)	48 (31)	20 (21)	150 (73)	87 (70)	66 (50)	40 (44)
Charlson Index										
0	119 (53)	73 (50)	75 (34)	44 (31)	48 (31)	31 (33)	Not collected		63 (48)	35 (39)
1 to 3	63 (28)	52 (36)	78 (35)	42 (29)	39 (25)	21 (22)			39 (30)	22 (24)
4 to 6	31 (14)	14 (10)	28 (13)	32 (22)	42 (27)	22 (23)			20 (15)	18 (20)
>= 7	10 (4)	7 (5)	40 (18)	26 (18)	24 (16)	20 (21)			9 (7)	15 (17)
Unknown	1 (0)									
ECOG Grade										
Good (0 - 1)	72 (32)	74 (51)	63 (29)	51 (35)	58 (38)	37 (39)	Not collected		47 (36)	31 (34)
Poor (2 - 4)	2 (1)	9 (6)	4 (2)	6 (4)	2 (1)	2 (2)			3 (2)	6 (7)
Unknown	150 (67)	63 (43)	154 (70)	87 (60)	93 (61)	55 (59)			81 (62)	53 (59)
Area Health Zone										
Central	106 (47)	66 (45)	110 (50)	55 (38)	47 (31)	37 (39)	116 (56)	55 (44)	56 (43)	34 (38)
Northern	8 (4)	43 (29)	12 (5)	45 (31)	14 (9)	36 (38)	4 (2)	25 (20)	5 (4)	31 (34)
Southern	110 (49)	37 (25)	99 (45)	44 (31)	92 (60)	21 (22)	86 (42)	45 (36)	70 (53)	25 (28)
Reviewed by MDT										
No	144 (64)	131 (90)	208 (94)	134 (93)	74 (48)	40 (43)	200 (97)	119 (95)	116 (89)	80 (89)
Yes	80 (36)	15 (10)	13 (6)	10 (7)	79 (52)	54 (57)	6 (3)	6 (5)	15 (11)	10 (11)

Numbers of patients in 2004 Queensland Patterns of Care Study according to MDT review
(Values in parentheses are percentages within each column)

	Breast No MDT	Breast MDT	Colon No MDT	Colon MDT	Head & Neck No MDT	Head & Neck MDT	Prostate No MDT	Prostate MDT	Rectal No MDT	Rectal MDT
TOTAL	275 (100)	95 (100)	342 (100)	23 (100)	114 (100)	133 (100)	319 (100)	12 (100)	196 (100)	25 (100)
Gender										
Male			186 (54)	10 (43)	92 (81)	113 (85)	319 (100)	12 (100)	131 (67)	17 (68)
Female	275 (100)	95 (100)	156 (46)	13 (57)	22 (19)	20 (15)	(0)	(0)	65 (33)	8 (32)
Median age (yrs)	59	56	71	67	62	62	69	73	67	63
Age group										
18-49	68 (25)	31 (33)	25 (7)	4 (17)	18 (16)	13 (10)	5 (2)	(0)	12 (6)	4 (16)
50-59	81 (29)	24 (25)	52 (15)	3 (13)	29 (25)	40 (30)	45 (14)	1 (8)	33 (17)	7 (28)
60-69	69 (25)	21 (22)	75 (22)	6 (26)	35 (31)	52 (39)	115 (36)	4 (33)	70 (36)	10 (40)
70-79	37 (13)	15 (16)	113 (33)	6 (26)	22 (19)	23 (17)	105 (33)	5 (42)	52 (27)	4 (16)
80+	20 (7)	4 (4)	77 (23)	4 (17)	10 (9)	5 (4)	49 (15)	2 (17)	29 (15)	(0)
Stage										
I	53 (19)	11 (12)	9 (3)	(0)	14 (12)	16 (12)	1 (0)	(0)	10 (5)	1 (4)
II	55 (20)	20 (21)	26 (8)	2 (9)	6 (5)	23 (17)	24 (8)	3 (25)	25 (13)	2 (8)
III	14 (5)	10 (11)	53 (15)	2 (9)	11 (10)	14 (11)	7 (2)	2 (17)	22 (11)	9 (36)
IV	43 (16)	10 (11)	92 (27)	13 (57)	38 (33)	57 (43)	53 (17)	4 (33)	41 (21)	5 (20)
Unknown	110 (40)	44 (46)	162 (47)	6 (26)	45 (39)	23 (17)	234 (73)	3 (25)	98 (50)	8 (32)
Charlson Index										
0	140 (51)	52 (55)	110 (32)	9 (39)	37 (32)	42 (32)	Not collected		86 (44)	12 (48)
1 to 3	83 (30)	32 (34)	118 (35)	2 (9)	29 (25)	31 (23)			55 (28)	6 (24)
4 to 6	38 (14)	7 (7)	54 (16)	6 (26)	28 (25)	36 (27)			33 (17)	5 (20)
>= 7	13 (5)	4 (4)	60 (18)	6 (26)	20 (18)	24 (18)			22 (11)	2 (8)
Unknown	1 (0)	(0)	(0)	(0)	(0)	(0)			(0)	(0)
ECOG Grade										
Good (0 - 1)	110 (40)	36 (38)	102 (30)	12 (52)	41 (36)	54 (41)	Not collected		64 (33)	14 (56)
Poor (2 - 4)	9 (3)	2 (2)	9 (3)	1 (4)	2 (2)	2 (2)			9 (5)	(0)
Unknown	156 (57)	57 (60)	231 (68)	10 (43)	71 (62)	77 (58)			123 (63)	11 (44)
Area Health Zone										
Central	122 (44)	50 (53)	159 (46)	6 (26)	42 (37)	42 (32)	162 (51)	9 (75)	80 (41)	10 (40)
Northern	41 (15)	10 (11)	54 (16)	3 (13)	4 (4)	46 (35)	26 (8)	3 (25)	34 (17)	2 (8)
Southern	112 (41)	35 (37)	129 (38)	14 (61)	68 (60)	45 (34)	131 (41)	(0)	82 (42)	13 (52)
Residence										
Urban	144 (52)	80 (84)	208 (61)	13 (57)	70 (61)	79 (59)	200 (63)	6 (50)	116 (59)	15 (60)
Rural	131 (48)	15 (16)	134 (39)	10 (43)	40 (35)	54 (41)	199 (62)	6 (50)	80 (41)	10 (40)

Qld Cancer Control Analysis Team

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