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An overview of colorectal cancer in the Australian healthcare system over the past 20 years

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Abstract

Colorectal cancer (CRC) places a heavy burden on both the Australian health care system and the economy. CRC is the third most diagnosed cancer and carries the second highest cause of mortality. Prognosis has improved over recent years attributable to multiple factors including the introduction of a free national bowel screening program, improvements in medical and surgical treatment, and nationally funded subsidisation of some treatments. However, given Australia's ageing population and that the incidence of CRC increases with age, this disease is likely to continue to place a heavy burden on the health economy. This paper provides an overview of the management of CRC in the context of the Australian health system over the past 20 years. It will consider the epidemiology of CRC, the various cancer registries that exist in Australia, the structure of the Australian healthcare system (mixed public and private) in which patients are treated, and finally the treatment options available to patients with either primary or metastatic CRC.

Keywords: *colorectal cancer, australia, treatment, healthcare system, burden of disease*

The overall burden of colorectal cancer in Australia

CCancer is the leading cause of mortality in Australia resulting in over 50, 000 deaths in 2019 [1]. Fortunately, survival has improved over the last 30 years and now seven in ten people survive at least five years following treatment [1]. Improvements in outcomes have occurred because of a general increased understanding in the community of avoidable risk factors, the introduction of the national screening programs, and the use of effective and novel chemotherapy and biological agents. However, these measures have come at increased costs to the community from such things as government funded screening services, the introduction of new chemotherapy and biological agents to the Pharmaceutical Benefits Schedule (PBS), and increases in Medicare funding rebates for specialist visits and diagnostic tests provided by the Medicare Benefits Schedule (MBS) and as a result, due to the increase in costs, Medicare funding has increased from $25 billion in 2018-19 to $31 billion in 2022-23 [2,3]. This has coincided with a steady rise in the cost of treating cancer in Australia exacerbated by an ageing population [1,4].

The aim of this paper is to provide an overview of the management of CRC specifically in the context of the Australian health system over the past 20 years. It will consider the epidemiology of CRC, the various cancer registries that exist in Australia, the structure of the Australian healthcare system in which patients are treated (mixed public and private sectors), the National CRC screening program and finally the specific treatment options available to patients with either primary or metastatic CRC (mCRC).

Epidemiology of CRC

Incidence

CRC is the second most common cancer diagnosed in men and women, and overall, the third most common cancer in the Australian population (behind breast and prostate cancer) [1,5]. The incidence of CRC has increased slightly recently from 15,352 new cases diagnosed in 2016 to an estimated 15,494 cases in 2020 [6]. In 2012 the average age of diagnosis for CRC was 69 years for both Australian males and females combined [7]. Recently, there has been a growing trend of patients below the age of 50 years diagnosed with CRC [5]. This is similar to trends in other western countries such as New Zealand [8], the United States [9] and in parts of Europe [10,11]. In 2016, the age-standardised incidence rate in Australia was 55 cases per 100,000 persons. In 2020 it was estimated to have reduced slightly to 51 cases per 100,000 persons [6]. When compared to the global incidence rate of 19.7 cases per 100, 000 persons in 2018, Australia and New Zealand were ranked collectively as having the highest age-standardised incidence rates [12].

Causes

There have been many studies highlighting a range of possible causes of CRC, including both non-modifiable and modifiable risk factors. Non-modifiable risk factors include African-American race; gender (Males>Females); age (risk increased with advancing age); hereditary syndromes; inflammatory bowel disease; prior abdominal radiation for a childhood malignancy; cystic fibrosis; and prostate cancer patients who have undergone androgen deprivation therapy [13]. Modifiable risk factors include alcohol consumption; smoking and tobacco use; diet, specifically the

consumption of red and processed meats; obesity and physical inactivity; and diabetes (specifically type two) [13,14].

Survival

In 2018, CRC was the second highest cause of cancer related mortality (following only lung cancer) in Australia with 5,336 deaths (2870 males and 2466 females) [6]. The age-standardised mortality rate was 18 deaths per 100,00 persons with men having a higher age-standardised mortality rate than women (21 and 15 respectively). While the number of deaths is on the rise (3704 in 1982 to 5336 in 2018), age-standardised mortality rates have decreased from 32 deaths to 18 deaths per 100,000 persons over the same time frame [6]. In comparison to global trends, Australia has the highest age-standardised mortality rates, where the world average was 8.9 deaths per 100,000 persons in 2018 [12].

The overall 5-year survival rate for Australian CRC patients diagnosed in 2011 was 69.9% [1] compared to the UK which had a rate of 59.4% during the period 2011-2015 [15], and the USA which had a rate of 63% during the period 2009-2015 [16]. In 2011 stage related 5-year survival rates in Australia were as follows: Stage I (98.6%), Stage II (88.6%), Stage III (71.3%), and Stage IV (13.4%) [1].

Cancer registries and data sources

In Australia, each state and territory has their own cancer registry. The role of these is to undertake health surveillance and provide support for research activities. While they are synonymous in what information is collected, they differ regarding the governing legislation, the date of formation and the methods of data collection. All registries are governed by a national umbrella, the Australian Institute of Health and Welfare (AIHW) [17]. The AIHW established the Australian Cancer Database (ACD) which consists of primary malignant cancers diagnosed in Australia from 1982. Data are sourced from hospitals, pathology laboratories, radiotherapy centres and the registry of births, death, and marriages. This is provided to the Australasian Association of Cancer Registries via each state and territory cancer registry and is then compiled by the AIHW.

The ACD consists of a minimum data set which is comprised of a patients' demographic details and tumour characteristics. The patient demographic details include: a unique identification number, name, gender, date of birth, indigenous status, country of birth, date of death, age at death and cause of death. The tumour characteristics include residence at diagnosis, tumour identification number, date of diagnosis, date of diagnosis accuracy indicator, age at diagnosis, International Classification of Diseases for Oncology 3rd edition (ICD-0-3) topography and morphology code, International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) disease code, most valid basis of diagnosis, statistical local area at diagnosis and postcode at diagnosis [17]. De-identified national cancer statistics such as incidence, trends, projections, survival, and prevalence are published by the AIHW. Access to the raw data can be granted to researchers conducting external projects who are willing to pay the costs and prepared to obtain ethical review.

The registration of all cancers in Australia is compulsory (except for basal and squamous cell carcinomas of the skin). However, recurrence rates following treatment, or the site of recurrence are not collected. Capturing this information is logistically difficult as treatment is often provided in multiple different institutions, and usually by more than one subspecialty team with inconsistent systems of follow up. At present, there is no legislation mandating the collection of recurrent or metastatic disease occurrence. Specifically in relation to CRC, it is known that the most common sites of recurrent or metastatic disease are in the liver and lungs, and more rarely in the peritoneum, bones, and the brain [18-20]. However, this detailed information is not captured in the various cancer registries.

Public and private health care system

Australia consists of a mixed public and private health care system. All Australian citizens and permanent residents are entitled to and are covered by public health care irrespective of their decision to purchase private health insurance. Public health care is comprised of the services collectively funded by the national and state and territory governments. These are services covered by the MBS, medicines covered by the PBS and public hospital services. Some health services are funded through private health insurance and, often patients are required to pay additional out-of-pocket costs. These costs vary depending on the level and type of healthcare cover (Gold, Silver, Bronze, or basic cover). There are two types of private health insurance: hospital and general treatment (also called ancillary or extras e.g., dental, optical).

While private health insurance is not mandatory in Australia, over recent years various incentives have been put in place by the national government to encourage citizens to purchase private health care cover, specifically hospital cover. In 1997, the Medicare Levy Surcharge (MLS) was first introduced for higher income earners where 1% of their taxable income was deducted if they did not have private hospital cover. This was followed by the introduction of a rebate in 1999 allowing Australians to receive 30% of their private health insurance premiums as a tax refund. Subsequently, this led to the introduction of the Lifetime Health Cover (LHC) Loading in July 2000 where Australian citizens aged over 31 paid a 2% levy for each year that they delayed obtaining private hospital cover. This loading was capped at 70 percent and would continue to pay LHC for a continuous ten-year period. Over the next 15 years the Australian government introduced further minor changes linking these deductions to individual's income and age.

In June 2019 only 13.6 million Australians (53% of the population) had some level of private health insurance (hospital cover or general cover or both). However, only 11.2 million Australians (44% of the total population) had private health insurance with hospital cover [21]. It is a difficult market to navigate and understand the private health insurance system in Australia as there are 30 insurance companies offering 3500 different health insurance products. By law, all insurance companies must accept new applicants and they must be allowed to switch policies and/or health insurance funds. Competition between health insurance funds is based on both the hospital cover offered (depending on the services provided) and the extent of the general cover (the percentage of cover offered for optical, dental, and other ancillary services). Numerous marketing strategies encouraging people to join, or switch health funds including such things as waving the waiting period for certain types of cover. Often, when switching to a higher cover, new and existing members must wait for a period to gain access to certain services for example physiotherapy, orthodontics, pregnancy care.

Few studies have examined the cost of treating CRC in Australia. Ananda et al. studied this prior to the introduction of expensive biological agents for the treatment of CRC. They examined patients being treated at four different hospitals and found that average costs for each patient ranged from $34,000 to $86,000 depending on the stage of their disease [22]. In 2013, Goldsbury et

al. using the 45 and up study determined that the cost of cancer care in Australia was $6.3 billion with the largest costs being associated with CRC ($1.1 billion) followed by breast cancer ($0.8 billion), lung cancer ($0.6 billion) and prostate cancer ($0.5 billion) [23]. It is likely that the Australian Government will spend a total of $82.05 billion in healthcare during the financial year 2020/21 compared with $74.44 billion in 2016/17 [24]. In summary, the costs for healthcare are on the rise and this is a significant concern for both the national and state and territory governments.

CRC Screening

Screening allows the identification of pre-malignant polyps or colorectal cancer via blood in stool samples. In doing so, colorectal polyps (pre-cancerous or early-stage-cancer) can be removed at an early stage and consequently reduce the risk of death from CRC. The tools used for screening are the faecal occult blood test (FOBT), the multi-targeted DNA stool test, flexible sigmoidoscopy, and colonoscopy. Due to the costs and limited availability of colonoscopic screening resources, the FOBT is used as the first step in CRC screening [25].

The National Bowel Cancer Screening Program (NBCSP) was introduced in 2006. Initially, Australians aged 55-65 years were provided with a one-off bowel cancer screening kit in the mail free of charge. With increased lobbying by the Cancer Council, the government increased funding to the program and the current model is that Australians aged 50-74 years receive one free bowel cancer screening kit every two years. Results from the national bowel cancer screening report in 2021 showed that 5.7 million people aged 50-74 were mailed a screening kit in 2018-19 although only 43.5% participated [26].

The CRC screening program is organised at the national level and participants receive an FOBT screening kit with instructions on how to complete the test. Following the completion of the test, participants post the test back for the results to be analysed. Results are sent within two weeks to the participant and their GP if this information is provided. When a negative test is obtained, the participant is automatically enrolled to be sent their next test in 2 years-time. When a participant tests positive, they are instructed to see their GP who then refers them to a specialist (Gastroenterologist or Colorectal surgeon) to undergo a colonoscopy. Individuals who are symptomatic or categorised as high risk i.e. individuals who have a history of CRC, chronic inflammatory bowel disease or have certain genetic disorders do not need to participate in the screening program [27]. Instead, their GP usually refers them directly to the appropriate specialist for further investigation.

Colonoscopies in Australia can be undertaken within a public hospital, private hospital or within a dedicated outpatient facility. Public hospitals provide the colonoscopy free of charge to uninsured patients and, usually as a no-gap fee for privately insured patients. A limitation of undergoing this investigation in the public sector may be prolonged waiting periods and limited ability to choose a doctor of choice or the date/time of the procedure. Undergoing a colonoscopy within a private hospital or outpatient facility may incur an out of pocket cost depending on the level of health insurance cover. The advantages for the patient of accessing the private sector are often shorter waiting times and a doctor of their choice.

In recent years there have been concerns about long waiting times that some NSBC patients are experiencing between a positive FOBT test and a definitive diagnostic colonoscopy in the public hospital sector [28]. Bowel Cancer Australia has suggested that national, state and territory governments need to introduce a national Colonoscopy Wait-time and Performance Guarantee to address delays in diagnosis and therefore treatment of CRC. Diagnostic intervals that exceed 120 days are associated with worse clinical outcomes. Geographical considerations offer an additional set of difficulties in the Australian Health care setting as depending on where patients reside, they may have to travel to access services. Waiting times in Australia for a public colonoscopy can range from 116-181 days [28].

Treatment of CRC and mCRC

Overview

Cancer treatment in Australia is provided in several different settings including public hospitals, private hospitals, private consulting rooms of GP's, physicians, surgeons or in private oncology clinics. While most people who reside in urban areas have access to these providers, in some cases patients in rural and regional areas face exhaustive travel times to obtain specialist treatment.

As shown in figure 1, patients with CRC will generally either be diagnosed via screening (NBCSP), following investigation of clinical symptoms or as part of an incidental finding during other tests (blood tests or imaging). Newly diagnosed patients are staged and then often discussed at a multidisciplinary team meeting (MDT). MDT meetings are attended by a range of specialists including medical oncologists, radiation oncologists, colorectal surgeons, radiologists, pathologists, Upper GI surgeons and sometimes even cardiothoracic surgeons. Depending on the tumour stage at diagnosis, the location of the tumour (colon or rectum) and other patient factors, neoadjuvant chemotherapy +/- radiotherapy may be administered prior to surgery. However, resection remains the mainstay of curative treatment in otherwise healthy patients. Patients may present with or develop metastatic disease, the most common sites being liver and lung. Colorectal liver metastases (CRLM) are described as either metachronous metastases (develops > 6 months after the primary diagnosis) or synchronous (present with both primary and metastases). If patients present with synchronous CRLM, resection of the primary tumour and metastasis may still be appropriate in carefully selected cases. Alternatively, if patients are not suitable for resection of the isolated metastatic disease, resection of the primary tumour may be followed by further chemotherapy and/or radiotherapy, trans arterial chemoembolization (TACE), portal vein embolization (PVE), or selective internal radiation therapy (SIRT) to reduce the size of the tumour, with consideration of later resection if the disease remains isolated. Surveillance and follow up is undertaken by the patient's GP, medical oncologist, or surgeon, and this usually involves a combination of physical examination, regular colonoscopy, imaging, and serum tumour markers. Table 1 compares the advantages and disadvantages of private hospital cover for each intervention in patients with CRC and mCRC.

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Table 1: *Advantages and disadvantages of private hospital cover for each intervention in patients with CRC and mCRC*

	Private Hospital Cover	No private hospital cover
CRC screening (Colonoscopy)	- Select specialist of your choice - Select date and time of procedures - Expedited quickly - Pay a gap fee	- Unable to nominate specialist - Procedure may be performed in a teaching capacity (fellow/trainee) under supervision - Unable to select date and time (cases are triaged) - Can encounter extensive waiting periods - Free of charge
Imaging	- Pay a small gap for imaging not covered by the MBS	- Pay for the entire cost of imaging not covered by the MBS
Surgery	- Select specialist of your choice - More influence over date and time of operation - Expedited quickly - Pay a gap fee	- Unable to nominate specialist - Operation may be performed in a teaching capacity (fellow/trainee) under supervision - Unable to select date and time (cases are triaged) - Can encounter extensive waiting periods - Free of charge
Chemotherapy and biological agents	- Pay a gap fee	- Free of charge
Radiotherapy	- Expedited quickly - Pay a gap fee	- Can encounter extensive waiting periods - Free of charge
Liver directed therapies	- Pay a small gap for SIRT therapy	- Apply for special consideration for SIRT

CRC: Colorectal Cancer, MBS: Medicare Benefits Schedule, SIRT: Selective Internal Radiation Therapy

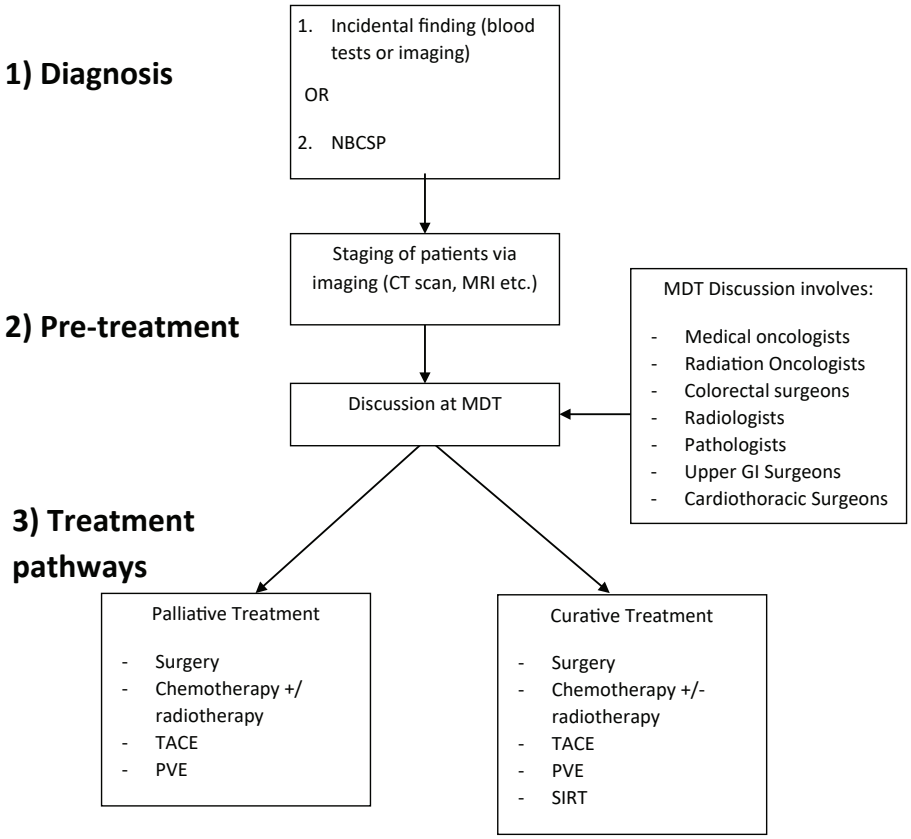

Figure 1: *Overview of the potential treatment pathways in principle of CRC and mCRC in Australia.*

The figure shows the different processes and teams involved in the diagnosis, treatment, and management of patients with CRC and mCRC

other tests (blood tests or imaging). Newly diagnosed patients are staged and then often discussed at a multidisciplinary team meeting (MDT). MDT meetings are attended by a range of specialists including medical oncologists, radiation oncologists, colorectal surgeons, radiologists, pathologists, Upper GI surgeons and sometimes even cardiothoracic surgeons. Depending on the tumour stage at diagnosis, the location of the tumour (colon or rectum) and other patient factors, neoadjuvant chemotherapy +/- radiotherapy may be administered prior to surgery. However, resection remains the mainstay of curative treatment in otherwise healthy patients. Patients may present with or develop metastatic disease, the most common sites being liver and lung. Colorectal liver metastases (CRLM) are described as either metachronous metastases (develops > 6 months after the primary diagnosis) or synchronous (present with both primary and metastases). If patients present with synchronous CRLM, resection of the primary tumour and metastasis may still be appropriate in carefully selected cases. Alternatively, if patients are not suitable for resection of the isolated metastatic disease, resection of the primary tumour may be followed by further chemotherapy and/or radiotherapy, trans arterial chemoembolization (TACE), portal vein embolization (PVE), or selective internal radiation therapy (SIRT) to reduce the size of the tumour, with consideration of later resection if the disease remains isolated. Surveillance and follow up is undertaken by the patient's GP, medical oncologist, or surgeon, and this usually involves a combination of physical examination, regular colonoscopy, imaging, and serum tumour markers. Table 1 compares the advantages and disadvantages of private hospital cover for each intervention in patients with CRC and mCRC.

The role of imaging in CRC – staging and surveillance

In Australia, imaging such as Computed tomography (CT) scans, Positron emission tomography (PET) scans and Magnetic resonance imaging (MRI) are performed either at independent healthcare imaging facilities or within public hospitals. Similarly, blood tests are done at private pathology companies or within public hospitals and these tests may be wholly or partly funded by the MBS. Most CTs (diagnostic and surveillance) are either wholly or partly funded through the MBS with any residual amount paid by the patient as an out-of-pocket expense. However, PET scans and MRIs are currently only covered by the MBS for select indications and patients who do not meet these criteria may incur out of pocket expenses of up to $900, especially those who do not have private health insurance cover. In May 2019, the government introduced a new policy in relation to MRI for patients with CRC. This allows one MRI of the liver to be funded through the MBS each twelve-month period. This has implications for the use of MRI in surveillance of patients following treatment for CRC.

At present in Australia, CT scans are the primary modality of choice for imaging CRLM as these are readily available, are less time consuming than MRI and under current arrangements CT scans attract an MBS fee. In relation to ongoing surveillance after treatment of CRC, consultations with specialists in states that do not have public hospital outpatient clinics may also only be partially rebated by the MBS, resulting in additional out of pockets costs especially when the surveillance involves multiple specialists.

Surgery in CRC

In most cases, resection (either endoscopic or surgical) of the primary tumour or resection of CRLM provides the best chance of long-term cure. These treatments may take place within either a public hospital or private hospital depending on whether a patient has private insurance or selects to self-fund. CRC patients who undergo treatment at a private hospital are usually referred to a specific surgeon or identify one themselves, and after discussion with the surgeon they then arrange a time and date for their operation. Commonly there is a gap payment that the patient must pay if the private health fund does not cover the entire fee charged by the hospital, and the surgical and anaesthetic team. The reason for a gap payment is because the MBS item number does not accurately represent the true cost to the provider or hospital offering the service. Instead, the MBS item number is associated with a "scheduled rebate" which reflects what the government is willing to fund for a particular procedure or hospital stay. Patients may choose to have their operation in a public hospital and may be placed on a "waiting list" depending on the urgency of their case. While cancer surgery in Australia is generally expedited, with typical wait times for elective bowel cancer surgery usually within 30 days, occasionally waiting times may be as long as 45 days [29].

Chemotherapy, biological agents, and radiotherapy

Chemotherapy and biological agents are commonly provided for the treatment of patients with either primary or metastatic CRC. In 2021, the most common chemotherapy agents used are Oxaliplatin, Irinotecan and Fluorouracil. Biological agents (Bevacizumab, Cetuximab or Panitumumab) are also often used in the management of patients with CRC. Prior to these biological agents being listed on the PBS, patients who could afford to do so paid $1500-$6000 per cycle for this treatment. Bevacizumab was placed on the PBS in July 2009, Cetuximab in September 2011, and Panitumumab in April 2014. Currently, patients only pay between $AUD 40-50 per script. As with chemotherapy medications, these agents are partly or wholly funded by the PBS. These treatments can be provided at public hospitals, private hospitals, private clinics or occasionally even at home under the supervision of nurse specialists. In public hospitals intravenous chemotherapy is provided at no cost to the patients, although interestingly oral chemotherapy incurs a cost for patients who are usually required to purchase these agents through a pharmacy. In public hospitals, while there is no cost to the patient, these services are provided from national government funding through block grants provided to state health departments.

Similarly, radiotherapy is commonly provided at many public hospitals and usually is provided with no out-of-pocket expenses. Waiting times for public hospital radiotherapy services may be up to 26 days [30]. Radiotherapy is also available in the private sector, though these treatments may be associated with significant out of pocket costs.

Liver directed therapies

Regional liver directed therapies for patients with CRLM include trans-arterial chemoembolisation (TACE), Selective Internal Radiation (SIRT), direct hepatic arterial perfusion of oxaliplatin, and various ablative therapies (Microwave ablation, Radiofrequency ablation, Cryotherapy, and Stereotactic radiotherapy). There is ongoing debate about the specific indications for each of these treatments in the management of patients with CRLM's.

In Australia liver directed therapies are offered in both public and private hospitals and public and private radiology practices. These treatments may be associated with out-of-pocket expenses depending on the service and whether the patient is privately

insured. Most patients are offered the above treatment options only after discussion at MDT cancer meetings. Patients may be discussed multiple times at these meetings (between 2-11) over the course of their treatment. The estimated cost of running each MDT meeting in our institution in the year 2020 is $6,300 (includes a full breakdown of administrative and clinical staffing and equipment), and given that these meetings occur fortnightly, the estimated annual cost of running a Colorectal MDT meeting is $138,000. The number of patients discussed per meeting varies but is usually between 10-25. These costs are borne by our institution (a public hospital) and the costs are partly offset through MBS cost reimbursement of approximately $15,000 annually. There are likely to be different arrangements at different hospitals and this highlights the difficulty of trying to estimate the additional cost of treating a patient with CRC in relation to the use of MDT cancer meetings.

Access to treatment in rural and remote areas

In many countries there are disparities in time to treatment, and this often results in a poorer prognosis in patients with cancer residing in rural areas compared with their urban counterparts [31-33]. In Australia, this is in fact what is found in relation to the treatment of patients with CRC when examined by the different states and territories [34,35]. Difficulty accessing timely or appropriate treatment for patients residing in rural and remote areas in Australia is due to the geographic spread of the continent and the scattering of the population into small communities. Screening and colonoscopy rates are particularly low in Australian indigenous populations raising concerns about access to services particularly in isolated communities [36]. While policy makers continue to focus their efforts on improving access to specialist cancer treatment in rural and remote areas, there is still room for improvement [37]. A delay in diagnosing and treatment is likely to result in patients presenting with advanced cancers and with a higher risk of mortality irrespective of subsequent treatment [38-40].

There are a few studies focussing on the diagnosis and treatment of CRC in remote communities in Australia. In Western Australia which has a large geographical spread and a thinly distributed population outside of coastal cities and towns, there is only limited access to diagnostic endoscopy in rural and remote areas [41]. A recent study conducted in Victoria found that rural patients had longer waiting times to see a Primary Care Practitioner and to have a colonoscopy compared with urban patients [42]. While access and outcomes to CRC surgery and chemotherapy are similar in both metropolitan and regional areas, access to specialist surgery groups such as liver resection for metastatic disease requires extensive travel times to metropolitan areas as these services are not usually available in rural areas. This places a heavy financial burden on patients and their families to bear the burden of the costs in travel and accommodation in addition to the traditional costs for the treatment itself. Furthermore, the carers and/or family members who may be accompanying them may be required to take time off from work.

Conclusion

This paper shows that cancer in Australia and specifically CRC has a relatively high incidence and mortality and places a heavy burden on the health budget. With changes in demographics and health policies over the years, it has become evident that CRC will have an increasing impact in the years to come and for this reason there is a need for further research in this area. The Australian cancer registry, for example requires further improvement i.e., collection of metastatic disease, collection of quality of life data and cost data. While Australia has an admirable national CRC screening policy in place, uptake is still relatively low, and improvements are required to encourage greater uptake. Furthermore, there are other areas of need including reducing waiting times for diagnostic tests and treatment for patients without private insurance cover. One example of such an improvement would be to establish appropriate check points and resources to ensure that the agreed timeframe of three months between a positive FOBT and time to colonoscopy at a public hospital are met to ensure that if patients have CRC, treatment can be provided in a timely fashion. There have been few studies specifically focussing on CRC health economics from an Australian perspective. Undertaking a thorough analysis of the large range of costs associated with the diagnosis and treatment of CRC will help better understand the economic burden of this disease and the actual cost drivers in treatment. Consequently, this might assist policy makers to make better informed decisions when deciding on which management pathways should receive priority funding.

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