



# **CANCER PLAN**

## **2010 - 2013**

---

**NHS GREATER GLASGOW & CLYDE (NHSGGC)  
CANCER SERVICES STEERING GROUP**

---

Version 1/Final: June 2010  
Approval Processes: NHSGGC Operational Management Group 13/5/10  
NHSGGC Senior Management Group 27/5/10  
Cancer Plan Review Date: December 2012  
Equality Impact Assessment: 8<sup>th</sup> April 2010

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	3
1 INTRODUCTION AND BACKGROUND .....	5
2 POPULATION HEALTH .....	8
3 ACHIEVEMENTS AND IMPROVEMENTS TO SERVICES AND FACILITIES .....	11
4 STRATEGIC PRIORITIES .....	20
5 PREVENTION .....	21
6 EARLY DETECTION.....	24
7 SERVICE DELIVERY : PRIORITIES FOR DEVELOPMENT .....	28
8 IMPROVING QUALITY OF CANCER CARE FOR PATIENTS.....	37
9 SUPPORTING SERVICE DELIVERY .....	40
10 SUMMARY .....	44
11 FURTHER INFORMATION .....	44

---

### Appendices are Separate to the Main Cancer Plan Document

<b>Appendix 1</b>	Cancer incidence and mortality rates: Top 4 cancers; Lung, Colon, Breast and Prostate Cancer, and Cancer Incidence (2006) and Mortality (2008) by CHCP
<b>Appendix 2</b>	NHSGGC Cancer Services Steering Group Structure Chart
<b>Appendix 3</b>	Colorectal (Bowel) Cancer . Literature Review/Review of Inequalities in Screening and Treatment, 2009
<b>Appendix 4</b>	Documents and Internet links of interest relating to the Cancer Plan
<b>Appendix 5</b>	Contact details for Community Health Partnerships and Community Health (and Care) Partnerships . referred to collectively throughout the document as <b>CHCPs</b> .

## EXECUTIVE SUMMARY

**NHS Greater Glasgow & Clyde (NHSGGC)** is the largest Health Board in the UK. Its geographic area stretches from the north east of East Dunbartonshire to Inverclyde. NHSGGC delivers services in 25 major hospitals, 10 specialist units and more than 60 health centres and clinics, and there are 300 GP practices serving a core population of approximately 1.2 million people. NHSGGC's population resides in a geographic area that covers 8 Local Government administrations, i.e. 6 administrations, plus part of North Lanarkshire and part of South Lanarkshire.

NHSGGC's overall aim is to deliver effective and high quality cancer services, and to act to improve the health of its population to do everything possible to reduce health inequalities. The planning and delivery of cancer services for NHSGGC's population is complex and challenging, ranging from prevention, referral to diagnosis, treatment, care, after care, and supported self care.

NHSGGC also provides specialist cancer services to the whole of the West of Scotland's geographic area, which accounts for more than half of Scotland's population. To ensure cancer services meet the needs of that extended population, robust joint regional planning arrangements are in place with our partner West of Scotland Health Boards. NHSGGC also works with colleagues at a national level to ensure its services and practices are aligned and developed within national best practice and guidelines. Key national policies that underpin the **NHSGGC Cancer Plan 2010 to 2013** include:

- ***Better Health Better Care: Action Plan, the Scottish Government's strategy for a healthier Scotland (2007)***
- ***Better Cancer Care, an Action Plan (2008)***
- ***Equally Well, the Scottish Government's Report of the Ministerial Task Force on Health Inequalities (2008)***
- ***Living and Dying Well: A National Action Plan for Palliative and End of Life Care in Scotland (2008)***
- ***The Healthcare Quality Strategy for NHSScotland (2010)***

NHSGGC's **cancer services** fall into a full range of services and specialties delivered in primary, community and acute care settings across the organisation's geographic area. The cancer plan has been developed to set out the organisation's strategic direction and planned developments for cancer services over the next three years, and is built on the achievements made during the course of the previous 2005 to 2010 cancer plan. The 2010 to 2013 cancer plan provides highlights of the improvements and investment made to services and facilities over the last 5 years.

Successful delivery of the NHSGGC Cancer Plan 2010 to 2013 will be achieved through the continuing efforts of our staff, working in all disciplines and specialties, and by continuing to work in partnership with patients, families and carers. In addition, we will continue to develop partnership working with partners in primary, secondary and community care settings, with voluntary sector agencies, and through our collaborative planning arrangements at national, regional and local level.

**In line with the delivery of Better Cancer Care, the key objectives of the NHSGGC Cancer Plan are to:**

- **Improve the health of the population through cancer prevention and screening programmes, and by supporting empowering individuals to make informed choices about their health, health outcomes and lifestyle**
- **Tackle inequalities in health; targeting those most vulnerable and at risk of having poor health outcomes and of developing cancer**
- **Develop and deliver safe, sustainable and affordable services within a culture of integration, and through service redesign**
- **Improve access, including equity of access, for local and regional services**
- **Deliver cancer access targets**
- **Improve quality outcomes and survivorship within an environment of continuous quality improvement**

As a priority, NHSGGC will continue to drive forward the delivery of the two new challenging targets identified in Better Cancer Care; by December 2011 implement a 62 days from referral to treatment for any patient urgently referred with a suspicion of cancer, or through a national screening programme, and for 31 days from decision to treat to treatment for all cancer patients, whatever their route of referral.

There are several challenges facing the organisation, not least ensuring cancer services continue to be developed to the highest quality standards within a climate of finite resources. NHSGGC will face that challenge by continuing to develop its cancer agenda in a framework of quality, effective and safe services, and for efficiency, make the best use of available resources to keep pace with 21<sup>st</sup> century care.

***Jonathan R Best - Chair  
NHS Greater Glasgow & Clyde  
Cancer Services Steering Group  
June 2010***



## Population Health Context

The population of NHS GGC faces significant and changing health problems. It has shorter life expectancy than the rest of Scotland, and is marked by higher levels of deprivation with its associated impact on health. Health inequalities are increasing, and obesity and alcohol consumption are increasing problems. The population is ageing, but this is happening at different rates. Despite much progress over recent years NHS GGC still faces significant health challenges as social disparities and poverty continue to impact on its population. NHS GGC continues to experience some of the widest variations in health between affluent and poor in society, which NHS GGC will continue to seek to address if improvements are to be made to the overall health of the population. The inequalities and poor health in our population drive high levels of hospital admissions, GP consultations and the use of a wide range of other services, with particular pressures in emergency care services.

An increase in patients living with cancer will also create challenges for access to services, in addressing wider inequalities issues, and in the way we deliver cancer services. Given the complex inequalities issues, together with increasing demand for services, there are significant implications for healthcare resources. The context of NHS GGC's population's health status in relation to cancer incidence and mortality rates relating to the top 4 cancers; Lung, Colon, Breast and Prostate Cancer, as well as Cancer Incidence (2006) and Mortality (2008) by CHCP, is demonstrated in **Appendix 1**. *(Note: As part of the continuing review of the cancer plan, incidence and mortality rates will be updated when validated releases of data become available. See also Section 2 of the Cancer plan, and the NHS GGC Director of Public Health Report – An Unequal Struggle for Health 2009-2011).*

Removing discrimination caused by social class, gender, disability, race, sexual orientation, age and faith, tackling health inequality (the health gap) and responding effectively to the needs of marginalised groups is part of NHS GGC's core business. NHS GGC aims to create an **Inequalities Sensitive Health Service (ISHS)**. There are a range of health policy and legal requirements with which the organisation is required to be compliant and these are reflected in the **NHS GGC Equality Scheme 2010-13**. An Equality Impact Assessment (EQIA) is a vital part of NHS GGC's overall approach to dealing with inequalities and discrimination. It means that services, policies and projects are thought about carefully in terms of their likely impact on different groups of people and on the various aspects of inequality. The EQIA process ensures that this impact is analysed so that any negative effects on inequality and groups can be reduced and any opportunities for promoting equality can be maximised. The NHS GGC Cancer Plan has been Equality Impact Assessed.

## Cancer Planning Processes

In 2008 NHS GGC established a multi-disciplinary **Cancer Services Steering Group (CSSG)** to lead and oversee the direction, development and implementation of the organisation's cancer agenda. In 2009, as well as developing the Cancer Plan, the CSSG led the development of a Corporate Planning Framework for Cancer Services. This was done in tandem with a set of planning frameworks developed across the organisation, including a **Framework for Acute Services, Primary Care Services**, and a **Framework for Long Term Conditions**. The key outcomes of the cancer planning framework are incorporated in the NHS GGC Cancer Plan 2010 to 2013. The CSSG established a CHCP/Primary Care Interface Group to reflect the importance of facilitating a shared agenda and integration of care between primary and secondary care providers to improve services for patients. Other significant groups established include a Clinical Leads Sub-Group and a Quality and Improvement Sub-Group. **Appendix 2** provides a chart showing the full structure of the CSSG.

## Clinical Leadership of the Cancer Agenda

Clinical leadership is key to driving forward service quality, change and best practice. The CSSG Clinical Leads Sub-Group established to reflect the key role of clinicians in leading the development and implementation of the cancer agenda. The sub-group works in tandem with the Quality and Improvement Sub Group, ensuring both groups work consistently, and to ensure good communications between the groups. The Clinical Leads work plan currently targets the following key areas of action in the cancer agenda:

- Lead development and implementation of NHSGGC's Cancer Plan 2010 to 2013
- Ongoing implementation of **Scottish Referral Guidelines/Cancer Pathways** (2007/ 2009)
- Effective delivery of cancer waiting time/access targets
- Compliance with the **Management of Core Cancer Services in Scotland**, NHS Quality Improvement Scotland (NHS QIS) (2008)
- Compliance with **NHSGGC Clinical Guideline** Framework: supporting good clinical governance, clinical safety and for quality assurance
- Continued implementation of **FRMC Report** recommendations
- Service Redesign, for sustainability and access, and effective and efficient services
- Better Outcomes for Patients, and enhanced communications and information sharing for staff and for patients and carers

## Quality and Improvement

A Quality and Improvement Sub-Group was set up to reflect the 6 areas for quality improvement identified in **Better Health Better Care (2008)**. These are: **Effective, Safe, Patient Centred, Timely, Efficient and Equitable** services. By 2010, all of Scotland's tumour-specific networks will take part in national audit that will enable an ongoing programme of improvements to clinical practice, based on national indicators which allow benchmarking against other countries' approaches. The Quality and Improvement Group's work plan is underpinned by the **Healthcare Quality Strategy for NHS Scotland (2010)**, and includes focus on the following key areas of action:

- Development and implementation of the Cancer Plan 2010 to 2013, including aligning with the national work of the **Scottish Cancer Taskforce Sub Group**, the **Living with Cancer Group**.
- Effectiveness of cancer services, and the cancer audit reporting governance framework.
- Monitoring complaints and incidents to identify recurring themes and trends for quality improvement in cancer care.
- Data quality and consistency - case ascertainment, data including new datasets, follow up date and referral data, patient safety data, and efficiency of data collection process.
- Screening and Prevention, including review of the uptake of national screening programmes.
- Supporting health improvement teams to improve lifestyles (smoking cessation, physical activity, dietary improvement, alcohol consumption) by identifying **reachable moments** to promote health behaviour change in order to reduce the incidence of cancers.
- A review cancer nurse led clinics in NHSGGC.
- Risk monitoring exception reports for cancer related risks. In addition, monitoring medicines.
- Overseeing the **Better Together Patient Experience Cancer Pilot** programme.
- Looking at ways to enhance patient involvement.

The NHSGGC Cancer Plan 2010-2013, is available to the public by accessing: the organisation's web page: <http://www.nhsggc.org.uk> and staff can also access the document on the NHSGGC Staff net Cancer Services Page: <http://staffnet/Acute/Division+Wide+Services/Cancer+Services/>

## 2 Population Health

For Scotland as a whole, **Better Cancer Care** describes that projections show the number of people diagnosed with cancer is likely to rise to nearly 35,000 per annum between 2016 and 2020. This compares to around 30,000 patients per year between 2006 and 2010, reflecting the impact of Scotland's ageing population as well as improvements in diagnosis.

Better access and better treatments mean that more people will be living longer after their cancer diagnosis. There is therefore a need to ensure that appropriate rehabilitation and support services are in place in community and primary care settings to support cancer patients, including for their carers and families, and to tackle persistent levels of inequality.

People living in deprived areas are more likely to be diagnosed with cancer and have a higher death rate than those who live in more affluent areas. See also the **NHSGGC Report of the Director of Public Health – An Unequal Struggle for Health 2009 – 2011**, which is available on request, and from the NHSGGC web site.

Circumstantial factors, such as poverty and unemployment, play an important role in contributing to non-participation in cancer screening programmes, the late presentation of cancer-related symptoms and the increased risk of getting cancer, together with poorer treatment outcomes. Self-care is fundamental in the management of long term conditions and is a core element of cancer care.

NHSGGC continues to experience some of the widest variations in health between affluent and poor in society which we must continue to seek to address if improvements are to be made to the overall health of the population.

The inequalities and poor health in our population drive high levels of hospital admissions, GP consultations and the use of a wide range of other services, with particular pressures in emergency care services.

**Appendix 1** of the Cancer Plan provides incidence and mortality rates for NHSGGC's population, relating to the top 4 cancers; Lung, Colon, Breast and Prostate Cancer, as well as Cancer Incidence (2006) and Mortality (2008) by CHCP.

As part of the process to review and update the Cancer Plan, incidence and mortality rates will be updated when validated data becomes available.

## Health Inequalities

For cancer services, there is significant evidence to show that in every stage of provision, from prevention programmes to palliative care, an inequalities-sensitive approach will result in better health outcomes for our patients and reduce health inequalities. NHSGGC is fully committed to promoting equality and diversity.

The organisation's planning priorities reflect the explicit identification of how equality is to be integrated in relation to its overarching corporate themes. **Equality Impact Assessments (EQIAs)** are a core part of the addressing equality issues process, and these identify existing good practice and address areas that require improvements.

A literature review, Colorectal (Bowel) Cancer - Review of Inequalities in Screening and Treatment, 2009, **Appendix 3** was undertaken to inform inequalities sensitive practice in cancer treatment services and this identified discreet aspects of inequality associated with:

<b>Age</b> <b>Ethnicity</b> <b>Poverty</b> <b>Health literacy</b>	<b>Disability</b> <b>Gender</b> <b>Faith</b> <b>End of life care</b>
--	---

**Equally Well**, the Scottish Government's Report of the Ministerial Task Force on Health Inequalities (2008), highlights that while Scotland's health is improving rapidly, it is not improving fast enough for the poorest sections of Scotland's society, and that health inequalities remain a major challenge.

Improving health and addressing inequalities in health is influential in developing the organisation's cancer plan, including shaping its services, pathways of care, service redesign programmes, workforce planning, and in its capital building and design programmes.

Cancer is a significant cause of premature death in Scotland. In 2006 there were almost 27,000 diagnoses of cancer in Scotland and in 2007 there were 15,000 cancer deaths. Cancer incidence is projected to rise to nearly 35,000 per annum between 2016 and 2020. Based on current incidence rates, 1 in 3 people in Scotland will develop some form of cancer in their lifetime which is increasing. However, cancer survival rates are getting better, due in part to screening programs (See also **NHSGGC Public Health Screening Annual Report 2008/09**), early detection and new advances in treatments. Because of this, prevalence of cancer is also increasing.

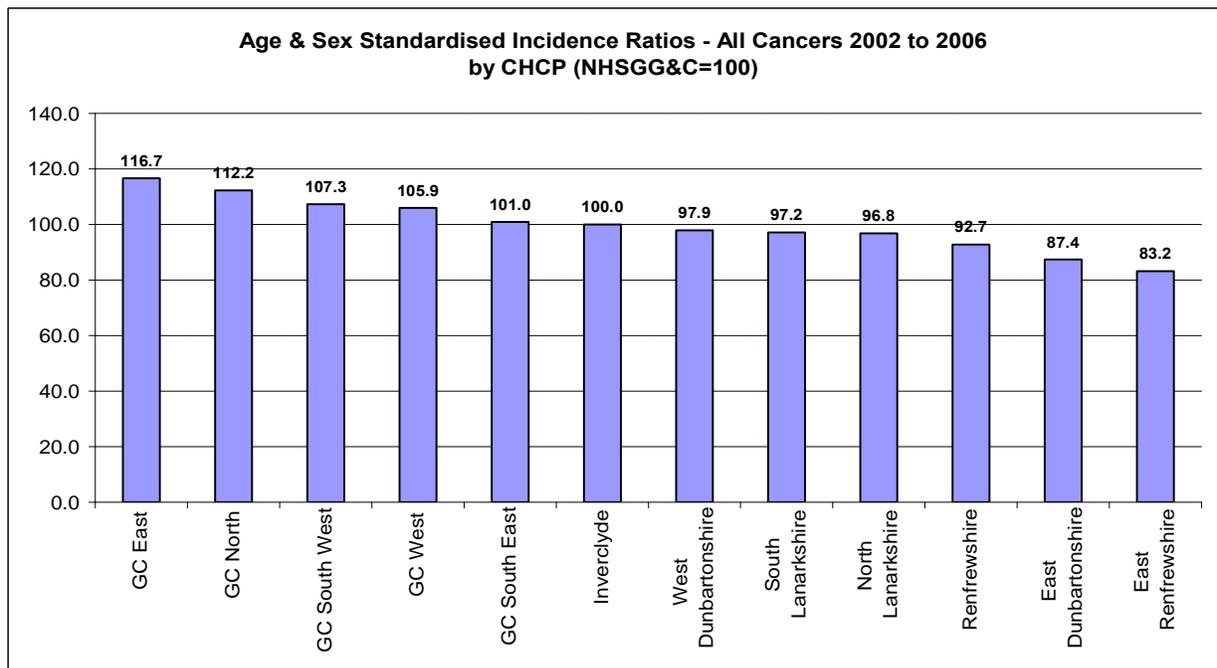
It is estimated that 2% males and 3% females in Scotland are living with cancer. Cancer is recognised as a long term condition and the need for health improvement opportunities throughout a patient's journey of care should not be underestimated.

The risk factors vary for different tumour sites. However there is often an increase in risk associated with people who are overweight or obese and with the following lifestyles:

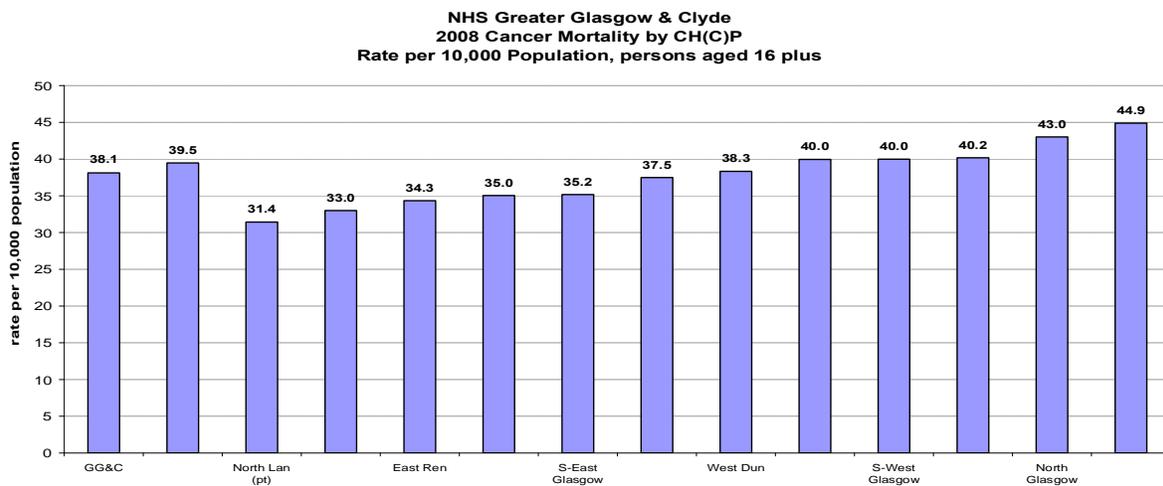
- High levels of alcohol consumption
- Diets low in fruit and vegetables and fibre / high in fat
- Smoking
- Low levels of physical activity

Four out of five cancers have the potential to be prevented. While, the importance of lifestyle issues are accepted, it is also acknowledged that life circumstances such as socio-economic status, social isolation, educational attainment and health literacy are influential in determining morbidity and mortality. Individuals and communities therefore need to be supported to make healthier choices and address wider health determinants.

Table 1 provides standardised incidence rates for all cancers by CHCP 2002 to 2006.



The NHSGGC area includes communities that are at opposite ends of the spectrum of good and poor health. The populations range from approximately 170,000 in Renfrewshire to 82,000 in Inverclyde. In addition, cancer mortality rates by CHCP demonstrate higher levels of mortality in the most deprived populations. Table 2 demonstrates mortality by CHCP area:



### 3 Achievements and Improvements to Services and Facilities

As stated in the introduction, NHSGGC is a large, complex organisation, and is the largest Health Board in the UK. As part of the organisation's ongoing programme to improve services and care for cancer patients, a significant number of improvements have been made to services delivered in primary, secondary, and community settings, including major improvements to the facilities where services are delivered. This section of the Cancer Plan highlights examples of key achievements made in specific service areas of cancer care by staff in acute, and primary/community services over the last 5 years:

- The modernisation of treatment and care pathways for cancer patients means that many patients can more appropriately receive their treatments and care without the need to be admitted to hospital. Creating the right environment for this has been provided for example in the modern facilities provided by the opening of two new hospitals with state of the art day care and out-patient facilities, at the New Victoria and Stobhill Hospitals.
- A major improvement for non-surgical treatment of patients with cancer was achieved by the opening of an £83m West of Scotland Beatson Oncology Centre (BOC) in 2007, which serves a population of 2.8m people. In addition, a further, £9.8m was invested for a PET CT scanner, and £11.9m of investment has been made in staff and facilities at the centre. Of note, a second PET CT scanner has been funded in 2010 and will be put into operation from 2011.
- Implementation of the Patient Management System (PMS), and the E-Referral programme to manage and track GP referrals to services for diagnosis and treatment; thereby speeding up access to services for patients and reducing patient waiting times. In addition, in 2009 the SCI Gateway electronic referral templates were updated to include the priority of urgent suspicion of cancer+option for urgent referrals, and work is ongoing to align and combine the templates with the Scottish Referral Guidelines for cancer.
- In 2009, an in-house HI&T system was successfully designed and developed to support the management of Multi-disciplinary Teams (MDTs) and piloted in some service areas. The system supports compliance with NHS QIS standards for Cancer, and will be refined and rolled out to clinical services in 2010. The potential to roll out the system to West of Scotland MDTs is to be explored.
- A significant HI&T achievement to cancer care is the Cancer Waiting Times Management and Reporting System (CWT) which was developed and successfully implemented across NHSGGC, replacing multiple legacy systems with a single system supporting services for patient treatment and care. As with the MDT IT system, the potential to implement this across the West of Scotland services, to support standardised systems, will be explored with West of Scotland Boards.
- Significantly, NHSGGC has continued to deliver and exceed, in some areas, the 95% cancer waiting times access target. This has been achieved by working with staff and partners across care boundaries to improve patient pathways, by investment of time and resource in the waiting times processes (including the CWT electronic tracking system), and having staff specifically dedicated to tracking patients through their journey of referral, diagnosis and to treatment.

## CHCPs and Primary Care Services

CHCP achievements include the development of local palliative care action plans, and the implementation of the **Liverpool Care Pathway**. To promote healthier lifestyle and target underlying causes of poor health CHCPs established **Eat Up** and **Healthy Eating** projects. In addition, selected CHCP areas launched local **Keep Well** programmes across identified GP practices targeting patients from deprived areas. The Keep Well areas have also enhanced the **Live Active Referral Scheme** into a health model. This means that it now includes other lifestyle behaviour change information as well as physical activity. In addition, enhanced local specialist smoking cessation services were established, and the roll out of a pharmacy stop smoking service was completed. The **Equally Well** national test site for tobacco control was also implemented. Additional achievements include:

- Maximising preventative ill health opportunities through improved planning arrangements with Health Improvement in CHCPs.
- A partnership developed with the **Macmillan Organisation** to host and manage an income maximisation service for people diagnosed with cancer from across the whole of Glasgow.
- Piloted out of hours service, allowing patients in the end stages of their lives to bypass NHS 24 and to contact local nursing staff who provide advice or arrange for an appropriate professional to visit the patient in their homes.
- Developing GP direct access to a number of imaging modalities, including ultrasound.
- The delivery of the HPV Immunisation Programme.
- The introduction of protected learning events to advance staff knowledge, including cancer and palliative care.
- The development and implementation of IT solutions in support of the Keep Well Programme.

## Acute Services

This section highlights some of the many achievements made by acute service specialties:

### Colorectal Cancer

A reorganisation of consultant posts improved access and capacity across the system, increasing availability of Colorectal Specialists across NHS GGC; increasing provision in hospitals and increasing capacity for colonoscopy. In addition, increased Laparoscopic cancer care provision was achieved. An additional consultant post in Sarcoma/Colorectal cancer management was established. During 2005/07 a multi-disciplinary working approach was established to enable patients to be treated closer to home. For example, Lanarkshire patients no longer require to travel to Glasgow to receive their chemotherapy treatment. In addition, the introduction of Nurse Led vetting and direct triage of referral for colonoscopy and sigmoidoscopy has improved delivery of patient flows through the care pathway. Other key achievements include:

- Early implementation of the Bowel Screening Programme.
- Increased laparoscopic cancer care delivered and high definition Laparoscopic camera stacks purchased to enhance operative management.
- Introduction of Endoscopic Ultrasound Services (EUS), with additional EUS sessions for diagnostic and treatments increased.
- New endoscopy facilities introduced at Southern General Hospital and Stobhill Hospital. Increased endoscopy capacity introduced at other sites via evening and weekend sessions, with increased nurse specialist provision in the South and Clyde sectors. Additional nurse endoscopists have been trained in colonoscopy via **NHS Education Scotland (NES)** Endoscopy Workforce programme.

- Funding secured to recruit to a Palliative Care Nurse Specialist post.

#### Upper Gastro-Intestinal (GI)/Gastrointestinal Oncology

A significant redesign of service during 2005 to 2007 saw the centralisation of all major Upper GI resection surgery delivered from one site at the Glasgow Royal Infirmary, with regular palliation services maintained in Gartnavel General Hospital and the Victoria Infirmary hospitals.

- Three new consultants joined the Gastro-Intestinal oncology team during the period 2005/2007, covering upper GI in Lanarkshire, colorectal in Forth Valley and rectal cancer in Inverclyde respectively. A consultant appointment was made in 2009 with an interest in benign upper GI surgery and palliation of malignancy, and an Upper GI Cancer Nurse Specialist was also appointed in 2009.
- The radiotherapy system for GI patients has been improved since moving to the BOC and the team is exploring the development of a High Dose Rate (HDR) brachytherapy service for oesophageal and rectal cancers.
- A Capecitabine chemotherapy clinic has been developed into a nurse/pharmacy led service, and a Xelox clinic has also been introduced.
- Pre-assessment for chemotherapy patients at the BOC has resulted in much shorter stays for patients having chemotherapy and much more efficient use of resources.
- Development of stenting service for patients presenting with upper GI cancers.

#### Urological Cancer

The urology service achieved expansion of laparoscopic nephrectomy capacity, with an additional consultant trained in procedure, and additional equipment obtained for the service. In 2006 a Cancer Nurse Specialist/Nurse Cystoscopist appointment was made which established a nurse led, protocol driven, service for bladder cancer surveillance patients, who have a low risk of recurrence. In addition:

- The Scottish Prostate Cryotherapy Service was established in November 2008, based within the Urology Department, Gartnavel General Hospital. Prostate cryotherapy is an optional second line treatment for patients who have recurrent prostate cancer following initial treatment of radiotherapy and/or hormone treatment. Referrals to the Cryotherapy Service are accepted from all Scottish NHS Boards.
- A number of developments were undertaken to improve the patient's pathway, for the timeliness of patients presenting with symptoms relating to cancer. This included nurse-led triage of referrals, triage direct to investigation, where appropriate.
- Redesign of the MDT arrangements saw the merging of individual suite-based MDTs, including the appointment of a co-ordinator post, which has improved management and administration of MDT meetings and has supported more effective and efficient use of clinical time.

Pump-prime funding for 3 years was secured to enable an appointment of a Macmillan Nurse Specialist for the service, with responsibility for the co-ordination of care and support to improve the patient's pathway.

Specialist clinics have been introduced to improve pathways of care for patients, e.g. prostate cancer clinics. Clinical Nurse Specialist resource has also been increased. Equipment for the service has also been updated, with additional ureteroscopes, aparoscopic stack (for laparoscopic nephrectomies, consumables for National Cryotherapy Service, equipment lease for National Cryotherapy Service and Transrectal ultrasound machines obtained.

## Lung Cancer

Within NHSGGC there has been a significant investment in patient trackers and a direct referral service from radiology, as well as a fast track referral system from primary care for patients with suspected lung cancer. Rapid access to CT scanning has been improved and significant investment has allowed the expansion of Endobronchial Ultrasound with all patients now having access to this important staging technique where appropriate.

A major service redesign took place amalgamating the Southern General and Victoria Hospitals. These now run as one service from the MDT meeting through treatment and subsequent patient follow up. Other significant service developments are the introduction of navigational bronchoscopy at Glasgow Royal Infirmary for the investigation of peripheral lung masses and the expansion of (medical) thoracoscopy across the region. The service continues to increase its participation in cancer trials.

- In NHSGGC, six new consultant clinical oncology appointments were made during 2005/07.
- In addition 2 radiographers with a specialist interest are increasingly involved in smoothing the planning process and in developments to improve the service.
- An important appointment to the team during 2005 to 2007 was the appointment of a Research Fellow dedicated to exploring the potential for implementation of Imaged Guided Radiotherapy Treatment (IGRT) to increase dose to the tumour, and reduce dose to normal tissues.
- A Clinical Nurse Specialist on the team plays a vital role in the management and monitoring of lung cancer patients within the department, especially during their radiotherapy treatment.

A major piece of work to ensure protocolisation of all chemotherapy and radiotherapy regimens was completed, and as such practice is both up to date, and compliant with relevant Good Clinical Practice documents such as IRMER and HDL 29 (2005). Because of the important advances in research and service provision in lung cancer radiotherapy, CHART has been established as the standard option for the radical treatment of early lung cancer. Almost all radiotherapy for lung cancer, including palliative treatments, is planned with CT simulation to more accurately localise the radiation field. In addition, through the purchase of new equipment to allow delivery of intra-bronchial brachytherapy links with respiratory physicians has enabled the team to develop a service (primarily palliative in the initial stages).

## Breast Cancer

There has been expansion of sentinel lymph node biopsy provision across several sites in NHSGGC, and immediate reconstruction provision increased. Day case services have been established, including the transfer of services to the new hospitals at Stobhill and the Victoria. Additional equipment for Sentinel lymph node biopsy has been obtained for South Glasgow and Clyde.

## Gynaecological Cancer

The development of a Telemedicine service to support the Managed Clinical Network (MCN) for Gynaecological Cancer in the West of Scotland has successfully led to the service being considered as a role model with regular visits from many centres in the United Kingdom and from overseas. Successful integration of HDR brachytherapy into clinical practice, with a consequent review and revision of clinical practices for all gynaecological cancers has enhanced the existing well established tradition of protocol based treatment for these types of tumours. Chemoradiotherapy is the standard of care for all locally advanced cases of cervix cancer. The

team are involved in the EORTC Trials of chemoradiation versus neo-adjuvant chemotherapy followed by surgery for this type of cancer.

A business case for a specialist ovarian cancer surgery model was successfully approved and awarded funding by the Regional Cancer Advisory Group (RCAG). The service standardises specialist surgery for ovarian cancer and complies with NHS QIS standards for the treatment of ovarian cancer; putting in place equity of access for women in the West of Scotland who require highly specialised surgery. Implementation plans were also developed for full operational roll out from 2010.

#### Skin Cancer

Establishment of a skin cancer Multi-disciplinary Team (MDT) was achieved with regional and local MCNs. The service increased its consultant numbers with the appointment of three new Consultant posts, and the appointment of a skin cancer CNS. As well as one stop SCS clinics, specialist skin cancer clinics are undertaken for MFU, Lymphoma, and MMS. At a national level, the service has contributed to parts of private members bill on sun beds within new public health bill 2009. Key improvement will include the banning of the use of coin operated sun beds for under 18 year olds.

The melanoma oncology service has significantly developed over the last few years following the appointment of an additional consultant medical oncologist to support the melanoma service, adding to the existing honorary consultant medical oncologist and input from a number of consultant clinical oncologists. In addition, a significant development has been the appointment of a part-time clinical nurse specialist. Patients from across the West of Scotland are discussed within a fortnightly MDT meeting, and managed in specialist clinics.

#### Sarcoma

In addition to the oncology service delivered for sarcoma, there are orthopaedic oncology surgeons, plastic surgery, abdominal, thoracic and vascular (ILP) surgery input into the MCN for Sarcoma in WoSCAN. There are two radiologists with expertise in sarcoma radiology who attend the weekly MDT, and there are also additional weekly meetings with the orthopaedic surgeons to assist with planning (and performing) biopsies, staging investigations and pre surgical assessment.

Other radiologists are involved in advising and reporting on intra-abdominal, thoracic and head and neck sarcoma. Pathology is double or triple reported (using specialist expertise from Aberdeen and Edinburgh). A second consultant pathologist in Glasgow has been appointed, and specialist palliative medicine input and advice is available. One of the NHSGGC's orthopaedic surgeons has developed a service to manage those cases with solitary bone metastases or fracture (non sarcomatous). This allows the sarcoma team to concentrate on those with true connective tissue tumours.

#### Paediatric Oncology

In addition to the Teenage Cancer Trust Unit beds at the Beatson Oncology Centre (BOC), a new **6-bed Teenage Cancer Trust Unit** opened in the summer of 2009 at the Royal Hospital for Sick Children (RHSC) in Glasgow. A paediatric radiotherapy liaison nurse appointment was also made, to co-ordinate treatment and to provide information to staff and families at the RHSC and Institute of Neurosciences at the Southern General Hospital in Glasgow RHSC. Other achievements include:

- A new Consultant Oncology post was established, and a radiographer post with an interest in paediatrics. All chemotherapy is provided at the RHSC. This now comprises three paediatric oncologists and two haematologists.
- An Associate Specialist post has increased service commitment to transplant patients.
- A Consultant Haematologist was appointed with an interest in adolescents and young adults.
- Participation in national and international trials is undertaken for patients in the paediatric age group. In addition, most Children's Cancer and Leukaemia Group trials are opened through the RHSC service and patients entered as eligible.

Other key achievements of note include:

- £1m has been invested to refurbish Bone Marrow Transplant accommodation and provide additional BMT Specialist nursing.
- £20k recurrent funding invested for a play therapy specialist to reduce general anaesthetic requirements.
- Investment of charity funds to refurbish the Day Care Unit allowing a greater volume of treatment to be delivered as an outpatient and to provide dedicated day care facilities for transplant patients.
- Commencement of CATSCAN and the investment by the unit to allow successful participation at all levels.
- NHS funding was secured for clinical scientists for molecular screening giving greater security to a service which depended on charitable funding.
- Considerable investment has been made for training of Chemotherapy Courses for Nursing Staff. A nurse educator position was created, and a research nurse post was established.

#### Beatson West of Scotland Cancer Oncology Centre (BOC)

As stated previously, a significant achievement was the opening of the new Beatson West of Scotland Cancer Oncology Centre for the delivery of non-surgical cancer care for the West of Scotland. One of the major objectives of the Centre is to provide sustainable Consultant led services across the West of Scotland 52 weeks a year. A programme of work was taken forward throughout 2009 reviewing the placement, and staffing, of all clinics across the region. The aim of this exercise was to provide a planned model of cross cover in the event of leave or other absence. Implementation of the model has commenced and is expected to be complete by the end of 2010.

Other key achievements include:

- In December 2009, the Macmillan Day Case Unit (MDCU) at the BOC was involved in a new scheme to measure quality, which was developed by Macmillan Cancer Support and endorsed by the Department of Health. It was one of 3 Scottish sites along with several cancer units in England. The MDCU successfully achieved the Quality Mark with high scores in all areas and received the award when the scheme was formally launched in London in January 2010.
- Integration of chemotherapy provision has allowed greater synergies between the BOC and the clinical teams providing chemotherapy locally. The aim of the BOC is to continue to provide as much local access as possible for patients.
- A new full 3D planning process for all breast radiotherapy techniques is now available. The service was developed and implemented during 2005 to 2007. This represents a major improvement in the quality of treatment for patients. A second development to boost technique based Virtual Simulation, which was completed in 2008.

- Main achievements in chemotherapy services include the introduction of taxanes, Herceptin® and aromatase inhibitors into routine practice as adjuvant treatments. In addition, in collaboration with colleagues from other Scottish centres, national guidelines for the use of aromatase inhibitors and Herceptin® have been developed. Herceptin® was introduced for adjuvant treatment, following agreement from the four West of Scotland boards fully seven months before the Scottish Medicines Consortium approval of the treatment.
- Significant progress had also been made to implement the FRMC Report recommendations, (adopted by the RCAG 2002) to modernise specialist oncology services provided from the BOC, and on an outreach basis across the region. Some of these achievements are reflected throughout this document. Full details of the FRMC report recommendations and achievements are available on request.
- In relation to Quality Standards for Radiotherapy, the BOC had an IR(ME)R inspection in 2009. The inspection looked at the management level procedures associated with medical exposures. This inspection went well; a further inspection is expected in 2010 to look at departmental level procedures.
- In January 2010, the British Standards Institution inspected the BOC in relation to the prescribing, planning and delivery of radiotherapy and brachytherapy. The centre was awarded ISO 9001:2008. In relation to quality standards for chemotherapy, Following successful completion of HDL compliance programme in NHSGGC, the BOC is contributing to the regional HDL compliance programme.

#### Genito-Urinary Oncology

A prostate brachytherapy programme is now fully established, with the BOC being recognised as the UK centre for training of new centres in the technique. Chemotherapy continues to be delivered both at the BOC and in peripheral clinics. Protocols for the treatment of hormone refractory prostate cancer have changed significantly. With the recognition of the benefits of docetaxel this drug has been adopted as a first line off-study agent replacing the previously acknowledged first line agent mitoxantrone. Successful introduction of zoledronic acid in subsets of patients has been achieved according to the local protocol.

In metastatic disease the protocol has been changed to allow the combination of cisplatin and gemcitabine as first line therapy in keeping with published clinical trial data. There is increasing use of the new drug combination in the neo-adjuvant setting prior to either radical radiotherapy or radical cystectomy according to Multidisciplinary Team discussions. This has evolved due to the 5% survival benefit expected for such treatment. Image-guided techniques have been developed and development of cone beam CT for localisation and on-line treatment verification/alteration is underway.

#### Renal Oncology

A significant achievement for renal services was the establishment of a multidisciplinary clinic registering patients from all over the West of Scotland. This clinic is attended by surgical, medical and clinical oncologists with direct input from palliative care physicians to provide state of the art multimodality care, and the development of molecular drugs at all levels from phase 1 to phase 3.

## Head & Neck Oncology

For radiotherapy a full 3D planning system has been introduced. The team has continued to make the facility of IMRT available to patients with head and neck cancer. There have been important developments in the use of chemotherapy in the management of patients with head and neck cancer. Cetuximab was introduced as an agent that improves overall survival in those with advanced disease receiving radiotherapy alone, without increasing morbidity.

## Neuro-Oncology

The neuro-oncology team undertook a major redesign of service during 2005/07 leading to the expansion in the range and quality of services delivered. A second consultant was also appointed. A fully constituted MDT was established, and a review of patients with suspected brain tumour to peripheral hospitals service in the catchment area was put in place serving patients in NHSGGC and throughout the West of Scotland.

- A fully supported new patient clinic replaced the previous practice of ward review with important benefits to patients and their relatives. The frequency of the joint glioma clinic with the specialist oncology neuro-surgeon doubled to twice per month offering improved service particularly to patients with lower grade brain tumours who need long term surveillance.
- Following Scottish Medicines Committee (SMC) approval of concomitant chemo-radiotherapy for high grade brain tumours, a comprehensive and safe service was established for all patients eligible for this treatment. A clinical nurse specialist was appointed and runs an independent clinic with consultant staff in an adjacent clinic providing all other chemotherapy indications.
- Innovations introduced during 2005/07 included, the use of single fraction stereotactic radiosurgery, mainly for brain metastases, and fractionated stereotactic radiotherapy for a range of tumours requiring accurate localization.
- Through links developed with neuropathology, collaboration on the development of molecular diagnostics for brain tumours has resulted in routinely offering 1p,19Q analysis for any patient whose tumour contains an oligodendroglioma component. An assay has been developed for the methylated promoter of the MGMT gene.

## Oncology Specialist Palliative Care (OSPC)

A fourth consultant was appointed to the service in January 2007. The team has also been enhanced by the appointment of 2 clinical nurse specialists in Palliative Care, including funding for an advanced level clinical nurse specialist post providing supportive care to young adults with cancer.

- After a successful pilot, the Liverpool Care Pathway for care of the dying was launched in the BOC in March 2006 and is now an integral part of end of life care in the BOC.
- Redesign and launch of the Beatson Pain Assessment Tool was achieved in 2006.
- The Palliative Care Manual was updated in 2007 and is available in all ward areas, outpatients and radiotherapy department as a resource for staff. It is available online.

- The OSPC team have been integral in education for and role out of the McKinley syringe driver pumps, which were introduced at the Beatson in autumn 2007.
- Development of a Glasgow-wide intrathecal service for cancer patients with pain that is refractory to standard measures.

### Haemato-Oncology

The re-configuration of service provision for patients has allowed the team to develop disease specific clinics and for a number of Consultants to be in the one clinic sharing knowledge and expertise.

In particular it has allowed the team to put in place a clinic for patients who have had significant exposure to chemotherapy and radiotherapy and are now cured. This is designed to monitor for and aid in treatment of the late effects these treatments can cause. The team continue to provide out-patient clinics for some haemato-oncology patients at Glasgow Royal Infirmary and Stobhill Hospital who do not require specialist nurses and clinical trial support.

- Day care facilities at the Victoria Infirmary Glasgow were relocated to put in place major improvements to the quality of care provided for patients. Services were also co-located on the BOC site, with Clinical Apheresis, day-care, and out-patients.
- The adult allogeneic bone marrow transplant programme originally based at GRI, and which moved to the BOC in March 2008, was given recognition and funding as the national centre providing transplant for adult patients requiring alternative donor sources, e.g. cord blood, volunteer unrelated donors.

## 4 STRATEGIC PRIORITIES

The planning and delivery of cancer services for NHSGGC's population is complex and challenging, and ranges from prevention, referral to diagnosis, treatment, care, after care, to supported self care. It is widely recognised that the earlier cancer is diagnosed, the better the chance of a cure. NHSGGC is continually taking steps to improve information to patients and the public in order that the population has a better understanding of lifestyle factors over which they can control and which will influence the likelihood of developing cancer. The key aims of the NHSGGC Cancer Plan are to:

- **Improve the health of the population through cancer prevention and screening programmes, and by supporting empowering individuals to make informed choices about their health, health outcomes and lifestyle**
- **Tackle inequalities in health; targeting those most vulnerable and at risk of having poor health outcomes and of developing cancer**
- **Develop and deliver safe, sustainable and affordable services within a culture of integrating services, and through service improvement and redesign**
- **Improve access, including equity of access, for local and regional services**
- **Deliver cancer access targets**
- **Improve quality outcomes and survivorship within an environment of continuous quality improvement**

The following **Sections 4 to 9** of the Cancer Plan highlight key planned improvements for each of these objectives.

These sections set out the key planned developments by service specialties in acute, primary and the community, and focus on 6 key areas of improving health outcomes:

1	The incidence of cancer among the population is reduced through primary prevention including, by improved public awareness of cancer risk, improved population lifestyles, i.e. better diet, increasing exercise, reducing alcohol intake and reduced smoking.
2	Patients' survival rates and quality of life are improved by detecting cancer as early as possible, including improved public awareness about symptoms
3	Patients with cancer have equity of access and improved access to services in the right place at the right time; for local and WoS/regional services, with timely information, diagnosis, treatment, and for rehabilitation services.
4	Patients with cancer have improved access to palliative care at the right time and in the right setting, and that services meet or surpass the national standards
5	Patients with cancer experience high quality services which are safe, effective and efficient, by putting effective planning systems in place, ensuring clinical audits are undertaken and acted upon, and service sustainability plans are in place.
6	Cancer health inequalities between deprived and non-deprived population are identified and reduced

## 5 PREVENTION

**Equally Well**, (referred to in **Section 2** Population Health), highlights that while Scotland's health is improving rapidly, it is not improving fast enough for the poorest sections of Scotland's society, and that health inequalities remain a major challenge.

The **West of Scotland Cancer Surveillance Unit** has had a longstanding role in describing determinants of cancer incidence and survival. In 2008, it began a programme of work using the extensive audit data gathered as part of MCN working. Audit data for colorectal, lung and ovarian cancers have been linked to the Scottish Cancer Registry data, which are also linked to all hospital admission and deaths data from 1980 onwards. The relationships between cancer stage, patient characteristics (including socio-economic circumstances), treatment and survival can therefore be described.

During 2010-2013 the unit plans to complete its analysis of colorectal, lung and ovarian cancers. Work will also begin on new cancer topics. The Unit has several other projects that will continue into 2013, including an analysis of primary care cancer referrals, using data gathered as part of the Enhanced Service, will indicate the effectiveness of primary care in identifying new cancers and referring them for investigation and treatment. A report on long term survival in breast cancer patients taking hormone replacement therapy, and extend our work on socio-economic variations in survival among non-Hodgkin's lymphoma patients will also be completed.

As treatment and survival improve, there has been interest in interventions to reduce both recurrence and new primary cancers amongst survivors. The unit is collaborating with a number of colorectal cancer surgeons and with the University of Stirling in a study on health-related behaviour change following the diagnosis of colorectal cancer; these results may help broaden understanding where health promotion services might be efficiently targeted at patients who have undergone successful cancer treatment.

The work of the West of Scotland Cancer Surveillance Unit in 2010-13 will therefore contribute to greater understanding of primary prevention of cancer and to quality improvement in NHS cancer services.

### Smoking

Smoking is a significant public health challenge for NHSGGC, which has the highest smoking rates of any NHS area in Scotland, and where smoking remains the primary cause of preventable death and ill health. However, adult smoking rates have fallen considerably in the past 30 years.

- The Greater Glasgow and Clyde area contains communities where levels of smoking are much lower and much higher than the Scottish average. Smoking is becoming concentrated in the poorest households and in socially excluded groups such as prisoners and homeless people.
- The most recent figures indicate that 8 in 10 (78%) prisoners smoke and prevalence rates estimated at 62% for the homeless population in Glasgow city. Tobacco use is the main cause of lung cancer accounting for at least 90% of cases in high incidence populations. Approximately 33% of all cancer deaths and 90% of all lung cancer deaths are due to smoking.

- NHSGGC has adopted a comprehensive tobacco programme focusing on a combination of approaches including prevention, cessation and protection from second hand smoke in line with national guidance and with the intention to reduce smoking prevalence.

These include:

- Provide effective stop smoking services (including pharmacotherapy) across a range of settings including maternity, mental health, community, pharmacy and hospital in- patients.
- Deliver a programme of Health education and promotion to reduce uptake of smoking delivered in primary and secondary schools across all NHSGGC.
- Develop a Board-wide programme to reduce children's exposure to second hand smoke in the home.
- Adopt a strategic approach to tobacco control through the development of local tobacco strategies and action plans across local authority areas in each CHCP.
- Support health promotion activities across NHSGGC during mouth cancer awareness week.

### Alcohol

Alcohol and tobacco remain the major factors in head and neck cancers. In order to reduce the harm associated with hazardous drinking and reduce the prevalence of alcohol related morbidity and mortality we will:

- Deliver the HEAT target for Alcohol Screening and Brief Interventions within primary care, community, pharmacy and acute settings.
- Implement the Acute Addiction plan, revised in 2009/10 to extend the focus of work to include brief intervention and reflect NHSGGC-wide Alcohol Liaison support.
- Identify and address the needs of specific groups through targeted action e.g. development of Older People and Alcohol action plan.
- Target NHSGGC and Glasgow City Council Staff to adopt safe alcohol use through awareness raising activity.
- Develop Prevention and Education action plans with all of NHSGGC CHCPs.

### Physical Activity

Physical activity can protect against bowel, breast and lung cancer and can assist in the prevention of obesity as well as enhancing good mental health and well-being. There are a number of initiatives being developed and implemented with our partners to improve physical activity uptake in our population, including for our employees. Local Authorities are developing local physical activity strategies, which set out to encourage concerted and co-ordinated action that will result in an increase of the levels of physical activity within the population, particularly targeting those least active, through six dedicated programmes. In addition NHSGGC is taking forward:

- Delivery of the **Live Active: Exercise Referral Programme**.
- Community based rehabilitation and therapeutic exercise (Vitality) programmes supporting inactive patients to become physically active.
- Implementing **Paths to Health** initiative to support walking within Glasgow.
- Developing an action plan to increase physical activity opportunities for priority groups e.g. people with learning disabilities.
- Delivering the **Play@Home** pre-five physical activity programme in conjunction with CHCPs and voluntary sector agencies.

## Diet

The Committee of Medical Aspects of Food and Nutrition Policy (COMA) 1998, recommended an increase in the intake of fruit, vegetables and fibre and the avoidance of any increase in the intake of red meat and processed meat, and stated “*Adoption of dietary patterns conforming to these recommendations would be expected to significantly reduce the burden resulting from some of the commonest cancers in the UK*”. In the 10 years since the seminal COMA report dietary improvements in Greater Glasgow and Clyde have been marginal and are further complicated by the increasing prevalence of obesity within the population.

The Glasgow Food and Health Framework (2001-2006) paved the way for concerted multi-agency action on food and health issues, and succeeded in mainstreaming a number of initiatives such as fruit in schools, breakfast clubs, and school meal initiatives. Challenges remain in achieving improvements in the nutritional status of the NHSGGC population, however in order to increase healthy eating on a population basis work is underway in local areas in relation to:

- Deliver community based healthy eating and weight management programmes.
- Develop practical cooking and shopping skills through Community Cooking initiatives and Community Cafes, and promote and supply of fruit and vegetable by social enterprise initiatives and voluntary sector.
- Deliver infant feeding initiatives such as weaning fairs and **Healthy Start**.
- Implement **Healthy Eating Award** schemes and **Healthy Vending Policies**.

## Sun Awareness

The single most important environmental issue relating to cancer is sunlight. Exposure to ultraviolet radiation from sunlight is a major risk factor for skin cancers including malignant melanoma even in a country with Scotland's climate. This risk is particularly high in children.

Recent research has further emphasized the impact of sun bed use and intense exposure to ultraviolet light. We will:

- Support reducing the incidence of skin cancer initiatives by raising awareness of the risk from exposure to ultraviolet radiation.
- Participate in national awareness campaigns within Community Pharmacy, and support programmes of local community events.

## 6 EARLY DETECTION

The earlier cancer is diagnosed, the better the chance of a complete cure. NHSGGC successfully implemented the Scottish Cervical Call/Recall System, the National Colposcopy Information Audit System and implemented a local database to report the invasive cancer audit outcomes. Further work continues to improve early detection with the roll out the bowel screening programme. Developments in breast screening have also facilitated the implementation of a two-view mammography service for patients.

In addition, improvements to the way referrals are managed and vetted, coupled with developments in diagnostic services are making significant improvements for patients by improving access, and speeding up diagnostic processes - see also the **NHSGGC Public Health Research Unit Annual Report (2008/09)**.

There has been a major change in the process of making and handling referrals; making paper referrals from GPs to acute care a thing of the past. The development of HI&T systems to facilitate **Electronic Referrals** has transformed the process for referring patients for consultation, diagnosis and treatment. Significantly, nearly 100% of GP referrals are now made electronically; thereby speeding up the referral process, improving the quality of information provided, and streamlining the patient's pathway of care.

In addition, a project to implement electronic vetting of referrals within acute services environments is ongoing, and will support faster turnaround of vetting, making information on vetting outcomes more readily available for service planning and will provide an update to the referring GP on the outcome of the vetting.

### Referral and Diagnosis

Diagnostic services are pivotal to the cancer patient journey and in supporting achieving waiting time targets for cancer diagnosis and treatment. The **National Diagnostic Collaborative** allowed structured investment and development within the service with the key objectives of the Collaborative being successfully embedded into the operational functions of the diagnostic services. This in turn facilitated a significant reduction in waiting times; the maximum wait for any of the eight key diagnostic tests is six weeks, with urgent cases being seen within 2 weeks. In addition:

- Diagnostic services will continue to work towards further reducing waiting times to a maximum of four weeks. Progress in implementing the Imaging Strategy, Laboratory Strategy and Acute Services Review (ASR) has seen the commissioning of a **new Laboratory Block** at the Southern General Hospital, further roll out of PACS, and with the opening of the two new hospitals the provision of additional MRI capacity within NHSGGC.
- Performance measurement systems are in place for monitoring imaging and regular measurement of turnaround times takes place within pathology and imaging, all contributing towards adherence to the 62 days target from referral to treatment for cancer patients.

## Cervical Screening

Delivering uptake rate for cervical screening was dropping until mid 2008 to the beginning of 2009 by high media profile given by the death of a celebrity from cervical cancer. Our aim is to reach the NHS QIS standard of 80% uptake of the screening.

A new communications strategy is being developed and implementation of a new technology in cytopathology laboratories is planned, pending the review of cytopathology laboratories across Scotland. There will be follow up of successful HPV vaccination to ensure women understand the need for continued cervical screening.

Cervical Screening Uptake figures for NHSGGC residents demonstrates that cervical uptake rates for the purpose of the General Medical Services target payments are between 9 and 12% higher than the NHS QIS standard rate. The uptake rate of the screening programme has increased from 61.9% in 1991-1994, to 71.8% in 2003-2006 in Greater Glasgow, and from 68.8% to 73.2% in Clyde.

## Breast Screening

Every woman registered with a GP receives a first invitation to attend for a mammogram at a local breast screening location sometime between her 50th and 53rd birthdays and then three yearly until her 70th birthday.

Following the publication by NHS QIS of a Health Technology Assessment (HTA) on the introduction of digital mammography into the Scottish Breast Screening Programme (SBSP) work is underway to implement two-view mammography from 2009/10. Two-view mammography will be offered to women in Clyde from 2009 and in Greater Glasgow from 2010. In Scotland women are offered two-view mammography at their first screen and a single oblique view mammogram in subsequent screens.

A business case to implement two-view mammography in Scotland for all screens has been approved and additional staff are being recruited and trained. Equipment will be procured to allow for the increase in activity to be implemented in NHS Greater Glasgow and Clyde from 2010.

## Bowel Screening

NHSGGC was an early implementer of the bowel screening programme in 2009. £1.9m of investment was made to develop and implement the national screening programme, including for an IT system and public awareness campaign. Implementation and roll out of the bowel screening programme will be taken forward from 2010.

In addition, the development and implementation of an IT system to support the programme is being developed, and will include putting in place operational level agreements to support the IT applications.

## Quality Improvement . The Patient Experience and Scottish Patient Safety Programme

Over the next three years NHSGGC will continue to implement and develop locality based **Public Partnership Forums (PPFs)** within CHCPs. PPFs, along with other groups, are linked to **NHSGGC's Involving People Network**, which comprises over 5,000 individuals and groups with an interest in healthcare.

The **Scottish Government Healthcare Strategy for NHSScotland (May 2010)** is a significant measure that will involve patients as partners in their own care and facilitate further develop improvements in the health services.

Patient safety is a key element of **Better Health, Better Care**, and NHSGGC is fully committed to improving patient safety and is actively involved developing and implementing the new nationally sponsored change programme, called the **Scottish Patient Safety Programme (SPSP)**. The SPSP is co-ordinated by NHS QIS, supported by the Institute of Healthcare Improvement (IHI). The work currently underway will build on developments and good practice already in place.

In addition, as part of the implementation of Better Health Better Care, NHSGGC is currently rolling out "**Leading Better Care**", **Senior Charge Nurse Role and Clinical Quality Indicators Project**, with over 420 Senior Charge Nurses already being involved in the programme, and further roll out is planned from 2010.

#### Rehabilitation and Support Services

Better access and better treatments mean that more people will be living longer after their cancer diagnosis. People living in deprived areas are more likely to be diagnosed with cancer and have a higher death rate than those who live in more affluent areas.

Conversely, there are likely to be more people in affluent populations living with cancer because of their lower mortality and the proportion of affluent populations who live to be >75, and are therefore more at risk of developing cancer. NHSGGC is committed to developing appropriate rehabilitation and support services in community and primary care settings to support cancer patients, including for their carers and families, and to tackle persistent levels of inequality.

#### Carers Information Strategies

In line with the Better Health Better Care (SGHD 2008), **NHSGGC's Carers Information Strategy** is part of a wider approach to working with carers and carers group to ensure they are involved in service planning and decision making, and supported in their caring responsibilities and their own health. NHSGGC will specifically consider how to make sure that the views and experiences of carers inform service changes and developments as part of the "**Better Together**" Programme.

#### Enabling and Supporting Patients to be Partners in their Care

NHSGGC has always been at the forefront of the Patient Focus and Public Involvement agenda and will continue to do so. NHSGGC has introduced a hospital ward based **Time to Care Initiative**, creating more time for senior nurses to spend with relatives of patients at visiting times. NHSGGC is fully committed to the **Fair for All** agenda, supported by the organisation's **Equality Scheme**. Listening to patients' views identifies what they want from their health service, e.g. caring and compassionate treatment, clear communication and explanation, effective collaboration with their clinician, a clean and safe care environment, continuity of care, and clinical excellence.

NHSGGC's **Patient Focus Public Involvement (PFPI)** Framework has been reviewed to take into account service reorganisation and the latest national guidance and initiatives, including Independent Scrutiny Panels and the introduction of elected NHS Boards. The framework provides NHSGGC's strategic vision for PFPI and ensures that services and staff are working in a

complementary fashion to ensure that patient and public involvement is integral to the delivery of Healthcare.

Aligned with the aims and objectives of the Better Together programme, NHSGGC, in partnership with the **West of Scotland Cancer Network (WoSCAN)**, has developed a **Cancer Pilot Project** that seeks to capture the experiences of cancer patients and use them as practical tools for service re-design. The three year pilot will develop robust methods of involving people across all the equality groups to reflect on their experiences and plan service improvements in partnership with the Board. Three priority work streams have been agreed: Chemotherapy day cases, Bowel screening and the Bowel cancer pathway.

In addition, two new patient information centres have been opened in the New Victoria and New Stobhill Hospitals providing a useful resource for patients, visitors and staff. A Macmillan Benefits service has also been established, and a Smoke Free Service and an Independent Advice and Support initiative have been commissioned.

### Living with Cancer

Work is already underway to provide staff with knowledge and skills to support individuals to self care, e.g. brief intervention skills, knowledge of support services, and inequalities sensitive practice training. The **Living with Cancer** agenda will additionally provide a supported self care framework for any person affected by cancer including, provision of Patient Information in various formats from Cancer Information and Patient Information centres.

In addition, NHSGGC is developing availability of services for income maximisation, employability/vocational rehabilitation, literacy, transport, housing, social care, mental health and lifestyle, access to patient education programmes and peer support, and ensuring service users are involved in the development and delivery of services and information (PFPI). In addition, some examples of specific work being taken forward at the BOC includes:

- Further development work is being taken forward within the Information Centre at the BOC dedicated to addressing the issues of equality and diversity.
- Robust arrangements are in place for interpreter services to ensure that patients have access to information regarding treatment choice and support.
- Supporting Macmillan Benefits Service by hosting teleconferences with patients in hard to reach areas, e.g. Western Isles. We will continue to explore options for using this media to enhance communications and services for patients.
- BOC is the pilot site for the Better Together Patient Experience Programme with the aim to improve services as a result of lessons learned from patient stories, staff diaries questionnaires etc.
- Achievement of the Macmillan Environmental Charter Mark award January 2010.
- Introduction of Time to Care creating more time for senior nurses to spend with relatives at visiting times thus enhancing communications between the healthcare professionals and service users.
- Ongoing collaboration with Friends of the Beatson Well Being Centre who provide a supportive and relaxing non clinical environment for inpatients.

## 7 SERVICE DELIVERY : PRIORITIES FOR DEVELOPMENT

Cancer services are delivered by a variety of clinical and care providers within primary and secondary care, and supported by a number of supporting services, e.g. diagnostics, laboratory services, and HI&T, and partner agencies. The range of specialties and services is spread across acute, primary and community care. NHSGGC recognises that developing integrated care pathways and delivering care in the most appropriate settings, will require joint financial and workforce modelling across service boundaries to ensure improvements to quality, productivity and efficiency are effective, and is actively working to address the financial framework of integrated care pathways.

### Better Outcomes for Patients

An overarching goal for NHSGGC is ensuring that patients have clinically effective treatment that is delivered safely and with the minimum disruption as possible to their daily life. Improving outcomes for patients underpins the key developments identified in the Cancer Plan, and over the course of the next 3 years NHSGGC will continue to strive to:

- Reduce the incidence of cancer among the population through primary prevention, including, improving public awareness of cancer risk, and lifestyle factors, i.e. improving diet, increasing exercise, reducing alcohol intake and stopping smoking.
- Improve patient survival rates, and improve quality of life by detecting cancer as early as possible, including improving public awareness about symptoms.
- Ensure equity of access and improved access to services, delivered in the right place at the right time - for local and for WoS (Regional Specialist) services, with timely information, diagnosis and treatment, including for rehabilitation services.
- Improve access to palliative care, at the right time and in the right setting that meets or surpasses the national standards.
- Continue to develop services to ensure patients with cancer experience high quality services which are safe, effective and efficient, and that we have effective planning systems in place, clinical audits are routinely undertaken and acted upon, and service sustainability plans in place.
- Address cancer health inequalities between deprived and non-deprived population

The following sections set out the key planned improvements to services over the next three years by CHCPs/Primary Care and in Acute Care Services:

### CHCPs and Primary Care Services

The majority of clinical encounters for patients take place in a primary care setting, and the majority of patient journeys through hospitals begin and end in that care setting. CHCPs are responsible for the planning and delivery of primary care and community services at local level. Locality cancer services are also supported by a number of organisations, including **Macmillan Nurses, the Prince and Princess of Wales, Marie Curie, St Margaret's, St. Vincent, and Accord Hospices**, which in addition to inpatient beds provide expert advice and guidance on request.

CHCPs also have an important role in bringing together the partners who design and deliver services that are intended to improve the lives of the communities they serve; working to improve the health of their local populations and to reduce health inequalities. They do this by providing a focus for the integration of primary health care, specialist health services and social services, to ensure that local population health improvement is at the heart of service planning and delivery.

The partnerships work to develop a more locally sensitive provision of health care and health improvement. Their responsibilities include health visiting, district nursing, speech and language therapy, physiotherapy, podiatry, mental health, addiction and learning disability services. Staff delivering these services work closely with other independent contractors and local health professionals, including GPs, dentists, pharmacists and opticians, to plan and develop services across their partnership areas.

Strategic priorities for CHCPs over the next three years are encompassed in key themes that are part of each CHCP development plan. The following are highlights of identified key priorities during 2010 to 2013 for service improvements. (*Contact information and web links for each CHCP are provided in **Appendix 5** of this document*). These will include improving the patient's journey in the following areas:

- Review of GP access to imaging to streamline patient pathways and support delivery of access targets, e.g. develop direct access to endoscopy services with referral guidelines.
- Early detection and intervention, and supporting improving cancer screening uptake, including targeting hard to reach groups.
- Implementation **HPV vaccination**, and the detection and **treatment of Hepatitis C**.
- Supporting patients while undergoing hospital based therapies, and delivering some primary care delivered treatments.
- Appropriate interventions and support in the palliation and monitoring phase of care.
- Provision and management of care and support for people who live with long term conditions, including integrated Older Peoples teams, and Rehabilitation and Enablement.
- Develop improved access to palliative care, including roll out of **The Liverpool Care Pathway (LCP)**, which is an end of life multidisciplinary accredited program to improve the quality of the last 48 hours of life.
- **Living and Dying Well** provides a template against which Community Nursing can assess input relating to a patient's needs along the care pathway. This is being supported by the full implementation of the Community Nursing IT System during 2010 to 2013.
- Participation in the **Macmillan Pharmacy PC Demonstrator**, which will focus on building links between local pharmacists, members of the multidisciplinary team and demonstrating the potential for pharmacists to be the lead care manager where appropriate.

A major focus for CHCPs will be continuing to tackle the underlying causes of cancers through prevention through community services. For example, Keep Well, Equally Well, Alcohol Brief Interventions, and **Weight Management Programmes**, and the implementation of supported self care framework.

Multi-agency task groups will be established to develop and oversee implementation of both local tobacco control action plans and local physical activity strategies. Key priorities are:

- Implementation of **Long Term Conditions (LTC)** through the LTC Steering Groups, and ensure that CHCPs are working closely and effectively with acute care, and that GP practices adopt the new board wide referral guidelines when referring patients with cancer to acute services, and support delivery of the cancer waiting time targets.
- Effectively manage and evaluate the Glasgow city wide income maximisation service established in 2009.
- Further develop integration of electronic communications and systems in the clinical setting between primary and secondary care, to synchronise clinical information and provide seamless sharing of information to support better outcomes for patients.

## Acute services

Currently acute services are provided from 10 main sites - 6 adult sites in Glasgow and 3 sites in Clyde, and the Royal Hospital for Sick Children, Glasgow. As part of the continued implementation of the organisation's ASR two new hospitals are being built; a new adult acute hospital and new children's hospital on the Southern General Hospital site. Further details can be found in the **NHSGGC Acute Services Plan**, which is available on request. In addition, patients are now benefiting from modern facilities provided at the New Victoria and new Stobhill Hospitals.

Over the course of the delivery of the plan for 2010 to 2013 there are many planned developments and improvements in acute care settings. Acute cancer services fall into a full range of medical and surgical and oncology specialties as well as supporting services, which are delivered at locations across the organisation's geographic area:

<b>Gynaecology</b>	<b>Upper Gastrointestinal/HPB</b>
<b>Lung</b>	<b>Dermatology/Skin</b>
<b>Colorectal</b>	<b>Paediatrics</b>
<b>Head and Neck</b>	<b>Sarcoma</b>
<b>Urological</b>	<b>Haemato-oncology</b>
<b>Specialist Oncology Services</b>	<b>Diagnostics &amp; Laboratory Services</b>
<b>Neuro-Oncology</b>	<b>Pharmacy</b>
<b>Ophthalmology</b>	<b>Specialist Palliative Care</b>

The following set out key planned developments in acute service specialties over the next 3 years:

### Upper Gastro-Intestinal/Gastroenterology

The centralisation of surgical services for pancreatic and OG cancer has resulted in a predictable increase in referrals from the West of Scotland, out side of NHSGGC's catchment area. A formal option appraisal by the Regional Cancer Advisory Group (RCAG) to look into the feasibility of funding a regional centralised Upper GI cancer service is being taken forward. As well as standardising referral processes to maximise turnaround times and ensure early patient management, during 2010 to 2013 the upper GI services will also:

- Develop the role of the Upper GI Cancer Nurse Specialist, appointed in 2009, for South Glasgow, to provide a local link with cancer services at the MDT in North Glasgow.
- Develop services for benign upper GI surgery and palliation of malignancy. A new Consultant appointment will take this forward in 2010 and will link with the MDT.
- Further expansion of laparoscopic services, including provision of High Definition Laparoscopic Cameras, and further develop endoscope scope provision.
- Expand nurse endoscopy services, and upper GI cancer nurse specialist roles.
- Establish a Regional EUS service with funding provided by RCAG.

### Colorectal Cancer

The service will continue to standardise referral processes to maximise turnaround times and ensure early patient management The establishment of a MCN for Colorectal Cancer is a significant improvement and will be taken forward for the introduction of an Advanced Disease

MDT. The service will also continue to align services in line with the implementation of the Bowel Screening Programme.

The service successfully implemented the national Bowel Screening programme, commencing in the Clyde part of the organisation in 2009. The screening programme is being rolled out across NHSGGC from 2010 onwards. In addition, integration and roll out of the regional palliative care teams together with adoption of the Liverpool Care Pathway, following successful pilot of the pathway at the Royal Alexandra Hospital will be taken forward. Other planned service developments include:

- In conjunction with the Colorectal MCN determine the feasibility of establishing a regional MDT for the management of advanced disease, and develop a business case to underpin development.
- Securing additional funding to support the Palliative Care Consultant post at Inverclyde Royal Hospital.
- A review to develop a Physiology Service to support patients with functional disorders which may be secondary to cancer.
- Enhance the deployment of Palliative Care Nurse Specialist services.
- Recruitment to a number of additional Consultant Physician posts will also benefit patients with cancer and the review and redesign of services.
- Ongoing review of oncologist service provision and a review of Clinical Nurse Specialist roles, e.g. Stoma Care Nurse, as part of Oncology Nurse Specialist Teams.

#### Breast Cancer

Future developments to improve the service include the introduction of marker guided boost radiotherapy to improve imaging and targeting. This is a next step in breast radiotherapy service development. The intention is to introduce this through the West of Scotland Breast Cancer Network. During 2010 to 2013 the service will standardise referral processes to maximise the turnaround times and ensure early patient management, and use electronic facilities to support changes. In addition, priorities for actions for breast cancer include:

- The reduction in waiting times for review, investigation and patient management.
- Introduction of two-view mammography in 2011 (please see Screening section of Cancer Plan for further information).
- Introduction of standardised Cancer Waiting Times IT system across NHSGGC .
- Review and standardisation of services to ensure consistency of care, involving redesign where appropriate and including merging of the in-patient service within Glasgow.
- Review of immediate reconstruction capacity with respect to new 31-day target.
- Introduction of sentinel lymph node biopsy capacity at Inverclyde Royal Hospital.
- Investment for the introduction of sentinel lymph node biopsy capacity at Inverclyde Royal Hospital.

#### Lung Cancer

The installation of the combined PET-CT scanner at the BOC has played a vital role in the staging of radically treatable NSCLC patients. There are ongoing collaborations between a number of interested physics staff, radiographers and clinicians to introduce 4D CT (CT scans taken during a breathing cycle) and on-treatment Cone-Beam CT to improve and individualise radiotherapy field localisation and delivery in radical lung cancer treatments.

In addition, the Liverpool Care Pathway is being rolled out across the organisation and the lung cancer service will be fully involved in its implementation. Other planned developments include:

- A Regional Thoracoscopy service will be established at Royal Alexandra Hospital.
- Provision of a dedicated Lung Cancer Clinic, incorporating the Lung Cancer Nurse Specialist, at the Inverclyde Royal Hospital, as well as a medical thoracic ultrasound service.
- Additional Palliative Care Nurse Specialist resource.
- Development of a dedicated Clyde-based Oncologist service (Consultant appointed August 2009).
- Support for Cancer Trials recruitment at Vale of Leven Hospital.

#### Urological Cancer

In urological services the electronic referral pathways and e-vetting will be maximised for turnaround times to ensure early patient management. In addition, expansion of Specialist Nurse/Nurse Cystoscopist services is planned, and implementation of the Global Rating Scale (GRS) for flexible cystoscopy as a pilot for consideration of national roll-out. Pilot and participate in the roll-out of the standardised generic MDT IT system across NHS Greater Glasgow & Clyde with further development of the system for cancer-specific aspects.

#### Genito-Urinary Oncology

Better co-ordination between specialties will see a planned increase in MDT input to individual patient management. The numbers of patients diagnosed with prostate cancer is expected to increase due to screening by GPs and patient demand, and work is underway to develop capacity to meet that demand.

In addition, the service will address increasing treatment complexity resulting in more time required for radiation treatment planning and delivery/verification, the increased demand for IMRT in prostate cancer, and increased use of chemotherapy in bladder cancer especially in the neo-adjuvant setting.

#### Skin Cancer

Planned developments include the establishment of early diagnosis and treatment of skin cancers particularly malignant melanoma with rapid access lesion clinics with surgical support. Other developments include:

- Photographic triage.
- Maximize surgical capacity and communication within and between specialities.
- Enhance MoHS (microscopically controlled surgery) service with second Mohs surgeon and assess feasibility of Mohs surgical fellowship.
- Develop the role of the skin cancer Clinical Nurse Specialist and increasing the role of nurses in skin surgery techniques.

#### Sarcoma Oncology

A MCN manager has been appointed, and the post of a network coordinator has been created. This will support collecting data on the national web based system. The Scottish Sarcoma Website is being brought up to date and national protocols and policies are being updated and ratified by the MCN.

## Gynaecological Oncology

To provide equity of access and standardisation of specialised surgical gynaecological services for women with ovarian cancer who live in the West of Scotland, the Regional Cancer Advisory Group approved the establishment of a West of Scotland Ovarian Specialist Surgical service model, which is based at the Glasgow Royal Infirmary. The additional funding has enabled the recruitment of additional consultant and nursing staff to support the new service. The new specialist service model was put in place in 2009 and will be fully implemented from 2010.

## Head and Neck Oncology

The aetiological factors associated with the development of head and neck cancers have changed. Alcohol and tobacco remain the major factors. However a cohort of young patients who are non-smokers and moderate drinkers has recently emerged.

Studies have shown that the cause in this group is exposure to HPV, similar to cervical cancer. Work will be taken forward to identify ways to develop capacity and facilities within pathology services to allow tissue samples to be analysed for the presence of HPV in these tumours, because of the prognostic factor and its presence influences treatment management.

- The Clinical Oncology team has provided an IMRT services available to patients with head and neck cancer. A business plan is in development to increase capacity of the service.
- Put in place robust monitoring processes for important developments in the use of chemotherapy: Neoadjuvant therapy (Taxotere, Cisplatin, 5FU) and Cetuximab and possibly other EGFR inhibitors in the near future, including Neoadjuvant chemotherapy to identify those patients who will best benefit from the therapy.
- Continue to progress the redesign of Glasgow Head and Neck Services (1 North and 1 South plus with AAHB) and develop MDTs, including assessment of clerical and IT support to support the efficient running of the service.
- Develop a redesign proposal for complex surgery, microvascular and ENT, with a view to rationalising services, and to provide comprehensive regional services.

## Thyroid & Neuro-Endocrine Oncology

There is a planned development of MCNs for thyroid and neuro-endocrine tumours. In addition, the arrival of the PET-CT allows potential opportunities to be explored to investigate these tumours further within a clinical evaluation programme, leading to an exciting period of activity in these tumour types.

- Take forward the development of MCNs for thyroid and neuro-endocrine tumours.
- Taking account of the national strategy for PET scanning development, and in conjunction with capacity planning work being taken forward on a regional basis, explore the potential to investigate tumours using PET-CT scanning within a clinical evaluation programme.

## Paediatric Haemato-Oncology

Implementation of two new posts in late 2009 across the paediatric and adolescent profile will allow existing and new staff the opportunity to progress special interests in areas such as palliative care, brain tumours, adolescents and late effects.

Development of Palliative Care Service will be improved by fixed-term funding which has been provided for the establishment of a dedicated integrated service, and plans are underway to put in place a sustainable and appropriate long-term solution. The process to discuss the future service model and costs will be taken forward through the Regional Service level Agreement processes. Other planned key areas of improvements include:

- Development of an Advanced Nurse Practitioner (ANP) service across all haemato-oncology specialist areas to improve the quality of discrete areas of multi-disciplinary patient care.
- Redesign of Vascular Access/Interventional Radiology Service to children with cancer will be taken forward. A dedicated and co-ordinated service, managed jointly by the general surgery, interventional radiology and anaesthesia teams will relieve uncomfortable cancellations and reduce unnecessary delays in patients' treatment times.
- Further development of Bone Marrow Transplant services with ongoing improvement during subsequent years to ensure JACIE compliance. The service will also explore additional opportunities for delivering care closer to the patients' home base.
- A new automated system of calculating chemotherapy prescriptions is currently being developed for compatibility with the hospital's internal PAS system.
- The 6-bed Teenage Cancer Trust Unit opened in the summer of 2009 at the RHSC, and this development is being managed and evaluated in conjunction with service providers from the BOC to ensure that equitable care and the patient desired transitional care to adult services is streamlined.
- The Clinical Trials team has been redesigned to guarantee that all children who are eligible to participate in trials are offered the opportunity to do so.
- Service provision will be reviewed to enable a successful and smooth transition from the current children's hospital location at the RHSC in Glasgow to the NCH at the SGH campus.

## Pharmacy and Prescribing Support Unit (PPSU)

PPSU will take forward educational initiatives targeting young people for alcohol misuse interventions and develop new models of care via the community pharmacy based smoking cessation programme. Also, monitor the uptake of specific recommendations from the SIGN guideline on oral cancer. The unit will improve access to cancer medicines, and through the NHSGCG's Prescribing Management Group contribute to local implementation of new Scottish Government directives on Co-payments, Patient Access Schemes and Exceptional Case Appeal Panels, which together will improve appropriate patient access to and public awareness about innovative new cancer medicines. In addition, further expansion and development of the community pharmacy specialist palliative care network will be delivered.

In the primary care setting, the PPSU elements of Living and Dying Well will be implemented. The impact of hospital pharmacy redesign which will release staff resources to direct patient care, particularly in the roll out of the use of patients' own medicines and increased clinical pharmacists at ward level. Service priorities include:

- Supporting local delivery of national action plan Living and Dying Well.
- Risk management of oral chemotherapy including primary care.

- Improved financial monitoring of cancer drugs.
- Implementation of CPORT, the Chemotherapy capacity and demand modelling tool.
- Review and extension of pharmacist prescribing.
- Electronic framework for cancer management guidelines and protocols.
- Re-apply the NMSGC pharmacy cancer capacity plan to identify gaps in workforce service models, capacity planning, enhanced roles, succession planning and education and training.
- Further service redesign to ensure patient need is met.
- Development of a cancer pharmacy practice research agenda with increased collaboration with Universities.
- Improving communication across traditional care boundaries.
- Further clinical effectiveness projects.

### **West of Scotland Cancer Network (WoSCAN)**

The WoSCAN is a collaborative embracing the four NHS Health Boards in the West of Scotland: Ayrshire and Arran, Forth Valley, Greater Glasgow and Clyde and Lanarkshire. Together with the regional MCNs, Speciality Networks (Pharmacy and Nursing) and hosted National MCNs, WoSCAN aims to ensure that care for people with cancer is of the highest standard. WoSCAN undertakes an annual review of its work plan to keep pace with service change and improvements. WoSCAN Priorities identified for 2010/11 include:

- Agreeing the development of a regional model for blood cancer diagnostics services, including streamline testing, removal of duplication and improve reporting.
- Implement 2<sup>nd</sup> PET/CT scanner, maximising capacity and supporting introduction of new nationally agreed protocols, and review diagnostic pathways to minimise, where possible, diagnostic investigations required.
- Ensure sustainability of regional endoscopic ultrasound service for upper GI cancers, including review referral pathways and optimise use of available resources, funding allocated by RPG in 2010/11 to support regional service provision.
- Complete implementation of the regional specialist oncology services strategy (FRMC).
- Ensure agreed regional policies are implemented for the management of oncological emergencies.
- Implementation regional HDL (2205) 29 Safe Administration of Chemotherapy for compliance purposes.
- Review and ensure alignment of regional policies for the managed entry of new cancer medicines and non formulary prescribing with CEL (2010) 17.
- Via the Scottish Radiotherapy Advisory Group, explore the potential of RRPORT to maximise capacity and deliver new access targets, and support the introduction of new technologies.
- Through horizon scanning processes, develop and take forward a programme of work in relation to cancer medicines, identifying areas where there is potential for cost savings to be made.
- Implementation the regional chemotherapy electronic prescribing and administrative system (CEPAS).
- Complete evaluation of CPORT and progress implementation if positively evaluated.
- Support the regional roll out of NMSGC cancer waiting times and MDT systems.
- Work with eHealth colleagues to enhance technical support (e.g. video-conferencing) for MDTs.
- Agree regional service model for major resectional surgery for upper GI cancers, including preparation of a business case to support service development.
- Agree regional service model for penile cancers.
- Progress, via regional Oral Maxillofacial Group and Regional Planning Group, centralisation of free tissue transfer surgical services for head & neck cancers.

During 2010/2011 MCNs will follow up a review of evidence base, a review of current practice and agree and progress implementation of regional models for each tumour type. MDTs will continue work to rationalise MDTs across the region. Also to review the baseline audit undertaken in 2009, and progress specific work to maximise effectiveness and efficiency of MDTs; ensuring compliance with NHS QIS standards for cancer services.

The quality agenda is a high priority area for the WoSCAN, and work will continue to assess and ensure compliance with regionally agreed Clinical Management Guidelines, participation in the development programme for **quality performance indicators (QPIs)** being taken forward nationally by the Scottish Cancer Taskforce. In addition, further work is being taken forward to develop and strengthen clinical audit and a critical review of data sets and methodology for data capture, enhance reporting and further strengthen governance processes is planned.

## 8 IMPROVING QUALITY OF CANCER CARE FOR PATIENTS

Over the next three years NHSGGC will continue to implement and develop locality based **Public Partnership Forums** (PPFs) within the CHCPs; ensuring their influence continues to extend into wider regional service development. PPFs, along with other groups, are linked to NHSGGC's Involving People Network, which comprises over 5,000 individuals and groups with an interest in healthcare.

NHSGGC's Patient Focus Public Involvement (PFPI) Framework has been reviewed to take into account service reorganisation and the latest national guidance and initiatives, including Independent Scrutiny Panels and the introduction of elected NHS Boards. The framework provides NHSGGC's strategic vision for PFPI and ensures that services and staff are working in a complementary fashion to ensure that patient and public involvement is integral to the delivery of healthcare. In addition, the **Scottish Government's Healthcare Quality Strategy** published in 2010 underpins the cancer plan quality agenda.

**Better Together**, the new **Scottish Patient Experience Programme**, places the experiences of those receiving NHS services in Scotland at the heart of NHSGGC's service development.

### Carers Information Strategies

In line with the commitment to carers set out in Better Health Better Care, **NHSGGC's Carers Information Strategy** is part of our wider approach to working with carers and carers group to ensure they are involved in service planning and decision making, and supported in their caring responsibilities and their own health. Further areas for development include updating our "**Are you looking after someone?**" series of information leaflets, focusing on the needs of young carers and ensuring that information and support takes account of the needs of different groups and communities.

NHSGGC will specifically consider how to make sure that the views and experiences of carers inform service changes and developments as part of the **Better Together** programme. NHSGGC plans to further develop **Better Together** in two other key areas; namely within surgery and within mental health. Involving the Surgical Directorate in the pilot will provide an opportunity to explore important linkages with the Scottish Patient Safety Programme, as the first phase of that programme significantly focuses on the Directorate of Surgery and Anaesthetics.

### Enabling and Supporting Patients to be Partners in their Care

NHSGGC in partnership with the WoSCAN has developed a Cancer Pilot Project as part of the Better Together Programme, that seeks to capture the experiences of cancer patients and use them as practical tools for service re-design. In essence, it re-orientates our perspective from that of provider to that of user, and we can better understand, and therefore remove barriers that prevent us from delivering the most effective and appropriate care for our communities.

In conjunction with the WoSCAN, three priority work streams have been agreed: Chemotherapy day cases, Bowel screening and the Bowel cancer pathway. It is planned to use the key learning points identified by the pilot to share across the WoSCAN, and take opportunities to apply the patient experience approach to other topic areas within the network. In addition, two new patient information centres have been opened in the New Victoria and New Stobhill Hospitals providing a useful resource for patients, visitors and staff. A **Macmillan Benefits Service** has also been

established, and a Smoke free Service and the Independent Advice and Support initiative have been commissioned.

### Living with Cancer

NHSGGC is working to provide a supported self care framework for any person affected by cancer, including:

- Continuing to develop patient Information in various formats provided from Cancer Information and Patient Information Centres.
- With partners continue to develop availability of information to support income maximisation, employability/vocational rehabilitation, literacy, transport, housing, social care, mental health and lifestyle, and access to patient education programmes and peer support.
- Evaluate the Information Centre at the BOC dedicated to addressing the issues of equality and diversity.
- Ensure robust arrangements are in place for interpreter services to ensure that patients have access to information regarding treatment choice and support.
- Evaluate whether the support to the Macmillan Benefits Service hosting teleconferences with patients in hard to reach areas, e.g. Western Isles, is effective.
- Achieve the Macmillan Environmental Charter Mark award January 2010.
- Develop existing collaborative arrangements with Friends of the Beatson Well Being Centre, to continue to enhance supportive and relaxing non clinical environments for inpatients.
- Ensure service users are involved in the development and delivery of services and information (PFPI).
- Provide staff with knowledge and skills to support individuals to self care e.g. brief intervention skills, knowledge of support services, inequalities sensitive practice.

### Clinical Effectiveness and Cancer Audit

Cancer audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change, and we continue to develop services that achieve defined quality standards in all services. These include those developed by the NHS QIS, the Scottish Intercollegiate Guidelines Network and the requirements of individual professional groups and Royal Colleges. In addition, the Scottish Health Council Participation Standard (published in 2009), the Healthcare Strategy for NHSScotland (2010) and the work of the National Quality Steering Group set up under the auspices of the Scottish Cancer Task Force. Priorities during 2010 to 2013 include:

- Further implementation of the Scottish Patient Safety Programme.
- Developing audit systems to enable effective monitoring of clinical outcomes and quality improvements. West of Scotland MCNs are developing regional audits for cancers, and data sets to support improved information are being agreed nationally.
- Taking forward recommendations from the Scottish Medicines Consortium, which sets national standards for the cost effective use of medicines.

GP practices have been maintaining cancer registers since the introduction of the new GP contract in 2004. As part of that cancer work they have been offering cancer patients targeted follow up/cancer reviews within six months of their diagnosis. In addition almost all practices have participated in at least two national cancer audits, as well as including a proportion of their cancer deaths in their contract required **Significant Event Analyses** (SEAs) for any given year.

The Scottish Enhanced Services Programme has been developed and current proposals include a plan to increase the number of cancer reviews to two in the six months after diagnosis and to ensure that at least one review is face to face. CHCPs use a range of quality and performance processes to measure and evaluate improvements to services delivered by CHCPs, including:

- HEAT targets on smoking cessation, alcohol interventions and obesity.
- **GP Quality Outcomes Framework (QOF)** targets e.g. on smoking cessation.
- Audits undertaken by GPs to look at appropriateness of urgent referrals for cancer diagnosis/treatment, which are part of the **Local Enhanced Service (LES)** scheme.
- Monitoring of performance against the **Gold Standards Framework** for the provision of care for people nearing the end stages of their lives.

## 9 SUPPORTING SERVICE DELIVERY

### Pharmacy and Prescribing Support Unit (PPSU)

The Pharmacy and Prescribing Support Unit (PPSU) has developed its community pharmacy role in helping to prevent cancers, for example, skin, oral cavity, bowel, and lung cancers. This includes the establishment of a network of 310 community pharmacies providing standardised smoking cessation services. There has also been a targeted training programme to train community pharmacy personnel in raising awareness of patients and the public on skin cancer and oral cancer.

There have been a number of enhancements to treatment services achieved, including

- Expansion of a specialist network.
- Strategic Review of Chemotherapy and implementation of its recommendations.
- Dose banding of chemotherapy (including national procurement).
- Regionally agreed cancer chemotherapy treatment protocols, and clinical effectiveness projects to determine optimum treatment protocols.
- Development of Regional Clinical Management Guidelines.
- Managed introduction of new drugs via SMC, Regional Cancer Network, MCNs and Local Cancer Medicines subgroup with delegated authority from NHSGGC Drug and Therapeutics Committee, and a regional database of formulary status of all new medicines and new indications for existing medicines, to guide local formulary management and minimise regional variations in prescribing practice.
- Regional clinical trials collaboration for documentation, set up and review.
- Establishing one stop+care at the new Victoria and Stobhill Hospitals.
- National capacity plans for aseptic dispensing services and oncology clinical pharmacy.

The PPSU also achieved successful Macmillan funding for a 3 year project which commenced in 2009, to implement recommendations from a pharmaceutical palliative care health needs assessment, using a model of Macmillan Community Pharmacist Facilitators. Training was undertaken and targeted at all pharmacists in NHSGGC using the accredited training pack developed nationally in conjunction with NES “**Pharmaceutical Care of people requiring palliative care**”.

In addition, the successful completion of changeover of ambulatory syringe pumps Graseby MS26 to McKinley T34 was achieved. Regional investment was obtained for the implementation of CEPAS, a Chemotherapy electronic prescribing and administration system, across the West of Scotland service, with the hub database hosted in NHSGGC and access available throughout prescribing centres in WOS.

Investment of approximately £250k over 5 years in primary care was achieved, to support the pharmacy primary care network of palliative care specialist community pharmacists.

## Diagnostic Services

Diagnostic services are responsive to multiple demands and subject to rapid changes in technology supporting the continuing changing patterns of delivery of care. Diagnostic services has a focus on ensuring that patients are placed on the correct diagnostic pathways for optimum treatment and care delivery at the earliest opportunity following referral:

- The diagnostic service is actively involved with Directorate colleagues in revising patient pathways and is leading the way in the introduction of Community Diagnostics. Considerable collaborative work has been undertaken with CHCPs to improve communication and encourage a more efficient use of Laboratory and Imaging services. Many diagnostic results are now available to all GPs through SCI store.
- Waiting times within the diagnostic service continue to fall and the additional capacity provided by 2 MRI scanners in the newly opened new hospitals are adding further benefit.
- A PET CT scanner is now fully operational within the BOC. Capital funding for a second PET CT scanner has been secured with running costs agreed by West of Scotland Boards for implementation in 2011.
- A state of the art Laboratory building on the SGH site will be commissioned and operational in 2012. This will facilitate centralisation of all Pathology services for NHSGGC onto one site.

Radiotherapy Physics is actively involved in a wide range of areas, supporting many of the clinical developments cited. Following a root and branch review of the planning pathways in liaison with clinical staff, new scheduling models have been created underpinning the efficient delivery of the cancer waiting time targets for radiotherapy. This provides a strong governance framework for the Department's Treatment Planning team to deliver safe and effective support for the patient pathway.

## Development and Improvements

- One of the key areas for development lies in the expansion of intensity modulated radiotherapy (IMRT) to a larger patient cohort and additional clinical treatment sites. Physics staff are integral to this work, leading in commissioning and implementation of new technology and their associated protocols. Around 15% of radical patient receive IMRT and the target is to increase this rate to around 30%.
- A significant commitment was made by the physics team in delivering the updated document management system supporting the Board in achieving ongoing compliance with radiation legislation including Ionising Radiation Regulations (1999) and Ionising Radiation (Medical Exposure) Regulations (2000) with successful audits and inspections by regulatory authorities in the last two years.
- The rolling capital replacement programme for radiotherapy equipment continues to provide up to date and modern technology in support of many of the anticipated clinical developments.
- The Department has commenced a 12-18 month long development to deliver an in-vivo dosimetry service that seeks to monitor the doses received during treatments for all patients undergoing radiotherapy. This approach is in excess of the minimum standard being adopted across Scotland and has been supported by capital monies allocated to the Directorate by the Board.
- Through close partnership with the Gynaecology Clinical Team, a new interstitial HDR brachytherapy service has been successfully introduced in recent months. This is the only service of its type in Scotland at this time.

- The dedicated appointment of a Research Physicist has provided opportunity to assess the continued implementation of Imaged Guided Radiotherapy Treatment (IGRT) in the Department.
- Future areas of work include improvements in the delivery and monitoring of treatment delivery for lung, breast and head and neck tumours.
- Implementation of a new electronic record management system for maintenance and support of radiotherapy equipment undertaken by Radiotherapy Physics as part of a wider Directorate strategy has provided improvements in monitoring equipment faults and response times.
- Through close collaboration with both the University of Glasgow and University of Strathclyde, a variety of research and development projects have been initiated. The Department supports a number of PhDs which seeks to underpin improved patient services for the future such as efficient electronic methods for monitoring the doses received during radiotherapy and computer modelling of pathway processes and scheduling.
- The Physics department has entered into collaborative research agreements with several major radiotherapy equipment manufacturers. Through this work, Physicists are influencing the future development of important scientific and technological developments in areas such as MRI imaging in cancer patients and radiotherapy patient information systems.

#### Health Information and Technology (HI&T)

The NHSGGC continues to modernise its Health Information and Technology (HI&T) systems, to support effective access and care for patients, and for efficiency in the way NHSGGC manages information. The NHSGGC HI&T Directorate plays a significant role in supporting service delivery, providing systems and technology to support improvements to NHSGGC's service and delivery of care.

Planned programmes that will support better cancer care are:

- **CEPAS** . Implementation of a WOS Chemotherapy System for adult care initially with plans being developed to include paediatric care as a second phase.
- **CPORT** . Chemotherapy capacity and demand modelling system.
- Implement the in-house developed **MDT IT system** to support MDTs, and explore potential for WoS use.
- Continue the roll out of the **Cancer Waiting Times (CWT)** system, and potential for WOS use.
- Rollout of Gateway to remaining GP practice, and rationalisation of cancer related referral templates. Development of cancer referral templates in line with national guidance and a Pilot of tertiary referrals via SCI Gateway.
- Complete implementation of **e-Triage** -supporting speedier vetting of referrals and improving communications to GPs.
- Support the **Breast Screening** programme and **Digital Mammography**.
- **EPR** . Clinical Portal, SCI Store, e-Forms, Order Comms, Digital Dictation & scanned records.
- Implement the **Patient Management System (PMS)** . Single PAS system across NHSGGC to include clinical tools, A&E and Order Comms.
- Further development of **e-Case audit** system to provide improved reporting and integration with Board systems, and a **Data Quality Programme** to improve the availability of data for patient care.
- Establishing a **Data Warehouse** to provide improved data on the patient journey and supporting the delivery of the patient access targets.

## Workforce Planning and Human Resources

NHSGGC's workforce has a significant role to play in the delivery of **Better Cancer Care; An Action Plan** (SGHD 2008). The Scottish Government's vision is to ensure that the NHS Scotland meets the needs of individuals and communities by providing high-quality safe and effective care through an empowered and flexible workforce which understands the diverse needs of the population and which chooses to work for and remains committed to the NHS Scotland.

**A Force for Improvement** (2009) sets out five key ambitions related to five core workforce challenges for the 21st century. Aligned with the Force for Improvement ambitions, NHSGGC has developed a Workforce Plan for effective delivery of services. The Workforce Plan also indicates how the NHS Career Framework will be used to shape and develop the future workforce.

To support workforce development, NHS Education Scotland (NES) has developed a capability framework for cancer care. The framework has been designed to be used by staff at different levels to identify learning needs.

NHSGGC's workforce is likely to undergo significant change in the future, characterised by a shift of workforce resources from indirect to direct care, including the re-profiling of the workforce skill mix and the creation of new roles, offering career advancement for professionally qualified staff as well as other disciplines of staff. Issues of service re-design will be linked to improved standards and quality of care, and new role development.

Laws are now in place which are designed to deal with unfair discrimination based on gender, race or disability. The **NHSGGC Equality Scheme** explains how NHSGGC will uphold the law by addressing inequalities. This means, for example, making sure that services are working well for everyone and that people are getting information in a way they can understand. The Equality Scheme also covers people's right not to be discriminated against in the workplace on grounds of race, gender, disability, religion and belief, age or sexual orientation.

## Training and Practice Development Education and Research

NHSGGC has developed a comprehensive training and development programme for all staff, and will continue to develop training and education plans that fit the organisation's strategic direction for cancer services. These will include training and development that reflects workforce requirements, service models and service design, and to ensure staff are suitably trained for the roles and the skill mix required to support better outcomes for patients.

The organisation also continues to encourage and develop research to improve knowledge and skills of staff, and for the development of better services and better outcomes for patients.

## 10 SUMMARY

NHS Greater Glasgow & Clyde (NHSGGC) is the largest Health Board in the UK and serves a core population of approximately 1.2 million people. NHSGGC additionally provides specialist health services to the whole of the West of Scotland, which is more than half of Scotland's population. To ensure that our services meet the needs of that extended population, joint planning arrangements are in place with our partner West of Scotland Health Boards. NHSGGC also works with colleagues at national level to support and advance the development of the cancer agenda. Addressing inequalities in health and the extremely poor health in some of our geographic areas presents challenges in all areas of care, including access to services and developing responsive services to meet the needs of the vulnerable population.

NHSGGC continues to experience some of the widest variations in health between affluent and poor in society which we will continue to seek to address if improvements are to be made to the overall health of the population. The inequalities and poor health in our population drive high levels of hospital admissions, GP consultations and the use of a wide range of other services, with particular pressures in emergency care services. An increase in patients living with cancer will create challenges for access to services, for addressing wider equalities issues, and in the way we deliver cancer services. Given the complex inequalities issues, together with increasing demand for services, there are significant implications for healthcare resources.

Quality improvement and improving outcomes for patients remain core priorities of NHSGGC's improving health agenda. The Scottish Government's **Healthcare Quality Strategy for NHSScotland** (2010) underpins that agenda. NHSGGC will continue to contribute and work with colleagues at national, regional and local level to support the improving quality agenda for patients and their carers. This includes supporting the work of the Scottish Cancer Task Force and the National Cancer Quality Steering Group to improve the quality of cancer services and for better outcomes for patients.

As already demonstrated throughout the plan, NHSGGC had made many achievements over the last 5 years; in primary and secondary care services. NHSGGC, with its partners, will continue to develop its cancer agenda to make further improvements. While there are many challenges facing the organisation in developing its cancer agenda, not least developing services within a framework of finite resources, these challenges also present opportunities for service improvements and redesign within existing resources. NHSGGC is committed to improving services to keep pace with 21<sup>st</sup> century care. This will be achieved within a financial framework of affordability and the need to demonstrate working in more effective and efficient ways.

The **Cancer Plan for 2010 to 2013** provides highlights of achievements already made to improve cancer care and treatment for patients, and sets out key planned priorities and developments for delivery over the next three years. The Cancer Plan will be monitored for delivery through the NHSGGC Cancer Services Steering Group and its sub-groups, as well as being updated as necessary to ensure the plan keeps pace with ongoing developments in services and for any significant policy changes.

## 11 FURTHER INFORMATION

Further information about the NHSGGC Cancer Plan 2010 to 2013 can be obtained by contacting:

**Jonathan R Best, Director of Regional Services and Chair of the NHSGGC Cancer Services Steering Group.** Email: [Jonathan.Best@ggc.scot.nhs.uk](mailto:Jonathan.Best@ggc.scot.nhs.uk) - Telephone: 0141 201 1622, and/or **Dorothy Cafferty, Planning Manager/Cancer Services Project Management** – Dykebar Hospital, Grahamston Road, Paisley PA2 7DE. Email: [Dorothy.Cafferty@ggc.scot.nhs.uk](mailto:Dorothy.Cafferty@ggc.scot.nhs.uk) Telephone: 0141 314 0205.

## APPENDIX 1

### INCIDENCE AND MORTALITY ANALYSIS

#### NHSGGC RESIDENTS AGED 16 PLUS

#### 1. CANCER INCIDENCE

##### 1.1. Top Ten Cancers by Sex 2006

In 2006 there were 6,473 new cases of cancer in NHSGGC residents aged 16 and over. The overall incidence rate for 2006 was 66 per 10,000 population.

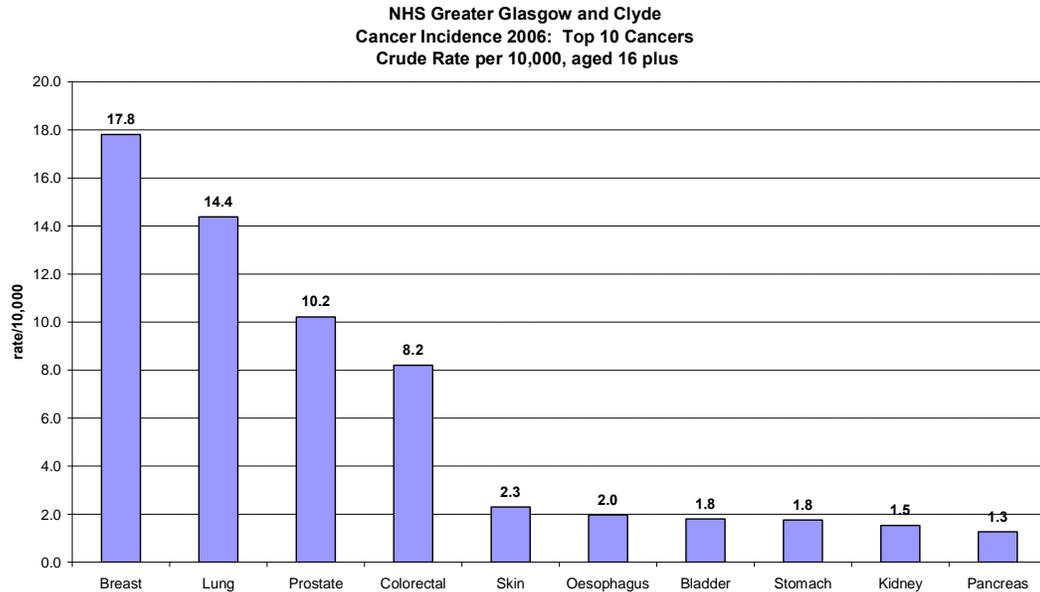
Table 1 shows the top ten cancers by sex: these cancers account for 72% of all registrations in 2006, the most commonly diagnosed cancer was bronchus and lung accounting for 22% of the total number.

**Table 1: Cancer Incidence 2006 by sex. No. % and rates per 10,000 population.**

PERSONS				MALES				FEMALES			
ICD10	Cases	% Total	Rate per 10,000	ICD10	Cases	% Total	Rate per 10,000	ICD10	Cases	% Total	Rate per 10,000
Lung	1409	21.8	14.4	Lung	735	23.9	15.9	Lung	674	19.9	13.0
Breast	923	14.3	17.8	Prostate	471	15.3	10.2	Breast	923	27.2	17.8
Colorectal	803	12.4	8.2	Colorectal	417	13.5	9.0	Colorectal	386	11.4	7.4
Prostate	471	7.3	10.2	Oesophagus	117	3.8	2.5	Skin	141	4.2	2.7
Skin	225	3.5	2.3	Bladder	107	3.5	2.3	Ovary	97	2.9	1.9
Oesophagus	193	3.0	2.0	Stomach	100	3.2	2.2	Corpus Uteri	96	2.8	1.9
Bladder	176	2.7	1.8	Kidney	100	3.2	2.2	Oesophagus	76	2.2	1.5
Stomach	172	2.7	1.8	Skin	84	2.7	1.8	Stomach	72	2.1	1.4
Kidney	150	2.3	1.5	Liver	72	2.3	1.6	Bladder	69	2.0	1.3
Pancreas	124	1.9	1.3	Larynx	71	2.3	1.5	Pancreas	62	1.8	1.2
Others	1827	28.2	18.7	Others	805	26.1	17.4	Others	798	23.5	15.4
<b>All Cancers</b>	<b>6473</b>		<b>66.1</b>	<b>All Cancers</b>	<b>3079</b>		<b>66.7</b>	<b>All Cancers</b>	<b>3394</b>		<b>65.5</b>

However, as can be seen in figure 1 the highest incidence rate was for breast cancer which was 18 per 10,000 population compared with 14 per 10,000 for lung cancer, the third most common cancer was prostate at 10 per 10,000 population.

**Figure 1: Cancer Incidence 2006, top ten cancers, rates per 10,000 population.**



Lung cancer rates were higher in males than in females (16 per 10,000 compared with 13 per 10,000 respectively) as was colorectal cancer (9 per 10,000 compared with 7 per 10,000). Skin cancer although the fifth most common cancer overall was fourth in women (3 per 10,000) and the eighth in men (2 per 10,000).

## **1.2. Cancer Incidence by CHCP 2002 to 2006**

Table 2 shows incidence rates for the the four main cancers (lung, colorectal, breast and prostate), others and all cancers by CH(C)P for 2002 to 2006. The overall incidence rate ranges from 58 per 10,000 in South East Glasgow to 77 per 10,000 in East Glasgow; breast cancer ranges from just over 15 per 10,000 in South-east and West Glasgow to 20 per 10,000 in Renfrewshire, and lung cancer ranges from 9 per 10,000 in East Dunbartonshire to 20 per 10,000 in East Glasgow.

**Table 2: Cancer Incidence 2002 to 2006 by CH(C)P, rates per 10,000 population.**

CH(C)P	Lung	Colorectal	Breast	Prostate	Others	All Cancers
<b>GG&amp;C</b>	<b>13.8</b>	<b>7.9</b>	<b>17.3</b>	<b>10.9</b>	<b>30.2</b>	<b>66.2</b>
East Glasgow	19.8	8.8	16.8	11.5	33.7	76.6
North Glasgow	17.4	7.9	14.6	10.3	30.6	68.5
West Glasgow	12.0	7.3	15.4	9.3	27.1	59.0
South East Glasgow	12.9	6.4	15.1	9.5	26.1	57.8
South West Glasgow	16.3	8.5	16.9	11.0	30.5	69.4
<b>All Glasgow City</b>	<b>15.6</b>	<b>7.8</b>	<b>15.8</b>	<b>10.3</b>	<b>29.6</b>	<b>66.1</b>
East Dunbartonshire	9.1	8.7	18.9	15.3	31.2	66.2
West Dunbartonshire	13.7	7.8	17.7	10.6	31.7	67.5
East Renfrewshire	10.0	7.4	20.4	13.5	27.5	62.1
Inverclyde	15.2	8.5	19.0	13.7	32.7	72.9
Renfrewshire	12.3	8.1	19.0	7.4	30.8	64.8
North Lanarkshire (pt)	11.4	7.0	15.3	12.1	29.0	61.1
South Lanarkshire (pt)	13.1	8.0	16.6	11.6	31.7	67.2

## 2. CANCER MORTALITY

### 2.1. Top Ten Cancer Deaths by Sex 2008

In 2008 there were 3,758 cancer deaths in NHSGGC for residents aged 16 and over. The overall mortality rate was 38 per 10,000 population.

Table 3 shows the top ten cancer deaths by sex: these cancers account for 75% of all cancer deaths in 2008, the most common cancer was bronchus and lung accounting for 31% of the total number.

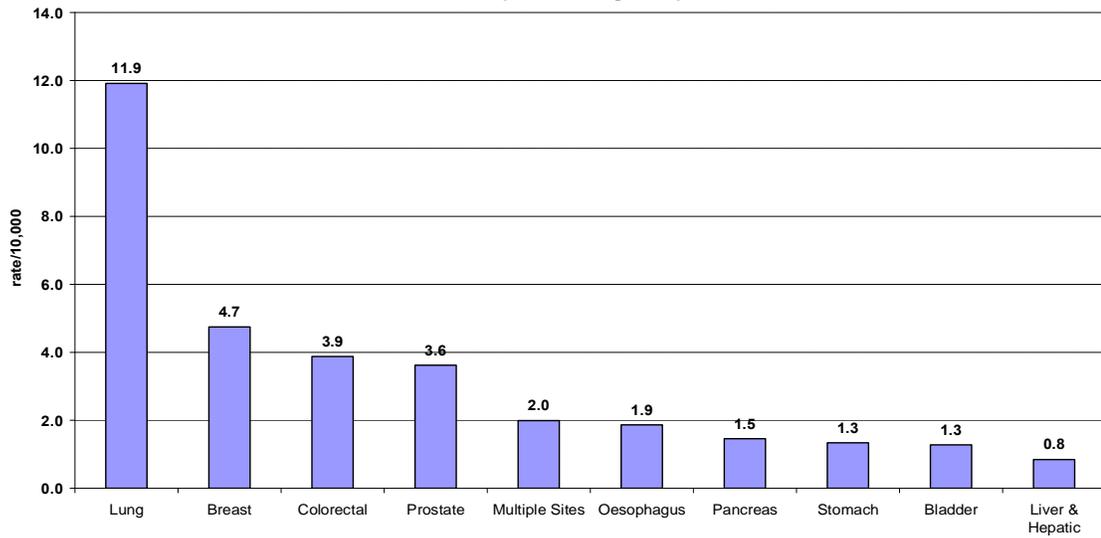
**Table 3: Cancer Mortality 2008 by sex. No. % and rates per 10,000 population.**

PERSONS				MALES				FEMALES			
ICD10	Cases	% Total	Rate per 10,000	ICD10	Cases	% Total	Rate per 10,000	ICD10	Cases	% Total	Rate per 10,000
Lung	1167	31.1	11.9	Lung	612	32.7	13.3	Lung	555	29.5	10.7
Colorectal	380	10.1	3.9	Colorectal	202	10.8	4.4	Breast	246	13.1	4.7
Breast	246	6.5	4.7	Prostate	167	8.9	3.6	Colorectal	178	9.4	3.4
Multiple Sites	195	5.2	2.0	Oesophagus	105	5.6	2.3	Multiple Sites	110	5.8	2.1
Oesophagus	183	4.9	1.9	Multiple Sites	85	4.5	1.8	Ovary	80	4.2	1.5
Prostate	167	4.4	3.6	Stomach	71	3.8	1.5	Oesophagus	78	4.1	1.5
Pancreas	143	3.8	1.5	Bladder	67	3.6	1.5	Pancreas	78	4.1	1.5
Stomach	131	3.5	1.3	Pancreas	65	3.5	1.4	Stomach	60	3.2	1.2
Bladder	125	3.3	1.3	Liver	49	2.6	1.1	Bladder	58	3.1	1.1
Liver & Hepatic	83	2.2	0.8	Kidney	45	2.4	1.0	Kidney	35	1.9	0.7
Others	938	25.0	9.6	Others	406	21.7	8.8	Others	406	21.5	7.8
<b>All Cancers</b>	<b>3758</b>		<b>38.4</b>	<b>All Cancers</b>	<b>1874</b>		<b>40.6</b>	<b>All Cancers</b>	<b>1884</b>		<b>36.4</b>

Lung cancer also had the highest mortality rate at 12 per 10,000 just over double that of the next highest which was breast cancer at 5 per 10,000 population (figure 2). The mortality rates for colorectal and prostate cancers were approximately 4 per 10,000.

**Figure 2: Cancer Mortality 2008, top ten cancers, rates per 10,000 population.**

NHS Greater Glasgow and Clyde  
 Cancer Mortality 2008: Top 10 Cancers  
 Crude Rate per 10,000, aged 16 plus



Overall male mortality rates were higher than those for females (41 per 10,000 compared with 36 per 10,000 respectively). The male lung cancer mortality rate was 13 per 10,000 compared with 11 per 10,000 in females.

## 2.2. Cancer Mortality by CH(C)P 2004 to 2008

Table 4 shows mortality rates for the the four main cancers (lung, colorectal, breast and prostate), others and all cancers by CH(C)P for 2004 to 2008.

**Table 4: Cancer Mortality 2004 to 2008 by CH(C)P, rates per 10,000 population.**

CH(C)P	Lung	Colorectal	Breast	Prostate	Others	All Cancers
GG&C	11.8	3.6	5.2	3.6	18.4	38.3
East Glasgow	15.9	4.0	5.6	3.9	20.6	45.2
North Glasgow	14.9	4.2	5.3	3.7	18.6	42.1
West Glasgow	10.7	3.1	3.5	2.8	16.8	33.8
South East Glasgow	11.8	3.0	4.6	2.5	15.5	33.9
South West Glasgow	14.0	4.3	5.1	3.9	19.5	42.3
All Glasgow City	13.3	3.7	4.8	3.3	18.2	39.3
East Dunbartonshire	8.4	4.0	5.9	5.1	17.4	35.3
West Dunbartonshire	11.9	3.4	5.1	4.3	19.7	39.6
East Renfrewshire	9.1	3.2	5.8	4.6	16.1	33.6
Inverclyde	11.7	3.5	5.5	2.8	21.0	40.5
Renfrewshire	10.5	3.6	5.6	3.4	19.1	37.7
North Lanarkshire (pt)	9.5	4.1	4.3	2.6	15.4	32.5
South Lanarkshire (pt)	11.1	3.6	6.7	4.0	19.5	39.7

The overall mortality rate ranges from 34 per 10,000 in East Renfrewshire, West and South-east Glasgow to 45 per 10,000 in East Glasgow; lung cancer deaths range from 8.5 per 10,000 in East Dunbartonshire to 16 per 10,000 in East Glasgow. Breast cancer rates range from 3.5 per 10,000 in West Glasgow to 6 per 10,000 in East Renfrewshire and East Dunbartonshire although it should be noted that the actual number of deaths these rates are based on are relatively small.

### 3. AGE AND SEX SPECIFIC RATES AND STANDARDISED RATIOS <sup>1</sup>, SIMD DEPRIVATION <sup>2</sup> QUINTILE AND CH(C)P ANALYSES

The following shows results of the above analyses for all cancers and the four most common cancers; lung, breast, colorectal and prostate.

#### 3.1. All Cancers

##### 3.1.1. Incidence and Mortality Rates by Age-group and Sex

Incidence rates increase with age peaking at 351 per 10,000 for males aged 75 and over. Overall incidence rates are higher for males than for females. However, rates in younger females especially those aged 45 to 54 are higher than for males at 44 per 10,000 compared with 30 per 10,000 respectively (table 5).

**Table 5: All Cancers. Age & sex specific incidence numbers and rates per 10,000 population, 2002 to 2006.**

<sup>1</sup> Standardised Ratio: expected numbers of events are calculated for any given population (e.g. SIMD quintile, CH(C)P) based on the actual rates from a standard population (all NHSGGC). This expected number is then compared with the actual number of events and expressed as a ratio; standard=100 therefore ratio greater than 100 indicated more than expected etc.

<sup>2</sup> SIMD: Scottish Index of Multiple Deprivation 2006: a measure of relative deprivation; often presented as deprivation quintiles ranging from Q1 most deprived to Q5 least deprived in NHSGGC analyses.

	Males		Females		Persons	
	no	rate	no	rate	no	rate
<b>16 to 44</b>	738	6.0	1404	11.0	<b>2142</b>	<b>8.6</b>
<b>45 to 54</b>	1171	29.6	1845	43.6	<b>3016</b>	<b>36.9</b>
<b>55 to 64</b>	3156	100.5	3109	93.0	<b>6265</b>	<b>96.6</b>
<b>65 to 74</b>	5214	237.3	4448	156.9	<b>9662</b>	<b>192.0</b>
<b>75 plus</b>	5191	351.4	6156	222.4	<b>11347</b>	<b>267.3</b>
<b>Total</b>	<b>15470</b>	<b>67.1</b>	<b>16962</b>	<b>65.5</b>	<b>32432</b>	<b>66.2</b>

Mortality rates display similar age related patterns peaking at 275 per 10,000 in males aged 75 and over. Male rates are consistently higher than those for females in all age-groups (table 6).

**Table 6: All Cancers. Age & sex specific deaths & rates per 10,000 population, 2004 to 2008.**

	Males		Females		Persons	
	no	rate	no	rate	no	rate
<b>16 to 44</b>	204	1.7	267	2.1	<b>471</b>	<b>1.9</b>
<b>45 to 54</b>	547	13.8	528	12.5	<b>1075</b>	<b>13.1</b>
<b>55 to 64</b>	1596	50.8	1326	39.6	<b>2922</b>	<b>45.1</b>
<b>65 to 74</b>	3001	136.6	2568	90.6	<b>5569</b>	<b>110.7</b>
<b>75 plus</b>	4057	274.6	4661	168.4	<b>8718</b>	<b>205.4</b>
<b>Total</b>	<b>9405</b>	<b>40.8</b>	<b>9350</b>	<b>36.1</b>	<b>18755</b>	<b>38.3</b>

### 3.1.2. Standardised Incidence Ratios

The age and sex standardised cancer incidence ratio in NHSGGC was 109.4 in 2006 i.e. just over 9% higher than expected based on Scottish rates.

### 3.1.3. Age and Sex Standardised Incidence and Mortality Ratios by SIMD Quintile

Analysis by SIMD quintile shows that there were 16% more cancers in the most deprived quintiles in NHSGGC and 19.5% less cancers in the least deprived quintiles than expected between 2002 and 2005 based on NHSGGC rates. Wider variations are seen in mortality: 22.5% more deaths than expected in the most deprived

quintiles and 29.5% less in the least deprived quintiles. Converting these ratios to a relative ratio (i.e. dividing the ratio of each quintile by that of the least deprived quintile) shows that there was a 1.4 fold difference in incidence and a 1.7 fold difference in mortality between the most and least deprived areas of NHSGGC (table 7).

**Table 7: All Cancers by SIMD deprivation quintile.  
Standardised ratios & relative ratios (NHSGG&C = 100)**

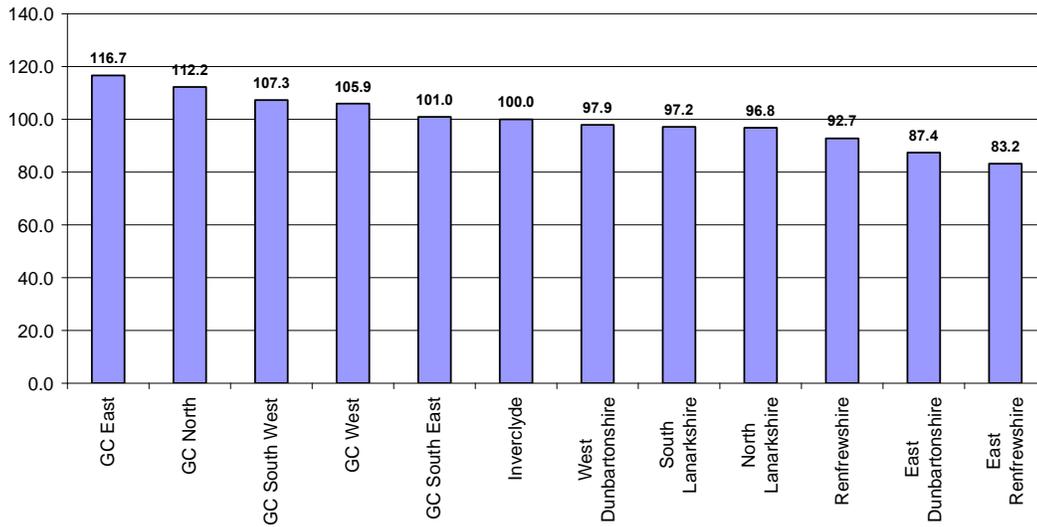
SIMD Quintile	Incidence 2002 to 2006			Mortality 2004 to 2008		
	Cases	Ratio	Relative Ratio	Deaths	Ratio	Relative Ratio
<b>Q1 most deprived</b>	13965	115.8	1.4	8583	122.5	1.7
<b>Q2</b>	6016	103.9	1.3	3545	104.3	1.5
<b>Q3</b>	3905	93.9	1.2	2264	94.4	1.3
<b>Q4</b>	3542	84.2	1.0	1852	77.5	1.1
<b>Q5 least deprived</b>	5004	80.5	1.0	2511	70.5	1.0

#### **3.1.4. Age and Sex Standardised Incidence Ratios by CH(C)P**

Significant variation can also be seen by CH(C)P area (figure 3). Standardised incidence ratios ranged from 117 in Glasgow East to 83 in East Renfrewshire i.e. 17% more than expected in Glasgow East to 17% less than expected in East Renfrewshire.

**Figure 3: All Cancers. Standardised Incidence Ratios by CH(C)P.**

**Age & Sex Standardised Incidence Ratios - All Cancers 2002 to 2006  
by CHCP (NHS GG&C=100)**



### 3.2. Lung Cancer

#### 3.2.1. Incidence and Mortality Rates by Age-group and Gender

Tables 8 and 9 show that incidence and mortality rates are very similar: incidence rates increase with age to 87.5 per 10,000 for males aged 75 and over (49 females, 62 overall); mortality rates peaked at 85 per 10,000 for males in the same age group (46 females, 60 overall).

**Table 8: Lung Cancer. Age & sex specific incidence numbers and rates per 10,000 population, 2002 to 2006.**

	Males		Females		Persons	
	no	rate	no	rate	no	rate
<b>16 to 44</b>	36	0.3	45	0.4	<b>81</b>	<b>0.3</b>
<b>45 to 54</b>	185	4.7	155	3.7	<b>340</b>	<b>4.2</b>
<b>55 to 64</b>	729	23.2	583	17.4	<b>1312</b>	<b>20.2</b>
<b>65 to 74</b>	1308	59.5	1086	38.3	<b>2394</b>	<b>47.6</b>
<b>75 plus</b>	1292	87.5	1344	48.6	<b>2636</b>	<b>62.1</b>
<b>Total</b>	<b>3550</b>	<b>15.4</b>	<b>3213</b>	<b>12.4</b>	<b>6763</b>	<b>13.8</b>

**Table 9: Lung Cancer. Age & sex specific deaths & rates per 10,000 population,**

2004 to 2008.

	Males		Females		Persons	
	no	rate	no	rate	no	rate
<b>16 to 44</b>	25	0.2	27	0.2	<b>52</b>	<b>0.2</b>
<b>45 to 54</b>	139	3.5	113	2.7	<b>252</b>	<b>3.1</b>
<b>55 to 64</b>	564	18.0	452	13.5	<b>1016</b>	<b>15.7</b>
<b>65 to 74</b>	1036	47.2	892	31.5	<b>1928</b>	<b>38.3</b>
<b>75 plus</b>	1253	84.8	1272	46.0	<b>2525</b>	<b>59.5</b>
<b>Total</b>	<b>3017</b>	<b>13.1</b>	<b>2756</b>	<b>10.6</b>	<b>5773</b>	<b>11.8</b>

### 3.2.2. Standardised Incidence Ratios

The age and sex standardised cancer incidence ratio in NHSGGC was 136.9 in 2006 i.e. 37% higher than expected based on the Scottish rates.

### 3.2.3. Age and Sex Standardised Incidence and Mortality Ratios by SIMD Quintile

Analysis by SIMD quintile (table 10) shows wide variations between the least and most deprived quintiles: there were 47% more cancers and 44% more deaths than expected in the most deprived quintiles in NHSGGC and less than half than expected in the least deprived quintiles (56% and 51.5% less cancers and deaths respectively) based on NHSGGC rates. The relative ratio shows that there was a 3 fold difference in incidence and mortality between the most and least deprived areas of NHSGGC.

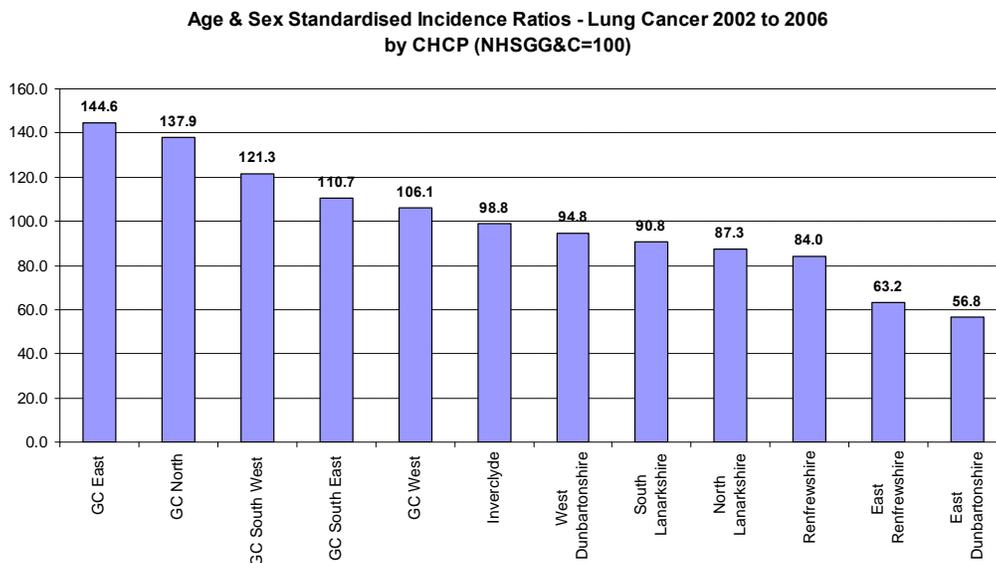
**Table 10: Lung Cancer by SIMD deprivation quintile. Standardised ratios & relative ratios (NHSGG&C = 100)**

SIMD Quintile	Incidence 2002 to 2006			Mortality 2004 to 2008		
	Cases	Ratio	Relative Ratio	Deaths	Ratio	Relative Ratio
<b>Q1 most deprived</b>	3710	147.0	3.3	3105	143.9	3.0
<b>Q2</b>	1291	106.1	2.4	1087	104.1	2.1
<b>Q3</b>	682	79.2	1.8	600	81.5	1.7
<b>Q4</b>	509	59.0	1.3	447	60.9	1.3
<b>Q5 least deprived</b>	571	44.0	1.0	534	48.5	1.0

### 3.2.4. Age and Sex Standardised Incidence Ratios by CH(C)P

Significant variation can also be seen by CH(C)P area (figure 4). Standardised incidence ratios ranged from 145 in Glasgow East to 57 in East Dunbartonshire i.e. 45% more than expected in Glasgow East to 43% less than expected in East Dunbartonshire.

**Figure 4: Lung Cancer. Standardised Incidence Ratios by CH(C)P.**



### 3.3. Breast Cancer

#### 3.3.1. Incidence and Mortality Rates by Age-group

Incidence and mortality rates increase with age: incidence rates peaked at 39 per 10,000 and mortality rates at 21 per 10,000 in those aged 75 and over (tables 11 and 12).

**Table 11: Breast Cancer. Age specific incidence numbers and rates per 10,000 population, 2002 to 2006.**

	Females	
	no	rate
16 to 44	492	3.9
45 to 54	835	19.7
55 to 64	1074	32.1
65 to 74	983	34.7
75 plus	1087	39.3
<b>Total</b>	<b>4471</b>	<b>17.3</b>

**Table 12: Breast Cancer. Age specific deaths & rates per 10,000 population, 2004 to 2008.**

	Females	
	no	rate
16 to 44	89	0.7
45 to 54	133	3.1
55 to 64	237	7.1
65 to 74	300	10.6
75 plus	587	21.2
<b>Total</b>	<b>1346</b>	<b>5.2</b>

### 3.3.2. Standardised Incidence Ratios

The age and sex standardised cancer incidence ratio in NHSGGC was very similar to that of Scotland at 100.3 in 2006 (Scotland=100).

### 3.3.3. Age and Sex Standardised Incidence and Mortality Ratios by SIMD Quintile

Analysis by SIMD quintile shows little variation across NHSGGC by deprivation. The 95% confidence intervals <sup>3</sup> for these ratios show that they include the population value of 100 and therefore may not significantly differ from the NHSGGC rate. The relative ratio analysis underlines this. There is one exception: the mortality ratio for quintile 3 was 117 and the 95% confidence intervals do not include 100. However,

<sup>3</sup> Confidence interval (CI): a range of values which includes the true value. In this analysis the 95% CI should not overlap 100 (standard population value) as this indicates the rate may be no different from that of the standard population.

the confidence interval is wide (101 to 134) and it is therefore difficult to draw any conclusions from this (table 13).

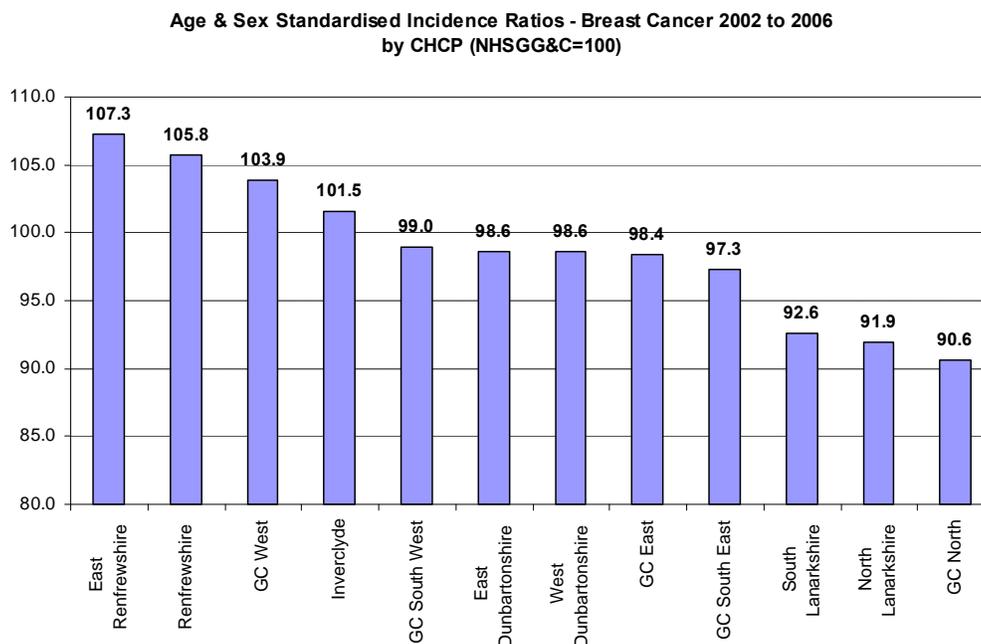
**Table 13: Breast Cancer by SIMD deprivation quintile.  
Standardised ratios & relative ratios (NHSGG&C = 100)**

SIMD Quintile	Incidence 2002 to 2006			Mortality 2004 to 2008		
	Cases	Ratio	Relative Ratio	Deaths	Ratio	Relative Ratio
<b>Q1 most deprived</b>	1600	96.2	0.9	520	102.2	1.1
<b>Q2</b>	803	101.4	1.0	244	99.1	1.1
<b>Q3</b>	595	103.4	1.0	203	117.6	1.3
<b>Q4</b>	569	96.7	0.9	156	91.3	1.0
<b>Q5 least deprived</b>	904	106.1	1.0	223	90.1	1.0

### 3.3.4. Age and Sex Standardised Incidence Ratios by CH(C)P

Figure 5 shows there is some variation across CH(C)P area. Standardised incidence ratios ranged from 107 in East Renfrewshire to 91 in North Glasgow. However, caution should be exercised when interpreting these data as the 95% confidence intervals around these ratios indicate that they may in fact not be significantly different from the NHSGGC rates.

**Figure 5: Breast Cancer. Standardised Incidence Ratios by CH(C)P.**



### 3.4. Colorectal Cancer

#### 3.4.1. Incidence and Mortality Rates by Age-group

Incidence rates increase with age peaking at 54 per 10,000 for males aged 75 and over (females 32 per 10,000). Overall incidence rates are higher for males than for females. Mortality rates display similar age related patterns peaking at 28 per 10,000 in males aged 75 and over and 18 per 10,000 in females (tables 14 and 15).

**Table 14: Colorectal Cancer. Age & sex specific incidence numbers and rates per 10,000 population, 2002 to 2006.**

	Males		Females		Persons	
	no	rate	no	rate	no	rate
<b>16 to 44</b>	40	0.3	52	0.4	<b>92</b>	<b>0.4</b>
<b>45 to 54</b>	154	3.9	118	2.8	<b>272</b>	<b>3.3</b>
<b>55 to 64</b>	410	13.1	245	7.3	<b>655</b>	<b>10.1</b>
<b>65 to 74</b>	695	31.6	490	17.3	<b>1185</b>	<b>23.5</b>
<b>75 plus</b>	796	53.9	892	32.2	<b>1688</b>	<b>39.8</b>
<b>Total</b>	<b>2095</b>	<b>9.1</b>	<b>1797</b>	<b>6.9</b>	<b>3892</b>	<b>7.9</b>

**Table 15: Colorectal Cancer. Age & sex specific deaths & rates per 10,000 population, 2004 to 2008.**

	Males		Females		Persons	
	no	rate	no	rate	no	rate
<b>16 to 44</b>	12	0.1	18	0.1	<b>30</b>	<b>0.1</b>
<b>45 to 54</b>	66	1.7	38	0.9	<b>104</b>	<b>1.3</b>
<b>55 to 64</b>	181	5.8	104	3.1	<b>285</b>	<b>4.4</b>
<b>65 to 74</b>	288	13.1	197	6.9	<b>485</b>	<b>9.6</b>
<b>75 plus</b>	411	27.8	488	17.6	<b>899</b>	<b>21.2</b>
<b>Total</b>	<b>958</b>	<b>4.2</b>	<b>845</b>	<b>3.3</b>	<b>1803</b>	<b>3.7</b>

#### 3.4.2. Standardised Incidence Ratios

The age and sex standardised cancer incidence ratio in NHSGGC was 106.7 in 2006 i.e. approximately 7% higher than expected based on the Scottish average.

### 3.4.3. Age and Sex Standardised Incidence and Mortality Ratios by SIMD Quintile

Analysis by SIMD quintile (table 16) shows some variation across SIMD quintiles. Incidence ratios show that there were 5% more cancers in the most deprived quintiles and 36% less cancers in the least deprived; a 1.6 fold difference based on relative ratios. Mortality ratios range from 7% above the expected number in the most deprived areas to 18% below in the least deprived. However, examination of confidence intervals indicates that these ratios may not significantly differ from the NHSGGC rate.

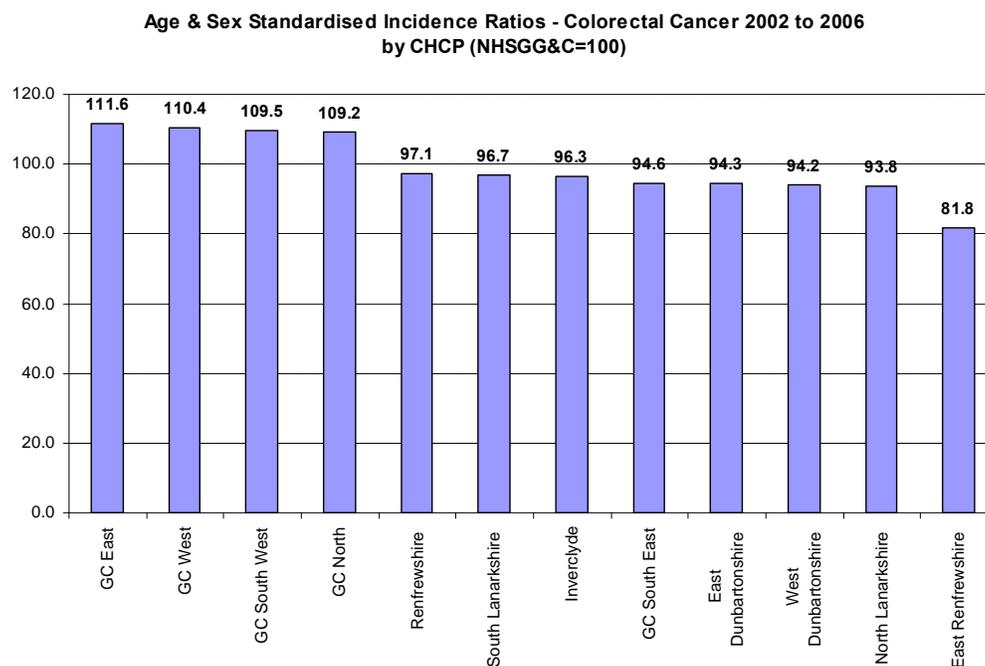
**Table 16: Colorectal Cancer by SIMD deprivation quintile. Standardised ratios & relative ratios (NHSGG&C = 100)**

SIMD Quintile	Incidence 2002 to 2006			Mortality 2004 to 2008		
	Cases	Ratio	Relative Ratio	Deaths	Ratio	Relative Ratio
<b>Q1 most deprived</b>	1524	105.1	1.6	722	107.4	1.2
<b>Q2</b>	745	106.2	1.7	345	105.5	1.2
<b>Q3</b>	656	131.8	2.0	211	91.4	1.0
<b>Q4</b>	486	97.5	1.5	222	96.6	1.1
<b>Q5 least deprived</b>	479	64.3	1.0	303	88.4	1.0

### 3.4.4. Age and Sex Standardised Incidence Ratios by CH(C)P

Analysis by CH(C)P shows some variation (figure 6). Standardised incidence ratios ranged from 112 in Glasgow East to 82 in East Renfrewshire. However, the 95% confidence intervals for these ratios indicate that they may in fact not be significantly different from the NHSGGC rates.

**Figure 6: Colorectal Cancer. Standardised Incidence Ratios by CH(C)P.**



### 3.5. Prostate Cancer

#### 3.5.1. Incidence and Mortality Rates by Age-group

Incidence and mortality rates increase with age: incidence rates peaked at 63 per 10,000 and mortality rates at 36 per 10,000 in those aged 75 and over (tables 17 and 18).

**Table 17: Prostate Cancer. Age specific incidence numbers and rates per 10,000 population, 2002 to 2006.**

	Males	
	no	rate
16 to 44	2	0.0
45 to 54	84	2.1
55 to 64	491	15.6
65 to 74	1012	46.1
75 plus	925	62.6
<b>Total</b>	<b>2514</b>	<b>10.9</b>

**Table 18: Prostate Cancer. Age specific deaths & rates per 10,000 population, 2004 to 2008.**

	Males	
	no	rate
<b>16 to 44</b>	0	0.0
<b>45 to 54</b>	9	0.2
<b>55 to 64</b>	71	2.3
<b>65 to 74</b>	225	10.2
<b>75 plus</b>	535	36.2
<b>Total</b>	<b>840</b>	<b>3.6</b>

### 3.5.2. Standardised Incidence Ratios

The age and sex standardised cancer incidence ratio in NHSGGC was 88.5 in 2006 i.e. 11.5% lower than expected based on the Scottish average.

### 3.5.3. Age and Sex Standardised Incidence and Mortality Ratios by SIMD Quintile

Analysis of incidence data by SIMD quintile (table 19) shows some variation across NHSGGC ranging from 6% less than expected in the the most deprived quintiles to 11% more than expected in the least deprived quintiles. However, examination of the 95% confidence intervals for these ratios show that they generally include the population value of 100 and therefore may not significantly differ from the NHSGGC rate. The relative ratios underline this. Similar patterns are seen in the mortality analysis.

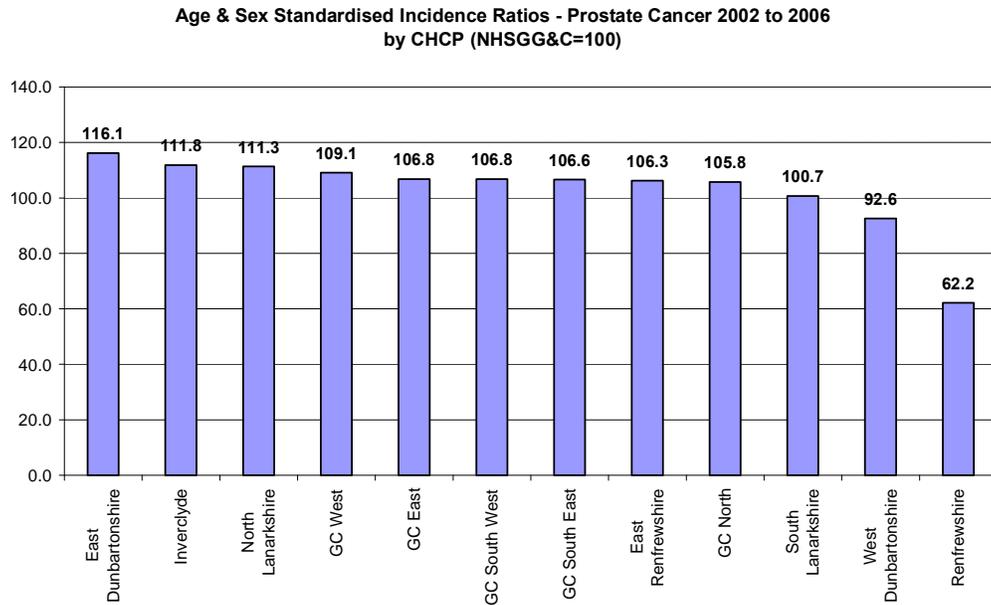
**Table 19: Prostate Cancer by SIMD deprivation quintile. Standardised ratios & relative ratios (NHSGG&C = 100)**

SIMD Quintile	Incidence 2002 to 2006			Mortality 2004 to 2008		
	Cases	Ratio	Relative Ratio	Deaths	Ratio	Relative Ratio
<b>Q1 most deprived</b>	864	93.6	0.8	296	95.9	0.9
<b>Q2</b>	436	98.5	0.9	166	109.4	1.0
<b>Q3</b>	308	96.2	0.9	100	92.7	0.9
<b>Q4</b>	350	107.1	1.0	103	95.9	0.9
<b>Q5 least deprived</b>	556	110.9	1.0	175	106.6	1.0

### 3.5.4. Age and Sex Standardised Incidence Ratios by CH(C)P

Some variation is seen between CH(C)P areas (figure 7). Standardised incidence ratios ranged from 116 in East Dunbartonshire to 62 in North Glasgow. However, the 95% confidence intervals again indicate that they may in fact not be significantly different from the NHSGGC rates.

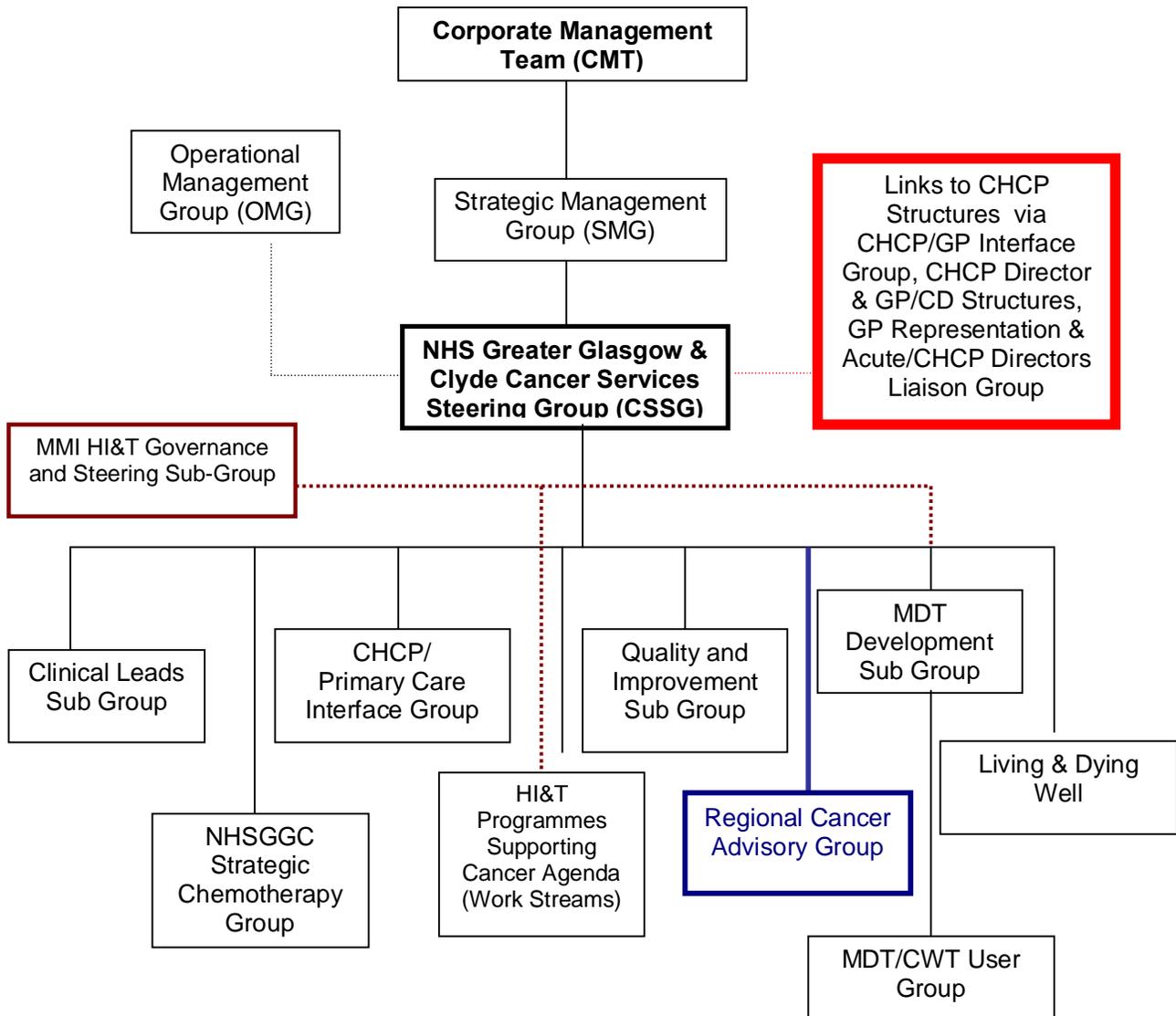
**Figure 7: Prostate Cancer. Standardised Incidence Ratios by CH(C)P.**



**NHS Greater Glasgow & Clyde**

Cancer Services Steering Group

Structure Chart - May 2010



# Colorectal (Bowel) Cancer

## A Literature Review of Inequalities in Screening and Treatment

Informing the NHSGGC Patient Experience Programme



## About the Authors

Dr Catherine Chiang is a Consultant in Public Health Medicine.

Alastair Low is a Planning and Development Manager in the Corporate Inequalities Team.

John Scott is the Public Health Librarian in the Public Health Resource Unit.

All of the authors are based at NHS Greater Glasgow and Clyde.

## Acknowledgements

Assistance was gratefully received from Rona Dougall, Lucy Thompson, Ann Harold, Iain Stewart and the Public Health Resource Unit Library staff. Thanks are also extended to Juliet Brown from the Scottish Intercollegiate Guidelines Network.

© Copyright 2009. Greater Glasgow and Clyde NHS Board.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of Greater Glasgow and Clyde NHS Board.

ISBN: 978-1-906150-11-2

# Contents

<b>Context of Literature Review</b>	<b>7</b>
<b>Search Methods and Strategy</b>	<b>8</b>
Initial Search	8
Databases Searched	8
Initial Results	8
Sample Search Strategy	9
Levels of Evidence	11
Review	13
<b>Introduction</b>	<b>14</b>
<b>Epidemiology</b>	<b>15</b>
Age	15
Socio-economic Status	15
Ethnicity	17
Gender	23
Men, Women and Colorectal Cancer	24
<b>Summary of Section - Epidemiology</b>	<b>27</b>
<b>Screening for Colorectal Cancer</b>	<b>28</b>
Socio-economic Status	28
Ethnicity	36
Health literacy	38
Age	40
Gender	41
<b>Summary of Section – Screening for Colorectal Cancer</b>	<b>42</b>

# Contents

<b>Colorectal Cancer and Surgery</b>	<b>43</b>
Surgical Treatment	43
Age	43
Health Literacy	45
Ethnicity	47
Socio-economic status	48
Disability	48
Gender	49
<b>Colorectal Cancer and Chemotherapy</b>	<b>52</b>
Socio-economic Status	52
Age	55
<b>Specific Chemotherapy Agents</b>	<b>55</b>
5-Fluorouracil	55
Capecitabine	56
Irinotecan	57
Oxaliplatin	57
Bevacizumab	58
Complex Regimens	58
Trials in the Elderly and Toxicity	58
The Elderly and Early Discontinuation of Treatment	59
The Elderly, Co-morbidities and Clinical Trials	60
Chronological Age as Determinant	62
Barriers to Treatment in the Elderly	63
Decision-Making in the Elderly	64

# Contents

<b>Colorectal Cancer and Radiotherapy</b>	<b>65</b>
Age	65
Ethnicity	66
Health Literacy	66
Disability	67
Summary of Section –Treatment for Colorectal Cancer (surgical, chemotherapy, radiotherapy)	69
<b>End of Life Care</b>	<b>71</b>
Culture	71
Ethnicity	72
Faith and Belief	73
Summary of Section – End of Life Care	75
<b>Conclusions</b>	<b>76</b>
Epidemiology	77
Screening	78
Surgical	81
Chemotherapy	82
Radiotherapy	83
End of Life Care	84
<b>Summary of Conclusions</b>	<b>85</b>

# Contents

<b>Recommendations</b>	<b>86</b>
Age	86
Socio-economic Factors	87
Gender	88
Ethnicity	89
Disability	89
Religion and Faith	90
Health Literacy	91
End of Life Care	91
Lesbian, Gay, Bi-sexual and Transgender People (LGBT)	92
<b>References</b>	<b>94</b>
Appendix 1	100
Appendix 2	101
Appendix 3	102
Appendix 4	103
Appendix 5	104
Appendix 6	105
Appendix 7	106

# Context of Literature Review

There is clear evidence emerging that despite a general rise in the standard of living within Scotland, the inequality gap (the division between those with the means to affect personal change and those without) is widening. The health consequences of this are multiple but manifest themselves significantly in patient treatment outcomes – commonly known as health inequalities. Understanding the link between experienced social and cultural inequalities and health inequalities is at the heart of a patient experience pilot being developed by NHS Greater Glasgow & Clyde as part of the Scottish Government's funded 'Better Together' patient experience programme.

The pilot will test out and assess methods of engagement with patients accessing regional cancer services, capturing experience in relation to their journey into, through and out of our services. This may range from practical aspects such as availability of parking, comfort of waiting areas and consultation waiting time to more 'hidden' elements of the patient experience. For the latter, a stratified approach to sampling patient groups will be put in place in a bid to capture more focused information on how inequalities experienced in daily life interplay with in-service experience. For example, what barriers exist within cancer services that could be attributed to ethnicity or sexual orientation? Do our practitioners understand and take account of people's experience of poverty or disability? And what understanding is there of the co-terminosity of inequalities and the cumulative effect this can have in terms of negative outcomes for service users?

To enhance understanding of where the experience of inequalities interacts with access to (and experience of) cancer services, the Project Co-ordinating group requested a literature review to be undertaken. This literature review has been developed to help fill the gaps in understanding inequalities in colorectal cancer care and guide the pilot team to areas of differential patient experience. Knowledge of the literature will help us ask the right questions of the right people and create a framework for re-orientating services with the patient at the heart of the planning mechanism.

# Search Methods & Strategy

## Initial Search

An initial search was conducted in November 2007 to establish what had been published on the topic of all cancers and inequalities – this included treatment, screening, epidemiology, diagnosis, and care (Appendix 1). The initial search utilised a variety of subject headings and keywords to encompass inequalities. This document outlines the resources that were searched and the search strategies that were used.

Databases Searched	
<b>AMED</b>	(Allied and Complimentary Medicine)
<b>British Nursing Index</b>	
<b>CINAHL</b>	(Cumulative Index to Nursing and Allied Health Literature)
<b>Cochrane</b>	(All libraries/databases, e.g. DARE, Cochrane Database of Systematic Reviews etc.)
<b>Embase</b>	
<b>Medline</b>	
<b>PsychInfo</b>	

## Initial Results

The initial search revealed that there was a large amount of potentially relevant material available on the topic: a full outline of the subject headings, keywords

# Search Methods & Strategy

and limits used for the first general search are outlined in Appendix 1. Through consultation with the designated project lead from NHSGGC's Corporate Inequalities Team and the Public Health Directorate, it was agreed there was scope to progress with the literature search and that a series of further, more specific searches should be undertaken.

Consequently, it was proposed that the search should focus on colorectal cancer for a number of reasons. Firstly, it is a frequently diagnosed cancer and is one of the biggest cancer killers in Scotland. A Scottish bowel cancer screening programme is currently being rolled out across the country that will invite all adults aged 50 to 74 years to complete a test kit at home every two years and send samples to a central laboratory for analysis. Secondly, it was agreed that the inequality descriptors used to inform the search should focus on the core strands of Fair For All with the addition of poverty, as well as any other appropriate aspect deemed to have an impact on inequitable treatment. Fair For All is a recognised collective term for inequality strands previously used by the Equal Opportunities Commission and specifically relates to gender, sexual orientation, faith, age, ethnicity and disability. It was also decided that the search should encompass all diagnostic, treatment, and palliative care options. Therefore, a further series of seven searches was conducted between November 2007 and June 2008. The corresponding limits, subject headings and keywords for each search are outlined in Appendices 2 to 7 of this document.

## Sample Search Strategy

Below is a sample search strategy that was used to conduct a focused search of Medline. A similar strategy was used to search the other databases – although subject headings were amended to suit the conventions of each particular database.

# Search Methods & Strategy

1. exp. Colorectal Neoplasms.sh
2. exp. Colonic Neoplasms.sh
3. exp. Rectal Neoplasms.sh
4. "bowel cancer".tw
5. \*Socio-economic factors.sh
6. \*Social class.sh
7. \*Poverty.sh
8. \*Poverty areas.sh
9. \*Age factors.sh
10. \*Aged.sh
11. \*Continental population groups.sh
12. \*Ethnic groups.sh
13. \*Minority Groups.sh
14. \*Vulnerable populations.sh
15. \*Culture.sh
16. \*Religion.sh
17. \*Disabled persons.sh
18. bisexual.tw
19. gay.tw
20. lesbian.tw
21. homosexual.tw
22. transsexual.tw
23. transgender.tw
24. LGBT.tw
25. masculinity.tw
26. femininity.tw
27. inequalit\$.tw
28. belief.tw
29. (or/ 1-4) and ((or/ 5-17) or (or/ 18-28))

**Legend:** \* = focus exp = explode tw = text word sh = subject heading

# Search Methods & Strategy

## Levels of Evidence

The standard levels of evidence as defined by SIGN<sup>1</sup> (Scottish Intercollegiate Guidelines Network) are as follows:

- 1++** High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias.
- 1+** Well conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias.
- 1-** Meta-analyses, systematic reviews or RCTs with a high risk of bias.
- 2++** High quality systematic reviews of case control or cohort studies  
High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal.
- 2+** Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal.
- 2-** Case control or cohort studies with high risk of confounding or bias and a significant risk that the relationship is not causal.
- 3** Non-analytic studies, e.g. case reports, case series
- 4** Expert opinion.

All levels of evidence, that is article or study types, were included in the completed search results - with the exception of case studies/letters (i.e. level 3) and expert opinion (i.e. level 4) – before the second review stage commenced.

The articles selected for inclusion in this report were ranked according to the Grades of Recommendation – as outlined by SIGN<sup>1</sup> – in order to present a simplified overview of the available evidence and corresponding level for each inequality strand.

# Search Methods & Strategy

**SIGN levels of evidence, reproduced with permission.**

- A** At least one meta analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; **or** A systematic review of RCTs or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
- B** A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; **or** Extrapolated evidence from studies rated as 1++ or 1+
- C** A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; **or** Extrapolated evidence from studies rated as 2++
- D** Evidence level 3 or 4; **or** Extrapolated evidence from studies rated as 2+

# Search Methods & Strategy

## Review

The initial review of the literature search results was conducted by the PHRU library staff. During the course of the search process, formatted results were passed to a second reviewer - in this case results were reviewed by a Consultant in Public Health Medicine with further input and review being received from the Corporate Inequalities Team's Project Lead. Where evidence was not available on colorectal cancer, other common tumours were used, for example breast or lung cancer, to supplement the evidence base. Results from the United States (US) were also included in the review, providing they addressed inequalities. However, allowances were made for the fact that the US health care system is completely different from the NHS, which provides services free at the point of delivery. Similarly, the US also employs different age categories/definitions for its screening programmes. Despite this, patient issues deriving from experience of inequalities, that is, the Fair For All strands and poverty and cancer were still deemed relevant and of value because this work is primarily concerned with issues of inequalities and not the delivery and/or types of treatments/services provided.

It should be noted that while the literature review has been undertaken to highlight potential gaps in understanding of inequalities, the various papers and reports studied may not articulate findings using inequality-sensitive language. To this end the expressed views and language taken from studies and contained within the literature review may not be representative of NHSGG&C's inequalities ethos.

# Introduction

Colorectal cancer is the third most common cause of cancer mortality worldwide with a particularly high death rate in post industrial countries. While genetic and hereditary risk factors are associated with colorectal cancer in around 20-30% of cases, for the remaining 70-80% of people diagnosed, biological, environmental, and behavioural factors play a key role.<sup>2-4</sup> The aim of this review was to compare the prevalence of this common tumour across different population groups and monitor access to services including screening, treatment and end of life care with particular reference to the Fair for all Criteria equality strands. Equality legislation seeks to ensure that opportunities for good health and quality of life are available to all irrespective of age, race, faith, sex, disability and sexual orientation. In addition, two further areas which influence health and access to services, namely socio-economic status and health literacy, are also reviewed in this study. Colorectal cancer was chosen in this review because it is a common cause of cancer for which a national screening programme is currently being introduced in the UK. As the aim is to look at equality of services, rather than the management of colorectal cancer, where there was insufficient information on this topic in relation to colorectal cancer, another common tumour was chosen to illustrate the point. The relative importance of each of the equality criteria vary from country to country and with regard to the particular aspect of the disease under study, thus while ethnicity may be referred to frequently in the US literature with regard to epidemiology and treatment, and ageing may be important in a number of societies, socio-economic factors are more commonly mentioned in the UK in relation to treatment variables. While reference to each criterion will be made under the headings of epidemiology, screening, treatment and end of life care, the relative importance of the factor will vary in different settings and at different disease stages.

# Epidemiology

## Age

Colorectal cancer occurs more frequently in older people, and the number of new cases of colorectal cancer is expected to increase because of the growing size of the elderly population, with 40% of patients in Europe being over 75 years at the time of initial diagnosis.<sup>5-10</sup> The incidence is rising in men in England and Wales, particularly in the elderly.<sup>11</sup> Au reports that in 2003 in Canada the age distribution of 18,000 new cases was 1,300 below 50 years of age, 2,700 aged 50-59 years, 4,200 aged 60-69 years, 5,600 aged 70-79 years, and 4,200 80 years or older.<sup>12</sup> Thus the care of older people with colorectal cancer is particularly important. Unfortunately, the most effective management of older people with colorectal cancer has lagged behind these changing trends.<sup>8, 10, 12</sup> Management of the elderly in relation to screening and treatment will be referred to again in the course of the paper.

## Socio-economic Status

An overview of the literature shows most writing on socio-economic deprivation originates from the UK. Poor people in general are not as healthy as affluent people nor do they live as long.<sup>13</sup> Socio-economic deprivation and co-morbidity both decrease the probability of survival in patients with colorectal cancer. The extent to which co-morbidity and deprivation might act independently to lower survival is unknown. A cohort of 483 ethnically homogenous patients from Tayside was examined retrospectively. It was found that survival in recently diagnosed patients was strongly influenced by clinical stage: ( $p < 0.00001$  for Dukes stage B, C, and D colon tumours). Using multiple regression, co-morbidity was found to have a significantly adverse impact upon survival when correction was made for age, the presence of metastatic disease and deprivation. The study showed that even when corrected for the presence of co-morbidity and other relevant variables, socio-economic deprivation had a demonstrable adverse effect upon overall survival. (2++)

# Epidemiology

The study concluded that any effect of deprivation on survival in this group of patients was not mediated exclusively by co-morbidity. There is good evidence that deprivation may be associated with more advanced pathological stage at presentation even when access to care is not constrained by ability to pay. Co-morbidity and age were also significant prognostic factors for overall survival.

A study of lung and colorectal cancer found survival was poorer for patients resident in the most deprived areas as compared to those in the least deprived areas.<sup>14</sup> Using computerised hospital discharge data it suggested that in Scotland, patients with colorectal cancer from deprived areas, were less likely to be treated with chemotherapy. (2+)

A study from London showed that if a patient with lung cancer first saw a specialist, survival was higher than if the first point of contact had been with Accident and Emergency or another specialty: ( $p=0.0014$ ). The difference was not materially changed by adjustment for case mix. The pattern suggested that the difference in survival between patients did not result from differences in case mix but differences in the treatment received. Variables associated with receipt of active treatment included young age, microscopically verified diagnosis and residence in a less deprived ward. Surgery for lung cancer tended to be associated with affluence and being seen by a specialist. (2+) There was no association with deprivation and chemotherapy use. Radiotherapy tended to be used more commonly in patients from affluent areas of residence, and it was strongly associated with access to a specialist. Socio-economic deprivation was associated with lower rates of treatment, which partially explained variations in survival. Patients first seen by a specialist were more likely to receive any treatment, any radiotherapy and any chemotherapy.<sup>15</sup> (2+) A US paper, which addressed socio-economic deprivation, noted that for several cancer sites, age, race, socio-economic status and insurance status have been related to stage at diagnosis. Census data were used to carry out an ecological study of 28,872 cases of colorectal cancer among New York City residents between 1980 and 1985 on the basis of a ranking of the health area of residence at the time of diagnosis.

# Epidemiology

Area ranks were based on composite index of the percentage of families below the poverty level and the percentage unemployed. They found there was a significant difference in the mean age of diagnosis by ethnic group: 73.7, 68.4, and 54.9 years for Whites, Blacks and Hispanics respectively. Analysis showed that individuals living in the lowest socio-economic areas were 45% more likely to be diagnosed at the late stage than persons living in the highest socio-economic area independent of other factors. After standardisation for age, race, gender and source of care groups, individuals living in areas with the lowest tercile of socio-economic status were significantly more likely to have their cancers diagnosed at late stage than individuals living in higher socio-economic status neighbourhoods ( $p < 0.001$ ). Amongst the persons living in the poorest areas, Blacks continued to have significantly higher rates of late stage disease (68%), Hispanics had intermediate rates at 67.1%, and Whites the lowest at 63.1% ( $p < 0.001$ ). Findings suggest that poverty is a key pathway through which other socio-demographic factors influence the likelihood of having late stage disease at the time of diagnosis. (2+) The mechanism by which poverty exerts its influence on cancer outcomes has not been clearly elaborated. For several cancer sites the high incidence rates observed in certain racial groups appear to be mediated through socio-economic status. Once an individual has developed colorectal cancer, poverty may influence their chance of having that cancer diagnosed at late stages in a variety of manners.<sup>16</sup>

## Ethnicity

The proportion of individuals from ethnic minority groups in the UK is increasing and thus, the proportion of ethnic minorities with colorectal cancer is expected to rise. A prospective study at the North Middlesex University Hospital identified the distribution and histological staging of colorectal cancer diagnosed there.<sup>17</sup> Data were collected on age, gender, anatomical distribution, operative procedures and histopathological grade. The hospital serves a

# Epidemiology

multi-ethnic population of Caucasian, Mediterranean (Turkish and Greek Cypriots), Afro-Caribbean and Asian (Indians, Pakistanis and Sri Lankans). The analysis was carried out on 256 patients diagnosed with colorectal cancer between 2000 and 2004. In all minority ethnic groups colorectal cancer presented at a significantly younger age group compared to Caucasians. Among the Afro-Caribbean and Asian groups there was a predominance of colorectal cancer among males (64.1% and 78.6% respectively). For Mediterranean participants and Caucasians, the incidence was similar between sexes. The incidence of proximal colon cancer was significantly greater in the Afro-Caribbean compared to all other groups, whilst the Mediterranean group had the highest incidence of distal colon tumours – although the distribution of cancers was significant among the other ethnic minority groups in comparison to Caucasians. Findings in this study demonstrated that patients in all ethnic minority groups presented 7-10 years younger than Caucasians, with the Asian group presenting younger than any of the other groups. The study confirmed that proximal colonic lesions occur with the highest frequency in the Afro-Caribbean group, accounting for 46.1% of all colorectal cancers in this ethnic group. This was significantly higher than for all other ethnic groups, and similar to findings reported in the US. This study reported a very low incidence of proximal colonic lesions in Mediterraneans compared to Caucasians. By contrast, the incidence of distal cancer was highest in the Mediterranean population, presenting with significantly greater frequency compared to both Caucasians and Afro-Caribbeans. However, the incidence of rectal cancer was similar in all ethnic groups, with the highest incidence in Asians.<sup>17</sup> (2++)

In England and Wales above average mortality is found among men and women from Scotland and Ireland and also for women from North and West Africa.<sup>2</sup> (1+)

A US study examined incidence data for 1992-97 submitted to the North American Association of Central Cancer Registries, covering approximately 40% of the US population.<sup>18</sup> Confirmed primary colorectal cancers were

# Epidemiology

grouped into four major categories: proximal colon; descending colon; distal colorectum; and other sites. The stages used in this study were: localised; confined to the colon or rectum; regional with extension to adjacent tissues or regional lymph nodes; and distant with metastasis to other areas of the body; and a remaining unknown group. There were 344,775 incident cases (88.3% White, 8.3% Black, 2.8% other races, 0.6% unknown). Cancer of the proximal colon accounted for 41.2% of cases, the descending colon 4.7%, and distal colon and rectum 49.3%. The remaining colorectal cancers accounted for approximately 4.8% of cases. 93% of colorectal cancers had stage information. Cancers diagnosed below 50 years of age, when routine screening starts, were more likely to present with distant disease. The disease stage was highly correlated with the anatomical site of location. Localised disease increased from 31.9% among cancers of the proximal colon to 37% in the descending colon and 41.5% in the distal colorectum. The percentage of regional disease stage decreased from proximal to distal. (2++)

For all race and gender groups cancer in the proximal colon was less likely to be localised than cancers in the descending colon and distal colorectum. This pattern was observed in all age groups. For all anatomical sites, the stage distributions were approximately the same for males and females except for the descending colon cancer in Blacks. However, racial disparities in stage of distribution were more apparent. Blacks were less likely than Whites to receive a diagnosis of localised disease and more likely to receive a diagnosis of distant disease in all individual anatomical subsites. This finding was most pronounced for distal colorectal cancers.

Age adjusted incidence rates for proximal and descending colon cancers were significantly higher in the Black population than in Whites for both males and females. Conversely, cancer incidence rates for all distal sub-sites were significantly lower for Black males than for White males. Among females rates were significantly lower in the Black population than in the White population for rectal cancers only. The male to female rate ratios were progressively higher from caecum to rectum regardless of race and all were statistically significant. (2++)

# Epidemiology

Incidence rates increased with age for cancers in all anatomic sub-sites, but more substantially for proximal colon than for descending and distal colon. This was true for all race and gender groups, however, the shift occurred among females at a younger age than among men. In younger age groups, only White males showed substantially higher cancer rates in the distal colorectum than in the proximal colon. For White females and Black males, although the rates were higher for the distal colorectal cancer than for the proximal cancer in the younger age groups, the differences were not as much as observed for White males. In contrast for young Black females rates of cancer in the proximal and distal colon were approximately equivalent. It appears that populations with lower socio-economic status are more likely to be exposed to risk factors for cancer of the proximal colon. (2++) They also have less access to health care, which could lead to a diagnosis at a more advanced stage. It is well known that Blacks are more likely than Whites to receive a diagnosis of advanced stage cancer, and this is seen for all anatomical sites. Racial differences were more pronounced than gender differences in both Blacks and Whites. Since screening can detect pre-malignant polyps and early stage cancers, it is very difficult to separate the effects of screening from truly racial and gender disparities in incidence rates, which may be associated with differences in exposure to subsite specific risk factors e.g. diet and exercise.<sup>18</sup> (2++) It has also been observed in the United States that mortality for colorectal cancer is lower for men and women from “American Indian and Alaskan Native populations” [sic] compared with the population as a whole.<sup>2</sup>

The national death rates for colorectal cancer across the United States have been declining since the mid 1980s but the trend is not consistent across all ethnic groups.<sup>3, 19</sup> In the past ten years the death rate for Caucasians has been decreasing at nearly twice the rate as for African Americans, and for “Native Americans” [sic] the rate has actually been increasing. Among Asian ethnic groups, Chinese and Philipinos suffer a higher death rate than do Japanese. These ethnic disparities appear to be due to more advanced disease at presentation. This may be secondary to differential use of cancer screening

# Epidemiology

services. However, studies that have controlled for stage at diagnosis continue to find significant ethnic differences. The Hawaiian tumour registry was used to examine trends in survival among a population of 16,424 inhabitants of different ethnic groups (Caucasian, Japanese, Hawaiian, Philippino and Chinese).<sup>19</sup> The proportion comprising the different ethnic groups in Hawaii in 1990 was as follows:

Caucasian	24.1%
Japanese	20.4%
Native Hawaiian	18.8%
Philippino	11.4%
Chinese and other ethnic groups	4.7%

The register was used to examine trends over three cohorts, 1960-74, 1975-87, 1988-2000. When compared to other ethnic groups, Hawaiians were diagnosed at a more advanced stage for each of the time periods and were more likely to have died of colorectal cancer. Hawaiians were also significantly younger for the second and third cohorts. When compared to other ethnic groups, Philipinos had a significantly higher proportion of males in all three cohorts. Controlling for year and stage of diagnosis, age, and sex, the five-year survival rate were 80.5% for Japanese, 79.4% for Caucasian, 78.8% for Chinese, 76.4% for Philippino and 72.5% for Hawaiian. In each time period there were significant differences in deaths due to colorectal cancer. In cohort one, Japanese and Caucasian patients had significantly longer five-year survival than Philippino and Hawaiian patients. In the second cohort, Caucasians had significantly longer survival than Philipinos. In the third cohort, Hawaiians had significantly shorter survival than all other ethnic groups. When death from any other cause was examined, analysis indicated that the Japanese group always had a significantly higher survival rate than at least one other ethnic group. There was persistently low Hawaiian cancer survival in cohort three. The life expectancy for the Hawaiian group in cohort

# Epidemiology

three has not improved. A comparison with the survival curve for other causes of death within cohort three reveals that this effect is specific to colorectal cancer and does not reflect the general tendency for Hawaiians to die sooner. Future research should investigate whether Hawaiians are receiving similar screening and treatment as other groups. (2++)

The final paper was a retrospective review of 615 patients treated at an inner city public hospital in Harlem over a twenty-year period from 1973-1992.<sup>20</sup> The population was 97% Black and virtually all were poor. The mean age of the sample was 68.1 years; 34.8% were younger than 65 years of age and 45.2% were male. All patients were symptomatic at the time of presentation. Symptoms caused by locally advanced disease and/or distant metastasis were the main cause of presentation. There was no significant difference in site of tumour over the twenty-year period. The distribution of tumour stage at presentation was 10.6% Dukes Stage A, 27.6% Dukes Stage B, and 41.3% Dukes Stage 3. Twenty point five percent of patients were too ill to have any operation, refused surgery or died before treatment could be given. These patients were unstaged. For all the five year time intervals from 1974-1992, the five year survival rate was much worse than the national rates for White or Black colorectal cancer patients. (2+) National averages obscure the extremely high mortality rates in inner city communities. Harlem and other similar areas with largely Black populations have exceptionally high mortality rates. Several factors probably contributed to the relatively low five-year survival rate witnessed in this study. Patients presented with more advanced disease: the proportion of patients with distant metastasis was significantly higher than the national average for all patients White and Black. None of the patients were asymptomatic at the time of diagnosis.

Although surgery is considered the most effective therapy for colorectal cancer, only 50.6% underwent surgery with the intention of cure. Ten percent had no treatment (much higher than previous reports) reflecting late presentation and poor general condition caused by advanced disease. In the United States nationally during 1974-1992, the relative five-year survival

# Epidemiology

rate improved in all races from 49.5% to 61.5% overall and from 44.6% to 52.4% for Blacks; the five-year relative survival rate for all Harlem patients was 19.7%, significantly lower than the national rate and unchanged during this time period. Colorectal carcinoma patients in Harlem Hospital had similar treatment outcomes for stage of disease when compared with patients with potentially curable disease. However, 70% of colorectal cancer patients in Harlem Hospital had incurable disease at the time of presentation. Poverty, low education and poor or absent primary care are believed to lead to barriers to early diagnosis and treatment. A culturally sensitive education and health care system are required to address the imbalance.

## Gender

The increasing understanding of the role of sex and gender in shaping the health of men and women has led to recognition of the need for gender-sensitive research in healthcare.<sup>2</sup> In some areas of health care, differences between men and women are particularly marked e.g. in relation to specific conditions such as Coronary Heart Disease or health behaviour such as smoking. However, it is important to explore conditions where the differences between men and women appear less noticeable. Women may suffer many of the same health risks as men, but at a later point in their life course. It is also important to consider the sex and gender risk differences influencing men and women's risk of specific conditions such as colorectal cancer.

An individual's risk profile is shaped by both biologically determined risk factors, which influence vulnerability to the condition, and gender or socially-shaped factors, which influence health behaviour, including both lifestyle conditions that affect risk and also the use of health services. Colorectal cancer has been described as an equal opportunity disease affecting men and women equally, yet there are important differences between men and women in the risk of developing the condition and in mortality figures. Differences between men and women in exposure to factors affecting the risk

# Epidemiology

of colorectal cancer and in health behaviours, including the use of preventive health care, suggest that in future the gap between men and women in deaths from this disease may widen rather than narrow following the introduction of widespread screening. As a result there is a need to adopt a gender-based approach to understanding this disease and the delivery of health care. In the case of colorectal cancer, a sex and gender specific approach calls for an understanding of biological risk factors, risk factors associated with gender differences, and also gender differences in the use of services.<sup>2</sup>

## Men, Women and Colorectal Cancer

Although the distribution of total mortality for colorectal cancer between males and females is similar, age standardised mortality rates reveal differences between males and females. Males are more likely than females both to develop the condition and to die from it, with a male to female ratio of colorectal cancer incidence and mortality of 1.1 and 1.7 in post-industrial countries. The lifetime risk of developing colorectal cancer is higher in males than females, and females tend to develop the condition later in life than males. Colorectal cancer incidence is high in the United States (US), Australia and also across Western Europe. Age standardised data shows that the male to female ratio varies from 1.2:1 to 1.7:1. There are differences between male and female in trends and incidence rates with faster increases in male incidence in northern, southern and eastern European countries while western European female's rates have increased more quickly. In the US both incidence and mortality rates have decreased in recent years, although there have been different patterns for female and male with a slower decline in male rates compared with female rates. In the last few years however male colorectal cancer incidence rates in the US have decreased more rapidly than female rates. Data for mortality reveals a higher risk for male than female across Europe and the US. Colorectal cancer mortality trends follow a similar pattern to incidence rates in terms of decreasing in some countries, notably the US, while stabilising or increasing in others.

# Epidemiology

The five year survival for colorectal cancer is between 50-60% with females experiencing better survival rates than males despite females tending to be diagnosed with more advanced cancer compared with males. (1+) Survival following cancer relates in part to location of the cancer, with better prognosis for distal cancers. While the majority of colorectal cancers are distal, women have a greater risk of proximal colorectal cancer, which tends to be more advanced when diagnosed. The better overall survival prospects are thought to relate in part to biological factors and in particular to sex differences in the immune function, where female sex steroids offer women protection both from the disease and also in terms of survival.<sup>2</sup>

Various research findings have suggested that biological factors play a part in differences between men and women in colorectal cancer risk.<sup>2</sup> There are variations between women and men in the type and location of colorectal cancer experienced, which relate in part to biological factors including hormones and gene expression. For example, proximal colon cancer is highest among women, men more often have cancer of the distal colon, and men are more frequently diagnosed with rectal cancer. These findings suggest sex or biological differences between men and women. Research on hormonal factors also suggests a biological basis for the gap. Women tend to develop colorectal cancer at a later age, which may reflect the protective effect of female hormones prior to the menopause, and possibly also Hormone Replacement Therapy (HRT). Studies of the association between HRT and colorectal cancer suggest it reduces the risk of colon cancer but not rectal cancer.<sup>2</sup> Further evidence to support this theory comes from the US where a reduction in women's colorectal cancer rates was witnessed in the 1950s when hormonal treatment came into use. It was not witnessed in men until the 1980s or 1990s. There is also an association between cancers of the female reproductive system and colorectal cancer.

Differences in health behaviour are also witnessed between the sexes. Unhealthy lifestyle is more common among men than among women. In general it appears that high body mass index (BMI) is a risk factor for

# Epidemiology

colorectal cancer and the risk is higher for men than for women. It is not clear which is the best measure of obesity to assess this, e.g. BMI or waist to hip ratio, but it is clear that for those who have the Metabolic Syndrome, the risk of developing colorectal cancer is greater in men than in women. It has also been suggested that women tend to underestimate their weight and men to do the reverse, so part of the findings may be artificial. Some studies have suggested that a diet rich in red meat, particularly barbecued red meat, and low in fruit and vegetables increases the risk of colorectal cancer. Research on food preferences for men and women suggest that this may be a contributory factor. Men consume more red meat in comparison to women in most countries. There are also suggestions that tea protects men but not women and seeds and nuts protect women but not men. People who are physically active appear to have a reduced risk of cancer compared to those who are not. This may be due to the impact of exercise on male and female hormones and on bowel transit time, which reduces contact time with carcinogenic material. Men benefit more from being physically active which may reflect a beneficial effect of exercise on an increase in male sex hormones while regular physical activity does not appear to reduce oestrogen levels. The benefit for men may also be mediated through a reduction in body weight. The clustering of good health behaviours in people who exercise may also affect this. Smoking is believed to be associated with colorectal cancer and men, historically, have higher smoking rates than women. While the distribution of such behaviours reflects gender differences the impacts of these behaviours on risk and on variation between men and women reflects biological factors. Women's higher risk of proximal cancer reflects biological factors but diet, activity, and body size also play a part. Meat consumption, raised BMI, and lack of activity are risk factors for proximal colorectal cancer while low consumption of vegetables and fibre and the use of alcohol are linked with distal colorectal cancer. The gender differences are moderated by sex linked factors but the pathways are complex. Changes in both male and female risk factors can moderate risk, but changes beneficial to women e.g. exercise, low consumption of meat and a healthy BMI for proximal tumour prevention in women and alcohol and its association with distal cancer, may be more important in men. Insulin resistance is associated with both breast and colon cancer.<sup>2</sup>

# Epidemiology

No papers were found which assessed epidemiology in respect of disability, health literacy or faith and belief.

## Summary of Section - Epidemiology

In the European population colorectal cancer is most common amongst people aged 75 and over, therefore rates are expected to rise in the UK as the population ages.

People living in poverty are more likely to present with a more advanced stage of disease. Co-morbidity reduces post diagnosis treatment and survival rates. Where both factors are present the impact will be cumulative.

The number of BME people living in the UK is increasing. As this population ages, the number of cases of colorectal cancer in the BME population will also increase. Evidence, predominately from the US indicates that BME people present with colorectal cancer at a younger age than non-BME counterparts and are more likely to receive diagnosis of advanced stage cancer. The limited evidence available from the UK is suggestive of a similar epidemiology, though more research is recommended to confirm this. There is also evidence to suggest that the site of the tumour varies among specific BME groups, which may have an impact on screening and treatment services if confirmed in the UK.

Despite women being diagnosed with more advanced stage cancer, they have better survival rates than men. Women also tend to develop proximal tumours whereas men are more likely to develop distal colon cancer.

No evidence was identified in relation to disability, health literacy, faith and belief or sexual orientation and colorectal cancer.

Overall the recommendations, based on the available evidence, for epidemiology and colorectal cancer are Grade C.

# Screening for Colorectal Cancer

## Socio-economic Status

A variety of papers from three countries have researched the effect of socio-economic deprivation in relation to colorectal cancer screening. The research has taken place in the UK, United States and Canada. Wardle draws attention to the fact that socio-economic status embodies resources like knowledge, money, power and prestige, which provide multiple opportunities to avoid risks of disease.<sup>21</sup> As new developments take place, people with more educational and financial resources will be in a better position to take advantage of them. Thus, a result could be a change in the disease gradient reflecting the new preventive behaviour. She concludes by stating 'the fundamental cause hypothesis' that as long as income and education are distributed unevenly in the population the changes in health behaviours will be differentially distributed across the population.<sup>21</sup>

Prior to the introduction of a pilot sigmoidoscopy screening for colorectal cancer prevention, a questionnaire was sent to 400,000 adults in the UK asking whether they would attend if invited. Data from this questionnaire indicated that both interest in screening and subsequent attendance had a direct correlation with socio-economic status. Participation rates in Scotland analysed using neighbourhood level markers of deprivation showed that people from more deprived neighbourhoods were less likely to return the screening interest questionnaire and less likely to express interest if they returned it, and also less likely to attend for a sigmoidoscopy if invited.<sup>21</sup> (2++) After standardising for age, bowel symptoms and general health, a graded relationship between socio-economic status and screening intention was found. Also lower socio-economic status groups reported higher levels of stress and lower levels of social support. The perceived benefits of screening were higher while the perceived barriers of fear and fatalism were lower in higher socio-economic groups and the effects were linearly patterned across the socio-economic groups. The odds of the highest socio-economic group expressing an interest in attending for screening were more than twice those of the most deprived group. Currently in the UK colorectal cancer mortality

# Screening for Colorectal Cancer

shows almost no gradient by socio-economic status but, if screening were introduced the findings of this study suggest that mortality rates for this cancer could well start to show a strong socio-economic gradient. Whynes and Weller report results from pilot colorectal cancer screening in the UK, Whynes from the first phase of a pilot and Weller from the second.<sup>22, 23</sup> In Whynes' study, 153,000 asymptomatic individuals aged 45-74 years were divided into equal sized intervention and control groups. The intervention group received a haemoccult Faecal Occult Blood (FOB) test kit by mail every two years and the database was interrogated from a socio-economic perspective to determine the extent to which relative deprivation contributed to an explanation of colorectal cancer. The randomisation took place on a deprivation index for the general practices concerned. This study confirmed the findings of Wardell that practices where deprivation was higher had a lower participation rate. In following up patients with cancer during the course of the trial it was found that stage A cancers were more prevalent amongst those who had some degree of participation with the screening programme compared with those who had no participation, odds ratio 2.78. (2+) Analysis by multiple regression also shows that higher deprivation is associated with earlier death. Similar findings were reported from studies undertaken in South Thames, Central Scotland and Wessex.<sup>22</sup> Whynes concludes by saying that FOB screening increases the chances of having a cancer diagnosed and treated at an earlier stage, and treatment at an earlier stage offers the prospect of longer subsequent life expectancy. However, those from more deprived areas are less likely to accept an invitation to be screened. Independently of their screening behaviour, females have post treatment survival prospects superior to those of males, although those prospects are lower if the patient originates from a more deprived area. The authors conclude that a disproportionate share of the survival and life expectancy benefits for faecal occult blood screening must have accrued to those from less deprived areas.

Weller reports on the second round of the pilot and his analysis is restricted to data from the English site only.<sup>23</sup> Men and women aged 50-69 years registered at general practices in the Coventry Teaching Primary Care Trust,

# Screening for Colorectal Cancer

North Warwickshire Primary Care Trust, and Rugby Primary Care Trust were eligible. Data on ethnicity and deprivation were linked to the screening database. Only subjects who participated in both rounds of bowel screening were included in the analysis, and logistic regression was used to investigate associations between demographic, ethnic variables and measures of uptake and positivity. Following appropriate exclusions the response rate was 54.5% of 127,746 invited to participate, lower than the first round of the pilot. Uptake was significantly lower in men than in women and increased with increasing age. Uptake fell with increasing levels of deprivation from 61.2% to 37.2% using indices of multiple deprivation quintiles 1-5 ( $p < 0.0001$ ) and was lower in areas with a high proportion of people from the Indian subcontinent (40.4% compared to 54.0%). Uptake of colonoscopy for those who had a positive screening test was 82.8%. The positivity rate was 1.77% and, as in the first round, the positive rate was higher in men than in women and increased with age. The positive rate increased significantly with increasing levels of deprivation and was highest in areas with a higher proportion of people of Indian subcontinent origin and these effects remained significant in multivariate analysis. These results indicate that to minimise inequalities in uptake, targeting of screening services may be required more for deprived and certain ethnic minority groups. (2+)

Simon conducted a UK study to investigate whether people of lower socio-economic status groups will have a more emotionally charged response to a pilot study of screening using a flexible sigmoidoscopy.<sup>24</sup> She assessed the emotional well-being of a sample of participants prior to screening, following the screening test and also of those who were referred for colonoscopy. At the baseline the more deprived groups were significantly more anxious and more worried about developing cancer both before and after screening than other groups. Anxiety was reduced from before to after screening but there was no evidence of a differential effect across socio-economic groups. Bowel cancer worry also decreased significantly over the period of screening but again with no interaction with deprivation. At three months post-screening, the levels of distress in the sample screened were low compared to other community and

# Screening for Colorectal Cancer

population samples. Distress was not associated with socio-economic status but there was a graded response between socio-economic status and anxiety. Ratings of positive consequences for screening were also linked to deprivation but lower socio-economic status groups reported more positive consequences of screening. (2++)

In summary, anxiety was higher in lower socio-economic groups both before and after screening reflecting established differences in the psychological well-being found in general population studies. Worry about cancer was also higher. However the results of this test showed no evidence that lower socio-economic status groups had more negative reactions to screening. Overall the levels of distress and anxiety were low post-screening. More importantly they were lower for the two outcome groups who had more pathology detected. People referred for colonoscopy also reported the most positive consequences of taking the test. Contrary to expectation the lower socio-economic status groups were not any more adversely affected by being referred for colonoscopy. The study demonstrates that lower socio-economic status groups were able to gain as much, if not more, psychological benefit from undergoing screening as more affluent groups.

Reports from the US indicate that Black and Minority ethnic groups and those without health insurance have more late stage colorectal cancer diagnoses and over the past decade have experienced less overall decline in colorectal cancer deaths than Whites and the insured.<sup>25</sup> A study in a multi-ethnic, low income, adult population assessed knowledge, preferences, perceptions and attitudes towards colorectal cancer screening and predictors of FOB test completion.<sup>25</sup> The study was carried out in a community health centre with 60% of patients below the Federal poverty line and 62% African American. Adults over the age of 40 were asked to participate in this survey about health care, cancer and colon cancer specifically. Ninety two percent accepted a Faecal Occult Blood (FOB) test kit and 29.7% returned the test sample. There was a significant interaction between both income and screening status and cancer fatalism and screening status. For those over 50 and not up-to-date

# Screening for Colorectal Cancer

with screening, cancer fatalism was found to be a negative predictor of card return. FOB testing was found to be associated with higher income levels and higher education levels. The study suggests that specifically targeted programmes will be required to expand colorectal cancer screening among low-income multi-ethnic populations. (2+)

Cancer mortality rates are 10-15% higher among the poor than among other Americans.<sup>26</sup> Factors contributing to poorer survival among socio-economically disadvantaged Americans include inadequate physical and social environments, inadequate information about cancer, risk promoting lifestyles, attitudes and behaviours, and diminished access to health care. Poverty also contributes to a decreased chance of survival from cancer.<sup>26</sup> A study of a sample of 211 socially economically deprived people attending a congregate meal site in South Carolina were used to investigate the effects of educational interventions on the uptake of FOB screening. It found that 65-75 year olds were more likely to participate in FOB tests than 85 year olds and in the replication study, male gender, ability to go places without assistance and previous history of having a digital rectum examination and FOB test were predictors of undergoing a further FOB test. In the previous study females had been more willing to participate in FOB tests. The authors recommend further research to confirm these results.<sup>26</sup> (2++)

Mortality is reduced by 15-33% by an annual FOB test and treatment but compliance with the FOB test varies from 30-90%.<sup>3</sup> Research on race and gender specific barriers has suggested that African Americans, particularly the elderly, are more fatalistic than other groups. Less knowledge and lower socio-economic status have consistently been associated with lower screening rates. Qualitative research carried out in Michigan identified that African American men were wary of being “experimented on by their physicians”. African American women noted that other factors including how much money they make and their gender might influence the quality of care they receive. The respondents were generally care seeking for cancer screening. Screening has come to be seen as a service to which they are entitled. Lack of trust in

# Screening for Colorectal Cancer

physicians, the health care system and lack of understanding of the progress of non-cancerous polyps contributed to low screening uptakes. The largest barriers to colorectal cancer screening that were reported were health care system barriers, lack of routine offering of screening and follow-up with both positive and negative results compounded by high turnover of physicians and patients' lack of confidence in their providers.

Other factors suggested for non-participation in colorectal cancer screening tests by elderly African Americans include barriers such as cost of screening, decreased access to services, lack of transportation, decreased educational levels and decreased knowledge about screening.<sup>27</sup> Yet when FOB test was offered free, transportation was provided and an educational session on colorectal cancer was held, African American women were still less likely than Caucasian women to participate. Cancer fatalism has been identified as an additional barrier to participation. Perceptions of fatalism can be viewed as an expression of individual and group beliefs, reflecting experiences, meaning and quality of life. These perceptions have the potential to influence individuals' life experiences. This complex psychosocial cycle is influenced by social, cultural, political, spiritual and economic factors and develops over time. Factors such as insensitivity of health care providers, discrimination in the health care setting, mistrust of health care providers, decreased access and limited finances, influence a revolving fatalistic course and keeps the individual entrenched in this cycle of late cancer diagnosis and death.<sup>27</sup> A descriptive study quantified high versus low levels of cancer fatalism and identified predictors of high levels of cancer fatalism among elderly African American women. Forward stepwise logistic regression was used to provide a probability model, which predicted high levels of cancer fatalism based on age, education and knowledge of colorectal cancer and was statistically significant. Research suggests that cancer fatalism may not be an all or none phenomenon and that high levels of cancer fatalism are associated more often with lower levels of participation in colorectal cancer screening. Predictors of high levels of cancer fatalism were age, knowledge of colorectal cancer and educational level. Despite the fact that the mean age of women was 75 years, older women were

# Screening for Colorectal Cancer

more likely to have higher levels of cancer fatalism. Lower levels of knowledge of disease, when coupled with lower educational levels, probably reflect absence of effective interventions suitable for educational levels as opposed to lower educational levels being solely responsible for the decreased knowledge. From a philosophical perspective it is difficult to dissociate demographic factors from the interrelationships within social, cultural, economic and political structures that also influence attitudes, health care behaviours, values and beliefs. These interrelationships are impossible to isolate statistically. Thus, although income may not be a statistical predictor, the influence of lower income on access to and use of services cannot be discounted. Furthermore, people with lower incomes have reported feelings of distrust, perceptions of mistreatment within the health care system, inappropriate diagnosis and referral, and insensitivity of the health care provider.<sup>27</sup> (2+)

A further study investigated differences in colorectal cancer screening rates for Black and ethnic minority groups according to income category, FOB tests and proctosigmoidoscopy use in 1997.<sup>28</sup> Socio-economic factors and socio-economic status have been examined as possible contributors to African American/White differences in stage, presentation and possibly treatment. Socio-economic status has been associated with stage at diagnosis for several cancers. Generally, lower socio-economic status is associated with higher cancer stage, more advanced disease at diagnosis and poorer survival prognosis, whereas upper level socio-economic status is associated with more localised disease at time of diagnosis.<sup>28</sup> Mandelblatt and co-workers suggested that African American race, female sex and low socio-economic status were related to stage of diagnosis of colorectal cancer but socio-economic status was the most important determinant of stage.<sup>16</sup> Poorer survival in African Americans was related to advanced stage at diagnosis, which accounted for more than 50-60% of the difference.

Socio-economic status is gaining attention as a possible explanatory factor for racial differences in cancer. African Americans and Latinos are over-represented in terms of low socio-economic status and insurance status.

# Screening for Colorectal Cancer

High poverty rates as well as high rates of uninsured individuals significantly influences access to cancer screening, diagnosis and treatment for racial and ethnic minorities compared with Whites. In the Veterans administration system after adjusting for factors such as co-morbidity, stage and anatomic site, no significant differences were observed in treatment of this disease between African Americans and Whites. This suggests that in an equal access medical system where the standards of care are the same, there is no difference in surgical, chemotherapy or radiation therapy for colorectal cancer in African American versus White Veterans. Studies by Ball and Elixhauser however have documented that African Americans were hospitalised with more sequelae from colorectal cancer and received less aggressive therapy.<sup>28</sup> Treatment was equivalent for only the sickest patients. Of the less severely ill patients, African Americans were less likely to receive standard therapy when compared to Whites.

Surgical differences for colorectal cancer also appear to be related to race in Medicare beneficiaries. African Americans were less likely to receive surgical resection even after adjustments were made for co-morbidity, stage and anatomic location of tumour and were also more likely to die even after adjustment for a variety of factors. Survival is poorer for African Americans than for Whites overall and within stage with few exceptions. Differences in survival may be partially explained by social and economic differences between minorities and Whites, but the existence of differences in tumour characteristics or differences in anatomic location of tumours may suggest differences in aetiology and exposure. Further research is suggested for colorectal cancer risk factors specific to African American and other minorities, differences in treatment and the role of socio-economic status.<sup>28</sup> (1+)

Screening policy in Canada since 2001 has recommended FOB testing every one or two years or flexible sigmoidoscopy every five years for screening individuals at average risk who are 50 years and older.<sup>5</sup> The Canadian health care system covers all necessary medical services without user fees. The study investigated the association of neighbourhood income (a

# Screening for Colorectal Cancer

marker of socio-economic status) with receipt of colorectal cancer screening investigations for people living in Toronto. People aged 50-70 years of average risk for colorectal cancer were included in a longitudinal survey from 1997-2001. Census data were used as a marker for surrogate income and the population was divided into quintiles. The study cohort comprised 1,810,702 people, mean age 58.6 years. After adjustment for all variables people in higher income quintiles had increased odds of receiving any investigation than those in the lowest. Those in the highest income quintile had a 1.5 times higher odds of receiving colonoscopy than those in the lowest. Increased income was associated with a 1.3 odds of receiving any colorectal investigation. Universal health insurance alone may not reduce socio-economic status differences in health care. Organised screening programmes may be necessary to reduce the disparity as fewer than 21% of people in the screening eligible age group were screened for colorectal cancer between 1997-2001.<sup>5</sup> (2++)

## Ethnicity

Most of the work regarding screening and ethnicity originates from the US. The exception is a British study conducted by Weller, who reported the uptake rates for FOB test screening in England.<sup>23</sup> The uptake rates for this screening test were lower in areas where there was a high proportion of people from the Indian subcontinent and this difference remains statistically significant after multivariate analysis. However, the highest rates of positive tests following colonoscopy were in areas with a high proportion of people from the Indian subcontinent. The study concluded that ongoing efforts would be required to minimise inequalities in uptake of screening tests by targeting certain ethnic groups.

Literature from the US has indicated that uptake of FOB and sigmoidoscopy screening is significantly lower in African Americans. This was reported by Baquet, Powe, Holmes-Rovner, Greiner et al, and Lloyd.<sup>3, 25, 27-29</sup> Two studies

# Screening for Colorectal Cancer

reported on the uptake of colorectal cancer screening in the Hispanic or Latino population. Baquet, reported that the uptake was lower than Whites but higher than Blacks, and Guerra, who found that uptake among the Latino population was lower than Whites.<sup>28</sup> Lesions detected in African Americans who were screened were typically much further advanced and twice as many cancers were discovered prior to age 50 in African Americans. The American College of Gastroenterology has revised its recommendations from March 2005, on the strength of this evidence, and is now recommending African Americans to begin screening colonoscopies at age 45 rather than the standard age of 50 for the majority population.<sup>29</sup> In the state of South Carolina, the incidence rates for colorectal cancer are greater among Blacks than among Whites and Black males and females have higher mortality rates from the disease than both White men and women, with Black males having the highest mortality rate.<sup>29</sup> Socio-economic status may be a possible indicator of lack of insurance and an additional barrier to uptake of screening.<sup>28</sup>

Holmes-Rovner conducted a qualitative study with African American men, African American women, White men and White women. In the study women in both groups were familiar with FOB test cards and were more positive about using them. White women were convinced that screening works, men and Black women were less aware of the effectiveness of screening. Only White women were convinced that screening was effective. Black men thought it was too late and Black women and White men were not sure. Black people had less trust in the health care system than White people. In the same study, it was also identified that men requested and required more detailed information about screening tests to ensure that they participated in the screening programme.<sup>3</sup> This was a factor which was also picked up by Powe in exploring the issue of cancer fatalism.<sup>27</sup> Factors highlighted included insensitivity of health care providers, discrimination in health care settings, mistrust of health care providers, decreased access and limited finances, all combining to contribute to the fatalistic view that some Black American populations have of colorectal cancer and screening. Cancer fatalism appears to be higher among African American women, people with lower levels of formal education, those

# Screening for Colorectal Cancer

with lower income, and those with lower knowledge of colorectal cancer. In a study conducted at an old peoples' centre with 204 elderly African American women, it was found that 63% of women had high scores for cancer fatalism and were less likely to participate in colorectal cancer screening. Women with high levels of cancer fatalism were older, had less knowledge of colorectal cancer and lower levels of formal education. Powe suggested that the lower levels of knowledge about colorectal cancer coupled with lower educational levels most likely reflected the absence of effective interventions suitable for the educational level as opposed to lower educational level solely being responsible for the decreased knowledge. Powe raised the issue of trust and recommended that culturally appropriate educational material should be the norm rather than the exception and professionals must move beyond simple recognition of beliefs such as cancer fatalism to an open discussion of those beliefs with the patients with effective interventions to modify their beliefs.<sup>27</sup> Guerra also touched on education for the Latino population, as did Greiner, who also reported that colorectal cancer screening knowledge was negatively associated with African American race.<sup>25, 30</sup>

## Health literacy

Health literacy is closely associated with socio-economic deprivation, race and frequently age. US research has examined the effect of health literacy in greater detail. Peterson defined health literacy as 'the capacity of an individual to obtain, interpret and understand the basic health information and services and the competence to use such information and services in ways which are health enhancing'.<sup>31</sup> Low literacy skills are associated with less knowledge about cancer screening, less screening participation in general and worse clinical outcomes.<sup>31</sup> Peterson recruited a convenience sample attending a local Medicare and Medicaid clinic for further study. Ninety-nine participants completed the rapid assessment of adult literacy and the structured interview. Limited health literacy was significantly associated with more barriers to completing the FOB test or colonoscopy and less knowledge about colorectal

# Screening for Colorectal Cancer

cancer or colorectal cancer screening. Fewer participants with limited health literacy were up-to-date for colorectal cancer testing compared to participants with adequate health literacy. (2+) An earlier study by Wolf et al, again a convenience sample of small size, revealed that workers in health care had many inaccurate beliefs about colorectal cancer or colorectal cancer screening. However, most members of this group agreed that they would undergo screening if their physician discussed this with them.<sup>32</sup>

Findings from a rural American community of European, African and Native American population identified that African American women had less positive beliefs about colorectal cancer screening than European Americans or Native Americans.<sup>33</sup> Among Native American women, those with some college education were more likely to be screened than those who were High School graduates or those who had less than the High School education. European American women with knowledge above the median score were more likely to be screened.

A further study in a Kansas community health centre, 69% of the sample population were African American and 71% were on low income, showed that colorectal cancer screening knowledge was negatively associated with reporting the endoscopy barrier and positively associated with higher income levels.<sup>25</sup> Models showed that African American race or ethnicity was negatively associated with colorectal cancer screening knowledge. Less than High School education was significantly associated with more barriers to faecal occult blood test screening. Greiner et al found that approximately 55% of their participants had no knowledge of colorectal cancer screening guidelines. This study also showed that discussion of colorectal cancer screening with a physician increased the uptake of colorectal cancer screening.

Having adequate functional health literacy was significantly associated with having heard of colorectal cancer and sigmoidoscopy or colonoscopy.<sup>30</sup> Poor health literacy was associated with being less aware of the starting age or screening interval. Information on screening should be tailored for patients with low literacy.

# Screening for Colorectal Cancer

## Age

In the US it has been reported that older persons are less likely to participate in FOB tests than younger persons.<sup>25-27</sup> Higher levels of cancer fatalism were more common in the elderly, who also had less knowledge about colorectal cancer, and had lower levels of formal education.<sup>25, 27</sup> An education programme designed for elderly Americans has been suggested as a means of improving the uptake of screening in the older age group.<sup>26, 27</sup> On the other hand offering screening tests to a younger age (40-50 year olds) found that there was a 5% increased odds of FOB return per year of additional age and that this result is consistent with current recommendations that only individuals over 50 years receive colorectal cancer screening.<sup>25</sup> (2+)

A report on the uptake of the second round of colorectal cancer screening in the West Midlands, UK, for patients aged 50-69 years found the uptake of screening increased with age from 45.7% in those aged under 55 years to 58.5% in those aged 65-69 years of age. The positive rate for colonoscopy for those with a positive FOB was increased with age.<sup>23</sup> A colorectal cancer screening trial in England found that survival following a diagnosis of cancer is less in subjects who are older at the time of treatment (surgery) but more likely if they have participated in screening and are female.<sup>22</sup> (2+)

Further evidence to support the inequalities agenda for screening in the elderly, is shown by the widely differing guidance in respect of age limits used in breast cancer screening programmes. Many nations have an upper age limit of 70 years for screening for breast cancer however the positive predictive value of a mammogram and the sensitivity of a mammogram increase with age.<sup>34</sup> Some public health experts have suggested that screening invitations might usefully be extended up to 75 years of age, at least for women in good health. Some have suggested that a reasonable recommendation would be to offer yearly mammography to older women without severe co-morbidities and an estimated lifespan of at least five years. A likely reason for non-participation in screening programmes is the number of co-existing illnesses, which tend to

# Screening for Colorectal Cancer

increase with advancing age. Life expectancy at 70 years may range from 15.5 years in healthy women to almost half that at 8.6 years in women who have significant co-morbidity.<sup>34</sup>

## Gender

A study has found that women were more likely to participate in the screening tests for colon cancer, however this research was conducted at a single site and had a small sample size.<sup>25</sup> Colon cancer kills men and women with nearly equal frequency: although polyps are slightly more common in men, they are more deadly in women giving rise to virtually equivalent mortality rates.<sup>29</sup> The second round of screening for colorectal cancer in England found that FOB screening uptake was lower in men than women and the difference was statistically and clinically significant.<sup>23</sup> (2+) Men also had a higher positive screening test and higher positive predictive values for cancer and neoplasia.

No screening papers for colorectal cancer addressed issues relating to faith and belief, sexual orientation or disability.

# Screening for Colorectal Cancer

## Summary of Section – Screening for Colorectal Cancer

There is a clear link between poverty, ethnicity, health literacy and sex with lower uptake of screening programmes for colorectal cancer, with the evidence suggesting that these aspects influence an individual's attitudes and beliefs. With regard to sex, screening rates for men are lower than those of women. Health literacy is an important factor in understanding and engaging with screening programmes. Lower levels of health literacy are associated with lower participation rates in screening programmes.

No evidence was found that examined the relationship between disability, faith and belief or sexual orientation and screening for colorectal cancer.

The recommendations based on this evidence are Grade C.

# Colorectal Cancer & Surgery

Most of the literature regarding colorectal cancer refers to active treatment of patients with the disease. Treatment may comprise a combination of surgery, chemotherapy or radiotherapy. Some patients will have all three modalities at different points in time during the course of their illness and others may have only one. For ease of reviewing the literature, treatment of this disease will be considered under the subheadings of surgery, chemotherapy and radiotherapy.

## Age

Surgical resection of colorectal carcinoma remains the only curative treatment for colorectal cancer to date.<sup>6, 10</sup> However, until the 1980s, curative excision was attempted far less frequently among elderly patients than their younger counterparts. The underlying belief, both stated and implied, was that the elderly were poor surgical candidates not only because of a high risk but also because of the perception that they had less potential gain even after a successful resection.<sup>10</sup> Despite the fact that elderly people represent a major proportion of colorectal cancer patients they are frequently being under-treated both for early and advanced stage disease.<sup>8</sup> Surgeons tend to evaluate patients according to their chronological rather than their biological age. The percentage of elderly patients participating in trials varies from 2.5% to 35%, which is not representative of the actual demographic characteristics of colorectal cancer patients.<sup>8</sup> Most clinical trials tend to impose an upper age limit, commonly 75 years, leading to absence of evidence based guidelines for treating older patients. Local excisions due to poor physical conditions were more common in the elderly.<sup>7</sup>

There is significant gain for treating patients with surgery irrespective of their age.<sup>8, 35</sup> Recent surgical and anaesthetic techniques have improved the number of adequate oncological resections in the elderly.<sup>6</sup> Recently there has been a refocus on the preconception of the elderly as frail and infirm and decision-making now includes risks predicted by co-morbidities and performance status rather than age alone.<sup>10</sup>

# Colorectal Cancer & Surgery

A study, by Vironen, of 294 patients between 1980-97, 32% of whom were aged 75 years or older, offered surgical treatment to all patients considered to be fit for major surgery irrespective of age. All efforts were made to correct and treat co-morbid conditions before surgery.<sup>7</sup> The median follow-up time was 5.1 years. The tumour stage, site, distribution and proportion of potentially curative operations were similar in both groups. The average age of the younger group was 63 years and the average age of the elderly group was 80 years.<sup>7</sup> The post-operative mortality rate was 1.7% for the older age group and zero for the young age group at 30 days respectively.<sup>7</sup> The overall number of complications after surgery was similar in both groups, 29% in the elderly group and 24% in the younger age group ( $p=0.3$ ).<sup>7</sup> After potentially curative surgery the crude survival at five years was 43% in the elderly group and 65% in the younger group.<sup>7</sup> The five year cancer specific survival was similar in both groups ( $p=0.6$ ). The five year disease-free survival was 60% in the elderly group compared to 69% in the younger group ( $p=0.4$ ).<sup>7</sup> (2++)

Another systematic review, conducted by Golfinopoulos, of 34,194 patients divided into age groups younger than 65 years, 65-74 years, 75-84 years, and 85 years and older, analysed patients who underwent curative, palliative, emergency and elective surgery and showed that the relative risk of post-operative death compared to the referent group of patients younger than 65 years was 1.03, 3.2 and 6.2 respectively.<sup>8</sup> A similar trend was demonstrated in post-operative morbidity. The cancer-specific median five-year survival rate was similar in all age groups. (1+)

A further retrospective study found evidence similar to that of Vironen and Golfinopoulos and it also was found that perioperative complications did not differ significantly between 157 patients aged 75 years and older and 174 younger randomly selected patients from a larger group.<sup>6</sup> Although the overall survival was lower in the elderly group (five year survival 51% versus 66% in the younger age group:  $p=0.02$ ) the disease specific survival rates in the two groups were similar. Five year disease specific survival was 69% versus 71% ( $p=0.75$ ). The study also suggested that surgical resection of the primary

# Colorectal Cancer & Surgery

tumour at diagnosis may delay or even preclude systemic chemotherapy especially in the elderly patient group.<sup>6</sup> (1+)

Finally, a study examined the treatment of stage IV colorectal cancer using 186 unselected patients from 1995-2001, none of whom were candidates for curative resection, to determine whether resection of the primary tumour in stage IV disease offered any survival benefit. It found that there was no significant relationship between the management of the primary tumour and mortality. The outcome of the study indicated that wherever possible patients who are symptomatic from their primary tumour should have their tumour removed in order to prevent or treat complications. However in patients with only minor symptoms the benefit of tumour resection was not shown. The authors concluded that the prognostic advantages for primary tumour resection in asymptomatic patients are outweighed by perioperative mortality and it is therefore difficult to warrant an operation. The number of metastatic sites and tumour load were of almost equal importance in predicting survival.<sup>36</sup> (2+)

## Health Literacy

There was a lack of research evidence examining health literacy and colorectal cancer, therefore the example of breast cancer was used to explore the issue. Health literacy was addressed in a study from the United States in relation to treatment for breast cancer.<sup>37</sup> It identified that breast cancer incidence rates are lower for women of Colour than for Caucasian women but mortality rates were disproportionately higher. Disparities in survival were partially a function of diagnosis at a more advanced stage. Reasons identified included limited opportunities for screening and cultural beliefs about risk and mortality. This review suggested that ethnically diverse and disadvantaged women were less likely to receive culturally appropriate information from their physicians, to be involved in therapeutic decisions or to receive definitive treatment for early stage breast cancer. A high proportion of women of low income and

# Colorectal Cancer & Surgery

with lower levels of education continued to receive a mastectomy rather than breast conserving therapy. Patients and surgeons disagreed in one third of cases as to whether breast-conserving surgery had ever been discussed. This agreement doubled in a less educated group. A similar proportion of women in another study did not perceive that there had been a choice of procedure at all. It was concluded that women and the health care team were not working together to plan breast cancer treatment for individual patients. It was stated that while information is necessary it is not sufficient and other facets of decision-making including attitudes, culture, experience and emotion may affect the perception of information or render facts inconsequential.<sup>37</sup> (1+)

It was suggested that there was a possibility that women's choice of mastectomy reflected inadequate appreciation of the evidence against that decision. However, there was also the possibility that the decision may reflect a concomitant avoidance of inconvenient adjuvant therapies that reflects her taking into consideration the total impact of her decision on herself and her family. Barriers of relevance for individual women included lack of transportation, childcare, absence from work, family responsibilities and financial pressures.<sup>37</sup>

Communication difficulties result in women and the health care team not working together to make the most appropriate treatment decisions for their breast cancer. Women claimed they had insufficient knowledge to make a critical treatment decision and felt they were 'gambling with their health'. The emotional context includes patient, family, as well as physician variables and reaction to the diagnosis; furthermore coping skills vary between ethnic groups. The emotional context of health care decision-making is embedded in culture and role theory and decisions for patients cannot be supported without an appreciation of the social and familial emotional context. Emotional context may influence the patient's interest and ability to be involved in the treatment decision process. Additionally, individual patients differ in their preference for involvement in the decision making process. The health care provider has to assess how much control the patient wants to exercise in the decision-making

# Colorectal Cancer & Surgery

process and present appropriate information in a culturally acceptable manner. Deber has suggested that the treatment decision process is more convoluted than simply information, context and emotion and that decisions are made in a dynamic process of structuring choices (problem solving) and weighing those choices through two often simultaneously operating decision modes – analytic and experiential.<sup>37</sup> The analytic mode applies conscious reasoning, weighing the facts to construct decisions. This mode is most easily addressed with tools to present factual information. In contrast, the experiential mode applies to emotional responses, associations and intuitions to judging information. Emotional responses and intuition include cultural, ethnic and economic elements. The latter is a less rational mode and is difficult to anticipate and support in individuals.

## Ethnicity

In relation to colorectal cancer a study reviewed 256 patients attending the Royal Middlesex Hospital, England from 2000-04 by age, gender and ethnic group. It revealed that operative procedures carried out mirrored the distribution of cancer, but that a higher proportion of patients of Mediterranean origin presented with Duke Stage A cancer compared to Afro-Caribbean and Caucasians, while Duke C cancer was more common in White and Afro-Caribbean patients.<sup>17</sup> (2++) Of significance was the fact that a high proportion of patients did not undergo curative surgery or even any surgical procedures at all, highlighting the advanced presentation of cancer in the Afro-Caribbean and Caucasian population. The author suggested that Afro-Caribbean patients should not be investigated alone with flexible sigmoidoscopy because of the high proportion of proximal bowel cancers. It also recommended screening the ethnic population at a younger age due to the younger age at which these patients present.

# Colorectal Cancer & Surgery

## Socio-economic status

Only two papers, both British, were identified which examined socio-economic status in relation to surgical intervention for colorectal cancer. A study examined 653 cases of colorectal cancer among patients resident in the North and North-East of Scotland.<sup>14</sup> It reported that there were few differences, by deprivation, in proportions of patients receiving surgery, and the times between referral and treatment were equal among all deprivation categories.<sup>14</sup> (2+) Another study of 3,200 patients undergoing resection for colon cancer between 1991-1994 in eleven hospitals in the central belt of Scotland found that the following factors significantly influenced survival following curative resection for colorectal cancer: age, sex, deprivation, mode of presentation and Dukes stage.<sup>38</sup> The hazard ratios for patients undergoing curative resection varied among hospitals from 0.58 to 1.32 and for palliative resection from 0.73 to 1.26. The results from the study identified that there were large variations among hospitals in age distribution, extent of deprivation, mode of presentation, extent of tumour spread at presentation and pathological stage. The majority of hospitals had similar case mix and therefore adjustment of the above factors had little impact on the hazard ratios. However some hospitals had a skewed case mix and following adjustment the hazard ratios diverge markedly. Despite endeavours there are still a number of factors including the assessment of cure and the quality of pathological reporting which may have introduced bias. Outcome relative to deprivation appeared to be consistent within the eight hospitals. The differences identified were thought to be related to number of patients treated at each hospital or whether or not the surgeons were specialists.<sup>39</sup>

## Disability

The available literature in relation to disability and the surgical treatment of cancer was again very sparse. For the purposes of researching inequalities

# Colorectal Cancer & Surgery

in surgical treatment for cancer patients it was felt necessary to explore this using an alternative common tumour. Disability was only addressed in one paper, McCarthy et al, and this was in relation to breast cancer surgery.<sup>40</sup> The paper identified that disabled women were less likely to receive treatment with breast conserving surgery, were less likely to have axillary lymph node dissection and were also less likely to receive radiotherapy among the subgroup of the population of women who had breast-conserving surgery. This study population was of young women aged 21-64 years who were already registered as disabled at the time of diagnosis of breast cancer and had early stage disease (stages I-III A). (1+)

Reasons for the difference in treatment proposed were: that disabled women were unlikely to be included in clinical trials; that physicians recommendations may be affected, consciously or unconsciously, by pervasive societal stigmatisation of certain disabilities; and misperceptions about the patient's actual abilities, quality of life and preferences for care; that cancer could complicate patient's perceptions of their physical and emotional well-being, which were already tied in complex ways to their disability. It was also suggested that disabled women must often consider important factors beyond tumour characteristics, for instance the clinical implications of their underlying medical conditions for cancer treatment and side-effects, as well as the very practical questions such as the potential effects on independent living, performance of daily activities, and use of mobility aids requiring upper body and arm strength and agility.

## Gender

No paper addressed surgical treatment for colorectal cancer in respect of gender, therefore in order to examine this inequality strand another common tumour was used. The literature review identified one paper that addressed treatment for prostate cancer and included surgical treatment as part of the

# Colorectal Cancer & Surgery

process. The study, carried out by Chapple and Ziebland in the UK, used purposive sampling to recruit 52 men with experience of a wide range of treatment for prostate cancer and interviews were carried out throughout the UK mainly in men's own homes from 2000-01. Among issues identified by men during these interviews was that many men were reluctant to consult doctors as men do not like to be considered weak for this is a threat to their masculinity. In British culture it was suggested that it was not macho to seek help for health problems.<sup>41</sup>

Prostate cancer and its treatments lead to situations where there is lack of control over bodily functions. Both before and after treatment many men had urinary symptoms such as urgency or frequency. They describe the embarrassment and inconvenience of having to search for lavatories while out shopping or travelling. One man commented that 'I don't believe that men are stronger than women or women are stronger than men. I think obviously they are equal but I think that the mental state of a man is such that he feels more let down by anything he cannot control than a woman would.'<sup>41</sup>

Another issue raised was that in British society work has traditionally been seen as a major source of status and identity, particularly for men, and masculinity has been associated with being a breadwinner. Many men said that when they heard the diagnosis, one of their primary concerns was how they would continue to provide financially for their wives and children. Although some men were able to return to work after treatment, one man complained that treatment had affected his ability to work.<sup>41</sup>

Surgical treatment for prostate cancer often causes impotence, and many of the men interviewed had long-term sexual difficulties. Men who had been interviewed following active treatment but without hormone therapy all reported limited sexual function. However they did not all talk about this affecting their sense of masculinity.

# Colorectal Cancer & Surgery

Several explicitly described impotence as a small price to pay. The men seemed to view the impotence as being confined to lack of ability to maintain an erection and not loss of interest in sex and this crucial difference allowed them to preserve their sense of masculinity.

No paper was found to address faith and belief issues in relation to surgical treatment for colorectal or any other cancer.

# Colorectal Cancer & Chemotherapy

## Socio-economic Status

A British study identified that socio-economic factors have been associated with access to specialist cancer services with the less affluent populations having poor access to specialist services and treatments.<sup>42</sup> The NHS seeks to address this by providing a comprehensive programme of guidance setting national standards. The study suggested that while there was a small, statistically significant gradient in the direction of more frequent use of chemotherapy in the highest socio-economic group, the absolute differences were very small in comparison with variation between age groups or between cancer networks.

The lack of available evidence in relation to chemotherapy treatment, colorectal cancer and socio-economic status necessitated the examination of another common tumour. From the US Griggs and Culakova studied breast cancer highlighting the fact that breast cancer survival rates are lowest among women of lower socio-economic status despite the fact that the incidence of breast cancer is lower in disadvantaged women.<sup>43</sup> The study suggests that these disparities were due to several factors, including: more advanced disease in women living in higher poverty areas; higher likelihood of biologically unfavourable tumour characteristics; as well as obesity associated with worse prognosis and higher rates of co-morbid disease.

Another possible cause of poor breast cancer survival rates is inadequate adjuvant treatment. This was investigated using reduced dose treatment prescribed for the first cycle of chemotherapy (an indicator of intentional physician prescribing), for early stage breast cancer.<sup>43</sup> Chemotherapy was considered to be reduced if the ratio of actual to expected dose was less than 0.85. The study found that breast cancer adjuvant chemotherapy was significantly influenced by geographic region, obesity and level of education. Co-morbidity, age and tumour characteristics were not associated with intentional dose reductions. With regard to socio-economic status, the authors

# Colorectal Cancer & Chemotherapy

state that the appropriate use of adjuvant therapy appears to vary according to the level of education, household income, and insurance status.

Guideline concordant care is given less often to patients insured only by Medicare or Medicaid. (2++) The authors suggest that medical providers anticipate a different patient response to the same adverse effects rather than a different adverse effect profile according to socio-economic status. Dose reductions would be intended to reduce the likelihood of such adverse events in order to improve patient compliance with continuing therapy. While speculative, however, lower social status is associated with less information exchange, shorter duration visits, less partnership building, and less social talk in physician-patient encounters. Differences in communication may heighten a provider's uncertainty about the patient's living situation, monetary resources and stressors, and expectations of treatment and social support. This may account for the intentional chemotherapy dose reduction seen in this study.<sup>43</sup>

A study on the problem of under-use of adjuvant therapy for colorectal cancer examined the factors associated with non-receipt of adjuvant therapy for a population of colon and rectal cancer patients in California from 1994-2001.<sup>44</sup> The study postulated that race or ethnicity is not as strongly associated with the receipt of adjuvant therapy for colorectal cancer when socio-economic factors are included in the analysis. 18,649 patients with stage III colon cancer or stage II or III rectal cancers were identified from a linked data source. The dependent variable was the receipt of adjuvant therapy for stage III colon cancers and stage II and III rectal cancers. The 2000 census was used to provide socio-economic information at a census tract level. Socio-economic status was evaluated as the percentage of the population living below the 100% poverty threshold in a patient census tract. The cohort was composed of 74% non-Hispanic White people, 6% Black, 11% Hispanic and 9% Asian.

In general, patients receiving adjuvant therapy were younger, with less co-morbid disease and were more likely to have private insurance. With respect to socio-economic characteristics, patients receiving adjuvant therapy were more

# Colorectal Cancer & Chemotherapy

educated and less likely to live below the 200% poverty threshold. Multivariate logistic regression identified that for patients with stage III colon cancer; increasing age, increasing co-morbidity, Medicaid, and low socio-economic status as measured by percent below the 200% poverty level decreased the likelihood of receiving chemotherapy. In contrast, male gender increased the likelihood of receiving it. For stage II and III rectal cancer, results of the multivariate logistic regression model predicting receipt of chemotherapy for patients showed that increasing age, increasing co-morbidity and low socio-economic status decreased the likelihood of receipt of chemotherapy for both stage II and III rectal cancer patients. (2++) Previous studies have indicated both under-use of adjuvant therapy for colorectal cancer and disparities in the receipt of colorectal cancer treatment.<sup>44</sup>

Several population-based studies found statistically significant differences in colorectal cancer treatment by race or ethnicity. However in these studies race or ethnicity may have been a significant factor because it was serving as a proxy for inadequately measured economic status or other unmeasured socio-economic variables such as education and acculturation, e.g., the ability to speak English.<sup>44</sup> McGory found socio-economic status and race or ethnicity to predict receipt of adjuvant therapy for colorectal cancer.<sup>44</sup> Demonstration that socio-economic status is a more important determinant of receipt of adjuvant therapy than race or ethnicity provides more potential solutions, because policies targeting the poor have the potential to improve access to care and remove financial barriers. For example, there is some evidence that race or ethnicity does not affect treatment or outcome of colorectal cancer when all patients have equal access to care.<sup>44</sup>

Results suggest that interventions to improve access to health care may alleviate some of the documented racial and ethnic disparities with respect to colorectal cancer treatment.

# Colorectal Cancer & Chemotherapy

## Age

There are indications in relation to lung, breast, ovarian and endometrial cancers that chemotherapy use among the elderly is less than optimal.<sup>35, 42</sup> Despite this there is evidence that combination chemotherapy, as a treatment option for colorectal cancer, can improve quality of life and prolong symptom-free survival and overall survival, but that treatment received was significantly associated with age.<sup>4, 11</sup> The proportion of patients who receive chemotherapy declines with age, with patients receiving adjuvant chemotherapy for Duke's C carcinoma being significantly younger than those who did not, with the greatest effect being seen in the 75-84 and over 84 year olds.<sup>4, 11, 45</sup> One study has show that 80% of patients younger than 55 years were treated with chemotherapy but only 11% of those 85 years and older were.<sup>45</sup>

A substantial percentage of older patients with colorectal cancer who are eligible for chemotherapy are not treated. The apparent age bias persists in studies that were adjusted for co-morbidities and patient refusal. Co-morbidity and advanced age were more common reasons for not using therapy in patients 75 years and older than was patient refusal.<sup>45</sup> There is information to indicate that older patients derive similar benefit from standard treatment for metastatic colon cancer as younger patients.<sup>6</sup> (1+)

## Specific Chemotherapy Agents

### 5-Fluorouracil

5-Fluorouracil (5-FU) is one of the most common agents used in the management of colorectal carcinoma. It may be used as monotherapy, or combined with folinic acid, levimasole, or leucovorin, and may be administered as a bolus or as an infusion. It is used for both palliative and adjuvant treatment.

# Colorectal Cancer & Chemotherapy

Researchers agree that there are similar efficacy profiles for adjuvant 5-FU based regimens for all age groups.<sup>6, 8, 10, 12</sup> This included similar times to progression and overall cancer free survival, and patients aged 65-75 years had a similar prognosis as younger patients in relation to colorectal cancer.<sup>8</sup> (1+) Death without cancer was more common in the elderly as expected.<sup>8</sup> Regarding toxicity profiles bolus 5-FU regimens resulted in a higher frequency of stomatitis in elderly patients, though there was no association between age and nausea, vomiting, or diarrhoea.<sup>6, 10, 12</sup> A study of the combination of 5-FU and levimasole showed it was more toxic than 5-FU and folinic acid, with a higher incidence of grade 3 to 4 leukopenia.<sup>6, 10, 12</sup> Constraints of the evidence continue to be the inclusion of only the very fit elderly in the trial, and lack of representation of those in the over 80 age group. When 5-FU was administered as an infusion for advanced disease there was no statistical difference in response rate and survival, with all age groups receiving equal benefit, though when 5-FU was administered as an infusion rather than a bolus, elderly patients had a lower incidence of stomatitis.<sup>6</sup> When infusional 5-FU and levimasole were used, the association between grade 3-4 leucopenia in the elderly was not seen.<sup>6, 12</sup> A pooled retrospective analysis of 22 European trials showed that there was a significantly improved response rate and overall survival and progression free survival compared to bolus 5-FU regimens.<sup>6</sup> The elderly benefit at least as much from palliative 5-FU as younger patients.<sup>6</sup> (1+)

## Capecitabine

Single agent capecitabine is well tolerated and effective in patients with advanced colorectal cancer over 70 years of age, and there is some suggestion of greater effectiveness and less toxicity than 5-FU based regimens.<sup>6, 10</sup> In the palliative setting there was no interaction between efficacy and age, with similar tolerability, outcome, progression free survival and

# Colorectal Cancer & Chemotherapy

survival times.<sup>4, 6</sup> The increased toxicity in the palliative setting was mostly caused by a predictable age related decline in renal function as shown by a significant age related decline in creatinine clearance.<sup>6</sup>

## Irinotectan

Irinotectan has been used as second line therapy, and is associated with better survival in advanced colorectal cancer; specifically there are no age related differences in objective response or median survival between the older and the younger age groups.<sup>6, 9</sup> However, the number of elderly patients in trials was small, patients over the age of 75 were excluded from enrolment, and toxicity and efficacy as a function of age were not reported.<sup>6, 10</sup> There is some suggestion of greater age related toxicity in the elderly, notably grade 3-4 diarrhoea.<sup>10</sup>

## Oxaliplatin

Oxaliplatin has been used combined with 5-fluorouracil and leucovorin in patients with metastatic colon and rectal cancer.<sup>6</sup> Compared to younger patients the elderly did not experience greater toxicity, except for diarrhoea, nor was age found to be a predictor of efficacy, although the number of elderly in the trial was small.<sup>6</sup> (1+) Oxaliplatin causes acute, cumulative neurotoxicity, which is the dose-limiting factor, and a similar response is seen in older and younger patients.<sup>6</sup>

# Colorectal Cancer & Chemotherapy

## Bevacizumab

When used in combination with 5-fluorouracil this monoclonal antibody against vascular endothelial growth factor resulted in clinical and statistically improved survival in patients with metastatic colon cancer.<sup>6</sup> Side effects included haemorrhage, thromboembolism, proteinuria and hypertension.<sup>6</sup> (1+) Trials have excluded patients with atherosclerosis, cardiovascular disease and those using anticoagulant therapy, thus excluding many patients in the elderly age group.<sup>6</sup>

## Complex Regimens

Combination therapy is associated with greater toxicity than a single agent administered alone.<sup>6</sup> In a phase III trial which included the elderly, with regimens using irinotecan and 5-fluorouracil and folinic acid versus the Mayo Clinic Regimen (a standard 5 day bolus fluorouracil regimen), not only were there accumulated survival rates, but age over 65 years was predictive of significantly prolonged progression free survival, with a strong trend towards improved overall survival with triple drug therapy as compared with younger subgroups.<sup>10</sup> (1+) The regimen was well tolerated. It showed that elderly patients might experience outcomes with irinotecan that are equivalent to those in younger patients.

## Trials in the Elderly and Toxicity

Evidence has been gathered in a number of phase II trials. Trials of single agent 5-FU, leucovorin, capecitabine and uracil and tegafur/leucovorin show

# Colorectal Cancer & Chemotherapy

these drugs to be tolerable with a response rate, timed progression and overall survival comparable to that expected in younger patients.<sup>9</sup> However, the safety and efficacy of specific drug combinations in older patients has not been studied in large phase III investigations.<sup>9</sup> Single agent irinotecan has also been shown to be safe and effective in second line therapy in older patients.

Au reported that there was no data that evaluated the combined effect of adjuvant chemotherapy and age on overall survival for rectal carcinoma.<sup>12</sup> They were not aware of any reported trials, which specifically addressed the issue of age and toxicity with the use of pre-operative or post-operative combined therapy in elderly patients compared to younger patients with stage II or III rectal cancer. For palliative colorectal cancer therapy, of the selected randomised control led trials, none reviewed showed an interaction between age and treatment effect on overall survival. Patients who are aged 70 years or older and who have good performance status can be treated with adjuvant chemotherapy for colorectal cancer with no more toxicity than younger patients and can obtain similar benefits in terms of disease free survival.<sup>45</sup> (1+)

Combination therapy is associated with greater toxicity than is observed with single agent administered alone. Trials in the elderly reveal that response to chemotherapy, median survival times and degree of toxicity in these elderly patients appear to be similar to those observed in younger patients.<sup>6</sup> (1+)

## The Elderly and Early Discontinuation of Treatment

Between 30-60% of patients older than 65 years who initiate adjuvant chemotherapy discontinue treatment before completing the standard six-month course. Earlier treatment discontinuation is associated with a nearly 20-50% increase in the risk of cancer related death.<sup>9</sup> (1+) Mortality rates among

# Colorectal Cancer & Chemotherapy

patients who received adjuvant therapy with 5-Fluorouracil and discontinued treatment early had a higher mortality rate than patients who completed 5-7 months of therapy.<sup>6</sup> Although six-month treatment may be optimal there is benefit from even three months' treatment, thus discontinuing therapy four-six months after initiation of treatment if toxicity has begun to impair patients' quality of life is an option.<sup>9</sup>

In the presence of metastatic disease an incremental approach in the elderly may be used, adding more agents if the regime is well tolerated. Efforts to improve the use of adjuvant and palliative chemotherapy in patients with colorectal cancer requires an adequate assessment of patient's medical, physical and social conditions.<sup>9</sup>

## The Elderly, Co-morbidities and Clinical Trials

Elderly patients have frequently been explicitly excluded by eligibility criteria from many clinical trials.<sup>4, 10, 46</sup> This under-representation is more pronounced in trials of new agents and modalities than in trials for the treatment of metastatic cancer.<sup>10, 46</sup> Studies that did enrol older patients tended to enrol a highly selected group of relatively robust, physiologically younger elderly, who may differ from the general population by other factors such as medical co-morbidity, performance status, and different treatment demands that make it unclear whether trial results pertain to older patients in the clinical setting.<sup>4, 9, 10, 46</sup> When elderly are included in clinical trials, data obtained from the trials may thus also be of limited use due to the selection of the elderly who are monitored in clinical trials.<sup>4</sup>

After adjustment for co-morbidity, stage of cancer, race and functional status, older age remained a statistically significant predictor of not being asked to participate in cancer treatment trials.<sup>6</sup>

# Colorectal Cancer & Chemotherapy

The vast majority of the elderly are neither frail nor fit enough to meet stringent clinical trial eligibility criteria.<sup>9</sup> The biggest challenge is to learn how to subclassify this middle group because they represent the majority of those diagnosed with cancer.<sup>9</sup> As only limited data are available on the risks and benefits of specific cancer treatment regimens in the elderly, participation of elderly cancer patients in clinical trials should be encouraged so that appropriate therapies for elderly patients with cancer can be identified.<sup>6</sup>

Furthermore, when reporting their results, investigators neither stratify their findings by age nor the elderly patients by level of co-morbidity. This combined with the varied definitions of elderly from over 60 to over 80 years of age results in difficulties in extending results for adjuvant and palliative chemotherapy use to elderly patients in a meaningful way.<sup>10</sup>

Frail and vulnerable patients seem to be the ideal candidates for a comprehensive geriatric-based approach, however, because little is still known about the effect of individual co-morbidities in the impact of cancer treatment, assessing co-morbidity in clinical trials is essential.<sup>46</sup> Web-based tools such as “Adjuvant” may be used in predicting the benefits of adjuvant therapy in older patients with colon cancer and incorporating life expectancy data based on age.<sup>46</sup>

Wherever possible elderly patients should be included in non-age specific trials, with eligibility criteria designed to be as flexible as possible. Age may be considered a stratification factor for the random assignment, and a prospectively specified subgroup analysed based on age included. An age specified adverse event monitoring plan may be included in the protocol to cease enrolment of the elderly if emerging data convincingly demonstrates that age is associated with an excessive risk of experiencing an adverse event.<sup>46</sup>

Aging is associated with an increased instance of co-morbidities and loss of function, which can decrease survival and lead to a need to adapt cancer therapies. Co-morbidities as a competing cause of mortality can assume a

# Colorectal Cancer & Chemotherapy

large role in determining survival in older cancer patients and can minimise or negate the benefit of adjuvant treatment.<sup>6, 46</sup> In one study the presence of three or more co-morbid conditions was a strong predictor of survival independent of tumour stage.<sup>46</sup> In older persons with multiple problems the Society of Geriatric Oncology concluded that a comprehensive geriatric assessment should be used in older cancer patients to detect unaddressed problems and to recommend interventions to improve functional status and possibly survival.<sup>46</sup>

## Chronological Age as Determinant

Bailey et al found that that differences in treatment received were not explained by differences in morbidity or in economic, mental, or physical function, self-care capacity, physical or psychological symptoms of stress, activity level or overall quality of life.<sup>11</sup> Chronological age in itself was a strong determinant of treatment with adjuvant chemotherapy, and this is a cause for concern. Reduction in local or distant relapse may be of major importance for patients aged over 70 or 80 years as life expectancy often exceeds the time in which metastatic disease would affect survival. In Western Europe the average life expectancy of a 65-year-old was 16-19 years, and that of a 75-year-old as 10-12 years.<sup>9</sup> Since 80% of colon cancer recurs within three years and 91% patients with recurrence die by 5 years, effective adjuvant therapy would be expected to grant most well 75-year-old patients a number of cancer free years of life. In the metastatic setting the case for chemotherapy benefit is also compelling because colorectal cancer survival without treatment is only six months but exceeds twenty-four months with optimal therapy.

# Colorectal Cancer & Chemotherapy

## Barriers to Treatment in the Elderly

A reason proposed for the less than optimal chemotherapeutic regimens used in the elderly is that older patients may value their current time feeling well more than they value the potential for increased longevity, although increased use of chemotherapy in these patients could increase survival and improve their quality of life.<sup>9, 42</sup> Regimes that are designed to be less toxic and therefore more suitable for the elderly are not recommended as they may also be less efficacious.<sup>46</sup>

In the UK, by far the strongest determinant of use of chemotherapy appears to be age and its effect is remarkably insensitive to statistical adjustment for type of cancer or stage.<sup>42</sup> Most patients with cancer are over the age of 65 years, and the choice of management must be individually considered and should be based on the stage of the cancer, clinical and functional status, concomitant disease, nutritional status and cognitive function.<sup>42</sup> Research in Denmark identified reasons given for non-treatment of the elderly including concerns about co-morbidity, reluctance in the elderly to receive it and lack of social support.<sup>4</sup> After controlling for age in their study, patients who were treated with adjuvant chemotherapy were in general less likely to be impaired in areas of social resources, e.g., marital status, living alone, frequency of visits from relatives and friends.<sup>11</sup> A question of whether patients decide not to proceed because they deemed themselves ill-equipped to do so or whether they were effectively excluded because they were judged to lack some form of necessary support could not be resolved in this study and merits further investigation.<sup>11</sup> Additionally, older patients who are solitary may lack the psychological and physical support to sustain themselves in the face of temporary treatment-related disability.<sup>9</sup> Older age, being unmarried, and having co-morbid conditions were associated with receiving less than five months of treatment.<sup>6</sup>

# Colorectal Cancer & Chemotherapy

## Decision-Making in the Elderly

Simple demographic criteria, like chronological age, are not good indicators of what patients actually want and the best way to facilitate decisions that reflect patients' and their preferences is to address each person's situation with them on an individual basis. It is important also that the availability of social resources is not allowed to govern the provision of adequate chemotherapy treatment and that inequalities in health care provision are prevented.<sup>4, 6, 11</sup>

Meulenbeld and Creemers state that co-morbidity and functional status are also independent predictors in the elderly and need to be assessed separately, an assertion borne out by the evidence base.<sup>4, 6, 9, 10, 46</sup>

There were no papers identified that addressed the issue of chemotherapy treatment for colorectal cancer in relation to disability, faith and belief, gender and none that directly addressed the issue of ethnicity.

# Colorectal Cancer & Radiotherapy

There is considerably less literature on the use of radiotherapy compared with the significant quantity of papers regarding use of chemotherapy in the treatment of colorectal cancer. To this end, papers examining other common tumours were used to supplement the evidence base for the impact of inequalities and cancer treatment.

## Age

In relation to radiotherapy and age two writers have identified a decrease in use of this mode of treatment in relation to lung and breast cancer respectively.

Radiotherapy for lung cancer is highly effective and well tolerated in patients aged 80 years and older. However, its use declined significantly with increasing age, and this age related decrease in its use could not be fully explained by the exclusion of those who were too ill to benefit from it.<sup>45</sup>

Post-operative radiotherapy decreases local recurrences following breast-conserving surgery and is the recommended standard of care. However, the frequency of radiotherapy omission significantly increased with advancing age and was associated with significantly reduced local control, breast cancer specific survival and overall survival.<sup>34</sup>

Radiotherapy is an effective mode of treatment, whether used as an adjunctive therapy with surgery or in palliative care for patients with both colon and rectal cancer.<sup>12, 44, 47</sup> It is known to improve local control, recurrence free survival and overall survival.<sup>47</sup> It also improves the operability of bulky tumours, and prevents tumour spread at the time of operation.<sup>47</sup> However, its use has been found to decline with increasing age, increasing co-morbidity, and poverty level.<sup>44</sup> The survival benefit is not compromised by age. In a study in Stockholm, increased excess mortality was noted in elderly patients treated with radiotherapy over 75 years and receiving a short pre-operative

# Colorectal Cancer & Radiotherapy

course. The causes of death were mainly cardiovascular and infectious complications.<sup>12</sup> In a trial in which a four portal radiation technique was used rather than a two portal technique, the mortality rate was reduced from 8% to 2%. There is a lack of age-stratified data from large trials on the use of radiotherapy for colorectal cancer.<sup>10</sup>

## Ethnicity

Data from US shows that the use of chemotherapy and radiation therapy was significantly lower in Blacks and other races with stage II and III rectal or colorectal cancer compared with Whites.<sup>44, 48</sup> No British paper addressed the issue of radiotherapy and ethnicity.

## Health Literacy

Health literacy and radiotherapy use was not addressed in relation to colorectal cancer. This issue was addressed in research in the US in relation to adjuvant radiotherapy use for breast conserving surgery.<sup>37</sup> African-American, Mexican-American and Puerto Rican uninsured and low-income women failed to receive subsequent radiotherapy courses following lumpectomy for breast cancer. The study pointed out that supporting breast cancer treatment decision-making is more complex than just providing treatment information. Clear comprehensive information regarding not only treatment options, but also length of time required for treatment, physiological impact and unanticipated financial and lifestyle costs must be included. If disparities in survival are to be addressed the entire process and context of breast cancer treatment decision-making must be understood from the

# Colorectal Cancer & Radiotherapy

patient perspective. Again it was highlighted that health care knowledge while necessary is not sufficient in supporting patient treatment decision-making, and the patient's utility of knowledge is influenced by the decision-making context and a myriad of interpersonal dynamics. In medical decision-making patients are faced with foreign and technical terms, complex ideas, multiple options and the need to differentially weigh the relative value of unfamiliar choices. In order to cope, patients may reduce their decision-making burden using potentially maladaptive strategies such as allowing the most readily understood factor to prevail or denying the existence of bothersome facts.<sup>37</sup>

## Disability

No paper addressed radiotherapy use in relation to disability and colorectal cancer. The issue of disability was addressed in relation to women undergoing breast-conserving surgery, who received radiotherapy less often and had a shorter survival than other women both for all cause and for breast cancer specific mortality.<sup>40</sup> Further adjustment for differences in initial treatment did not diminish these disparities. The adjusted hazard ratios for all cause mortality were highly statistically significant across all cancer stages at diagnosis and the overall treatment adjusted hazard ratio was 1.<sup>98</sup> Breast cancer mortality rates were also statistically significantly higher for women with a disability but treatment-adjusted hazard ratios by cancer stage at diagnosis were statistically significant for stages I and IIIA only.<sup>40</sup>

It appears that even if breast-conserving surgery is preferred, physical impairments could prevent effective radiotherapy. A patient's inability to lie flat or remain still or adequately abduct the arm may pose contraindications to radiotherapy. Women with disabilities who develop breast cancer may already confront challenges to independent living and complications of cancer therapy can disrupt the finely tuned adaptations. Finding reliable transportation

# Colorectal Cancer & Radiotherapy

to complete a six-week course of radiotherapy may be difficult for some women with disabilities. One study had found that elderly women found that anticipating transportation problems increased the choice for mastectomy.<sup>40</sup> Additionally it is reported that some physicians have openly negative views of disability and make clinical decisions based on these perceptions, justifying their actions by their personal beliefs that patients have poor quality lives.<sup>40</sup>

No papers specifically address faith and belief, gender or socio-economic status in relation to radiotherapy for colorectal cancer.

# Colorectal Cancer & Treatment Summary

## Summary of Section – Treatment for Colorectal Cancer (surgical, chemotherapy, radiotherapy)

While there is no direct research on disability and colorectal cancer treatment, parallels with breast cancer have revealed that disabled women were less likely to receive breast conserving surgery and/or dual modality radiotherapy. A number of factors are likely to have contributed to this outcome including the impact of the disability, the potential impact of the treatment and its interaction with the disability, the attitude of the clinician towards disabled people, and a number of social factors specific to the US. Research is required in the UK to investigate the cancer treatment offered to people with physical or mental impairment and ensure that they are offered equitable care.

The overall grading of evidence for this section is Grade C.

Research examining prostate cancer and gender highlights the key role socialisation of behaviour norms plays for men avoiding seeking help and maintaining their 'macho' identity.

Older people are less likely to receive surgical interventions and chemotherapy or radiotherapy. Where combination treatment is offered, older people are less likely to complete a standard course of treatment. Older people also tend to receive low dose chemotherapy. This can be attributed to co-morbidity issues, a dearth of older people in related clinical trials and being treated according to chronological age rather than their biological age.

Overall the available evidence for this section is Grade B.

Ethnicity fares poorly in research findings in this area. Due to advanced stage of disease at presentation, operative solutions may not be sought. Literature is often not culturally sensitive and the levels of specialist jargon used can act as a barrier to understanding options available. Additionally, BME populations are not adequately represented in clinical trials.

# Colorectal Cancer & Treatment Summary

The Evidence for ethnicity and colorectal cancer is Grade C.

Once diagnosis has been made there was relatively little differential found in relation to poverty and surgical treatment – although it does have an impact on whether or not an individual has access to a specialist. Some research suggests that chemotherapy is used more frequently in affluent groups, with less affluent groups frequently being offered lower dose chemotherapy treatment.

The available evidence for poverty in relation to colorectal cancer is Grade C.

There were no papers to draw conclusions from in regard to faith and belief and sexual orientation issues and treatment for colorectal cancer. No evidence was identified that examined gender, socio-economic status, and faith and belief in relation to radiotherapy and colorectal cancer.

There was no direct evidence in relation to health literacy and colorectal treatment though parallels were drawn from breast cancer treatment that stressed the importance of providing patients with clear, impartial and culturally sensitive information. Without this provision it is difficult for patients to discuss treatment options as a mutual partner in decision making.

# End of Life Care

Malignant bowel obstruction can be viewed as a disease managed in similar ways by a doctor, and as an illness – the personal experience and meaning of that physical condition. Illness responds to a bio-psychosocial–spiritual model of care based within individual meaning and his or her cultural group’s interpretation of the condition.<sup>49</sup>

Treatment of malignant bowel obstruction occurs in the context of palliative care where comfort and quality of life are the primary concerns and death is expected. There are tremendous variations in how cultures view and understand the process of dying and death. Some issues that may be culturally different include issues such as truth telling, patient autonomy in decision-making, and the role of food and eating.<sup>49</sup>

## Culture

Malignant bowel obstruction is a common clinical problem with a plethora of treatment options.<sup>49</sup> End of life care for patients with malignant bowel obstruction is influenced by the culture of the patient and also the culture of the care providers. Culture has been defined as an integrated pattern of human behaviour that includes language, thoughts, communications, actions, customs, beliefs, values and institutions of racial, ethnic, religious or social groups. Culture was reported to provide the meaning of life and prescriptions of behaviour to achieve that meaning. Culture guides groups and individuals in decision-making, and strongly influences how people make meaning of illness, treatment and death. Culture also reflects associations such as religion, nationality, rural or urban setting, sexual orientation, immigrant status, geographic region and socio-economic status. Cultural expressions are not only influenced by cultural origins but also by acculturation and assimilation into society.<sup>49</sup> Western Euro American cultures focus on individuality and autonomy in contrast to many world cultures that focus on the social collective and interconnectiveness.<sup>49</sup>

# End of Life Care

Palliative care practice has long recognised the importance of culture. Variations in the experience and meaning of symptoms such as pain are known to exist within and across cultural groups. There is also tremendous diversity in perspectives and traditions around the process of dying and end of life. In addition, common concepts of palliative care include the family as a unit of care and the need to involve many disciplines in providing care.<sup>49</sup> The Western centrality of patient-centred approach to care may be contrasted with other cultures' family-centred approach.<sup>49</sup> In studying treatment options for malignant bowel obstruction it is important to consider the needs of as many possible ethnic and cultural groups that may require treatment for this condition to ensure that differing needs and perspectives are accommodated.<sup>49</sup> This will allow the service to be more broadly generalisable and more effective in accommodating culturally based differences. Future services should identify potential intra-group variations within the population.<sup>49</sup>

## Ethnicity

A study from the United States on end of life care explored the use of living wills by patients with advanced lung and colon cancer and has shown that White patients were more likely to have a living will and durable Power of Attorney for health care than African American patients ( $p=0.002$ ).<sup>50</sup> Social scientists have indicated that patients' cultural and spiritual beliefs may yield different views about who should make decisions for the individual at end of life and what constitutes optimal care at end of life. African American families are more likely than Whites to want life sustaining measures no matter what the patient's condition and are less likely to have an advanced care plan. In a near death condition African American patients were significantly more likely to desire all of the life supportive measures than White patients ( $p<0.001$ ). A number of reasons have been put forward to explain these differences including the mistrust of health care system, lack of familiarity with advanced

# End of Life Care

care documents, economic disparities and cultural beliefs and values regarding the right time to die. Potential influences of religious and spiritual beliefs on approaches to end of life care and preferences about the use of life sustaining measures were not well understood.<sup>50</sup>

## Faith and Belief

There has been growing recognition of the central role of religion and spirituality in patients' lives.<sup>50</sup> Religious and spiritual beliefs have been shown to be integral to coping with many serious illnesses for a large number of patients. Efforts to increase attention to patients' spiritual views and practices have largely been motivated by an understanding of the limitations of scientific medicine alone in mitigating suffering at the end of life. Attention to patients' spiritual views is essential not only to the holistic care of patients, but also to the understanding of how patients make decisions at the end of life, including whether or not they choose to engage in advanced care planning. Some researchers have indicated that religion and spirituality play a more important role in coping for African American patients than for White patients.<sup>50</sup>

Religiosity was defined as a more formal and institutionally based expression of belief. Spirituality was regarded as an individualised relationship to the transcendent. Research explored three specific domains: 'collaborative religious coping' defined as seeking control through a partnership with God or a higher power; 'active religious surrender' defined as actively giving up control to a higher power; 'seeking spiritual support' defined as searching for comfort and reassurance through the love and care of a higher power.

True's research identified that religion and spirituality were a source of strength or support to cope with illness. When a sample of 68 patients were asked the question "Where do you get your strength and support to cope with your

# End of Life Care

cancer?” patients cited religion or spirituality as a source of strength more often than anything else. Of 68 patients, 43 said the religious spiritual faith was a source of strength, whereas the next most often mentioned source, spouse or family, was cited by 29 patients.<sup>50</sup>

The greater the extent to which patients reported working together with a higher power, belief in divine intervention and using spirituality to cope with their illness, the less likely they were to have a living will. The greater the extent to which patients reported working together with a higher power, the more likely they were to wish cardiopulmonary resuscitation in a near death situation. Similarly, turning to a higher power for support, belief in divine intervention and using spirituality to cope with illness, were correlated with preferences for Cardiopulmonary resuscitation (CPR) in the near death situation. Turning to a higher power for support and belief in divine intervention were both associated with preferences for CPR after controlling for ethnicity. The greater the extent to which patients used each of the three dimensions of spiritual coping the more likely they were to want mechanical ventilation and tube feeding in near death situation. However, these associations were weaker and not usually statistically significant. As far as hospitalisation in a near death situation was concerned, 87% of African American patients said they would want to be hospitalised compared to 66% of White patients. After controlling for ethnicity, using spirituality to cope with the illness was the only one of the three criteria that remained statistically significant.<sup>50</sup>

In cases where patients’ spiritual and religious beliefs play a key role in their decisions, there may be no easy solution to fundamental disagreements about the value of life sustaining treatments. In such cases, input from chaplains or other clergy as well as greater attention to the patient’s spiritual views on the part of clinicians can help diffuse tension, foster understanding and aid in the negotiation of a mutually acceptable care plan.<sup>50</sup>

No other significant equality issues were explored in relation to “end of life care”.

# End of Life Care

## Summary of Section – End of Life Care

While limited in scope, evidence suggests end of life care is a complex mix of personal, clinical, spiritual and socio-cultural considerations. Western approaches to patient-centred delivery may be at odds with inclusion of the wider cultural needs of patient, family and community. There are still significant gaps in delivering inequality-sensitive end of life care.

# Conclusions

Cancer services remain one of the most utilised areas of our health service. However, the complexity of treatment regimes, the sensitive nature of the illness, the prevailing social stigma and taboo relating to cancer and the diverse nature of the client groups requiring access to services, combine to create an environment that must be managed at both macro and micro level to deliver appropriate care.

This literature review has focused on only a small area of cancer related activity, further defined through an inequalities lens. The conclusions may confirm some previously held conceptions, adding depth to understanding and awareness. In addition, this work has served to highlight gaps in understanding that require further examination to better understand the complexities of services and how they match the needs of lives that do not readily conform to dominant or normative cultures, beliefs and behaviours.

The conclusions for this report are diverse in nature. Whilst there are recurring themes throughout, the perverse symbiotic nature of inequalities can make it difficult to isolate any one issue and reach conclusions on its impact on cancer care. In addition, the research has taken evidence from a number of countries, some with distinct differences in the design and delivery of health care programmes. For instance, US research may vary in its utility or applicability due to differentials in ethnic concentrations at point of research and the prevailing reliance on private health insurance as a curative aid.

To simplify findings, the conclusions are presented by section as a reflection of the report structure.

# Conclusions

## Epidemiology

To unpack the potential influence of inequalities in cancer care, it is important to first understand the prevalence of disease by equality group. Colorectal Cancer is certainly influenced by age.<sup>5, 6, 8-10</sup> Colorectal tumours appear more frequently in older people with almost half of all European patients receiving their first diagnosis after the age of 75.<sup>6</sup> Given the increasing life expectancy of our population, and a broadening range of co-morbidity factors in later life, we will be treating significantly more older people with more complex needs in the years to come.

There has been an appreciation of the correlation between poverty and ill health for a number of years. While the relationship between prevalence of colorectal cancer and poverty may be debatable, there appears to be conclusive evidence of the relationship between poverty and delay in presentation and post-diagnosis life expectancy. This will be further discussed within the socio-economic conclusions section.

Ethnicity is one of the most well researched areas in relation to inequalities and cancer treatment though much of this work has been undertaken outwith the UK. An epidemiological overview would suggest that as ethnic populations grow, the prevalence of colorectal cancers would also increase within this group. However, it is difficult to determine from the research whether increased prevalence in disease, more advanced stage presentation and shorter post-diagnosis life expectancy can be solely attributed to a person's ethnic status as the majority of subjects studied had to also contend with low socio-economic status and a range of other co-morbidity factors.

Colorectal cancer's status as an 'equal opportunities' disease for men and women may be a misnomer, leading a reader away from more implicit gender and sex considerations. While evidence would suggest parity in prevalence, the social constructs of gender and the biological constructs of sex will determine very different outcomes for men and women, with men being more

# Conclusions

likely to present with the disease at a younger age and with a wider range of co-morbid factors present (relating to gendered risk factors such as poorer diet, higher alcohol consumption etc.) Subsequently, their post diagnosis survival is poorer than that of women.

## Screening

If the premise that knowledge, money, power and prestige afford multiple opportunities to avoid risk of disease, then it must follow that those who are dis-empowered, poor and lack mainstream status in society will have the least opportunity to remain healthy.<sup>21</sup>

We can conclude from the research review that people living in relative economic poverty both perceive screening differently and are offered screening differentially. Fatalistic beliefs and increased stress levels derived through perpetually contending with more acute daily living pressures, provided a pre-screening psychological profile that was more compliant to disease development than active prevention and intervention.<sup>24, 25</sup> The link between socio-economic status and educational attainment supported this self-harming philosophy.

The practical restrictions of being poor are also a defining factor in accessing screening programmes, though this tended to be truer for US studies where health insurance provision may include screening costs.<sup>26</sup> However, fatalistic attitudes combined with a personal acknowledgement that screening may lead to treatment that will in turn have an impact on re-planning routines with potential cost implications should not be overlooked.

As previously detailed, ethnicity remains a focal point of interest when

# Conclusions

discussing inequality related issues within cancer care. Evidence in relation to ethnicity and screening continues to support the argument that a person's cultural background has a direct bearing on their ability to access and be supported through services. Studies have concluded that ethnicity is a predictor of low screening uptake and there is evidence to suggest that those from diverse ethnic backgrounds who are screened have a higher incidence of positive testing.<sup>3, 25, 27-29</sup> Studies of African Americans showed later stage disease detection through screening and generally had fatalistic views, mistrust of health services, low educational achievement and low health literacy. Added to this were findings of explicit instances of discrimination within health services that compound wider social discrimination and led readers to conclude that health inequalities (i.e. the barriers that present themselves within health care settings) are a continuation of the discriminating factors that individuals are exposed to in daily life.

A constant factor within socio-economic status and ethnicity is health literacy and thus conclusions about the impact of health literacy on an individual's ability to access screening are intrinsically linked to these factors. Where poverty and ethnicity are present within screening, evidence would suggest that health literacy and therefore understanding of procedures, possible outcomes and the related disease, would be lower.<sup>31</sup>

Age, like ethnicity and socio-economic deprivation, may have an inverse relationship with screening in that the older a person is, the less likely they are to uptake screening invitations.<sup>25-27</sup> However, there are national variations that complicate this conclusion. The former is true for US studies, where older people had higher rates of cancer fatalism, less knowledge of cancer issues and lower levels of formal education.<sup>25, 27</sup> UK studies however have found that age and screening are conversely proportional and that younger cohorts are less likely to uptake screening invitations. The Scottish bowel screening programme will be targeted at individuals aged 50-74 years, the English programme is targeted at people aged 60-69 and about half of all tumours occur in patients 75 years and older.

# Conclusions

Some public health experts have recommended raising the current breast screening age cut-off from 70 to 75 as the benefits of screening this higher age group increase with age. However, older people presenting for screening may also have increased co-morbidity risk factors and a more detailed assessment of suitability would have to take place.

Gender remains a factor with little consideration in screening research. Despite this, the limited information available shows that men continue to be more reluctant to uptake screening invitations despite having higher rates of positive testing and higher positive predictive value for cancer and neoplasia.<sup>29</sup>

This literature review found no papers relating to screening in relation to faith and belief or disability.

# Conclusions

## Surgical

Despite the prevalence and diverse nature of disability within our societies, this issue is under-represented within research findings. The only paper with relevance focused on breast cancer and found disabled women were less likely to receive breast-conserving surgery and those who did were then less likely to receive dual modality radiotherapy.<sup>40</sup> The reason for this treatment inequity may be attributed to a gap in clinical trials that included disabled women, the physical limitations of the disability that may have impeded surgery and limited quality of life post treatment. However, it was also stated that clinicians might have their judgement swayed through societal stigmatisation of some disabilities.

While there were no papers available to reach a conclusion on the impact of gender on surgery for colorectal cancer, papers relating to prostate cancer highlighted the pervasive nature of gender socialisation with men avoiding help-seeking behaviour because it was not seen as 'manly'.<sup>41</sup> Living up to the macho stereotype could be considered as self-harming behaviour, with men avoiding treatment in case they lose their position as the 'breadwinner', though for many this was a fear with real practical considerations for provision for their families.

The literature on health literacy and surgery draws heavily on the lack of culturally sensitive information and the appropriateness of discussion of choice for people who are not able to communicate effectively using the medical terminology of health care physicians. This had a significant impact on options made available to patients, but was also coupled with a lack of understanding regarding other decision making facets including culture, attitudes and experience.<sup>37</sup>

The literature on ethnicity and colorectal surgery paints a relatively depressing picture. The limited evidence found suggests that stage of disease at presentation (within Afro-Caribbean populations) is so advanced that little or no operative solutions are sought.<sup>17</sup>

# Conclusions

Several papers were available relating to age and surgery for colorectal cancer. Evidence would suggest that there is an under-representation of older people in surgical trials and thus limited knowledge about response to surgical procedures.<sup>4, 10, 46</sup> In lieu of this, older patients are treated according to their chronological, rather than biological age, leading to a removal of treatment within groups where it could be an effective option.<sup>8</sup>

Two UK papers were identified that discussed colorectal surgery and socio-economic status.<sup>14</sup> They conclude that once diagnosed, there was relatively little difference in surgical treatment in relation to socio-economic status.

There were no papers to draw conclusions from relating to faith and belief issues.

## Chemotherapy

There was scant evidence on which to draw conclusions from in relation to chemotherapy treatment for colorectal cancer and disability, faith and belief and gender and none that directly addressed issues of ethnicity.

Socio-economic anomalies do exist to some degree within chemotherapy recording with some studies suggesting that chemotherapy use is more frequent amongst more affluent groups and under-represented in lower socio-economic groups.<sup>42-44</sup> The use of socio-economic status as a marker captures a number of other inequality issues, as poverty is often the constant factor in issues relating to ethnicity, disability, gender and health literacy.

Several studies looked at age and chemotherapy with the conclusion that even taking into account age-related co-morbidities, older people are under-

# Conclusions

represented in chemotherapy figures.<sup>35, 42</sup> Again, strong references are made to the dearth of older people recruited to chemotherapy trials, a resulting bias that precludes them from treatment. Indeed clinical trials that do include older people tend to select individuals who have no known co-morbidity factors and so, are not a true representation of the wider older population.<sup>4, 9, 10, 46</sup>

## Radiotherapy

It is difficult to draw conclusions from the evidence presented as no papers refer explicitly to radiotherapy and faith and belief, gender or socio-economic status. However, some research supports chemotherapy findings in that use of radiotherapy appears to be significantly lower for ethnic minorities.<sup>44, 48</sup>

Disability may be a consideration when prescribing radiotherapy if the nature of the disability means an individual is unable to receive the treatment. However, access to reliable transport to complete a six-week radiotherapy course was a consideration and in the case of breast conserving surgery followed by radiotherapy, may have led some women to opt for a mastectomy rather than a course of treatment.<sup>40</sup>

Evidence would suggest that without a reasonable level of health literacy, patients could quickly become disorientated by the collective, jargonistic terminology that can be common in this area of treatment.<sup>37</sup>

Chemotherapy, like radiotherapy, appears to be a decreasing option the older one becomes, despite some evidence to show its effectiveness in people over 80 years.<sup>34, 45, 47</sup> Again, the lack of older people participating in radiotherapy trials significantly restricts the opportunity for learning and increasing its use.<sup>10</sup>

# Conclusions

## End of Life Care

The limited information about end of life care and inequalities makes it difficult to draw any conclusions, though the very fact that information is so limited perhaps presents a valid conclusion in its own right. That said, remaining conclusions that may be drawn are that end of life care is a complex process that must take into account the diverse range of personal, cultural and societal influences on both the individual and their care support systems.<sup>49</sup> Also the ability to plan for end of life may be supported and/or determined by an individual's religion and spirituality with a growing understanding of how central these beliefs are to effective service provision.<sup>50</sup>

# Conclusions

## Summary of Conclusions

As stated in the introduction to this section, inequalities feature significantly in terms of their impact on an individual's ability to access screening, treatment and appropriate end of life care. Where measures are not put into place to provide equity of care, those who experience societal inequalities will expect and experience them within clinical care in relation to colorectal cancer. The nature of the experience is not necessarily determined by one single predicating factor, rather that several factors can combine to determine a positive or negative service journey for an individual.

# Recommendations

This literature review has identified several factors that contribute to poorer outcomes for several groups in the UK population. The resulting recommendations have been made in the appropriate sections for the specific inequalities to which they relate. However, as the literature suggests, it is frequently the case that a given group does not experience one inequality in isolation, but rather there is frequently a cluster of factors contributing to the inequalities which people experience. Thus in designing and delivering cancer services it is important to be aware of the complex interplay among the different factors contributing to the patients' experience. For instance, it is not sufficient to appraise services for people with a disability in isolation when there is clear evidence that disabled people may be further disadvantaged through exposure to poverty, gender, race or age.

There were apparent gaps in the extant literature, namely in connection to people with a physical or mental illness or impairment, faith and belief and end of life care. This report recommends that further research is conducted to improve the understanding of the impact of inequalities in these areas.

## Age

Older people are under-represented in many clinical trials, and where they have been included, the participants have generally been unrepresentative of the population of the elderly who develop colorectal cancer. Therefore, the effects of cancer treatment in this population (both the benefits and the side-effects) are not well understood. While some may be excluded due to co-morbid illnesses that increase with age, many are excluded due to societal beliefs and values regarding the elderly.

# Recommendations

Elderly people not selected on the basis of strict health criteria should routinely be included in trials, and results should be reported with stratification for benefits and side-effects by age, to improve the understanding of cancer treatment in the elderly.

Ensuring that health information is accessible to older people is also critical. Language used should be comprehensible and an understanding of cultural beliefs commonly held within this age group is imperative.

## Socio-economic Factors

It is already widely recognised that economic status and poor health are inextricably linked. Throughout the research reviewed, poverty was a key factor in enabling or disabling access to screening and treatment. Experience of poverty should therefore be seen as an important risk factor for delaying presentation of disease and for not negotiating the complex care pathways available within services. If services are to offer equitable access, then a broader understanding of poverty and its consequences is required within cancer planning.

Efforts must be made to ensure that screening invitations to populations living in areas of deprivation take account of the particular difficulties and commonly held beliefs among this population, such as: cancer fatalism, health literacy and the knowledge and educational achievement of people who are without money, power or prestige in our society. Ultimately this will mean those who deliver services target efforts appropriate to meet the needs of this group.

# Recommendations

Regular review of screening and treatment services and the development of strategies to encourage “hard-to-reach” groups to take up screening, by health boards, are essential to ensure that colorectal cancer does not become another disease with a strong socioeconomic gradient, where currently none exists.

## Gender

In some ways it is difficult to discuss gender without first addressing sex. Sex refers to the anatomical differences and affects where and when cancers will develop. However, while colorectal cancer has been described as an ‘equal opportunities’ cancer, an individual’s gender (beliefs and values about behaviours appropriate for our sex) influence how they understand and seek help. Men are less likely to participate in screening programmes and are more likely to delay presentation. They are also more vulnerable due to a range of factors that will impact on both quality and length of life, such as hormonal influences, lifestyle decisions (for example, diet, alcohol, and smoking), and health behaviours (such as seeking early treatment or preventive health care). Screening programmes need to be presented in such a way that it is seen as beneficial for men to participate in them and it becomes their responsibility to maintain good health for their own and their families benefit. This could contribute to closing the gap between the genders and improve health outcomes for both men and women. This may be achieved by helping men recognise the potentially harmful nature of stereotypes such as refusing to acknowledge weakness or illness and delaying seeking help, and by enabling men to understand that caring for yourself strengthens the ‘macho code’ rather than betrays it.

# Recommendations

## Ethnicity

There is evidence that some ethnic groups are at higher risk of developing colorectal cancer at an earlier age than others, and also that the site of the tumour varies according to ethnicity. While much of this research was carried out in the US, evidence suggests that a similar pattern may also be observed in the UK. Further research is warranted to confirm the relevance of these findings for our local population. Should these findings be confirmed it will be important to ensure that screening services are made available for these ethnic minority groups and are offered at an appropriate age to allow the detection of pre-malignant changes and localised tumours while curative treatment is possible.

In addition, ethnicity may present additional barriers to accessing screening and treatment services. Screening programmes must be accessible not only to populations who are White, affluent, English speaking and educated, but also for the poor, non-English speaking and socioeconomically deprived population whose risk of colorectal cancer may be increased. Cultural beliefs and health literacy of these groups should also be taken into account.

Health Boards should monitor screening programmes to ensure that they are including ethnic minorities and that there is equitable access to health care.

## Disability

There was no information on colorectal cancer and screening or treatment for disabled people. As with older people, disabled people are under-represented in many areas of screening and treatment. Evidence from breast cancer treatment suggests that some of this may be attributed to the nature of the

# Recommendations

disability and its influence on the patients' quality of life. However, it has been suggested that social stereotyping and the stigma of disability prevent access to appropriate care.

It is therefore vital that practitioners ensure that treatment is not withheld on the basis of social stereotypes of disability and informed decisions are made in conjunction with patients to assure the most appropriate care.

As for all inequalities, services must ensure consideration is given to the needs of disabled people. Health information, physical access (including transport) and staff attitudes should all be reviewed to ensure equity of provision.

## Religion and Faith

There was relatively little information available relating to religion and faith and colorectal cancer. As this may have a significant impact on patients in relation to participation in screening programmes and acceptability of a range of treatment options, this appears to be a significant gap in the evidence base. Experience of cancer and the associated treatments can be an overwhelming experience for many, and thus, where an individual incorporates religion or belief systems into their lives, they would be expected to have a significant role in their experience and treatment decisions at this time. Further research is required to explore the potential to use faith and belief in providing the most appropriate care.

# Recommendations

## Health Literacy

Health literacy was inextricably linked to most factors that could potentially impact on the occurrence of cancer and its management. Poor health literacy presented an additional barrier between patients and medical services. The ability of services to effectively engage and communicate with patients is critical for optimum delivery of care and positive health outcomes. Information must be communicated to patients in a manner and form appropriate for their needs. Thus understanding the context of cancer services from the patients' perspective is imperative. The complexity of treatment options, benefits and side effects must be translated into a language accessible to all and time must be given for thorough consultation and confirmation of understanding. This consultation must also take into account the wider variables in an individual's life (for example, poverty, ethnicity, and belief) as health literacy is created through a multitude of experiential factors.

## End of Life Care

End of life care is conspicuously absent in the current body of research and must be given special mention in the recommendations. While the primary paper studied considerations for research within end of life care and the other focused on differentials in life sustaining interventions and their relationship to ethnicity and faith and belief, they also highlight considerations for delivering more holistic end of life care.<sup>49, 50</sup>

Holistic end of life care should consider the specific needs of the patients at this crucial time. Consideration of the cultural, religious and belief support networks

# Recommendations

of patients including family are essential to ensure that their care needs are met and preparation for a “good death” is permitted.

It is strongly recommended that additional work be undertaken in this area to better understand how end of life care and inequalities mesh to help ensure that all possible steps are taken to support this challenging stage of care.

## Lesbian, Gay, Bi-sexual and Transgender People (LGBT)

From the outset, the literature review sought evidence relating to the six Fair for All strands, including sexual orientation and gender status. The literature review was unable to identify information on lesbian, gay, bisexual or transgender people. However, it would be appropriate to ensure that there is no discrimination in access to care and that the needs of lesbian, gay, bisexual or transgender people are considered in the design and delivery of services.

In conclusion, this literature review has revealed variations in the occurrence of disease in certain population groups, and the need to understand and account for experience of inequalities when designing and delivering NHS services.

Our diverse communities cannot and should not receive a ‘one size fits all’ response to their needs. It is clear that where this approach continues as the status quo, sizeable numbers of the most vulnerable within our society will continue to be at risk of falling through the health ‘net’.

Ensuring that health services take account of the specific needs of vulnerable populations at the stage of planning services will help to ensure that the service provided is most appropriate for our populations’ health needs. It

# Recommendations

should also facilitate discussion between patients and practitioners around the planning and provision of the most appropriate care for each individual.

The colorectal cancer screening and treatment service re-design (and its associated methodologies) informed by this literature review, will form part of a collective of evidence collated by the Scottish Government under the 'Better Together' programme of activity. The programme will form part of continuing activity to enhance equity of care, improving quality and delivering services that are truly fair for all.

# References

1. Scottish Intercollegiate Guidelines Network. Levels of evidence and grades of recommendation. Available at: [http://www.sign.ac.uk/methodology/agreeguide/agree/grading\\_system.html](http://www.sign.ac.uk/methodology/agreeguide/agree/grading_system.html). Accessed 06/02/2008.
2. Payne S. Not an equal opportunity disease - a sex and gender-based review of colorectal cancer in men and women: Part I. *Journal of Men's Health & Gender* 2007; **4(2)**: 31-9.
3. Holmes-Rovner M, Williams GA, Hoppough S, Quillan L, Butler R, Given CW. Colorectal cancer screening barriers in persons with low income. *Cancer Practice*. 2002; **10(5)**: 240-7.
4. Jensen SA, Lonborg JT, Sorensen JB. Benefits and risks of palliative capecitabine based therapy to elderly patients with advanced colorectal cancer: Danish single centre experiences. *Acta Oncologica*. 2006; **45(1)**: 67-76.
5. Singh SM, Paszat LF, Li C, He J, Vinden C, Rabeneck L. Association of socioeconomic status and receipt of colorectal cancer investigations: a population-based retrospective cohort study. *Canadian Medical Association Journal*. 2004; **171(5)**: 461-5.
6. Meulenbeld HJ, Creemers GJ. First-line treatment strategies for elderly patients with metastatic colorectal cancer. *Drugs & Aging*. 2007; **24(3)**: 223-38.
7. Vironen JH, Sainio P, Husa AI, Kellokumpu IH. Complications and survival after surgery for rectal cancer in patients younger than and aged 75 years or older. *Diseases of the Colon and Rectum*. 2004; **47(7)**: 1225-31.
8. Golfinopoulos V, Pentheroudakis G, Pavlidis N. Treatment of colorectal cancer in the elderly: A review of the literature. *Cancer Treatment Reviews*. 2006; **32(1)**: 1-8.
9. Sanoff HK, Bleiberg H, Goldberg RM. Managing older patients with colorectal cancer. *Journal of Clinical Oncology*. 2007; **25(14)**: 1891-7.

# References

10. Matasar MJ, Sundararajan V, Grann VR, Neugut AI. Management of Colorectal Cancer in Elderly Patients: Focus on the Cost of Chemotherapy. *Drugs and Aging* 2004; **21(2)**: 113-133.
11. Bailey C, Corner J, Addington-Hall J, Kumar D, Nelson M, Haviland J. Treatment decisions in older patients with colorectal cancer: The role of age and multidimensional function. *European Journal of Cancer Care*.2003; **12(3)**: 257-62.
12. Au H, Mulder KE, Fields ALA. Systematic review of management of colorectal cancer in elderly patients. *Clinical Colorectal Cancer*. 2003; **3(3)**: 165-171.
13. Munro AJ, Bentley AH. Deprivation, comorbidity and survival in a cohort of patients with colorectal cancer. *European Journal of Cancer Care*. 2004; **13(3)**: 254-62.
14. Campbell NC, Elliott AM, Sharp L, Ritchie LD, Cassidy J, Little J. Impact of deprivation and rural residence on treatment of colorectal and lung cancer. *British Journal of Cancer*. 2002; **87(6)**: 585-90.
15. Jack RH, Gulliford MC, Ferguson J, Moller H. Explaining inequalities in access to treatment in lung cancer. *Journal of Evaluation in Clinical Practice*. 2006; **12(5)**: 573-582.
16. Mandelblatt J, Andrews H, Kao R, Wallace R, Kerner J. The late-stage diagnosis of colorectal cancer: demographic and socioeconomic factors. *American Journal of Public Health*. 1996; **86(12)**: 1794-7.
17. Tiwari A, Tun KY, Riris S, Moghal M, Williams S, Meleagros L. The distribution and pathological staging of colorectal cancers in ethnic groups. *Anticancer Research* 2007; **27(4 C)**: 2957-59.

# References

18. Wu XC, Chen VW, Steele B, Ruiz B, Fulton J, Liu L, et al. Subsite-specific incidence rate and stage of disease in colorectal cancer by race, gender, and age group in the United States, 1992-1997. *Cancer*. 2001; **92(10)**: 2547-54.
19. Pagano IS, Morita SY, Dhakal S, Hundahl SA, Maskarinec G. Time dependent ethnic convergence in colorectal cancer survival in Hawaii. *BMC Cancer*. 2003; **3**:
20. Freeman HP, Alshafie TA. Colorectal carcinoma in poor blacks. *Cancer*. 2002; **94(9)**: 2327-32.
21. Wardle J, McCaffery K, Nadel M, Atkin W. Socioeconomic differences in cancer screening participation: Comparing cognitive and psychosocial explanations. *Social Science and Medicine*. 2004; **59(2)**: 249-61.
22. Whynes DK, Frew EJ, Manghan CM, Scholefield JH, Hardcastle JD. Colorectal cancer, screening and survival: the influence of socio-economic deprivation. *Public Health*. 2003; **117(6)**: 389-95.
23. Weller D, Coleman D, Robertson R, Butler P, Melia J, Campbell C, et al. The UK colorectal cancer screening pilot: results of the second round of screening in England. *British Journal of Cancer*. 2007; **97(12)**:1601-5.
24. Simon AE, Steptoe A, Wardle J. Socioeconomic status differences in coping with a stressful medical procedure. *Psychosomatic Medicine*. 2005; **67(2)**: 270-6.
25. Greiner KA, James AS, Born W, Hall S, Engelman KK, Okuyemi KS, et al. Predictors of fecal occult blood test (FOBT) completion among low-income adults. *Preventive Medicine*. 2005; **41(2)**: 676-84.
26. Weinrich SP, Weinrich MC, Atwood J, Boyd M, Greene F. Predictors of fecal occult blood screening among older socioeconomically disadvantaged Americans: a replication study. *Patient Education & Counseling*. 1998; **34(2)**: 103-14.

# References

27. Powe BD. Cancer fatalism among elderly African American women: Predictors of the intensity of the perceptions. *Journal of Psychosocial Oncology*. 2001; **19(3-4)**: 85-95.
28. Baquet CR, Commiskey P. Colorectal cancer epidemiology in minorities: a review. *Journal of the Association for Academic Minority Physicians*. 1999; **10(3)**: 51-8.
29. Lloyd SC, Harvey NR, Hebert JR, Daguise V, Williams D, Scott DB. Racial disparities in colon cancer. Primary care endoscopy as a tool to increase screening rates among minority patients. *Cancer*. 2007; **109(2 Suppl)**: 378-85.
30. Guerra C., Dominguez, Francisco, Shea JA. Literacy and knowledge, attitudes, and behavior about colorectal cancer screening. *Journal of Health Communication*. 2005; **10(7)**: 651-63.
31. Peterson NB, Dwyer KA, Mulvaney SA, Dietrich MS, Rothman RL. The influence of health literacy on colorectal cancer screening knowledge, beliefs and behavior. *Journal of the National Medical Association*. 2007; **99(10)**: 1105-12.
32. Wolf RL, Zybert, Patricia, Brouse CH., Neugut AI, Shea, Steven, Gibson G. et al. Knowledge, beliefs, and barriers relevant to colorectal cancer screening in an urban population: A pilot study. *Family & Community Health*. 2001; **24(3)**: 34-47.
33. Kelly KM, Dickinson SL, DeGraffinreid CR, Tatum CM, Paskett ED. Colorectal cancer screening in 3 racial groups. *American Journal of Health Behavior*. 2007; **31(5)**: 502-13.
34. Crivellari D, Aapro M, Leonard R, von Minckwitz G, Brain E, Goldhirsch A, et al. Breast cancer in the elderly. *Journal of Clinical Oncology*. 2007; **25(14)**: 1882-90.

# References

35. Bouchardy C, Rapiti E, Blagojevic S, Vlastos AT, Vlastos G. Older female cancer patients: importance, causes, and consequences of undertreatment. *Journal of Clinical Oncology*. 2007; **25(14)**: 1858-69.
36. Stelzner S, Hellmich G, Koch R, Ludwig K. Factors predicting survival in stage IV colorectal carcinoma patients after palliative treatment: A multivariate analysis. *Journal of Surgical Oncology*. 2005; **89(4)**: 211-217.
37. Georgia NL, Polacek GN, Ramos MC, Ferrer RL. Breast cancer disparities and decision-making among U.S. women. *Patient Education & Counseling*. 2007; **65(2)**: 158-65.
38. McArdle CS, Hole DJ. Outcome following surgery for colorectal cancer: Analysis by hospital after adjustment for case-mix and deprivation. *British Journal of Cancer*. 2002; **86(3)**: 331-335.
39. McArdle CS, Hole DJ. Outcome following surgery for colorectal cancer. *British Medical Bulletin*. 2002; **64**: 119-125.
40. McCarthy EP, Ngo LH, Roetzheim RG, Chirikos TN, Li D, Drews RE, et al. Disparities in breast cancer treatment and survival for women with disabilities. *Annals of Internal Medicine*. 2006; **145(9)**: 637-45.
41. Chapple A, Ziebland S. Prostate cancer: embodied experience and perceptions of masculinity. *Sociology of Health and Illness*. 2002; **24(6)**: 820-41.
42. Patel N, Adatia R, Mellempgaard A, Jack R, Moller H. Variation in the use of chemotherapy in lung cancer. *British Journal of Cancer*. 2007; **96(6)**: 886-90.
43. Griggs JJ, Culakova E, Sorbero ME, van Ryn M, Poniewierski MS, Wolff DA, et al. Effect of patient socioeconomic status and body mass index on the quality of breast cancer adjuvant chemotherapy. *Journal of Clinical Oncology*. 2007; **25(3)**: 277-84.

# References

44. McGory ML, Zingmond DS, Sekeris E, Bastani R, Ko CY. A patient's race/ethnicity does not explain the underuse of appropriate adjuvant therapy in colorectal cancer. *Diseases of the Colon and Rectum*. 2006; **49(3)**: 319-29.
45. Dale DC. Poor prognosis in elderly patients with cancer: the role of bias and undertreatment. *The Journal of Supportive Oncology*. 2008; **1(4 Suppl 2)**: 11-7.
46. Muss HB, Biganzoli L, Sargent DJ, Aapro M. Adjuvant therapy in the elderly: making the right decision. *Journal of Clinical Oncology*. 2007; **25(14)**: 1870-5.
47. Farniok KE, Levitt SH. The role of radiation therapy in the treatment of colorectal cancer Implications for the older patient. *Cancer*. 1994; **74**: 2154-9.
48. Morris E, Haward RA, Gilthorpe MS, Craigs C, Forman D. The impact of the Calman-Hine report on the processes and outcomes of care for Yorkshire's colorectal cancer patients. *British Journal of Cancer*. 2006; **95(8)**: 979-85.
49. Fineberg I, Grant M, Aziz N. Prospective integration of cultural consideration in biomedical research for patients with advanced cancer: recommendations from an international conference on malignant bowel obstruction in palliative care. *J Pain & Symptom Management*. 2007; **34 (Supp 1)**: s28-s39.
50. True G, Phipps EJ, Braitman LE, Harralson T, Harris D, Tester W. Treatment preferences and advance care planning at end of life: The role of ethnicity and spiritual coping in cancer patients. *Annals of Behavioral Medicine*. 2005; **30(2)**: 174-9.

# Appendix 1

## Literature Search Results: Inequalities and cancer care, diagnosis, screening, treatment and epidemiology. (November 2007)

**Databases searched:** Medline, Embase, Cinahl, Cochrane, PsychInfo  
**Internet:** No  
**Limits applied:** English, last 10 years (1997-2007), human(s)

### Subject Headings:

Neoplasm; public health; health education; "Delivery of Health Care"; health policy; health service accessibility; health services; health promotion; primary prevention; mass screening; treatment outcome; drug therapy; therapeutics; surgery; patient education; "Attitude of health personnel"; social marketing; preventive health services; health care delivery; health care services; health care policy; health care utilization; prevention; health personnel attitudes; screening; cancer screening; chemotherapy; radiation therapy; surgery; treatment outcome; cancer surgery; cancer prevention; health policy; health screening; surgery, operative; socioeconomic; social status; ethnic group; "ethnic and racial group"; "ethnic or racial aspects"; race; sexuality; attitude to sexuality; gender; gender identity; disabled person; religion; ethnology; poverty; age; aged; employment status; reading; writing; social belief; vulnerable populations; socioeconomic factors; social class; age factors; continental population groups; educational status; culture; religion; cultural deprivation; psychosocial deprivation; unemployment; poverty areas; minority groups; gender bias; sexism; race factors; disabled; "Religion and Religions"; special populations; sociocultural factors; ethnic identity; "Racial and ethnic groups"; "Race and ethnic discrimination"; "Culture (Anthropological)"; "Disabled (Attitude towards)"; religious beliefs; employment status; at risk populations; "Age (attitudes towards)"; age discrimination

**Keywords:** cancer (truncated), inequality (truncated)

# Appendix 2

## Literature Search Results: Inequalities and colorectal cancer. (January 2008)

**Databases searched:** Medline, Embase, Cinahl, Cochrane, PsychInfo  
**Internet:** No  
**Limits applied:** English, last 10 years (1997-2007), human(s)

### Subject Headings:

Neoplasm; colorectal neoplasm; socioeconomic; social status; ethnic group; "ethnic and racial group"; "ethnic or racial aspects"; race; sexuality; attitude to sexuality; gender; gender identity; disabled person; religion; ethnology; poverty; age; aged; employment status; reading; writing; social belief; vulnerable populations; socioeconomic factors; social class; age factors; continental population groups; educational status; culture; religion; cultural deprivation; psychosocial deprivation; unemployment; poverty areas; minority groups; gender bias; sexism; race factors; disabled; "Religion and Religions"; special populations; sociocultural factors; ethnic identity; "Racial and ethnic groups"; "Race and ethnic discrimination"; "Culture (Anthropological)"; "Disabled (Attitude towards)"; religious beliefs; employment status; at risk populations; "Age (attitudes towards)"; age discrimination

**Keywords:** cancer (truncated), inequality (truncated)

# Appendix 3

## Literature Search Results: Bowel cancer, screening, chemotherapy and inequalities. (February 2008)

**Databases searched:** Medline, Embase, Cinahl, Cochrane, PsychInfo, BNI  
**Internet:** No  
**Limits applied:** English, last 10 years (1997-2008), human(s)

### Subject Headings:

Socioeconomic status; sociocultural status; social class; sexuality; poverty; ethnic identity; "racial and ethnic groups"; "race and ethnic discrimination"; "culture (anthropological)"; "Disabled (attitudes towards)"; education; minority groups; colon disorders; neoplasms; cancer screening; health screening; drug therapy; colonic neoplasms; colorectal neoplasms; mass screening; rectal neoplasms; socioeconomic factors; gender identity; aged; age factors; continental population groups; ethnic groups; disabled persons; educational status; culture; religion; vulnerable populations; chemotherapy; colon cancer; rectum cancer; cancer screening; screening; mass screening; socioeconomics; social status; "ethnic and racial groups"; "ethnic or racial aspects"; race; "attitude to sexuality"; gender; ethnology; reading; writing; gender bias; sexism; race factors; educational status; age factors; "attitude to sexuality"

**Keywords:** inequality (truncated), "bowel cancer", screening, chemotherapy (truncated)

# Appendix 4

## Literature Search Results: Chemotherapy and inequalities in the UK. (March 2008)

**Databases searched:** Medline, Cochrane, Embase, BNI, Cinahl, PsychInfo, AMED

**Internet:** No

**Limits applied:** 2002-2008; English; humans

### Subject Headings:

antineoplastic agents; drug therapy; radiotherapy; sexuality; disability; socioeconomic factors; culture; ethnic group; Great Britain; cancer chemotherapy; cancer radiotherapy; gender issues; health inequalities; transcultural care; "culture and religion"; chemotherapy, adjuvant; radiotherapy, adjuvant; gender identity; ethnic groups; continental population groups; minority groups; disabled persons; sexual behavior; religion; social class; poverty; UK; race; disabled person; cultural anthropology; United Kingdom; chemotherapy, cancer; "religion and religions"

**Keywords:** bisexual, gay' lesbian, homosexual, transsexual, transgender, LGBT, masculinity, femininity, inequality (truncated), belief, UK, Great Britain

# Appendix 5

## Literature Search Results: Bowel cancer, palliative care and inequalities. (April 2008)

**Databases searched:** Medline, Embase, BNI, Cinahl, Cochrane,  
**Internet:** No  
**Limits applied:** English, last 10 years (1997-2008), human(s)

### Subject Headings:

Age Factors; Aged; Bowel Cancer; Colon Cancer; Colon Tumor; Colonic Cancer; Colonic Neoplasms; Colorectal Cancer; Colorectal Neoplasms; Colorectal Tumor; Continental Population Groups; Culture; Disabled Persons; Educational Status; Ethnic Groups; Gender Identity; Intestine Cancer; Minority Groups; Palliative Care; Poverty; Poverty Areas; Rectal Cancer; Rectal Neoplasms; Rectum Tumor; Religion; Sexual Behavior; Sexuality; Socioeconomic Factors; Social Class; Terminal Care; Vulnerable Populations

**Keywords:** Bisexual, "Bowel Cancer", "end of life care",  
Femininity, Gay, Homosexual, Lesbian,  
LGBT, Masculinity, "Terminal Care", Transgender,  
Transsexual,

# Appendix 6

## Literature Search Results: Bowel cancer, inequalities and screening. (June 2008)

**Databases searched:** Medline, Embase, BNI, Cinahl, Cochrane  
**Internet:** No  
**Limits applied:** English, last 10 years (1997-2008), human(s)

### Subject Headings:

Age Factors; Aged; Bowel Cancer; Cancer Prevention & Screening; Cancer Screening; Colon Cancer; Colon Tumor; Colonic Cancer; Colonic Neoplasms; Colorectal Cancer; Colorectal Neoplasms; Colorectal Tumor; Continental Population Groups; Culture; Disabled Persons; Educational Status; Ethnic Groups; Gender Identity; Intestine Cancer; Mass Screening; Minority Groups; Poverty; Poverty Areas; Rectal Cancer; Rectal Neoplasms; Rectum Tumor; Religion; Screening; Sexual Behavior; Sexuality; Socioeconomic Factors; Social Class; Vulnerable Populations

**Keywords:** Bisexual, "Bowel Cancer", Cancer Screening, Femininity, Gay, Health Screening, Homosexual, Lesbian, LGBT, Masculinity, Transgender, Transsexual

# Appendix 7

## Literature Search Results: Bowel cancer, inequalities and surgery. (June 2008)

**Databases searched:** Medline, Embase, BNI, Cinahl, Cochrane  
**Internet:** No  
**Limits applied:** English, last 10 years (1997-2008), human(s)

### Subject Headings:

Age Factors; Aged; Bowel Cancer; Cancer Surgery; Colon Cancer; Colon Tumor; Colonic Cancer; Colonic Neoplasms; Colorectal Cancer; Colorectal Neoplasms; Colorectal Tumor; Continental Population Groups; Culture; Disabled Persons; Educational Status; Ethnic Groups; Gender Identity; Intestine Cancer; Minority Groups; Poverty; Poverty Areas; Rectal Cancer; Rectal Neoplasms; Rectum Tumor; Religion; Sexual Behavior; Sexuality; Socioeconomic Factors; Social Class; Surgery; Vulnerable Populations

**Keywords:** Bisexual, "Bowel Cancer", Femininity, Gay, Homosexual, Lesbian, LGBT, Masculinity, Surgery, Transgender, Transsexual



If you would like copies in another language, please contact: 0141 201 4560

Ma tha sibh ag iarraidh an fhiosrachaidh seo ann an cànan eile, cuiribh fios gu:

如果您需要该信息的其它语言版本，请联系：

اگر این اطلاعات را به زبانی دیگر میخواهید لطفا با این ادرس تماس بگیرید:

إذا رغبت في الحصول على هذه المعلومات بلغة أخرى، الرجاء الاتصال بـ:

ਜੇਕਰ ਤੁਹਾਨੂੰ ਇਹ ਜਾਣਕਾਰੀ ਕਿਸੇ ਦੂਜੀ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੀਦੀ ਹੈ ਤਾਂ ਵਿਚਾਰ ਕਰਕੇ ਸੰਪਰਕ ਕਰੋ:

اگر آپ یہ معلومات کسی اور زبان میں حاصل کرنا چاہتے ہیں تو براہ مہربانی رابطہ کریں:

Eğer bu bilgiyi bir başka dilde istiyorsanız lütfen bağlantı kurunuz:

Jeśli chcesz uzyskać te informacje w innym języku skontaktuj się z:

If you would like this document in Braille

or audio-tape format, please contact:

**0141 201 4560**

If you require further copies of this document please contact or a printed copy  
in a larger font, please contact:

**0141 201 4560**

NHS Greater Glasgow & Clyde

Corporate Inequalities Team

Tel: 0141-201 4560/Fax: 0141-201 4601

E-mail: CITAdminTeam@ggc.scot.nhs.uk

This document can be viewed online at:

[www.equality.scot.nhs.uk](http://www.equality.scot.nhs.uk)



- 1 The Scottish Government. Better Health Better Care: Action Plan. Edinburgh (2007)  
<http://www.scotland.gov.uk/Publications/2007/12/11103453/0>
- 2 Better Cancer Care: An Action Plan (2008)  
<http://www.scotland.gov.uk/Resource/Doc/242498/0067458.pdf>
- 3 Living and Dying Well: A National Action Plan for Palliative and End of Life Care in Scotland. Edinburgh (2008)  
<http://www.scotland.gov.uk/Topics/Health>
- 5 The Healthcare Quality Strategy for NHSScotland (2010)  
<http://library.nhsggc.org.uk/mediaAssets/PHRU/PHRU%20Annual%20Report%202006-2007.pdf> or  
<http://www.scotland.gov.uk/Resource/Doc/311667/0098354.pdf>
- 6 Public Health Research Unit Annual Report 2006 to 2007  
<http://library.nhsggc.org.uk/mediaAssets/PHRU/PHRU%20Annual%20Report%202006-2007.pdf>
- 7 NHSGGC Direct of Public Health Report: 2009-2011 an Unequal Struggle for Health  
[http://www.nhsggc.org.uk/content/default.asp?page=s1497\\_4](http://www.nhsggc.org.uk/content/default.asp?page=s1497_4)
- 8 Equally Well <http://www.scotland.gov.uk/Resource/Doc/229649/0062206.pdf>
- 9 Keep Well  
<http://www.keepwellscotland.com/where/glasgow/index.aspx> and/or  
<http://www.scotland.gov.uk/Topics/Health/health/Inequalities/P2010>
- 10 NHSGGC Equality Scheme 2010 to 2013  
[http://www.equalitiesinhealth.org/documents/EqualityScheme\\_Access\\_Web.pdf](http://www.equalitiesinhealth.org/documents/EqualityScheme_Access_Web.pdf)
- 11 Living and Dying Well: A National Action Plan for Palliative Care in Scotland (2008)  
<http://www.scotland.gov.uk/Resource/Doc/239823/0066155.pdf>
- 12 Living with Cancer  
<http://scotland.gov.uk/Topics/Health/health/cancer/ScottishCancerTaskForce/livingwithcancer>
- 13 Liverpool Care Pathway <http://www.gsfs.scot.nhs.uk/overview.html>
- 14 University of Glasgow - West of Scotland Cancer Surveillance Unit  
<http://www.gla.ac.uk/departments/publichealthhealthpolicy/westofscotlandcancersurveillanceunit/>
- 15 Better together Programme  
[http://www.bettertogetherscotland.com/bettertogetherscotland/CCC\\_FirstPage.jsp](http://www.bettertogetherscotland.com/bettertogetherscotland/CCC_FirstPage.jsp)
- 16 Introduction and Availability of Newly Licensed Medicines in the NHS in Scotland  
[http://www.sehd.scot.nhs.uk/mels/CEL2010\\_17.pdf](http://www.sehd.scot.nhs.uk/mels/CEL2010_17.pdf)
- 17 Carer Information Strategies  
<http://openscotland.net/Topics/Health/care/Strategy/NHSCarerInformationStr>
- 18 NHS Greater Glasgow & Clyde Web Site <http://www.nhsggc.org.uk/content/default.asp>

Director	CHCP	Address	Street	Town	Postcode	Telephone
Karen Murray	<b>East Dunbartonshire CHP</b>		300 Balgrayhill Road	Glasgow	G21 3UR	0141 201 4217
Julie Murray	<b>East Renfrewshire CHCP</b>		1 Burnfield Avenue	Glasgow	G46 7TL	0141 577 3842
Neil Hunter	<b>West Glasgow CHCP</b>	Gartnavel Royal	1055 Great Western Road	Glasgow	G12 0XH	0141 211 3647
Mark Feinmann	<b>East Glasgow CHCP</b>	Building 2, Templeton Business Centre	62 Templeton Street	Glasgow	G40 1DA	0141 277 7454
Alex MacKenzie	<b>North Glasgow CHCP</b>		300 Balgrayhill Road	Glasgow	G21 3UR	0141 201 9739
Jackie Kerr (Interim)	<b>South East Glasgow CHCP</b>	Strata House, 135 Fiftypitches Road	Cardonald Business Park	Glasgow	G51 4EB	0141 276 5239
David Walker (Interim)	<b>South East Glasgow CHCP</b>	Forsyth House	151 Coplaw Street	Glasgow	G42 7DE	01475 558 862
Keith Redpath	<b>West Dunbartonshire CHP</b>	Hartfield Clinic	Latta Street	Dumbarton	G82 2DS	01389 812 326
David Leese	<b>Renfrewshire CHP</b>	Renfrewshire House	Cotton Street	Paisley	PA1 1AL	0141 842 6243
Rab Murphy	<b>Inverclyde CHCP</b>	2nd Floor, Roxburgh House	108 Roxburgh Street	Greenock	PA15 4JT	01475 558 867