Galway University Hospitals Cancer Centre

Annual Report 2012




Galway University Hospitals
Ospidéil na h-Ollscoile Gaillimh
UNIVERSITY HOSPITAL GALWAY
MERLIN PARK UNIVERSITY HOSPITAL

Contents

Foreword

The incidence of cancer in the West of Ireland has increased in recent years and the accepted best practice as defined by the National Cancer Control Programme (NCCP) is centralisation of cancer services and the development of dedicated cancer facilities. The NCCP has developed eight cancer centres nationally and Galway University Hospitals (GUH) is the designated centre for the West and North West, incorporating a satellite unit at Letterkenny General Hospital (LGH).

The publication of a report such as this highlights the enormous workload, dedicated teams and outputs from a co-ordinated cancer centre which has been developed on a regional hospital site following the NCCP strategy announcement in 2006.

The core strengths of our cancer centre include specialist cancer diagnostics, pathology, surgery, medical and radiation oncology, a multidisciplinary approach to cancer management and the development of clinical trial and research programmes.

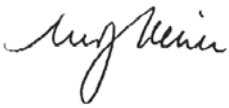
This report aims to identify and quantify cancer related activities in 2012 and create a template for the development of a strong cancer centre in the West of Ireland.

Data from the GUH cancer service is logged via Hospital Inpatient Enquiry System (HIPE), the National Cancer Registry Ireland (NCRI), data submitted to the NCCP and individual databases in the various specialist units. In the absence of a unique patient/health identifier there are limitations and constraints on individual databases and these are highlighted in this report. I am very grateful for the support from the key national, regional and local data sources.

I would like to acknowledge the support of the Galway and Roscommon University Hospitals Group (GRUHG), individual cancer lead clinicians, Marie Cox, Assistant Director of Nursing, Seamus Leonard, GUH HIPE Project Manager, Ger Cooley, Symptomatic Breast Centre, Dr Sue Hennessy, GUH Waiting List Manager and Emer Hennessy, NUI Galway Discipline of Surgery.

I am also grateful to Professor Miriam Wiley (ESRI), Dr Harry Comber (NCRI) and Dr Susan O'Reilly (NCCP) who have been very supportive of this project.

Much work has been done, but we are in a nascent stage and will work together over the next few years to co-ordinate and strengthen our efforts in the fight against this common condition.



Professor Michael J Kerin

Chair, Cancer Strategy Group,
Galway University Hospitals

Mr Bill Maher

Chief Executive Officer
Galway and Roscommon University Hospitals Group

I am delighted to commend to you this first annual Cancer Services Report for Galway University Hospitals. Galway prides itself as a leading cancer centre and has an ambitious programme to develop world class services for the patients we serve.

This report outlines our activity and progress in 2012 across the various cancer specialties and I would like to thank all of our cancer leads and multidisciplinary teams for the enormous work they do each and every day in delivering a high quality service despite the resource challenges we face.

I would also particularly like to thank Professor Michael Kerin for his vision and leadership in developing our services and his tireless work on behalf of the organisation. I hope you find the Annual Report an interesting and informative read. I see it as a key document that charts our progress and records our service delivery and would encourage all to read.

Dr James J Browne

President
National University of Ireland, Galway

On behalf of NUI Galway I am delighted to endorse and be associated with this cancer centre annual report. We in the University recognise the importance of our clinical partners in GUH and the western regional hospitals in the development of our strategic aims in education, research and innovation. This burgeoning cancer programme with the cancer centre development and its academic spin-offs is very important in our mission.

This report incorporates all of the aspects of an academic medical centre identifying clinical outcomes as well as education, research, innovation and collaborations with voluntary agencies and industry. I would like to add my word of congratulations to all involved.

Dr Mary Hynes

Network West Director
National Cancer Control Programme

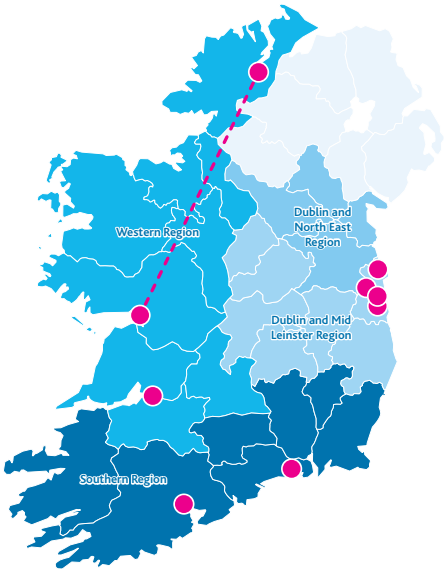
On behalf of the National Cancer Control Programme I am delighted to be associated with this report. The development of cancer centres has major effects, particularly in regional hospital cancer services.

Cancer care is best done by multidisciplinary teams in a high volume environment. The outputs, teamwork and strategic vision outlined in this report document the early stage development of such a cancer centre and highlight the high volume of cancer care in the western cancer centre.

Research, education and subspecialisation are believed to be the key to creating successful cancer centres. The marriage of these attributes in this report is both striking and laudable. On behalf of the NCCP I thank the cancer centre team involved and wish the cancer centre every success.

1. National Cancer Control Programme (NCCP)

The implementation of the NCCP in 2006 has led to the development of eight cancer centres and the delivery of a comprehensive national strategy for cancer care. In the West and North West of Ireland this programme is currently delivered from a large tertiary referral centre, GUH, and incorporates diagnostic, therapeutic and palliative care teams as well as translational research, clinical trials and biobanking. GUH links with its satellite centre at LGH.



NCCP Designated Cancer Centres

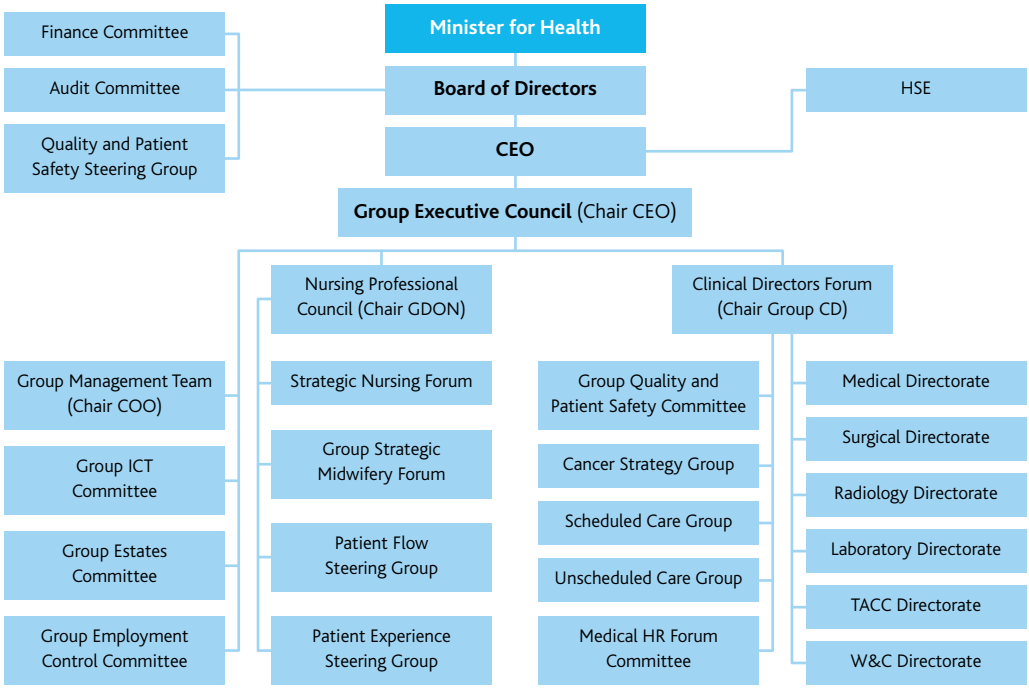
Cancer Speciality	No. of Centres
Breast	8
Colon	8
Thoracic	4
Gynaecological	8
Urological	6
Skin	8
Haematological	8
Upper Gastrointestinal	4
Hepatobiliary and Pancreatic	1
Brain and Central Nervous System	2
Paediatric	1
Bone and Soft Tissue	1
Head and Neck	8

Consultant Numbers at Galway and Roscommon University Hospitals Group

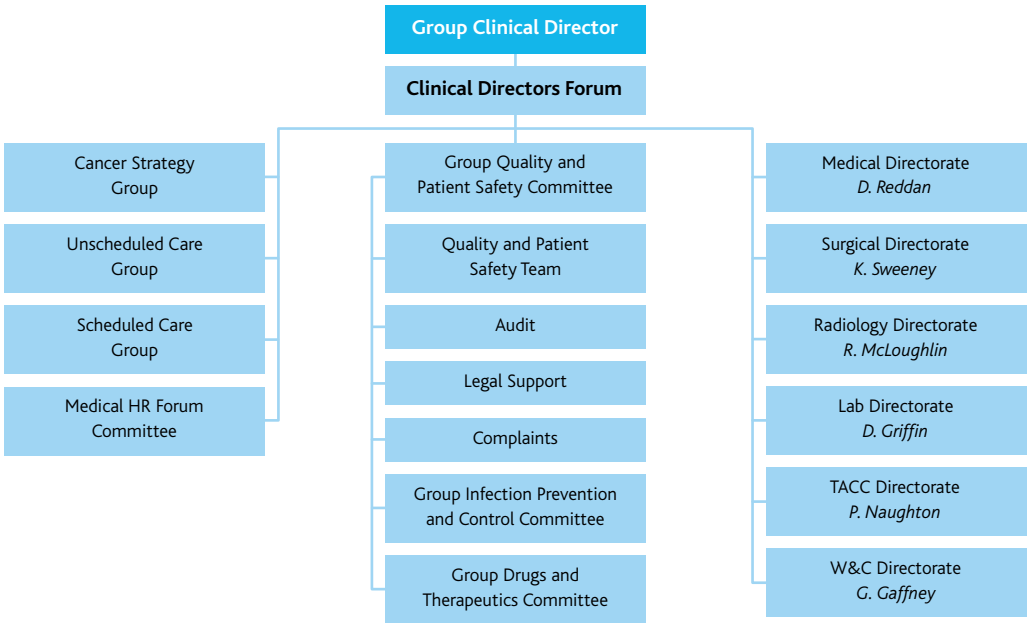
Cancer Speciality	Before NCCP	Since NCCP
Breast Surgery	2	5
Gastrointestinal and Colorectal Surgery	2	5
Urological Surgery	2	5
Lung and Cardiothoracic Surgery	0	2
Skin Cancer Surgery	2	4
Head and Neck Surgery	2	4
Gynaecological Surgery	1	2
Haematology	3	5
Medical Oncology	2	4
Radiation Oncology	3	4
Radiology	7	14
Pathology	8.5	10.5

2. Galway and Roscommon University Hospitals Group Governance

Galway and Roscommon University Hospitals Group Corporate Clinical Governance Structure



Galway and Roscommon University Hospitals Group Directorate Clinical Governance Structure



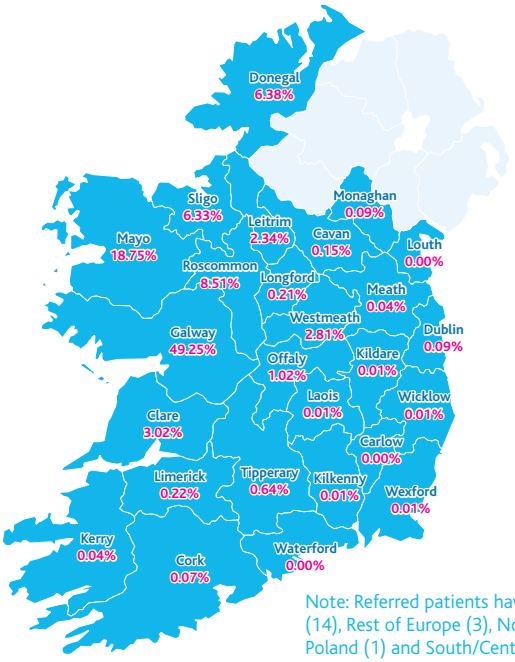
3. Overview of Cancer Services

GUH is the designated cancer centre for the West and North West of Ireland. GUH, Portiuncula Hospital, Ballinasloe and Roscommon County Hospital make up the GRUHG which was formed on the 9th January 2012. GUH has a patient referral area that includes the West and North West counties but there has been referral from all 26 counties in the Republic of Ireland. The population of this catchment area makes up 30% of the entire population of the State.

Geographical Referral Information

County	No. of Referrals	% of Referrals
Galway	21181	49.25%
Mayo	8063	18.75%
Roscommon	3661	8.51%
Donegal	2744	6.38%
Sligo	2722	6.33%
Clare	1297	3.02%
Westmeath	1210	2.81%
Leitrim	1005	2.34%
Offaly	438	1.02%
Tipperary	275	0.64%
Limerick	93	0.22%
Longford	92	0.21%
Cavan	66	0.15%
Monaghan	40	0.09%

County	No. of Referrals	% of Referrals
Dublin	38	0.09%
Cork	28	0.07%
Kerry	16	0.04%
Meath	16	0.04%
Kildare	6	0.01%
Wicklow	4	0.01%
Wexford	4	0.01%
Kilkenny	4	0.01%
Laois	3	0.01%
Louth	2	0.00%
Waterford	2	0.00%
Carlow	1	0.00%
Republic of Ireland	**43011**	



Note: Referred patients have also come from England (14), Rest of Europe (3), Northern Ireland (1), Scotland (1), Poland (1) and South/Central America (1)

Cancer Diagnostics
The ability to deliver a comprehensive cancer programme is dependent on the ability to triage, assess, investigate and diagnose cancer in a timely fashion. Some cancer services such as breast, cervical and colorectal have dedicated national screening programmes which are integrated into the local programme and are currently implemented in GUH. Cancers such as lung, prostate and breast have dedicated rapid access symptomatic clinics where patients with worrying symptoms are seen quickly. Within other cancer services patients are still seen within "general" clinics.

Cancer Therapeutics
The integrated care pathway for an individual with cancer involves team work from multiple specialties in diagnostic and therapeutic services. Decision making is done in a multidisciplinary environment.

The cancer therapy service (non-surgical) in GUH is provided in a 52-bed allocated cancer inpatient facility, a radiotherapy unit with three linear accelerators and a 19 day-case chaired Haematology/Oncology Day Ward.

Specialist cancer surgery is a cornerstone of any cancer centre. In GUH the development of a NCCP centre has led to a doubling of the surgeon numbers in breast, prostate, colorectal and upper GI cancer and the commencement of a lung cancer programme. This has led to ongoing staffing challenges in the theatre and the development of a dedicated cancer location for cancers such as lung, breast, gynaecological and colorectal. The NCCP has facilitated this by funding a dedicated breast theatre. Over the next few years we aim to align cancer theatre facilities further within our theatre complex with the segregation of emergency, elective and cancer care along dedicated programme lines.

Multidisciplinary Meetings (MDM)
Most cancers require input from a diagnostic team consisting of radiologists, pathologists and surgeons and a therapeutic team of medical, radiation and surgical oncologists. Support is provided by registered advanced nurse practitioners (RANP), dedicated clinical nurse managers (CNM), clinical nurse specialists (CNS), radiographers, technicians and other clinicians such as plastic surgeons and palliative care specialists. A key to MDM performance is the logging of the action/treatment plans, numbers of patients discussed and outcomes. Currently we have a very active multidisciplinary programme which meets in a dedicated teleconferencing facility with input from team members at GUH and regional hospitals.

Multidisciplinary Meetings

Cancer Speciality	Frequency of MDT Meeting	No. of MDM Held in 2012	No. of Patients Discussed
Breast	Weekly	51	1840
Endocrine	Every 2 Weeks	24	396
Gastrointestinal/Colorectal	Weekly	51	1067
Urology	Every 2 Weeks	24	648
Gynaecological	Every 2 Weeks	24	120
Combined Oncology/Radiology	3 Times per Month	37	370
Head & Neck	Every 2 Weeks	23	228
Lung & Cardiothoracic	Weekly	51	582
Lymphoma	Every 2 Weeks	24	192
Skin	3 Times per Month	36	540

4. Cancer Specialties
4.1 Surgical Oncology

BREAST CANCER

Mr Ray McLaughlin

Consultant Breast Surgeon
Lead Clinician

The Symptomatic Breast Centre (SBC) at GUH was established over 25 years ago. Today the unit at GUH and its satellite centre at Letterkenny General Hospital (LGH) constitute one of the largest breast units in the country both in terms of numbers of patients seen and cancers treated. A new purpose built facility was opened on the grounds of University Hospital Galway in 2008. This building is part of a complex which also houses BreastCheck, the National Breast Cancer Screening Programme.

As part of the national cancer strategy as set out by the NCCP the breast service at GUH has been expanding rapidly. Additional consultant and other staff appointments combined with infrastructure developments and a new symptomatic breast unit building have supported the strategy. All women with urgent symptoms are now seen within two weeks and have all their radiology and biopsies performed on that day. The service has a very proactive quality assurance program which gives us confidence that we are providing a service on a par with anywhere in the world.

Triple assessment clinics are held at the SBC each morning Monday to Friday from 9am - 1pm. At LGH triple assessment clinics are held every Monday and Thursday 9am - 5pm. These are consultant managed clinics with a consultant breast surgeon in attendance. On average 25 new and 30 review patients attend each clinic. Furthermore, the establishment of successful specialist nurse-led clinics, in parallel with the consultant-led clinics has further enhanced patient care within the centre.

A genetic counsellor travels from the National Centre for Medical Genetics in Dublin to hold a genetics clinic on average one morning in the month.

There are strong links and working relationships with the hospitals in Mayo, Sligo and Letterkenny. The Mayo symptomatic breast service was transferred to GUH in November 2008. In addition the NCCP decided to transfer the breast service from Sligo to Galway in 2009. Again this transfer was managed with clear clinical governance and accomplished in an efficient and effective manner. The LGH unit operates as a satellite centre from Galway and is working very well in supporting symptomatic breast services in the North West.

Patients are discussed at the weekly multidisciplinary meeting with Mayo, Sligo and LGH joining by videoconference. Those who require specialist reconstructive surgery are admitted to GUH.

The level of activity at the SBC continued at a very high level in 2012 with almost 7,000 new patient attendances and over 7,000 review patient attendances across both sites. The cancer detection rate was 5.82 per 100 new patients seen at GUH and 3.5 per 100 new patients seen at LGH. In 2012, there were 163 diagnoses at BreastCheck. The following tables depict all breast activity across the both sites with HIPE activity showing the overall breast activity data for GUH.

Symptomatic Breast Centre Cancer Outpatient Episodes 2012

Outpatient Clinic Statistics	GUH	LGH	Total
Number of Outpatient Clinics per Week	16	8	24
Designated Cancer Outpatient Clinics per Week	5	4	9
New Patients	4909	1845	6754
Review Patients	5581	1752	7333
Total Number of Patients Seen	**10490**	**3597**	**14087**

Symptomatic Breast Centre and BreastCheck Cancer Diagnoses 2012

Performance Parameter	GUH	LGH	Total
Number of New Patients Diagnosed with Cancer	286	65	351
Disease Progression Diagnosis (Review)	22	9	31
Total SBC Cancer Diagnoses	**308**	**74**	**382**
Total Breastcheck Cancer Diagnoses			**163**
Total GUH Cancer Diagnoses			**545**

Breast Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	No. of Episodes
Benign	315
In-situ	107
Primary Cancer	1097
Unknown	4
Total	**1523**

Note: The table above includes benign as well as cancer episodes of care given to patients.

Breast Cancer Surgical Interventions 2012

Surgical Intervention	HIPE Numbers	SBC Numbers (GUH + LGH)
Breast Biopsy	451	-
Excision Procedures	428	214
Excision Lymph Nodes Axilla	346	115
Mastectomy	121	117
Reconstruction of Breast	61	53
Augmentation of Breast	9	-
Other (Includes Examination 176)	218	171 (Sentinel Lymph Node Biopsy)

Note: The table above includes all breast cancer interventions at GUH including incidental findings and benign activity. HIPE numbers include all breast cancer procedures across GUH. SBC numbers include only those treated within the symptomatic service.

UROLOGICAL CANCER

Mr Garrett Durkan

Consultant Urological Surgeon
Lead Clinician

Introduction

The urology department at GUH serves the West of Ireland with some overlap with Dublin/Mid-Leinster regions as patients from Offaly, Westmeath and Laois are often referred by GPs from these areas via the Urology service provided at Portiuncula Hospital, Ballinasloe. Tertiary referrals from the urology department at University Hospital Limerick for complex cancer surgery and nationwide referrals for laparoscopic radical prostatectomy are also seen.

The department consists of five consultant urological surgeons (Mr Corcoran, Mr Durkan, Mr Jaffry, Mr Rogers, and Mr Walsh), six specialist registrars (SpR), one senior house officer (SHO), one registered advanced nurse practitioner (RANP) and two urology nurse specialists.

Satellite outpatient and day treatment services are provided at Portiuncula Hospital (Mr Rogers), Roscommon County Hospital (Mr Jaffry) and Mayo General Hospital (Mr Walsh). Inpatients at GUH are facilitated on St Pius' Ward (22 dedicated urology beds). Outpatient services at GUH are provided in the main outpatient clinic, St Pius' Ward and the T7 Rapid Access Prostate Clinic.

Nurse-Led Outpatient Activity

Our three specialist urology nurses perform a number of critical functions in the outpatient setting including:

- Facilitating the rapid access prostate biopsy and review services (T7)
- Intravesical chemotherapy and BCG treatment for bladder cancer (St Pius' Ward)
- Intravesical instillation of Cystistat for interstitial cystitis
- Catheter care and instruction
- Instruction in Clean Intermittent Self-Catheterisation
- Flow study, bladder scanning, assessment of LUTS (T7)
- Invasive urodynamics (St Pius' Ward)
- Trial of void/catheter removal following complex surgery
- Counselling and assessment of men with urological cancer
- Teaching and instruction of general nurses regarding urological cancer, catheter management etc.

Rapid Access Prostate Clinic (RAPC)

The RAPC service was founded in June 2009 by Mr Eamon Rogers and formally opened by Professor Tom Keane (former NCCP Director). Mr Durkan was appointed in 2010 by the NCCP and has taken over responsibility for the RAPC.

There are two "one-stop" prostate assessment sessions in T7 each week, run by Mr Durkan (Mr Paddy O'Malley, consultant urologist at the Galway Clinic performs biopsies on the Tuesday clinic on a sessional basis). Two further biopsy sessions are provided with the support of Professor Peter McCarthy and Dr Claire Roche in Radiology. Mr Durkan and Mr Walsh run review clinics to inform patients of biopsy results and to arrange further investigation and treatment. Mr Durkan also runs the RAPC at University Hospital Limerick. Patients from Limerick, who require radical prostatectomy travel to GUH for their surgery. Referrals with suspected cancer falling outside NCCP referral guidelines are seen in general urology clinics.

There is a single dedicated theatre for urological surgery where open and laparoscopic radical prostatectomy/cystectomy (with the option of bladder reconstruction) and nephron-sparing renal surgery are performed.

Multidisciplinary Meeting

There is excellent MDM support from colleagues

in radiology and pathology. Videoconferencing facilities permit the urology teams from Sligo and Letterkenny hospitals to participate. The meeting is also attended by teams from radiation and medical oncology. There is close collaboration between the teams from oncology and urology to facilitate rapid treatment of patients. There are a number of clinical trials available for selected patients (MRC RADICALS trial for high risk localised prostate cancer following radical prostatectomy, Alpha-Radin study for patients with metastatic prostate cancer, adjuvant Pazopanib study for patients with high-grade T3+ renal cancer following nephrectomy etc.).

Urological Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	Prostate	Bladder	Kidney	Testicular	Penile
Benign Disease	56	8	2	1	0
In-situ Disease	8	14	1	0	3
Primary Cancer	531	349	184	24	9
Secondary Cancer	0	0	1	0	0
Unknown	0	5	2	0	0
Total	**595**	**376**	**190**	**25**	**12**

Urological Cancer Outpatient Episodes 2012 (Hospital PAS Data)

Outpatient Clinic Statistics	No. of Episodes
Number of Outpatient Clinics per Week	9
Designated Cancer Outpatient Clinics per Week	4
New Patients	2742
Review Patients	5806
Total Number of Patients Seen	**8548**

Note: It is estimated that 65% of the urology service clinical workload is cancer related.
Figures include 283 new and 487 review patients from RAPC Limerick.

Urological Cancer Surgical Interventions 2012

Outpatient Clinic Statistics	No. of Interventions
Open Radical Prostatectomy	67
Laparoscopic Radical Prostatectomy	39
Open Radical Nephrectomy	57
Laparoscopic Radical Nephrectomy	11
Partial Nephrectomy	11
Nephro-Ureterectomy	9
Radical Cystectomy	16
Radical Orchidectomy	24
Penectomy	9
Turbt	92

UPPER GASTROINTESTINAL CANCER

Mr Chris Collins

Consultant Surgeon
Lead Clinician

2012 was an eventful year for the upper gastrointestinal (GI) service at GRUHG with the appointment of a second surgeon (Mr Chris Collins) and its designation by the NCCP as one of the three satellite upper GI cancer centres along with Cork University Hospital and Beaumont Hospital. St. James' Hospital, Dublin is the national centre for upper GI cancer.

The GRUHG service is led by Professor Oliver McAnena and Mr Chris Collins. An integral part of the team, facilitating patients through this comprehensive, thorough, complex care pathway is the Upper GI Cancer Nurse, Ms Olive Cummins (with assistance from Olivia Dunleavy in GUH and Aine Kennedy in Portiuncula Hospital, Ballinasloe).

Specialist nurses coordinate the care and transfer of care of the Upper GI cancer patient from the satellite to the regional centre, liaising closely with the medical and specialist nursing teams there. This involves the arranging of various tests and investigations on the same day being continuously aware that many of our patients are travelling long distances within the hospital group. They provide education and supportive care to patients and their families at diagnosis, during treatment, pre- and post-operatively and following discharge from hospital. They act as the patient's advocate, therefore being their single point of contact during their treatment pathway. Close highly functional working relationships within the team optimises the productivity of the GRUHG Upper GI Service.

Every patient case is discussed at the MDM which is held every Friday in conjunction with the colorectal MDM. This includes videoconferencing with Letterkenny, Sligo, Mayo and Portiuncula Hospitals with Roscommon County Hospital coming online in 2013. Patients are then seen in one of our Upper GI Rapid Access Clinics on Tuesdays or Fridays in GUH.

Future plans for the service include bringing endoscopic ultrasound on line - the equipment has been purchased and a consultant gastroenterologist has been identified for training in order to deliver this service locally. Challenges include delivering this level of complex care in the face of reduced resources and limited theatre access.

Upper Gastrointestinal Cancer Team From left: Professor Oliver McAnena, Aine Kennedy, Olive Cummins CNS, Olivia Dunleavy CNS and Mr Chris Collins

Upper GI Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	No. of Episodes
Benign Disease	63
In-situ Disease	0
Primary Cancer	137
Secondary Cancer	0
Total	**200**

Combined General/Upper GI/Colorectal Outpatient Episodes 2012 (Hospital PAS Data)

Outpatient Clinic Statistics	No. of Episodes
Number of Outpatient Clinics per Week	11
Designated Cancer Outpatient Clinics per Week	0
New Patients	2836
Review Patients	7282
Total Number of Patients Seen	**10118**

Gastrointestinal Cancer Surgical Interventions 2012

Outpatient Clinic Statistics	No. of Interventions
Definitive Chemoradiotherapy	15
Oesophagectomy	18
Gastrectomy (Including Partial)	17
Panendoscopy ± Biopsy	173
Gastrostomy/Gastroenterostomy	10

COLORECTAL CANCER

Mr Mark Regan

Consultant Surgeon
Lead Clinician

Introduction

The colorectal cancer programme is centred at GUH. It delivers care to the entire West and North West of Ireland and is affiliated with Sligo Regional Hospital, Mayo General and Letterkenny General Hospital as well as the wider GRUHG. On site surgery is delivered by Mr Mark Regan, Mr Myles Joyce, Professor Oliver McAnena and Mr Eddie Myers.

A weekly MDM takes place on Fridays from 9-10.30am. Each of the external sites communicates via videoconference link. More than forty cases are discussed each week. The meeting is attended by fifteen consultant surgeons, six consultant pathologists, eight consultant radiologists, four consultant radiotherapists, five consultant oncologists, three consultant gastroenterologists along with specialist GI nurses, stoma therapy and the associated teams. Cases are accepted from all services at all of the sites.

A full range of open and laparoscopic management for primary and recurrent colorectal cancer is available in the GUH colorectal unit: segmental colonic resection, anterior resection, low anterior resection, colo-anal restorative surgery, and colo-anal and ileo-anal pouch surgery along with trans-anal open and endoscopic surgery. There is a full range of endoscopic interventions available including polypectomy, stenting and endomucosal resection. The service is fully accredited for colorectal screening. The unit provides all resectional surgical services for screen-detected cancers.

The colorectal unit also has a programme to manage recurrent tumours including pelvic recurrence and offers multidisciplinary management of such tumours with the urology and gynaecology services including pelvic exenteration.

As part of the multidisciplinary team there is access to a full complement of associated, clinical and support services. This includes physiotherapy, dietetic care, stoma care, specialist nurse support and palliative care.

There is a full range of diagnostic and interventional radiological service available at GUH for diagnosis, staging and clinical management. There is full onsite medical and radiation oncology services with specialist expertise in the management of colorectal neoplasia. The pathology laboratory services have under gone a recent upgrading of their molecular pathology program and there are three specialist GI pathologists on the team along with specialist cytology services. There is excellent networking with national and international laboratories for highly specialised services.

A specialist colorectal nurse, Ms Olivia Dunleavy, was appointed in 2012 and she provides a wide range of services to all of the colorectal cancer patients. There is a stoma therapy service (Ms Mary Quigley and Ms Mary Smyth) which also provides extensive continence services.

Colorectal Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	Lower GI	Abdominal
Benign Disease	150	5
In-situ Disease	0	13
Primary Cancer	432	120
Secondary Cancer	5	2
Unknown	5	2
Total	**592**	**142**

Combined General/Upper GI/Colorectal Outpatient Episodes 2012 (Hospital PAS Data)

Outpatient Clinic Statistics	No. of Episodes
Number of Outpatient Clinics per Week	11
Designated Cancer Outpatient Clinics per Week	0
New Patients	2836
Review Patients	7282
Total Number of Patients Seen	**10118**

Colorectal Cancer Surgical Interventions (HIPE Data)

Surgical Interventions	No. of Interventions
Colonoscopy ± Biopsy	278
Colectomy	59
Anterior Resection of Rectum	30
Excisions Procedures on Liver	27
Rectosigmoidoscopy/Proctectomy	17
Stoma Formation	14
Other	9

SKIN CANCER

Ms Deirdre Jones
Consultant Plastic Surgeon
Lead Clinician

Introduction

Skin cancer services in the West of Ireland are spread across a number of specialties and facilities, but the focus for discussion of complex cases and all melanomas is the MDM which takes place three times per month in GUH. This meeting is routinely attended by specialist staff from histopathology, plastic surgery, dermatology, radiology, medical oncology and radiotherapy.

There are multiple facilities for the outpatient assessment of patients with skin cancer, including a joint plastic surgery/dermatology skin triage clinic. The majority of skin cancer patients are seen in general plastic surgery clinics (five per week) or on a "see and treat" basis in a dedicated day facility.

In 2012, the Department of Histopathology in GUH processed 1770 skin cancers. These skin cancers were excised in multiple settings: public and private hospital clinics, day surgery units, private rooms and general practice.

Surgical biopsy and treatment of skin cancers was undertaken by multiple specialties, with plastic surgery accounting for approximately 80% of procedures. Sentinel lymph node biopsy is routinely carried out for indicated melanoma patients as per international guidelines. There were 81 sentinel lymph node biopsies carried out for melanoma in 2012.

The medical treatment of skin cancer in the West of Ireland is provided by the dermatology, medical oncology and radiotherapy departments. The dermatology service provides photodynamic therapy when indicated, as well as providing topical treatments for suitable skin cancer patients. Radiotherapy and medical oncology actively participate in the MDM, and the referral process to these departments is generally initiated in this setting. There were 71 skin cancer referrals to radiotherapy in 2012.

New developments

Most skin cancers are surgically treated as local anaesthetic day case procedures, and two recent developments have been helpful in increasing quality and efficiency in service provision. The first is the development of a Plastic Surgery Procedures Unit within GUH where 803 patients with benign and malignant skin lesions were surgically treated in 2012. The second is a "see and treat" day facility established

Number of Skin Cancers Diagnosed in 2012 Classified by Type

Diagnosis	No. of Cancers
Basal Cell Carcinoma	934
Squamous Cell Carcinoma	356
Squamous Cell Carcinoma (In-situ)	225
Melanoma	107
Melanoma (In-situ)	129
Other	19
Total	**1770**

in Roscommon County Hospital in late 2011 where 198 skin cancers were surgically treated in 2012. The majority of "see and treat" patients need only attend a single appointment.

The education and training of a RANP for plastic surgery and skin cancer has been approved and has commenced in Roscommon County Hospital. It is anticipated that this nurse specialist will have an important clinical role, as well as providing training to other nursing staff and database maintenance.

Plastic Surgery Procedures Unit Launch 2012 From left: Dr Maeve McAllister; Dr Stephen Murphy; Clodagh Hickey; Dr Conor Sugrue; Dr Ann Marie Kennedy.

Surgical Biopsy/Treatments of Skin Cancer Classified by Specialty

Treatments	No. of Patients
Plastic Surgery	1339
Dermatology	149
General Practice	83
General Surgery	63
Ophthalmology	10
Maxillofacial/Ent/Urology/Obgyn	14
Photodynamic Therapy	109
Total	**1767**

LUNG AND CARDIOTHORACIC CANCER

Dr David P. Breen

Consultant Respiratory Physician
Lead Clinician

Introduction

Lung cancer is the third most common cancer diagnosed in Ireland; however it is the leading cause of cancer related death accounting for 18% of female deaths and 22% of male deaths. In 2010 the NCRI recorded 278 cases of lung cancer diagnosed from counties Galway, Sligo, Mayo, Roscommon and Donegal combined.

The Rapid Access Lung Clinic (RALC) commenced in 2011 with the support of the NCCP. This allows a rapid access point for the assessment and work up of patients with (presumed) lung cancer. A key performance index for this service is that first review of patient should take place within two weeks of GP referral.

The initial work up of (presumed) lung cancer is generally performed by Chest Physicians. The RALC service is led by Dr David Breen – appointed in the last quarter of 2011 and supported by two additional respiratory physicians – Dr Anthony O'Regan and Dr Robert Rutherford. The service is fully supported by a nurse manager, Ms Ellen Wiseman and staff nurse, Ms Dympna McPhillips. Our nurses provide invaluable support to the service and offer significant assistance in the work up of patients as they pass through a rapid and complex diagnostic pathway. They are also the point of contact for patients and provide significant psychological emotional support to patients during the pathway.

The RALC runs weekly on a Monday afternoon (Wednesday mornings in case of a bank holiday). In 2012 a total of 847 patients were assessed though the RALC - 461 new patients and 386 return patients. In total 95 cases of cancer were diagnosed through the clinic - a rate of malignancy of 20.6%

Once assessed, a diagnostic plan is put in place. Diagnostic work up is undertaken in Merlin Park University Hospital. The goal is to perform both diagnosis and staging of disease in a single step. Patients have their staging CT scan and this is frequently followed by an endoscopic procedure. Options include bronchoscopy, EBUS (Endobronchial Ultrasound), EUS (Oesophageal Ultrasound), pleural procedures, neck ultrasound and sampling of lymph nodes.

The lung cancer service also offers a comprehensive therapeutic service for patients with advanced malignancy. There is an active interventional pulmonology service offering rigid bronchoscopy for central airway disease management including stent placement. In addition the service offers both diagnostic and therapeutic thoracoscopy – the first centre in Ireland to offer this service.

The MDM occurs weekly and the aim is to discuss all new cases of lung cancer. In addition to cases discussed from Galway there is a video link to Sligo, Mayo and Roscommon hospitals; thus ensuring that the majority of cases in the region are discussed with the multidisciplinary team in the regional cancer centre.

A personalized treatment plan is made for patients through this meeting and they are then referred to the relevant speciality – medical oncology, radiotherapy or thoracic surgery. Mr Mark DaCosta and Mr Dave Veerasingam lead the thoracic surgery team.

Future plans for the service include a thoracic oncology clinic, new diagnostic techniques for work up of the peripheral nodule and a significant drive to strengthen the role of the lung nurse specialist.

Lung and Cardiothoracic Surgical Interventions 2012

Type of Surgical Intervention	No. of Episodes
Wedge Resection	8
Lobectomy	32
Pneumonectomy	2
Total Lung Resection	**42**

Lung Cancer Clinic Activity 2012

RALC Statistics	
New Patients Seen	461
Return Patients Seen	386
Total Patients Seen	**847**
Total Number of Primary Lung Cancers	71
Total Number Secondary Lung Cancer	19
Other Malignancy	5
Total Cancer Diagnoses	**95**

Lung and Cardiothoracic Interventional Procedures 2012 (HIPE Data)

Surgical Interventions	No. of Interventions
Bronchoscopy	115
Excision of Lymph Nodes	21
Biopsy of Thymus	1
Lung Biopsy	16
Other	19

GYNAECOLOGICAL CANCER

Mr Michael O'Leary

Consultant Obstetrician and Gynaecologist
Lead Clinician

Introduction

There are two Consultant Gynaecologists with a special interest in Gynaecological Oncology servicing the West and North West of Ireland, taking referrals from Galway, North Clare, Roscommon and Mayo. Not all patients from Sligo or Donegal with gynaecological cancers are referred to Galway, the majority being sent to Dublin.

There are two Gynaecological Outpatient Clinics every week where patients with gynaecological cancers are seen, with an average of 30 patients per clinic. We have no mechanism for capturing which proportion of the new referrals is oncology related.

Additionally, we provide a colposcopy service under the CervicalCheck National Screening Programme. There are two consultant led colposcopy clinics with several more nurse led clinics per week, staffed by one registered advanced midwife practitioner (RAMP), one candidate AMP and one CNS. We have applied for a CNS in Gynaecological Oncology.

1092 new patients were seen in 2012, with 4825 overall attendances. 465 excisional treatments were performed. 22 cervical cancers were diagnosed and 335 high grade per-cancerous lesions were treated (CIN2-3 and CGIN).

There are 1.5 theatre sessions per week in the gynaecology theatre, with additional sessions in the main theatre block when available. This became more formalised in October 2012 when allocation of Gynaecology theatre lists in main theatre was taken over by the Theatre Flow Group. Dr Katherine Astbury also operates on low risk cases in Portiuncula Hospital, Ballinasloe. Dr Michael O'Leary operated monthly in Mayo General Hospital until September 2012 when the list was cancelled due to financial constraints.

Gynaecological Diagnoses 2012

Cancer Area	Intervention	No. of Diagnoses
Vulval/Vaginal	Vulvectomy	Cancers 3
	Vaginal Biopsy	Vain 8
Ovarian	Total Abdominal Hysterectomy/Bilateral Salpingo-Oophorectomy/Debulking	Cancers 29 Benign/Borderline 16
	Laparoscopic Salpingo-Oophorectomy	Benign 19 Risk Reducing 7
	Laparoscopic Hysterectomy/Bilateral Salpingo-Oophorectomy	Benign 1
Cervical	Radical Hysterectomy/Pelvic Lymph Node Dissection	Cancers 5
	Lletz (Colposcopy Procedure)	Cancers 11 Cin 454
	Total Abdominal Hysterectomy/Total Laparoscopic Hysterectomy	Cin 3
Uterus	Total Abdominal Hysterectomy/Bilateral Salpingo-Oophorectomy	Cancers 4 Pre-Malignant Cah 1
	Total Laparoscopic Hysterectomy/Bilateral Salpingo-Oophorectomy	Pre-Malignant Cah 3
NOS	Debulking Laparotomies	3

Gynaecological Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	No. of Episodes
Benign Disease	236
In-situ Disease	17
Pre-Cancerous	575
Primary Cancer	1572
Secondary Cancer	26
Pre-Malignant Dysplasia	467
Unknown	58
Total	**2971**

Gynaecological Cancer Outpatient Episodes 2012 (Hospital PAS Data)

Outpatient Clinic Statistics	No. of Episodes
Number of Outpatient Clinics per Week	8
Designated Cancer Outpatient Clinics	2
New Patients	2088
Review Patients	3207
Total Number of Patients Seen	**5295**

Gynaecological Cancer Surgical Interventions 2012 (HIPE Data)

Surgical Interventions	No. of Interventions
Cervical Procedures	351
Eua Vagina	332
D&C/Eua	82
Abdominal Hysterectomy	81
Excision of Lymph Nodes	15
Salpingo-Oophorectomy/Oophorectomy	39
Vaginal Hysterectomy	30
Other	67

HEAD AND NECK CANCER

Ms Orla Young

Consultant Otolaryngologist,
Head and Neck Surgeon
Lead Clinician

Introduction

GUH is the tertiary referral centre for head and neck cancer for the West of Ireland. Patients are referred from GPs and all of the regional hospitals. Head and neck cancer services are provided by the Department of Otolaryngology, Head and Neck Surgery (ENT) and the Department of Maxillofacial Surgery.

The ENT department consists of four consultant surgeons (Professor Keogh, Ms Young, Mr Gormley, Mr Lang), one SpR, three Registrars, one SHO, one Intern and has a vacant head and neck liaison oncology nurse position at present. Outpatient services are provided five days per week in GUH, one day per week in Mayo General Hospital and one day per fortnight in Roscommon County Hospital. The maxillofacial department consists of one consultant surgeon (Mr Patrick McCann) and three and a half registrar posts. Maxillofacial outpatient services are provided in GUH and Portiuncula Hospital.

Multidisciplinary Meeting

The head and neck oncology MDM meets every second week. All new cases of head and neck cancer are discussed. In 2012, there were 23 MDMs and 228 new cancers were discussed. The meeting is also attended by consultants and teams from radiation and medical oncology and speech and language therapy.

Trans Oral Laser Surgery (TORS)

2012 saw the arrival of TORS to patients in the West of Ireland for the first time. Using CO2 laser, early laryngeal cancers can be excised trans-orally under general anaesthesia. This provides an excellent alternative treatment option to the standard six weeks external beam radiation. With the arrival of further equipment in 2013, it is hoped we can increase the number of patients being treating with TORS, reducing pressure on our radiation oncology services and also keeping radiotherapy in reserve, should it be necessary at a later stage in their management.

Head and Neck Cancer Outpatient Episodes 2012 (Hospital PAS Data)

Outpatient Clinic Statistics	Ear, Nose and Throat	Maxillofacial
Number of Outpatient Clinics per Week	6	3
Designated Cancer Outpatient Clinics	0	0
New Patients	4262	1309
Review Patients	5770	1288
Total Number of Patients Seen	**10032**	**2597** (HIPE)

Head and Neck Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	No. of Episodes
Benign Disease	2
Primary Cancer	264
Total	**266**

Head and Neck Surgical Interventions 2012

Surgical Interventions	No. of Interventions
Parotidectomy	30
Excision Biopsy Neck Nodes	33
Laryngectomy	3
Thyroidectomy	12
Neck Dissection	36
Panendoscopy and Biopsy	42
Microlaryngoscopy and Biopsy	106
Excision Mass Oral Cavity/Oropharynx	43
Glossectomy/Hemiglossectomy	9
Trans-Oral Laser Resection Laryngeal Tumour	3
Endoscopic Excision Nasal/Sinus Tumour	3
Tracheostomy	16
Maxillectomy	7
Mandibulectomy	5
Free Flap Reconstruction	12
Pedicle Flap Reconstruction	4

ENDOCRINE CANCER

Dr Marcia Bell

Consultant Endocrinologist
Lead Clinician

Introduction

The endocrine cancer programme is based on a multidisciplinary team involving six endocrinologists, three endocrine surgeons, two pathologists, two radiologists and two chemical pathologists.

MDMs are held twice monthly and all endocrine patients requiring surgical intervention are discussed pre- and post-operatively. Diagnostic assessments include specialist radiology, cytology and isotope studies. The service has specialist expertise in intra-operative parathyroid hormone (iPTH) measurement and sestamibi localisation for parathyroid disease.

Endocrine Cancer Inpatient Episodes 2012 (HIPE Data)

Diagnosis	No. of Episodes
Benign Disease	39
In-situ Disease	1
Primary Cancer	73
Secondary Cancer	15
Unknown	11
Total	**139**

Endocrine Cancer Surgical Interventions 2012 (HIPE Data)

Surgical Interventions	No. of Interventions
Thyroidectomy	38
Parathyroidectomy	9
Adrenalectomy	4

4.2 Haematological Cancer

Professor Michael O'Dwyer

Consultant Haematologist
Lead Clinician

Introduction

GUH is one of the longest established haematology centres in the country and the main haematology centre in the West of Ireland. However, as the only tertiary referral centre in the west region GUH has for many years provided care in selected cases to patients from a wider catchment area encompassing Leitrim, Sligo, Donegal, and North Clare. This has included the management of patients with acute leukaemia, patients undergoing autologous stem cell transplantation as well as management of other complex haematological cancers, including patients with high grade lymphomas and relapsed/refractory disease. Letterkenny and Sligo hospitals currently each have a single full time haematologist and provide a full general and laboratory haematology service to their immediate catchment area. Complex cases are referred to GUH. Within the past year we have accepted patients from the Southern HSE region for autologous stem cell harvesting and transplantation, which has increased our workload significantly.

There are only two licensed adult stem cell processing laboratories in the country. Further information on the Stem Cell facility is described in Appendix 1. The GUH Blood and Tissue Establishment also has a good manufacturing practice (GMP) license and thus provides a comprehensive range of haematology services, including a diagnostic service, blood banking, apheresis and stem cell processing. There are established MDMs for lymphoma and leukaemia/myeloma respectively.

There is a weekly sessional commitment to Mayo General Hospital (MGH) with full oversight of the laboratory, provision of a consult service and weekly outpatient clinic.

In addition, appropriate level low intensity day case activity is provided for in a shared Oncology/Haematology day ward at MGH.

Our aim is to develop a comprehensive supra-regional haematology service for the whole western region. We plan to do this in partnership with our sister hospitals in the region expanding and consolidating existing services, improving links across the network while taking mutual advantage of our shared resources.

Medical and Nursing Manpower

GUH currently has five WTE consultant haematologists. One of these posts is an academic post and is currently shared between two haematologists. It should be noted that two medical oncologists and four radiation oncologists also participate in the multidisciplinary management of patients with lymphoma and myeloma. Four of the haematologists are regularly involved in the delivery of care to adult patients with blood cancers. The fifth haematologist is predominantly concerned with haemostasis and thrombosis but also has some paediatric sessions with Our Lady's Hospital for Sick Children, Dublin and participates in shared care of children with acute leukaemia. We are a recognised hospital for training purposes by the Irish Committee for Higher Medical Training (ICHMT) and currently have two SpR posts and two registrar posts. We currently have three CNSs (two in haematology and one in haemophilia) and one RANP.

Inpatient facilities

Haematology inpatients are facilitated on St Patrick's and St Joseph's Wards with a nominal capacity of sixteen beds. However, haematology frequently occupies 20-25 beds daily. At present it is not possible to house all patients in isolation rooms with ensuite facilities. The expansion in stem cell transplantation has further increased pressure on beds as has provision of tertiary services to other hospitals in the region.

There is a clear need for the provision of a dedicated Haematology inpatient unit with adequate inpatient capacity to reflect our growing workload. It is planned to provide such a unit with the completion of a new hospital block in 2015. We estimate that we require a HEPA-filtered 25 bedded dedicated haematology in-patient unit composed of single rooms with en suite facilities to address current and future requirements and meet JACIE accreditation standards. There should be adequate space for procedures, a facility for chemotherapy reconstitution, office space for medical and nursing staff, a conference room for team meetings/educational activities and a private family room for sensitive discussions.

Haematology/Oncology Day Ward

Over the past number of years there has been an increasing move to treat patients in the ambulatory setting and avoid in-patient admissions as much as possible. We have also pioneered innovative strategies such as home treatment of patients with multiple myeloma with Velcade. In 2012 there were, on average, 49 patient episodes of Velcade home treatment per month. Our current day unit is shared with Oncology and has insufficient capacity for both specialities. Due to space and staff constraints we are not in a position to cater for walk in referrals, cope with any increase in workload or provide an optimal environment for patients. Further Haematology/Oncology Day Ward activity details are included in the Medical Oncology section of this report.

Current Activity Levels

At GUH we diagnose more than 20 new patients with acute leukaemia per year and on average between 15-20 patients undergo induction therapy each year for acute leukaemia. These patients require multiple cycles of intensive chemotherapy with hospital stays averaging a month at a time. As noted in Appendix 1 our stem cell transplant activity is growing and all of these factors are inevitably putting increased pressure on Haematology services.

Haematology Inpatient and Day Case Activity in 2012 (HIPE Data)

Cancer Type	Primary	Unknown	Total
Lymphoid Leukaemia	654		654
Lymphoma	1336		1336
Myeloid Leukaemia	564		564
Myeloma	1311		1311
Myelodysplastic		672	672
Other Leukaemia	13		13
Polycythaemia Vera		55	55
Total	**3878**	**727**	**4605**

Haematological Cancer Outpatient Episodes 2012 (Hospital PAS Data)

Outpatient Clinic Statistics	No. of Episodes
Number of Outpatient Clinics per Week	9
Designated Cancer Outpatient Clinics per Week	4
New Patients	434
Review Patients	3289
Total Number of Patients Seen	**3723**

Haematological Cancer Interventions (HIPE Data)

Types of Intervention	No. of Interventions
Chemotherapy	2840
Transfusions	508
Bone Marrow Biopsy	157
Lumbar Puncture	43
Lymph Node Biopsy	31
Apheresis	27
Bone Marrow/Stem Cell Transplant	18

4.3 Radiology

Dr Ray McLoughlin

Consultant Radiologist
Lead Clinician

The Radiology Department provided a range of diagnostic, staging and surveillance imaging studies for oncology patients at GUH and its catchment area in 2012, including Computed Tomography, Ultrasound, Nuclear Medicine and Magnetic Resonance Imaging. In many instances, this constituted the bulk of the workload for these modalities at our hospital.

Our department offered several interventional procedures to these patients. These included (i) diagnostic procedures (image guided biopsies), (ii) procedures facilitating intravenous or enteral therapy (central venous catheter insertion, percutaneous gastrostomy), (iii) procedures for complications of their disease (drainage and stent insertion, caval filter insertion) and (iv) procedures to directly treat their cancer (radiofrequency ablation, tumour chemoembolization).

In addition, our department supported twelve oncology MDMs, most occurring weekly. These meetings require careful preparation, and afford the opportunity to critically review current and previous imaging in the context of planning patient care/treatment.

Radiology Modalities

Modality	Estimated No. of Examinations/Procedures	Cancer % of total 2012 workload
Computed Tomography (CT)	10,406	75%
Magnetic Resonance Imaging (MR)	1,239	25%
Nuclear medicine	3,319	75%
Ultra-Sound	5,340	50%
Interventional Procedures	2,168	70%

Radiology Multidisciplinary Meetings Schedule

MDM Meeting	Frequency	Length (Hours)	No. of Radiologists	Preparation (Hours)
Lung	Weekly	1	1	1
Head and Neck	Alt Weeks	1	2	1
Oncology	Weekly	1	1	1.5
Lymphoma	Alt Weeks	1	2	1
Gynaecology	Alt Weeks	1	2	1
GI (Surgical)	Weekly	1.5	2	1.5
Breast Symptomatic	Weekly	1.5	3	2
Breast Check	Weekly	1	3	1
Melanoma	¾ Weeks	1	1	1
Urology	Alt Weeks	2	1	2
Haematology	Weekly	1	1	1
Endocrinology	Alt Weeks	1	1	1

4.4 Pathology

Dr Teresa McHale

Consultant Pathologist
Lead Clinician

The Anatomic Pathology Department provided diagnostic and staging information for oncology patients attending GUH, and for the wider catchment area through surgical pathology and cytopathology services. This included the provision of diagnostic pathology for the breast service and the NCCP-led rapid access prostate and lung services, in addition to the entire range of other cancer types. In 2012, the department began the process of validation of molecular testing for BRAF, KRAS and EGFR, with a view to offering these molecular tests locally in 2013. The work load of the department for 2012 is outlined in the first table below. The work load was handled by Consultant Pathologists numbering 10.5 whole time equivalents (WTE), with subspecialist expertise across all of the major cancer subtypes.

In addition to the numbers illustrated in the first table, 1975 cases were subjected to intradepartmental consultation, i.e. were forwarded to a second pathologist for review and opinion. This constitutes 5.5% of the total case load, which surpasses the recommended target of the National Quality Assurance Program, and constitutes an invaluable quality assurance mechanism within the department.

The Pathology Department is one of the busiest in the country and cancer-related biopsies and resections form a large part of the work load of the department. The second table in this section provides an overview of the numbers of patients with cancer/neoplastic diagnoses, in each organ system that were diagnosed and/or pathologically staged in 2012.

Multidisciplinary Meeting

The Pathology Department provided pathology support for the twelve separate cancer-related MDMs that took place regularly throughout the year. The list of these meetings in provided in the radiology section. Each meeting is staffed by a minimum of three and maximum of six subspecialist pathologists on a rotational basis, with most pathologists participating in several MDMs. Each MDM is staffed by a subgroup of pathologists with experience/expertise in that area of pathology. A total of 3886 cancer cases were reviewed and presented at MDMs in 2012, constituting a total of 1.5 WTE, in terms of pathologist hours contributing to MDM preparation and presentation.

Total Number of Cases/Specimens Handled by the Pathology Department in 2012

Specimen Type	No. of Cases
Surgical Pathology Specimens, Including Diagnostic Biopsies and Resections	32620
Cytopathology Specimens (Including Fine Needle Aspiration Biopsies)	2422
Transbronchial Biopsies + Cytology	110
Referred Cases from Outside Institutions, (Majority for Review for MDMS)	875
Total	**36027**

Cancer and/or Neoplastic Diagnoses Recorded in 2012

Organ system	No. of patient cases
Gastrointestinal Pathology	
Oesophageal Carcinoma (Squamous Carcinoma, Adenocarcinoma, NOS)	42 (12, 29,1)
Gastric (Carcinoma, Neuroendocrine Tumour, GIST, Other)	48 (40, 3, 4, 1)
Small Intestinal (Carcinoma, Carcinoid, Lymphoma)	10 (5, 2, 3)
Colonic Adenocarcinoma	119
Rectal Carcinoma/Anal Canal Carcinoma	49 (44/5)
Liver (Hepatocellular Carcinoma, Carcinoma, Others)	58 (5, 46, 7)
Gallbladder/Pancreas	7 (3/4)
Other	30
	363 Total
Breast Pathology	
Ductal Carcinoma In-situ	136
Infiltrating Ductal Carcinoma	390
Ductal Carcinoma, Other	110
In-situ Lobular Carcinoma	18
Lobular Carcinoma, NOS	72
Lobular Carcinoma, Other	134
	860 Total
Genitourinary Pathology	
Prostate (Adenocarcinoma, Prostatic Intraepithelial Neoplasia, Other)	737 (506, 225, 6)
Bladder (Urothelial Carcinoma, Adenocarcinoma)	140 (139, 1)
Kidney (Renal Cell Carcinoma, Squamous Cell Carcinoma, Lymphoma)	65 (63, 1, 1)
Testis (Testicular Carcinoma, Leydig Cell Tumour, Other)	16 (13, 2, 1)
Penis, Squamous Cell Carcinoma	6
	964 Total
Dermatopathology	
Squamous Cell Carcinoma, Invasive and In-situ	656
Basal Cell Carcinoma	934
Melanoma (Including In-situ Melanoma)	256
Other	13
	1859 Total
Gynaecologic Pathology	
Uterus/Endometrium: Endometrial Carcinoma/Lymphoma)	21 (20, 1)
Cervix (Squamous Carcinoma, Adenocarcinoma, Carcinosarcoma)	20 (12, 7, 1)
Ovary (Carcinoma, Borderline Tumours, Cystadenomas)	46 (29, 4, 17)
Vulva (Invasive/In-situ Malignancy)	9 (6, 3)
	96 Total
Lung and Mediastinum	
Trachea (SCC and Small Cell Carcinoma)	3
Bronchus (SCC and 1 Sarcoma)	14
Lung (Carcinoma NOS, Carcinoid, Sarcoma)	110 (105, 4, 1)
Pleural Fluids Positive for Malignant Cells	23
Mediastinum, Malignant Neoplasm, NOS	5
	155 Total
Head and Neck	
Vocal Cord, Larynx, Pharnyx, Tonsil, Nasopharnyx, Epiglottis	44 (17, 7, 5, 6, 5, 4)
Mouth, Palate, Uvula, Tongue (All Squamous Cell Carcinomas)	32
Salivary Gland Neoplasms	9
Parotid Lymphoma	3
Thyroid (Carcinoma/Neoplasm)	37
Parathyroid Carcinoma	1
	126 Total
Hematolymphoid	
Bone Marrow - Leukaemia/Lymphoma	129
Lymph Nodes - Lymphoma	29
Lymph Nodes - Metastatic Carcinoma	172
	330 Total
Bone and Soft Tissue	
Primary Bone Tumours (Sarcoma)	6
Myeloma	7
Metastatic Malignancy	54
	67 Total
All Other Sites:	
Including Retroperitoneum, Umbellicus, Peritoneum, Peritoneal Fluid, Etc.	**84 Total**

4.5 Medical Oncology

Dr Maccon Keane

Consultant Medical Oncologist
Lead Clinician

Introduction

Medical oncology at GUH plays a core role in cancer services in the West of Ireland. It comprises of medical oncology/ haematology day wards at GUH and our satellite units at Mayo General Hospital and Portiuncula Hospital.

The inpatient service that supports the day wards are located on St Joseph's and St Patrick's Wards at GUH. This service supplies systemic therapy for all cancers except paediatric cancer. Paediatric cancers are treated in collaboration with the paediatric oncology service at Our Lady's Hospital for Sick Children in Dublin.

The service supplies integrated combined modality care in collaboration with the radiation therapy service at GUH. All systemic therapies for cancer including chemotherapy, immunotherapy, biologic agents, targeted therapies and endocrine therapies are delivered through this service.

This service is led by four medical oncology consultants who deliver multidisciplinary care at GUH, Mayo General and Portiuncula Hospitals. The medical oncology service facilitates access to clinical trials for patients with cancer in collaboration with ICORG, NASBP, ECOG as well as in-house independent investigator-led studies.

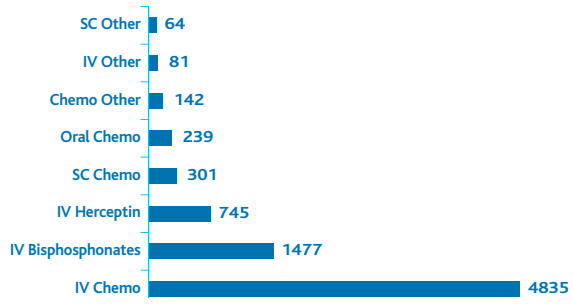
Haematology/Oncology Day Ward (HDW)

There were approximately 2400 inpatient admissions (haematology, oncology and radiotherapy) to cancer services in 2012; this represents a 132% increase in turnover from figures in 2010. The pressure on the limited inpatients beds to accommodate emergency admissions means that timely elective admissions for (traditionally) inpatient chemotherapy treatments is increasingly difficult. The current ratio of chemotherapy administration for inpatient:outpatient is 30:70%. The HDW is at capacity at present - in the physical environment and human resources of both nursing and pharmacy isolator staff.

There was an average of 1322 patients per month admitted to the HDW in 2012 (12 months) and an average of 49 patients administering Velcade at home per month from March-December 2012 (10 months).

In the HDW chemotherapy and supporting treatments are administered, non-malignant haematology disorders are treated and patients undergoing cancer treatments are monitored. The ward has seventeen chairs and two trolleys in seven divided rooms; three single rooms, plus a seven, four, three and two chaired area.

Oncology Day Ward Chemotherapy 2012



In 2012 there was a 47% increase in demand for HDW treatments from the previous year. This can be related to the increased turnover in the inpatient service. The increased turnover, probably due to earlier discharge from the inpatients and increasing patient numbers, has a direct impact on demand for HDW services. On average, 50 patients attend the HDW daily. 50% of these patients attend for Chemotherapy Administration (IV, SC, and IM) and are

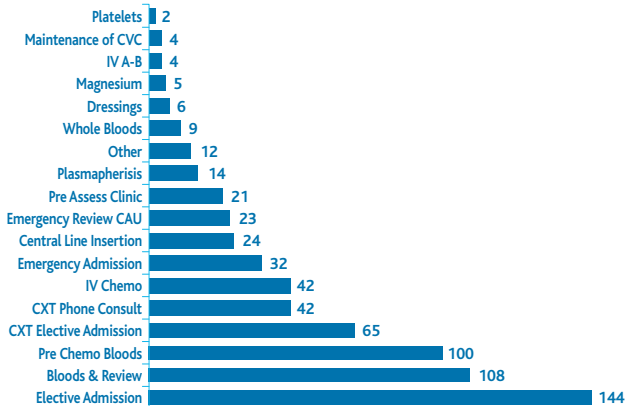
managed within thirteen chairs. The remaining 50% are managed within a four chaired area and attend for the following reasons:

- IVIG infusion - 2 per day (3-4 hour infusion)
- Iron infusion - 2 per day, Electrolyte replacement - IV infusion (2-4hours)
- Blood and platelet transfusions, Venosection - 2 per day
- Bone marrow biopsy, Lumber puncture - Diagnostic and therapeutic response
- Oral chemotherapy – new cycle scripts, compliance and side effect monitoring
- Bloods and review post discharge from inpatients and chemo cycle interval monitoring

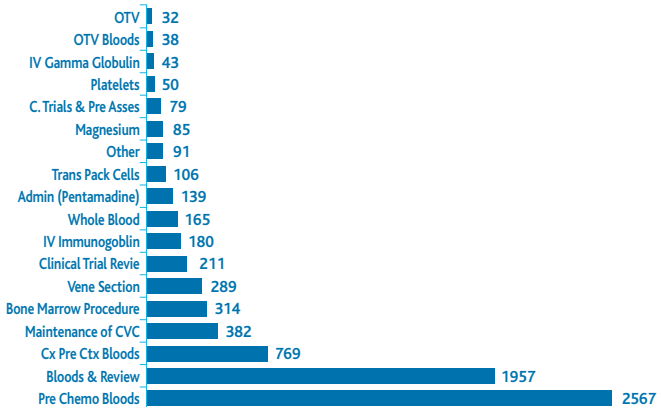
The Cancer Assessment Unit (CAU) is situated on the fifth floor between inpatient wards. It is an integral part of the service, staffed from St Patrick's Ward nursing complement and supported by the haematology, oncology, radiotherapy CNSs and NCHDs. It assists with hospital bed flow as it facilitates cancer service patients awaiting admission from the emergency department. The CAU also facilitates patients for pre-assessment prior to inpatient/day ward chemotherapy, patients for day case procedures such as central line insertion, biopsy procedures and patient monitoring to avoid inpatient admission.

It is hoped that the development of a new ambulatory unit within the main hospital, in close proximity to the inpatient unit will provide greater capacity and a better patient experience as well as the ability to provide certain procedures on an ambulatory basis that currently require admission, e.g. stem cell harvests, apheresis etc. This unit should reasonably protect vulnerable haematology patients, who are often immunosuppressed as well as neutropenic from transmission of infectious agents, and should be able to provide, as necessary, for patient isolation, long duration intravenous infusions, multiple medications, and/or blood component transfusions.

Cancer Assessment Unit Activity for 2012



Oncology Day Ward Nursing Activities 2012



4.6 Radiation Oncology

Professor Frank Sullivan

Consultant Radiation Oncologist
Lead Clinician

Introduction

The Department of Radiation Oncology at GUH opened in March of 2005 and has grown steadily since then. It provides a full spectrum of services for (adult) cancer patients in the West of Ireland. It has gained a reputation nationally for the provision of high quality radiation services (including IMRT) in a caring and compassionate environment.

Located in GUH and with a full time staff complement of fifty three, it serves the needs of patients referred primarily from the West of Ireland. However, selected specialised radiation services are provided to patients from all over the country. Our service performance is closely monitored with our KPIs submitted monthly to the NCCP, reflecting timeliness and quality. There are no real waiting lists to see a physician in radiation oncology. For example all patients are seen routinely within eight calendar days of the referral being received. The timelines for treatment planning and delivery are well within national norms. All patients requiring emergency radiation therapy are assessed by a consultant radiation oncologist within 24 hours and treated the same day where necessary.

Radiation oncology is a multidisciplinary team effort, and all patients receiving curative radiation therapy are discussed as a part of an approved MDM, often using videoconferencing to include our colleagues in the region. Within the department there is significant interaction between all the members of our team, from administrative staff, through nurses in our clinics, radiation therapy/dosimetry and physics staff, and physicians. In addition to four full time radiation oncologists, we are fortunate to have the support of a senior fellow/locum consultant (part time), two SpR radiation trainees, as well as ward-based NCHDs. Our therapists have taken the lead on image guided radiation techniques, as well as the contouring of volumes on planning CT Scans. Our nursing section is nationally recognised for their nurse-led "on treatment visits" and supportive care measures for radiotherapy patients. There is an ANP candidate within the department who is taking the lead for post treatment prostate cancer patients and their long-term side effect management.

Prostate brachytherapy provides patients with a "same day" once off treatment option that involves the implantation of radiotherapy seeds directly into the prostate as an alternative to conventional radiotherapy treatments. We look forward to the national launch of our brachytherapy service in January 2013.

The department participates in a range of national and international clinical trials, including the use of novel radio-isotopes for cancer treatment (Alpharadin). Affiliated with the Prostate Cancer Institute at NUI Galway we are involved in translational research also.

As a part of the national plans to expand radiation services, Phase II of our facility is in development with a planned opening scheduled for the second half of 2017. This will further enhance the capacity and technical capabilities of our department.

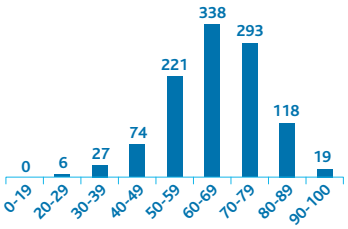
Services Provided by GUH Radiation Oncology

Treatment Statistics	No. of Patients
Patients Treated with External Beam Radiation Therapy (EBRT)	1165
Patients Treated with Orthovoltage (Superficial External Beam)	31
Brachytherapy	Prostate Seeds 111 Gynae Fletcher Patients 12 Gynae Cylinder Patients 39
IMRT Treated	179

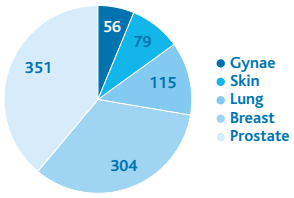
Outpatient Clinic Statistics	No. of Patients
New Patient Referrals	1569
Review Patients	5909
RANP Patients Visits	271
Patients on Research Trials	20

KPIs were returned to the NCCP for four disease sites breast, prostate, lung and rectal cancers (radical patients).
KPI 8 was published quarterly. Timeline from ready to treat to date of first fraction was ≤ 15 working days.
86% of patients commenced their radiation treatment within 15 working days of their ready to treat date.
(Target 90%) All disease sites will be reported on in 2013.

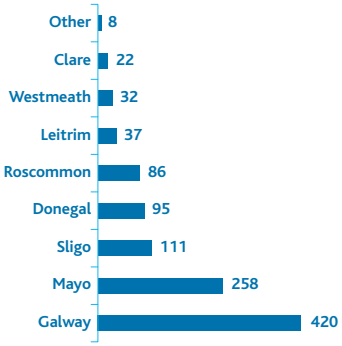
EBRT Age Profile

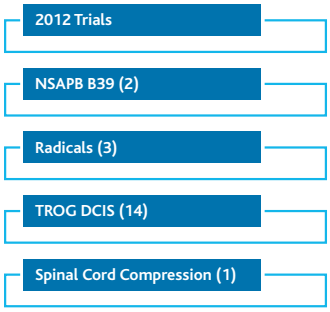


Patients Treated Top Five Diagnosis



EBRT County of Residence





4.7 Cancer Nursing

Marie Cox

Assistant Director of Nursing,
Cancer Services and Outpatients Department,
Interim Cancer Services Manager

Nursing within cancer services (surgery, medical oncology, haematology, radiotherapy, palliative care) is a valued resource. The nursing team is proactive in advancement of their roles and considering nurse led service solutions e.g. the Cancer Assessment Unit. The nursing team comprises of support staff (HCAs, Ward Clerks), staff nurses, CNMs, CNSs, Clinical Trials Research Nurses and a RANP in Haematology. There is an ANP candidate in radiotherapy, who hopes to progress to registration in 2013.

There is a continuous emphasis on undergraduate and postgraduate education and training. This is assisted by our clinical facilitator and close linkages with colleagues in NUI Galway and the NCCP. It would be impossible to outline the specifics of each nursing role within cancer services but the CNS role is seen as integral to all of the services and therefore will be outlined below:

The five core concepts of the CNS as set out by the National Council 2007 are as follows:

1. Clinical focus: The CNS must have a strong patient focus whereby the specialty defines itself as nursing and subscribes to the overall purpose, functions and ethical standards of nursing. The clinical practice role may be divided into direct and indirect care.
a. Direct care comprises the assessment of patient pre-treatment, coordination of the patient journey, involvement in the delivery of care alongside the registered nurse and evaluation of care and the nursing interventions. Monitoring patients for side effects and educates both patient and family on every aspect of their cancer journey.
b. Indirect care relates to activities that influence others in their provision of direct care e.g. teaching, mentoring and supporting other staff in the care of the patient with cancer.

2. Patient/client advocate: The CNS role involves communication, negotiation and representation of the patient/client values and decisions in collaboration with other health care workers and community resource providers. Communicating effectively with patient and carers prior to all interactions and accepts feedback on performance.

3. Education and training: The CNS remit for education and training consists of structured and impromptu educational opportunities to facilitate staff development and patient/client education. Also liaises and develops educational initiatives pertaining to cancer care locally and nationally.
a. Each CNS in tandem with his/her line manager is responsible for his/her continuing professional development, including participation in formal and informal educational opportunities, thereby ensuring sustained clinical credibility among nursing, medical and paramedical colleagues.

4. Audit and research: Audit of current nursing practice and evaluation of improvements in the quality of patient/client care are essential requirements of the CNS role. The CNS must keep up to date with relevant current research to ensure evidence-based practice and research utilisation demonstrating an understanding of clinical trials and the implications of the outcomes on individual patients. The CNS must contribute to nursing research, which is relevant to his/her particular area of practice. Any outcomes of audit and/or research should contribute to the next service plan.

5. Consultant: Inter- and intra-disciplinary consultations, across sites and services are

recognised as key functions of the CNS. This consultative role also contributes to improved patient/client management through verbal and written communication to other members of the MDM.

The CNS is identified as the patients' key worker and is the main point of contact during care. The CNS participates in discussions at MDMs about the patient care, and where required, liaises with other team members within GUH and at other organisations. A large part of CNS work involves helping patients cope with the diagnosis and treatment of their cancer. The CNS is able to give expert advice about diagnosis and treatment and discuss any issues that the patient and their family might have. They provide continuity of care for the patient and family over the trajectory of their treatment.

University Hospital Galway

4.8 Palliative Medicine

Dr Dympna Waldron

Consultant in Palliative Medicine
Lead Clinician

The Department of Palliative Medicine commenced service in 2000. The service has expanded significantly since this time. By 2012 the most significant and noticeable changes were the earlier referral of patients with incurable malignancies, referral of patients with potential cure for specific symptom control for short term management and a marked increase in referral of patients with advanced incurable non-malignant conditions.

We have two consultant posts at GUH covering Roscommon County Hospital (RCH) and the community seven days a week. There are three CNS posts, one unfilled, and two NCHD posts. There is an outpatient clinic in MPUH once a week and an outpatient clinic at RCH also. The service in both hospitals works to a "liaison" model and integrates closely with all specialities in both the hospitals and community.

The department carries a significant role in medical and nursing education: a nursing PhD study commenced in 2012. There were five research papers submitted to journals for peer review. The planning for a fourth international conference, Cuisle Beatha 2013, commenced in 2012.

GUH and Roscommon County Hospital (RCH) Referrals to the Palliative Care Service 2012

	2005	2006	2007	2008	2009	2010	2011	2012
GUH	689	778	778	750	770	621	720	897
GUH OPD	200	200	200	200	200	200	200	94
RCH Referrals	197	160	230	203	251	260	186	154
RCH Home Care Referrals	92	90	121	140	153	167	140	194
Total No. of Patients	**1178**	**1228**	**1329**	**1293**	**1374**	**1248**	**1246**	**1339**

GUH Referrals to the Palliative Care Service 2012

	Referrals	Malignant	Non-Malignant	Deaths
January	60	47	13	22
February	63	44	19	20
March	69	46	23	33
April	65	45	21	23
May	86	68	18	19
June	69	54	15	16
July	88	62	26	27
August	74	52	22	26
September	66	50	16	23
October	90	66	24	22
November	76	58	18	17
December	91	60	31	36
Total	**897**	**652**	**245**	**284**

5. Cancer Research

NUI Galway is the academic partner of GUH. With over 17,000 students and more than 2,400 staff, NUI Galway has a distinguished reputation for teaching and research excellence. Undergraduates from the three schools in the College of Medicine, Nursing and Health Sciences may continue their training at GUH or one of the other regional hospitals. Medical academies have been developed to date in Mayo, Sligo and Letterkenny to strengthen training and research programmes throughout the region. An academy is under development at Portiuncula Hospital, Ballinasloe.

Cancer biology and therapeutics is a strategic research priority at NUI Galway and over the last number of years the partner institutions have built a strong team of internationally recognised basic and translational cancer researchers and clinicians. NUI Galway is a member of the Irish Clinical Research Infrastructure Network (ICRIN) which links all clinical research facilities in the country. ICRIN, as the Irish member of the European Clinical Research Infrastructure Network (ECRIN), forms part of a European-wide effort to construct an infrastructure for multi-centre and multi-national clinical trials sponsored by academic institutions and industry.

NUI Galway Research Institutes and Centres
The development of research centres and institutes at NUI Galway has encouraged interdisciplinary research programmes and collaborations with industry partners in areas of strategic importance, both regionally and nationally. The following research centres and institutes illustrate the established cancer and health research programmes at NUI Galway.

- Health Research Board Clinical Research Facility Galway (HRB CRFG)
- Regenerative Medicine Institute (REMEDI)
- National Centre for Biomedical Engineering Science (NCBES)
- Prostate Cancer Institute
- Centre for Chromosome Biology
- UNESCO Child and Family Research Centre
- Centre for Pain Research
- Centre for Clinical Health Services Research and Development

Research is also carried out in collaboration with the Health Economics and Policy Analysis (HEPA) group, the School of Psychology, the Whitaker Institute for Societal Change and various other schools and disciplines at NUI Galway.

Prostate Cancer Institute Launch 2011 From left: Professor Frank Giles; Dr Sharon Glynn; Professor Frank Sullivan; Former President of Ireland, Mary McAleese; Dr Martin McAleese and NUI Galway President Dr James J Browne.

Cancer Research Outputs
The Ignite Technology Transfer Office (TTO) explores and facilitates commercial opportunities for the research community at NUI Galway, and facilitates industry partnership. In 2012 there were two patents filed/pending by the Discipline of Surgery (1) hsa-miR-138 (MicroRNA-138) as a biomarker of breast cancer (Professor Michael Kerin and Dr Roisin Dwyer) and (2) A novel method for detection and quantification of microRNAs in the circulation of breast cancer patients (Professor Michael Kerin, Dr Nicola Miller and Dr Helen Heneghan)

Publications
Please see Appendix 3

Haematology Translational Research
Translational research in haematological malignancies at GUH and NUI Galway has grown considerably in recent years. This was consolidated in 2012 by the HRB Clinician Scientist Award to Professor Michael O'Dwyer.

This award, worth €1.7 million was made to establish a programme of translational research in multiple myeloma, based at NUI Galway. The main focus of this work is to explore the role of glycosylation in multiple myeloma. Professor O'Dwyer's award follows the award in 2011 to Dr Siobhan Glavey, a Galway trainee of a HRB/HSE National SPR Academic Fellowship under Prof O' Dwyer's supervision to work on this project. This was one of only two NSAFP Fellowships awarded nationally across all medical specialties. Initial work arising from this research was presented at the annual meeting of the American Society of Hematology in Atlanta, 2012 and was also the subject of a patent application to the European Patent Office.

Breast and Colorectal Cancer Research
Professor Michael Kerin leads the cancer research team in the Discipline of Surgery. Research is carried out into breast and colorectal cancer primarily. The core research areas are gene and microRNA profiling in cancer, human mesenchymal stem cells (MSCs) in cancer, population genetics and the role of the tumour microenvironment in breast cancer. A comprehensive Cancer Biobank and breast cancer database has been developed over many years in collaboration with the clinical cancer teams at GUH. Collaborative research is carried out with various NUI Galway schools and disciplines as well as national and international institutes: the National Centre for Medical Genetics, ICORG, Beaumont Hospital, RCSI, Biomedical Diagnostic Institute DCU, Yale University Medical Center, University of Arizona, the Mayo Clinic, Baylor College of Medicine, University of Oxford and Nottingham Trent University.

Dr Róisín Dwyer, Lecturer in the Discipline of Surgery, received the inaugural Irish Cancer Society Researcher of the Year award for her research into the use of adult stem cells to deliver anti-cancer drugs directly to tumours.

There were nine postgraduate researchers (PhD and MD) in the laboratory in 2012. Dr Niamh Hogan, an MD student, was awarded the 2012 Royal Academy of Medicine Ireland Registrar's Prize for her work on mesenchymal stem cells in the colorectal cancer microenvironment. Dr Hogan was supervised by Professor Michael Kerin, Dr Róisín Dwyer and Mr Myles Joyce.

There is an active Summer Student Research Programme in the Discipline of Surgery. Hospital or laboratory-based projects are funded by various agencies for 6-8 weeks. Students have the opportunity to present their research at the Annual College of Medicine, Nursing and Health Sciences Research Day. Eleven medical students undertook research in the Discipline of Surgery in 2012.

Cancer Research Principal Investigators

Cancer Research Specialty	Cancer Investigators
Stem Cell Research	Professors Frank Barry, Tim O'Brien and Dr Mary Murphy
Cancer Therapeutics and Haematology	Professors Frank Giles and Michael O'Dwyer
Cancer Diagnostic Technology	Professors Terry Smith and Michael Kerin
Breast Cancer	Professors Michael Kerin and Grace Callagy
Chromosome Biology, Genome Stability	Professors Noel Lowndes and Corrado Santocanale
Apoptosis Research	Professor Afshin Samali
Gastrointestinal	Professor Larry Egan
Prostate Cancer	Professor Frank Sullivan
Translational Medicine	Professor Martin O'Donnell
Medical Oncology	Dr Maccon Keane

6. Education and Training

The GUH cancer centre is a major site for clinical education and training in medicine, nursing and health and social care professionals.

Courses
Postgraduate Courses available through NUI Galway include:

- PhD Degrees
- Masters of Health Sciences (Nursing/ Specialist Nursing)
- Masters of Health Sciences (Advanced Practice with Prescribing)
- Masters/Diploma/Cert of Health Sciences (Clinical Education)
- MSc in Clinical Research (offered via the HRB Clinical Research Facility Galway)
- MSc in Biostatistics (offered via the HRB Clinical Research Facility Galway)
- MSc in Regenerative Medicine
- Masters of Medical Science
- Masters in Surgery
- Postgraduate Diploma/Cert in Health Sciences (Clinical Primary Care)
- Postgraduate Diploma in Nursing (Oncology, Palliative Care, Perioperative, Education, Acute Medicine)

NCCP Nursing Training Programmes

- Community Oncology Nurse programme
- Nurses in Primary Care Programme

Conferences
The Sir Peter Freyer Memorial Lecture and Surgical Symposium is hosted annually by the Discipline of Surgery, NUI Galway. Professor Sean O'Beirn established this conference in 1975 and was succeeded by Professor HF Given. It is currently chaired by Professor Michael Kerin and Professor Oliver McAnena.

Galway-born in 1851, Peter Freyer attended Queen's College, Galway and Dr Steevens' Hospital in Dublin. Having spent many years working in India and London, Freyer specialised in the treatment of urinary problems. He first performed a total extirpation of the prostate in 1900 and today Freyer is accredited globally for pioneering the operation now known as a prostatectomy.

The Sir Peter Freyer Memorial Lecture and Surgical Symposium is the largest surgical conference in Ireland and is open to all surgical disciplines both nationally and internationally. The conference provides a platform for healthcare professionals to present their research and clinical work and allows for the merging of both scientific and clinical knowledge. Abstracts are published in a supplement to the Irish Journal of Medical Science. Each year the Sir Peter Freyer Memorial Medal is awarded to the best original research paper. A poster prize is also awarded. Participants at the conference are eligible for continuous professional development (CPD) credits.

In 2012 the Memorial Lecture was given by Dr John R. Monson, Chief of the Division of Colorectal Surgery and Vice Chair of the Department of Surgery at the University of Rochester Medical Centre, New York.

Sir Peter Freyer Memorial Lecture and Surgical Symposium 2012 From left: Professor Michael Kerin, NUI Galway; Professor John Macfie, Guest Speaker; Dr John Monson, Guest Speaker and Professor Patrick Broe, RCSI President.

7. Cancer Charities: Patient and Research Support

National Breast Cancer Research Institute

T: 1890 611 711 www.nbcri.ie

This national organisation has funded breast cancer at NUI Galway since 1991. Its current research director is Professor Michael Kerin. The NBCRI funds postgraduate researchers and provides financial support for the running of the research laboratory. The NBCRI research team are currently investigating the presence of biological markers involved in the detection, development and spread of breast cancer. Dr Róisín Dwyer and Dr Nicola Miller, Lecturers/ Senior Scientists within the laboratory, supervise the various projects.

Postgraduate students funded by NBCRI in 2012:

- Sonja Khan
- Deirdre Wall (NBCRI Anne Ryan Memorial Fellowship 2012)
- Cathy Brougham
- Dr Ailbhe McDermott (NBCRI Tricia McCarthy Memorial Fellowship 2012)
- Dr Peadar Waters
- Dr Niamh Hogan
- Dr Terri McVeigh
- Dr Marese Murphy

Drs Helen Heneghan, Elrasheid Kheirelseid and Shirley Potter were awarded their PhD degrees in 2012. Drs Kah Hoong Chang, Nuala Healy, Fiachra Martin and Mary Nugent graduated with MD degrees. All had been the recipients of NBCRI funds during their postgraduate studies.

The NBCRI also supports a Summer Research School for undergraduate medical students. In 2012 eight medical students received NBCRI funding for their summer research.

Cancer Biobank

Since 1990 the Discipline of Surgery at NUI Galway has developed a cancer biobank with the financial support of NBCRI. The Cancer Biobank has received ethical approval from the GUH Clinical Research Ethics Committee and patients are requested to sign a consent form in order for specimens to be collected. This consent form has also received ethical approval.

The biobank is a vital for our researchers to have access to clinical samples in order to investigate the various biological markers of cancer. The specimens stored in our biobank are used by NBCRI researchers and our official collaborators at research institutes nationally and internationally. Specimens are collected from patients from several hospitals around Ireland, e.g. Beaumont, St James', Sligo, Mayo, Letterkenny, and Galway.

The NBCRI is a key stakeholder in the future Translational Research Facility having donated €1 million towards its development on the grounds of University Hospital Galway.

NBCRI Donation to the Translational Research Facility
From left: Mary Bennett, NBCRI; Dr James J Browne, NUI Galway President; Dr Anna O'Coinne, Chair of NBCRI; Professor Michael Kerin, NBCRI Research Director and Patricia Caffrey, NBCRI.

Irish Cancer Society

T: 1800 200 700 www.cancer.ie

Patient Support

The Irish Cancer Society has been developing information and support services for almost 30 of its 50 years and is the leading provider of cancer information in Ireland. The Society has always been innovative in the development of direct patient care services. Building on this expertise as a key provider of cancer information the Society decided to extend its cancer information service into major general hospitals in Ireland.

The first Daffodil Centre opened in University Hospital Galway in 2009; this initiative is a successful collaboration between the Society and the hospital. By visiting the Daffodil Centre those affected by cancer can access up to date and reliable information and take time to discuss their concerns face to face with an experienced cancer nurse in confidence.

The Daffodil Centre is staffed by an Irish Cancer Society Cancer Information Nurse and specially trained volunteers who provide a range of free advice, information and support on cancer prevention, early detection, diagnosis, treatments and related side-effects, emotional support services, end of life services and practical entitlements.

The Daffodil Centre staff direct people to appropriate services in the hospital and the community. The centre is open to all, no referral or appointment is necessary.

In 2012 almost 2000 people visited the Daffodil Centre in University Hospital Galway or one of the many cancer awareness/early detection information stands the Daffodil Centre staff facilitated around the hospital.

For further information:

Irish Cancer Society
Daffodil Centre

University Hospital Galway
T: 091 893 489
E: daffodilcentregalway@irishcancer.ie

Research

Dr Róisín Dwyer (pictured), Lecturer in Translational Science in the Discipline of Surgery, was announced the first 'Irish Cancer Society Researcher of the Year' in March 2012.

Dr Dwyer, whose project was funded by the Irish Cancer Society from 2008-2011, used Mesenchymal Stem Cells (MSCs) or adult stem cells, which play an important role in wound healing and tissue generation, to deliver anti-cancer drugs directly to tumours.

The Irish Cancer Society funded four projects in NUI Galway in 2012:

- Uncoupling of death receptor-induced nuclear factor kappa B activation from apoptosis (Dr Eva Szegezdi)
- Role of xbp1 in breast cancer development and resistance to therapy (Ms Patricia Cleary)
- Therapeutic microRNA control of Prostate Cancer growth (Dr Laura Barkley-Elliman)
- Centrosome amplification and radiosensitization of prostate cancer cells (Professor Ciaran Morrison)

Cancer Care West
The West of Ireland Cancer Charity

T: 091 540 040 www.cancercarewest.ie

Inis Aoibhinn is located on the grounds of GUH and provides accommodation to patients undergoing radiotherapy treatment. The residence provides a "home away from home" environment for patients. It comprises 33 ensuite bedrooms and has facilities for a patient's family member or guest to share.

The **Cancer Care West Support Centre** has been in operation since May 2009. Services available are outlined in the table.

During 2012, the service was used by 1233 clients on 6483 occasions. This represents an average of 5.2 uses per client, an increase of 27% on the previous year. Of these, 870 people were first time users of the service, reflecting a 17% increase on 2011. Included in this figure are 188 Inis Aoibhinn residents who attended mainly for psychology and complementary therapy services. There were 815 cancer patients and 418 relatives, a ratio of approximately 2:1. This figure does not include people who attended training events or public talks at the centre. If these figures are included, over 1401 people accessed the centre during 2012.

A significant proportion of clients using the service are at least two to four years post treatment. This is consistent with the findings of the Cansurvivor Report published by the NCCP and the HSE East Region. In a survey of the needs of cancer patients, the need for medium to long-term support was highlighted often up to six years post treatment. This continues to be one of the strengths of the CCW Support Centre in that it is community based and not in the hospital. A model is therefore emerging of marrying traditional cancer support centre services with more formal psycho-oncology services.

In 2012 there were 2562 formal appointments at the centre. There were 3608 occasions when people dropped in without an appointment. This is seen as a good ratio reflecting the community based nature of the service.

Cancer Care West performs an active training role, offering a three day psycho-oncology course to nursing and allied health professionals at GUH and throughout the West of Ireland. Topics include assessing psychological distress in cancer, communication skills and self-care. 32 people attended this course, offered on two occasions in 2012. Staff from the centre also offered a number of public talks during the year on various aspects of coping with cancer. Currently there are four volunteers offering four hours support per week, mainly 'meet and greet', housekeeping, library and telephone answering.

Research

In September 2012 NUI Galway announced a joint initiative by which Cancer Care West and the Galway University Foundation donated €1 million to provide fully funded translational and clinical research scholarships to ten PhD students. One scholarship is being funded by The Maura Burke Memorial Fund.

Cancer Care West Support Centre Services

Service Provided	No. of Patients
Psychology	497 (317 Clinical, 180 Counselling)
Seen in Hospital	92 (142 Hours)
Oncology Information	503
Reflexology	94 (7 Month Service)
Yoga	99
Massage	144
Art Class	44
Creative Writing	35
Tai-Chi	47
Exercise	49
Nutrition	38
Benefits Advice	212

8. Cancer Centre Vision

The development of the NCCP cancer centre has significantly impacted on the workload in large regional institutions such as GUH. This report highlights the highly specialised, complex programmes necessary to produce modern cancer outcomes. Our vision is to develop a comprehensive cancer centre which continues to deliver large volume, high quality diagnostics and therapeutics such as radiation, systemic chemotherapy and surgery. Day case and inpatient cancer surgery will be delivered in a site-specific (organ or anatomical area) manner. Cancer care will be provided by the clinically-led multidisciplinary team and from a dedicated clinical space, i.e. breast, lung, prostate etc. The delivery of cancer care will be separated from the elective and emergency (scheduled and unscheduled) care programmes. Some elements of this vision are already achieved; others require ongoing development.

Cancer surgery is performed by trained cancer surgeons who mainly operate in designated cancer theatres within the existing theatre complex thus facilitating access to the Intensive Care Unit, High Dependency Unit and specialist nursing support within areas such as Cardiothoracic, Upper GI, etc. This will also facilitate access to the key support services which patients undergoing cancer surgery require (these tend to be similar to organ specific services).

The National Plan for Radiation Oncology comprises the provision of class leading facilities in six hospitals across Ireland. The aim is to develop a new, dedicated 10,950m2 radiation oncology facility at GUH and the ultimate provision of six linear accelerators on site. It is on target for a 2017 commencement date.

The major stakeholder in this programme is the West and North West Hospitals Group which will manage and develop the facility in line with national clinical programmes and NCCP. It is the vision of this Group to develop a cohesive cancer institute that encompasses the multidisciplinary team collaborating on the patient journey through the Directorate model and Cancer Strategy Group. The other key collaborator is the Group's academic partner, NUI Galway. The vision extends through clinical care, education and cancer research so that the centre would become the largest training and education centre in Ireland. In addition we will encourage and develop interactions with philanthropic stakeholders including Galway University Foundation, Cancer Care West and the National Breast Cancer Research Institute.

Appendices
1. Stem Cell Transplantation

Autologous stem cell transplants have been performed at GUH for the past 20 years and constitute an important part of the comprehensive management of patients with haematological malignancies. The Blood and Tissue Establishment at GUH is one of the few laboratories in the country licensed by the Irish Medicines Board to process stem cells. The main indications for this procedure are as part of the standard initial treatment of younger patients with multiple myeloma (up to the age of 70) and as standard treatment for relapsed or refractory lymphoma (both Hodgkin's and non-Hodgkin's).

As a regional comprehensive cancer centre we view this as a vital service to provide locally for our patients, who would otherwise have to travel to Dublin for this essential treatment. In 2012, 24 patients underwent a stem cell harvest procedure at GUH with a total of 21 patients receiving autologous stem cell transplants. As mentioned previously stem cell activity has increased at GUH with the extension of this service to patients from the Southern HSE region. We project that we will soon be performing approximately 40 stem cell transplants per year.

Autologous stem cell transplantation is a form of cellular therapy and this whole area is undergoing considerable evolution at present. It is anticipated that the practice and application of cellular therapy for the treatment of cancer will change considerably in the future, with the advent of genetically modified T cells and NK cell therapy. These new therapeutic strategies could potentially be applied to many different cancers, not just blood cancers. Given the strong links between the Blood and Tissue Establishment at GUH and the REMEDI stem cell research group at NUI Galway, GUH is well placed to be at the forefront of such developments and to quickly adapt to changing practices in this area in the future.

Appendices
2. Clinical Trials Unit

In 2001 on the basis of a successful €1 million HRB grant the oncology clinical trials group at GUH was founded. This unit is an active member of the Irish Clinical Oncology Research Group (ICORG) and runs investigator lead trials, International Phase III Cooperative Group Studies and pharmaceutical company trials.

In 2007 through cooperation with ICORG the oncology clinical trials group became the first site outside of the US to become a member of National Surgical Adjuvant Breast and Bowel Project (NSABP). Subsequently the clinical trials group have become members of Eastern Cooperative Oncology Group (ECOG) and are also members of the European Cooperative Groups including the Medical Research Council (MRC), European Organisation for Research and Treatment of Cancer (EORTC) and Scandinavian Prostate Cancer Group.

Currently there are 31 clinical trials in medical oncology open through the clinical trials group at GUH. This resource offers patients from the West of Ireland the opportunity to get access to new drugs and development for cancer delivered through the most stringent clinical trials mechanism.

The Clinical Trials Unit is involved with both oncology and haematology trials. As well as being active in these therapeutic studies the unit also successfully runs radiotherapy and translational studies. The site has had a number of recent publications based on studies previously completed or in follow up at the site.

Through the trials being run at the site, access has been provided to patients to a number of breakthrough treatments. These treatments would otherwise not have been available to patients at this time and include; Crizotinib, Pertuzumab, Dabrafenib, Regorafenib, Elotuzumab and Ibrutinib.

GUH Clinical Trial Data

Trial Indication	Phase of Trial	No. of Trials Open	No. of Patients Recruited
Haematology	III	2	2
Breast	II, III, IV	10	35
Genitourinary	II, III	2	8
Melanoma	IV	1	1
Lung	III	2	2
Gynaecological	IV	1	1
Radiotherapy	III, IV	5	17
Translational	III, IV	4	38
Total		**27**	**104**

Haematology Trials

GUH is the most active Haematology centre in the country with respect to clinical trials. A list of the clinical trials open in 2012 is shown in the tables. A total of 28 patients have been enrolled on these clinical trials. This has resulted not only in the provision of valuable new treatment options to patients but has also considerably reduced drug costs to the HSE.

Haematology Trials Open to Recruitment at the HRB Clinical Research Facility

Trial Name	No. of Patients Enrolled
Novartis Myelofibrosis Phase 1 A Phase 1b, open-label, multicentre, single arm, dose finding study to assess safety and pharmacokinetics of the oral combination of panobinostat and ruxolitinib in patients with primary myelofibrosis (PMF), post-polycythemia vera myelofibrosis (PP-MF) or post-essential thrombocythemia myelofibrosis (PET-MF)	4
GSK Phase 1b Study evaluating safety, tolerability, PK, PD and clinical activity of GSK2110183 dosed in combination with bortezomib and dexamethasone in subjects with relapsed/refractory Multiple Myeloma GSK 110183	9
Resonate 2 Randomised, Multicentre, Open-label, Phase 3 Study of the BRUTON'S Tyrosine Kinase (BTK) Inhibitor Ibrutinib versus chlorambucil in patients age 65 or older with treatment naive CLL or small lymphocytic leukaemia (PCYC 1115 CA)	3
Gilead A Phase 3, Randomised, Controlled Study Evaluating the Efficacy and Safety of GS-1101 (CAL-101) in previously Treated Chronic Lymphocytic Leukaemia	1
Jakarta Trial A Phase 3, Multicentre, Randomized, Double-Blind, Placebo-Controlled 3-Arm Study of SAR302503 in Patients with Intermediate-2 or High-Risk primary myelofibrosis, post-polycythemia vera myelofibrosis, or post-essential rhrombocythemia myelofibrosis with splenomegaly	2
Resonate 1 A Randomized, Multicenter, Open-label, Phase 3 Study of the Bruton's Tyrosine Kinase (BTK) Inhibitor Ibrutinib versus Ofatumumab in Patients with Relapsed or Refractory Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma PCYC-1112-CA	1

Haematology Trials Open to Recruitment at the Clinical Trials Unit, GUH

Trial Name	No. of Patients Treated
Eloquent Lenalidomide/Dexamethasone in combination with Elotuzumab for patients with previously untreated multiple myeloma	2 Treated
Shine Bendamustine plus Rituximab in combination with Ibrutinib in patients with newly diagnosed Mantle Cell Lymphoma	1 on Treatment
Mabease Subcutaneous Rituximab vs IV Rituximab in combination with CHOP in previously untreated CD20 positive DLBCL	2 on Treatment
Orchaard Ofatumumab versus Rituximab Salvage Chemoimmunotherapy followed by ASCT in Relapsed or Refractory DLBCL	2 Treated
Zest Zevalin in Patients at least 60 Years of Age with Newly Diagnosed Diffuse Large B-cell Lymphoma in PET-negative Complete Remission After R-CHOP or R-CHOP-like Therapy	1 Treated

Appendices
3. Cancer Research Publications

BREAST CANCER

1. Groarke A, Curtis R, Kerin M. Cognitive-behavioural stress management enhances adjustment in women with breast cancer. **Br J Health Psychol. 2012** Dec 4. [Epub ahead of print].

2. Waters PS, McDermott AM, Wall D, Heneghan HM, Miller N, Newell J, Kerin MJ, Dwyer RM. Relationship between Circulating and Tissue microRNAs in a Murine Model of Breast Cancer. **PLoS One. 2012**;7(11):e50459.

3. Warren H, Dudbridge F,..., Kerin M et al. 9q31.2-rs865686 as a susceptibility locus for estrogen receptor-positive breast cancer: evidence from the Breast Cancer Association Consortium. **Cancer Epidemiol Biomarkers Prev. 2012** Oct;21(10):1783-91.

4. Hein R, Maranian M,... Kerin M, Miller N et al. Comparison of 6q25 breast cancer hits from Asian and European Genome Wide Association Studies in the Breast Cancer Association Consortium (BCAC). **PLoS One. 2012**;7(8):e42380.

5. Selcuklu SD, Donoghue MT, Rehmet K, de Souza Gomes M, Fort A, Kovvuru P, Muniyappa MK, Kerin MJ, Enright AJ, Spillane C. MicroRNA-9 inhibition of cell proliferation and identification of novel miR-9 targets by transcriptome profiling in breast cancer cells. **J Biol Chem. 2012** Aug 24;287(35): 29516-28.

6. Gupta A, Caffrey E, Callagy G, Gupta S. Oestrogen-dependent regulation of miRNA biogenesis: many ways to skin the cat. **Biochem Soc Trans. 2012** Aug;40(4):752-8.

7. Hynes SO, McLaughlin R, Kerin M, Rowaiye B, Connolly CE. A unique cause of a rare disorder, unilateral macromastia due to lymphangiomatosis of the breast: a case report. **Breast J. 2012** Jul-Aug;18(4):367-70.

8. Healy NA, Heneghan HM, Miller N, Osborne CK, Schiff R, Kerin MJ. Systemic mirnas as potential biomarkers for malignancy. **Int J Cancer. 2012 Nov** 15;131(10):2215-22. Review.

9. Glynn RW, Miller N, Mahon S, Kerin MJ. Expression levels of HER2/neu and those of collocated genes at 17q12-21, in breast cancer. **Oncol Rep. 2012** Jul;28(1):365-9.

10. Selcuklu SD, Donoghue MT, Kerin MJ, Spillane C. Regulatory interplay between miR-21, JAG1 and 17beta-estradiol (E2) in breast cancer cells. **Biochem Biophys Res Commun. 2012** Jun 29;423 (2): 234-9.

11. Lowery AJ, Kell MR, Glynn RW, Kerin MJ, Sweeney KJ. Locoregional recurrence after breast cancer surgery: a systematic review by receptor phenotype. **Breast Ca Res Treat. 2012** Jun;133(3): 831-41. Review.

12. Pilarski R, Patel DA, Weitzel J, McVeigh T, Dorairaj JJ, Heneghan HM, Miller N, Weidhaas JB, Kerin MJ, McKenna M, Wu X, Hildebrandt M, Zelterman D, Sand S, Shulman LP. The KRAS-variant is associated with risk of developing double primary breast and ovarian cancer. **PLoS One.2012**; 7(5):e37891

13. Johnson N, Walker K,...., Kerin M et al. CYP3A variation, premenopausal estrone levels, and breast cancer risk. **J Natl Cancer Inst. 2012** May 2;104(9):657-69.

14. Lambrechts D, Truong T,...., Kerin M, Miller N et al. 11q13 is a susceptibility locus for hormone receptor positive breast cancer. **Hum Mutat. 2012** Jul;33(7):1123-32.

15. Stevens KN, Fredericksen Z,..., Kerin MJ et al. 19p13.1 is a triple-negative-specific breast cancer susceptibility locus. **Cancer Res. 2012** Apr 1;72(7):1795-803.

16. Ghoussaini M, Fletcher O,..., Kerin M et al. Genome-wide association analysis identifies three new breast cancer susceptibility loci. **Nat Genet. 2012** Jan 22;44(3):312-8.

17. Potter, SM, Dwyer, RM, Hartmann, MC, Khan, S, Boyle, MP, Curran, CE, Kerin, MJ. Influence of stromal-epithelial interactions on breast cancer in vitro and in vivo. **Breast Ca Res Treat. 2012**, 131 :401-411.

UROLOGICAL CANCER

18. Walsh K. Systematic classification and prediction of complications after nephrectomy in patients with metastatic renal cell carcinoma (RCC). **BJU Int. 2012** Nov;110(9):1282.

19. Kelly BD, Miller N, Healy NA, Walsh K, Kerin MJ. A review of expression profiling of circulating microRNAs in men with prostate cancer. **BJU Int. 2012** May 22. [Epub ahead of print].

GASTROINTESTINAL/COLORECTAL CANCER

20. Cummins D, Sheehan M, Bruzzi J, McAnena O. Solid pseudopapillary neoplasm of the pancreas. **BMJ Case Rep. 2012** Oct 26;2012.

21. Chang KH, Smith MJ, McAnena OJ, Aprjanto AS, Dowdall JF. Increased use of multidisciplinary treatment modalities adds little to the outcome of rectal cancer treated by optimal total mesorectal excision. **Int J Colorectal Dis. 2012** Oct;27(10):1275-83.

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23. Bukhari Y, Hogan NM, Pomeroy M, O'Leary M, Joyce MR. Surgical management of rectal cancer in pregnancy. **Int J Colorectal Dis. 2012** Jul 22. [Epub ahead of print]

24. Kheirelseid EA, Miller N, Chang KH, Newell J, Kerin MJ. mRNA/miRNA correlations in colorectal cancer: novel mechanisms in cancer initiation and progression. **Int J Colorectal Dis. 2012** Sep 1. [Epub ahead of print] PubMed PMID: 22941055.

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27. Nugent M, Miller N, Kerin MJ. Circulating miR-34a levels are reduced in colorectal cancer. **J Surg Oncol. 2012** Dec;106(8):947-52.

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29. Hogan NM, Dwyer RM, Joyce MR, Kerin MJ. Mesenchymal stem cells in the colorectal tumor microenvironment: recent progress and implications. **Int J Cancer. 2012** Jul 1;131(1):1-7. Review.

SKIN CANCER

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HAEMATOLOGY AND ONCOLOGY

31. Giles FJ, Yin OQ, Sallas WM, le Coutre PD, Woodman RC, Ottmann OG, Baccarani M, Kantarjian HM. Nilotinib population pharmacokinetics and exposure-response analysis in patients with imatinib-resistant or -intolerant chronic myeloid leukemia. **Eur J Clin Pharmacol. 2012** Oct 5. [Epub ahead of print]

32. Kellokumpu-Lehtinen PL, Hjälm-Eriksson M, Thellenberg-Karlsson C, Åström L, Franzen L, Marttila T, Seke M, Taalikka M, Ginman C; SPCG-13 (ICORG, Keane M) Toxicity in patients receiving adjuvant docetaxel + hormonal treatment after radical radiotherapy for intermediate or high-risk prostate cancer: a preplanned safety report of the SPCG-13 trial. **Prostate Cancer Prostatic Dis. 2012** Sep;15(3):303-7.

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35. Giles FJ, Kantarjian HM, le Coutre PD, Baccarani M, Mahon FX, Blakesley RE, Gallagher NJ, Gillis K, Goldberg SL, Larson RA, Hochhaus A, Ottmann OG. Nilotinib is effective in imatinib-resistant or -intolerant patients with chronic myeloid leukemia in blastic phase. **Leukemia. 2012** May;26(5):959-62.

HEAD AND NECK CANCER

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CANCER ECONOMICS

39. Walsh B, Silles M, O'Neill C. The role of private medical insurance in socioeconomic inequalities in cancer screening uptake in the Republic of Ireland. **Health Econ. 2012** Oct;21(10):1250-6.

40. Burns R, Walsh B, O'Neill S, O'Neill C. An examination of variations in the uptake of Prostate Cancer Screening within and between the countries of the EU-27. **Health Policy 2012** Dec;108(2-3):268-76

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CANCER CELL & APOPTOSIS RESEARCH

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43. Deegan S, Saveljeva S, Gorman AM, Samali A. Stress-induced self-cannibalism: on the regulation of autophagy by endoplasmic reticulum stress. **Cell Mol Life Sci. 2012** Sep 28. [Epub ahead of print]

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48. Finn K, Lowndes NF, Grenon M. Eukaryotic DNA damage checkpoint activation in response to double-strand breaks. **Cell Mol Life Sci. 2012** May;69(9):1447-73. Review.

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TRAINING AND EDUCATION

50. Boyle E, Healy D, Hill AD, O'Connell PR, Kerin M, McHugh S, Coyle P, Kelly J, Walsh SR, Coffey JC. Career choices of today's medical students: where does surgery rank? **Ir J Med Sci. 2012** Dec 15. [Epub ahead of print]

51. O'Connor P, Ryan S, Keogh I. A comparison of the teamwork attitudes and knowledge of Irish surgeons and U.S Naval aviators. **Surgeon. 2012** Oct;10(5):278-82.

52. Healy NA, Glynn RW, Malone C, Cantillon P, Kerin MJ. Surgical mentors and role models: prevalence, importance and associated traits. **J Surg Educ. 2012** Sep-Oct;69(5):633-7.

53. O'Connor P, Byrne D, Kerin M, Lydon S. An assessment of stress in Irish interns. **Med Teach. 2012**;34(5):424.

54. Healy NA, Cantillon P, Malone C, Kerin MJ. Role models and mentors in surgery. **Am J Surg. 2012** Aug;204(2):256-61.

55. Corrigan M, McHugh S, Sheikh A, Lehane E, Shields C, Redmond P, Kerin M, Hill A. Surgent University: the establishment and evaluation of a national online clinical teaching repository for surgical trainees and students. **Surg Innov. 2012** Jun;19(2):200-4.

Appendices
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