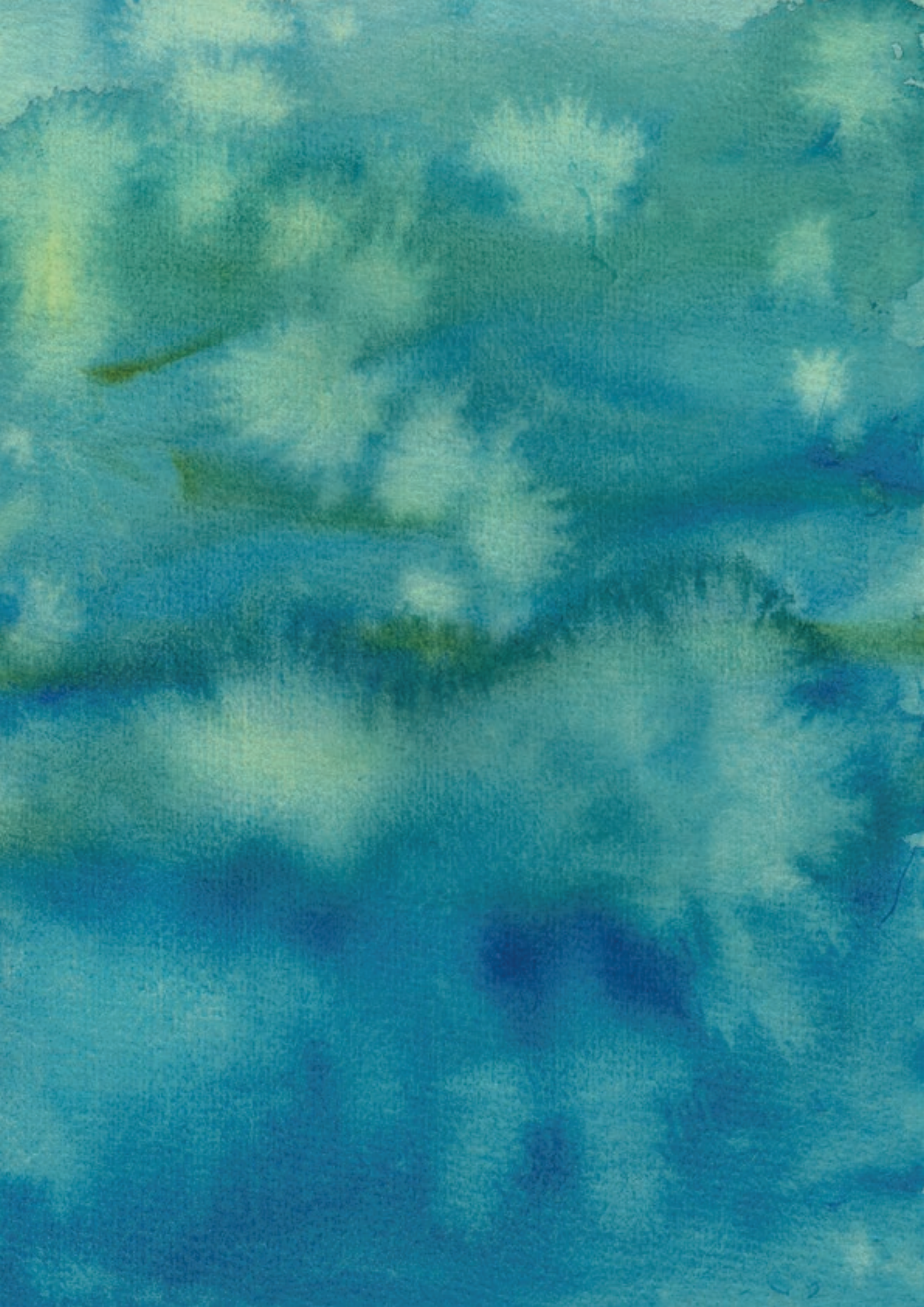
ST. JAMES'S HOSPITAL

FIVE YEAR CANCER AUDIT REPORT 2013-2017



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FOREWORD

It is my pleasure to contribute a foreword to this 5 year Audit of Cancer Care at St. James's Hospital. This report complements two previous reports, the last published in 2013 and covering the 10 year period from 2003-2012. Audit such as this enables us to benchmark ourselves against national and international standards, and is a key element of the ambition of St James's Hospital and Trinity College Dublin in partnership to develop a Cancer Institute.

Safe and efficient cancer care relies on high quality data. By taking responsibility for our clinical data, the hospital together with individual clinicians and their teams can review the quality of care, in particular outcomes, and constantly strive to develop quality improvement measures which directly benefit our patients. The Cancer Audit Programme is long established at St. James's Hospital, and is unique in the Irish context, enabling us to document patient volumes, trends, complexity of treatment, patterns and the quality of care provided.

During the 5 year period, St James's Hospital diagnosed and/or treated almost 18,000 new cancer patients in the 9 cancer sites that are audited. Cancer activity represents approximately 30% of the clinical activity of the hospital on a daily basis. Since 2003, activity for all cancer sites has increased from between 54% to 135%. The data is now sufficiently mature to provide a basis for long term outcome analysis.

From 2019, with the further development of the Trinity St. James's Cancer Institute, and accreditation sought through the Organization of European Cancer Institutes (OECI), an annual report for each cancer site will be provided, detailing process and outcomes, and will be embedded into new governance structures for cancer.

In conclusion, the provision of high quality cancer data remains an operational and strategic priority in St. James's Hospital, with significant further development in electronic data bases and infrastructure in train. For now, I wish to congratulate all those involved in providing this 5 year report, and acknowledge with great appreciation all those who provide excellent patient-centered cancer care in the hospital.

Lorcan Birthistle

Chief Executive Officer
St. James's Hospital

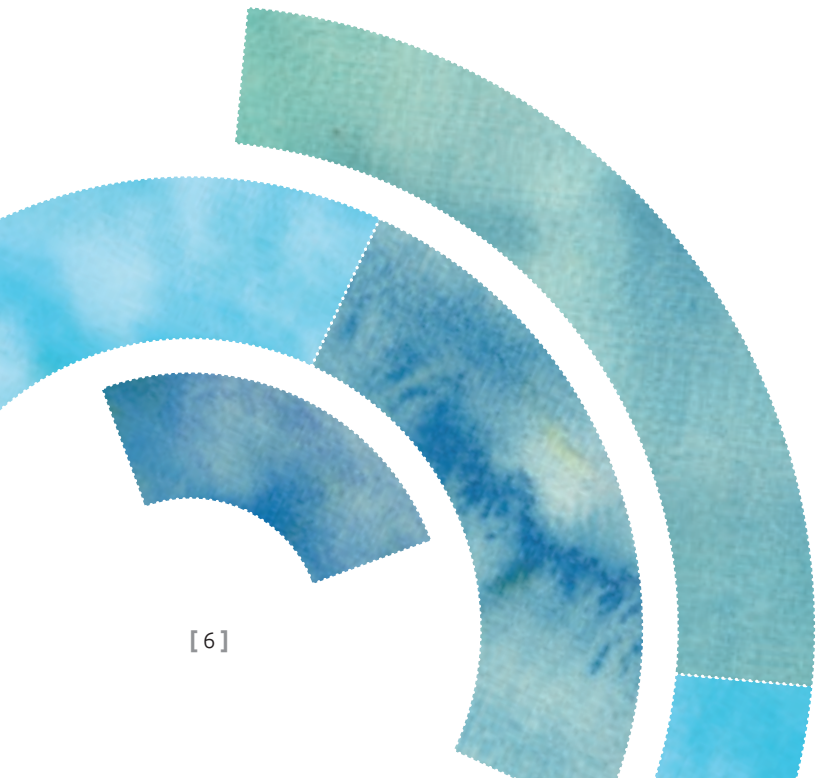
OBJECTIVE

The primary objective of this report is to present a comprehensive audit of cancer care undertaken at St. James's Hospital from 2013 to 2017, inclusive. The unique dimension in the Irish context is the focus on outcomes of cancer care, stage by stage, for individual cancer sites.

The report also includes patterns in patient volumes and incidence trends, referral patterns, and complexity of care. The outcome and process data herein can be used to compare against published benchmarks from international cancer series, and for national reports.

The cancer audit programme (CAP) since its inception at St. James's Hospital has supported continuous quality improvement, and has developed in tandem with structural changes including defined multidisciplinary teams, cancer clinics, rapid-access processes and care pathways, and integrated practice units. This audit, unique in the Irish context, provides information that allows patient's information on institution-specific cure rates and outcomes relevant for a particular cancer and stage of disease. The audit also enables detailed information to be provided to the administration and board of the hospital, and relevant bodies including the National Cancer Control Programme (NCCP), the Department of Health and Children (DOHC), the Health Service Executive (HSE), and the Health Information Quality Authority (HIQA). It also provides a framework for measuring the cost of cancer care.

It is also consistent with the ambition to develop the Trinity St. James's Cancer Institute, built around the modern and future approach to the cancer patient, initially developed as a concept but with a clear vision towards development of a comprehensive cancer centre and capital structure. Cancer audit is a core foundation of the Institute, enabling research, education and quality improvement, and enabling other key platforms including bioresourcing, basic and translational scientific research, and clinical care.



BACKGROUND

The Cancer Audit Programme (CAP) at St. James's Hospital was established in 2001. The goal from the outset was to provide comprehensive prospective data on the structures, processes and outcomes of cancer care delivered by the many national, supra-regional and regional cancer services at the Hospital. Stage for stage outcome data is unique in the Irish context and relatively rare internationally. Outcome data provides information to patients, enables audit and continuous quality improving of services, planning, and benchmarking against best international data.

Cancer audit structure

The CAP is managed by a Cancer Audit Manager, Ms Cathy Enright, and clinically led by Professor John Reynolds, with direct oversight from executive management, Ms Ann Dalton, Deputy CEO. The CAP has dedicated cancer data managers for most cancer sites including lung, oesophageal/gastric, breast, colorectal, skin, gynaecological, head & neck, and urology. Haematology data management and analysis is provided by Mr Greg Lee, Haematology Data Scientist. The technical function of CAP is directly supported by the IMS Department. The CAP originally used the information system Patient Analysis Tracking System (PATS), but in the last quarter of 2018 it was upgraded and became completely web-based (Intellect Web, Dendrite, UK).

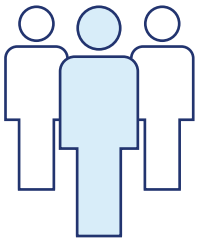
Each data manager reports to both the Cancer Audit Manager and the Clinical Lead with a direct responsibility for each cancer.

CANCER SITE	DATA MANAGER	WTE
Breast	Karina Delaney	1.0
Colorectal	Chris Gleeson	1.0
Gynaecology	Therese Brown	0.5
Head and Neck	Mary Devlin	0.5
Lung	Fiona Mulvany	1.0
Melanoma and NMSC	Anita Cafolla	1.0
Urology	Mary O'Brien	0.5
Oesophago-gastric	Sinead King	1.0

Not all cancer is audited, for instance primary liver, pancreas, brain, and soft tissue sarcoma cancers are not high volume or centralized at the Hospital, and are not currently included in data collection, although it is the ambition of the CAP to address this.

The first audit report was in 2004, followed by a six year report of incidence and outcome cancer data in 2008, the first report of its kind in Ireland, and then a comprehensive 10 year report (2003-2012) which was published in 2013. In addition to the recent development of electronic registries, another key development is the development of Quality Improvement Programmes (QIP). One of the key aims is to monitor and improve each service in order to ensure the continuous provision of safe, effective, quality cancer care to its patients and community and compliance with all relevant legislation, regulation and both national and international best practice standards. The QIP provide a platform for validation, review and quality assurance of the cancer data, and provides KPIs to the NCCP. The ultimate goal is to develop a framework and foster a culture of continuous quality improvement, whereby real-time data is reviewed regularly at a speciality level to inform service change and strategy.

EXECUTIVE SUMMARY



ALMOST

18,000

NEW PATIENTS

were entered by the CAP for 9 tumour sites over 5 years.

Since 2003, there has been over a

DOUBLING (> 100%) INCREASE IN NEW CASES

of lung, head and neck, melanoma and gynaecological malignancy, as well as over 50% increase in oesophago-gastric (84%), colorectal (73%), breast (54%), urology (77%), and non-melanoma skin cancer (90%).

Since 2013/4, the number of new cases has remained constant for most cancers, with the exception of a

42% INCREASE IN COLORECTAL CASES

and a 16% increase in myeloid and myeloproliferative disorders.

Reflecting national and supra-regional structures, the

TERTIARY REFERRAL RATE

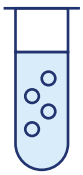
for oesophageal is 80%, 45% for lung, 45% for gynaecological, and 31% for melanoma.

APPROXIMATELY

9,500

MDT DISCUSSIONS

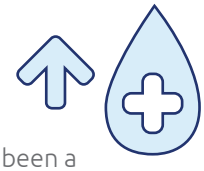
took place in 2017 for solid tumours, and 1,154 for haematological malignancies.



For haematological cancers, there were

10,963 ATTENDANCES

to outpatients by 2,625 individual patients and 952 in-patient stays in 2017. In 2017 there were 323 individual patients with lymphoma.



There has been a

60% INCREASE IN BLOOD CANCERS

since 2013, with 224 new cases in 2013 compared with 359 in 2017.

BONE MARROW TRANSPLANT ACTIVITY

has increased by 75% since 2003. There were 443 autologous transplants performed between 2013-2017, with 57% of these for multiple myeloma. There were 378 allogeneic transplants.

The 5 years survival for myeloma autologous

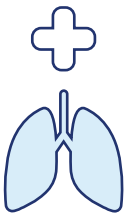
STEM CELL TRANSPLANT IS 80%

since 2011, for AML the survival is 55%, and 83% for Hodgkin's lymphoma. Overall survival is 53% for myelodysplastic syndrome.

For allogeneic transplants for ALL, the

OVERALL SURVIVAL IS

55%



NEW LUNG CANCER CASES

annually are very high volume at approximately 600, representing one quarter of cases nationally.

EXECUTIVE SUMMARY

BETWEEN

47% AND 50% OF PATIENTS NATIONALLY

who require lung cancer surgery are treated at St James's Hospital.

For lung cancer, a

3 AND 5 YEAR SURVIVAL

of patients treated with curative intent of 67% and 50.6%, respectively, is consistent with international benchmarks

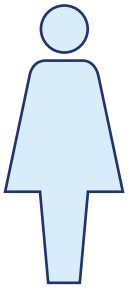
OESOPHAGEAL CANCER SURVIVAL

within the National Centre, a 5 year survival of 51.7% and a 3 year survival of 61.2% in patients treated with curative intent is encouraging. The 3 year survival in node negative patients is 80%.

For gastric cancer, the overall

5 YEAR SURVIVAL IS 28%

In patients treated with curative intent, the 3 and 5 year survival is 59% and 54.5%, respectively, and an 84% 3 year survival in node negative disease.



St James's Hospital provides approximately

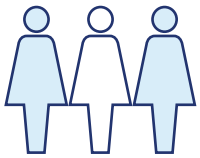
30% OF THE NATIONAL WORKLOAD

for gynaecological malignancy.

80%

FOR CERVICAL CANCER

(n=408), the 3 and 5 year survival is 77% and 65.5%, respectively, with approximately 80% 5 year survival for clinical or pathological Stage I and II disease.



FOR ENDOMETRIAL CANCER

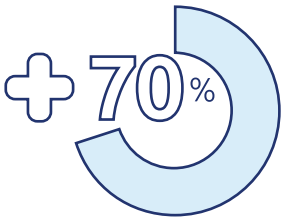
(n=558), the 3 and 5 year survival is 79.5% and 73%, respectively, and approximately 85% for stage I and II disease, and 50% for Stage III

80%

For ovarian cancer (n=420), the

3 AND 5 YEAR SURVIVAL IS 57% AND 41%, RESPECTIVELY

with 3 year survival over 80% for stage I and II disease, and 34% and 37%, respectively, for stage III and IV disease.



The 5-year survival of

VULVAL CANCER

(n=77) is over 70%

OVER

11,500

PATIENTS

are seen annually by the breast care team, with approximately 300 new cancer diagnoses.

The overall 5 year

SURVIVAL FOR BREAST CANCER IS 78%

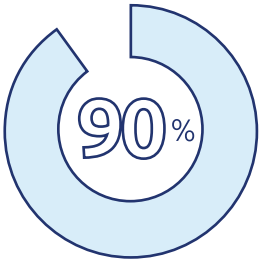
and over 90% where patients were treated with curative intent for loco-regional disease

Following neoadjuvant therapy for breast cancer, 3 year survival was approximately

90%

FOR STAGES 0-2

and 80% for Stage 3



Colorectal cancer cases increased by 42% between 2013 and 2017, with

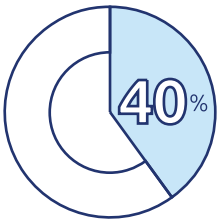
213

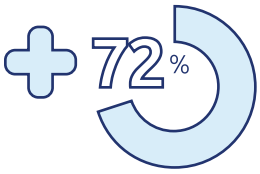
NEW CASES

in 2017

RECTAL CANCER

accounts for almost 40% of the colorectal cancer activity at St. James's Hospital





The overall 5 year survival for colon cancer is 64%, and

72%

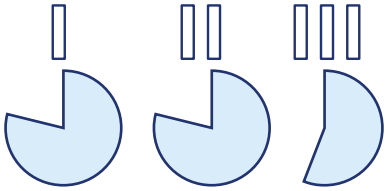
FOR RECTAL CANCER

85%

For curative intent treatment, the

3 YEAR SURVIVAL WAS 85%

for colon cancer, and 82% for rectal cancer.



For colon cancer, the 5 year survival for Stages I, II, and III was

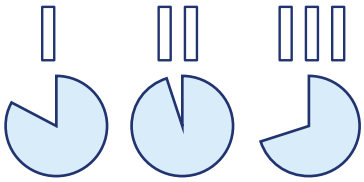
79%, 80%, AND 57%,

respectively.

For rectal cancer, the 5 year survival for Stages I, II, and III was

83%, 95%, AND 70%,

respectively.



For Head and Neck Cancer, approximately

280

NEW CASES

are seen annually, with close to 60% being tertiary referrals.

Cancer of the oral cavity accounts for

40%

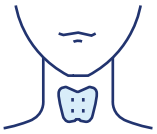
OF NEW PATIENTS

with a 3 and 5 year survival of 69% and 65%, respectively.

The 3 and 5 year survival for

CANCER OF THE LARYNX

(n=162) is 67% and 58%, respectively



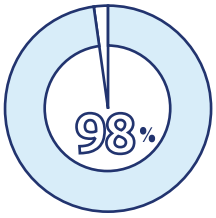
The 5 year survival for thyroid cancer (n=193) which includes anaplastic and medullary cancer, and well differentiated cancer, is

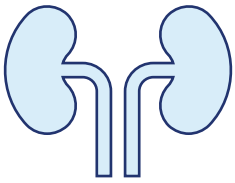
91%

EXECUTIVE SUMMARY

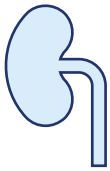
FOR PROSTATE CANCER
stage 1 and II constitutes 63% of new cases, with 12% stage IV

The 3 year overall survival for prostate cancer is
98%



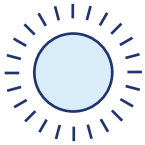


For kidney cancer, laparoscopic surgery is used in
70% OF CASES



FOR KIDNEY CANCER,
stage I/II constitute
62%
of cases

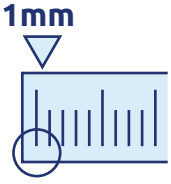
The 3 and 5 year overall survival for kidney cancer is
81% AND 78%,
respectively



Over 5 years
4,310
NEW CASES
of non-melanoma skin cancer (NMSC) were seen

There was a
100%
INCREASE OVER THIS 5 YEAR PERIOD
in Mohs surgery, from 208 in 2013 to 418 in 2017

844
NEW CASES
of melanoma were managed, with the face and posterior trunk the most common sites



Lentigo maligna/melanoma in situ and tumours with a Breslow depth of
< 1MM DEPTH
accounted for 67% of cases, Breslow depth > 4mm accounted for 9% of cases. 9% of patients were diagnosed with Stage III disease and 2% stage IV disease.

For melanoma, the 3 and 5 years survival is
90%
OVERALL
with 3 year survival of 77% for stage III disease, and 40% for stage IV

SECTION 1:

GENERAL ASPECTS OF CANCER AUDIT

1 Demographic Data

Incidence

St. James's Hospital (SJH) diagnosed and/or treated on average, over 3,500 patients each year over the period of this report with a total of 17,839 patients diagnosed and/or treated at SJH between 2013 and 2017* for the cancers described in Table 1.1.1 and Table 1.1.2. The cancer workload in SJH has increased by 11 percent (excluding NMSC) when compared to the previous five years activity (2008-2012). Lung cancer remains the largest cohort of patients diagnosed and treated at SJH. Gynaecology, urology, breast, head and neck, haematology, and oesophagogastric services diagnosed and treated over 1,000 patients per service between 2013 and 2017.

Table 1.1.1 Cancer Activity in SJH

CANCER SITE	2013	2014	2015	2016	2017	TOTAL
NMSC	830	902	932	920	726	4310
Lung	587	566	561	572	578	2864
Breast	298	308	310	324	325	1565
Oesophagogastric	241	259	267	259	217	1243
Urology	422	429	362	316	227	1756
Colorectal	150	152	191	189	213	895
Head and Neck	306	269	274	275	270	1394
Gynaecology	328	352	354	331	322	1687
Melanoma	133	165	205	181	160	844
Lymphomas and Lymphoproliferative Disorders	NR	150	144	166	170	630
Myeloid and myeloproliferative disorders	NR	88	82	105	102	377
Myeloma and Plasma Cell Disorders	NR	65	78	57	82	282

* NR denotes non-recorded

Table 1.1.2 Solid Tumour Activity since 2003

CANCER SITE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	% INCREASE SINCE 2003
NMSC	383	425	412	517	574	679	677	730	724	804	830	902	932	920	726	90%
Lung	280	302	323	348	415	394	446	512	587	648	587	566	561	572	578	106%
Breast	202	138	141	134	160	162	210	276	285	272	294	305	317	323	310	54%
Oesophago-gastric	118	143	134	164	189	197	197	229	278	263	241	259	267	259	217	84%
Urology	128	144	203	208	216	226	318	381	448	445	422	429	362	316	227	77%
Colorectal	123	139	142	166	168	180	209	198	207	176	150	152	191	189	213	73%
Head and Neck	128	153	165	151	183	195	205	240	259	285	306	269	274	275	275	115%
Gynaecology	160	153	180	198	197	243	287	288	293	297	328	352	354	331	322	101%
Melanoma	68	76	69	99	105	119	139	127	163	152	133	165	205	181	160	135%

Referral Details

SJH receives a high volume of referrals to all its cancer services. SJH is a national referral centre for many cancers and is the site of the National Adult Stem Cell Transplant Centre. Tertiary referrals include patients referred to SJH from outside the Dublin Mid Leinster region. Tertiary referral trends are described in Table 1.1.3.

Table 1.1.3 Tertiary referral rates

CANCER SITE	TERTIARY REFERRAL RATE
Lung	45%
Breast	<5%
Oesophageal	80%
Gastric	70%
Urology	20%
Colorectal	13%
Head and Neck	Not available
Gynaecology	45%
Melanoma	31%
Haematological	Not available

2 Multidisciplinary Teams (MDT)

Overview

Nine cancer multidisciplinary team conferences are held weekly in SJH to establish consensus diagnosis and treatment plans for all cancer patients. All MDT conferences bring together expertise from surgery, pathology, radiology, medical and radiation oncology, nursing, data management, clinical trial managers, and in some cases scientific researchers. Each conference is supported by an MDT Co-ordinator.

Cancer MDT activity

MDT activity for oncology in 2017 is shown in Figure 1.2.1, which included 9,434 patients, and for Haematology Oncology in figure 1.2.2, including 1154 patients.

Figure 1.2.1 Oncology MDT Activity 2017

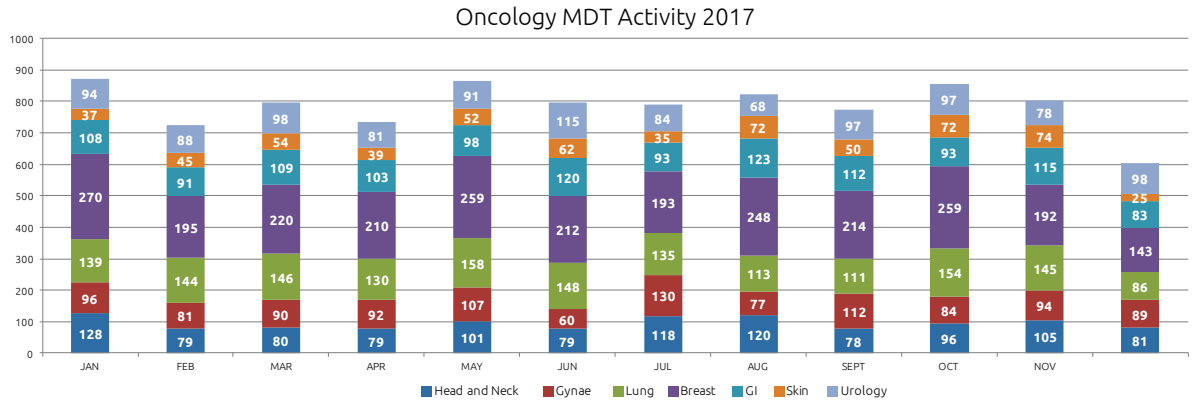
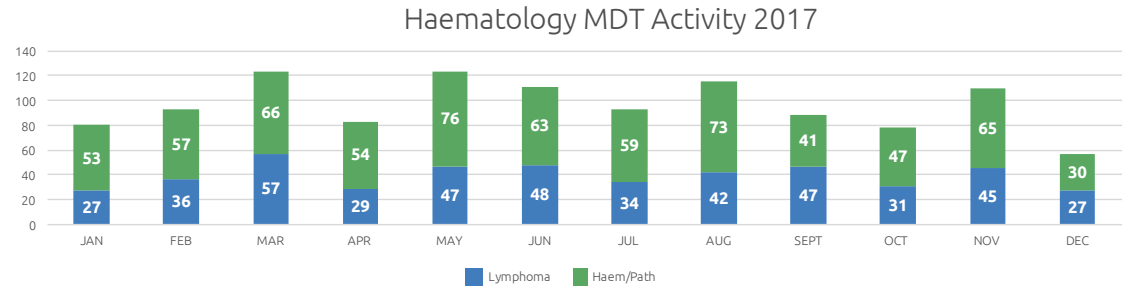


Figure 1.2.2 Haematology MDT Activity 2017



MDT Coordinators

One MDT Operational Co-ordinator and three MDT coordinators provide administrative expertise for organisation and coordination of weekly MDT conferences, Table 1.2.1. Each MDT coordinator works with their clinical team to ensure all required information is available for staging and treatment discussion and decision at the meetings.

Table 1.2.1 MDT coordinators and meetings

CANCER CONFERENCE	MDT TEAM	FTE
Gastrointestinal	Yvonne Shepherd	1.0
Urology and Skin Cancer	Avril Nolan	1.0
Head and Neck, Lung, and Lymphoma	Karl Doyle	1.0
Gynaecology and Breast	Caroline Gleeson	1.0

SECTION 2:

SITE SPECIFIC CANCER 5-YEAR AUDITS

1. Haematological Malignancies

Introduction

The Haematology Department at St. James's Hospital is the largest in Ireland and includes the National Adult Stem Cell Transplant Centre. There are six consultant haematologists who provide care for patients with general and malignant haematological disorders, including leukaemia, lymphoma and myeloma. Each of the consultants has had training in all areas of stem cell transplantation but also have areas of special interest as follows:

- Dr. Larry Bacon: Acute Lymphoblastic Leukaemia, Lymphoma, Adolescent/ Young Adult (AYA) haematology.
- Prof. Paul Browne: Myeloma, Acute Leukaemia.
- Dr. Eibhlin Conneally: Acute Leukaemia, Myeloproliferative Neoplasms.
- Dr. Catherine Flynn: Acute Leukaemia, Bone Marrow Failure Syndromes.
- Dr. Patrick Hayden: Myeloma, Cryobiology/Apheresis.
- Prof. Elizabeth Vandenberghe: Lymphomas, Lymphoproliferative Disorders, molecular diagnostics.

There are three components to the clinical Haemato-Oncology Service:

- The Acute Leukaemia/Stem Cell Transplant Service is based in the Denis Burkitt Stem Cell Transplantation Unit. This is a purpose-built facility with 21 single rooms for patients undergoing stem cell transplantation or treatment of acute leukaemia and aggressive lymphomas. There is special air filtering in place to minimise the risk of infection. The unit is managed by a clinical nurse manager along with a staff of stem cell transplantation-trained nurses.
- Patients requiring less intensive therapy are admitted to a dedicated haemato-oncology ward, the Donal Hollywood Ward. Patients with a wide range of haematological conditions such as lymphoma, myeloma or myelodysplasia are cared for on this service.
- Blood cancer patients are increasingly managed in the haematology day-care setting and treatment is delivered by a day centre team which includes a haematology specialist registrar and haematology trained nurses. Clinical nurse specialists are linked to each service to ensure that patients are educated about their disease and treatment and each patients 'cancer journey' is individually planned.

The Blood Cancer diagnostic service uniquely in Ireland has a multidisciplinary integrated reporting service incorporating morphology, immunophenotyping and molecular diagnostics reports, as well as providing a national service for complex flow-cytometry and molecular diagnostics delivered by haematologists and haematopathologists, trainees and diagnostic scientists. The combined Blood Cancers diagnostic service publishes and presents extensively as well as mentoring scientists and clinicians though higher degrees (Masters projects, PhDs, MD). The diagnostic program collaborates internationally with EUTOS, European Research Initiative in CLL (ERIC), Euroclonality, VU Amsterdam for Refractory Coeliac Disease flow cytometry group, Euroflow Consortium, European Society for Clinical Cell Analysis (ESCCA) MPN & MPNr EuroNet, UK and Ireland haematological malignancies diagnostics forum. We actively encourage enrolment in clinical trials and are supported by an active Clinical Trials Unit. This ensures that patients have early access to new treatment options, which may not yet be licensed for routine use.

Patients attend the outpatient and day service in the Haematology Oncology daycare centre (HODC) with attendances increasing year-on-year. Weekly consultant delivered counselling clinics are provided for all haematology patients being considered for transplantation, clinical trials or with complex diagnostic/ management requirements. A donor clinic runs weekly for the assessment of family donors and for matched unrelated donors in conjunction with the Irish Unrelated Bone Marrow Registry.

Weekly consultant led and disease specific clinics are provided for patients on active treatment for a haematological malignancy or post-transplant follow up. The management of patients for post-transplant review including management of ongoing graft versus host disease, screening for secondary malignancies and optimising long term outcome of these cancer survivors. In 2017 there were 703 patients reviewed in late effects clinics. Weekly haematology clinics provide follow up and management of patients who have completed treatment, or have indolent blood cancers requiring surveillance and intermittent treatment. Lymphoma patients treated successfully with curative intent are transitioned to an advanced Nurse Practioner clinic to ensure early pick up of treatment related morbidity and encourage active patient management of overall health.

Table 2.1.1: Haematology Outpatient Activity 2014-2017

OUTPATIENT ACTIIVITY 2014-2017				
	2014	**2015**	**2016**	**2017**
New	744	1046	1104	810
Return	9439	9168	9387	10153
Total	**10183**	**10214**	**10491**	**10963**

Figure 2.1.1: Blood Cancers/Haematological Malignancies individual patients reviewed in Out Patients 2017

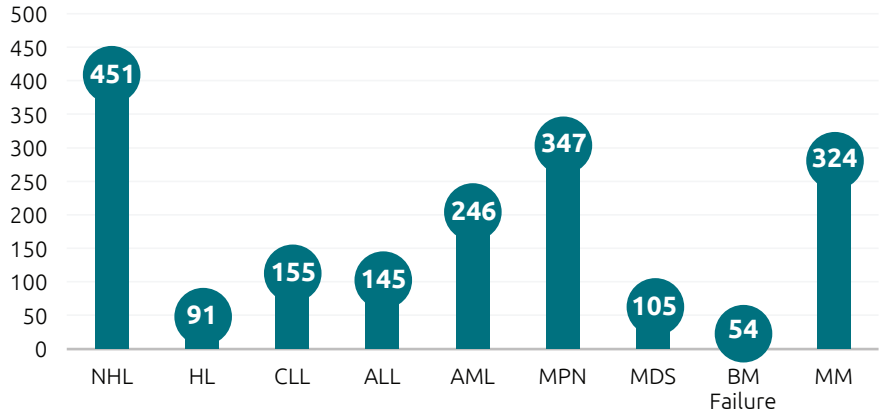


Figure 2.1.1 shows a breakdown of individual patients that attended outpatients by Cancer/Malignancy type. Many patients will have more than a single visit to outpatients. There were a total of **10,963** outpatient attendances in 2017.

The day unit is staffed by clinical nurse managers who ensure delivery of chemotherapy, blood products and assessment of patients undergoing treatment in a dedicated facility with access to isolation features.

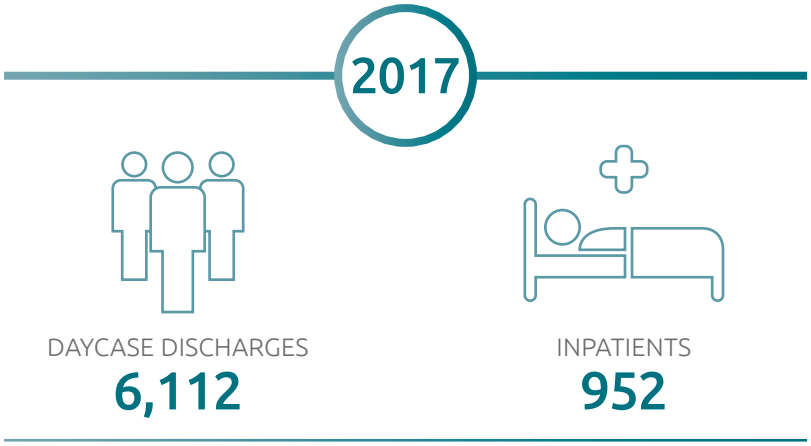


Table 2.1.2: Inpatient and Daycare Activity 2014-2017

DAYWARD AND INPATIENT NUMBERS 2014-2017				
	2014	**2015**	**2016**	**2017**
Dayward Discharges	3592	5191	5826	6112
Inpatient Stays	758	943	936	952

Figure 2.1.2: Blood Cancers and Haematological Malignancies individual patients treated in HODC and Inpatients 2017

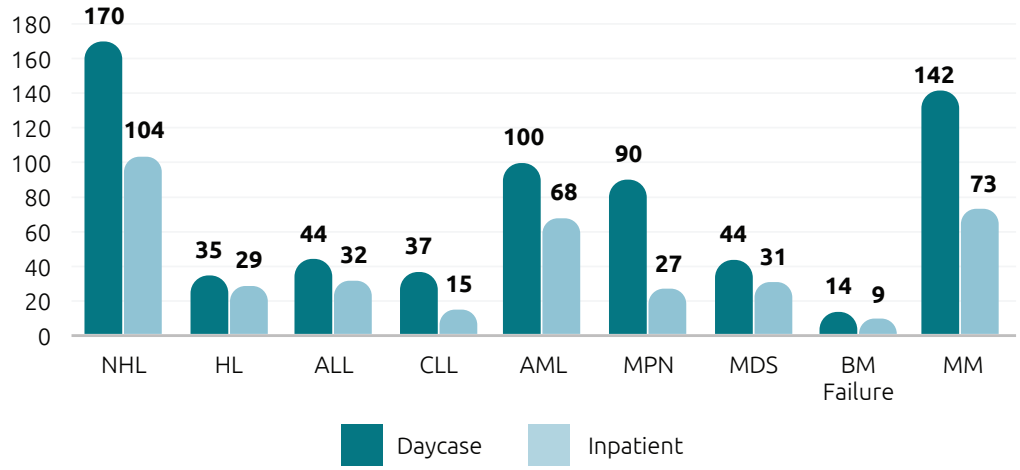
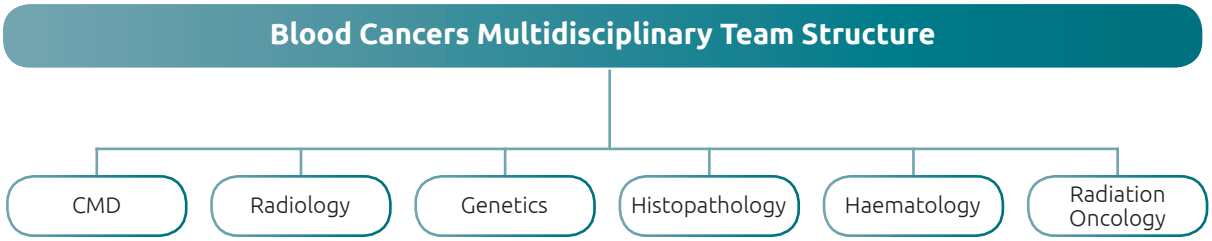


Figure 2.1.2 shows a breakdown of subsets of individual patients with blood cancers and haematological malignancies. There were **6,112** day case discharges in 2017 accounting for **843** individual patients. There were **952** inpatient stays in 2017 accounting for **468** individual patients.

Multidisciplinary working is integral to haematology and includes several weekly multidisciplinary team meetings (MDT). These include a bone marrow transplant planning meeting, a haematology MDT and a Lymphoma MDT.



Lymphoma MDT 2017

459
PATIENTS DISCUSSED

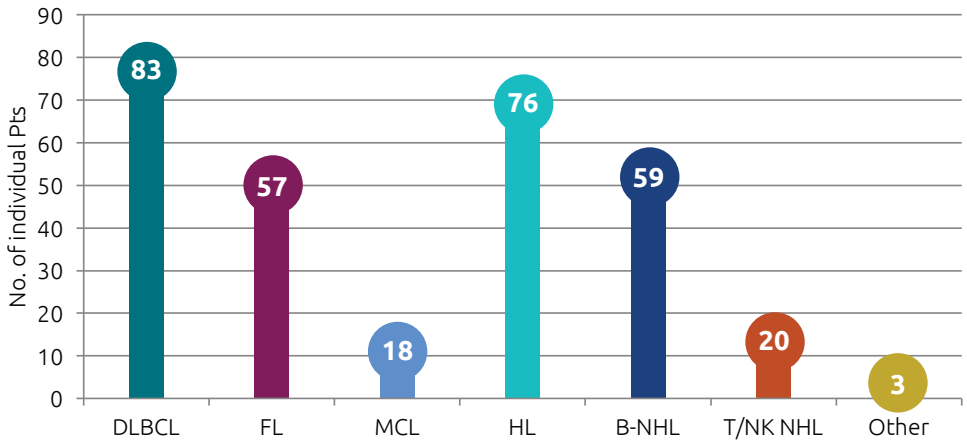
323
INDIVIDUAL PATIENTS

NEARLY 30%
EXTERNAL REVIEWS

2016
424 CASES

INCREASING NUMBERS
OF CASES EACH YEAR

Figure 2.1.3: Snapshot of numbers of individual patients with Lymphoma. Many patients are discussed on more than one occasion more than one occasion at MDT.



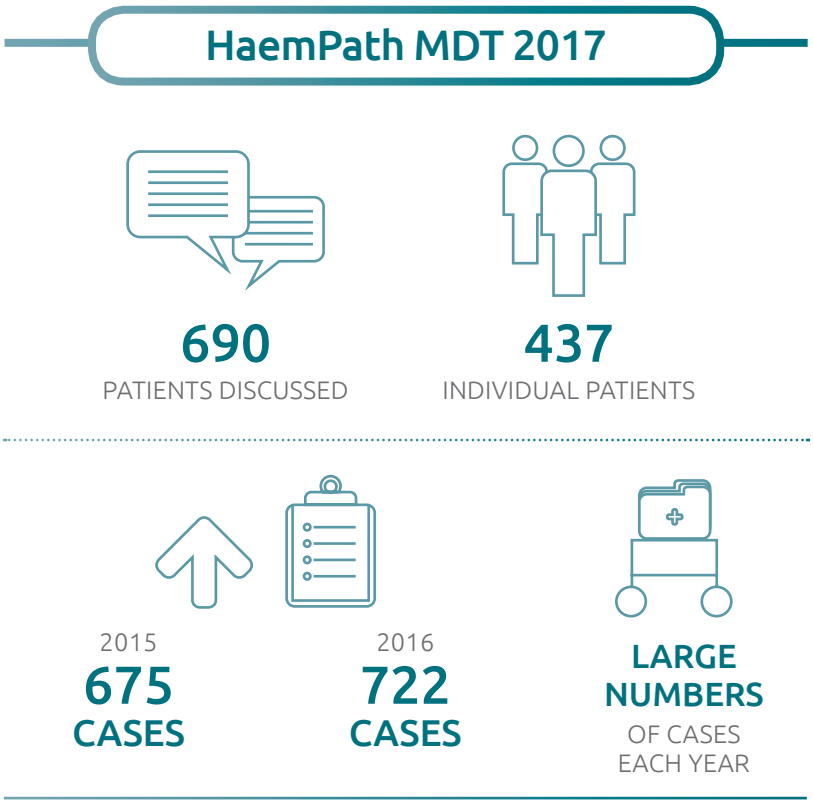
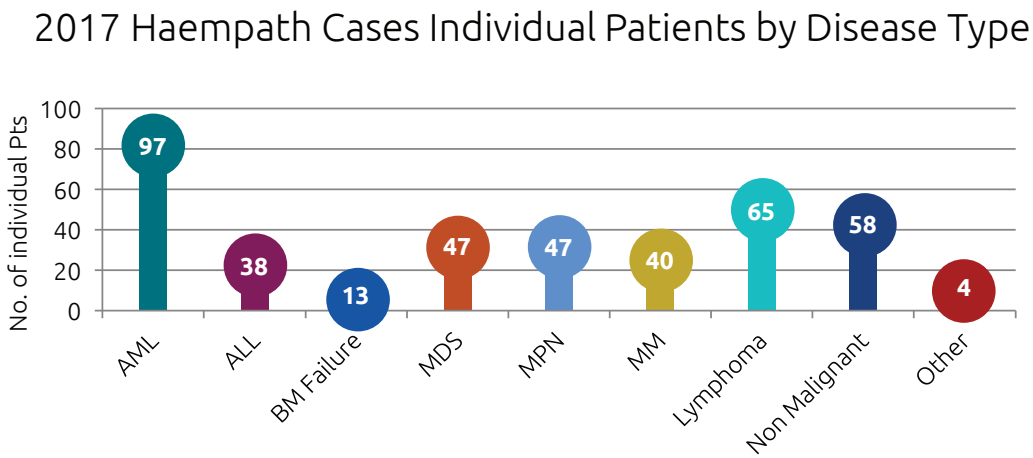


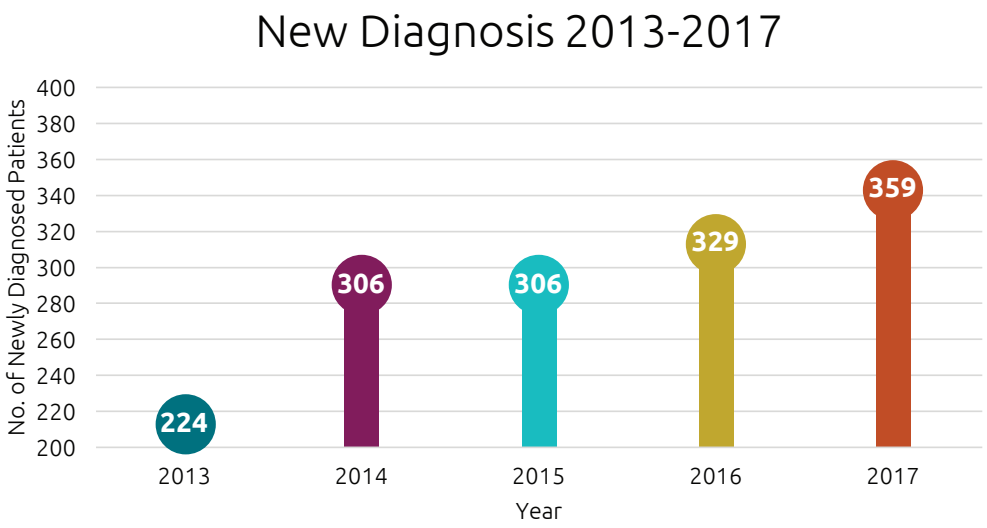
Figure 2.1.4: Snapshot of numbers of individual patients with blood cancers and haematological malignancies discussed at haempath MDS in 2017. Many patients are discussed on more than one occasion.



Blood Cancers

There were 359 individual patients with newly diagnosed haematological malignancies attending St. James's hospital in 2017 either as inpatients or managed through the day care centre. 359 new patients compared with 224 in 2013 represents a 60% increase.

Figure 2.1.5: Newly Diagnosed Patients per year



Leukaemia and Myeloproliferative Neoplasms

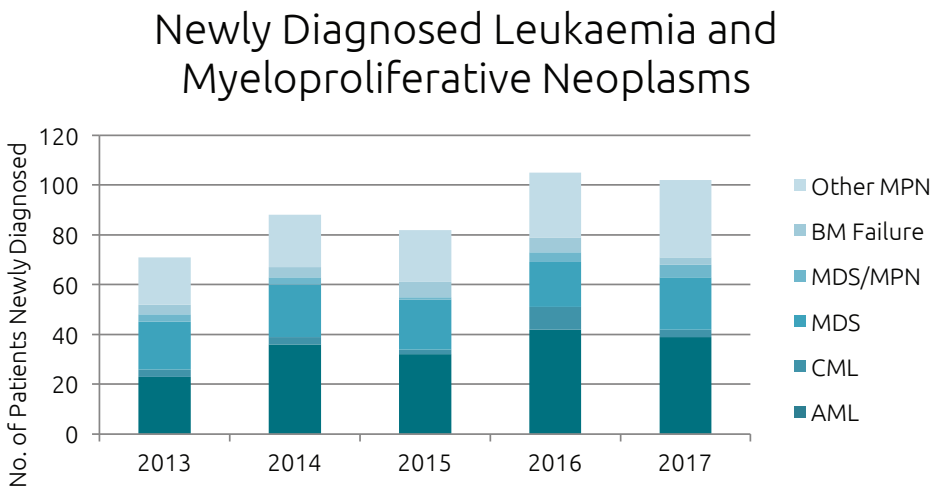
The myeloid malignancy service encompasses the care of patients diagnosed with acute myeloid leukaemia, myelodysplastic syndromes (low and high risk) and myeloproliferative neoplasms. The national incidence of these diseases is not comprehensive and our group is working with the Blood Cancer Network Ireland and the Irish cancer society to collect improved national data. The myeloid service also looks after a group of patients with less common inherited and acquired bone marrow failure syndromes.

Myeloid malignancies are cancers of the bone marrow and arise de novo or as a result of transformation of an existing myelodysplastic syndrome or myeloproliferative neoplasm. They can also arise in patients who have received immunotherapy, chemotherapy or radiation treatment for a previous solid organ neoplasm or immunodeficiency. These patients are diagnosed following detection of a cytopenia in general practice or following presentation to SJH via another specialty including A and E with a cytopenia or related condition. The clinical and laboratory haematology service are linked and the cytopenias are detected in the laboratory and further investigations are arranged with referring clinicians. Where high suspicion of a haematological malignancy is considered, these patients are seen in a haematology clinic promptly. In addition, referrals are frequent from national haematology centres on patients who may request a second opinion or consultation regarding the benefits of an allogeneic stem cell transplant. Transplant referrals are also received from the Northern Ireland health service for unrelated allogeneic transplants in myeloid disorders.

The myeloid service also looks after a group of patients with less common inherited and acquired bone marrow failure syndromes.

All new diagnoses of myeloid malignancies are reviewed at our haematopathology meeting weekly and plans are underway to establish a formal myeloid MDT. The myeloid malignancy service can be divided into inpatient and outpatient services. Inpatients include patients having intensive chemotherapy for acute myeloid leukaemia and high risk myelodysplastic syndrome diagnosed in St. James's Hospital or referred from Tullamore Hospital and regional hospitals in Limerick or Waterford. In addition, we look after patients who have infective complications following outpatient treatment. Outpatient treatments are more common for older patients or those patients ineligible for an allogeneic transplant. These patients may require venesection or receive a variety of sub-cutaneous and intravenous treatments in the day ward facility including azacytidine and transfusions of blood and platelets. Self-administered treatments and oral chemotherapy are supervised during regular outpatient visits. Common self-administered treatments include includes growth factor support, interferon and oral chemotherapy including hydroxycarbimide, tyrosine kinase inhibitors, ruxolitinib, anegrelide and busulphan.

Figure 2.1.6 Breakdown of diagnosis 2013 - 2017

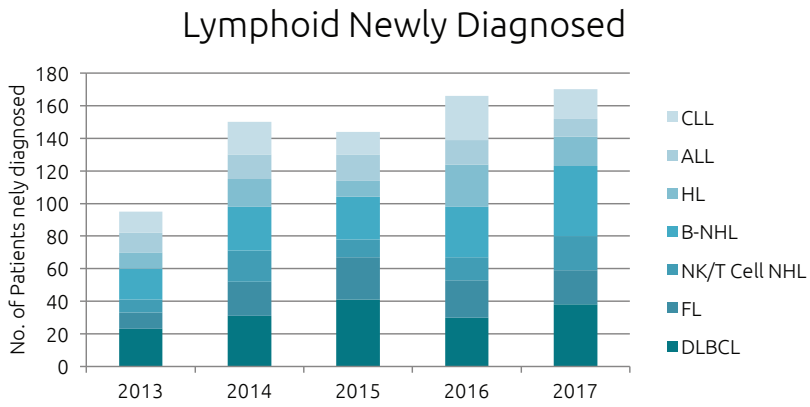


Lymphomas and Lymphoproliferative Disorders

Lymphomas are cancers of the immune system, and approximately 900 new cases are diagnosed in Ireland every year. The diagnosis of lymphomas is complex because more than 50 sub-types of lymphoid malignancies have been identified, each requiring a specific treatment approach based on multi-disciplinary specialist diagnostics including, haematopathology flow cytometry, molecular diagnostics and radiology. Treatment pathways are complex and include surveillance without treatment, chemotherapy, antibody treatment, radiation and stem cell transplantation. To help to ensure that each patient receives appropriate treatment, all patients with lymphomas are reviewed at a weekly Multi-Disciplinary Meeting (MDM). Over 300 patients are discussed at the MDM annually, including patients from the Midlands Regional Hospital Tullamore, University Hospital Waterford, and University Hospital Limerick.

The accurate and timely treatment of lymphomas is important. They constitute the most common cancer in young people and are often associated with a high cure rate if an accurate and timely diagnosis is made and appropriate treatment is initiated. Many people with low-grade lymphomas survive with intermittent treatment and a relatively normal lifestyle and lifespan; it is estimated that 20% of patients with low grade lymphoid malignancies will eventually die of their disease. This suggests that many thousands of patients are under the care of lymphoma specialists in Ireland, making it one of the most common cancers managed in cancer centres.

Figure 2.1.7 Breakdown of diagnosis 2013 - 2017



Myeloma and Plasma Cell Disorders

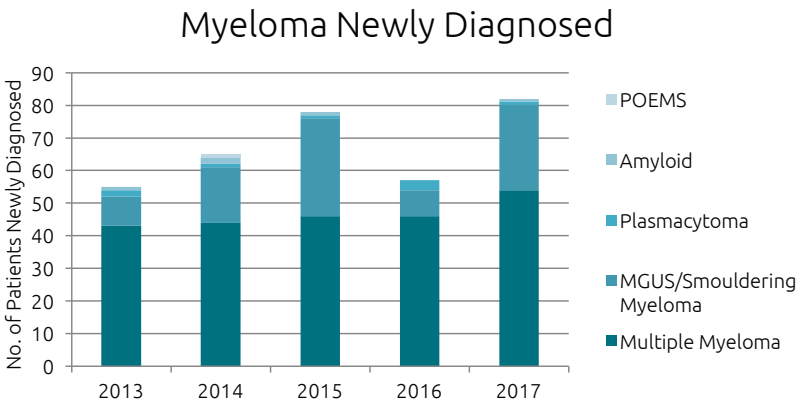
Myeloma is a malignancy of plasma cells. These are the cells of the immune system that normally produce antibodies to protect us against infection. Patients with myeloma commonly present to their general practitioners with bone pain and fatigue. Laboratory tests to investigate these symptoms may reveal anaemia and damage to the kidneys. X-rays often show fractures. Myeloma is commonly diagnosed in older people. The average age at diagnosis is approximately 70 years. The incidence of myeloma in Ireland is approximately 5 per 100,000 per year. There are, therefore, about 240 patients diagnosed with myeloma annually in Ireland.

The treatment of myeloma has greatly improved over the last 15 years, and it is considered one of the success stories of modern cancer treatment. New types of drugs have been developed, including proteasome inhibitors such as bortezomib (Velcade) and immune-modulatory drugs such as lenalidomide (Revlimid). These are now in widespread use in Ireland, allowing patients to live much longer with the disease. Many patients diagnosed this year can expect to live for a decade, if not longer.

The Haematology Service at St. James's Hospital is the largest in Ireland and includes the National Adult Stem Cell Transplant Centre. There is a dedicated Myeloma Service, which looks after patients with a range of plasma cell disorders, including symptomatic myeloma, solitary plasmacytomas, light chain amyloidosis and monoclonal gammopathy of uncertain significance. There are currently over 70 patients with myeloma and amyloidosis attending our clinic.

There is a Myeloma Clinic each week and another for Myeloma Transplantation Counselling.

Figure 2.1.8 Breakdown of Myeloma diagnosis 2013 -2017



Bone Marrow Transplantation (BMT) Service

The Stem Cell Transplantation (SCT) Service in St. James's Hospital was founded in 1984 and has since performed more than 2,500 stem cell and bone marrow transplants. The service oversees transplants in approximately 160 patients each year. The SCT Unit includes the National Adult Allogeneic Transplant Programme, (allogeneic transplant means using stem cells from a family member or an unrelated matching donor), and an Autologous Stem Cell Transplant Program, (autologous transplant means using your own stem cells). The service is currently the third largest SCT unit in the United Kingdom and Ireland. It is affiliated to the European Blood and Marrow Transplantation (EBMT) Registry, and it reports all outcomes to the registry and takes part in EBMT research projects. In 2018, the BMT unit applied for accreditation under the Joint Accreditation Committee ISCT-Europe & EBMT (JACIE) and an onsite inspection took place in November of that year.

Stem cell transplants are used to treat and cure many types of haematological, or blood-related, malignancies such as leukaemia, lymphoma or multiple myeloma as well as rare solid-organ tumours. For SCT, healthy stem cells are transplanted from one individual to another. Alternatively, the individual's own stem cells are used. Sources of stem cells include bone marrow and peripheral blood, and the procedure is referred to as a bone marrow transplant (BMT) or peripheral blood stem cell transplant (PBSCT), depending on the source of the cells that are transplanted. In order to identify potential donors, the transplant unit works closely with the Tissue Typing Service and the Irish Unrelated Donor Registry (IUBMR), based at the Irish Blood Transfusion Service. It also holds joint SCT planning meetings with paediatricians in the National Paediatric Transplant Unit at Our Lady's Children's Hospital, Crumlin.

The SCT Service is led by six transplant trained-haematology consultants who each have specific sub-specialist interests and sit on the relevant working parties of the EBMT. The service is delivered by a Multi-Disciplinary Team (MDT). This consists of a group of doctors, clinical nurse specialists and other health professionals, including pharmacists and laboratory scientists, who specialize in SCT. The SCT Service is supported by the Apheresis Unit, where stem cells are collected, and a Stem Cell Laboratory that has facilities for cryopreservation, or cell storage. A liquid nitrogen facility is used for the long-term storage of patients' stem cells.

Stem cell transplantation is carried out in a specialist 21-bed HEPA-filtered unit on Denis Burkitt Ward. The unit is managed by a clinical nurse manager, with a staff of SCT-trained nurses. Specialist support is provided by a team that includes dieticians, physiotherapists, a medical social worker and other medical/surgical teams, as required. Post-transplant care is delivered through the Haematology Oncology Day Care (HODC) Unit, supervised by a clinical nurse manager and specialist haematology nurses.

The Bone Marrow Leukaemia Trust (BMLT) is a charity founded in 1983 to support the SCT Service. It provides direct support for patients and their relatives and especially recognizes the needs of those coming from outside Dublin. Over the last number of years, the BMLT has provided and managed apartments near St. James's Hospital for patients and their families in the first crucial weeks of adapting to life after transplantation. It has also donated equipment, training and staff salaries.

The service oversees transplants in approximately 160 patients each year.

Transplant Survivorship

AUTOLOGOUS TRANSPLANT PATIENT FROM 1985

Male transplanted for Lymphoma still alive, survival

33 YEARS

ALLOGENEIC TRANSPLANT PATIENT FROM 1986

Female transplanted for ALL still alive, survival

32 YEARS

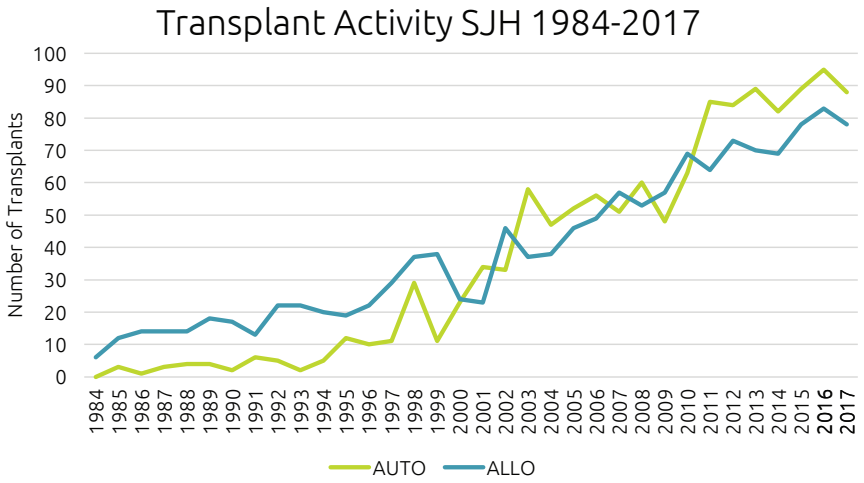
465

unique patients treated post transplant in late effects service in 2017

19

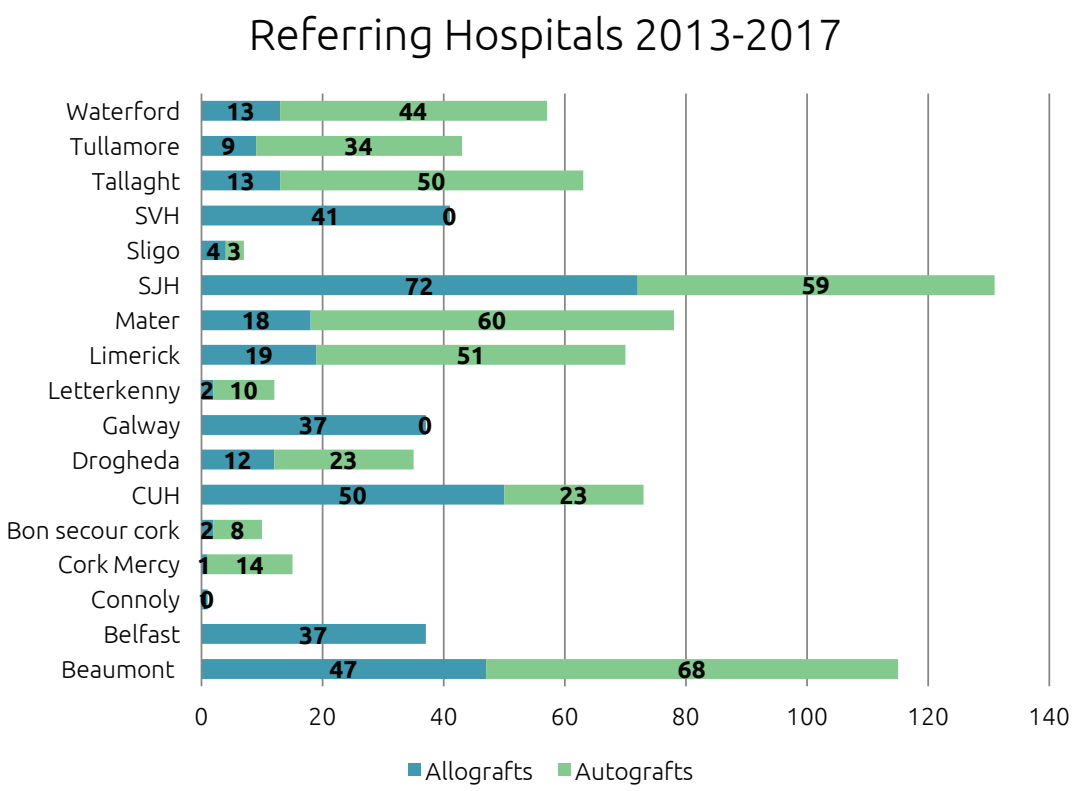
Allo patients transplanted between 1984 and 1990 are known to be still alive having a survival of 26-32 Years

Figure 2.1.9: Transplant Activity Trends 1984-2017:



Transplant activity is increasing overall over time. Since 2003 activity transplant activity has increased by 75% in 2017.

Figure 2.1.10: Referral Centres by Transplant Type in the last 5 years (2013-2017)

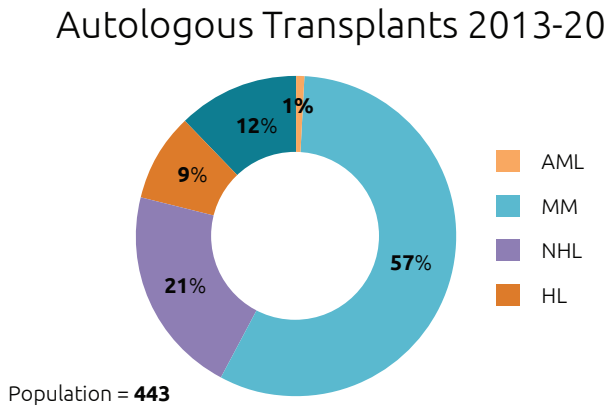


There were 443 autologous transplants performed in the BMT unit between 2013 and 2017.

Autologous Transplants 2013-2017

There were 443 autologous transplants performed in the BMT unit between 2013 and 2017. Of these transplantation for Multiple Myeloma (MM) accounted for 57%. Other main transplant groups were Non Hodgkin Lymphoma (NHL), Hodgkin Lymphoma (HL) and Germ Cell tumours

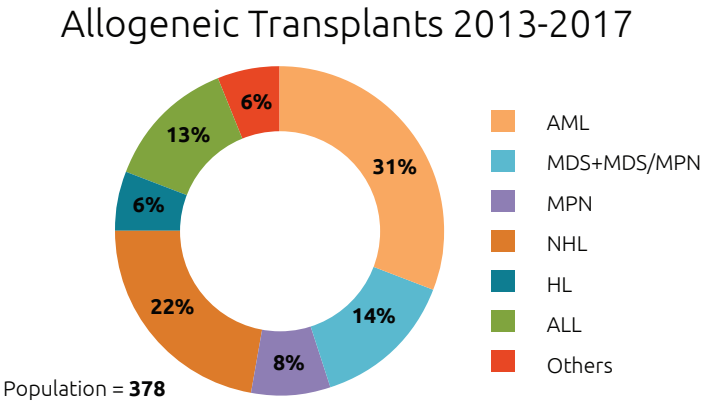
Figure 2.1.11: Autologous Transplants 2013-2017



Allogeneic Transplants 2013-2017

There were 378 allogeneic transplants performed between 2013 and 2017.

Figure 2.1.12: Allogeneic Transplants 2013-2017



Allogeneic Transplants 2013-2017

152
Full intensity Myeloablative (MA) Transplants

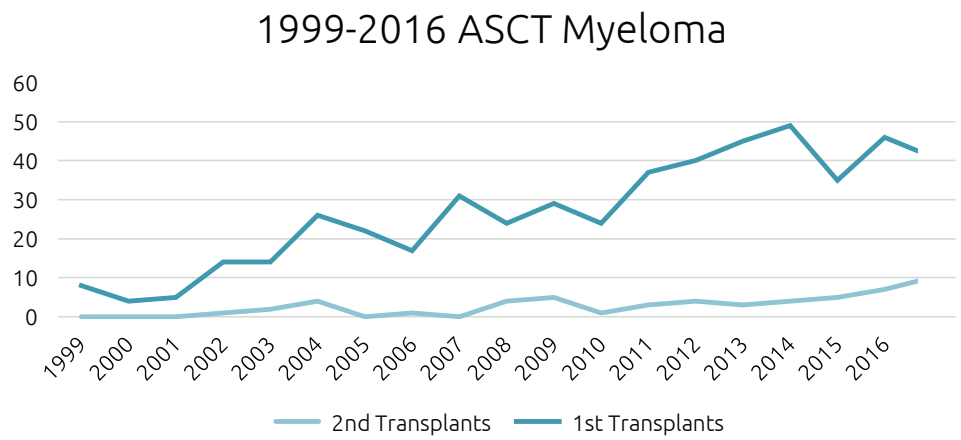
226
Reduced Intensity Conditioning (RIC) Transplants

171
Related Donor Tranplants

207
Matched Unrelated Donor Transplants

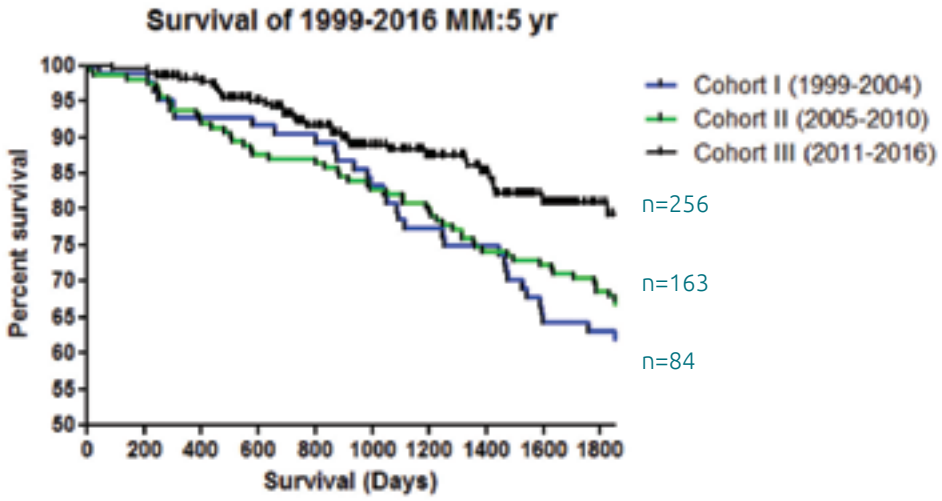
Myeloma Autologous Stem Cell Transplant

Figure 2.1.13: Myeloma 1st and 2nd Autologous SCT



557 patients underwent ASCT for Myeloma at St. James's Hospital from 1999-2016, 503 upfront and 54 as a second transplant. Stem cell mobilisation was Cyclophosphamide+ G-CSF in almost all cases. Median age at transplant was 58yrs (29-70yrs). The 5 Year Survival for most recent cohort is 80%.

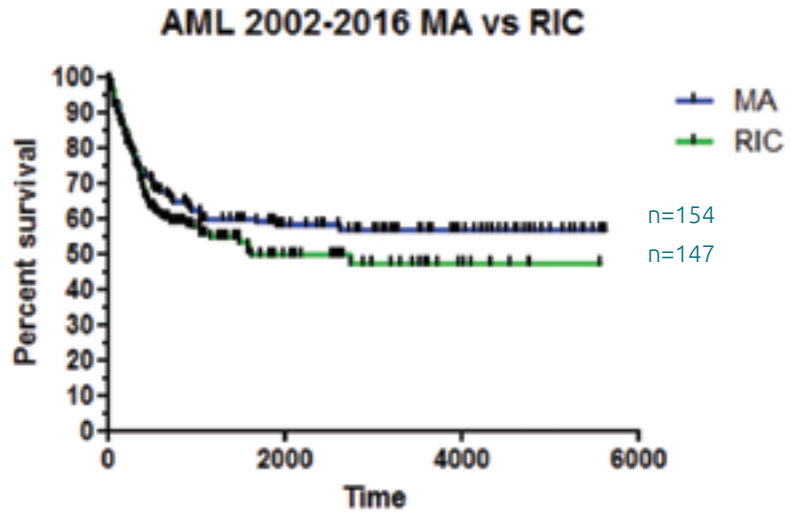
Figure 2.1.14: Survival of Myeloma patients post Autologous SCT showing marked improvement in modern era



Acute Myeloid Leukaemia (AML)

From 2002-2016 there were 301 Transplants performed. Of these 154 were myeloablative and 147 were reduced intensity. Overall survival for AML transplants is 53%. 5 year survival is 55%. The median age at transplant was 45yrs (16-69yrs). Of the transplants performed 165 had a related donor and 136 had a matched unrelated donor.

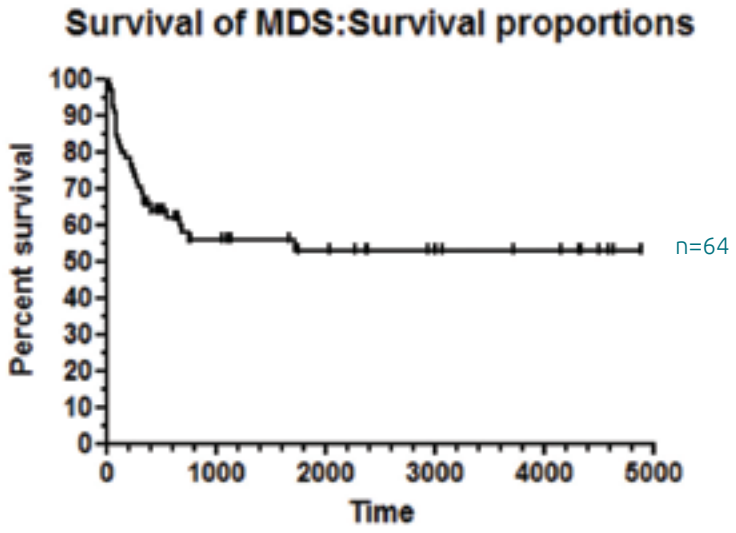
Figure 2.1.15: Survival of AML transplant patients post allogeneic transplant



Myelodysplastic Syndrome (MDS)

From 2002-2016 there were 64 transplants performed. Overall survival is 53% for this group. Median age at transplant was 51yrs (18-64yrs). Of the transplants performed 29 had a related donor and 35 had a matched unrelated donor.

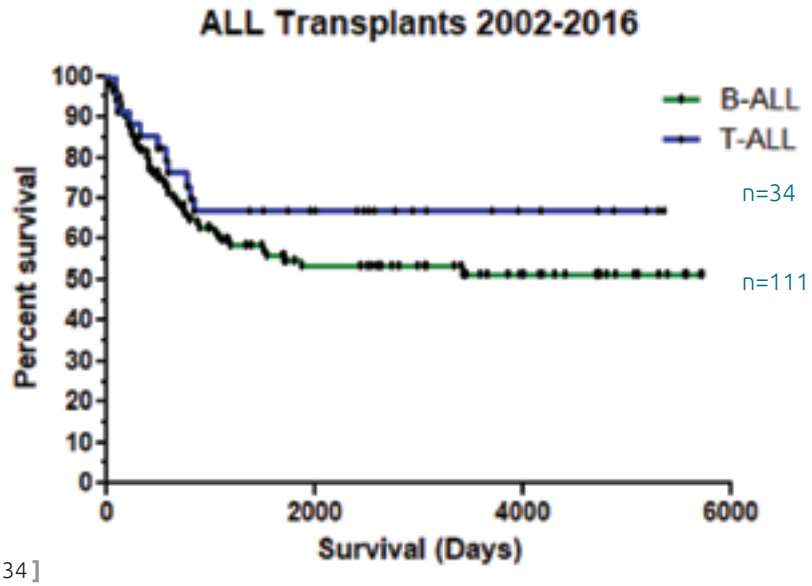
Figure 2.1.16: Survival of Patients Transplanted with MDS 2002-2016



Acute Lymphoblastic Leukaemia (ALL)

From 2002-2016 there were 145 allogeneic Transplants performed. Of these 130 were Myeloablative and 15 were reduced intensity. Overall survival for this group is 55%. The majority of transplants were performed using Cy/TBI conditioning. The median age at transplant was 34 yrs (16-61yrs). 94 patients were male and were 51 female.

Figure 2.1.17: Survival of ALL transplant patients post allogeneic transplant



From 2002-2016 there were 64 transplants for MDS patients performed.

Hodgkins Lymphoma (HL)

From 2002-2016 there were 89 autologous transplants performed. Overall survival is 66%. 5year survival for the cohort is 83%. Median age at transplant was 32yrs (17-64yrs).

Figure 2.1.18: Survival of HL transplant patients post autologous transplant

From 2002-2016 there were 42 autologous transplants performed. Overall survival is 53%. Median age at transplant was 32yrs (17-64yrs). Median age at transplant was 26yrs (17-49yrs).

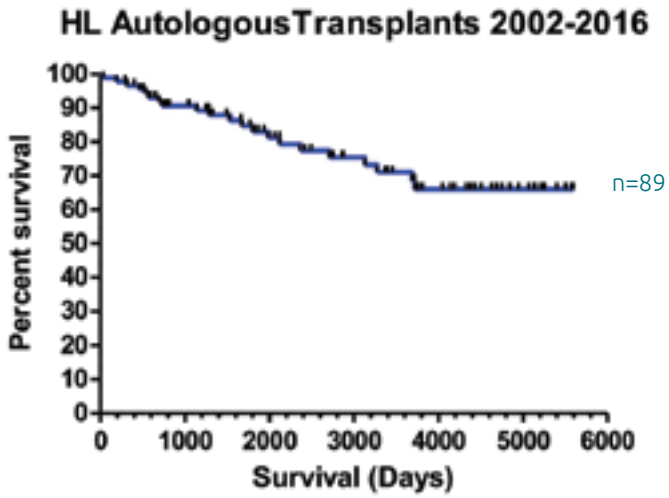
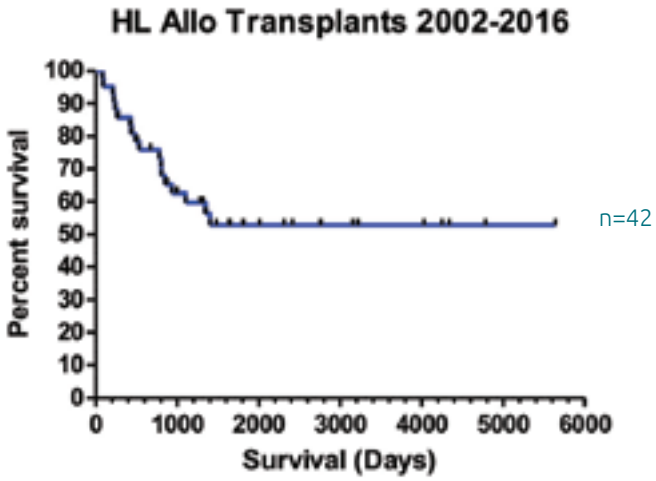


Figure 2.1.19: Survival of HL transplant patients post allogeneic transplant



Mantle Cell Lymphoma (MCL)

- Pre-2010: Auto in CR/PR1 or CR2 unsuitable for allo-SCT
- Allogeneic SCT in >CR1, consider in blastic MCL in CR1

From 2002-2016 there were 33 autologous transplants and 11 allogeneic transplants performed. Overall survival is 53%. Median age at transplant was 56yrs (38-68yrs).

Figure 2.1.20: MCL Survival Autologous SCT with Nordic Protocol

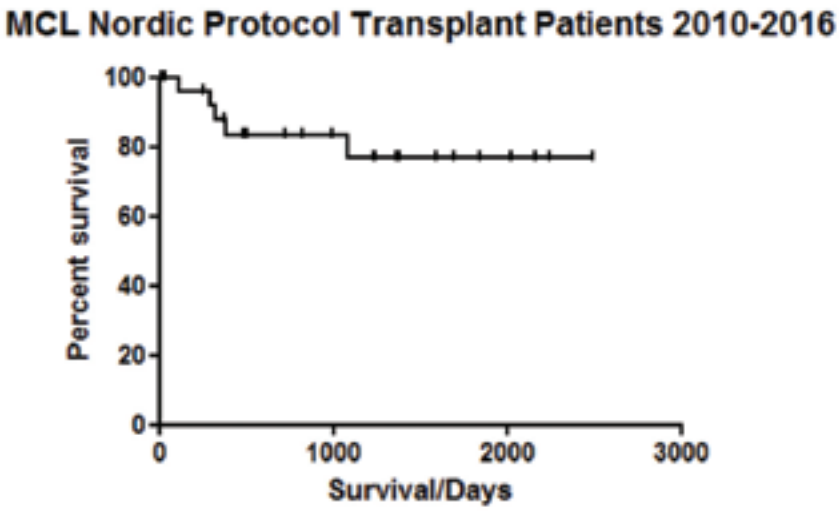
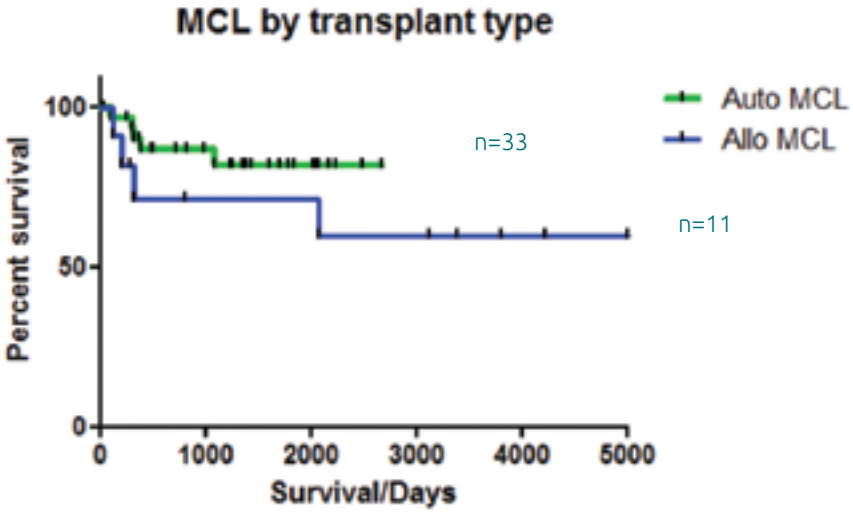


Figure 2.1.21: Mantle Cell Lymphoma Survival by transplant type 2010-2016



2. Lung Cancer

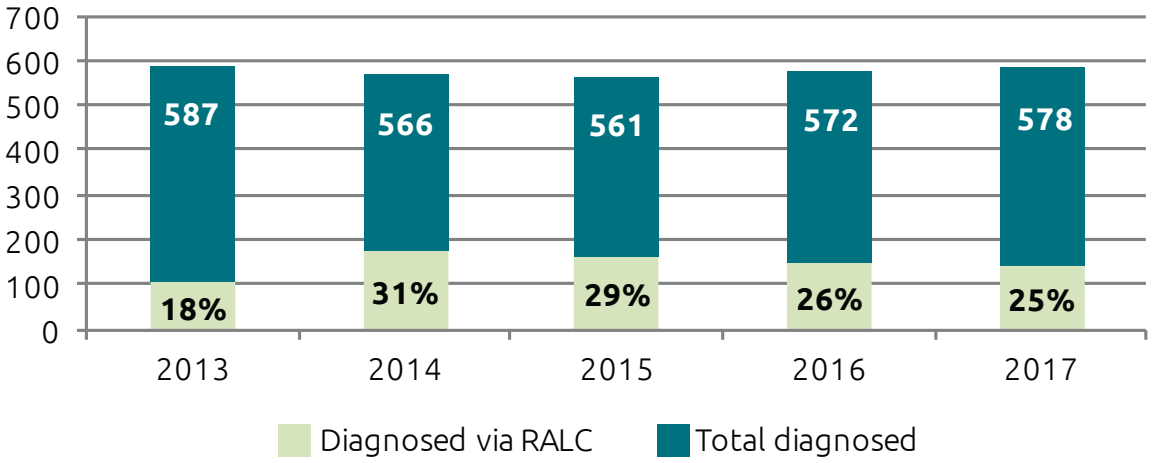
Lung cancer is the leading cause of cancer related death in Ireland; the incidence of lung cancer has been rising, currently at 41.2 per 100,000 for females and 56.1 per 100,000 for males[1]. It is the second most common cancer in the Irish population (2nd most common for females; 3rd most common for males). St James's Hospital is the main provider of lung cancer care in Ireland, performing between 47 and 50 per cent of lung cancer surgery[8].

Structure

Rapid Access Lung Centre

St James's Hospital is one of the eight nationwide rapid access lung centres, providing diagnostics and staging to patients. The service aims to be in a position to determine appropriate primary therapy within a 4-6 week time frame. All bronchoscopies are provided on a "next list" basis which means there is no waiting list for any patient needing this service. Where CT and bronchoscopy are the only investigations required this is usually achieved within two weeks. Where additional investigations such as CT guided biopsy, US guided biopsy, EBUS, PET, MRI or mediastinoscopy are required, the aim is within six weeks of initial contact. The respiratory consultants in SJH specialise in providing bronchoscopy under fluoroscopy and EBUS guided TBNA for mediastinal staging. Rapid Access Clinic KPI data has been submitted to NCCP since mid 2010. The Rapid Access Lung Centre continued to reach and exceed targets during the period of this report. On average, over the five year period 2013-2017 26% of patients diagnosed with a primary lung cancer were diagnosed via the Rapid Access Clinic (Figure 2.2.1).

Figure 2.2.1 Lung Cancer Diagnoses 2013-2017



Multidisciplinary Team (MDT)

The MDT is long established, and includes a tele-link with referring hospitals in Mullingar, Tullamore, Letterkenny, Limerick and Waterford. The MDT is organised by a full time MDT coordinator. There is also an MDT planning meeting which takes place at the end of every week to ensure patients waiting for difficult or complex biopsies are discussed with radiology consultants post bronchoscopy, and that patients who are having surveillance scans as part of the follow up care are discussed in a multidisciplinary environment.

Radiology

The radiology department has an essential role in the work up and treatment of patients with lung cancer in SJH. Initial CT staging is complemented by PET-CT. There are four thoracic radiologists who help present the lung cancer MDT and they also perform over 200 percutaneous CT-guided lung biopsies per year for tissue diagnosis. The Centre for Advanced Medical Imaging (CAMI), based in the radiology department, is developing new imaging techniques to image lung cancer, including diffusion and perfusion MRI.

Cardiothoracic Surgery

A National Cardiothoracic Unit at SJH opened in 2000. It has two cardiothoracic surgeons Mr Vincent Young and Mr Ronan Ryan, and an experienced dedicated MDT delivering expert surgical care to patients throughout Ireland. Thoracic surgeons in SJH accept referrals from regional and supra-regional hospitals including major hospitals in Dublin such as Tallaght Hospital and Beaumont Hospital. The lung cancer surgical service in SJH is unique in Ireland both in terms of volume and complexity. The surgeons have a special interest and experience in extended resections for the treatment of locally invasive lung cancers.

Based on data from the National Cancer Control Programme (NCCP), the thoracic team carried out 49% of curative lung cancer resections in ireland between 2013 and 2017.[8]

Radiation and Medical Oncology

The radiation oncology department provides a referral and review service for SJH patients who may require radiotherapy treatment. SJH has a dedicated medical oncologist for lung cancer, Dr Sinead Cuffe, with in-patient and outpatient chemotherapy, non-surgical treatment of cancer and supportive and palliative care. A patient may also be eligible to take part in a clinical trial of a new cancer treatment, and SJH has an active lung cancer clinical trials service.

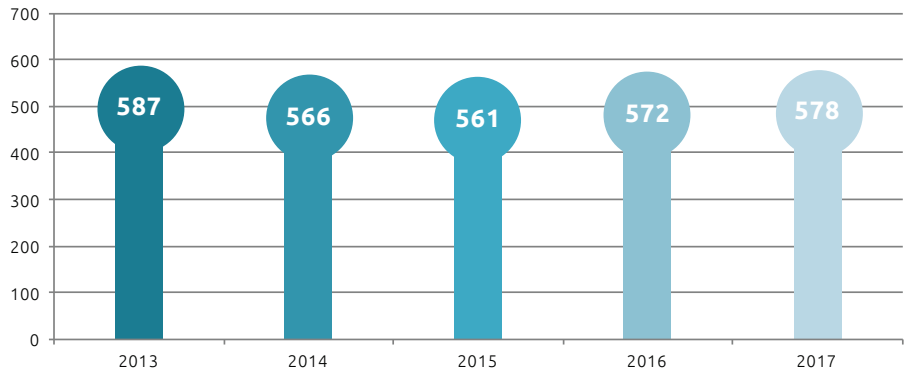
Radiofrequency and Microwave Ablation Treatment

Radiofrequency and Microwave Ablation (RF&MA) treatment is a relatively new minimally invasive technique for treating lung cancer. Both techniques involve percutaneous placement of a heat probe into a tumour under CT guidance. RF&MA are ideally suited to patients who are medically unfit for surgery. They are well tolerated by most patients and have equivalent response rates when compared to stereotactic radiotherapy. They are suitable for the treatment of primary and secondary lung tumours under 3 cm and have been performed in SJH by Prof. Peter Beddy and Dr. Michael Guiney since 2017. RF&MA treatment is a speciality only performed in SJH under our specialist pulmonary radiology consultants.

Lung Cancer Audit

The following is a report on 2,864 newly diagnosed and/or treated lung cancers in SJH between 2013 and 2017.

Figure 2.2.2 Lung Cancers



The annual number of new cases has remained constant, 587 in 2013 and 578 in 2017. Males accounted for 53% of all lung cancer diagnoses. While smoking is the most common risk factor, a significant percentage (6%) occurs in never-smokers (Table 2.2.1). Radon, second-hand smoking, occupational exposure, indoor air pollution and genetic predisposition are risk factors for the development of lung cancer in non-smokers. Lung cancer not related to smoking, in particular adenocarcinoma, has different clinical, pathological and molecular findings, occurring more frequently in women.

Table 2.2.1 Smoking incidence SJH patients

	FEMALE	MALE
Never Smoker	76 (9%)	31 (3%)
Ex- Smoker	319 (37%)	400 (43%)
Current Smoker	383 (44%)	379 (41%)
Unknown	88 (10%)	113 (12%)
Lives with Smoker	3 (0%)	1 (0%)
	869	**924**

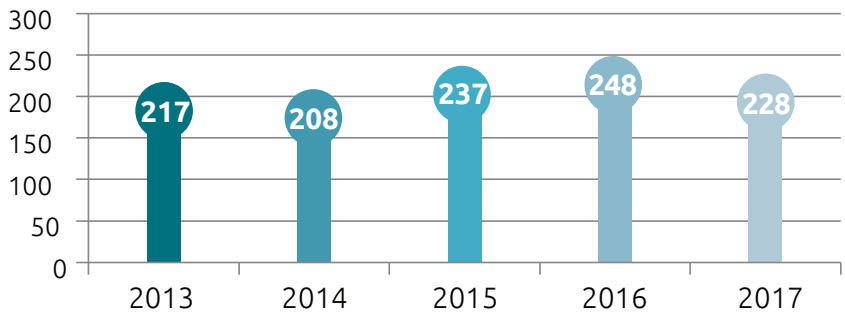
At time of diagnosis, 5% of patients are under the age of 50, 86% are aged 51-80 and 9% are over 80 years.

Table 2.2.2 Age at Diagnosis 2013-2017

2013-2017	FEMALE	MALE	TOTAL
0-20	1	1	2
21-30	7	2	9
31-40	19	11	30
41-50	48	60	108
51-60	236	211	447
61-70	483	588	1071
71-80	420	515	935
81-90	115	136	251
91-100	5	6	11
	1334	**1530**	**2864**

Consistent with total lung cancer cases, the percentage undergoing surgery with curative intent has remained quite constant at approximately 50 per cent (Table 2.2.3).

Figure 2.2.3 Lung cancer surgery 2013-2017



	2013	2014	2015	2016	2017
Total who had surgery in SJH*	217	208	237	248	228
Total patients diagnosed at SJH	330	314	300	298	302
Total who were diagnosed at SJH and had surgery	89	87	99	96	66
% who were diagnosed at SJH and had surgery	27%	28%	33%	32%	22%
% Referred via RALC and had surgery	31%	27%	36%	31%	28%

*includes patients from all referring hospitals

The national data (Table 2.2.3) shows that, although SJH manages about a quarter of the national workload for new diagnoses of lung cancer, the percentage of patients having lung cancer surgery is up to 50 percent.

Table 2.2.3 Comparison of national data versus SJH

COMPARISON OF NATIONAL DATA VERSUS SJH	2013	2014	2015	2016	2017
Total new lung cancer cases nationally[1]	2,433	2,242	2,431	Not Available	Not Available
Total new lung cancer cases at SJH*	587	566	561	572	578
% of national workload[1]	24%	25%	23%	Not Available	Not Available
Total surgeries nationally[8]	444	412	482	497	484
Total surgeries SJH	217	208	237	248	228
% of national patients who had surgery at SJH[8]	49%	50%	49%	50%	47%

*includes all patients coming to SJH for diagnosis and/or treatment

Clinical staging (Table 2.2.4) for non-small cell lung cancer indicates that early stage (IA and IB) lung cancer is common, reflecting referral bias for patients who can be treated with curative intent, with 990 (46%) of 2,139 of patients who were fully staged. Pathological stage of resected cases shows 598 (55%) cases of Stage 0/I of 1092 patients (Table 2.2.5).

Table 2.2.4 Clinical Staging of Non Small Cell Lung Cancer

CLINICAL STAGE	2013-2017 7TH EDITION[2]
Stage IA	618
Stage IB	372
Stage IIA	162
Stage IIB	190
Stage IIIA	302
Stage IIIB	124
Stage IIIC	7
Stage IV	364
Unknown/Not Specified	464

Table 2.2.5 Pathological Staging Non Small Cell Lung Cancer

PATHOLOGICAL STAGE	7TH EDITION 2013-2017[2]
Stage 0	30
Stage IA	362
Stage IB	206
Stage IIA	123
Stage IIB	128
Stage IIIA	199
Stage IIIB	28
Stage IV	16
Unknown/Not Specified	464

Table 2.2.6 Tumour Histo-morphology 2013-2017

MORPHOLOGY	OCCURRENCES	PERCENT
Adenocarcinoma	1107	39
Squamous	891	31
SCLC	265	9
NSCLC	131	5
Mesothelioma	64	2
Typical Carcinoid	60	2
Pleomorphic	24	0.8
Large Cell Neuroendocrine	17	0.6
Adenosquamous	16	0.6
Mixed Cell	13	0.5
Atypical Carcinoid	12	0.4
Neuroendocrine	7	0.2
Spindle cell	6	0.2
Large Cell	2	0.1
Mucoepoid	2	0.1
Undifferentiated	1	0.0
Other	6	0.2
Not Histologically Proven	40	1
No data	211	7

Table 2.2.7 Tumour Location

(LLL; left lower lobe; RLL; right lower lobe; LUL; left upper lobe: RUL; right upper lobe: RML; right middle lobe)

POSITION	OCCURRENCES	PERCENT
LLL	322	**11**
LUL	654	**23**
RLL	405	**14**
RUL	791	**28**
RML	145	**5**
Bronchus	70	**2**
Pleura	57	**2**
Right Lung	54	**2**
Left Lung	48	**2**
Pleural Effusion	42	**1**
Mediastinum	15	**0.5**
Both Lungs	5	**0.2**
Lymph Nodes	5	**0.2**
Pancoast	5	**0.2**
No data	246	**9**

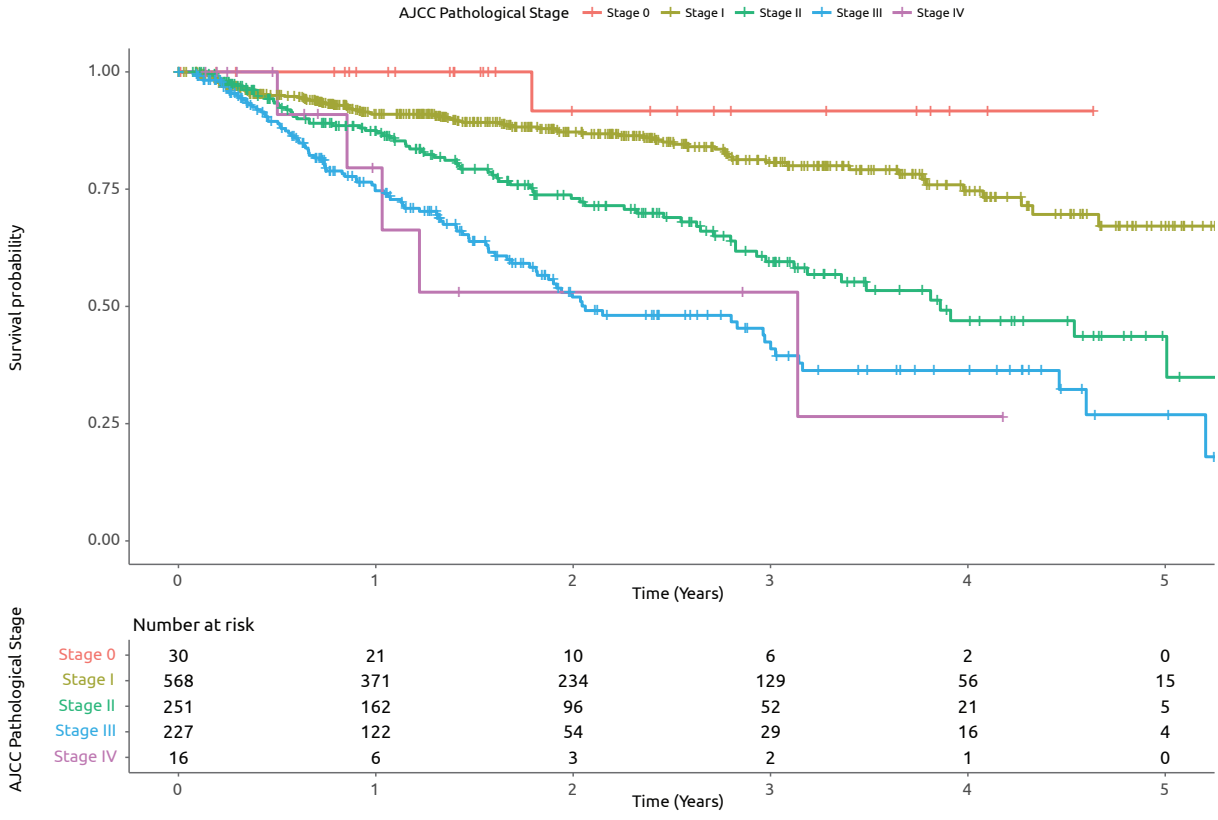
Table 2.2.8 Treatment Administered

TREATMENT GIVEN 2013-2017	OCCURRENCES	PERCENT
Surgery	1129	39
Oncologist Referral	611	21
Radiation Oncology referral	276	10
Chemotherapy	161	6
Radical Radiotherapy	150	5
Adjuvant Chemotherapy	143	5
Chemo/Radiotherapy	117	4
Best Supportive Care	102	4
Surgical Procedure	79	3
Palliative Radiotherapy	50	2
Stereotactic treatment	48	2
Radiotherapy	37	1
Palliative Chemotherapy	23	0.8
Neo Adjuvant Chemotherapy	23	0.8
Adjuvant Radiotherapy	18	0.6
Neo Adjuvant Radiotherapy	11	0.4
Radio Frequency Ablation	31	1.1
Surgical Referral	6	0.2
Other	236	8.2
No Active Cancer Treatment	50	1.7
No Treatment given at present	53	1.9
Refused all treatment	7	0.2
Unknown	14	0.5

Outcomes and survival analyses

Figure 2.2.4 Overall post-operative survival by stage

STAGE	N AT RISK	MEDIAN OS (YEARS)	95% CI	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
0	30	NR	NR, NR	100%	91.7 (77.3, 1)	NS
I	568	NR	NR, NR	91.0 (88.5, 93.5)	80.7 (76.2, 85.4)	67.1 (58.5, 77.0)
II	251	3.86	3.19, NR	87.0 (82.5, 91.6)	59.5 (51.7, 68.6)	34.9 (0.21, 58.4)
III	227	2.06	1.82, 3.03	74.7 (68.7, 81.1)	41.0 (32.7, 51.3)	26.9 (16.3, 44.4)
IV	16	3.14	1.03, NR	66.3 (40.9, 1)	26.5 (0.05, 1)	NA



3. Oesophageal, Oesophago-gastric Junction, and Gastric

Summary Points

SJH is designated by National Cancer Control Programme (NCCP) as both the National Centre for Oesophageal and Gastric Cancer, and the National Centre for Management of Early Upper Gastrointestinal Mucosal Neoplasia (i.e. early tumours arising in Barrett's Oesophagus). Professor John Reynolds, TCD Professor of Surgery, is the National Lead for oesophageal and gastric cancers.

The key summary points are as follows:

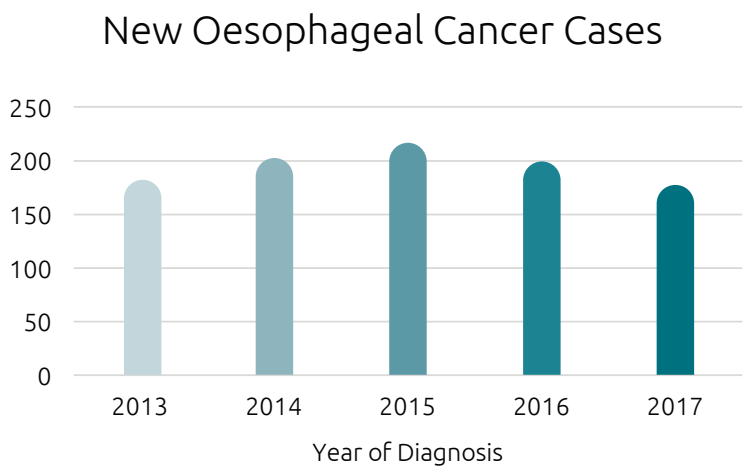
- Based on NCRI figures for years 2013-2015[1], approximately 68% of surgical resections for oesophageal cancer in Ireland are undertaken at SJH
- 80% of all referrals are tertiary.
- Twice weekly Rapid Access clinics.
- Therapeutic endoscopy, particularly endoscopic mucosal resection (EMR) has increased in frequency.
- The team over the time period of the audit includes Professor John Reynolds and Professor Narayamasamy Ravi (surgeons); Professor Dermot O'Toole and Dr. Finbar Mc Carthy (specialist gastroenterology for endoscopic ultrasound (EUS) and endoscopic resection (EMR); Dr. M. Cunningham (radiation oncology); Dr. S. Cuffe & Professor Maeve Lowry (medical oncology). Ms. Jennifer Moore is the Cancer Nurse Specialist.
- A major advance was the launch and commencement of the neo-AEGIS trial, led by SJH. This is an investigator-led international randomized, controlled trial comparing preoperative chemotherapy with preoperative chemotherapy and radiation therapy in patients with adenocarcinoma of the oesophagus and oesophago-gastric junction. (NCT01726452). At this time, 300 of 540 patients have been randomized, 102 from SJH.
- Multidisciplinary model is well established, in particular for clinical trials of multimodality therapy and related molecular and scientific research.
- Tumour and Barretts tissue is biobanked, as are blood samples.
- TCD Departments of Surgery and Medicine have a long-established major focus on oesophageal disease, including oesophageal cancer and Barrett's oesophagus
- The standards and performance indicators for oesophageal cancer are well inside internationally-accepted benchmarks in high volume centres: an in-hospital post-operative mortality of 1.3%, with integrated care pathways operational, and patients linked to the cancer clinical trials programme.
- Programme strengths include cognate tertiary services in thoracic and head and neck surgery, interventional radiology, critical care and medical gastroenterology.
- In 2017, there were 25 research papers published

Based on NCRI figures for years 2013-2015, approximately 68% of surgical resections for oesophageal cancer in Ireland are undertaken at SJH

3(a) Oesophageal and Oesophago-gastric junction

In the period 2013 to 2017, 980 patients were diagnosed or treated at SJH for oesophageal or junctional cancer. The new case number has remained constant at between 175 and 215 per annum.

Figure 2.3.1 New Cases



Oesophageal adenocarcinoma is predominantly a male cancer, and 73% of cases overall are male. Ages ranged from 22-97 years, the median age was 68, and 60% of patients were aged between 61 and 80 years. The tumour site is predominantly lower oesophagus and junction, representing 79% of the total new cases. (Table 2.3.1). Squamous cell cancers represented 30% of pathology, with 57% invasive adenocarcinoma, and 13% intramucosal.

Table 2.3.1 Tumour Site

TUMOUR SITE	OCCURRENCES	PERCENT
Upper Oesophagus	34	3.5%
Middle Oesophagus	185	19%
Lower Oesophagus	291	29.5%
OG Junction	470	49%

Clinical stage reflects a referral practice to a National Center weighted towards patients who can be treated with curative intent, with just 23% having stage 4 disease, and 23% Stage 0/1. Pathologically, 67% of patients had Stage 2 cancer or less, again reflecting the clinical staging pattern and downstaging impact of neoadjuvant therapy.

Table 2.3.2 Clinical Stage

CLINICAL STAGE	OCCURRENCES	PERCENT
Stage 0/HGD	100	10%
Stage 1	134	13%
Stage 2	258	26%
Stage 3	233	24%
Stage 4	230	23%
Unable to assess	25	2%

Table 2.3.3 Pathological Stage (n=295)

PATHOLOGY	OCCURRENCES	PERCENT
Stage 0	32	11%
Stage 1	81	27.5%
Stage 2	83	28%
Stage 3	95	32%
Stage 4	4	1.5%

Treatments

Table 2.3.4 Treatments Administered

FOR OESOPHAGEAL CANCER	OCCURRENCES*	PERCENT
Curative Surgery	295	**30%**
Palliative Surgery	18	**2%**
Neo-adjuvant treatment **	279	**28%**
Adjuvant Chemotherapy/Radiotherapy	15	**1.5%**
Radical Chemo/Radiotherapy	76	**8%**
Endomucosal Resection (EMR)	150	**15%**
Radiofrequency Ablation	114	**12%**
Radical Chemotherapy	5	**<1%**
Radical Radiotherapy	1	**<1%**
Palliative Chemotherapy	159	**16%**
Palliative Radiotherapy	137	**14%**

*Please note patients may have more than one treatment. ** Neo adjuvant number includes patients whose treatment was shared between centres.

61% (598) of patients were treated with curative intent.

Survival

The overall oesophageal cancer survival rate for all patients at 5 years is 32%. This rate includes oesophageal cancers diagnosed at all stages and treatment intents. For the 602 patients treated with curative intent the following graph shows actual survival, with 3 year survival at 61.2% (Figure 2.3.2). This compares with 47% from the previously published 10 year audit report, and also favourably with the UK's 3 year survival of 44% for curative intent patients, published in their National Oesophao-gastric Cancer Audit 2016[3]. These improved outcomes may in part reflect the increased percentage of early cancer diagnosed through the Barrett's surveillance programme, and the advent of endotherapies.

Figure 2.3.2 Survival in Patients treated with Curative intent (n=602)

	OVERALL SURVIVAL	95% CI
1 year	86.2%	83.5, 89.1
3 year	61.2%	56.8, 65.9
5 year	51.7%	46.1, 58.1
Median	5.47 years	(4.07, NR)

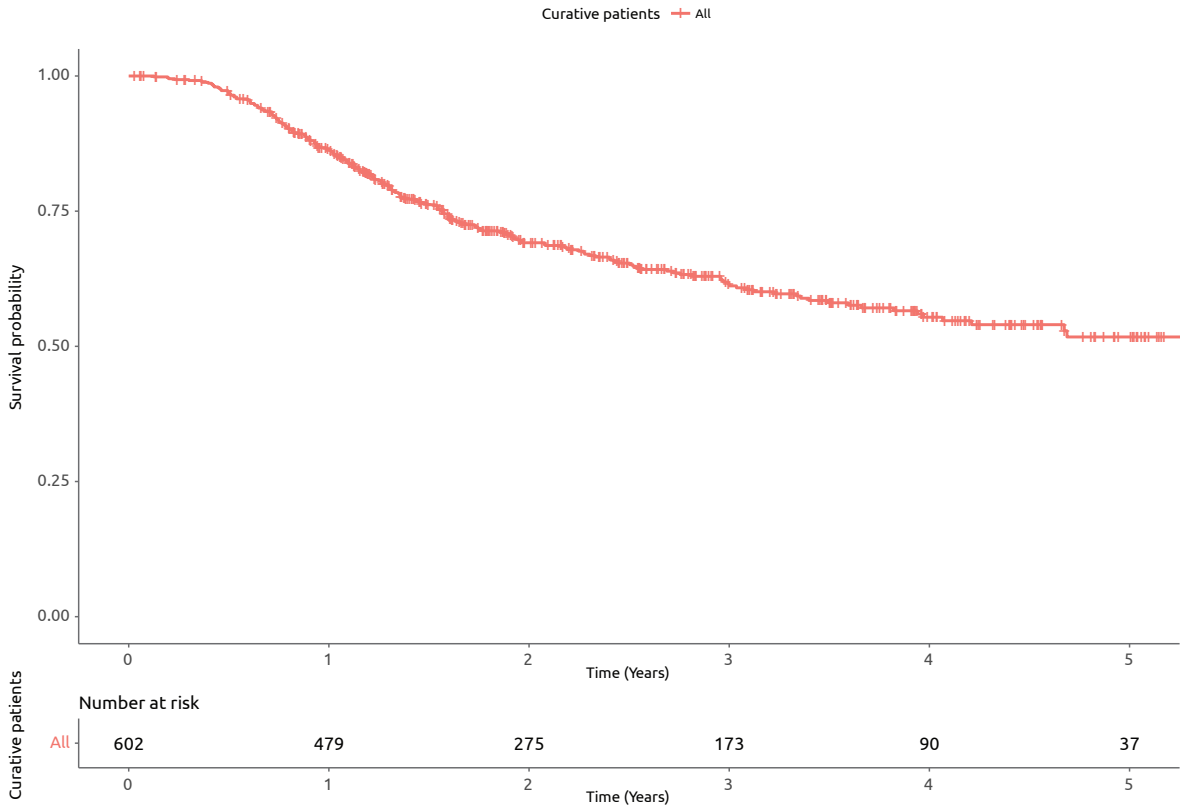
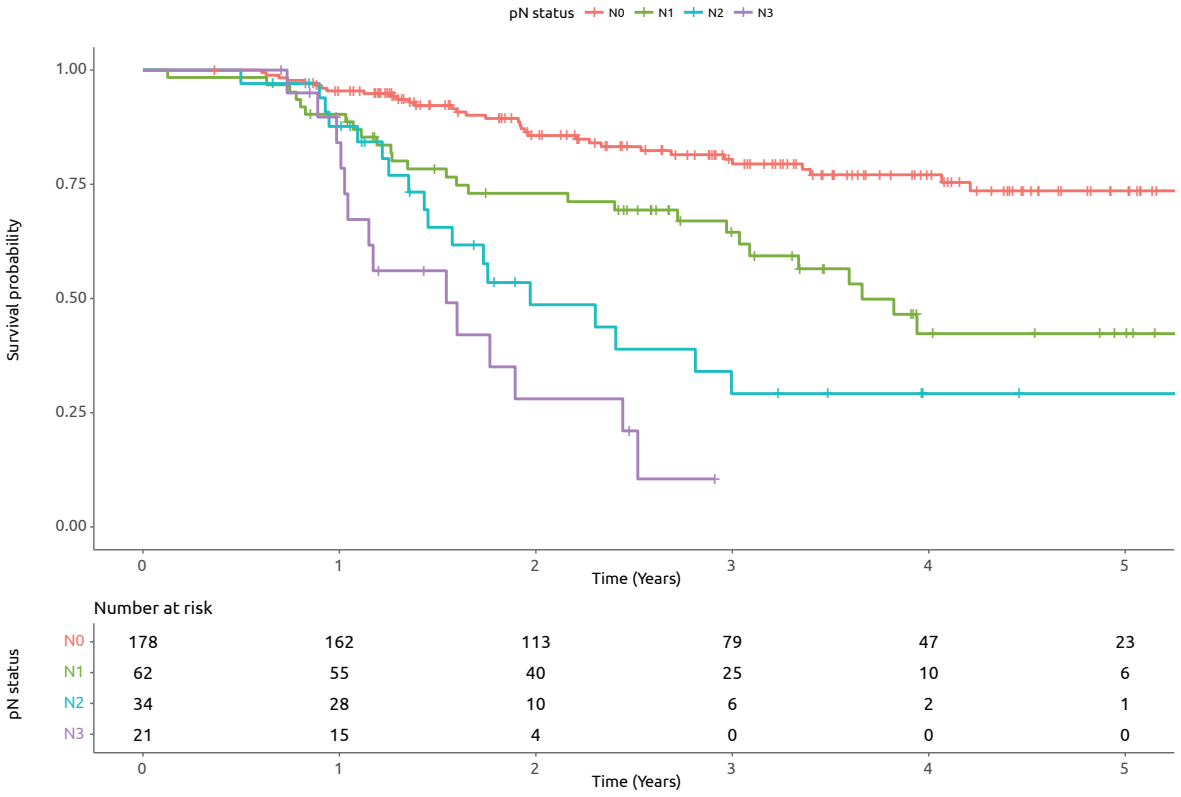


Figure 2.3.3 Oesophageal Cancer survival by Nodal Involvement

PATHOLOGICAL STAGE	NUMBER AT RISK	N EVENTS	MEDIAN OS (YEARS)	95% CI	1 YEAR OS %	3 YEAR OS %	5 YEAR OS %
N0	178	33	NR	NR, NR	95.4 (92.4, 98.6)	79.5 (72.9, 86.6)	73.6 (65.5, 82.6)
N1	62	27	3.66	3.04, NR	90.3 (83.3, 98)	64.5 (52.9, 78.7)	42.3 (28.9, 61.9)
N2	34	19	1.97	1.57, NR	87.7 (77, 99.8)	29.2 (15.3, 55.6)	NS
N3	21	14	1.54	1.04, NR	78.5 (61.8, 99.7)	NS	NS



These data highlight that node negative disease, either ab initio or after neoadjuvant therapy, is associated with excellent outcomes with an actual 3 year survival rate of 80%.

3(b) Gastric Cancer (excluding junctional)

Gastric Cancer Trends

The following report looks at 263 new gastric cancer patients diagnosed and/or treated in SJH 2013-2017.

Table 2.3.5 Clinical staging

CLINICAL STAGE	OCCURRENCES	PERCENT
HGD	13	5%
Stage 1	42	16%
Stage 2	74	28%
Stage 3	36	13%
Stage 4	86	33%
Unable to assess	12	5%

The most common morphology was adenocarcinoma, accounting for 85% of all tumours. 51% of patients (n=134) were treated with curative intent.

Table 2.3.6 Treatment received in SJH for Gastric Cancer

TREATMENT RECEIVED IN SJH FOR GASTRIC CANCER	OCCURRENCES*	PERCENT
Curative Surgery	100	**38%**
Palliative Surgery	16	**6%**
Neo-adjuvant treatment **	68	**26%**
Adjuvant treatment	13	**5%**
Endomucosal Resection (EMR)	16	**6%**
Radiofrequency Ablation	1	**<1%**
Palliative Chemotherapy	35	**13%**
Palliative Radiotherapy	7	**3%**

*Please note patients may have more than one treatment

**Neo-adjuvant number includes patients whose treatment was shared between centres

Table 2.3.7 pathological Stage (n=94)

PATHOLOGY STAGE	OCCURRENCES	PERCENT
Stage 0/HGD	6	7%
Stage 1	35	37%
Stage 2	18	19%
Stage 3	33	35%
Stage 4	2	2%

Survival

The overall gastric cancer survival rate at 5 years is 28%. This rate includes gastric cancers diagnosed at all stages and treatment intents. For patients treated with curative intent (n=134), the following graph shows actual survival, with 3 year survival at 59%. This rate is comparable to the UK's 3 year survival of 51% for curative intent patients, published in their National Oesophago-gastric Cancer Audit 2016[3].

Figure 2.3.4 Curative intent Gastric Cancer survival

OVERALL SURVIVAL (95% CI), N=134	
1-year	89.1% (83.8, 94.6)
3-year	58.9% (49.7, 69.8)
5-year	54.5% (44.6, 66.7)

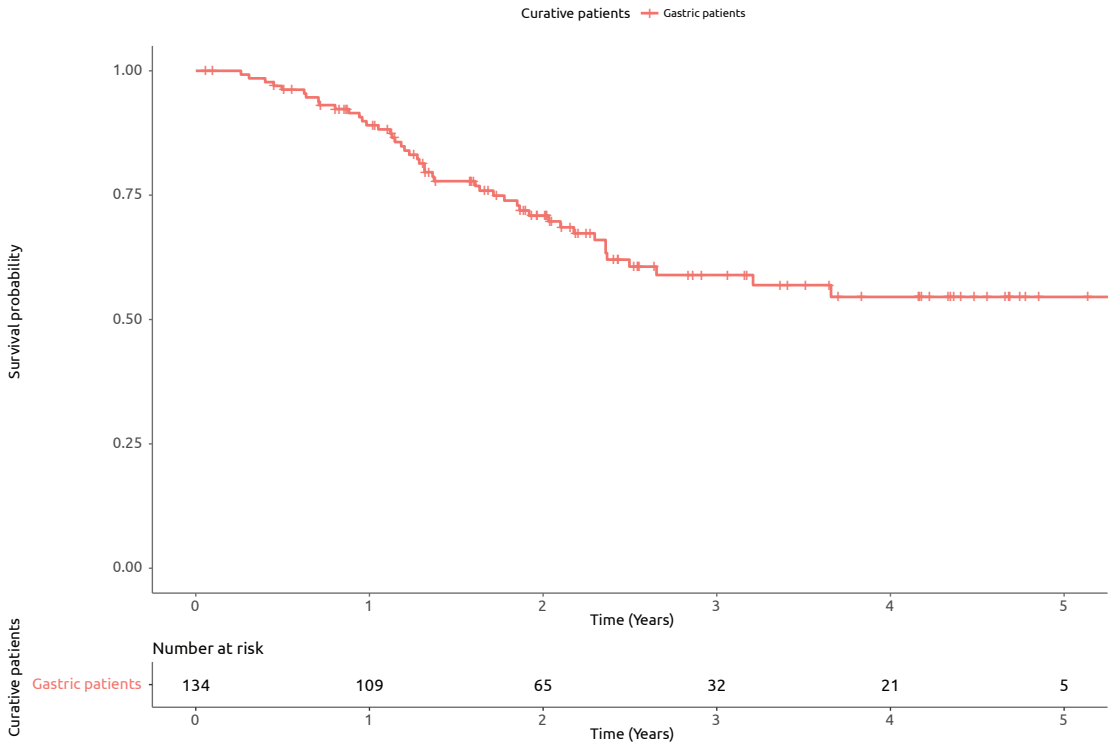
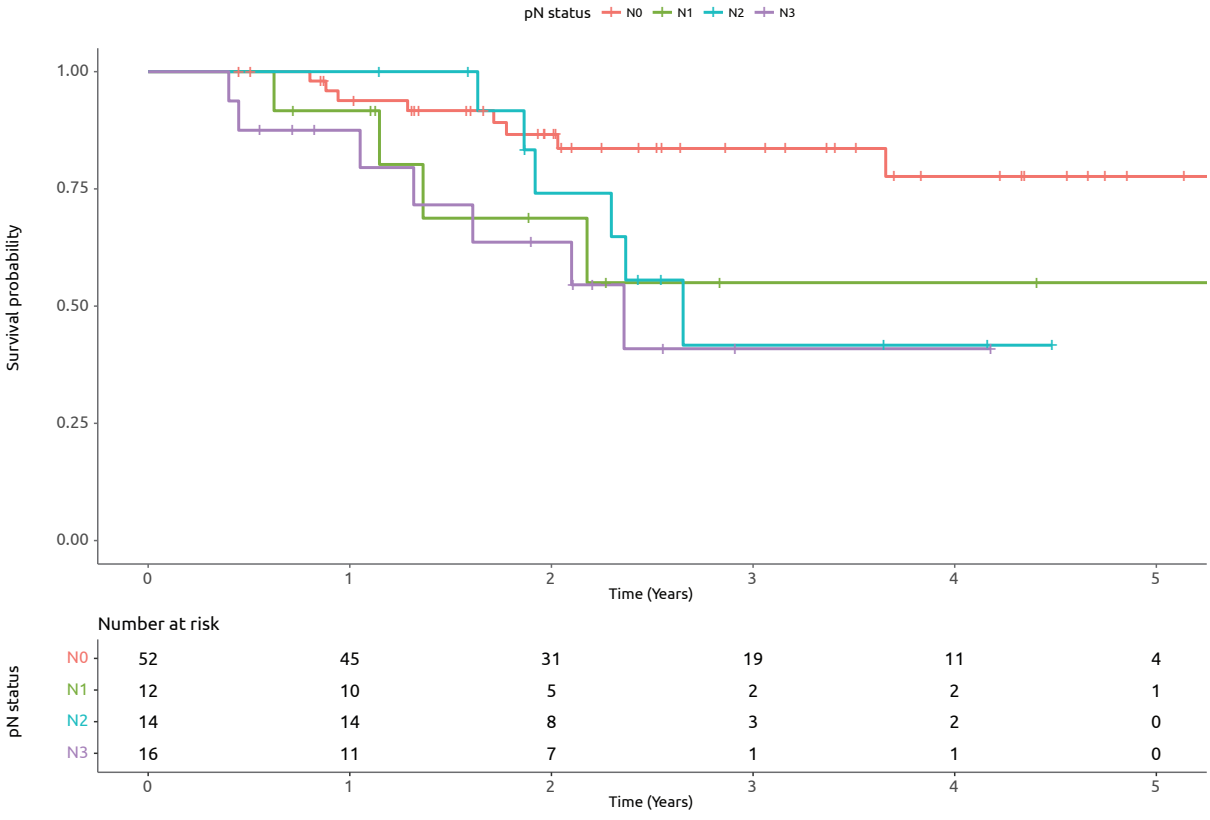


Figure 2.3.5 Gastric Cancer survival by Nodal stage

PATHOLOGICAL STAGE	NUMBER OF EVENTS	MEDIAN OS (YEARS)	1-YEAR OS %	3-YEAR OS
N0/Nx	8	NR (NR, NR)	93.8 (87.3, 100)	83.6 (73.1, 95.7)
N1	4	NR (1.36, NR)	91.7 (77.3, 100)	55 (29.7, 100)
N2	6	2.65 (2.3, NR)	100	41.7 (19.2, 0.9)
N3	7	2.36 (1.6, NR)	87.5 (72.7, 100)	40.9 (19.1, 87.4)

NR=Not reached



This report highlights excellent outcomes for node negative cancer

4. Gynaecological Cancer

Gynaecological cancer care at SJH is accredited by the NCCP as a referral centre for the care of women with all genital tract malignancies, and as a specialist centre for vulval cancer and exenterative surgery. The gynaecological surgical facility at SJH is now dedicated exclusively to the provision of care for women with cancer, including gynaecological disease arising in women with other cancers, and women with complex benign gynaecological diagnoses. This arrangement has been facilitated by agreement with the Coombe Women's & Infants' University Hospital (CWIUH) and Tallaght Hospital, and a robust referral mechanism has been developed. The Colposcopy service, directed by Dr Tom D'Arcy, is located at CWIUH & Tallaght Hospital. The gynaecological cancer care programme is based around a weekly multidisciplinary conference that is attended by all relevant specialists.

The Oncology Division has five subspecialist trained gynaecological oncologists, namely Dr. Noreen Gleeson, Dr. Tom D'Arcy, Dr Waseem Kamran, Dr Feras Abu Saadeh, and Dr Claire Thompson. Minimal access (laparoscopic) approach to surgery and sentinel node mapping are available. The gynaecological oncologists are subspecialist trainers and the training programme is approved by the Royal College of Obstetricians & Gynaecologists (RCOG). SJH is the only unit in the Republic of Ireland that is RCOG accredited for senior fellowship training. The large case volume and complex clinical caseload in a multidisciplinary setting provide a high quality training framework. The gynaecological oncology division also supports the breast/ovary genetic and family risk clinic with a risk reduction surgical service.

The specialist medical oncologist is Dr. Dearbhaile O'Donnell. There is an active clinical trials portfolio with dedicated research nurses. Molecular diagnostics are provided by the Centre for Molecular Diagnostics (CMD), enabling personalised and targeted treatment. Specialist radiation oncologist care is led by Dr. Charles Gillham. There are three clinical nurse specialists (CNS) in gynaecological cancer care (Ms Debra McKnight, Ms. Ciara Donohoe, and Ms. Elaine Gray). The Data Manager is Ms. Therese Brown.

Research is undertaken in conjunction with Clinical Trials Ireland/ GCIG for clinical trials and Trinity College for basic science/laboratory projects. The basic science facilities are directed by Professor John O'Leary, Dr Lucy Norris & Dr Sharon O'Toole. The research activity includes gynaecological cancer biology, pathology, coagulation, genomics and oncometabolomics.

Table 2.4.1 Gynaecological Cancer MDT discussion

2013	2014	2015	2016	2017
100%	100%	100%	99.10%	100%

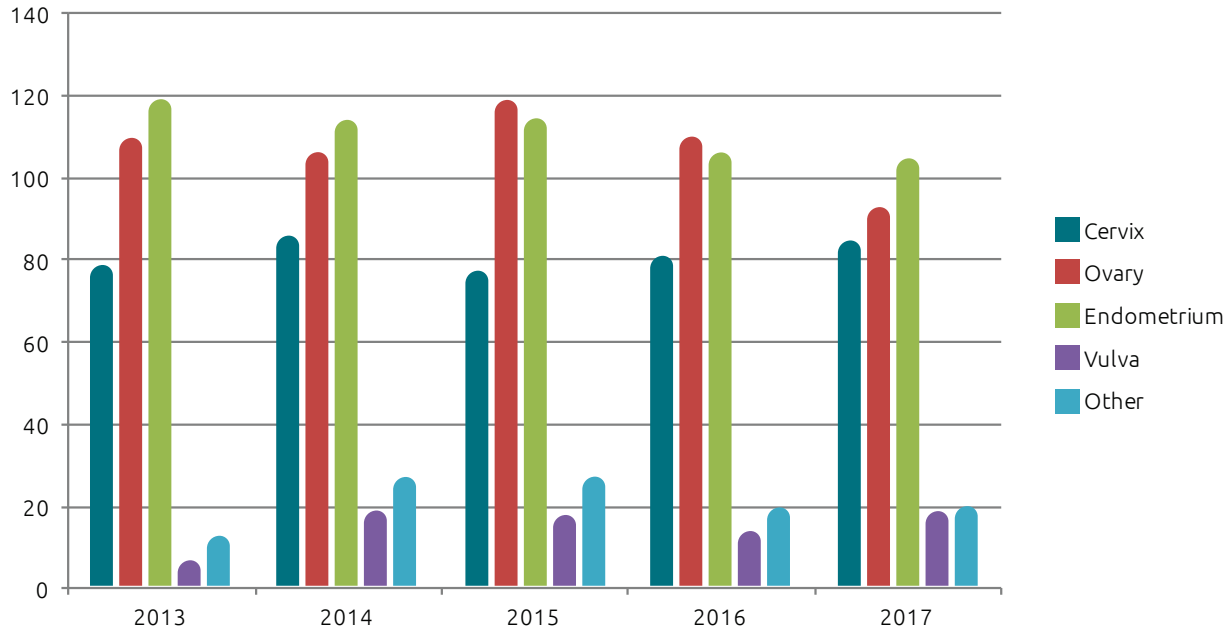
Gynaecological Cancer Trends

There were 1,655 new patients with gynaecological cancer diagnosed and/or treated in SJH during the period 2013 to 2017. This figure includes 33 patients with more than one tumour site, and 62 patients for second opinion or discussion at MDT only. During the five year period of this report, there has been an 18% percent increase in the gynaecological oncology service workload when compared to the latter five years (2008-2012) of the previous audit report.

(See Figure 2.4.1 and Table 2.4.2)

The following is a breakdown by tumour site for the years 2013 to 2017. There were 33 patients with two tumour sites. The 1655 newly diagnosed patient's tumour sites are divided as follows.

Figure 2.4.1 Gynaecological Cancers by Tumour Site



33

patients with more than one tumour site

62

patients for second opinion or discussion at MDT only

There were 1655 new patients with gynaecological cancer diagnosed and/or treated in SJH during the period 2013 to 2017.

Table 2.4.2 SJH 5 year Gynaecological Cancer by tumour site

TUMOUR SITE	2013	2014	2015	2016	2017	TOTAL
Cervix	79	86	77	81	85	**408**
Ovary	110	106	119	110	93	**538**
Endometrium	119	114	114	106	105	**558**
Vulva	7	19	18	14	19	**77**
Others	13	27	27	20	20	**107**
Total	338	352	355	331	322	**1688**

Table 2.4.3 SJH figures as a percentage of national gynaecological malignancies

TUMOUR SITE	2013	2014	2015
Cervix	29%	31%	**32%**
Ovary	31%	25%	**30%**
Endometrium	26%	23%	**25%**
Vulva	16%	37%	**30%**

SJH continues to account for a significant amount of the national workload with approximately 30% of all gynaecological malignancies diagnoses or treated in SJH[1].

Table 2.4.4 Treatment Details

Cancer treatments for patients in 2014 are summarised below for each tumour site

Cervix (n= 86)	Occurrences	Percent
None	6	7.0
Surgery Only	27	31.4
Surgery with adjuvant Chemotherapy	1	1.1
Surgery with adjuvant Radiotherapy	4	4.7
Surgery with adjuvant Chemoradiotherapy	11	12.8
Radiotherapy	8	9.3
Chemotherapy	1	1.1
Palliative Care / Best Supportive Care	3	3.5
Chemoradiotherapy	24	28.0
Unknown	1	1.1
Ovary (n= 106)	**Occurrences**	**Percent**
None	9	8.5
Surgery Only	40	37.7
Surgery with adjuvant chemotherapy	27	25.5
Surgery with adjuvant radiotherapy	3	2.8
Surgery with adjuvant chemoradiotherapy	2	1.9
Chemotherapy	5	4.7
Palliative care / best supportive care	2	1.9
Primary Chemotherapy with adjuvant Surgery	18	17.0
Unknown	0	0
Endometrial (n= 114)	**Occurrences**	**Percent**
None	6	5.3
Surgery Only	43	37.7
Surgery with adjuvant chemotherapy	4	3.5
Surgery with adjuvant radiotherapy	34	29.8
Surgery with adjuvant chemoradiotherapy	13	11.4
Radiotherapy	2	1.8
Chemotherapy	5	4.4
Palliative care / best supportive care	5	4.4
Primary Chemotherapy with adjuvant Surgery	1	0.9
Unknown	1	0.9
Vulva (n= 19)	**Occurrences**	**Percent**
None	2	10.5
Surgery Only	14	73.7
Surgery with adjuvant radiotherapy	2	10.5
Chemoradiotherapy	1	5.3

Cervix Uteri

There were 408 new cervical cancers diagnosed in this period. The median age was 54 and the age range was from 15 to 93 years.

Table 2.4.5 Cervical Cancer– morphology

MORPHOLOGY TYPE	PERCENT
Squamous Cell	75
Adenocarcinoma	15
Adenosquamous	5
Other/Unknown	5

Uterine / Endometrial Cancer

There were 558 new endometrial (uterine corpus) cancers diagnosed in this period. The median age was 60 and the age range was from 28 to 91 years.

Table 2.4.6 Endometrial/uterine Cancer – morphology

MORPHOLOGY TYPE	PERCENT
Endometroid Adenocarcinoma	72
Serous	12
Sarcoma/Carcinosarcoma/Leiomyosarcoma	12
Other/ Unknown	4

Ovarian Cancer

There were 538 new ovarian cancers diagnosed in this period, including 118 borderline tumours. The median age was 54 and the age range was from 15 to 93 years.

Table 2.4.7 Ovarian Cancer morphology

MORPHOLOGY TYPE	PERCENT
Endometroid	10
Serous	47
Borderline	22
Clear Cell	4
Other/ Unknown	17

Vulval Cancer

There were 77 new vulval cancers diagnosed in this period. The median age was 62 and the age range was from 33 to 93 years.

Table 2.4.8 Vulval Cancer – morphology

MORPHOLOGY TYPE	PERCENT
Squamous Cell Carcinoma	88
Melanoma	6
Other/ Unknown	6

There were 538 new patients with ovarian cancers diagnosed in this period, including 118 of which were borderline.

Outcomes and survival analysis by tumour site

Cervical Cancer

Figure 2.4.2 Overall survival cervical cancer (n=408)

OUTCOME	RESULTS	95% CI
Median Survival (years)	NR	NR, NR
1-year OS %	87.0%	83.4, 90.7
3-year OS %	77.1%	72.1, 82.4
5-year OS %	65.5%	56.5, 76.0

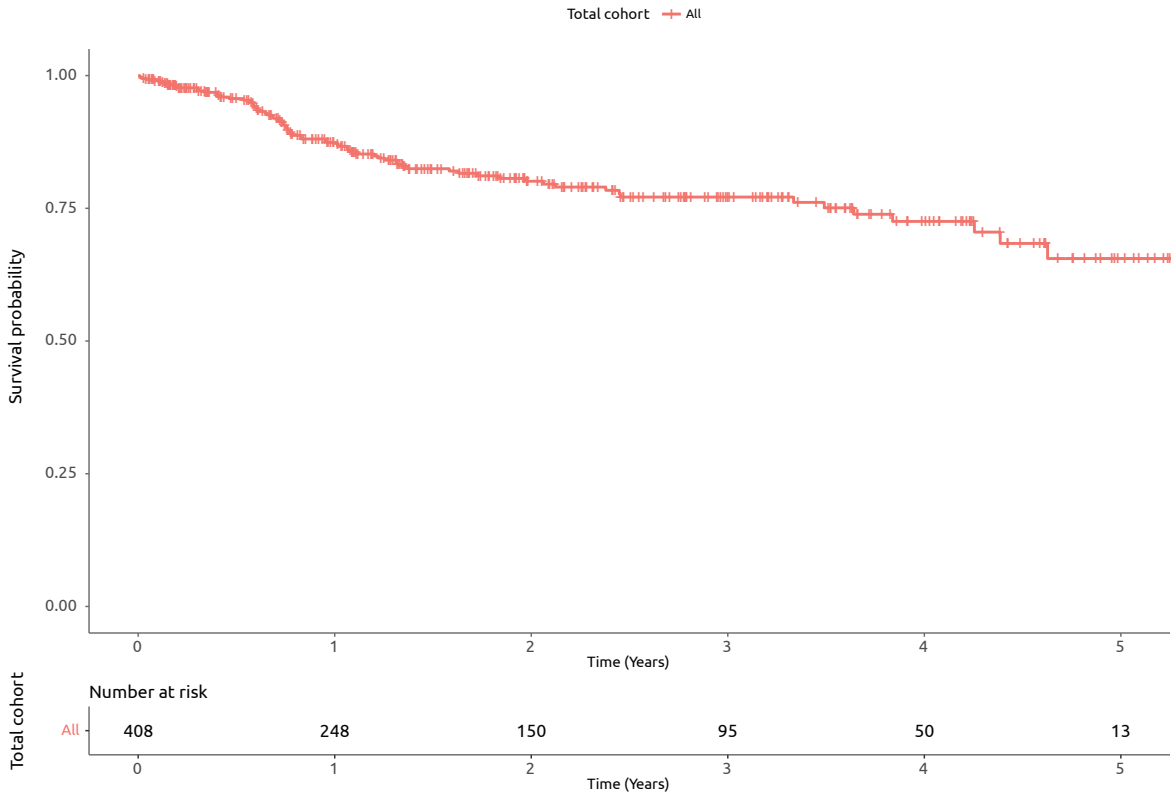


Figure 2.4.3 Cervical Cancer: Overall survival cervical cancer by clinical stage

CLINICAL STAGE	N DEATHS	MEDIAN OS (YEARS, 95% CI)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
I	19	NR (NR, NR)	93.6% (89.9, 97.5)	86.4% (80.2, 93.0)	76.2% (62.9, 92.2)
II	9	NR (NR, NR)	94.9% (90.2, 99.9)	90.1% (83.3, 97.4)	82% (70.4, 95.5)
III	25	1.83 (0.95, NR)	62.2% (48.7, 79.4)	40.2% (26.6, 60.7)	12.6% (2.6, 61.8)
IV	17	1.01 (0.72, NR)	47.2% (30.7, 72.6)	NS	NS

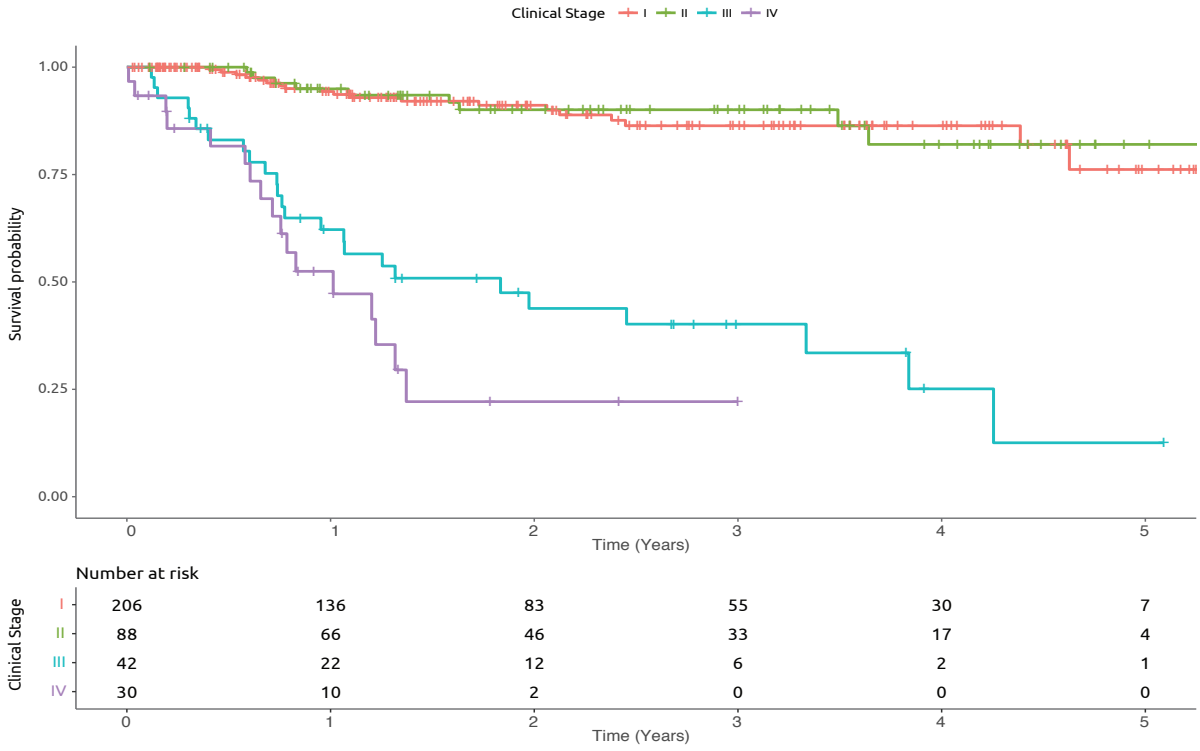
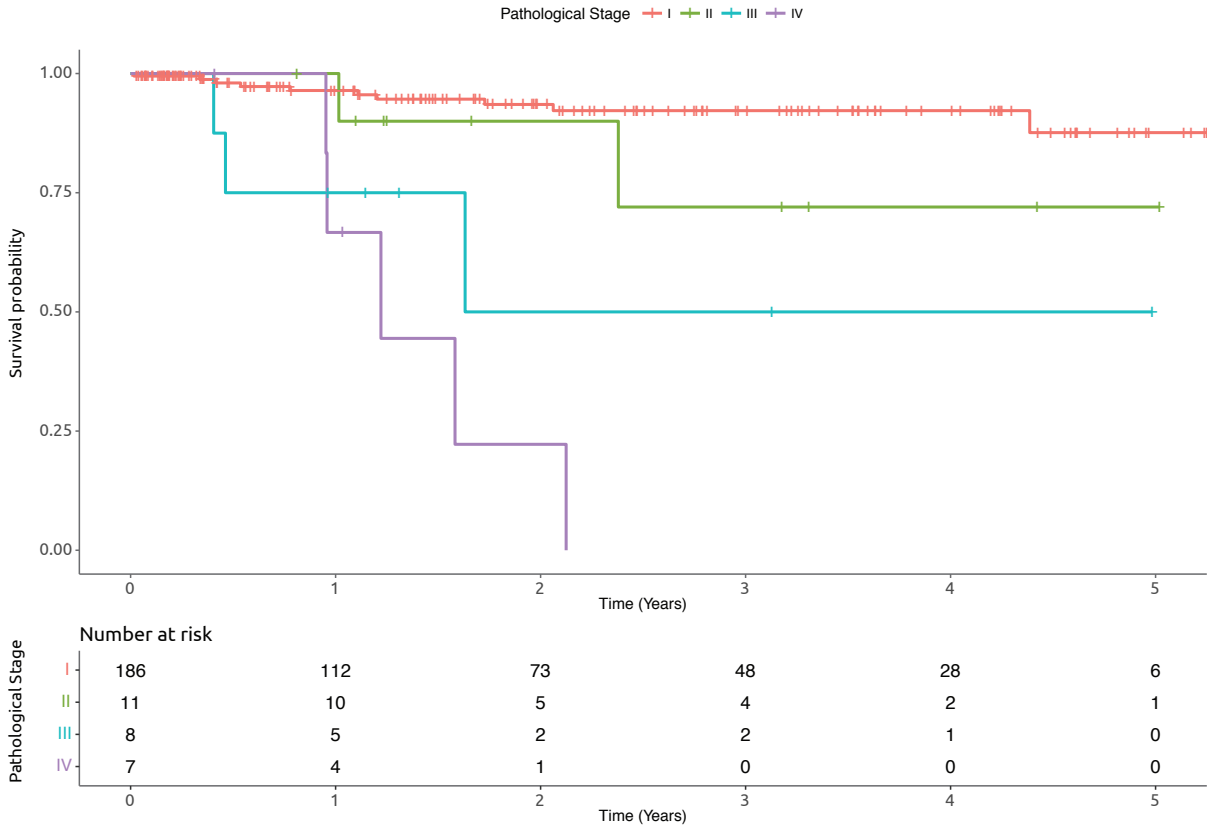


Figure 2.4.4 Cervical Cancer: Overall survival cervical cancer by pathological stage

PATH STAGE	N DEATHS	MEDIAN OS (YEARS, 95% CI)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
I	10	NR (NR, NR)	96.4% (63.4, 99.6)	92.2% (87.3%, 97.4%)	87.6% (78.1, 98.2)
II	2	NR (2.4, NR)	100%	72.0% (44.4, 100)	72% (44.4, 100)
III	3	1.63 (1.63, NR)	75.0% (50.3, 100)	50.0% (20.4, 100)	NA
IV	5	1.22 (0.96, NR)	66.7% (37.9, 100)	0%	NA



Endometrial / Corpus Uteri

Figure 2.4.5 Overall survival endometrial/corpus cancer (n=558)

OUTCOME	RESULTS	95% CI
Median survival (years)	NR	NR, NR
1-year OS %	90.5%	87.9, 93.1
3-year OS %	79.5%	75.5, 83.8
5-year OS %	72.9%	65.9, 80.7

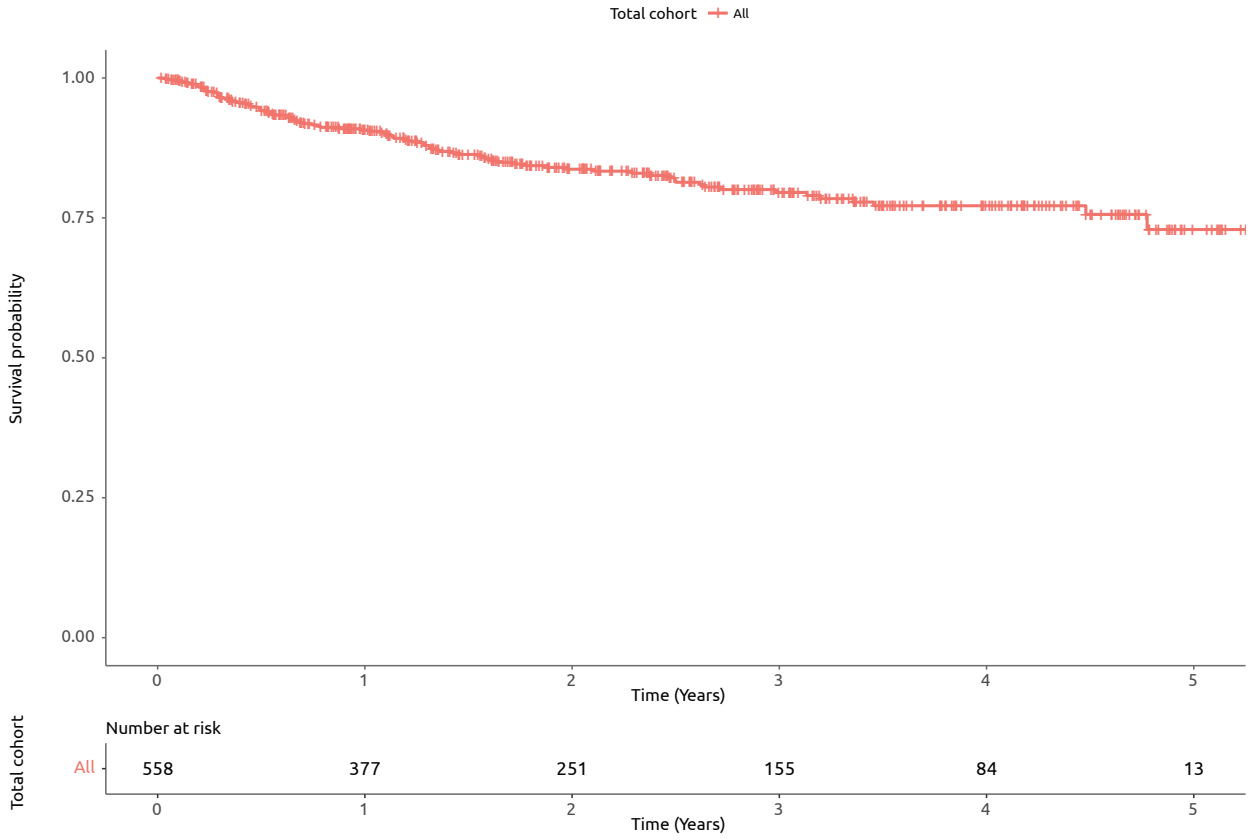
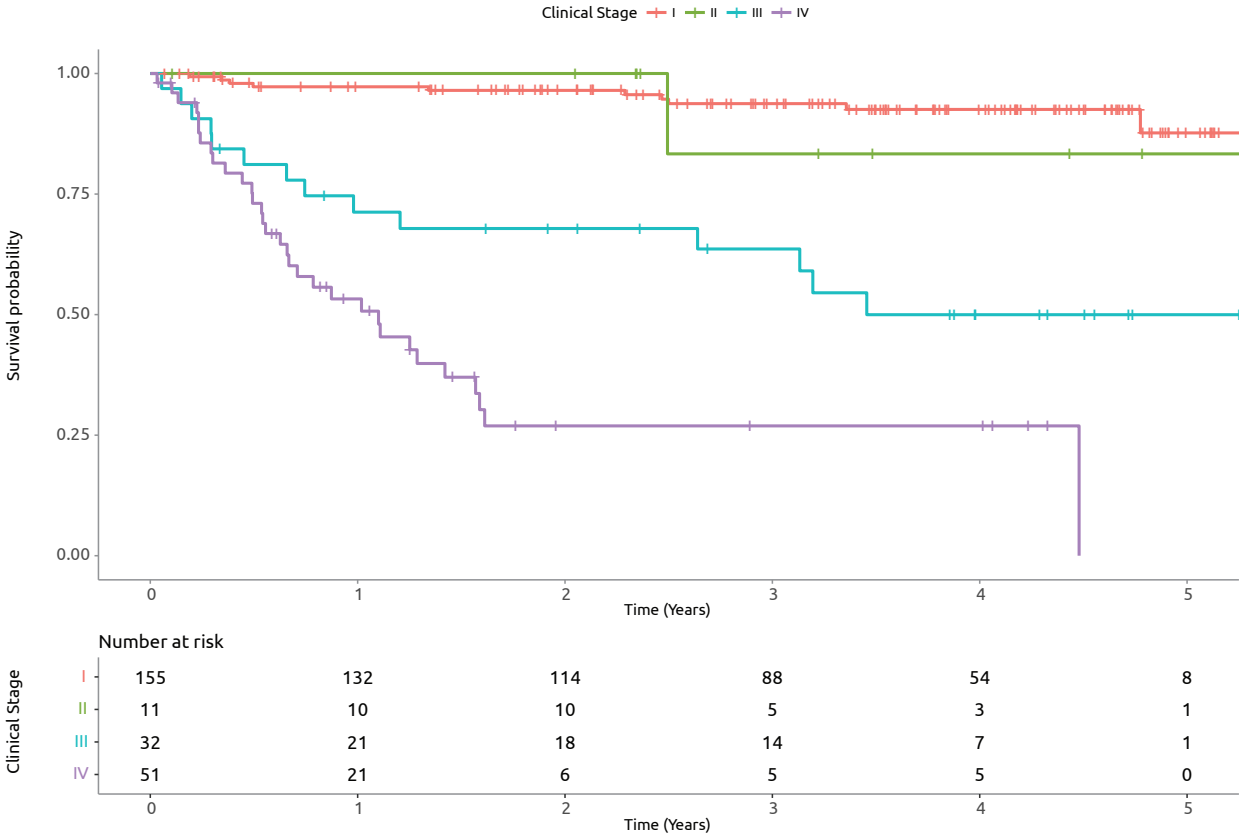


Figure 2.4.6 Endometrial Cancer: Overall survival by tumour stage

STAGE	N DEATHS	MEDIAN OS (YEARS, 95% CI)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
I	10	NR (NR, NR)	97.2% (94.6, 99.9)	93.8% (89.6, 98.1)	87.7% (77.9, 98.7)
II	1	NR (NR, NR)	100%	83.3% (58.3, 100)	83.3% (58.3, 100)
III	14	3.46 (2.64, NR)	71.2% (57.0, 89.1)	63.6% (48.4, 83.6)	50% (33.9, 73.6)
IV	32	1.10 (0.66, 1.59)	50.7% (38.1, 67.5)	26.9% (15.7, 46.1)	NS



Ovarian

Figure 2.4.7 Overall survival ovarian cancer

OUTCOME	RESULTS	95% CI
Median survival (years)	4.26	3.24, NR
1-year OS %	81.6%	77.8, 85.6
3-year OS %	56.8%	51.2, 63.1
5-year OS %	41.2%	30.7, 55.3

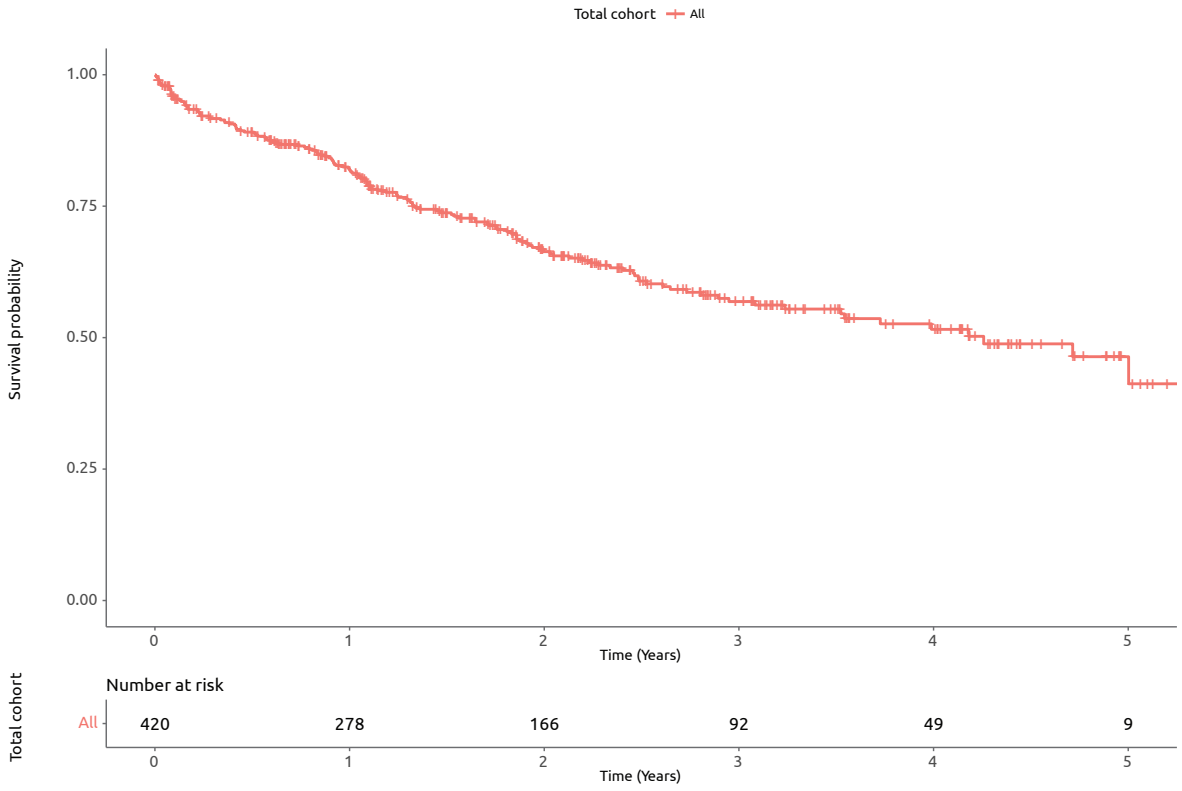
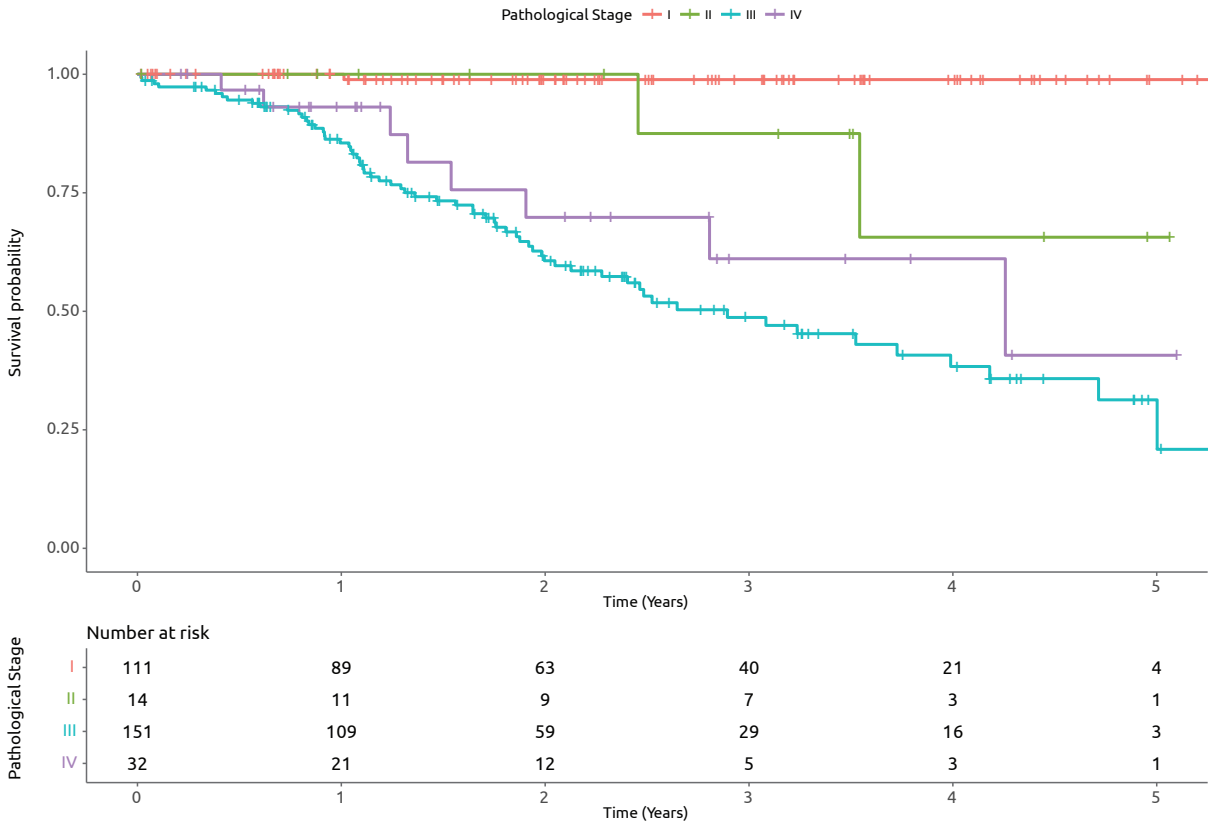


Figure 2.4.8 Ovarian Cancer: Overall survival by pathological stage

STAGE	N DEATHS	MEDIAN SURVIVAL (YEARS, 95% CI)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
I	1	NR (NR, NR)	100%	98.8% (96.7, 100)	NS
II	2	NR (3.54, NR)	100%	87.5% (67.3, 100)	65.6% (35.2, 100)
III	65	2.89 (2.28, 4.18)	85.5% (79.8, 91.6)	48.7% (39.6, 59.9)	20.9% (8.46, 51.5)
IV	8	4.26 (2.81, NR)	93.1% (84.3, 100)	61.1% (41.0, 91.0)	40.7% (16.7, 99.5)



Vulval Cancer

Figure 2.4.9 Overall survival vulval cancer

OUTCOME	RESULTS	95% CI
Median Survival (years)	NR	NR, NR
1-year OS %	84.2%	75.6, 93.8
3-year OS %	71.2%	59.1, 85.6
5-year OS %	71.2%	59.1, 85.6

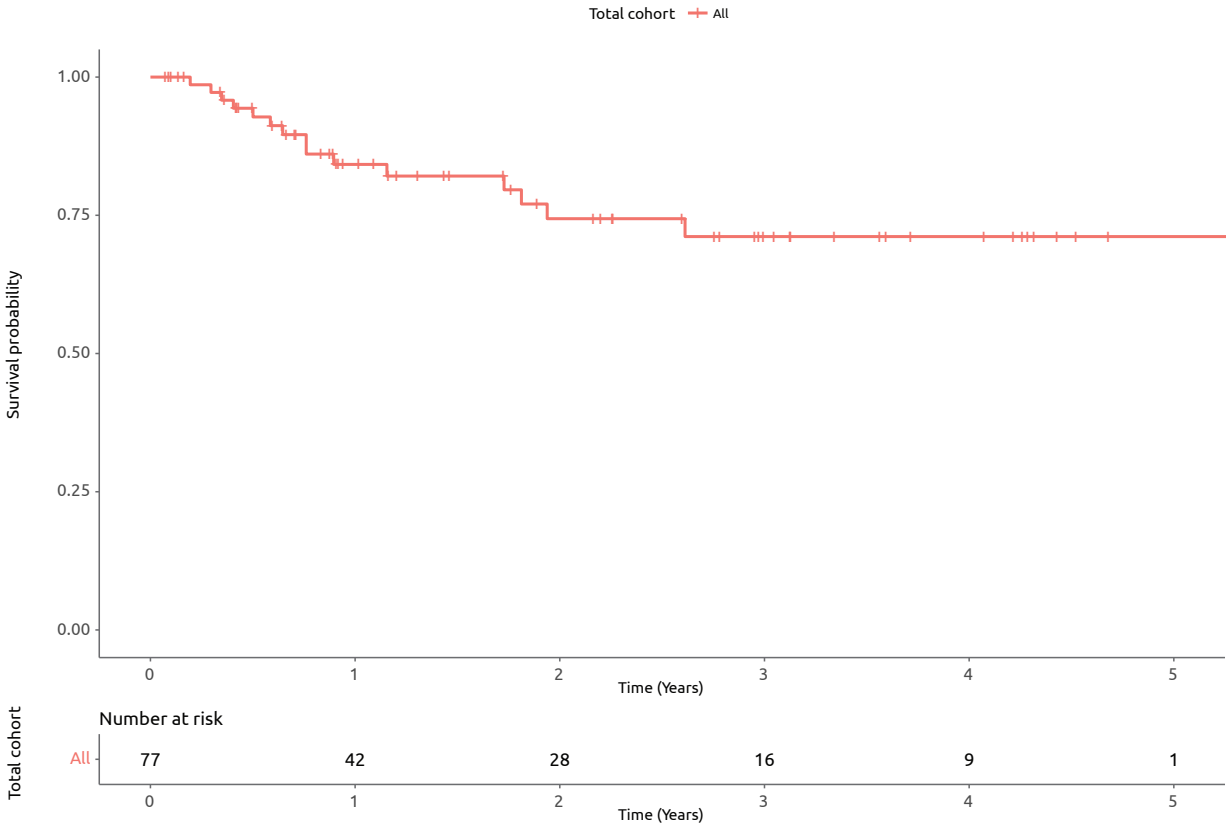
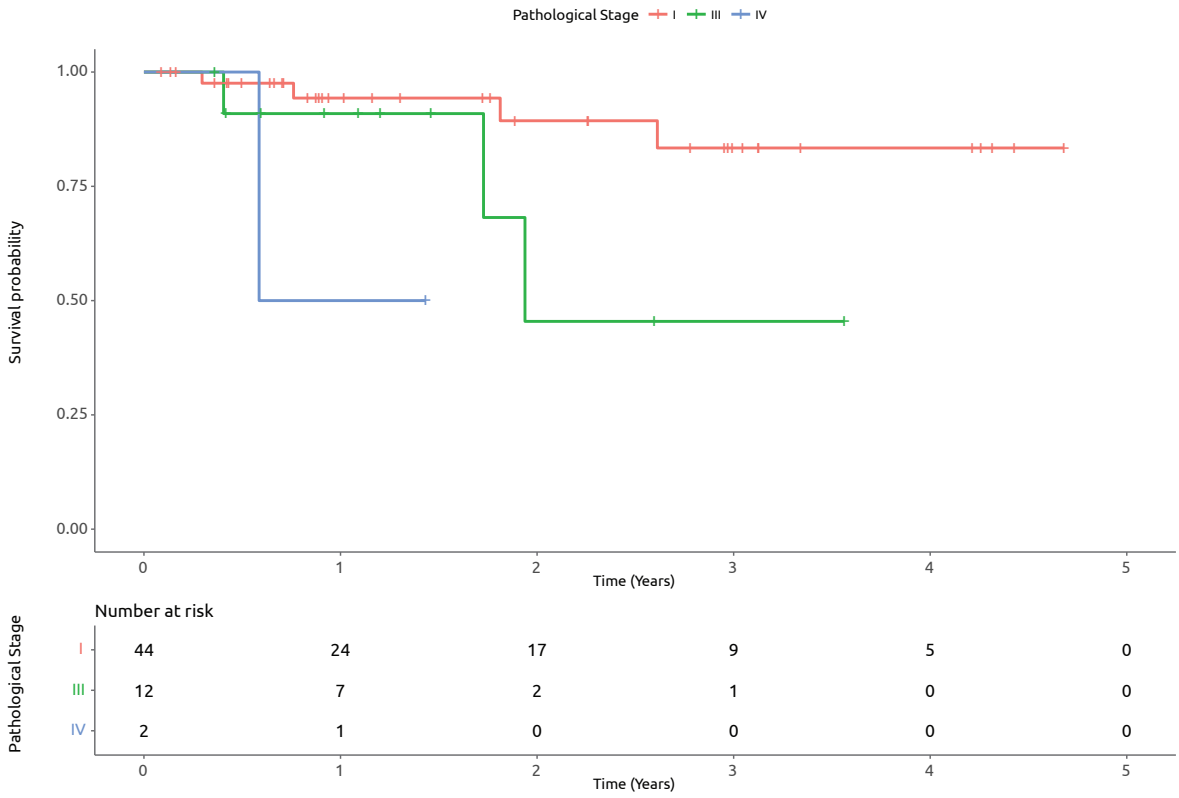


Figure 2.4.10 Vulval Cancer: Overall survival by pathological stage

STAGE	N DEATHS	MEDIAN OS (YEARS, 95% CI)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
I	4	NR (NR, NR)	93.1% (84.3, 100)	88.4% (76.8, 100)	NS
III	3	1.94 (1.73, NR)	66.7% (30.0, 100)	33.3% (6.73, 100)	NS
IV	1	0.59 (0.59, NR)	66.7% (30.0, 100)	33.3% (6.73, 100)	NS



5. Breast Cancer

Background

- St. James's Hospital Breast Unit was designated as one of the eight specialist centres for Symptomatic Breast Disease Services in Ireland by the NCCP in 2007. This has led to an increase in the catchment area size and has resulted in a substantial increase in referrals into the service over the past number of years.
- The Breast Care Unit at SJH provides services to patients with symptomatic breast disease, including breast cancer. The specialist breast MDT includes surgeons (Mr Dhafir Alazawi, Mr Terence Boyle, Ms Elizabeth Connolly, Ms Claragh Healy and Mr David O'Donovan) radiologists (Dr Susannah Harte, Dr Mark Knox, Dr Ronan McDermott, Dr Sylvia O'Keefe and Dr Graham Wilson) pathologists (Dr Barbara Dunne, Dr Aoife Maguire and Dr Ciaran O'Riain), medical oncologist (Prof John Kennedy), radiation oncologists (Dr Sinead Brennan, Dr Fran Duane and Dr Naomi Farrell), geneticists (Prof David Gallagher), and ANP and specialist nurses (Ms Yvonne Hanhauser, Ms Elaine Richardson, Ms Mairead Teague, Ms Fiona Lynch, Ms Alison O'Driscoll, Ms Maeve Stenson, Ms Ann O'Hara, Ms Antonia Tierney, Ms Carmel Nolan, Ms Elizabeth Morrin, Ms Denise Dunne). This team work together in order to ensure patients are seen and investigated promptly and once diagnosed, receive the highest quality of individually planned treatment and care.
- In addition, SJH provides a high risk surveillance programme to women at increased risk of breast cancer either due to a family history of this disease or other risk factors such as previous high dose radiation exposure. This high-risk clinic encompasses scoring systems based on their family history to identify those who require intensive breast surveillance and/or genetic testing via the Medical Genetics Department led by Prof. David Gallagher. Depending on the level of risk identified, these patients are entered into a surveillance programme using a combination of clinical exam, mammogram and with the addition of breast MRI in those with identified high risk mutations e.g. BRCA1/ BRCA 2 gene or equivalent risk. The option of prophylactic mastectomy and immediate reconstruction is discussed with the gene positive women.
- There is a high risk breast cancer MDT run monthly which includes surgeons, radiologists, a geneticist, genetic nurse counsellors and breast care nursing team.

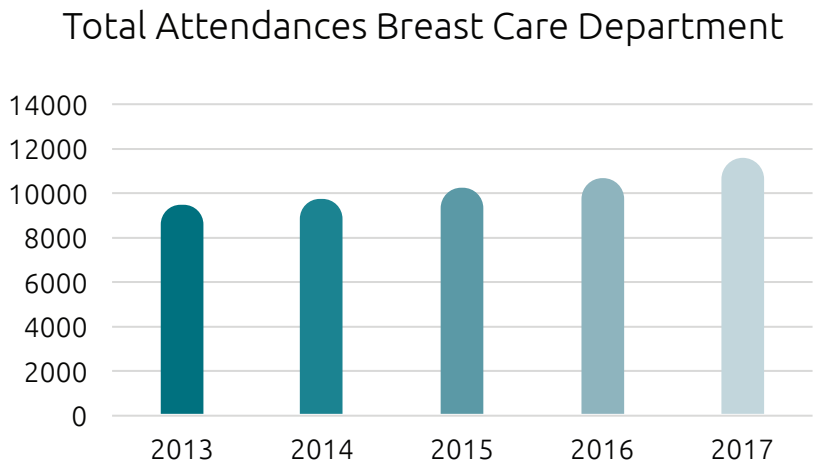
Structure

- Consultant led triple assessment clinics, review clinic, diagnosis clinics, post-operative clinic, and family risk clinics.
- Prompt access to all required diagnostic services and treatments.
- A team of specialist breast care nurses who attend all the clinics and are available to answer patient queries or concerns directly.
- Weekly MDT meetings, where each patient's management plan is discussed and agreed.
- Monthly high- risk MDT discussion of patients with strong family histories.
- Direct referral service to specialist medical oncologists, radiation oncologists, breast reconstructive surgeons, specialist genetic service and a well-established psycho-oncology service.
- Access to a range of physical and psychological support services.
- Dedicated genetic risk assessment and counselling service.

Breast Care Trends

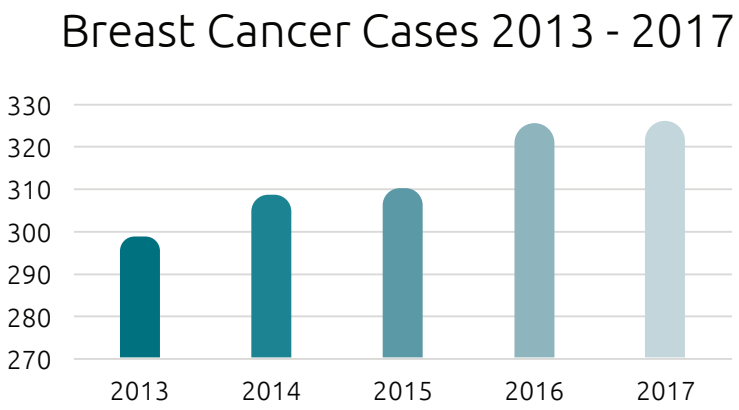
This report examines the details of 1,565 patients with breast cancer managed at SJH from 2013 to 2017. On average, 3,141 women are diagnosed with breast cancer annually in Ireland[1]. SJH manages approximately 10% of the national breast cancer workload, consistent with the workload seen in the 10 year audit report[4] (2003-2012). In Figure 2.5.1, the breast clinic activity by year at SJH over this five year period is shown. Activity has continued to increase, with a 60% increase in clinic activity when compared to 2008-2012, and 11,569 patients were assessed in 2017.

Figure 2.5.1 St James's Hospital Breast Clinic activity 2013-2017



	2013	2014	2015	2016	2017
Activity	9481	9755	10210	10642	11569

Figure 2.5.2 St James's Hospital Breast Cancer New Diagnoses



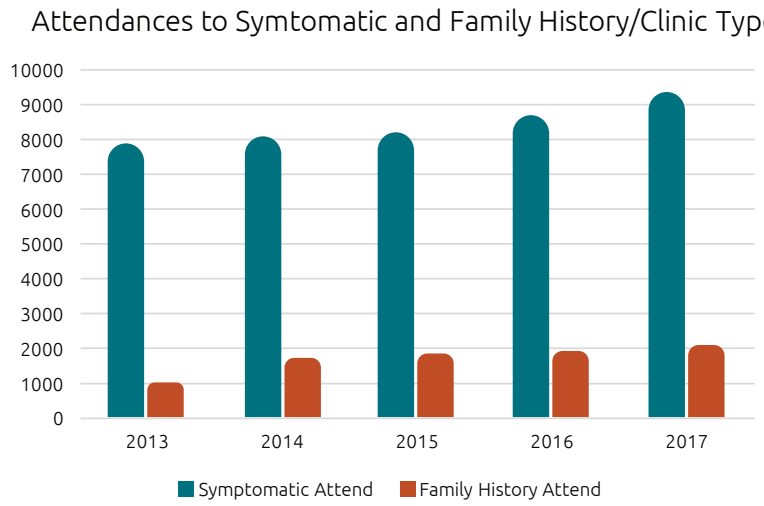
	2013	2014	2015	2016	2017
Breast Cancers	298	308	310	324	325

Figure 2.5.2 illustrates breast cancer activity by year at SJH over this time period. There has been a 29% increase in cancer cases during this period of time (compared with 2008-2012)[4].

There has been a 29% increase in cancer cases during this period of time (compared with 2008-2012)[4].

Figure 2.5.3 Family risk Clinic activity

The increase in activity in the family risk clinics from 2013 is shown in Figure 2.5.3



	2013	2014	2015	2016	2017
Symptomatic Attendance	7888	8078	8217	8711	9360
Family History Attendance	1045	1737	1893	1912	2102

Age and Gender

98.9% of cases were female, 1.1%male. The mean patient age at diagnosis was 59 years (Table 2.5.1). The age of diagnosis ranged from 22-94 years. 36% of patients diagnosed in SJH were younger than 50.

Table 2.5.1 Age breakdown of breast cancer patients

AGE RANGE	OCCURRENCES	PERCENT
21-50	595	**36**
51-70	564	**35**
Older than 70	472	**29**

Surgery

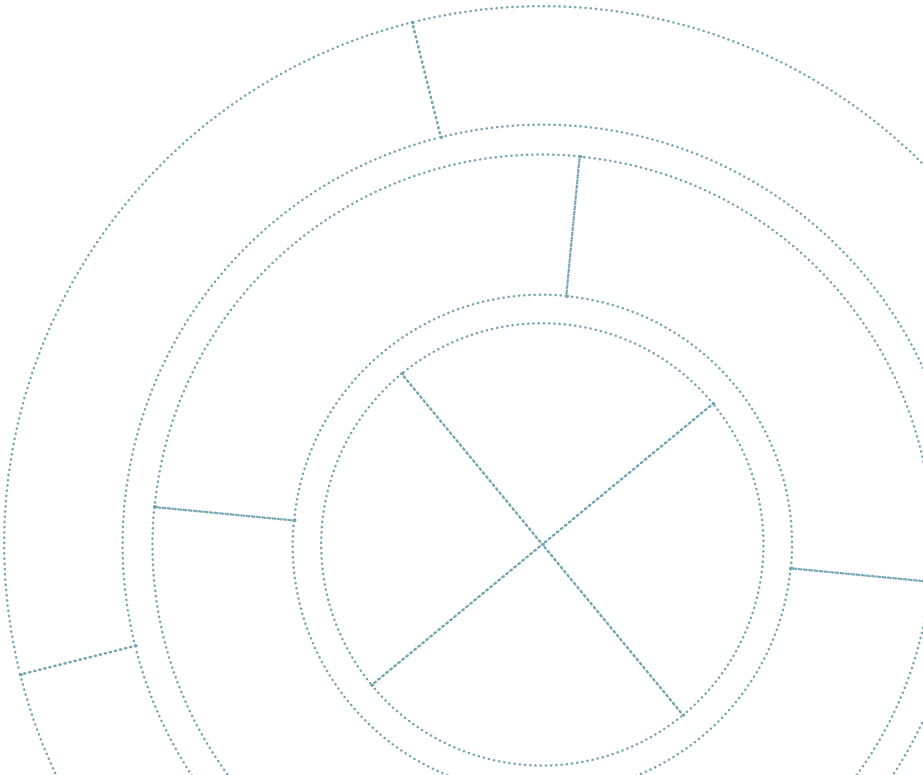
Table 2.5.2 shows the surgeries performed over the audit period. Breast conserving surgery and sentinel node biopsy as primary surgical therapy remain at similar rates compared to 2012. Immediate reconstruction approaches 10%, axillary clearance approximately in one in four patients, and neoadjuvant therapy prior to surgery has increased from 21.29% to 37.27% over this time period, consistent with international trends.

Table 2.5.2 Surgery analyses of breast cancer patients

YEAR	N	PRIMARY BREAST CONSERVING SURGERY	PRIMARY MASTECTOMY	MASTECTOMY WITH IMMEDIATE RECONSTRUCTION	PRIMARY AXILLARY CLEARANCE	PRIMARY SENTINEL NODE BIOPSY	NEOADJUVANT
2013	263	63.88%	24.33%	8.37%	23.95%	73.38%	**21.29%**
2014	256	61.77%	35.69%	4.71%	24.71%	71.76%	**22.75%**
2015	261	56.70%	34.48%	6.51%	23.37%	74.33%	**31.80%**
2016	274	60.95%	28.83%	9.12%	22.63%	72.63%	**40.88%**
2017	271	62.73%	30.26%	7.38%	23.62%	70.85%	**37.27%**

Tumour site and Morphology

The most common tumour site remains the upper outer quadrant of the breast, accounting for 35% of breast cancer sites (Table 2.5.4). Invasive ductal carcinoma remains the most common morphology, accounting for 74% of all breast cancers (Table 2.5.4).



Pathological staging

The pathological stage for all breast cancers post primary surgery and post neo adjuvant treatment is shown in Table 2.5.3. Stage I breast cancer is most common stage post-surgery. Following neoadjuvant therapy, approximately 21 percent of patients achieved a complete pathological response.

Table 2.5.3 Breast cancer pathology stage

	PRIMARY SURGERY	OVERALL %	POST NEO SURGERY	OVERALL %
Stage 0	83	9.08%	85	20.73%
Stage I	348	38.07%	86	20.98%
Stage IIA	258	28.23%	91	22.20%
Stage IIB	139	15.21%	52	12.68%
Stage IIIA	50	5.47%	72	17.56%
Stage IIIB	4	0.44%	3	0.73%
Stage IIIC	16	1.75%	13	3.17%
Stage IV	5	0.55%	8	1.95%

Table 2.5.4 Breast Cancer Morphology and Site

MORPHOLOGY OCCURRENCES 2013-2017			
Answer	**Total**	**Location**	**Total**
Ductal (NOS)	1205	Upper outer	576
DCIS-Non Invasive	905	Upper inner	172
Lobular	232	Lower outer	135
LCIS-Non Invasive	64	Lower inner	61
Mucinous	40	Nipple	13
Papillary	29	Multicentric	29
Tubular/Cribiform	26	Diffuse	8
Metaplastic	16	Other	5
Other	15	Axilla	18
Paget's Disease	9	Central portion of breast	138
Medullary	6	Multifocal	151
Adenocarcinoma	3	Null	316
Phylloides	3		
Micro-invasion	3		
Apocrine	2		
Malignant Phylloides	1		
Small Cell Carcinoma	1		
Not Specified	1		

Table 2.5.5 Management of Breast Cancer

TREATMENT DETAILS	
Adjuvant Radiotherapy & Hormone Therapy	381
Adjuvant Chemotherapy, Radiotherapy & Hormone Therapy	230
Neo-adjuvant Chemotherapy & Adjuvant Radiotherapy & Hormone Therapy	228
Adjuvant Radiotherapy only	91
Primary Hormone Therapy	89
Neo-adjuvant Chemotherapy & Adjuvant Radiotherapy	87
Adjuvant Hormone Therapy	67
Neo-adjuvant Hormone Therapy & Adjuvant Radiotherapy	65
Adjuvant Chemotherapy & Radiotherapy	56
Surgery Only	55
External Treatment	36
No treatment	32
Primary Chemotherapy	27
Primary Hormone Therapy & Radiation	16
Neo-adjuvant Hormone Therapy	15
Adjuvant Chemotherapy & Hormone Therapy	15
Palliative Treatment - Chemotherapy/Radiation/Hormone Therapy	14
Primary Chemotherapy & Radiotherapy	12
Adjuvant Chemotherapy	12
Primary Radiation	11
Patient Declined treatment	7
Primary Hormone Therapy & Chemotherapy	5
Neo-adjuvant Hormone Therapy & Adjuvant Chemotherapy & Radiotherapy	3
Primary Chemotherapy/Hormone Therapy/Radiotherapy	2
Neo-adjuvant Chemotherapy & Adjuvant Hormones	2
Neo-adjuvant Chemotherapy	1
Neoadjuvant Chemotherapy & Adjuvant Radiotherapy & Aduvant Chemotherapy	1
Neo-adjuvant Chemotherapy & Adjuvant Radiotherapy, Hormone Therapy & Chemotherapy	1

Outcomes and survival analysis

Figure 2.5.4 Overall Breast cancer survival

OUTCOME	RESULT	95% CI
Median OS	Not reached (NR)	5.53 NR
1-year OS	95.4%	94.3%, 96.5%
3-year OS	86.5%	84.4%, 88.6%
5-year OS	78.3%	74.4%, 82.3%

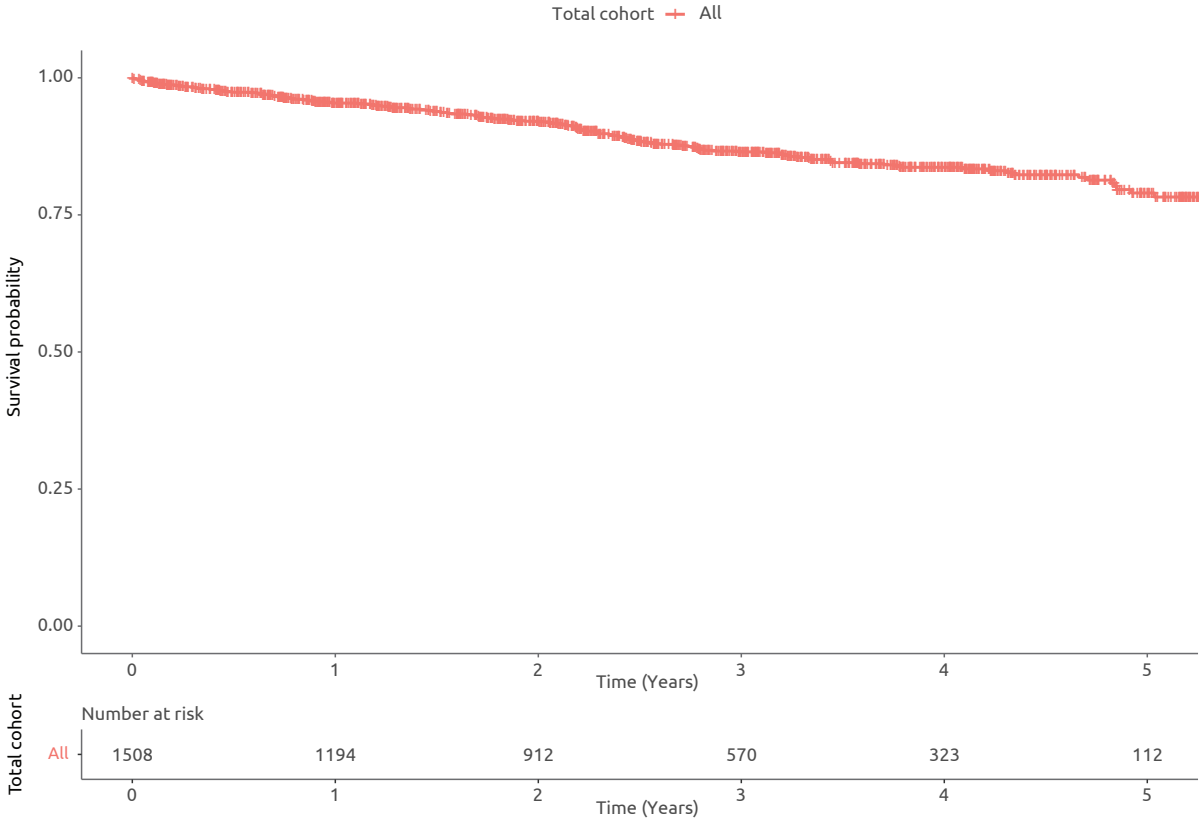


Figure 2.5.5 Breast cancer survival by pathological stage post neoadjuvant therapy.

Out of 410 treated patients, survival outcomes are excellent, with 37 (9%) deaths.

STAGE	N EVENTS	MEDIAN OS (95% CI), YEARS	1-YEAR OS %	3-YEAR OS%	5-YEAR % OS
0	4	NR (NR, NR)	98.7%	92.5%	NA
I	6	NR (NR, NR)	97.3%	86%	NA
II	12	NR (4.85, NR)	98.3%	91.2%	NA
III	14	NR (NR, NR)	97.5%	79.6%	72.4%
IV	1	NR (NR, NR)	100%	100%	NA

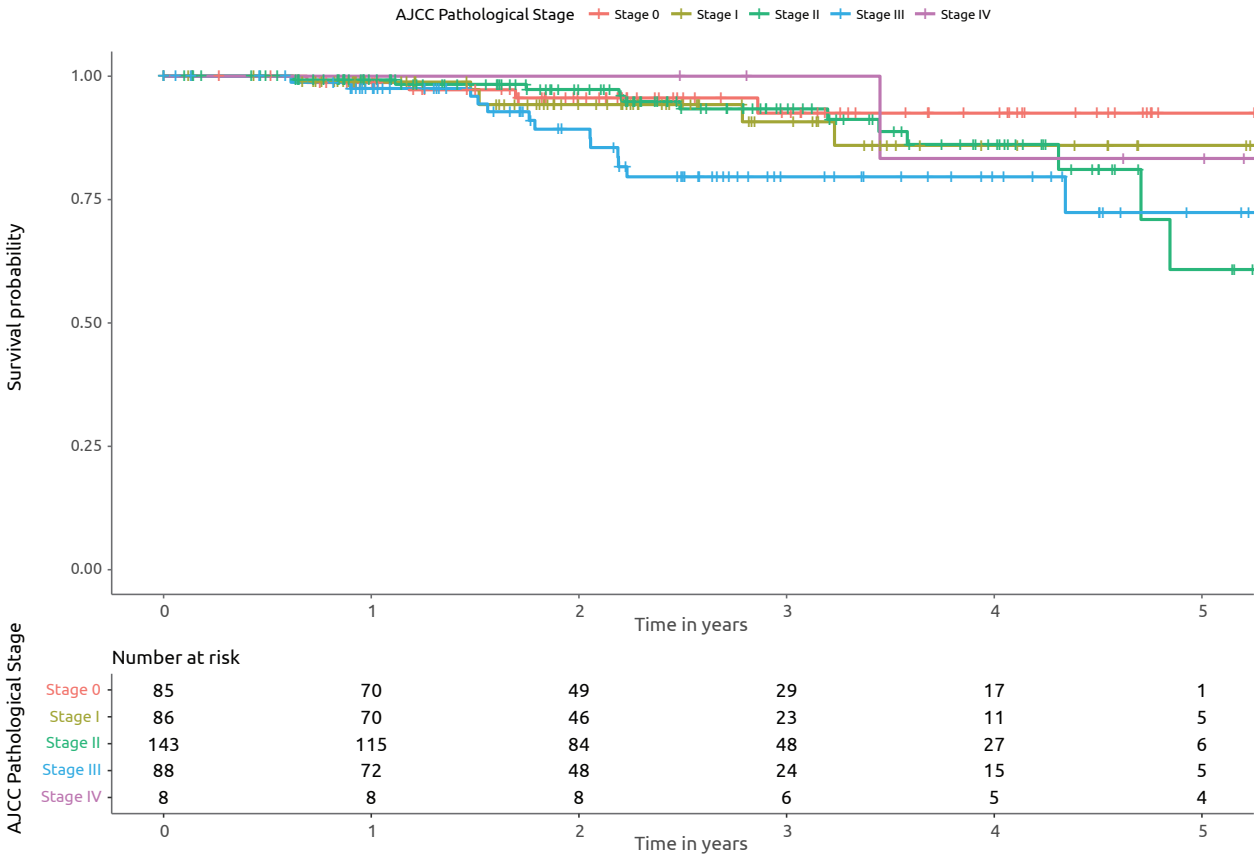
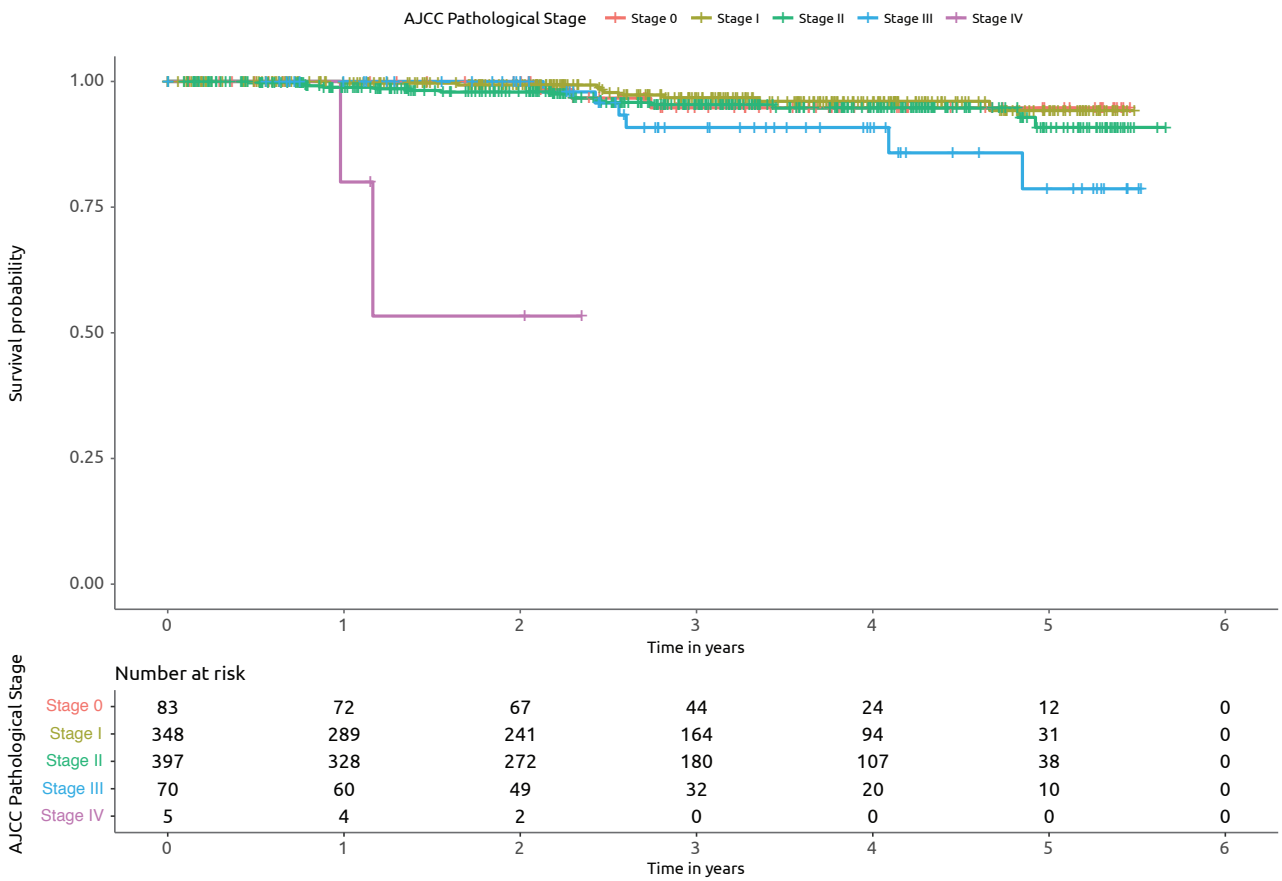


Figure 2.5.6 Breast Cancer survival by pathological stage (surgery as primary treatment)

These data show that in patients treated with curative intent, an actual 3 year survival of 95% is achieved, with a predicted 5 year survival of approximately 90%.

STAGE	N EVENTS	MEDIAN OS	1-YEAR OS %	3-YEAR OS%	5-YEAR % OS
0	3	NR (NR, NR)	100%	94.8%	NS
I	9	NR (NR, NR)	99.7%	96.8%	94.2%
II	16	NR (4.85, NR)	98.5%	95.4%	90.9%
III	6	NR (NR, NR)	100%	90.8%	78.6%
IV	2	NR (1.16, NR)	80%	NS	NS



6. Colorectal Cancer

Background to the Service

- The colorectal service is involved in the management of approximately 10% of the national delivery of service for rectal cancer, and 8% for colon cancer[1].
- There is a well-developed multimodality treatment model for rectal cancer, with integrated staging, treatment planning, audit and follow-up for all patients diagnosed within the Dublin Midlands Hospital Group.
- SJH is a high volume centre for colorectal diseases, with laparoscopic surgery the preferred approach for major resections.
- All colorectal cancer cases are discussed at a weekly MDT conference where the most appropriate treatment modality is proposed for the individual patient.
- SJH rates for sphincter preservation, anastomotic leaks, in-hospital morbidity and mortality, and stage for stage survival are consistent with international benchmarks.
- Standards are defined and linked with the Association of Coloproctology of Great Britain and Ireland (ACPGBI).
- There is close cognate alignment with gynaecology and urological oncology services.
- Lung resections for colorectal metastatic disease are performed at SJH. Liver resections with synchronous colorectal resection are performed at SJH, major liver resections are performed either at The Mater Hospital, or St. Vincent's University Hospital.

Structure

- There are four colorectal Consultant Surgeons (Mr. Brian Mehigan, Mr. Paul McCormick, Mr John Larkin, and Mr Fady Narouz) providing specialised, integrated "single team"care to all in-patients within the SACC Clinical Directorate. Mr Jamie O'Riordan and Mr Dara Kavanagh hold joint SJH and Tallaght University Hospital appointments for rectal cancer surgeries. This team based care includes ward rounds, operating lists and flexible outpatient clinics.
- Three specialist registrars work in a level 3 colorectal training unit approved by the ACPGBI.
- Consultant oncologists, Prof David Gallagher and Prof John Kennedy, provide oncology care for patients with colorectal cancer including involvement in novel chemotherapy and targeted therapy trials. The medical oncology service is also supported by colorectal oncology liaison and research nurses. Radiation oncology is led by Dr. C. Gillham and is also supported by a radiation liaison nurse.
- Specialist histopathology, radiology, interventional radiology, gastroenterology, palliative care, psycho-oncology services are also key to the colorectal programme, and Prof. David Gallagher provides the link to genetic services (Section 3, Chapter 2).
- Full time colorectal nurse co-ordinators, Ms. Delia Flannery and Ms. Katrina O'Connor facilitate the management and support of the colorectal cancer patient as they follow the pathway through referral, diagnosis, treatment and follow-up.
- Audit, research, and KPI reporting are supported by a full time colorectal data manager, Ms. Chris Gleeson.
- There are four Stoma Clinical Nurse Specialists (3 full time equivalents), Ms AnneMarie Stuart, Ms Siobhan McGovern, Ms Catherine Dowling and Ms Laura Duffy. They facilitate the colorectal cancer patients pathway by means of an initial pre operative meeting with stoma siting, education and psychological support. Education and support are continued throughout the patients stay and also following their discharge.
- There are two Palliative Care Consultants, Ms Norma O Leary and Ms Lucy Balding.

Colorectal service Process

- An average of four colorectal outpatient clinics per week.
- An average of five specialised colorectal endoscopy sessions available per week. There are two X-ray rooms to facilitate colonic stenting and one endoscopic ultrasound room.
- There are seven theatre sessions per week and two day surgery sessions per week.
- Access to regular in-patient and outpatient x-ray facilities, including MRI scans CT scans , rectal and anal ultrasound, Barium studies, PET scans and CT colonography are available for colorectal cancer patients. There are two protected CT slots and two protected MRI slots reserved for patients with a suspected cancer diagnosis.

Colorectal services and quality assurance

- Once weekly MDT meetings organised by MDT co-ordinators provide a structured and co-ordinated approach to the delivery of cancer care. The MDT meeting is also attended by a Consultant Liver Surgeon (Mr John Conneally). The meeting has a tele-link with Tullamore General Hospital.
- A full range of open, laparoscopic, and transanal resectional surgery with, where necessary, pouch reconstruction, is practiced in the colorectal unit.
- Colonic stenting is provided as a bridge to surgery for patients presenting with obstructing tumours and for palliation of obstructive symptoms.
- Transanal minimally invasive surgery (TAMIS) has been introduced on a selective basis to complement transanal endoscopic micro-surgery (TEMS) and trans anal excisions.
- A Colorectal Cancer Care Pathway is in place using evidence based research and guidelines from the ACPGBI and is regularly reviewed and updated.
- A weekly nurse-led follow up clinic for patients who have curative surgery for colorectal cancer. The follow up clinic provides a more complete and accurate patient follow up in a patient focused environment.
- An electronic colorectal cancer database, in place since 2001, enables the capture of all information relating to the patient journey, including referral, diagnosis, treatments and follow-up, ensuring quality assurance.
- SJH continues to participate in national audit via the NCCP defined Key Performance Indicator (KPI) programme for rectal cancers. Introduced in 2014 to measure the timeliness of access to services, investigations and treatment of colorectal cancer patients, SJH continues to meet and exceed compliance. These standards are under regular review to measure compliance.

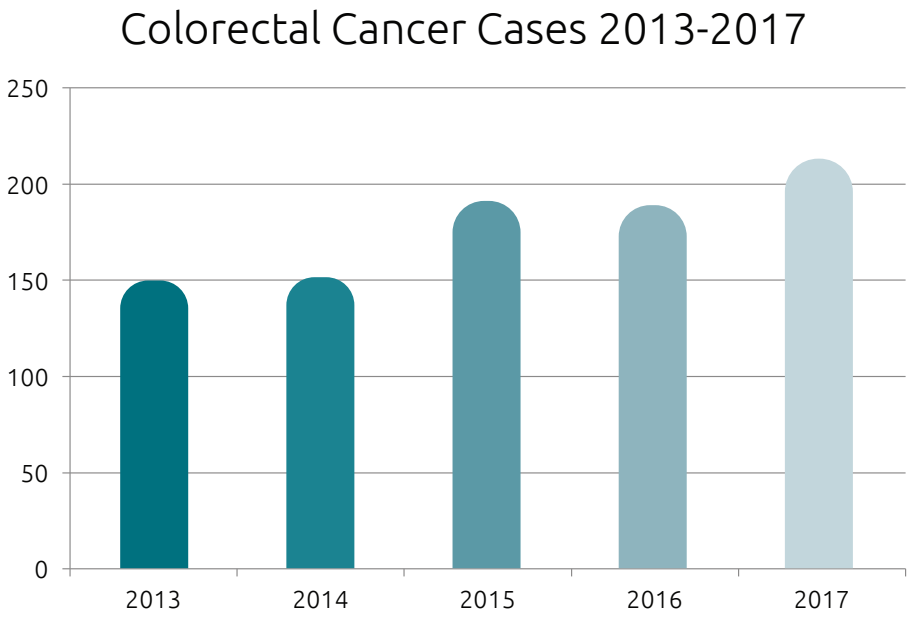
Screening Services

- Colorectal Cancer Screening commenced in 2013, offering free screening to men and women aged between 60 and 69 years with a view to extending the age criteria to 55 to 74 years. The first screening colonoscopy was carried out in August 2013. Since then, SJH has accounted for approximately 12% of the national screening service, with 2096 screening colonoscopies performed, and 110 new cancers diagnosed.
- The service is managed by one full time Advanced Nurse Practitioner Candidate, Ms Lynda Foy and one full time Clinical Nurse Manager 2, Ms Aisling Carolan.

Colorectal Cancer Audit

During the period 2013 to 2017 a total of 1,063 patients were referred to, diagnosed with and/or treated in SJH for colorectal cancer. This report focuses in detail on 895 of these patients referred to or diagnosed in SJH with colorectal cancer who had full treatment; surgery alone or adjuvant therapy. The remaining 168 patients were referred specifically for the opinion of the GI oncology MDT, a small percentage of patients were referred for lung resection, chemotherapy or palliative care for recurrence of colorectal cancer having been initially diagnosed and treated elsewhere. Colorectal cancer includes malignant tumours of the appendix, colon, rectum and anus. Approximately three new cases of colorectal cancer are diagnosed or referred to SJH weekly.

Figure 2.6.1 Colorectal Cancer 2013-2017



	2013	2014	2015	2016	2017
Colorectal Cancer	150	152	191	189	213

Gender & age analysis

41% were female and 59% male. 54% of patients were over 65, with a median age of 66 and range from 20 to 99 years.

Tumour site

The vast majority of colorectal cancers are adenocarcinoma (87%), the most common sites the rectum (38%) and the sigmoid colon (18%). (Table 2.6.1)

Table 2.6.1 Tumour Site

TUMOUR SITE	NUMBER OF SITES	%
Rectum	339	**38%**
Sigmoid colon	165	**18%**
Caecum	76	**9%**
Ascending colon	62	**7%**
Transverse colon	40	**5%**
Rectosigmoid	37	**4%**
Hepatic flexure	38	**5%**
Descending colon	39	**5%**
Splenic flexure	19	**2%**
Appendix	30	**4%**
Anus	36	**3%**
Site Not Specified (NS)	6	**1%**
Small bowel	5	**1%**
Terminal ileum	3	**<1%**

Table 2.6.2 Treatments

	COLON	RECTAL
Surgery	448	**236**
Chemotherapy	193	**209**
Non-resection surgeries*	103	**165**
Radiotherapy	40	**179**
Endoscopic	37	**20**
No treatment	14	**7**

Note: Treatments are not mutually exclusive. *Some patients may have multiple surgeries including stoma formation/stoma reversal. Laparoscopic surgery is the preferred approach. Within the audit period greater than 75% of surgeries were laparoscopic compared with 58% between 2008 and 2012[4].

Colon Cancers

- Colon cancer patients were treated with curative intent in 78% of cases, an increase from 67% in the previous 10 year audit report.
- Metastatic disease was present in 16% of patients at time of diagnosis compared with 27% in the 10 years previous audit.
- Median lymph node harvest was 19.

Rectal Cancers

- Rectal cancer patients were treated with a curative intent in 79% of cases.
- Metastatic disease was present in 18% of patients at time of diagnosis.
- 202 patients (60%) had neoadjuvant therapy prior to rectal cancer resection.
- Median lymph node harvest was 16
- A watch and wait protocol is in practice for rectal preservation for patients with complete clinical responses following neoadjuvant chemoradiation and is increasingly considered at MDT, consistent with international trends and emerging evidence.

Outcomes and survival analysis

Figure 2.6.2 Colon Cancer Overall Survival

	OVERALL SURVIVAL %	95% CI
1 year	89	86.3, 91.7
3 year	75.4	71.2, 79.9
5 year	64.2	56.1, 73.5
Median	NR	NR, NR

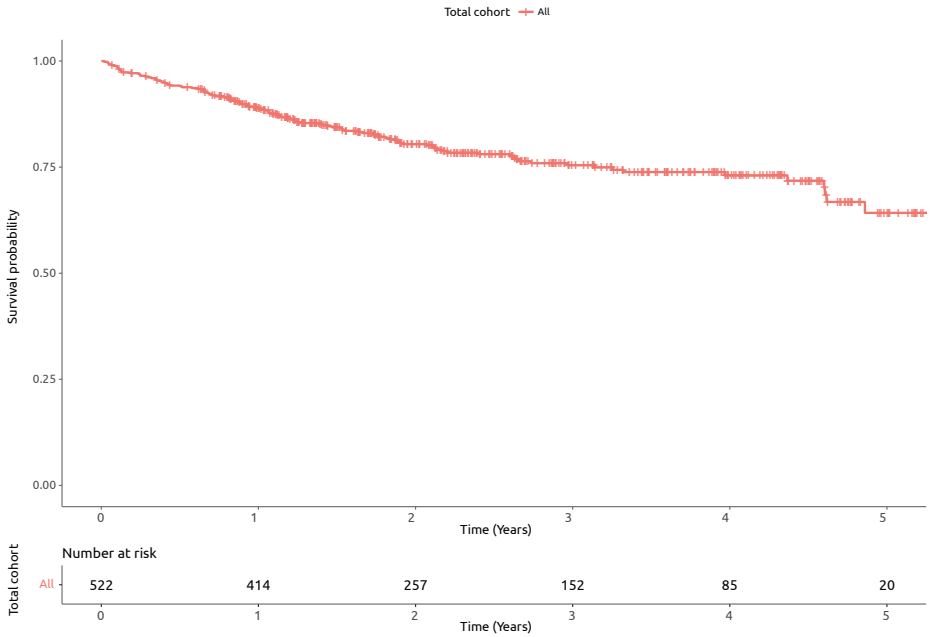


Figure 2.6.3 Rectal Cancer Overall Survival

	OVERALL SURVIVAL %	95% CI
1 year	91.5	88.6, 94.6
3 year	74.6	69.3, 80.4
5 year	72.2	66.1,78.9
Median	NR	NR, NR

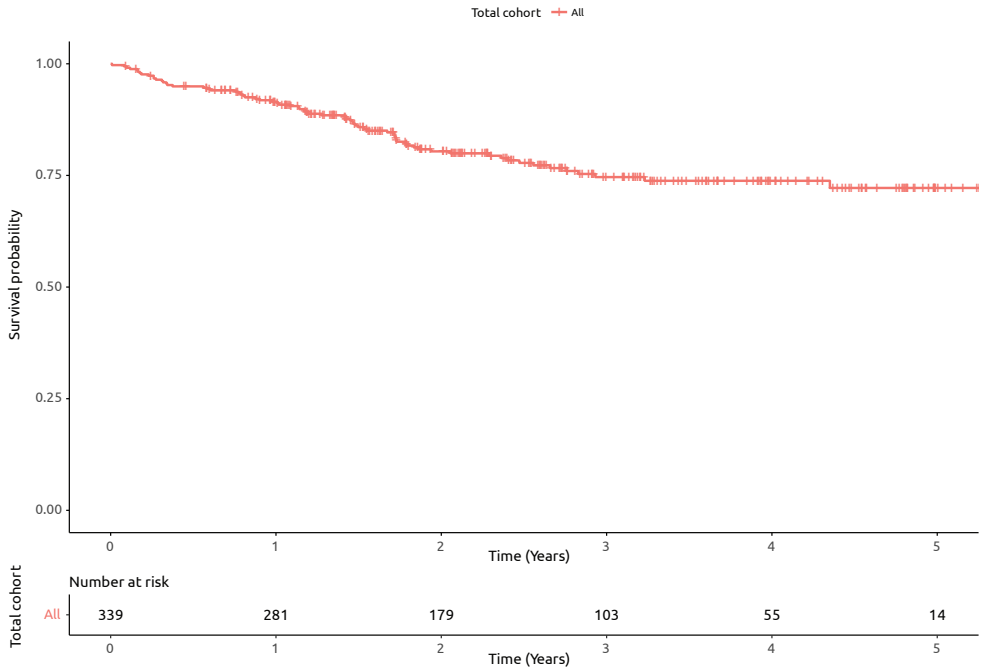


Figure 2.6.4 Overall Survival by treatment intent

	Median (95% CI), years
Curative	NR (NR, NR)
	95.1% (93.1, 97.2)
	3-year OS 84.7% (80.8, 88.9)
Palliative	1.19 (0.876, 1.83)
	1-year OS 55.3% (45.4, 67.5)
	3-year OS 17.4% (8.35, 36.1)

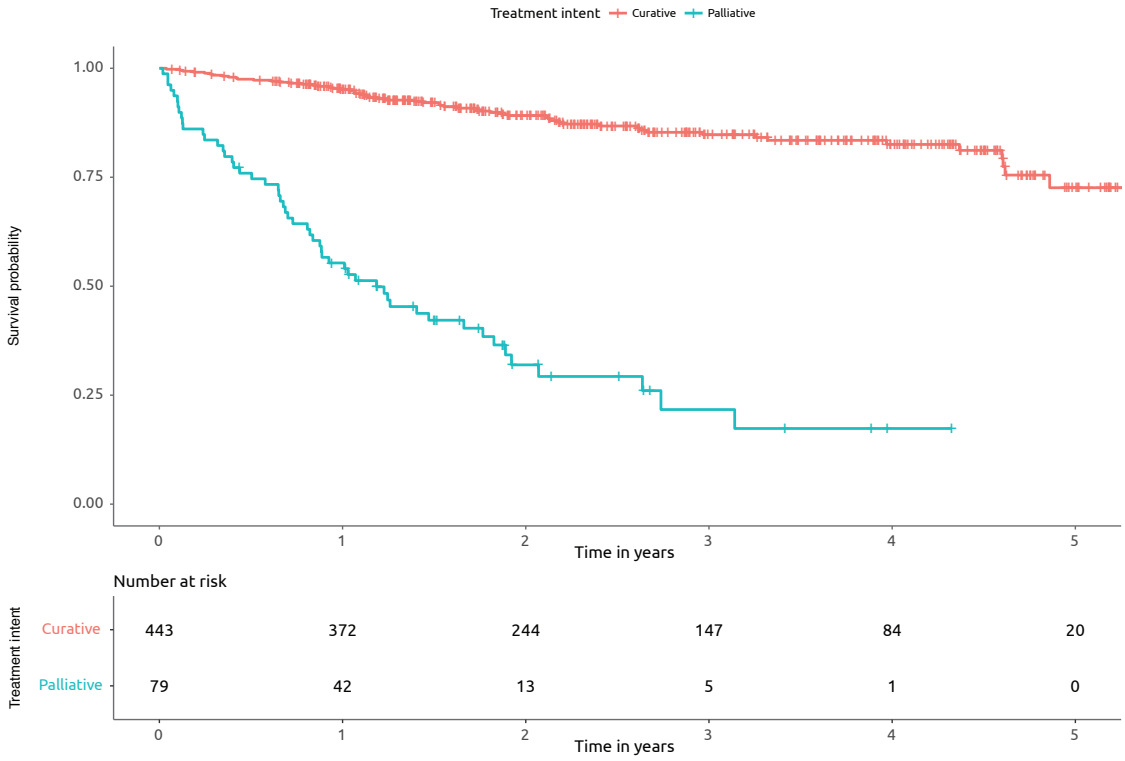


Figure 2.6.5 Rectal Cancer Survival by Treatment intent

	Median (95% CI), years
Curative	NR (NR, NR)
	1-year OS 95.2% (92.7, 97.8)
	3-year OS 81.7% (76.3, 87.5)
Palliative	1.83 (1.53, NR)
	1-year OS 74.3% (63.8, 86.4)
	3-year OS 34.6% (22.1, 54.1)

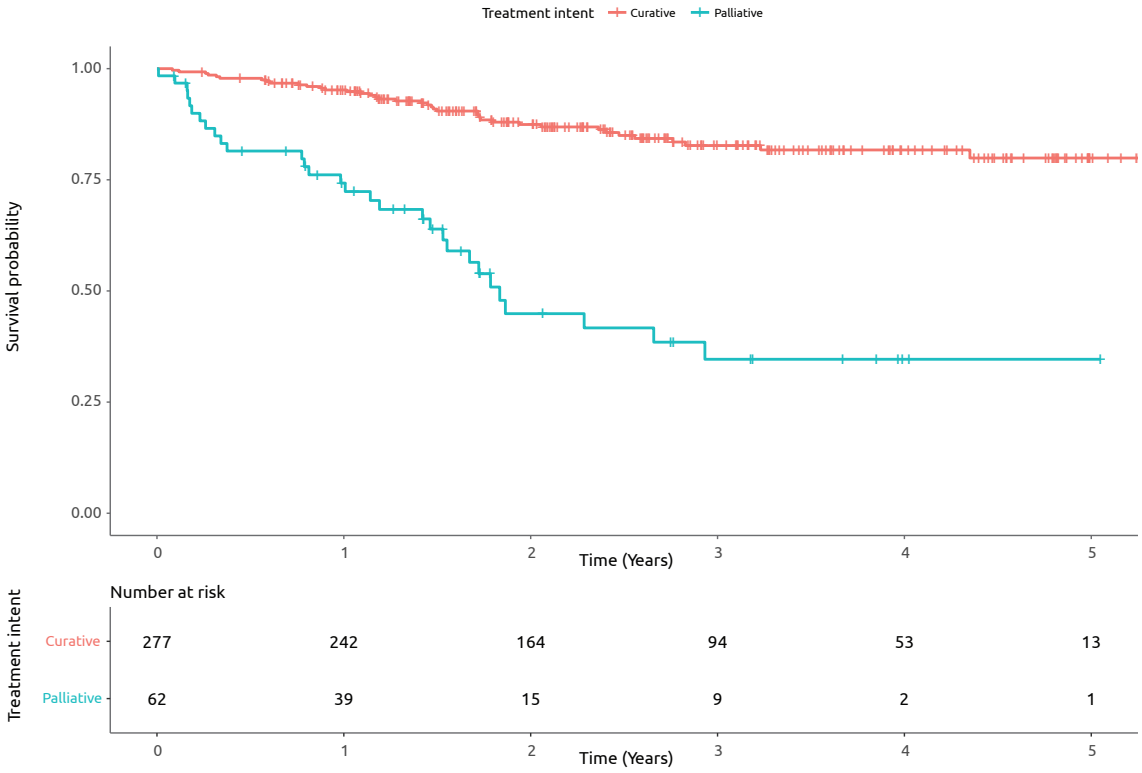


Figure 2.6.6 Colon Cancer Survival by pathological stage

STAGE	N DEATHS	MEDIAN OS (95% CI), YEARS	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
Stage 0	0	NR (NR, NR)	100	100	100
Stage I	10	NR (NR, NR)	98.2 (95.7, 100)	90.6 (84.5, 97.2)	78.5 (61.3, 100)
Stage II	15	NR (NR, NR)	95.7 (92.4, 99.1)	86.8 (80.3, 93.9)	79.6 (66, 96)
Stage III	20	NR (4.6, NR)	94.4 (90.1, 98.9)	79.6 (70.4, 90)	56.5 (38.9, 82)
Stage IV	18	3.14 (2.2, NR)	81.7 (71, 94)	50.3 (34.5, 73.3)	NS

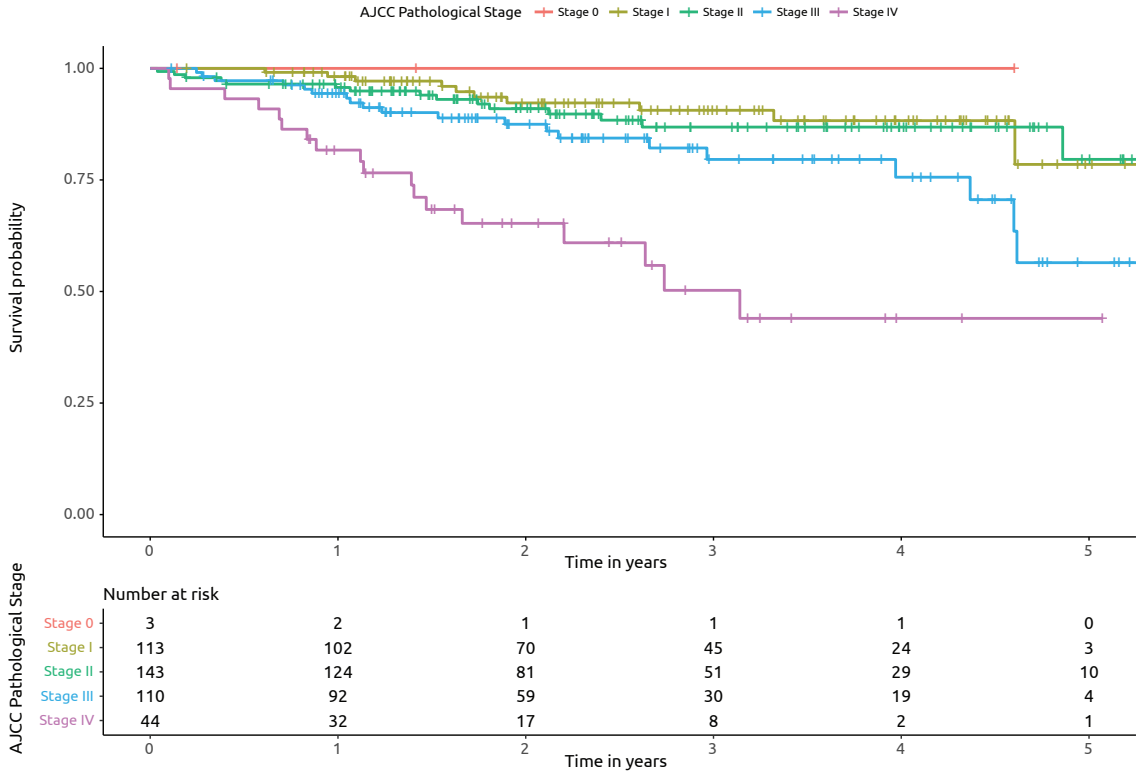
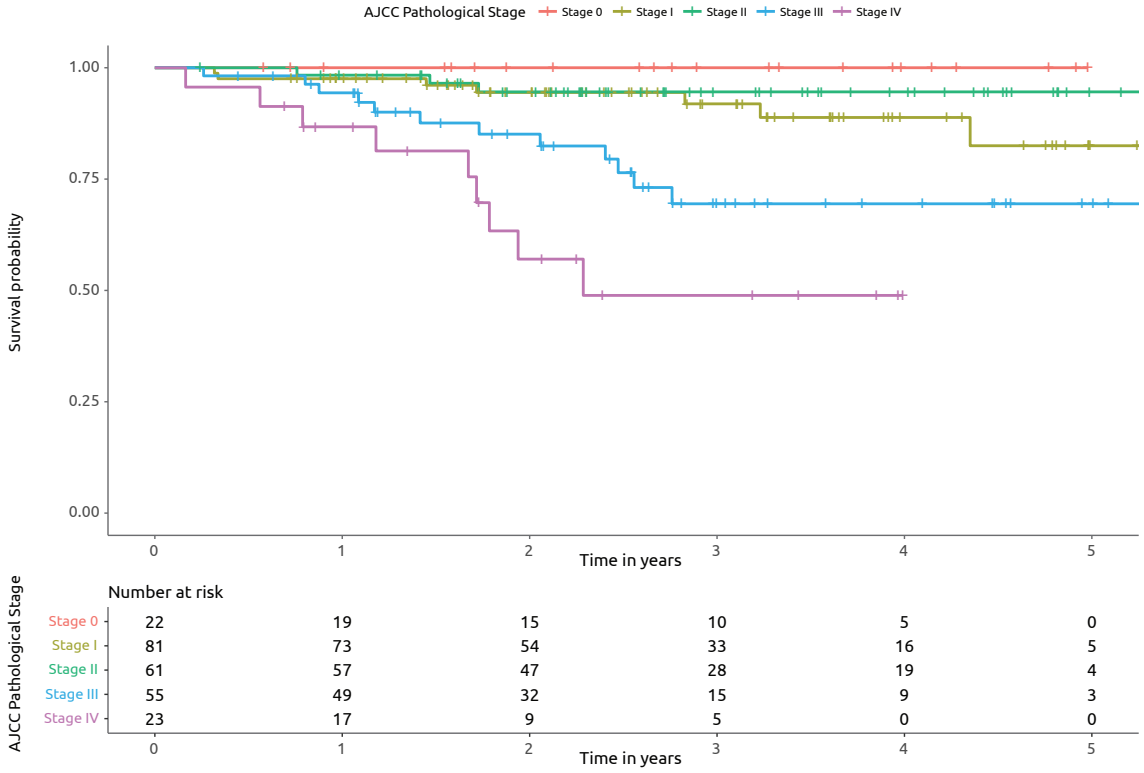


Figure 2.6.7 Rectal Cancer Survival by pathological stage

STAGE	N DEATHS	MEDIAN (95% CI)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
0	0	NR (NR, NR)	100	100	100
I	7	NR (NR, NR)	97.5 (94.2, 100)	91.9 (85, 99.3)	82.5 (69.1, 98.5)
II	3	NR (NR, NR)	98.3 (95.1, 100)	94.6 (88.8, 100)	94.6 (88.8, 100)
III	12	NR (NR, NR)	94.4 (88.4, 100)	69.5 (55.9, 86.3)	69.5 (55.9, 86.3)
IV	9	2.29 (1.79, NR)	86.7 (73.8, 100)	48.9 (29.4, 81.1)	NS



7. Head and Neck, and Oral Cavity Cancer

Structure

Head, neck and oral cancer patients within SJH are managed by both the Department of Otolaryngology-Head & Neck Surgery and the Department of Maxillofacial Surgery, which ensures that patients in this group have access to the combined surgical strengths of these services. The patient treatment pathway is enhanced from the combined academic strength of two Trinity College Professors of Surgery (Professor Conrad Timon and Professor Leo Stassen) and an academic focus on these cancers from the Department of Pathology in Trinity College and the Trinity Translational Medicine Institute (Professor Orla Shiels and Dr. Mary Toner). There is a single department structure with Tallaght Hospital, and a close association with the Royal Victoria Eye and Ear Hospital. All complex major cancer surgery in this axis is carried out at SJH. In addition, Mr Conor Barry and Professor Stassen coordinate the management and treatment of malignancies diagnosed at the Dublin Dental Hospital (DDH), with all new cancers diagnosed there linked with SJH via the single MDT structure. The DDH in addition provides an invaluable oral health service to Head and Neck patients, pre and post radiation treatment, through the leadership of Dr Denise MacCarthy.

Surgery for this group of patients may be complex and difficult, often requiring multiple surgical teams to play a part. A comprehensive cancer centre model of combined multi-surgeon operations is in use for the most complex cases, with the considerable benefit of on-site links to the largest national plastic and reconstructive team, the national oesophageal service and a high volume cardiothoracic service.

Multidisciplinary team meetings

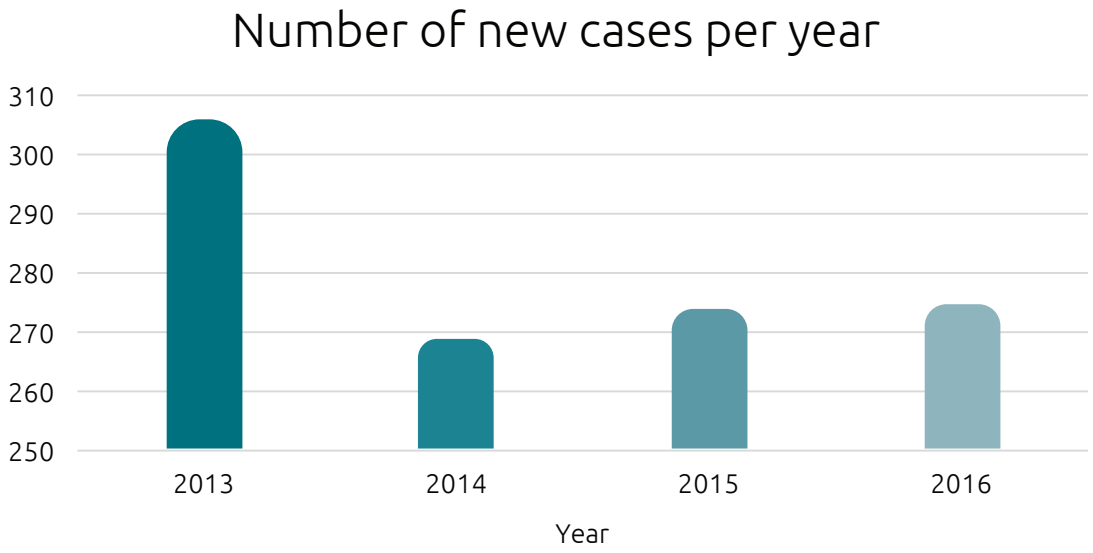
Weekly combined Head and Neck MDT meetings commenced in March 2006. Meetings are attended by all relevant stakeholders. Surgical decisions are determined by combined opinion of five surgeons (Prof. C. Timon, Mr. J. Kinsella, Mr. Paul Lennon, Prof. L. Stassen and Mr. Conor Barry). Two specialist nurses are also present, Ms. Anne Marie Farrelly and Ms. Joanne McDonagh. Radiation oncology is represented by Dr. S. Brennan and Dr Fran Duane, and medical oncology by Dr Cliona Grant. Radiology, and the quality of imaging, reporting, and specialist expertise provides a large input on the decision making process with the majority of patients having MRI/PET/CT imaging prior to surgery. A hub and spoke model of clinical care underpins the service delivery and functioning of the MDT. All the surgical members of the team work at other centres (RVEEH, Tallaght, and DDH). This ensures optimal treatment for patients. Patients are also regularly referred from other hospitals in the Dublin Midlands group, and complex cases are referred from almost every hospital in the country.

Head and Neck Cancer Trends

This report provides an analysis of head and neck cancer data from 2013 to 2016. 2017 is incomplete due to the absence of data management resource during the reporting period. There were 1,124 new Head and Neck cancer cases (ICD C01 -14, C30-32, C73.9) diagnosed and/or treated in SJH, with an average of 281 new patients per year. The National Cancer Registry[1] report shows an average of 311 new Head and Neck cancer diagnosed annually over the period 2013-2015. A direct comparison between SJH data and the NCRI is not possible as some of the cases included in the SJH include skin cancers to the head and neck. However it does show that SJH is the major centre for the treatment of this cancer type in Ireland.

The National Cancer Registry[1] report shows an average of 311 new Head and Neck cancer diagnosed annually over the period 2013-2015.

Figure 2.7.1 Head & neck cancer cases 2013 – 2016



	2013	2014	2015	2016
Head & Neck Cancer	306	269	274	275

In addition to these patients, the head and neck multidisciplinary team review and discuss many more head and neck cancer cases. An audit of MDT discussions at SJH in 2016 carried out by Mr Paul Lennon in collaboration with NCCP revealed an additional large and important workload. For instance, in 2016 alone, 685 patients were discussed, including 50 complex benign cases, and 571 patients were either treated at SJH or in the radiation centre in St. Luke's Hospital, Rathgar, or elsewhere. Of those discussed, the most common tumour site was oral cavity, the most common stage was Stage IV (47 percent), and squamous cell carcinoma identified as the most common morphology (71 percent). The majority of patients discussed were with the view to primary treatment (75 percent). Overall more than half the patients received radiotherapy (56 percent), either alone or with chemotherapy as a primary treatment modality, or as an adjuvant to surgical treatment. Over half the patients (52 percent) were managed surgically, as many patients had a combination of treatments.

Figure 2.7.2 Age Profile

The average age at diagnosis is 61 and the median age is 63. The NCRI reports the biggest percentage of patients in the 50-64 age group with 43%[1]. The SJH group had its biggest percentage in the older age group 61-80 years with 47%).

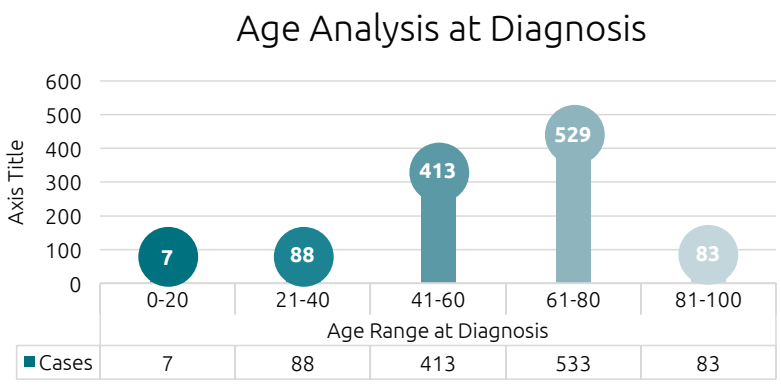


Table 2.7.1 Referral patterns

YEAR	DUBLIN %	TERTIARY %
2013	40	60
2014	46	54
2015	45	55
2016	44	56

Table 2.7.2 Tumour site occurrence

TUMOUR SITE	NUMBERS	%
Oral Cavity	436	39
Oropharynx	109	10
Nasophaynx	31	3
Hypopharynx	49	4
Thyroid	170	15
Larynx	165	15
Skin	22	2
Ear	10	1
Cervical Oesophagus	6	0.5
Other	21	2
Primary of Unknown Origin	25	2
Lymphoma	10	1
Nose	14	1
Neck	40	3.5
Eye	4	0.5
Sinuses	6	0.5

Table 2.7.3 Morphology

MORPHOLOGY	NUMBER	%
Squamous Cell Carcinoma	758	67
Basal Cell Carcinoma (skin)	14	1.3
Lymphoma	8	0.7
Melanoma	8	0.7
Adenocarcinoma	14	1.3
Other	27	2.4
Papillary Cancer	141	12.5
Follicular Cancer (Minimally Invasive)	10	0.9
Anaplastic Cancer	7	0.6
Carcinoma	38	3.4
Adenoid cystic	18	1.6
Acinic Cell Carcinoma	5	0.4
Medullary	12	1.1
Baso Squamous	2	0.2
Spindle cell squamous carcinoma	3	0.3
Mucoepidermoid carcinoma	17	1.5
Sarcoma Undefined	3	0.3
Small Cell Carcinoma	1	0.1
Follicular Cancer (Widely Invasive)	1	0.1
Salivary duct carcinoma	1	0.1
Basoloid squamous cell carcinoma	1	0.1
Carcinoma-in-situ (CIS)	15	1.4
Sarcomotid/ spindle cell carcinoma	3	0.3
Metastic Squamous Cell Carcinoma	1	0.1
Follicular and Papillary carcinoma	1	0.1
Microcarcinoma	4	0.4
Merkle Cell carinoma (Neuroendocrine tumour)	3	0.3
Mixed cell	1	0.1
Osteosarcoma	3	0.3
Clear cell carcinoma	2	0.2
Carcinoma ex pleomorphic adenoma	2	0.2
Non Small Cell Carcinoma (NSCC)	2	0.2
Human papilloma virus related carcinoma	1	0.1
Adenosquamous	1	0.1

Table 2.7.4 p16 status

P16 STATUS (WHERE AVAILABLE)	POSITIVE	NEGATIVE
2013	43	57
2014	44	56
2015	50	50
2016	43	57

Table 2.7.5 Treatments

Head & Neck Cancer Treatments 2013-2016	
All Surgery	621 + 105 (Recurrence Operations)
All Radiotherapy	554
All Chemotherapy	324
Best Supportive Care Only	28

Outcomes and survival analysis

Figure 2.7.3 Oral Cavity Overall Survival

OUTCOME	RESULT	95% CI
Median OS	NR	NR, NR
1-year OS %	84.7%	81, 88.7
3-year OS %	68.9%	63.5, 74.8
5-year OS %	65.2%	58.7, 72.4

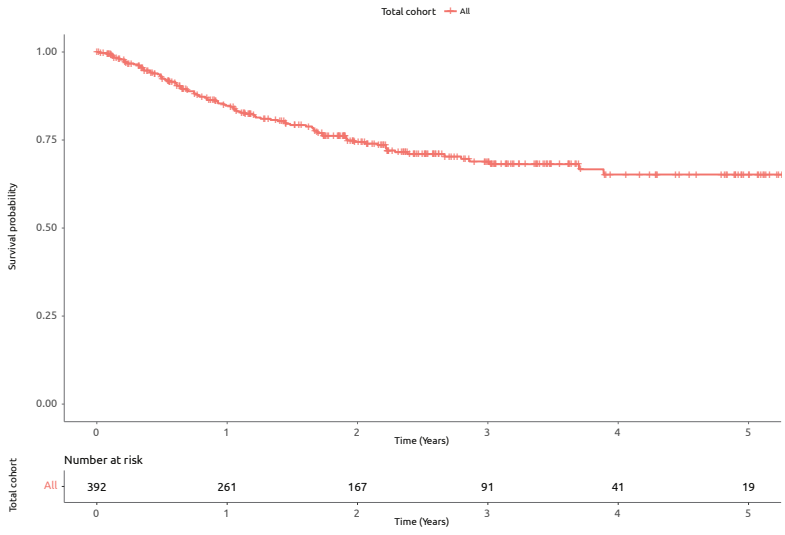


Figure 2.7.4 Overall survival in cancer of the larynx

OUTCOME	RESULT	95 % CI
Median OS (years)	NR	4.96, NR
1-year OS %	87.7	82.1, 93.3
3-year OS %	67.0	58.2, 77.1
5-year OS %	57.8	44.9, 74.3

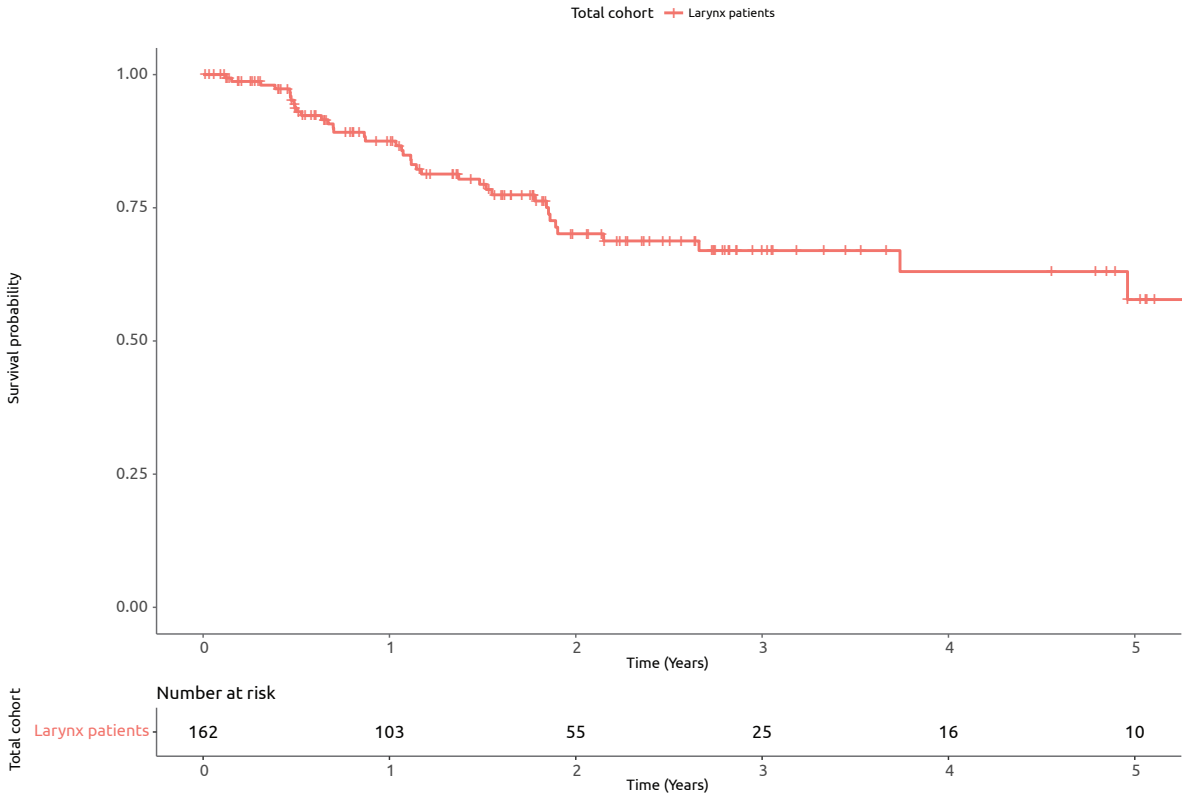
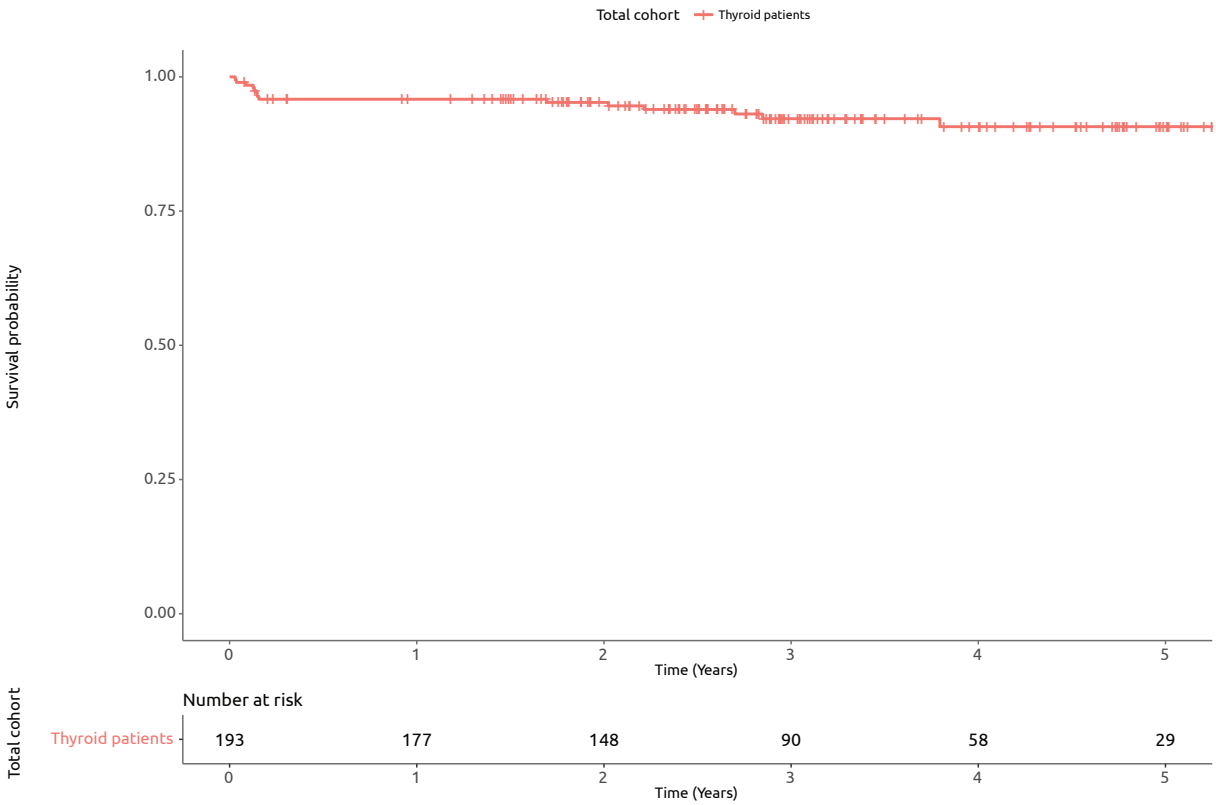


Figure 2.7.5 Overall survival in cancer of the thyroid

OUTCOME	RESULT	95% CI
Median OS (years)	NR	NR, NR
1-year OS %	95.8	93.0, 98.7
3-year OS %	92.2	88.1, 96.5
5-year OS %	90.7	85.8, 95.9



8. Urology Cancer

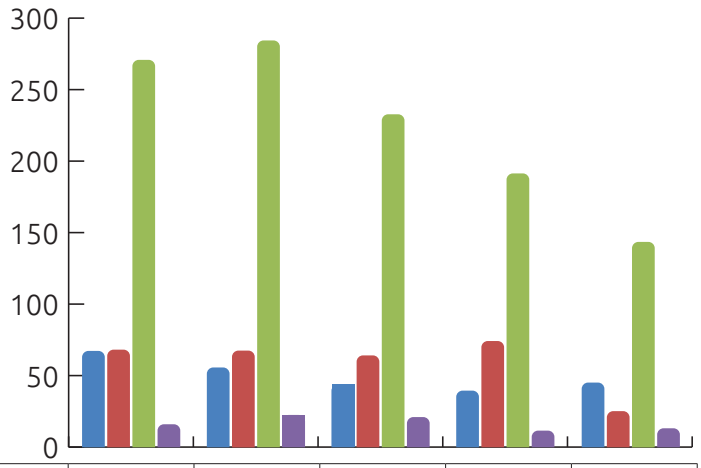
Structure

- Surgery provided by Professor Thomas Lynch, Mr. Rustom Manecksha and Mr Imtiaz Ahmed. Dr. Dearbhaile O'Donnell provides specialised oncology care, and two Consultant Radiation Oncologists, Dr. Moya Cunningham and Dr Patricia Daly provide specialist radiation oncology.
- Approximately 90 patients are discussed per month at MDT.
- The service is supported by four Clinical Nurse Specialists; Ms. Marion O'Brien, Ms. Lynn Casey, Ms. Sonya Bowen and Ms. Tanya Conroy.
- Academic unit led by Prof. T. Lynch with a special interest in laboratory based research in prostate cancer with interface to the Trinity Translational Medicine Institute (TTMI) and the UCD Conway Institute. The majority of prostate cancers are biobanked.
- Recognised centre for higher specialist training in urology surgery.
- SJH has been established as one of eight National Rapid Access Prostate Clinics (RAPC) in Ireland. These clinics provide rapid access to a prostate clinic where they will be assessed by an Urologist and will have access to a Urology CNS. The clinics were established in an effort prioritise access for men with a possible prostate cancer based on evidenced criteria.
- There are two RAPCs each week and three 'one stop' haematuria clinics.

Urology Cancer Trends

There were 1,756 urology cancers diagnosed and/or treated in SJH between 2013 and 2017 (Figure 2.8.1).

Figure 2.8.1 Urology Cancers by Tumour Site



	2013	2014	2015	2016	2017
Bladder	67	56	44	39	45
Kidney	68	67	64	74	25
Prostate	271	284	233	191	144
Testis	16	22	21	12	13

Prostate Cancer

Table 2.8.1: Prostate Cancer: Gleason Score (GS) prognostic Grade (Epstein Grading System)[5]

GLEASON PROGNOSTIC GRADE	OCCURRENCES	%
Prognostic Grade I (GS</=6)	215	19.1
Prognostic Grade II (GS 3+4=7)	434	38.6
Prognostic Grade III (GS 4+3=7)	196	17.5
Prognostic Grade IV (GS=8)	102	9.1
Prognostic Grade V (GS 9-10)	139	12.4
Not recorded/Unknown	37	3.3

Table 2.8.2 Prostate Cancer Clinical Stage

CLINICAL STAGE	OCCURRENCES	PERCENT
Stage I	90	**9.2**
Stage II	387	**39.5**
Stage III	196	**20.0**
Stage IV	88	**8.9**
Unknown/Not specified	218	**22.3**

Sixty seven per cent were treated with curative intent. Approximately 20% of patients commenced on a surveillance programme. 8% were treated with palliative intent

Table 2.8.3 Prostate Cancer: Planned primary treatment options in 2016

PLANNED TREATMENT OPTIONS AT SJH	OCCURRENCES
Sugery Only*	48
Active Surveillance/Active Monitoring	45
Radiotherapy and hormone therapy	46
Hormone therapy alone	19
Radiotherapy alone	9
Surgery and adjuvant radiotherapy	4
Combined chemo-radiotherapy	1
Palliative chemotherapy and hormone therapy	1
Chemotherapy only	1
None	1

*Robotic surgery is carried out off site due to absence of a robot at SJH

Table 2.8.4 Prostate surgery type (patients discussed at SJH MDT)

PROSTATE SURGERY	OCCURRENCES	PERCENT
Prostatectomy	270	**84.6**
TURP	32	**10.0**
Cystoprostectomy	6	**1.9**
Other	1	**0.3**
Unknown	10	**3.1**

For Prostatectomy and cystoprostatectomy patients the following table lists the breakdown of pathology stage (Table 2.8.5).

Table 2.8.5 Pathological Stage

PATHOLOGY STAGE	OCCURRENCES	PERCENT
Stage I	5	**2.1**
Stage II	142	**59.7**
Stage III	60	**25.2**
Stage IV	5	**2.1**
Unknown	26	**2.5**

Outcomes and survival analysis

Prostate

Figure 2.8.2 Overall survival prostate cancer treated with curative intent

OUTCOME	RESULT	95% CI
Median OS	Not reached (NR)	**NR, NR**
1-year OS	99.5%	**98.5%, 100%**
3-year OS	98.2%	**96.2%, 100%**
5-year OS	NA	**NA**

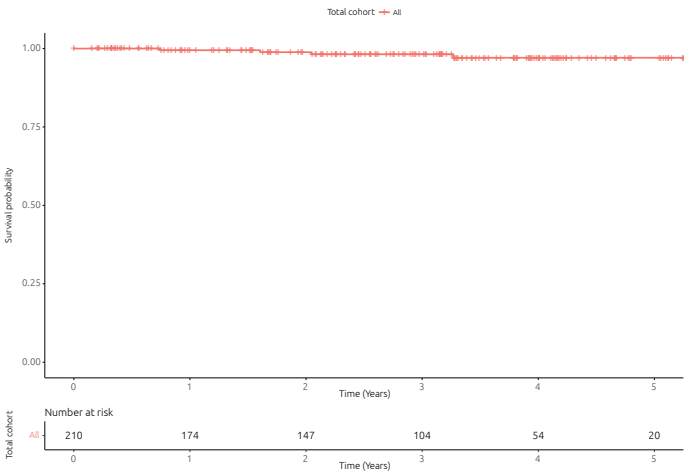
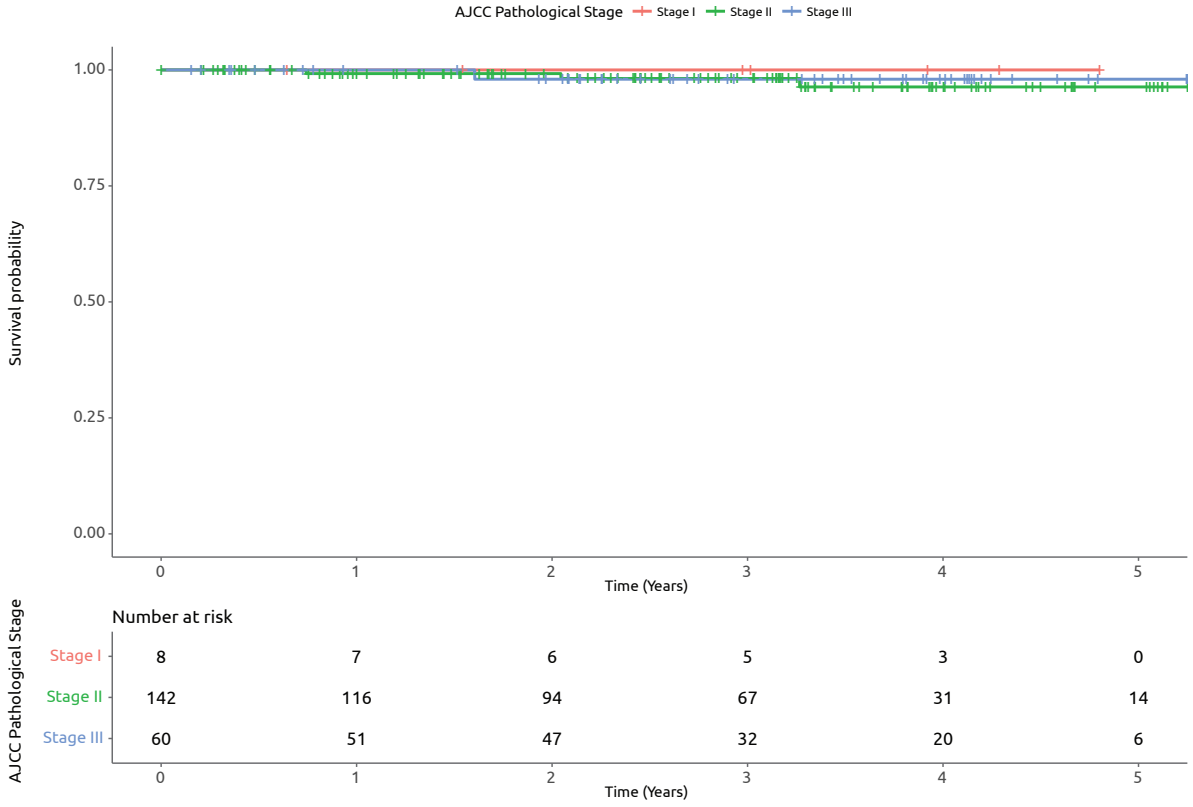


Figure 2.8.3 Prostate Cancer survival by pathological Stage (cancer specific survival)

STAGE	N DEAD	MEDIAN OS (95% CI), YEARS	1-YEAR OS %	3-YEAR OS%	5-YEAR % OS
I	0	NR (NR, NR)	100%	100%	NS
II	3	NR (NR, NR)	99.2%	98.2%	NS
III	1	NR (NR, NR)	100%	98%	NS



Kidney

SJH is a major tertiary referral centre for treatment of kidney cancers, with over 50% tertiary referral. It was the first centre in Ireland to manage kidney cancers laparoscopically. The average age at diagnosis was 64 years (19-89). Approximately 55% of all diagnoses were male. Over 60% had treatment with curative intent. Approximately 9% started on an active surveillance programme.

Table 2.8.6 Planned primary treatment options in 2016 (n=74)

PLANNED TREATMENT OPTIONS AT SJH	OCCURRENCES
Surgery only	48
Active Surveillance/Active Monitoring	6
Palliative Treatment	3
Palliative Care	3
Surgery and adjuvant therapy	2
Neoadjuvant chemotherapy/surgery/radiotherapy	1
None	1

Table 2.8.7 Kidney surgery type

TYPE OF SURGERY	OCCURRENCES	PERCENT
Open Nephrectomy (full or partial)	40	**21.4**
Laparoscopic Nephrectomy	130	**69.5**
Laparoscopic Nephrectomy (Partial)	12	**6.4**
Other	5	**2.7**

Table 2.8.8 Pathology Stage

PATHOLOGY STAGE	OCCURRENCES	PERCENT
Stage I	97	**51.8**
Stage II	19	**10.2**
Stage III	54	**28.9**
Stage IV	17	**9.1**

Figure 2.8.4 Kidney Cancer Survival

OUTCOME	RESULT	95% CI
Median survival (years)	NR	NR, NR
1-year OS %	88.9%	85.1, 92.9
3-year OS %	81.3%	76.1, 86.9
5-year OS %	78.4%	72.1, 85.3

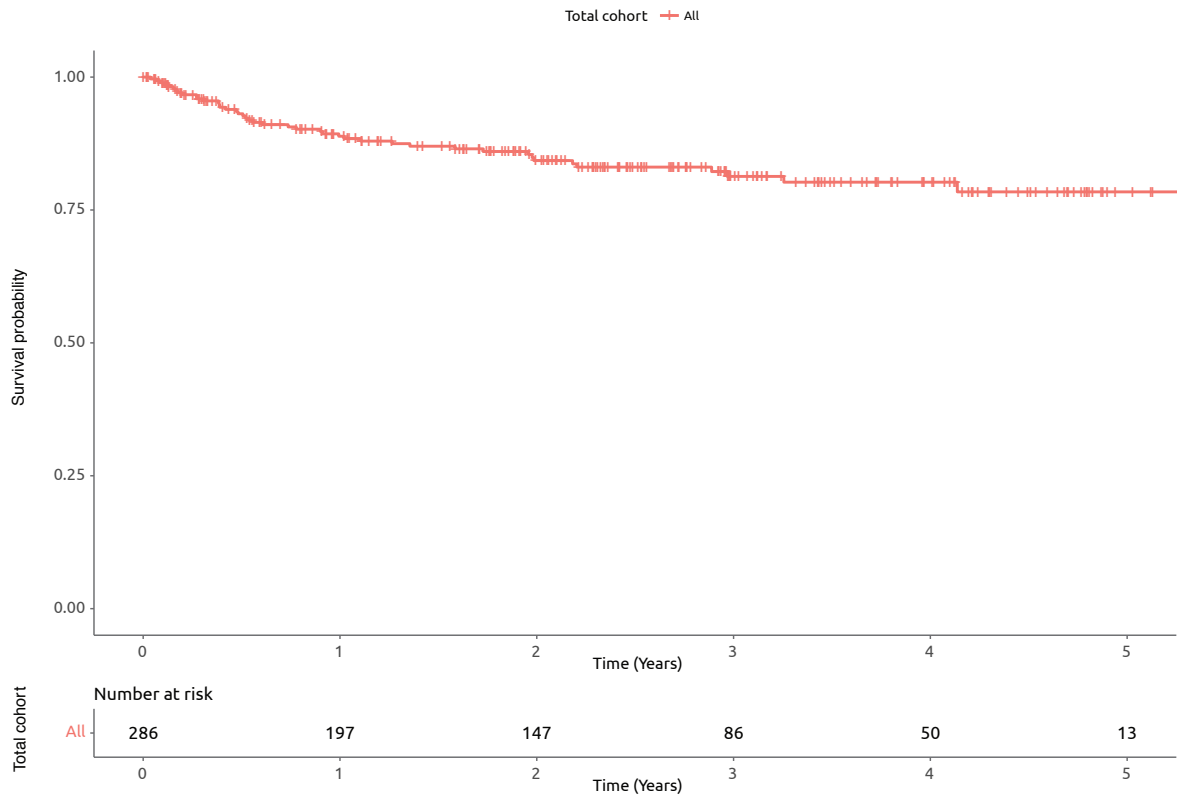
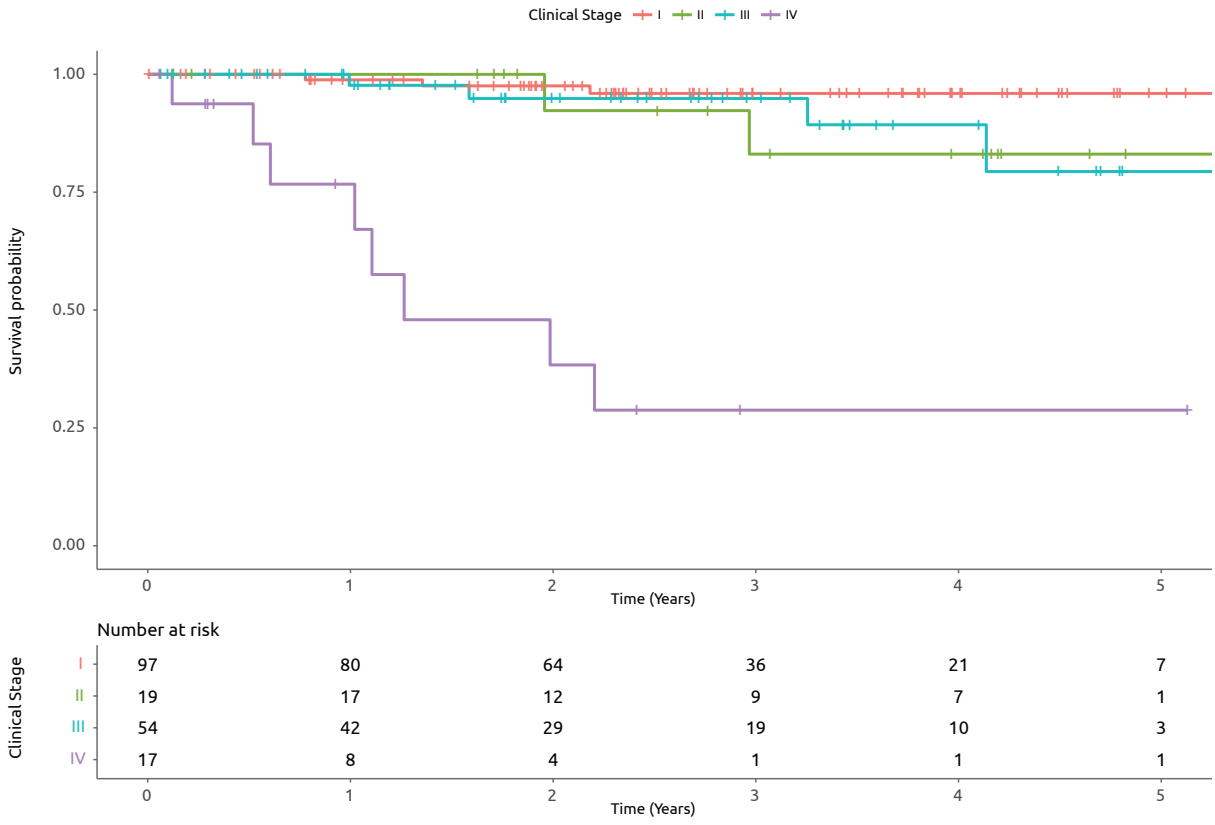


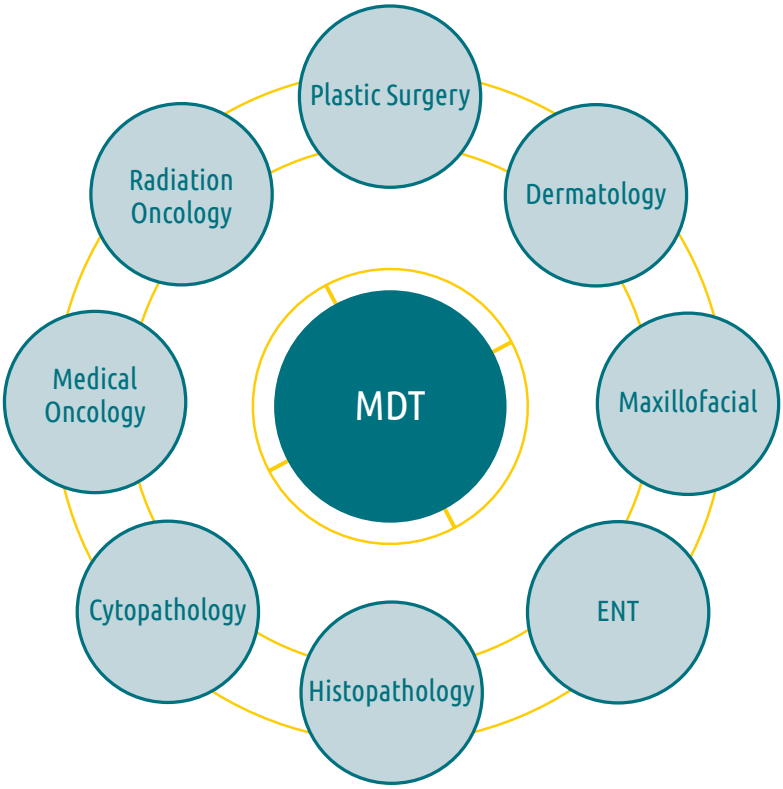
Figure 2.8.5 Kidney Cancer survival by pathological stage

STAGE	N DEAD	MEDIAN OS (YEARS), 95% CI	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
I	3	NR (NR, NR)	98.8 (96.6, 100)	96 (91.5, 100)	96 (91.5, 100)
II	2	NR (NR, NR)	100	83.1 (64.1, 100)	NS
III	4	NR (NR, NR)	97.7 (93.3, 100)	94.9 (88.2, 100)	79.4 (60.6, 100)
IV	8	1.26 (1.02, NR)	76.7 (56.5, 100)	28.8 (11.2, 74)	NS



9. Skin Cancer

Skin cancer care in St James's hospital is provided by a large range of specialties in a coordinated multidisciplinary team. The Dermatosurgery Department is the largest dermatology-led, dedicated skin cancer unit in the country. It provides weekly rapid access clinics for both pigmented lesions and for high-risk non-melanoma skin cancers (NMSC). The hospital has pioneered the role of the Multidisciplinary Team (MDT) in skin cancer and there is a weekly skin cancer MDT meeting, with all relevant departments being an integral part of this decision-making forum. Close liaison exists with other MDTs (Lymphoma, Head and Neck, Lung) as a result of the diverse range of specialists available on site.



The Dermatosurgery Department is the largest dermatology-led, dedicated skin cancer unit in the country.

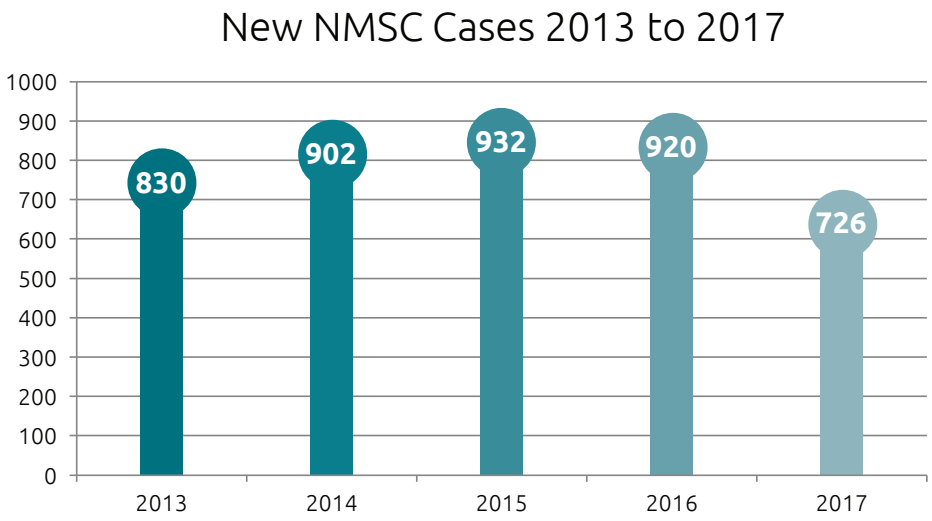
Patient Pathway and Services

- Skin cancer patients are referred via electronic and traditional referrals, triaged and directed into the Departments of Dermatology (Dr Patrick Ormond, Dr Rupert Barry, Dr Bairbre Wynne, Dr Alan Irvine), Plastic surgery, Radiation Oncology, Medical Oncology, Maxillo- facial surgery and Head and Neck surgery depending on the individual requirements. Close links between Occuloplastic surgery and other departments nationally facilitate the delivery of complex skin cancer throughout the country.
- The Department of Histopathology has two dedicated Dermatopathologists, Dr Mairin McMenamin and Dr Niamh Leonard, who work as an integral part of the team and provide both secondary and tertiary services, including the provision of laboratory support for Mohs micrographic surgery (see Section 3, Chapter 8).
- St James's hospital set up and runs the national Mohs Micrographic Surgery (MMS) service in the Department of Dermatology with two dedicated Mohs surgeons, Dr Patrick Ormond and Dr Rupert Barry, leading training in Dermatologic surgery, and playing pivotal roles in the development of national and international standards of care for people with skin cancer.
- St James's has the largest department of Plastic and reconstructive surgery (Mr David O'Donovan, Mr Eamon Beausang, Ms Marlese Dempsey, Ms Claragh Healy, Mr Christoph Theopold, Ms Patricia Eadie, Mr David Orr and Mr Odhran Shelley) in Ireland, with a wide range of subspecialties available to our patients, and sub-specialty areas of expertise including melanoma, sarcoma, and the full range of reconstructive surgery.
- Dr Sinead Brennan (Radiation Oncology), Dr Fergal Kelleher (medical oncology), Cytology, and Clinical Nurse Specialists, Ms Edel McGrath, Ms Carol Day, Ms Dorothy Hand, Ms Christina O'Rourke, provide specialist expertise within patients treatment pathways.
- The large cohort of cancer survivors from other cancer types, attending St James's Hospital are looked after by the skin cancer team. This is of particular importance in maintaining the well-being of patients, particularly those at high risk of secondary skin cancers as a result of the primary disease process such as CLL or from their prior treatments such as BMT.
- Coordination of the care pathway of paediatric melanoma patients and rare tumours from Our Lady's Hospital for Sick Children occurs via the skin cancer MDM. This will be of more significance in the future as paediatric and adolescent care is transferred on site to the St James's campus within the National Paediatric Hospital.
- Members of the Skin cancer care team are involved in the development of national skin cancer guidelines and processes through participation in the National Cancer Control Programme (NCCP), RCPI, RCSI and national charities such as the Irish Skin Foundation, Marie Keating Foundation, and the Irish Cancer Society.
- St James's has been involved in pioneering and piloting a range of changes in the management of patients in a diverse range of areas, such as KPIs, data management, referral processes, and the development of a nurse led dermatologic surgery service.
- The members of the skin cancer team are a leading voice advocating and advising on behalf of skin cancer patients through the Irish Skin Foundation, Marie Keating Foundation, Irish Cancer Society and the Media.
- Consultant staff are actively involved in regular teaching and research at national and international meetings.

Skin Cancer Trends

This report examines both NMSC and melanomas from 2013-2017. On average, there were 862 newly diagnosed NMSC patients over the last five years. Please note that this figure represents new patients diagnosed and not new NMSCs diagnosed on a previously diagnosed patient. Therefore this does not reflect the true workload of the department.

Figure 2.9.1 NMSC



Malignant Melanoma

There were 844 new patients with 874 melanomas diagnosed and treated in SJH over the last five year period. The median age at diagnosis was 65 years with a range from 3-97 years. 47 percent of patients were male and 53% of patients were female, consistent with the previous report and what is described nationally[1,4].

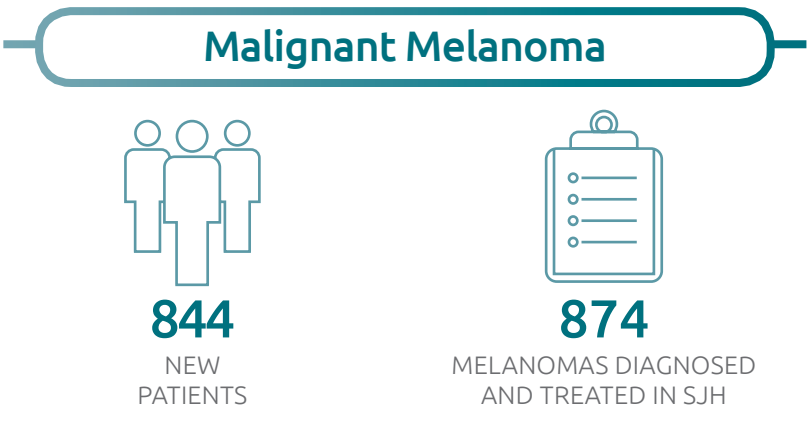


Figure 2.9.2 Melanoma

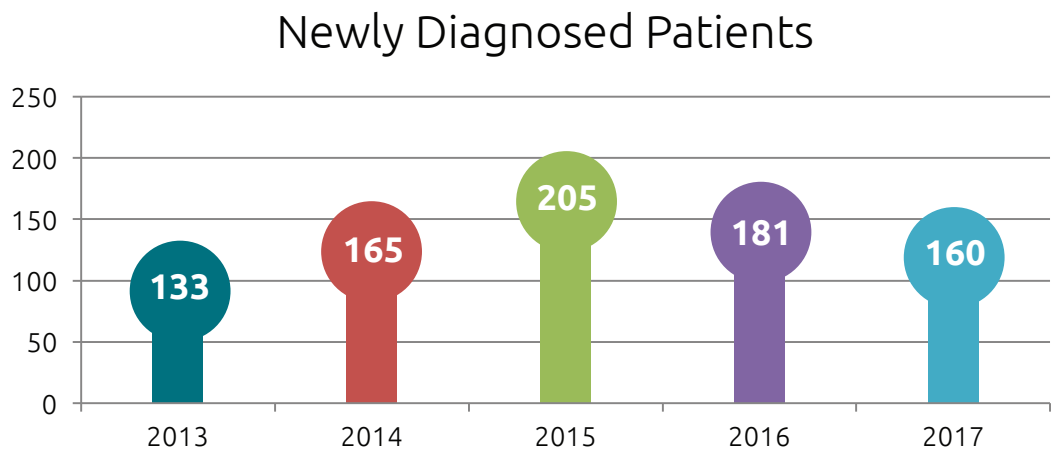


Figure 2.9.3 Trends in Mohs Surgeries per year

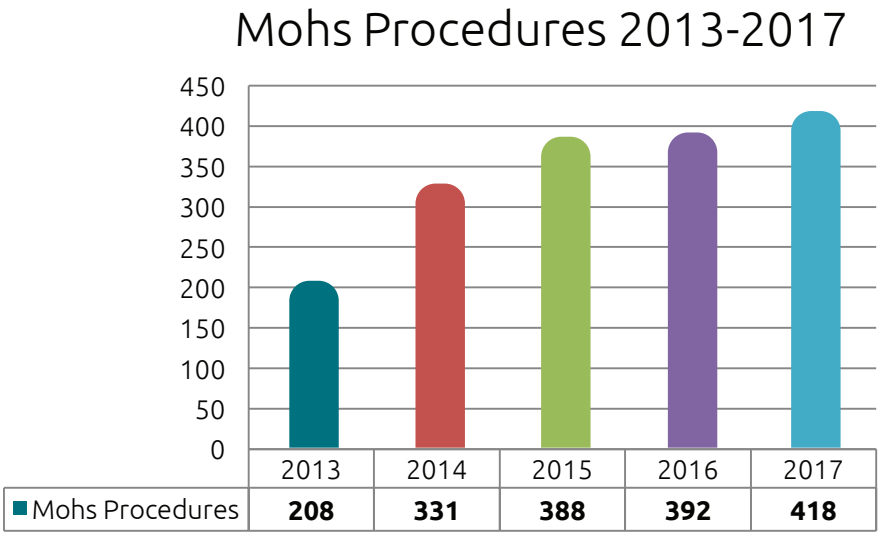


Table 2.9.1 Tumor Site (n= 844)

	OCCURRENCES
Face	141
Posterior Trunk	93
Left Lower Limb	90
Left Upper Limb	77
Right Lower Limb	75
Right Upper Limb	70
Anterior Trunk	56
Ears	48
Neck	50
Nose	26
Temple	27
Acral- Dorsum of foot	9
Acral- Plantar aspect of hand	4
Eyelid	13
Scalp	13
Forehead	20
Nail Bed	5
Lips	7
Vulva	4
Eye	2
Anal	2
Metastatic disease only (No primary found)	10
Not specified	32

Table 2.9.2 Type of Melanoma

MELANOMA TYPE	OCCURRENCES	%
Superficial Spreading Melanoma	303	34.0
Nodular Melanoma	61	7.0
Lentigo Maligna Melanoma	155	17.7
Acral Lentiginous Melanoma	24	2.7
Desmoplastic melanoma	3	0.3
Spindle cell melanoma	5	0.6
Malignant Melanoma-not specified	57	6.5
Lentigo Maligna	162	18.5
Melanoma in Situ NOS	104	11.9

Table 2.9.3 Breslow depth

BRESLOW DEPTH	OCCURRENCES	%
<1 mm (T1)	320	36.6
1.01-2 mm (T2)	113	12.9
2.01-4.0mm (T3)	66	7.6
>4.0mm (T4)	79	9.0
Tis (melanoma in situ/lentigo maligna)	266	30.4
Not Recorded	30	3.4

Over 50% of melanomas with a measured Breslow depth <1mm at time of presentation

Table 2.9.4 Pathological Stage

PATHOLOGICAL STAGE	OCCURRENCES	%
Stage 0	199	**25.4**
Stage 1a	248	**31.7**
Stage 1b	149	**19.1**
Stage IIa	43	**5.5**
Stage IIb	26	**3.3**
Stage IIc	30	**3.8**
Stage III	1	**0.1**
Stage IIIa	21	**2.7**
Stage IIIb	25	**3.2**
Stage IIIc	24	**3.1**
Stage IV	14	**1.8**
Stage IVa	1	**0.1**
Stage IVb	1	**0.1**

The most common pathological stage seen is stage I at 45 percent of all pathologically staged melanomas. A review of patients from 2016 showed that 47 patients (26%) had a sentinel node biopsy (SNB), and of these, 21 percent had a positive sentinel node (SN). 90 percent of patients with a positive SN went on to have a complete lymph node dissection.

Outcomes and Survival

Figure 2.9.4 Overall survival melanoma

OUTCOME	RESULTS	95% CI
Median survival (years)	NR	NR, NR
1-year OS	96.8%	95.3%, 98.3%
3-year OS	90.8%	87.9%, 93.8%
5-year OS	90%	86.5%, 93.3%

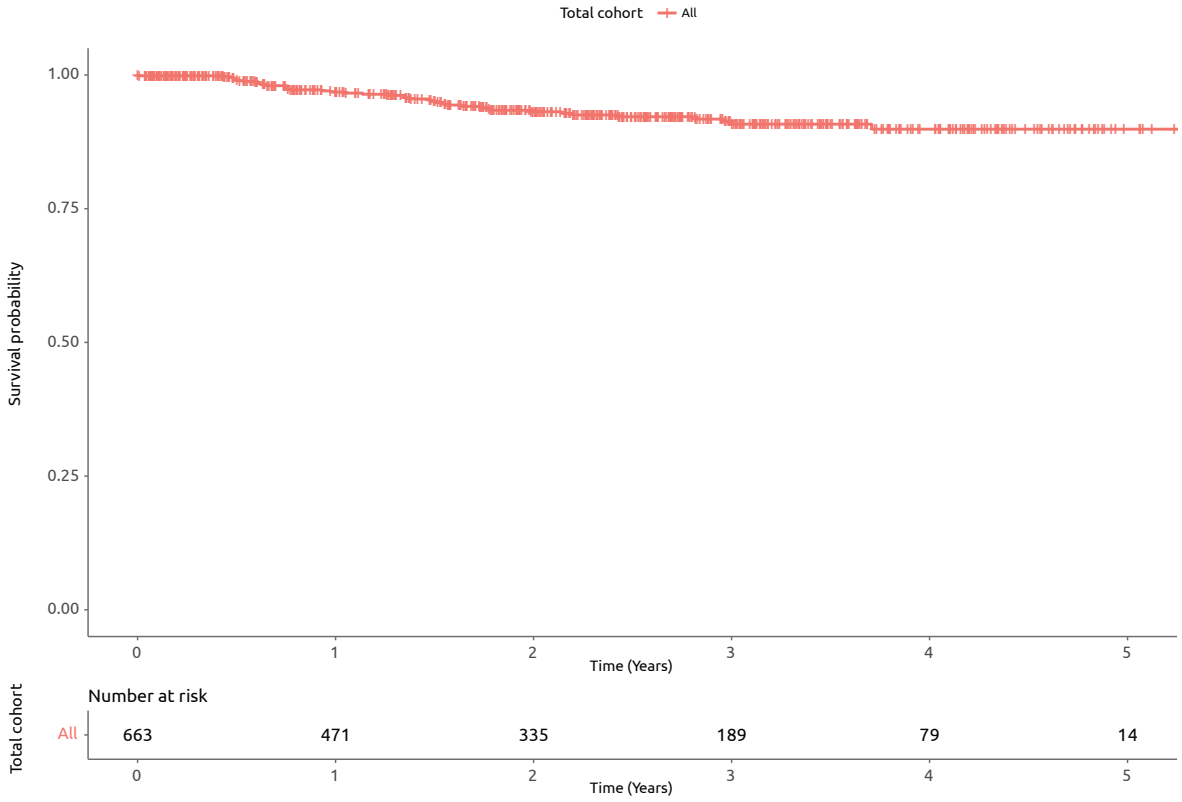
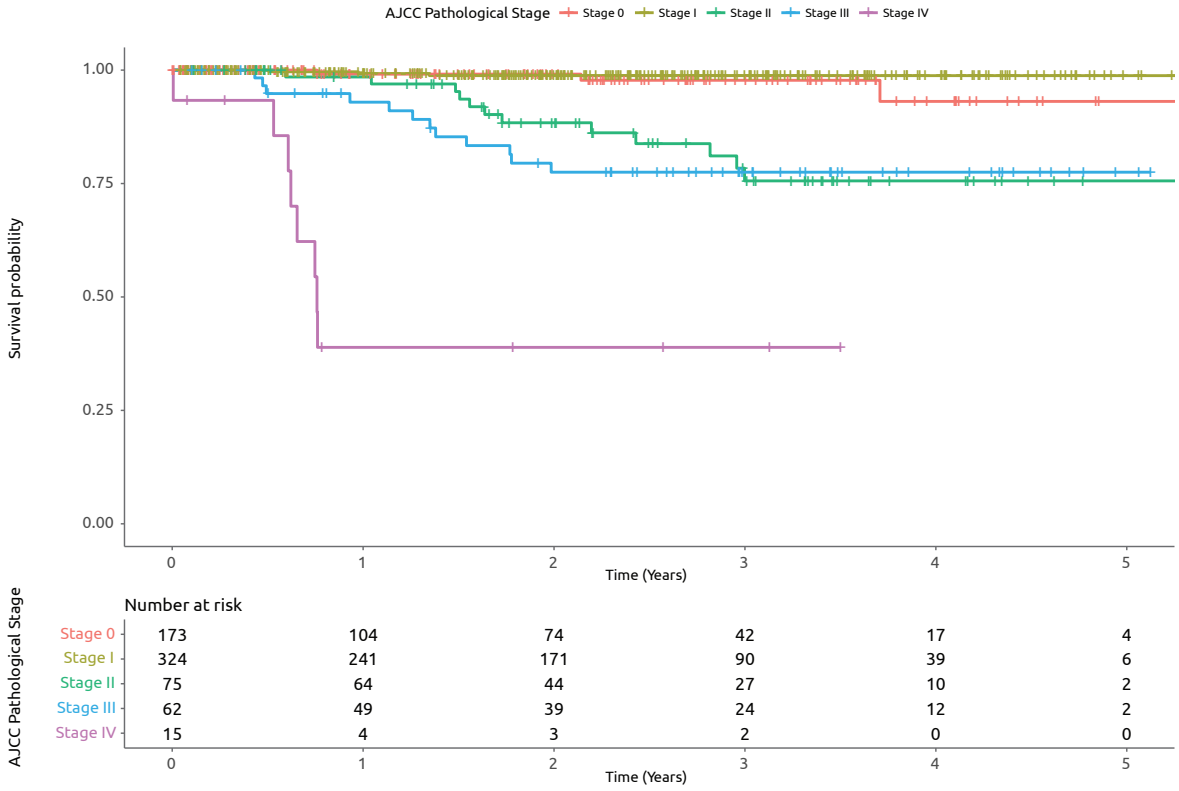


Figure 2.9.5 Overall Survival by pathological stage

PATHOLOGICAL STAGE	DEATHS	MEDIAN OS (YEARS)	1-YEAR OS %	3-YEAR OS %	5-YEAR OS %
Stage 0	3	NR (NR, NR)	99.1%	97.8%	NS
Stage I	3	NR (NR, NR)	99.2%	98.8%	NS
Stage II	12	NR (NR, NR)	98.5%	75.6%	NS
Stage III	12	NR (NR, NR)	92.9%	77.5%	NS
Stage IV	8	0.76 (0.622, NR)	38.9%	38.9%	NS



SECTION 3:
STRUCTURES

1. Cancer Clinical Trials Office (CCTO)

The CCTO is managed by Ms Ingrid Kiernan, Business Manager. Staff include five data managers, a senior pharmacist and eight research nurses. The Clinical Director during the 5 year period was initially Dr Dearbhaile O'Donnell (2012-2016) with Prof Elisabeth Vandenberghe taking over in late 2016. The office conducts trial with all the Medical Oncologists and Haematologists.

This 5 year period saw the CCTO recruit over 700 patients onto 85 different clinical drug trials, biobanking studies, Quality of Life studies and surgical trials. In this period the first surgical trial with the gynaecological surgeons was opened. St. James's Hospital is the sole site for this trial in Ireland. The portfolio of clinical trials continued to expand, particularly in the area of Head and Neck Cancer, and St. James's Hospital was chosen as the sole site in Ireland for an immunotherapy trial in which target accrual was exceeded. During this 5 year period immunotherapy was introduced into the cancer space and an increasing number of the trials conducted involved some form of immunotherapy. Close collaboration with Cancer Trials Ireland continued and the first trials with ETOP were opened during this period.

Figure 3.1.1

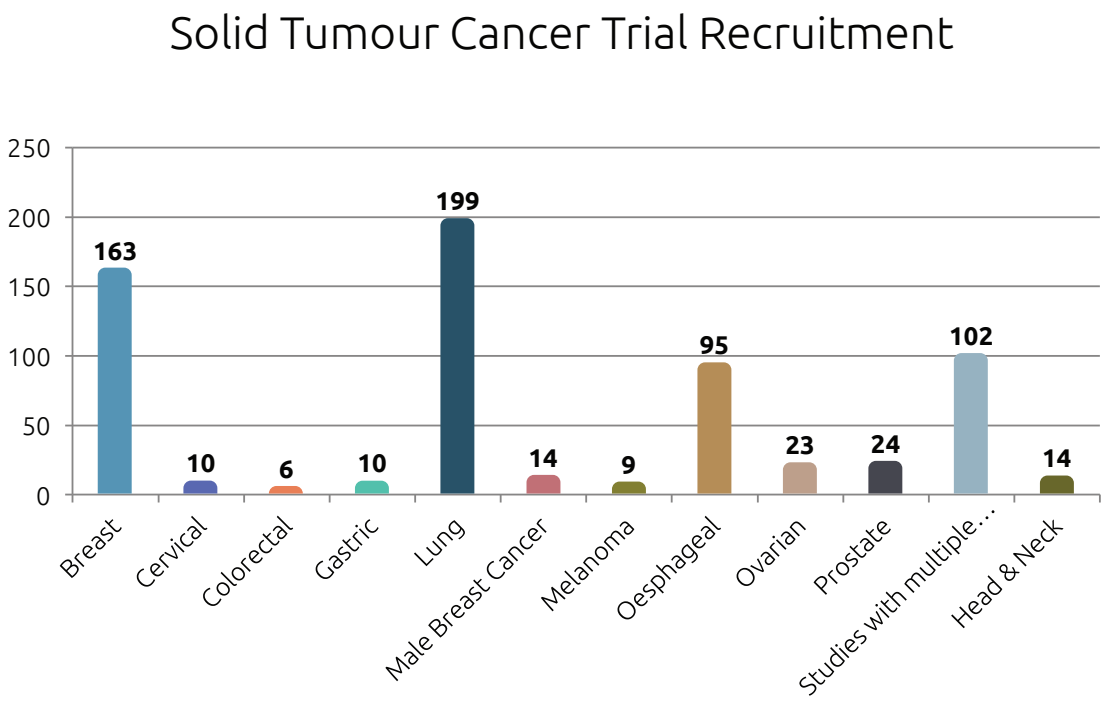


Figure 3.1.1 represents all recruitment to drug and translational/biomarker studies by Principal Investigators (PIs) 2013-2017. For a full list of studies, please see appendix 4

Table 3.1.1

ONCOLOGY PRINCIPAL INVESTIGATORS 2013-2017	STUDY INDICATIONS
Prof John Kennedy	Breast cancer
Dr Sinead Cuffe	Lung, Gastric, Oesophageal cancers, Melanoma
Dr Cliona Grant	Head and Neck cancer, Lymphoma
Prof David Gallagher	Colorectal cancer, Prostate cancer
Dr Dearbhaile O'Donnell	Ovarian cancer, prostate cancer
Dr Noreen Gleeson	Cervical
Prof John Reynolds	Oesophageal
Dr Fergal Kelleher	Melanoma
Prof Ken O'Byrne	Lung

Figure 3.1.2

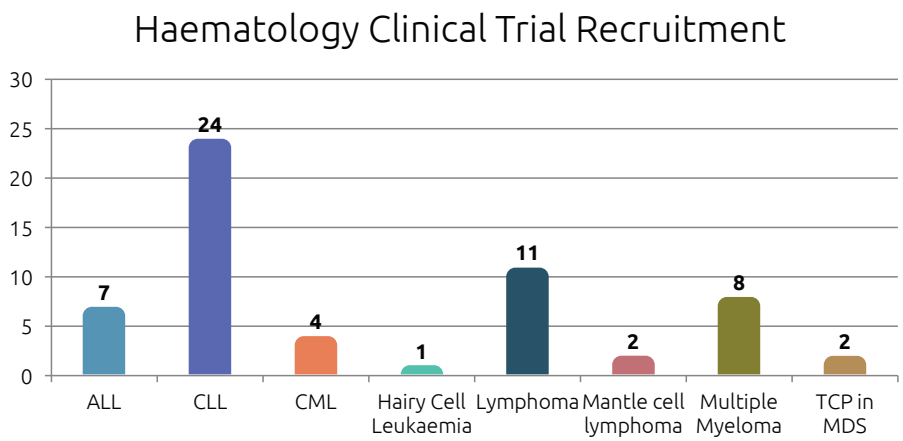


Figure 3.1.2 represents all recruitment to drug and translational/biomarker studies by Principal Investigators (PIs) 2013-2017. For a full list of studies, please see appendix 4

Table 3.1.2

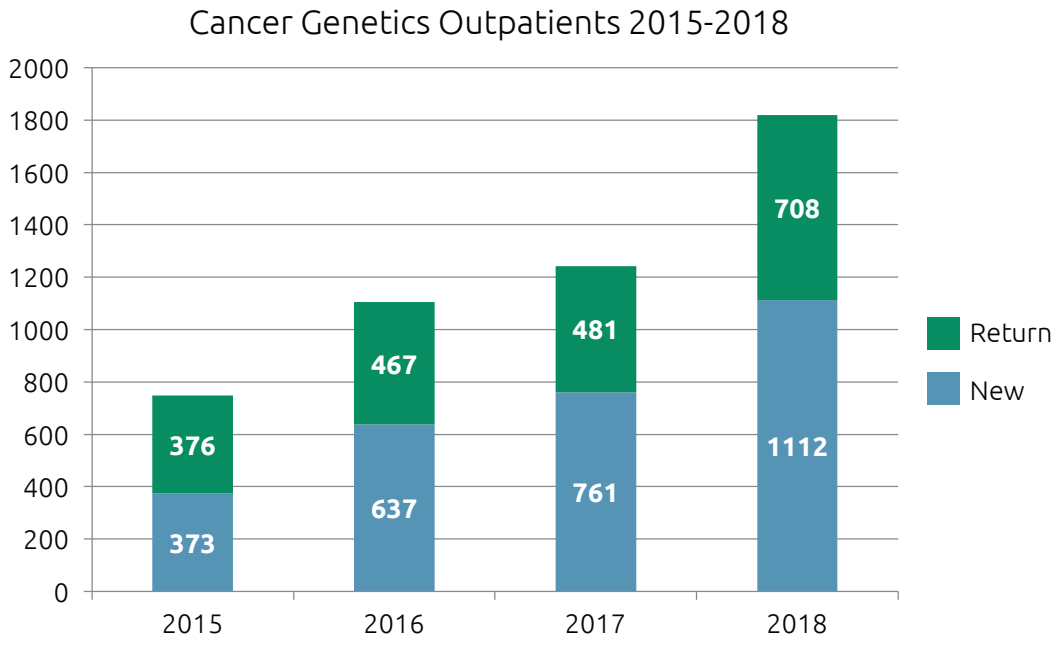
HAEMATOLOGY PRINCIPAL INVESTIGATORS 2013-2017	STUDY INDICATIONS
Prof Elisabeth Vandenberghe	CLL, ALL, Lymphoma, Mantle Cell lymphoma
Dr Eibhlin Conneally	CML
Dr Patrick Hayden	Multiple myeloma
Dr Larry Bacon	Lymphoma, Hairy Cell Leukaemia
Dr Catherine Flynn	Thrombocytopenia in MDS

2. Cancer Genetics Service

The current cancer genetics service at St. James's Hospital was established in 2011 and remains the only consultant-run cancer genetics service in a cancer centre in Ireland. Referrals are received from all cancer centres in Ireland and from the community. Attendance has increased exponentially year on year, commensurate with the increasing clinical relevance of cancer genetics in caring for patients with cancer.

Figure 3.2.1: Cancer genetics activity 2015-2018.

*2018 data is activity up until 28th November 2018



Attendance has increased exponentially year on year, commensurate with the increasing clinical relevance of cancer genetics in caring for patients with cancer.

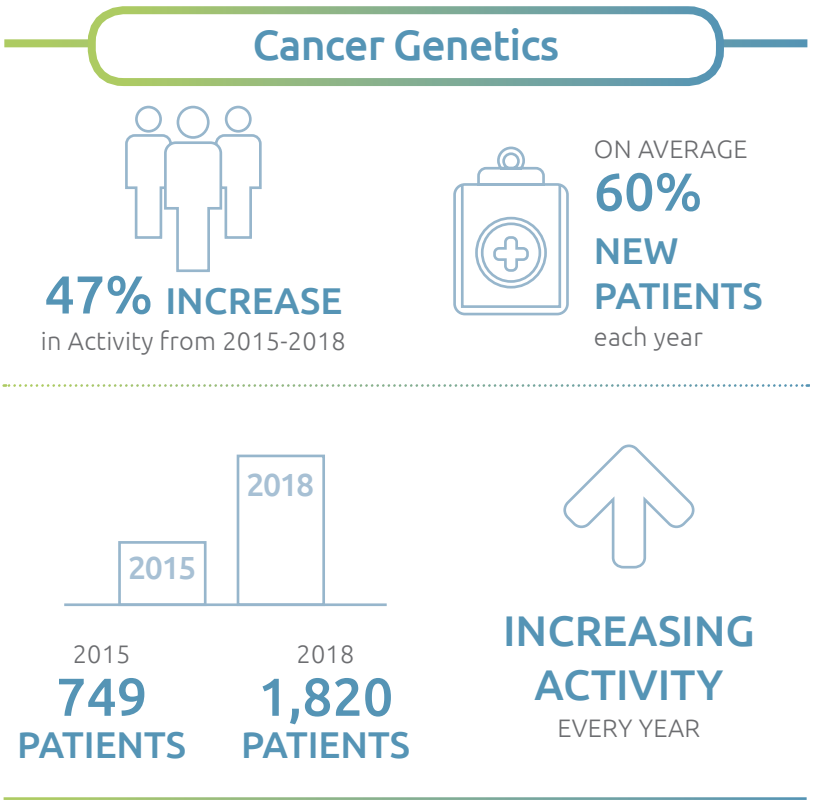
In line with the growth in demand for clinical services the clinical staff has doubled in the past 3 years. It now includes 1 WTE consultant, 3 WTE genetics counsellors and 3 WTE genetic nurse specialists, in addition to 3 administrative staff, and a new consultant post has been approved for Q4 2018

Clinical Services

Technological advances have made it possible to genetically profile not only tumours but also the individuals who develop them. This information can be used to select a more tailored therapeutic approach for patients with cancer. We can additionally identify healthy individuals who carry certain genes that genetically predispose them to cancer, and intervene to prevent the disease or diagnose it early at a curable stage. This preventive capability of cancer genetics is particularly powerful, and if harnessed will contribute meaningfully to the future wellness of the Irish population.

Additional activities

The service remains actively engaged in research with national and international collaborations. In addition to peer reviewed publications members of the cancer genetics team have presented research at the American Society of Clinical Oncology (ASCO) Annual Meeting, as well as the ASCO Gastrointestinal and Genitourinary Symposia, at the European Society of Medical Oncology Annual Meeting, the European Society of Medical Genetics Annual Meeting, and at the San Antonia Breast Cancer Conference.



3. Medical Oncology and Haematology

The medical oncology and haematology service is provided by seven medical oncologists and six haematologists with significant site/disease specialisation across all cancers. The consultant team is supported by a team comprising specialist registrars and registrars, ADON, ANP, CNMs, CNS, pharmacists, and administration.

Table 3.3.1 Medical oncologists and haematologists at SJH

MEDICAL ONCOLOGIST	DISEASE/SITE SPECIALISATION	HAEMATOLOGIST	DISEASE/SITE SPECIALISATION
Dr S. Cuffe	Lung, gastric, oesophageal, melanoma	**Dr L. Bacon**	Acute Lymphoblastic Leukaemia, Lymphoma, Adolescent/Young Adult (AYA) haematology
Prof D. Gallagher	Colorectal	**Prof P. Browne**	Myeloma, Acute Leukaemia
Dr C. Grant	Head and neck, sarcoma, lymphoma	**Dr. E. Conneally**	Acute Leukaemia, Myeloproliferative Neoplasms
Dr F. Kelleher	Melanoma, sarcoma (2018)	**Dr. C. Flynn**	Acute Leukaemia, Bone Marrow Failure Syndromes
Prof M.J. Kennedy	Breast, colorectal	**Dr. P. Hayden**	Myeloma, Cryobiology/Apheresis
Prof M. Lowery	Gastric, oesophageal, Pancreatic,	**Prof. E. Vandenberghe**	Lymphomas, Lymphoproliferative Disorders, molecular diagnostics
Dr D. O'Donnell	Urology and Gynaecology		

Haematology Oncology

Haematology Oncology service continues to grow both in terms of the haematology team and demands for the service. It provides care for patients with leukaemia, myeloma, and lymphoma. The service incorporates the National Adult Bone Marrow Transplant Unit. It also provides a matched unrelated transplant service to Northern Ireland and is national tertiary referral for complex haematological malignancies.

Medical Oncology

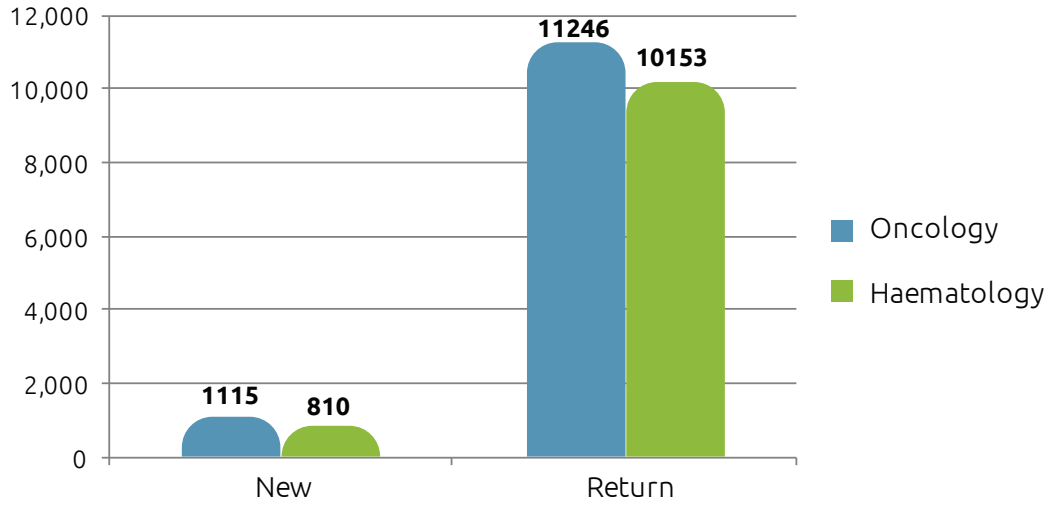
The medical oncology service continues to grow both in terms of the medical oncology team and demands for the service. In 2017 there were over 11,000 attendances across the service. The service is closely integrated and aligned with surgical and radiation oncology, cancer clinical trials, radiology, histopathology and molecular diagnositics. Such a multidisciplinary approach facilitates optimal care for our patients.

In 2017 there were over 11,000 attendances across the service.

Developments and Innovations

- As the National Adult Haematopoietic Stem Cell Transplant Unit, the service carried out 89 autologous and 78 allogeneic stem cell transplants in 2017.
- The 1st Irish National Bone marrow conference was held in St James's Hospital.
- The HODC was expanded with reconfiguration of waiting areas and creation of new consulting rooms.
- The Haematology and Oncology day case episodes (23,324 attendances for 2017) and OPD clinics continue to increase year on year.
- There have been very significant developments in the field of molecular diagnostics. Access to immunotherapies through participation in cancer clinical trials and approval of these drugs in various indications has expanded treatment options for our patients. The goal for 2018 is to increase our access to both of these areas with investment in diagnostics and increased access to novel therapies.
- Professor Maeve Lowery Consultant Translational Medical Oncologist joined the service in 2017. Her specialist interests are pancreatic cancer and to increase access to novel medications via clinical trials.
- Launch of the e-Smart study, a European nursing study monitoring chemotherapy toxicities and patient quality of life during treatment.
- Advanced nurse practitioner Ms Catherine O'Brien was appointed to provide nursing expertise to the area of patient survivorship.
- The TCD /SJH –led IMPETUS study (IMproving Physical activity and Exercise with Technology Use in Survivors) commenced recruiting patients
- Quality manager Ms Peig Carroll was appointed to lead JACIE accreditation for the haematology service with site visit in November 2018.

Figure 3.3.1: New and return attendance oncology and haematology attendances 2017



4. Cancer Nursing

Nurses caring for patients with a cancer engage with them along a trajectory that includes diagnoses, surgery, radiation, chemotherapy, survivorship and if required specialist palliative care. The care of these patients is provided by dynamic, educated, competent and caring nurses working across all clinical directorates within St. James's Hospital.

Within the HOPe Directorate the opening of Donal Hollywood Ward in 2016, which is a forty three bedded specialised Oncology, Haematology and Radiation unit has streamlined the cancer patients journey whilst ensuring that quality specialised care is provided to this cohort of patients.

The Bone Marrow Transplant Unit provides a national service for a rising number of patients requiring bone marrow transplant. Recent JACIE accreditation late in 2018 has ensured that up to date evidenced based protocols and standards are employed within the Stem Cell Transplant service.

Nursing teams caring for patients with a cancer diagnosis span all clinical Directorates within the organisation: Medical, Surgical, Oncology and Haematology and the Care of the Elderly which include both inpatient and ambulatory care services. This ensures that high quality and safe patient care is provided throughout. Nurses caring for patients with a cancer throughout the organisation are supported in advancing their clinical practices and decision making skills by Clinical Nurse Manager colleagues to ensure that such high standards are maintained.

Advancing Nursing Practice

Following the publication of the *National Cancer Strategy 2017-2026*[7] a number of Key Performance Indicators (KPIs) and recommendations were identified. Furthermore the strategy recognized the role that nurses working in advanced nursing posts could play in helping to realise these KPIs and recommendations. Nurses in advanced practice positions ensure that the cancer patient's healthcare needs will be met though impeccable assessment, planning, implementing, coordinating, monitoring, and evaluating of care all of which are underpinned by appropriate expert knowledge, autonomy, expertise of practice and professional and clinical leadership.

The Appointment of a Registered Advanced Nurse Practitioner (RANP) in Cancer Survivorship, Cardiothoracic and Palliative Care has been valuable additions to the patients experience in recent years.

Historically palliative care services in the acute hospital setting have been confined to inpatient services. However, most cancers are treated without the need for admission to hospital. Confining the provision of palliative care only to those in an inpatient setting denies a significant majority of ambulatory palliative care patients receiving anti-cancer treatment access to palliative care. The introduction of the RANP in Specialist Palliative Care in February 2017 ensures a safe transition and a continuity of care between healthcare settings and healthcare professionals. The RANP in palliative care acting in an advanced nursing, patient centred capacity spans traditional boundaries to provide timely and appropriate specialist knowledge and skill sets to the ambulatory palliative care patient, their family, multidisciplinary team members, other healthcare organisations, and to healthcare professionals in the primary care setting.

In June 2018, an RANP nurse-led lung cancer surveillance and survivorship service was established. All patients who have lung resection for primary lung cancer remain under surveillance for a minimum of five years post-surgery. There are three RANP led clinics each week and patients are seen at a dedicated appointment time. Each clinic review includes a physical and psychosocial assessment, health promotion and review of surveillance radiology. The service also provides a continuum of care between the acute service, patients and their primary care providers as the RANP managing the service can be contacted between appointments if necessary via email or mobile phone.

The RANP in Cancer Survivorship was appointed in July 2018. The role of the RANP in Cancer Survivorship in St James's Hospital is in the early stages and will continue to develop in collaboration with the National Cancer Control Programme (NCCP). The initial phase involved the establishment of RANP Nurse-led Cancer Survivorship clinics which are based in the outpatient setting. The patient groups identified as the priority to be included in the caseload and scope of practice are breast, lymphoma and testicular cancers. The overall purpose of the service is to provide safe, timely, evidenced based nurse-led care to patients at an advanced nursing level. This involves undertaking and documenting complete episodes of patient care, which includes comprehensive assessment, diagnosis, planning, treating and the discharging of patients in accordance with collaboratively agreed local policies, procedures, protocols and guidelines and/or service level agreements/ memoranda of understanding. The specific purpose of the RANP in Cancer Survivorship is to empower patients to achieve their best possible health.

A new advanced nursing post in diagnostics was established in the Breast Care Service with the support of the NCCP. The successful candidate ANP was appointed in December 2018.

Education

The personal and professional development of nurses working in cancer care within the organisation is maintained as they progressively and continuously achieve competence in their area of expertise. The provision of Nursing and Midwifery Board of Ireland (NMBI) certified courses help to nurture and retain nursing staff. These accredited post graduate courses are run in conjunction with Trinity College Dublin (TCD) and examples are listed below:

- Fundamentals of Oncology Programme
- Fundamentals of Haematology Programme
- Palliative Care Foundation Programme
- Psych-Oncology Programme
- Foundation in Stoma Care
- Post Graduate Diploma in Cancer Care & Haematology in Trinity College Dublin
- MSc in Cancer Care & Haematology
- Weekly Journal Clubs (both Medical & Nursing facilitated)

The HOPe Directorate have developed a Foundation course in Haematology and Cancer Care which will commence in the first quarter 2019.

Nursing Grand rounds is a new initiative commencing in early 2019 with the aim of sharing quality service developments and practice initiatives across the Hospital.

Audit & Research

ESMART is a European nursing study monitoring chemotherapy toxicities and the patient's quality of life during treatment. Recruitment for the study was undertaken in the Haematology, Oncology Day Centre (HODC) and Donal Hollywood Ward.

The Cancer Nursing Research Group comprises of a Director of Research from the School of Nursing TCD, and a researcher from the Nursing Research Collaboration Group within Trinity College Dublin and nurses working in cancer care across St James's Hospital. The group aims to encourage and support nurses to become proficient and confident in academic writing, critiquing literature, undertaking research and publishing their findings.

Cancer nursing staff continue to represent St. James's Hospital and their cancer speciality at both national and international cancer conferences thereby keeping abreast and participating in current standards of cancer care.

The cancer services throughout the hospital collaborate with the Irish Cancer Society Daffodil Centre who together with St. James's Hospital nursing staff work to provide patient education related to patients receiving anticancer treatments. Annually ongoing health promotion and education initiatives continue during site specific cancer awareness months.

Cancer Nursing

Early 2019 will see the recruitment of a

DERMATOLOGY CLINICAL NURSE SPECIALIST

Nursing teams caring for patients with a cancer diagnosis span

ALL CLINICAL DIRECTORATES

within the organization

Future Developments

Recruitment of a Project Nurse to examine and develop a pathway for the assessment and management of acute oncology, haematology, radiation oncology, and palliative care patients Recruitment of a project nurse to examine the current practices and management of the acutely unwell oncology, haematology, radiation oncology and palliative care patient, who come through the emergency department or HODC and to develop a pathway for the management of these patients.

Early 2019 will see the recruitment of a Dermatology Clinical Nurse Specialist. The principle role of this advanced nursing post is to facilitate the journey of each patient diagnosed with a malignant melanoma across the Dublin Midlands Hospital Group. The introduction of a coordinated nurse led rapid access pigmented lesion clinic will address the growing figures of melanoma with access to nurse led dermoscopy and advanced wound care management.

Also early 2019 will see the recruitment of a Thyroid Disease Clinical Nurse Specialist. This pan hospital post and will see a standardised pathway of care for patients in the Dublin Midlands Hospital Group diagnosed with thyroid cancer and requiring radioactive iodine treatment.

The TCD School of Nursing and Midwifery and St James's Hospital are building their capacity within nursing to make a more substantial contribution to leading the cancer nursing care research agenda in Ireland. Key to this is the establishment of a Nursing Professor in Cancer Care as a joint appointment between the two organisations. The Nursing Professor in Cancer Care will have a dual role of facilitating and leading on establishing and progressing a strong nursing research base within the organisation and being proactive in the in strategic planning and implementation of cancer nursing, It is foreseen that as part of this strategy cancer nurses will be encouraged and facilitated to undertake Masters and Doctoral programmes to further strengthen the nursing research agenda within the organisation.

5. Radiation Oncology

The St James's Hospital Campus houses the St. Luke's Radiation Oncology Centre for Radiation therapy, which is part of the St. Luke's Radiation Oncology Network (SLRON). The Network operates from three locations - St. Luke's Hospital (SLH), Rathgar, St. Luke's Radiation Oncology Centre at SJH (SJC) and SLROC at Beaumont Hospital (BC) in Dublin. The SJH and Beaumont centres opened in March 2011.

Since the commencement of service, there has been a steady increase in both the number of patients attending the centre and in the complexity of the treatments delivered. In 2013, just 27% of treatments delivered were using a volumetric modulated arc therapy (VMAT) compared with 74.3% of treatments in 2017.

There are currently 14 linear accelerators within the network, resulting in faster access for patients. The SJH centre houses four state of the art treatment linear accelerators (LA) as well as two CT scanners and one MRI unit. The SJH centre, in addition, provides total body irradiation (TBI) for haematology patients attending the National Stem Cell Transplantation Centre. There are 12 designated radiation oncology in-patient beds in SJH which first opened in February 2014.

Staffing

There are seven consultant radiation oncologists that work within the SLRON St James's centre (Dr. Charles Gillham, Dr. Moya Cunningham, Dr. Sinéad Brennan, Dr. Pierre Thirion, Dr Patricia Daly, Dr Naomi Lavan and Dr Fran Duane) providing a radiotherapy service for SJH. All consultants provide a comprehensive in-patient consultation and Outpatient Department (OPD) service, and collectively attend all the hospital's oncology MDT meetings. Liaison nursing support from SJH is provided by Ms. Anne O'Hara, but a team of SLRON nurses, led by Ms. Mary Cunningham, provide the nursing needs of outpatients on-treatment.

The remaining SJC staff team is comprised of radiation therapists, physicists, clinical engineering and patient services staff.

There are currently 14 linear accelerators within the network, resulting in faster access for patients.

Developments and Innovations

Clinical Trials

- From 2015-2017, a dedicated nurse and radiation therapist worked on site in our clinical trials unit with responsibility for implementing new trial protocols and managing follow up of previously enrolled patients.

CT

- In 2013, 4DCT scanning for lung tumours was introduced and remains the standard for patients receiving radical lung treatment in SJC. It permits greater accuracy when delivering radiotherapy by integrating respiratory motion within target volume delineation and treatment delivery.

Deep-Inspiration Breath Hold

- Two new techniques for treating breast cancer were introduced in 2016 – mono-isocentric treatment and deep inspiration breath hold treatment which aims to reduce the heart and lung doses received from the treatment.
- This DIBH technique was expanded to include lymphoma patients in 2017.

MRI

- In 2014, fusion of radiotherapy treatment planning CT and MR scans (in the treatment position) was introduced for certain patients undergoing radiotherapy to their prostate and is still used if required.

Stereotactic ablative radiotherapy (SABR) programme

- The national stereotactic ablative radiotherapy (SABR) programme, treating patients with early stage (usually medically in-operable) lung cancer has been operational in SJC since March 2014.
- In 2016, the service was awarded a Certificate of Compliance with the Novalis Standard for Stereotactic Radiosurgery (SRS) and Stereoablative Body Radiotherapy (SABR) Programmes.
- Expansion of the service in 2017 to treat more centrally located tumours which involves treatment over eight fractions (as opposed to three or five) resulted in a huge increase in the number of patients treated with SABR with the number of fractions delivered more than doubling. The introduction of motion management techniques for lung patients was introduced in 2018.

Total Body Irradiation (TBI)

- When SJC opened, the TBI service was transferred from SLH to SJC which required a change to the existing technique and implementation of a fractionated regime for both adults and paediatric patients.
- Total body irradiation continues and in 2017 there was a decrease in patient numbers from a high of 24 patients treated (128 fractions delivered) in 2016 to 17 patients (89 fractions delivered) using the predominantly fractionated techniques.

Total Lymphoid Irradiation

- In 2014, the first patient was treated in SJC with total lymphoid irradiation and this service continues to be provided. Patients are referred from the Mater Hospital and therapy is delivered to patients who appear to be rejecting their donated organs. To date seven patients have been treated.

6. Surgical Oncology

The Cancer Programme at SJH is founded on a multidisciplinary integrated team based model, with a high degree of site specialisation, and significant overlap and support from cognate disciplines. The key strengths within surgical oncology at the hospital are as follows:

- High-volume hospital and high-volume specialist surgeons for oesophageal/ gastric, lung, head and neck, maxillofacial, colorectal, breast, gynaecological, urological, and skin cancers.
- National Centre for Oesophageal and Gastric Cancer, and National Centre for Early Mucosal Neoplasia of the Oesophagus.
- National Maxillofacial Centre.
- Supra-regional Centres in Lung, Gynaecological and Head and Neck Cancer.
- Rapid-access structured clinics for all cancer sites.
- Integration with gastroenterologists and respiratory physicians in state of the art modern endoscopic facility, including EUS,EBUS, ERCP.
- Five-surgeon plastic and reconstructive unit, the largest in Ireland, link closely with head and neck, breast and skin cancer programmes.
- Cancer Clinical Trials aligned Cancer Trials Ireland (CTI).
- Excellent interface with specialist histopathology and molecular diagnostics, and biobanking of all resected oesophageal, lung, colorectal and prostate tissue enables molecular research in the Trinity Translational Medicine Institute, and national and international collaboration.
- Cognate linkage for major surgery across several sites: oesophageal and lung, head and neck/maxillofacial with reconstructive, oesophageal and lung, gynaecological, urological and rectal, urological and cardiac.
- Comprehensive vascular and endovascular programme, with significant input into some complex cancer operations and the management of major vascular emergencies.
- Outstanding cross-sectional radiology for cancer staging, including CT/PET and MRI, as well as specialist interventional radiology for the management of complex cancer cases and surgical complications.
- Developed nurse specialist roles in all surgical cancer sites.

Five-surgeon plastic and reconstructive unit, the largest in Ireland, link closely with head and neck, breast and skin cancer programmes.

7. Diagnostic and Interventional Radiology

Diagnostic and interventional radiology is provided by the Radiology Department which comprises 15 consultants, 76 radiographers, 12 nurses and 12 specialist registrars. The department performs approximately 180,000 examinations per annum. Since 2013 and the publication of the initial 10 year Audit report, the Department has increased the number of clinical MRI units from one to three, CT units from two to three, and mammography units from two to three (2018). There have also been two new consultant radiologist appointments. The Department provides both an urgent and routine oncology imaging service, all times are within guidelines established by the HSE and NCCP. It provides full support to all cancer MDTs, which now represent a substantial workload.

In 2008, the Centre for Advanced Medical Imaging (CAMI) was opened. This comprises of a high strength 3T MRI scanner and is the only unit of its type in the country. Among its ongoing research projects are both translational and clinical oncology imaging studies. The clinical department at SJH has very well developed academic structures with established links to TCD and the Faculty of Radiology. TCD has funded a research fellow who is assisting with oncology research projects

St James's introduced a Picture Archiving and Communication System (PACS) in the second half of 2006. This has quickly become integral to oncology patient care. In 2015, the department integrated this with the national PACS network (NIMIS). The NIMIS project was led by staff from SJH radiology, Informatics, and medical physics departments. As the majority of public hospitals are currently integrated with NIMIS, this has proven to be of great importance and value in oncology care and research.

In 2009, the national PET/CT unit was opened in SJH. This has become the busiest PET/CT unit in the country performing up to 14 examinations per day. Approximately 40% of these patients are referred from outside the SJH cancer network. We plan to develop the service over the next few years by introducing new radiopharmaceuticals and further integrating PET/CT into radiation oncology planning. In 2019, the PET/CT Department is introducing PET/CT using Ga-68 based radiopharmaceuticals (PSMA and Somatostatin receptor imaging).

Consultant Staff:

Diagnostic
Dr Niall Sheehy, Prof Peter Beddy, Prof Mary Keogan, Prof James Meaney, Dr Graham Wilson

Interventional Radiology
Dr Niall McEniff, Dr Michael Guiney, Dr Mark Ryan, Dr Ian Brennan

PET/CT and Nuclear Medicine
Dr Grainne Govender, Prof Ciaran Johnston, Dr Niall Sheehy

Breast Imaging
Dr Suzannah Harte, Dr Sylvia O'Keeffe, Dr Ronan McDermott, Dr Mark Knox

Nurse Manager

Ms Maria Dobrei

Radiographic Services Manager:

Ms Suzanne Dennan

Activity

Complex imaging activity from 2013 is demonstrated in Figure 3.7.1. Figure 3.7.2 demonstrates the range of activity and Figure 3.7.3 shows the units that have undergone the most significant changes.

Figure 3.7.1: Complex Diagnostic Imaging activity by patient number since 2013[Incorporates PET/CT, CT, MRI, US, NM, mammography and Interventional Radiology]

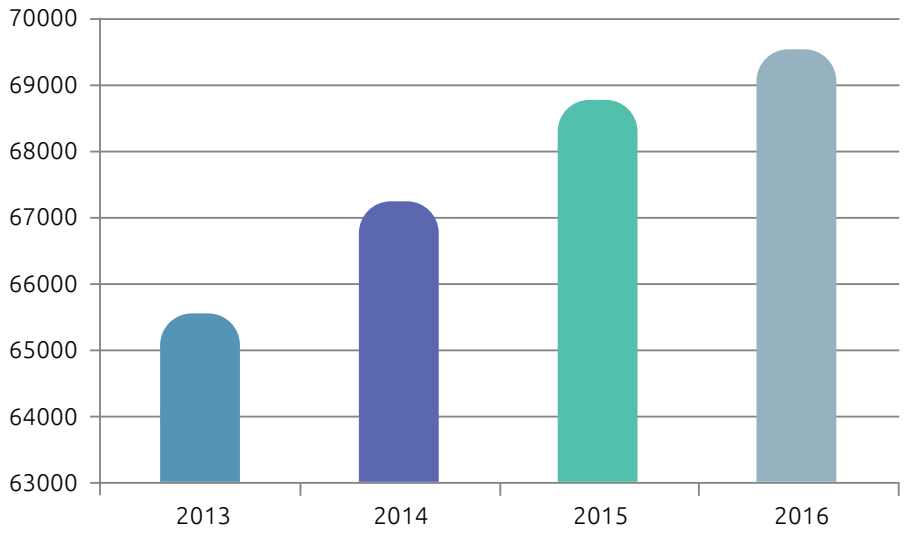


Figure 3.7.2: Complex imaging by modality (2013-2017)

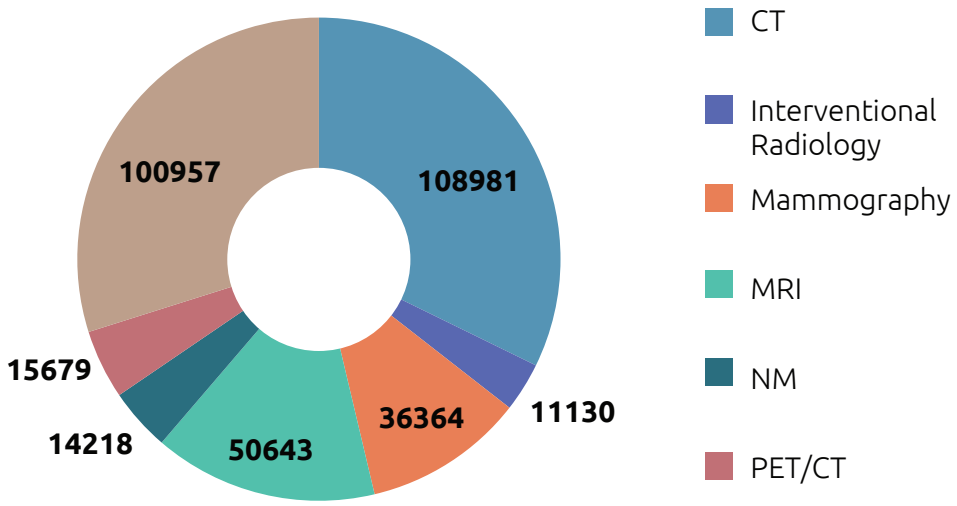
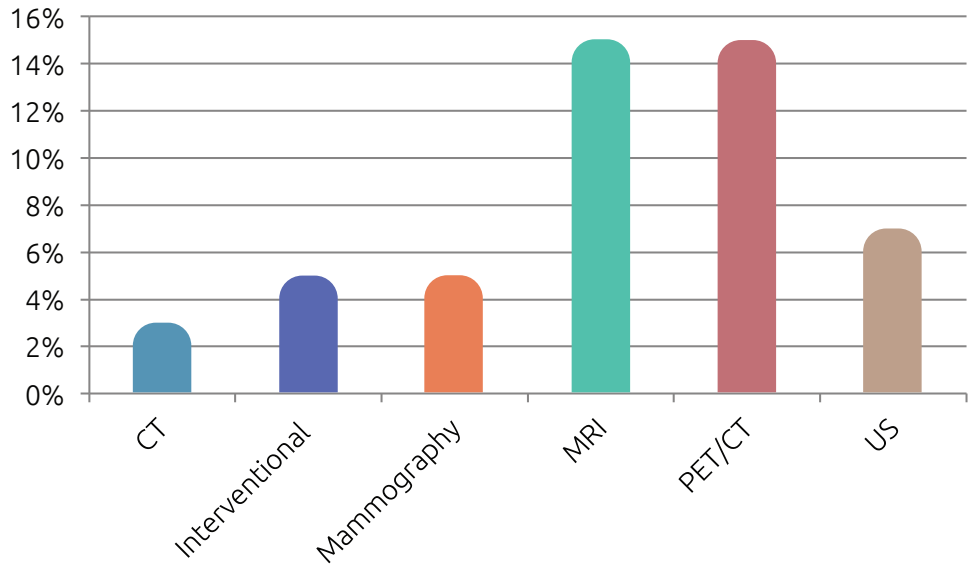


Figure 3.7.3: Percentage increases in complex imaging 2013-2016



8. Histopathology and Cancer Molecular Diagnostics

The Department of Histopathology and Cytology plays an integral role in cancer services in SJH. Diagnostic services are provided to SJH, GPs in the Greater Dublin area, the Dublin Dental Hospital (DDH) and some external hospitals. The department provides an opinion on all tumour biopsy material as well as diagnosis, grading and staging of tumour resections done within SJH.

The department also provides second opinions on the pathology of patients referred from outside hospitals to SJH as well as consultation second opinions to hospitals around the country.

The diagnostic cytopathology service is provided by two specialised cytopathologists who report fine needle aspiration (FNA) and exfoliative cytology that is integral to the diagnosis, staging and management of cancers of the lung, breast, hepatobiliary system and pancreas, head and neck including thyroid and the haematolymphoid system. Rapid on site evaluation of cytologic diagnostic samples is available on request. A weekly clinic is also offered by a Cytopathologist trained in performance of FNA. Hospital in-patients, outpatients and GP patients have access to this clinic.

There are 11 weekly MDT meetings and two fortnightly meetings where the pathology, radiology and clinical features of cases are discussed so that appropriate treatment plans can be devised for patients.

Structure

The Histopathology Department delivers subspecialty reporting of cases in Cytopathology, Dermatopathology, Gynaecological pathology, Pulmonary pathology, Breast pathology, Gastrointestinal pathology, Urological pathology, Head and Neck/Dental pathology, Haematopathology, Liver pathology and Molecular pathology with each pathologist reporting within two or three specialities only.

We work with the Cancer Molecular Diagnostic (CMD) laboratory which is one of only two accredited molecular diagnostic laboratories in Ireland focused exclusively on cancer in Ireland. To date CMD has provided a de facto national molecular diagnostic service, primarily for haematological malignancies. More recently solid tumour molecular diagnostics have become critical to the appropriate management of patients with a broad array of common cancers such as breast, colon, lung, ovarian and malignant melanoma and these requirements will increase hugely over the next number of years. All such testing is performed using Next Generation Sequencing platforms using broadly targeted panels.

A strong strategic alliance has been forged between Histopathology and CMD and The Trinity Translational Medicine Institute (TTMI) in TCD to develop and validate clinically relevant biomarkers with the support of industrial and academic collaborators. The laboratory is a European reference laboratory for cancer molecular diagnostics clinical trials. It is partnered with the European Thoracic Oncology Platform which was founded in 2009 with a focus on promoting collaboration in clinical and translations research in lung cancer and mesothelioma in Europe. In addition, CMD provides molecular diagnostics to support clinical trials in association with Cancer Trials Ireland. Molecular pathology will become increasingly important in the treatment of cancer.

Recently there has been a convergence of somatic and germ line cancer risk assessments and the molecular laboratory has been working with both the genetics and histology departments at Our Lady's Children's Hospital, Crumlin to enhance both adult and paediatric cancer patient care.

In house PDL1 immunohistochemical staining of non-small cell lung carcinoma was introduced in 2018 with results used by oncology colleagues to assess patient suitability for immune checkpoint inhibitor therapies. This has been integrated into the molecular diagnostic report providing all relevant molecular and protein expression data for therapy selection.

Two Mohs dermatoscopic surgeons work in the Mohs surgery service and surgically treat complex skin cancers in anatomically sensitive sites with a large referral practice. Medical scientists process the frozen sections in the Mohs surgical laboratory and the laboratory participates in EQA.

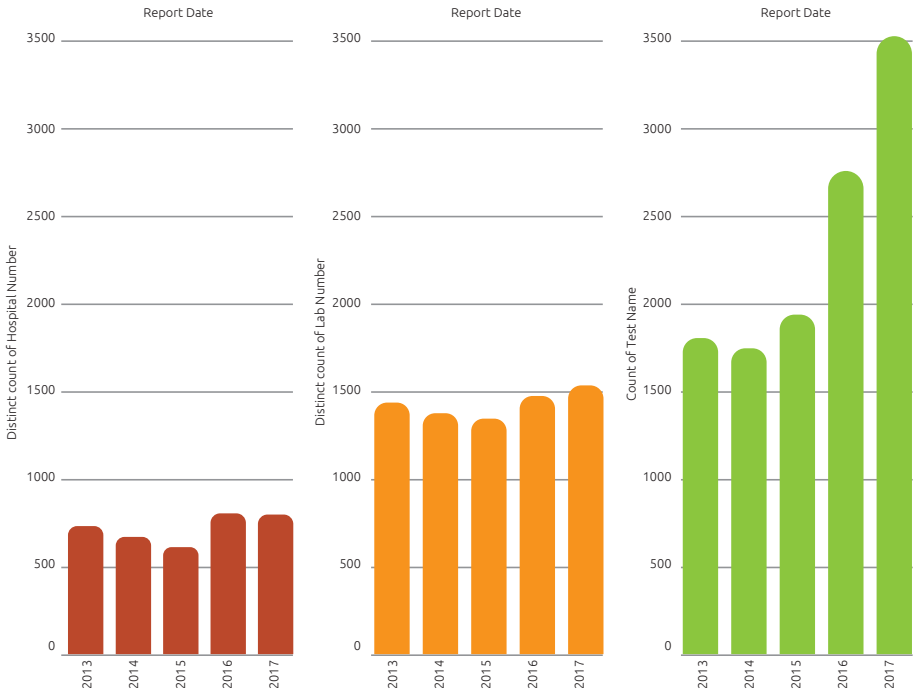
Table 3.8.1 Molecular diagnostics at SJH

MOLECULAR DIAGNOSTIC PERFORMED AT SJH		
ALK (FISH)	Colorectal Panel	Oncomine
ALK (IHC)	FLT3-ITD	BCR-ABL relative quantitation
B screen	IgH Somatic Hypermutation	T screen
BCR-ABL mutation screen	JAK2	t(11;14)
BCR-ABL (p190)	Lung Adenocarcinoma Panel	t(14;18)
BCR-ABL (p210)	Melanoma Panel	t(15;17)
CALR	Nucleophosmin	TP53
Chimerism	NTRK	BRAF

Cancer Molecular Diagnositics Activity 2013-2017

Figure 3.8.1 denotes the number of internal requests processed by the CMD laboratory annually from 2013 to 2017 inclusive. The average number of samples received per patient has remained consistent from year to year, however the number of tests being performed on each sample has grown significantly. This reflects the growing recognition of the importance of molecular diagnostics in cancer diagnosis and treatment.

Figure 3.8.1 Cancer Molecular Diagnositics Activity



9. Palliative Care

Structure

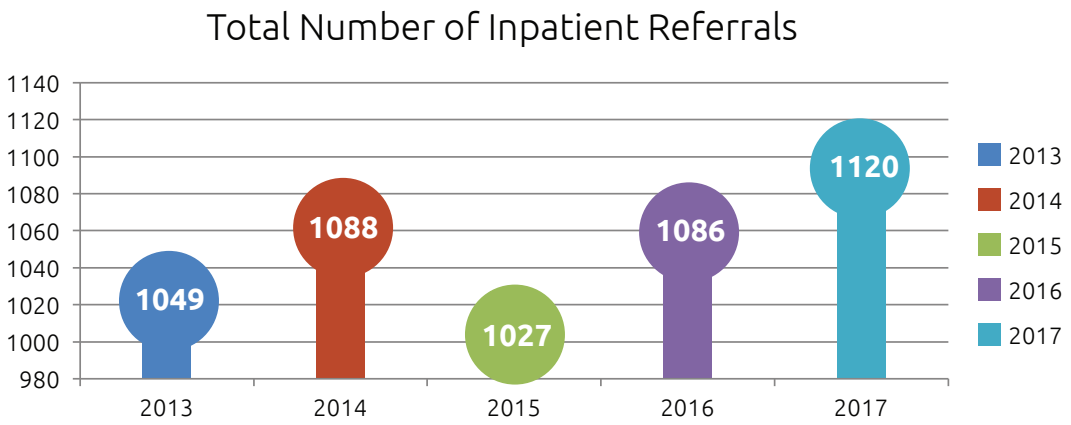
The palliative care service in SJH was established in 1995. It comprises two medical consultants, Dr Norma O'Leary and Dr Lucy Balding, (23.5 hour commitment), a registered Advanced Nurse Practitioner (Mr Rory Wilkinson), a fulltime medical registrar, 3 WTE clinical nurse specialists (Ms Denise Breen, Ms Paula Ward, Ms Martina Monaghan, Ms Martina Thuillier), a medical social worker and 0.5 WTE administration support. The direct administrative supervision and governance of the service is conducted through the HOPE directorate. The strategic policy direction of the service is in line with the HSE National Clinical Programme for Palliative Care.

A weekly MDT meeting is held where all patients referred to the service are discussed and a plan of care agreed. Joint palliative medicine/oncology psychosocial meetings are held twice weekly. A consultation service is provided to hospital in-patients. Four outpatient clinics are held per week; two in the outpatient department and two in the Haematology and Oncology Day Ward. When patients leave SJH they can receive ongoing specialist palliative care either through the outpatient clinics or with community based specialist palliative care services.

Activity

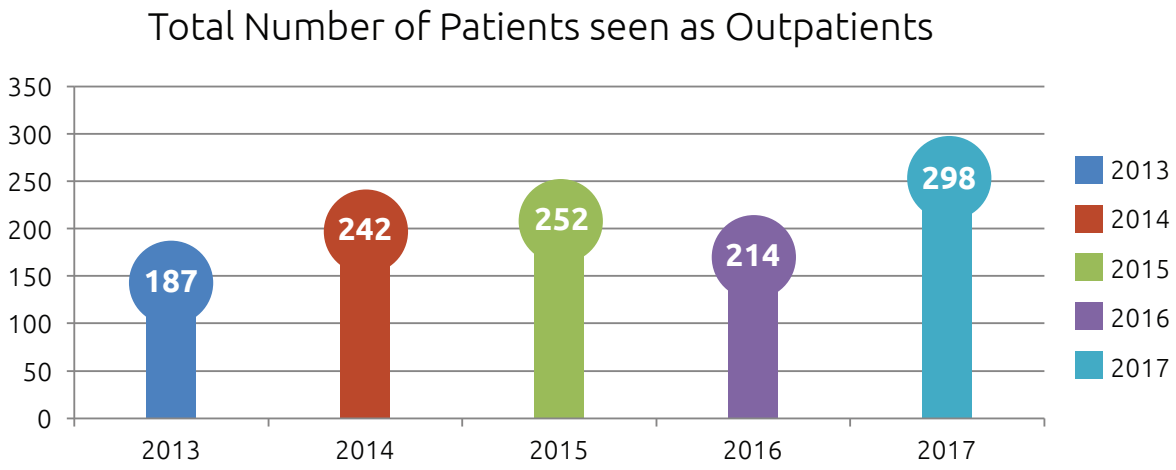
The service contributes to the National Minimum data set on a monthly basis. Inpatient, outpatient and rapid discharge data are collected. The demand for the service has been increasing year-on-year, with for instance a 7% increase in total inpatient referrals since 2013. On average more than 85% of all new inpatient referrals are seen within two days of referral. 70% of the workload relates to patients with cancer. The 3 main outcomes in order of frequency are discharge to home with community palliative care support, death or transfer to hospice for ongoing care.

Figure 3.9.1 Number of inpatient referrals



There has been a 60% increase in outpatient activity since 2013. This is related to the Advanced Nurse Practitioner focusing on ambulatory cancer care.

Figure 3.9.2 Total number of patients seen as outpatients



Developments

1. At the end of 2017 the Advanced Nurse Practitioner (RANP) was registered with the Nursing and Midwifery Board of Ireland. The RANP supports the integration of palliative care with oncology care by seeing patients earlier in the disease trajectory and by being available to see patients in the oncology day way or in the outpatients department. The RANP supports transitions of care by strengthening information and communication between services as patients transition from hospital based care to community based care. The quantitative impact of the RANP is reflected in the increase in outpatient activity.
2. A bereavement support evening has been jointly run by the specialist palliative care and social work teams. This biannual remembrance service has been supported by proceeds from the Trinity Med Day, organised by medical students. Families and friends of approximately 70 deceased patients have attended the remembrance service every year. It has been very well evaluated by attendees.
3. The Survey of Bereaved Relatives: VOICES MaJam: Voices of Informal Carers – Evaluation of Services at the Mater Misericordiae University Hospital and St.James's Hospital, was published in 2017. This report examined the quality of end of life care as perceived by bereaved relatives in order to inform quality improvement.
4. The team is actively involved in teaching and training of all disciplines both at undergraduate and postgraduate levels.
5. The team is involved in National Clinical Programme for Palliative Care audit and guideline development initiatives e.g. Pharmacological Management of Cancer Pain in Adults (published 2015), Care of the Dying Adult (in development).

10. Psycho-Oncology

The Psycho-Oncology Service at SJH was formally opened by the Minister for Health in 2005. It was the first integrated psycho-oncology service nationally and developed the first CNS post in a general hospital setting. Developed from the existing Psychological Medicine Service, it promotes the same ideals of integrated, multi-disciplinary psychological care across all levels of distress– mild/moderate and severe and provides emergency and elective assessment as well as on-going complex psychological care when needed. The core service includes Principal Clinical Psychologist; Dr Sonya Collier, CNS; Mr. Eugene Beirne; Administrator; Ms. Karen Shine, and Consultant Psychiatrist; Dr Anne-Marie O' Dwyer.

In addition to providing clinical care, the team also provides training, supervision and education for health workers including staff education and support lectures delivered to Radiation Oncology nurses and radiotherapists.

The service continued to support the intern placement within the Psychological Medicine service and facilitated GP registrar placements.

The service continues to experience high volumes of referrals and attendance to the service and increased referrals to the service for cancer genetics patients.

The team has presented at national and international conferences and has published in a number of peer reviewed journals.

A recent innovation by the service was the completion of phase 2 of new Mentalisation-Based Treatment group intervention for patients with complex mental/physical health presentations completed. Development of new service for the sickle cell cohort is on-going.

The service continues to experience high volumes of referrals and attendance to the service and increased referrals to the service for cancer genetics patients.

11. Health and Social Care Professions' Directorate Services

These Departments are combined within the SCOPe HSCPs Directorate which comprises the Departments of Speech and Language Therapy, Medical Social Work, Clinical Nutrition, Occupational Therapy and Physiotherapy.

Clinical Nutrition

Clinical Nutrition activity has increased substantially over the last five years, in particular with upper gastrointestinal, colorectal, gynaecological, haematology, and head and neck cancer cancer patients, and more broadly across medical and radiation oncology.

For complex head and neck cancers, there has been a 74% increase in patients diagnosed and treated in St. James's Hospital from 2005 to 2017. An audit of head and neck cancer surgery patients demonstrated that 95% (87-100% ENT and Maxillo-Facial cancer respectively) of patients were referred to Clinical Nutrition, and an audit of need by cancer site indicated that 95% of these patients warranted dietetic referral. In 2017, over 250 new head and neck cancer surgery inpatients were seen by Clinical Nutrition with almost 1,900 inpatient contacts.

There has been a increase in staffing to help meet the increased activity. However, demand on services continues to grow, reflecting St. James's designation as a cancer centre, improved survivorship, increasing patient complexity (including referral of complex patients from other hospitals) and the need for intensive clinical nutrition input throughout the patient's cancer journey, including the outpatient setting. The department is fortunate to have clinical specialist positions in the areas of upper gastrointestinal cancer surgery and radiation oncology (service established in 2013).

There has also been a significant expansion in the number of cancer patients managed on both home enteral (HEN) and parenteral nutrition (HPN) support. This facilitates early appropriate discharge and reduces length of stay while providing patient-centred dietetic care. For instance, in oesophageal surgery, an average 73 patients are discharged annually on HEN supplementation. The number of patients with cancer discharged on HPN or intravenous fluids has also increased, with 48 successfully discharged home between 2013 and 2017 that heretofore would have remained in hospital for possibly months. Another important initiative, developed in 2014, is a joint dietitian and surgeon outpatient clinic dedicated to investigating and managing symptoms of malabsorption after oesophageal and gastric cancer surgery. It is held fortnightly, is mainly focused on weight loss and malabsorption, and provides evidence-based care for patients to optimise quality of life after oesophageal and gastric cancer surgery.

In 2016, Clinical Nutrition in collaboration with Interventional Radiology established a dedicated Radiologically Inserted Gastrostomy (RIG) replacement clinic for patients who require enteral tube feeding via a RIG tube to receive sole or supplementary artificial nutrition to support their cancer treatment and recovery. This dedicated clinic, with a rapid response service, delivers approximately 200 tube changes per year and reduces delays for both routine and non-routine RIG replacements, and also eliminates waiting times for appointments. This joint Interventional Radiology /Clinical Nutrition quality initiative identified and acted on opportunities to improve patient-centred care, prevent unnecessary admissions and Emergency Department presentations, reduce length of stay and increase the throughput of patients through interventional radiology (IR), allowing IR to accommodate an increased volume of new patients requiring RIG tube insertions and increasing IR capacity for other procedures.

Clinical Nutrition staff have developed and reviewed resource information on nutrition for cancer patients for use nationally and contributed to cancer survivorship service needs mapping and submissions to the National Cancer Strategy 2017- 2025[7]. A senior Medical Oncology Dietitian was an invited member of specially convened national multidisciplinary advisory panel that contributed to; A Review of Home Parenteral Nutrition in Ireland: Recommendations for Action on behalf of the Irish Society of Nutrition and Metabolism (IrSPEN) Standards and Guidelines Committee, September 2013, with SJH cited in appendix 2 of report as one of two examples of good practice with HPN coordination. A senior Medical Oncology Dietitian is the National Adult Home TPN dietitian representative on the National Community Funded Schemes Service Improvement Programme – Nutrition with a programme goal to streamline funding for home TPN patients nationally. Clinical Nutrition staff have presented widely on nutrition and cancer including presentations at national (Irish Society of Gastroenterology, Sir Peter Freyer conference, Lymphoma Forum of Ireland, Cuisle Beatha Palliative Medicine Conference Irish Nutrition and Dietetic Institute study days, INDI Research Day, IrSPEN Irish Society for Clinical Nutrition and metabolism) and international (BAPEN, ESPEN, ASPEN, AUGIS, San Antonio Breast Cancer Symposium) conferences, and received travel awards for best abstract submitted from that country to attend ESPEN in 2008 and 2016. Staff have presented at Grand Rounds, on the RCSI Specialist Registrar education programme and at multiple Irish Cancer Society meetings. Staff have also written and contributed to national media articles on nutrition and cancer and delivered public lectures and information evenings for patients, families and other health care professionals.

Audit and Research

The Department of Clinical Nutrition, working in collaboration with Professor Reynolds, secured almost €1,000,000 in cancer research funding for trials, with work continuing into 2013-2017. This work has resulted in 19 peer reviewed publications and numerous international and national conference presentations and associated conference publications, including the first Irish studies linking obesity and metabolic syndrome to cancer, as well as two RCTs investigating the impact of enteral nutrition on recovery post-oesophagectomy.

Medical Social Work

Social workers focus on the psychosocial aspects of patient care, incorporating both emotional and practical support to patients and their families, and providing comprehensive assessment of patients' psychological and social needs as well as assessing any risks to the patient. They provide counselling for patients and families, practical advice and information and advocacy and liaison work with community services to facilitate effective discharge planning and aftercare.

Over the past ten years the social workers have provided a service to an increasing number of patients with cancer over and above their tradition role with medical oncology and haematology patients, in particular with Head and Neck Cancer patients, oesophageal, gynaecological, and colorectal cancer surgery. Demographic and socio-economic changes nationally have been reflected in the increased complexity of patients' circumstances. As a result, many patients have been assisted by social workers including those from different ethnic backgrounds, those with limited family support, families who have been financially devastated by the recession and older patients who are living in extreme isolation.

Developments / Innovations

The social work team provides chemotherapy education sessions once weekly in conjunction with the Irish Cancer Society Daffodil Centre. These sessions help to educate patients on the role of the social worker and provide information on the

The Department of Clinical Nutrition, working in collaboration with Professor Reynolds, secured almost €1,000,000 in cancer research funding for trials, with work continuing into 2013-2017.

practical and emotional impact of a cancer diagnosis, as well as giving information on how to talk to children in the family about cancer. These weekly sessions have helped to reach all new patients commencing on chemotherapy. The oncology social work team has all been trained in the CLIMB programme which is a group work programme for primary school children who have a parent with a cancer diagnosis. This programme is facilitated by the social work team twice a year through ARC cancer support centre.

The social work team has played a leading role in the Irish Oncology and Haematology Social Workers Group over the past few years with members of our social work team taking on the roles of chairperson and secretary. The Irish Oncology and Haematology Social Workers Group (OHSWG) is a nationwide group of professionally qualified Social Workers who meet for information sharing, professional development and education. The social work team has also joined the newly established Irish PsychoSocial Oncology Network (IPSON) which is another forum for social workers and other professionals to share information and participate in professional development.

It is widely acknowledged that dealing with a cancer diagnosis leads to an increase in expenses and a decrease in income for patients. Social workers aim to assist patients to cope with the financial burden of coping with a cancer diagnosis through applying for financial aid grants, such as Travel 2 Care. The last few years have been a challenging time as during the recession many charities, including the Irish Cancer Society, did not have the funds to provide comfort payments. Social Workers have advocated for resources from charitable organisations over this time.

The oncology social work team may also work with patients facing end of life. The team completed training in 2018 on 'Writing for the Future' which involves assisting the patient to write their life story so that they are able to leave a written legacy for their families.

Occupational Therapy (OT)

Occupational Therapy plays an essential role at all stages of the cancer care pathway. The occupational therapist works as a key member of the multi-disciplinary team to enable patients achieve their optimum level of functional independence and quality of life. The Occupational Therapy staffing in Oncology and Haematology is 1 WTE senior Occupational Therapist. This individual provides a dedicated service to all Oncology and Haematology inpatients (including outliers) and outpatients, based on need. As teamwork is a standard feature of recommended cancer care, the OT meets regularly with multi-disciplinary team members.

Activity

On average, the Occupational Therapist delivers approximately 700 individual patient contacts to Oncology and Haematology per annum.

Developments / Innovations

Staff grade rotations have been incorporated when feasible to address increasing clinical demand as well as developing a specialist oncology and haematology skill-set amongst staff grade therapists. The Occupational Therapy Department has implemented core clinical competencies to support this rotation. The occupational therapist has developed a comprehensive Haematology and Oncology clinical care pathway in order to streamline service delivery and ensure adherence to standards of practice.

Following assessment of functional performance, the occupational therapist provides essential enabling equipment in the home environment to facilitate discharge from hospital. This has resulted in decreasing length of stay, facilitating safe discharge home and improving quality of life.

The occupational therapist developed an outpatient fatigue management programme for patients on a one to one basis. The Fatigue Severity Scale was used to identify appropriate cases who then, opted in to receive individual therapy. The Canadian Occupational Performance Measure demonstrated the effectiveness of this programme with participants reporting increased engagement in activities of daily living, better quality of sleep, improved quality of life and re-establishment of daily routines.

In collaboration with the School of Occupational Therapy at Trinity College Dublin, a PhD research project was completed in 2017 to investigate the effectiveness of the OPTIMAL self-management programme amongst cancer survivors. OPTIMAL is a six week occupation focussed education programme focussing on topics such as fatigue management, pain management, anxiety and stress management, exercise and activity, cognitive strategies, and effective communication with health professionals. Four OPTIMAL programmes were delivered with 26 individuals of mixed cancer diagnoses over an 18-month period. The programme was shown to be effective in assisting people to transition from treatment to survivorship.

Future developments

In keeping with continuous quality improvement, the department is committed to ongoing clinical audit, promoting evidence-based practice and further development of the Oncology and Haematology Occupational Therapy service. Plans are afoot to deliver the OPTIMAL programme within the multi-disciplinary team, incorporating Occupational Therapy, Physiotherapy, Clinical Nutrition, Survivorship Nurse and Oncology Psychology liaison in January 2019.Specific outcome measures will be utilised to demonstrate the efficacy of this self-management education post treatment amongst our patient population.

Physiotherapy

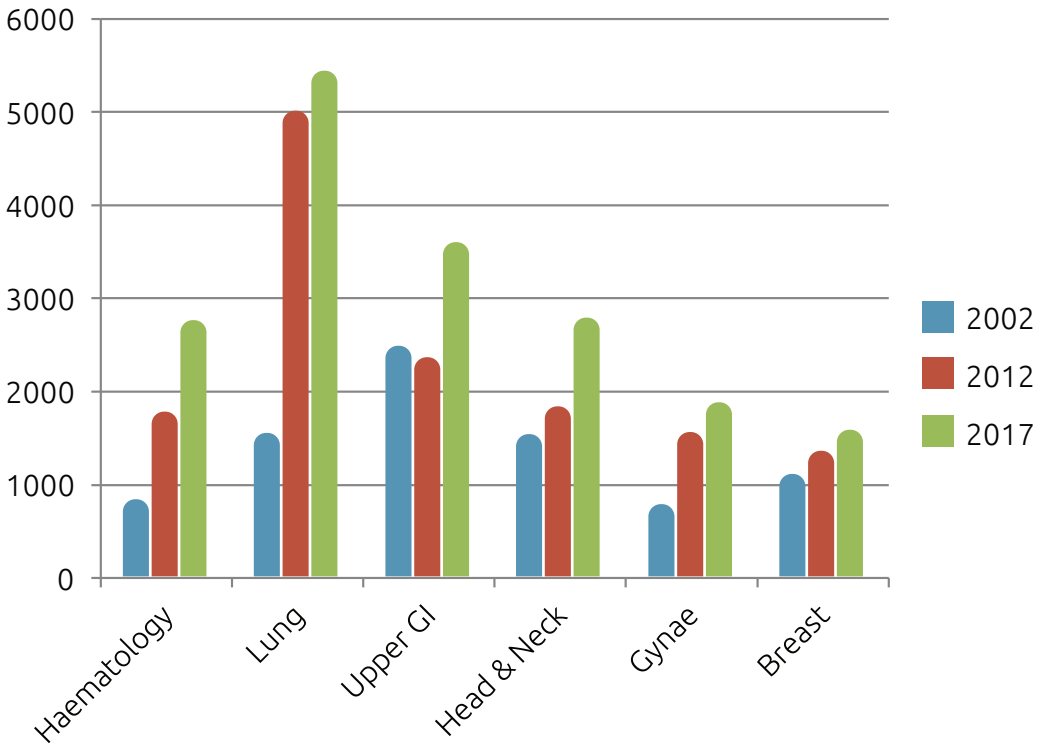
Physiotherapy is increasingly a key element in the optimum management of the cancer patients. Cancer and its various treatments are associated with a wide range of distressing physical and psychological symptoms, which can have long term effects for patients for many years following the end of treatment. Exercise can improve quality of life for cancer patients, regardless of the type and stage of their disease. Inclusion of physiotherapy-led exercise within cancer pathways can reduce and prevent disability.

Physiotherapy has a key role for patients throughout their cancer journey. The primary goal is to assist the person with cancer in achieving maximum physical functioning within the limits imposed by their disease and/or treatment. Emerging evidence also shows that exercise reduces the risk of cancer recurrence and mortality, and mortality can be reduced in bowel, breast and prostate cancer. In addition, disease progression can be reduced by up to 57 per cent in men with prostate cancer who engage in three hours a week of moderate intensity exercise.

Excessive weight gain and loss can be a problem for many patients, depending on their treatment, stage and type of cancer. Specialist physiotherapists are vital for maintaining healthy weight and preventing muscle weakness and its consequences.

Specialist physiotherapy can also alleviate distressing symptoms such as lymphoedema and fatigue, which debilitates 75-95 per cent of all cancer patients.

Figure 3.11.1: The Number of Physiotherapy Treatments per Cancer Type 2002 – 2017



- Specialist physiotherapy can also alleviate distressing symptoms such as lymphoedema and fatigue, which debilitates 75-95 per cent of all cancer patients.
- Nearly three quarters of cancer survivors are not physically active at the levels recommended

At St. James's Hospital the physiotherapist is increasingly involved pre-operatively as well as post-operatively in patients scheduled to have complex major cancer surgery. Pre-operative optimization including inspiratory muscle training and pre-habilitation in patients with lung and oesophageal cancer may improve patient outcomes, and this is an active focus of research conducted in the Wellcome/ Health Research Board Clinical Research Facility on site. Additionally, in patients that will have chemotherapy and/or radiation after surgery, studies are ongoing to address cardiopulmonary and functional issues that may influence oncological outcomes and quality of life.

Over the last five years there has been a consistent rise in treatment delivery to all cancer patients as outlined in the chart below. This depicts the number of treatments, and highlights a several fold increase in treatments across oncology, in particular for lung, oesophageal, head and neck, haematological, and gynaecological.

Developments & Innovation

Research

There is a strong track record of research and innovation in physiotherapy in St James's Hospital. Three physiotherapists completed PhDs and one MSc in the field of cancer and published papers in peer reviewed journals. A sample of topics published is outlined below.

Jenny Gannon, PhD:

- Effect of preoperative inspiratory muscle training on physical functioning following oesophagectomy.
- Sarcopenia during neoadjuvant therapy for oesophageal cancer: characterising the impact on muscle strength and physical performance.
- Multidisciplinary rehabilitation across the oesophageal cancer journey.
- Reduced fitness and physical functioning are long-term sequelae after curative treatment for esophageal cancer: a matched control study.
- Examining the impact of oesophageal surgery on functional performance.

Jonathan Moran PhD

- Evaluating and optimising preoperative physical fitness to enhance postoperative outcome in major surgery.
- Physical Decline and its Implications in the Management of Oesophageal and Gastric Cancer.
- Increasing physical activity in cancer survivors using eHealth: A focus group study.
- The ability of prehabilitation to influence postoperative outcome after intra-abdominal operation: A systematic review and meta-analysis.

Grainne Sheill, PhD

- Considerations for Exercise Prescription in Patients With Bone Metastases: A Comprehensive Narrative Review.
- Physical activity and advanced cancer: The views of chartered physiotherapists in Ireland.
- The views of patients with metastatic prostate cancer towards physical activity: a qualitative exploration.
- The ExPeCT (Examining Exercise, Prostate Cancer and Circulating Tumour Cells) trial: Study protocol for a randomised controlled trial.
- Physical activity and advanced cancer: the views of oncology and palliative care physicians in Ireland.

Deirdre Lynch, MSc

- Physical fitness and physical activity levels of patients following haematopoietic stem cell transplant: A case controlled study.

Furthermore, several initiatives have been successfully introduced into physiotherapy practice in cancer care, as follows

- A project was introduced to ascertain compliance to a prescribed exercise programme using a web-based exercise app within the national adult bone marrow transplant unit.

- Pink Pilates has been introduced as part of standard practice for post-operative breast cancer patients. The class comprises exercises to improve upper and lower body movement and strength, with an emphasis also on core strength and posture.
- Breast reconstruction physiotherapy care pathway was devised and is now in operation to provide early best in class care to breast patients.
- A lymphoedema pathway and protocol was developed to facilitate early identification of those at risk of lymphoedema – a debilitating chronic condition affecting some patients as a consequence of their cancer treatment.
- A Prehabilitation Programme is now underway which involves two supervised exercise classes designed to improve patients' fitness before cancer surgery. St James's Hospital patients scheduled for thoracic, oesophageal, GI, open gynaecological and colorectal surgery with surgery scheduled in >2 weeks are invited to participate in the programme.

Future Developments

In keeping with evidence-based practice, we are committed to building on our role in the area of exercise, cancer and survivorship. Investigation into the effectiveness of prehabilitation for patients before they embark on active cancer treatment will continue.

Speech and Language Therapy (SLT)

Speech and Language therapists play a crucial role within the cancer care multidisciplinary team, from the pre intervention assessment period, through pre and postoperative recovery, and in all phases of chemo/radiotherapy. In addition, it has significant importance in outpatient rehabilitation and palliative care in the areas of:

- Head & Neck Oncology
- Radiation Oncology
- Oesophageal Oncology
- Lung Oncology
- Medical Oncology & Haematology

Therapists work with patients presenting with communication and/or swallow impairment, and also providing psychosocial support and information to patients and carers.

Head/Neck Oncology

SJH has the largest Speech and Language Therapy Head and Neck cancer service in Ireland, with designated staffing allocation for Cancer of 3 WTE, comprising a Clinical Specialist for Radiation Oncology, a Clinical Specialist for Head /Neck Oncology, and one senior therapist. These staff provide in-patient and outpatient assessment (including objective assessment with videofluoroscopy and fiberoptic endoscopic examination of swallowing (FEES), and treatment of the increasingly complex patient profile. Speech and language therapist attendance at Joint Head and Neck Clinics has expanded to reflect the growth in referrals from this service. This facilitates increased ongoing liaison with community / primary care services for this patient group. We have over 100 outpatient laryngectomy patients on our caseload to whom we provide long term follow up and maintenance of their alternative communication modalities (Surgical Voice Restoration and Electrolarynx). We have retained our specialist therapists allowing us to continue to provide the necessary specialist standard of care required for this patient group. This has resulted in our department having the expertise to run the Macmillan Surgical Voice Restoration Course for speech & language therapists nationally.

Activity

Head and Neck Cancer: Speech and Language Therapists are involved at all stages of the patient journey from diagnosis, pre-operative education, post-operative assessment, rehabilitation and management to post discharge management, often lifelong. These patients require intensive SLT input at critical points both as inpatients and outpatients, with treatment sessions of 60-90+mins commonly required. Recommendation 50 in the National Cancer Strategy 2017-2026 clearly identified the need for SLTs with specific specialist skill mix to match the needs and progression of the centralisation of cancer surgery services. Currently 2 WTE SLT posts are funded for the head and neck cancer service in SJH. There has been no additional staffing sanctioned for this specialty area for the past 13 years despite a significant 88% increase in the number of head and neck cancer patients treated in SJH in that time span.

Oesophageal Cancer:

Referrals from upper GI oncology have remained stable in the last five years at approximately 70-77 per annum, however number of return visits has increased significantly by 38% or more annually reflecting an increased complexity in this caseload and increased demand from the upper GI services for SLT input. There is no dedicated SLT staffing for this specialty.

Medical Oncology/Haematology: Referrals to SLT have increased by 55% and return visits have increased by 137% in the period 2012-2017.This figure has increased significantly in the last 12 months along with an increased awareness of the role of SLT with this patient cohort. No dedicated SLT staffing exist for this specialty.

Lung Cancer: There continues to be a significant demand for SLT service post thoracic surgery. These patients are often complex requiring tracheostomy or presenting with CVA post -surgery needing significant time input regarding communication and swallow .No dedicated SLT staffing for this area.

Developments/Innovations

- Development of weekly FEES assessment clinics for cancer patients.
- Establishment of an evidenced based treatment programme for trismus (difficulty in mouth opening) including provision of Therabite devices, thereby improving quality of life associated with swallowing, oral care and speech functions.
- Retention of a basic grade staff rotation into Head and Neck and Oesophageal Cancer speciality areas.
- Involved in business case for the appointment of a SLT Manager for SLT Radiation oncology service in St Lukes's Hospital Rathgar.
- Education at undergraduate and postgraduate level in Trinity College, University of Limerick National University of Ireland, Galway and the Dublin Dental University Hospital.
- Reestablishment of National Head and Neck Forum (Special Interest Group) for SLTs.
- Development of closer links with our PCC, SLT colleagues, facilitating more streamlined, timely discharge and follow up for outpatients.
- Representation at national SLT/HSCP conferences.

Future developments

- Expansion of Speech and Language Therapy Services for cancer services.
- Further development of our FEES assessment clinic for cancer patients, with training for speech and language therapists in the department to allow them to complete this assessment independently.
- Establishment of rotation for SLT therapist's into Radiation Oncology specialty area.

Referrals from upper GI oncology have remained stable in last 5 years at approximately 70-77 per annum, however number of return visits has increased significantly by 38% or more annually reflecting an increased complexity in this caseload and increased demand from the upper GI services for SLT input

APPENDIX

Appendix 1 Methods

Sources of Data

All information is actively obtained and audited by the cancer data managers with the clinicians and nursing staff ongoing input on all patients diagnosed and treated with cancer in SJH.

Data acquisition is obtained from the following sources:

- SJH Patient Administration System (PAS)
- SJH Pathology system
- SJH theatre management system
- SJH EPR system
- HIPE Data from www.esri.ie HIPE data was provided by staff from the HIPE coding department in SJH.
- MDT meetings
- SJH Endoscopy system
- Chemotherapy recording system SJH
- NCRI
- Radiotherapy information from SLRON

Recording of Data

The cancer audit programme has been in place in SJH for over 10 years. CAP uses a cancer information system (PATS/Intellect – software by Dendrite Clinical Systems) and this system is managed and audited by a data manager.

The information system has a core set of data items that captures key SJH cancer information requirements, the NCRI minimum dataset and incorporates site-specific national and international cancer and clinical datasets. The data is used to report cancer activity trends, outcomes, and to fulfill NCCP KPI reporting requirements.

Patient information is captured from time of referral through follow-up and to time of death or last follow-up. The data managers ensure that follow-up is as up to date as possible to facilitate accurate outcomes and survival analysis.

Advances in electronic data capture at SJH through Project Oak have will continue to impact positively on data collection, analysis and outcomes reporting allowing SJH to continually review its cancer services and provide a resource for quality improvement.

Data analysis

All basic calculations have been completed in PATS and Intellect, i.e. tabulation of the data. All oncology survival curves were generated using a statistical software package, R, by our colleague Ms Claire Gorry in NCPE. Haematology survival curves were produced using Graphpad Prism v5.03. Survival analysis was generated using the Kaplan Meier method (all-cause mortality).

Data Quality

One of the constant key priorities of the cancer audit team has been the continuous improvement of QA initiatives to ensure the accurate and timely information is available to clinicians and management to measure the quality of care received by cancer patients in SJH.

There are two mechanisms for quality control and validation of our data. Continuous data quality checks at the time of data capture and periodical reviews of the accuracy and validity of our data.

All data managers complete regular QA, error and completeness checks across all registries across the entire data collection process. The PATS software system allows the facility to control user access and privilege. There is an audit trail facility to track data entry by all users. The system restricts users to a range of predetermined values for each data item, and checks for internal consistency.

Monthly and annual audits of all information are routinely done and presented to clinicians to review. Lead clinicians are ultimately responsible for data produced.

The introduction of collaborative quality improvement programmes (QIP) in each of the individual tumour sites has been significant in improving the validation and quality control of our data. These QIP groups meet regularly and data can be prospectively measured, assessed, and benchmarked against national and international performance indicators.

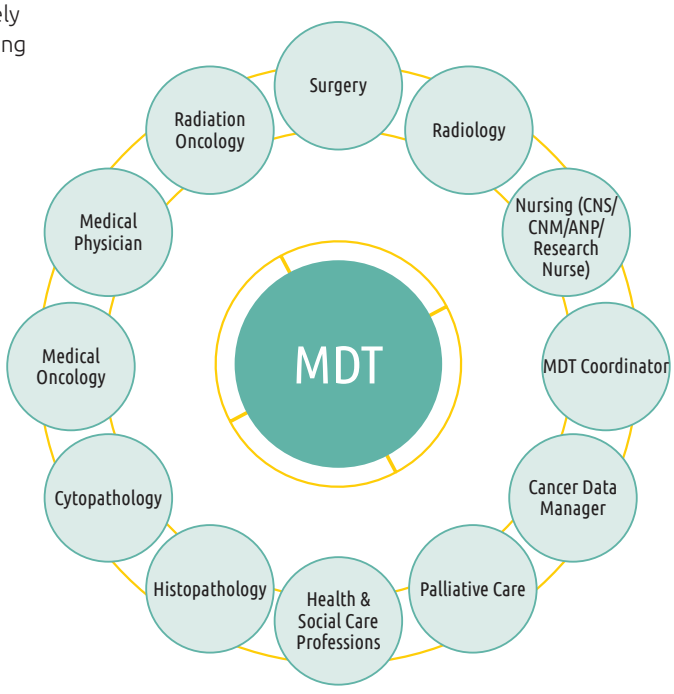
Appendix 2 Cancer Audit Programme Team

The Cancer Audit Programme team is managed by a Cancer Audit Manager, Ms Cathy Enright, and clinically led by Professor John Reynolds, with direct input and output to the Executive Management, specifically the Deputy CEO, Ms Ann Dalton. The programme has dedicated cancer data managers for most cancer sites including lung, oesophageal/ gastric, breast, haematology (HOPe Directorate), colorectal, skin, gynaecological, head & neck, and urology. The data managers work with their clinical and administrative teams, and MDT coordinators to ensure timely and complete data collection to fulfil the aims and objectives of the cancer audit programme.

The cancer audit team members have wide ranging experience at SJH and elsewhere in the healthcare setting including nursing and specialist practice, cancer patient services and administration, operations management, health research, health informatics, clinical trial management, data management, data analytics, and statistics. Team members have been cited as co-authors on numerous academic publications and audits and have contributed to national, European and international registries and databases.

Professor John Reynolds	Cancer Audit Clinical Lead
Cathy Enright, BSc., M.A. Healthcare Management	Cancer Audit Programme Manager
Karina Delaney	Breast Cancer Data Manager (2017-Present)
Lorraine O'Reilly	Breast Cancer Data Manager (2007-2017)
Chris Gleeson, Dip BM	Colorectal Cancer Data Manager
Therese Brown, Dip BM and Strategic Procurement	Gynaecology Cancer Data Manager
Mary Devlin, RGN, B.A., MSc. I.T.	Head and Neck Cancer Data Manager
Fiona Mulvany, BSocSc., PgDip Statistics	Lung Cancer Data Manager
Anita Cafolla, Lean Healthcare Management – White Belt	Skin Cancer Data Manager
Mary O'Brien, BA (Hons) Business Studies	Urology Data Manager
Sinead King, BNSc., PgCert. Specialist Practice	Upper GI and Hepatobiliary Data Manager

Each data manager is closely linked to their corresponding multidisciplinary team



Appendix 3 References

1. National Cancer Registry Ireland (2017) *Cancer in Ireland 1994-2015 with estimates for 2015-2017: Annual Report of the National Cancer Registry*
2. Edge SB, Byrd DR, Compton CC, Fritz AG, Greene FL, Trotti A, editors. *AJCC Cancer Staging Manual, 7th edition.* New York, NY: Springer; 2010
3. Healthcare Quality Improvement Partnership Ltd. (HQIP) (2017) *National Oesophago-Gastric Cancer Audit Report 2017*
4. St. James's Hospital, Cancer Audit Programme (2013) *Ten Year Cancer Audit Report St. James's Hospital*
5. Pierorazio PM, Walsh PC, Partin AW, Epstein JI. Prognostic Gleason grade grouping: data based on the modified Gleason scoring system. *BJU Int.* 2013;111(5):753-60.
6. St. James's Hospital, Cancer Audit Programme (2007) *Six-Year Cancer Audit Report St. James's Hospital*
7. Department of Health (2017) *National Cancer Strategy 2017-2026*
8. National Cancer Control Programme, Cancer Intelligence Unit

Appendix 4 Cancer Trial and Study List 2013-2017

PI	TRIAL NAME	INDICATION
Prof Elisabeth Vandenberghe	Amgen 00103311 (tower) ICORG 13-18	ALL
Prof John Kennedy	AMH study (ICORG 10-16)	Breast
Prof John Kennedy	Bayer Sorafenib(ICORG 11-06)	Breast
Prof John Kennedy	CharactHer 12-09	Breast
Prof John Kennedy	Exosomal study (ICORG 10-15)	Breast
Prof John Kennedy	ICORG 12-30 Tailorx Tissue Bank	Breast
Prof John Kennedy	MiRNA (ICORG 10-11)	Breast
Prof John Kennedy	Neotrip ICORG 15-49	Breast
Prof John Kennedy	NSABPB47	Breast
Prof John Kennedy	Pallas ICORG 15-17	Breast
Prof John Kennedy	penelope B ICORG14-11	Breast
Prof John Kennedy	Puma Nala ICORG14-21	Breast
Prof John Kennedy	Recurrence score (ICORG15-34)	Breast
Prof John Kennedy	Roche Aphinity	Breast
Prof John Kennedy	SNAP ICORG 12-45	Breast
Prof John Kennedy	SWOG Icorg 12-01	Breast
Prof John Kennedy	TCHL	Breast
Prof John Kennedy	THvTHL (ICORG 11-10)	Breast
Prof John Kennedy	Trio22 (ICORG 12-43)	Breast
Dr Noreen Gleeson	SHAPE CX5 protocol ICORG 14-02	Cervical
Prof Elisabeth Vandenberghe	Abbvie M15-550 (ICORG 16-79)	CLL
Prof Elisabeth Vandenberghe	Cll13 (ICORG 16-60)	CLL
Prof Elisabeth Vandenberghe	Gilead CAL101	CLL
Prof Elisabeth Vandenberghe	Gilead GS-US-312-1325	CLL
Prof Elisabeth Vandenberghe	PCYC-1116-CA	CLL
Prof Elisabeth Vandenberghe	PCYC115	CLL
Prof Elisabeth Vandenberghe	Pharmacyclics 1112 Resonate	CLL
Dr Eibhlin Conneally	Novartis Freedom	CML
Prof David Gallagher	MK3475-177 (ICORG 16-18)	Colorectal
Prof David Gallagher	Strategic-1 ICORG14-20	Colorectal
Prof John Kennedy	Angipredict (ICORG 12-16)	Colorectal
Prof John Kennedy	LCC1029 ICORG 12-07	Colorectal
Dr Sinead Cuffe	Merck Gastric MK3475-061	Gastric
Dr Sinead Cuffe	Taiho TAS-102-302 (Non-ICORG)	Gastric
Dr Larry Bacon	Medimmune	Hairy Cell Leukaemia
Dr Cliona Grant	Ca209-714 ICORG16-54	Head & Neck
Dr Cliona Grant	MK3475-040 ICORG 15-13	Head & Neck
Prof Ken O'Byrne	A7471009 (ICORG 11-21)	Lung
Prof Ken O'Byrne	A8081014 (ICORG11-30)	Lung
Prof Ken O'Byrne	ECOG1505 (ICORG 06-36)	Lung
Prof Ken O'Byrne	Lung Cancer Biobank	Lung
Prof Ken O'Byrne	Lux7	Lung

Prof Ken O'Byrne	Lux8	Lung
Dr Sinead Cuffe	Abbvie M11-089 ICORG14-14	Lung
Dr Sinead Cuffe	Ca209-171	Lung
Dr Sinead Cuffe	Ca209-227 ICORG 15-27	Lung
Dr Sinead Cuffe	ETOP Belief (ICORG 12-24)	Lung
Dr Sinead Cuffe	ETOP Emphasis (ICORG 12-25)	Lung
Dr Sinead Cuffe	ETOP Pearls ICORG15-40	Lung
Dr Sinead Cuffe	Etop splendour ICORG 12-53	Lung
Dr Sinead Cuffe	Lung Cancer Biobank	Lung
Dr Sinead Cuffe	Lung Cancer Biobank	Lung
Dr Sinead Cuffe	MK3475-024 ICORG14-13	Lung
Dr Sinead Cuffe	MK3475-189 ICORG 16-16	Lung
Dr Sinead Cuffe	Mk3475-604	Lung
Dr Sinead Cuffe	Roche GO29438 (ICORG TBA)	Lung
Dr Cliona Grant	Celegene Robust ICORG15-08	Lymphoma
Prof Elisabeth Vandenberghe	Arroven ICORG 15-09	Lymphoma
Prof Elisabeth Vandenberghe	Bayer Chronos 3 (ICORG15-38)	Lymphoma
Prof Elisabeth Vandenberghe	MabEASE	Lymphoma
Prof Elisabeth Vandenberghe	Spectrum (Zevalin)	Lymphoma
Dr Larry Bacon	Ca209-744 CTrial-IE 17-07	Lymphoma
Dr Larry Bacon	MedImmune D4190C00023	Lymphoma
Prof John Kennedy	Male breast cancer (ICORG 12-40)	Male Breast Cancer
Prof Elisabeth Vandenberghe	Ray Mantle Cell	Mantle cell lymphoma
Dr Fergal Kelleher	Ca209-401 (ICORG 16-14)	Melanoma
Dr Sinead Cuffe	Ca184-143	Melanoma
Dr Sinead Cuffe	CA209-172 ICORG14-15	Melanoma
Dr Patrick Hayden	Amgen 20090482 (ICORG12-10)	Multiple Myeloma
Dr Patrick Hayden	CA204-006 (ICORG 12-21)	Multiple Myeloma
Dr Patrick Hayden	CC4047 Celgene Optimismm ICORG15-10	Multiple Myeloma
Dr Patrick Hayden	Celgene QOL study	Multiple Myeloma
Dr Patrick Hayden	RSQVD (ICORG 13-17)	Multiple Myeloma
Prof John Reynolds	Cross V Magic (ICORG10-14)	Oesphageal
Dr Sinead Cuffe	Mk3475-181 (ICORG 16-29)	Oesphageal
Dr Dearbhaile O'Donnell	Anzgog study (ICORG 10-12)	Ovarian
Dr Dearbhaile O'Donnell	B9991010	Ovarian
Dr Dearbhaile O'Donnell	Icon-8	Ovarian
Prof David Gallagher	Impact (Icorg 12-29)	Prostate
Dr Dearbhaile O'Donnell	Astellas Premise	Prostate
Dr Catherine Flynn	Aspire (GSK)	TCP in MDS
Dr Catherine Flynn	GSK Support ICORG 14-10	TCP in MDS
Dr Dearbhaile O'Donnell	Roche M029518 ICORG16-64	Various tumour sites/indications
Prof John Kennedy	ICORG 13-01 ABC Study	Various tumour sites/indications
Prof Ken O'Byrne	ICORG 07-12 COLAB STUDY	Various tumour sites/indications

Appendix 5 Acknowledgements

Mr Dhafir Alazawi	Consulant Breast Surgeon
Dr Lucy Balding	Palliative Care Consultant
Mr Lorcan Birthistle	Chief Executive Officer
Dr Rupert Barry	Consultant Dermatologist
Mr Frank Bell	IMS
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Mr Terence Boyle	Consulant Breast Surgeon
Ms Sandra Brady	SCOPe Manager
Ms Aisling Carolan	Endoscopy CNM
Ms Roisin Clarke	Cancer Genetics CNS
Dr Eibhlin Conneally	Consultant Haematologist
Ms Elizabeth Connolly	Consulant Breast Surgeon
Ms Hilary Craig	Regional Oncology Programme Office Manager
Dr Moya Cunningham	Consultant Radiation Oncologist
Ms Ann Dalton	Deputy Chief Executive Officer
Ms Suzanne Dennan	Radiographic Services Manager
Ms Elaine Dunne	IMS (HIPE)
Mr Anthony Edwards	Clinical Photography
Mr Barry Fanning	Technical Support manager, IMS
Ms Andrea Fergsuon	Cancer Clinical Trials Office CNM
Prof Stephen Finn	Cancer Molecular Diagnostics (CMD)
Prof David Gallagher	Consultant Medical Oncologist and Consultant Medical Geneticist
Dr Charles Gillham	Consultant Radiation Oncologist
Dr Noreen Gleeson	Consultant Gynaecological Oncologist and Pelvic Surgeon
Ms Claire Gorry	National Centre for Pharmacoeconomics
Ms Siobhan Harrison	IMS (HIPE)
Ms Emma Hayes	HOPe Business manager
Ms Lisa Heffernan	Screening Service - BowelScreen
Prof John Kennedy	Consultant Medical Oncologist
Ms Jennifer Kerlin	ADON HOPe
Ms Niamh Kiely	ANP Cardiothoracics
Ms Ingrid Kiernan	Business Manager, Cancer Clinical Trials Office
Mr Paul Lennon	Consultant Otolaryngologist, Head and Neck Surgeon
Ms Niamh Leonard	Consultant Histopathologist
Prof Thomas Lynch	Consultant Urological Surgeon
Mr Rustom Manecksha	Consultant Urological Surgeon
Ms Paula Markey	SCOPe Manager
Mr Paul McCormick	Consultant Colorectal and General Surgeon
Ms Laura McCullagh	National Centre for Pharmacoeconomics
Ms Mairin McMenamin	Consultant Histopathologist
Mr Brian Mehigan	Consultant Colorectal Surgeon

Dr Cian Muldoon	Consultant Histopathologist
Ms Niamh Murphy	SCOPe Manager
Ms Amy Nolan	Lead Cancer Nurse
Ms Carmel Nolan	Cancer Genetics CNS
Ms Catherine O'Brien	ANP HOPe
Dr Cathal O'Brien	Cancer Molecular Diagnostics (CMD)
Dr Finbarr O'Connell	Consultant Respiratory Physician
Dr Dearbhaile O'Donnell	Consultant Medical Oncologist
Ms Gina O'Donoghue	SCOPe Manager
Dr Ann Marie O'Dwyer	Consultant Psychiatrist
Ms Aoife O'Gorman	SCOPe Manager
Dr Norma O'Leary	Consultant Physician in Palliative Medicine
Dr Patrick Ormond	Consultant Dermatologist
Ms Claire Peyton	Genetics Counsellor
Mr Narayanasamy Ravi	Consultant Upper GI Surgeon
Ms Patricia Reilly	SCOPe
Mr Ronan Ryan	Consultant Cardiothoracic Surgeon
Mr Niall Sheehy	Consultant Radiologist
Prof Leo Stassen	Consultant Surgeon, Oral and Maxillofacial
Ms Charlotte Stuart	Endoscopy CNS
Prof Conrad Timon	Consultant ENT Surgeon
Prof Elisabeth Vandenberghe	Consultant Haematologist
Ms Brid Wilson	SCOPe Manager
Mr Vincent Young	Consultant Cardiothoracic Surgeon

Appendix 6 Abbreviations

ACPGBI	Association of Coloproctology of Great Britain & Ireland
ADON	Assistant Director of Nursing
ALL	Acute Lymphocytic Leukemia
AML	Acute Myelogenous Leukemia
ANP	Advanced Nurse Practitioner
ASCO	American Society of Clinical Oncology
ASPEN	American Society for Parenteral and Enteral Nutrition
AUGIS	Association of Upper Gastrointestinal Surgeons
BCC	Basal Cell Carcinoma BMT
BRAF	Proto-oncogene B-RAF
CAMI	Centre of Advanced Medical Imaging
CAP	Cancer Audit Programme
CCTO	Cancer Clinical Trials Office
CEO	Chief Executive Officer
CLL	Chronic Lymphocytic Leukaemia
CMD	Cancer Molecular Diagnostics
CNM	Clinical Nurse Manager
CNS	Clinical Nurse Specialist
CRC	Colorectal Cancer
CT	Computed Tomography
CWIUH	Coombe Women's & Infant's University Hospital
DBIH	Deep-Inspiration Breath Hold
DDH	Dublin Dental Hospital
DLBCL	Diffuse Large B-Cell Lymphoma
EBMT	European Bone Marrow Transplant
EBUS	Endo Bronchial Ultrasound
ECOG	Eastern Cooperative Oncology Group
EGFR	Epidermal Growth Factor Receptor
EMR	Endo Mucosal Resection
EORTC	European Organisation for Research & Treatment of Cancer
EPR	Electronic Patient Record
EQA	External quality assurance
ERAS	Enhanced recovery After Surgery
ENT	Ear, Nose and Throat
ERCP	Endoscopic retrograde cholangiopancreatography
ERIC	European Research Initiative on CLL
ESCCA	European Society for Clinical Cell Analysis
ETOP	European Thoracic Oncology Platform
EU	European Union
EUS	Endoscopic Ultrasound
EUTOS	European Treatment Outcome Study

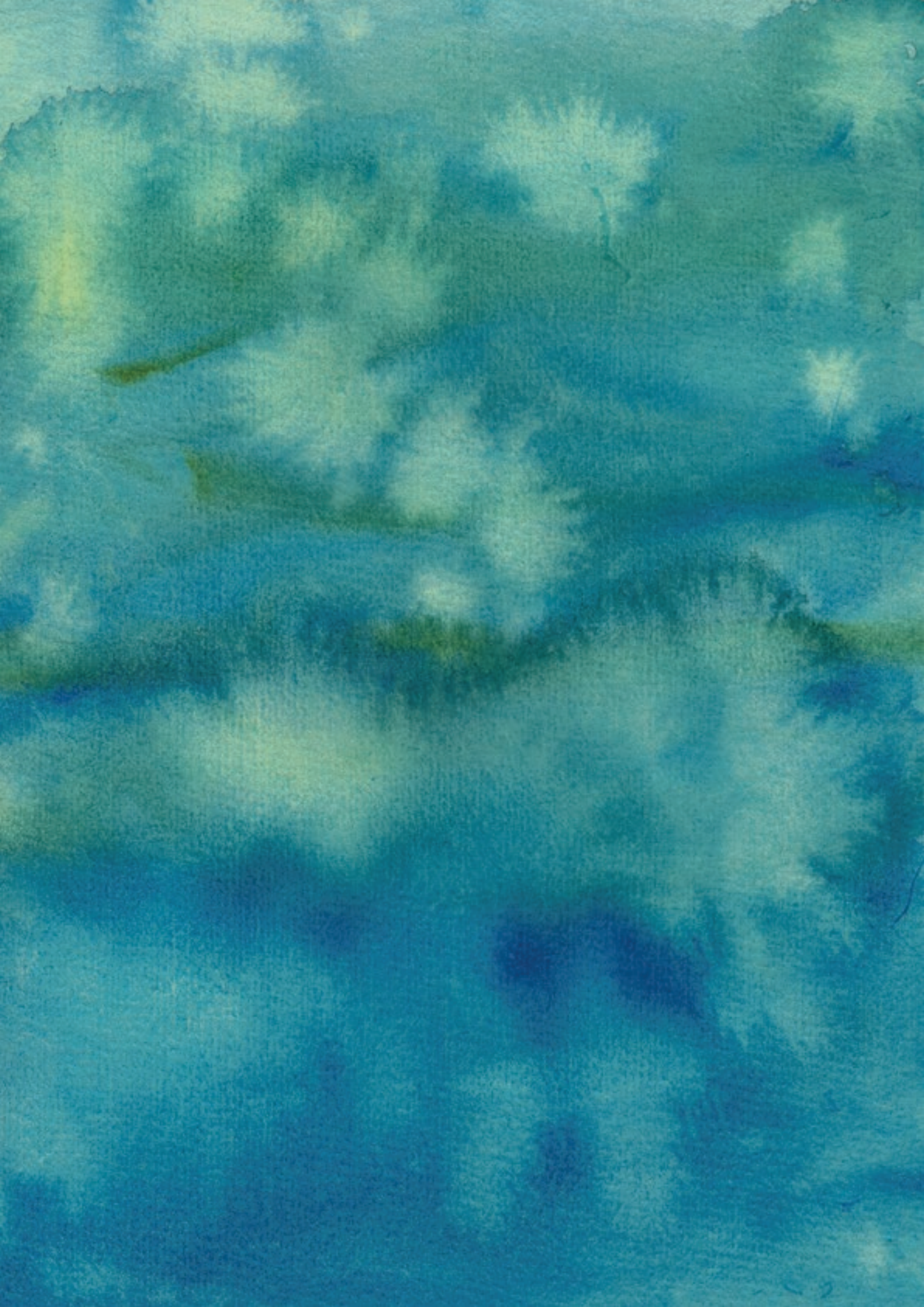
FEES	Fiberoptic Endoscopic Examination of Swallowing
GEMS	GI Medicine & Surgery, General Medicine Including Hepatology & Urology
GCIG	Gynaecologic Cancer Intergroup
GP	General Practitioner
HDU	High Dependency Unit
HEN	Home Enteral Nutrition
HIPE	Hospital Inpatient Enquiry
HIQA	Health Information and Quality Authority
HL	Hodgkin's Lymphoma
HODC	Haematology Oncology Day Care
HOPe	Haematology Oncology, Medical & Radiation Oncology & Palliative Care
HPN	Home Parenteral Nutrition
HRB	Health Research Board
HSCP	Health and Social Care Profession's Directorates Services
HSE	Health Service Executive
IBTS	Irish Blood Transfusion Service
ICD	International Classification of Disease
ICORG	Irish Clinical Oncology Research Group
IMRT	Intensity Modulated Radiation Therapy
IMS	Information Management Services
INDI	Irish Nutrition & Dietetic Institute
IPSON	Irish Psycho-Social Oncology Network
IR	Interventional Radiology
IrSPEN	Irish Society for Clinical Nutrition & Metabolism
JACIE	Joint Accreditation Committee ISCT-Europe & EBMT
KPI	Key Performance Indicator
LA	Linear Accelerator
MDT	Multidisciplinary Team
MMS	Mohs Microsurgery
MRI	Magnetic Resonance Imaging
NCCP	National cancer Control Programme
NCPE	National Centre for Pharmacoeconomics
NCI	National Cancer Institute, Washington
NCRI	National Cancer Registry of Ireland
NIMIS	National Integrated Medical Imaging System
NMSC	Non Melanoma Skin Cancer
NSABP	National Surgery Adjuvant Breast & Bowel Group
OT	Occupational Therapy
QIP	Quality Improvement Programme
PACS	Picture Archiving and Communication System
PATS	Patient Analysis & Tracking System
PAS	Patient Administration System
PET	Positron Emission Tomography
PI	Principal Investigator

PSMA	Prostate-Specific Membrane Antigen
QA	Quality Assurance
RAPC	Rapid Access Prostate Clinic
RCOG	Royal Society of Gynaecologists
RCPI	Royal College of Physicians of Ireland
RCSI	Royal College of Surgeons in Ireland
RCT	Randomised controlled trial
RF&MA	Radiofrequency and Microwave Ablation
RIG	Radiologically Inserted Gastrostomy
SACC	Surgical, Anaesthesia and Critical Care
SABR	Stereotactic ablative radiotherapy
SAMS	Dermatology, Endocrinology, GUIDE, Gynaecology, Neurology, Ophthalmology & Rheumatology
SCOPe	Speech & Language Therapy, Medical Social Work, Clinical Nutrition, Occupational Therapy & Physiotherapy
SJH	St James's Hospital
SLH	St. Luke's Hospital
SLROC	St. Luke's Radiation Oncology Centre
SLT	Speech and Language Therapy
SNB	Sentinel Node Biopsy
SRS	Stereotactic Radiosurgery
TAMIS	Transanal Minimally Invasive Surgery
TBI	Total Body Irradiation
TBNA	Transbronchial needle aspiration
TCD	Trinity College Dublin
TTMI	Trinity Translational Medicine Institute
TURP	Transurethral Resection of Prostate
VMAT	Volumetric modulated arc therapy
US	Ultrasound
WTE	Whole Time Equivalent

Appendix 7
Executive Summary

- Almost 18,000 new patients were entered by the CAP for 9 tumour sites over 5 years.
- Since 2003, there has been over a doubling (> 100%) increase in new cases of lung, head and neck, melanoma and gynaecological malignancy, as well as over 50% increase in oesophago-gastric (84%), colorectal (73%), breast (54%), urology (77%), and non-melanoma skin cancer (90%).
- Since 2013/4, the number of new cases has remained constant for most cancers, with the exception of a 42% increase in colorectal cases and a 16% increase in myeloid and myeloproliferative disorders.
- Reflecting national and supra-regional structures, the tertiary referral rate for oesophageal is 80%, 45% for lung, 45% for gynaecological, and 31% for melanoma.
- Approximately 9,500 MDT discussions took place in 2017 for solid tumours, and 1,154 for haematological malignancies.
- For haematological cancers, there were 10,963 attendances to outpatients by 2,625 individual patients and 952 in-patient stays in 2017. In 2017 there were 323 individual patients with lymphoma.
- There has been a 60% increase in blood cancers since 2013, with 224 new cases in 2013 compared with 359 in 2017.
- Bone marrow transplant activity has increased by 75% since 2003. There were 443 autologous transplants performed between 2013-2017, with 57% of these for multiple myeloma. There were 378 allogeneic transplants.
- The 5 years survival for myeloma autologous stem cell transplant is 80% since 2011, for AML the survival is 55%, and 83% for Hodgkin's lymphoma. Overall survival is 53% for myelodysplastic syndrome.
- For allogeneic transplants for ALL, the overall survival is 55%.
- New lung cancer cases annually are very high volume at approximately 600, representing one quarter of cases nationally.
- Between 47 and 50% of patients nationally who require lung cancer surgery are treated at St James's Hospital.
- For lung cancer, a 3 and 5 year survival of patients treated with curative intent of 67% and 50.6%, respectively, is consistent with international benchmarks.
- For oesophageal cancer within the National Centre, a 5 year survival of 51.7% and a 3 year survival of 61.2% in patients treated with curative intent is encouraging. The 3 year survival in node negative patients is 80%.
- For gastric cancer, the overall 5 year survival is 28%. In patients treated with curative intent, the 3 and 5 year survival is 59% and 54.5%, respectively, and an 84% 3 year survival in node negative disease.
- St James's Hospital provides approximately 30% of the national workload for gynaecological malignancy.
- For cervical cancer (n=408), the 3 and 5 year survival is 77% and 65.5%, respectively, with approximately 80% 5 year survival for clinical or pathological Stage I and II disease.
- For endometrial cancer (n=558), the 3 and 5 year survival is 79.5% and 73%, respectively, and approximately 85% for stage I and II disease, and 50% for Stage III

- For ovarian cancer (n=420), the 3 and 5 year survival is 57% and 41%, respectively, with 3 year survival over 80% for stage I and II disease, and 34% and 37%, respectively, for stage III and IV disease
- The 5-year survival of vulval cancer (n=77) is over 70%.
- Over 11,500 patients are seen annually by the breast care team, with approximately 300 new cancer diagnoses.
- The overall 5 year survival for breast cancer is 78% and over 90% where patients were treated with curative intent for loco-regional disease.
- Following neoadjuvant therapy for breast cancer, 3 year survival was approximately 90% for Stages 0-2, and 80% for Stage 3.
- Colorectal cancer cases increased by 42% between 2013 and 2017, with 213 new cases in 2017.
- Rectal cancer accounts for almost 40% of the colorectal cancer activity at St. James's Hospital.
- The overall 5 year survival for colon cancer is 64%, and 72% for rectal cancer.
- For curative intent treatment, the 3 year survival was 85% for colon cancer, and 82% for rectal cancer.
- For colon cancer, the 5 year survival for Stages I, II, and III was 79%, 79%, and 57%, respectively.
- For rectal cancer, the 5 year survival for Stages I, II, and III was 83%, 95%, and 70%, respectively.
- For Head and Neck Cancer, approximately 280 new cases are seen annually, with close to 60% being tertiary referrals.
- Cancer of the oral cavity accounts for 40% of new patients, with a 3 and 5 year survival of 69% and 65%, respectively.
- The 3 and 5 year survival for cancer of the larynx (n=162) is 67% and 58%, respectively
- The 5 year survival for thyroid cancer (n=193),which includes anaplastic and medullary cancer, and well differentiated cancer, is 91%.
- For prostate cancer, stage 1 and II constitutes 63% of new cases, with 12% stage IV.
- The 3 year overall survival for prostate cancer is 98%.
- For kidney cancer, laparoscopic surgery is used in 70% of cases.
- For kidney cancer, stage I/II constitute 62% of cases.
- The 3 and 5 year overall survival for kidney cancer is 81% and 78%, respectively.
- Over 5 years 4,310 new cases of non-melanoma skin cancer (NMSC) were seen.
- There was a 100% increase over this 5 year period in Mohs surgery, from 208 in 2013 to 418 in 2017.
- 844 new cases of melanoma were managed, with the face and posterior trunk the most common sites.
- Lentigo maligna/melanoma in situ and tumours with a Breslow depth of < 1mm depth accounted for 67% of cases, Breslow depth > 4mm accounted for 9% of cases. 9% of patients were diagnosed with Stage III disease and 2% stage IV disease.
- For melanoma, the 3 and 5 years survival is 90% overall, with 3 year survival of 77% for stage III disease, and 40% for stage IV.



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