ST. VINCENT'S
HEALTHCARE GROUP

Cancer Report
2016

Our Values

Innovation
Medical Research
Clinical Excellence
Exceptional Patient Care

Contents

Overview

It is my pleasure to introduce the St. Vincent's Healthcare Group (SVHG) Cancer Report 2016.

SVHG comprises St. Vincent's University Hospital (SVUH), St. Vincent's Private Hospital (SVPH) and St. Michael's Hospital (SMH). SVHG has a long tradition of treating patients with cancer. The range of services encompasses; diagnosis, staging and all aspects of cancer treatment including radiation oncology. SVUH is one of the eight cancer centres under the HSE National Cancer Control Programme (NCCP) and one of two cancer centres within the Ireland East Hospital Group (IEHG).

The remit of the Cancer Committee is to promote patient care and safety through continuous quality improvement and clinical risk management in a multidisciplinary culture, ensuring compliance with national and international standards of best practice.

A priority of the Cancer Committee is to produce an Annual Report on cancer related activity across the SVHG campus. The volume of cancer related activity is increasing year on year by approximately 6% as evidenced by the data presented. In addition to patient numbers, the report describes staffing, complexity of care, clinical outcomes achieved, research and publications for 2016.

Significant progress in data management has been made with development of a common management system with central data entry using the Excelicare™ system. This will support development of a clinical cancer registry and drive key performance indicators.

A recent major addition to the services provided on campus was the opening of an Irish Cancer Society Daffodil Centre in the atrium of SVUH. The centre has been an unprecedented success and dealt with 3,335 enquiries from patients and relatives during 2016.

Priorities for the Cancer Committee in 2017 include; development of treatment algorithms for common cancers, tissue bio-banking and genomic testing, increasing awareness of and recruitment to clinical trials in cancer treatment and capturing survival data in all major cancer groups.

I would like to thank my colleagues for their support in the publication of this report which I feel will be instrumental in driving quality improvement and development of cancer services across the campus.

Prof. Ray McDermott,
Consultant Medical Oncologist
Chairman of the SVHG Cancer Committee

1 Breast

The Breast Service has had a further increase in attendances. New patients increased by 5% to 6,828.

All our patients were seen within the NCCP Guidelines. 38% were triaged as urgent, 62% as early routine. Though the NCCP KPI for routine patients is that they should be seen within 12 weeks, we achieved our own standard of seeing routine patients within six weeks. All referred routine patients over 35 attend for a mammogram prior to attending the clinic. Some patients triaged as routine had tumours detected on their mammograms and were seen within one week. This ensures that even patients triaged as routine who have breast cancer do not have a delay in diagnosis.

The age profile of patients detected in the Symptomatic Clinic in St. Vincent's University Hospital (SVUH) is interesting, in that most cancers detected were below 50 or above 65. Less than 2% were under 35, 25% were under 50, 26% were 50 - 65 and 47% were older than 65. The total number of patients diagnosed was 390. This indicates that BreastCheck detects most breast cancers in the screened cohort 50 – 64.

283 patients had breast cancer diagnosed in BreastCheck and operated in SVHG. The age extension of BreastCheck commenced during 2016 so this should see a further change in the profile over the coming years (Screening to 69). There are five breast surgeons, four specialist breast pathologists, six specialist breast radiologists, three specialist breast medical oncologists, three specialist breast radiation oncologists and four specialist breast care nurses. There are also data managers, administrative staff, radiographers, and medical scientists, all delivering a comprehensive symptomatic breast service to our patients.

The number of patients being discussed at the MDT has increased greatly. This is not only due to the increase numbers of breast cancer but due to the increased complexity of patient management and the greater use of neoadjuvant chemotherapy.

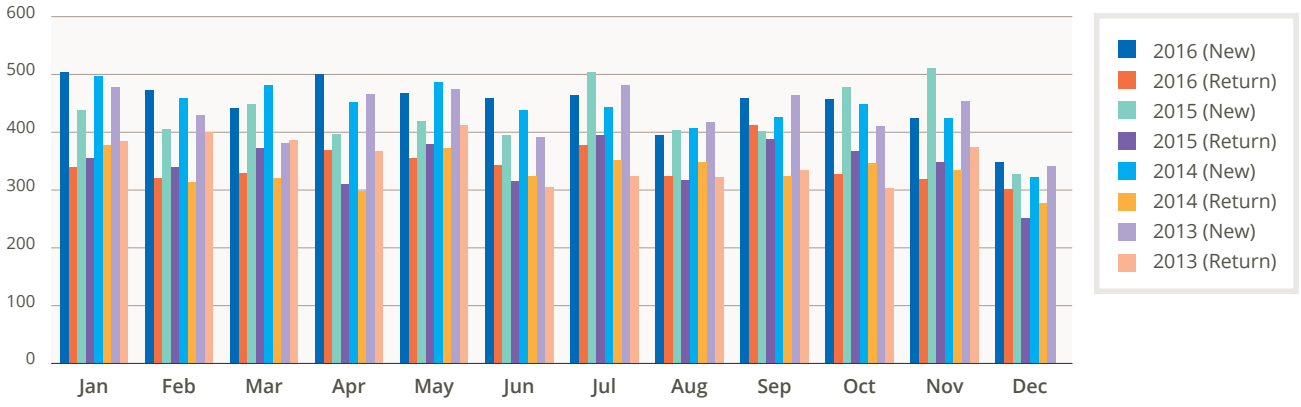
A very large number of expert and committed multidisciplinary team member's constitute the multidisciplinary team. The optimum management for each patient is recommended. There continues to be a very strong emphasis on research and education in the team with active research and teaching programmes for all grades of staff and disciplines.

Symptomatic Breast Cancer Outpatient Episodes 2016

Outpatient Episodes 2016	SVUH	SVPH	SVHG Total
No of Outpatient clinics per week	12	3	15
Designated Cancer Outpatient Clinics per week	1	1	2
New Patients	5,396	1,432	6,828
Review Patients	4,117	2,636	6,753
Total Number of Patients Seen	**9,513**	**4,068**	**13,581**

- New patient attendance in SVUH increased by 5% from 5,132 patients in 2015 to 5,396 patients in 2016.
- Total number of patients seen in SVUH increased by 2.6% from 9,275 patients in 2015 to 9,513 patients in 2016.

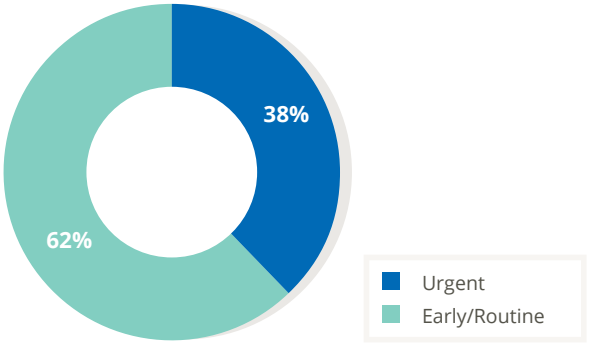
Breast Cancer Outpatient Episodes SVUH Comparison 2013 to 2016



DNA (Did not attend) SVUH 2013 to 2016

Percentage of Patients that did not attend appointments 2013 to 2016							
2016		2015		2014		2013	
New DNA	Return DNA	New DNA	Return DNA	New DNA	Return DNA	New DNA	Return DNA
9%	14%	6%	13%	7%	11%	7%	12%

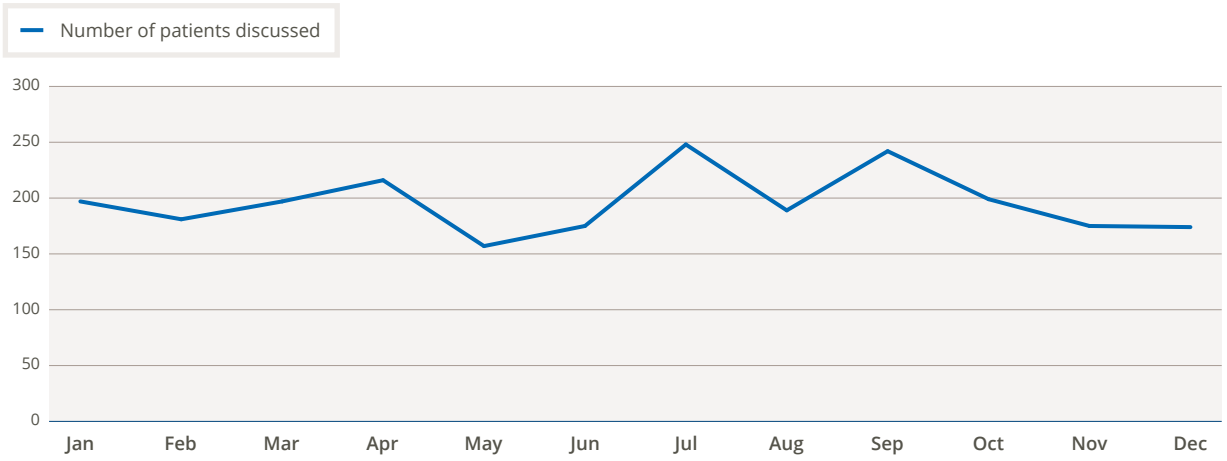
Triage Breakdown SVUH 2016



Multidisciplinary Team Meetings

There were 51 multidisciplinary meetings in 2016 which is above that required under HIQA Standards. The number of patients discussed at the weekly MDT meetings in 2016 was 1,474 (2,350 patient discussions). The number of patient discussions increased by 6% from 2015 to 2016 (2,214 discussions to 2,350 discussions).

Multidisciplinary Team Meeting Monthly Volumes 2016

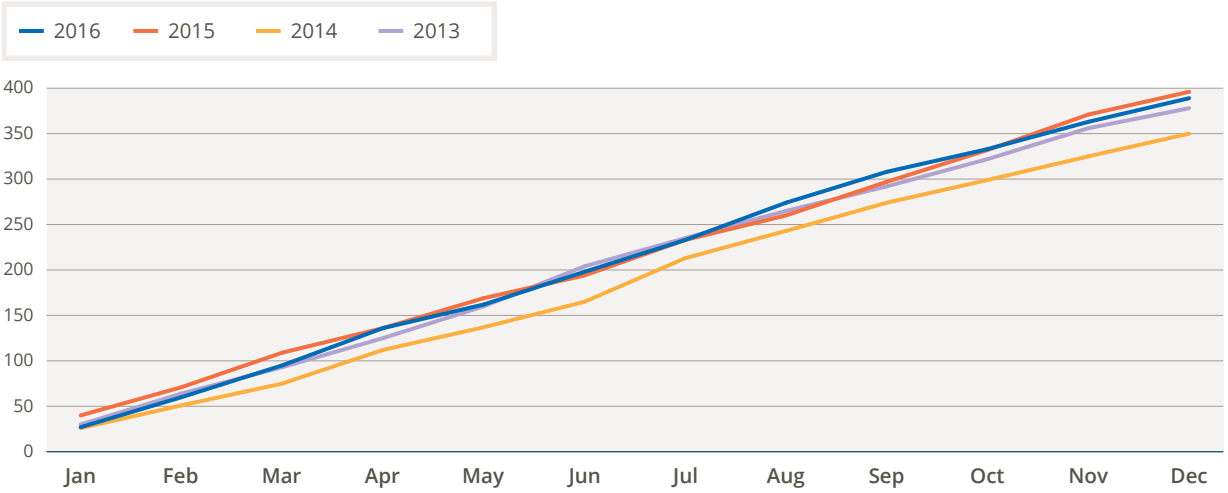


Symptomatic Breast Centre and Breast Check Cancer Diagnosis 2016

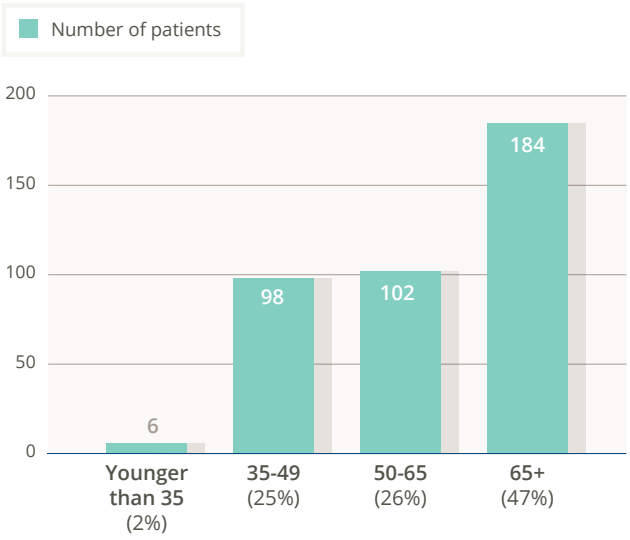
	SVUH and SVPH	Breast Check	Total
New Patients Diagnosed With Cancer	390	283	673
Total SBC Cancer Diagnosis	438	283	721

- SVUH / SVPH Primary Breast Cancer: Decreased by 1% in 2016 compared to 2015.

SVUH/SVPH Primary Breast Cancers 2013 to 2016



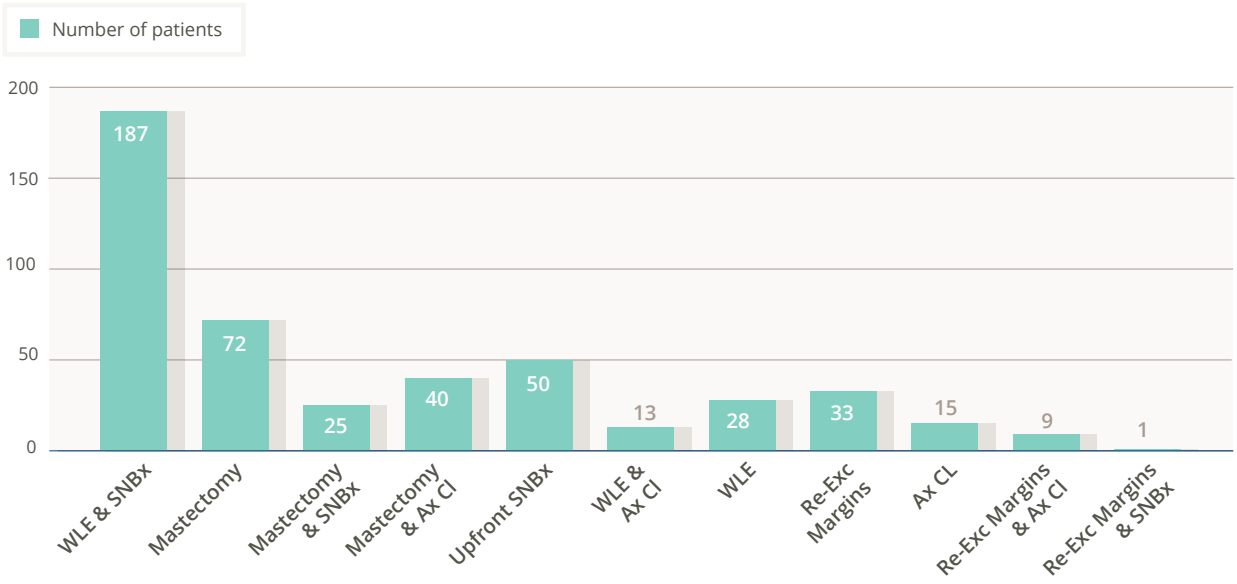
SVUH/SVPH Primary Breast Cancer Diagnosis Age Breakdown 2016



Biopsy & FNA Investigations 2016

SVUH/SVPH Breast & Axillary Investigations				
	Core Biopsy Breast	FNA of Breast	Core Biopsy of Axilla	FNA of Axilla
Number of Investigations	1143	26	50	219

Therapeutic Procedures 2016 Breakdown SVUH & SVPH (Total 473)



2 Colorectal

The Colorectal Surgical Unit within SVHG has evolved over the last 20 years to be the largest such unit in Ireland with an establishment of five surgeons including Prof. P.R. O'Connell, professor of Surgery and Head of Subject at UCD, Prof. Des Winter, Mr. Sean Martin, Ms. Ann Hanly and in 2016 Mr. Rory Kennelly joined the group following the retirement of Prof. John Hyland.

The unit is supported by two specialist registrars, a UCD Lecturer, two senior house officers and two Interns. In addition, the unit regularly attracts visiting surgeons and has an established international fellowship programme, with European and Australasian fellows choosing St. Vincent's University Hospital to complete subspecialist training.

The ward nursing staff have particular expertise in managing patients with colorectal disease and are supported by two cancer specialist nurses and three stoma-care clinical nurse specialists. The unit is closely allied with Medical Gastroenterology, Pathology and Medical and Radiation Oncology Groups within SVHG; together these groups form the Centre of Colorectal Disease.

Colorectal cancer is a major clinical interest for the unit. In 2016, 400 new patients with colorectal cancer were referred, an increase of seven patients (2%) over 2015. The volume of new referrals is the largest to a single unit in Ireland.

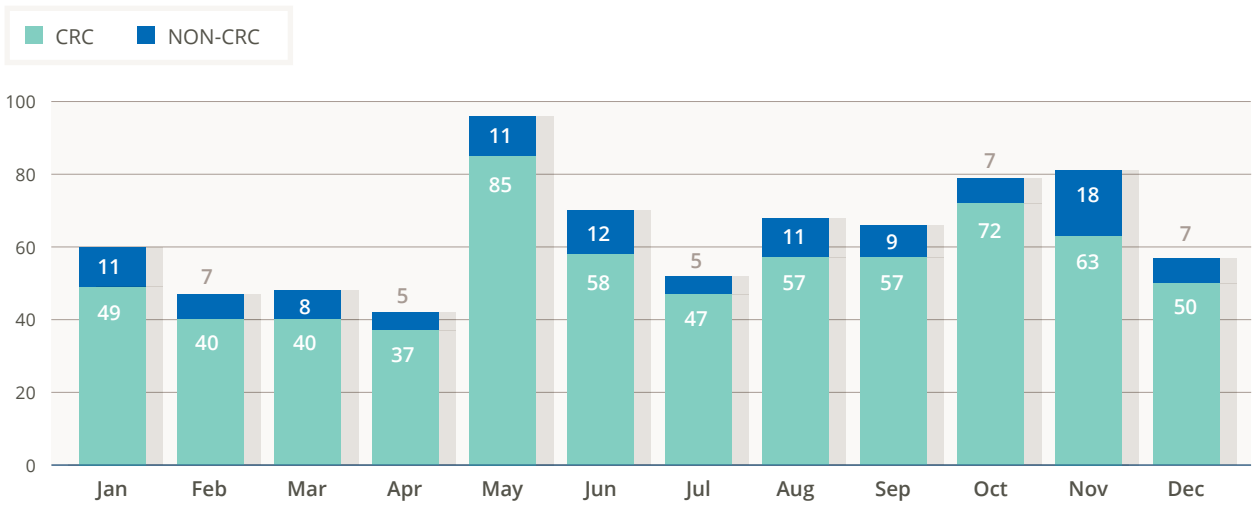
All patients referred are reviewed at a weekly MDT meeting which is attended by; the colorectal surgeons, GI radiologists, pathologist, medical and radiation oncologists. Following staging, patients follow a standardised treatment pathway to primary surgical treatment, neoadjuvant chemo-radiotherapy or primary chemotherapy based on consensus opinion from our weekly MDT. Patients' progress and response to treatment is regularly reviewed with clinical and radiological evaluation, such that 766 patient episodes were discussed at 50 MDT meetings in 2016. Of the 766 episodes, 655 specifically dealt with colorectal cancer, while the remainder dealt with benign diagnoses, mostly benign polyps that may have involved malignancy.

50
MDT Dates

766
Case Discussions

655
CRC Case Discussions

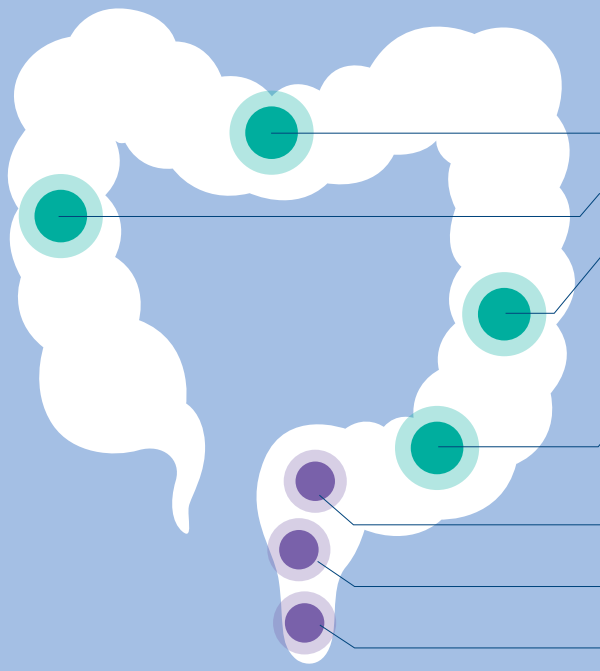
MDT Case Discussions



The Colorectal Unit receives the majority of referrals (66%) from within the local catchment area of SVHG, however 34% of referrals were from outside the catchment area, reflecting the sub-specialty expertise available within SVHG including Hepatobiliary Surgery, Urology, Gynaecology, Oncology, Plastic and Reconstructive Surgery, and Orthopaedic Oncology.

This extended multidisciplinary expertise is especially important in management of locally advanced or metastatic colorectal cancer.

The anatomical distribution of colorectal cancer followed the expected pattern of approximately one third in the rectum and two thirds in the colon.



19	Transverse Colon
83	Right Colon
19	Descending Colon
74	Sigmoid Colon
195	**Total Colon**
21	Upper Rectum
24	Mid Rectum
31	Lower Rectum
76	**Total Rectal**

400

Diagnosed CRC Tumour Sites

(January-December 2016)

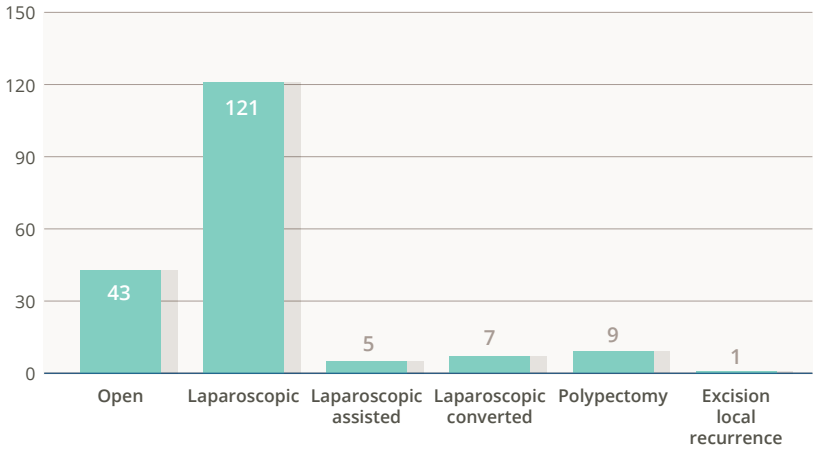
2	Appendix
2	Terminal Ileum
6	Anus
25	Local Recurrence
94	Metastatic

Among 76 patients with primary rectal cancer and without metastases, 43 (56.5%) received neoadjuvant chemo-radiotherapy with the intention of down-staging locally advanced disease prior to surgical resection. The unit has a particular research interest in the response of rectal tumours to neoadjuvant therapy, and has been at the fore in organ-preserving surgery when this can be performed. In selected patients, local excision was performed following a suspected complete pathological response. Likewise, early rectal tumours (T1) suitable for local excision were also treated less aggressively. Overall, 19 (25%) patients with rectal cancer had organ-preserving local excision.

94 (24%) patients had metastatic disease at presentation and received primary chemotherapy for three months with a view to restaging the disease with subsequent radical excision.

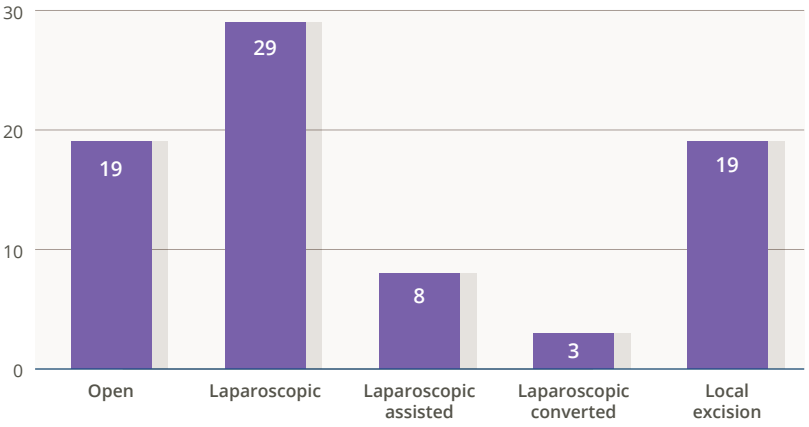
Laparoscopic surgical techniques were used in the majority of procedures (163/264 or 62%) reflecting the unit's philosophy of minimally invasive surgery and enhanced recovery protocols. In 2017 the unit will commence a robotic colorectal surgery programme.

Laparoscopic Surgical Techniques – Colon



186
Total Colon Procedure

Laparoscopic Surgical Techniques – Rectal

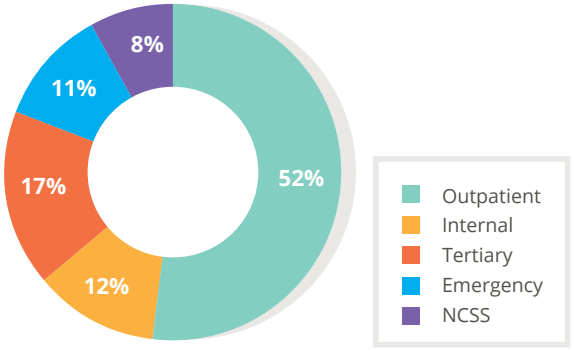


78
Total Rectal Procedure

All surgical specimens were processed and examined using standardised protocols and reported in a standard template. The median lymph node retrieval was 20 in colonic resection specimens and 14 in rectal specimens. Reflecting international experience, the lymph node count was less after neoadjuvant therapy (15) than without (14).

The majority (75%) of patients presented electively via outpatient or internal referral. 17% of patients were referred to SVHG from other hospitals, while 8% were referred from the National Cancer Screening Service via BowelCheck.

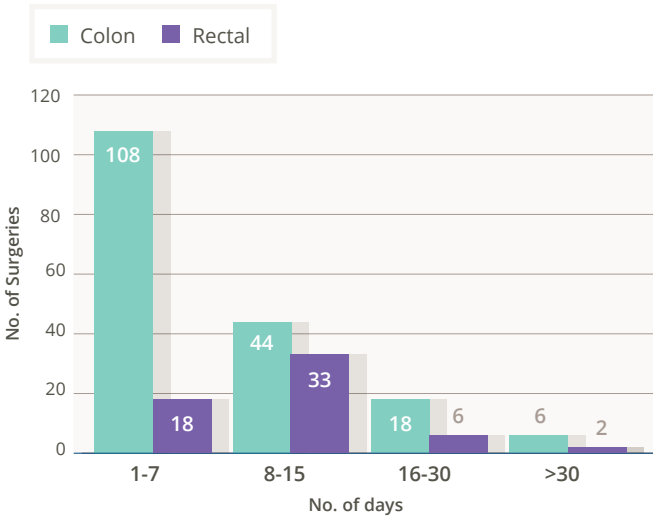
Referral Data



Among 264 patients who underwent a surgical procedure for colorectal cancer during 2016, there were no post-operative deaths within 90 days. The unit has a policy of day-of-admission surgery and uses enhanced post-operative recovery protocols. The median length of stay for patients (including the day of surgery) was seven days for colonic resection and nine days for rectal cancer resection.

CRC Surgical LOS

The unit has an active research programme in colorectal cancer, particularly as it relates to the host immune responses to rectal cancer and how this relates to outcome. The research is supported the Centre for Colorectal Disease and the Health Research Board and is led by post-doctoral scientist Dr. Elizabeth Ryan. The research output has included multiple oral and poster presentations and 45 peer reviewed publications.



LOS Statistics

	Colon (No. of days)	Rectal (No. of days)
Minimum	3	5
Maximum	57	62
Average	9.6	11.8
Median	7	9
Mode	5	8
Total	176	59

3 Lung

Lung Cancer is the fourth most common cancer in Ireland, accounting for 11.8% of all invasive cancers in men and 10.8% of such cancers in women. Annually, 1,292 men and 1,027 women were diagnosed with Lung Cancer within 2011-2013 (Annual Report of the National Cancer Registry, December 2015).

Background

The Rapid Access Lung Clinic (RALC) is one of the eight NCCP centres for the diagnosis of Lung Cancers in Ireland. This comprehensive service reviews patients with a suspected diagnosis of lung cancer within a two week period of referral as per the recommendations of the NCCP and the Irish Thoracic Society.

The RALC receives referrals from General practitioners, internal hospital teams and external hospitals. The goal of this service is to ensure the early diagnosis and timely treatment of people with lung cancers, improving national surgical and survival rates and impacting patient outcomes.

Staffing

The Rapid Access Lung Cancer Service is led by Lead Clinician, Prof. Michael Keane. There are nine respiratory consultants involved in the service on a two weekly rota covering the Monday RALC, following the patients through their investigations and seeing patients in their designated return RALCs. Four respiratory consultants provide an endobronchial ultrasound service for bronchoscopic tissue staging of mediastinal and hilar lymph nodes (Dr. Marcus Butler, Dr. Brian Canavan [visiting consultant from St Luke's Hospital, Kilkenny], Prof. Michael Keane, Dr. Brendan Keogh). Prof. Jonathan Dodd is the designated Consultant Radiologist for the NCCP Rapid Access Lung Cancer Service. In total, four consultant radiologists are involved in the weekly Lung Cancer MDT meetings.

There is a designated 0.5 WTE Histopathology post for the Lung Cancer Service, presently covered by three consultant histopathologists, led by Prof. Aurelie Fabre. There are two consultant cardio-thoracic surgeons, Mr. Michael Tolan and Prof. David Healy working between SVUH and MMUH for surgical treatment of Lung Cancers. There are two medical oncologists, Dr. Emer Hanrahan and Prof. John Crown, and two radiation oncologists Prof. John Armstrong and Dr. Osama Salib involved in the medical + radiation oncology treatment of Lung Cancer patients.

There is 1.5 WTE Lung Cancer Clinical Nurse Specialists, Cecilia Boland (1 WTE) and Patsy Ryan (0.5 WTE, post shared with Melanoma Service). There is a 0.5 WTE data manager for the Lung Cancer Service, Sue Canny (shared with melanoma). There is a dedicated Rapid Access Lung Clinic Administration Manager, Georgina O'Reilly who co-ordinates the new and return RALC and managing the administration workload of the Rapid Access Lung Cancer Service.

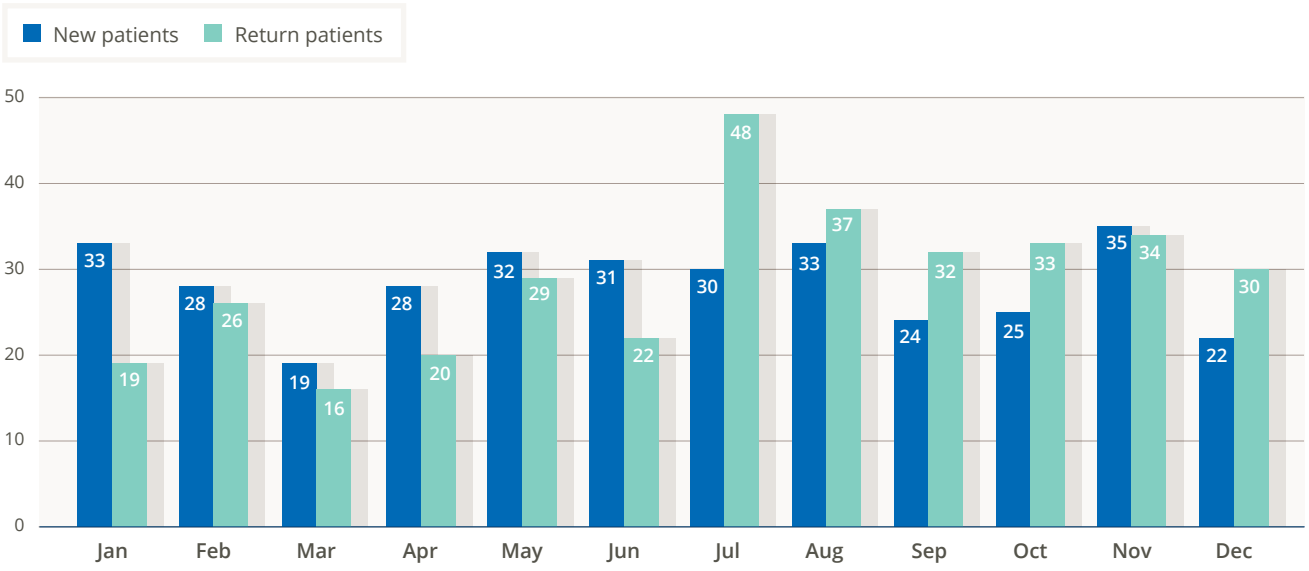
Activity

The RALC for new referrals is held each Monday, excepting bank holidays. Most RALC referrals, even when ultimately felt to be benign disease, tend to get discussed even briefly at the MDM, accounting for the much higher number of patients discussed than cancers diagnosed. Many patients were discussed at more than one lung cancer MDM, and the total number of discussions held in 2016, including repeat discussions for a patient as a distinct discussion, was 1,324 discussions.

Rapid Access Lung Cancer Clinic Activity 2016

Rapid Access Clinic St Vincent's University Hospital	2016 Total	(2015 Total)
Designated Cancer Outpatient clinics per week	238	(192)
New Patients	340	(309)
Review Patients	346	(310)
Total Number of Patients Seen	686	(619)
Total Number of Primary Lung Cancers	171	(141)
Total Number of Secondary Lung Cancer	79	(51)
Recurrent Cancer Diagnoses	4	(0)
Total Cancer Diagnoses in Rapid Access Clinic	254	(192)

SVUH Lung Cancer Service 2016 - Clinic Activity



Multidisciplinary Meetings 2016

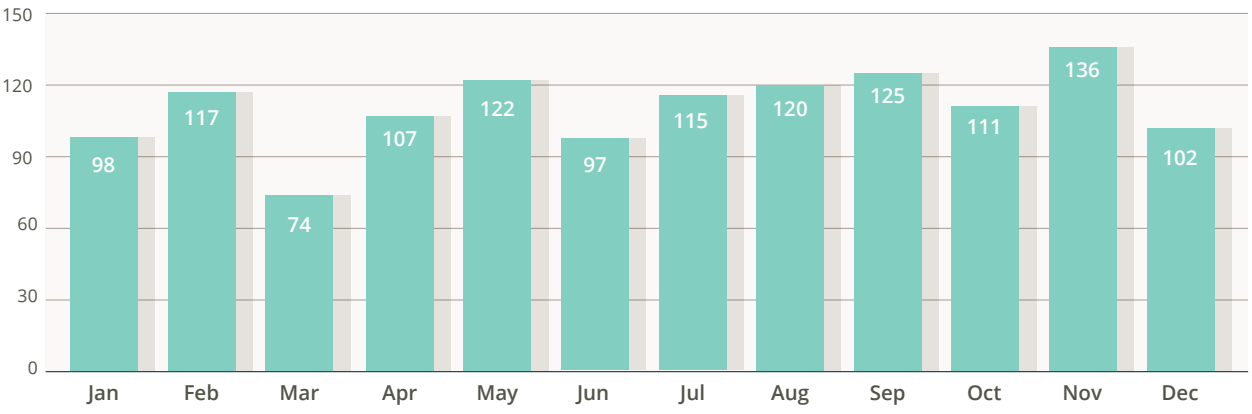
47
No. of MDMs

698
No. of patients discussed

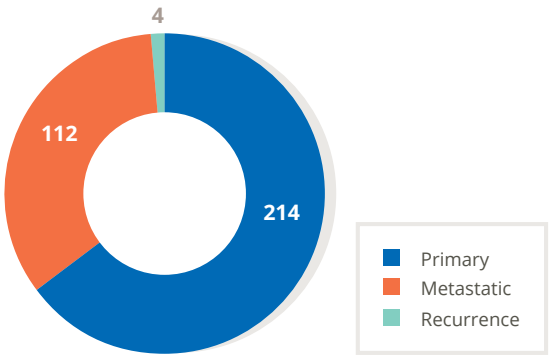
1,324
Total number of discussions

An average of 28 separate patient discussions took place per MDM each week. The volume of discussed patients per month varied from 74 (lowest) in March to 136 (highest) in November 2016. For SVHG as a whole, including the rapid access service and private patients, there were an overall total of 214 primary lung cancer patients diagnosed in 2016, 112 cancers metastatic to the thorax from non-lung cancer primary tumours, and four recurrent lung cancers.

MDT Discussions



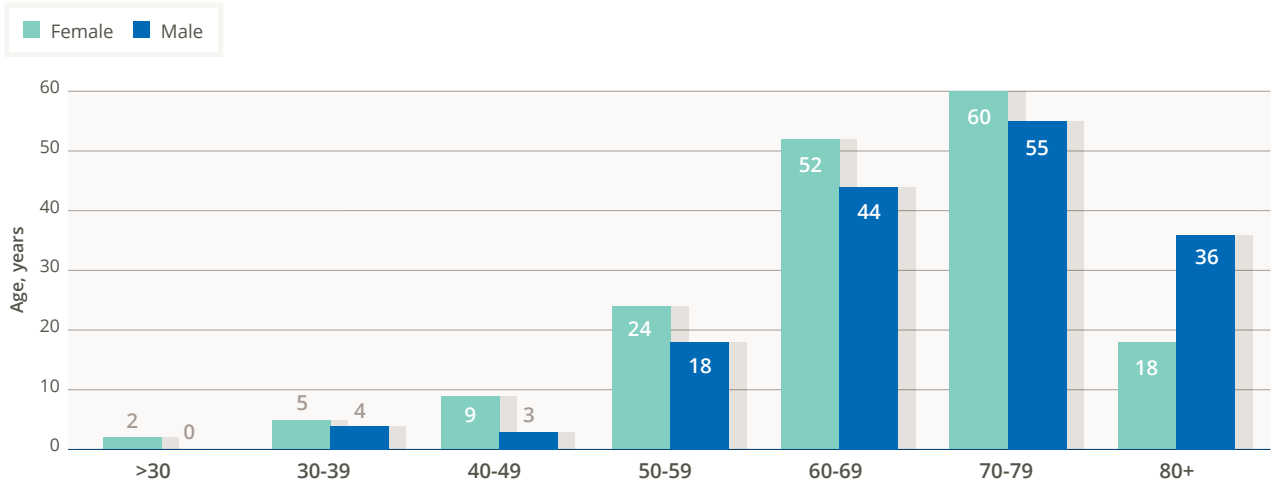
Diagnosis Type



Demographics

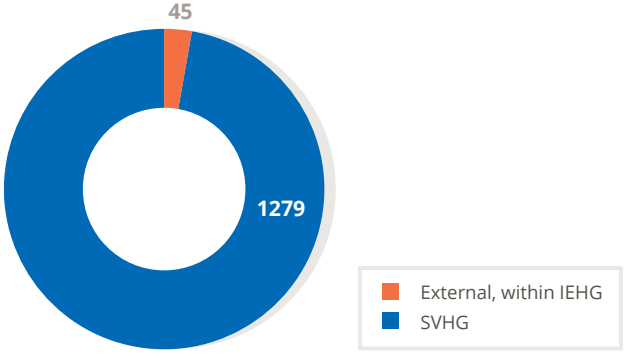
In 2016, the majority of patients (64%) attending the Lung Service were patients in their seventh and eighth decades of life. Among the attendees, there were 54 patients (16%) aged 80 years or older, compared to 20 (11%) such patients in 2014. There were 65 patients (20%) aged under 60 years old, versus 36 patients (19%) in 2015. For the year 2016, there were 160 male and 170 female patients.

Lung Cancer diagnoses by age and gender



All of the patients discussed in 2016 at the lung cancer MDM were patients from Ireland East Hospital Group catchment area, with the vast majority coming from the SVHG (97% of MDM discussions).

MDT Patient Demographics



Lung and Cardiothoracic Interventional Procedures 2015

All diagnostic procedures for patients with a suspected lung cancer are carried out within the Ambulatory Day Care Service as day case procedures. Investigations include; CT imaging, bronchoscopy (including endobronchial biopsies and brushings), EBUS-TBNA (endobronchial ultrasound-guided transbronchial needle aspiration, usually with rapid on-site evaluation of sample adequacy by a consultant histopathologist), CT guided Lung Biopsy and FDG-PET scanning in an external intuition. Facilitating these investigations requires a great deal of support from the endoscopy, radiology, day care services and histopathology departments.

All patients with a definitive diagnosis of lung cancer are discussed at our weekly Multi-Disciplinary lung cancer meeting held each Monday morning to ensure an evidence-based plan of treatment is recommended for the individual patient (Irish Thoracic Society 2009).

From September 2010, Lung Cancer surgeries were re-located to the Mater Misericordiae University Hospital (MMUH). Radiation therapy for SVUH patients is performed via the St. Luke's Radiation Oncology Network (SLRON).

Research

Where appropriate, lung cancer patients are actively enrolled in clinical trials of new and emerging regimes for the treatment of lung cancer, including the newer biologic agents. In 2016, there were four lung cancer-related publications in peer reviewed journals generated by members of the multidisciplinary team.

4 Urological

The Urology Oncology Service at SVHG, together with our colleagues at MMUH, provides services to 1.2 million people in the Ireland East Hospital Group (IEHG).

We have seen a continued increase in demand for our services and take referrals from; Wexford, Carlow, Kilkenny, Wicklow and South Dublin as the hospital groups become more established. The unit provides a Regional Urological Oncology Service as well as a National Centre for Prostate Cancer surgery and most recently, specialist minimally Invasive Kidney and Prostate surgery. We work closely with our colleagues in both Radiation Oncology and Medical Oncology to provide a full service for all urological cancers. Medical staff within the Urology Department managing urological malignancy consist of five consultants on staff, three specialist registrars, two senior house officers, two interns and two specialist nurses in urological oncology.

We welcome the recent appointment of Mr. Barry McGuire who brings an expertise in minimally invasive surgical treatments for urological cancers. All cancer cases are discussed in our MDT meetings on a weekly basis and we have witnessed an increasing number of cases year on year.

The treatments provided for prostate cancer at St. Vincent's are open radical retropubic prostatectomy (nerve-sparing), radiation therapy (both seed brachytherapy and external beam radiotherapy) and active surveillance. Patients are seen and evaluated in the Rapid Access Prostate Clinic supported by Denise Murray and Mary Nevin, our NCCP Prostate Nurses.

Together with the Radiology Service provided by Dr. Robin Gibney and Dr. Deirdre Moran, diagnostic trans-rectal prostate biopsies (TRUS) are provided by our one-stop clinic service if required. Biopsy rates are closely monitored and are reported to NCCP centrally. Although pre-biopsy MRI Imaging can also be used where indicated. The use of MRI Imaging has grown and has been supported by the Radiology Service. Our TRUS prostate biopsy sepsis rate biopsy is just 1% and this compares favourably with other centres both in Ireland and Internationally. Rapid reporting of the biopsies is provided by the Pathology department, Drs. Tom Crotty and Niall Swan.

Patients are locally staged with multi-parametric MRI (mpMRI) imaging, which is also used to offer patients a targeted biopsy where a previous biopsy may not have yielded a diagnosis. Trans-perineal prostate biopsies are also provided in St. Michael's Hospital. Our service reports monthly, quarterly and annual returns to the NCCP. Opinions on radiation therapy opinions are offered by Prof. John Armstrong and Dr. Gerry McVey. Medical Oncologist, Prof. Ray McDermott also provides newer systemic therapies for more advanced disease and facilitates access to international trials for many of our patients. Our patients are also enrolled in the new Irish Prostate Cancer Outcomes Research (IPCOR) study funded by Movember and the Irish Cancer society. 70% of all men treated for prostate cancer in SVUH are in their 60s or younger, defying the popular myth that is a disease of old age. With the appointment of Mr. Barry McGuire, we aim to offer our patients minimally invasive robotically assisted laparoscopic prostatectomy (RALP) as soon as the equipment is installed in 2017.

Patients referred with blood in the urine are prioritised and seen in our Haematuria Service to expedite diagnosis combining imaging with local anaesthetic cystoscopy. Again, this is supported by the Radiology Department where Ultrasound, CT Urogram and MRI are all useful in correctly staging our patients. Diagnostic renal biopsies both with US and CT guidance are regularly used to assist with diagnosis. For patients diagnosed with renal tumours, surgical treatments offered include; laparoscopic or open radical and partial nephrectomy, nephroureterectomy and radio-frequency ablation, together with new biological therapies where indicated.

Bladder cancer numbers remain high and ongoing surveillance consumes large resources. In more aggressive muscle invasive disease, radical cystectomy and radical radiotherapy are offered in muscle-invasive disease combined with neo-adjuvant or concomitant chemotherapy. Surgical patients can choose between being offered a continent or incontinent reconstruction. For more localised disease patients are offered intra-vesical therapy – either a once off post-operative treatment or a six-week course. This out-patient based treatment is provided by our urology cancer nurses. Testicular cancer is managed with radical orchidectomy, prosthesis insertion and if needed chemotherapy. Penile cancer too is evaluated and treated. A specialist service has evolved in MMUH offering organ-preserving techniques, so patients can be referred there for specialist services.

Team

The team consist of four full time consultants; Mr. David Quinlan, Mr. David Mulvin, Mr. Gerald Lennon and our new consultant, Mr. Barry McGuire. Further, Mr. David Galvin is based 50% of the time in SVUH and 50% in MMUH. There are three senior registrars, Mr. Diarmuid Moran, Ms. Anna Walsh and Ms. Eabhann O'Connor. The nursing team is made up of Ms. Mary Nevin, Clinical Nurse Specialist in Urological Cancer; Ms. Denise Murray, NCCP Clinical Nurse Specialist; and Ms. Nicola Boyle, Clinical Nurse Manager2 in St. Charles Ward. Ms. Louise Bradbury is the senior administrator and Ms. Deirdre McNally is the secretarial support. Ms. Joyce Masterson is the Data Manager.

Key Performance Indicator Submissions to NCCP in 2016

Key performance reports for the Rapid Access Clinics are submitted to the NCCP on a monthly, quarterly and annual basis. The reports confirm the number of outpatient attendances, the numbers of trans rectal ultrasound biopsies (TRUS) – both first biopsies and surveillance biopsies – and the numbers of positive prostate cancers. The reports also cover the length of time from referral to first appointment, from biopsy to authorisation of the biopsy report and the length of time on the waiting list for surgery, with targets to attain. Confirmation that all positive prostate cancers have been discussed at MDT is recorded.

In 2016, SVUH actively participated in the trial application of the online portal system provided by the NCCP for direct online reporting of the key performance indicators. This is due to roll out in 2017.

Multidisciplinary Team Meetings 2016

There were 49 multidisciplinary team meetings (MDTs) in 2016 which is in line with HIQA Standards. The number of patient discussions at the weekly MDT meetings in 2016 was 669. This figure represents an increase of 13% in the number of patients discussed at the Urology MDT meeting compared to 2015.

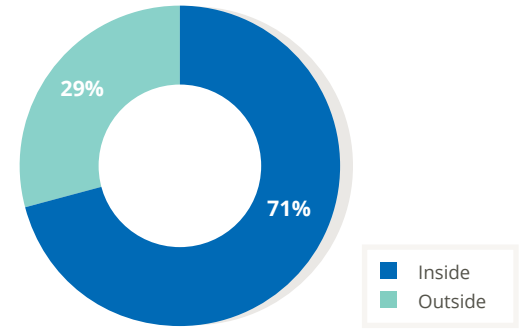
Outpatient Episodes 2016

Outpatient Episodes 2016	SVUH Total
No. of Outpatient clinics per week	8
Designated Cancer Outpatient clinics per week	4
New Patients	1183
Review Patient	5753
Total number of patients seen	**6936**

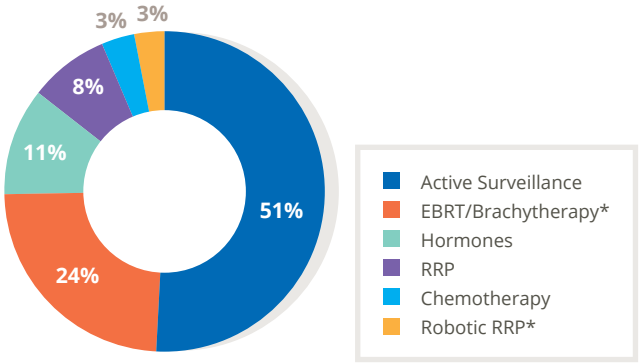
2016 Rapid Access Prostate Clinics

New Attendance	352
Return Attendance	195
Total Attendance	547
New DNA	30
Return DNA	3
Total DNA	**33**

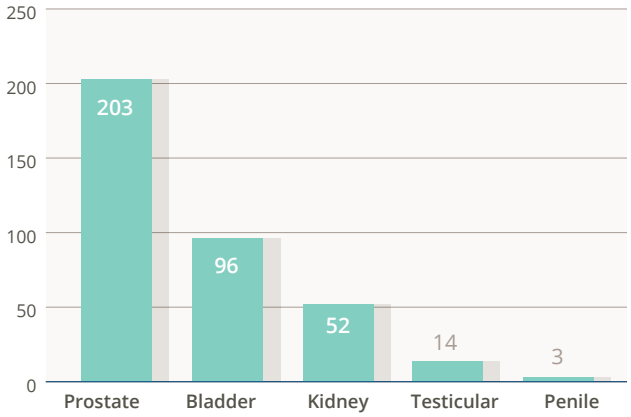
SVUH Referrals by Catchment Area 2016



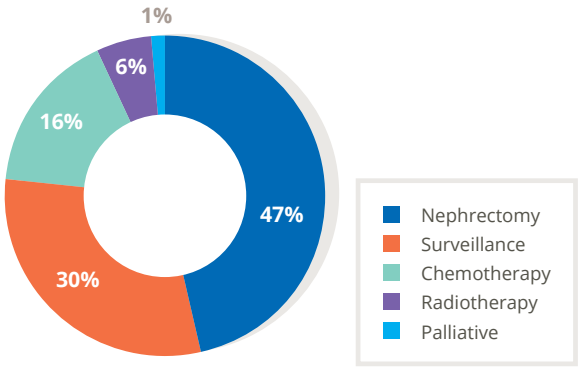
SVUH 2016 Prostate Cancer Primary Treatment



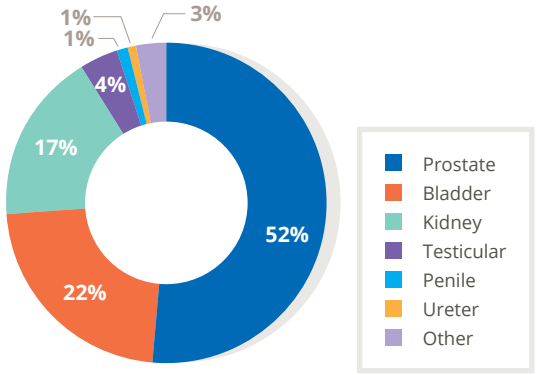
Cancer Diagnosis 2016 SVUH



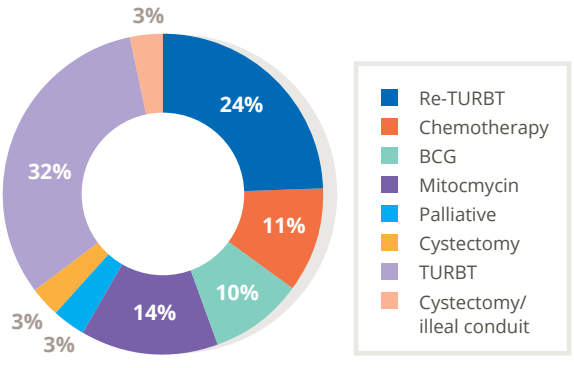
SVUH 2016 Renal Cancer Primary Treatment



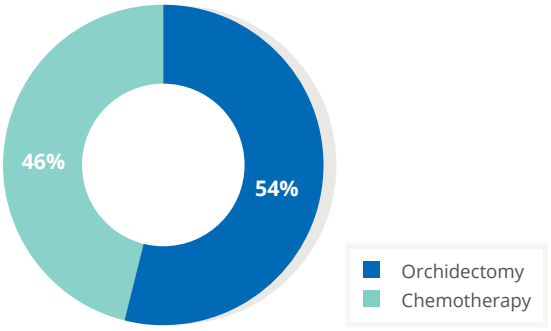
MDT Discussions by Tumour Site 2016



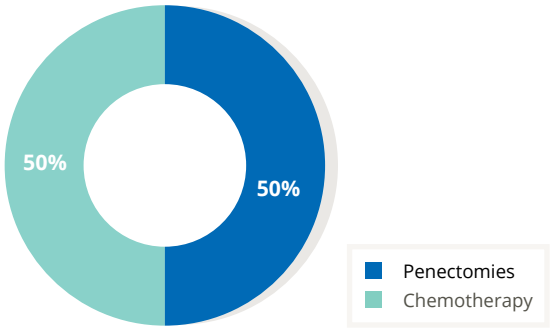
SVUH 2016 Bladder Cancer Primary Treatment



SVUH 2016 Testicular Cancer Primary Treatment



SVUH 2016 Penile Cancer Primary Treatment



Length of stay for surgical patients 2016

Treatment	Median Length Of Stay (Days)	Range (Days)
Prostate RRP	7	4 – 10
Nephrectomy	6	3 – 35
Cystectomy	15	11 – 15
Nephroureterectomy	11	9 – 14
Orchidectomy	2	1 – 6
Penectomy	9	7 – 10

5 Pancreatic, Hepatobiliary and Upper GI

For the HPB group at St. Vincent's University Hospital 2016 was a standout year for a number of reasons.

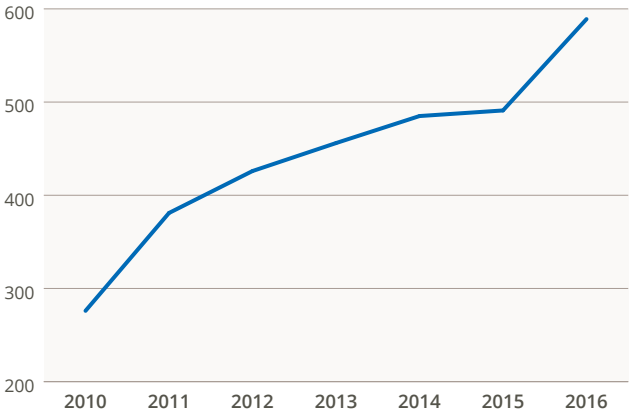
The unit performed its 1,000th liver transplant (hepatocellular cancer is one the main indications for liver transplant); the fellowship training programme was the first HPB training programme accredited by the UEMS; the Neuroendocrine Tumour Programme was successful in achieving Centre of Excellence accreditation from ENETS; finally, the Pancreas Transplant Programme was activated.

In addition, congratulations are due to Prof. Kevin Conlon on his election as President-Elect of the E-A HPBA. All of these achievements will increase the visibility of the HPB programme on both the national and international stage.

With regard to cancer work in particular, the number of referrals and procedures performed continues to increase steadily compared with previous years.

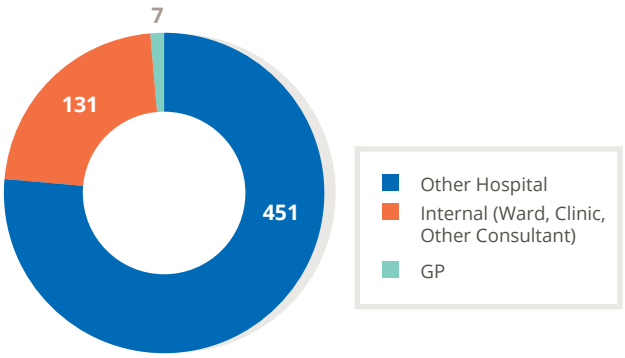
From a staffing point of view Mr. Anthony Stafford and Mr. Tom Gallagher joined the unit in 2016 to bring the consultant surgical complement up to seven. This gives the HPB group the capacity to expand our activities and explore new technical procedures. Ms. Emer Burton, Clinical Nurse Specialist left the unit after almost 10 years. Emer made a major contribution in the establishment of the National Surgical Centre for Pancreatic Cancer (NSCPC) and in the codification of the HPB service. We all wish her the best as she furthers her career.

New Referrals to NCCP Pancreas Service (inc. Upper GI Referrals)



The number of patient referrals to the Pancreatic Service continues to climb since the formal establishment of the NSCPC in 2010. Better recognition of pre-malignant conditions of the pancreas and referral for assessment has been a major factor in this regard. This places an increasing load on the diagnostic radiology and pathology components of the service. The MDT process has been streamlined considerably over the last few years but still requires enormous effort to keep it running efficiently. The majority of these patients are tertiary referrals from other hospitals and collating all of this information to allow timely MDM presentation continues to depend on the sterling efforts of Jenni Cross and Fiona O'Carroll.

Source of Referrals



The number of pancreatic resections has also shown a significant increase in 2016. The number of resections is shown in the table below along with the pathologies encountered. Although pancreatic adenocarcinoma is the commonest pathological entity, the table illustrates the heterogeneity of the patient population. An increasing number of patients with pancreatic cancer receive neoadjuvant treatment. A significant amount of progress has been made in formalising the neoadjuvant pathways under the direction of Prof. Ray McDermott and Dr. David Fennelly. It is anticipated that St. Vincent's will be in a position to contribute patients to a major international trial of neoadjuvant treatment for pancreatic cancer (ESPAC-5) within the next year.

Pancreatic Surgeries 2016

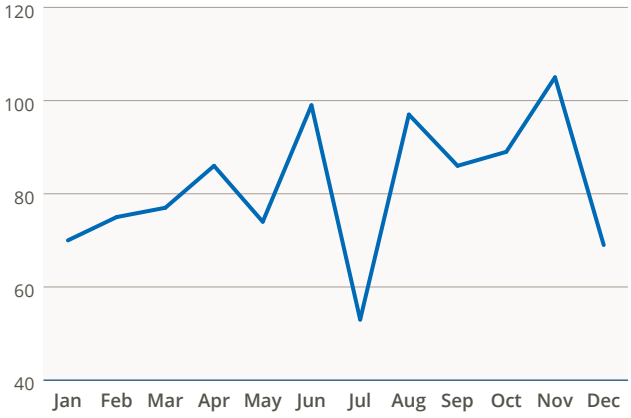
Pancreatic Surgeries	No.
Whipples Procedure	92
Distal Pancreatectomy - Laparoscopic	9
Distal Pancreatectomy - Open	16
Total Pancreatectomy	1
Ampullectomy - Open	2
Other Surgeries	6
Distal Gastrectomy	3
Combined Colo - Rectal & Hepato-Biliary Case	1
Total	130

Post OP Morphology	No.
Adenocarcinoma	68
Cholangiocarcinoma	10
Neuroendocrine Tumour	13
Rencal Cell Carcinoma Clear Cell Type	3
Sarcoma	6
Non Malignant	26
G.I.S.T	4
Total	**130**

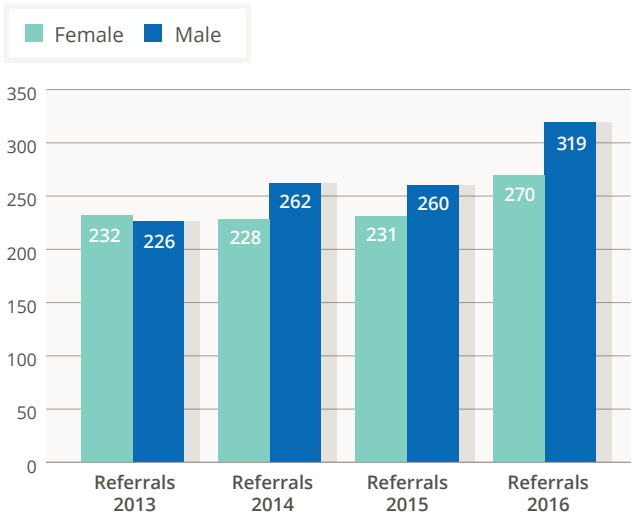
In parallel with the increasing number of pancreatic cases, the number of referrals of patients with hepatobiliary problems also continues to increase. The majority are tertiary referrals from surgical, oncology, and gastroenterology department in other hospitals. As with the pancreatic cases the majority are tertiary referrals.

980 Patients discussed at the Pancreatic MDT in 2016 an increase of 7% compared to 2015.

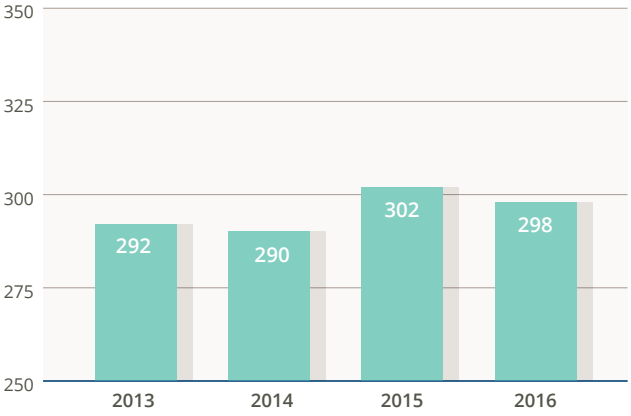
Pancreas and Upper GI Patients discussed at MDT in 2016 - 980



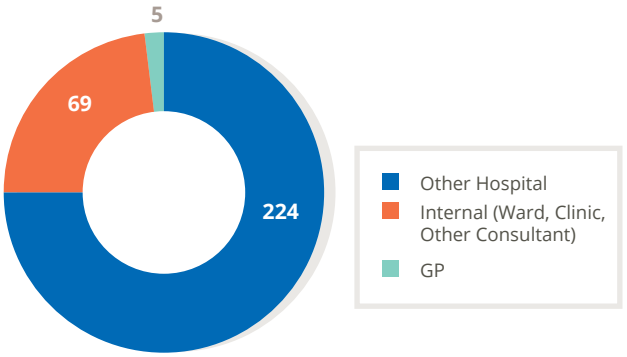
Gender Profile



New Referrals - Hepatobiliary



Source of Referrals



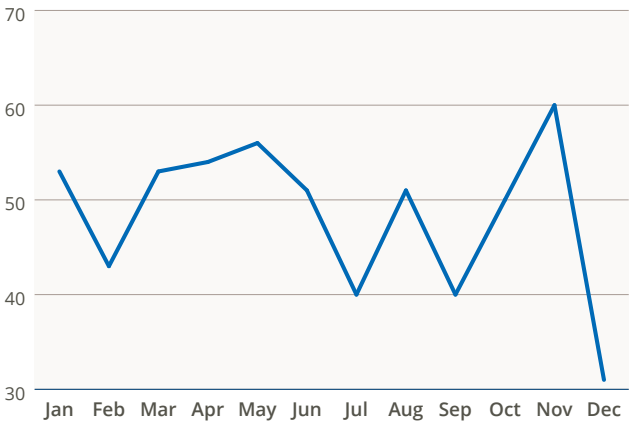
Hepatobiliary Surgeries 2016	No.
Liver Resection - Open	96
Liver Resection - Laparoscopic	15
Liver Resection - Second Stage	9
Liver Resection & Inferior Vena Cava Resection	1
Right Hepatectomy & Partial Gastrectomy	1
Liver Resection & Splenectomy	1
Combined Hepato-Biliary & Colo-Rectal Case	4
Small Bowel Resection	1
Laparotomy & Right Adrenalectomy & Small Bowel Resection	1
Laparotomy & Small Bowel Resection	2
Total	131

Post Op Morphology	No.
Benign	9
CCA	11
CCA/HCC	1
CRLM	79
G.I.S.T	1
GB Adeno	1
HCC	14
Melanoma	1
NCLM	6
NET	6
Signet Ring Cell Carcinoma GB Cancer	1
Squamout Cell Carcinoma	1
Total	131

The caseload of pancreatic and hepatobiliary services continues to increase steadily without any increase in operating theatre time or access to HDU beds. Undoubtedly increased theatre capacity in particular will be needed to match the inexorable increase on demand for complex HPB surgery.

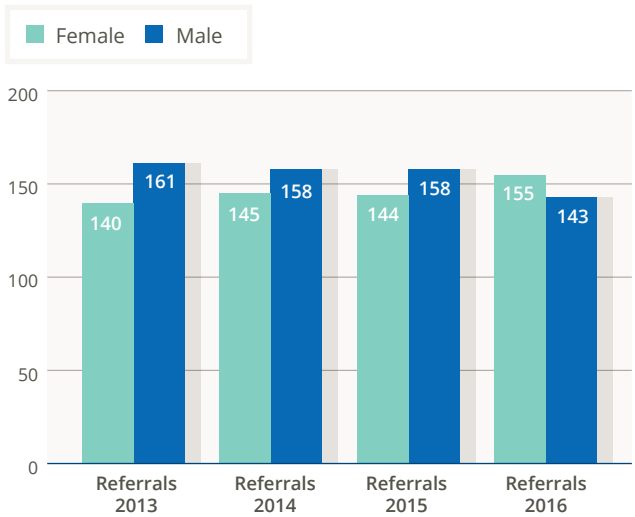
582 Patients discussed at the Hepatobiliary MDT in 2016 an increase of 4% compared to 2015.

Hepatobiliary Patients discussed at MDT in 2016 - 582



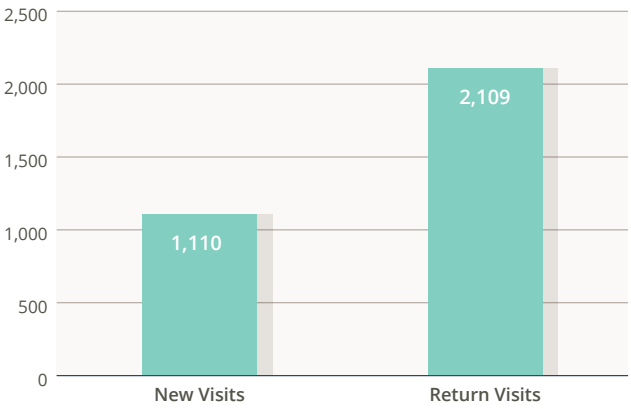
Almost 130 liver resections were performed in 2016 with metastatic colon cancer remaining the commonest indication. The hepatocellular carcinoma workload is steadily increasing largely under the direction of Dr. Diarmaid Houlihan, Consultant Hepatologist. This is supported by the presence of the Liver Transplant Programme at St. Vincent's allied to the commitment of our Diagnostic and Interventional Radiology colleagues. This has also resulted in an increasing number of resections for HCC in recent years. The unit has maintained a particular interest in surgical management of cholangiocarcinoma and continues to implement the Mayo protocol for liver transplant in selected cases of unresectable cholangiocarcinoma. The proportion and complexity of liver resection performed laparoscopically continues to increase year-on-year. This should produce a benefit in terms of bed utilisation but does not impact on the problem of lack of theatre capacity.

Gender Profile



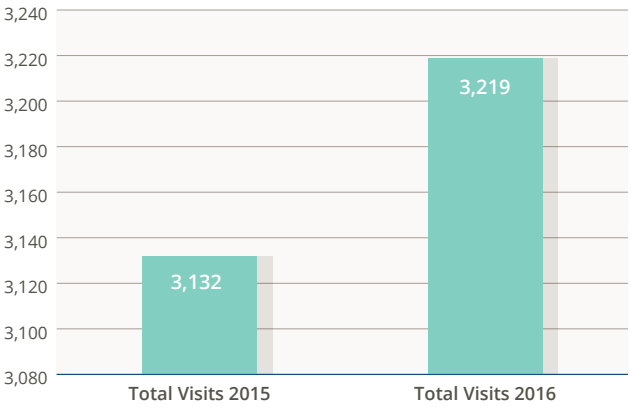
OPD Attendances 2016

OPD Attendances 2016



3,219 Patients attended OPD in 2016 an increase of 3% compared to 2015.

Total Visits New and Return



Members of the HPB Unit continue to engage in a range of research activities. Our external collaborations continue with research groups at Johns Hopkins Medical Center and B. Closer to home joint projects continue with the National Cell Biology Institute at DCU and with Queen's University. Oonagh Griffin, Pancreatic Dietician, continued with her HRB-funded PhD in sarcopenia in patients undergoing neoadjuvant chemoradiotherapy for pancreatic cancer and Fiona Hand completed her time preparing an MD with Prof. Cliona O'Farrelly, Department of Immunology, TCD, a long-term collaborator of this unit. Members of the unit presented a number of papers at a range of national and international meetings.

5.1 Hepatocellular Carcinoma

The Hepatocellular Carcinoma (HCC) Service at SVUH is the only dedicated service of its kind in Ireland. It acts as a national referral center for all patients with suspicious liver lesions, concerning for HCC.

The service is not currently recognised or resourced by NCCP. It is run by Dr. Diarmaid Houlihan, Consultant Hepatologist and Michèle Bourke, HCC Clinical Nurse Specialist, in conjunction with the wider hepatology, hepatobiliary and interventional radiology teams, as well as the nursing staff in St. Brigid's Ward and in the Interventional Radiology Department. The role of MDT co-ordination is provided by Fiona O'Carroll. Bláthnaid O'Sullivan is the HCC Data Manager and Sandra Wheatley provides secretarial support to the HCC Service. There is a HCC clinical trial currently underway which is led by Prof. Ray Mc Dermott, Consultant Oncologist, in conjunction with the HCC Service. A working group comprised of key personnel from each of these areas, meets monthly to discuss service delivery and development. The members of this group include; Dr. Diarmaid Houlihan, Michèle Bourke, Dr. Ronan Ryan (Consultant Interventional Radiologist), Mr. Emir Hoti (Consultant Hepatobiliary and Transplant Surgeon), Joan Killeen (Assistant Director of Nursing), Smitha Sukumaran (Acting CNM2 Interventional Radiology), Bláthnaid O'Sullivan, Anne McGuire (Surgical Pancreatic and Hepatobiliary CNS), as well as a nursing management representative from St. Brigid's Ward.

All HCC patients are reviewed at the liver MDT's once a week. Additionally, patients referred from outside SVUH with liver lesions are reviewed at this forum. The weekly MDT's are on a Thursday morning and comprise of a Liver Transplant MDT, Radiology MDT and a Pathology MDT. These are all attended by the wider MDT as mentioned above.

2016 Hepatocellular Carcinoma Activity Levels

The overall activity of the HCC Service between 2014 and 2016 is demonstrated in table 1. The patients' journey begins at the Radiology MDT where the scan images are discussed and a definite diagnosis of HCC is made. The most appropriate treatment strategies are proposed for each patient prior to their clinic visit. Since the HCC Service was established in 2014 there has been a steady rise in the number of HCC cases discussed at the MDT. Additionally, the number of patients diagnosed with HCC is increasing in line with a recent report from the National Cancer Registry of Ireland (NCRI) (1).

Table 1 | HCC activity levels

2016 HCC Activity Levels	2014	2015	2016	% Increase
No of MDM's	49	50	49	
No of MDM HCC discussions	379	535	610	14%
No of Referrals to Service	156	271	243	
No of New HCC Diagnosis	76	97	105	8%

Outpatient Episodes

Patients are referred to the HCC Clinic from all over the Republic of Ireland. In 2016, 35 dedicated HCC Clinics were run and 350 patients were seen. This was a 59% increase on the patient attendances in 2015 (220). There were 51 new patients reviewed and 299 return patients, both significant percentage increases from 2015 (Table 2).

There were 105 new HCC diagnoses in 2016. As the majority of these cases occur on a background of liver cirrhosis, not all of the referrals came directly to the dedicated HCC clinic, but rather to the expansive liver service offered in SVUH (Table 3). A portion of patients with advanced disease did not attend any service in SVUH as they had advanced disease at the time of referral and were either; too ill to travel or already deceased at the time of their clinic appointment.

The therapies for every new patient with HCC are coordinated by the HCC CNS regardless of their point of entry to the liver service. Once their journey in SVUH has commenced these patients are then tracked and followed up through the HCC Service. Going forward, the aim is to guide these referrals through the dedicated HCC pathway from their first presentation to SVUH.

Table 2 | Dedicated HCC OPD outpatient episodes

HCC Clinic	2015	2016	% Increase
New	48	51	6.25%
Return	172	299	73.84%
Total	220	350	59.09%

Table 3 | Location of review for patients with new HCC diagnosis

Place of Review	No. of Patients
HCC OPD	51
General Hepatology OPD	5
Liver Transplant OPD	14
Hepatobiliary Surgical OPD	2
Viral OPD	2
SVUH Inpatient	9
St. Vincent's Private OPD	5
Did Not Attend any follow-up	17
TOTAL	105

HCC Diagnosis

Hepatocellular carcinoma is a highly vascular cancer and diagnosis can be made both histologically and radiologically. With good quality multiphasic imaging, if certain imaging features are present, i.e. arterial hyper-enhancement, washout and a capsule, in the setting of liver cirrhosis, a non-invasive diagnosis of HCC can be made. The Radiology Department, in SVUH employs the Li-Rads Classification for this (2). If these classical features are not seen, or the patient is non-cirrhotic a targeted biopsy of the lesion may then be advised. The number of new HCC diagnoses made in SVUH increased by 8% over the last year, from 97 (2015) to 105 (2016). These referrals were from hospitals located all over the island (Table 4). SVUH is part of the Ireland East Health Group (IEHG) and as such its catchment area serves a catchment population of 1.1 million people.

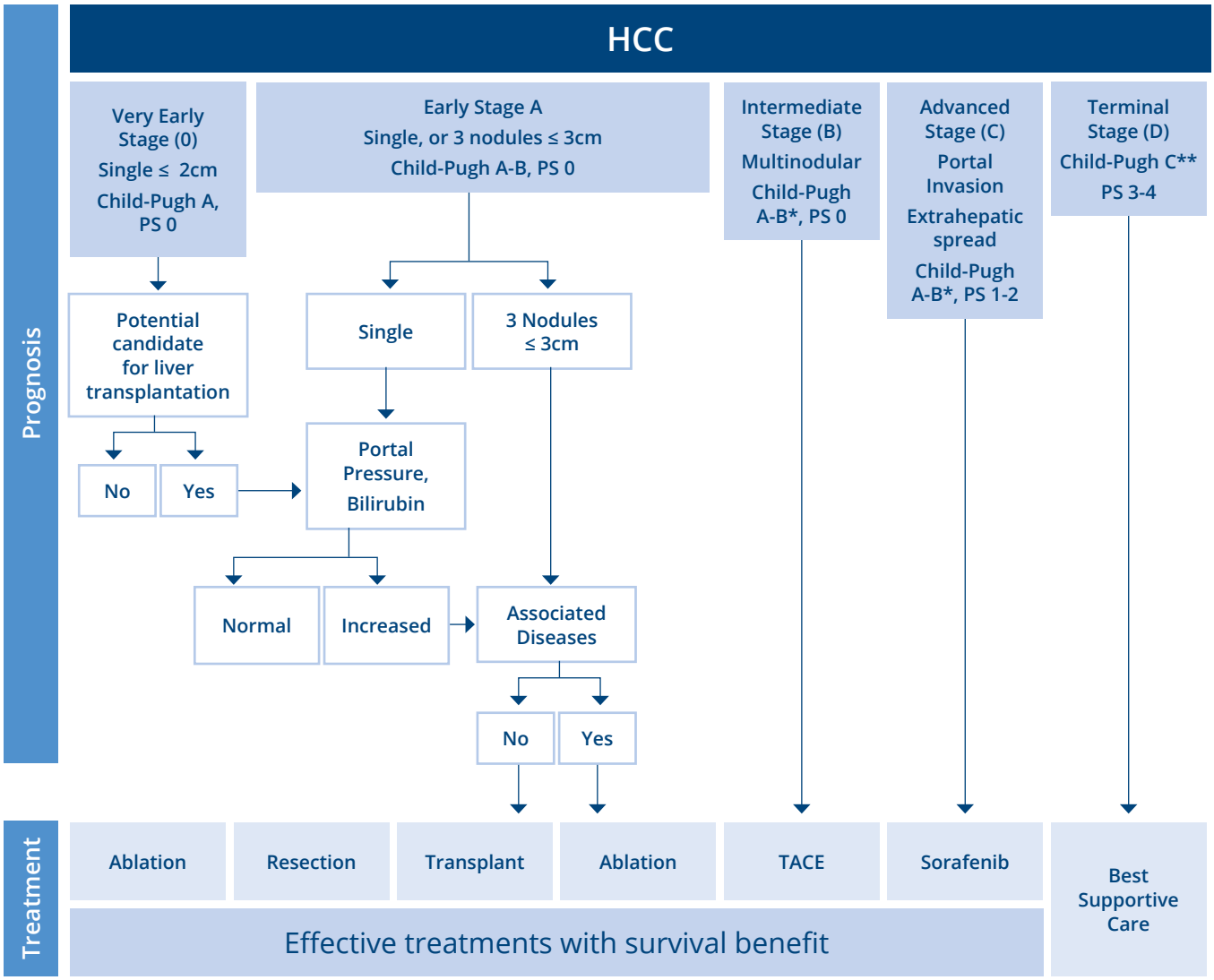
Table 4 | **Number of new HCC diagnosis and geographical location of the referring centers to the HCC service**

Area of Residence		% Values
In Catchment	26	25%
Not in Catchment	79	75%
Grand Total	105	100%

Once diagnosed, treatment for HCC is guided by the Barcelona Clinic Liver Cancer (BCLC) staging system (Figure 1.) (3). This staging system considers both tumour burden and the stage of the underlying liver disease i.e. the level of liver function and patient performance status.

From the BCLC algorithm, treatment options range from curative, to palliative and supportive therapies. Curative options include; liver transplantation, liver resection and thermal ablation (radiofrequency ablation - RFA and microwave ablation - MWA). Non-curative options include; transarterial chemoembolisation (TACE), selective internal radiation therapy (SIRT) and Sorafenib - an oral chemotherapeutic agent. All of these treatments have proven survival benefit. Some patients may be eligible for a combination of these treatments depending on their tumour burden and performance status. Many will require repeat treatments with thermal ablation and TACE.

Figure 1 | **BCLC staging system and suggested management algorithm for HCC (3).**

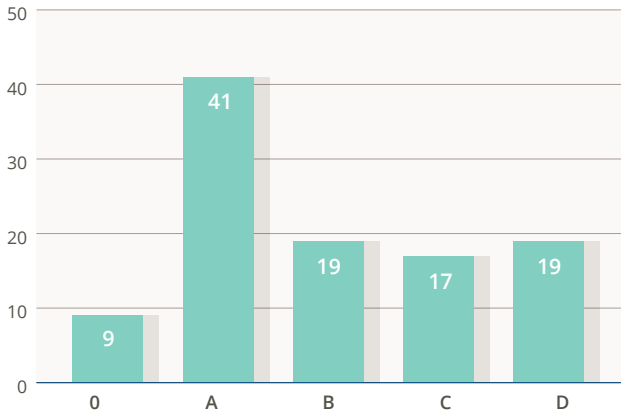


* Note that Child-Pugh classification is not sensitive to accurately indentify those patients with advanced liver failure that would deserve liver transplant consideration.

** Patients with end stage cirrhosis due to heavily impaired liver function (Child-Pugh C or earlier stages with predictors or poor prognosis, high MELD score) should be considered for liver transplantation. In them, HCC may become a contraindication if exceeding the enlistment criteria.

In 2016, 50 (> 47%) of the new patients referred to us were at a stage (0 or A) where a curative treatment could be offered, 36 (> 34%) were eligible for non-curative treatments and 19 (> 18%) were at a stage where only palliation and symptomatic relief could be offered (Figure 2).

Figure 2 | **BCLC staging chart for HCC diagnoses**



HCC is predominantly a male diagnosis. This is in keeping with our findings here in SVUH where 89% of diagnoses in 2016 were male (Figure 3). The median age for patients with a HCC diagnosis is 66, (range 16 – 91 years) (Figure 4).

Figure 3 | **2016 HCC Gender Profile**

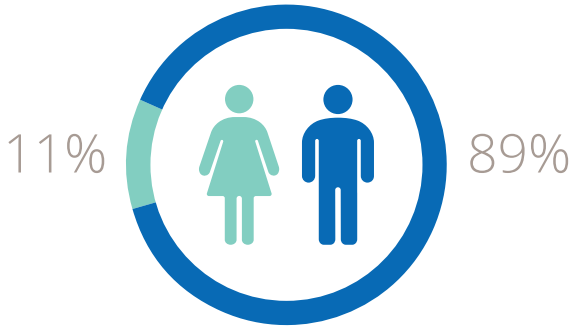
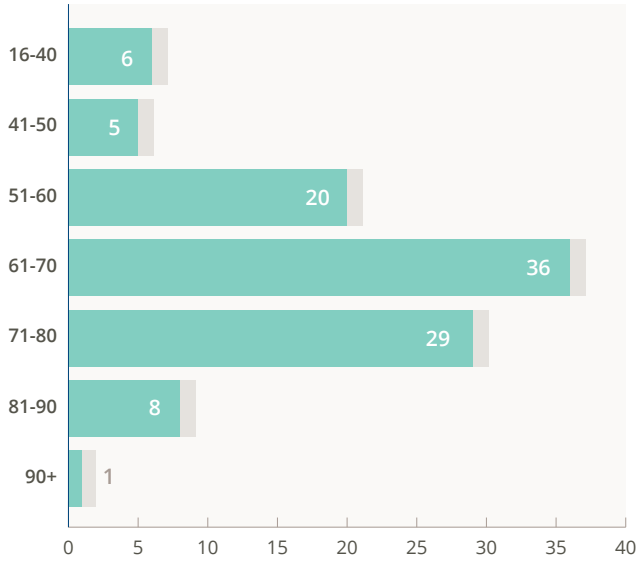


Figure 4 | **Age breakdown for HCC diagnoses**



Treatments

As mentioned already, treatments for HCC range from; curative to non- curative, palliative and symptomatic interventions. Some patients may be eligible for a combination of these treatments depending on tumour burden and performance status. Following the MDT the Hepatologist and CNS meet the newly referred patient in the HCC clinic. The patient is informed of their diagnosis and the implications of this. Appropriate treatments are discussed at length and the patient makes a fully informed decision regarding their treatment pathway. The appropriate treatment is then booked and organised from this clinic. The HPB and transplant surgeons perform the resections and liver transplants in the operating theatre. The IR Consultants perform loco-regional therapies (RFA, MWA, TACE and SIRT) in the Interventional Radiology Department. Chemotherapy (sorafenib) is prescribed by the Hepatologist. Patients on this therapy are followed monthly to screen and monitor for side effects. The full range of therapies for HCC delivered to patients in SVUH in 2016 is described in Table 5 and illustrated in Figure 5. The number of HCC therapies increased in 2016 compared to the 2 previous years.

In addition to cancer directed therapies, patients with HCC may also develop complications of liver cirrhosis i.e. variceal bleeding, ascites and hepatic encephalopathy. Therefore additional supportive interventions that are offered through the HCC Service include; oesophagogastroduodenoscopy (OGD) and banding for varices and large volume paracentesis (LVP) for the management of refractory ascites. Those that develop hepatic encephalopathy are screened for possible causes and frequently they are offered a combination of oral non-absorbable antibiotics and laxatives. There is a protected HCC bed on St. Brigid's ward that is essential to the smooth running of the service.

Liver Transplantation (LT)

Patients with BCLC stage 0 or A HCC may be eligible for LT. The Milan Criteria i.e. a single HCC ≤5cm, or no more than 3 HCC's ≤3cm, is currently used to select patients for LT. In addition to this, serum alpha-feto protein (AFP) level, must be <1000 kU/l, for consideration for LT. Those patients who are deemed appropriate candidates for LT go through a series of testing to assess their mental and physical ability to withstand the operation and transplantation process. Fifteen patients received liver transplants for HCC in 2016.

Liver Resection

As most patients with HCC have established liver cirrhosis, it is very important to consider their liver function and reserve prior to embarking on this treatment pathway. The presence of portal hypertension or poor synthetic function increases the risk for liver failure post-operatively. Fourteen patients had a liver resection for HCC in 2016.

Thermal Ablation

Thermal ablation refers to the use of heat energy to burn and kill the cancer cells. This can be done in the form of RFA and MWA; both of these are performed under general anesthesia in the Interventional Radiology (IR) Department in SVUH. Thirteen patients underwent thermal ablation for HCC in 2016.

TACE

TACE is a technique used to deliver drug eluting beads impregnated with chemotherapy into the arterial blood supply feeding the tumour, as well as blocking off this blood supply. It is performed under conscious sedation. The aim is that the tumour cells undergo a 'double hit' and become necrotic and die. TACE is primarily used for patients with BCLC stage B HCC, but can also be used as a bridging therapy for those patients awaiting a liver transplant. Seventy patients received TACE for HCC in 2016.

SIRT

SIRT is a similar technique to TACE as it also delivers microscopic beads into the arterial blood supply feeding the tumour. It is also performed under conscious sedation. However, these beads differ as they contain the radioactive product Yttrium-90 and there is little or no embolic effect. The beads become permanently lodged in the small blood vessels of the tumour and emit radiation for several weeks or months after the treatment. The radiation destroys the tumour cells from within the tumour with minimal impact to the surrounding healthy liver tissue. SIRT was introduced as a therapy for HCC in SVUH for the first time in 2016. Eight patients received SIRT for HCC in 2016.

Sorafenib

Sorafenib (*Nexavar*) is the only systemic chemotherapeutic agent shown to have any impact on overall survival of HCC patients. Patients with BCLC stage C HCC and compensated liver cirrhosis are offered this form of therapy. These patients are reviewed monthly in HCC OPD and assessed for side effects. Their management also requires a good working relationship with their local GP and community based nursing teams. Eighteen patients commenced sorafenib as therapy for their HCC in 2016.

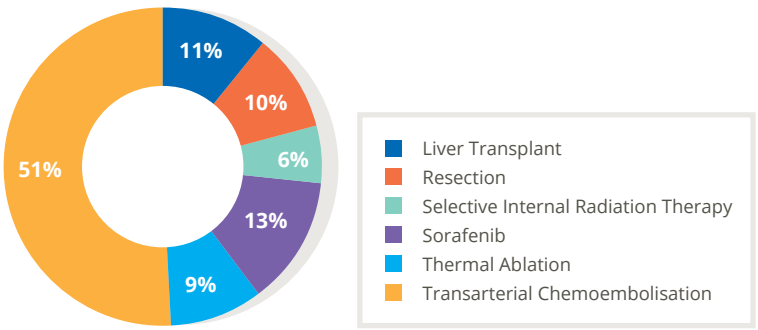
Palliation

If a patient is deemed to be BCLC stage D i.e. poor performance status with advanced liver disease, they are cared for in conjunction with palliative services. Supportive therapy includes symptom management i.e. pain, nausea, encephalopathy, as well as OGD and LVP.

Table 5 | **Treatments given to patients with HCC in SVUH in 2016**

Treatments	2014	2015	2016	% Increase
Resection	8	14	14	
Liver Transplant	10	16	15	
Thermal Ablation	4	13	13	
Transarterial Chemoembolisation	75	65	70	8%
Selective Internal Radiation Therapy	N/A	N/A	8	100%
Sorafenib	16	13	18	38%

Figure 5 | **Graphical illustration of HCC specific treatments delivered at SVUH in 2016**



Patient survival

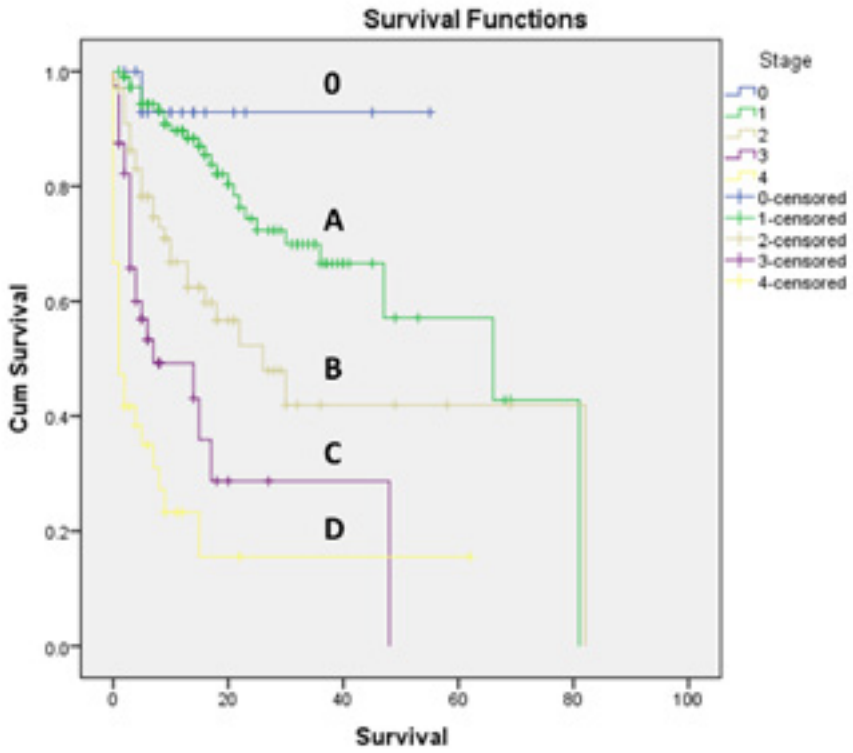
In January 2014, a prospective database of all new referrals to the HCC Clinic at SVUH was established. Retrospective data from some patients treated in the unit prior to January 2014, but followed up in the HCC clinic are included in the database. We analysed the survival probability depending upon BCLC stage at the time of referral. In total, we had a complete dataset on 274 patients [BCLC stage 0 (n=18), A (n=112), B (n=68), C (n=40) and D (n=36)]. A Kaplan Meier curve (Figure 3) was generated to estimate the actuarial survival probability of each patient type over the study period (Figure 6). At the end of follow, up the proportion of patients alive in each of the groups were as follows: BCLC stage 0 - 94.4%, A - 77.7%, B - 58.8%, C - 45% and D - 25%. The predicted median survival time for BCLC stage A, B, C and D patients was 66, 26, 7 and 1 months respectively. These data highlight the importance of appropriate screening strategies (ultrasound liver and AFP level every six months) for all patients with liver cirrhosis, where the annual risk of developing HCC varies between 1-5% per annum. Despite an alarming increase in the number of patients dying from liver cirrhosis there is currently no National screening strategy for HCC in patients with cirrhosis in Ireland.

Research and Audit

PD-1 is a receptor located on T cells that influences immune activation. Binding of the PD-1 ligand and subsequent activation of the receptor inhibits T-cell activation. A variety of cancers have been demonstrated to express abundant levels of this T-cell inhibitor. We hypothesise that inhibition of PD-1 using a blocking antibody will augment tumour activity and prolong patient lives.

In conjunction with Prof. Ray Mc Dermott, Consultant Oncologist, the HCC Service here in SVUH is currently involved in a trial looking at the use of a new systemic chemotherapeutic agent, pembrolizumab (PD-1 inhibitor), versus best supportive care as second line therapy, in subjects with advanced HCC, who were previously systemically treated with Sorafenib. This is a double-blind randomized Phase 3 trial. For subjects to be eligible, they must have objective radiographic progression of disease or else be intolerant of sorafenib. Subjects can be non-cirrhotic or have a Child Pugh liver score A. The primary objectives of this trial are to determine progression-free survival and overall survival of pembrolizumab plus best supportive care compared with placebo plus best supportive care. To date, there are two patients enrolled in the study and two more potential candidates have been identified.

Figure 3 | **Survival probability depending on the stage of disease at presentation. Kaplan Meier Curves were generated for patients with BCLC stage 0 (blue), A (green), B (brown), C (purple) and D (yellow).**



5.2 Neuroendocrine Tumours

Neuroendocrine Tumour (NET) Service – St. Vincent's University Hospital, Elm Park.

Background and updates in 2016

The NET Service in St. Vincent's University Hospital was established as a National Centre in 2014/2015. The service is centered round an in-patient service, a weekly consultant-led multidisciplinary outpatient clinic on a Friday morning. The clinical team also expanded in 2016 with the addition of NET Registrar/Fellow.

The NET Service is the National recognised NCCP structure that aims at providing expertise for patients within group of rare digestive neuroendocrine tumours that includes common lesions such as:

- NET of midgut (formerly referred to as midgut carcinoids
- Pancreatic NETs (functional, e.g., gastrinomas, insulinomas, ...) and non-functional tumours)
- Gastric NET
- Colorectal NET
- Appendiceal NET
- And other NET of the upper GI system.

The expertise has expanded to include:

- Lung NET
- Hereditary NET disorders providing counseling to gene carriers, in addition to the surveillance and management of patients with NET
  - MEN-1
  - VHL
  - Paragangliomas
- The Centre is registered with ENSTA, the European Network for the Study of Adrenal Tumours.

European Centre of Excellence for neuroendcrine tumours

Furthermore, in December 2016 the NET Service in St. Vincent's University Hospital, with the support of senior hospital management, underwent an accreditation audit visit by our colleagues in the European Neuroendocrine Tumour Society (ENETS). The purpose of the audit was for St. Vincent's University Hospital to be awarded the ENETS Accreditation award as a European Centre of Excellence. The audit was successful for St. Vincent's University Hospital and the team are very proud to have been granted the accreditation as a European Centre of Excellence for Neuroendocrine Tumours. This accreditation will bring opportunities to link in with our colleagues overseas on clinical trials and research, and will allow our patients to have the added benefits of our link to other Centres of Excellence within the ENETS network.

NET Service

Outpatient clinic runs every Friday morning in dedicated consultation rooms in the Ambulatory Day Care Centre (ADCC), St. Vincent's University Hospital.

The NET MDT continues to expand also and is held on alternate Friday mornings (07:00 to 08:30) and patients attend the NET outpatients department (OPD) on the same day their Treatment Plan has been agreed with the multidisciplinary team (MDT) in order to communicate the outcome of that Treatment Plan to the patient in a timely fashion.

NET Service OPD figures	Total Attendances
2015	296
2016	343

Referrals to the NET Service come from a range of sources: consultants within SVHG, partner tertiary centres, and in-patients and via the NET patient advocacy group.

The referrals are received and coordinated by Ms. Geri Daly, (Administration) Ms. Jenni Cross (MDT Coordinator) and Ms. Lisa Cullen (CNS), in order to ensure all imaging, histology and clinical details are available for inclusion in NET MDT. Once patients are listed for NET MDT, the referral source data is available to the entire MDT team. Imaging and histology are reviewed and all data available at MDT is discussed in order for an appropriate decision to be made.

The decision of the MDT is captured in the local Excelicare Database during MDT and reviewed to ensure complete and accurate data. Once reviewed the decision is communicated to the referring team/consultant. Generally the patients are seen in OPD on the same day as their MDT discussion or within seven days, at which time the decision of the MDT discussion is also communicated to the patient. This allows the NETS specialists to assist with questions or comments that the patient may have as well as give them all necessary support, education and guidance.

2016 Data

126
New patients seen annually (MDT/OPD)

346
Returning/current patients seen (MDT/OPD)

95%
Implementation of MDT treatment plan

NET Service – Main Partners

- **Endocrinology** (D. O'Shea, R. Crowley); Administration (S. Watson, D. Murray, C. Dawson)
- **Surgery** (J. Geoghegan, K. Conlon, E. Hoti, D. Maguire, T. Stafford, T. Gallagher);
- **Radiology** (S. Skehan, C. Collins, C. Cantwell [IR], J. Mc Cann [IR] & R. Ryan [IR]
- **Pathology** (N. Swan, K. Sheahan, A. Fabre);
- **Oncology** (D. Fennelly, R. McDermott, J. Crown)
- **Endocrine Surgery** (R. Pritchard);
- **Gastroenterology** & NET Co-ordinator (D. O'Toole);
- **NET Co-ordination** NET Senior CNS (L. Cullen), NET Admin Lead (G. Daly) J. Cross, D. O'Toole, D. O'Shea
- **NET Data** (B. O'Sullivan, A. Moran, S. Canny & J. Cross);
- **Biochemistry/Markers** (P. Twomey & C. Le Roux)

Contact Details

Neuroendocrine Tumour Clinic – European Centre of Excellence

National Centre for Neuroendocrine Tumours, St. Vincent's University Hospital, Elm Park, Dublin 4, Ireland.
PA: g.daly@svuh.ie
Tel: +343 (0) 1 2214407
Fax: +353 (0) 1 2214981

6 Gynaecological

The service is provided jointly across the hospital group with complex surgery performed in St. Vincents University Hospital and minimally invasive surgery performed in the National Maternity Hospital.

Anatomical site	NMH	SVUH	SVPH	Total
Cervix	24	1		25
Endometrium	19	28	5	52
Ovary	8	32	8	48
Vulva	1	5		6
Total	**52**	**66**	**13**	**131**

Twenty six fortnightly MDT meetings held in 2016. Every patient who was treated or diagnosed in 2016 was discussed at an MDT meeting and most women are discussed more than once (there were 384 discussions recorded on Excelicare). The meetings are attended in all cases by gynaecological surgeons, medical oncologists, radiation oncologists, radiologists and pathologists.

Of the 131 women diagnosed with gynaecological cancer 128 women had their proposed treatment discussed at the MDT meeting after their confirmed diagnosis of gynaecological cancer but prior to commencement of treatment for that gynaecological cancer. Using a teleconferencing system in St. Vincent's University Hospital, clinicians have the option of participating in discussions without having to be physically present in the hospital.

Cervical cancer

Cervical cancer was diagnosed in 25 women, 60% of whom were aged less than 50 and 40% of whom were aged in their thirties. The mean age at diagnosis was 47 years 7 months (47.6 years)

A Figo stage was recorded in all but one case. The disease was staged as Figo Stage 1 in thirteen, four women presented at Figo Stage 2 and another four were Figo Stage 3. Three women presented at Figo Stage 4.

Fertility sparing conisation using cone biopsy or LLETZ was performed in 11 women one of whom had a laparoscopic lymph node dissection.

Eight women diagnosed with cervical cancer in 2016 were treated with radiotherapy and three of these women had combined radiotherapy and chemotherapy and two women had radiotherapy as part of palliation.

Endometrial cancer

Endometrial cancer presented in an older population; of 52 new cases of endometrial cancer diagnosed in 2016 82% (45) were over 50 years old. The mean age at diagnosis was 65 years 2 months (65.2 years)

A Figo Stage was available for 43 cases; 31 women presented with Figo Stage 1 disease (60%), three women presented with Figo stage 2 disease, four women presented with Figo stage 3 disease and nine women presented with Figo stage 4 disease.

The mainstay of treatment was surgery. Forty two of the 55 patients diagnosed in 2016 had surgery as their primary treatment all of these women had hysterectomies of which 23 had minimally invasive surgeries (defined as laparoscopic or vaginal). In addition, 40 of these women had salpingo oophorectomies all were bilateral.

Nineteen of the women who had surgical treatment had adjuvant radiotherapy and eight had adjuvant chemotherapy.

Ovarian cancer

There were 48 new cases of ovarian cancer in 2016, of whom over 90% of women (43) were over the age of 50 and 33% were over the age of 70. The mean age at diagnosis was 61 years 6 months (61.54 years)

Ovarian cancer commonly presents late; twelve new cases were Figo Stage 1 while four were Figo Stage 2. Almost two thirds (29 of 45 staged cases) were either Figo Stage 3 or Figo Stage 4.

Surgery was the most common form of treatment 34 women were treated with debulking surgery. In Chemotherapy was used for 42 women; 18 were treated with neo adjuvant chemotherapy and 24 received adjuvant chemotherapy following surgical treatment.

Cancer of the Vulva

Vulvar cancer remains relatively uncommon and presents in an older cohort. The mean age at diagnosis was 69 years 3 months (69.29 years). Four women presented with Figo Stage 1 disease and 1 presented with Figo Stage 3.

Two women had wide local excisions and two women had radical vulvectomies performed. Two of the women were treated with chemotherapy.

The gynaecological surgery team at St. Vincent's University Hospital worked closely with the Breast Cancer Service in 2016, four risk reducing hysterectomies with bilateral salpingo oophorectomies were carried out at St. Vincent's on patients who had a historic diagnosis of breast cancer.

Age of the Women Diagnosed with Gynaecological Cancer

	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
Cervix	2	10	3	2	4	3	1	0	25
Endometrium	1	2	7	6	16	10	7	3	52
Ovary	3	2	6	8	15	12	2	0	48
Vulva	0	0	0	3	0	2	1	0	6
Total	**6**	**14**	**16**	**19**	**35**	**28**	**11**	**3**	**132**

Surgeries by Cancer Site

Cervix	16
Endometrium	46
Ovary	43
Vulva	5
Total	**110**

Chemotherapy by Cancer Site

Cervix	3
Endometrium	8
Ovary	42
Vulva	2
Total	**50**

Cervicalcheck Colposcopy Service NMH

The Colposcopy Service continued to be very busy during 2016 and remains the largest in the country. The numbers of new patients again increased this year as the CervicalCheck programme continued with a policy of HPV triage in the community for women with low-grade cytological abnormalities whereby women with a low-grade abnormality (ASCUS or LSIL) have a reflex test for HPV performed in the laboratory and are referred to colposcopy if they test positive for HPV 16/18. Using a combination of nurse and consultant led clinics, women continue to be seen throughout a longer working day from 8am to 7pm five days per week.

Appointments were allocated according to the grade of cytological abnormality and a combination of facilitated referral within the timeframes suggested by the CervicalCheck quality standards. This year saw continued improvements in the waiting times for new referrals with only four out of 2,474 new referrals (0.16%) being offered an appointment for more than eight weeks after the receipt of the referral letter.

Of the 2,304, new attendances at the Colposcopy Clinic during 2016, 1,868 were referred because of an abnormal smear and the remaining 436 were referred for clinical reasons. Of the abnormal smear referrals, 279 (15%) of those seen were referred with high-grade cytological abnormalities (HSIL moderate or worse). The referral smear was LSIL in 918 women (49%) and 628 women (33.6%) presented with ASCUS. This change in pattern was largely due to the continued use of HPV triage for women with low grade cytology.

A diagnostic punch biopsy was performed in 2,659 cases and 970 excisional procedures were performed. This included 921 LLETZ procedures, 49 knife cone biopsies and 232 ablative procedures using cold coagulation.

Clinical pathological CPC review meetings continued monthly with review of the cytology, colposcopy and histology findings for selected cases. The multidisciplinary colposcopy clinical governance committee met regularly and reviewed the quality of our service. The colposcopy information management system again provided most of the figures for this years report. It continues to be important in effectively improving communication of results and treatment plans to both women and GPs.

Pathology Diagnoses at the Colposcopy Service*

Histology Result	Diagnostic Biopsy	Excision	Total Biopsies
Adenocarcinoma in situ / CGIN	17	19	36
Cervical Cancer	9	3	12
CIN Uncertain Grade	21	2	23
CIN1	733	206	939
CIN2	605	353	958
CIN3	345	285	630
No CIN / No HPV (normal)	645	113	758
VAIN1	3	-	3
VAIN2	13	-	13
VAIN3	2	0	2
VIN1	3	1	4
VIN2	7	1	8
VIN3	4	1	5
Inadequate	125	1	126
Total	**2661**	**957**	**3618**

* *Number of biopsies performed and number of biopsies analysed by pathology are not the same in any given time period. As in previous years, the most severe abnormality is used for coding - a minority of cases have both squamous and glandular lesions present.*

7 Head & Neck

Head and neck cancer services SVUH and MMUH

This has been a sad year for the Head and Neck oncology service of SVUH with this untimely passing of Prof. Aonghus Curran. Aonghus built up the unit and last year he was instrumental in joining forces with the Mater unit as per the IEHG/ DAMC group. This was to protect and enhance structures that were already in place, combine our MDT resources into one and our data collection into one. Work on these projects was hampered by his passing but is now slowly progressing in a positive way. The MDT that already existed has split into dedicated Head and Neck cancer MDT and a general MDT. These are held every two weeks. In the New Year, the Head and Neck cancer MDT will join with that of the Mater. A second Head and Neck cancer surgeon will be appointed early in the New Year.

In the year 2016, 45 new head and neck squamous cancers were seen; tumour sites, stages and treatments are outlined in figures 1, 2 and 3.

The Ear Nose and Throat Head and Neck Services combine with Breast and Endocrine Services in reviewing and dicing on treatment of thyroid pathologies. In 2016, the Head and Neck Service operated on 14 cases of thyroid cancer. The pathologies are outlined in figure 4.

There were three cases of salivary gland cancer and three sarcomas requiring surgery.

The plastic surgery service referred five cases of malignant melanoma with neck metastases for neck dissection +/- (with or without?) parotidectomy.

Finally, 17 cases of lymphoma were diagnosed and referred for appropriate treatment to the haematology and medical oncology services in 2016.

Figure 1 | **Malignant Melanoma all Head and Neck Metastases and 4/5 Metastases to Parotid Lymph Nodes**

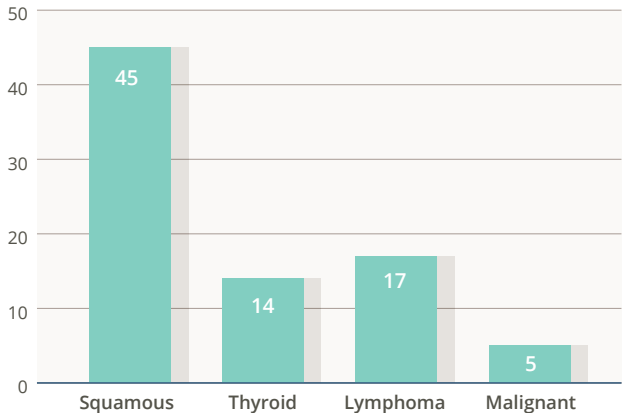


Figure 2 | **Squamous Carcinoma of the Head and Neck**

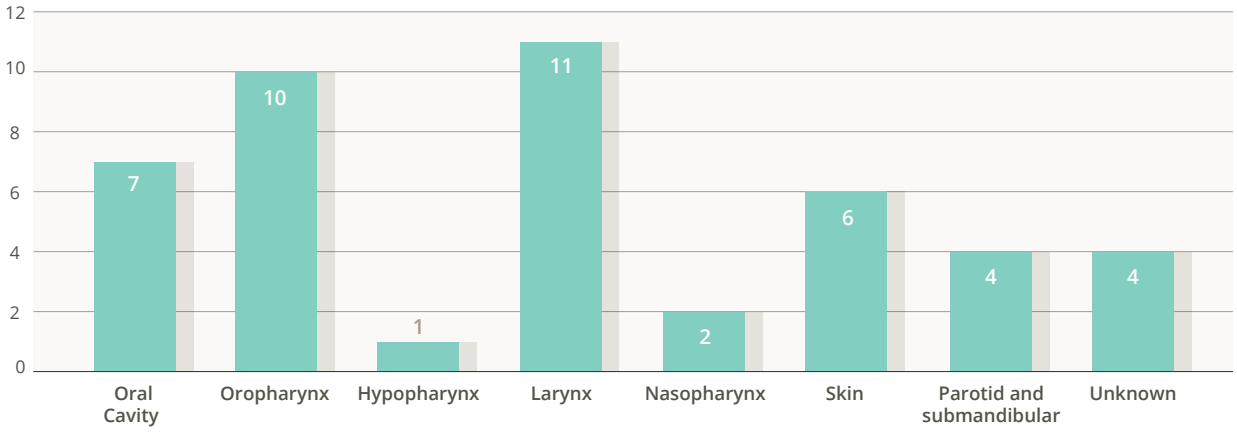


Figure 3 | **Thyroid Malignancies**

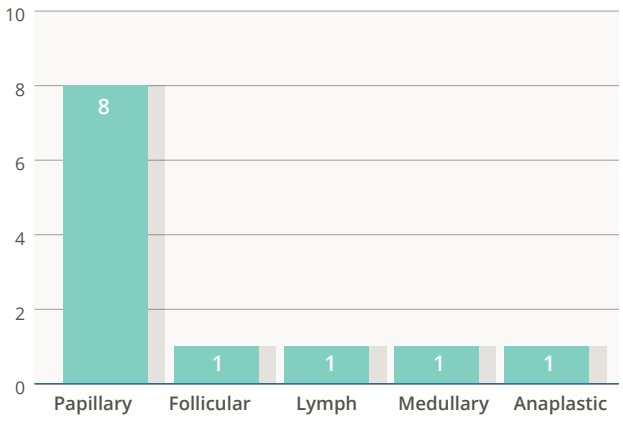
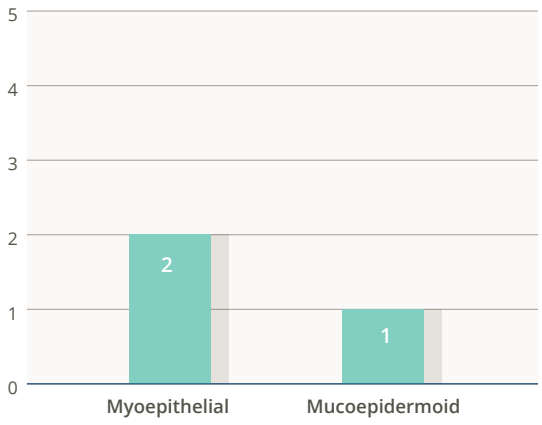


Figure 4 | **Salivary Malignancy excluding SCC**



8 Sarcoma

In Ireland, approximately 200-250 adults are diagnosed with some form of sarcoma each year. The most common is soft tissue sarcoma, which account for 1% of all malignancies in adults. Ireland has an incidence of 4.5 per 100,000 person-years. This is at the higher end of the international incidence range, making centralisation of these rare cancers very important in order to concentrate the expertise in the hope of delivering quality contemporary care.

About 60% of soft tissue sarcomas begin in an arm or leg, 30% start in the torso or abdomen, and 10% occur in the head or neck. With the purpose of concentrating the expertise to care for these patients in mind, the MDT commenced in 2013. It builds on the previous SVUH MDT allowing a hub and spoke model of soft tissue sarcoma (STS) care to be formalised. As well as the expertise already in St. Vincent's, practitioners with specialist interest in STS are taking part in the MDT discussion. More than five hospitals and respective referral bases are represented at the biweekly meeting.

Prof. Gary O'Toole, Prof. Paul Ridgway, Mr. David Healy and Ms. Amy Gillis provide surgical oncology input. The designated musculoskeletal radiologist for the MDT is Dr. Eric Heffernan. Dr. Aurelie Fabre, Dr. Tom Crotty and Dr. Clare D'Arcy provide the specialist pathology input. Dr. Charles Gillham is the Specialist Radiation Oncologist and Dr. David Fennelly is the Medical Oncologist.

The Sarcoma Group in SVUH has been in place for more than three years, with referrals and work volumes continuing to increase. In an effort to ensure that this group evolves, has the appropriate governance and quality assurance processes, and becomes formally accredited the following next steps are essential:

- Develop formal Irish Sarcoma Group Guidelines
- Develop KPIs
- Establish multi-disciplinary clinics at SVUH
- Implement a Quality Assurance Programme
- Collaboration with Crumlin Hospital and St. James' Hospital about GIST patients
- Prospective International Collaborative Clinical Trial (TRAST) evaluating the role of concomitant chemotherapy (Trabectedine) and Radiation in metastatic STS
- Active collaboration in GIST Registry (Prof. Reynolds, St. James' Hospital)
- Creation of a Soft Tissue/Bone Sarcoma Registry
- Retrospective observational study about incidence and outcome of bone sarcoma in Ireland
- Analysis of retrospective incidences of Bone Metastases in STS.

Sarcoma Mutli Displinary Meetings 2016

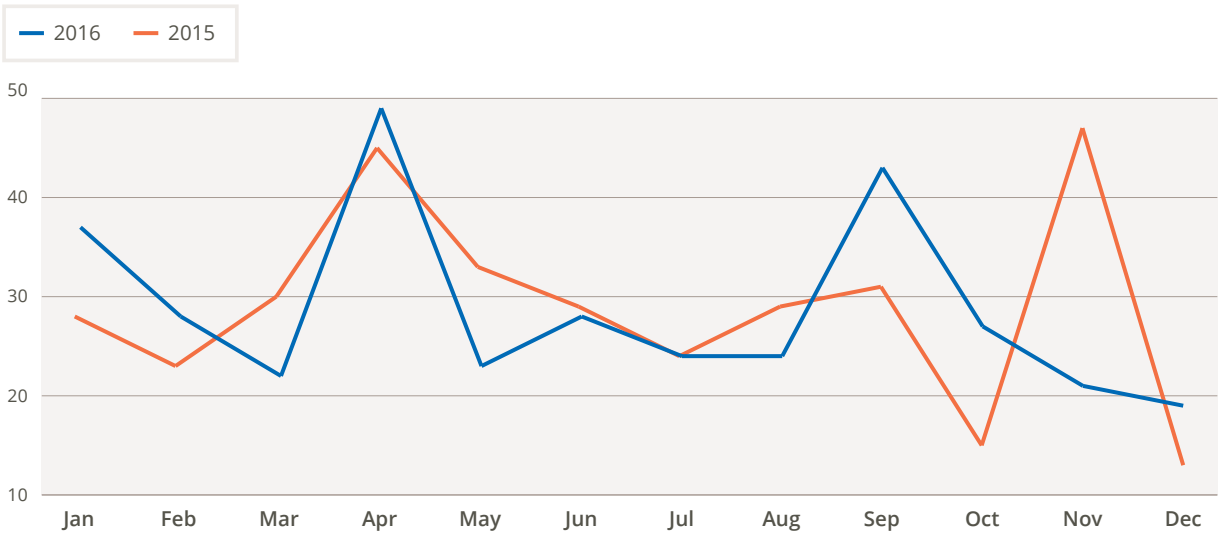
Multidisciplinary working is integral to Sarcoma. A core bi-weekly MDT meeting is held where all confirmed new, suspected or recurrent cases are discussed to formulate a management plan.

24
Sarcoma MDT Meetings

345
Case Discussions

45
Non-Sarcoma Case Discussions

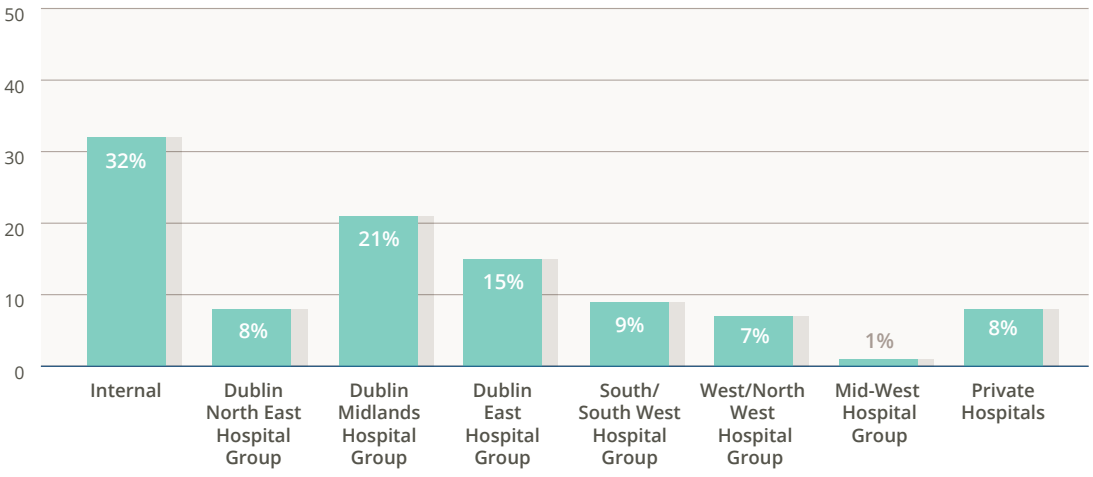
MDT Case Discussion 2015 - 2016



Sarcoma MDM Referral Source 2016

Sarcoma MDT Referral Analysis

Location	New	Recurrence	Metastatic
SVHG	35	2	5
Dublin North East Hospital Group	9	0	1
Dublin Midlands Hospital Group	26	2	0
Dublin East Hospital Group	16	2	2
South/South West Hospital Group	10	2	0
West/North West Hospital Group	7	2	0
Mid-West Hospital Group	1	0	0
Private Hospitals	10	1	0
Total	**114**	**11**	**8**



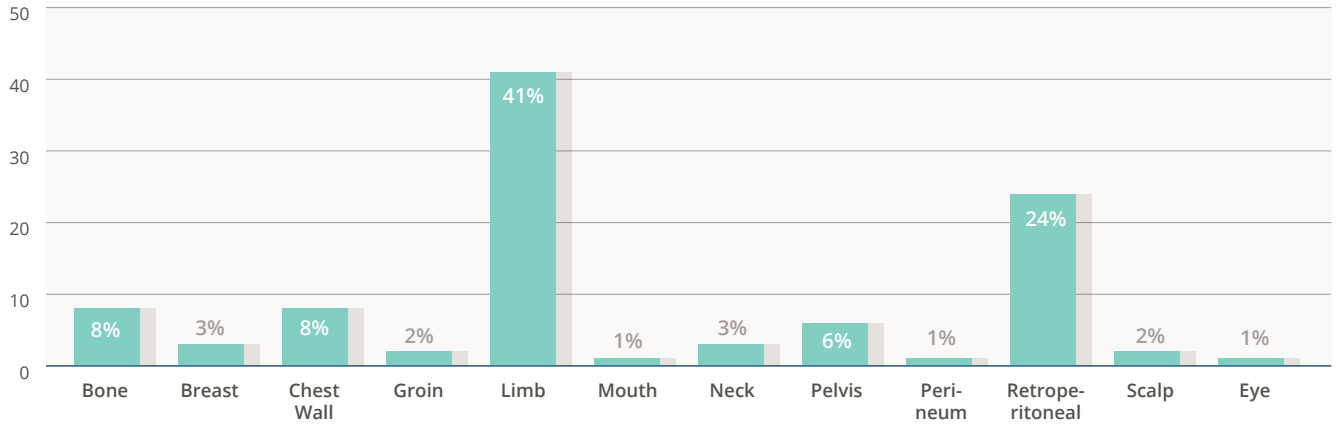
Sarcoma diagnosis

The number of patients with a new sarcoma diagnosis has increased from 101 in 2015, to 114 in 2016. This represents a percentage increase of 8% from 2015 to 2016.

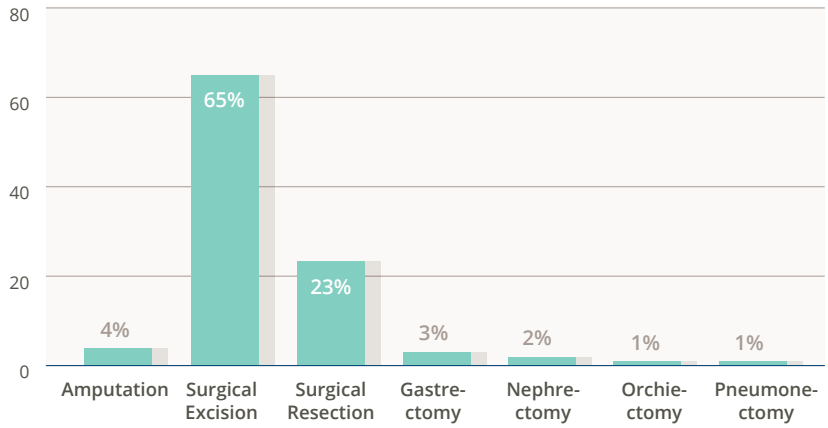
Details	2016	2015	2014
New	114	101	80
Recurrence	11	9	0
Metastatic	8	22	0
Ongoing	87	72	0
Total	**220**	**204**	**80**

Sarcoma Diagnoses 2016	New	Recurrence	Metastatic	Total
Leiomysarcoma	8	1	1	10
Liposarcoma	29	1		30
Pleomorphic Sarcoma Not Otherwise Specified (PSNOS)	15	3	1	19
Synovial Sarcoma	6		1	7
Ewing's Sarcoma (Bone & Extraskeletal)	3			3
Angiosarcoma	3			3
Chondrosarcoma	6	1		7
Dermatofibrosarcoma Protruberans (DFSP)	2	1	1	4
Fibrosarcoma	2	2	2	6
Gastrointestinal Stromal Tumour (GIST)	9			9
Osteogenic Sarcoma	3	1	1	5
Pleomorphic Rhabdomyosarcoma	3			3
Unclassified Spindle Cell Sarcoma (Myofibroblastic)	2		1	3
Malignant Peripheral Nerve Sheath Tumour (MPNST)	9	1		10
Myxoma	3			3
Solitary Fibrous Tumour (SFT)	4			4
Giant Cell Tumour of Bone	7			7
Total Sarcoma Diagnoses	**114**	**11**	**8**	**133**

Primary Sarcoma Sites

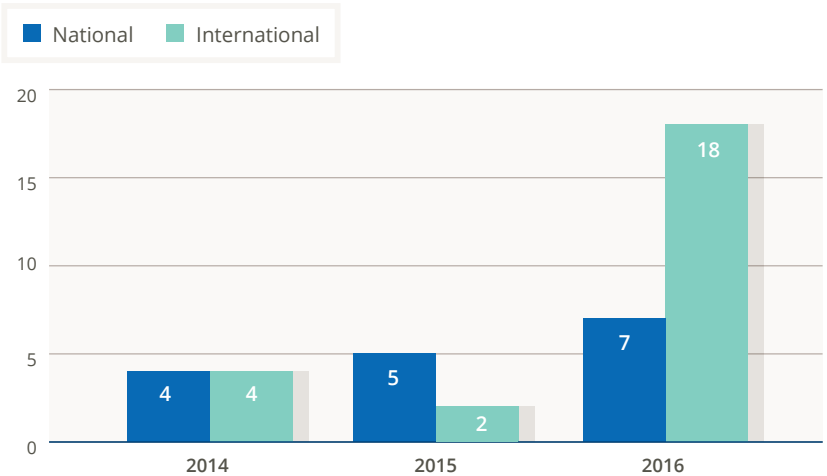


Surgical Procedures 2016

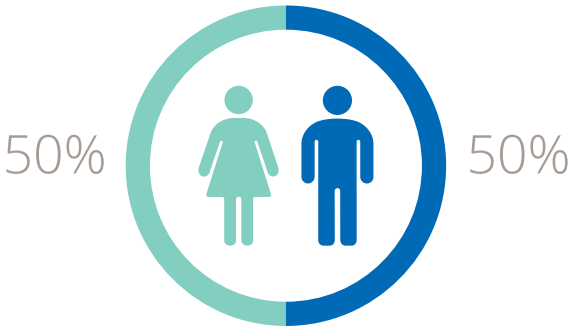


Specimens Sent for External Review

Making a Sarcoma diagnosis can sometimes prove challenging, therefore, in order to complete the staging process and make accurate clinical decisions, external opinion is sometimes sought.

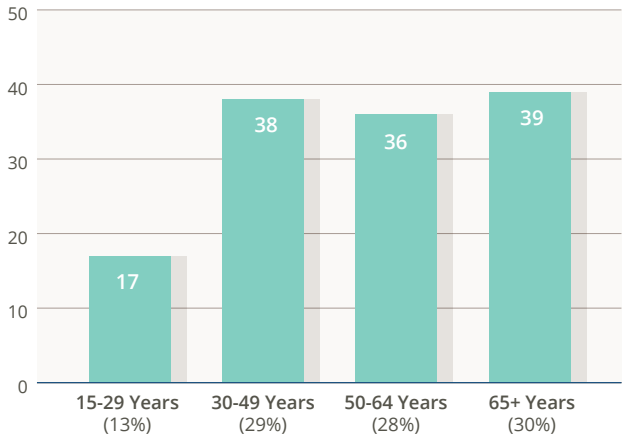


Sarcoma Gender Distribution 2016



- Sarcoma cancer equally affects both genders.
- In 2016, of the 130 reviewed cases, 65 were male and 65 were female.

Sarcoma Age Analysis 2016



The age distribution for sarcoma cancer shows that 58% of all patients were aged 50 years and upwards at the time of diagnosis.

13% of patients were in the Adolescent and Young Adult (AYA) group of 15 to 29 years.

Sarcoma Audits

Audit	
Audit By	Dr. Aurelie Fabre, Consultant Histopathologist, Associate Clinical Prof. UCD School of Medicine
Details	Audited turnaround time of histopathology reporting for January 2015 to October 2015, as per the Royal College of Pathologists recommendations (standards: 80% diagnostic biopsies will be reported within 7 calendar days of the biopsy being taken; 80% of all histopathology specimens (excluding those requiring decalcification) will be reported within 10 calendar days of the specimen being taken).
Result	A total of 63 soft tissue specimens were received during the study period. They included 26 biopsies and 37 resections. All the 26 biopsies were reported within 7 calendar days (100%) and All the resections specimens were also reported within 10 calendar days (100%). 16 of the cases were SVUH cases (25.4%) and the other 47 cases were external (75.6%).
Recommendations & Action Plan	To be repeated for 2016.

9 Haematology

The Clinical Haematology Department at SVUH provides care for patients with general and malignant haematological disorders including; leukaemia, myeloma and lymphoma, as well as patients undergoing autologous stem cell harvesting and transplantation. The hospital's Haematology Department also has an active accredited Tissue Establishment. The service is provided in a 20 bedded dedicated combined Haematology/Oncology Unit in St. Anne's Ward. Over the past number of years there has been an increasing move to treat patients in the ambulatory setting and avoid inpatient admissions as much as possible.

The Clinical and Laboratory Haematology Service is provided by Dr. K. Murphy, Dr. G. Connaghan, Dr. K. Fadalla, Dr. J. Fitzgerald and Dr. S. Ni Loingsigh, along with a team consisting of 1 x specialist registrar, 1 x registrar, 2 x senior house officers, 2 x haematology clinical nurse specialist and 1 x tissue establishment clinical nurse specialist. The laboratories covered within this commitment, include St. Vincent's University Hospital, St. Columcilles' Hospital, St. Michael's Hospital, St. Luke's Hospital and The National Maternity Hospital, all of which are INAB Accredited.

The consultants provide specialist services for; leukaemias, myeloprolifertive disorders, multiple myeloma and high risk obstetric haematology patients in designated specialist clinics. The Lymphoma Service is delivered by a combined haematology/oncology team. Access is therefore provided to an integrated treatment pathway for all haematology patients including standard chemotherapy/biological therapy and transplantation.

Clinical Haematology Mutli Displinary Meetings 2016

Multidisciplinary working is integral to clinical haematology and includes several weekly multidisciplinary team meetings. These include; a Bone Marrow, Lymphoma and Haematology MDT, at which all confirmed new, suspected, recurrent and ongoing cases are discussed to formulate a management plan. The department also feeds into a Joint Fetal Maternal Haematology Multidisciplinary Meeting in the National Maternity Hospital.

The number of patient discussions in SVUH has increased from 1,802 in 2015, to 1,918 in 2016. This represents a 6.5% increase in the number of patient's discussed across four multidisciplinary team meetings.

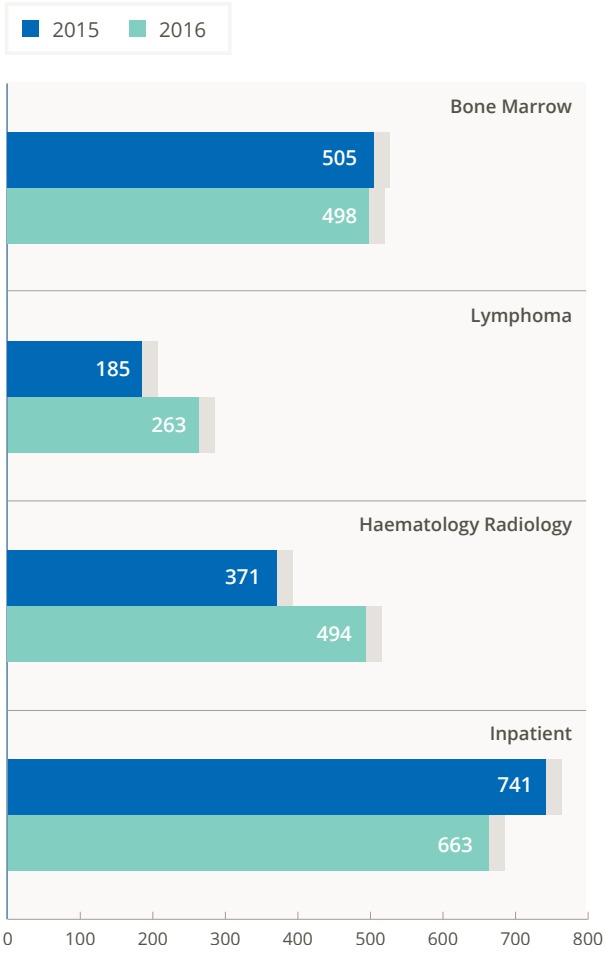
The number of consult cases handled by the Clinical Haematology Team is only a snapshot of the actual cases handled as daily telephone consults are ongoing.

172
Clinical Haematology MDMs

1,918
Case Discussions

200
Consult Cases

Clinical Haematology Case Discussions 2016

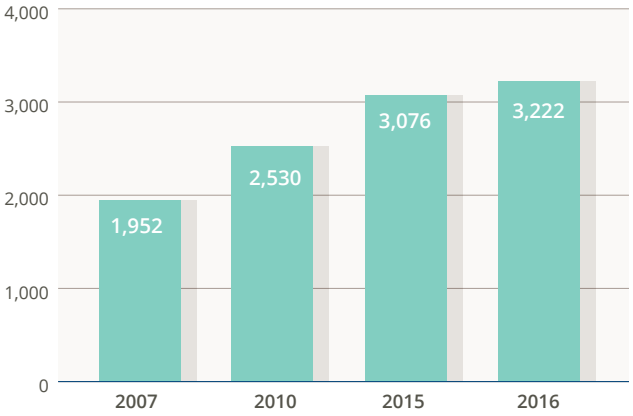


Clinical Haematology Outpatient Department

Clinics	2016
Outpatient Clinics Per Week	3
Rapid Assess Clinics Per Week	1 (Only 1 Clinic Held In 2016)
National Maternity Hospital Clinic Per Week	1

Haematology Outpatient Activity 2016	
New Visits	358
Return Visits	2,864
New Referrals	743
DNA's	353

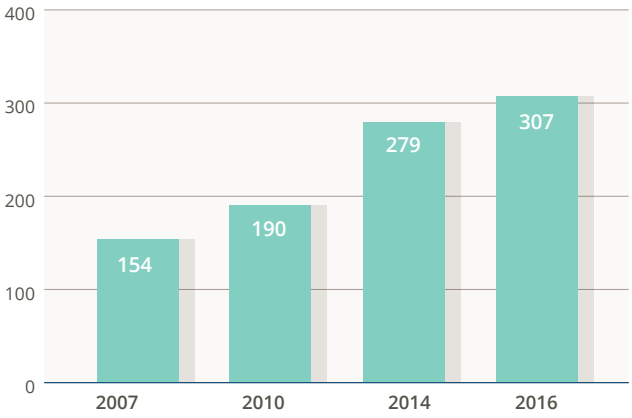
OPD Activity Attendances (Excl. Virtual)



Inpatient activity

Patient discharges in SVUH have increased from 190 patients in 2010, to 307 patients in 2016. This represents a 62% increase in inpatient activity over a six year period.

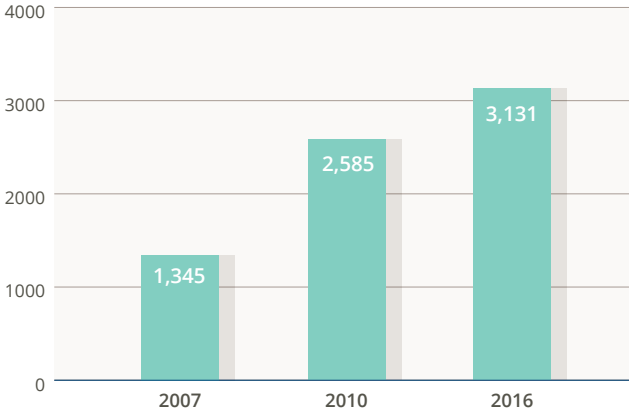
Inpatient Discharges



St. Anne's Day Centre activity

Day Case attendance in SVUH has increased from 2,585 patients in 2010 to 3,131 patients in 2015. This represents a 19% increase in Day Case activity over a six year period.

St. Anne's Day Centre: Day Cases



Haematology Malignant Diagnoses

Haematological Malignancies 2016			
Details	New	Recurrence	Ongoing
Acute Lymphocytic Leukaemia (ALL)	2	2	10
Acute Myeloid Leukaemia (AML)	16	4	10
Acute Promyelocytic Leukaemia (APML)	0	0	4
Chronic Lymphocytic Leukaemia (CLL)	29	1	129
Chronic Myeloid Leukaemia (CML)	6	0	28
Chronic Myelomonocytic Leukaemia	5	1	2
Large Granular Lymphocytic Leukaemia (LGLL)	2	0	3
Hairy Cell Leukaemia (HCL)	0	1	5
Diffuse Large B-Cell Lymphoma (DLBCL)	38	8	46
Follicular Lymphoma (FL)	22	6	20
Hodgkin's Lymphoma (HL)	16	1	23
MALT Lymphoma	1	0	2
Mantle Cell Lymphoma	3	0	7
Marginal Zone Lymphoma	3	0	4
Burkitts Lymphoma	2	0	0
Small Lymphocytic Lymphoma (SLL)	2	0	1
T-Cell Lymphoma	1	0	3
Primary CNS Lymphoma	0	0	1
Grey Zone Lymphoma	0	0	1
Multiple Myeloma (MM)	32	16	76
Myelo Dysplastic Syndrome (MDS)	42	0	67
Myeloproliferative Neoplasm (MPN)	48	0	197
Myelofibrosis (MF)	5	0	10
Waldenstroms Macroglobulinemia (WM)	6	0	12
Total	**281**	**40**	**661**

Malignant Diagnoses			
Details	2016	2015	2014
New Diagnoses	281	246	203
Recurrent Diagnoses	40	51	32
Ongoing Management	661	N/A	N/A
Total	**982**	**297**	**235**

In 2016, there were 281 patients diagnosed with a new malignancy, this compares with 203 such patients in 2014. This represents a percentage increase of 38% over a three year period.

In 2016, there were 40 patients diagnosed with a recurrent malignancy, this compares with 32 such patients in 2014. This represents a percentage increase of 25% over a three year period.

Haematology non-malignant diagnoses

Non-Malignant diagnostic figures relate to patients treated in 2016 only. As such, a Key Performance Indicator (KPI) for 2016 is to capture cumulative data for this patient cohort.

Haematological Non-Malignancies 2016

Details	New 2016	Ongoing 2016
MGUS	23	55
Deep Vein Thrombosis (DVT)	33	38
Pulmonary Embolism (PE)	21	13
Factor V Leiden (FVL)	5	6
ITP	38	81
Iron Deficiency Anaemia (IDA)	40	56
Neutropenia	15	17
Pancytopenia	7	3
Thrombocytopenia	13	14
Haematological Non-Malignancy : Other	38	69
Total	233	352

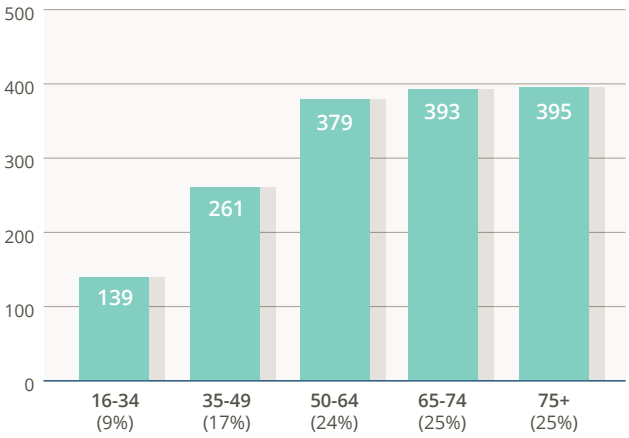
Investigations for a Haematological Disorder

Details	New 2016	Ongoing 2016
Patient's Under Investigation	136	7

Haematology age analysis 2016

The age distribution for haematological disorders shows that 74% of all patients are aged 50 years and upwards at the time of diagnosis.

Haematology Age Analysis 2016



Haematology Gender Distribution 2016

- Haematological disorders equally affect both genders.
- In 2016, of the 1,567 diagnosed cases, 780 were male and 787 were female.

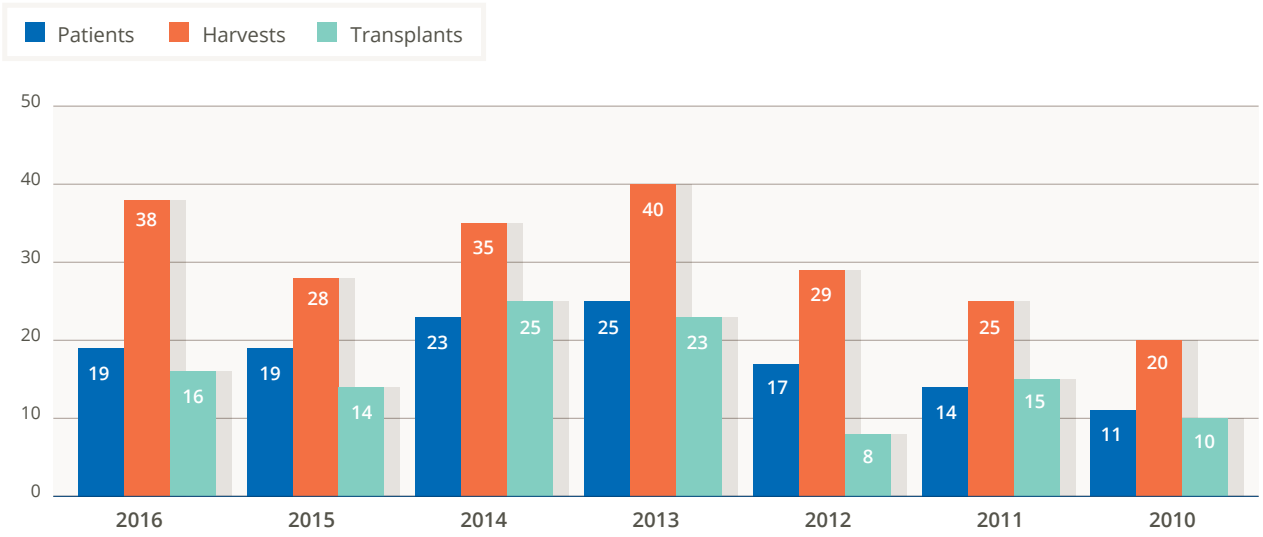
Tissue establishment

The Clinical Haematology Department is responsible for the Tissue Establishment which runs the Stem Cell Transplant Programme within SVUH.

The Tissue Establishment is authorised to collect blood forming stem cells from patients with blood cancers, freeze them, store them and subsequently use them for treating patients with diseases such as myeloma and lymphoma. This service takes referrals from both the haematology and oncology teams. The whole procedure is referred to as autologous peripheral blood stem cell transplantation.

The Tissue Establishment is accredited by the HPRA, with a KPI being to achieve JACIE Accreditation by 2017.

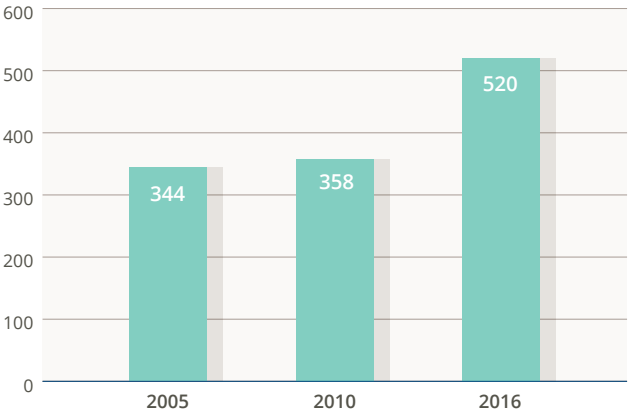
Tissue Establishment



Bone marrow reporting

Bone Marrow reporting is used to advance patient treatment of hematopoietic disorders. Reporting on same has increased from 358 aspirates in 2010, to 520 aspirates in 2016.

Bone Marrow Reporting : Consultant Sign Out



10 Skin

Primary Data Sources: Excelicare Data Management Database; Cognos Pathology Database
Prepared by Dr. Aoife Lally, Consultant Dermatologist, with acknowledgement to Ms Sue Canny, Data Manager and Dr. Aine Kelly, Dermatology Registrar for assistance with collection and analysis of data for this report.

Non-melanoma skin cancer is the most common cancer in Ireland. The incidence of malignant melanoma, both invasive and in-situ, is increasing across all age groups.

SVUH diagnoses the greatest number of melanomas amongst the Dublin teaching hospitals (NCCP Survey of Practice: Referral and Primary Treatment of Pigmented Lesions; Multi-disciplinary Diagnosis of Melanoma, June 2014). In spite of this the hospital did not receive any of the NCCP-funded consultant dermatologist posts approved approximately eight years ago.

There are currently no NCCP designated centres for skin cancer management and no specific NCCP funding for management of patients with these tumours. An NCCP referral form for GPs to refer suspicious pigmented lesions was piloted in SVUH and subsequently introduced across the country in 2014/15. Uptake of this form through an electronic referral system is increasing. In 2016, approximately 200 referrals were received by the Dermatology Department at SVUH electronically using this system. It is not possible at present to capture details regarding the number of NCCP referral forms received by fax or referrals regarding suspicious pigmented lesions that are sent without using either the paper or electronic NCCP referral system.

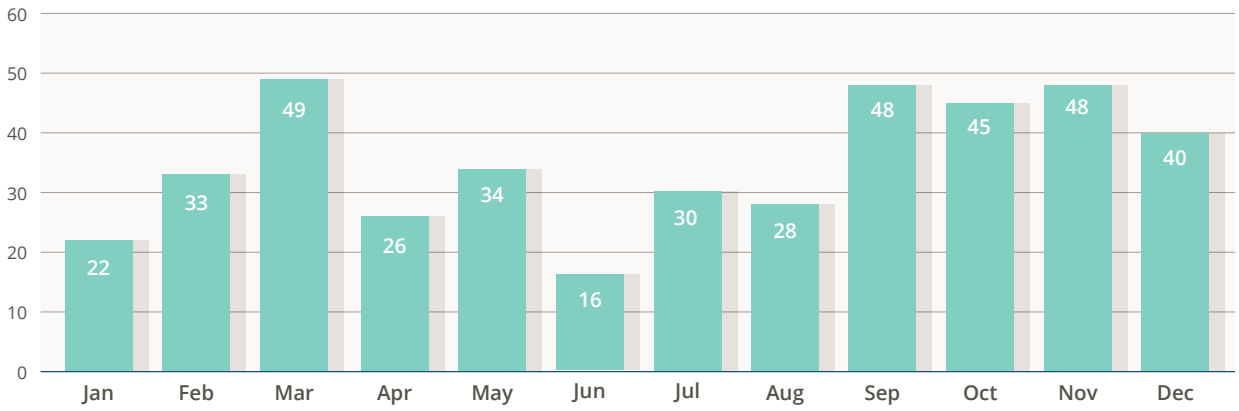
There is a "one-stop" see and treat pigmented lesion clinic twice a month in dermatology (Dr. A Lally and Dr. B Moriarty), a joint dermatology/ plastic surgery see and treat pigmented lesion clinic once/twice a month (Prof. B Kirby/Ms. C Lawlor/Dr. B Moriarty) and a Skin Cancer Assessment Clinic, primarily for non-pigmented lesions two/three times per month in dermatology (Dr. A Lally). Pigmented lesions and other referrals suspicious for cancer are also seen in general clinics in dermatology and plastic surgery. Patients referred for wide local excision and consideration for sentinel lymph node biopsy are seen in a weekly surgical clinic (Mr. D Evoy). The referral pathway to medical oncology (Prof. J Crown/Dr. G Gullo) and radiation oncology (Prof. J Armstrong/Dr. O Salib) is also established.

At SVUH, there is a fortnightly melanoma MDM which is attended by dermatologists, plastic surgeons, general breast and endocrine surgeons, medical oncologists, radiation oncologists and histopathologists. There is an established pathway (using SNOMED codes generated by histopathology) to ensure all patients with a histological diagnosis of melanoma made in SVHG (regardless of clinician or anatomical site affected) are listed for discussion.

There is a part-time melanoma CNS (shared with lung cancer service), Patsy Ryan, who was appointed in April 2013. Sue Canny was appointed as Data Manager (shared with lung cancer service) in June 2014 and facilitated the introduction of a proforma for the melanoma MDM in September 2015 which has enabled a data report to be produced following each meeting. Fiona O'Carroll, MDT Co-ordinator, was appointed in May 2015, shared with HCC/Liver, Pancreatic and Mortality & Morbidity MDTs. The need for a non-melanoma skin cancer MDM is recognised as patients with high risk tumours often require a multi-disciplinary input from dermatology, plastic surgery, ENT surgery and radiation oncology. These cases are sometimes discussed at the melanoma MDM.

A total of 219 patients were discussed at 25 melanoma MDMs throughout 2016 (Figure 1).

Figure 1 | **Melanoma MDTs 2016**



A total of 142 cases of melanoma were diagnosed in 2016 including 113 primary invasive melanomas and 24 cases of lentigo maligna/melanoma in situ. There were 40 external cases sent to the Histopathology Department including 18 for BRAF mutation analysis and 22 for review of slides and listing for MDM discussion. There were nine cases of local recurrence and 24 cases of distant and nodal metastases. Nine cases of metastatic ocular melanoma and one case of urethral melanoma, presenting with nodal disease were listed for discussion at the melanoma MDM.

Specific details of primary cutaneous melanoma diagnoses in 2016 are outlined on the following pages:

Figure 2 | **Anatomical Location of in Situ Disease**
Lentigo Maligna + Melanoma in situ

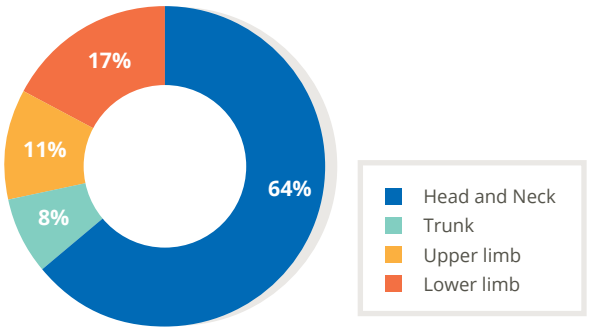


Figure 3 | **Anatomical Location of Primary Invasive Melanoma**
Invasive Carcinoma

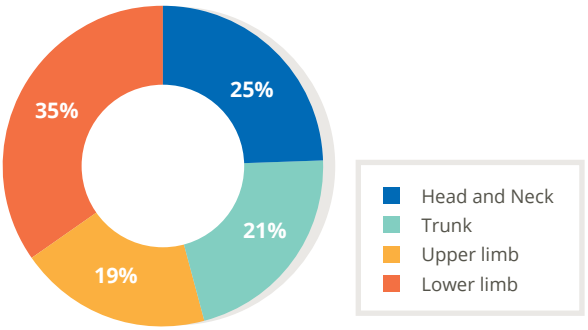


Table 1 | **Breslow Thickness of Primary Invasive Melanoma**

Breslow thickness	Cases	%
<1mm	50	41.67%
1-4mm	44	36.67%
>4mm	19	15.83%

Figure 4 | **Clinical Staging of Melanoma using AJCC 2009 Criteria**

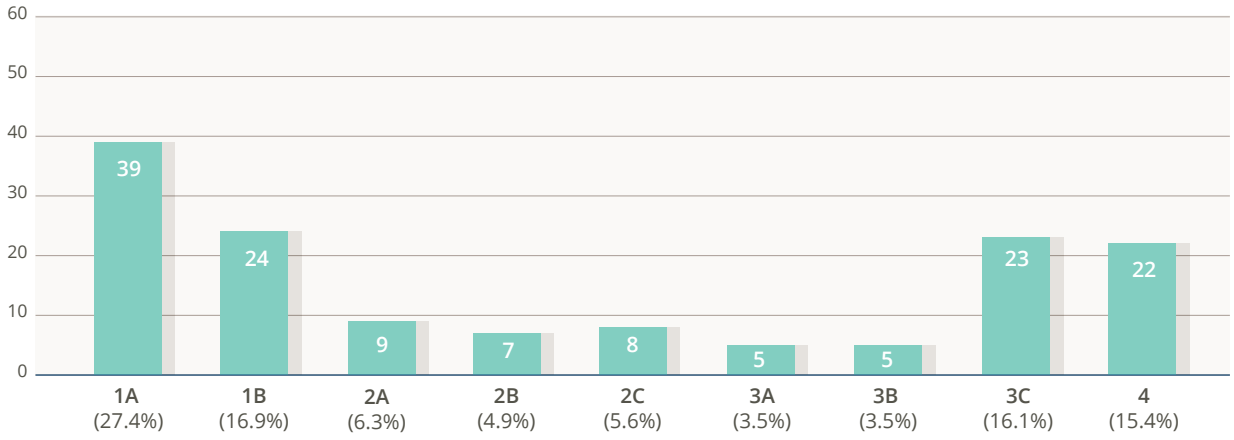


Table 2 | **Demographic and Histopathological Features of Primary Invasive Melanoma Affecting the Body (Trunk and Limbs)**

	Number = 69	Mean	Median	Range
Gender	30 Male (43%) 39 Female (57%)			
Age (years)		63	67	(28-95)
Breslow (mm)		2.42	1.1	(0.2-23)
Ulceration present	18 (26.1%)			

Table 3 | **Demographic and Histopathological Features of Primary Invasive Melanoma Affecting the Head and Neck**

	Number = 23	Mean	Median	Range
Gender	14 Male (60.8 %) 9 Female (39.1 %)			
Age (years)		70.4	73	31-93
Breslow (mm)		1.79	1	0.14-10
Ulceration present	5 (34.7%)			

There were 39 sentinel lymph node biopsies performed at the time of wide local excision.

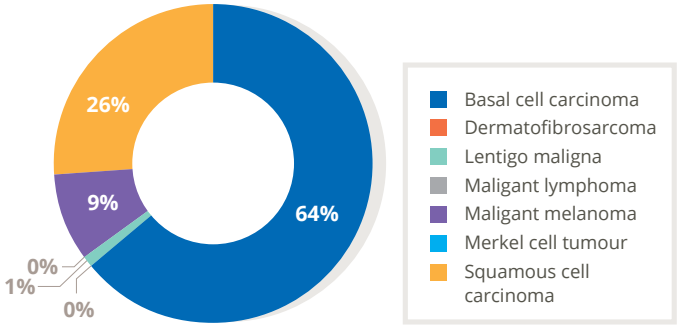
BRAF mutation analysis was carried out on 59 patients (18 of which were external), with 15 positive results. NRAS mutation analysis was carried out on five patients, two of which were positive (both melanoma of unknown primary) and cKIT mutational analysis on one patient was positive (metastatic urethral melanoma).

In 2016, there were 1,270 basal cell cancers, 510 squamous cell cancers, 8 cutaneous lymphomas, 2 dermatofibroma sarcoma protruberens and 1 merkel cell cancer diagnosed in SVUH (Figure 4).

Research

The lack of resources to assist with data collection/input into the melanoma database and the lack of a non-melanoma skin cancer database has limited research opportunities in this field. Nonetheless, a number of pilot studies, audits and clinical trials take place each year with recent work including review of skin cancers affecting renal transplant recipients and patients with inflammatory bowel disease and the use of photodynamic therapy to treat precancerous skin lesions.

Figure 4 | **2016 Skin Cancer Type**



11 Medical Oncology

2016 was a busy year for the Medical Oncology Department in SVHG. There were increases across all aspects of clinical activity in SVUH, including the numbers of patients attending our outpatient clinics and day centre, and the numbers of patients requiring hospital admission.

There are six consultant medical oncologists in the Medical Oncology Department, with disease site specialisation being a key feature (Table 1). Each consultant attends the multidisciplinary meetings (Table 2), provides an inpatient consult service, and conducts regular outpatient clinics relevant to their area of interest and expertise. The consultants work with a team of clinical nurse specialists, four registrars, one senior house officer and two Interns.

In 2016, another clinical nurse specialist joined the team, increasing the number of oncology liaison nurses to four: Hazel Murray, Marie O'Brien, Aileen O'Meara and Nollaig O'Sullivan. These oncology liaison nurses are key members of the oncology team, coordinating patient care and providing vital support and information for patients and their families. The Medical Oncology Service has a close working relationship with the Psycho-Oncology and Palliative Care teams, who provide further essential supportive care for the patients, including symptom control, counselling and complimentary therapies.

Day ward and inpatient Oncology Services are also provided by five of the consultants to patients attending St. Vincent's Private Hospital (SVPH).

Table 1 | **Consultant Medical Oncologists by Site Specialisation**

Consultant	Disease site		
Dr. Emer Hanrahan	Lung	Head & Neck	
Dr. Janice Walshe	Breast		
Dr. David Fennelly	Gynaecology	Gastro-Intestinal	Sarcoma
Prof. Ray McDermott	Genito-Urinary	Gastro-Intestinal s.i. Pancreas	
Prof. John Crown	Breast	Melanoma	Lymphoma
Dr. Giuseppe Gullo (locum)	Breast	Melanoma	Lymphoma

Table 2 | **MDT Meetings Attended**

Monday	Tuesday	Wednesday	Thursday	Friday
Lung	Colorectal	Pancreas / Hepatobiliary	Lymphoma	Liver/NET
Breast	Urology	Gynaecology		Breast
Melanoma				Medical Oncology radiology conference
Sarcoma				

Outpatient Activity

Eight consultant-led, disease-oriented oncology outpatient clinics are held each week. New patients are usually seen within two weeks of referral, and the goal is for chemotherapy, where indicated, to commence within two weeks of the decision to treat in line with the NCCP key performance indicators. There were over 5,000 Medical Oncology Clinic visits in 2016, including 681 new patient visits. The number of new patient visits increased by 3.7% relative to 2015, and the total number of clinic visits increased by 4% (Table 3).

Table 3 | **Outpatient Clinic Visits**

	2013	2014	2015	2016	% variance (2015 - 16)
New patient visits	627	601	657	681	+ 3.7%
Return patient visits	4,154	4,439	4,601	4,789	+ 4.1%
Total	**4,781**	**5,040**	**5,258**	**5,470**	**+ 4.0%**

Day Centre Activity

St. Anne's Day Centre is a modern Haematology/Oncology day ward that provides facilities for the administration of outpatient systemic anti-cancer therapy and supportive therapies (such as blood transfusions and bisphosphonates). There are 16 infusion chairs for the administration of intravenous therapies. There are also designated areas for the evaluation of patients on chemotherapy, including patients attending for scheduled visits and unwell patients making unplanned visits. Day ward medical oncology activity increased again in 2016. There were a total of 7,609 day centre visits in 2016, up from 7,524 visits in 2015.

A very positive development in our day ward services in 2015 was the establishment of nurse-led, pre-chemotherapy assessment and oral anti-cancer medication clinics. These clinics have continued to run very successfully in 2016. Pre-chemotherapy assessment clinics were recommended by the NCCP Oncology Medication Safety Report 2014/2015 to improve efficiency, reduce waiting times in day wards and identify health care issues within a 48 hour period prior to the administration of IV chemotherapy for patients attending day care units. Patients who live within reasonable proximity of the hospital generally attend the day before chemotherapy for assessment of cancer symptoms and treatment-related toxicity, and for phlebotomy. Chemotherapy can then be ordered in advance for patients who are proceeding with treatment, minimising waiting times for the patient on the day of treatment. Patients receiving orally-administered, anti-cancer therapies are also assessed in these nurse-led clinics, affording the patient a more time-efficient hospital visit and allowing the day ward chairs to be reserved for patients who are on intravenous therapy.

Inpatient Activity

Inpatient care and inpatient chemotherapy are provided in St. Anne's Ward, with 20 dedicated haematology/oncology rooms, each with a single bed and bathroom. Patients requiring emergency admission may be accommodated on another medical ward when there is no available room in St. Anne's Ward, where their medical care continues to be provided by the medical oncology team.

The oncology inpatient activity increased in 2016. The number of oncology inpatient discharges in 2016 was 846, as compared with 760 in 2015 (relative increase of 11%). The average length of stay for these patients was 10.4 days, reflecting the often complex medical and social needs of this patient population.

Pharmacy

The pharmacy staff in the Aseptic Unit are crucial to the running of the Oncology Services. These staff prepare chemotherapy in the Aseptic Unit, develop and revise chemotherapy protocols and treatment guidelines, and provide clinical review of chemotherapy prescriptions. In 2016, the total number of treatment items dispensed by the pharmacy aseptic unit in SVUH was 14,891. This figure includes all parenteral cytotoxic chemotherapy and monoclonal antibodies, oncology clinical trial medications and medications supplied on compassionate use/expanded access programs. During 2016, the Pharmacy Department dispensed an average of 87 trial items per month to patients in the Oncology Service as part of approximately 35 active clinical trials. We are planning to recruit a dedicated Clinical Trials pharmacist in early 2017.

Clinical Research

The Medical Oncology Research Department is located in the Clinical Research Centre (CRC). The Department is funded and administered by the Cancer Clinical Research Trust. (CCRT), a registered charity which supports a dedicated cancer research program in multiple Dublin-based institutions, including SVUH, DCU and UCD. The primary focus of CCRT's work is translational research and the provision of clinical trials at SVUH, through affiliations with Cancer Trials Ireland, international cooperative groups and the pharmaceutical industry.

The CCRT has 12 full-time and part-time staff members, including one clinical research manager, three clinical research coordinators, four data managers, one training and quality coordinator, one translational study coordinator, one senior research fellow, and one operations manager. These posts are not funded by the HSE. The revenue that supports the clinical trial programme is provided by remuneration for participation in cooperative group and pharmaceutical industry studies and a dedicated fundraising programme.

A total of 211 patients were recruited to clinical trials across multiple tumour types in 2016 (Table 4). In addition, 390 patients who had previously enrolled into clinical trials remained in follow up.

The conduct of clinical trials at SVUH allows patients to access to novel therapies and also results in savings to the hospital on the costs of existing standard treatments and investigations. The group continues to focus on the expansion of trial opportunities across all disease sites in 2017.

Table 4 | **Number of Patients Recuited to Clinical Trials**

Tumour Type		Title	Synopsis	Total No. of Patients
Breast	GG	PENELOPE 'B' GBG-78 BIG 1-13 Investigator-led.	A phase 111 study evaluating Palbociclib (PD-0332991), a cyclin-dependent kinase (CDK) 4/6 inhibitor in patients with hormone-receptor +ve, HER2-normal primary breast cancer with high relapse risk after neo-adjuvant chemotherapy.	3
Breast	JC	PUMA NER: Neratinib trial NALA ICORG 14-21	Phase 3 randomised multicentre multinational open-label active-controlled parallel design study of the combination of neratinib plus capecitabine versu the combination of lapatanib plus capecitabine in HER2= MBC patients who have received two or more prior HER2 directed regimens in the metastatic setting.	1
Breast	JC	Panther Study Bayer ICORG15-02	Phase IB/II clinical trial of copanlisib in combination with trastuzumab in pretreated recurrent or metastatic HER2-positive breast cancer.	1
Colorectal	RMcD	BMS CA209-142 Colon MSI-H	A phase 2 clinical trial of Nivolumab and Nivolumab plus Ipilimumab in recurrent and metastatic microsatellite High (MSI-H) Colon cancer.	2
Lung	EH	Merck Pembro MSD MK 3475-189	Phase 3 study of Pemetrexed plus platinum with or without Pembroluzimab in 1L metastatic non squamous NSCLC.	2
Lung	EH	ASTRIS 223048 / D5160C00022 (PAREXEL)	Open Label, Multinational, Multicenter, Real World Treatment Study of Single Agent AZD9291 for Patients with Advanced/Matastatic Epidermal Growth Factor Receptor (EGFR) T790M Mutation-positive NSCLC who have received prior therapy with an EGFR Tyrosine Kinase Inhibitor (EGFR-TK1).	10
Mixed	JC	Roche MO29518 PDL-1 basket protocol	An open-label, multicohort, phase 11 study of MPDL3280A in locally advanced or metastatic solid tumours.	6
NHL	JC	Celgene ROBUST study. ICORG 15-08	Phase 3 randomised double-blind placebo controlled multicenter study to compare the efficacy and safety of Lenalidomide (CC-5013) plus R-CHOP chemotherapy (R2-CHOP) versus placebo plus R-CHOP chemotherapy in subjects with previously untreated activated B-Cell type diffuse large B-cell Lymphoma.	1
Prostate	RMcD	PEACE 1 study GETUG-AFU 21.	A prospective randomised phase 3 study of androgen deprivation therapy with or without local radiotherapy with or without abiraterone acetate and prednisone in pts with metastatic hormone naïve prostate cancer.	1
Translational	JW	Ovarian Reserve Study ICORG 10-16	Study to determine alteration of hormones in pre-menopausal patients receiving adjuvant or neo-adjuvant chemotherapy for breast cancer.	6
Translational	GG	CharactHER ICORG 12-09	A study of the molecular and cytogenetic characteristics of patients with HER2+ve locally advanced breast cancer achieving durable complete response after a Trastuzumab-containing chemotherapy.	23

Tumour Type		Title	Synopsis	Total No. of Patients
Translational	JC	Exosomal ICORG 10-15	Exosomal and free extracellular RNAs and proteins as predictive biomarkers for HER2 therapies in breast ca.	1
Translational	GG	SYS-ACT Melanoma	Study cohort: Advanced melanoma pts that had bx/sx prior to standard drug tx. Control cohort: Pts that had a bx/sx but do not meet inclusion for study cohort.	4
Translational	RMcD	Identification of plasma predictive biomakers in pancreatic ductal carcinoma (PDAC). ICORG 12-31.	Identification of plasma predictive biomarkers in pancreatic ductal carcinoma: Part A – Resected disease. Part B – Advanced disease, systemic therapy.	19
Translational	RMcd	iProspect ICORG 14-04	Irish Programme for Stratified Prostate Cancer Therapy.	6
Translational	JW	CRQ Survey Study	Clinical Research Questionnaire of Oncology Patients - a Nationwide Survey.	100
Breast	JC	Boehringer Ingelheim 1280.4 1st/2nd line.	Phase 1b/11 randomised study of BI836845 with Exemestane and Everolimus Versus Exemestane and Everolimus in women with locally advanced or metastatic breast cancer.	9
Melanoma	JC	MK3475-252 Keynote (Pembro)	A Phase 3 Randomized, Double-Blind, Placebo-Controlled Study of Pembrolizumab (MK-3475) in combination with Epacadostat or placebo in unresectable or metastatic melanoma (Keynote 252/ECHO 301).	3
Prostate	RMcD	ICORG 13-21, Radium 223	A phase 2 study of Radium-223 in combination with Enzalutamide in progressive metastatic castrate-resistent prostate cancer.	6
Breast	JC	MDV 673-301/ TRIO 023/EMBRACA (ICORG 14-01)	Phase 3 open label randomised parallel 2 arm multicentre study of BMN 673 versus Physicians choice in Germline BRCA mutation subjects with locally advanced and/or metastatic breast cancer, who have received no more than 2 prior chemotherapy regimens for metastatic disease.	1
Prostate	RMcD	ANZUP ENZAMET study - Enzalutamide ICORG 14-06	Randomised phase 3 trial of testosterone suppression with or without Enzalutamide as first line therapy for metastatic prostate cancer.	4
Pancreatic	RMcD	APACT Study Celgene ABI-007-PANC-003	Phase 3 multi-centre open-label randomised study of nab-Paclitaxel plus Gemcitabine versus Gemcitabine alone as adjuvant therapy in subjects with surgically resected pancreatic carcinoma.	1
Translational	JW	Ctrial 16-20 POSITIVE	POSITIVE Pregnancy Outcome and safety of Interrupting Therapy for women with endovrine responsive breast cancer.	1
Total Number of Patients Recuited in 2016				**211**

12 Pharmacy

Overview of Pharmacy Services to Cancer Patients in SVHG

The Pharmacy Departments in both SVUH and in SVPH provide a wide range of services to cancer patients under the care of oncology and haematology departments in both centres. The pharmacy teams include; pharmacists and pharmaceutical technicians. Staff working in pharmacy oncology and haematology services are highly trained and specialised in these clinical areas and in aseptic compounding services and work in conjunction with all medical and nursing staff to provide an efficient and quality service to patients.

Aseptics Service

SVUH and SVPH

The Pharmacy Aseptic Compounding Units in SVUH and SVPH compound all chemotherapy for inpatients and outpatients. This compounding takes place in pharmaceutical isolators which are operated in a controlled, validated environment in compliance with national and international guidelines and standards. Staff compound chemotherapy into patient specific injectable items that are administered to patients in clinical areas. The supply of certain oral anti-cancer medications is also co-ordinated by staff in the Aseptics Service. Pharmacy staff also lead on development and revision of chemotherapy protocols and treatment guidelines, and provide clinical review of chemotherapy prescriptions.

30,398 chemotherapy items were dispensed from the Aseptic Compounding Units in SVUH and SVPH in 2016.

In addition to standard chemotherapy prescriptions, staff dispense and compound oral and parenteral drugs for patients under several compassionate use (expanded access) programs. These programmes enable patients to have access to new and innovative drug treatments before full licence/re-imbursment status has been achieved.

The aseptic services in both centres liaise closely with medical, nursing and research staff working in cancer services and collaborate on research projects, audits and quality improvement initiatives. All staff continuously strive to improve the service provided to patients. For example in SVUH in late 2016 a system of electronic (email) confirmations for chemotherapy was implemented which has resulted in improvements in communications between the unit and clinical areas as well as a reduction in the number of interruptions from phone calls. In SVPH, the ACU team were nominated for the 2016 "Innovation in Aseptic Compounding Award" at the Hospital Professional Awards.

In 2016 SVUH and SVPH commenced work on new intrathecal policies which included collaboration between centres. These policies are expected to be implemented in 2017 with elements of the policies applicable in both centres (in particular education and training requirements, and intrathecal registers for medical staff working across both sites).

Clinical Trials

The Aseptic Compounding Unit in SVUH supports clinical trial services for cancer patients by providing compounding, dispensing and full accountability for clinical trial medications in compliance with GCP (Good Clinical Practice for clinical trials). During 2016, the Pharmacy Department dispensed an average of 87 trial items per month to patients in the oncology service as part of approximately 35 active clinical trials.

Clinical Services

SVUH

The Pharmacy Service covers all aspects of pharmaceutical care for oncology and haematology inpatients on St. Anne's Ward and on other wards as well as outpatients on St. Anne's Day Centre and is supported by both pharmacist and technician staff.

A Senior Clinical Pharmacist provides a clinical service to inpatients on St. Anne's ward. This includes medication history and allergy status confirmation on; admission, medication reconciliation, daily kardex review, supply of relevant medications, liaison with medical and nursing team members on patient issues, co-ordination of chemotherapy prescriptions, participation in MDT/dry rounds, and liaison with the Aseptic Compounding Unit. Communication with community pharmacies regarding patient care issues also occurs.

A clinical service to St. Anne's Day Centre commenced in early 2016, and is provided by a senior clinical pharmacist. This service includes participation at MDT/dry rounds and liaison with medical and nursing team members, co-ordination of chemotherapy prescriptions and liaison with the Aseptic Compounding Unit as well as provision of information on new drugs and supply issues and chelation of relevant financial and clinical information for the hospital and individual consultants.

Medication information enquiries for inpatient, day centre and outpatient clinics are also completed and this service is supported by the pharmacy's Medicines Information Service.

SVPH

Pharmaceutical care is provided for oncology and haematology inpatients on Cedar Ward (26 bed), Cara Ward (26 beds - Palliative Care) and outpatients in Day Care Unit (23 chairs). A clinical pharmacist perform all aspects of pharmaceutical care including; appropriateness review of prescriptions for oral and IV anticancer medications, medication reconciliation and interaction check on all new patients, patient counselling on supportive care medications, responding to queries from staff nurses, oncology registrar, community pharmacist and triage queries regarding patient's medication, providing advice on correct prescribing, interactions with regular, herbal and complementary medicines and dose modifications according to changes in physiological status including renal/hepatic impairment etc.

Education and Training

The pharmacy teams in both SVUH and SVPH are dedicated to continuous professional development and maintaining high levels of qualification and training appropriate to specific roles (training comprises a range of internal, external and ongoing training commitments).

Members of the pharmacy teams also provide education and training to nursing and medical staff working in cancer services as required on several topics covering clinical and technical subjects. Pharmacy team members also routinely participate in providing induction training for new intakes of medical staff as well as relevant training and educational sessions for nursing staff working in oncology and haematology services.

SVUH and SVPH also deliver training and education externally to the hospital group including provision of lectures to M.Sc. in Hospital Pharmacy (Trinity College Dublin), tutoring M.Sc in Hospital pharmacy students. In 2016, SVPH pharmacists were also involved in the delivery of lectures to community pharmacist colleagues via the Irish Pharmacy Union Academy.

Members of both teams are also committed to the development of Cancer Services both locally and nationally by lending their expertise to several working/special interest groups and committees and participating in clinical/services research as required.

13 Radiology

The Radiology Department provides non-invasive diagnostic, staging and follow-up imaging. Our Biopsy Service provides image-guided invasive tissue diagnosis of cancer. The department provides cancer treatment delivered by interventional radiologists for liver and renal tumours.

In 2016, the Endocrinology, Surgery, Pathology and Radiology Departments supported the successful application for European Neuroendocrine Tumour Society recognition as a Centre of Excellence for Neuroendocrine Tumour management and treatment. In 2016, the Radiology Department performed its first ten transarterial radioembolisation procedures with Y90 glass spheres for primary liver cancer.

The Radiology Group provide imaging interpretation and support for 26 clinical trials in oncology. The group actively participates in scientific committees and international cancer bodies including the Cardiovascular and Interventional Society of Europe (CIRSE), the European Congress of Radiology, the International Cancer Imaging Society and the Radiological Society of North America. In April 2016, the department welcomed the European Conference on Interventional Oncology to the national conference centre in Dublin. Members of staff were active faculty and lecturers.

National and Regional Imaging Referral Centre

The Department of Radiology provides Cancer imaging expertise for:

National

1) National Liver Transplant Unit
2) National Pancreatic Cancer Surgical Centre

IEHG

1) Rapid Access Lung Cancer Referral Centre
2) Rapid Access Prostate Cancer Centre
3) Regional Oncology Centre
4) Breast (Regional Screening and Symptomatic Unit)
5) Neuroendocrine Tumour Referral Centre
6) Hepatocellular Cancer Referral Centre
7) Colorectal Cancer Surgery Centre
8) Sarcoma Surgical Centre

Radiology Oncology Multidisciplinary Imaging Team SVUH 2016

Breast Cancer:

- Dr. Ann O'Doherty, Clinical Director BreastCheck
- Dr. Suzanne Shine, Breast Cancer Imaging
- Dr. Sorcha McNally, Breast Cancer Imaging
- Dr. Ailbhe O'Neill, Breast Cancer Imaging
- Dr. Anne Foster, Breast Cancer Imaging

Lung Cancer:

- Prof. Jonathan Dodd, Lung Cancer Imaging
- Dr. Conor Collins, Lung Cancer Imaging
- Dr. Stephen Skehan, Lung Cancer Imaging
- Dr. Ailbhe O'Neill, Lung Cancer Imaging

Hepatobiliary/Pancreatic:

- Dr. Ronan Ryan, Hepatobiliary/Pancreatic Cancer Imaging
- Prof. Dermot Malone, Hepatobiliary/Pancreatic Cancer Imaging
- Dr. Stephen Skehan, Hepatobiliary/Pancreatic Cancer Imaging
- Dr. Robin Gibney, Hepatobiliary/Pancreatic Cancer Imaging
- Dr. Eric Heffernan, Hepatobiliary/Pancreatic Cancer Imaging
- Dr. David Brophy, Hepatobiliary/Pancreatic Cancer Imaging
- Dr. Jeff McCann, Hepatobiliary/Pancreatic Cancer Imaging
- Dr. Ailbhe O'Neill, Hepatobiliary/Pancreatic Cancer Imaging

Colorectal:

- Dr. Robin Gibney, Colorectal Cancer Imaging
- Dr. David Brophy, Colorectal Cancer Imaging
- Dr. Conor Collins, Colorectal Cancer Imaging
- Dr. Stephen Skehan, Colorectal Cancer Imaging
- Prof. Dermot Malone, Colorectal Cancer Imaging
- Dr. Suzanne Shine, Colorectal Cancer Imaging
- Dr. Deirdre Moran, Colorectal Cancer Imaging

Sarcoma:

- Dr. Eric Heffernan, Sarcoma Imaging

Hepatocellular:

- Prof. Dermot Malone, HCC Imaging
- Dr. Robin Gibney, HCC Imaging
- Dr. Ronan Ryan, HCC Imaging
- Dr. Stephen Skehan, HCC Imaging
- Dr. Colin Cantwell, HCC Imaging
- Dr. Jeff McCann, HCC Imaging

Urology:

- Dr. Deirdre Moran, Prostate Cancer Imaging
- Dr. Robin Gibney, Prostate Cancer Imaging

Gynaecology:

- Prof. Risteard O'Laoide, Women's Cancer Imaging
- Dr. Suzanne Shine, Women's Cancer Imaging
- Dr. Anne Foster, Women's Cancer Imaging

General Oncology:

- Dr. Conor Collins, Oncology Specialist, PET-CT Specialist
- Dr. Stephen Skehan, Oncology Specialist, PET-CT Specialist

NeuroOncology:

- Dr. Ronan Killeen, NeuroCancer Specialist, PET-CT Specialist
- Dr. Graeme McNeill, NeuroCancer Specialist

Haematology-oncology:

- Dr. Conor Collins, Oncology Specialist, PET-CT Specialist

Lymphoma:

- Dr. Conor Collins, Oncology Specialist, PET-CT Specialist

Neuroendocrine:

- Dr. Stephen Skehan, Oncology Specialist, PET-CT Specialist
- Dr. Conor Collins, Oncology Specialist, PET-CT Specialist

Thyroid:

- Dr. Stephen Skehan, Thyroid Cancer Imaging
- Prof. Dermot Malone, Thyroid Cancer Imaging
- Dr. Robin Gibney, Thyroid Cancer Imaging
- Dr. Ronan Killeen, Ocular Malignancy, Head and Neck Imaging
- Dr. Graeme McNeill, NeuroCancer Specialist

ENT MDT:

- Dr. Ronan Killeen, Ocular Malignancy, Head and Neck Imaging
- Dr. Graeme McNeill, Ocular Malignancy, Head and Neck Imaging

Multidisciplinary Team Oncology Conferences (MDTs)

Multidisciplinary team Cancer meeting preparation and delivery make up a major part of the Radiology Department activity (Table 1): 15,000 MDT cases were discussed in 2016, 70% with complex consultations on outside films from referring hospitals.

MDT	Frequency	Duration (hours)
Lung	Weekly	1.5
Colorectal	Weekly	1
Pancreatic	Weekly	2
Urology	Weekly	1
Haematology	Weekly	1
Gynaecology	Every 2nd Week	1
Oncology	Weekly	1
Lymphoma	Weekly	1
Thyroid	Monthly	1
Breast Check	Weekly	2
Symptomatic Breast	Weekly	1
Sarcoma	Every 2nd Week	1
ENT	Weekly	1
Neuroendocrine	Every 2nd Week	1

National Cancer Control Program (NCCP) Imaging Leads

2016 saw ongoing involvement of the SVUH Radiology Group in National Advisory Committees for the NCCP. There are seven consultants on NCCP committees:

- Prof. Jonathan Dodd on the Radiology Advisory Group for the NCCP for Lung Cancer
- Dr. Ronan Ryan on the Radiology Advisory Group for the NCCP for Pancreatic Cancer
- Dr. Ronan Ryan on the Radiology Advisory Group for the NCCP for Hepatobiliary Cancer
- Dr. Deirdre Moran on the Radiology Advisory Group for the NCCP for Prostate Cancer
- Dr. Stephen Skehan on the Radiology Advisory Group for the NCCP for Colon Cancer
- Dr. Ann O'Doherty on the Radiology Advisory Group for the NCCP for Breast Cancer
- Dr. Eric Heffernan on the Radiology Advisory Group for the NCCP for Sarcoma

Interventional Radiology Oncology Team

- Dr. Colin Cantwell
- Dr. Jeff McCann
- Dr. David Brophy
- Dr. Ronan Ryan

The Interventional Radiology Group in SVUH provides daily and emergency Interventional Radiology (IR) consultation for inpatient and outpatient procedures for patients with cancer. The range of procedures includes diagnostic core biopsy and brushings, preoperative biliary and urinary drainage, palliative and supportive stenting of biliary and renal/urinary tract malignancy, biliary access for endoluminal brachytherapy and photodynamic therapy, portal vein embolization for liver hypertrophy to extend the potential for liver resection, intraoperative and percutaneous image-guided liver tumour and renal tumour ablation, transarterial chemoembolisation (TACE) for hepatocellular carcinoma, neuroendocrine carcinoma and liver metastases. Enteral access is provided for radiotherapy programmes in head and neck cancer and for palliative feeding and bowel decompression. There is a large venous access programme inserting and managing venous port devices and peripheral tunnelled and non-tunnelled access for oncologic treatment. Pre-operative embolisation is provided for hypervascular bone, renal and soft tissue tumours. The IR service also provides post-operative complication support to surgical and medical services including embolization and fluid collection drainage and clinical management.

The following figure shows the increase in TACE and RFA procedures for cancer performed over the last four years: (Source: 'Trans-arterial chemo-embolization and ablation for neuroendocrine hepatic metastases at SVHG 2010-2016.' Aishan Patil, Gerard Healy, Colin P. Cantwell.)

2016	
83	TACE procedures (78 HCC, 0 CRC, 5 NET)
10	Y90 procedures (8 HCC, 1 Cholangiocarcinoma)
21	RFA procedures (14 HCC, 6 CRC, 0 NET, 1 other metastasis)

2015	
121	TACE procedures (90 HCC, 24 CRC, 7 NET)
32	RFA procedures (16 HCC, 13 CRC, 1 NET, 2 other metastasis)

2014	
120	TACE procedures (103 HCC, 8 CRC, 9 NET)
16	RFA procedures (7 HCC, 2 CRC, 2 NET, 5 other metastasis)

2013	
121	TACE procedure (92 HCC, 20 CRC, 9 NET)
14	RFA procedures (9 HCC, 3 CRC, 0 NET, 2 other metastasis)

Radiology Nursing Oncology Team

The radiology nursing team play a significant role in both the diagnostic and treatment aspects of the cancer services in the department. Some examples of the comprehensive care given by the radiology nursing team include the complete management and care of Rapid Access Prostate Clinic patients from the time of the decision to biopsy on the day of the clinic visit, to discharge a number of hours later from the Radiology Department. Rapid Access Lung Clinic patients are admitted to the CT Department as radiology day cases and monitored and cared for throughout the day by radiology nurses. Biopsy is performed and the patient is closely monitored over the next four hours. If recovery is satisfactory there is a combined medical and nursing discharge of these patients.

Treatments

Currently local ablative techniques available in SVUH include; radiofrequency ablation and microwave ablation of hepatic and renal tumours, transarterial chemoembolization (TACE) of hepatocellular cancer, neuroendocrine tumours and colorectal cancer and radioembolisation of primary liver tumours.

Trials

Twenty six oncology clinical trials are actively being imaged by the Radiology Department for; breast cancer, colon cancer, lung cancer, head and neck cancer, metastatic melanoma, pancreatic cancer and prostate cancer.

There was an international prospective investigator lead randomised control trial of TACE of HCC called TACE-2 closed for enrolment in 2016.

14 Histology

Laboratory resources are devoted to high quality analysis and reporting on these patient's biopsies and resected specimens. Immense experience has been built up both amongst the consultant histopathology and medical scientific staff in the analysis of these specimens. SOPs and standardised reporting has been in place for many years.

MDT meetings take place on a weekly/monthly basis relating to patients from; Oncology, Breast, BreastCheck, Gastrointestinal, Urology, Liver, Skin, Haematopathology, ENT, Genitourinary, Respiratory, Thyroid, and Melanoma services.

Approximately 20% (5,000) of all specimens (25,000) are discussed at MDTs on an annual basis. These conferences are consultant-led and delivered by all the following consultant staff. Dr. T. Crotty, Dr. C Quinn, Dr. Clare d'Arcy, Prof. K. Sheahan, Dr. A Fabre, Dr. N Swan, Dr. D. Gibbons, Prof. S. Kennedy, Dr. N. Nolan, and Dr. E. Mooney.

Molecular/precision oncological testing

A wide range of immunohistochemical and molecular ancillary tests are routinely performed or occasionally out-sourced to identify hereditary cancers, potential drug targets and resistance mutations; in house tests include:

- Microsatellite instability/mismatch repair status: this IHC test screens for LYNCH syndrome (Colorectal/CRC and endometrial cancers); this test also stratifies CRC patients for treatment purposes and determines eligibility for Immune checkpoint inhibitor therapy in the metastatic setting. There is an increasing demand for testing in all metastatic carcinomas, regardless of site of origin.
- Mutational analysis of the KRAS and NRAS genes: predominantly in metastatic CRC.
- Mutational analysis of the BRAF gene: indicated in metastatic melanoma patients. Also performed on all MSI CRCs to separate sporadic from Lynch syndrome patients.
- Mutational analysis of the EGFR gene: indicated in all non-small cell lung cancers.
- We reflex screen for ALK rearrangement and PDL-1 expression by immunohistochemistry in non-small cell lung cancers.
- ALK rearrangement and PDL-1 expression by immunohistochemistry in non-small cell lung cancers.
- We reflex screen for all breast cancers for HER-2, and ER expression.
- External tests such as Oncotype Dx, c-KIT mutational analysis and MLH1 methylation studies are also performed.

Current histopathology services	Ongoing cancer service development in Histopathology SVUH
Diagnostic and Prognostic services including specific testing for suitability of specific Therapeutic agents	
Immunocytochemistry Provides a range of 128 antibody tests, mainly tumour markers.	Ongoing optimisation of new biomarkers for diagnosis, prognosis and treatment decisions.
Molecular Her-2 FISH for Breast Cancer treatment, provision of testing. Molecular testing for mutations in BRAF and k-ras genes in Colorectal Cancers & Melanoma, EGFR and screening for ALK rearrangement and PDL-in lung cancer (histology & cytology samples).	Next-generation sequencing platforms are in the process of being validated to ensure more efficient screening for actionable tumour mutations.
Cancer Specimen Cut-Up: Reception and numbering of specimens from Endoscopy, Theatre, Wards and GP's. Specimen description; intraoperative procedures including frozen sections and assessment of margins; X-ray of tumours; monitoring of radioactivity; photography; inking; weighing; decalcification; gross cut-up; fixation and paraffin processing; specimen retention and correct disposal. Triage & liquid nitrogen freezing of tissue for bio banking.	Increasing role of Medical Scientists in cut-up, in line with Royal College of Pathologist/ Institute of Biomedical Scientists' guidelines on Advanced Practice in Histological Dissection.
Tissue & Slide Preparation for Microscopy: Specimen Embedding, Microtomy, Morphological staining and Quality Control.	Order comms and automated processing will improve safety and efficiency.
CPA Accreditation of SVUH Histopathology Department Histopathology Accredited since 2004.	Continuing need to ensure compliance with INAB.
Quality Assessment and Audit Histopathology laboratory is a leader in National Quality Improvement Programme.	Existing and additional staff (medical, scientific and clerical) contribute to this activity.

	Current Staffing	Additional Staffing Planned
Consultant Histopathologists	10	0
NCHDs	8	0
Clerical/Secretarial	4	1
Chief Medical Scientist	1	
Senior Medical Scientists	6	
BreastCheck Medical Scientists	3	
Medical Scientists	8	2 Medical Scientists
Laboratory Aides	4	1 Laboratory Aide

MDT Meetings / Conferences

Monday	7.00	Soft Tissue (2 x month)
	7.30	Melanoma (2 x month).
	8.00	Lung Cancer MDM
	9.30	Bone Marrow Morphology CPC
	13.00	Breast screening MDM (Merrion Unit)
Tuesday	7.30	Colorectal Cancer MDM
	8.30	Urology MDM
	12.00	ENT (bi-weekly radiology conference room 2)
	13.00	Thyroid (every 3 months)
Wednesday	7.30	ENT (bi-weekly radiology conference room 2)
	7.15	Pancreas Cancer MDM
	8.00	Surgical Grand Rounds (Old Lecture Hall)
	10.00	Gynaecology (bi-weekly)
	11.30	Dermatology CPC
Thursday	7.00	Lymphoma MDM
	8.00	Medicine Grand Rounds (Old Lecture Hall)
	10.00	Renal (Monthly, last Thursday)
	10.30	Liver Medical CPC
	13.15	GI Medical CPC
Friday	7.00	NET (1st & 3rd) / Hepatobiliary (2nd & 4th) MDM
	8.15	Breast MDT (Old Lecture Hall)

15 Health & Social Care

15.1 Dietetics

The role of the oncology dietitian is to provide evidence based advice on nutrition for patients with a diagnosis of cancer. The main aim of the dietetic treatment is to optimise a patient's wellbeing in particular for cancer treatment, improve their quality of life and/or reducing their risk of malnutrition.

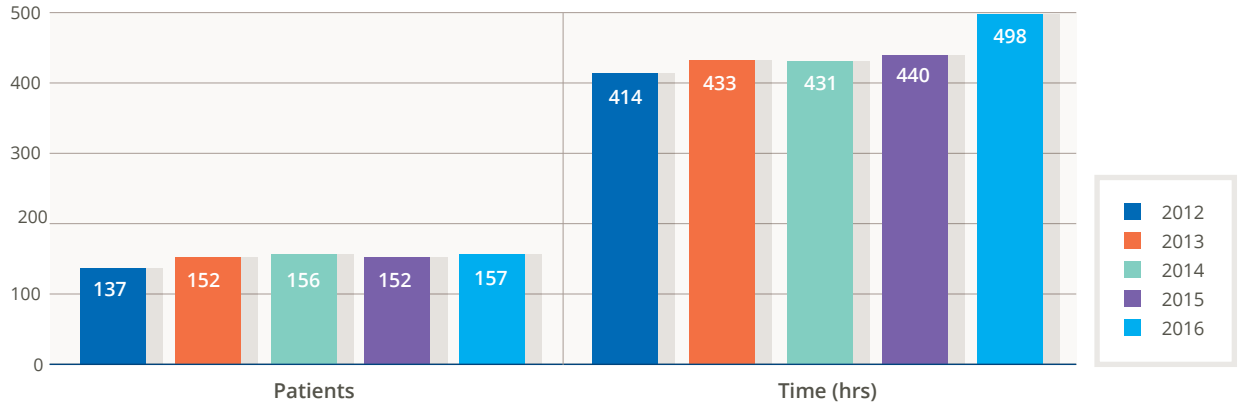
The incidence of malnutrition in cancer patients varies from 50% prior to treatment and up to 80% in advanced cancer, therefore the priority lies in identifying those "at risk" of malnutrition, treating, and reversing malnutrition where possible. The MUST screening tool identifies those admitted to hospital or the Oncology Day Centre who are at nutritional risk. This generates a referral for dietetic management of patients on both curative and palliative pathways.

Nutritional intervention is mainly in the form of nutritional support (oral nutritional supplements, enteral or parenteral feeding). It also includes aggressive management of side-effects of treatment (anorexia, nausea, vomiting, constipation, odynophagia, dysgeusia, G.I obstruction) and/or management of symptoms using pharmacological and dietary intervention. Guidance can be given to both the patient and family on suitable meal choices, portions sizes, food fortification, meal patterns and easy to prepare meals.

Staffing/Workload

There is one WTE senior Dietitian dedicated to surgical pancreatic cancer appointed under NCCP in January 2011. All other Dietitians are assigned by consultant team and provide services to multiple teams.

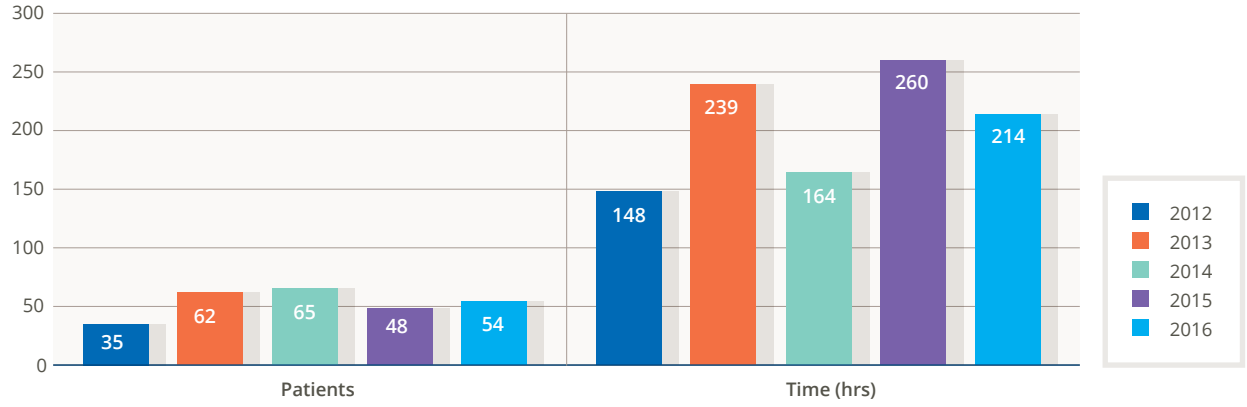
Chart 1 | Oncology Dietetic Activity 2012 – 2016



The number of patients seen by a dietitian has remained relatively consistent over the past five years. This group of patients required an additional 13% of time in 2016 compared with 2015. This is likely due to increased complexity of this patient group, as there was an increase by 50% in the number of patients requiring enteral nutrition, compared with 2015.

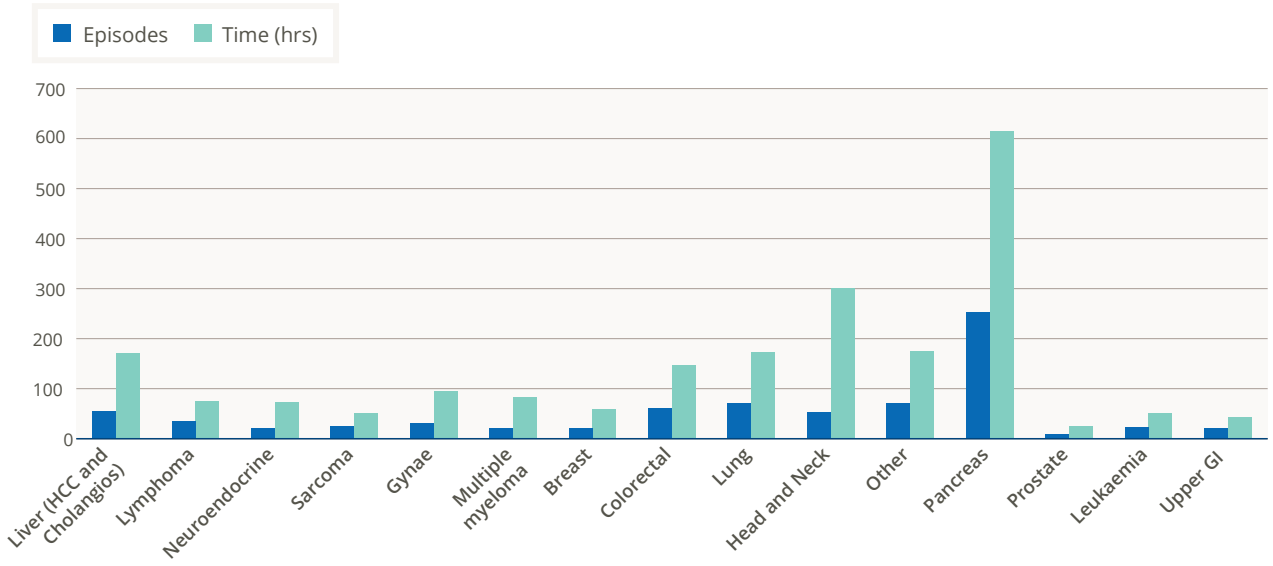
The introduction of the nutrition care process began in 2016, which is a standardised international dietetic documentation process. This includes the use of a methodical patient assessment, nutrition diagnosis and formulised dietetic plan. Initially, this is more time consuming and may also account for increased patient time in 2016.

Chart 2 | Haematology Dietetic Activity 2012 – 2016



The number of patients being seen under haematology has remained constant however the time spent with them has decreased. There was a reduction in patients requiring enteral nutrition and the patients referred had less complex nutritional needs than 2015. The MDT meeting for haematology was not attended by a dietitian in 2016 secondary to time constraints.

Chart 3 | **Number of patients by cancer site 2016, receiving dietetic care**



For 2016, the activity for Upper GI cancers has been added to the database. There has been a slight reduction in the number of patients seen with "other" cancers in 2016. Identifying the diagnosis for this group of patients is to be prioritised in 2017 so that a more complete picture can be captured. The number of patients being seen with a diagnosis of pancreatic cancer continues to grow where an increase of 20% of patients have been seen in both 2015 and 2016.

Research/ Service Improvement Initiatives

The Pancreatic Cancer Dietitian, Oonagh Griffin has just completed over one year of her PhD at Trinity College Dublin "*Investigating the impact of body composition and nutritional intervention strategies in pancreatic cancer".* Early findings from this research have been presented at a number of conferences including the Sir Peter Freyer Surgical Symposium, Trinity College Dublin Cancer Conference, Pancreatic Society of Great Britain and Ireland, the INDI research seminar, the 25th Sylvester O'Halloran Surgical Symposium and IrSPEN Conference and Policy Seminar.

She has also continued to share her knowledge on pancreatic cancer, cachexia, nutrition and cancer with both peers and members of the public in conjunction with the Irish Cancer Society, Irish Nutrition and Dietetic Institute and the Pancreatic Society of Great Britain and Ireland Nutrition Interest Group.

Prof. Declan Walsh, professor of Palliative Care at Our Lady's Hospice Harold's Cross has been instrumental in setting up a multi-professional Malnutrition in Cancer Research Group. The department has been involved with the group's original research on "*Nutritional Status of Cancer Patients at Dietitian Referral."* This concluded that the majority of patients were referred late to a dietitian, when they had already lost weight and had multiple barriers to nutrition. Almost 50% of these patients had missed the opportunity to be referred to a dietitian at an earlier stage. The results are to be submitted for publication. Involvement with this group is ongoing and future research is in the planning stage. The group aims to establish the information people with cancer are receiving on diet, the resources that they are using and when they would like to receive dietary information.

15.2 Social Work

Overview of the Oncology / Haematology Social Work Service to Cancer Patients

Oncology/Haematology Social Work provides Social Work services to patients and their families facing the impact of a diagnosis of cancer. The scope of Oncology/Haematology Social Work includes; clinical practice, programme planning, education and research.

The Oncology/Haematology Social Worker in SVUH provides psychosocial services to inpatients, outpatients and day patients all along the disease continuum from initial diagnosis of cancer to end of life care. These services can include:

- **Assessment**

  A central role of the Oncology/Haematology Social Worker is to assess patient and family care needs, and to provide interventions that help clients to work toward solutions that address their physical, emotional, interpersonal and environmental problems.

- **Counselling**

  The oncology/haematology social worker provides both individual and family counselling. Interventions are based on a range of theoretical approaches (cognitive-behavioural, systems, task-centred, crisis intervention, problem-solving, brief solution focused, narrative, conflict resolution) to reduce stress, improve coping skills, and increase patient/family control. This service also includes direct work with children.

- **Discharge Planning**

  This involves ongoing liaison with the multidisciplinary team, convening and chairing of family meetings, formulating care/discharge plans in conjunction with patients' and families' needs and wishes, mobilising community resources, making applications and arranging for transfer to alternative placements if a patient cannot return home (i.e. convalescence, rehabilitation, long term care).

Patient/Staff Education

The oncology/haematology social worker provides ongoing education to patients and staff in relation to psychosocial issues affecting Oncology/Haematology patients and the relevant support services available. In 2009, the Oncology/Haematology Social Workers group produced a website (www.socialworkandcancer.com) to enable patients to access information in relation to understanding the psychosocial effects of a diagnosis of cancer and how to improve access to psychosocial support services.

Advocacy

This service involves providing assistance with navigating the complex health system, identifying and reducing the barriers to recommended care and services.

The oncology/haematology social worker also has a role in identifying gaps in services to cancer patients attending SVUH and attempting to address these gaps.

Examples to date

"Care to Drive" came into existence in SVUH in May 2008. Since July 2011 the service has been expanded and is now available to Oncology patients attending; SJH, MMUH, Tallaght Hospital, James Connolly Hospital Blanchardstown, Mid-Western Regional Hospital, Limerick Hospital, Sligo General Hospital, Letterkenny General Hospital, Mid-Western Hospital Sligo, Waterford Regional Hospital, Kerry General Hospital, Cork University Hospital, Mercy Hospital Cork and Galway Hospitals.

A close working relationship has been formed with the Citizens Information Service which, while based in the community, holds clinics in SVUH to ensure that Oncology patients receive individualised input from the financial advice service.

The oncology/haematology social worker is a member of the Irish Cancer Society's Medical Committee. This provides an opportunity to advocate for Oncology/Haematology patients attending SVUH, highlighting gaps in services and resources or any other particular difficulties facing cancer patients on a day-to-day basis.

Staffing/Caseload

There is one senior social worker dedicated to the area of Oncology/Haematology.

15.3 Physiotherapy

Physiotherapy is an essential element of our service to cancer patients. The primary goal is to assist the individual with a diagnosis of cancer to achieve optimal physical functioning within the limits imposed by the disease process or the treatments.

The indication for input from the Physiotherapy Service is based on an individual's diagnosis, clinical signs and symptoms and identified needs. Physiotherapy provides a holistic approach to meet the needs of the individual thereby optimising their physical functioning to achieve targeted and realistic goals that will enhance their quality of life.

The Physiotherapy Services provided to Oncology and Haematology patients at SVUH are delivered by both the Surgical Respiratory Physiotherapy Service and the Medical Respiratory Physiotherapy Service.

Within the surgical service the Physiotherapist will assess and treat all individuals who have major surgical intervention to treat their cancer. The aim is to reduce the incidence of post-operative pulmonary complications in the immediate post-operative period, achieve early independent mobilisation and ensure that their physical limitations are addressed to facilitate discharge. Physiotherapists give specific exercise protocols and advice following certain types of surgeries e.g. breast surgery. Patients attending pre-assessment clinic for work-up for pancreatic and liver surgeries are seen by the senior physiotherapist in surgical respiratory care. Patients and their families are educated in the expected mobilisation plan post-surgery, the benefits of early mobilisation and their role in this process. Individualised activity programmes and airway clearance techniques are prescribed where appropriate to optimise patients' physical functioning in preparation for the planned surgical procedure.

The Medical Respiratory Physiotherapy Service provides inpatient care to patients located on St. Anne's Ward. There is a 0.5 staff grade physiotherapist allocated to the care of this ward. Primarily, physiotherapy resources are focused on managing respiratory complications that these patients may develop and providing ward-based rehabilitation to facilitate timely hospital discharge.

In addition to the service on St. Anne's Ward, Oncology and Haematology patients are cared for by the physiotherapist providing care to the particular ward. In particular, the physiotherapist is skilled in providing appropriate patient-specific exercise programmes that can help alleviate cancer-related fatigue and improve quality of life (NCCN 2006), which is integral to effective management and care of these patients. Physiotherapists are also skilled to care for palliative patients, especially with patients who are breathless or need assistance to clear pulmonary secretions which improves patient comfort. Palliative care may also include rehabilitation and the physiotherapist enables patients to set and achieve realistic goals to maximise independence.

15.4 Speech and Language Therapy

To deliver a high quality patient-centred, evidence-based Speech and Language Therapy (SLT) Service, revolving around the assessment, diagnosis and management of swallowing and communication disorders associated with lung cancer, head & neck (post- surgery and/or radiotherapy/chemotherapy), brain tumours and other cancers including palliative care. These patients may experience a variety of voice, swallowing, language (dysphasia), and cognitive-linguistic disorders.

Access to service

SLT provides a service to both inpatients and outpatients. The service may take place at the bedside or in the Speech and Language Therapy Department. Patients may also be seen in their home or nursing home as part of the new community liaison service.

Swallowing Service

- Clinical swallowing assessment.
- Objective assessments if recommended – FEES (fiberoptic endoscopic evaluation of swallowing) conducted jointly with a member of ENT team and/or Digital Fluoroscopy completed in conjunction with Prof. D. Malone. The SLT Department run two weekly Digital Fluoroscopy clinics.
- Ongoing management through accurate diagnosis, diet modification, compensatory strategies, patient and carer education etc.

Voice, Head and Neck Service

- This forms part of our ENT service. The SLT Department runs three weekly voice clinics. Patients who present with voice problems will have an objective assessment of the structure and function of their vocal cords using a digital stroboscopy and a clinical voice assessment.
- Ongoing management through vocal tract care, voice conservation, patient and carer education, compensation strategies and augmentative communication aids (voice amplifier), tracheotomy management, speaking valves, voice prosthesis, etc.

Language and Cognitive – Linguistic Service

- Complete language (auditory comprehension, expressive language, reading and writing) and cognitive –linguistic (memory, problem solving, reasoning) assessments.
- Ongoing management through therapy programmes etc.
- Augmentative and alternative communication devices.
- Family and carer education.

15.5 Occupational Therapy

Occupational Therapists working in oncology possess skills and knowledge related to cancer as well as the side effects of cancer and its treatment. This knowledge is applied in a patient-centred, family focused way to provide individual holistic care.

Overview of Occupational Therapy to Cancer Patients

We aim to work alongside the patient and assist their goal set to prioritise key aspects of their current baseline physical functioning and cognitive day to day functioning.

This also includes planning their discharge to the home. Through the inclusion of aids and adaptations maximising the patient's function and enabling them to remain as independent for as long as possible.

Occupational Therapy Profession Provides

- Assessment, intervention and support during active treatment
- Care and support at end of life.

Oncology Specific Occupational Therapy Assessment

- Provides expert assessment in the physical, cognitive and functional aspects of cancer and its treatment within the context of personal, vocational care
- Expert knowledge of the physiological effects of cancer and its treatment, means that we anticipate symptoms and functional impact and factor this into assessment, care planning and our intervention.

Care Planning

- Negotiating individual and meaningful goals
- Promotion of autonomy.

Intervention

- Aim to optimise independence in activities of daily living (ADL)
- Promote engagement in valued activities and occupations
- Provide interventions including; education, retraining in ADL, environmental modification and prescription of equipment to support recovery and adaptation
- Educate on symptom management to improve functional status and engagement in occupation for example breathlessness, pressure care, cancer related fatigue, pain, cognitive impairment, sensory and neurological disturbances.

Staffing

Current Staffing and Issues

There are no dedicated senior or staff grade occupational therapists in this area. The entire Cancer and Palliative Care Service is covered by one WTE staff grade who rotates every seven to nine months.

This impacts the quality and team based approach to patient care and leads to very much a basic equipment and discharge planning model.

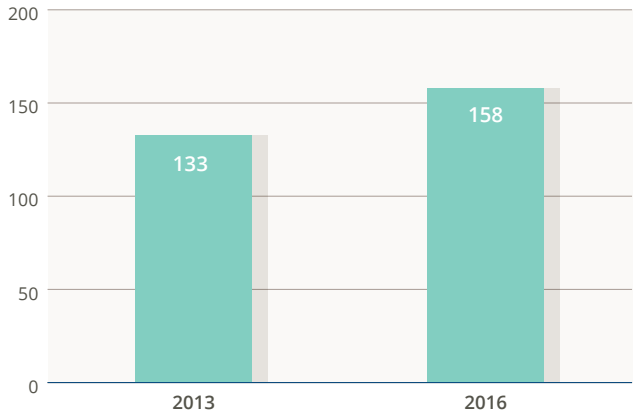
Ideal Staffing and Benefits

1 WTE Senior Grade Occupational Therapist would work along a rehabilitative model, planning an integrated graded discharge planning alongside the rest of the oncology and palliative care team, in addition to the discharge planning.

Occupational Therapy Oncology Activity 2013 Versus 2016

- There has been a 19% increase in the patients seen in 2016 versus 2013/2014 as below

Oncology Occupational Therapy activity 2013 v 2016



15.6 Psycho-oncology

Psycho-oncology is a specialist service with a clinical, teaching and research remit to the hospital cancer services following internationally recognised standards of best practice. It provides this service across the cancer trajectory: from diagnosis to the palliative and end of life care of cancer patients of SVUH.

Research suggests that up to a third of these people with will have problems with psychological distress warranting referral to a Psycho-oncology Service (Carlson and Bultz, 2003). Therefore approximately 1,400 newly diagnosed patients will require consultation with Psycho-oncology annually at SVUH.

According to international guidelines (i.e. U.K. NICE Guideline: Improving Supportive and Palliative Care for Adults with Cancer, Canadian Guideline: A Pan-Canadian Clinical Practice Guideline: Assessment of Psychosocial Health Care Needs of the Adult Cancer Patient) a multi-disciplinary Psycho-oncology Service should involve psychology, psychiatry, nursing and social work.

The routine assessment of psychological distress among cancer patients is now accepted as a minimum standard practice in oncology care. Early evaluation and screening for distress leads to early and timely management of psychological distress, which in turn improves medical management. According to NCCN (2010) failure to recognise and treat distress leads to problems such as trouble in making decisions about and adhering to treatment, additional physician visits and greater time and stress for the oncology team. Given the current human resource of the Psycho-oncology Service this basic standard is not being met. In addition there is severe pressure on provision of inpatient clinical services.

Activity level and Staffing

In 2016, the Psycho-oncology Department provided 2,677 episodes of care (i.e. inpatient or OPD assessment and intervention). This represents a drop of 1141 (-17.57%) from 3,818 units of care in 2015. Referral rates remain consistent with 243 referrals in 2016 and 242 in 2015.

The reduction in episodes of care resulted in the context of one member of staff being on extended sick leave and secondment of the department head for the first four months in 2016. It is expected that with remediation of these factors the department will resume usual service provision.

As per previous years, patients with breast cancer represent the largest group attending the service accounting for 64% of all referrals. Consistent with international trends a majority of referrals (61%) were female. Current staffing;

- Dr. Paul D'Alton, Senior Clinical Psychologist, Head of Psycho-oncology Department
- Dr. Louise Kinsella, Clinical Psychologist
- Ms Mary Moriarty, Clinical Nurse Specialist
- Ms. Susan O'Flanagan, Clinical Psychologist
- Ms. Caroline Livingstone, Administrator.

Research & Education

The department played a central role in bringing the 18th World Congress of Psycho-oncology to Dublin in 2016 and hosted over 600 delegates form 27 different countries. The department head co-chaired the congress and chaired the scientific committee of the congress.

The Department of Psycho-oncology continues to provide educational input across the schools of nursing, medicine and psychology in UCD. A series of information sessions for all healthcare staff will also be held with a range of topics covered, among them; distress, grief and loss, fatigue, anxiety and depression, palliative care in cancer, stress management and cancer in the family were also provided in-house in 2016.

16 Cancer Data Management

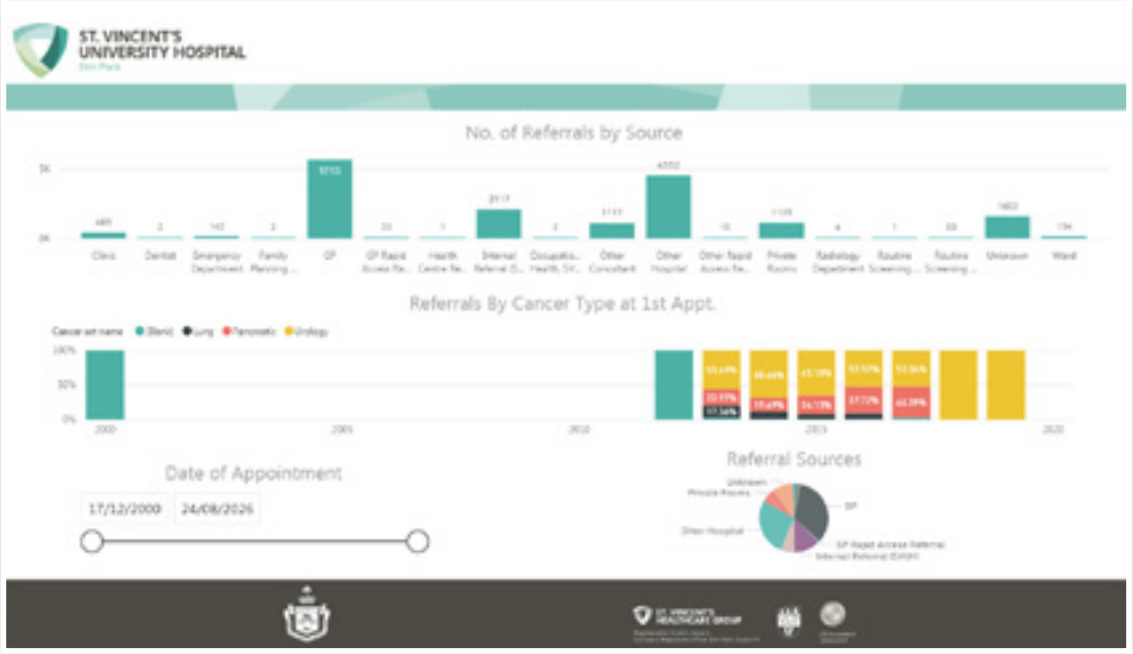
SVHG have a robust Clinical Dataset across all cancer specialties. This dataset helps to inform and guide the Patient's pathway through each service while also providing rich clinical data to assist in the planning and evolution of the cancer services. This dataset was built into our Cancer information System, Excelicare.

In order to provide insight into this dataset, the Data Management team along with the reporting department have spent much of the year building a Business Intelligence platform to present the groups oncology data.

We have built an intuitive and user-friendly environment that allows the end users manipulate the data using dashboards and reports that visualise their data in gauges, pie charts, graphs and even on specialty specific graphics such as a Liver or Lung. This enables the users to clearly identify trends and react to changes in the data.

We aim to produce the 2017 SVHG Cancer Report as a digital interactive dashboard that will include an overall view of the Cancer services and specialty specific dashboards.

Sample of proposed new cancer data management dashboard for 2017 data



17 Daffodil Centre

Since its opening in February 2014, the Daffodil Centre in SVUH has had contact with 10,218 people. The Daffodil Centre is managed by a Cancer Nurse Specialist and is supported by a group of trained volunteers. The centre is open Monday to Friday 08:30 to 16:30. In 2016, 38,547 people had contact with our 13 Daffodil Centres around the country.

Enquirer Activity

The total number of visitors to the Daffodil Centre in SVUH in 2016 was 3,335. Visitors included:

- **Browsers** – those who had a brief interaction with the nurse or volunteers and had taken patient information literature = 946
- **Attendees** at one of the many cancer awareness/early detection stands facilitated by the centre = 931
- **Enquirers** who visited the centre to discuss their questions or concerns about cancer = 1,458.
- The statistics in this report were compiled from the information gathered from Enquirer Record Forms completed after each enquirer interaction (1,458).

13
Daffodil Centres around the country

38,547
total enquiries in 2016

3,335
visitors to the Daffodil Centre in SVUH in 2016

Of the 1,458 enquiries:

- **1,166** (80%) enquiries were handled by the Daffodil Centre Cancer Nurse
- **292** (20%) by a Daffodil Centre Volunteer
- **1,144** (78%) were first time enquirers to the Daffodil Centre
- **314** (22%) had visited before
- **65** (4%) enquirers worked within the hospital

Time spent on enquiry

Less than 5 minutes	6%
10 minutes	30%
15 minutes	22%
20 minutes	19%
30 minutes	13%
40+ minutes	10%

Gender of lead enquirer

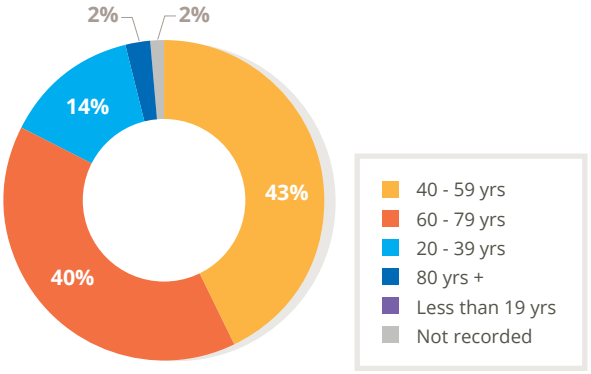
Most enquirers were female (71%)

Female	1040
Male	418
Total	**1458**

Age Groups

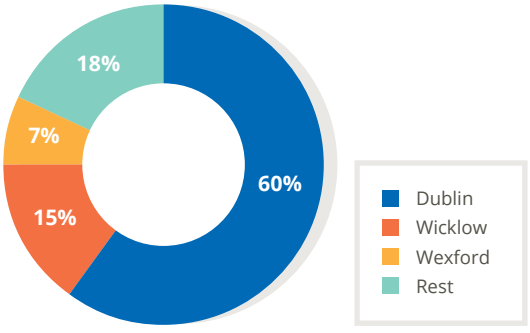
The majority of enquirers (43%) were in the 40-59 age group, with 40% in the 60-79 age bracket.

Less than 19 yrs	3
20 - 39 yrs	200
40 - 59 yrs	626
60 - 79 yrs	578
80 yrs +	34
Not recorded	17
Total	**1458**



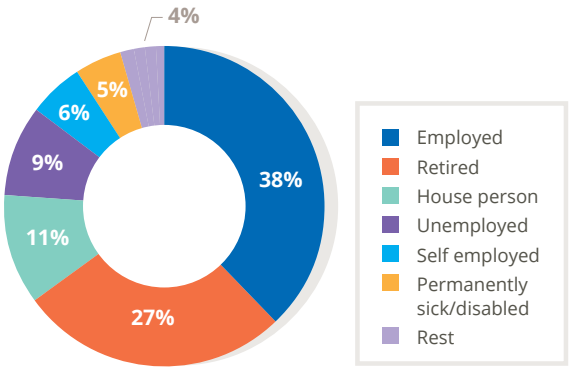
Counties

Enquirers visit the Daffodil Centre from all over Ireland but most enquirers came from Dublin, Wexford and Wicklow.



Main employment status

Employed	551
Retired	398
House person	163
Unemployed	134
Self employed	82
Permanently sick/disabled	68
Volunteer/unpaid	21
Not recorded	16
Student	13
Full time carer	12
Total	**1458**



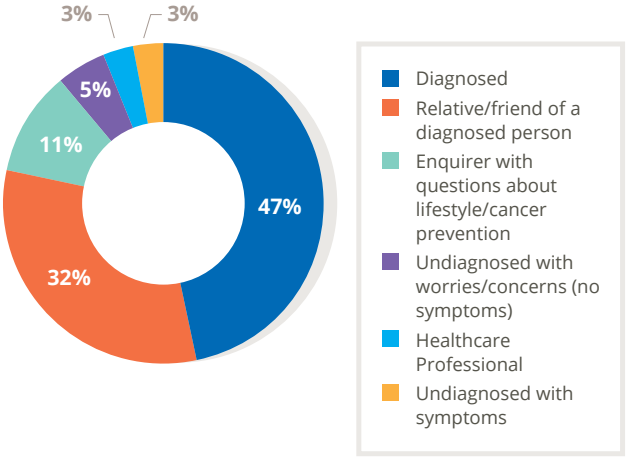
Type of Enquirer

79% of enquirers were people with cancer or their family and friends.

3% of enquirers were Healthcare professionals within the hospital seeking information on behalf of their patients/clients.

11% of enquirers were seeking information on lifestyle/cancer prevention.

Diagnosed	683
Relative/friend of a diagnosed person	463
Enquirer with questions about lifestyle/cancer prevention	154
Undiagnosed with worries/concerns (no symptoms)	70
Healthcare Professional	45
Undiagnosed with symptoms	43
Total	**1458**



How Enquirers found out about the Daffodil Centre

62% who visited found the centre by seeing the signs, posters or leaflets and 2% by attending an Awareness Stand

Healthcare Professionals within SVUH referred 5% of enquirers to the Daffodil Centre and 5% heard about the Daffodil Centre by word of mouth.

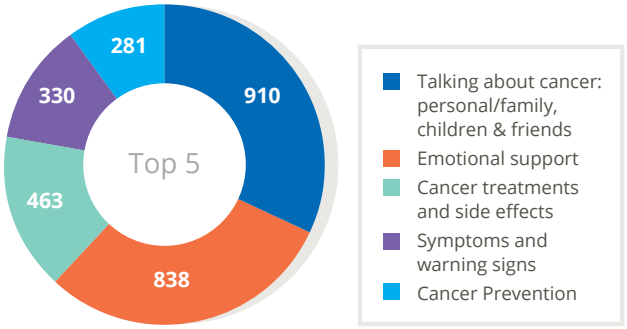
Saw signs, posters or leaflets	905
Word of mouth	71
Referred by a HCP tertiary	52
Irish Cancer Society Website	33
Awareness stand	27
Irish Cancer Society Daffodil Centre	24
Referred by a HCP primary	8
Irish Cancer Society Publications	8
Referred by a HCP secondary	8
Local cancer support centre/group	4
Media advertising	2
Irish Cancer Society Online Community	1
Irish Cancer Society Relay for Life event	1
Not recorded	314
Total	**1458**

Mode of contact

Face to face	1362
Telephone	92
Email/written	3
Social Media	1
Total	**1458**

Subject of Enquiry

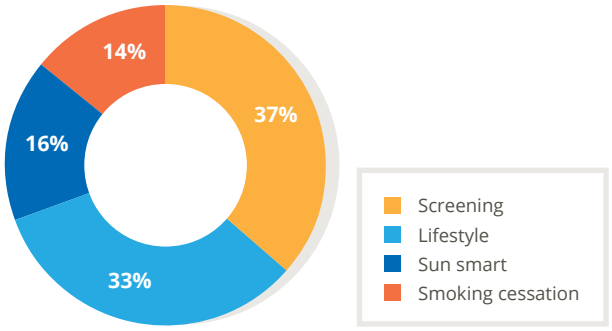
Most enquirers have a number of questions to ask when they visit. Most enquiries have an element of emotional support and both the nurses and volunteers provide emotional support through listening and signposting to services within the hospital and other relevant organisations.



Talking about cancer: personal/family, children & friends	910	62%
Emotional support	838	57%
Cancer treatments and side effects	463	32%
Symptoms and warning signs	330	23%
Cancer Prevention	281	19%
Tests and investigations	263	18%
Causes of cancer/risk factors	247	17%
Prognosis	128	8%
Practical support and advice (equipment/childcare/travel)	122	8%
Local cancer support services	118	8%
Life after cancer/survivorship	117	8%
Financial/entitlements	109	7%
Hospital and community health services	95	6%
Family history/Inherited cancer risk	92	6%
Irish Cancer Society Services	88	6%
End of life issues	58	4%
Irish Cancer Society Volunteer Driver Service	56	4%
Recurrence	49	3%
Bereavement	45	3%
Symptom Management	45	3%
Irish Cancer Society Survivor Support	41	3%
Anticipatory grief	35	2%
Pre-cancerous conditions	31	2%
Travel2Care	27	2%
Complaint	23	1.5%
Other transport schemes	17	1%
Clinical trials	11	1%
Irish Cancer Society Fundraising	11	1%
Social Worker	8	0.5%
Sexuality	6	0.4%
Legal issues	6	0.4%
Suicidal ideation	2	0.1%

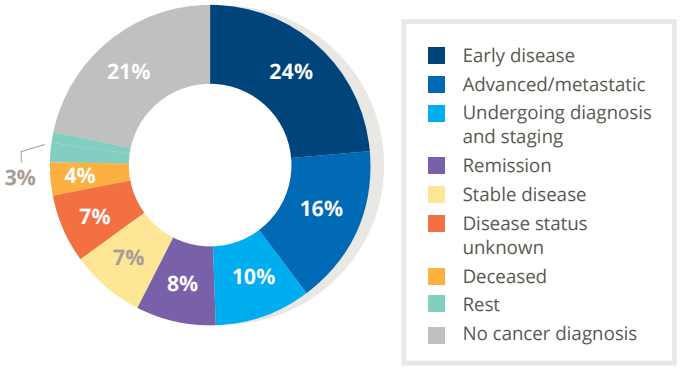
Cancer Prevention

Screening	129
Lifestyle	116
Sun smart	58
Smoking cessation	49
Total	**352**



Disease status

Early disease	346
Advanced/metastatic	237
Undergoing diagnosis and staging	141
Remission	115
Stable disease	109
Disease status unknown	101
Deceased	52
End of life - palliative care	28
Recurrence/relapse	17
No cancer diagnosis	312
Total	**1458**



Type of primary cancer

Breast	380
Bowel (colon and rectum)	111
Prostate	109
Lung	76
Pancreatic	52
Ovarian	43
Melanoma	38
Non-Hodgkin's lymphoma	33
Liver	25
Name of cancer not known	24
Myeloma (sometimes called multiple myeloma)	21
Kidney (renal call)	20
Skin (basal cell skin cancer and squamous cell skin cancer)	16
Womb (uterine, endometrial or lining of the womb)	15
Hodgkin's lymphoma	15
Neuroendocrine tumours (including carcinoid tumours and gastroenteropancreatic tumours)	15
Soft tissue sarcomas	15
Bladder	14
Stomach	13
Oesophageal (gullet)	11
Testicular	10
Brain (all types of primary brain tumours such as gliomas, oligodendrogliomas, astrocytomas etc)	10
Myelodysplastic Syndromes (MDS)	8
Chronic lymphocytic leukaemia (CLL)	7
Acute myeloid leukaemia (AML)	7
Unknown primary	7
Acute Lymphoblastic Leukaemia (ALL)	6
Larynx	6
Head & neck cancers (mouth, tongue, tonsil, nasopharynx, nasal or paranasal sinus cancer)	6
Bone	4
Thyroid	4
Bile Duct	4
Cervical	3
Rare Cancer	3
Adrenal	2
Anal	2
Vulva	2
Primary peritoneal	2
Penile	2
Eye (including ocular melanoma)	2
Mesothelioma	1
Chronic myeloid leukaemia (CML)	1
Parathyroid	1
No cancer diagnosis	312
Total	**1458**

Dealing with Enquiries

The nurse and volunteers provide information and support that is tailored to an enquirers needs whether that entails - talking through a question, giving an information leaflet, finding information for the enquirer online and directing them to reliable cancer information websites.

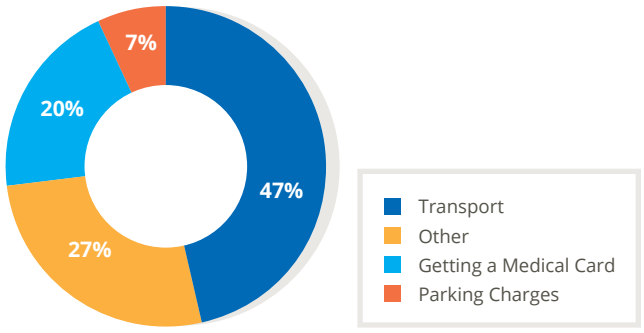
*The top **5** ways enquiries were dealt with:*

- Listening/emotional support
- Information booklet/leaflet
- Referred to a cancer support centre/group
- Referred to services within the hospital
- Referred to GP

How was the query dealt with?		
Listening/emotional support	1354	93%
Information booklet/leaflet	1239	85%
Referred to a cancer support centre/group	741	51%
Referred to services within the hospital	256	17%
Referred to GP	205	14%
Referred to Irish Cancer Society Services: Survivor Support	151	10%
Referred to services within community	139	10%
Referred to Irish Cancer Society Services	118	8%
Referred to an Irish Cancer Society Cancer Nurse	66	4%
Referred to an Irish Cancer Society Daffodil Centre	39	3%
Referred to the Irish Cancer Society Cancer Nurseline	37	3%
Follow up/call back	35	3%
Internet	30	2%
Referred to Irish Cancer Society Services: Volunteer Driver Service	29	2%
Referred to Irish Cancer Society Services: Travel2Care	24	2%
Referred to Irish Cancer Society Services: Night Nursing	16	1%
Referred to Irish Cancer Society Services: Fundraising	7	0.4%
Referred to Irish Cancer Society Services: Financial Aid	5	0.3%
Accompany enquirer to clinic/clinical area	4	0.2%
Referred to Irish Cancer Society Services: Advocacy/Communications	1	0.1%

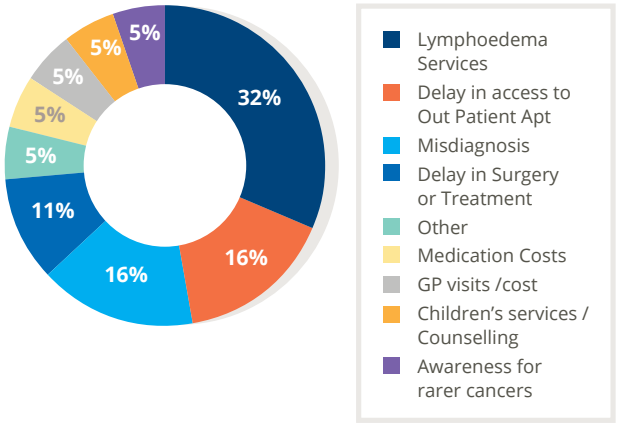
Advocacy Financial

Transport	7
Other	4
Getting a Medical Card	3
Parking Charges	1
Total	**15**



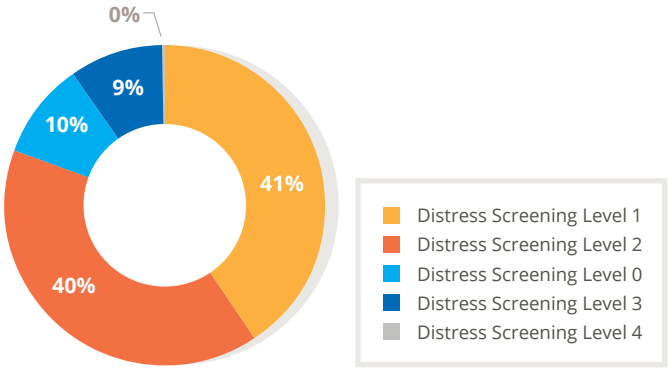
Advocacy Health

Lymphoedema Services	6
Delay in access to Out Patient Apt	3
Misdiagnosis	3
Delay in Surgery or Treatment	2
Other	1
Medication Costs	1
GP visits /cost	1
Children's services / Counselling	1
Awareness for rarer cancers	1
Total	**19**



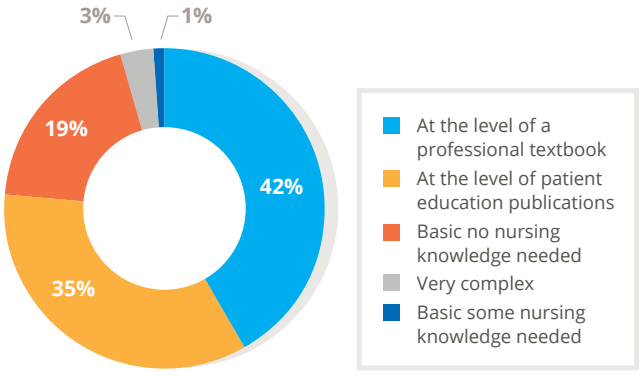
Distress Screening Level

Distress Screening Level 0	112
Distress Screening Level 1	476
Distress Screening Level 2	466
Distress Screening Level 3	109
Distress Screening Level 4	3
Total	**1166**



Complexity of information provided

At the level of a professional textbook	609
At the level of patient education publications	507
Basic no nursing knowledge needed	279
Very complex	47
Basic some nursing knowledge needed	16
Total	**1458**



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St. Vincent's
Healthcare Group
Elm Park, Dublin 4
Ireland

T +353 1 221 4000
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