THE University of Vermont CANCER CENTER

Cancer Committee Annual Report 2017

From the Cancer Committee Chair

The Cancer Committee further integrated its work this year with the Transdisciplinary Teams (see page 2) to ensure that services provided by the UVM Medical Center are of the highest quality, provide access to cutting edge clinical trials as well as supportive services. Cancer Committee goals for 2017 included:

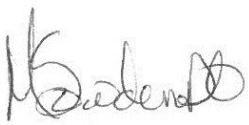
- **Development and implementation of standard procedures for Transdisciplinary Teams to open new clinical trials.** Achievement of this goal provides a more clear and transparent process, ensuring effectiveness in our ability to offer a robust array of clinical trials.
- **Implementation of an Accountable Care Unit on Shepardson 4 (oncology inpatient unit).** This structure and processes currently under development work to organize physicians, nurses and allied health professionals into a high functioning, unit-based team.
- **Development of a plan for implementation of the new American Society of Clinical Oncology Palliative Care Clinical Practice Guidelines.** This year, a plan was developed to pilot an outpatient clinic in 2018 for oncology patients, providing access to a multidisciplinary palliative care team.

2017 Highlights

- Outperforming Quality Standards on 8 national metrics (pages 10-11)
- Doubling the numbers of cancer patients receiving access to palliative care (page 4)
- Increasing the incorporation of tumor genomics into clinical practice (pages 4-5)
- Establishing a Patient Financial Navigator role (page 6)
- Receiving recognition as a "High Performing Site" (page 5)

- **Working with the UVM Integrative Health Program, develop a plan for piloting implementation of massage therapy for cancer patients.** This goal was achieved with support from a generous donor. Massage therapy services are now available in the chemotherapy infusion suite and for inpatients on Shepardson 4.

Thank you to all of the TDTs, Cancer Committee members and care teams for a very successful year.



Michelle Sowden, DO, FACOS
Surgical Oncologist & Chair
UVM Medical Center Cancer Committee

TRANSDISCIPLINARY TEAMS AND LEADERS

Breast Oncology:
Michelle Sowden, DO, FACOS

Cutaneous Oncology/Melanoma:
Chris Anker, MD

Ear, Nose and Throat (ENT):
Havaleh Gagne, MD

Gastrointestinal Oncology:
Steven Ades, MD, MSc, FRCPC

Genitourinary Oncology:
Scott Perrapato, DO

Gynecologic Oncology:
Cheung Wong, MD

Hematologic Oncology:
Chris Holmes, MD, PhD

Lung Oncology:
Garth Garrison, MD

Pediatrics:
Alan Homans, MD

Sarcoma:
Alexandra Kalof, MD

Pathology Liaison:
Mark Fung, MD, PhD

Radiology Liaison:
George Gentchos, MD

Transdisciplinary Team Highlights

The **Breast TDT** tackled a reorganization of our high risk breast program this year. The high risk breast program is dedicated to the follow up of patients at risk for breast cancer secondary to a genetic mutation, a strong family history or a personal history of atypia or cancer. Throughout the years the criteria for inclusion in the program had become vague and with the recent laws on breast density in Vermont the referrals had become unsustainable. A small working group initiated changes in the intake form, published criteria for inclusion on the website and drafted informational letters to referring offices to clarify the changes. This was done in collaboration with leaders from Gynecology, Internal Medicine and Family Medicine.

The Breast TDT continues to meet monthly to discuss open trials, current accruals, and new trials that may be appropriate for our team. In addition this year we are including a clinical item to each agenda to provide members with education and initiate quality improvements.

This year the **Genitourinary TDT** welcomed **Amanda Cronin**, Clinical Research Associate and **Nataniel Lester-Coll**, Radiation Oncologist and said farewell to **Dr. Edmund Folefac**.

Clinical notables:

- GU Oncology TDT held four general meetings
- Multidisciplinary Clinic and Tumor Conference: 42 patients seen in GU MDC clinic, 122 patients discussed at GU tumor board
- All testis Ca and PT2 plus TCC bladder patients evaluated
- Of note: 25% increase in new PCa patients evaluated/last 8 years.
- 2 Visiting Professorships
- Multiple invited presentations at the local, state, regional and national levels
- 2 publications
- Member achievements: **Nicole Messier, RN**: Obtained certification as an Oncology Nurse Navigator Certified Generalist (ONN-CG) through The Academy of Oncology and Patient Navigators (AONN+); **Steven Ades, MD, MSc, FRCPC** became a member of the Alliance, GU section.

Tumor Conference Activity

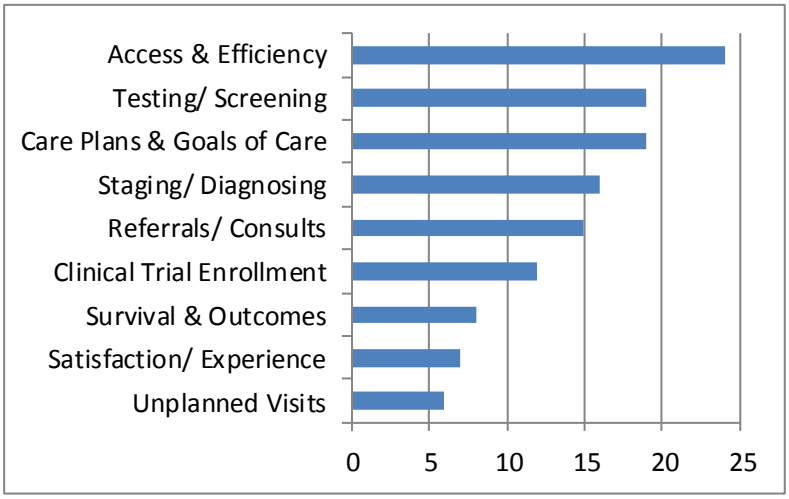
Tumor conferences provide a forum for discussion of treatment options including clinical trials and evidence based treatment guidelines. The UVM Medical Center's TDT's in total held 316 multidisciplinary tumor conferences in 2017, presenting a 1,615 cases. Disease-specific tumor conferences meet on a regular schedule including lung, lower GI, upper GI, melanoma, ENT, breast, gynecologic, GU, Brain, sarcoma and hematologic malignancy.

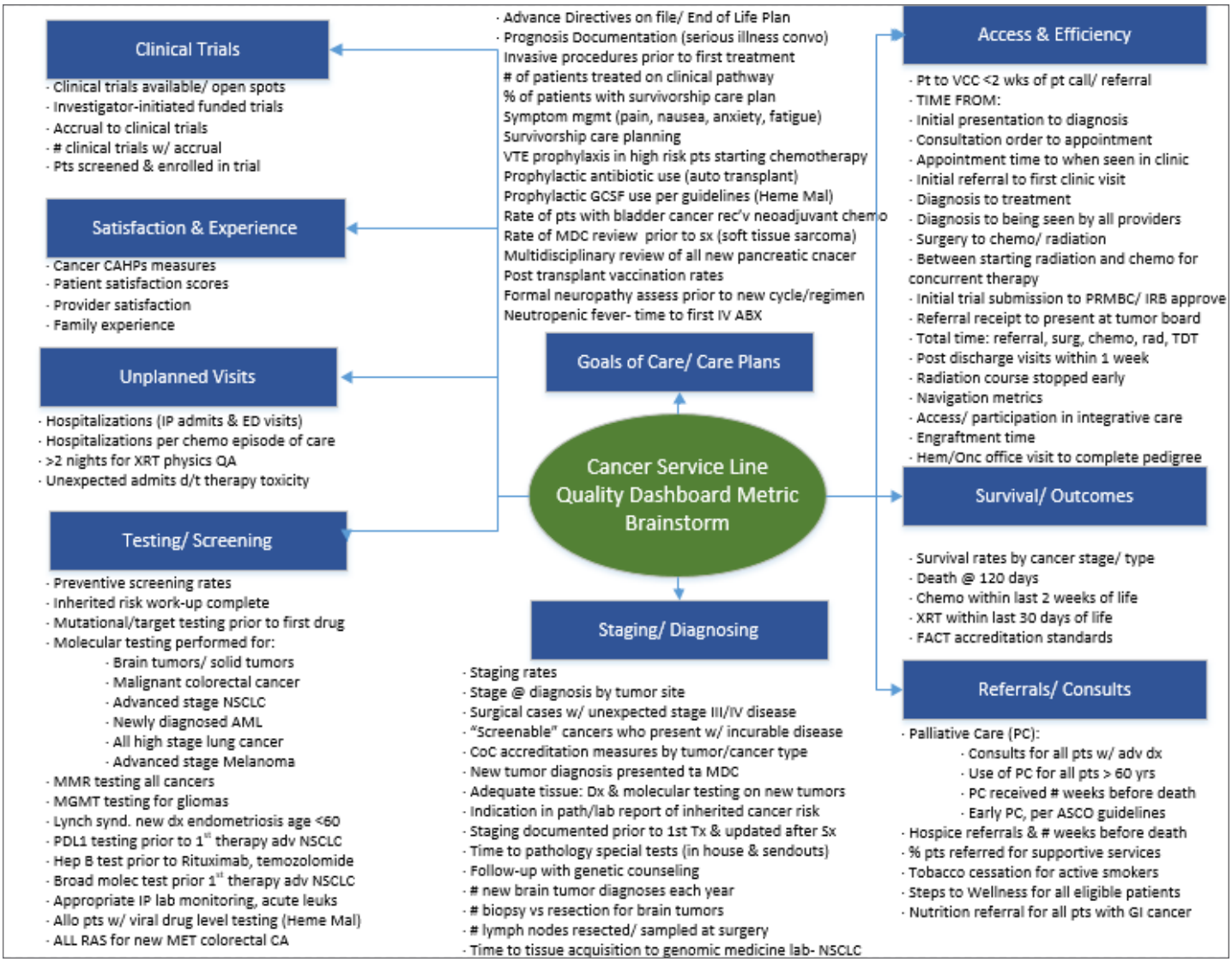
Quality Metric Identification

The Cancer Committee and TDT Leaders participated in a Jeffords Institute for Quality facilitated workshop aimed at identifying quality metrics that are important in assessing our care delivery processes, outcomes and patient experience. Based on this exercise, a number of key metrics were identified and a process is now underway to develop quality dashboards at the TDT level as well as in the aggregate. A thematic analysis of the workshop is represented here.

The following categories emerged:

1. **Access & Efficiency** (24)
2. **Care Plans & Goals of Care** (19)
3. **Testing & Screening** (19)
4. **Staging & Diagnosing** (16)
5. **Referrals &Consults** (15)
6. **Clinical Trial Enrollment** (12)
7. **Survival & Outcomes** (8)
8. **Patient & Provider Satisfaction** (7)
   Unplanned Visits (6)





Studies of Quality: Early Integration of Palliative Care

Members of the Cancer Committee carried out a study this year to determine if patients admitted to the hematology/oncology service who qualify for a palliative care consultation received one. The findings of the study revealed that out of the 174 admissions to hematology oncology at the UVM Medical Center, 91% qualified for palliative consultation based on ASCO guidelines yet only 27% received a palliative care consult. The team then sought to create quality improvements through:

- Identifying cause-effect of lack of palliative care consults/referrals
- Using ASCO guidelines to implement a process improving palliative care assessment by 20%

Changes/Strategies Implemented:

- Educated at Grand Rounds, meetings with fellows and nurses, distribution of pamphlet with information about role of palliative care in oncology.

Team Members: **J.Ruades, C.Nunnink, R.Gramling, N.Hodde, J.Page, J.Kelly, D.Rand, Hematology and Oncology Fellows**

Results	February 2016	February 2017
Palliative care consults	27%	52%
Days of hospitalization	5.02	5.12
Readmission rate (1 month)	36%	20%
ED visits (month)	12%	4%
Days from admission to PC	2.6	2.2
Mortality within one month	14.6%	14%

Assuring Adherence to Evidence-based Guidelines

GARTH W. GARRISON, MD, LEADER,
LUNG TRANSDISCIPLINARY TEAM

NCCN guidelines call for broad molecular profiling for pulmonary adenocarcinomas (EGFR, ALK, ROS1, BRAF). The UVM Medical Center Genomics Lab opened in January of 2016 and has improved the process for obtaining molecular profiling. An assessment of practices at UVM Medical Center of ordering genomic testing during the initial patient evaluation was conducted using tumor registry data of 57 patients from January 2016 through August 2017 who had all of part of their care at UVM Medical Center.

Findings:

- NGS was performed in 48 of the 57 cases (84%)
- The average time from biopsy date to completion of NGS was 24.8 days.

Reasons for lack of NGS:

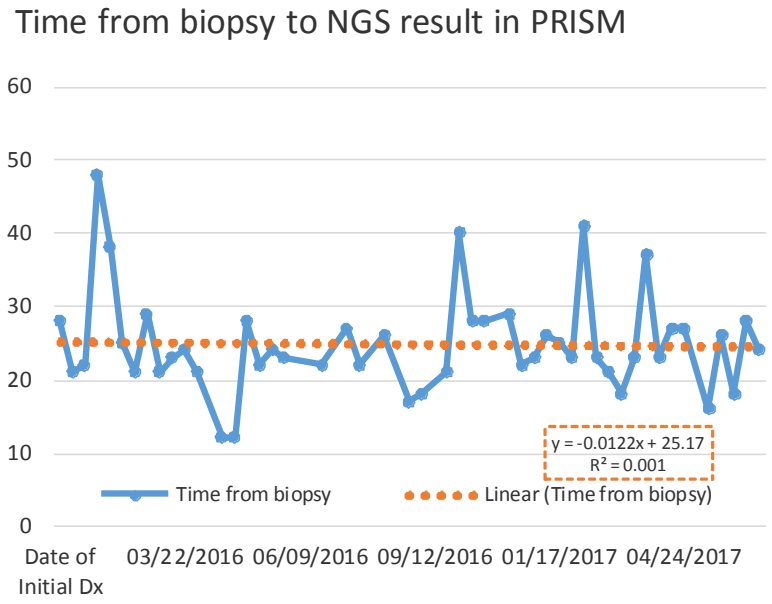
- NGS not ordered for 5/57 (9%) patients referred directly to hospice
- NGS not ordered in 3/57 (5%) when quantity was considered insufficient on first biopsy, no additional biopsy done
- NGS not ordered in 1 (2%) for unknown reasons

NGS not used initial treatment decision in 9/48 (19%)

- NGS ordered, other treatment started or patient died prior to NGS result

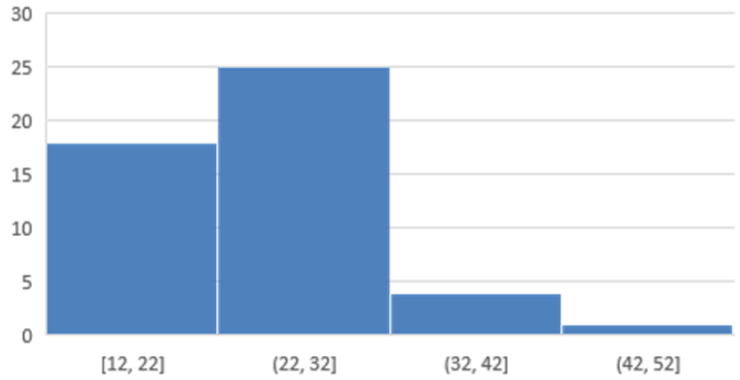
Summary/Areas to improve:

- High rate of NGS completion in metastatic pulmonary adenocarcinoma cases
- The length of time from biopsy to NGS result has been steady around 24 days
    - Significant variability
    - In-lab turn-around time goal is 7-10 business days
- Inadequate cellularity of biopsy samples was infrequent 3/57 cases overall
- There were 7/48 cases where deaths occurred prior to NGS result



Next Steps:

- Adjust pathways for approach to include sites w/maximum expected yield & reduce QNS result
- Reflex testing & Reduce time from Cytology and/or Anatomic Pathology result to NGS
- Improved utilization of NGS & increase efficiency in processing samples



UVM Cancer Center Designated NCTN High Performing Site

The National Clinical Trials Network (NCTN) Program Leadership Management Committee designated the UVM Cancer Center as a High Performing Site this year, providing support for research and clinical trials infrastructure. This status is based on the numbers of patients that we enroll on clinical trials and our high quality data submissions contributing to the success of our clinical trials program.

Patient Navigation: Addressing Financial Barriers to Care

The Cancer Community Needs Assessment findings in 2016 highlighted challenges that our patients and families have with understanding their health insurance benefits, potential for out of pocket costs and accessing needed financial assistance programs. To address this need, a Patient Financial Navigator role was established this year, providing a point person to assist patients with this process. **Sheila Corbett** is available to meet with any patient who has questions or concerns about the financial aspects of their care. In 2018, a pilot project is planned to implement a proactive approach to assisting patients, including providing a customized packet of information about their individual benefits and estimated out of pocket expenses related to their cancer care.

2017 By the Numbers:

2,643 Patients received nurse navigation services

741 Patients received specialized dietician counseling

716 Patients (and their families) learned more about their genetic risk of cancer

520 Patients received cutting edge care on clinical trials

63 Clinical trials open to benefit our patients

306 Patients received psychologic support

517 Patients received a survivorship care plan

>100 Patients received oncology rehabilitation services

421 Parents and children received child life services

1,210 Patients were screened for psychosocial distress

91 Patients with cancer offered a first in the nation comprehensive VTE risk assessment and prevention

Community Outreach, Prevention and Screening

In 2017, The Cancer Committee determined that HPV prevention and colon cancer screening were priority areas to address in the community. As a result, two events were sponsored.

The UVM Cancer Center's Annual Women's Health and Cancer Conference featured HPV related topics for professionals and the public with over 60 people in attendance:

- "The HPV Vaccine: Cancer of the Head and Neck and Cervical Cancer" **(Daniel Fram, MD and Courtney Riley, MD)**
- "HPV is Cancer Prevention: How Does it Work and Is It Safe?" **(Wendy Davis, MD, FAAP)**

UVM Medical Center's Healthsource, a Community Health Improvement program that offers free educational events throughout the year featured the free education and screening event, "An Alternative to Colonoscopy for Low-risk Individuals" **(John King, MD and Krista Evans, MD)** based on Screening for Colorectal Cancer US Preventive Services Task Force Recommendations, providing FIT test screening to 20 community members.

Cancer Data Registry Report

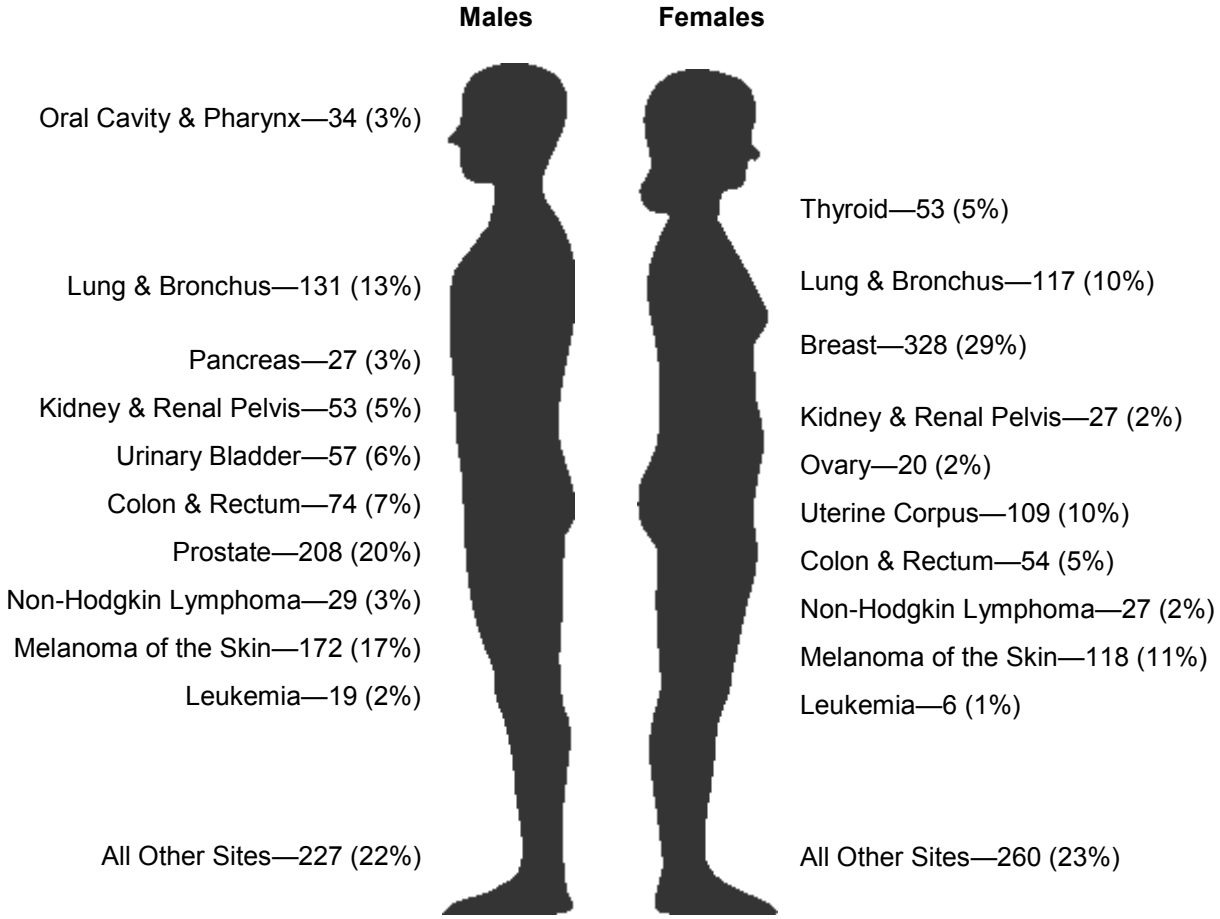
University of Vermont Medical Center Cancer Data Registry collects the data items mandated by the American College of Surgeons, Commission on Cancer, Vermont State Central Cancer Registry and SEER (Surveillance Epidemiology and End Results), while maintaining strict patient confidentiality. The UVM Medical Center Cancer Data Registry reports new cases to the Vermont State Central Cancer Registry weekly and to the National Cancer Database annually. This data is also used internally for assessing community needs, appropriate treatment and services, and maintaining the highest quality of care and support for our cancer patients.

All Abstraction of data in the UVMMC Cancer Data Registry is performed or supervised by certified tumor registrars (CTR), the national credential for these medical professionals. The UVMMC Cancer Data Registry is staffed by three certified tumor registrars and two tumor registrars in training.

The UVMMC Cancer Data Registry abstracted 2,150 analytic cases on patients first seen for their disease at UVMMC in 2016. These cases represent patients who were seen at UVMMC for initial diagnosis and/or initial treatment for cancer or benign brain tumors. The five most prevalent cancers seen in UVMMC female patients were breast, melanoma of skin, uterine/endometrium, lung and colorectal. The five most prevalent cancers seen in UVMMC male patients were prostate, melanoma of skin, lung, colorectal and bladder.

2016 University of Vermont Medical Center Analytic Cases

Summary by Body System and Sex Report



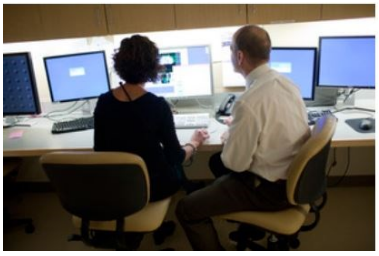
Summary of Body System and Sex Report

2016 University of Vermont Medical Center Analytic Cases

Primary Site	Total	%	Male	%	Female	%
ORAL CAVITY & PHARYNX	**47**	**2.2%**	**34**	**3.3%**	**13**	**1.2%**
Tongue	18	0.8%	13	1.3%	5	0.4%
Salivary Glands	3	0.1%	2	0.2%	1	0.1%
Floor of Mouth	2	0.1%	2	0.2%	0	0.0%
Gum & Other Mouth	8	0.4%	5	0.5%	3	0.3%
Nasopharynx	2	0.1%	1	0.1%	1	0.1%
Tonsil	12	0.6%	10	1.0%	2	0.2%
Hypopharynx	2	0.1%	1	0.1%	1	0.1%
DIGESTIVE SYSTEM	**292**	**13.6%**	**157**	**15.2%**	**135**	**12.1%**
Esophagus	26	1.2%	19	1.8%	7	0.6%
Stomach	18	0.8%	10	1.0%	8	0.7%
Small Intestine	4	0.2%	2	0.2%	2	0.2%
Colon Excluding Rectum	81	3.8%	42	4.1%	39	3.5%
Cecum	12		6		6	
Appendix	3		1		2	
Ascending Colon	18		5		13	
Hepatic Flexure	2		0		2	
Transverse Colon	12		6		6	
Splenic Flexture	3		2		1	
Descending Colon	6		5		1	
Sigmoid Colon	20		14		6	
Large Intestine, NOS	5		3		2	
Rectum & Rectosigmoid	47	2.2%	32	3.1%	15	1.3%
Rectosigmoid Junction	8		4		4	
Rectum	39		28		11	
Anus, Anal Canal & Anorectum	14	0.7%	4	0.4%	10	0.9%
Liver & Intrahepatic Bile Duct	21	1.0%	13	1.3%	8	0.7%
Liver	19		13		6	
Intrahepatic Bile Duct	2		0		2	
Gallbladder	4	0.2%	3	0.3%	1	0.1%
Other Biliary	2	0.1%	0	0.0%	2	0.2%
Pancreas	58	2.7%	27	2.6%	31	2.8%
Peritoneum, Omentum & Mesentery	9	0.4%	0	0.0%	9	0.8%
Other Digestive Organs	8	0.4%	5	0.5%	3	0.3%
RESPIRATORY SYSTEM	**263**	**12.2%**	**141**	**13.7%**	**122**	**10.9%**
Nose, Nasal Cavity & Middle Ear	1	0.0%	1	0.1%	0	0.0%
Larynx	12	0.6%	8	8.8%	4	0.4%
Lung & Bronchus	248	11.5%	131	12.7%	117	10.5%
Trachea, Mediastinum & Other	2	0.1%	1	0.1%	1	0.1%
BONES & JOINTS	**6**	**0.3%**	**1**	**0.1%**	**5**	**0.4%**
Bones & Joints	6	0.3%	1	0.1%	5	0.4%
SOFT TISSUE	**13**	**0.6%**	**9**	**0.9%**	**4**	**0.4%**
Soft Tissue (including Heart)	13	0.6%	9	0.9%	4	0.4%
SKIN EXCLUDING BASAL & SQUAMOUS	**299**	**13.9%**	**179**	**17.4%**	**120**	**10.7%**
Melanoma—Skin	290	13.5%	172	16.7%	118	10.5%
Other Non-Epithelial Skin	9	0.4%	7	0.7%	2	0.2%
BREAST	**333**	**15.5%**	**5**	**0.5%**	**328**	**29.3%**
Breast	333	15.5%	5	0.5%	328	29.3%

Primary Site	Total	%	Male	%	Female	%
FEMALE GENITAL SYSTEM	**166**	**7.7%**	**0**	**0.0%**	**166**	**14.8**
Cervix Uteri	14	0.7%	0	0.0%	14	1.3%
Corpus & Uterus, NOS	109	5.1%	0	0.0%	109	9.7%
Corpus Uteri	108		0		108	
Uterus, NOS	1		0		1	
Ovary	20	0.9%	0	0.0%	20	1.8%
Vagina	4	0.2%	0	0.0%	4	0.4%
Vulva	8	0.4%	0	0.0%	8	0.7%
Other Female Genital Organs	11	0.5%	0	0.0%	11	1.0%
MALE GENITAL SYSTEM	**225**	**10.5%**	**225**	**21.8%**	**0**	**0.0%**
Prostate	208	9.7%	208	20.2%	0	0.0%
Testis	12	0.6%	12	1.2%	0	0.0%
Penis	3	0.1%	3	0.3%	0	0.0%
Other Male Genital Organs	2	0.1%	2	0.2%	0	0.0%
URINARY SYSTEM	**163**	**7.6%**	**118**	**11.4%**	**45**	**4.0%**
Urinary Bladder	73	3.4%	57	5.5%	16	1.4%
Kidney & Renal Pelvis	80	3.7%	53	5.1%	27	2.4%
Ureter	7	0.3%	5	0.5%	2	0.2%
Other Urinary Organs	3	0.1%	3	0.3%	0	0.0%
EYE & ORBIT	**1**	**0.0%**	**1**	**0.1%**	**0**	**0.0%**
Eye & Orbit	1	0.0%	1	0.1%	0	0.0%
BRAIN & OTHER NERVOUS SYSTEM	**94**	**4.4%**	**41**	**4.0%**	**53**	**4.7%**
Brain	43	2.0%	26	2.5%	17	1.5%
Cranial Nerves Other Nervous System	51	2.4%	15	1.5%	36	3.2%
ENDOCRINE SYSTEM	**99**	**4.6%**	**37**	**3.6%**	**62**	**5.5%**
Thyroid	76	3.5%	23	2.2%	53	4.7%
Other Endocrine including Thymus	23	1.1%	14	1.4%	9	0.8%
LYMPHOMA	**65**	**3.0%**	**33**	**3.2%**	**32**	**2.9%**
Hodgkin Lymphoma	9	0.4%	4	0.4%	5	0.4%
Non-Hodgkin Lymphoma	56	2.6%	29	2.8%	27	2.4%
NHL—Nodal	34		17		17	
NHL—Extranodal	22		12		10	
MYELOMA	**15**	**0.7%**	**5**	**0.5%**	**10**	**0.9%**
Myeloma	15	0.7%	5	0.5%	10	0.9%
LEUKEMIA	**25**	**1.2%**	**19**	**1.8%**	**6**	**0.5%**
Lymphocytic Leukemia	7	0.3%	5	0.5%	2	0.2%
Acute Lymphocytic Leukemia	4		2		2	
Chronic Lymphocytic Leukemia	2		2		0	
Other Lymphocytic Leukemia	1		1		0	
Myeloid & Monocytic Leukemia	17	0.8%	13	1.3%	4	0.4%
Acute Myeloid Leukemia	14		10		4	
Chronic Myeloid Leukemia	3		3		0	
Other Leukemia	1	0.0%	1	0.1%	0	0.0%
MESOTHELIOMA	**5**	**0.2%**	**3**	**0.3%**	**2**	**0.2%**
Mesothelioma	5	0.2%	3	0.3%	2	0.2%
MISCELLANEOUS	**39**	**1.8%**	**23**	**2.2%**	**16**	**1.4%**
Miscellaneous	39	1.8%	23	2.2%	16	1.4%
Total	2,150		1,031		1,119	
Exclusions: Not male and not female					0	

Quality of Cancer Care



As an American College of Surgeons Commission on Cancer (CoC) accredited program, The University of Vermont Medical Center submits data on compliance with key metrics related to the standard of care therapies for breast, colon, rectum, lung and gastric cancers.

These data are compiled annually into Cancer Program Practice Profile Reports (CP3R) which offer patients and providers meaningful information that helps us improve quality of patient care.

We are pleased to report that based on this data, the UVM Medical Center and its care teams are providing excellent quality of care.

Commission on Cancer® ACCREDITED PROGRAM | A QUALITY PROGRAM OF THE AMERICAN COLLEGE OF SURGEONS

The University of Vermont Medical Center, Burlington, VT (2015 diagnosis year)

Select Measures—Breast	Commission on Cancer Standard	University of Vermont Medical Center 2015	All Commission on Cancer Approved Programs 2015
Image or palpation-guided needle biopsy (core or FNA) of the primary site is performed to establish diagnosis of breast cancer	80%	**98.6%**	91%
Tamoxifen or third generation aromatase inhibitor is considered or administered within 1 year (365 days) of diagnosis for women with AJCC T1c or stage IB-III hormone receptor positive breast cancer	90%	**98.5%**	91.4%
Radiation therapy is considered or administered following any mastectomy within 1 year (365 days) of diagnosis of breast cancer for women with >= 4 positive regional lymph nodes	90%	**100.00%**	86.70%
Radiation is administered within 1 year (365 days) of diagnosis for women under the age of 70 receiving breast conservation surgery for breast cancer	90%	**96.40%**	91.10%

Select Measures - Colon	Commission on Cancer Standard	University of Vermont Medical Center 2015	All Commission on Cancer Approved Programs 2015
At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer	85%	**100%**	92%

Select Measures - Rectum	Commission on Cancer Standard	University of Vermont Medical Center 2015	All Commission on Cancer Approved Programs 2015
Preoperative chemo and radiation administered for clinical AJCC T3N0, T4N0 or Stage III; or postoperative chemo and radiation administered within 180 days of diagnosis for clinical AJCC T1-2N0 with pathologic AJCC T3N0, T4N0 or Stage III; or treatment is recommended; for patients under the age of 80 receiving resection for rectal cancer	85%	87.5%	87%

Select Measures - Lung	Commission on Cancer Standard	University of Vermont Medical Center 2015	All Commission on Cancer Approved Programs 2015
Systemic chemotherapy administered within 4 months to day preoperatively or day of surgery to 6 months postoperatively, or it is recommended for surgically resected cases with pathologic lymph node positive (pN1) and (pN2) non-small cell lung cancer	85%	**100.00%**	89%
Surgery is not the first course of treatment for cN2 M0 lung cases	85%	**100.00%**	92%

Select Measures - Gastric	Commission on Cancer Standard	University of Vermont Medical Center 2015	All Commission on Cancer Approved Programs 2015
At least 15 regional lymph nodes are removed and pathologically examined for resected gastric cancer	80%	**50%*** **low number of cases, 1-2 per year*	61.2%

2017 Cancer Committee Members

COMMITTEE LEADERSHIP

Michelle Sowden, DO, FACOS, Surgery, Committee Chair

Carl Nelson, MD, Radiation Oncology, Committee Vice Chair

Brian Irwin, MD, Urology, Cancer Liaison Physician

PHYSICIAN MEMBERS

Kim Dittus, MD, PhD, Medical Oncology

Robert Gramling, MD, D.Sc., Palliative Care

Garth Garrison, MD, Pulmonology

Maureen Harmon, MD, Medical Director Surgical Pathology

Ruth Heimann, MD, PhD, Radiation Oncology

Alissa Thomas, MD, Neurology

Erin Tsai, MD, Diagnostic Radiology

H. James Wallace, MD, Chief, Radiation Oncology & Cancer Service Line Leader

NON-PHYSICIAN MEMBERS

Ann Adsem, RN, OCN, Hematology/Oncology Inpatient Nursing Manager

Gretchen Bates, RN, Hematology/Oncology Outpatient Nursing Supervisor

Geera Demers, MPA, CPHQ, Quality Improvement Coordinator

Ann Gray, CTR, Cancer Data Registry

Summer Ladd, CTR, Cancer Data Registry, Cancer Registry Quality Coordinator

Jamie Kelly, PA-C, Physician Assistant, Hematology/Oncology

Shira Louria, MSW, MA, PsyD , Psychosocial Services Coordinator

Martha McAuliffe, RN, BSN, Community Outreach Coordinator

Wendy McKinnon, MS, CGC, Genetics Counselor

Wesley D. McMillian, PharmD, BCPS, FCCM, Interim Director, Pharmacy Administration

Katherine Michaud, MPA, FACHE, Director of Oncology, Cancer Program Administrator

Michelle Pierce, LICSW, Social Work

Gary Stein, PhD, Director University of Vermont Cancer Center

Lisa Thompson, CTR, Cancer Data Registry

Kate Webster, CRA, Research Center Administrator, Clinical Research Coordinator

Joanna Wert, Cancer Conference Coordinator

Kimberly Woods, Manager, Rehabilitation Therapy Services