



Lehigh Valley Cancer Institute

LEHIGH VALLEY HEALTH NETWORK

STATISTICAL REPORT 2017

Welcome

We are pleased to present Lehigh Valley Cancer Institute's 2017 annual report, featuring 2016 data as well as information about our oncology services.

Cancer care programs offered by LVHN include prevention, detection, diagnosis, genetics, patient navigation, nutritional services, social and psychological support, rehabilitation, clinical trials, multidisciplinary and coordinated care, surgery, radiation, chemotherapy, integrated medicine, hemophilia, survivorship, palliative care and hospice care.

LEHIGH VALLEY CANCER INSTITUTE

In September 2017, we introduced the Lehigh Valley Cancer Institute. The word "institute" in successful health care organizations describes a location where clinicians of the highest caliber collaboratively conduct patient care, research and provider education at the highest level to better predict, prevent and combat disease. LVHN has adopted the institute model because it has the necessary infrastructure, programs and partnerships in place to help people stay healthy and provide the most advanced treatment when needed. People in the communities we serve can be confident in knowing they have access to hundreds of lifesaving and breakthrough clinical trials through LVHN's partnership with Memorial Sloan Kettering (MSK) Cancer Institute and other clinical relationships.

OUR MISSION

We ease our community's cancer burden by preventing cancer, by finding cancer early, by providing comprehensive diagnostic, consultative, treatment, support and survivorship services, and by educating health care professionals and residents of the communities we serve about advances in cancer care.

MSK ENHANCEMENTS IN 2017

LVHN's relationship with MSK resulted in improvements in our ability to better serve our patients.

- Lehigh Valley Cancer Institute aligned with MSK to initiate site-specific Disease Management Teams (DMTs). Each DMT is comprised of clinicians who specialize in a particular type of cancer care. On a weekly basis, DMTs meet to review and discuss new findings within their areas of expertise and interpret the data, helping to determine what should change within standard-of care practice and what shouldn't. Cases that pose unique challenges are discussed by experts at MSK and LVHN in order to offer patients a collective treatment plan recommended and developed by top leaders in the field. The patient's case can be discussed by physicians on both sides to develop strategies designed to maximize benefits to the patient.
- DMT's align with the MSK Cancer Institute, helping bring world-class cancer care to people in and around the Lehigh Valley.
- Opened eight new MSK clinical trials.



Memorial Sloan Kettering
Cancer Alliance
MEMBER

ONCOLOGY ALIGNS WITH EPIC

As part of LVHN's commitment to high-quality care, the Cancer Institute now uses the Epic electronic medical record system. In fall 2016, oncology moved all treatment plans from the MOSAIQ® application to the Beacon module found in Epic. This means that cancer patients' diagnoses, staging, treatments and care information are in one medical record that can be seen and updated by their specialty and primary care provider, as well as in the hospital should they need to be admitted. Having one integrated record across the system also means patients can access information through the MyLVHN (mylvhn.org) patient portal. With MyLVHN, patients can securely send a message to their provider (or the provider's team), review after-visit summaries and see test results.

LVHN Cancer Case Information

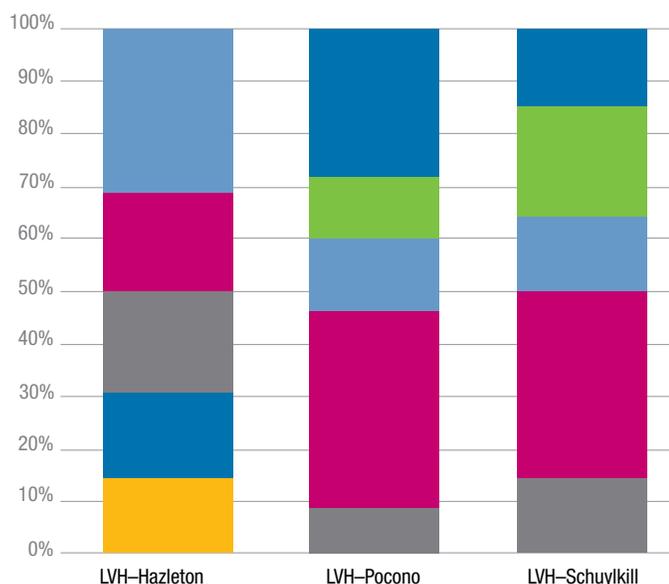
Lehigh Valley Cancer Institute offers a range of cancer services in convenient, patient-focused locations, including the John and Dorothy Morgan Cancer Center at Lehigh Valley Hospital (LVH)–Cedar Crest, Cancer Center at LVH–Muhlenberg, Dale and Frances Hughes Cancer Center at LVH–Pocono, Health Center at Bangor and Health & Wellness Center at Hazleton. Patient care is also provided through Lehigh Valley Physician Group practice offices in Allentown, Bethlehem, Hazleton, Bangor and Lehigh. Breast Health Services is offered in eight locations throughout the region.

The faculty of the cancer program is composed of physicians who are cancer care specialists and board-certified in their fields. In calendar year 2016, the cancer program saw more than 3,505 new cancer patients. In fiscal year 2017, outpatient infusion volumes comprised 43,528 visits, and radiation oncology comprised 1,542 new treatments.

Top 5

Most Prevalent Sites of Cancers Treated at LVHN in FY16

- Breast
- Urinary Bladder
- Blood and Bone Marrow
- Colon/Rectal
- Lung
- Lymph Nodes
- Prostate
- Skin



3,505

New cancer patient analytic cases

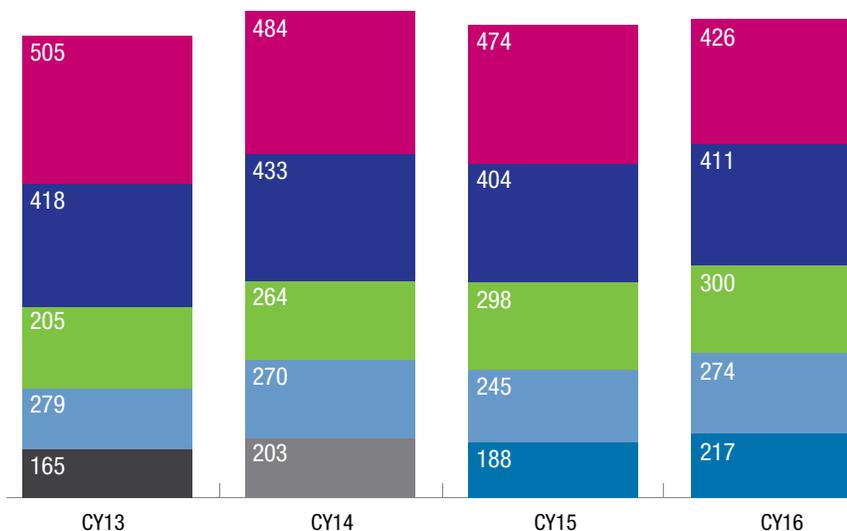
1,542

New treatments in radiation oncology

43,528

Outpatient infusion visits

LVH–Cedar Crest and LVH–Muhlenberg below



Cancer Staging and Incidence Terminology

Cancer diagnosis, staging, incidence and treatment have a language of their own. Here are some commonly used terms and resources for more information:

American Joint Committee on Cancer (AJCC) Staging

A classification system used for describing the extent of disease progression based on the evaluation of the tumor size/invasion (T), nodal status (N) and metastasis (M) at the time of diagnosis. AJCC staging is important in determining treatment plans.

Analytic Cancer Case

Cases for which the facility provided the initial diagnosis of cancer and/or for which the facility contributed to all or part of the first course of treatment.

National Cancer Database (NCDB)

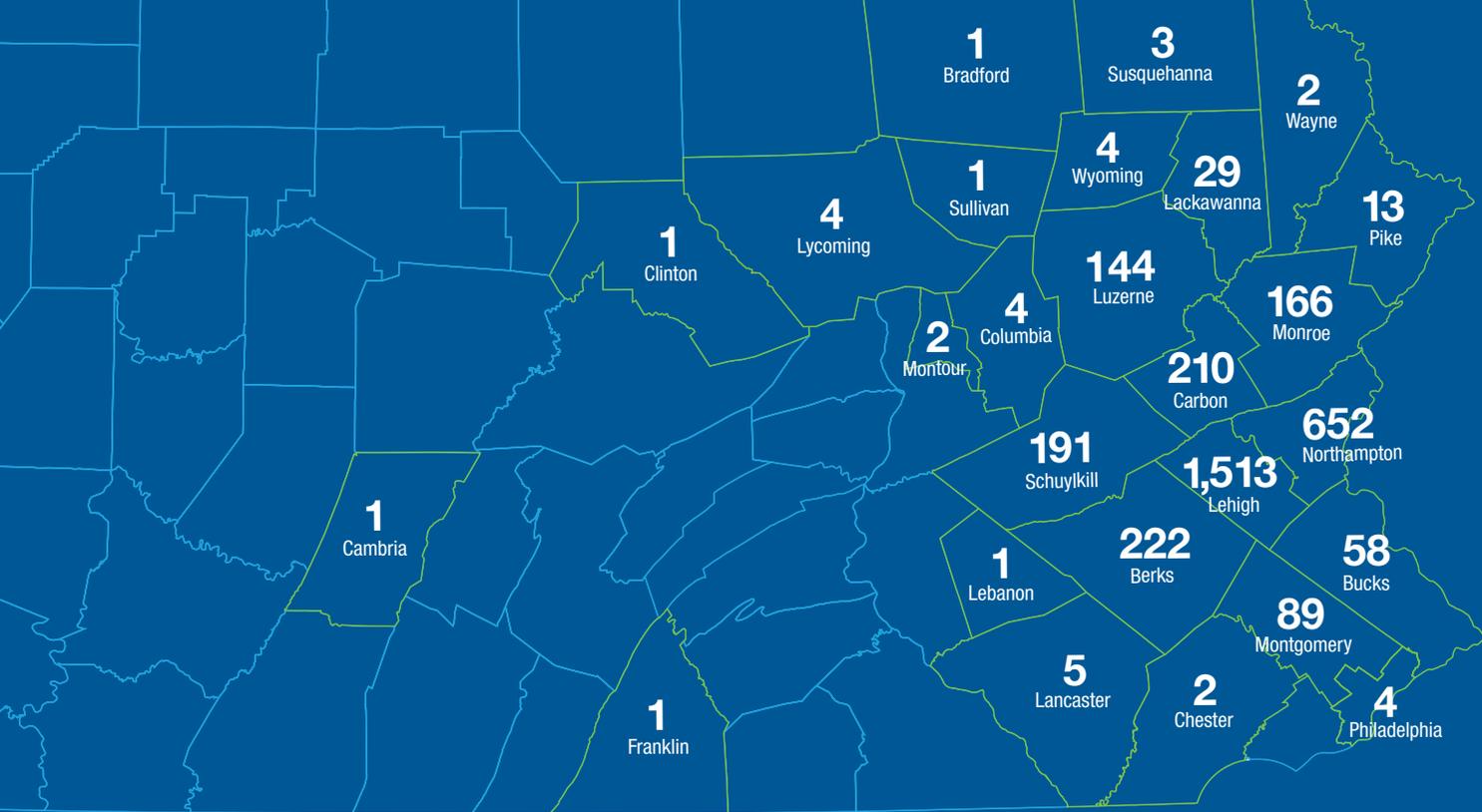
The NCDB, a joint project of the American Cancer Society and the Commission on Cancer, collects information on cancer cases diagnosed and/or treated at hospitals throughout the country. This non-patient-identified information is used to present scientifically

reviewed descriptions of patient diagnosis, treatment and outcomes. The most recent data from NCDB for comparison is on cases newly diagnosed in 2015.

Rapid Quality Reporting System (RQRS)

The RQRS is a web-based data collection and reporting system that uses information gathered through the National Cancer Database (NCDB), a nationwide oncology case repository specifically focused on breast and colon-rectal cancer patients and their quality of care. LVHN participates in the NCDB data collection and reporting program. The resulting data contributes to a body of evidenced-based cancer care knowledge. Based on the evidence, the RQRS alerts users each month to “anticipated care” for breast and colon-rectal cancer patients. The value in these alerts is to avoid having patients miss out on adjuvant, evidence-based care or therapy that they could receive in addition to their main treatment.





Analytic Cases by County of Residence

Lehigh Valley Cancer Institute provides cancer care for patients in our community and serves as a tertiary referral center. In 2016 alone, we provided diagnostic care, second opinion recommendations and treatment to more than 3,505 patients from 25 Pennsylvania counties. In addition, 66 patients came to our cancer program from communities across the United States.

COUNTY OF RESIDENCE	2014	2015	2016
BERKS	249	245	222
BLAIR	0	1	0
BRADFORD	0	3	1
BUCKS	50	43	58
CAMBRIA	0	0	1
CAMERON	1	0	0
CARBON	200	190	210
CHESTER	2	2	2
CLINTON	0	0	1
COLUMBIA	2	0	4
DAUPHIN	5	0	0
ELK	1	0	0
FRANKLIN	0	0	1
HUNTINGDON	0	1	0
LACKAWANNA	23	29	29
LANCASTER	0	0	5
LEBANON	0	2	1
LEHIGH	1,694	1,549	1,513
LUZERNE	118	153	144

COUNTY OF RESIDENCE	2014	2015	2016
LYCOMING	6	6	4
MONROE	142	156	166
MONTGOMERY	90	68	89
MONTOUR	0	1	2
NORTHAMPTON	666	652	768
NORTHUMBERLAND	3	0	0
PHILADELPHIA	3	4	4
PIKE	6	8	13
SCHUYLKILL	130	161	191
SNYDER	0	1	0
SULLIVAN	0	0	1
SUSQUEHANNA	4	1	3
TIOGA	0	4	0
UNION	0	2	0
WAYNE	8	11	2
WESTMORELAND	1	0	0
WYOMING	2	2	4
OUT OF STATE	63	42	66
TOTAL	3,469	3,337	3,505

2016 Analytic Cases by Primary Body Site

The table below notes the primary body site involved in each patient's cancer diagnosis.

LEHIGH VALLEY HOSPITAL–CEDAR CREST AND LEHIGH VALLEY HOSPITAL–MUHLENBERG CASES

PRIMARY SITE	TOTAL
HEAD & NECK	90
DIGESTIVE ORGANS	619
ESOPHAGUS	43
STOMACH	49
SMALL INTESTINE	14
COLON	190
RECTOSIGMOID JUNCTION	21
RECTUM	63
ANUS & ANAL CANAL	16
LIVER & BILE DUCTS	61
GALLBLADDER	12
OTHER BILIARY TRACT	12
PANCREAS	134
OTHER DIGESTIVE ORGANS	4
THORAX	419
BRONCHUS & LUNG	411
THYMUS	3
HEART MEDIASTINUM PLEURA	5
MUSCULOSKELETAL SITES	33
BLOOD & BONE MARROW	217
SKIN	160
BREAST	426
FEMALE GENITAL ORGANS	300
VULVA	13
VAGINA	4
CERVIX UTERI	26
CORPUS UTERI	182
UTERUS (NOT OTHERWISE SPECIFIED-NOS)	3

PRIMARY SITE	TOTAL
OVARY	63
OTHER FEMALE GENITAL ORGANS	8
PLACENTA	1
MALE GENITAL ORGANS	323
PENIS	4
PROSTATE GLAND	300
TESTIS	18
OTHER & UNSPECIFIED MALE GENITAL ORGANS	1
URINARY TRACT ORGANS	334
KIDNEY	144
KIDNEY, RENAL PELVIS	15
URETER	10
URINARY BLADDER	162
OTHER & UNSPECIFIED URINARY ORGANS	3
CENTRAL NERVOUS SYSTEM	209
MENINGES	103
BRAIN	86
OTHER NERVOUS SYSTEM	20
ENDOCRINE GLANDS	178
THYROID GLAND	146
ADRENAL GLAND	2
OTHER ENDOCRINE GLANDS	30
OTHER	6
RETROPERITONEUM & PERITONEUM	5
OTHER ILL-DEFINED SITES	1
LYMPH NODES	144
UNKNOWN PRIMARY	47
TOTAL ANALYTIC CASES	3,505

*LEHIGH VALLEY HOSPITAL–HAZLETON CASES

PRIMARY SITE	TOTAL
HEAD & NECK	12
DIGESTIVE ORGANS	35
BRONCHUS AND LUNG	7
CONNECTIVE, SUBCUTANEOUS & SOFT TISSUE	1
BLOOD & BONE MARROW	13
SKIN	6
BREAST	15

PRIMARY SITE	TOTAL
FEMALE GENITAL ORGANS	8
MALE GENITAL ORGANS	7
URINARY TRACT ORGANS	17
CENTRAL NERVOUS SYSTEM	4
ENDOCRINE GLANDS	7
LYMPH NODES	11
UNKNOWN PRIMARY	6
TOTAL ANALYTIC CASES	149

*This reflects patients who received services solely at LVH–Hazleton. Patients who received a portion of services at LVH–Cedar Crest and/or LVH–Muhlenberg in addition to LVH–Hazleton are counted in both LVH–Cedar Crest and LVH–Muhlenberg numbers for purposes of this report.

Primary Body Sites: 5 Most Frequently Treated at LVHN

#1 Breast Cancer

INCIDENCE OF BREAST CANCER BY AGE AT DIAGNOSIS LVHN 2016

AGE AT DIAGNOSIS	10-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	TOTAL
(N)	0	14	67	108	134	68	28	7	426

BREAST CANCER TREATMENT BY STAGE AT DIAGNOSIS

FIRST COURSE	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage UNK	TOTAL	%
SURGERY ONLY	25	14	10	3	0	0	52	13.3
CHEMOTHERAPY ONLY	0	2	5	1	2	1	11	2.8
SURGERY & RADIATION	9	11	6	1	0	0	27	6.9
SURGERY & CHEMOTHERAPY	1	5	9	6	1	0	22	5.6
SURGERY, RADIATION & CHEMOTHERAPY	0	7	4	3	0	0	14	3.6
SURGERY, RADIATION & HORMONE THERAPY	4	90	16	1	1	0	131	33.6
SURGERY & HORMONE THERAPY	0	17	7	1	0	0	29	7.4
SURGERY, RADIATION, CHEMOTHERAPY & HORMONE THERAPY	0	11	12	4	0	0	27	6.9
SURGERY, RADIATION, CHEMOTHERAPY & IMMUNOTHERAPY	0	7	3	1	0	0	11	2.8
SURGERY, RADIATION, CHEMOTHERAPY, HORMONE THERAPY & IMMUNOTHERAPY	0	9	1	2	0	0	12	3.1
SURGERY, CHEMOTHERAPY & HORMONE THERAPY	0	0	1	1	0	0	2	0.5
SURGERY, CHEMOTHERAPY & IMMUNOTHERAPY	0	4	1	1	0	0	6	1.5
SURGERY, CHEMOTHERAPY, HORMONE THERAPY & IMMUNOTHERAPY	0	2	1	1	0	0	4	1.0
OTHER SPECIFIED THERAPY	0	1	4	1	16	0	22	5.6
NO FIRST-COURSE TREATMENT	5	2	8	2	3	0	20	5.1
TOTAL	67	182	88	29	23	1	390	100%

*Note: 36 cases excluded due to AJCC stage classification Performed During or After Initial Multimodality Therapy

#2 Lung Cancer

INCIDENCE OF LUNG CANCER BY AGE AT DIAGNOSIS LVHN 2016

AGE AT DIAGNOSIS	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	TOTAL
(N)	0	0	15	61	132	124	67	12	411

LUNG CANCER TREATMENT BY S*AJCC STAGE AT DIAGNOSIS

FIRST COURSE	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage UNK	TOTAL	%
SURGERY ONLY	2	32	15	4	0	5	58	14.2
RADIATION ONLY	0	34	5	5	35	0	79	19.4
SURGERY AND CHEMOTHERAPY	0	4	5	9	0	0	18	4.4
RADIATION AND CHEMOTHERAPY	0	1	5	47	50	3	106	26.0
CHEMOTHERAPY ONLY	0	0	3	6	37	2	48	11.8
SURGERY, RADIATION & CHEMOTHERAPY	1	0	0	4	0	0	5	1.2
OTHER SPECIFIED THERAPY	0	0	0	1	10	1	12	2.9
NO FIRST-COURSE TREATMENT	0	11	3	17	51	0	82	20.1
TOTAL	3	82	36	93	183	11	408	100%

*Note: 3 cases excluded due to AJCC stage classification Performed During or After Initial Multimodality Therapy

#3 Prostate Cancer

INCIDENCE OF PROSTATE CANCER BY AGE AT DIAGNOSIS LVHN 2016

AGE AT DIAGNOSIS	0-39	40-49	50-59	60-69	70-79	80-89	90-100	TOTAL
(N)	0	7	65	126	81	20	1	300

PROSTATE CANCER TREATMENT BY *AJCC STAGE AT DIAGNOSIS

FIRST COURSE	Stage 1	Stage 2	Stage 3	Stage 4	Stage UNK	TOTAL	%
SURGERY ONLY	9	76	19	1	14	119	39.8
RADIATION ONLY	5	9	0	0	1	15	5.0
SURGERY & HORMONE THERAPY	0	2	3	4	0	9	3.0
SURGERY, RADIATION & HORMONE THERAPY	0	2	0	2	0	4	1.3
RADIATION & HORMONE THERAPY	0	46	3	4	0	53	17.7
SURGERY & RADIATION	0	1	0	0	0	1	0.3
HORMONE THERAPY ONLY	0	5	0	13	0	18	6.0
OTHER SPECIFIED THERAPY	0	2	0	11	0	13	4.3
NO FIRST-COURSE TREATMENT	41	25	0	1	0	67	22.4
TOTAL	55	168	25	36	15	299	100%

*Note: 1 case excluded due to AJCC Stage classification Performed During or After Initial Multimodality Therapy

#4 Colon Rectal Cancer

INCIDENCE OF COLON CANCER BY AGE AT DIAGNOSIS LVHN 2016

AGE AT DIAGNOSIS	10-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	TOTAL
(N)	1	6	14	44	45	60	34	7	211

COLON CANCER TREATMENT BY STAGE AT DIAGNOSIS

FIRST COURSE	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage UNK	TOTAL	%
SURGERY ONLY	4	32	36	17	6	13	108	52.4
SURGERY & CHEMOTHERAPY	0	1	9	38	5	3	56	27.2
SURGERY, CHEMOTHERAPY & IMMUNOTHERAPY	0	0	1	0	9	0	10	4.9
CHEMOTHERAPY ONLY	0	0	0	0	6	0	6	2.9
CHEMOTHERAPY & IMMUNOTHERAPY	0	0	0	0	5	3	8	3.9
SURGERY, RADIATION & CHEMOTHERAPY	0	0	1	0	0	0	1	0.5
OTHER SPECIFIED THERAPY	0	1	0	0	1	1	3	1.5
NO FIRST-COURSE TREATMENT	1	0	3	1	4	5	14	6.8
TOTAL	5	34	50	56	36	25	206	100%

*Note: 5 cases excluded due to AJCC Stage classification Performed During or After Initial Multimodality Therapy

INCIDENCE OF RECTAL CANCER BY AGE AT DIAGNOSIS LVHN 2016

AGE AT DIAGNOSIS	10-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	TOTAL
(N)	1	0	5	15	21	8	11	2	63

RECTAL CANCER TREATMENT BY STAGE AT DIAGNOSIS

FIRST COURSE	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage UNK	TOTAL	%
SURGERY ONLY	3	0	1	4	1	6	18	38.3
SURGERY & CHEMOTHERAPY	0	0	0	0	6	1	2	4.3
SURGERY & RADIATION THERAPY	0	2	0	2	3	0	0	0.0
CHEMOTHERAPY & RADIATION THERAPY	0	0	2	4	2	0	8	17.0
CHEMOTHERAPY & IMMUNOTHERAPY	0	0	0	0	2	0	2	4.3
CHEMOTHERAPY ONLY	0	0	0	0	2	0	2	4.3
SURGERY, RADIATION & CHEMOTHERAPY	0	1	0	3	1	2	7	14.9
RADIATION THERAPY ONLY	0	0	1	1	1	0	3	6.4
NO FIRST-COURSE TREATMENT	0	1	1	1	0	2	5	10.6
TOTAL	3	10	5	9	9	11	47	100%

*Note: 16 cases excluded due to AJCC Stage classification Performed During or After Initial Multimodality Therapy

#5 Blood and Bone Marrow Cancer

INCIDENCE OF BLOOD AND BONE MARROW CANCER BY AGE AT DIAGNOSIS LVHN 2016

AGE AT DIAGNOSIS	0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100	TOTAL
(N)	5	2	3	13	35	52	52	49	6	217

BLOOD AND BONE MARROW CANCER TREATMENT DIAGNOSIS

FIRST COURSE	TOTAL	%
CHEMOTHERAPY ONLY	73	33.6
CHEMOTHERAPY & HORMONE THERAPY	10	4.6
CHEMOTHERAPY, HORMONE THERAPY & IMMUNOTHERAPY	4	1.8
CHEMOTHERAPY, HORMONE THERAPY & STEM CELL TRANSPLANT	2	0.9
CHEMOTHERAPY, HORMONE THERAPY, IMMUNOTHERAPY & STEM CELL TRANSPLANT	2	0.9
CHEMOTHERAPY & STEM CELL TRANSPLANT	3	1.4
CHEMOTHERAPY, RADIATION, HORMONE THERAPY & IMMUNOTHERAPY	6	2.8
CHEMOTHERAPY & OTHER	7	3.2
RADIATION THERAPY ONLY	4	1.8
IMMUNOTHERAPY ONLY	8	3.7
CHEMOTHERAPY & IMMUNOTHERAPY	1	0.5
OTHER SPECIFIED THERAPY	10	4.6
NO FIRST-COURSE TREATMENT	87	40.1
TOTAL	217	100%

Evidence-Based Study

Commission on Cancer Standard 4.6 Evidence-Based Study was conducted on the treatment and overall survival of patients with neuroendocrine tumors diagnosed at Lehigh Valley Health Network between 2011 and 2015.

STUDY OBJECTIVES

- Compare data with the National Comprehensive National Network National Guidelines (NCCN) to assess concurrence.
- Carcinoid versus neuroendocrine cancer, analyzed for five-year survival rate.
- Recommendations for performance improvements were based on the study.

METHODS USED

- Carcinoid and neuroendocrine cancers were selected from the tumor registry database for analysis of age, diagnosis, staging, treatment and survival status.
- Treatments in concordance with NCCN guidelines.
- Data from 2011 through July 2012 was analyzed for five-year survival.
- A total of 237 cases were reviewed:
 - 1 case removed because it was a pediatric patient
 - 25 cases removed due to lack of cancer staging
 - 212 cases were selected for analysis
 - 123 cases were carcinoid tumors
 - 89 cases were neuroendocrine carcinomas

RESULTS

- Age range: Average age at diagnosis 63.3 for carcinoid tumors and 66.7 for neuroendocrine carcinoma.

CONCLUSIONS

- LVHN followed NCCN Standard of Care Guidelines.
- Carcinoid tumors had an overall higher survival (89.4%) rate than neuroendocrine carcinomas (48.3%) as expected.
- Patients who expired with stage I-III of both tumor types expired of something other than their neuroendocrine cancer.
- A higher stage of cancer was correlated to a higher rate of mortality for both tumor types.
- Five-year survival of carcinoid stage I-III was 86 percent and neuroendocrine carcinoma stage I-III was 80 percent.
- Five-year survival of carcinoid stage IV was 67 percent and neuroendocrine carcinoma stage IV was 19 percent.
- No performance improvement was recommended based on this study; it was all consistent with national guidelines.

Lehigh Valley Cancer Institute Innovations and Impact

Each year, Lehigh Valley Cancer Institute continues to grow. Not only have we experienced steady growth in the number of patients for whom we provide care, we also have become a leader in our area offering specialized procedures and treatments. Our areas of specialization include Clinical Trials, robotic surgery, liver and pancreatic surgeries, thyroid surgery and stereotactic radiosurgery among others.

CLINICAL TRIALS

Offering our patients excellence in cancer care and access to the latest and most promising therapies is the mission of Lehigh Valley Cancer Institute's clinical trials program. Enhancing our already robust and well-respected program further, Lehigh Valley Cancer Institute was invited to join the Memorial Sloan Kettering (MSK) Cancer Alliance. Beginning in 2016, cancer patients worked with their providers to determine if an early-phase MSK cancer clinical trial is right for them. In addition to potentially improving lifespan or quality of life, the LVHN/MSK clinical trials collaboration helps to advance cancer treatment knowledge to benefit all patients.

Lehigh Valley Cancer Institute has a collaborative agreement with the Michigan Cancer Research Consortium (MCRC) – one of only 34 National Cancer Institute Community Oncology Research Programs (NCORP). At the end of 2016, LVHN joined NCORP under the MCRC, allowing us access to more than 120 National Cancer Institute (NCI) clinical trials. Greater involvement in NCI trials opens the door to increasingly innovative science and expansion into cancer control studies, positioning Lehigh Valley Cancer Institute as a leader not only in providing the highest-quality cancer care but also looking to the future.

In addition to participating in clinical trials through our alliance with MSK and under NCORP, Lehigh Valley Cancer Institute continues to support a strong portfolio of pharmaceutical clinical trial. Our dedicated clinical trial staff helps ensure we follow the strictest protocol guidelines and deliver clear results while providing compassionate care for our patients.

ACTIVELY ACCRUING

Phase 1

Adult Treatment: **1**

Phase 2

Adult Treatment: **13**

Pediatric Treatment: **4**

Phase 3

Adult Treatment: **24**

Pediatric Treatment: **10**

Biology

Adult: **1**

Pediatric: **9**

Registry

Adult: **4**

Pediatric: **4**

Quality of Life

Pediatric: **3**

Registry/Biology

Pediatric: **1**

Supportive Care

Adult: **1**

Pediatric: **1**

Compassionate Use

Adult: **1**



ELITE CANCER TRIALS

Targeted Agent and Profiling Utilization Registry (TAPUR): The TAPUR study provides eligible patients with medication not yet approved by the FDA for their particular cancer type and collects data on the clinical response. LVHN is one of only two TAPUR sites in Pennsylvania.

Affiliated with the federal government's **Cancer Moonshot** program to accelerate cancer research, TAPUR will help realize the promise of genomic-targeted therapies.

If the genetic profile of a patient's tumor indicates actionable mutations, physicians can consult TAPUR to see if there's a match between the patient and a medication being investigated. A molecular tumor board will help guide patient eligibility for the registry.

Hope for Brain Tumor Treatment

CAPTIVE

LVHN patients ages 18 and older with recurrent glioblastoma may be eligible for the CAPTIVE study. Lehigh Valley Hospital–Cedar Crest is the only hospital in the region participating in the trial, which is sponsored by biotechnology company DNAtrix in conjunction with Merck.

CAPTIVE patients will receive one injection of a modified adenovirus (common cold virus) into the brain tumor mass under general anesthesia to allow the virus to replicate inside the tumor. Patients also receive infusions of Keytruda (pembrolizumab) to stimulate the immune system. Initial research with virus injection

has shown promising results.

CAPTIVE has very strict inclusion criteria. Patients must have a single mass localized in one half of the brain only, and not near the ventricular system. Patients must have adequate liver function and blood counts. They should be free of autoimmune diseases and active infections. If they've undergone chemotherapy or radiation, it must be several weeks from their last treatment. They also must have good performance status.



HARNESSING IMMUNOTHERAPY TO TREAT GBM

LVHN offers phase 3 clinical trials that may impact long-term survival: Each year, 40 to 60 Lehigh Valley Health Network (LVHN) patients are diagnosed with glioblastoma multiforme (GBM), which arises from cells that comprise the supportive tissue of the brain. Although it's considered a rare cancer, GBM is one of the most common primary brain tumors in adults.

For the past 50 years, treatment advances have slowly impacted survival. For example, in October 2015, the FDA approved the NovoTFF medical device for both newly diagnosed and recurrent GBM patients. The device, worn on a cleanly shaven head, generates an electrical field that disrupts molecules to prevent cancer cells from dividing. In studies, NovoTFF increased GBM survival by an average of four months (30 percent). Still, few GBM patients survive 12 to 16 months past the diagnosis date.

However, LVHN is at the forefront of a promising new development that may impact long-term survival.

LVHN is one of the first U.S. medical centers to offer two phase 3 clinical trials for patients newly diagnosed with GBM to test the effectiveness of anti-PD-1 immunotherapy, which takes the brakes off the immune system so the body can clear cancer cells.





Robotic Surgery Program

LVHN RAISES THE BAR IN ROBOTIC SURGERY AND NOW OFFERS SURGICAL OPTIONS ACROSS 10 SERVICE LINES IN SIX LOCATIONS.

Lehigh Valley Health Network's (LVHN) robotic surgery program has performed more than 10,000 robotic procedures and now offers patients expanded access to robotic surgery, making it available at all campuses in Northeastern Pennsylvania. In fall 2017, the network added an Xi HD Surgical System to increase the number of robots to eight across six hospitals:

- Lehigh Valley Hospital (LVH)—Cedar Crest
- LVH—17th Street
- LVH—Muhlenberg
- LVH—Schuylkill
- LVH—Pocono
- LVH—Hazleton

LVHN was the first in the region to offer robot-assisted surgery in 1995. As this technology has evolved, so has LVHN and surgical robotic platforms. The latest surgical robot is known as the da Vinci® Xi. LVHN is home to eight of these systems across 10 service lines: ear, nose and throat; bariatrics; urology; surgical oncology; general surgery; thoracics; colorectal surgery; urogynecology; gynecology; and gynecologic oncology.

The da Vinci® Xi and Si machines operate similarly. The Si is designed for simpler, single-quadrant surgery,



BENEFITS OF ROBOTIC SURGERY MAY INCLUDE:

- Smaller incisions
- Less pain, scarring and recovery time
- Shorter hospital stay
- Lower risk for infection
- Less blood loss and fewer incisions
- Quicker return to normal activities

allowing surgeons to work in only one area at a time, such as the pelvis. The Xi is more maneuverable. It's optimized for multiple quadrants of the body, such as the pelvis and upper abdomen, without having to undock. Both surgical systems are at the frontier of minimally invasive surgery.

With 3-D HD vision of the da Vinci, surgeons can maneuver more nimbly. Enhanced visualization can translate to more precise incisions and less pain for patients as well as faster recovery time, fewer complications and shorter hospital stays, if hospitalization is required.

Navigation and Multidisciplinary Care

Multidisciplinary clinics offer patients an opportunity to have their diagnosis and care options assessed and explained by a team of clinicians representing medical, surgical and radiation oncology, along with advocacy and support from an oncology nurse navigator, and support staff including social workers, counselors, rehabilitation, dietitians and genetic counselors for each individual patient. Multidisciplinary clinics (MDCs) include breast, thoracic, genitourinary, gastrointestinal, prostate, and skin and soft tissue.

BRINGING MULTIDISCIPLINARY PERSPECTIVES TO GASTROINTESTINAL CANCERS

Disease management teams promote state-of-the-art care:

Expertise across multiple specialties is essential to the treatment of gastrointestinal (GI) cancers. That's why most large cancer centers use multidisciplinary clinics to guide treatment for individual cases. Lehigh Valley Cancer Institute goes even further, embedding multidisciplinary perspectives into the very structure of its program. The GI Disease Management Team (DMT) brings together experts from both LVHN and Memorial Sloan Kettering (MSK) Cancer Center – who continually evaluate care protocols and ensure the latest advances are available to patients.

The DMT includes representatives from all specialties involved in the treatment of GI cancers – medical oncologists, radiation oncologists, gastroenterology physicians, surgeons, pathologists, radiologists, nurses and more. Team members review the latest scientific literature in their areas and evaluate Lehigh Valley Cancer Institute protocols and procedures on a monthly basis. The DMT's function is to provide more comprehensive, collaborative care at a very gradual level and bring leading-edge innovation.

Recent changes enacted by the DMT include:

- Ensuring that patients undergoing CT scans of the abdomen and pelvis also have a CT scan of the chest to evaluate for metastatic disease
- Implementing MRI in preoperative staging of patients with rectal cancer
- Expanding and standardizing parameters covered in MRI reports to enable more accurate tumor staging
- Implementing routine RAS mutation, genetic testing for targeted molecular therapies

By examining and validating procedures with MSK, LVHN physicians also are able to evaluate the very latest standards of care, sometimes even before they appear in national guidelines.



483

Total MDC visits FY17,
12% increase from FY16



1,056

Number of new patients



1,656

Number of patients assisted
by patient navigators in 2016



PROMOTING LEADING-EDGE LUNG CANCER CARE

Most cancer centers strive to use the latest evidence-based standards of care to guide diagnosis and treatment. But how many have put in place a formal infrastructure to make sure that's the case?

Lehigh Valley Cancer Institute Disease Management Teams (DMTs) continually evaluate and implement the latest evidence-based clinical pathways for virtually every cancer disease site.

Lehigh Valley Cancer Institute specialists don't just review standards internally. They validate them with internationally renowned experts at Memorial Sloan Kettering (MSK) Cancer Center as part of the MSK Cancer Alliance. This process benefits patients with any cancer type but is particularly important for thoracic and pulmonary cancers.

The thoracic and pulmonary disease DMT includes many of the same specialists as the Lehigh Valley Cancer Institute's lung cancer multidisciplinary clinic (MDC). But where MDCs focus on coordinating treatment for individual patients, the DMT evaluates the program overall. It includes every specialty involved in thoracic and pulmonary cancer – medical oncology, surgical oncology, thoracic surgery, radiation oncology, pulmonary medicine, diagnostic radiology, and pathology.

The thoracic and pulmonary disease DMT analyzes 59 metrics across Lehigh Valley Cancer Institute's lung cancer practices. The process is ongoing – team members meet monthly, as well as discuss care standards with their counterparts at MSK on a regular basis. These reviews also extend to diagnosis and staging.

One example of a DMT Clinical Quality Improvement process is that now all prospective lung cancer patients undergo mediastinum staging early in the diagnostic process to provide the most accurate staging possible.

Lehigh Valley Cancer Institute specialists continue to collaborate with their counterparts at MSK to review changing standards, discuss difficult cases and, when necessary, obtain second opinions. Patients with lung and thoracic cancers can be confident they're getting the very latest state-of-the-art, evidence-based care.

BRIDGING THE GAPS FOR YOUNGER CANCER PATIENTS

New tumor board tailors care for a historically underserved population.

From the perspective of treating cancer, teen and young adult patients live between two worlds. With its adolescent and young adult (AYA) tumor board, Lehigh Valley Cancer Institute oncologists have created a forum specifically designed to meet this population's unique needs.

The AYA tumor board features expert specialists such as hematology oncologists, pediatric oncologists, and reproductive endocrinology and infertility specialists. Also included are a radiation oncologist, surgical oncologist and several supportive care staff. They meet monthly to evaluate patients ages 15 to 30 who have hematologic and brain malignancies, sarcomas and other rare cancers.

Cancer diagnoses raise a host of issues for patients in this age range. They may need fertility services, which can be very expensive. Patients may struggle to get to and from appointments. They may have insurance issues, or no insurance. They may not be able to return to work or school. A wide range of cancer support services – social workers, financial and psychological counselors, and patient navigators – participate in the AYA tumor board to address patients practical needs as well as clinical needs.

Disease Management and Research Teams

SIGNIFICANCE

In 2010, LVHN successfully pioneered its first pharmaceutical clinical trial. Since then, the program has rapidly developed from approximately 20 trials to over 100 trials and includes a diverse portfolio, covering multiple disease sites in various phases; therefore, as the program evolved, so did identification of potential eligible patients, and appropriate trial selection became more critical.

PURPOSE

As a result, and in accordance with NCCN recommendations, identified a need to develop a multidisciplinary infrastructure to support clinical trials selection, feasibility and accrual management was identified.

INTERVENTION

DMTs were identified as the appropriate venue to promote change in the process of selection and targeted accrual of clinical trials. Restructure of research responsibilities began with programmatic changes discussed within each DMT, and a process was established. The final infrastructure change includes DMT responsibility for:

- Choosing appropriate trials
- Vetting trials for feasibility
- Presenting to the Protocol Review Committee
- Educating the cancer institute and promoting strategies for accrual
- Primary accountability for accrual goals

EVALUATION

Clinical trial accruals have dramatically increased since the involvement of DMTs; post-implementation in January 2017 from 58 accruals (January-June 2016) to 152 (January-June 2017). There is a revived energy across all DMTs, and providers have voiced positive feedback of the improved process.

RESEARCH INTEGRATION INTO DISEASE MANAGEMENT TEAMS

Disease management teams (DMTs) are responsible for selecting clinical trials to consider opening at LVHN, based on the patient population they treat and current disease-specific program needs. The clinical trial protocol is thoroughly reviewed by each DMT member, and an appropriate accrual target is selected, using the tumor registry and statistical analysis. Each DMT lead is present at the protocol priority review meeting to present the clinical trial. DMTs are responsible for meeting accrual targets and educating and informing the entire cancer institute of the trial, including inclusion and exclusion criteria, trial design and adverse event management.

Cancer Genetics Annual Report

The Gregory and Lorraine Harper Cancer Risk and Genetic Assessment Program is staffed by three full-time, board-certified licensed genetic counselors.

Nicholas Lamparella, DO, became medical director in May 2017. Additionally, there are two clinical assistants, an office coordinator, and extra support provided by cancer support services staff.

While the majority of cancer is sporadic, approximately 10 percent of cancer has a hereditary cause. Understanding if there is a hereditary contribution to cancer can aid in treatment, surveillance and risk-reducing options for individuals and their families. Additionally we are learning that testing cancer for somatic mutations not only can help dictate treatment decisions but also can help identify families with hereditary cancer syndromes.

This program meets with individuals who are interested in cancer risk assessment and genetic testing for hereditary cancer syndromes. An appointment consists of in-depth counseling and education regarding personal and family history of cancer, cancer risk assessment and discussion of medical management guidelines to reduce/prevent cancer. If genetic testing is warranted, a discussion between patient and provider determines the most appropriate type of testing (single gene vs. multi-gene panels). Genetic test results as well as personal and family risk factors help clinicians personalize a medical management and surveillance plan.

Patients who test positive are invited to attend the genetics multidisciplinary clinic where an annual appointment continues to offer recommendations for cancer risk reduction. The Cancer Risk and Genetic Assessment Program also helps facilitate entry into clinical or research studies when appropriate.

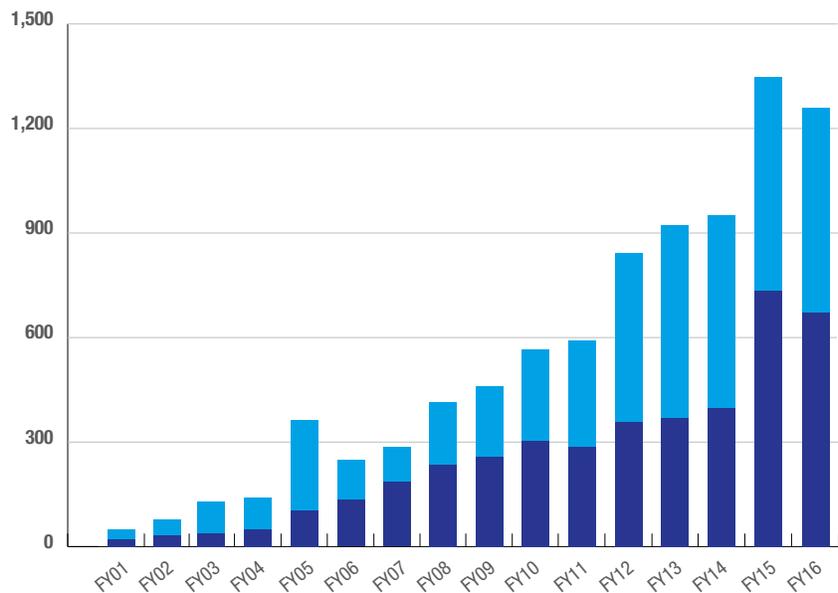
Our program continues to see substantial growth, due to high demand for and expansion of genetic information/infrastructure and opportunity in cancer treatment.

672	1,259
New genetic counselor visits	Total visits



Gregory and Lorraine Harper Cancer Risk and Genetic Assessment Program

- New Patient Visits
- Total Risk Visits



Radiation Oncology

Radiation therapy may play a crucial role in your cancer care. The department of radiation oncology offers patients the availability of the finest state-of-the-art technology and techniques.

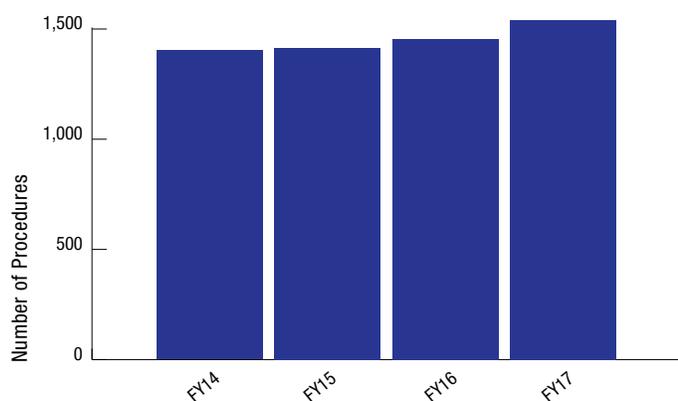
Radiation oncology facilities at LVHN include: Lehigh Valley Hospital (LVH)–Muhlenberg and LVH–Cedar Crest.

Our program offers the latest in treatment protocols and technologies, including:

- Six linear accelerators
- Stereotactic body radiotherapy (SBRT)
- Prostate stereotactic body radiotherapy (SBRT)
- Stereotactic radiotherapy (SRT)
- Linac-based single-fraction cranial radiosurgery (SRS)
- Gamma Knife® Icon™ radiosurgery
- Intensity-modulated radiation therapy (IMRT)
- Two large-bore, 16-slice CT simulators with latest technology including metal artifact reduction software
- Brachytherapy – high dose and low dose
- 3-D treatment planning
- Image-guided radiation therapy (IGRT)
- Respiratory gating
- RapidArc® technology
- Optical surface monitoring system (OSMS) allowing for monitoring patient positioning during radiation treatment

- Prone breast radiation therapy that allows the breast to fall away from the chest wall, reducing radiation doses to the heart and lungs and is especially helpful for women with large breasts.
- Dose painting technique to highly customize the treatment area allowing for a “boosted” dose of radiation to the focused area (tumor) while remaining target area receives a lower dose
- Pediatric radiation oncology
- Leksell Gamma Knife® Icon™: At Lehigh Valley Hospital, we have upgraded to the most precise radiosurgery device on the market, limiting radiation dose to healthy tissue. Icon is the only technology with microradiosurgery capabilities, allowing for treatment of virtually any target in the brain with ultra-high precision.
- Prostate stereotactic body radiotherapy (SBRT) with SpaceOAR®: At Lehigh Valley Hospital, we have the ability to treat prostate cancer patients with five fractions when a biodegradable hydrogel (SpaceOAR®) is used to push the prostate away from the rectum. Because a space is created, we are able to offer high doses in fewer treatment fractions to eligible patients, decreasing side effects and helping patients return to daily life activities faster.

Total “New Start” External Beam and Special Procedures



Lehigh Valley Cancer Institute Provides Leading-Edge Treatment for Brain Tumors

GAMMA KNIFE® ICON™ OFFERS IMPROVED PATIENT COMFORT AND

Patients at Lehigh Valley Cancer Institute can now benefit from the Gamma Knife® Icon™ for treatment of primary brain tumors, brain metastases and other central nervous system disorders using ultraprecise micro-radiosurgery capabilities that limit unwanted radiation to healthy tissue and allow for improved patient comfort. The new Icon allows providers to use frameless or head frame immobilization options.

Gamma Knife Icon can be used to treat a variety of malignant and benign conditions, including:

- Primary and metastatic brain tumors (including paraspinal)
- Glial tumors
- Acoustic neuromas
- Pituitary adenomas
- Pinealomas
- Craniopharyngiomas
- Meningiomas
- Chordomas
- Arteriovenous malformations
- Trigeminal neuralgia (ticdouloureux)

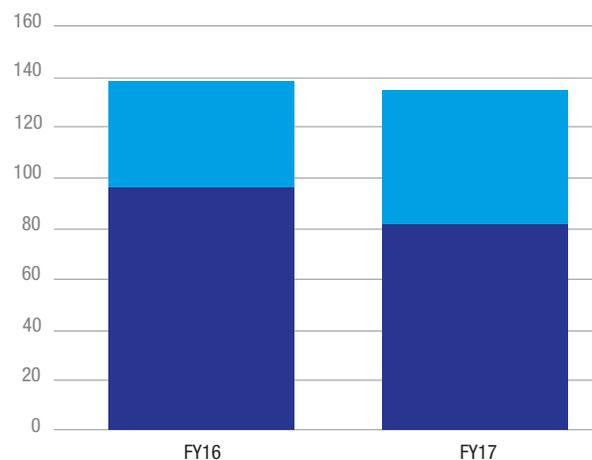
Other advantages of the new technology include an infrared monitoring system that automatically halts treatment if the patient moves a fraction of a millimeter during treatment delivery, as well as a fractionated treatment option. LVHN is the only health network in the region to offer this capability, meaning patients can receive, close to home, what is known as the gold standard treatment for brain conditions. Patients are typically seen within a week of referral.

Gamma Knife® technology has been in use at LVHN since 2004. This noninvasive alternative to conventional neurosurgery, whole-brain radiation therapy or intensitymodulated radiation therapy allows patients to remain awake during treatment and to go home the same day. More than 1,400 patients have undergone Gamma Knife procedures at the John and Dorothy Morgan Cancer Center at Lehigh Valley Hospital–Cedar Crest, and this upgraded technology will allow LVHN to expand care to even more patients in need.



Gamma Knife® Icon™ Treatments

- All Other Conditions
- Brain Metastases

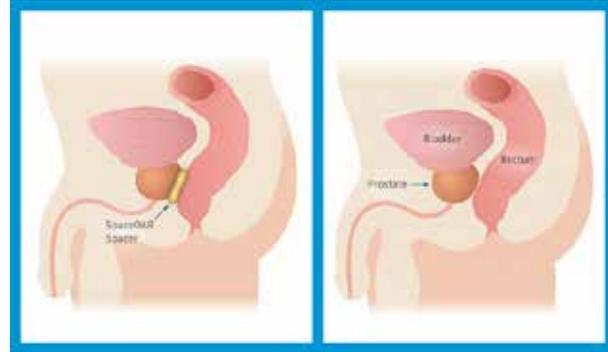


Minimizing Prostate Cancer Complications

Now, Lehigh Valley Cancer Institute radiation oncologists can minimize the risk for rectal injury using the Spacing Organs at Risk SpaceOAR® system.

This recent advancement in the treatment of localized prostate cancer has meant a shift to shorter courses of treatment using higher daily doses of radiation. Most patients prefer shorter treatment courses, but higher doses targeting the prostate can pose risk to nearby organs – especially the rectum, which is particularly sensitive to radiation. Doses that are too high can lead to long-term complications, such as pain and bleeding, that may require medical intervention.

Traditionally, treatment for most prostate cancers entailed daily radiation therapy for nine weeks. Recognizing the inconvenience this poses to patients, radiation oncologists have endeavored to shorten that timeline to as little as five weeks for low- and intermediate-grade cancers that are likely to be localized. For some very early prostate cancers,



the course of treatment may now be even shorter.

For patients, the SpaceOAR procedure is similar to a standard prostate biopsy. Oncologists use an ultrasound probe in the rectum, introduce a needle into the perineum under image guidance to find the space between the rectum and prostate, and inject saline to open up the space. The oncologist then injects SpaceOAR® hydrogel, which solidifies on contact and forms a barrier between the prostate and rectum. The material dissolves over time after treatment is completed. The procedure is conducted in an outpatient setting, typically in 30 to 40 minutes. Patients then begin their radiation treatment course.

Tumor Registry

A cancer registry is an information system designed for the collection and analysis of data on the diagnosis of cancer. To help zero in on cancer, the registry tracks important data about patient tumors leading to an understanding of how cancer presents, how it is treated and the outcomes of therapy our patients receive. The cancer data management department captures a complete summary of patient history, diagnosis, treatment and status for every cancer patient seen at LVHN. The data is used to evaluate patient outcome, quality of life, calculate survival rates and report cancer incidence as required by the PA Cancer Registry and National

Cancer Database, evaluating the effectiveness of treatment modalities in an effort to improve the quality of care we deliver. This information is used to inform a wide variety of public health decisions and provide rich information for cancer education. As part of our commitment to long-term care and education, we offer lifetime patient follow-up to gather data that benefits our patients now and into the future.

In 2017, the Tumor Registry upgraded its database management system to CRStar electronic registry system. This web-based product provides advanced technology for increased productivity and data mining.

24,409

Number of patients followed for life

1,533

Patient cases reviewed at multidisciplinary tumor board in 2017

Breast Health Services

Breast Health Services at Lehigh Valley Cancer Institute offers women a caring environment for breast screening and diagnostic studies provided by staff members who excel in their profession.

At LVHN Breast Health Services, we offer mammograms performed by certified technologists using advanced technology for both 2-D and 3-D mammography in breast screening and diagnostic studies. 3-D mammography gives patients with dense breast tissue additional peace of mind. For women with dense breast tissue, LVHN offers 3-D mammograms using a technology that can reveal what’s hidden from sight.

Hologic Genius™ 3-D mammography – also known as breast tomosynthesis – captures images of very thin cross sections of the breast. In a recently published study, unparalleled images from Hologic Genius led to far fewer false-positive diagnoses and more accurate diagnosis of breast cancer than 2-D imaging.

3-D mammography is currently available at six LVHN locations, with additional locations coming soon.

- Lehigh Valley Hospital–Cedar Crest
- Lehigh Valley Hospital–Muhlenberg
- Lehigh Valley Hospital–17th Street
- Health Center at Bethlehem Township
- Health Center at Moselem Springs
- Health Center at Trexlertown

AMONG OUR DESIGNATIONS

- Accredited by the National Accreditation Program for Breast Centers (NAPBC)
- Certified Quality Breast Center by the National Quality Measures for Breast Centers (NQMBC)
- Designated Breast Imaging Center of Excellence (BICOE) by the American College of Radiology (ACR)

The Breast Imaging Center of Excellence (BICOE) designation is awarded to breast imaging centers that achieve excellence by seeking and earning accreditation in all of ACR’s voluntary breast-imaging accreditation programs and modules, in addition to the mandatory Mammography Accreditation Program.

OUR ACR BREAST IMAGING MODALITIES

- 12 mammography units and growing
- Five dedicated breast ultrasound/biopsy units
- Two stereotactic biopsy units
- One breast MRI magnet



We reached the highest level of certification with the National Quality Measure for Breast Centers – Certified Quality Breast Center of Excellence. We are the only Comprehensive Breast Center in Pennsylvania, which includes Lehigh Valley Hospital–Pocono.

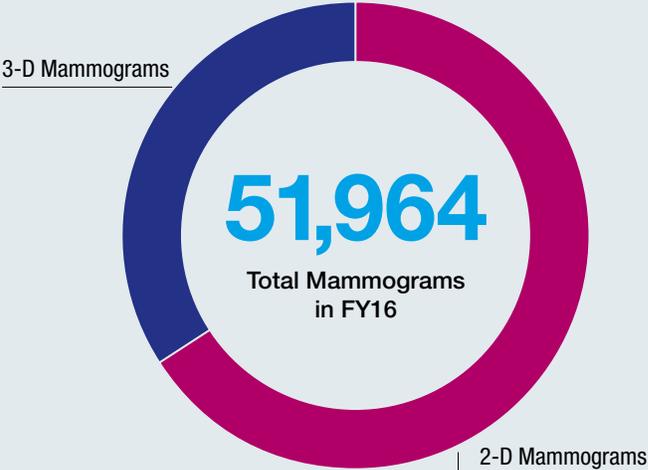
MAMMOTHON RESULTS

To encourage women to have a screening mammogram we expanded the times and made it more accessible to meet their busy schedules, no appointment or prescription was necessary. Lehigh Valley Cancer Institute held two sessions – one in the spring, the other in the fall – for walk-in mammograms at different locations on multiple dates.

- Health Center at Moselem Springs: **31**
- Health Center at Bethlehem Township: **37**
- Health Center at Bangor: **23**
- Health Center at Bath: **47**

Total: 138

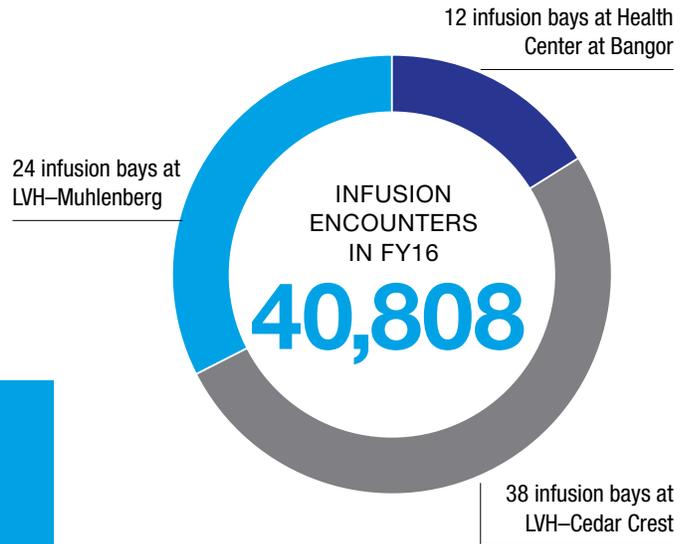
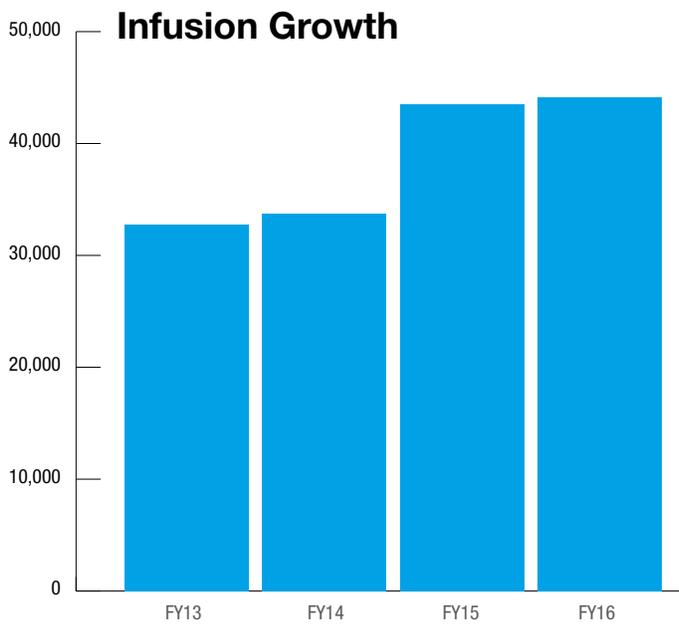
Annual Volumes



Infusion Services

Patients who require intravenous (IV) therapy for oncology or non-oncology disorders may receive their care at one of our three convenient and comfortable infusion locations:

- Health Center at Bangor infusion services
- Multipurpose area infusion services at the John and Dorothy Morgan Cancer Center at Lehigh Valley Hospital–Cedar Crest
- Multipurpose satellite infusion services at Lehigh Valley Hospital–Muhlenberg



IMAGINE ... YOU CAN MAKE AN APPOINTMENT FOR YOUR MAMMOGRAM IN MINUTES
 A campaign was launched to increase screening mammograms targeting women, ages 40+, who have not had a screening mammogram in the last 365 days. By the end of 2017, screening rates hit their 70 percent goal.

Cancer Support Services

COUNSELING SERVICES

A cancer diagnosis can create strong feelings of grief, sadness, anger or fear. Our licensed counselors with expertise in cancer care are available to help patients, their families and caregivers cope with the diagnosis in an effort to help feel less distressed. Counselors can make visits to the doctor’s office or treatment areas. They are available by appointment.

- 722 cancer patient visits with licensed counselors
- 21 percent increase in visits over previous year
- 1,007 combined visits for FY17
- 196 support group attendance
- 1,571 encounters with patients in non-counseling cancer support activities

CANCER CHIMES

Patients are marking an end to cancer treatment by celebrating with a little music – Vivaldi’s “Four Seasons.” Each time patients complete chemotherapy, radiation, the entire cancer journey or just reach a personal milestone, they are invited to sound our new cancer chimes throughout the campus of LVH–Cedar Crest or LVH–Muhlenberg.

FINANCIAL COORDINATION

The Lehigh Valley Cancer Institute provides eight financial coordinators to assist patients in reducing financial barriers to care. They answer questions related to precertification requirements, health insurance and medical bills.

Financial coordinators also connect patients with support agencies to assist them in receiving free or reduced-cost services and medical supplies if they qualify.

- Financial coordinators assisted 176 patients in obtaining \$5.4 million in free or reduced-cost oral medications in fiscal year 2017.
- Assisted over 700 patients with other services, related to receiving or reducing financial barriers to care.

NUTRITION COUNSELING

Three board-certified specialists in oncology nutrition are available to meet with patients and families before, during and after treatments to assess nutritional needs and determine appropriate goals and strategies to reach those goals. Our dietitians also offer their expertise to the community through our community outreach programs including presentations, cooking demonstrations and participation in health fairs. In fiscal year 2017, our dietitians saw 913 new patients and 1,362 follow-up appointments.

	FY12	FY13	FY14	FY15	FY16	FY17
Oral Medication Assistance	\$3,590,246	\$4,366,205	\$3,388,420	\$3,058,370	\$4,438,076	\$5,419,690
Oral Patients	257	202	152	109	155	176
FAP Patients	666	749	725	655	590	577
PATHS	294	294	247	221	223	220

PALLIATIVE CARE

Palliative care is appropriate at any age and at any stage in a serious illness and can be provided together with curative treatment. LVHN's palliative medicine program is called OACIS. OACIS stands for Optimizing Advanced Complex Illness Support. OACIS provides assistance with managing difficult symptoms, can make house calls and can help facilitate conversations with family members or other health professionals involved in your care. If you require hospitalization, we can be there to make sure all your doctors know what kind of care you want.

Palliative care is not the same as hospice care. Hospice provides services for people at the end of life. Palliative care helps you at any point in your illness, including end of life. OACIS can assist you with completing advance directives and will work closely with hospice as needed. We also can help you through the difficult decision on whether to focus on curing your illness or managing your pain and symptoms.

Ask your doctor for a palliative medicine consultation so he or she can refer you to receive OACIS care.

- In your home through our home-based consult service
- As a patient in one of LVHN's hospitals
- By making an appointment at the OACIS outpatient clinic

CANCER REHABILITATION

Cancer rehabilitation services helps patients manage functional activities of daily living that are affected by the cancer experience. Individualized treatment programs are designed to enable the patient to resume normal activities. If you are suffering from fatigue, weakness, balance problems, lymphedema, or other symptoms related to your condition and treatment, our trained rehabilitation therapists can help provide relief or recommend steps you can take to improve your symptoms.

REIKI PROGRAM

In spring 2016, a reiki program was started. A reiki master with experience working in a cancer center volunteered to start the program and offer free reiki treatment to patients being treated for cancer. With input from the volunteer department, a job description, policies, competency checklist, consents and pre- and post-assessments were created. In FY17 there were 67 reiki visits. All patients reported decreased stress level; 75 percent reported increased energy, and all who reported pain, reported decreased pain level after their treatment.

CANCER SUPPORT SERVICES

Physical Therapy

- Lymphedema
- Pain management
- Physical impairments and disabilities
- Cancer-related fatigue
- Cancer-related peripheral neuropathy
- Pelvic floor therapy

Occupational Therapy

- Lymphedema
- Activity of daily living assessments
- Custom bracing and splinting of the upper extremity
- Vision rehabilitation
- Custom wheelchair fitting and mobility clinic

Speech Therapy

- Head and neck cancer
- Video swallowing studies
- Cognition
- Voice disorders

LVHN Fitness and Massage

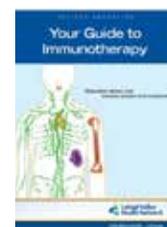
- Massage therapy
- Lifestyle and weight management
- Assist to Fit (grant-funded fitness membership for cancer survivors)
- Community-based fitness facilities

IMMUNOTHERAPY PROGRAM

Since 2011, LVHN has participated in more than 40 immunotherapy clinical trials. Our physicians, nurses and clinical trials team have become experts in managing the care of patients on this new type of therapy. However, when we searched national patient educational resources, we identified that there was no comprehensive patient education book available for patients and families.

LVHN fulfilled this unmet need by developing "Your Guide to Immunotherapy: Education about your immune system and fulfilled and unmet need in understanding and managing side effects treatment." This book helps patients understand how their immune system works and how it responds to immunotherapy in addition to what side effects to expect and report to their providers.

Immunotherapy is not chemotherapy – side effects and management of those side effects are very different. Patients going through immunotherapy should feel well. If they don't, it's important they seek medical care from their oncology teams as mismanagement of rare but unique side effects must be addressed differently than chemotherapy side effects so as not to harm patients. This book has been identified as a best practice by two national organizations.



Caring for Our Community

Community health specialists at LVHN reviewed priority areas addressing social and health needs of the community offering services to underserved areas. Prevention, wellness and education empower people to take an active role in their health and address issues that contribute to preventable diseases. Initiatives include promoting mammograms, Pap tests, obesity, nutrition, skin and oral screenings, and tobacco cessation.

As referenced in the 2016 Community Needs Assessment, the Allentown area identified health care disparities. This included a poverty rate of 39.58 percent, Medicare/Medicaid rate of 69 percent, lower cancer screenings, higher breast cancer rates than state and national averages as well as transportation and language barriers (higher lack of English proficiency than the national average) and worsening tobacco use.

Based on low rates of cancer screening in the population and lack of English proficiency, our bilingual outreach coordinator planned events and provided information in English/Spanish about free cancer screenings, especially for breast, cervical and colon cancers. Free screenings are provided through Allentown Health Bureau Lehigh Coalition.

As outlined in our Community Needs Assessment from 2016, tobacco use is increasing in Lehigh and Northampton counties, therefore smoking cessation was chosen as our area of focus. Smoking has been proven to contribute to a wide range of diseases and early death. In conjunction with the American Lung Association, our goal for 2017 was to integrate a standard process for tobacco cessation referral for our cancer patients through “ASK, ADVISE, REFER” process and referral to the PA Free QUITLINE. All patients were referred to a nurse navigator and social worker for tobacco cessation screening. The program provided patients with free telephone counseling and free tobacco replacement medication.

The assessment also described issues in Lehigh and Northampton counties related to limited English proficiency, low median income, increased percentage of city residents below poverty level and lack of access to reliable transportation. These issues are continuously addressed by bilingual nurse navigators, financial counselors and transportation assistance through grants and a partnership with the American Cancer Society.

COMMUNITY OUTREACH

Lehigh Valley Cancer Institute works with community organizations such as the American Cancer Society, Lymphoma & Leukemia Society, Mark J. Young, MD, Community Health and Wellness Center, Allentown Health Bureau, Cancer Support Community of the Greater Lehigh Valley and other community entities to accomplish outreach activities. Prevention, along with early detection and screening programs, are offered to residents of our area utilizing nationally accepted evidence-based guidelines and interventions.

FY 2017 FREE CANCER SCREENINGS

- Breast: 341 mammograms
- Cervical: 375 Pap tests
- Skin: 134 skin exams
- Oral: 86 oral exams

2017 EDUCATION AND PREVENTION WORKSHOPS

- HPV Community Forum
- ACS Panel Roundtable Discussion
- Dine and Donate the Chemo Bag
- Colon Cancer Awareness Health Fair
- Colon Cancer Education Community Forum
- Colon-Rectal Cancer Conversation
- Advances in Kidney Cancer Care
- Melanoma Forum
- Colon Rectal Conversations
- End-of-Life Conversations
- Look Good Feel Better
- Nutrition for Cancer Series
- Close to Home
- Yesterday, Today, Tomorrow
- Cancer Survivorship Event
- I Pink I Can
- The Role of Physical Therapy and Cancer Care
- Surviving and Thriving in the Kitchen
- Advances in Lung Cancer



Publications and Posters

AUTHORED BY OUR ONCOLOGY COLLEAGUES

Benefits of a Multidisciplinary Clinic Operations Workgroup as a Forum for Navigator, Coordinators and Quality Improvement. Pauls, A., RN, OCN; Smith, C., RN, BSN, MA, OCN; Sevedge, K., RN, MA, AOCN; Beaupre, L., RN, BSN, OCN, CN-BN; Chicas, M., RN, BSN, OCN; Heffernan, C., RN, BSN, OCN; Kenna, J., RN, OCN; Miller, A., RN M.Ed., OCN; Zubia, J., RN, OCN, CN-BN. Poster presented at the 8th Annual Navigation and Survivorship Conference, Orlando, Fla., Nov. 16-19, 2017

Association of Radiotherapy Boost for Ductal Carcinoma In Situ With Local Control After Whole-Breast Radiotherapy. Moran MS1; Zhao Y2; Kirova Y3; Fourquet A3; Chen P4; Hoffman K5; Hunt K5; Wong J6; Halasz LM6; Freedman G7; Prosnitz R Jr7, Yassa M8; Nguyen DHA8; Hijal T9; Haffty BG10; Wai ES11; Truong PT11. *JAMA Oncol.* 2017 Aug. 1; 3 (8): 1060-1068. doi: 10,1001/jamanoncol.2016,6948

Improving Patient Care Through Nursing Informatics. Hendricks, M., RN, MSN, AOCNS; Werkheiser, R., RN, OCN; Zolynski, A., RN, OCN. Lehigh Valley Health Network, Allentown, Pa.

Effectiveness of a Thoracic Multidisciplinary Clinic in the Treatment of Stage III Non-Small Cell Lung Cancer. Friedman, E1; Kruklytis, RJ2; Patson, B1; Sopka, DM3; Weiss, MJ4. *Journal of Multidisciplinary Healthcare* 2016;9 1-8

Our Locations

Lehigh Valley Cancer Institute offers a range of services in convenient, patient-focused locations. We also provide patient care at Lehigh Valley Physician Group practice offices in Allentown, Bangor, Bethlehem, Hazleton and Lehigh.

LEHIGH VALLEY CANCER INSTITUTE LOCATIONS

- LVHN Cancer Center–Cedar Crest
- LVHN Cancer Center–Muhlenberg
- LVHN Cancer Center–Hazleton
- Health Center at Bangor

BREAST HEALTH SERVICES LOCATIONS

- Breast Health Services – 17th Street, Allentown
- Breast Health Services – LVH–Cedar Crest
- Breast Health Services – LVH–Muhlenberg
- Health Center at Bangor
- Health Center at Bath
- Health Center at Bethlehem Township
- Health Center at Moselem Springs
- Health Center at Mountain Top
- Health Center at Trexlertown



OVERNIGHT ACCOMMODATION FOR PATIENTS AND GUESTS

Hackerman-Patz House at Lehigh Valley Hospital–Cedar Crest is a convenient and affordable alternative to an expensive hotel or daily trips to and from a distant home. Whether you are receiving care here or your loved one is a patient at our hospital, Hackerman-Patz House offers you comfortable accommodations and a supportive environment that allows you to focus on healing. Financial assistance is available.

Reserve your room at Hackerman-Patz House. Call 610-402-9500 or visit LVHN.org/familylodge.

2,154

Cancer Center guests in FY17

Our Awards, Certifications and Accreditations



AMERICAN COLLEGE OF RADIOLOGY (ACR) LUNG CANCER SCREENING CENTER
ACR Lung Cancer Screening Center program, recognizes facilities committed to providing quality screening care to patients at the highest risk for lung cancer.



ACR FOR BREAST MAMMOGRAPHY
Lehigh Valley Health Network has earned accreditation from the American College of Radiology (ACR) for breast mammography.



ACR AND THE AMERICAN SOCIETY FOR RADIATION ONCOLOGY (ASTRO) SEAL OF ACCREDITATION
Lehigh Valley Hospital–Cedar Crest and Lehigh Valley Hospital–Muhlenberg have been awarded the ACR and the American Society for Radiation Oncology (ASTRO) seal of accreditation.



ACR CERTIFIED QUALITY BREAST CENTER OF EXCELLENCE
LVHN Breast Health Services is also designated as a Breast Imaging Center of Excellence by the ACR.



ACR DIAGNOSTIC IMAGING CENTER OF EXCELLENCE
This achievement is a one-of-a-kind program that takes your department or practice to the next level of imaging, efficiency, safety and quality care.



AMERICAN SOCIETY OF CLINICAL ONCOLOGY (ASCO) QOPI® CERTIFICATION PROGRAM (QCP™)
Hematology-Oncology Associates of Allentown, Bethlehem and Bangor, a practice of Lehigh Valley Physician Group, actively participates in the American Society of Clinical Oncology (ASCO) QOPI® Certification Program (QCP™) and has been continuously certified since 2011.



ASSOCIATION FOR THE ACCREDITATION OF HUMAN RESEARCH PROTECTION PROGRAMS
The Association for the Accreditation of Human Research Protection Programs Inc. (AAHRPP) promotes high-quality research through an accreditation process that helps organizations worldwide strengthen their human research protection programs (HRPPs).



BLUE DISTINCTION CENTER FOR COMPLEX AND RARE CANCERS
Highmark Blue Shield has named Lehigh Valley Hospital–Cedar Crest as a Blue Distinction Center for Complex and Rare Cancers, focusing on complex inpatient and surgical care through 2017.



COEMIG™ DESIGNATION
Eight of our doctors also have earned COEMIG™ designation from the AAGL (American Association of Gynecologic Laparoscopists), whose mission is advancing minimally invasive gynecology worldwide.



COMMISSION ON CANCER
Continuously since 2005, Lehigh Valley Health Network has been an accredited cancer program through the American College of Surgeons Commission on Cancer® (CoC), a designation only granted when a facility voluntarily commits to provide the best in cancer diagnosis and treatment, while also complying with standards established by the CoC.



NATIONAL ACCREDITATION PROGRAM FOR BREAST CENTERS (NAPBC)
Breast Health Services at Lehigh Valley Health Network is accredited by the National Accreditation Program for Breast Centers (NAPBC).



NATIONAL QUALITY MEASURES FOR BREAST CENTERS (NQMBC) CERTIFIED QUALITY BREAST CENTER OF EXCELLENCE™
Breast Health Services at Lehigh Valley Hospital (LVH) and LVH–Pocono were named Certified Quality Breast Centers of Excellence™ in the National Quality Measure for Breast Centers (NQMBC) by the National Consortium of Breast Centers.



THE JOINT COMMISSION (TJC)
The Joint Commission accreditation and certification is recognized nationwide as a symbol of quality that reflects an organization's commitment to meeting safe and effective care of the highest quality and value.



U.S. NEWS & WORLD REPORT
Each year, U.S. News & World Report ranks hospitals according to patient satisfaction, patient outcome and access to leading-edge care across many specialties. In cancer care, U.S. News & World Report recognizes Lehigh Valley Hospital as “high performing” in recognition of our qualified staff, patient access to advanced technologies and patient survival.

