Cancer Program Annual Report
2014

ELKHART
GENERAL HOSPITAL
CENTER FOR CANCER SERVICES

Oncology Program Leadership

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Medical Oncologist and Cancer Committee Chair

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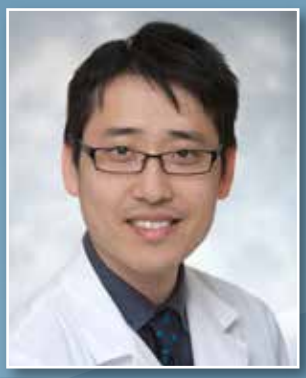
General and Vascular Surgeon and Cancer Liaison Physician



Brion Shin, M.D.
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For more information or additional copies of the 2014 Cancer Program Annual Report, visit egh.org or call Beacon Health System Marketing Department at 574.647.7350.

Message from Medical Leadership

As you explore the information provided here in our annual report on the various aspects of the hospital's cancer care program, you'll quickly discover that Elkhart General offers a level of technology and medical expertise that rivals just about any "big city" cancer center. But what patients also experience here is a deep-rooted and personal level of commitment and compassion that we challenge any other hospital to match. That's what sets us apart – advanced cancer care provided by specialists who are as skilled at treating the *person* as they are at treating the disease.

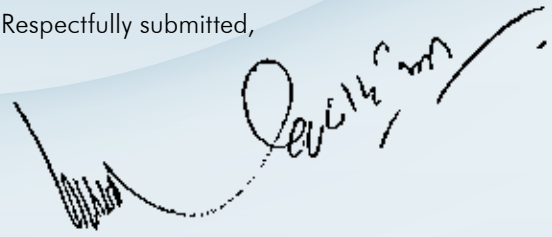
Our oncology program continues to be acknowledged by the American College of Surgeons as a top performer in delivering high-quality, interdisciplinary care for all types of cancer treatments. A successful cancer treatment plan demands that we put the most advanced resources in the hands of highly skilled diagnosticians. Elkhart General is one of only four hospitals in the nation to be named by Siemens, the company that makes CT scanners, as a "Low-Dose Center of Excellence." We have established the lowest possible radiation dose that is allowable and that will still render a quality image.

In 2014 we continued to develop and grow our Lung Cancer Screening Program as well as our Thoracic Oncology Clinic. We take great pride in being able to offer a comprehensive, interdisciplinary forum that our patients and families may attend to have their treatment plan streamlined under the guidance of a team of specialists.

In addition to the growth of our lung screening program, in 2014 we added a new treatment option for primary liver cancers. Radioembolization or Yitrium 90 (Y-90) is a combination of radiation therapy and a procedure called embolization to treat liver cancer. The augmentation of the Y-90 treatment therapy enhances our already comprehensive cancer treatment program.

When someone learns they have cancer, it can trigger an avalanche of emotions and questions. Our highly skilled team of professionals and ancillary staff are here to partner with our patients on their journey. We offer research-based care as well as nationally approved treatment planning, allowing our patients options to stay local for their treatment and close to their family and support systems. This is just one more reason for the patients to make the Elkhart General Center for Cancer Services their choice for cancer care.

Respectfully submitted,



Ahsanul Haque, M.D.

Cancer Committee Chair
Elkhart General Hospital Center for Cancer Services

Cancer Program Highlights

Cancer Survivorship Clinic

Appointments in the Cancer Survivorship Clinic are one-on-one with an experienced oncology nurse practitioner (or Advanced Practice Nurse, APN). Patients receive a treatment summary and an individualized survivorship care plan. The survivorship care plan outlines short-term and long-term follow-up, how to monitor for late side effects and a personalized nutrition and physical activity plan. The visit to the Survivorship Clinic also includes an appointment with a registered dietitian for a personalized evaluation, if desired.

Oncology Pharmacists

Oncology pharmacists are based in the Inpatient Oncology Care Unit and provide pharmacy services to the Ambulatory Infusion Center as well. The pharmacist reviews all chemotherapy and other medication orders ensuring therapeutic soundness. In addition, the Pharmacy Department offers a TPN and anticoagulation dosing service, as well as an antibiotic surveillance program. The oncology pharmacists are also available for patient counseling on medications and serve as drug information resources for physicians and nurses. The oncology pharmacists help provide a coordinated interdisciplinary approach to oncology patient care.

Cancer Registry

Cancer Registry is staffed by a team of three certified cancer registrars. They collect information about the occurrence (incidence) of cancer, types of cancers, locations within the body, extent of cancer at the time of diagnosis (disease stage) and types of treatment patients receive, including clinical trials. In the United States, the data is reported to a central statewide registry. Data collected by state cancer registries enables public health professionals to better understand and address the cancer burden. Registry data is critical for targeting programs focused on risk-related behaviors (e.g., tobacco use and exposure to the sun) or environmental risk factors (e.g., radiation and chemical exposures). Such information is also essential for identifying when and where cancer screening efforts should be enhanced and for monitoring treatment provided to cancer patients to ensure compliance with national treatment guidelines. In addition, reliable registry data is fundamental to a variety of research efforts, including those aimed at evaluating effectiveness of cancer prevention, control or treatment programs.

Oncology Care Unit

The Oncology Care Unit is a 20-room inpatient unit that specializes in the treatment of cancer. Our goal is to support patients and their families through their cancer journey by offering state-of-the-art medical care, up-to-date treatments and medications and access to the latest in imaging technology, accompanied by personal and spiritual guidance. We have oncology certified nurses who ensure that high-quality care is delivered to our patients. With newly remodeled private rooms, convenience and comfort have been "built in" for patients, families, physicians and nurses. Relaxing, pleasant earth tones with a living room decor reinforce the home-like atmosphere. Just as you have complete freedom to come and go in your own home, so it is with our unit. Family can visit 24 hours or stay 24 hours with the patient as the unit has a bathroom with a shower, kitchen and large living room with fireplace.

Ambulatory Infusion Center

The Ambulatory Infusion Center provides a comfortable, convenient and safe environment to receive treatment as an outpatient. The center is monitored by oncology certified registered nurses along with supervision by an experienced oncology nurse practitioner (APRN). In our eight-chair infusion clinic we have flexible hours seven days a week to meet the needs of our patients. Some of the treatments available are:

- Chemotherapy infusions
- Blood transfusions
- Inserting and removing of different types of IV devices
- Central line care
- Antibiotic therapy
- Injections

Radiation Oncology Center

The Radiation Oncology Center offers leading-edge technology and the most advanced radiation equipment available under the direction of a board-certified radiation oncology physician. Enabling patients to have the best care close to home, specialized therapies such as Rapid Arc and Stereotactic Body Radiation Therapy (SBRT) are available to patients. Elkhart General is the only facility offering SBRT in northern Indiana. The center offers flexible appointment times, allowing patients to continue to have a normal personal schedule while going through their radiation treatments.

Ribbon of Hope

Ribbon of Hope is a nondenominational cancer support ministry with a mission to provide emotional and spiritual support for cancer patients, caregivers and family members. Volunteers log over 8,000 patient service hours annually, with patient interactions that complement the technical side of cancer care through encouragement and practical acts of kindness, such as phone calls, uplifting notes, transportation to appointments and occasional meals and household assistance. Each year concludes with the annual Holiday Adopt a Family project. Through the support of Elkhart General staff and community members, Ribbon of Hope provides Christmas gifts, food items and non-food care boxes to families and seniors.

Clinical Trials and Research

There are numerous cancer clinical trials going on at Elkhart General that seek to improve the care and outcomes for cancer patients worldwide. Some of these trials involve only our patients, while other trials include people from across the United States or other countries. All oncology patients are screened as possible candidates for clinical trials.

Oncology Care Coordinators

Oncology care coordinators are available to patients who need education, encouragement, financial assistance referrals, resource identification, support and advocacy. Our coordinators communicate with patients throughout their treatment, providing understanding and reassurance to them and their family members as well.

Support Groups

At Elkhart General we are committed to supporting our patients through their cancer journey. Each support group offers the patient opportunities to discuss concerns they might have and to receive support from others who are facing the same challenges. The support groups offered through Elkhart General are:

- Look Good Feel Better
- Circle of Hope

Ribbon of Hope staff members left to right: Loretta Salchert, Gina Martin, Diane Matteson.

Community Outreach

In 2014, Community Outreach made significant contributions through cancer education and screening events to the community. In collaboration with the American Cancer Society, four (4) "Look Good... Feel Better" programs were held at Elkhart General. Monthly editorials were submitted to the Elkhart Truth regarding information on the importance of cancer prevention, awareness and screenings.

Collaboration with ACS and CRAN Network to promote awareness of colorectal cancer:

- Staff provided free cancer education; skin cancer checks, and colorectal take-home kits, along with information on the Elkhart General Center for Cancer Services at the Elkhart County 4-H Fair.
- Multiple free cancer education awareness activities, including specific focus areas of lung and colorectal cancers, occurred at several worksites in the community.
- Cancer screening education was provided at the Ribbon of Hope ecumenical cancer support ministry Fun Run/Walk.
- An educational banner was developed and traveled to the Beacon Medical Groups, providing information on the detection and prevention of colorectal cancer.

Lung Cancer Screening and Smoking Cessation

Smoking has been identified as one of the top three health care issues in our community. Smoking rates in Elkhart County are higher than national rates and we have more patients diagnosed with later stages of lung cancer. Additionally, more than half of all lung cancer is in former smokers.

In response to this data, Elkhart General initiated a Lung Cancer Screening Program. Our Lung Cancer Screening Program includes current and former smokers. Also, one-on-one clinic visits are available for smoking cessation counseling and monitoring. A national lung screening study found a 20 percent decrease in death from lung cancer with the type of lung screening offered at the hospital. Elkhart General also has the lowest radiation dose exposure in the northern Indiana area for these screening CT scans, an important factor when screenings are to be done once a year.

Elkhart Genral is pleased that their efforts have resulted in two national honors for their work in the field of lung cancer screening:

The Lung Cancer Alliance named Elkhart General as a "Center of Excellence." The hospital was just the seventh organization in Indiana to achieve this designation. Centers of Excellence are honored for providing the following services:

- Clear information to patients on the risks and benefits of CT screening
- Best practices for high screening quality, radiation dose, and diagnostic procedures
- A multidisciplinary team
- Smoking cessation referrals for patients who smoke
- Timely results to the patient and referring physician

Also, the American College of Radiology (ACR) designated Elkhart General as a Lung Cancer Screening Center. The hospital is one of only two facilities in Indiana with this designation.

The ACR Lung Cancer Screening Center designation is a voluntary program that recognizes facilities that have committed to practice safe, effective diagnostic care for individuals at the highest risk for lung cancer.

In order to receive this elite distinction, facilities must be accredited by the ACR in computed tomography in the chest module, as well as undergo a rigorous assessment of its lung cancer screening protocol and infrastructure. Also required are procedures in place for follow-up patient care, such as counseling and smoking cessation programs.

Pink Hard Hat Event

More than 350 gathered to form a pink ribbon in support of Breast Cancer Awareness Month at Elkhart General Hospital on Oct. 9. As you can see, Elkhart General associates, EMCOR/Shambaugh & Son representatives and others donned a pink hard hat. Thank you to EMCOR/Shambaugh & Son for hosting this fantastic event, as well as those associates who took time out of their day to support an important cause.

Cancer Committee

The Cancer Committee is comprised of primary and specialty care physicians, as well as hospital department staff members involved in the care of cancer patients. The multidisciplinary committee meets regularly to review and evaluate the quality and direction of the overall cancer program and makes recommendations for improvement.

Ahsanul Haque, M.D.
Medical Oncologist
Cancer Committee Chair

Michael Rotkis, M.D., FACS
General & Vascular Surgeon
Cancer Liaison Physician

Brion Shin, M.D.
Radiation Oncologist
Cancer Conference Coordinator

Luis Benavente, M.D.
General Surgery

Vicky Carter, CTR
Cancer Registrar
Cancer Registry Data Quality Control Coordinator

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Palliative Care

Stephen Dickson, Jr., M.D.
Cardiothoracic Surgeon

Laurie Dubois
Community Cancer Coordinator

Deanna Emmons, RD, CD, CNSC
Oncology Dietitian

John Gilbert, D.O.
Otolaryngology

Nazar Golewale, M.D.
Interventional Radiology

Pam Green, R.N.
Oncology Outpatient Care Coordinator

Walter Halloran, M.D.
Cardiothoracic Surgeon

Marcie Hemenway, R.N., OCN
Oncology Education

Roger Hershberger, LCSW
Oncology Outpatient Care/ Psychosocial Services Coordinator

Pam Jackson, R.N.
Clinical Research Nurse/ Coordinator

James Jin, M.D., Ph.D.
Medical Oncologist

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Pathologist

Toni Klatt-Ellis, APRN, MN, AOCN
Oncology Advanced Practice Nurse, Thoracic Oncology Clinic

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Family Medicine Physician

Rolan Pascual, M.D.
Medical Oncologist

William Pletcher, M.D.
Medical Oncologist

Kelly Puster, M.D., FACS
General Surgeon

Shelley Rody
Account Executive
Marketing Department

Loretta Salchert
Ribbon of Hope

Leah Schrock, LCSW
Inpatient Oncology Care Coordinator

2014 Breast, Thoracic and General Cancer Conferences

Attendees include radiologists, pathologists, general surgeons, thoracic surgeons, medical oncologists, radiation oncologists, pulmonologists, palliative care and other specialists along with ancillary and/or support staff. This format provides a forum in which experts from varied oncology disciplines are able to collaboratively discuss the clinical stage of disease, the different treatment options mandated by national treatment guidelines and available clinical trials when applicable. Patient and family members are routinely invited and attend the conferences. We are the only facility in the area that invites our patients to attend their own case presentations. This open forum provides the patient with a unique and intimate opportunity to interact with each clinician during the discussion. Patients exit the conference with full knowledge and understanding of their cancer diagnosis, disease staging, treatment options and referral processes. Elkhart General's strong commitment to patient satisfaction and support of these open forums is yet another way to provide a positive experience as the patients begin their cancer journey.

Analytic cases presented throughout the year are determined by incidence volume and tracked statistically as the "Top Five Sites" and are as follows: breast, lung, colon, prostate and lymphoma. Some other sites presented included bladder, blood, benign and malignant brain, gynecological, head and neck, liver, lymphomas, pancreas, sarcomas, skin and thyroid, as well as unknown primary sites. Occasionally, a presentation may be of didactic nature to provide education on unusual or rare cancers.

A total of 63 general cancer conferences, 105 breast conferences and 139 thoracic conferences have been presented through the end of December 2014, totaling 308 case presentations. Due to the continued dedication of the Elkhart General cancer program team relative to patient care and positive outcomes, a significant increase of case presentations has again occurred. Currently, 42 percent of the analytic volume has been presented, nearly tripling the mandated 15 percent benchmark set by the Commission on Cancer.

Breast cancer conferences are held each Tuesday at 7 a.m. in the Radiation Oncology Conference Room. Thoracic cancer conferences are held every Thursday of each month at 7 a.m. in the Radiation Oncology Conference Room. General cancer conferences are held every second and fourth Wednesday of each month at noon in Auditorium B. Several speakers are invited annually to provide cancer-focused presentations outlining the most up-to-date cancer treatments and/or trends; this element of expertise is of educational value to our physicians as well as ancillary staff. Cases relevant to the speaker topic follow the presentation.

All breast and general conference cases should be directed to the Elkhart General Cancer Registry at **574.523.3454**. All thoracic cases should be directed to the Thoracic Oncology Clinic at **574.523.7850**.

	Number of Newly Diagnosed Cases (2014)	Number Presented*	Number of Patients and/or Family Attended
Breast Cancer Conference	144	105*	114 as of 12/4/14
Thoracic Oncology Clinic	100	139*	144 as of 12/4/14

*Cases may be presented prior to and after initial treatment.

2014 Cancer Registry Review

By Vicky Carter, Cancer Registry Coordinator

The Cancer Registry at Elkhart General has a beginning reference date of 1 January 1998 and is under the management and direction of Oncology Administration, Cancer Committee as well as strict adherence to the Commission on Cancer (CoC) Program Standards. Cancer Registry is charged with the collection of data which provides the whole picture of the patient's disease. The data is maintained and inclusive of but not limited to: patient demographics; date of diagnosis; primary site; histology; stage of disease; treatment; recurrence; and follow-up data and provides physicians and hospital administration with statistics for research, education and strategic planning. In recent years higher education and certification standards for Cancer Registrars were mandated to ensure the accuracy of the collected data and ultimately impact the overall care of the patients at Elkhart General Hospital.

Currently, there are a total of 10,832 cases in the Cancer Registry database. In 2014, 791 new incidences of cancer were accessioned by a team consisting of three certified tumor registrars. Confidentiality of patient identification and related medical data are strictly maintained and only aggregate data are analyzed and published.

Each patient in the database is followed annually in order to acquire necessary information on disease recurrences, subsequent treatment and survival data that is vital for continued patient care. The Cancer Registry is responsible for maintaining lifetime follow-up on all analytic patients. The current rate of 95.4 percent (90 percent or greater required) is based on patients diagnosed within the past five years. Additional required follow-up is based on all patients within the database with the current rate at 87.7 percent (80 percent or greater required). The respective rates significantly exceed the established benchmarks mandated by the Commission on Cancer and attest to the continued teamwork approach to patient care at Elkhart General.

Registry Accomplishments for 2014:

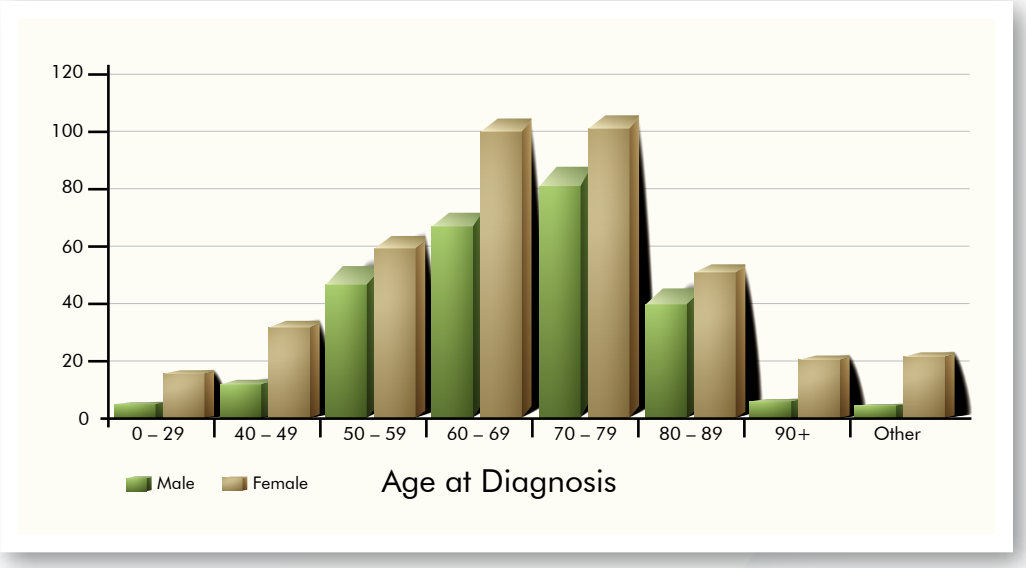
- Maintained bimonthly general cancer conferences and weekly breast conferences as multidisciplinary case presentations and lectures.
- Submitted required data to the National Cancer Database timely and free of errors.
- Reported required incidence of cancer cases to the Indiana State Cancer Registry within six months of diagnosis on a monthly basis.
- Collaborated with abstracting software provider (METRIQ) to incorporate system upgrades.
- Maintained ongoing quality review of data via annual physician review of 10 percent analytic cases inclusive of cancer registrar collaborative stage, monthly state edits and periodic internal audits.
- Instrumental in supplying data for Continuous Quality Improvement ("benchmark"), physician requests for research, Administration, Marketing and Planning, Community Outreach, Education and Cancer Conferences.
- Maintained Rapid Quality Reporting System (RQRS) per Commission on Cancer guidelines.

Cancer Registry Education for 2014:

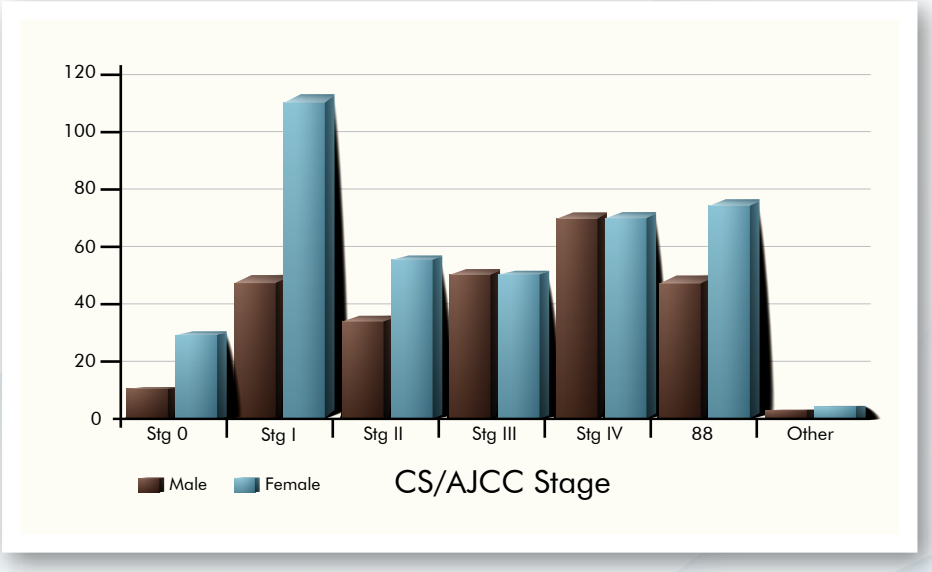
- All staff attended general cancer conference speaker presentations.
- All Registry staff participated in NAACCR educational webinars.
- One registrar passed certified tumor registrar exam.
- Coordinator attended 40th Annual National Cancer Registrars Association Conference in Nashville, Tennessee.
- Two Registrars attended the ICRA 36th Annual Educational Workshop in Indianapolis.

Left to Right: Cancer Registrars Ann Bemiller, CTR; Vicky Carter, CTR; and Stacy Hirst, CTR

Male vs. Female Age at Diagnosis 2013* Cases

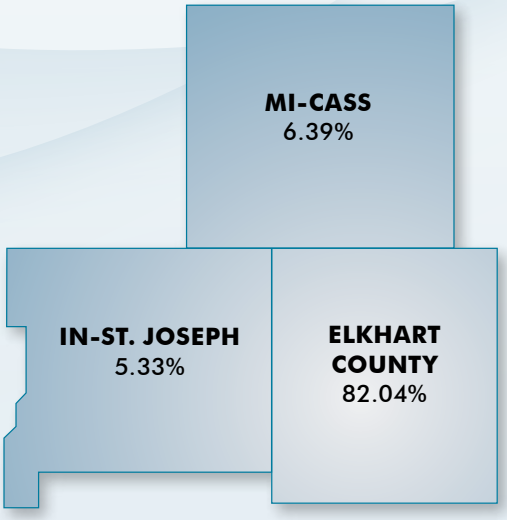


Male vs. Female by Best AJCC Stage 2013* Cases



Distribution by State/County 2013* Cases

NOTE: 6.24 percent of patients reside in counties outside of the service areas shown.



Based on 2013 Cancer Registry Data

2013 Annual Report Primary Site Table Based on 2013 Statistics

Primary Site	Total	Male	Female	Class of Case		AJCC Staging				
				Analytic*	Non-analytic**	In-situ	I	II	III	IV
Oral Cavity & Pharynx	**16**	**15**	**1**	**12**	**4**	**0**	**0**	**2**	**2**	**8**
Tongue	8	8	0	6	2	0	0	2	0	4
Gum and Other Mouth	1	1	0	1	0	0	0	0	0	1
Tonsil	4	4	0	2	2	0	0	0	1	1
Oropharynx	2	1	1	2	0	0	0	0	1	1
Hypopharynx	1	1	0	1	0	0	0	0	0	1
Digestive System	**122**	**63**	**59**	**113**	**9**	**1**	**23**	**16**	**27**	**40**
Esophagus	5	3	2	3	2	0	0	0	2	1
Stomach	5	4	1	5	0	0	1	0	0	4
Small Intestine	2	0	2	2	0	0	0	1	0	1
Colon (Excluding Rectum)	40	18	22	36	4	0	13	7	6	8
Rectum & Rectosigmoid Junction	24	14	10	24	0	0	0	2	10	9
Anus, Anal Canal and Anorectum	2	0	2	2	0	0	0	1	1	0
Liver and Intrahepatic Bile Ducts	9	6	3	7	2	0	0	0	0	3
Gallbladder	4	1	3	4	0	0	1	0	3	0
Other Biliary	3	2	1	3	0	0	0	0	1	0
Pancreas	28	15	13	27	1	0	0	5	4	14
Respiratory System	**140**	**66**	**74**	**127**	**13**	**1**	**33**	**8**	**36**	**49**
Larynx	4	2	2	4	0	0	2	0	1	1
Lung & Bronchus	136	64	72	123	13	1	31	8	35	48
Bones and Joints	**2**	**1**	**1**	**2**	**0**	**0**	**0**	**2**	**0**	**0**
Soft Tissue (including Heart)	**3**	**3**	**0**	**1**	**2**	**0**	**1**	**0**	**0**	**0**
Melanoma – Skin	**10**	**4**	**6**	**4**	**8**	**0**	**0**	**2**	**1**	**1**
Breast	**138**	**1**	**137**	**122**	**16**	**26**	**46**	**33**	**13**	**4**
Female Genital System	**39**	**0**	**39**	**24**	**15**	**0**	**9**	**3**	**4**	**8**
Cervix Uteri	7	0	7	5	2	0	0	2	2	1
Corpus & Uterus, NOS	15	0	15	9	6	0	8	0	0	1
Ovary	15	0	15	8	7	0	1	1	2	4
Vagina	1	0	1	1	0	0	0	0	0	1
Other Female Genital Organs	1	0	1	1	0	0	0	0	0	1
Male Genital System	**65**	**65**	**0**	**34**	**31**	**0**	**6**	**15**	**7**	**6**
Prostate	61	61	0	33	28	0	5	15	7	6
Testis	3	3	0	1	2	0	1	0	0	0
Other Male Genital Organs	1	1	0	0	1	0	0	0	0	0
Urinary System	**55**	**38**	**17**	**45**	**10**	**10**	**17**	**5**	**4**	**8**
Urinary Bladder	29	25	14	21	8	8	3	4	2	3
Kidney & Renal Pelvis	24	12	12	22	2	1	14	1	1	5
Ureter	2	1	1	2	0	1	0	0	1	0
Brain & Other Nervous System	**77**	**27**	**50**	**74**	**3**	**0**	**0**	**0**	**0**	**0**
Brain	25	13	12	24	1	0	0	0	0	0
Cranial Nerves, Other Nerves	52	14	38	50	2	0	0	0	0	0
Endocrine System	**33**	**10**	**28**	**28**	**5**	**0**	**13**	**0**	**1**	**3**
Thyroid	20	4	16	17	3	0	13	0	1	3
Other Endocrine including Thymus	13	6	7	11	2	0	0	0	0	0
Lymphomas	**35**	**18**	**17**	**30**	**5**	**0**	**10**	**6**	**5**	**9**
Hodgkin Lymphoma	9	5	4	8	1	0	1	1	3	3
Non-Hodgkin Lymphoma	26	13	13	22	4	0	9	5	2	6
Multiple Myeloma	**14**	**8**	**6**	**10**	**4**	**0**	**0**	**0**	**0**	**0**
Leukemia	**15**	**8**	**7**	**10**	**0**	**0**	**0**	**0**	**0**	**0**
Lymphocytic Leukemia	6	4	2	3	0	0	0	0	0	0
Myeloid & Monocytic Leukemia	9	4	5	7	0	0	0	0	0	0
Mesothelioma	**3**	**2**	**1**	**2**	**1**	**0**	**0**	**2**	**0**	**0**
Unknown or Ill Defined Site	**23**	**8**	**15**	**17**	**6**	**0**	**0**	**0**	**0**	**0**
TOTAL	**791**	**338**	**453**	**657**	**134**	**38**	**158**	**92**	**102**	**136**

*Analytic = First diagnosed and/or first course of treatment at this institution. **Non-analytic = First diagnosed and first course of treatment elsewhere.

Standard 4.2
2014 Screening Programs

Each year, the cancer committee provides at least one cancer screening program that is:

- Targeted to decreasing the number of patients with late-stage disease
- Based on community needs
- Consistent with evidence-based national guidelines and evidence-based interventions

1. **The cancer screening is targeted to decreasing the number of patients with late-stage disease:** Colorectal cancer is ranked third in incidence and death of cancers in the United States. Similarly, colorectal cancer is the third most commonly diagnosed cancer at Elkhart General. Per the Elkhart General Stage and Distribution-Analytic Cases database, in 2013, 8 percent of those cases were diagnosed at advanced stage.

2. **The cancer committee identifies the screening needs of the community.**
   The annual Elkhart County 4H Fair attendance is a good representation of the Elkhart County population, and an ideal environment for screenings and education.

3. **The cancer committee provides at least one cancer screening program.**
   Elkhart General Community Outreach provided Colorectal EZ Take Home Kits to 2014 Elkhart County 4H Fair patrons 50 years and older. Instructions and permission to follow up accompanied the kits.

Results: A total of 49 Colorectal EZ Take Home Kits were distributed on July 19, 2014. Several follow-up phone attempts were made. Ten participants completed the test, all reporting negative results.

Standard 4.7
2014 Cancer Studies of Quality

The purpose of Standard 4.7 is to develop, analyze and document studies that measure the quality of care and outcomes for patients with cancer.

Study 1 of 2

Study Topic
Track skin reactions in Elkhart General Radiation Oncology Center (ROC) patients for type of cancer, location of skin reaction and severity.

National Benchmark
Approximately 85 percent of radiation patients experiences a moderate to severe skin reaction.[1]

Results
Year to date: 30/235 or 16 percent of ROC patients experienced a grade 2-4 skin reaction. Elkhart General is well below the national benchmark. Breast and lung were the primary sites of skin breakdown.

Action Plan
Final results for 2014 will be reviewed with radiation oncologist and cancer committee to make recommendations if any changes in our management of skin reactions need to be made.

[1] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2913836

Study 2 of 2

Study Topic
Track percent of in patients who receive chemotherapy within 2 weeks of death.

National Benchmark
ASCO QOPI National Quality Initiative and National Palliative Care Standards state 0 percent of patients receive chemotherapy within two weeks of death.

Results
Year to date 20 Elkhart General patients received chemotherapy on the inpatient unit. Of those 20 patients, only one received chemotherapy within the last two weeks of life, or 5 percent.

Action Plan
The standard is 0 percent, therefore, Elkhart General exceeded the benchmark. However, it is noted, the one case received chemotherapy on day 14. The average number of days from last chemotherapy treatment to death is 57. It appears the standard of care was followed for the one outlier case. Therefore, no action plan required at this time.

Follow-up Steps to Monitor Actions Implemented
This study demonstrated Elkhart General is in compliance.

Standard 4.8
2014 Cancer Quality Improvements

The purpose of this Standard is to implement a patient care improvement from another source or from a completed study that measures cancer patient quality of care and outcomes.

Quality Improvement Topic

Review 2014 Elkhart General patients admitted to the inpatient oncology floor with neutropenic fever to identify time to antibiotic from admission. There is evidence that links early antibiotic intervention to better outcomes. It is known that the time from the start of fever to administering the first antibiotic is strongly correlated to patient outcomes, such as number of days in the ICU, length of stay and mortality. This has led to the general idea the first antibiotic should be administered within two hours of fever onset. Febrile neutropenia is 50 percent fatal if not adequately treated within the first 48 hours.

Goal of the Quality Improvement

Implement best practice for antibiotic timeliness for all neutropenic patients admitted to the oncology floor.

Process Changed

Education of physicians, staff nurses and pharmacists on the importance of implementing antibiotics within two hours of hospital admission.

Quantifiable Improvements

Baseline data was collected January 2014 – September 2014. Results showed out of 21 patients the average door to antibiotic time was 3.4 hours. The findings indicated there is equal opportunity for direct admits (DA) and patients from the Emergency Department (ED). 5/21 or 24 percent were DA; 16/21 or 76 percent were admitted via the ED. Of the 5 DA patients, 1, or 20 percent, met the goal of two hours or less. Of the 16 ED patients, 10, or 62.5 percent, met the goal of two hour or less. The findings show from time of admission to direct admit, Elkhart General is 57 percent compliant with giving antibiotics within two hours or less to neutropenic fever patients. Although the data demonstrates greater success with ED patients, the biggest outliers fell within this same group, with the longest outlier being 13 hours.

Follow-up Steps to Monitor Actions Implemented

Education plan roll out on 11/26/2014 while continually collecting data and monitoring processes and checking for outliers. Director of oncology will implement process change if necessary for any outliers.

Non-Hodgkin Lymphoma Study

By Ahsanul Haque, M.D., Cancer Committee and Department of Medicine Chair, Elkhart General Hospital, Center for Cancer Services

This study will provide an overview of Non-Hodgkin Lymphoma (NHL) including epidemiology, pathogenesis, staging and treatment. Additionally, the study will examine Elkhart General's incidence of NHL for years 2004-2013 and patient survival rates for years 2004-2009 specifically comparing Elkhart General with the national average.

Etiology

NHLs are a biologically and clinically heterogenous group of lymphoproliferative diseases that reflect the diverse cell types comprising our immune system. These neoplasms are characterized by the clonal expansion of malignant cells of B, T, NK-or, rarely histolytic/dendritic cell origin. An estimated 79,990 new cases of lymphoma will be diagnosed in 2014. Lymphoma is a type of cancer that begins in certain immune system cells and is classified as either Hodgkin (9,190 cases in 2014) or Non-Hodgkin (NHL, 70,800 cases in 2014). From 2006 to 2010, incidence rates increased slightly among men for both NHL (0.7 percent per year) and Hodgkin lymphoma (0.4 percent per year), while among women, rates were stable. An estimated 20,170 deaths from lymphoma will occur in 2014, most of which are NHL (18,990). Death rates for NHL began decreasing in the late 1990s; from 2006 to 2010, rates decreased by 2.4 percent per year among men and women combined. Declines in lymphoma death rates reflect improvements in treatment over time. [1]

Pathology

The World Health Organization (WHO) classification of the tumors of hematopoietic and lymphoid tissues, based upon the earlier Revised European American Lymphoma (REAL) classification, represents an important advance in defining hematologic malignancies. This classification combines morphologic, immunophenotypic, molecular genetic and clinical features to define individual entities. The individual entities identified within the WHO classification are biologically and clinically distinct, with implication for both prognoses and treatment. As such, expert hematopathologic review is an essential component of lymphoma and leukemia management. Immunophenotypic analysis by flow cytometry or immunohistochemistry is an integral part of diagnostic evaluation.

In the WHO classification, lymphomas are divided into precursor and mature B, T, NK-or cell categories. Overall, approximately 90 percent of all NHL in Western countries are of mature B-cell origin, with diffused large B-cell lymphoma and follicular lymphoma, the most common subtype (table below). The incidence of NHL is less with the Asian population, where T-cell neoplasms are more frequent. The distribution of NHL subtypes differ significantly in children, where follicular (nodular) subtypes are rare and T-cell neoplasms are more frequent.

Clinical Classification System for NHL

Indolent Lymphomas	Aggressive Lymphomas
B-Cell	
CLL/SLL	Mantle cell
Follicular, Grades I, II, IIIa	Follicular, grade IIIb
Marginal zone MALT Nodal	Diffuse large B-cell Mediastinal large B-cell Burkitt and Burkitt-like Precursor B-lymphoblastic
T-Cell	
Mycosis Fungoides/ Sezary Syndrome	Systemic ALCL Peripheral T-cell
Primary cutaneous ALCL	Precursor T-lymphoblastic Adult T-cell leukemia-lymphoma

The classification system of lymphoma should reflect the natural history and prognosis of the disease. For clinical purposes, the lymphoma are broadly separated into indolent or aggressive categories. Indolent lymphoma are generally incurable with standard therapeutic approaches and are typified by a chronic course with repeated relapses and progression despite therapy. However, most of these patients survive many years with remarkably stable disease even in the absence specific therapy. Median survival is usually 5-10 years but not uncommonly may exceed 15-20 years. Most but not all aggressive lymphomas are potentially curable with a combination of chemotherapy. Aggressive subtypes usually have a more acute presentation and more rapid progression than the indolent entities. In the event of

failure to achieve complete remission following treatment, or with relapse after an initial therapeutic response, survival is usually measured in months rather than years. Some of these patients, however, are cured by second line chemotherapy and a stem cell transplantation approach.

Pathogenesis

There are multiple risk factors such as congenital and acquired immunodeficiency states and infections, as well as physical and chemical agents associated with increased risk for NHL. Immunosuppression associated with HIV infection induces immunosuppression in the organ transplant setting and is associated with an increased incidence of aggressive B-cell lymphomas, likely resulting from dysregulated B-cell proliferation and susceptibility to viruses such as Epstein-Barr Virus (EBV). In some cases these neoplasms are polyclonal and may respond to reduce immunosuppression when feasible post-transplant. More subtle, chronic immuno-regulatory disorders, such as rheumatoid arthritis, Sjogren's syndrome and Hashimoto's thyroiditis, carry increased risk of NHL. Infection with bacterium Helicobacter pylori is strongly associated with gastric MALT lymphoma. Immunosuppression from a variety of causes increases the risk of NHL (see table below).

There is no particular indication for lymphoma among specific ethnic groups although NHL is more frequent in Western than Asian populations. Familial predisposition to NHL is rare; however, kindred with the high frequency of NHL or Hodgkin lymphoma have been reported.

Infectious/Autoimmune Association with Lymphoma

- Helicobacter pylori- primary gastric MALT lymphoma or DLBCL
- Chlamydia psittaci- ocular adnexal MALT lymphoma
- Borrelia burgdorferi- cutaneous MALT lymphoma
- Hepatitis C virus- splenic marginal zone lymphoma
- Campylobacter jejuni- immunoproliferative small intestine disease (IPSID or heavy chain disease)
- Sjogren's syndrome- extranodal MALT lymphoma or DLBCL
- Hashimoto's thyroiditis- extranodal MALT lymphoma or DLBCL
- Gluten enteropathy- intestinal T-cell lymphoma

Staging

Staging procedures define the anatomic extent of disease. Generally, careful physical examination of lymphadenopathy and organomegaly including CT scan of the neck, chest, abdomen, and pelvis or CT-PET scan and bone marrow biopsy are necessary to confirm NHL. CT or MRI of the brain and evaluation of the CSF are indicated in patients with Burkitt or lymphoblastic lymphomas, and in the patient with aggressive lymphoma involving the bone marrow, sinonasal region or testis. The Ann Arbor staging system, identifying patients as stage I-IV disease, was originally devised for use in Hodgkin lymphoma, however later adopted for use in NHL. Patients are further stratified as to the absence or presence of symptoms, namely fevers, drenching night sweats or weight loss of 10 percent or more within 6 months of diagnosis.

The use of the PET scanning is proving increasingly useful, both for staging and assessing response to lymphoma therapy. Residual abnormalities on CT scan frequently led to a "partial remission." It is recognized that many of these patients may infact be cured and that the abnormal tissue visualized may represent fibrosis rather than residual lymphoma. PET scanning in such cases may provide evidence for a "functional complete response," and the sensitivity and specificity of this technique are under evaluation in several current clinical trials.

Staging of Lymphoma

Stage I	Single lymph node region (I) or single extra nodal organ or site (IE)
Stage II	Two or more nodal regions, same side of diaphragm (II), or localized extranodal extension plus one or more nodal regions (IIE)
Stage III	Nodal involvement on both sides of the diaphragm (III) which may be accompanied by localized extra lymphatic extension (IIIE) or splenic involvement (IIIS)
Stage IV	Dissemination to one or more extra nodal tissues or organs (e.g., bone marrow), with or without associated lymph node involvement or disease in distant site(s)
A	Asymptomatic
B	Unexplained fever > 38° C Night sweats Unexplained weight loss > 10% baseline within 6 months of staging
E	Extranodal disease
X	Bulking disease (>10 cm maximum diameter, or mediastinal mass > one-third maximal chest diameter)

Treatment

The success rate in treating lymphoma is of course related to the grade of disease as well as many other prognostic factors. For both high- and low-grade lymphomas, the most important prognostic indicators are summarized in the table below. Patients with low-grade lymphomas often have a good prognosis in terms of their long-term survival but are very rarely cured, ultimately dying of their disease. Conversely, patients with high-grade lymphoma who have a very poor prognosis when untreated and a much shorter average survival can often be cured by aggressive therapy. Thus, NHL therapy must be tailored to the disease and to the patient. In many institutions, these patients will be treated according to research protocols. This permits continuous improvement in therapy as new regimens for radiotherapy, multi-drug chemotherapy and bone marrow transplantation are introduced. Successful treatment of lymphoma also requires a high-quality blood transfusion service to provide red blood cells and platelets support and an aggressive approach to control the infection in these immunocompromised patients.

Prognostic Indicators in High- and Low-Grade Lymphomas

Adverse Factors for High-Grade Lymphoma	Adverse Factors for Low-Grade Lymphoma
Age >60 years	Age > 60 years
Serum LDH elevated	Serum LDH elevated
Stage III or IV	B symptoms or ESR>30
Extranodal involvement	Extranodal involvement

Survival According to Prognostic Indices

	High-Grade Lymphomas		Low-Grade Lymphomas	
	2-yr Survival	5-yr Survival	5-yr Survival	10-yr Survival
Low risk: 0-1 factor	84%	73%	89%	70%
Intermediate risk: 2-3 factors	60%	47%	71%	49%
High risk: >3 factors	34%	26%	47%	8%

Watchful Waiting is closely monitoring a patient's condition without treatment until there is a significant change in the clinical course of the disease process or development of symptoms. This would be only considered in less aggressive lymphomas where traditionally, early treatment has not been shown to increase survival. With the availability of current modern treatment, this strategy is changing.

Chemotherapy is the most commonly used treatment. It is considered a systemic therapy, traveling throughout the body. This may be used alone or in combination with other modalities such as radiation and immunotherapy. CHOP, is the most common regimen for NHL, made up of Cytoxan, Adriamycin (Hydroxydoxorubicin), Oncovin (Vincristine) and Prednisone. This combination is given in "cycles" or set blocks of time. Other chemotherapies used in NHL therapy include Chlorambucil, Methotrexate, Etoposide, Cytarabine, Fludarabine and Cladribine.

Radiation Therapy is a local treatment that targets a limited area and is used for early stages of low-grade lymphomas to kill cancerous cells and shrink tumors. Sometimes it's used along with chemotherapy on intermediate-grade tumors or to treat specific sites, such as the brain.

Immunotherapy/Biologic Therapy is aimed at using the body's own immune system to attack the cancerous cells and includes several types of agents. Interferon alpha is one type of immunotherapy that works by targeting certain receptors on the cancerous cells, interfering with cell replication and causing the immune system to attack the cancerous cells. Interferon alpha is used in follicular and cutaneous T-cell lymphomas. Monoclonal antibodies are manmade antibodies designed to target a specific marker found on the tumor cell. Once the medication is administered, the monoclonal antibody finds and attaches itself to the target in the cancerous cell, subsequently activating the body's immune system to destroy it. This therapy is used alone or in combination with chemotherapy. Rituxan is the most common monoclonal antibody used for NHL and targets the CD20 antigen. Since these agents target specific cells, side effects are generally less than those typically seen with chemotherapy.

Radioimmunotherapy combines the technology of monoclonal antibodies and radiation. Manmade antibodies linked to a form of radiation attached to them (called a radioisotope) are designed to target the surface of the tumor cell such as the CD20 antigen. The antibody seeks out the tumor cells (by finding the antigen), attaches to them, exposes these cells to the radiation, and thus kills them along with any nearby cancer cells. Again, these agents target specific cells and side effects may be less than typical chemotherapy. This form of treatment has been gaining ground in the treatment of NHL, based on favorable outcomes of recent clinical trials. Currently available radioimmunotherapy agents include Bexxar and Zevalin.

Bone Marrow and Stem Cell Transplants are other options for treatment of relapsed or advanced disease. It is done using a donor's bone marrow or stem cells (allogenic) or a patient's own bone marrow or stem cells (autologous). Autologous transplants are used to maximize the amount of chemotherapy that a patient can safely receive. Following a high dose of chemotherapy, the bone marrow or stem cells are replaced soon after the treatment by using cells that have been obtained and stored ahead of time. In an allogeneic transplant this is also true; however in NHL the role of graft- versus-lymphoma affect the ability of the donor's cells and immune system to attack any remaining cancer cells and is the key to its efficacy.

Vaccine Therapy is a type of biologic therapy that uses a substance or group of substances that activates the immune system to respond to a tumor and kill it. This is still considered an experimental treatment and not available for use by clinicians.

Clinical Trials are extremely important in furthering our knowledge of NHL. It is through clinical trials that exciting new therapies are currently being tested, and eventually introduced as part of improved treatment for this disease.

Role of Maintenance Rituximab: Although follicular lymphoma remains incurable, recent advances in first line therapy has resulted in improved response rates and response duration. Maintenance therapy with rituximab after induction treatment with rituximab alone or chemotherapy in combination with or without rituximab has resulted in further improvement in progression-free survival in both treatment naïve and previously treated patients. Efficacy results from the large Phase 3, randomized primary rituximab and maintenance (PRIMA) trial in the first line setting have demonstrated significant improvement in progression-free survival, in the rate of patients achieving complete remission, and in the proportion of patients remaining in complete remission using maintenance rituximab. The use of maintenance therapy is also under study in additional hematological malignancies, including diffuse large B-cell lymphomas and CLL. Clinical investigation is ongoing to address the optimal duration of maintenance therapy.

What's New in the Treatment of NHL?

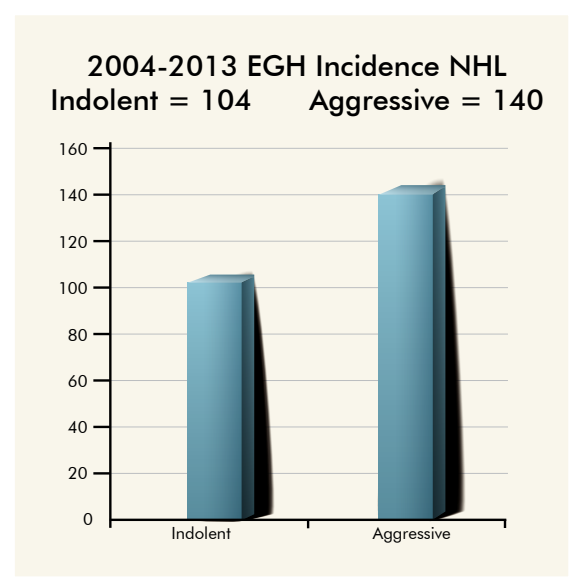
There are hundreds of medicines in the pipeline for the treatment of NHL and the following are a few recently approved by FDA:

1. Zydelig® (Idelalisib): Used in a patient who has already received at least 2 systemic treatments and disease recurred in Follicular B-cell NHL and CLL.
2. Zolinza® (Vorinostat): Used in recurrent cutaneous T-cell lymphoma.
3. Velcade® (Bortezomib): Used in patients who already received at least one other type of treatment in Mantle Cell Lymphoma.
4. Revlimid® (Lenalidomide): Used in recurrent Mantle Cell Lymphoma.
5. Folotyn® (Pralatrexate): Used in recurrent or refractory peripheral T-cell lymphomas.
6. Istodax® (Romidepsin): Used in a patient who has already been treated with other chemotherapy in cutaneous T-cell lymphoma.

What's Happening in Our Institution?

Elkhart General is one of the founding hospitals of the Northern Indiana Cancer Research Consortium (NICRC), an NCI granted Clinical Community Oncology Program, which promotes cancer treatment and prevention in research. Elkhart General is a charter member of the Indiana Cancer Consortium, a statewide effort to implement a cancer control plan. Elkhart General has a complete and dedicated Oncology program, consisting of Medical Oncology, Surgical Oncology, Radiation Oncology, Cancer Survivorship Program, Cancer Registry, palliative care services, nutritional services and support groups.

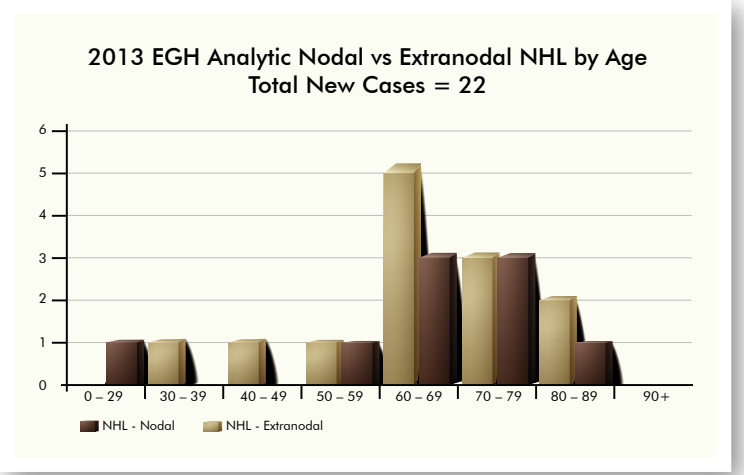
On review of Elkhart General registry data, for a period of 10 years (2004-2013), there are 244 NHL cases including 104 Indolent NHL and 140 Aggressive NHL.



If we review the incidence of NHL of years 2004-2013 at Elkhart General, we find that we have a total of 244 cases of lymphoproliferative disorders in which 233 are Non-Hodgkin Lymphoma; nodal, 171 and extra-nodal, 62. The remaining volume consists of lymphocytic leukemia. If we compare these numbers with the national average for our size of institution, we are slightly low and the variation is probably due to a different practice model in our area.

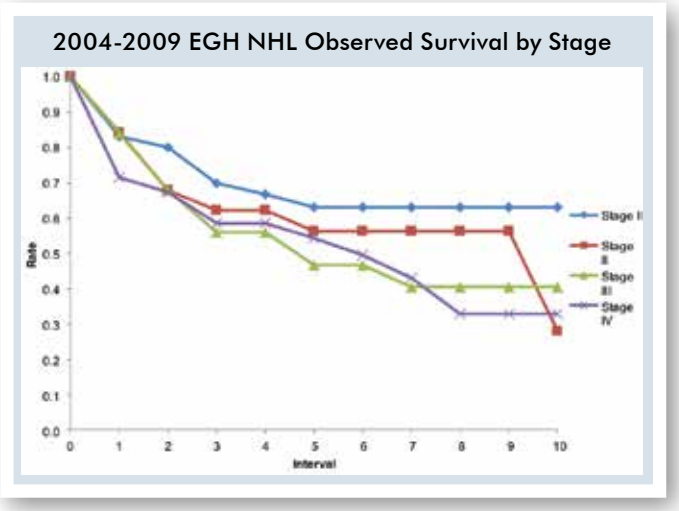
Age Feature

Overall, NHL incidence rises exponentially with increasing age. In persons older than 65, the inside is 68.0 per 100,000 in this population. Except for high-grade lymphoblastic and Burkitt lymphomas (the most common type of NHL seen in children and young adults), the median age at presentation for all subtypes of NHL exceeds 50+ years. Low-grade lymphomas account for 37 percent of NHLs in patients between the age of 35 and 64 years at diagnosis, but for only 16 percent of cases in those younger than age 35. In our institution, in 2013, there was a total of 22 incidences of NHL in which 17 cases were more than 60 years old.



Survival

The natural history (survival rates for Indolent Lymphoma) has been unchanged from the 1950s to the early 1990s, although a recent study from IOWA shows a potential change in survival trends. Survival varies widely by cell type and stage of disease. For NHL, the overall 1 and 5 year relative survival rates are 81 percent and 69, respectively; survival declines to 58 percent at 10 years after diagnosis. For Hodgkin Lymphoma, the 1-, 5- and 10-year relative survival rates are 92 percent, 85 percent and 80 percent, respectively.



In our institution between 2004 to 2009 we have a total of 134 cases of NHL diagnosed and treated. See the table below that demonstrates the breakdown of the stages of disease at time of diagnosis.

Stage I	30
Stage II	19
Stage III	25
Stage IV	46
Non-applicable stage	7
Unknown stage	7

Our incidence rates for sex and age are consistent with the overall national trends, with exception to the age. Elkhart General's lymphoma population has a male predominance of 115 vs. 11 females diagnosed. Nationally, the 40-70 year age group has the highest incidence of NHL. However, at Elkhart General, we have a greater number of the patients in their early and late 80s.

In general, stage at diagnosis at Elkhart General was consistent with the national trend. Most of the cases diagnosed in stage IV and incidence of stage I and stage III were equal. In all 127 cases, 60 patients are alive and 67 have expired. The NHL 5 year survival rate for Elkhart General when compared with the national average is a bit low; however, this could be due to our higher incidence of older patient population with NHL. We have a much smaller number of cases, making this difference less significant.

Summary

Patients with lymphoma receive advanced therapy at Elkhart General. In carrying out the institute's mission to improve outcomes for patients, the staff is constantly updated with new education and our patients receive standard-of-care treatments. Additionally, they participate in clinical trials of new treatment strategies, and our physicians work closely with referring tertiary care facilities where bone marrow transplants are performed. In conclusion, age, sex, histological behavior, stage and survival rates for Non-Hodgkin Lymphoma approximately match the national standard.

Acknowledgments

Thanks to Vicky Carter, CTR, Cancer Registry Coordinator; Kim Greising, R.N., BSN; Director of Oncology; Cindie McPhie, Executive Director of Oncology; and all the members of the Elkhart General cancer program for their assistance with this study and continued dedication to providing the best possible care for the patients in our community.

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Awards, Accreditations and Recognitions

Lung Cancer Screening Center Featured in National Professional Journal

An article authored by Samir Patel, M.D., Albert Cho, M.D., Allison Lamont, M.D., and Toni Klatt-Ellis, APRN, was featured in the May 2014, Volume 11, Number 5, issue of the *Journal of the American College of Radiology,* published by the American College of Radiology. "Implementing a Community Hospital Lung Cancer Screening Program: A Multidisciplinary Program and a Standardized Reporting System" describes the need for a comprehensive lung cancer screening and smoking cessation program, the formation of the program, reporting system development and the outcomes of the program's first 13 months of operation.

Elkhart General was designated a **Lung Cancer Screening Center** by the American College of Radiology (ACR). Elkhart General is one of just two facilities with this designation in Indiana. The ACR Lung Cancer Screening Center designation is a voluntary program that recognizes facilities that have committed to practice safe, effective diagnostic care for individuals at the highest risk for lung cancer.

Elkhart General was named a **Center of Excellence** by the Lung Cancer Alliance. The national recognition acknowledges the comprehensive care and multidisciplinary approach of the hospital's Lung Screening Program.

Elkhart General Hospital Center for Cancer Services has received accreditation from the Commission on Cancer which included a rigorous evaluation process and review of performance, including an on-site evaluation by a physician surveyor. During the evaluation, Elkhart General demonstrated a commendation level of compliance with the most critical program features including clinical services, community outreach, research, quality improvement, cancer committee leadership and cancer data management.

American College of Radiology Accreditation

The Breast Care Center and the Radiology Department were awarded a three-year term of accreditation in ultrasound as the result of a recent survey by the ACR. The state-of-the-art equipment and board-certified medical staff received accreditation for their achievement in high practice standards after a peer-review evaluation. Evaluations were conducted by board-certified physicians and medical physicists who are experts in the field. They assessed the qualifications of the personnel and the adequacy of the facility's equipment.

NQMBC Certified Quality Breast Center of Excellence

The Breast Care Center was recognized as a Certified Quality Breast Center of Excellence, Certification Level III – the highest certification level awarded by the National Consortium of Breast Centers National Quality Measures for Breast Centers™ Program (NQMBCTM). In addition to meeting the highest set of certification criteria, the Breast Care Center supplied 90 percent of the measures for which their quality breast center type should be able to measure performance, and performed above the 25th percentile.

American College of Radiation Oncology Accreditation

The American College of Radiation Oncology (ACRO) granted the Radiation Oncology Department at Elkhart General a three-year accreditation. This prestigious accreditation was granted after in-depth appraisals of the facility, equipment, policies, procedures, staff and clinical treatment methods were reviewed. In addition, the Radiation Oncology Department was examined and found to be practicing within multiple nationally accepted standards of current radiation oncology practice. For decades, the Radiation Oncology Department has provided a full range of competent, compassionate radiation therapy services.

Implementing a Community Hospital Lung Cancer Screening Program: A Multidisciplinary Program and a Standardized Reporting System

Samir Patel, MD, Albert Cho, MD, Allison Lamont, MD, Toni Klatt-Ellis, APRN

THE PROBLEM

Elkhart, Indiana, has a regional population of approximately 150,000 people. The area has a long tradition of manufacturing in the recreational vehicle industry and in freight, shipping more primary metals than any other municipality in the United States [1]. This strong manufacturing base was hard hit during the economic downturn of 2008, leaving a large unemployed population in its wake. Elkhart County's population of smokers is among the state's highest at 23.4% (Indiana's rate is 17%) [2]. Data from the Elkhart General Hospital Cancer Registry over the past 10 years show that 50% of lung cancers diagnosed in the area were diagnosed at stage IV, higher than the national average of 50% of lung cancers diagnosed at stage III or stage IV [3]. In 2011, the Elkhart County Community Health Assessment identified smoking as a significant health concern affecting local residents. When compared with other screening programs, a lung cancer screening program compares favorably (with estimates of cost <$19,000 per life saved) with the costs of breast cancer screening mammography ($31,000–$51,000 per life saved) and colorectal screening with colonoscopy ($19,000–$29,000 per life saved) [4]. These assessments prompted the staff, physicians, and administrators at Elkhart General Hospital to develop a comprehensive lung cancer screening and smoking cessation program.

We developed an appropriate infrastructure that would support screening our high-risk population. Part of this infrastructure manifested initially in the development of a multidisciplinary Thoracic Oncology Clinic where medical staff from thoracic surgery, radiology, pathology, medical oncology, radiation oncology, and pulmonology are asked to assess patients' diagnostic examinations and guide appropriate management. Patients and family members are encouraged to attend and participate. Additional staff members participating in the Thoracic Oncology Clinic include a social worker, a registered dietician, a clinical trials research nurse, a smoking cessation counselor, and a lung nurse navigator. A smooth, seamless process from initial screening CT to appropriate follow-up, and treatment when indicated, was critical to ensuring the success of the screening portion of the program.

ESTABLISHING THE LUNG SCREENING PROGRAM

With the multidisciplinary Thoracic Oncology Clinic in place, our attention turned to developing the lung screening aspect of the program. The screening aspect of the program was designed to follow any single patient for several years, and as a result, care was taken to establish both easy entry points as well as detailed check points within the system. We recommend that any patient who meets the high-risk criteria established by the National Lung Screening Trial consider screening with low-dose CT (LDCT) [5].

At the point of entry into the screening program, a potential patient or physician office representative is led through a structured intake questionnaire by a centralized scheduler. The process defines the patient as high risk on the basis of age, pack-year history, and current and former smoking status with years since quitting. The CT request is then reviewed by a precertification specialist, who confirms insurance coverage parameters. The patient is informed of the specifics of insurance coverage and possible out-of-pocket payment requirements before the examination. If any communication with insurance carriers is needed, it is performed by an advanced practice nurse (APN). Because the CT screening examination is not yet covered by some insurance carriers, hospital administrators and radiologists worked to find the most effective discounted price, so that cost would not be prohibitive for patients without insurance coverage. The self-pay price for screening lung CT at our institution is $199, approximately the cost of cigarettes in 1 month for a 1.5-pack-per-day smoker. Because of the high incidence of unemployment in our area, we secured a grant from our hospital foundation to cover scans for low-income individuals with no insurance.

Patients are imaged using an LDCT protocol. Dose optimization has resulted in our LDCT scan being completed with half the dose reported in the National Lung Screening Trial [5]. These data reassure both patients and physicians that effective screening doses are "as low as reasonably achievable." This reassurance is important because yearly (or more frequent) CT is recommended.

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Table 1. NCCN lung cancer screening guidelines: follow-up

Size	Follow-Up Recommendation
Solid or part-solid nodule	
<6 mm	LDCT, 12 mo
6–8 mm	LDCT, 3 mo
>8 mm	PET/CT or needle biopsy
Nonsolid nodule (ground-glass opacity or ground-glass nodule)	
<5 mm	LDCT, 12 mo
5–10 mm	LDCT, 6 mo
>10 mm	LDCT, 3 mo
Solid endobronchial nodule	
Any size	LDCT, 1 mo, or needle biopsy

Source: National Comprehensive Cancer Network [6].
Note: LDCT = low-dose CT; NCCN = National Comprehensive Cancer Network.

Within 5 days of the completion of the CT scan, the APN phones every patient to discuss the results of the scan and appropriate follow-up interval. An appointment for smoking cessation counseling, if a person is still smoking, is always offered at the follow-up phone call. At this phone call, an appointment is also made for the next scan, whether it is 3-month, 6-month, or 12-month follow-up. The appointments are entered into a computer database so that a notification is generated if there is a cancelation or no-show. This system ensures that no patient is lost to follow-up. Results are also sent electronically to any physician the patient identifies as being involved in his or her care.

Reporting of the results on the dictated written radiology report is key to primary care physicians' support and participation. We felt that the best strategy for recommended follow-up was to implement the National Comprehensive Cancer Network (NCCN) lung cancer screening guidelines (Table 1) [6]. A consistent and clear radiology report was essential to making the implementation of lung screening successful.

THE LUNG REPORTING AND DATA SYSTEM

We implemented a format we call the Lung Reporting and Data System (L-RADS) for reporting the results of all LDCT scans for lung cancer screening, enabling results reporting and recommendations for follow-up to be concise and user friendly. L-RADS has allowed us to clearly communicate to the patient's physician the next recommended steps. Patients and health care providers can be confident in these recommendations because L-RADS is entirely reflective of the evidence-based NCCN lung cancer screening guidelines.

To design the structured reporting system, we took the NCCN lung cancer screening algorithm for follow-up of lung nodules on the basis of size of lesion and defined a standardized structured reporting system including findings and recommendations for referring providers (Table 2). L-RADS is similar to the BI-RADS® structured reporting system for breast imaging reporting [7]. L-RADS provides uniformity for radiologists reading the scans and for referring providers for follow-up appointments.

Table 2. L-RADS checklist-driven structured reporting for LDCT lung screening

Finding	L-RADS Score	Assessment	Recommendation
No nodules	L1	Negative	LDCT, 12 mo
Solid or nonsolid, <6 mm	L2	Benign pulmonary findings	LDCT, 12 mo
Nonsolid, 6–10 mm	L3a	Probable benign pulmonary findings	LDCT, 6 mo
Solid, 6–8 mm, or nonsolid, >10 mm	L3b	Indeterminate pulmonary findings	LDCT, 3 mo
Solid, >8 mm, any solid endobronchial	L4	Potentially significant abnormality	PET/CT or needle biopsy

Note: LDCT = low-dose CT; L-RADS = Lung Reporting and Data System.

OUTCOMES SUPPORTING THE SUCCESS OF THE EFFORT

Our lung screening program has screened 150 patients in its first 13 months. The referring physician base has increased to 20 physicians. Of the 150 LDCT screenings, the following recommendations were made: 100 patients (67%) with 12-month follow-up, 28 patients (19%) with 6-month follow-up, 11 patients (7%) with 3-month follow-up, and 2 patients (1%) with biopsy recommendations (1 diagnosed with cancer) (Fig. 1). During the screening phase of the National Lung Screening Trial, 39% of the participants in the LDCT group had at least one positive result (follow-up in <12 months) [5]. Comparatively, in our first year, 27% of our scan interpretations were recommendations of follow-up in <12 months.

L-RADS provides uniformity and consistency in the reporting of LDCT lung screening. Practicing physicians have found this reporting system useful to instruct their patients on the appropriate evidence-based recommended follow-up. Using L-RADS and the NCCN guideline for follow-up that corresponds to the L-RADS number has

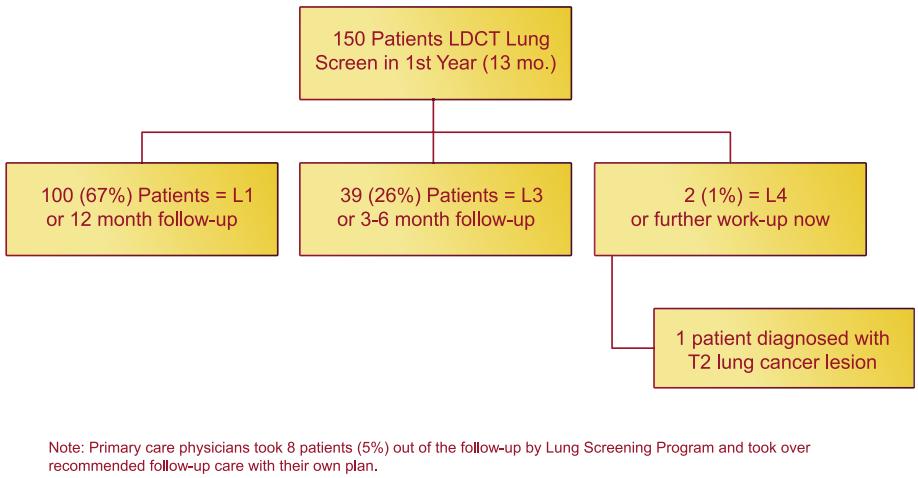

Fig 1. Number of LDCT lung screening scans by follow-up recommendations. LDCT = Low dose CT.

made interpretation and recommendations for follow-up user friendly, evidence driven, and efficient.

When there is a suspicious finding (L-RADS score L4), the APN who oversees the program follows up with the patient's referring provider, if there is one, and helps coordinate a biopsy or PET/CT scan. If the patient is a self-referred patient who does not have a primary care physician, the APN has a list of physicians who have agreed to take these patients, and an appointment is set up with a physician as indicated. The APN ensures compliance with the recommended follow-up, and if needed, a referral is made to the multidisciplinary Thoracic Oncology Clinic.

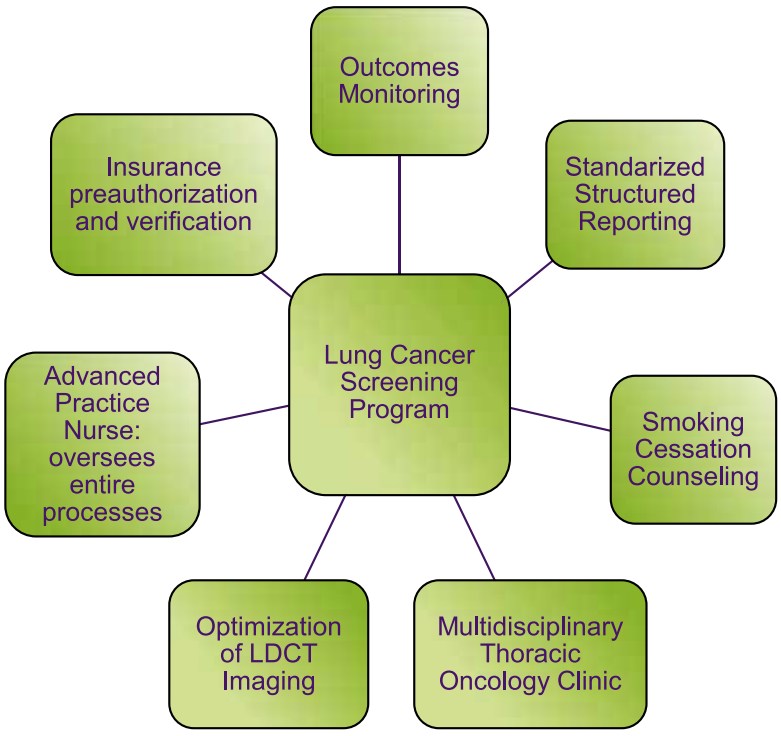

Fig 2. Components of a community hospital–based comprehensive lung cancer screening program. LDCT = Low dose CT.

Elkhart General Hospital physicians selected as a 2012 quality measure to document outpatient smoking histories at 100% compliance for all patients aged ≥13 years. In 2013, presentations were done with each physician office to teach how to document smoking cessation counseling and how to obtain reimbursement for this add-on office counseling. Plans for 2014 are to promote and track smoking cessation counseling with our office practitioners and to offer LDCT lung screening to patients with high-risk smoking histories.

A recent article [8] describes a similar lung screening program, with several important differences. We allow self-referral of high-risk patients, an important component for increased access. Many insurance contractual arrangements prevent offering free examinations without insurance companies' approval, so we do not offer routine "free" LDCT lung screening. Our program has smaller volumes and is likely more reflective of the

community hospital setting, with no additional radiologist full-time equivalent staffing to interpret the volume of CT scans.

Our voice of experience says that a successful community hospital LDCT lung screening program is possible. In the community hospital setting, we have implemented all the important components, including defining eligibility criteria, performing an LDCT protocol, using standardized structured reporting on the basis of national consensus-based published algorithms, and having a multidisciplinary group of experts for consultation and management. With the support of hospital administrators and physicians working together, a program can be implemented with a relatively short 1-year to 2-year planning period. Figure 2 depicts what we conceptualized to be the key components of putting together our comprehensive lung screening program as opposed to just offering LDCT lung screening. It is our hope that sharing our experience will facilitate the development of similar programs to the benefit of all our patients.

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Elkhart General Hospital Initiates New Palliative Care Program in 2014

During the first six months of the new Palliative Care Program at Elkhart General, the team received 179 consult referrals from area physicians, far exceeding the expected number of 100 consults per year for a hospital of Elkhart General's size. The most common diagnoses addressed through the program include cancer, heart disease and congestive heart failure, chronic obstructive pulmonary disorder and catastrophic conditions such as sepsis and stroke.

Amberly Burger, M.D., Medical Director for the Palliative Care Program, explains that palliative care is not hospice care or end-of-life care; rather, it is provided concurrently with life-prolonging, curative therapies for patients who have a serious or life-threatening illness.

Using a multidisciplinary approach, the inpatient program includes aggressive symptom management; transparent communication with all members of the care team to ensure clarity of objectives and the patient's priorities; and determining an appropriate level of post-discharge care. Keeping the patient's family informed is also a high priority.

"We consider 'the patient' to be the entire family unit, not just the person lying in the bed," says Dr. Burger. "We have a team that can spend hour long visits with families to help them fully understand what's going on with the patient."

The Palliative Care team meets daily to discuss patients and their care management. This focused approach seeks to improve patient satisfaction scores, decrease lengths of stays and decrease readmission rates. Goals for the future include mortality rate reduction, improved discharge timing and increasing the number of patients who have advance directives in place.

Dr. Burger anticipates expanding the program next year, including opening an outpatient Palliative Care Clinic that will include disease-specific clinic days. For more information about the Palliative Care Program, contact Dr. Burger at **aburger@beaconhealthsystem.org**.

Elkhart General Hospital Palliative Care Team

Amberly Burger, M.D.
Medical Director

Tricia DiMarzio, R.Ph.
Pharmacist

Terri Geiser, LISW, M.Div.
Chaplain

Roger Hershberger, MSW-LCSW
Oncology Care Coordinator

Laurie Loedeman, PharmD
Pharmacist

Amy Luebbehusen, PharmD
Pharmacist

Paula Simpson, R.N.

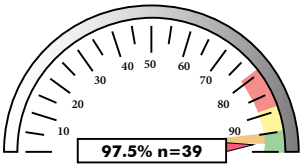
Lorna Stahler
Director

Rapid Quality Response System

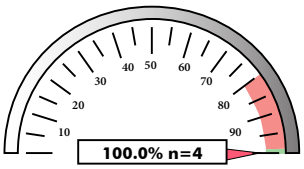
Rapid Quality Response System analysis allows us to actively monitor and assess compliance with six National Quality Forum endorsed measures. It assists in surveillance of care for breast, colon and rectal cancer patients in real clinical time.

Michael Rotkis, M.D., FACS
General and Vascular Surgeon and Cancer Liaison Physician

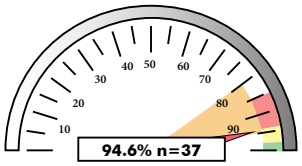
Breast Measures



Radiation therapy is administered within one year (365 days) of diagnosis for women under age 70 receiving breast conserving surgery for breast cancer. **BCS**

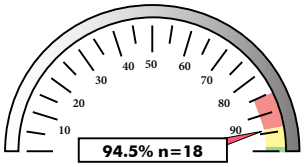


Combination chemotherapy is considered or administered within four months (120 days) of diagnosis of women under 70 with AJCC T1cN0M0 or Stage II or III hormone receptor negative breast cancer. **MAC**

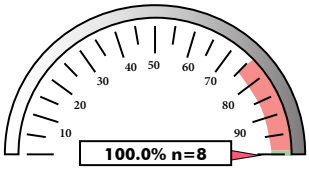


Tamoxifen or third generation aromatase inhibitor is considered or administered within one year (365 days) of diagnosis for women with AJCC T1cN0M0 or Stage II or III hormone receptor positive breast cancer. **HT**

Colon Measures

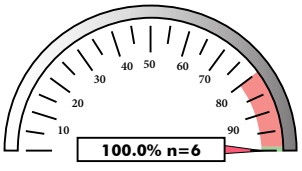


At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer. **12RLN**



Adjuvant chemotherapy is considered or administered within four months (120 days) of diagnosis for patients under the age of 80 with AJCC Stage III (lymph node positive) colon cancer. **ACT**

Rectal Measures



Radiation therapy is considered or administered within six months (180 days) of diagnosis for patients under the age of 80 with clinical or pathologic AJCC T4NOMO or Stage III receiving surgical resection for rectal cancer. **ADJRT**

Accredited to: American College of Surgeons Commission on Cancer Rapid Quality Reporting System (RQRS v1.1)

Our Team of Certified Oncology Nurses

(L-R) Alechia Evans, Marcie Hemenway, Elizabeth Werling, Trish Coatie, Alison Haffner and Julie Young

ONCOLOGY CERTIFIED NURSES
Nov. 2014

Trish Coatie
Alechia Evans
Alison Haffner
Marcie Hemenway
Myrna Hull
Elizabeth Werling
Julie Young
Heather Griffith
Pam Jackson

Heather Griffith

Myrna Hull

Pam Jackson

Our Team of Certified Chemotherapy Nurses

CHEMOTHERAPY CERTIFIED NURSES
November 2014

Trish Coatie
Heather Griffith
Alison Haffner
Amanda Hawkins
Marcie Hemenway
Myrna Hull
Diane Roberts
Nancy Timms
Larry Beachy
Roxy Schertz
Kelsey Beabout
Emily Gilley
Kayla Grove
Shaina Glantz
Brittani Bieber

AIC & ROC CHEMOTHERAPY CERTIFIED NURSES

Dick Doll
Kristi Meister
Elizabeth Werling
Julie Young
Alechia Evans
Rob Siri

July 2014
20 chemo R.N.s
9 OCNs
45%

November 2014
15 chemo R.N.s
8 OCNs
53%

Directory

Area Code 574 unless noted otherwise.

Treatment and Clinical Services

Ambulatory Infusion Center	296.6444
Breast Cancer Clinic	389.5654
Breast Care Center	296.6571
Cancer Survivorship Clinic	523.7819
Oncology Care Unit	523.3112
Radiation Oncology Center	523.7857
Thoracic Oncology Clinic	523.7850

Ancillary Services

Center for Behavioral Medicine	523.3347
Center for Pain Management	523.3232
Individual Nutrition Counseling	523.3444
Home Care and Infusion Therapy	800.284.8999
Home Medical Equipment	888.517.3100
Inpatient Rehabilitation Services	523.3443
Mammography Scheduling	523.3444
Oncology Nursing Education	523.7978
Outpatient Rehabilitation Services	523.3242
Outpatient Pharmacy	523.3101

Professional Education/Research

Cancer Conferences	523.3454
Cancer Registry	523.3454
Continuing Medical Education	523.4826

Patient and Family Support

Breast Care Financial Assistance	296.6571
Cancer Support Group Information	296.6553
Case Management	523.3257
Chaplaincy Services	523.3142
Patient Accounts	523.7818
Ribbon of Hope Cancer Support & Ministry	389.7379

Community Services

American Cancer Society	800.227.2345
Cancer Care Counseling Line	800.813.HOPE
Cancer Information	888.344.6773
Community Education Programs	523.3303
Health Information Center	888.344.6773
KME National Breast Cancer Organization	800.221.2141
National Cancer Institute Info Line	800.4CANCER
Physician Referral Line	888.344.6773
United Cancer Services	875.5158

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