

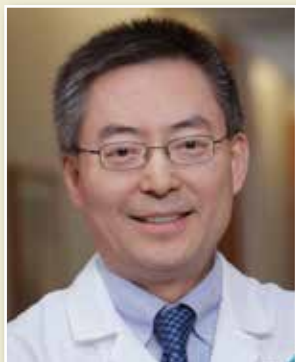


CANCER PROGRAM  
ANNUAL REPORT  
*2015*



**ELKHART**  
GENERAL HOSPITAL  
CENTER FOR CANCER SERVICES

# Oncology Program Leadership



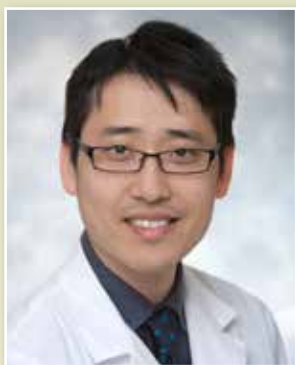
**James Jin, MD, PhD**

*Medical Oncologist and Cancer Committee Chair*



**Michael Rotkis, MD, FACS**

*General and Vascular Surgeon and Cancer Liaison Physician*



**Brion Shin, MD**

*Radiation Oncologist and Cancer Conference Coordinator*



**Vicky Carter, CTR**

*Cancer Registrar and Cancer Registry Data Quality Control Coordinator*



**Cindie McPhie**

*Executive Director of Specialty Services and Exceptional Experience*



**Kim Greising, RN, BSN**

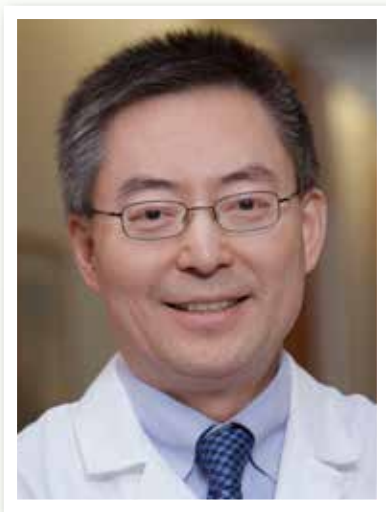
*Director of Oncology*

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For more information or additional copies of the 2015 Cancer Program Annual Report, visit [EGH.org](http://EGH.org) or call Beacon Health System Marketing Department at 574.647.7350.

# Message from Medical Leadership



James Jin, MD, PhD

As you explore the information provided here in our annual report on the various aspects of the hospital's cancer care program, you will quickly discover that Elkhart General offers a level of technology and medical expertise that rivals just about any "big city" cancer center. However, what patients also experience here is a deeply-rooted and personal level of commitment and compassion that we challenge any other hospital to match. This is 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 receive the seal of approval from the Commission on Cancer and American College of Surgeons as a top performer in delivering high-quality, interdisciplinary care to our cancer patients. A successful cancer treatment plan demands that we put the most advanced resources into the hands of highly-skilled diagnosticians.

In 2015, we continued to develop and grow our Lung Cancer Screening Program as well as our Thoracic Oncology Clinic. Elkhart General continues to be recognized by the Lung Cancer Alliance as a Lung Screening Center of Excellence. We take great pride in offering 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.

We are continually looking to add new treatment options for our patients. New this year is a procedure to treat cervical cancer using radiation. Tandem and ovoid brachytherapy is offered on an outpatient basis, saving patients from a longer and more costly inpatient hospitalization.

We also upgraded our mammography machines with 3-D mammogram technology which offers fewer false positives, up to 15 percent better detection. As technology advances the treatment of cancer care we plan to remain on the cutting edge of providing our patients the very best.

When someone learns they have cancer, it can trigger an avalanche of emotions and questions. Our expert 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 patients to make the Elkhart General Hospital Center for Cancer Services their choice for cancer care.

Respectfully submitted,

A handwritten signature in dark ink, appearing to be 'J. Jin', written in a fluid, cursive style.

James Jin, MD, PhD

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 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, along with personal and spiritual guidance. We have oncology-certified nurses who ensure that high-quality care is delivered to our patients. With 20 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 a day 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 (or Advanced Practice Registered Nurse, 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, Tandem and Ovoid Brachytherapy and Stereotactic Body Radiation Therapy (SBRT) are available to patients. 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 staff members Loretta Salchert and Gina Martin.*

## 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



**Trish Coatie, RN, BSN**

*Research Nurse*

There are numerous cancer clinical trials offered 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.

## Palliative Care

The multidisciplinary care team assists patients with care coordination; establishing goals of care; symptom management and identifying and finding care options. The team also provides spiritual and emotional support to patients and families. The team sees both inpatients and outpatients while working toward improved patient satisfaction, reduction of readmission rates, and shorter hospital stays. Future goals include mortality rate reduction and increasing the number of patients with established advance directives.



*Terri Geiser, LISW, MDiv; Amy Luebbehusen, PharmD; Amberly Burger, MD; Roger Hershberger, MSW-LCSW; Paula Simpson, RN*

## Community Outreach

In 2015, 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 the CRAN Network promoted 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.
- Cancer screening education was provided at the Ribbon of Hope ecumenical cancer support ministry Fun Run/Walk.
- Staff provided presentations with Oncology Dietitian on “Girl Power: Learn the Truth About Cancer Prevention”.
- Dietitian visited supermarkets for the “Eat Smart Be Well” campaign to help consumers understand the importance of eating more fruits and vegetables as a means to reduce the risk of developing cancer, with a primary focus on breast 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 there are more patients diagnosed with later stages of lung cancer. Additionally, more than half of all lung cancer is diagnosed in former smokers.

In response to this data, Elkhart General initiated a Lung Cancer Screening Program in 2012 that 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 General is pleased that our efforts have resulted in two national honors for our 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 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.

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 their lung cancer screening protocol and infrastructure. Also required are procedures in place for follow-up patient care, such as counseling and smoking cessation programs.



# 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.

**James Jin, MD, PhD**

Medical Oncology  
Cancer Committee Chair

**Michael Rotkis, MD, FACS**

General & Vascular Surgery  
Cancer Liaison Physician

**Brion Shin, MD**

Radiation Oncology  
Cancer Conference Coordinator

**Luis Benavente, MD, FACS**

General Surgery

**Erin Buckles, MSW, LSW**

Oncology Outpatient Care/  
Psychosocial Services Coordinator

**Vicky Carter, CTR**

Cancer Registrar  
Cancer Registry Data Quality  
Control Coordinator

**Cindie McPhie**

Executive Director of Specialty  
Services and Exceptional Experience

**Kim Greising, RN, BSN**

Director of Oncology

**Rachelle Anthony**

American Cancer Society

**Amberly Burger, MD**

Medical Director,  
Palliative Care

**Stephen Dickson, Jr., MD, FACS**

Cardiothoracic Surgery

**Laurie Dubois**

Community Cancer Coordinator

**Deanna Emmons, RD,  
CD, CNSC**

Oncology Dietitian

**Nazar Golewale, MD**

Interventional Radiology

**Pam Green, RN**

Oncology Care Coordinator

**Ahsanul Haque, MD**

Medical Oncology

**Walter Halloran, MD, FACS**

Cardiothoracic Surgery

**Marcie Hemenway, RN, OCN**

Oncology Education

**Pam Jackson, RN**

Clinical Research Nurse/  
Coordinator

**Kristen Jacobs, M.D.**

Pathology

**Jackie Lenfestey, MSN, FNP,  
APRN-BC**

Oncology Nurse Practitioner  
Cancer Survivorship Clinic  
Thoracic Oncology Clinic & Lung  
Screening

**Greg Losasso**

President  
Elkhart General Hospital

**Amy Luebbehusen, PharmD**

Oncology, Pharmacy

**Heather Macklem, MD**

Family Medicine Physician

**Rolan Pascual, MD**

Medical Oncology

**Kelly Puster, MD, FACS**

General Surgery

**Roberta Pope**

Account Executive  
Marketing Department

**Loretta Salchert**

Ribbon of Hope

**Leah Schrock, LCSW**

Inpatient Oncology  
Care Coordinator



# General Cancer Conference, Breast Clinic and Thoracic Oncology Clinic (TOC) Summary 2015

Attendees include radiologists, pathologists, general surgeons, thoracic surgeon, 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 as well as available clinical trials when applicable. Patient and family members are routinely invited and attend the conferences. Elkhart General Hospital is the only facility in the area that invites patients to attend their own case presentations. This open forum provides the patient 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 Hospital's strong commitment to patient satisfaction and support of these open forums is yet another way to provide a positive experience as patients begin their cancer journey.

Analytic cases presented throughout the year are determined by incidence volume and tracked statistically as the "Top Five Sites." They rank in order of volume as breast, lung, colon, prostate with pancreas and lymphoma tying for fifth place. These cancer sites were presented at the various conferences and clinics throughout the year along with various other cancer sites both for staging and treatment planning purposes as well as providing education to physician and ancillary staff. Occasionally, a presentation may be of a didactic nature to provide education on unusual or rare cancers.

Throughout 2015 a total of 80 cases were presented at General Cancer Conference and 65 at the Breast Cancer Clinic. A total of 175 cases were presented at the Thoracic Oncology Clinic including definitive cancer diagnoses along with lung screening cases for determination of next-step process to rule out possible cancer. All told, 320 case presentations cycled through the clinic and conference processes and validate the significant focus by the oncology team to ensure best practice and positive treatment outcomes for the oncologic patients in Elkhart County. By year end 43 percent of the analytic volume was presented and nearly tripled the mandated 15 percent benchmark set by the Commission on Cancer as the accrediting body and overseer of the cancer program at Elkhart General Hospital.

The Breast Cancer Clinic is held each Wednesday at 7 a.m. in the Prenatal Classroom, West Wing. The Thoracic Oncology Clinic is held every Thursday at 7 a.m. in the ROC Conference Room. The General Cancer Conference is 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 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 (2015)	Number of Cases* Presented	Number of Patients and/ or Family Attended
<b>Breast Clinic</b>	98	65*	59 as of 12/2/15
<b>Thoracic Oncology Clinic</b>	109	175*	297 as of 12/10/15

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

# 2015 Cancer Registry Review

By Vicky Carter, Cancer Registry Coordinator

The Cancer Registry at Elkhart General has a beginning reference date of Jan. 1, 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, however, not limited to: patient demographics; date of diagnosis; primary site; histology; stage of disease; treatment; recurrence; and follow-up data. It 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 11,639 cases in the Cancer Registry database representing 10,741 patients, some of whom were diagnosed with more than one cancer during their lifetime. In 2015, 592 new incidence of cancer were accessioned by a team consisting of three certified tumor registrars. Additionally, 120 cases were accessioned representing those patients who presented due to cancer recurrence or disease progression for an overall collection of 712 cases. 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. Cancer Registry is responsible for maintaining lifetime follow-up on all analytic patients. The current rate of 97.13 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 91.24 percent (80 percent or greater required). The respective rates significantly exceed the established benchmarks mandated by the CoC and attest to the continued teamwork approach to patient care at Elkhart General Hospital.

## Registry Accomplishments for 2015:

- 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.

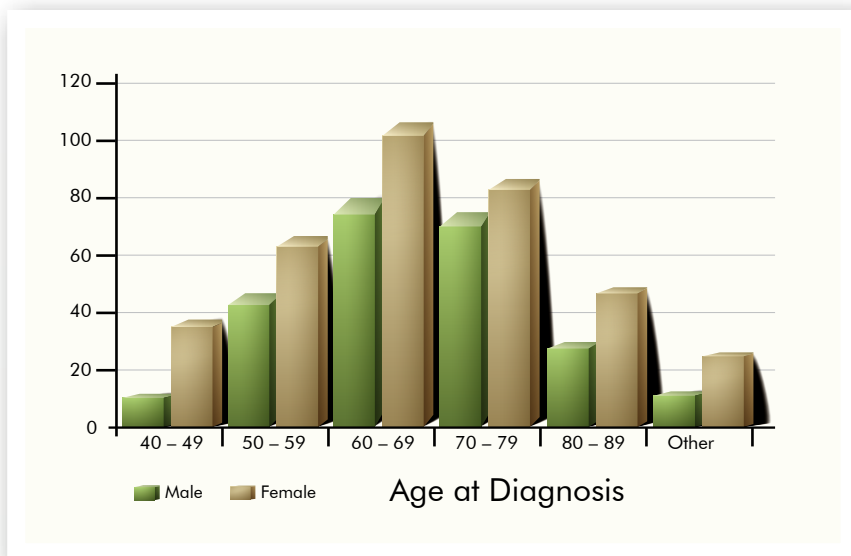
## Cancer Registry Education for 2015:

- All registrars attended General, Breast or Thoracic Conferences.
- All registrars participated in clinical staging webinars for professional development.
- All registrars completed National Cancer Registrar Association case study educational offerings for professional development.
- One registrar attended 41st Annual National Cancer Registrars Association Conference in San Antonio, Texas.
- One registrar attended 37th Annual Educational Workshop in Indianapolis.
- One registrar attended NCDB Quality Tools Workshop in Chicago.

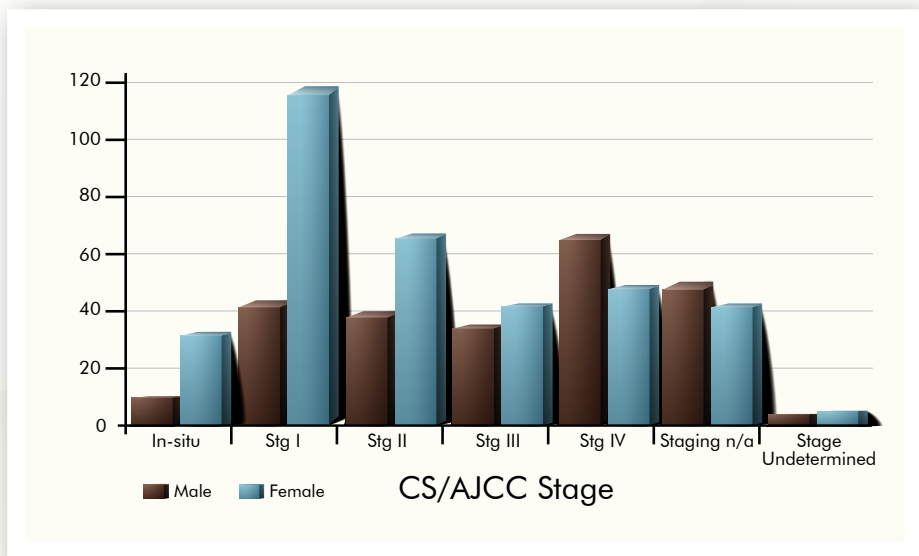


Left to Right: Cancer Registrars Stacy Hirst, CTR; Vicky Carter, CTR; and Judy Libera, CTR

### Male vs. Female Age at Diagnosis 2014\* Cases

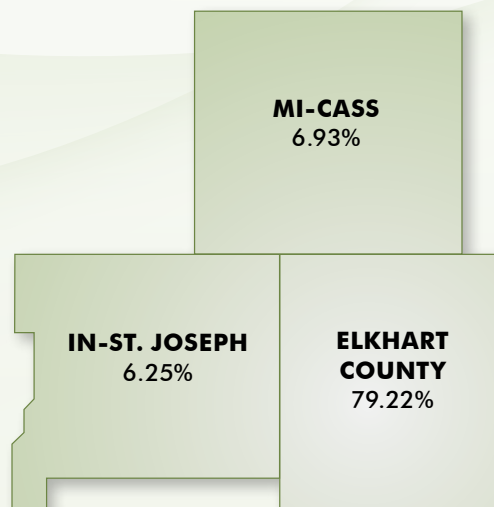


### Male vs. Female by Best AJCC Stage 2014\* Cases



### Distribution by State/County 2014\* Cases

NOTE: 7.60 percent of patients reside in counties outside of the service areas shown.



\*Based on 2014 Cancer Registry Data



# 2015 Annual Report Primary Site Table Based on 2014 Statistics

Primary Site	Total	Male	Female	Class of Case		In-situ	AJCC Staging			
				Analytic*	Non-analytic**		I	II	III	IV
<b>Oral Cavity &amp; Pharynx</b>	<b>14</b>	<b>11</b>	<b>3</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>6</b>
Tongue	3	2	1	1	2	0	0	0	1	0
Salivary Gland	3	1	2	2	1	0	0	0	2	0
Floor of Mouth	2	2	0	2	0	0	0	1	0	1
Tonsil	2	2	0	2	0	0	0	0	0	2
Oropharynx	3	3	0	2	1	0	0	0	0	2
Hypopharynx	1	1	0	1	0	0	0	0	0	1
<b>Digestive System</b>	<b>146</b>	<b>73</b>	<b>73</b>	<b>125</b>	<b>21</b>	<b>3</b>	<b>27</b>	<b>32</b>	<b>25</b>	<b>33</b>
Esophagus	8	7	1	6	2	0	0	1	3	2
Stomach	12	9	3	8	4	0	2	2	1	2
Small Intestine	3	3	0	2	1	0	0	0	2	0
Colon (Excluding Rectum)	61	27	34	56	5	0	14	18	12	10
Rectum & Rectosigmoid	18	13	5	14	4	2	2	2	4	3
Anus, Anal Canal and Anorectum	3	0	3	3	0	1	1	1	0	0
Liver and Intrahepatic Bile Ducts	13	6	7	11	2	0	4	1	2	4
Gallbladder	1	0	1	1	0	0	0	0	0	1
Other Biliary	3	2	1	2	1	0	0	1	0	0
Pancreas	22	5	17	20	2	0	3	6	1	10
Retroperitoneum	1	1	0	1	0	0	1	0	0	0
Peritoneum, Omentum & Mesentery	1	0	1	1	0	0	0	0	0	1
<b>Respiratory System</b>	<b>124</b>	<b>58</b>	<b>66</b>	<b>108</b>	<b>16</b>	<b>2</b>	<b>32</b>	<b>15</b>	<b>16</b>	<b>40</b>
Nose, Naval Cavity & Middle Ear	2	1	1	2	0	0	1	0	0	1
Larynx	8	6	2	7	1	1	2	2	0	2
Lung & Bronchus	113	51	62	98	15	1	29	13	16	37
Trachea, Mediastinum & Other	1	0	1	1	0	0	0	0	0	0
<b>Soft Tissue (including Heart)</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Skin Melanoma</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>Breast</b>	<b>152</b>	<b>1</b>	<b>151</b>	<b>136</b>	<b>16</b>	<b>27</b>	<b>59</b>	<b>33</b>	<b>6</b>	<b>10</b>
<b>Female Genital System</b>	<b>39</b>	<b>0</b>	<b>39</b>	<b>24</b>	<b>15</b>	<b>0</b>	<b>9</b>	<b>3</b>	<b>4</b>	<b>8</b>
Cervix Uteri	13	0	13	9	4	0	2	0	4	3
Corpus & Uterus, NOS	22	0	22	16	6	0	9	2	3	2
Ovary	5	0	5	4	1	0	0	0	3	1
<b>Male Genital System</b>	<b>53</b>	<b>53</b>	<b>0</b>	<b>28</b>	<b>25</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>2</b>	<b>5</b>
Prostate	46	46	0	25	21	0	4	15	1	5
Testis	7	7	0	3	4	0	2	0	1	0
<b>Urinary System</b>	<b>45</b>	<b>29</b>	<b>16</b>	<b>38</b>	<b>7</b>	<b>7</b>	<b>18</b>	<b>3</b>	<b>5</b>	<b>5</b>
Urinary Bladder	23	15	8	18	5	7	3	3	3	2
Kidney & Renal Pelvis	21	13	8	19	2	0	15	0	2	2
Other Kidney Organs	1	1	0	1	0	0	0	0	0	1
<b>Brain &amp; Other Nervous System</b>	<b>48</b>	<b>21</b>	<b>27</b>	<b>46</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Brain	20	11	9	19	1	0	0	0	0	0
Cranial Nerves, Other Nerves	28	10	18	27	1	0	0	0	0	0
<b>Endocrine System</b>	<b>15</b>	<b>7</b>	<b>8</b>	<b>13</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>
Thyroid	7	2	5	6	1	0	1	1	2	1
Other Endocrine including Thymus	8	5	3	7	1	0	0	0	0	0
<b>Lymphomas</b>	<b>22</b>	<b>11</b>	<b>11</b>	<b>20</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>7</b>	<b>5</b>
Hodgkin Lymphoma	3	0	3	2	1	0	0	0	2	0
Non-Hodgkin Lymphoma	19	11	8	18	1	0	6	2	5	5
<b>Myeloma</b>	<b>11</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Leukemia</b>	<b>8</b>	<b>5</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Lymphocytic Leukemia	3	1	2	3	0	0	0	0	0	0
Myeloid & Monocytic Leukemia	5	4	1	5	0	0	0	0	0	0
<b>Mesothelioma</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>Miscellaneous</b>	<b>24</b>	<b>16</b>	<b>8</b>	<b>20</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL</b>	<b>712</b>	<b>297</b>	<b>415</b>	<b>592</b>	<b>120</b>	<b>39</b>	<b>162</b>	<b>104</b>	<b>77</b>	<b>113</b>

\*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

## 2015 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:**

The sub-committee submitted to cancer committee on February 4, 2015, that our recommendation for screening for Standard 4.2 should be lung. Since lung cancer seems to be a top cancer diagnosis at Elkhart General Hospital: > 50 percent diagnosed late stage with the population tending to be smokers, and our smoking rate in Elkhart County is 20.1 percent, (the State rate is 23 percent compared to the US rate of 17.8 percent) that more education/information, as well as resources, and possible screening should be available to our community.

**2. The cancer committee identifies the screening needs of the community.**

Smoking was identified as one of the top health priority needs for Elkhart County for the 2015 Community Health Needs Assessment.

**3. The cancer committee provides at least one cancer screening program.**

Beacon is moving toward population health initiatives. The population health concept represents a change in the focus from the individual-level, characteristic of most mainstream medicine. It also seeks to complement the classic efforts of public health agencies by addressing a broader range of factors shown to impact the health of different populations. Currently our physician office at Beacon Medical Group Bittersweet has met the criteria for being a certified medical home. A patient-centered medical home is a way of organizing primary care that emphasizes care coordination and communication to transform primary care into “what patients want it to be” Medical homes can lead to higher quality and lower costs, and can improve patients’ and providers’ experience of care. They will organize/pilot a lung screening initiative using Mark Schmeltz, DO and his office practice. They will screen their patients as to who meets the lung screening criteria with pack/yr., smoking history, and age to identify patients at risk. A mailer will be sent to these at-risk patients raising awareness about lung screening and risk of lung cancer. Then when these patients come in for appointments the physician will encourage the low-dose CT program and complete the shared decision making appointment for the screening all at the same time.

**Results:** On June 17, 2015, a presentation to more than 20 employees at Patrick Metals, all of whom were current smokers, was performed. The smoking cessation program was conducted, along with providing awareness of the low-dose CT program.



### ORGANIZATION

American College of Radiology (ACR) / Society of Breast Imaging (SBI)

American Cancer Society (ACS)

U.S. Preventive Services Taskforce (USPSTF)

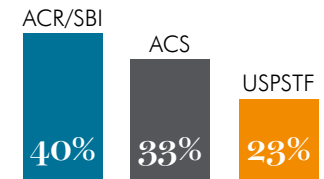
### SCREENING RECOMMENDATION

Annually beginning at age 40

Annually between ages 45-54, biennial beginning at age 55

Biennial between ages 50-74

### MORTALITY REDUCTION



## National Data

**71% ▼** mortality ACR/SBI vs. USPSTF (AJR 2011; 196:W112-W116)

American Cancer Society 2015 Breast Cancer Screening Guidelines (JAMA 2015; 314:1599-1614): Because of **clear evidence of benefit**, the majority of women would want to **begin screening mammography** beginning at **age 40** and **continue annually** as long as overall health is good and have a life expectancy  $\geq 10$  years.

**75%** of women who develop breast cancer are of clinically average risk.

More than **40%** of the years of life lost to breast cancer are women diagnosed in their 40s (*The Oncologist* 2014; 9:107-112).

**False Positives:** A woman would have to undergo >10 consecutive annual screening mammograms for one false positive occurrence (<9% likelihood).

### Overdiagnosis:

- No current ethical effective algorithm to determine which breast cancers (DCIS and invasive) do not require treatment
- No credible report of a breast cancer disappearing without intervention
- $\approx 3\%$  based on literature review (*J Med Screen* 2012; 19:42-56)
- Screening-detected breast cancer treatment morbidity is much less than if detected clinically (*Int J Cancer* 2007; 120:2185-2190)

**3D mammography benefits** (JAMA 2014; 311: 2499-2507): **15% ▼** recall rate, **41% ▲** invasive cancer detection, **7% ▼** false positive biopsies. **\$28.53 savings/woman** screened (*J ClinicoEconomics & Outcomes Research* 2015; 7:53-63).

## Elkhart General Hospital Breast Care Center Data

**70% ▼** screening mammography mortality with American College of Radiology/Society of Breast Imaging recommendations vs. American Cancer Society recommendations based on stage at diagnosis

**50% ▼** mortality with American College of Radiology/Society of Breast Imaging recommendations vs. USPSTF recommendations based on stage at diagnosis

**39% ▼** mortality with American College of Radiology/Society of Breast Imaging recommendations vs. American Cancer Society recommendations based on stage at diagnosis

**47% ▼** mortality 2014 vs. 2000 based on stage at diagnosis

**33% ▼** recall rate (false positives) 2014 vs. 2001 while recommending annual screening mammography beginning at age 40

**23% ▼ (\$6,664)** survival-indexed mean breast cancer diagnosis cost 2014 vs. 2000 (**>\$500,000 annual patient savings per cancer diagnosed**)

### 3D Mammography (implemented September 2015):

- Additional **16% ▼** false positives
- **9% ▼** radiation dose

**Allison Lamont, MD** | Radiology, Inc.; Elkhart General Hospital Radiology Department Chair & Breast Care Center Director

**Samir Patel, MD** | Radiology, Inc.; Principal author of *American College of Radiology Practice Parameter for the Performance of Screening & Diagnostic Mammography* – 2014 and co-author of *American College of Radiology Appropriateness Criteria for Breast Cancer Screening* – 2012



# Lung Cancer Study

By Edwin Annan, MD



**Edwin Annan, MD**

*Pulmonary & Critical Care  
Medicine*

## The Burden of Lung Cancer

Lung cancer is the second most commonly occurring cancer in the U.S. (secondary to prostate cancer in men and breast cancer in women), however, remains the most common cause of cancer-related death. An estimated 221,200 new cases of lung cancer are expected in the U.S. in 2015, accounting for about 13 percent of all new cancer diagnoses as reported by the American Cancer Society.<sup>1</sup> An

estimated 158,040 deaths are expected to occur in 2015 which accounts for about 27 percent of all cancer deaths.<sup>1</sup>

Lung cancer in the U.S. is estimated to account for \$36.1 billion in loss of productivity (after early death) and \$13.4 billion in actual health care expenditure.<sup>2</sup>

## Risk Factors Contributing to Increasing Incidence and Mortality of Lung Cancer

The single most important risk/cause of lung cancer is smoking (mostly cigarette smoking also includes pipe and cigar smoking). The incidence of lung cancer from smoking by far exceeds all other risks of lung cancer.

Other risk factors include occupational or environmental exposure to:

- Radon gas: Released from soil and building materials. This is estimated to be second leading cause of lung cancer in Europe and North America.<sup>1</sup> Also estimated to be the most common cause of lung cancer in non-smokers.
- Secondhand smoke
- Asbestos (particularly among smokers)
- Heavy metals (chromium, cadmium, arsenic)
- Radiation
- Air pollution

Other risks include:

- Rubber manufacturing, paving, painting or chimney sweeping occupations
- Low socioeconomic status: Though not a direct cause of lung cancer, is thought to be associated with increased incidence of smoking that then is associated with an increased risk of developing lung cancer.
- Genetic susceptibility is thought to play a contributing role especially in younger individuals with lung cancer.

## Classification and Staging of Lung Cancer

The current international multidisciplinary classification of lung cancer has been described since 2011<sup>3</sup> still encompasses previously known broad classes of lung cancer as follows:

### 1. Non-Small Cell Lung Cancer

This form of lung cancer accounts for about 85 percent to 90 percent of all lung cancer. They are further classified as:

- Adenocarcinoma: Most common form of lung cancer in the United States among both men and women
- Squamous cell carcinoma
- Non-small cell lung cancers not otherwise specified (Previously large cell carcinoma)

### - Stages of Non-Small Cell Lung Cancer

Current staging is based on the TNM (Tumor, node [lymph node], metastasis) staging introduced by the International Association for the Study of Lung Cancer in 2009 (Refer Table 1). A simplified summary of this in group staging (Refer Fig 1) would be as follows:

**Stage 0:** Cancer is found only in the top layers of cells lining the air passages, and has not extended deeper into the lung tissue.

**Stage I:** Tumor is smaller than or equal to 5 cm (about 2 inches) in maximum diameter and has not spread to any other tissues or lymph nodes.

**Stage II:** Tumor is either between 3 and 7 cm (between about 1.2 to 3 inches) in size, OR has spread to the lymph nodes, OR has invaded the tissues surrounding the lung (pleural lining or chest wall), OR has started to invade the large bronchial tubes.

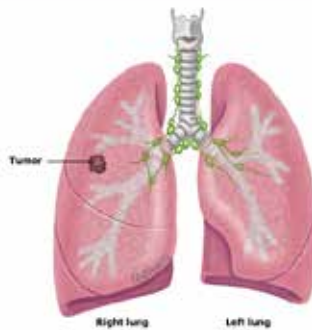
**Stage IIIA:** Tumor is bigger than 7 cm (about 3 inches), OR has spread to the lymph nodes in the center of the chest (called the mediastinum), OR has spread to the rib cage, heart, esophagus or the trachea without lymph node involvement in center of chest.

**Stage IIIB:** Tumor has spread to lymph nodes on the other side of the mediastinum or to the lymph nodes above or behind the clavicle with or without involvement of the rib cage, heart, esophagus or to the trachea.

**Stage IV:** Cancer has spread to cause fluid to collect around the lung or heart (called a malignant effusion), OR has spread to the opposite side of the chest OR outside the chest.

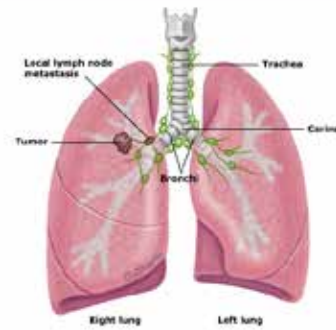
Fig 1: Demonstration of tumor involvement in different stages of lung cancer. Adapted from Thomas, KW et al. Tumor node metastasis (TNM) staging system for non-small cell lung cancer In: UpToDate, Post TW (Ed), UpToDate, Waltham, MA. Accessed on December 2015.

#### Stage I lung cancer



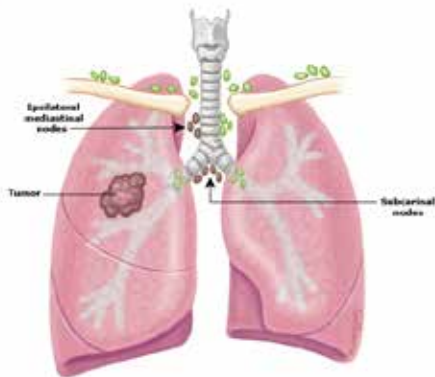
This figure depicts a stage I cancer. In stage I lung cancer, the tumor is small and has not spread to any of the lymph nodes or other structures in the chest.

#### Stage II lung cancer



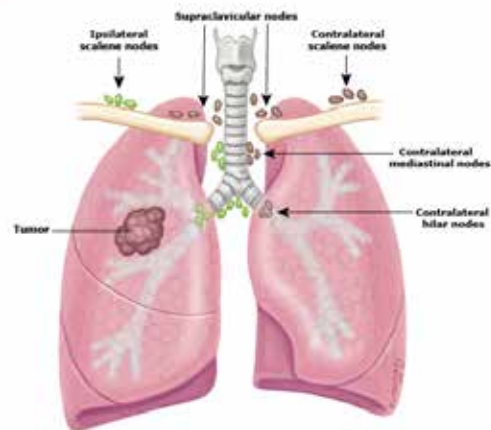
This figure depicts a stage II cancer. In stage II cancer, the tumor is bigger than in stage I or it has spread to nearby lymph nodes or it has spread into the large bronchial tubes.

#### Stage IIIA NSCLC

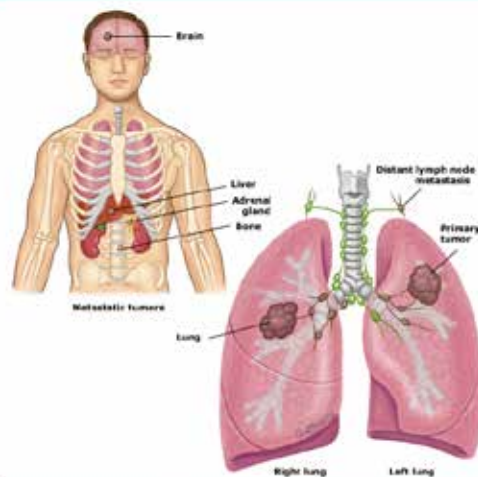


This figure depicts a stage IIIA cancer. In stage IIIA cancer, the tumor has spread to lymph nodes in the middle of the chest or it has spread into the structures in the middle of the chest like the main windpipe (called the trachea) or the swallowing tube (called the esophagus).

#### Stage IIIB NSCLC



#### Stage IV lung cancer



This figure depicts a stage IV cancer. In stage IV cancer, the tumor has spread (metastasized) somewhere distant from the original tumor. This could include spread to the other side of the chest or to other places in the body such as the bones, the brain, the liver, or the adrenal glands. Stage IV cancer can also cause fluid collections to build up inside the chest, which are called malignant effusions.

Table 1. TNM staging system for lung cancer. Adapted from Thomas, KW et al. Tumor node metastasis (TNM) staging system for non-small cell lung cancer. In: UpToDate, Post TW (Ed), UpToDate, Waltham, MA. Accessed December 2015.

### TNM staging system for lung cancer (seventh edition)

Primary tumor (T)			
T1	Tumor ≤3 cm diameter, surrounded by lung or visceral pleura, without invasion more proximal than lobar bronchus*		
T1a	Tumor ≤2 cm in diameter		
T1b	Tumor >2 cm but ≤3 cm in diameter		
T2	Tumor >3 cm but ≤7 cm, or tumor with any of the following features:		
	Involves main bronchus, ≥2 cm distal to carina		
	Invades visceral pleura		
	Associated with atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung		
T2a	Tumor >3 cm but ≤5 cm		
T2b	Tumor >5 cm but ≤7 cm		
T3	Tumor >7 cm or any of the following:		
	Directly invades any of the following: chest wall, diaphragm, phrenic nerve, mediastinal pleura, parietal pericardium, main bronchus <2 cm from carina (without involvement of carina)		
	Atelectasis or obstructive pneumonitis of the entire lung		
	Separate tumor nodules in the same lobe		
T4	Tumor of any size that invades the mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, esophagus, vertebral body, carina, or with separate tumor nodules in a different ipsilateral lobe		
Regional lymph nodes (N)			
N0	No regional lymph node metastases		
N1	Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension		
N2	Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)		
N3	Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)		
Distant metastasis (M)			
M0	No distant metastasis		
M1	Distant metastasis		
M1a	Separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural or pericardial effusion		
M1b	Distant metastasis (in extrathoracic organs)		
Stage groupings			
Stage IA	T1a-T1b	N0	M0
Stage IB	T2a	N0	M0
Stage IIA	T1a,T1b,T2a	N1	M0
	T2b	N0	M0
Stage IIB	T2b	N1	M0
	T3	N0	M0
Stage IIIA	T1a,T1b,T2a,T2b	N2	M0
	T3	N1,N2	M0
	T4	N0,N1	M0
Stage IIIB	T4	N2	M0
	Any T	N3	M0
Stage IV	Any T	Any N	M1a or M1b

\* The uncommon superficial spreading tumor of any size with its invasive component limited to the bronchial wall, which may extend proximal to the main bronchus, is also classified as T1a.

Adapted from: Goldstraw P, Crowley J, Chansky K, et al. The IASLC Lung Cancer Staging Project: Proposals for the revision of the TNM stage groups in the forthcoming (seventh) edition of the TNM classification of malignant tumours. *J Thorac Oncol* 2007; 2:706.



## 2. Small Cell Lung Cancer

This accounts for 10 to 15 percent of lung cancers and is thought to be more exclusively secondary to smoking. Small cell lung cancer is more rapid growing and so has a higher mortality.

### Stages of Small Cell Lung Cancer

**Limited stage:** Cancer is confined to one side of the chest and may involve nearby lymph nodes. This is further staged using TNM classification and grouped similar to non-small cell lung cancer.

**Extensive stage:** Cancer has spread to other regions of the chest or other parts of the body.

## General Overview of Treatment of Lung Cancer

Treatment options most commonly used depend on the stage of lung cancer. Broad modalities for therapy include surgery, chemotherapy and radiation therapy.

### Non-Small Cell Lung Cancer

**Stage I:** Surgery offers best chance of cure if the patient has adequate pulmonary function, no co-existing comorbidities that preclude surgery and is agreeable to surgery. Other options to be considered if surgery cannot be performed include radiation therapy and more recently described radiofrequency thermal ablation therapy (RFA). RFA is yet to be placed into guideline as this is still a newer therapy.

**Stage II:** Surgery offers best chance for cure. Chemotherapy is usually recommended after surgery to treat suspected micro-metastasis to further reduce recurrence and overall survival rates. Radiation therapy may replace surgery in patients who are not candidates for surgery.

**Stage IIIA:** Neo-adjuvant chemotherapy may precede surgery then followed by combined chemotherapy and radiation therapy. Surgery may not always be possible in which case combined chemotherapy and radiation therapy would be the favored option.

**Stage IIIB:** Chemotherapy followed by radiation therapy would be favored option for therapy. Radiation therapy may be only therapy if patient is too ill for chemotherapy. Surgery is not favored in stage IIIB cancer.

**Stage IV:** Palliative chemotherapy. Radiation may be considered for symptom relief.

### Small Cell Lung Cancer

**Limited stage:** Combined chemotherapy and radiation therapy.

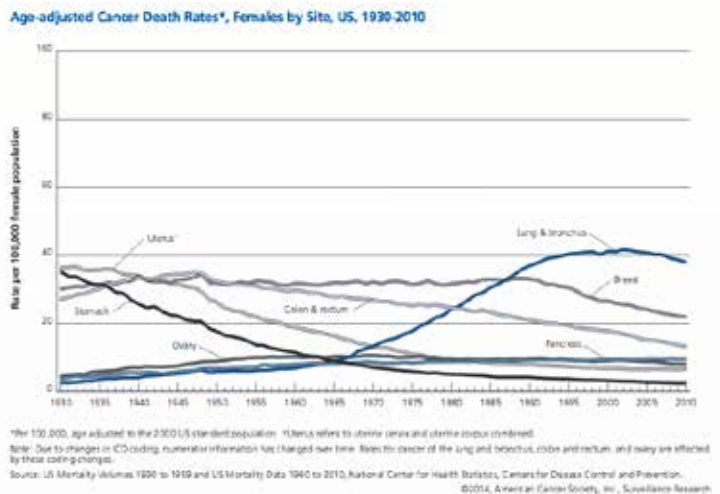
**Extensive stage:** Palliative chemotherapy.

## Trends in Lung Cancer Incidence and Mortality in the U.S.

It is interesting to note that the incidence of lung cancer in the U.S. rose dramatically from prior to the 1930s when deaths from stomach, colon, prostate cancer in men and

uterine, breast and ovarian cancer in women, liver and pancreas cancers had worse mortality. (Refer Fig 2 and 3)

Fig 2. All cancer mortality in women in U.S. by site from 1930 to 2010

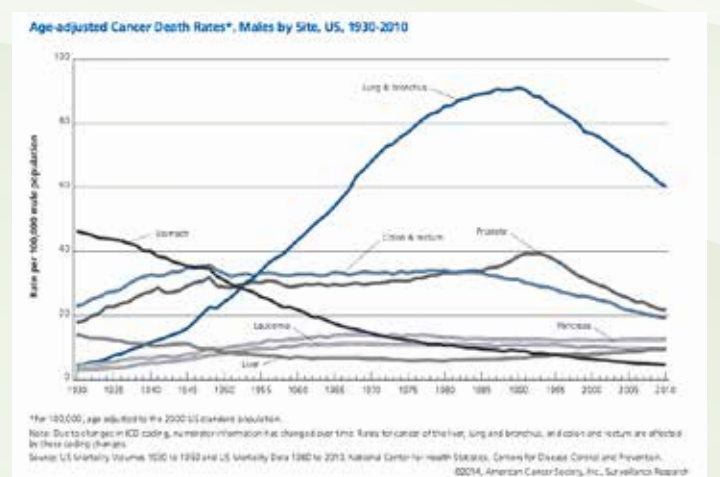


The Surgeon General Report in 1964 on health and smoking was the first comprehensive public declaration regarding the detrimental relationship between smoking and health. It reported that there was a 70 percent increased mortality of smokers over non-smokers and that there was a 10- to 20-fold increased risk of developing lung cancer between average and heavy smokers.<sup>1</sup>

The report created an increased awareness that smoking was a direct cause of lung cancer. The prevalence of smoking in adults >18y from the year after this report, 1965, to 2002 declined in the US from 43 percent to 23 percent.<sup>4</sup> A more recent CDC report as of 2013 mentioned the prevalence of smoking to be at approximately 18 percent.<sup>5</sup>

It was not until the mid-1980s in men and mid-2000s in women when the incidence of lung cancer peaked (Fig 4). From 2007 to 2011, lung cancer incidence rates decreased by 3.0% per year in men and by 2.2% per year in women.<sup>1</sup>

Fig 3. All cancer mortality in men by site from 1930 to 2010

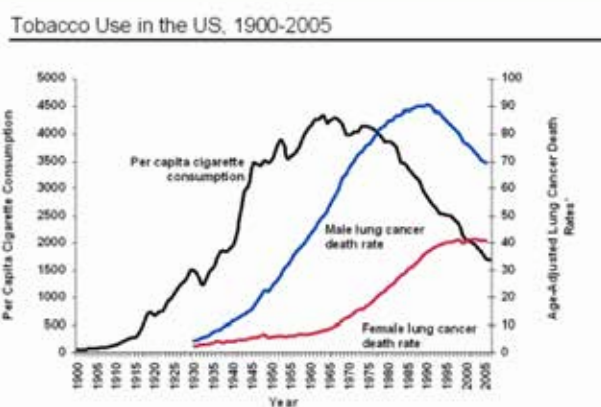


Death rates began declining in 1991 in men and in 2003 in women. From 2007 to 2011, death rates from lung cancer decreased by 2.9 percent per year in men and by 1.9 percent per year in women.<sup>1</sup>

The consistent gender difference in lung cancer incidence and mortality is thought to have resulted from different historical patterns of smoking uptake and cessation over the previous decades.

Nonetheless, the incidence of lung cancer remains high and continues to remain the second highest cause of newly occurring cancer in the U.S. despite the decline in incidence. The U.S. incidence of prostate cancer in men alone or breast cancer in women alone remains at No. 1. Lung cancer also accounts for more deaths in the U.S. than any other cancer including prostate cancer and breast cancer combined.

Fig 4. Trends in tobacco use and lung cancer death rates\* in the U.S. from 1900 to 2005.



Adapted from Cancer Statistics 2013. A presentation from the American Cancer Society. <http://www.cancer.org/research/cancerfactsstatistics/cancerfactsfigures2013/cancer-statistics-2013-slide-presentation.pdf>. Accessed 12/9/15

## Trends in Lung Cancer Incidence and Mortality Globally

On a more global scale, between 2002 and 2030, though tobacco-attributable deaths are expected to decrease by 9 percent in high-income countries (including the U.S.), tobacco related deaths are expected to increase by 100 percent (from 3.4 million to 6.8 million) in low-and middle-income countries,<sup>1</sup> making the fight against lung cancer far from over. This is thought to be a direct result of increasing rates of smoking worldwide, mostly attributable to lower socioeconomic status and poorer awareness about the effects of smoking on health. About a quarter of the world's population are smokers.<sup>1</sup>

## Current Lung Cancer Mortality in the U.S.

The overall survival rate of lung cancer at 1 year is 44 percent and 17 percent at 5 years.<sup>6</sup> Treatment modalities for lung cancer have improved over the past 30 years. Despite this, the survival rate of lung cancer diagnosed at distant stage (presumably stage IIIB and stage IV), even

with current advances in management, remains at 26 percent at 1 year and 4 percent at 5 years.<sup>6</sup>

If lung cancer is diagnosed earlier when disease is still localized (Stage I), the 5-year survival rate from lung cancer improves to 54 percent.<sup>6</sup>

The cytological type of lung cancer also affects survival. The overall 5-year survival for small cell lung cancer is 6 percent while that for non-small cell cancer is 21 percent.<sup>6</sup>

## The Burden of Lung Cancer at Elkhart General Hospital

Elkhart General Hospital, now a member of Beacon Health System, serves a wide area with the majority of individuals from Elkhart County in northern Indiana and then the surrounding counties including St. Joseph County, Cass County, Kosciusko County and La Grange County. In 2014, there were a total of 136 newly diagnosed cases of lung cancer at Elkhart General Hospital. There have been 100 to 136 cases yearly over the past 10 years. The number of newly diagnosed cases a year of lung cancer is second only to breast cancer in women at Elkhart General Hospital. Unlike current trends nationwide, lung cancer is the most commonly occurring cancer in men at Elkhart General Hospital.

For patients who were diagnosed with lung cancer at any stage in 2010 at Elkhart General Hospital, the overall survival was 26.16 percent at 5 years.

## Reducing the Burden of Lung Cancer

Understanding the burden of lung cancer helps create an appreciation of a need to improve efforts to reduce the burden.

**Smoking Cessation:** The effects of smoking on lung cancer are non-disputable. Trends in smoking uptake and cessation have thus been the biggest drivers of the incidence of lung cancer. Smoking cessation has thus been the primary and the most important long-term goal for reducing preventable lung cancer deaths. The Indiana Tobacco Prevention and Cessation program was adopted as part of the Indiana State Department of Health in July 2011 to approach the CDC recommendations for states to fund programs that promote smoking cessation, reduce secondhand smoking and prevent smoking uptake by youth.<sup>7</sup> These programs are now easily accessible via several hotlines including 1-800 QUIT NOW and [www.smokefree.gov](http://www.smokefree.gov). In 2015, however, the American Cancer Society reported that Indiana was one of several states that spent < 10 percent of recommended funding on tobacco prevention programs (Fig 5)<sup>8</sup> suggesting an area requiring improvement for Indiana that is likely to further boost smoking cessation rates. Indiana's smoking rate was at 22.9 percent in 2014 which is higher than the nationwide rate of 18 percent.<sup>9</sup> On a positive note, Indiana is one of 2 states as of 2015 that offered a comprehensive cessation benefit to tobacco users on Medicaid.<sup>10</sup>

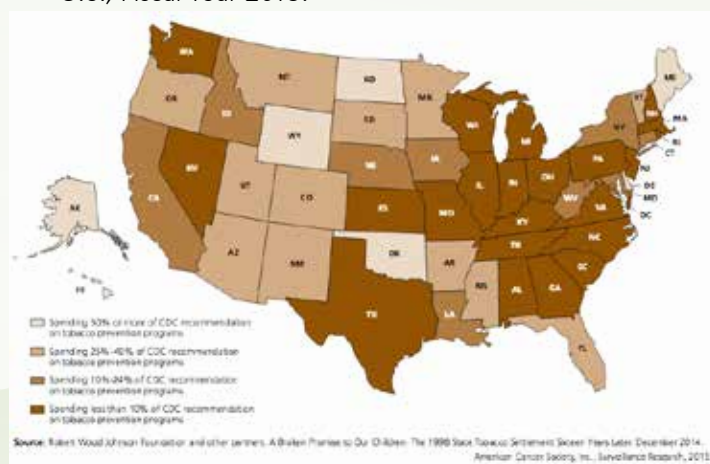
Elkhart County has a high smoking rate reported in 2010 at 23 percent.<sup>11</sup>

At Elkhart General Hospital, a broad range of patient education tools remain available for patients as well as primary and specialty care office implementation of education services. These services aim to assist smoking cessation and prevent smoking uptake in younger individuals.

**Early Diagnosis:** Undoubtedly, the later the stage lung cancer is diagnosed, the worse the survival rate. About 57 percent of all lung cancer is diagnosed at stage IV. Only 15 percent of all lung cancers are diagnosed at localized stage (stage I and stage II).<sup>6</sup> The reality of a, more likely, later stage of diagnosis of lung cancer clearly translates into a reason why lung cancer mortality remains high.

The most useful tool available today for allowing earlier diagnosis of lung cancer is lung cancer screening in the appropriate population.

Fig 5. Funding for tobacco prevention programs, by state, U.S., Fiscal Year 2015.<sup>8</sup>



## Lung Cancer Screening

Lung cancer screening has been seen as a modality to improving earlier diagnosis since the 1970s. Screening was comprised of serial chest X-rays in smokers and former smokers, which did improve the lung cancer stage at diagnosis and was associated with more favorable survival rates. There however remained sentiment that with advances in CT scan imaging, there was a potential to do better at improving earlier diagnosis.

A landmark National Lung Screening Trial in 2011 showed a significantly reduced lung cancer mortality compared with low-dose CT scan screening in patients without a suspicion of cancer other than their history of smoking (>30 pack year history, active or former smokers who quit within the past 15 years) when compared with chest X-ray screening that was traditional then.<sup>12</sup> In both groups, many adenocarcinomas and squamous cell carcinomas were detected at either stage I or stage II, suggesting both modalities as having a benefit being used as screening tools. However, the stage distribution was

more favorable with more early stage and less late stage disease diagnosed in the low-dose CT group than in the radiography group.

Since then, guidelines by several societies including the American Cancer Society, the U.S. Preventive Service Task Force (USPSTF) and the National Comprehensive Cancer Network (NCCN) have been implemented (Table 2). These guidelines are now recognized by several other institutions including the Centers for Medicare and Medicaid Services (CMS), which now entirely cover lung screening CT scanning as a preventive service.<sup>13</sup> Private health care and financial institutions have, however, been slower to recognize and adopt these guidelines but have shown some progression regarding this more lately.

## Lung Cancer Screening at Elkhart General Hospital, a Participating Hospital in Beacon Health System

Lung cancer screening was started at Elkhart General Hospital in June 2012, the first hospital in the region to do so after the 2011 lung screening guideline had been established. Lung screening patients are determined according to current guidelines. (Refer Table 2). The program is associated with a multidisciplinary Thoracic Oncology Clinic under which radiologists, pathologists, thoracic surgeons, medical oncologists, radiation oncologists, pulmonologists, palliative care services, advanced practice nurses and ancillary/support staff collaboratively discuss the clinical stage of disease and different treatment options according to current guidelines regarding patients with lung cancer. The patient and family are routinely invited with a goal to maintain transparent discussions between specialties and explain or address all questions and concerns the patient may have.

## Lung Cancer Study

**Lung Cancer Screened Group:** We reviewed data from the lung screening program from commencement of the program in June 2012 to July 2015, comprising 3 years of data and labelled this the lung screened group.

Since June 2012, 377 patients have come through the lung screening program, totaling 643 lung screen CT scans through July 2015. Several patients were followed with continued lung screening that is now required annually according to current guidelines. This explains the higher number of CT scans performed than patients screened.

A total of 14 patients were found to have a positive biopsy for lung cancer. The proportion of new patients diagnosed with lung cancer through the lung screening program was 3.7 percent. The average age of diagnosis was 64.1 years.

The histology identified included one patient with small cell lung cancer (7.1 percent) and 13 patients (92 percent) with non-small cell lung cancer.



The stages at which lung cancer was diagnosed in this lung screened group is represented in Fig 6. More than half the percentage of lung screened patients (64.2 percent) were diagnosed at stage I. 21.4 percent were diagnosed at stage II and 14 percent were diagnosed at stage III. (Fig 6). A remarkable realization is that 85.6 percent of patients in this group were diagnosed at early stage described as stage I and stage II. There was no patient diagnosed at stage IV lung cancer. As previously mentioned, currently 15 percent of all lung cancer, nationwide, is diagnosed at early stage and 57 percent of lung cancers nationwide are diagnosed at stage IV.<sup>6</sup> There was an obvious improvement in stage of diagnosis of lung cancer in the lung screened group.

**Non-Lung Screened Group:** We also reviewed data from the cancer registry during the same 3-year period which we labeled the non-lung screened group. This was to allow comparison between groups to identify differences in stage of diagnosis.

There were a total of 309 patients diagnosed with lung cancer outside of the lung screening program within this 3-year period. The average age of diagnosis was 68.5 years. Histology showed 261 patients (84.4 percent) with non-small cell lung cancer and 48 patients (15.5 percent) with small cell lung cancer. (Fig 7). Two patients had an unknown diagnosis.

Fig 6. Distribution of lung cancer by stage in lung cancer within the lung cancer screening program.

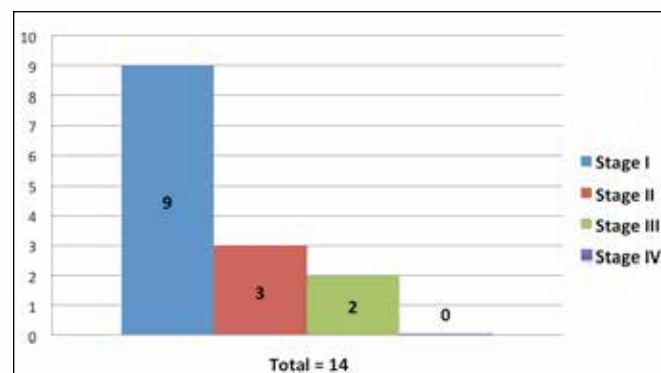


Fig 7. Distribution of lung cancer by stage in lung cancer at Elkhart General Hospital outside of lung screen program.

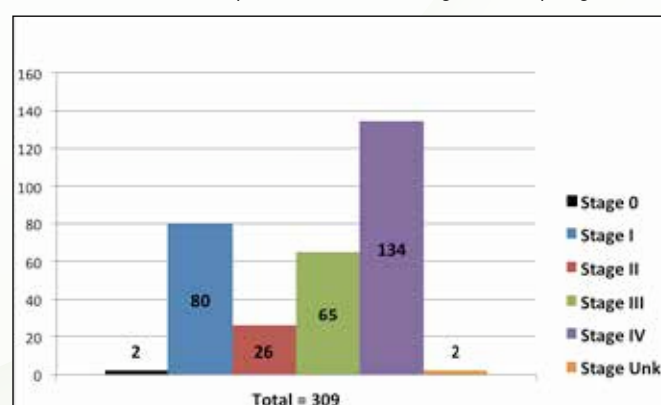
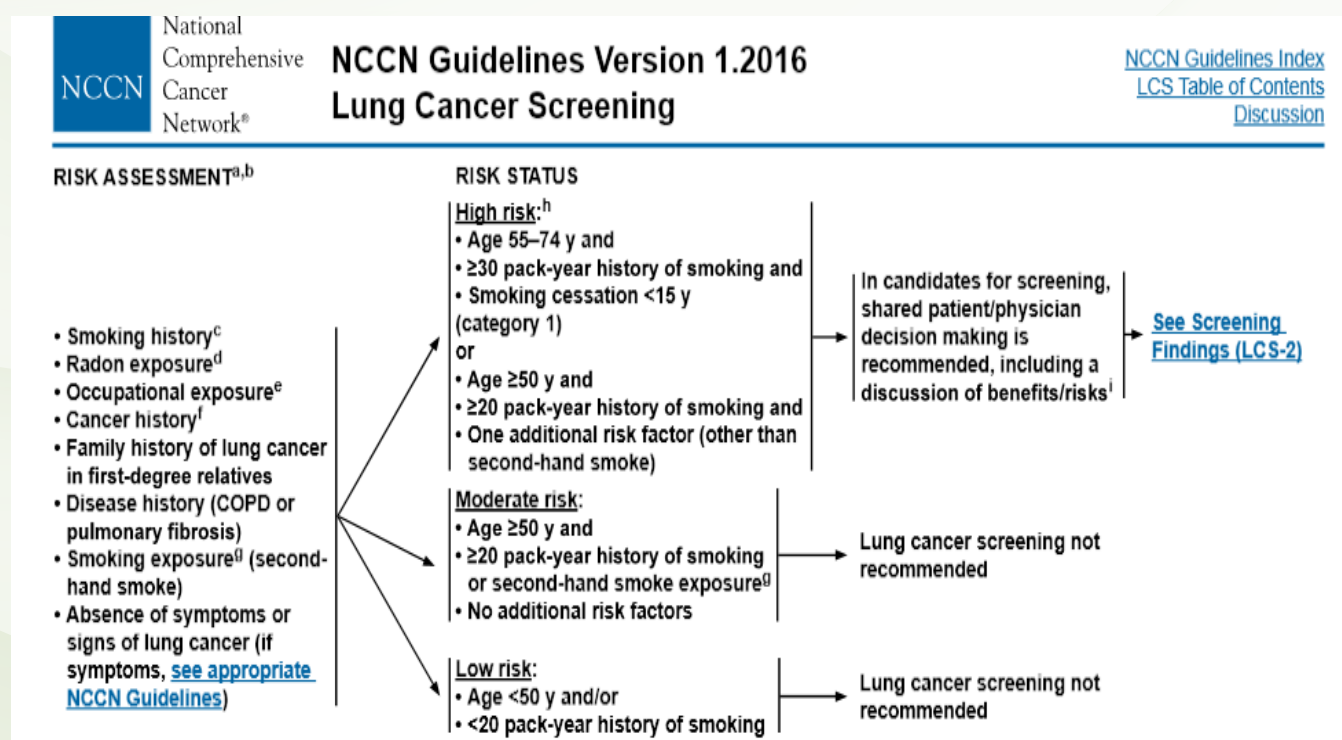
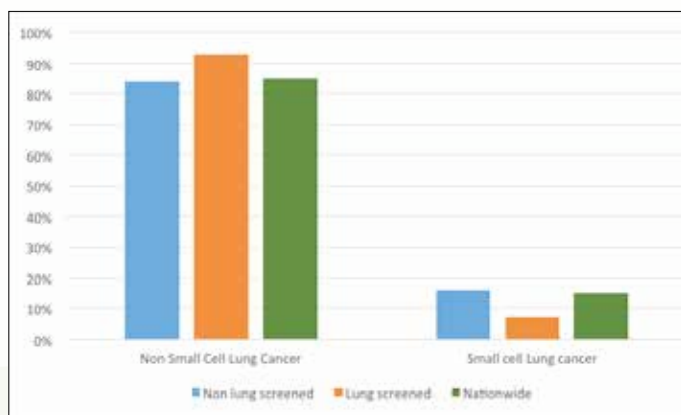


Table 2: Current NCCN Guidelines regarding who to screen for lung cancer and who not to screen. Adapted from Lung Cancer screening version 1.2016. NCCN Clinical Practice Guidelines in Oncology. [http://www.nccn.org/professionals/physician\\_gls/f\\_guidelines.asp#detection](http://www.nccn.org/professionals/physician_gls/f_guidelines.asp#detection). Accessed December 2015.



Both groups showed a small cell to non-small cell proportion that is similar to nationwide reported proportions. (Fig 9).

Fig 9. Chart showing proportion of non-small cell vs small cell lung cancer in the lung screened vs non-lung screened vs nationwide populations.

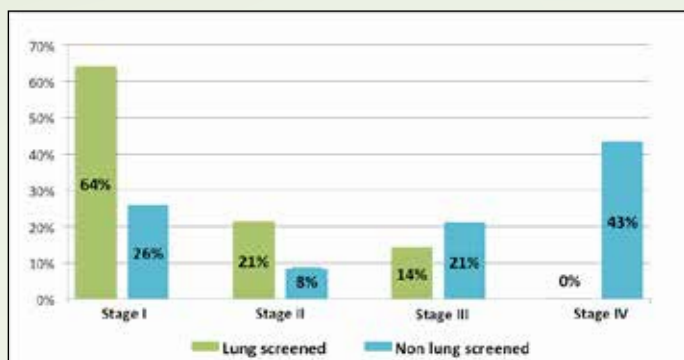


In the non-lung screened group, 26 percent of patients were diagnosed at stage I. This is still better than the nationwide 15 percent diagnosed at stage I, however, appreciably lower than the percentage diagnosed at stage I in the lung screened group. Forty-three percent of patients were diagnosed at stage IV in the non-lung screened group where there was no diagnosis of stage IV in the lung screened group. Staging could not be determined on two patients.

Until now, an assessment of stage of diagnoses at Elkhart General Hospital through the lung screened group has not been possible considering the small number of patients diagnosed with lung cancer in this group. When the stage of diagnosis in the lung screened group is compared to stage of diagnosis in the non-lung screened group, there is obvious contrast in earlier stage of diagnosis in the lung screened group. The comparison by stage is represented in Fig 10.

Though a higher sampling size is needed for more adequate comparison, one can extrapolate that if all patients at risk underwent lung screening, there would be a high chance that stage IV diagnoses of lung cancers would be significantly reduced.

Fig 10. Chart showing percent of each stage of diagnosis of lung cancer diagnosed for the lung screened group vs the non-lung screened group.

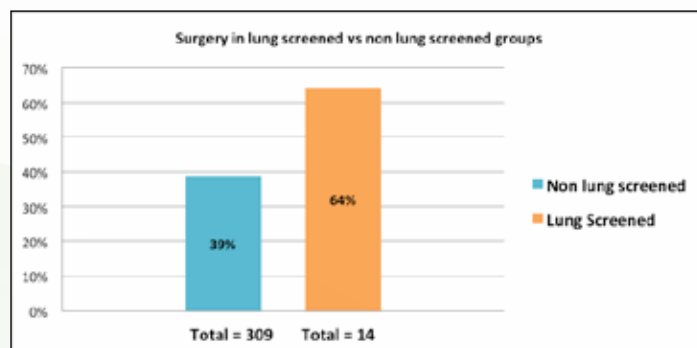


Mortality/survival was not evaluated in this study secondary to the small sampling size and the short 3-year period of follow-up.

## Surgical Cure

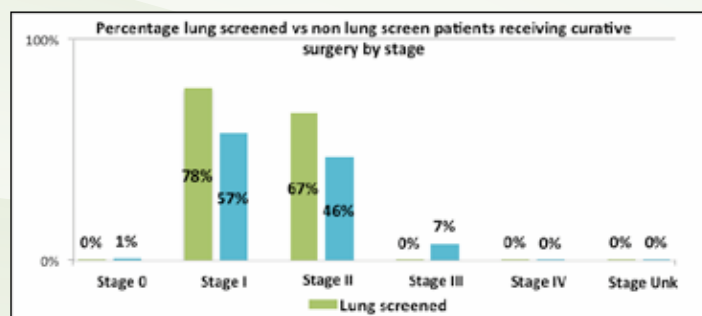
Mortality could not be evaluated in this study because of the short 3-year period of follow-up. Surgical cure is however associated with improved survival. There is overall a higher percentage of patients that went through curative surgery. Thirty-nine percent of lung cancer patients who were not lung screened had curative surgery. However, 64 percent of those who were lung screened underwent curative surgery. (Fig 11)

Fig 11. Chart showing percentage of patients in each group that underwent curative surgery.



This improvement in curative surgery rates was maintained even when each stage of lung cancer was evaluated separately. There were improved rates of surgery in earlier stages of diagnosis (stage I and stage II) in the lung screened population than in the non-lung screened population. (Fig 12). This may also be an effect of an associated multidisciplinary thoracic oncology program.

Fig 12. Percentage lung screened vs non lung screened patient who received curative surgery by stage.



## Conclusions

The landmark National Lung Screening Trial in 2011 was the beginning of a radical change in the understanding of early diagnosis of lung cancer that created giant leaps in improving the mortality of lung cancer. Elkhart General Hospital, a member of Beacon Health System, has established a lung screen program that suggests an improved early stage diagnosis of lung cancer. Earlier stage diagnosis of lung cancer likely translated into increased attempt at curative surgery for these patients.

More study is needed after a larger sampling size in the lung screened group is obtained to assess the benefit of lung screening more deeply, and further study is needed to ascertain a translation into improved mortality of patients at Elkhart General Hospital.

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# Elkhart General Hospital Low Dose CT Lung Cancer Screening Population Health Program

By Samir Patel, MD

Radiology, Inc. Value Management Program Director

Elkhart General Hospital Board of Directors

## Lung Cancer Background

- Leading cause of cancer deaths in men, and women
- >200,000 new cases diagnosed and >150,000 deaths in 2016
- Lifetime risk of 6.6%
- 5-year mean survival 17.4%
- Indiana: 14.6% higher incidence of lung cancer than national average (indianacancer.gov); IN-12th highest adult smoking rate in the country (www.ingov/isdh/25194.htm)
- Lung Cancer-Elkhart General Hospital (EGH)
  - 100 new patients diagnosed each year
  - 45% have distant spread (metastasis) at diagnosis

## American College of Radiology (ACR) Designated Lung Cancer Screening CT Center Accreditation

- Program began in June 2012
- Samir Patel, MD, Albert Cho, MD, Allison Lamont, MD and Toni Klatt-Ellis, APRN. **Implementing a Community Hospital Lung Cancer Screening Program: A Multidisciplinary Program and a Standardized Reporting System.** J Am Coll Radiol 2014; 11: 527-530
- **443 unique patients** have been imaged
- **14 Lung Cancers Diagnosed (13 with completed staging information)**

## Eligible Patients

- Men and women aged 55-74 with a 30+ pack-year smoking history and not symptomatic
- Currently smoking or quit within past 15 years

## # Cancers Diagnosed/# Unique Patients

- EGH: 1/32
- National: 1/41 (NLST; N Engl J Med 2011;365: 395-409)
- 1.3x higher rate

## 5-year Mortality Reduction of Screening Detected Lung Cancers Based on Stage @ Diagnosis

- EGH: ~50% (average survival of 34.7% vs. 17%)
- NLST: 20%

## Radiation Dose

- Low Dose CT dose ~½ of annual background radiation dose
- 63% CT-guided lung biopsy dose reduction (Radiology, Inc. Diagnostic and Interventional Radiologists)

## Reimbursement/Cost

- Covered by insurers
- Codes(Reimbursement): G0296+G0297(~\$185)
- Cost-effective: <\$19,000/life-year saved
- Annual appropriate revenue enhancement opportunity for Beacon Health System (~>\$300,000)

## Annual Lung Screening CT Examinations at Beacon Health System 2015

- EGH: 315
  - Walt Halloran, MD, Allison Lamont, MD, Albert Cho, MD, Pedro Miro, MD, Al Harding, MD, Nazar Golewale, MD, Sheila Witous, Betsy Flesh, Stacy Nyerges, Edwin Annan, MD, Greg Losasso, Cindie McPhie, Kim Greising, Toni Klatt-Ellis, Jackie Lenfestey, Vicky Carter, Bill Molen, Ray Kiendl, Linda Lackman, Jenny Sotobeer, Deann Toth, Phil Morris
  - Support from cardiologists and primary care physicians
- MEM: 31

## Thoracic Clinic

- Multi-disciplinary
- Patients are present and participatory

# Awards, Accreditations and Recognitions



## Lung Cancer Screening Center Featured in National Professional Journal

An article authored by Samir Patel, MD, Albert Cho, MD, Allison Lamont, MD, 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 been granted full accreditation from the Commission on Cancer. This achievement is the seal of approval for cancer programs from the American College of Surgeons and is the formal acknowledgement of commitment to providing high-quality cancer care to the community and patients with cancer. Every three years the hospital is subject to a rigorous evaluation process and review of performance including an on-site evaluation by a physician surveyor. Compliance is based on assessment of the most critical program features including clinical services, community outreach, 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.

## NQNBC 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 25<sup>th</sup> 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.

# Survivorship



**Jackie Lenfestey, MSN,  
FNP, APRN-BC**

*Oncology Nurse Practitioner*

Life after cancer treatment can sometimes present both physical and emotional challenges. All too often, individuals who complete cancer treatment and are cancer free have complex health care concerns that repeatedly go unmet.

That's why Elkhart General Hospital developed the Cancer Survivorship Clinic, a long-term follow-up program designed to create a bridge between cancer treatment and your primary care physician.

Care is provided by an Advanced Practice Nurse (APN) who has expertise in cancer care and survivorship. Patients in this program receive careful monitoring for possible recurrence of their cancer and have the opportunity to discuss their cancer treatment, better understand its impact on their health and learn how to stay as healthy as possible.

## Highlights of the cancer survivorship clinic

- *Survivorship Care Plan (SCP)* — a personalized record of cancer treatment and recommendations for ongoing monitoring
- Follow-up assessments for cancer recurrence
- Evaluation for long-term complications of treatment
- Education about methods to prevent new health problems and stay as healthy as possible
- Screening recommendations for other cancers, according to national guidelines
- An emphasis on healthy lifestyle practices
- Referrals to specialists, resources or services as needed
- Communication with primary care physician and treatment team

Criteria set by the Commission on Cancer for Oncology Programs to have in place by 2015.

## Patients excluded (ineligible) from Standard 3.3 requirements include:

- Patients with Stage 0 or IV metastatic disease, though, survivors by varying definitions are not required to receive a SCP under standard 3.3. However, programs may choose to provide SPCs to metastatic patients.
- Patients who are pathologically diagnosed but never treated or seen for follow-up by the accredited program are not required to receive a SCP from the facility providing diagnosis.

## Implementation of the standard and required percentage of SCPs provided must follow the schedule as outlined:

- January 1, 2015-December 31, 2015: Implement process to provide SCPs to > 10 percent of eligible patients who have completed treatment.
- End of 2016: Provide SCPs to > 25 percent of eligible patients who have completed treatment.
- End of 2017: Provide SCPs to > 50 percent of eligible patients who have completed treatment.
- End of 2018: Provide SCPs to > 75 percent of eligible patients who have completed treatment.





# 2015 Elkhart County Community Health Needs Assessment

During 2015, Beacon Health System conducted a joint Community Health Needs Assessment (CHNA) for the approximate 200,000 residents of Elkhart County and the approximate 267,000 residents of St. Joseph County, which reflect the primary market service areas for Elkhart General Hospital and Memorial Hospital of South Bend, respectively.

## Participants in the Elkhart County CHNA Process

Community engagement and feedback were integral to the integrity and validity of the Elkhart County CHNA process. Throughout the process, input was actively solicited and secured from persons who hold a broad knowledge of and represent the broad interests of Elkhart County, including public health, minority, cultural and underserved populations; from the community members at large; and from the medical and health services fields.

In late 2014 through February 2015, dialogue on the CHNA planning and coordination occurred among Beacon Health System executives and the Community Benefit staff from both Elkhart General Hospital and Memorial Hospital of South Bend.

The phases of the CHNA consisted of a quantitative review of secondary data, the completion of an online key informant survey and the completion of an online community-based online survey. From this data and from input with key community stakeholders, including representatives from the medical, education, philanthropic and health care sectors, the identified health needs that Elkhart General Hospital will be addressing from 2015-2017 are **obesity, access to health care, access to health care coverage and perinatal health**. Health plans for addressing these health needs are documented in the Implementation Strategy plan that will be posted with the CHNA on the Elkhart General Hospital website.



Sample promotional messages for the Community Health Needs Assessment.

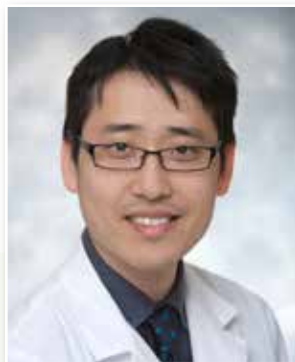




# *New Treatment Implemented At Elkhart General Hospital*

## **HDR Brachytherapy**

*Implemented in 2015 with Brion Shin, MD*



**Brion Shin, MD**  
*Radiation Oncologist  
and Cancer Conference  
Coordinator*

Elkhart General Hospital is implementing the use of a new device for managing cervical cancer that greatly reduces treatment time, helping to prevent patients from developing pressure ulcers and other problems associated with extended time lying on one's back, and reducing staff's exposure to radiation.

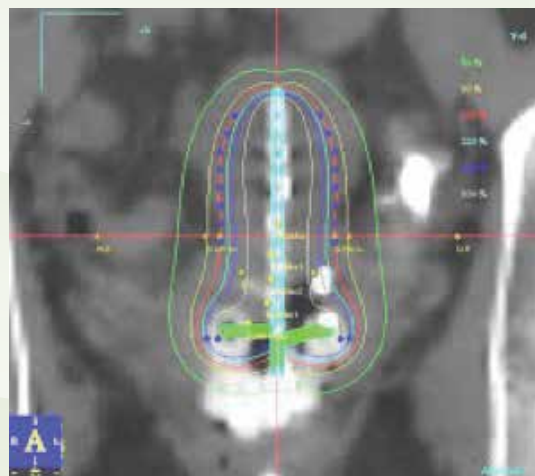
For more than 100 years, the standard of care for cervical cancer has been low-dose-rate brachytherapy, which required patients

to lie still in their hospital beds for two days. A new device, the HDR Tandem and Ovoid, purchased in 2015, allows staff to perform the treatment with high-dose-rate brachytherapy, reducing treatment time to approximately 20 minutes. There is no radiation exposure to staff using the new procedure.

The Tandem and Ovoid is inserted into the vagina in an operating room by the radiation oncologist and then stabilized with packing. The patient is then taken to the radiation oncology department for CT scans that are used for generating a 3D radiation therapy plan for treatment. This allows for a more accurate dose representation compared to previous plans done in 2D, and improves ability to protect critical normal structures.

After the physician reviews the treatment plan, the patient is taken for the HDR treatment. The radiation therapist and physicist ensure that the catheters, which will carry the radioactive source into the device, are correctly attached. The physician oversees the entire procedure and treatment.

After the treatment is completed, the device is removed and the patient is able to go home. The physician will usually want the patient to receive another two to five treatments over the following weeks, at which time the whole procedure is repeated.

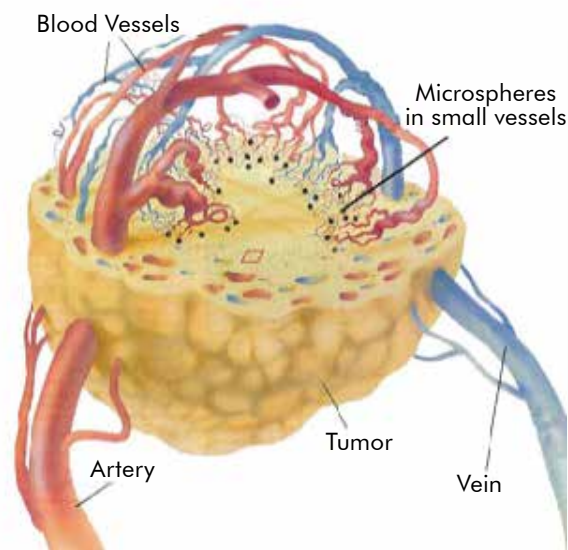


# Radioembolization (Y-90)



**Nazar Golewale, MD**  
*Interventional Radiology*

Radioembolization is a minimally invasive procedure that combines embolization and radiation therapy to treat liver cancer. Tiny glass or resin beads filled with the radioactive isotope yttrium Y-90 are placed inside the blood vessels that feed a tumor. This blocks the supply of blood to the cancer cells and delivers a high dose of radiation to the tumor while sparing normal tissue. It can help extend the lives of patients with inoperable tumors and improve their quality of life.



Elkhart General Hospital began performing this procedure under the direction of Nazar Golewale, MD in late 2014. Since August of 2014, staff have performed 9 total procedures on 6 patients. This is a less invasive and less toxic treatment method to aggressively treat liver cancers with metastatic. This treatment option had not been offered locally in the past and now allows patients the advantage of being treated closer to home.



# Rapid Quality Response System

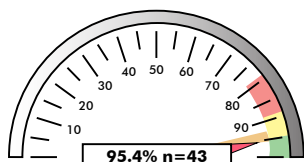
Rapid Quality Response System analysis allows us to actively monitor and assess compliance with six National Quality Forum endorsed measures. It assists in surveillance of care for breast and colon cancer patients in real clinical time.



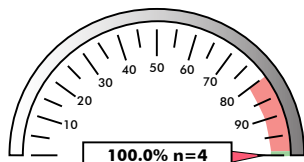
Michael Rotkis, MD, FACS

General and Vascular Surgeon  
and Cancer Liaison Physician

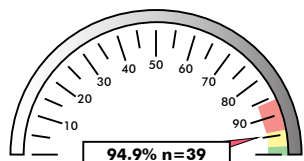
## Breast Measures



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



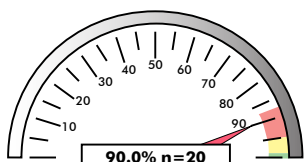
Combination chemotherapy is considered or administered within four months (120 days) of diagnosis of women under 70 with AJCC T1cN0M0 or Stage II or III hormone receptor negative breast cancer. **MAC**



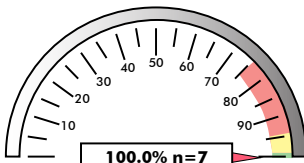
Tamoxifen or third generation aromatase inhibitor is considered or administered within one year (365 days) of diagnosis for women with AJCC T1cN0M0 or Stage II or III hormone receptor positive breast cancer. **HT**

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## 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**



# *Our Team of Oncology Specialty Nurses*

## *Certified Chemotherapy Nurses*

Larry Beachy  
Brittani Beber  
Trish Coatie  
Dick Doll  
Alechia Evans  
Emily Gilley  
Heather Griffith  
Kayla Grove  
Alison Haffner  
Mandy Hawkins  
Marcie Hemenway

Amanda Huff  
Myrna Hull  
Bethany Moriarty  
Brandan Penzenik  
Diane Roberts  
Roxy Schertz  
Nancy Timms  
Amy Valle  
Liz Werling  
Julie Young

### **December 2015**

21 chemo RNs

9 OCNs (43%)



*Certified Oncology Nurses (L-R) Julie Young, Marcie Hemenway, Trish Coatie, Alechia Evans, Emily Gilley, Liz Werling, Myrna Hull, Heather Griffith*



*Not pictured above,  
Alison Haffner*

# 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
Palliative Care	523.3170
Radiation Oncology Center	523.7857
Thoracic Oncology Clinic	523.7850

## Ancillary Services

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

## Professional Education/Research

Cancer Conferences	523.3454
Cancer Registry	523.3454

## Patient and Family Support

Breast Care Financial Assistance	296.6571
Cancer Support Group Information	296.6553
Case Management	523.3364
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
ABCD (After Breast Cancer Diagnosis)	800.221.2141
National Cancer Institute Info Line	800.4CANCER
United Cancer Services	875.5158



**ELKHART**  
GENERAL HOSPITAL  
CENTER FOR CANCER SERVICES

**800.643.5719**

600 East Boulevard | Elkhart, IN 46514