Cancer Program Annual Report

2013

Elkhart General Hospital
Center for Cancer Services
Oncology Program Leadership

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

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

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

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

Cindie McPhie
Director of Oncology, Rehabilitation and Neurosciences

Kim Dimos, RN, BSN
Quality Improvement Coordinator

For more information or additional copies of the 2013 Cancer Program Annual Report, visit egh.org or call Beacon Health System Marketing Department at 574-523-3303.
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 Hospital is one of only four hospitals in the nation to be named by Siemens, the company who makes CT scanners, as a “Low Dose Center of Excellence.” We have established the lowest possible radiation dose that is allowable that will still render a good quality image. In 2013 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.

Learning you have cancer 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, close to their family and support systems. This is just one more reason for the patients to make The Center for Cancer Services at Elkhart General Hospital 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 are provided with 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 Dietician 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 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. 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 are critical for targeting programs focused on risk-related behaviors (ie, tobacco use and exposure to the sun) or environmental risk factors (ie, 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. 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 that ensure high quality care is delivered to our patients. With newly remodeled private rooms, convenience and comfort have been “built in” for patients, families, physicians, 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 available for patient’s family use.

Ambulatory Infusion Center

The Ambulatory Infusion Center provides a comfortable, convenient, and safe environment to receive treatment as an outpatient monitored by Oncology Certified Registered Nurses and overseen 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 (SBRT) are available to patients. EGH is the only facility offering SBRT in the northern Indiana area. 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. Every patient interaction allows Ribbon of Hope to complement the technical side of cancer care by bringing encouragement through practical acts of kindness. Each year concludes with the annual Holiday Adopt a Family project. Through the support of Elkhart General staff and community members, Ribbon of Hope provided Christmas gifts, food items and non-food care boxes to 17 families with minor aged children at home. In addition, more than 50 comfort care boxes are delivered to seniors who would otherwise be forgotten during the holidays. Once again, Ribbon of Hope has logged more than 8,000 patient service hours by the end of 2013.

Clinical Trials and Research

There are numerous cancer clinical trials going on at Elkhart General that seek to improve the care and outcome for cancer patients worldwide. Some of these trials involve only our patients, while other trials include people from across the U.S. 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 have ongoing communication with patients throughout their treatment and they help provide understanding and reassurance to the patients 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 receive support from others who are facing the same challenges. The support groups offered through Elkhart General Hospital are:

- Man to Man
- Look Good Feel Better
- Circle of Hope

Community Outreach

In 2013, Community Outreach made significant contributions through cancer education and screening events to the community. In collaboration with American Cancer Society, four “Look Good...Feel Better” Programs were held at Elkhart General. Monthly editorial series were submitted to the Elkhart Truth regarding information on the importance of cancer prevention, awareness, and screenings. Staff provided free cancer education; skin cancer checks, and oral, head and neck cancer screenings, and 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, breast, prostate, and cervical 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, Breast Cancer Awareness & Prevention Open House and at the Edwardsburg Memorial Day Festival.

Additionally, general cancer screening guidelines were provided to worksites and to the Elkhart General employees through Lunch and Learns. Community Outreach hosted free PAP, prostate, skin, and oral, head, and neck cancer screenings, as well as body fat measurement for obesity-related cancer risk, to the medically underserved community.

Lung Cancer Screening and Smoking Cessation

Smoking has been identified as one of the top 3 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, we 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 we offer at EGH. We also have 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.

In addition, Community Outreach offered three Freedom From Smoking six-week smoking cessation series free of charge to the community. For National Smoke-Out day held on November 15, smoking cessation information was distributed to a number of businesses in Elkhart. "Cold Turkey" sandwiches were also distributed at a local business in exchange for the employee's 1/2 pack or full pack of cigarettes.
The Cancer Committee is comprised of representatives from primary and specialty care physicians, as well as Hospital departments 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.

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Cancer Registry Data Quality Control Coordinator

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Director of Oncology, Rehabilitation and Neurosciences

Kim Dimos, R.N., B.S.N., Nurse Manager of the Oncology Care Unit, Ambulatory Infusion Center, Cancer Registry, Radiation Oncology, Clinical Research, Thoracic Oncology Clinic and Cancer Survivorship Clinic
Quality Improvement Coordinator

Laurie Dubois, Community Outreach Coordinator

Deanna Emmons, RD, CSO, CD, Oncology Dietitian

Pam Green, RN, Oncology Outpatient Care Coordinator

Tammy Gustafson, Manager, Marketing and Communications

Walter Halloran, MD, Cardiothoracic Surgeon

Marcie Hemenway, RN, OCN, Oncology Education

Roger Hershberger, LCSW, Oncology Outpatient Care / Psychosocial Services Coordinator

Pam Jackson, RN, Clinical Research Nurse/Coordinator

James Jin, MD, PhD, Medical Oncologist

William Kaliney, MD, Pathologist

Josh Kellems, American Cancer Society

Toni Klatt-Ellis, APRN, MN, AOCN, Oncology Advanced Practice Nurse, Cancer Survivorship Clinic, Thoracic Oncology Clinic, Clinical Supervisor Ambulatory Infusion Center

Greg Losasso, President of Elkhart General Hospital

Amy Luebbenhusen, PharmD, Oncology, Pharmacy

Heather Macklem, M.D., Family Medicine Physician

Rolan Pascual, M.D., Medical Oncologist

Samir Patel, MD, Diagnostic Radiologist

William Pletcher, MD, Medical Oncologist

Kelly Puster, MD, FACS, General Surgeon

Loretta Salchert, Ribbon of Hope

Leah Schrock, LCSW, Inpatient Oncology Care Coordinator
Attendees include radiologists, pathologists, general surgeons, thoracic surgeon, medical oncologists, radiation oncologists, pulmonologists 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. We are the only facility in the area that invites our patients to attend their own case presentation. 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's strong commitment to patient satisfaction and support of these open forums is yet another way to provide a positive experience as the patient begins 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, Head & Neck, Kidney, Pancreas, Rectum, Soft Tissue, Stomach, Uterine, 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 74 General Cancer Conferences, 91 Breast Conferences and 96 Thoracic Conferences have been presented through the end of December 2013, totaling 252 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, 46.5% of the analytic volume has been presented more than tripling the mandated 15% benchmark set by the Commission on Cancer.

Breast Cancer Conferences are held each Friday at 7:00 a.m. in the ROC Conference Room. Thoracic Cancer Conferences are held every 1st and 3rd Thursday of each month at 7:00 a.m. in the ROC Conference Room. General Cancer Conferences are held every 2nd and 4th 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.
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 year’s 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 10,312 cases in the Cancer Registry database. In 2013, 661 new incidence of cancer were accessioned by a team consisting of two Certified Tumor Registrars and one Cancer Registrar. 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 98.3% (90% 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 96.2% (80% or greater required). The respective rates significantly exceed the established benchmarks mandated by the CoC and attests to the continued teamwork approach to patient care at Elkhart General Hospital.

Left to Right: Cancer Registrars Ann Bemiller, CTR; Vicky Carter, CTR; and Stacy Hirst, RN.
Registry Accomplishments for 2013:

- 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 on-going quality review of data via annual physician review of 10% 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.
- Achieved Cancer Registry “Commendation” status at time of CoC Accreditation Survey.
- Implemented Rapid Quality Reporting System (RQRS)

Cancer Registry Education for 2013:

- All staff attended General Cancer Conference speaker presentations.
- All Registry staff participated in NAACCR educational Webinars.
- Coordinator attended a CoC Rapid Quality Response System (RQRS) Workshop in Chicago.
- Coordinator attended CoC Survey Savvy Workshop in Chicago.
- Two Registrars attended an ISDH Coding Workshop in Indianapolis.
- All Registrars attended the ICRA 35th Annual Educational Workshop in Indianapolis.
10

Male vs. Female Age at Diagnosis
2012* Cases

Male vs. Female by Best AJCC Stage
2012* Cases

Distribution by State/County
2012* Cases

NOTE: 4.99 percent of patients reside in counties outside of the service areas shown.

*Based on 2012 Cancer Registry Data
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<th>Female</th>
<th>Analytic*</th>
<th>Non-analytic**</th>
<th>In-situ</th>
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<th>II</th>
<th>III</th>
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*Analytic = First diagnosed and/or first course of treatment at this institution.  **Non-analytic = First diagnosed and first course of treatment elsewhere.
Lung Cancer loosely refers to an array of different malignant tumors. The unifying feature is that they arise from lung or bronchial tissue cells and begin their growth in that organ. Collectively, lung cancer accounts for nearly 30% of all cancer deaths in the United States, far exceeding any other primary malignancy. More than 206,000 Americans are diagnosed with lung cancer each year, and the dramatic rise in lung cancer in women has nearly erased the significant male preponderance which existed in the 20th century. In this country, nearly 160,000 men and women will die from lung cancer each year. A chilling reminder of the costs to our society brought on by cigarette smoking.

Lung cancer was a very rare diagnosis prior to 1900, with an incidence below 4/100,000. Even in large urban industrial centers where unregulated toxins, coal dust and its combustion byproducts, and pandemic infections were considered normal; lung cancer was rarely seen.

Tobacco smoking is the only significant risk factor for lung cancer. Cigarette smoking, which became fashionable in the early 1900’s, rose in earnest in WWI and then again in WWII. Male smokers far outnumbered female smokers, and rate of smoking in men continued to increase until about 20 years ago. Women’s smoking rate has steadily climbed, so that the rates in men and women are now nearly equal.

Lung cancer incidence and death rates began elevating about twenty years after tobacco’s rise in popularity, and death rates have continued to push upward throughout the last century into the first part of the 21st century. It is a lethal disease at epidemic levels in the US, and is largely preventable.

**Etiology of Lung Cancer**

We have many challenges to overcome to effectively conquer lung cancer, but two remain paramount:

1. Reduction of cigarette smoking
2. Early detection of lung cancer

Reduction of tobacco use is a singularly important goal of all comprehensive national health plan initiatives; and is part of the Affordable Care Act as well as Center for Medicare/Medicaid Services, National Institutes of Health, World Health Organization, and National Cancer Institute health promotion guidelines.* At Elkhart General Hospital, we have a broad range of patient education tools available for all patients and have developed an integrated system for tobacco cessation assistance. Materials have been distributed throughout primary and specialty care offices, and the offices have been visited and educated on the importance and implementation of these services. Through our Thoracic Oncology Program, a single phone call will initiate the program for any interested individual (574-523-7850).
Screening and Early Detection

Early lung cancer detection remains the backbone of successful lung cancer therapy. It is appropriate for both current smokers and former smokers; and it requires the establishment of effective risk analysis coupled with appropriate diagnostic techniques. Lung cancer is typically a relatively silent disease until it reaches an advanced stage where secondary symptoms such as pneumonia or extra pulmonary effects (e.g. osseous metastases with pain or brain metastases with seizures) are noticed. Lung cancer survival statistics clearly demonstrate the importance for early detection.

Early stage non-small cell lung cancer effectively staged and treated can have a long term survival exceeding 80%, where locally advanced lymph node positive disease and metastatic disease have dramatically worse (dismal) long term survival rates.

Old practices of lung cancer screening had no background in evidence-based data. Routine or sporadic “plain” chest x-rays were ineffective for several reasons. The resolution was too low to accurately detect early (small) lung nodules, and the lack of evidence-based protocol resulted in no uniform screening practice across all international medical systems.

Computerized Axial Tomography (CAT) of the chest is a very sensitive, though not specific, way to assess for lung nodules. The current iteration of scanning machines detects very small abnormalities, and do so with a very rapidly performed study. However, the radiation exposure with historical CAT scanning is far more than plain x-ray. And it is far more expensive, albeit not nearly as expensive as treating an advanced stage lung cancer. So “routine” population screening was not recommended in the past because of adverse cost/benefit analysis, lack of specificity of the scans (it detects many non-cancer abnormalities) and high cumulative radiation exposure. “Legitimate potential harms...to our population may outweigh screening benefit.”

This has all recently changed: 1) new CAT scanning technology for screening has greatly reduced the radiation exposure; 2) risk stratification is used to identify the subpopulation at highest risk of lung cancer; 3) specific
algorithms are used to define and manage detected abnormalities. The National Lung Cancer Screening Trial (NLST) was designed to analyze the effectiveness of such targeted screening versus standard x-ray screening. It was halted two years earlier than the originally planned completion date after 53,000 patients enrolled and a 20% mortality reduction was realized with the new screening protocol.

At Elkhart General Hospital, we were the first hospital in the region to have an effective lung cancer screening program. Begun in mid 2012, we have completed over 220 lung screen scans in 18 months on residents in Elkhart and the surrounding communities. Data from the NLST suggest that approximately 300 scans are performed for one lung cancer to be detected. We have diagnosed two lung cancers already in our still early efforts.

**Multidisciplinary Thoracic Clinic**

Along with this screening plan, we have addressed the treatment arm for our patients as well. Our area-leading Thoracic Oncology Clinic, meets weekly to discuss new lung cancer patients; and the patients (with family members) are encouraged to attend. The clinic is a group including Pathologists, Medical Oncologists, Interventional Radiologists, Radiation Oncologists, Pulmonologists, and Thoracic Surgeons. It also boasts a large support team of advanced practice nurses (NP’s), nurse clinicians, social workers, and physician assistants (PA’s). All the physician specialists are Board Certified in their specialty area. Board Certification in Thoracic Surgery has been shown by several studies to have a significant positive impact on patient outcomes when compared with care provided by surgeons not board certified in Thoracic Surgery.

The Thoracic Oncology Clinic provides our lung cancer (or suspected lung cancer) patients with a “one stop” comprehensive assessment of their clinical situation along with a coordinated and thoughtful plan for implementation of the further diagnostics and treatments needed. After interacting face-to-face with the entire team of physicians, patients leave with a plan in hand to move forward.

**Staging**

Lung Cancer Staging is determined by the Union for International Cancer Control and is used according to American Joint Committee on Cancer to provide a meaningful assessment of the cancer stage. This allows more accurate prognosis and defines treatment options. This staging uses the TNM standard: Tumor size, lymph node involvement and Metastatic disease. Stages 0 – IV are defined, with the higher number indicating more advanced stage.

**Stage at Diagnosis**

Most non-small cell lung cancer is unfortunately still diagnosed at late stage, Stage III or Stage IV disease, both nationally [9] and here in Elkhart locally. In our own analysis of patients diagnosed at Elkhart General over the past five years (2008-2012), we have not had a significant impact on the stage at diagnosis. While raw numbers of newly diagnosed lung cancer cases at Elkhart General has fluctuated from 2008 to 2012, our percent of those diagnosed with lung cancer at Stage IV disease has remained relatively linear (Graph #1). The Thoracic Oncology Clinic, Lung Screening Program, and Tobacco Cessation Counseling, mentioned above, were designed specifically to step up our efforts to address the problem we recognize we have with late stage at diagnosis, however these efforts may not show impact on stage at diagnosis for many years into the future. Fortunately when examining survival for all stages over the past five years (2003-2007) compared to the previous five years (1998-2002), we have improved with the most notable difference being seen in the improvement of survival in Stage II patients (Graph #2).

**Treatment**

Chemotherapy is the primary mode of treatment for advanced, metastatic Stage IV disease, while a combination of chemotherapy and radiation therapy is used for Stage III disease, sometimes using surgery later, after the tumor has been down-staged, or reduced in size by the administration of initial chemo and or radiation therapy [1]. Surgery is however the preferred first line of treatment for Stage I and Stage II lung cancer if a patient’s overall health allows surgery to be performed. Surgery has the highest long-term survival rates for Stage I and Stage II lung cancer [6].

We have focused our review of data for this year on early stage lung cancer, those diagnosed with Stage I and II disease. Diagnosing patients at an earlier point in their disease presentation should significantly impact survival, however long-term survival for even this group of patients is still challenging. There is a need for continued research to define how best to treat these early stage patients once surgery has been completed to further improve outcomes. While surgery is the treatment for the highest cure rate, post-operative chemotherapy is offered as adjunct under certain circumstances. Identifying which early stage I and II patients would benefit from more aggressive post-surgical treatments such as chemotherapy or biological therapy could contribute positively to outcomes in lung cancer. Currently the national 5-year average survival for a patient diagnosed with a Stage I or Stage II lung cancer is still lower than the 5-year survival for early Stage I and Stage II disease for breast, colon, or prostate cancer [8].
Elkhart General Hospital
Stage IV at Diagnosis 2008-2012

GRAPH #1

Average Survival by Date Range:
1999-2003 Compared to 2004-2008

GRAPH #2
Adjuvant Chemotherapy in Lung Cancer

In the treatment of early stage cancer of any type, surgery is often followed by chemotherapy; chemotherapy used in this way, after complete successful surgical resection of all detectable tumor, is given to prevent recurrence months to years later from micrometastasis [3]. Micrometastasis, present at the time of surgery, is the biologic cause of failure to cure cancer with surgery alone. Chemotherapy given for eradicating micrometastasis after surgery, adjuvant chemotherapy, was first used over 40 years ago in breast cancer [2]. While adjuvant chemotherapy use is well established for improving survival in breast cancer, it is still a controversial and developing standard of care in early stage lung cancer [4]. Currently the two most respected Evidence-Based Guidelines that are available, from American Society of Clinical Oncologists (ASCO) and National Comprehensive Cancer Network (NCCN), advocate adjuvant chemotherapy for lung cancer in Stage IIA and IIB disease but not in Stage IA or IB [1,5].

Offering adjuvant chemotherapy to subsets of patients who have a more biologically aggressive tumor and are most at risk for recurrence instead of to every early stage cancer patient has improved care for some cancer types [2]. Using the molecular profile (like Oncotype Dx ®Genomic Health Inc.) is now routine in breast cancer to identify who will benefit from chemotherapy for improving survival [2,7]. Defining a molecular panel that predicts which tumors are aggressive in early lung cancer and therefore who benefits from chemotherapy after surgery should be a primary focus for the future. We have come farther in development of tumor genetic profiles defining subsets of high-risk patients with early stage disease for breast, colon, and prostate cancers than we have for lung cancer [7]. The lack of progress in this area is unacceptable as lung cancer causes more cancer deaths than breast, colon and prostate cancer combined each year in the United States [8].

Stage as a Risk Factor for Determining Chemotherapy

From Cancer Registry data, we reviewed survival in Stage IA-IIB patients from 1998-2012; 15 years of previously treated patients at Elkhart General. Average survival for Stage IA to IIB lung cancer patients from 1998-2012 was at least twice as good if a patient had surgery (with or without adjuvant chemotherapy) versus no surgery (Graph #3). Interestingly, those patients who had surgery as their primary modality of treatment and did not have adjuvant chemotherapy did better than those who had surgery as their primary modality of treatment and received adjuvant chemotherapy (Graph #3). While this population represented local, small numbers, not randomized and not prospective, it is interesting to contemplate this finding. We were unable to analyze subsets of early stage patients as the number in each category was small. The data range was for the past 15 years and it is possible that nuances of treatment and side effect management as well as management of other comorbidities could have considerably improved from 1998 to 2012. We also did not analyze type of chemotherapy given; specific chemo drugs given could have been highly variable over the time span of 15 years. Around 2008 is when data began being published showing Cisplatin giving a survival advantage [5,6]. Stage alone may not be good for predicting who should get chemotherapy.

High-Risk Factors to Determine who gets Chemotherapy

High risk factors indicating need for post-operative chemotherapy often sited, and in fact mentioned in the NCCN Guidelines but not research validated [1], are the following:

- poorly differentiated tumors
- vascular invasion
- wedge resection vs. other larger surgery
- tumor ≥ 4 cm
Survival: Adjuvant vs Primary Chemo
Surgery vs No Surgery
1998-2012 Stage IA-IIB

GRAPH #3
• visceral pleural involvement
• incomplete lymph node staging, (defined as NX)

Additionally we evaluated the same cohort of patients, (Stage IA, IB, IIA and IIB lung cancer patients at Elkhart General Hospital from 1998-2012) for the NCCN “high risk factors” for those patients receiving adjuvant chemotherapy after surgery versus those patients not receiving adjuvant chemotherapy. Numbers were small in some categories resulting in 4 of the 6 “high risk factors” identified in the NCCN Guidelines being able to be evaluated. While NCCN Guideline is for adjuvant treatment in Stage IIA and IIB patients, because of small numbers, we reviewed these 4 high risk factors in all 4 stages of early lung cancer, IA-IIB. A schematic of how we set up the review of our local data for these risk factors is pictured in Figure 1 below.

Figure 1: Are Current Risk Factors Useful?

- Any individual risk factor may not be a risk factor

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NCCN High Risk Factors:
- Poorly differentiated tumors
- Vascular invasion *
- Wedge resection
- Tumor > 4 cm
- Visceral pleural involvement*
- Incomplete lymph node staging

*not able to be evaluated due to small numbers of data

We again found that survival was better for those not receiving adjuvant chemotherapy with surgery as their primary treatment when evaluated for the presence of 0, 1, 2 or 3 or greater high risk factors (Graph #4). Again, we must use caution as the numbers are extremely small in some groups and the study design not prospective or randomized. However, taken with the national controversy regarding a lack of research validation of these as high-risk factors indicating those who need chemo post operatively and those who will derive no benefit, this local data is begging for better guidelines to aid clinical decision making in the post-operative setting.

Finally, we found when looking at wedge surgery versus other lung surgery that those receiving adjuvant chemotherapy post-operatively after wedge did better than those not receiving chemotherapy post-wedge. Extreme caution is warranted as the wedge surgery with adjuvant chemotherapy totaled a very small number of patients (Graph #5).

Summary

In summary, genetic profiling for making treatment decisions for Stage IV metastatic disease and Stage III recurrent disease is moving forward for lung cancer. We have available and are using genetic testing to identify which individuals have EGFR or ALK positive tumors to predict response to various biological therapies now on the market and readily available to treat the subset of patients who benefit. We now need to turn our attention to improving survival in the potentially curable Stage IA to IIB population by identifying those subsets of patients who will and will not benefit from adjuvant chemotherapy in the post-operative setting. There are likely patients who do benefit from adjuvant chemotherapy. However, there may very well be patients who would do better, with better survival, if no adjuvant chemotherapy is administered.

Clearly if we are going to impact lung cancer both nationally and locally over the next decade it will be from successful efforts aimed at the following three strategies in unison:

- Tobacco Cessation
- Lung Cancer Screening
- Validating tumor factors to predict post complete surgical resection which Stage I and Stage II patients benefit from adjuvant chemotherapy.

Walter Halloran, M.D.
Cardiothoracic Surgeon

References

3. http://cancerres.aacrjournals.org/content/68/21/8643/T2.expansion.html
10. Elkhart General Hospital Cancer Registry Database. Page 19
Survival by # of Risk Factors: Adjuvant Chemo &/or Surgery
1998-2012 Stage 1A-2B

Survival
Chemo vs No Chemo
Wedge vs Other Surgery

Average Survival in Months

Graph #4

Graph #5
Elkhart General Hospital Center for Cancer Services received the Outstanding Achievement Award by the American College of Surgeons Commission on Cancer (CoC) for excellence in cancer care for three consecutive surveys (2004-2013). Elkhart General is the only hospital in the state of Indiana and one in 13 facilities nationwide to receive this honor. Fewer than 20 percent of cancer programs in the US attain this superior recognition.

Elkhart General has also received accreditation 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 American College of Radiology (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 (NQMBC™). 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 Hospital 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.
Siemens Healthcare has announced Elkhart General Hospital as a Low-Dose Center of Excellence for computed tomography (CT). One of only four hospitals in the nation to receive this designation, Elkhart General will collaborate with Siemens in the development of best-in-class clinical processes and protocols that reduce patient CT radiation dose, improve patient outcomes and strengthen clinical operations.

Low-Dose Centers of Excellence represent leading health care facilities that are pioneering radiation dose reduction in CT.

“This is a big deal,” said Ray Kiendl, Director of Radiology at Elkhart General. “This benefits the health and well-being of the patients we serve because we have established the lowest possible radiation dose that is allowable that will still render a good quality image. No one else is doing that in our region.”

The Elkhart General Radiology Department established a baseline level of radiation doses given to patients, then embarked upon ways to reduce doses while enhancing image quality at the same time.

“The low dose is particularly important for pregnant women, so the first area we studied involved pulmonary embolisms, which is a common occurrence in pregnant women,” Kiendl said. “Pregnant women with pulmonary embolisms have to undergo CTs of the chest for this condition. These patients are the most critical because the growing fetus is the most susceptible to adverse effects of radiation.”

“It is not only critical to limit radiation exposure to the fetus, but also to the woman. Since these X-rays involve the chest region, the cumulative dose to the breast is potentially harmful with the chance of radiation-induced breast cancer,” Kiendl explained. “We are very excited to offer these women, as well as other patients, the lowest possible dose CT.”

Launched exclusively by Siemens in 2009, the CT Low-Dose Centers of Excellence program is the gold standard for academic-industry partnerships. Patient care is the core commitment of Siemens’ CT Low-Dose Centers of Excellence program, and Siemens works with its leading customers in various clinical settings to create best industry practices to continue development of this important mission and achieve best-in-class outcomes. Other participating institutions include Anne Arundel Medical Center in Annapolis, Maryland; Virginia Commonwealth University Medical Center in Richmond; and the University of Minnesota Medical Center in Fairview. To learn more, visit egh.org.
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.

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 twelve 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**
## Directory

Area Code 574 unless noted otherwise.

### Treatment and Clinical Services

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<td>Oncology Care Unit</td>
<td>523-3112</td>
</tr>
<tr>
<td>Radiation Oncology Center</td>
<td>523-7857</td>
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<tr>
<td>Thoracic Oncology Clinic</td>
<td>523-7850</td>
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### Ancillary Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Center for Behavioral Medicine</td>
<td>523-3347</td>
</tr>
<tr>
<td>Center for Pain Management</td>
<td>523-3232</td>
</tr>
<tr>
<td>Individual Nutrition Counseling</td>
<td>523-3444</td>
</tr>
<tr>
<td>Home Care and Infusion Therapy</td>
<td>800-284-8999</td>
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<tr>
<td>Home Medical Equipment</td>
<td>888-517-3100</td>
</tr>
<tr>
<td>Inpatient Rehabilitation Services</td>
<td>523-3443</td>
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<tr>
<td>Mammography Scheduling</td>
<td>523-3444</td>
</tr>
<tr>
<td>Oncology Nursing Education</td>
<td>523-7978</td>
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<tr>
<td>Outpatient Rehabilitation Services</td>
<td>523-3242</td>
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<tr>
<td>Outpatient Pharmacy</td>
<td>523-3101</td>
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### Professional Education/Research

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Cancer Conferences</td>
<td>523-3454</td>
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<tr>
<td>Cancer Registry</td>
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<tr>
<td>Continuing Medical Education</td>
<td>523-4826</td>
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### Patient and Family Support

<table>
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<tbody>
<tr>
<td>Breast Care Financial Assistance</td>
<td>296-6571</td>
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<tr>
<td>Cancer Support Group Information</td>
<td>296-6553</td>
</tr>
<tr>
<td>Case Management</td>
<td>523-3257</td>
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<tr>
<td>Chaplaincy Services</td>
<td>523-3142</td>
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<tr>
<td>Patient Accounts</td>
<td>523-7818</td>
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<tr>
<td>Ribbon of Hope Cancer Support &amp; Ministry</td>
<td>389-7379</td>
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### Community Services

<table>
<thead>
<tr>
<th>Service</th>
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<tbody>
<tr>
<td>American Cancer Society</td>
<td>800-227-2345</td>
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<tr>
<td>Cancer Care Counseling Line</td>
<td>800-813-HOPE</td>
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<tr>
<td>Cancer Information</td>
<td>888-344-6773</td>
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<tr>
<td>Community Education Programs</td>
<td>523-3303</td>
</tr>
<tr>
<td>Health Information Center</td>
<td>888-344-6773</td>
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<tr>
<td>KME National Breast Cancer Organization</td>
<td>800-221-2141</td>
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<tr>
<td>National Cancer Institute Info Line</td>
<td>800-4CANCER</td>
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<tr>
<td>Physician Referral Line</td>
<td>888-344-6773</td>
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<tr>
<td>United Cancer Services</td>
<td>875-5158</td>
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