November 2018

West Allis Memorial Hospital Cancer Program Annual Report, 1995

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CANCER COMMITTEE CHAIRMAN'S FOREWORD

Kevin J. Murray, M.D., Chairman

The Cancer Committee is a multidisciplinary committee whose function is the overseeing and monitoring of all of the oncology aspects at West Allis Memorial Hospital. In addition to supervising educational efforts for the medical staff, nursing and the general public, the committee supervises the submission of data to the American College of Surgeons who directs both short-term and long-term patient care evaluations.

This year remained a very active time for all the members of the oncology program. Over 975 cases were diagnosed or treated at West Allis Memorial Hospital. While cancers of the female breast, prostate, lung and colon represented approximately 50% of all of the patients seen, a major strength of the oncology program at West Allis Memorial Hospital remains its diversity. By dealing with the full range of oncology diagnoses, the oncology program remains committed to the understanding and treating of all problems associated with patients with cancer.

During the past year, the committee has strived to improve the overall aspects of oncology care and delivery for the patients at West Allis Memorial Hospital. To help with this plan, two clinical indicators sponsored by the Joint Commission on the Accreditation of Hospitals Organization were implemented in the past year. These indicators test the appropriateness and availability of information within the medical record to insure that patients have an adequate amount of information so that appropriate decisions can be made. While these indicators may be mandatory in the future, at this point in time, it is only through an organizations own initiative that they are performed. We are happy with the results of these indicators though continued work to insure this excellent response needs to be maintained.

The Cancer Committee also supervised our participation in both short-term and long-term patient care evaluation studies of patients with cancers of the esophagus. This participation forms a basis for our report this year and later in this booklet, you will find articles describing the surgery, chemotherapy and radiation therapy aspects of these types of cancers.

Throughout this year, as well as the years in the past, the cancer program at West Allis Memorial Hospital has maintained its tradition of excellence in the therapy and the support of those patients afflicted with this disease. All of these efforts require the continued dedication of all those who participate and I applaud their continued excellent work.
West Allis Memorial Hospital offers a comprehensive program for the detection, prevention, and treatment of cancer, and rehabilitation of the patient. Our Cancer Program has many facets, each contributing to our mission of caring for and improving the lives of people stricken with cancer.

Once cancer has been diagnosed, a treatment plan is developed to meet the special needs of the individual.

Our multidisciplinary team of highly skilled physicians and healthcare professionals provide state-of-the-art specialized medical care, aided by the latest technology. Cancer treatment is constantly evolving, taking advantage of new discoveries and technology.

Rehabilitation is an important component of cancer care whether the patient is receiving therapy for cure or palliation. The general goal of rehabilitation is to reach the fullest potential of the individual within his or her environment, with due consideration of the cancer site, histology, stage, treatment and the patient’s age and condition.

Cancer is more than a physical disease. It often undermines the psyche, the family, and economic security. An important part of our mission is to deal with these factors with the same intense dedication brought to the physical well-being of each patient.

Cancer support services encompasses a network of services and personnel whose mission is to enable people with cancer who are currently undergoing treatment and those who are not, those who are living with disease and those who survived it, their families and their friends, to cope with the stress and changes in their lives that cancer and its treatment can render.

This report contains a description of the activities within the Cancer Program in 1995 and illustrates the patient volume in each tumor site. In addition, attention is focused on our in-depth study of esophageal cancer, including articles by physicians who diagnose and treat esophageal cancer.
MEMBER

Kevin J. Murray, M.D., Chairman
Linda J. Barrows, M.D.
Donald Blatnik, M.D.
Donald L. Feinsilver, M.D.
David Foley, M.D.
Richard E. Fuller, M.D.
Jeffrey B. Gorelick, M.D.
John F. Pope, M.D.
Terence V. Roth, M.D., ACoS Liaison Physician
Steven D. Sperling, M.D.
Robert Taylor, M.D.
Shelly Underhill, M.D.
Mark D. Wilcox, M.D.
J. Frank Wilson, M.D.
Richard Kellar
Beverly Hochtritt, R.N.
Barbara Dazo, R.R.A.
Vicki Shackley, R.N.
Carmen Bolger-Linna, R.N., O.C.N.
Priscilla Eckert, A.R.T., C.T.R.

SERVICE

Radiation Oncology
Physical Medicine
Otolaryngology
Psychiatry
Gynecology/Oncology
Family Practice
Physical Medicine
Urology
General Surgery
Diagnostic Radiology
Hematology/Oncology
Pathology
Anesthesiology
Radiation Oncology
Vice President
Nursing Administration
Director of Health Information Services
Director of Quality Assessment
Oncology Nursing
Cancer Registrar
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Virtually all patients with cancer are diagnosed in the primary care setting and the majority (78 to 80 percent) receive all their care in community hospitals. The initial evaluation and treatment decisions are the most critical in the outcome of the patient with cancer; but cancer is a systemic illness that can rarely be detected, diagnosed, and adequately treated by one physician.

The Tumor Board of West Allis Memorial is a multidisciplinary cancer conference which is held weekly. These conferences focus on the diagnosis, pretreatment evaluation, staging, treatment strategy, and rehabilitation of cancer patients. Cases with special educational value or unusual clinical findings or patients with multiple medical problems which complicate treatment decisions are often discussed at conference.

The primary goal of the Tumor Board is to improve the care of cancer patients through the exchange of information among the participating physicians. Local specialists share their expertise which is based on their experience, as well as a knowledge of the current literature. In this environment the primary care physician can take advantage of the expertise of his colleagues and be informed of the current clinical trials that may benefit his/her patient.

Through participation at the Tumor Board the family physician is confident that he/she can offer not only comprehensive and empathetic care, but also the most up-to-date advances in cancer treatment which offer the best chance of response and survival.

Equally important is the educational aspect of the Tumor Board. The non-cancer specialist in attendance is informed in areas of prevention, early diagnosis, and treatment. Attendees have the opportunity to ask questions or have points of information clarified. Allied health professionals attending the conferences also enjoy these educational benefits. Indirectly these benefit the patient because the physicians and allied health professionals who treat cancer patients are better informed as a result of the conferences. The overall quality of care delivered by the hospital is thereby improved.

Tumor Board provides a mechanism for review of professional practices within the hospital for the purpose of reducing morbidity and mortality through outcome analysis.

In 1995, an average of 3 patients per week were presented at Tumor Boards. The average weekly attendance was 32.

The Tumor Boards are held every Friday and Continuing Medical Education programs are held on Tuesdays. Sessions are held in meeting rooms A and B at noon, on their respective days. The programs are approved for continuing education credits by the Wisconsin Medical Association, and the American Academy of Family Practice for one credit hour in Category I of the Physicians’ Recognition Award of the American Medical Association.

### CANCER-RELATED CONTINUING MEDICAL EDUCATION PROGRAMS

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<td>What’s New in Urologic Oncology</td>
<td>Mark Rosen, M.D.</td>
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<td>Screening for Bethesda System Cervical Cancer</td>
<td>David Ferguson, M.D.</td>
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<td>11/14/95</td>
<td>Psychological Factors of Breast Cancer</td>
<td>Rebecca Anderson, M.D.</td>
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<td>11/28/95</td>
<td>Office Proctology</td>
<td>David Heber, M.D.</td>
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CANCER REGISTRY

Data System
West Allis Memorial Hospital Cancer Registry is a comprehensive data system for the collection, management and analysis of data on persons with cancer. The registry is patterned to meet the requirements of the American College of Surgeons, Commission on Cancer.

Main Objective
The Cancer Registry is designed to describe trends in patient and disease characteristics, modalities of therapy and patient survival experiences. The main objective of the registry is to make basic knowledge about West Allis Memorial’s experience available to the members of the medical staff in order to evaluate the results of patient care. It is hoped that this information will further improve the diagnosis and management of cancer patients. Registry incidence data also aids in administrative planning and for use in program planning.

Computerized Data
The data collected is entered on to a computer software program of Electronic Registry Systems. Computerized data enables prompt retrieval of information, automated printing of follow-up letters, and a paperless registry.

Registry Start Date
The registry has cancer data from January 1, 1978 (the official start date of the Cancer Program at West Allis Memorial) and has accessioned over 13,000 new cancer cases.

Reporting Activities
Cancer data reporting to the Wisconsin State Department of Health, Cancer Reporting System, has been required by legislation as of January 1, 1978. The registry is responsible for this function. In 1995 the Cancer Committee agreed to participate with other hospitals in the United States by providing requested cancer data to the National Cancer Data Base (NCDB).

Confidentiality Maintained
Confidentiality regulations are always observed in the release of information. Only aggregate data is submitted for national studies. Confidentiality of patients and physicians is strictly maintained. Seventeen requests for data was received by the registry in 1995 from staff physicians and hospital staff.

Data Quality Measures
Accuracy of the data is extremely important and several measures are in place to insure quality data. The Cancer Committee reviews 10% of the cases accessioned each year. This is accomplished by physician review comparing the abstracts with the information in the medical record. Studies are reviewed for accuracy prior to submission by a physician member of the Cancer Committee. Abstracts are routinely edited for completeness, logic and consistency. This is accomplished by editing of printed computer reports, automatic computer edits, and by running error reports provided in the registry software program.

Follow-up Activities
Cancer patients are followed by the registry for the lifetime of the patients. Patient follow-up is a necessary function of the registry and at least a 90% follow-up rate is necessary in order to have meaningful survival data. In 1995 the follow-up rate average was 94%, surpassing the 90 percent requirement of the American College of Surgeons.

Patient follow-up also serves as an automatic reminder to the physician to schedule regular physical examinations, and provides outcome data for comparison with regional and national norms.

Staff to Cancer Committee
The registry works closely with the Cancer Committee. Under the auspices of the Cancer Committee, the registry assures that all components for an approved Cancer Program
are maintained. The registry assisted the committee by collecting and summarizing data for the American College of Surgeons long and short-term esophageal cancer patient care evaluation studies (results of these studies can be found in another part of this report). Collection and summarization of data was also accomplished for the two Clinical Indicator studies. In addition, the registry assisted the committee in the participation of the American College of Surgeons and American Cancer Society Patient Survey Study. The information gathered by participation in this study should help us better identify and meet the needs of the cancer patients and their families. The registry also serves as staff to the Cancer Committee, takes minutes of Tumor Boards, and assists in the preparation of the Cancer Program Annual Report.

Continuing Education

The Cancer Registry staff are active participants in the Wisconsin Cancer Registrars’ Association, the National Cancer Registrars’ Association, the American Cancer Society, the American Health Information Management Association and the Wisconsin Health Information Management Association. Active memberships are maintained in an effort to keep abreast of all the current and future changes in the health care information field as it relates to cancer. Association meetings also provide training and invaluable information on changes in the cancer registry data collection requirements as well as current changes in cancer diagnosis and treatment.

Inquiries Welcomed

The registry staff welcomes inquiries and the opportunity to assist medical staff members to retrieve cancer data. Requests can be made by calling 328-7122.

Priscilla Eckert, ART, CTR
Cancer Registrar

Sharon Miller
Follow-up Service
CANCER PROGRAM SERVICES

From the moment of entry into West Allis Memorial Hospital each patient and their family is guided through the cancer care system with the conscientious support of medical experts who understand the mental and physical tolls of the disease and treatment processes.

Oncology Inpatient Unit

The oncology unit is a dedicated 30 bed unit located on 6 North. This clustering assures expert staffing. An entire team of health care professionals, including physicians, nurses, therapists, dietitians, and pharmacists are involved in the one-on-one individual care of the cancer patient. The enterostomal therapist provides a very important role in the rehabilitation of cancer patients who undergo ostomy surgery. Mastectomy teaching is provided by the oncology nursing staff for breast cancer patients following surgery. Keeping up with new technology, chemotherapy protocols or nursing innovations is managed by the Oncology Nursing Committee.

Outpatient Oncology Unit

The outpatient oncology unit can accommodate up to 40 patients. Medical oncologists see and treat their patients in the outpatient clinic. Chemotherapy is a frequently used modality for the treatment of cancer. Although some regimens of chemotherapy require hospitalization, the majority can be administered on an outpatient basis.

Radiation Oncology Department

The radiation oncologists at West Allis Memorial Hospital can offer the cancer patient external beam radiation delivered by linear accelerator plus interstitial and intracavity brachytherapy, and the opportunity to participate in national treatment protocols.

Rehabilitation Services

Rehabilitation Services provides inpatient and outpatient physical therapy, occupational therapy and speech pathology services to the cancer patient. The coordinated team approach enables attainment of patient treatment goals. Board-certified physiatrists are available for consultation.

Community Education

Health improvement educational programs designed to serve our patients, their families and everyone in the surrounding communities are offered on a routine basis. A dedicated staff of health professionals deal in group instructions for detection, prevention and promotion of a healthy lifestyle. Some of the cancer-related programs offered in 1995 were:

- Wise Food Choices for a Healthy GI Tract by Kathy Haas, R.D., M.S.
- Making Healthy Choices at the Supermarket by Mary B. Hartwig, R.N., M.S., R.D.
- Dispelling Myths about Pap Smears by Mary Reznicek, M.D.

Community Services

When the cancer patient leaves the direct care of the hospital a network of support and caring is extended out into the community. The challenge is to ensure continuity of care as the patient moves out to the home or institutional settings in the community. Following are but a few examples of this network which is extended not just to the cancer patient and their families, but to all patients and the community as a whole.

- Home Care - West Allis Memorial has teamed up with various other agencies to provide home care for community residents. This combination of expertise and resources can supply community residents with everything they need from nursing to nutrition to equipment.
- Meals Ala Wheels - This hospital program consists of the delivery of nourishing appetizing meals, by volunteers, to community residents who wish to remain at home, but are unable to cook for themselves. This program has been in existence since 1967.
♦ WAMH Van Patient Transportation - The WAMH Van courtesy shuttle is available to drive patients to and from the hospital for any outpatient test and service or hospitalization. This service is free and is available weekdays for patients able to walk unassisted or with walking aids.

♦ Home Laboratory Services - If patients need to have blood samples drawn but have difficulty coming to the hospital laboratory staff will come to the patients home to collect the samples.

♦ Mammography Screening Center - The Screening Center offers low cost breast cancer screening and self-examination education in a pleasant environment.

♦ "Great American Smokeout" - Annual hospital event to encourage persons to quit smoking.

Support Services

Several support groups are offered for persons with cancer, their families and friends. In addition to the support groups spiritual support is offered for the patients through chaplain services. The support groups provide an opportunity to share concerns and ideas for coping with illness and to help people live within the limits of the disease process.

♦ "Positive People" - New insights and information can be gained through sharing common experiences with others whose lives cancer has touched. One of the goals of this support group is to help people recognize that individuals who have cancer can continue to lead productive, meaningful lives.

♦ "I Can Cope" - This is a nationally recognized patient education program offered at the hospital with the cooperation of the American Cancer Society. The program is designed to help patients and their loved ones understand the day-to-day issues of living with a chronic disease like cancer.

♦ "Living Through Loss" - Informational series that provides an opportunity to learn about loss and grief. The stages of grief, the accompanying life changes and ways to move beyond loss are discussed. This provides a healing environment for people to share their own personal stories and ways of coping with grief.

♦ "Care for the Caregiver" - This group provides a supportive atmosphere for caregivers to discuss concerns, vent frustrations and share ideas for coping.

♦ National Cancer Survivors Day - This is a "Celebration of Life" co-sponsored by West Allis Memorial, St. Luke's Medical Center and, The American Cancer Society annually for cancer survivors, their families, caregivers and the community. The celebration is an opportunity to share the joy of victory over cancer.

Research

Participation in national study groups assures patients of the newest treatments available including research protocols. The Institutional Review Board (IRB) is responsible for the review and approval of all protocols with patient participation. Patients have been enrolled in research protocols through the:

♦ Radiation Therapy Oncology Group (RTOG)
♦ National Surgical Adjuvant Breast/Bowel Project (NSABP)
♦ Cancer Control Research including:
  Cancer Screening Programs
  Identification of high risk groups
  Nutritional Counseling
BREAST CANCER AND CERVICAL CANCER SCREENING PROGRAM

By Nancy Rhodes, R.N.

The Wisconsin Women’s Cancer Control Program (WWCCP), Suburban Milwaukee County, is a public-private partnership between the 12 suburban health departments and West Allis Memorial Hospital. The West Allis Health Department is the fiscal agent for the project, which began in May of 1994. Funding is from the State of Wisconsin who successfully competed for a five-year grant from the U.S. Centers for Disease Control and Prevention to substantially reduce the deaths due to breast cancer. There is a WWCCP program in each county in Wisconsin and all states are participating.

The goals of the project are:

1. To increase the number of women 50 and over who are screened with special emphasis on those who are under/uninsured, low income (200% of poverty), and have a high deductible if they have insurance;

2. To eliminate barriers such as pay-

ment, transportation and access to the health care system;

3. To recruit providers throughout suburban Milwaukee County to increase access and provide a close, convenient screening site;

4. To assist health departments in reaching eligible women within their specific communities;

5. To maintain a coalition of community representatives;

6. To network and coordinate with health and community organizations to prevent duplication, identify women who qualify for free screening and promote outreach activities.

As coordinator of the project, it is my responsibility to oversee this multi-community effort. I am employed by and housed at West Allis Memorial Hospital who has been an active participant through the Mammography Screening Center and Radiology.

Women are qualified to receive a screening and/or diagnostic mammogram, fine needle aspiration superficial and fine needle aspiration, deep tissue under radiology guidance paid by the program at Medicare rates, if they are 50 years of age and older and meet the income guidelines which are based on 200% of poverty. Currently one individual can have a gross household income of $15,480, or two persons $20,720. Many women in the 50-65 year age group may be working at jobs providing no health insurance or have a high deductible. Many Medicare eligible women live on Social Security and are eligible during the off year in which Medicare does not cover the cost of their mammogram.

Screening began in October, 1994 and through the first fiscal year of 10/01/94 through 09/30/95, West Allis Memorial screened 85 women of the total 107 under this program. In
the past fiscal year, 10/01/95 through 09/30/96, 86 of the estimated 200+ women screened were at West Allis Memorial Hospital. Other providers who participate are St. Luke’s, St. Luke’s South Shore, St. Mary’s, St. Joseph’s, Sinai-Samaritan, Aurora Medical Group West, and Mobile Diagnostic testing through Aurora. In Suburban Milwaukee County, two breast cancers were detected and treated. Within the State of Wisconsin, 7,000 women were screened from June 1, 1994, through August 30, 1996, and 14 breast cancer were detected and treated.

The other component for the program is provision of Pap tests, screening and diagnostic, colposcopy without biopsy and with directed biopsy. Several physicians and Planned Parenthood are the providers of these services. In the cervical area, 10 were CIN I, 5 CIN II-III, and one invasive cancer were detected and treated.

We know there are 58,000 women 50 years of age and older in Suburban Milwaukee County with an unknown number who may qualify. One of the largest challenges has been identifying those women. Each community has and is involved in recruitment and education efforts in reaching women. Mobile mammography has been a successful effort at low income housing units, community centers, and long term care facilities who invite their community neighbors. West Allis Memorial’s Admitting and Mammography Center have been especially alert to patients who may qualify. Our goal is to screen 500 women in the next fiscal year, 10/01/96 through 09/30/97.

If you have patients who may benefit from this program, please have them call me, Nancy Rhodes at 328-7407, or their local health departments. For questions about the program please contact Nancy Rhodes.
ANALYTIC cases are those which were diagnosed and/or treated at WAMH. Non-analytic cases are those which were diagnosed and had their 1st course of therapy elsewhere and were seen at WAMH for recurrence and/or subsequent treatment.

*Analytic cases are those which were diagnosed and/or treated at WAMH. Non-analytic cases are those which were diagnosed and had their 1st course of therapy elsewhere and were seen at WAMH for recurrence and/or subsequent treatment.
## WEST ALLIS MEMORIAL HOSPITAL
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<td>0</td>
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West Allis Memorial Hospital
Primary Site Tabulation for 1995 Accessions

<table>
<thead>
<tr>
<th>Primary Site</th>
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<th>Class</th>
<th>Sex</th>
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<td>Male Genital</td>
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<tr>
<td>Brain &amp; CNS</td>
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<td>6</td>
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<td>Lymphatic System</td>
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<td>Non-Hodgkin’s</td>
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<tr>
<td>Other/Ill-Defined</td>
<td>3</td>
<td>2</td>
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</tbody>
</table>

Number of cases excluded: 0
This report includes CA in-situ cervix cases, and squamous and basal cell skin cases.

Key
- **Class A**: Analytic case - patients diagnosed and/or received all or part of their first course of therapy at this hospital
- **Class N/A**: Nonanalytic case - patients diagnosed and treated elsewhere who were seen at this hospital for recurrence or persistent disease or were first diagnosed at autopsy
- **Stage 0**: In situ stage - noninvasive cancer
- **Stage Ben**: Benign tumors
- **Stage Unk**: Unknown stage - staging workup was not completed or there is no staging scheme for the site (such as hematopoietic primary sites)
The distribution tables (shown on the opposite page) display the most frequent sites by sex comparing West Allis Memorial Hospital with the incidence in the United States.

The site with the largest number of new cases was the female breast with 179 cases accessioned. Only one male breast cancer was diagnosed in 1995. The primary sites that accounted for approximately half of all female cancer cases were breast (35%) and colon and rectum (11%).

Prostate cancer was the second most frequent site with 167 cases accessioned and was the most frequent site among males. Half of the all male cancer patients had primary tumors of the prostate (36%) and lung (15%).

The rank of the sites for male cancers by incidence is the same for WAMH and United States. Although, at WAMH there is a three percent higher incidence of colon and rectal cancer and a two percent higher incidence of urinary cancer than for the United States. There is only a one percent increase in lung cancer at WAMH when compared with the rate for the United States.

The rank of the sites for female cancers by incidence differs between WAMH and the United States, but only by one to three percentage points. Lung cancer ranks second in the nation for females and third at WAMH. Lung cancer ranks as number one site as the cause of death from cancer for both sexes, both at WAMH and in the nation.

The stage at diagnosis table (shown below) compares the most frequent sites of cancer of WAMH and the SEER program. WAMH cases compare favorably with the SEER cases by stage at the time of diagnosis. WAMH has a higher percentage of localized stage cases than SEER for lung, female breast, cervix uteri, ovary, prostate and bladder. A lower percentage of patients diagnosed with distant disease was evident at WAMH for all sites except the corpus uteri. The percentage of distant stage disease for colon and rectum was tied at 19%.

<table>
<thead>
<tr>
<th>PERCENT OF CANCER CASES BY STAGE AT DIAGNOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WAMH 1995 CASES</strong>*</td>
</tr>
<tr>
<td><strong>SEER CASES 1983 - 1990</strong> **</td>
</tr>
<tr>
<td><strong>DISTANT</strong></td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>37</td>
</tr>
<tr>
<td>2</td>
</tr>
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<td>3</td>
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<tr>
<td>11</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

Note: Sites do not total 100 percent because sufficient data is not available to assign a stage to all cancer cases.

* West Allis Memorial Hospital 1995 Cancer Cases
** Surveillance Epidemiology and End Results Program of the National Cancer Institute Cancer Cases
Source: American Cancer Society, based on SEER data of 1983 - 1990
### 1995 DISTRIBUTION OF CANCER CASES

**PERCENTAGE OF SITES BY SEX**

#### MALE

<table>
<thead>
<tr>
<th>WAMH</th>
<th>SITE</th>
<th>UNITED STATES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>36%</td>
<td>PROSTATE</td>
<td>36%</td>
</tr>
<tr>
<td>15%</td>
<td>LUNG</td>
<td>14%</td>
</tr>
<tr>
<td>13%</td>
<td>COLON &amp; RECTUM</td>
<td>10%</td>
</tr>
<tr>
<td>10%</td>
<td>URINARY</td>
<td>8%</td>
</tr>
<tr>
<td>5%</td>
<td>LEUKEMIA &amp; LYMPHOMA</td>
<td>7%</td>
</tr>
<tr>
<td>2%</td>
<td>PANCREAS</td>
<td>2%</td>
</tr>
<tr>
<td>19%</td>
<td>ALL OTHERS</td>
<td>23%</td>
</tr>
</tbody>
</table>

#### FEMALE

<table>
<thead>
<tr>
<th>WAMH</th>
<th>SITE</th>
<th>UNITED STATES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>35%</td>
<td>BREAST</td>
<td>32%</td>
</tr>
<tr>
<td>11%</td>
<td>COLON &amp; RECTUM</td>
<td>12%</td>
</tr>
<tr>
<td>10%</td>
<td>LUNG</td>
<td>13%</td>
</tr>
<tr>
<td>7%</td>
<td>CORPUS UTERI</td>
<td>8%</td>
</tr>
<tr>
<td>5%</td>
<td>URINARY</td>
<td>4%</td>
</tr>
<tr>
<td>5%</td>
<td>LEUKEMIA &amp; LYMPHOMA</td>
<td>6%</td>
</tr>
<tr>
<td>3%</td>
<td>OVARY</td>
<td>5%</td>
</tr>
<tr>
<td>24%</td>
<td>ALL OTHERS</td>
<td>20%</td>
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*Estimated 1995 cancer cases from American Cancer Society publication, Cancer Statistics 1995*
PATHOLOGY OF ESOPHAGEAL CANCER

By Paul A. Angermeier, M.D.

The vast majority of malignant neoplasms of the esophagus are carcinomas. Malignant stromal tumors (formerly called leiomyosarcomas) are very rare. Squamous cell carcinomas account for approximately 80% - 85% of esophageal malignancies. Adenocarcinomas constitute approximately 10% of esophageal cancers, while rare forms of carcinomas make up the rest.

Squamous cell carcinoma is associated with many risk factors, most notably excessive alcohol consumption and tobacco use. Other risk factors reported include lye strictures, achalasia, human papilloma virus infection, genetic factors, diet, Plummer-Vinson syndrome and celiac sprue. In the biopsy diagnosis of squamous cell carcinoma, the pathologist may be challenged when tissue taken at an ulcer may show severe basal cell hyperplasia mimicking carcinoma in situ or endothelial changes in granulation tissue may resemble adenocarcinoma. Resection specimens also present a substantial challenge to the pathologist when intra-operative histologic evaluation of the margins by frozen section is requested. Squamous cell carcinoma may spread within the submucosa up to 5 cm or more beyond the grossly visible tumor. Multiple sections are required to include the entire circumference as well as multiple levels to identify submucosa and submucosal lymphatics. Another practical problem includes evaluation of resection specimens following chemotherapy and radiotherapy. The primary tumor and nodal metastasis may be replaced by necrotic tissue or hyalinized tissue with a giant cell reaction. These presumptive findings of tumor involvement are important to document since prognosis may relate to the extent of tumor involvement prior to chemotherapy and/or radiotherapy.

Adenocarcinomas are most frequently located in the middle and lower esophagus. Earlier these were thought to arise in submucosal glands in the esophageal wall. It is now recognized that the vast majority arise from a background of Barrett's esophagus. This condition refers to the replacement of normal squamous epithelium by columnar epithelium. Chronic gastroesophageal reflux causes inflammation and ulceration of the squamous epithelial lining. The healing process occurs by epithelialization originating by pluripotent stem cells. These differentiate into metaplastic glandular epithelium in this acid environment. Barrett's metaplastic epithelium (defined by the presence of goblet cells) is histologically identical to intestinal metaplasia of the incomplete type in the stomach. This histologic finding carries the synonyms "distinctive", "specialized" or Barrett's metaplasia. Patients are at increased risk for esophageal adenocarcinoma even when only a short segment (1 cm or 2 cm) of esophagus is involved by Barrett's metaplastic epithelium.

The pathologist's role in evaluating patients with suspected Barrett's esophagus is threefold: (1) identify Barrett's metaplastic...
epithelium, (2) identify and grade glandular dysplasia, and (3) detect intramucosal or invasive adenocarcinoma, if present.

The endoscopic diagnosis of Barrett's esophagus may be problematic. The squamo-columnar mucosal junction does not always coincide with the gastroesophageal junction. Patients with large hiatal hernias may pose a challenge to the endoscopist. Fortunately, if the diagnosis of Barrett's esophagus is based on the histologic finding of metaplastic epithelium, then the exact landmarks are not critical. Moreover, the presence of metaplastic epithelium anywhere within the gastroesophageal junction region is considered a predisposition for adenocarcinoma since adenocarcinoma of the gastric cardia is probably closely related to adenocarcinoma in Barrett's.

The identification of glandular dysplasia within the metaplastic epithelium of Barrett's esophagus directly influences patient management. It is hypothesized that adenocarcinoma arises in Barrett's esophagus through a sequence of events beginning with chronic reflux and ending with invasive tumor. This hypothesis identifies the goblet cell (the diagnostic feature of intestinal metaplasia) as an obligatory precursor of dysplasia and then cancer. Dysplasia is recognized by the presence of architectural and cytologic abnormalities in glandular epithelium and classified as low or high grade. Sampling error and imprecision in the histologic evaluation of Barrett's esophagus are problems in the diagnosis of dysplasia. The dysplastic mucosa may be extensive or focal, thus sampling needs to be thorough and systematic. The dysplastic changes span a continuum from minimal atypia to high grade dysplasia. A generally accepted format includes the categories: (a) negative for dysplasia, (b) indefinite for dysplasia, (c) low grade dysplasia and (d) high grade dysplasia.

Frequently, regenerative and inflammatory changes may closely resemble low grade dysplasia, hence the category "indefinite for dysplasia". These patients may require follow-up biopsies after anti-reflux therapy for a more definitive diagnosis. Low grade dysplasia results in increased surveillance. Patients with high grade dysplasia may undergo an esophagectomy since esophageal resection specimens resected for biopsy-proven high grade dysplasia not infrequently demonstrate an unsuspected invasive carcinoma.

REFERENCES


ESOPHAGEAL CANCER DIAGNOSIS AND THERAPY

By Franklin D. Loo, M.D.

In the rest of the world there are several "hot zones" for squamous cell carcinoma of the esophagus, for example, the "esophageal cancer belt" that extends from northern China to the Caspian Sea and the Transheir region of South Africa. Both types of esophageal cancer affect men more frequently than women. Squamous cell cancer is three times more common in men than in women, whereas adenocarcinoma is approximately seven times more common in men. Both are diagnosed most often between the ages of fifty and seventy.

Risk Factors

A. Squamous cell carcinoma.

In the United States, cigarette smoking and alcoholism are acknowledged risk factors. Other potential risk factors include exposure to carcinogens (nitrates) and thermal injury such as drinking boiling hot tea.

Infection may also play a role in causing squamous cell cancer of the esophagus. One recent study found that twenty percent of patients had evidence of human papilloma virus infection. In some cases, chronic ingestion of foods contaminated with certain types of fungi and bacteria capable of converting nitrates to N-nitroso compounds are suspected of playing a causative role.

Patients with celiac sprue, Plummer-Vinson syndrome, lye ingestion strictures and tylosis all have high risks of esophageal cancer.

B. Adenocarcinoma

The cause of adenocarcinoma is less well understood. The only accepted risk factor for adenocarcinoma of the esophagus is Barrett’s esophagus. Cigarette smoking and alcohol consumption have not been linked to this form of esophageal cancer. Barrett’s esophagus is more frequently seen in patients with colon polyps, implying a common primary genetic mechanism. Chronic acid reflux, frequently
asymptomatic in these patients, appears to trigger the metaplastic change from squamous mucosa to Barrett’s epithelium and subsequently to adenocarcinoma.

Diagnosis

Both types of esophageal cancer are asymptomatic in the early stages. Only serendipity or screening examinations for Barrett’s esophagus permit early diagnosis. X-rays are especially useful if sequential studies are needed. Endoscopy is required to establish a histologic diagnosis prior to surgery. Endoscopy is also the only practical means for performing surveillance exams on patients with Barrett’s esophagus.

Adenocarcinoma of the esophagus is thought to be preceded by the development of dysplastic lesions in the affected segment. The progression of dysplasia to cancer has been compared to the well described and confirmed colon polyp - colon cancer sequence. Unfortunately with dysplasia in the esophagus there is greater controversy regarding the histologic criteria required for the diagnosis. There is frequent disagreement between different pathologists reviewing the same sections. To complicate the issue dysplastic changes can frequently be reversed by aggressive anti-ulcer therapy; although some experts suspect in those cases there was some misreading of the original specimens.

Annual examinations have been recommended for Barrett’s esophagus. Several recent investigators are recommending a surveillance schedule on alternate years, based on risk benefit statistics. When low grade dysplasia is found surveillance exams are recommended at eight weeks and again in six months. If high grade dysplasia is found and confirmed, an esophagectomy is recommended. Given this fairly drastic recommendation, confirmation of high grade dysplasia by several pathologists is, of course, required. Attempts at enhancing the diagnostic yield with vital stains has proved disappointing. Proposed bio-markers currently being evaluated include mucous abnormalities, flow cytometry and tumor suppression gene P53 expression.

Staging

Surgery remains the main curative therapy. Therefore preoperative staging is crucial. CT scans have been the primary staging modality but endoscopic ultrasound appears to have a great deal of promise with T stage accuracy and N stage sensitivity of 70 - 90%.

Treatment

Surgery is usually undertaken with cure in mind. Occasionally palliation is attempted surgically. Combined treatment protocols with pre and post chemo and radiation therapy has improved survival.

When cancer has extensively metastasized and surgical palliation is not acceptable, several endoscopic options are available. These include laser and photodynamic therapy or stent placement.

The former two approaches may occasionally be considered non-operative approaches for cure but these techniques and their efficacy in bringing about cures of very early lesions remains controversial and to be validated.

Nd:YAG Laser therapy has been advocated for tumor ablation of bulky tumors with or without stricture that cause dysphagia. Advantages of laser therapy include relative ease of the procedure and the lack of a prosthetic requirement. Disadvantages include the need for repeated endoscopic procedures, a risk of perforation, bleeding and no effect on tumor pain. Dysphagia persists to some degree but usually improves with treatments.

In Barrett’s esophagus laser therapy has been touted as a means of reversing the metaplastic change i.e., re-epithelializing the Barrett’s esophagus with squamous mucosa. Recently there’s been a report of adenocarcinoma developing in the esophageal segment of Barrett’s that had been re-epithelialized with squamous tissue. If this is true, the malignant potential is not lost after laser induced treatment. Because of this concern there has been a decrease in the enthusiasm of treating Barrett’s esophagus with laser.
Photodynamic therapy (PDT) is a different type of laser treatment from Nd:YAG thermal ablation for esophageal cancer. PDT consists of administration of a chemical sensitizer that accumulates in the tumor with greater concentration than in normal tissue. The chemical is then activated by the application of light to the area of the tumor with a low power laser. Tumor necrosis results from a photochemical rather than a thermal effect. PDT is comparable to laser in terms of palliation of dysphagia but objective tumor response appears to be greater for PDT. On average PDT requires fewer endoscopies than laser. However, patients are photosensitized and must avoid sunlight for two months. Perforation and bleeding are less common for PDT in the early studies but side effects of nausea, fever, pleural effusions and chest pain are much more common. PDT appears to be equally effective for squamous and adenocarcinoma.

One intriguing application for PDT is for patients with Barrett’s esophagus who have high grade dysplasia. This subset of patients is being evaluated with PDT therapy for the dysplastic lesions. The anecdotal experience has been good but prospective randomized studies are required.

Finally both rigid (plastic polyethylene and silastic) and expanding wire mesh stents have been used for palliation. The rigid stents offer the advantage of occluding fistulas, for example tracheoesophageal-esophageal fistulas, and preventing tumor growth into the lumen. Wire mesh stents are better tolerated by the patient but do permit tumor ingrowth. Lesions in the distal or middle third of the esophagus are best suited for plastic stenting. The mesh stent is more versatile and can be placed more easily in proximal and very distal lesions.

In summary, carcinoma of the esophagus is a disease in evolution. Of the estimated 12,000 patients who will be diagnosed in the U.S. this year only 7% will survive five years. Out of the 100 patients who actually go to visit a doctor, 58 will be explored, 39 resected, 26 leave the hospital with tumor excised (29% operative mortality), 18 survive for one year, 9 for two years and 4 for five years. The bright spot is that adenocarcinoma, which is increasing at a rate of between 4 - 10% per year (replacing squamous cell carcinoma) is more amenable to early detection and prevention. Interruption of the acid reflux-Barrett’s esophagus-adenocarcinoma sequence, along with new treatment modalities such as PDT, hopefully will have an impact on the dismal survival statistics of this disease.
CURRENT ISSUES IN ESOPHAGEAL CANCER SURGERY

By John F. Just, M.D.

Unlike Iran, China and Russia where there are 500 cases per 100,000 people, in the United States the incidence is 5 cases per 100,000 people. Age, alcohol, dietary and nutritional factors, race and smoking all are implicated in the epidemiology of esophageal cancer. Squamous cell cancer is the most frequent cell type, but there has been an increase in adenocarcinoma of the esophagus in the last fifteen years, specifically in the arisal of cancer from Barrett’s mucosa, where the risk of developing cancer is 50 to 100 times that of normal esophageal mucosa. Often dysplasia precedes malignancy. Whereas low grade dysplasia may remain stable or regress, high grade dysplasia is equivalent to carcinoma in situ. Endoscopic surveillance is necessary to detect and treat the cancer early and to improve survival.

Barium swallow and endoscopy are complimentary in early detection. CT scanning is useful in tumor staging and in detecting distant metastasis, and as a surveillance tool postoperatively. Endosonography provides detailed images of the esophageal wall and adjacent structures for staging esophageal cancer, and is better than CT scanning in assessing the depth of the tumor infiltration and regional adenopathy.

Neoadjuvant therapy recently has been added to reduce the bulk of the tumor and attempt to eradicate tumor in lymph nodes and thereby downstage the disease. It may reduce dissemination during surgery because it is delivered prior to the surgical disruption of the blood supply to the tumor. Preoperative radiation therapy as well can reduce tumor bulk, render some specimen sterile and should not increase postoperative morbidity and mortality. Preoperative chemo-radiation therapy has resulted in 40% five year survival for patients with documented pathological remission.

The operative procedures for resectable esophageal cancers have substantially changed recently. The initial operative procedure described by Ira Lewis in England in the mid-forties was a laparotomy and creation of a gastric tube followed by a right thoracotomy and resection of the esophagus with subsequent pull up of the gastric tube into the right chest. The current blunt esophagectomy championed by Dr. Oringer from the University of Michigan has become quite an acceptable alternative to avoid some of the previous complications associated with the placing of anastomosis in the right chest. While not being able to resect in the classical en block manner the long-term survival rates are as favorable with the transhiatal approach.

Since the esophagectomy is the most dangerous of the elective thoracic procedures one tries to minimize the complication rate. In the transhiatal approach the patient is operated upon in the supine position, the abdomen is open, the duodenum freed up using a Kocher maneuver and a pyloroplasty performed if there is no evidence of intra-abdominal spread of the disease. A gastric tube is formed by leaving the right gastric and the right gastroepiploic vessels intact while ligating the remaining vascular arcades (see figure 1).
The left neck is opened and the esophagus is freed up from the surrounding tissues with careful attention to avoid injury to the recurrent laryngeal nerve. The thoracic esophagus is freed up in a blunt manner as well from the mediastinum through the neck incision. The esophagus is removed in a retrograde fashion after being divided in the neck (see figure 4).

The stomach is then transected using surgical stapling instruments so that a gastric tube is formed with the apex of the fundus of the stomach being the ultimate site of the anastomosis between the cervical esophagus and the gastric tube (see figure 2).

The gastric tube is brought through the native bed of the esophagus to the neck where the anastomosis is performed; hence, any subsequent leak can be managed by drainage through the neck incision (see figures 5 and 6).

The dissection is then carried out through the hiatus which is opened enough to let the dissection proceed and bluntly the esophagus is removed from the mediastinum ligating vessels as necessary (see figure 3).
Alimentation is maintained through a feeding jejunostomy and after the fifth or sixth day, assuming there are no further complications and there is no leak at the anastomosis, feedings are begun. The jejunostomy will remain in place until the patient is eating a regular diet and is removed as an outpatient. The patient may lose ten to fifteen pounds over the next four to six months while eating four smaller meals a day with nothing to eat or drink after the evening meal.

The long term results of the esophagectomy can accomplish the primary mission which is to restore the patients ability to eat and drink for the remainder of his lifetime. Survival rates have been increasing in the last several years and the current status of neoadjuvant therapy to downstage tumor in order to increase survival has yet to be defined.
Carcinoma of the esophagus represents roughly 1% of all cancer in the United States. In 1990, there are an estimated 10,600 new cases of which approximately 7500 were men and 3100 were women. The majority of patients present in the middle years between the ages of 55 and 65. This tumor is found worldwide though some areas such as in Iran, the Soviet Union and in China, there can be markedly high incidences of esophageal cancer which is felt to be related to dietary changes.

In the United States, the major risk factors for the development of esophageal malignancies are alcohol and tobacco use with approximately 80 - 90% of all cases. Certain food products especially dietary intake of nitrates (especially found in cured meats and smoked fish) are also associated with the development of this tumor.

This tumor has a tendency to grow quite insidiously and develops extensive local growth and lymph node involvement just prior to becoming widely disseminated. This can happen well before clinical symptoms are manifested since there is little to contain the spread of cancer and prevent extension into surrounding adjacent structures. Even following aggressive surgery and radiation therapy, the majority of the patients failed locally and a substantial number do develop distant disease.

The majority of patients present with symptoms of approximately 3 - 4 month duration. Dysphagia (difficulty swallowing) and weight loss are seen in over 90% of patients. Odynophagia is also present in approximately 50%. Because these tumors can locally invade into adjacent structures such as the lung and bronchial tree, the patients can present with hemoptysis and persistent cough.

Following biopsy to establish the diagnosis, all patients should be considered for possible surgical excision of this tumor. This generally involves the subtotal or total esophagectomy. If the patient is not felt to be a candidate for surgical removal either due to underlying medical conditions or due to the extensive nature of the tumor, the next course of therapy is to consider combined chemotherapy and external beam radiation. Large numbers of studies have been published looking at combinations of chemotherapy, mainly 5-FU but also Bleomycin, Vincristine and Methotrexate combined with radiation therapy prior to consideration of surgery. Complete response rates have been reported anywhere from 30 - 90% using combination therapy. Substantial improvement in overall survival can be found in those patients who do have an excellent response to their initial management.

One of the largest studies to compare the use of external beam irradiation alone versus external beam irradiation combined with chemotherapy was a cooperative group study between the Radiation Oncology Group, Southwestern Oncology Group, and the North Central Cancer Therapy Group. This study randomized
120 patients between external beam irradiation alone to 6400 cGy versus 5000 cGy plus chemotherapy consisting of 5-FU and Cisplatin. All patients were able to complete their therapy. The 2 year survival for the radiation therapy alone group was 10% while it was 42% for the combined modality therapy. This result was highly statistically significant. It was noted that the patients receiving combined modality therapy tended to have fewer local recurrences as well as recurrences in regional or distant sites. It was overall felt that this combined therapy was well tolerated with acceptable levels of toxicity.

When using radiation therapy techniques in the treatment of esophageal tumors, the majority of patients will receive a course of externally directed irradiation. The key in the treatment of these patients is to make sure that the volume treatment adequately encompassed the tumor as well as a margin of normal tissue. Generally a margin of 5 - 6 cm. above and below the tumor is recommended due to the well known capability of this tumor to extend far beyond its visible borders. Additionally, appropriate care must be taken to minimize the dose to the multiple surrounding normal structures which include the bronchial tree, lungs, heart, aorta and spinal cord. Generally patients are treated while lying on their back using a series of treatment directions from the front and back or from the front in both posterior obliques. CT scans in conjunction with computerized treatment planning are used to help maximize the dose to the target volume while minimizing the dose to the surrounding normal tissues. A dose of approximately 50 - 60 Gy (5000 - 6000 rads) in 5 - 6 weeks is generally recommended for the treatment of this disease. Modifications of this approach are made depending on bulk of disease as well as patients overall status.

An additional radiation therapy technique involves the use of placement of a central catheter into the esophagus using a nasogastric approach. Inside of this catheter, a radioactive isotope such as a Iridium-192 can be placed. This radioactive source emits low energy x-rays at a relatively high dose rate and can deliver substantial doses of irradiation to the surrounding esophageal tissues with little delivery of radiation to the surrounding normal structures. While this technique has a great deal of utility in the treatment of extensive local lesions of the esophagus, it is difficult to treat the entire esophageal tumor due to its propensity to spread substantially beyond its visible borders. This makes it then difficult to determine the exact placement of the radioactive sources.

When the radiation is used to help relieve the symptoms that patients can experience (especially pain on swallowing or a sensation that food is unable to completely pass through the esophagus) patients can be effectively palliated in the upwards of 80% of the cases. Generally somewhat lower total doses on the order of 30 - 45 Gy (3000 - 4500 rads) in a treatment duration of 2 - 3 weeks are utilized.

While advances have been made in the treatment of this difficult disease especially in the areas of combined chemotherapy, radiation and surgery, the overall outlook for these patients needs further work and study.
Carcinoma of the esophagus presents a persistent therapeutic challenge to oncologists and surgeons. Approximately 11,000 new cases will be diagnosed in the country, and the vast majority of these will die from their disease. The cancer itself represents 1.9% of all cancer deaths in the United States, and a particularly disturbing trend reveals that adenocarcinoma of the esophagus now represents a larger percentage of esophageal cancers, whereas squamous cell carcinoma, which is more favorable in its prognosis and its response to treatment, used to represent a much higher percentage. Approximately half of the newly diagnosed cases now have adenocarcinoma and half epidermoid carcinomas.

Surgical treatment for resectable esophageal cancer has resulted in a five year survival of between 5 and 20%. Surgical mortalities, in some series, can run as high as 20% however, negating any potential benefit of that treatment. Furthermore, patterns of recurrence suggest that metastatic disease and lymphatic spread represent a significant risk to such patients and are not addressed adequately by surgery alone. A recent autopsy study from Hong Kong demonstrates systemic disease even at or shortly after initial presentation. The majority of patients in that series were found to have evidence of distant metastatic disease, even if it did not contribute substantially to their mortality. Clearly, the need to address dissemination must involve the use of systemic therapies, and chemotherapy therefore has been considered.

Preoperative Neoadjuvant Chemotherapy

There are several possible techniques for utilizing chemotherapy in the treatment of esophageal carcinoma. One such approach is to use drugs in a so-called “neoadjuvant” setting. In this modality, patients with advanced esophageal carcinomas received chemotherapy prior to definitive surgery or radiation. This approach has been used in a variety of trials in patients with both epidermoid and adenocarcinoma. In an early trial reported by Coonley, 34 patients with an epidermoid carcinoma were given one course of preoperative chemotherapy followed by one course of postoperative therapy. Major antitumor response was seen in only 17%, but 76% were felt to be operable. Postoperative mortality, as mentioned above, was approximately 11%, and no demonstrable benefit for the treatment was demonstrated. More recent chemotherapy combinations have incorporated the agent cisplatin and have resulted in much more favorable response rates. In a series reported in the last two years, a combination of cisplatin, bleomycin and vindesine was used, with major responses of 53% and a pathologic complete response rate of 3%. The median survival in that series was 15 months, which was superior to that of a historically controlled, surgically treated group. Overall, preoperative chemotherapy with cisplatinum based combination chemotherapy achieved the major response in between 17 and 66% of patients with a pathologic complete response rate of between 3 and 10%. These results suggest that the adminis-
tration of preoperative chemotherapy is safe and without side effects; however, the overall survival has still been disappointing with median survivals ranging between 10 and 26 months, which is not a substantial improvement over historical surgical controls.

Neoadjuvant Chemotherapy with Radiation

Attempting to intensify the effects of preoperative chemotherapy, in patients with esophageal carcinoma, has led to the use of combined modality therapy in this setting. It is known that both cisplatinum and 5 FU are radiation sensitizers and, as such, it is not surprising that such patients would benefit from a combined modality (radiation and chemotherapy) in this setting. Several such studies have been published. An Eastern Cooperative Oncology Group phase III trial, utilizing chemotherapy and radiation versus radiation alone, showed no difference in survival. Concurrent radiation and infusional 5 FU has been felt to be helpful, but for the most part has not been successful in prolonging life in the absence of surgery.

Chemo-radiotherapy has also been used in conjunction with surgery, in a trimodality approach. Several trials have been published in this regard, the earliest one being from Wayne State which utilized, a combination of 5 FU and mitomycin-C and 5 FU and cisplatinum administered for two cycles with radiation therapy being given concurrently, with the first cycle of chemotherapy followed by an esophagectomy. Pathologic complete responses to chemo-radiotherapy were seen in between 20 and 24% of the patients; however, the median survival remained relatively short at 18 months. Even amongst patients with complete clinical responses, all had eventually succumbed to metastatic disease without evidence of local tumor recurrence.

A subsequent study, done by the Southwest Oncology Group and the Radiation Therapy Oncology Group, evaluated 106 patients treated in a similar fashion. Pathologic complete responses were seen in 17%, but median survival for all patients was only 12 months. This study also failed to demonstrate a substantial improvement for the combined modality arm. Multiple other studies have been performed and are ongoing, to demonstrate a favorable response in this regard. Most of these have addressed the contribution of additional chemotherapy agents to preoperative chemo-radiotherapy, including etoposide, leucovorin and combinations of those two drugs. To date, comparable rates of resectability, pathologic complete responses and survival have been observed in these trials, when compared to the prior studies.

Palliative Therapy

Chemotherapy and radiation therapy, without surgery, have been used in a palliative mode for patients deemed either unable to tolerate esophagectomy or those who refuse the procedure. Again, the group from Wayne State studied this approach utilizing 5 FU and cisplatinum followed by radiation therapy. Median survival in this series was 22 months, although approximately half continued to have persistent local regional tumor after such treatment. Similar studies have confirmed similar findings in those patients treated with combined modality approach.

The role of chemo-radiotherapy remains somewhat uncertain. Major response rates have been reported in between 40 and 80%, and up to 24% pathologic responses have been achieved. Despite this however, median survivals remain quite disappointing at between 11 and 29 months. There is currently no consensus on the role of combined chemo-radiotherapy in such patients, except inasmuch as it does appear to provide palliative treatment for many patients with this disease, and this approach remains somewhat investigational. In a nonsurgical setting, recent evidence would strongly suggest that concurrent chemotherapy and radiation therapy is superior to radiation therapy alone, in the control of locally advanced disease. The question of whether or not an esophagectomy is necessary awaits the results of a randomized trial.

Future Directions

Clearly additional chemotherapy agents are essential to improvement in overall survival of this disease. While the addition of cisplatinum to the 5 FU combination has increased responses. Newer antitumor agents are needed.
Leucovorin as a biomodulator of 5 FU may have efficacy in this disease, and this combination has been shown to have effectiveness against epidermoid carcinomas. Similarly, using infusional 5 FU and leucovorin in combination with cisplatinum may provide a potential advantage as well.

Additionally Interferon Alfa 2a, as a biomodulator for 5 FU, has been suggested as a means to improve response without increasing toxicity excessively, although clearly hematologic toxicity may become important in such a combination. The ongoing studies indicate a potential role for oncogenes and tumor suppressor genes in the mechanism of tumorigenesis. Similarly, the tumor suppressor gene P53 has been studied, and P53 mutations have been demonstrated in a variety of esophageal carcinomas, both adenocarcinoma and squamous cell carcinoma, and in Barrett’s epithelium. The use of agents which affect the expression of an epidermal growth factor receptor, and the P53 gene, may be important in the development of esophageal carcinomas. Clearly, such agents are several years from clinical trials that may ultimately produce the needed breakthrough which will allow eradication of this very aggressive and highly malignant disease.
CANCER OF THE

ESOPHAGUS

PCE STUDY

RESULTS
CANCER OF THE ESOPHAGUS

PATIENT CARE EVALUATION STUDIES

Annual Studies

Annually the Cancer Committee conducts at least one long-term and short-term patient care evaluation study. In 1995 the committee chose to participate in the esophageal cancer study, which was the current study being conducted by the American College of Surgeons (ACOS), Commission on Cancer (COC). The long-term study includes the cases accessioned in 1989 and 1990. The short-term study represents cases accessioned in 1994.

Electronic Submission

This study is different from past evaluations in that the short-term study is submitted electronically via the National Cancer Data Base (NCDB) Call for Data to the ACOS. Over time, outcome data from this short-term esophageal cancer study will be collected through the NCDB Call for Data. Electronic data submission allows the NCDB staff to link current follow-up data to previously submitted data.

Purpose of the Studies

This study of esophageal cancer is designed to document the current methods of diagnosis, treatment, and staging, and survival. This information is reviewed by the Cancer Committee to identify opportunities for improving patient care and analyze the causes of study variations.

Case Selection Criteria

Patients must have a histologically confirmed primary cancer of the esophagus that was either diagnosed and/or initially treated at this hospital. Patients that have been diagnosed with histologically proven metastasis, having clinical evidence of a primary tumor are to be included.

This study includes all carcinomas. Excluded from the study are sarcomas, melanomas and plasmacytomas of the esophagus. Primary carcinomas of the esophagogastric junction are not included in the study.

Presenting Symptoms

Esophageal cancer rarely causes symptoms until the esophagus has been encircled completely by cancer. The two main symptoms present at time of diagnosis were dysphagia and weight loss. The patients main reason for seeking medical attention was difficulty eating.
Chronic cough and hoarseness were present less often.

ESOPHAGEAL CANCER STUDIES
TOBACCO AND ALCOHOL USE HISTORY

Risk Factors

Cancer of the esophagus accounts for between one and two percent of all cancers in the United States and occurs three times as often in men as in women. These trends are also present at West Allis Memorial Hospital (WAMH). Individuals in the sixth and seventh decades are affected most often at WAMH. This is a decade younger than the national average. Smoking along with the consumption of alcohol have been linked to esophageal cancer. Case histories have shown that the majority of persons who develop this type of cancer have a history of heavy smoking, heavy drinking or heavy smoking and drinking combined.

Pathology

Squamous cell carcinoma including keratinizing squamous cell carcinoma account for over 58% of the esophageal cancers. Adenocarcinoma is in second place totaling 30% of the cases at WAMH.
Radiation therapy was the most often used modality at WAMH for the treatment of esophageal cancer. Radiation was used either by itself or in combination with other modalities in 46% of the cases. Chemotherapy was used either by itself or in combination with other modalities for 38% of the esophageal cancers. Surgery was used in only 17% of the cases. Fifteen percent of the cases received no treatment.

Stage at Diagnosis

In the majority of the cases the treatment was palliative only because of advanced disease or because of local extension to vital organs at the time of diagnosis. When comparing the stage at diagnosis at WAMH with Surveillance, Epidemiology and End Results (SEER) data WAMH had 10% more patients staged with regional stage (direct extension and/or regional lymph nodes) and the same percentage of distant stage. The unstageable category, for the most part, includes patients who either refused staging workup and/or were in terminal condition at the time of diagnosis. The WAMH five year survival table reflects this as none of the unstageable cases survived five years. WAMH survival rates compare very favorably with SEER data. The overall five year survival rate for all stages reflects that WAMH patients have a five percent higher survival rate. The five year survival rate differences for local stage are higher and statistically significant for WAMH when compared to SEER data.
### Esophageal Cancer

#### Stage at Diagnosis Comparisons

<table>
<thead>
<tr>
<th>Stage at Diagnosis</th>
<th>WAMH</th>
<th>SEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Situ</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Localized</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>Regional</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Distant</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Unstageable</td>
<td>17</td>
<td>25</td>
</tr>
</tbody>
</table>

#### Percentage of Cases

- **95-30**: Percentage of cases by stage at diagnosis.

#### Five Year Survival Rates

<table>
<thead>
<tr>
<th></th>
<th>All Stages</th>
<th>Local</th>
<th>Regional</th>
<th>Distant</th>
<th>Unstaged</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAMH**</td>
<td>11%</td>
<td>40%</td>
<td>4%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>NCI - SEER*</td>
<td>6%</td>
<td>13%</td>
<td>4%</td>
<td>1%</td>
<td>6%</td>
</tr>
</tbody>
</table>

*NCI - SEER* National Cancer Institute - Surveillance Epidemiology & End Results Program Accession years in survival calculations 1974 - 1986

**WAMH** West Allis Memorial Hospital Accession years in survival calculations 1978 - 1995

+ Survival Rates Survival rates are calculated by Actuarial (Life Table) Method.
### GLOSSARY

**Accessioned**
Entered into the Cancer Registry data base

**ACoS, COC**
American College of Surgeons, Commission on Cancer. In 1932 the American Cancer Society urged the American College of Surgeons to take the lead in setting guidelines for cancer care. Approval of hospital-based cancer programs by the Commission on Cancer has been the foundation for improving the quality of patients with cancer. Certification of a cancer program by ACoS, COC indicates that standards for optimal cancer patient care are in place.

**ACS**
American Cancer Society

**AJCC**
American Joint Committee on Cancer - organized for uniform cancer staging and end results reporting

**Analytic Cases**
Cases which are first diagnosed and/or received all or part of their first course of therapy at West Allis Memorial

**Cancer Stage**
The extent of cancer spread determined at the time of initial workup

**First Course of Therapy**
The initial tumor-directed treatments, usually initiated within four months following diagnosis

**Non-Analytic Cases**
Cases which were diagnosed elsewhere and received first course of therapy elsewhere or were diagnosed and treated here prior to the cancer registry start date of January 1, 1978. These cases are seen for subsequent treatment for either persistent disease or recurrent disease. Also includes those cases diagnosed at autopsy

**SEER Program**
Cancer Surveillance, Epidemiology, and End Results reporting program of the National Cancer Institute of the National Institutes of Health

<table>
<thead>
<tr>
<th><strong>SEER Summary Staging</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In situ</strong></td>
<td>Neoplasm which fulfills all microscopic criteria for malignancy except invasion</td>
</tr>
<tr>
<td><strong>Localized</strong></td>
<td>Neoplasm which appears entirely confined to the organ of origin</td>
</tr>
<tr>
<td><strong>Regional</strong></td>
<td>Neoplasm which has spread by direct extension to immediately adjacent organs or tissues and/or has spread to regional lymph nodes and no further</td>
</tr>
<tr>
<td><strong>Distant</strong></td>
<td>Neoplasm which has spread beyond immediate adjacent organs and/or has metastasized to distant lymph nodes or is systemic in origin</td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td>Stage cannot be determined from the medical record or a medical authority</td>
</tr>
</tbody>
</table>

**TNM Staging**
AJCC classification to determine the extent of cancer at the time of diagnostic workup for the first course of therapy
- **T** - Extent/size of primary tumor
- **N** - Extent of lymph node involvement
- **M** - Extent of distant metastasis

**Survival**
Survival statistics were calculated using the actuarial method for observed survival
West Allis Memorial Hospital

AuroraHealthCare

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