Fox Chase Virtua Health Cancer Program
2006 Annual Report
Message from the Medical Directors

The Fox Chase Virtua Health Cancer Program (FCVHCP) and its Cancer Committees are proud to present the 2006 Oncology Program of Excellence Annual Report. The program is a unique partnership between Virtua Health and the Fox Chase Cancer Center, whose aim is to develop cancer prevention strategies, cultivate cancer research, enhance diagnostics techniques and provide access to advanced treatment and clinical trials for people in Southern New Jersey. FCVHCP remains the only program in the tri-county region to receive the Outstanding Achievement Award from the American College of Surgeons' Commission on Cancer.

Many exciting events took place in 2006. A state-of-the-art radiation oncology center opened on the Virtua Voorhees campus, under the direction of Dr. Lemuel Ariaratnam. Dr. Ariaratnam has provided radiation oncology at the Virtua Memorial and Marlton campuses for many years, and we welcome him to Virtua Voorhees, along with his partners Drs. Kelly Fife, Deborah Butzbach and their newest associate, John Wilson. Clinically, this new radiation suite offers external beam radiotherapy, as well as Intensity Modulated Radiation Therapy (IMRT). This technology is a newer form of radiotherapy that allows for higher dosing with fewer side effects. At the Virtua Memorial radiation facility, another emerging technology was implemented: high dose rate (HDR) brachytherapy, which provides partial breast irradiation therapy, as well as treatment of gynecological and other tumors.

Our patients have been able to have access to and participate in national and regional clinical trials. Thanks to the efforts of our physician leaders in medical oncology, Drs. Alan Weinstein and Ashok Bapat, Virtua has seen a continual increase in accruals to clinical trials, with more than 150 patients projected to be enrolled in research studies this year. By supporting this important element in the advancement of the science of cancer, Virtua's patients are able to receive therapies through clinical trials, in convenient locations, near their homes and with their own physicians. This is due in large part to our collaboration with the Fox Chase Cancer Center. Fox Chase physicians also provide a second opinion service unique to our region which aids our patients and physicians in determining the ideal approach to treating and managing difficult cases. More than 30 patients with complex tumors were supported by this service in 2006.

The Oncology Program of Excellence is pleased to announce a new Fox Chase affiliation for Virtua physicians who have demonstrated a significant commitment to diagnosing and treating cancer patients. Virtua medical staff members who are active in the cancer program and demonstrate this through clinical research, and cancer committee activities can now seek a title of "Adjunct Fox Chase Physician".

The FCVHCP continues to support numerous community outreach and continuing medical education activities. Our New Jersey Cancer Early Education and Detection

(CEED) program has been recognized as a very successful program in the state. More than 1,000 underserved and underinsured residents in Camden and Burlington counties were screened for breast, prostate and cervical cancers in 2006.

In 2006, Virtua was awarded a three-year grant of more than $300,000 to offer tobacco addiction services to New Jersey residents. The Virtua Health Quitcenter is funded in part by the New Jersey Department of Health and Senior Services Comprehensive Tobacco Control Plan (CTCP). Virtua's Quitcenter is one of only five in the state and the only one in Southern New Jersey providing professional face-to-face counseling in individual or group sessions. Participants can obtain up to date consultations on prescription and over the counter medications. Services are provided by trained Tobacco Dependence Specialists to residents of Camden, Burlington and Gloucester counties.

A fitness and exercise program for cancer survivors, *Moving On,* was implemented at the William G. Rohrer Center for HealthFitness. The program is geared toward those who are in active cancer treatment or have completed it. The program's goal is to improve both emotional and physical health, and to address the most common side effects of treatment.

This year's site study focuses on colorectal cancers. Virtua has seen a marked increase in the diagnoses of colorectal cancers in the last two years. In 2003 there were 274 analytic cases reported compared to 320 in 2005. We are grateful to the leadership of Dr. Stephen Pilipshen and Dr. Eytan Irwin for the time they committed in preparing the site study.

All of the physicians and staff in the Oncology Program of Excellence and Cancer Committees are expecting many more exciting developments in 2007 and beyond, with plans underway to build state-of-the-art cancer centers on its Voorhees and Mount Holly campuses.

Sincerely,

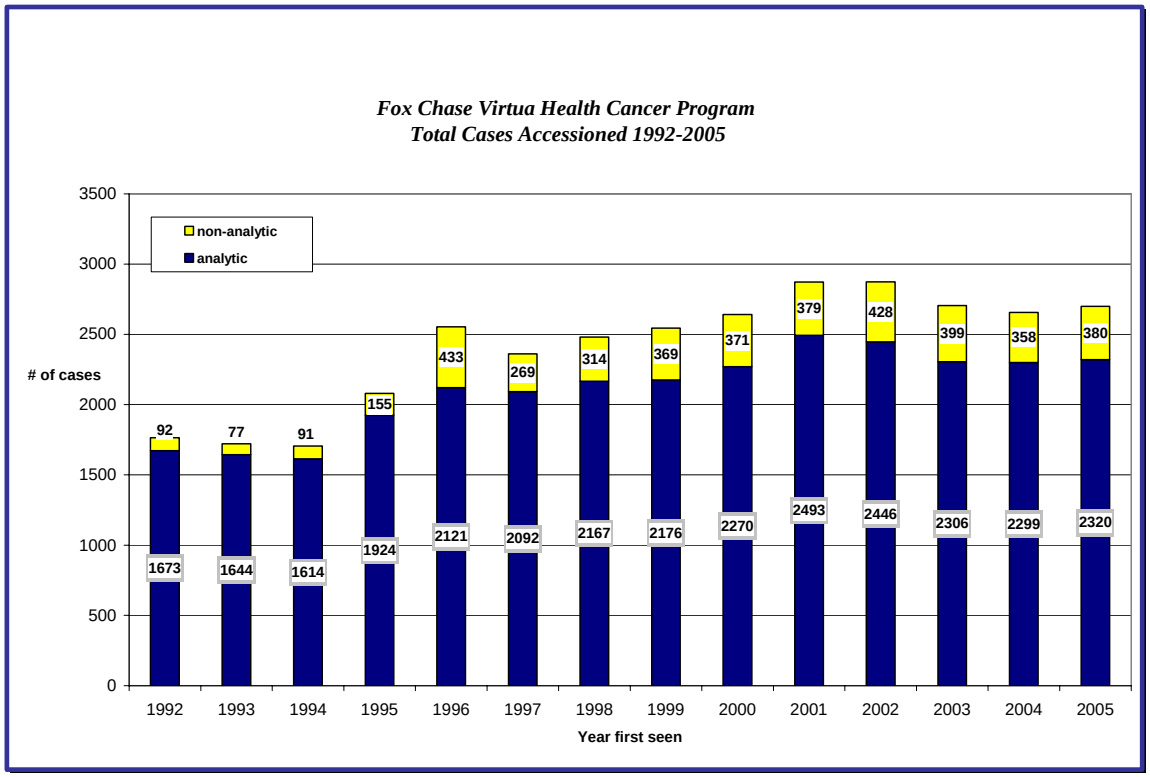
Louis L Keeler, III, MD, FACS
Chairman, Cancer Committee
Oncology Medical Director
Program of Excellence
Virtua West Jersey Hospitals

Alan S. Weinstein, MD, FACP
Chairman, Cancer Committee
Oncology Medical Director
Program of Excellence
Virtua Memorial Hospital

Fox Chase Virtua Health Cancer Program's Cancer Registry Report

The Cancer Registry plays an integral part in ensuring that the FCVHCP meets the standards of the Commission on Cancer of the American College of Surgeons. During 2004, we were awarded the Outstanding Achievement Award by the ACOS. Approximately 10% of hospitals surveyed nationwide receive this distinction each year.

The Cancer Registry plays a vital role in improving the detection, prevention and treatment management of cancer. The primary role of the Cancer Registry is the collection and precise management and documentation of the cancer data, both demographic and clinical. This begins at diagnosis and continues throughout the cancer patient's lifetime. The collected data is an invaluable tool in the fight against cancer. The Cancer Registry staff works closely with physicians and administration to provide them with data related to treatment and outcomes. During 2005, data was collected on 2320 new cancer cases that were diagnosed and/or treated at Virtua Health. Since 1992, Virtua has seen a 53% increase in the number of cancer patients treated here.



Each Cancer Registry is staffed by a team leader and two cancer registrars. This year all six of Virtua's cancer registrars are certified (CTR) by the National Cancer Registrars Association. Members of our staff hold executive board positions in the state and national cancer registrar associations. The staff attended multiple training sessions sponsored by the New Jersey State Cancer Registry, the Oncology Registrars Association of New

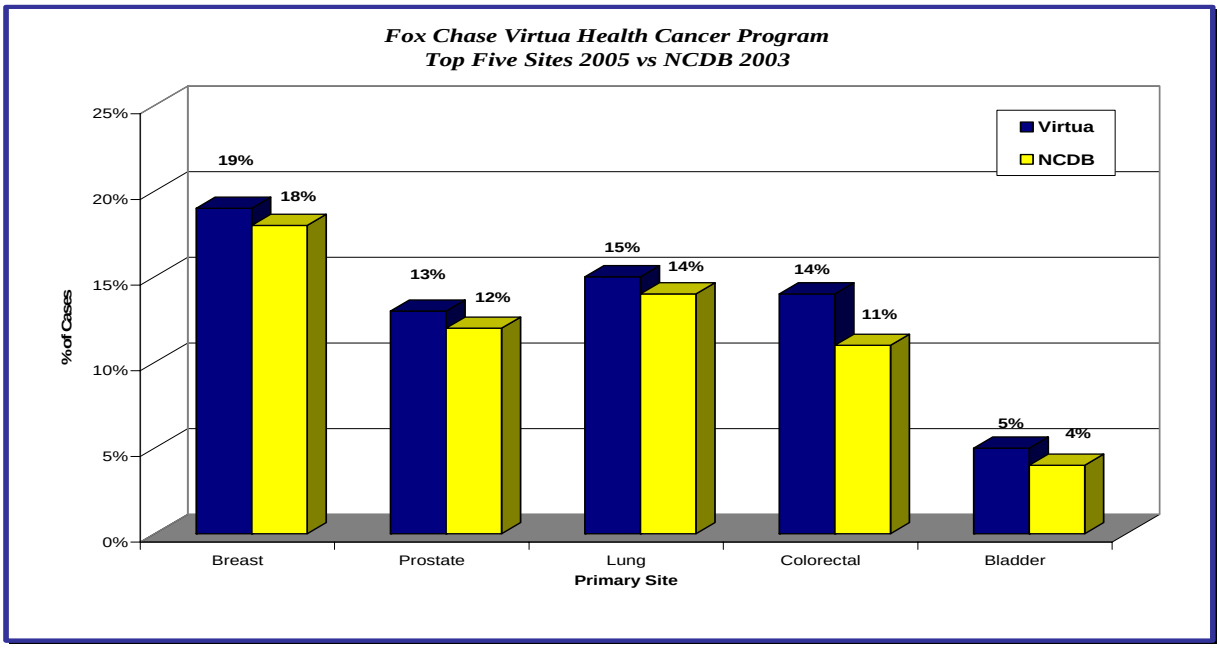
Jersey and the National Cancer Registrars Association. Registrar education is underway to prepare for the new Multiple Primary and Histology rules, effective with cases diagnosed as of January 1, 2007.

The Cancer Registry answered fifty-six requests for data in 2006, compared to thirty-five requests in 2005, from physicians, administrators and other cancer caregivers.

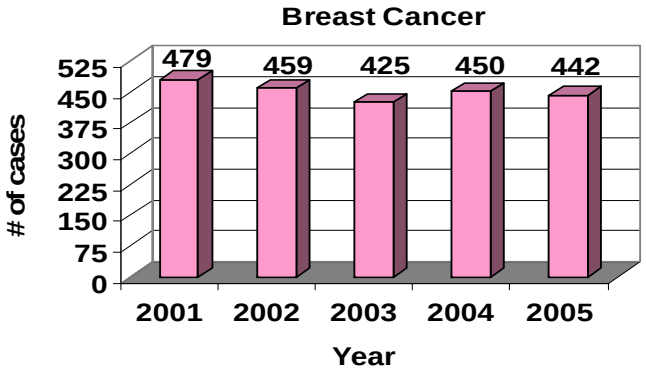
Medical oncologists, radiation oncologists and surgeons perform quality data review throughout the year. More than 10% of the analytic cases accessioned into the Cancer Registry database are reviewed for accuracy and completeness as well as consistency. Pathologists review more than 10% of pathology reports to ensure they contain the required scientifically validated elements from the College of American Pathology (CAP) protocols.

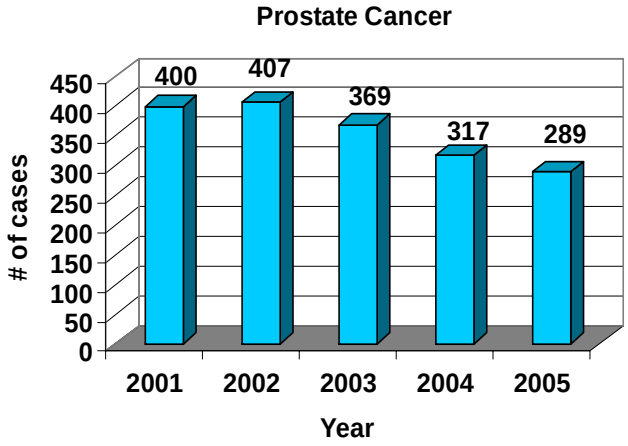
Weekly Cancer Conferences are held at the Virtua Memorial and Virtua West Jersey campuses. Cases are discussed in a multi-disciplinary format with the overwhelming majority presented for consensus treatment decisions. Guest speakers from the Fox Chase Cancer Center as well as other world-renowned cancer doctors participate in cancer conferences on both campuses. Site specific breast, colorectal, urology, thyroid and gynecologic oncology cancer conferences are held at Virtua.

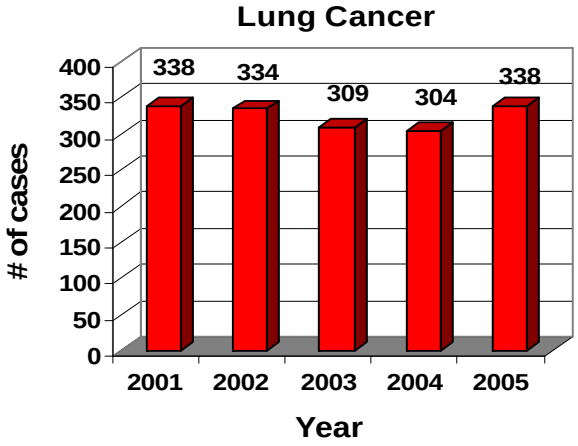
Breast, prostate, lung, colorectal and bladder remain the most frequently seen sites at the FCVHCP comprising 66% of the cases accessioned into our database. The individual breakdowns are as follows: breast 19%, prostate 13%, lung 16%, colorectal 14% and bladder 5% (see chart below). Breast and prostate cancer continue to have the highest incidence at Virtua, which is in line with National Cancer Data Base incidence rates.

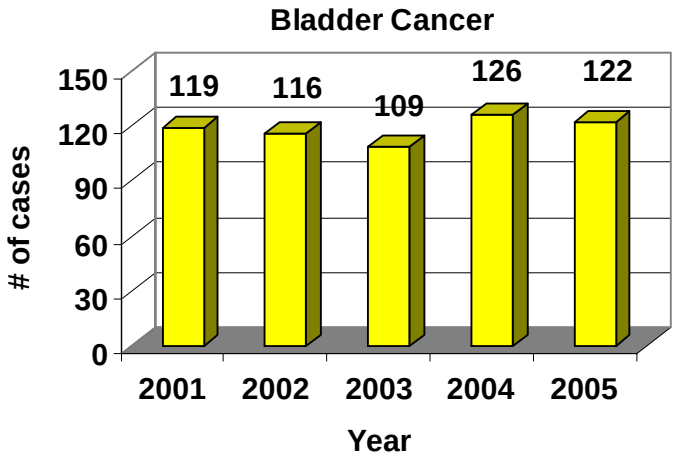


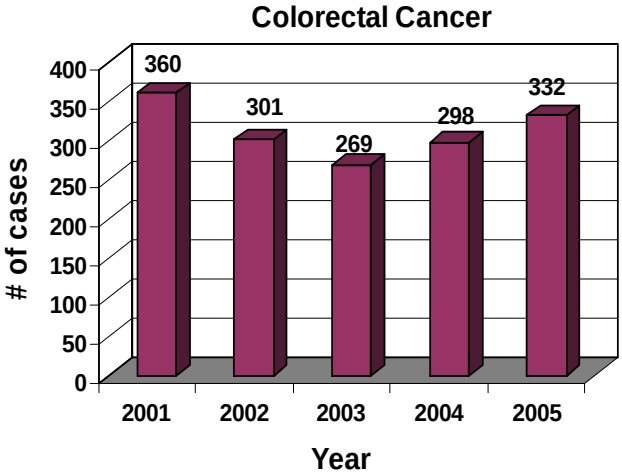
Fox Chase Virtua Health Cancer Program
Five Year Incidence by site
2001-2005





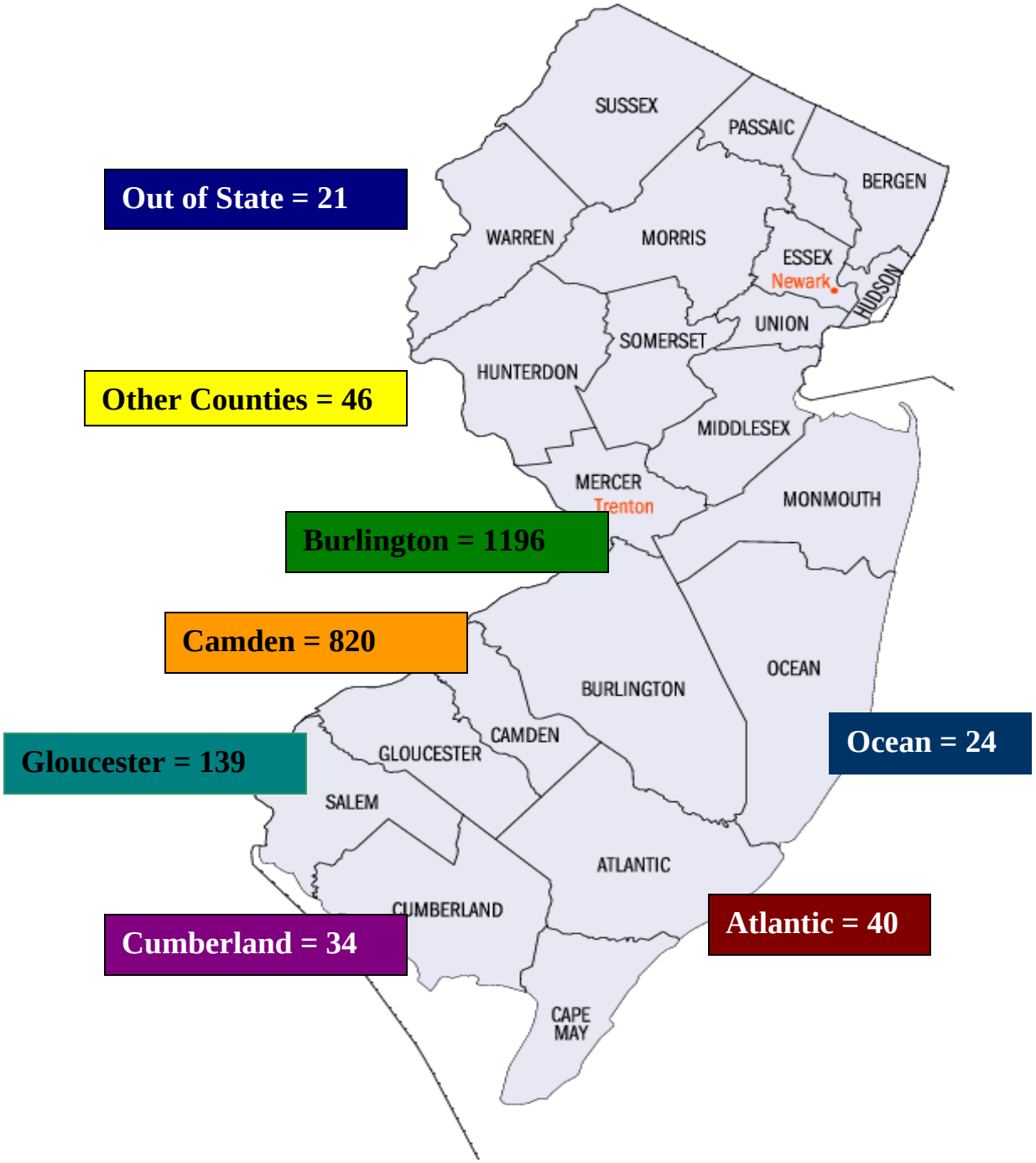






The majority of our patients reside in Burlington and Camden counties. Some patients came from Pennsylvania, Delaware and New York (see map below). 54% of our patients were women and 46% were men.

Fox Chase Virtua Health Cancer Program
2005 Analytic Cases by County at Diagnosis



Fox Chase Virtua Health Cancer Program

Analytic[1] Cases - 2005

Primary Site	Total Cases	Male	Female	AJCC[2] Stage 0	1	2	3	4	UNK	N/A
TOTAL:	**2320**	**1051**	**1269**	**186**	**566**	**599**	**308**	**337**	**145**	**179**
Oral Cavity & Pharynx	34	23	11	2	5	10	2	11	4	0
Digestive										
Esophagus	22	17	5	1	2	3	3	9	4	0
Stomach	19	13	6	0	3	1	5	5	4	1
Small Intestine	10	5	5	0	0	2	0	0	1	7
Colorectal	332	153	179	30	76	73	84	45	18	6
Anus, Anal Canal	6	2	4	2	0	2	1	0	1	0
Liver/Biliary	25	13	12	0	2	2	6	6	8	1
Gallbladder	7	1	6	1	0	1	0	5	0	0
Pancreas	48	15	33	0	2	11	6	24	4	1
Retro & Peritoneum	4	1	3	0	0	0	1	0	0	3
Other Digestive	1	0	1	0	0	0	0	0	0	1
Respiratory										
Larynx	11	9	2	3	0	4	0	4	0	0
Heart, Medias & Pleura	8	7	1	0	0	0	3	1	2	2
Lung/Bronchus	338	180	158	0	72	20	82	133	29	2
Bones & Joints	1	1	0	0	0	0	0	0	0	1
Soft Tissue	11	6	5	0	1	3	2	1	3	1
Skin										
Melanoma	27	15	12	2	8	5	2	1	9	0
Other Skin	8	6	2	0	2	1	1	0	2	2
Breast	442	3	439	79	168	116	41	17	20	1
Female Genital										
Cervix	16	0	16	0	7	4	2	1	2	0
Corpus	82	0	82	2	56	5	6	2	4	7
Ovary	50	0	50	0	16	6	16	9	1	2
Vagina	4	0	4	0	1	0	0	0	1	2
Vulva	7	0	7	1	1	3	2	0	0	0
Other Female Genital	3	0	3	0	2	0	0	0	0	1
Male Genital										
Prostate	289	289	0	0	0	272	5	11	1	0
Testis	9	9	0	0	8	0	1	0	0	0
Penis	0	0	0	0	0	0	0	0	0	0
Other Male Genital	0	0	0	0	0	0	0	0	0	0
Urinary										
Bladder	122	95	27	59	24	17	6	11	4	1
Kidney/Renal Pelvis	60	35	25	2	34	9	3	8	4	0
Ureter	3	3	0	0	0	1	2	0	0	0
Other Urinary Organs	3	2	1	2	1	0	0	0	0	0
Central Nervous System	18	8	10	0	0	0	0	0	0	18
Endocrine										
Thyroid	84	23	61	0	49	10	6	5	14	0
Other Endocrine	9	4	5	0	0	0	0	0	0	9
Lymphoma										
Hodgkins	21	6	15	0	5	9	4	2	1	0
Non-Hodgkin	76	52	24	0	21	9	16	26	4	0
Multiple Myeloma	16	9	7	0	0	0	0	0	0	16
Leukemia	25	14	11	0	0	0	0	0	0	25
Other/Unknown/Uncertain Malig	69	32	37	0	0	0	0	0	0	69

[1]Analytic: Newly dx and/or 1st treated at this institution

[2]AJCC: American Joint Committee on Cancer

Fox Chase Virtua Health Cancer Program's Education and Community Outreach Report

The FCVHCP works closely with Virtua's Cancer Committees, cancer advocacy organizations and community partners to improve and enhance cancer education, prevention and supportive services in the community. The Committees continually review cancer incidence and prevalence within the region and develop resources and services to augment existing programs, while also identifying the future direction for cancer education and prevention efforts. Programs are designed across the continuum of care, from prevention to risk reduction and supportive services. This report details all of the community activities by our oncology program staff and physicians from January to October 2006.

In 2005, a comprehensive database was created to enable comprehensive reporting of all activities sponsored and supported by the cancer program. This tracking system details programs, events, speakers, counties served, number of participants and target audiences. Reports are shared with the cancer committees, physician leadership, grantors and cancer advocacy groups. This database enables the program to quantify activities, benchmark against our previous data and assist in developing future programming.

Community Education

Many of our oncology physicians and staff are active members of the Virtua Health Speakers Bureau. These experts travel throughout our community fulfilling many speaking engagements on cancer related topics for lay and professional audiences.

Experts have been interviewed and featured in many internal publications and external newspapers, magazines and television programs discussing various aspects of oncology care from prevention to survivorship.

Virtua offers access to a range of speakers, including physicians, nurses, therapists, educators and executives, on a variety of topics. Lectures are given free of charge as a community service. The FCVHCP strives to fulfill speaker requests for organizations within Burlington, Camden and Gloucester counties and the surrounding markets.

The most common requested lectures for 2006 were: Breast Cancer Awareness, High School Breast and Testicular Self Exam, Prostate Cancer and Colon Cancer.

Lecture Topics	Total Lectures Jan-Oct	Total Attendance
Breast Cancer Awareness	26	999
Prostate Cancer Awareness	5	131
Colon Cancer Awareness	3	228
High School TSE/BSE	7	550
Other Oncology Topics	11	855
TOTAL LECTURES	**50 Lectures**	**2763 Attendance**

Grant Funded Programs

The New Jersey Cancer Education and Early Detection Program (NJCEED) is part of the New Jersey Department of Health and Senior Services. NJCEED provides grants to facilitate comprehensive screening services for breast, cervical, prostate and colorectal cancer. The NJCEED grant provides monies for outreach, education and cancer screening services with case management for breast, cervical, prostate and colorectal cancers. Services are provided by Virtua affiliated physicians to uninsured or underinsured residents in Camden and Burlington Counties. This year's NJCEED grants totaled $ 452,000.

Camden County CEED screenings	Screened
Breast & cervical cancers	744
Prostate cancer	77
Colon cancer	179

The Virtua Health Quitcenter is part of the New Jersey Department of Health and Senior Services Comprehensive Tobacco Control Plan (CTCP). It is one of only five Quitcenters in the state providing professional counseling in individual or group sessions. Participants can obtain consultations on prescription and over the counter medications. Services are provided by trained Tobacco Dependent Specialists to residents of Camden, Burlington and Gloucester counties. This year's New Jersey CTCP grant totaled $108,000.

Susan G Komen Breast Cancer Foundation Central & South Jersey Affiliate funded the Breast Care Program $28,274 to provideeducation and support to newly diagnosed women in our community. With this grant funding we were able to enhance our existing patient education and our breast cancer services. Some of the activities included: supporting Virtua's free publication "The Breast Cancer Handbook: A Guide to Healing and Recovery", sponsoring free educational workshops addressing topics of interest to breast cancer patients, high school breast self examination (BSE) instruction, community lectures on breast cancer awareness, professional translation services for clients recently diagnosed with breast cancer and breast cancer support groups. Program results are included throughout this report.

Cancer Screenings Events

In addition to the New Jersey Cancer Education and Early Detection Program (NJCEED) screening program, FCVHCP offers lectures and free cancer screenings in our community. Physicians volunteer their time to provide site-specific cancer screenings. Participants receive education, screening examinations and referrals for follow-up care for suspicious findings. Patients and their primary care physician receive all results and follow-up post screening.

Type of Screening	Attendance
Skin cancer	37
Total Screened	**37**

Community Health and Wellness Events

Health fairs give the FCVHCP the opportunity to reach out to people and the community about their health and well-being. By bringing health professionals and lay people together, a health fair offers people information about health, behavior modification, prevention and the resources that the FCVHCP has available to the community. FCVHCP's participation in health fairs can include exhibits, mini-workshops, demonstrations and screenings. Our participation in health

fairs also allows us to develop a partnership with organizations interested in promoting health issues to the community.

Display and Health Fairs	Encounters
30 events	3172

**Encounters are the total number of people that Virtua comes in contact with at a health fair/event.*

Professional Education Programs

In order to promote clinical excellence in the treatment of cancer, the FCVHCP recognizes the importance of continuing medical education whether by bringing in experts in the field of cancer treatment or featuring our medical expertise to educate their peers. The program sponsored five continuing medical education programs.

Continuing Medical Education Programs	Attendance
2005 ASH Review	15
Advances in Radiation Therapy: IMRT and Beyond	48
Mini Symposium on Conditions of the Ovary	10
Management of the High Risk Ovarian Cancer Patient	35
Current Controversies in Breast Cancer	58
Total Attendance	**166**

Professional Peer to Peer lectures totals	Attendance
13 lectures	430

Support Groups and Counseling

The FCVHCP offers support groups that provide patients and their care givers an opportunity to learn ways of coping with their cancer diagnosis and treatment. These groups provide emotional support and decrease the sense of isolation commonly associated with treatment. They provide a forum where patients can get practical advice as well as share thoughts, feelings and concerns. The support groups are facilitated and managed by oncology professionals from the FCVHCP.

Patients also have access to oncology social workers who provide support both in the hospital and on an outpatient basis including individual and group support, and counseling for children whose parents have cancer. An oncology social worker is a professional who has specialized training in how a diagnosis of cancer affects a person and his or her family and friends. Their expertise is a comprehensive view of the person living with cancer that is respectful of each individual's ethnicity, spirituality, family situation, unique strengths and challenges. It is his or her job to represent a person's interests and needs to the medical team.

Support Group	Virtua Location	# of mtgs.	Avg. pts/
Caregivers Group	Mt.Holly	7	5
Burlington Cty. United Ostomy Assoc.	Mt.Holly	8	25
Living with Lung Cancer	Mt Holly	7	3
Man to Man: Prostate Cancer	Voorhees	12	35
Women Supporting Women with Breast Cancer	Voorhees	18	7
Women’s Cancer Connection GYN cancer	Voorhees	11	4

Workshops

Look Good Feel Better is a program that teaches female cancer patients beauty techniques to help restore their appearance and self-image during and after chemotherapy and radiation treatments. A licensed cosmetologist teaches participants about makeup, skincare, nail care and options related to hair loss such as wigs, turbans and scarves. Each group receives a free cosmetics kit to use during and after the workshop. The FCVHCP sponsors this American Cancer Society workshop as a community service and offers it on-site at Virtua Memorial and Virtua West Jersey locations.

Workshops held	Avg. Attendance
11	6 patients/session

Pink Ribbon Poetry Workshop is a unique program that offers breast cancer patients to seek support from other survivors, to learn about using poetry as a tool for reflection and to express their own feelings through writing and poetry. The women gather to read the poetry of published survivors and create their own poetry, which is published on Virtua's website, www.virtua.org. The group is open to all breast cancer patients and meets weekly at the Virtua Memorial campus.

Workshops held	Avg. Attendance
17	7 patients/session

In the Looking Glass is a collaborative program between the FCVHCP and The Cancer Foundation for Personal Wellness. Cancer patients learn how to maintain optimum health and physical appearance during and after cancer treatment. Participants are educated on the importance of nutrition, relaxation and how to care for their skin and hair during and after treatment.

Workshops held	Attendance
2	6 patients

A Beauty Retreat for Women Fighting Cancer is collaboration between the FCVHCP and Rizzeri Salon and Spa in Marlton. Cancer patients receive spa services, education and support.

Special Events

Cancer Survivor's Day is an annual program that allows families and physicians to get together and rejoice in their survival. The day's theme was "Life is Sweet - Eat Dessert First". Staff and physicians served ice cream for make your won sundaes and listened to the soothing sounds of a classical harpist, who is one of Virtua's Cancer Registrars. The 2006 keynote speaker was Vince Papale, a former NFL - Philadelphia Eagle and colon cancer survivor who spoke about his cancer experience, diagnosis and treatment as well as his positive view of life's lessons. He also shared a preview of his movie, *Invincible.* Complementing the program were four other cancer survivors who shared their words of hope and encouragement.

Cancer Survivors Day	Attendance
June 10, 2006	390

12th Howard S. Fiala Memorial Oncology Lecture and Dinner is an endowed lectureship, in memory of the Virtua Memorial Hospital trustee and Moorestown resident who succumbed to

cancer in 1986. The purpose of the lecture series is to bring nationally recognized teachers and scientists to speak and share their knowledge with our lay and professional community. This year, Terri Tate, RN, MS, a successful therapist, hypnotherapist and consultant, who is an oral cancer survivor, was the keynote speaker on "Wit and Wisdom from Both Sides of the Bed". Witnessing the way that Terry has come through her ordeal-her speech and appearance surgically altered, her spirit and innate desire to serve stronger than ever, shows her audiences that they can overcome their own obstacles with grace and humor.

Howard Fiala Lecture and Dinner	Attendance
October 4, 2006	135

Advocacy and Community Events

FCVHCP's employees actively participate in community awareness and cancer advocacy fund raising events independent of their employee responsibilities. This year, teams of employees, physician and patients walked, raced, rowed and raised funds to support cancer research and cancer care in our community.

Virtua Health Teams participated in events held in our community including:

- Susan G. Komen Breast Cancer Foundation's *Race for the Cure*
- Leukemia Lymphoma Society's *Light the Night Walk*
- South Jersey Breast Cancer Coalition's *Strike Out Breast Cancer* American Cancer Society's *Making Strides Against Breast Cancer*
- American Cancer Society's *Relay for Life*
- *4th Annual Philadelphia International Dragon Boat Festival*
- *William G. Rohrer Center for HealthFitness 5K Race* to benefit Fox Chase Virtua Health Cancer Program

Additional programs and activities of distinction

- **Moving On** is a fitness and exercise program that offers supervised exercise for cancer survivors. This program is located at Virtua's William G. Rohrer Center for HealthFitness.
- **Family Risk Assessment Program (FRAP)** offers men and women with a family history of breast or ovarian cancer education, genetic testing and counseling for hereditary breast and ovarian cancers.
- **Outpatient nutrition services** are offered to meet the needs of patients who are undergoing cancer treatment. Patients undergoing chemotherapy or radiation are counseled by a registered dietician who helps create meal plans that incorporate their individual food preferences.
- **Complementary therapies** are available to our patients which includes massage therapy, guided imagery and mind/body healing.
- **Reiki Therapy** is a free service offered to the in-patients at Virtua Memorial's oncology unit. The Japanese word "Reiki" means universal life force energy. This therapy employs hands-on healing that uses this energy to restore physical, mental and emotional balance.
- **Collaborative Efforts:** Virtua Health collaborates with many organizations in the community to meet the needs of community members through its active participation in cancer-related coalitions. Examples include: American Cancer Society, Susan G. Komen Breast Cancer Foundation, Burlington County Department of Health, Camden County Department of Health, South Jersey Cancer Coalition, South Jersey Breast Cancer Coalition, ACS Nutrition Task Team,

Camden County CEED Coalition, NJCEED Coalition, New Jersey Cancer Control Task Force and the Camden and Burlington County CAT Coalition.

The FCVHCP continues to demonstrate its commitment to bringing to the community the latest advancements in cancer prevention, education, screening services and supportive care available.

To receive complimentary Fox Chase Virtua Health Cancer Program publications for your office, please call 1-888-Virtua-3. Topics include smoking cessation, clinical trials, Breast Cancer Handbook, Prostate Cancer Handbook, Cancer Survivor's Guidebook, and health alerts on a variety of cancers and cancer-related topics.

Fox Chase Virtua Health Cancer Program's In-Patient Oncology Education Report

Virtua Health employs a master's prepared oncology advanced practice nurse (APN). The Oncology APN is responsible for assisting in the development and implementation of nursing education programs. Focus areas include cancer, specifically disease and treatment related adverse events. In addition, she supports Virtua Health's Pain Initiative through development and implementation of a Pain Resource Nurse Program.

Virtua Health's Pain Resource Program

Virtua Health is committed to providing optimal pain management to our patients. In supporting this commitment, the Oncology APN and Pain Resource Nurses have developed a Pain Resource Nurse Program, fully supported by nursing administration. The program includes an education course and clinical pilot. Our Pain Resource Nurse Education Course is a two day course that will be offered bi-annually. The first offering is November 2007. The pilot will address the clinical barriers identified by nursing staff and administrators at Virtua. Anticipated program outcomes include:

- Improved knowledge and attitudes of staff toward managing and assessing pain
- Increased health care provider commitment and accountability to pain assessment, documentation and management
- Improved quality indicators surrounding pain management regarding: assessment, reassessment, management, documentation and patient satisfaction
- Improved communication and collaboration between physicians, staff and patients

Pain education opportunities at Virtua

- On-Line Pain Self Learning Packet, available October 2006
- Third Annual Virtua Health Pain Symposium, December 8, 2006
- Bi-Annual Pain Resource Nurse Education Course, November 2006

Oncology nursing education opportunities

- Oncology Review Course, offered bi-annually, first offering November 2007
- Oncology Nursing Society Chemotherapy and Biotherapy Course, offered bi-annually

Fox Chase Virtua Health Cancer Program
2006 Annual Report Clinical Research Report

Fox Chase Virtua Health Cancer Program (FCVHCP) clinical research has experienced significant growth throughout this year. The affiliation with Fox Chase Cancer Center has enabled the clinical research program to pursue and grow programs such as the Community Clinical Oncology Program (CCOP) and the Family Risk Assessment Program (FRAP). In addition, by affiliating with more outside physicians we have been able to strengthen the program's ties to community oncologists and surgeons and increase accrual rates to clinical trials.

The research department is staffed by a dynamic healthcare team that works collaboratively to increase accrual to clinical and prevention trials, to ensure the protection of human subjects and to complete all research in accordance with protocol guidelines. In 2006, FCVHCP successfully passed audits by the South West Oncology Group, the Eastern Cooperative Oncology Group, the Radiation Therapy Oncology Group and the Fox Chase Research Base (FCRB) CCOP.

Clinical Trials

♦ Currently, there are 94 oncology clinical trials open at the Fox Chase Virtua Health Cancer Program, representing 17 different cancer sites.

♦ Thirty eight new trials were approved and opened in 2006 to continue the trend in providing the highest quality cancer care and offering the newest treatments to patients at Virtua Health.

♦ Six percent of Virtua Health cancer patients were accrued to clinical trials. Nationally, approximately two to three percent of adult cancer patients participate in clinical trials. As part of the American College of Surgeons Commission on Cancer accreditation, the Fox Chase Virtua Health Cancer Program continues to meet commendation level of the Commission's standard of enrolling four percent of oncology patients annually.

♦ From January 1, 2006 to December 1, 2006, 132 people have enrolled in clinical trials available through the Fox Chase Virtua Health Cancer Program

♦ The Fox Chase Virtua Health Cancer Program participates in multiple national cooperative groups including: Eastern Cooperative Oncology Group (ECOG), South West Oncology Group (SWOG), Radiation Therapy Oncology Group (RTOG), American College of Surgeons Oncology Group (ACOSOG), Clinical Trials Support Unit (CTSU), and Gynecology Oncology Group (GOG).

♦ Information is available for patients and staff on Virtua's oncology clinical trials on the Virtua web site (www.virtua.org) and on New Jersey Cancer Trial Connect.

♦ The clinical research department has continued to use a database to manage all aspects of clinical trials including accrual tables and financial aspects associated with trials.

Prevention Trials

♦ The Family Risk Assessment Program is designed to help women learn more about their risk factors associated with breast and ovarian cancer. Through collaboration with Fox Chase Cancer Center, eligible individuals receive the opportunity to participate in a variety of studies such as new screening methods, genetic testing for research purposes and cancer prevention trials.

♦ Twenty one participants have been accrued through FRAP from January 1, 2006 through December 1, 2006.

♦ Virtua has successfully opened three cancer prevention clinical trials in 2006 through the FCRB CCOP: Screening Intervention for Siblings of Colorectal Cancer Patients, Comparing the Lozenge to the Patch for Smoking Cessation and Evaluation of the Facing Forward Guide to Facilitate Life after Cancer Treatment.

♦ Thirteen participants have been accrued to prevention trials during 2006.

Continuing Education

♦ The clinical research staff continues to strive for certification through the Oncology Nursing Society. Many of the nurses in the department are Oncology Certified Nurses.

♦ During 2006, the staff attended numerous educational workshops to enhance their knowledge of oncology clinical trials, prevention trials, cancer processes and cancer management. Moreover, we have taken that information and developed educational sessions for the staff throughout Virtua Health.

♦ The staff also attends clinical trial group sponsored meetings throughout the year. In 2006, Virtua was represented at many national meetings, including RTOG, NSABP, CCOP, ECOG and the Oncology Nursing Society Congress and Institutes of Learning.

To learn more about clinical trials or find out about open prevention and treatment studies available at the Fox Chase Virtua Health Cancer Program, call 1-888-Virtua-3 and ask to speak with a protocol coordinator.

Annual Site Study: Colon Cancer at Fox Chase Virtua Health Cancer Program

Stephen J. Pilipshen, MD, Eytan Irwin, MD

Incidence

Carcinoma of the colon and rectum (CRC) remains the fourth most common cancer in the United States and the second leading cause of cancer death in men and women. It follows lung, breast and prostate cancer in incidence, and lung cancer in mortality. The American Cancer Society (ACS) estimates that for the year 2006 there will be 147,500 new cases and 57,100 deaths from CRC. However, recent trends reveal a slight decrease in both the incidence of and mortality from CRC. This is assumed to be secondary to increased screening rates leading to polypectomy and the diagnosis of cancers at an earlier stage. Still our lifetime risk approaches 6%.

CRC remains one of the eminently curable cancers with early detection. It has a predictable mode of development – "the polyp through cancer sequence". Its genetic underpinnings are now better understood with inherited and acquired patterns of chromosome-gene-loci mutations and by more defined events of inherited chromosome/gene deletion or alteration. This site study will highlight certain aspects of colon cancer care at Virtua Health examining where we are and where we are going. Though the incidence of colon cancer is significant and sobering, the improvements in screening and treatment offer great hope and encouragement.

Anatomy and Terms

What is the colon? It represents the last 5 to 6 feet of our intestinal tract – our body's "trash compactor" where our waste matter is processed, stored and expelled. It is composed of a glandular (mucosal) lining constantly regenerating itself, while remaining in balance with both good and deleterious bacteria, both good and bad (carcinogens) environmental chemical exposure from the dietary refuse that the colon must process, as it does its active functions of water absorption and some degree of electrolyte balance, and provides both "immune" barrier protection and education for our body's immune system. Figure 1 illustrates the configuration of the colorectum within the abdomen. This site review will restrict its analysis to the colon which is within the abdominal cavity (the rectum is situated mostly outside of abdominal cavity in the pelvis).

Figure 2 depicts the anatomy of the colon with its layered lining of mucosa (inner most layer) to its muscle layer and outer most layer of peritoneal covering. Lymphatics and blood vessels are located in the submucosal layer. Lymph nodes are present in the supporting structure of the mesocolon that both suspends and supports the colon within the abdominal cavity. It is through this "mesocolic" layer that the colon's major blood vessels, nerves and lymphatic channel, which drain into lymph nodes are given support and protection.

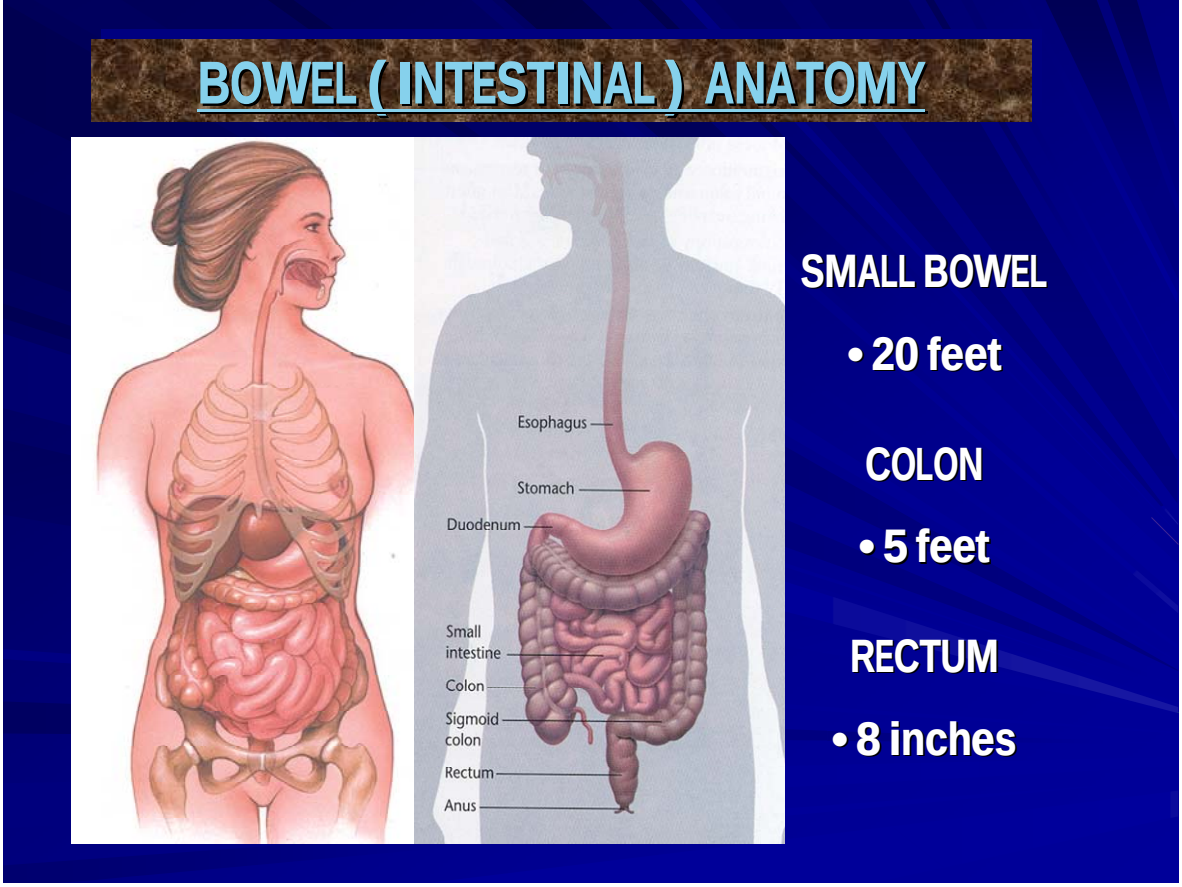


Figure 1. Anatomy

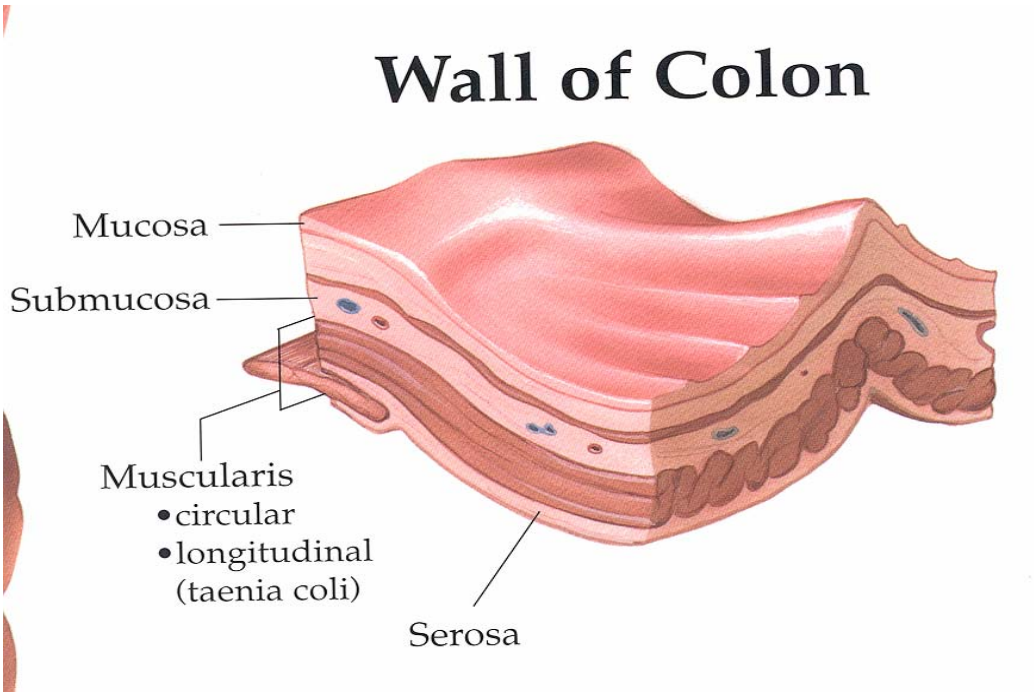


Figure 2. Colon and its layers

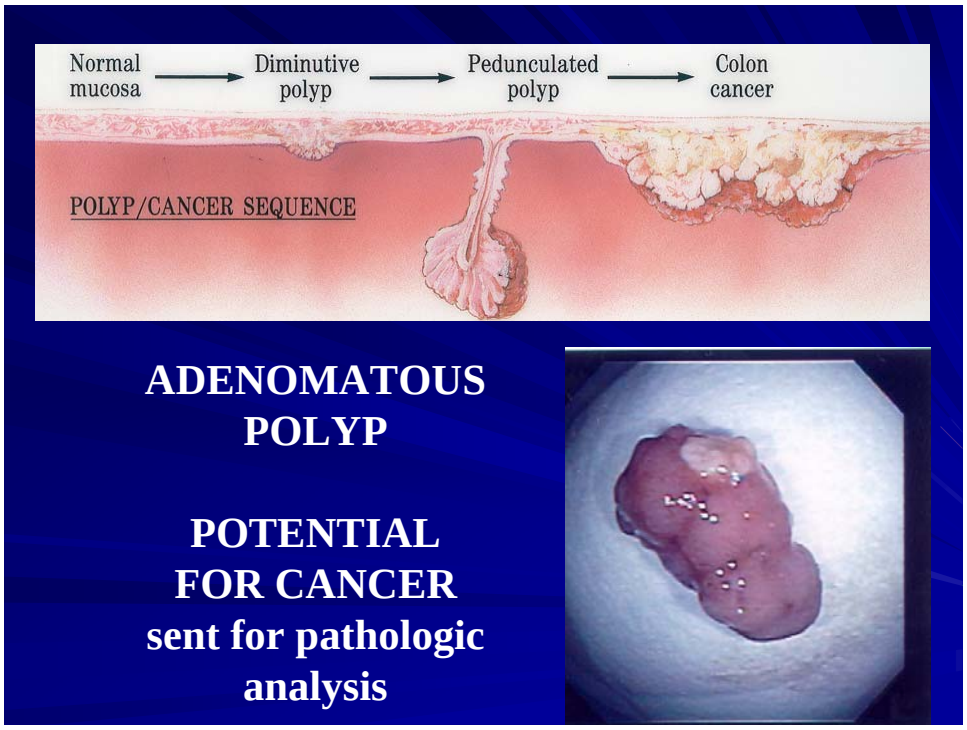


FIGURE 3: Polyp to cancer sequence

Etiology

While the majority of cases (70%) of CRC occur as sporadic occurrences and are reflected in increasing risk with age (over 50 years of age), inherited genetic predisposition also increase the likelihood of colon cancer. The risk factors of colon cancer are listed in Table 1.

Table 1: Risk Factors

Age > 50 Race: African American Male show a slight predominance	Family history of polyps or cancer Personal history of polyps or cancer Inflammatory Bowel Disease Chronic ulcerative colitis Crohn's disease
Lifestyle/environmental risks Tobacco consumption Alcohol consumption Physical inactivity Diet high in red meats & animal fats Low fiber diet	Inheritable genetic conditions FAP HNPCC Hamartomatous polyposes

As aberrant cells develop in the crypts (regenerating portion) of the glandular (mucosal) lining, a proliferative process develops often forming a definable but still benign polyp (Figure 3). Some of its "adenoma" cells may develop a capability of bridging the body's immune defenses, expanding its otherwise anatomical restrictive boundaries with invasion and progressive spread with vessel acquisition, with potential lymphatic spread to lymph nodes, embolic spread through blood vessels to distant organs (commonly the liver) – in a word defining what is cancer.

The process from benign polyp to cancer may take as long as 10 years, or be biologically programmed to advance over a much shorter period (as in familial polyposis, an autosomal dominant inherited condition characterized by the development of hundreds of polyps in one's late teens or early twenties, and high occurrence of colon cancer by age 30). Most acquired (sporadic) cancers occur after the age of 50 peaking in the years 60 to 70. No age is spared, as 3% of colorectal cancers occur below the age of 40; 1% occur below the age of 30. Higher risk colon cancers include both hereditary polyposis (FAP) and non-polyposis (HPNCC) conditions – now distinguishable and predicted by genetic testing and pedigree analysis. Family tree analysis is especially important, correlating generations of colon cancer occurrences with concomitant extra-colonic cancers and predictable extra-colonic non-cancer manifestations. Chronic ulcerative colitis and certain patterns of long standing Crohns' Disease, also predispose to a higher incidence of colon cancer, and require a more intense level of colonic surveillance by both an earlier age for initially screening and more frequent intervals of screening. Tobacco, certain patterns of radiation and exposure to increasingly identified environmental carcinogens increase risk. Efforts to pro-actively halt the development of colon cancer by dietary modification continue. Anti-oxidant protection with aspirin, selenium and other anti-inflammatory (NSAIDS) agents may reduce risk. Exercise and weight control remain important protective factors.

For the average risk patient (none of the cited risk factors), the best cancer screening tool is colonoscopy at age 50. This allows for both the identification and the removal of adenomatous polyps (pathologically distinct "neoplastic" growths of the colonic mucosa with the recognized pre-malignant potential of dysplasia).

The death rate from colorectal cancer has decreased over the last decade, reflecting prevention efforts by the screening and removal of adenomatous polyps and earlier detection of colon cancer with down staging at presentation.

The role of Family history is demonstrated in Table 2. This data is derived from Virtua's Cancer Registry.

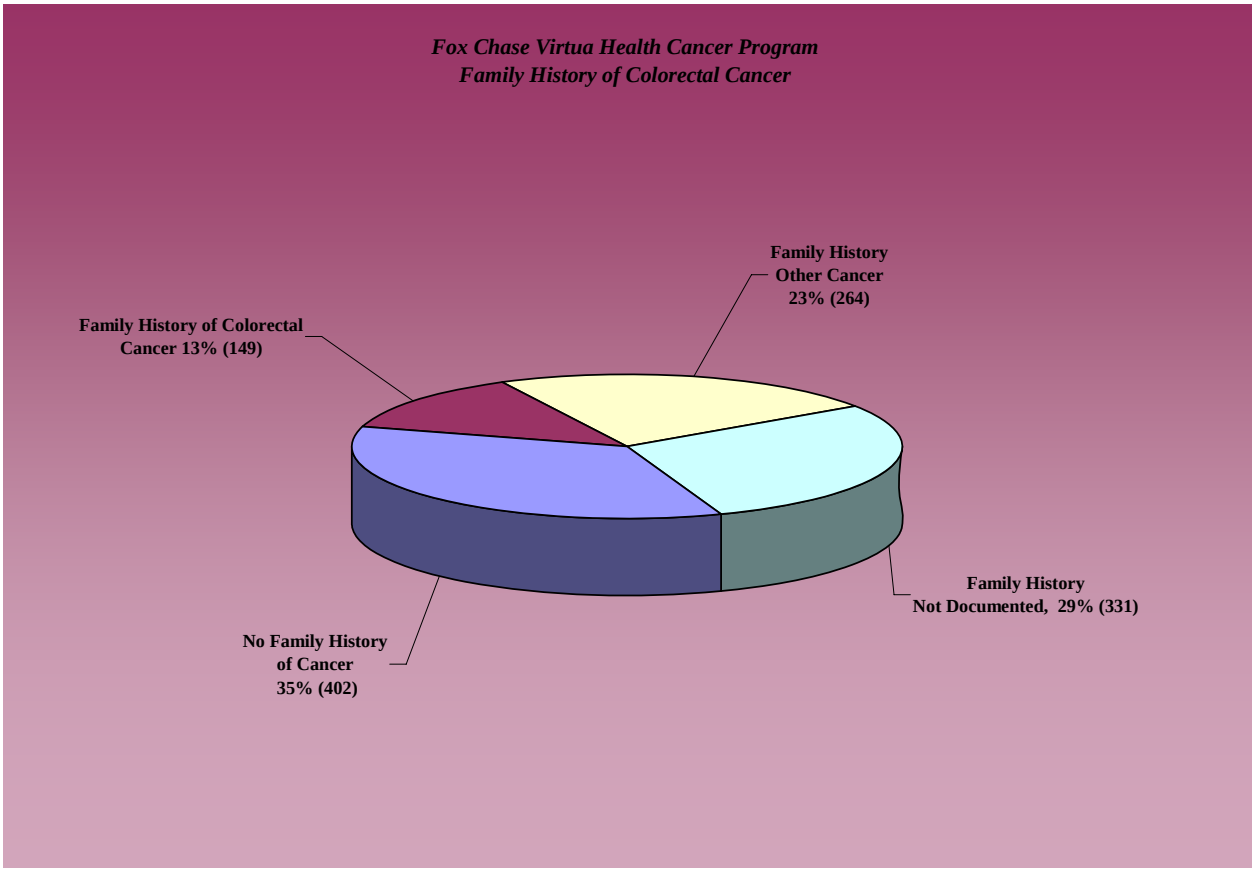


Table 2: Family History

The age risk and gender specificity is depicted in Table 3. These bar graphs depict Virtua's cases distributed by decade incidence and gender within each age grouping. The NCDB refers to the National Cancer Data Base in which Virtua records its cases and is profiled by comparisons with national, state and regional hospitals with similar demographics. It allows comparisons to other institutions and a way for cancer care planners to compare successes of treatment and compliance to current "Best practice" recommendations. Such comparisons will be referred to in other parts of this report.

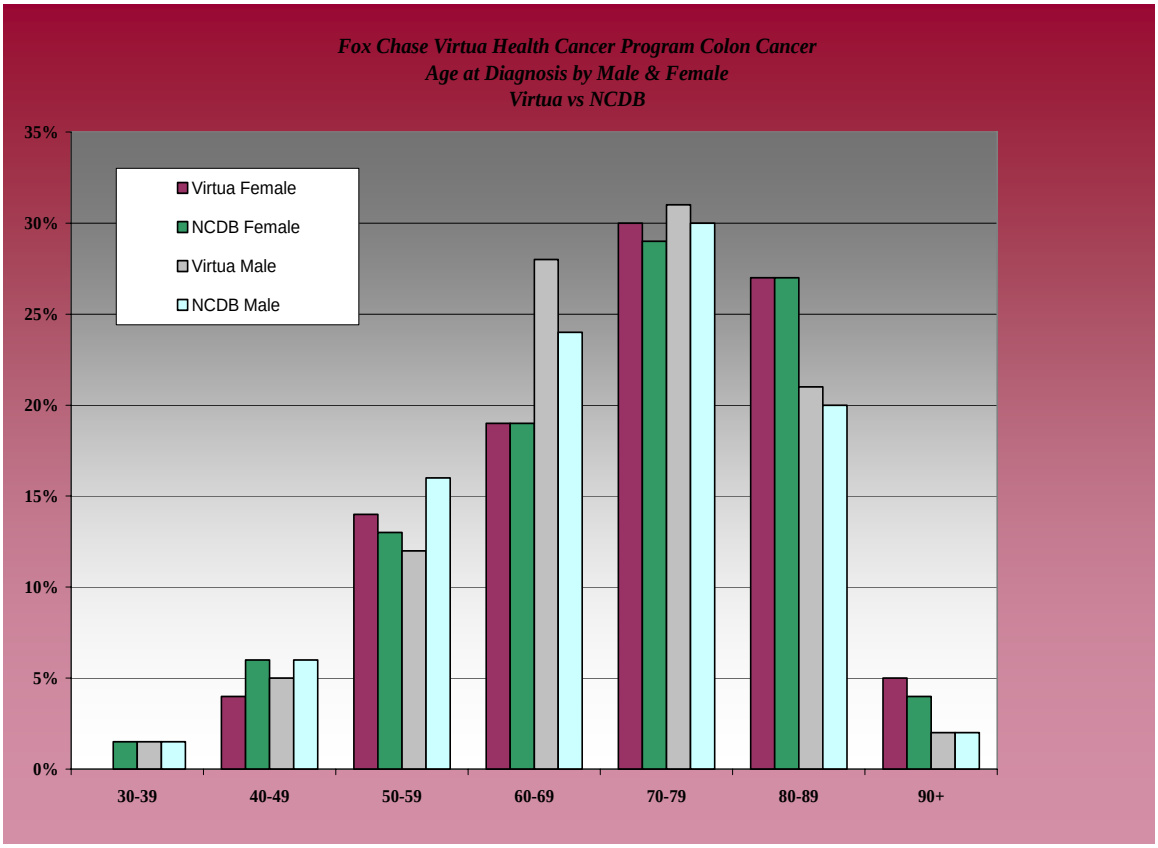


TABLE 3: Gender and age risk

Colon Cancer at Virtua Health

Virtua Health includes many dedicated gastroenterologists, radiologists, general and colorectal surgeons, and medical and radiation oncologists. These physicians perform skillful diagnostic colonoscopies, CT scan colonographies, barium enemas, PET scans, MRI scans and a variety of carefully chosen open versus minimally invasive surgical techniques. Stage appropriate, adjuvant chemotherapies may be applied, sometimes combined with pre-operative or post-operative radiation therapy especially in rectal cancer and occasionally in colon cancer. The ultimate aim is to preserve quality of life by maximizing bowel and sphincter function while maintaining and enhancing high rates of cure. An increasing number of interventions and treatment modalities are offered in metastatic colorectal cancer that include interventional radiologic techniques of chemoembolization and radiofrequency ablation; radiation therapy includes IMRT (Intensity Modulated) and IGRT (Image Guided), and an ever increasing choice of chemotherapeutic agents. Virtua's north and south campuses provide radiation care at two "state of the art" sites. Virtua's medical oncologists participate in many regional and

national protocols to provide state of the art care, while seeking improvement in both care and outcomes.

Multidisciplinary Colorectal Specific Cancer Conference
Virtua's site-specific cancer conferences allow for comprehensive presentation and evaluation of patients in a prospective fashion. The conferences are attended by board-certified colon and rectal and general surgeons, radiation and medical oncologists, radiologists, pathologists and gastroenterologists, often with an expert from the Fox Chase Cancer Center and other centers. The conferences provide a forum for case presentation, discussion between the attending physicians, staff and invited specialists to provide the most appropriate and current treatment recommendations to the presenting physician and their patients.

Locoregional Lectures
Virtua's physicians are actively involved in the local medical community and are sought out to make presentations to local primary care providers as well as to the public. This was manifest by involvement in a regional conference entitled "The Big C: Current Trends in Cancer Control" on April 27, 2006. This conference, attended by over 100 primary care providers, was a forum for discussion on the prevention and treatment of common cancers, including lung, prostate and colon and rectum. Virtua's efforts to reduce patient hospital stay for colorectal cancer care were also discussed at a state-wide surgical meeting this year attended by 350 regional surgeons.

Continuing Medical Education
There is an ongoing effort to remain at the forefront of therapeutic modalities to provide the best care for the community. To achieve this goal, Virtua physicians are involved in continuing medical education. Every colon and rectal surgeon at Virtua attended the national conference of the American Society of Colon and Rectal Surgeons this past year. In addition, renowned experts in the field have been invited as guest lecturers. This past year Dr. Bruce Minsky, vice chair, department of radiation oncology at Memorial Sloan-Kettering Cancer Center, presented an informative program on the newest protocols available in the treatment of colon and rectal cancer. Medical oncologists including Dr. Dan Haller (University of Pennsylvania), Dr. Paul Engstrom (Fox Chase Cancer Center) and Dr. John Marshall (Georgetown University Medical Center) have participated either in Virtua and Fox Chase sponsored cancer seminars or weekly cancer conferences.

Resident Education
Virtua is committed to training the next generation of primary care physicians and surgeons to be active participants in prevention and treatment of CRC. This is done by education in the primary prevention of CRC through alterations in lifestyle (e.g. diet, exercise, avoidance of smoking and alcohol) and well as secondary prevention through proper screening. Family practice residents are mentored during a dual rotation with gastroenterology and colon and rectal surgical practices. Surgical residents from Cooper University Medical Center (UMDNJ) rotate regularly and participate in both surgical operating room and office care. This gives them first hand experience in the application

of evidence-based medicine as it applies to the daily lives of the patients with whom they interact. They also have an opportunity to learn basic skills such as flexible sigmoidoscopy, colonoscopy and colon procedures and learn how these tools and treatments fit into the armamentarium of the practicing physician in the diagnosis and treatment of CRC.

Stages of Colon Cancer

Table 5 shows the incidence of colon cancer cases from 2000 to 2005 at Virtua Health. Colorectal cancer is staged by the TNM system. T refers to the tumor depth; N, the lymph node status as regards to spread or no spread; and M, the presence or lack thereof of distant organ spread. At its earliest, CRC is confined to the colonic mucosal cells from whence it is derived, so called in situ or intramucosal cancers (TIS). As it grows into the bowel wall, it bridges the lining and grows into the submucosal area (T1). It is now capable of spread by blood vessels or lymphatics to lymph nodes or distant sites. It may penetrate into the muscle layer but not through it (T2) or finally through it (T3) with possible adherence or invasion of other organs (T4). At anytime of its spread in tumor depth from T1 to T4, CRC can spread to lymph nodes (N1 or N2) or not (N0). It may spread to distant organs (M1) or not (M0). Based upon these TNM designations, as objectively documented by the removed portion of the colon and its supporting structures, a stage designation is assigned (Figure 4). Stage confers prognosis and defines the roles of chemotherapy and radiation therapy, or no additional therapy.

Tables 4 a to c reflect the descriptions and designations of the TNM nomenclature and as it finally reflects in the stage of disease. This pathologic stage is best based upon removal of the cancer and a detailed gross and microscopic analysis.

Table 6 a and b demonstrate the Stages of Colon Cancer over different time periods. There is a slight trend to more Stage I and II cancers and a decrease from Stage IV to Stage III, over these more extended time periods. Table 7 compares Virtua's Colon Cancer data by Stage and time to the NCDB data base. This comparison shows comparability by stage to the nation's data.

FIGURE 4: Cancer Spread

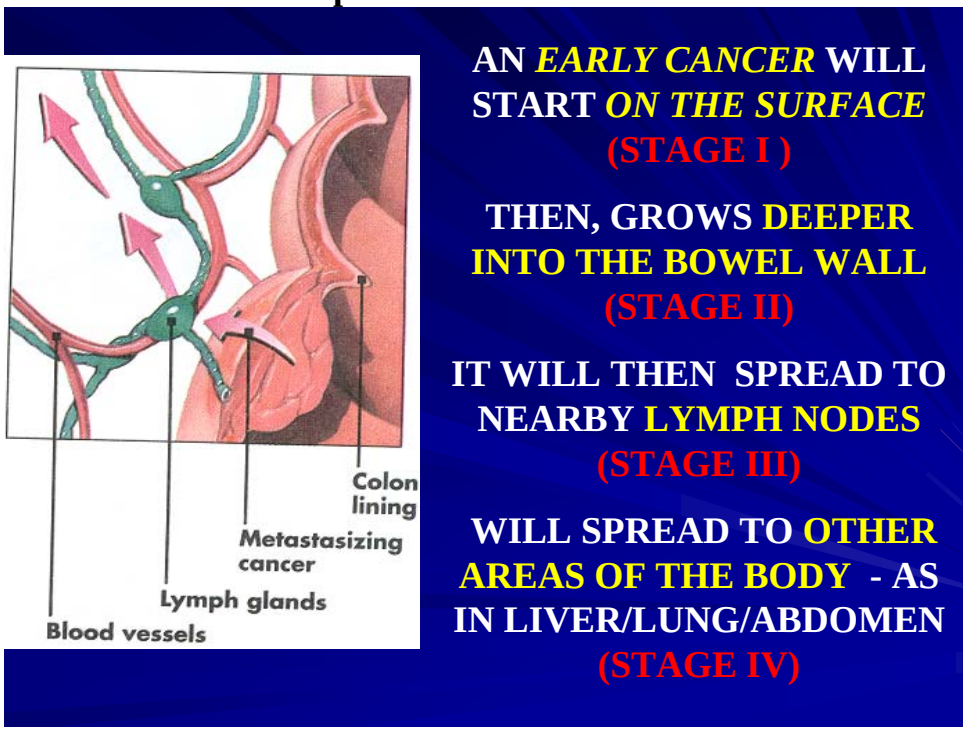


Table 4a: TNM Staging – "T" Definition in Colon Cancer

TX	**Primary tumor cannot be assessed**
T0	**No evidence of primary tumor**
TIS	**Carcinoma in situ, intraepithelial or invasion lamina propria**
T1	**Tumor invades submucosa**
T2	**Tumor invades into muscularis propria**
T3	**Tumor invades through muscularis propria into pericolonic tissues**
T4	**Tumor directly invades other organs or structures or perforates visceral peritoneum**

Table 4b: TNM "N" and "M" Designations

NX	**Regional nodes cannot be assessed**
N0	**No regional node metastasis**
N1	**Metastasis in 1 to 3 regional nodes**
N2	**Metastasis in 4 or more regional lymph nodes**

M0	**No Distant metastasis**
M1	**Distant Metastasis**

Table 4c: Stages of Colon Cancer based TNM designations

STAGE	T	N	M
0	TIS	N0	M0
I	T1	N0	M0
	T2	N0	M0
IIA	**T3**	**N0**	**M0**
IIB	**T4**	**N0**	**M0**
IIIA	**T1-T2**	**N1**	**M0**
IIIB	**T3-T4**	**N1**	**M0**
IIIC	**Any T**	**N2**	**M0**
IV	Any T	Any N	M1

Table 5: Incidence of patients with colon cancer from 2000 to 2005

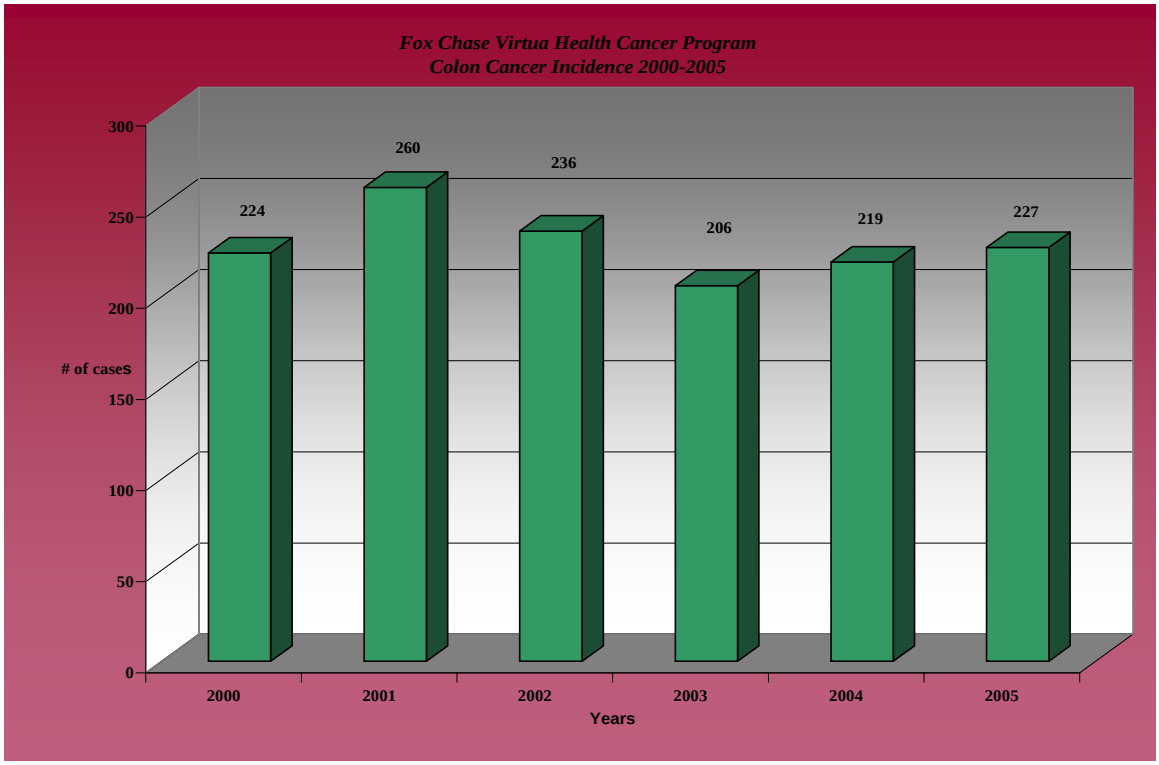


Table 6(a): Stage incidence of colon cancer in years 1990, 1995, 2000 and 2005

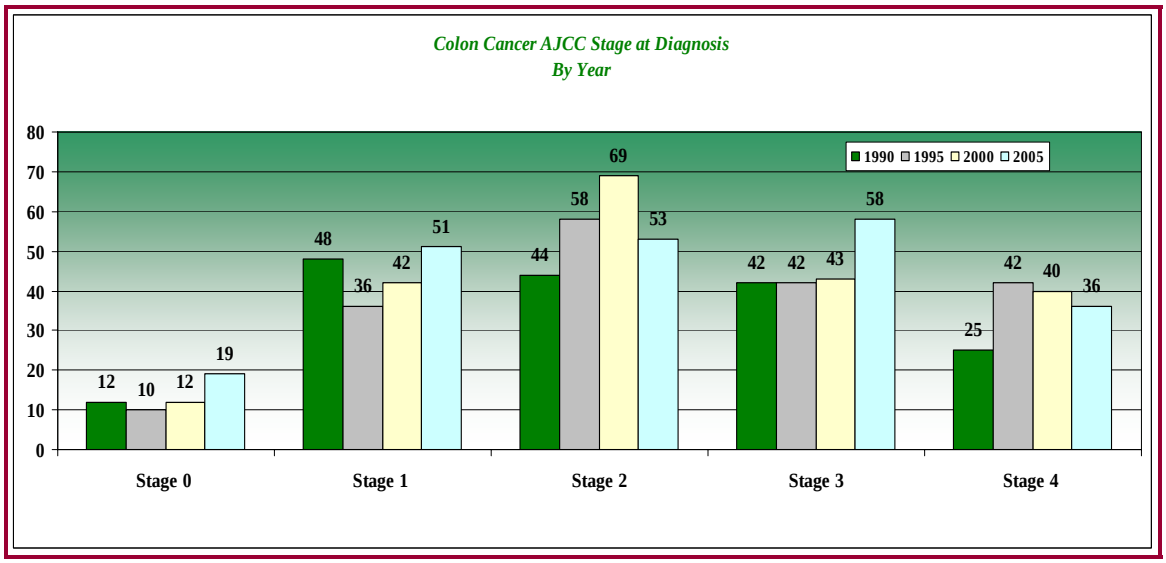
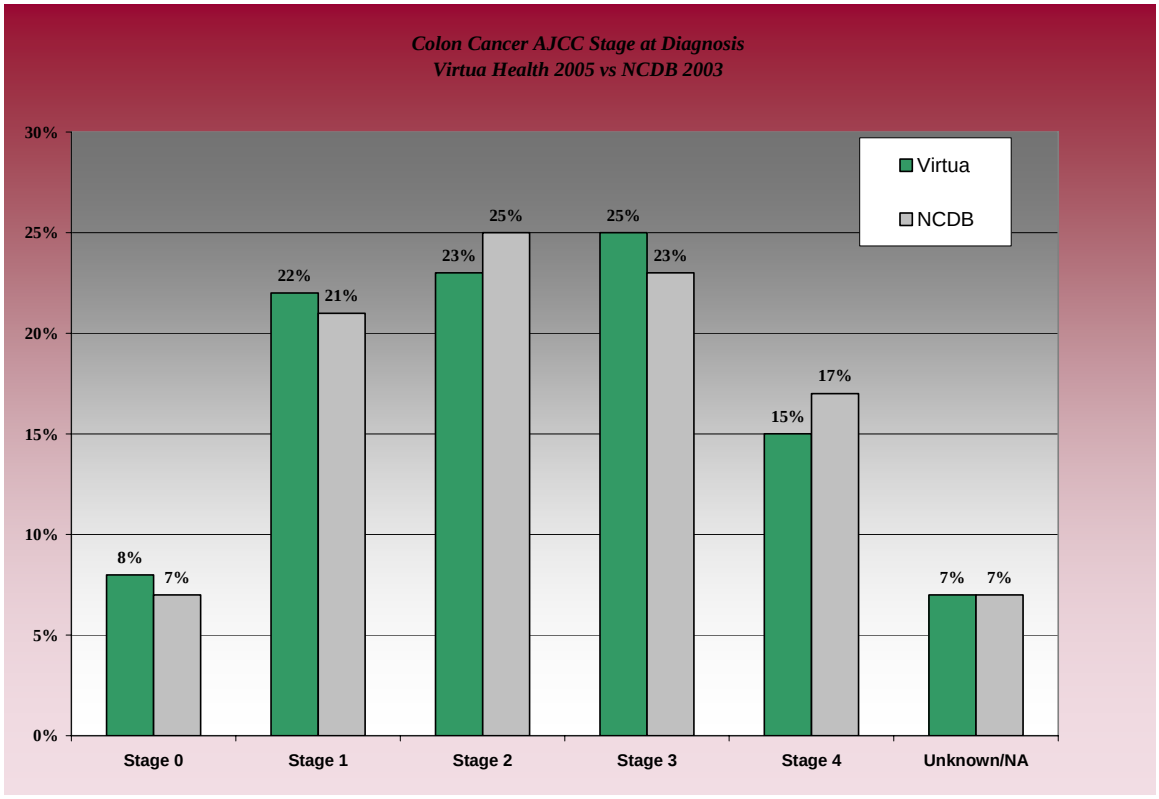


TABLE 6(b): Time periods relative to total cases by stage

Time Period	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4
1990 (n=171)	7% (n=12)	28% (n=48)	26% (n-44)	25% (n=42)	15% (n=25)
1995 (n=188)	6% (n=10)	19% (n=35)	31% (n=58)	22% (n=42)	22% (n=42)
2000 (n=206)	6% (n=12)	20% (n=42)	34% (n=69)	21% (n=43)	19% (n=40)
2005 (n=217)	9% (n=19)	24% (n=51)	24% (n=53)	27% (n=58)	17% (n=36)

Table 7: Comparability of stage presentation at diagnosis to the NCDB data.



Treatment:

Colectomy for Cancer – Lymph Nodes

Surgery remains the mainstay of care for colon cancer. Proper resection includes the section of the colon and ample margins about the cancer. It also requires removing enough mesocolon to provide at least 12 lymph nodes for pathologic staging. Recent National Comprehensive Cancer Network studies reinforce that a report of 12 negative lymph nodes confers a better prognosis than less than 12 negative lymph nodes. This number of lymph nodes would potentially increase the chance of picking up metastatic disease for which adjuvant post-operative chemotherapy has become standard of care. The finding of more negative lymph nodes collected versus fewer collected may well reflect a better prognostic indicator, as future studies attempt to stratify prognosis in node negative Stage I and II cancers, and even in the total number of lymph nodes collected in Stage III colon cancers. Such studies are ongoing and Virtua has been participating with the thousands of patients followed in its cancer registry.

Since the publication of the "COST" trial in the New England Journal of Medicine in 2005, laparoscopic colon surgery is considered a comparable surgical treatment option to large open resections. The advantages of open resection remain a fuller tactile and visual inspection of the entire abdominal cavity. Its disadvantages include more incisional pain, longer lengths of stay in the hospital, and longer recovery at home. Importantly, this study demonstrated no difference in the number of lymph nodes extracted in the colon resections either by open or laparoscopic techniques. Table 8 demonstrates the number of nodes collected at resections for colon cancer at different time periods at Virtua. It reflects improvement in numbers likely attributable to the combined efforts of both the surgeons and pathologists. Virtua's most recent lymph node efforts placed it in the top four institutions of Fox Chase Partners. A recent study/survey by Fox Chase and its partners indicated its efforts at quality resections and pathologic assessment by number of lymph nodes analyzed places it in the top two percent of facilities treating colon cancer.

Table 8: Colon Cancer Lymph Node Dissection at Virtua Health, 2000 through 2005

# LN Removed	% LN Group in Treatment Year											
	2000		2001		2002		2003		2004		2005	
	#	%	#	%	#	%	#	%	#	%	#	%

0	4	2%	4	2%	8	4%	11	6%	4	2%	7	3%
1 - 5	40	21%	42	19%	34	17%	17	9%	11	6%	5	3%
6 - 11	88	47%	108	49%	94	45%	69	39%	52	27%	50	25%
12 or more	51	27%	65	29%	67	32%	81	45%	124	64%	139	69%
Unknown	5	3%	3	1%	4	2%	1	1%	2	1%	0	0%

Laparoscopic Colectomy for Cancer – The Future

Ten years after early data determined the feasibility of laparoscopic resection for selected CRCs, we are still not certain of the long-term outcome. Early studies have clearly documented benefits in the short term. Reports indicate that laparoscopic resection results in less postoperative pain, a quicker return of bowel function, diminished infectious complications, and therefore a shorter overall hospital stay and earlier return to pre-surgical activities. Obviously, in some patients cosmesis is also an important issue.

The differences of surgical technique of open surgery versus laparoscopic are illustrated in Figures 5a and 5b, with smaller incisions and their placement.

Figure 5a: Open and laparoscopic incisions

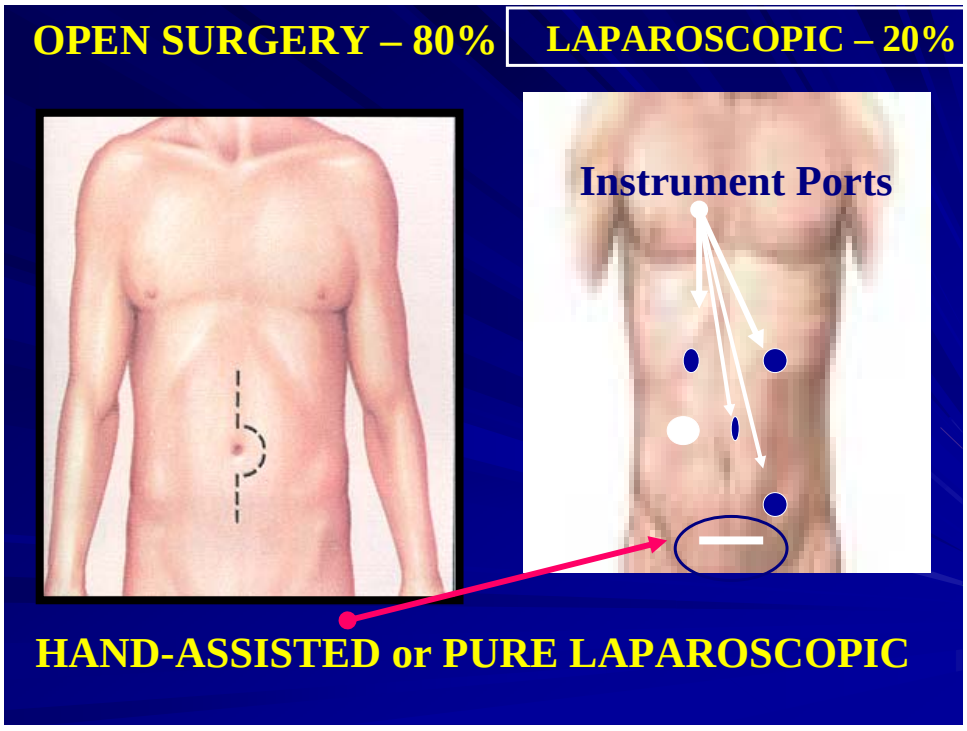
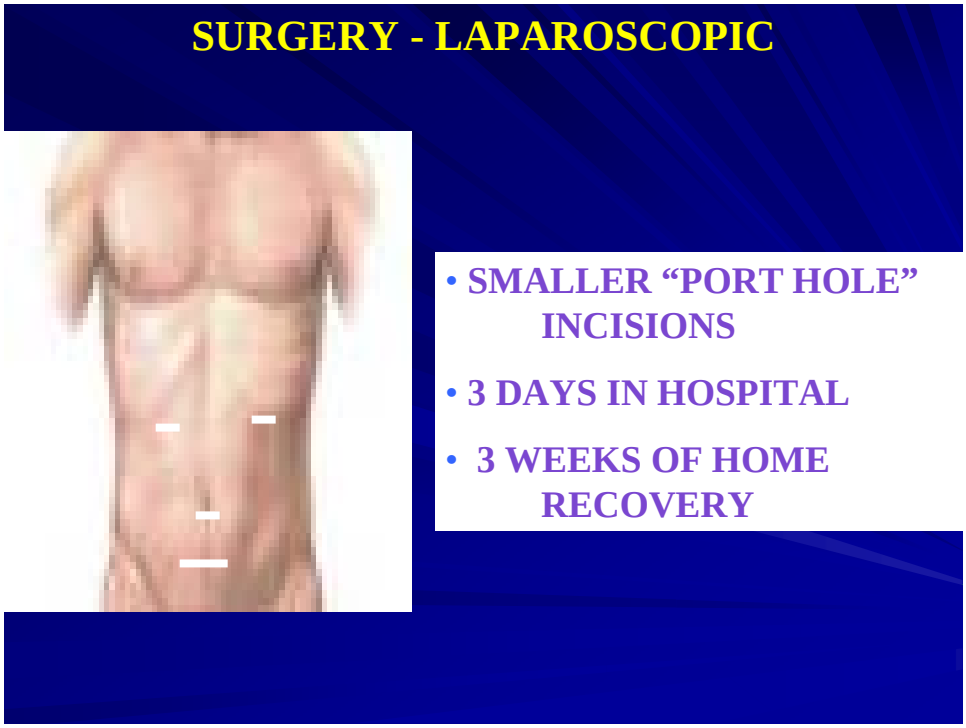


Figure 5b: Potential laparoscopic advantages

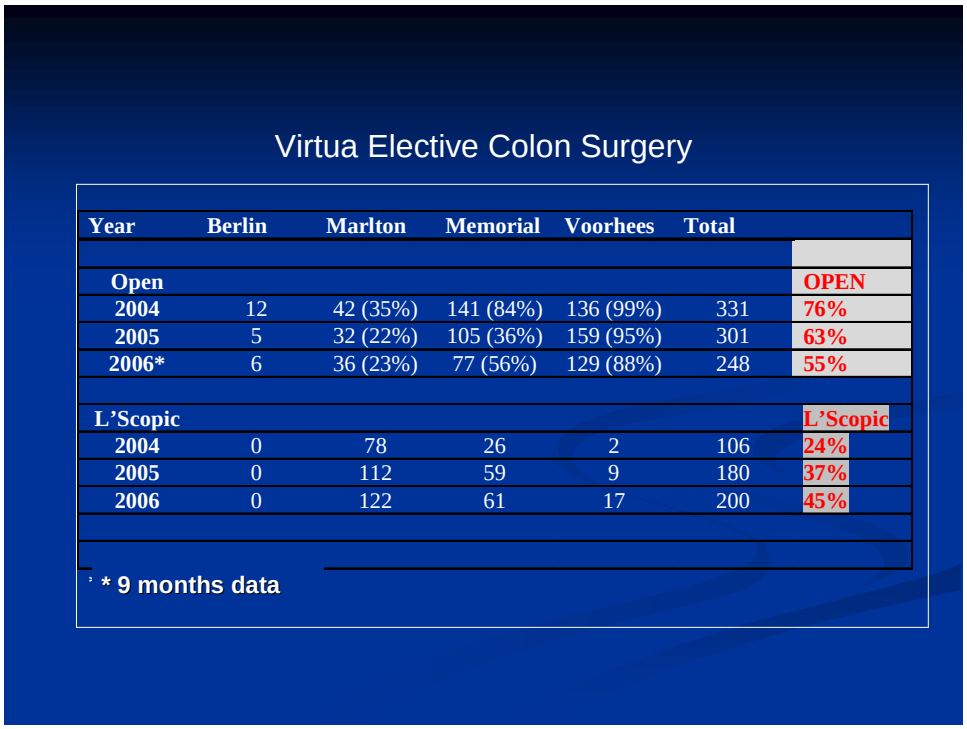


Several small prospective randomized single institution trials have been completed which show acceptable mid and long-term data. Although survival outcome is clearly the most crucial factor, other issues remain important. There is data to support that a greater percentage of elderly patients return to their preoperative state of independence after a laparoscopic resection. In addition, a lower rate of adhesions has been demonstrated. This may translate into a decreased incidence of post-operative small bowel obstruction, and therefore less hospitalizations and re-operations.

Oncological results are measured in the long-term by survival and recurrence rates. In the short term, we measure margins and lymphovascular clearance. These two factors have been shown to be equivalent to open surgical techniques. Initial concerns regarding wound and port site recurrences are currently less concerning. Recent reports from larger series indicate the rate of recurrence, in the wound or port sites, is between 0 and 2.5%. This is not statistically different from that of open surgical procedures. It has been assumed therefore that these recurrences are most likely due to inadequate surgical technique. No study has shown a detrimental effect on survival. In fact, the published data documents equivalent or slightly better outcomes in the laparoscopic group. However, the results of an ongoing large prospective randomized trial, the COST trial, has shown oncologic comparability in terms of survival. Approximately, 15 to 30 % of laparoscopic resections require conversion to open surgery for technical or oncologic reasons. Table 9 demonstrates a trend towards laparoscopic procedures for elective colon resections. Laparoscopic surgery is clearly on the increase at Virtua from 2005 through 2006. Table 10 demonstrates shorter lengths of stay for colon resections at Virtua at its

different campuses. Virtua will continue to monitor its rates of laparoscopic resection as far as safety, patient satisfaction, functional and longterm oncologic outcome.

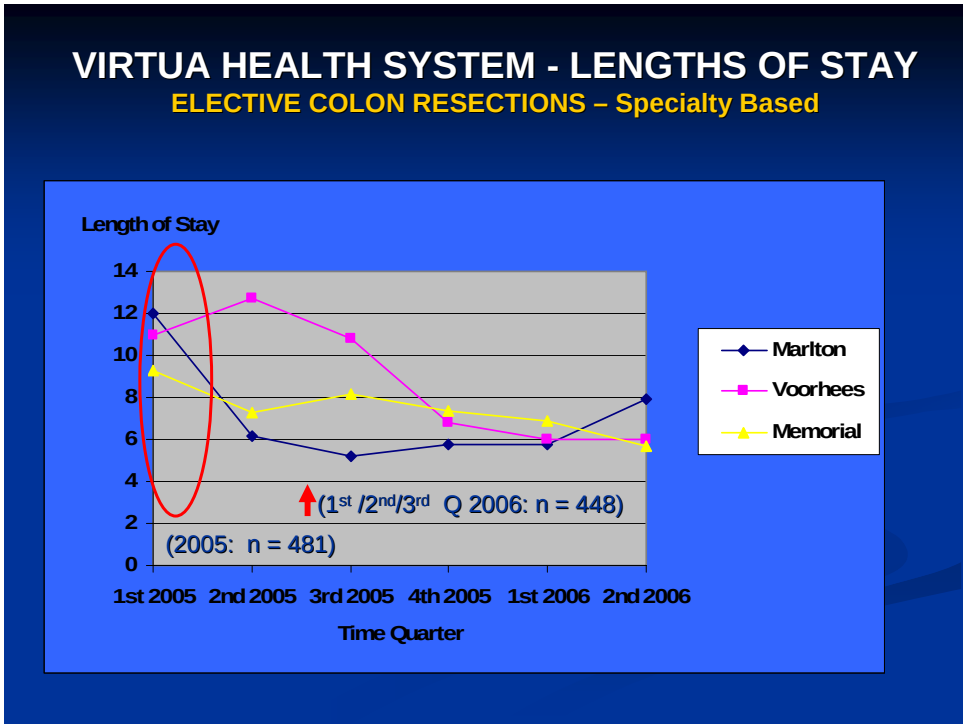
Table 9. Laparoscopic vs. Open Colon Resections – 2004 to 2006



Post-colectomy Clinical Pathway

After more than 2 years of development and piloting, Virtua is set to roll-out a clinical pathway to all its' divisions. The pathway was developed through the collaborative effort of colon and rectal surgeons, hospital administration, nursing professionals, nutritionists and physical therapists. The main focus is to provide a comprehensive approach to the care of the "post-colectomy" patient. This will hasten the patient's recovery, provide for a more unified approach and reduce complications through such goals as earlier ambulation, tailored meals and anticipation of post-discharge needs. Some of the impact of the introduction of the clinical care pathway is demonstrated in Table 10, highlighting lengths of stay (LOS) for colectomies at the various campuses over the time periods of 2005 and 2006. Much of the improved LOS is attributable to the trend of laparoscopic surgery over open resections over this same time period (referred to Table 9), but also the introduction of these pathways in 2006 may have contributed as well.

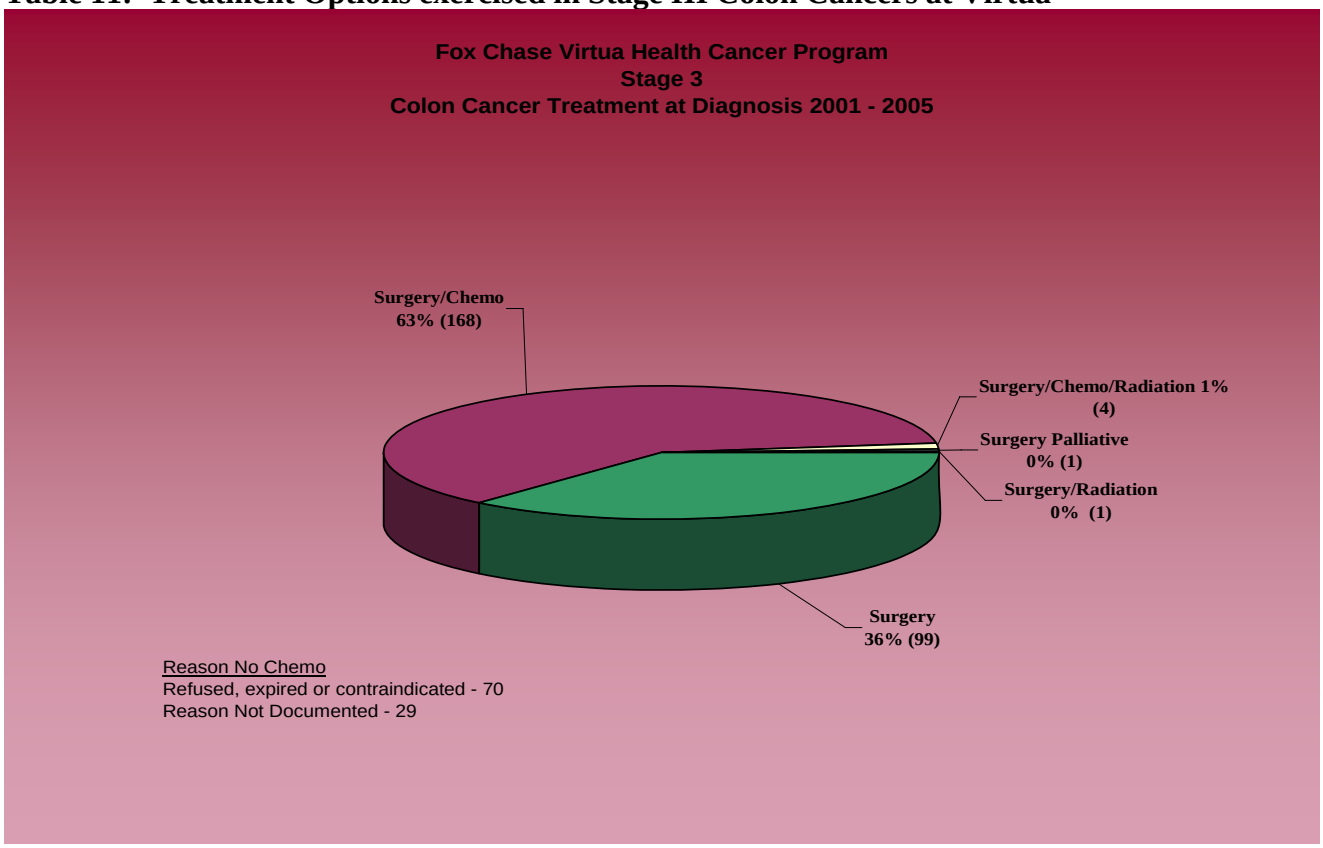
Table 10. Lengths of stay – 2005 to 2006



Adjuvant Chemotherapy

In the past, 5-FU based therapy in combination with Levamisole or Leucovorin had been the standard of care for stage III CRC. Long-term data has shown a 40% decrease in recurrence rate and a 33% improved survival. However, a substantial group of patients are still succumbing to CRC. Recent advances in chemotherapeutics have led to further combinations as alternatives. Newer agents have recently entered the field, including Irinotecan and Oxaliplatin. Results of randomized trials reveal increased response rates and prolonged survival using 3 drug combinations. In addition, an oral form of fluoropyrimidine is now available, which has been shown to have equivalent results to infusional 5-FU. Further trials are ongoing to determine the optimal combination and sequence of these agents. Various other trials are investigating the utility of targeted biological therapy. These agents include inhibitors of the epidermal growth factor receptor, tyrosine kinase inhibitors, and angiogenesis inhibitors. Vaccines, gene therapies, and chemopreventative agents are also being developed. These investigations and advancements will hopefully lead to further decreased recurrences, improved long-term survival, and a better quality of life in CRC patients. A recent review of Virtua's use of adjuvant chemotherapy shows that it compares very favorably with institutions within the state, region and nation. Approximately 83% of colon patients with Stage III (node positive disease) received adjuvant chemotherapy. Table 11 demonstrates that data in Virtua patients with Stage III colon cancer.

Table 11: Treatment Options exercised in Stage III Colon Cancers at Virtua



Guanylyl Cyclase C (GCC) – Staging-Prognosis on a Molecular Level

Through a collaborative effort with Dr. Scott Waldman of Thomas Jefferson University Hospital and Dr. David Weinberg of Fox Chase, Virtua surgeons are taking part in an investigational GCC study. Dr. Waldman's team discovered the existence of a protein marker, GCC, on the surface of colorectal cancer cells that allows scientists to detect if cells have spread to other areas of the body and where, as he says, "they don't belong". GCC may eventually be used as a diagnostic tool to stage patients in determining the extent of disease and particularly whether or not it had spread to the lymph nodes. This may have treatment and outcome implications where a "node-negative person" by traditional pathologic methodology may be offered potentially life-saving chemotherapy because they are found to have "GCC-positive" nodes by a very sensitive detection technology called RT-PCR analysis. RT-PCR can identify one cancer cell in 1 million to 10 million normal cells.

Metastatic Disease – The Ultimate Challenge

Over thirty percent of all CRC patients will develop metastatic disease, the vast majority of which occur in the liver or lungs. If left untreated the 5-year survival is less than 5%. Highly selected patients with liver or lung metastases are candidates for further curative surgery. Curative resection of liver disease results in a 22-49% 5-year survival. For lung metastases, the 5-year survival ranges from 14-78% in various series. However, further metastases occur in 50-70% of these patients. In addition concurrent or sequential liver

and lung resections are possible with a 5-yeaer survival approaching 30%. Other than systemic chemotherapy, alternative therapies for liver metastases include hepatic artery infusion, portal vein embolization, and local destruction utilizing cryosurgical techniques or radiofrequency ablation. Although short term data is encouraging, there is no long-term data available on any of these alternatives.

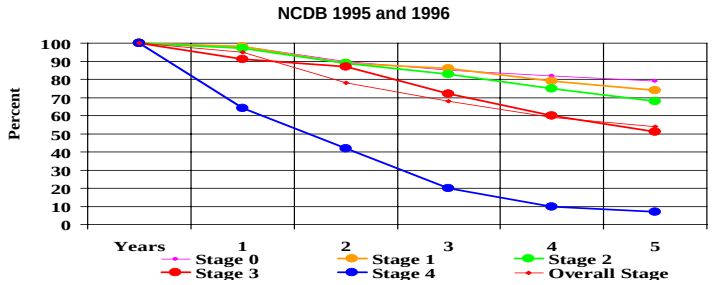
The expansion of drugs available for colon cancer treatment has allowed improvements in survival for patients with advanced metastatic colon cancer from mean survivals of six to eight months to mean survivals of 24 months in recent series.

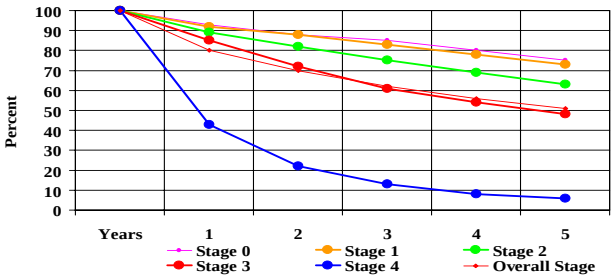
Stage Related Survival

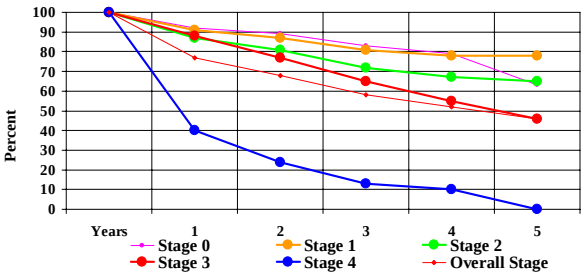
Table 12 illustrates stage related crude survival for colon cancer at Virtua from 1995 to 2000, 2000 to 2005, and compares Virtua with the NCDB 2003 data. These graphs would indicate fairly comparable survival rates overtime and by comparison with the NCDB. There have been recent reports of a decreasing incidence of colon cancer as well as an increase in overall survival over the past 20 years, notably more in men than women (1.6% versus 0.6%). Table 11 demonstrates the patterns and distribution of treatment for Stage III colon cancer from 2001 to 2005. Standard of practice mandate that patients with this stage of cancer receive the option of adjuvant chemotherapy in addition to surgical resection. Many factors may in fact reduce that final choice. A recent analysis of Virtua's data from 2004 and 2005 demonstrated that 83 % of patients with Stage III colon cancer were offered and received adjuvant chemotherapy placing Virtua well above local, state, regional, and national averages.

Table 12: Observed Survival Rates for Colon Cancer by AJCC Stage

Source: Data reported from 62 hospitals







Conclusions:
The future is bright. As public awareness increases, the premalignant precursor, polyps, will be increasing diagnosed and eradicated (secondary prevention). We are not far from using chemoprevention guided by better molecular identifiers of risk. Better staging may be anticipated with molecular markers to better define those Stage I and II patients, who despite improved stage, still have an increased risk of progressing to metastatic disease.

Surgery has become less invasive and there are increased options for patients with advanced disease, particularly in the liver.

Much of this progress will have to coincide with robust digital or electronic medical records that will allow the best clinical pathways to reduce hospitalization time by aligning the best treatment in a more personalized/tailored way to enhance survival, safety and patient satisfaction. Such pathways can help patients and their families navigate an ever more complex environment of diagnostic tests and treatment options.

There will be increasing efforts to measure and report quality of care in colon and rectal cancer management. The NQF (National Quality Forum) will be carefully evaluating both Breast and Colorectal Cancer for validating "quality" indicators with expectations of collecting, comparing, and reporting on such data from hospitals, states and regions to determine where gaps of care exist, why it occurs and what needs to be done to improve it.

Virtua will continue with its partner, Fox Chase, to be on the forefront of quality care for colorectal cancer and the other major cancers. Virtua's hard work and dedication of all of its cancer professionals is reflected in the American College of Surgeons conferring upon Virtua's cancer profiles its approval of its cancer program with commendation. This award is given to less than three percent of all approved cancer programs in the United States.

References: Web sites and selected readings
American Society of Colon and Rectal Surgeons
http://www.fascrs.org/

National Comprehensive Cancer Network Practice Guidelines in Oncology for 2006
http://www.nccn.org/

National Cancer Data Base of the American College of Surgeons
www.facs.org/dept/cancer/ncdb/

National Cancer Institute; Review of Clinical Trials
http://www.cancer.gov/clinicaltrials

American Cancer Society Guidelines for Early Detection of Cancer, 2003; Cancer Statistics, 2003; Merging Technologies in Screening for Colorectal Cancer. CA: A Cancer Journal for Clinicians 2003;53(1).