

# Involvement of Virginia's Cancer Centers in Research and Treatment

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## Purpose of Study

- 2009: SJR 292 (Senator Martin) directed the JCHC to conduct a 2-year study of Virginia's National Cancer Institute (NCI) Centers, the Massey Cancer Center and the University of Virginia Cancer Center
  - JCHC members voted to include in the 2011 work plan, a review of how the various cancer research centers in Virginia are involved in advancing cancer research and treatment

## Virginia's Cancer Research and Treatment Centers

- Eastern Virginia Medical School (EVMS) and Sentara Healthcare
- INOVA
- Carilion Clinic
- Hampton University Proton Therapy Institute

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## EVMS and Sentara Healthcare

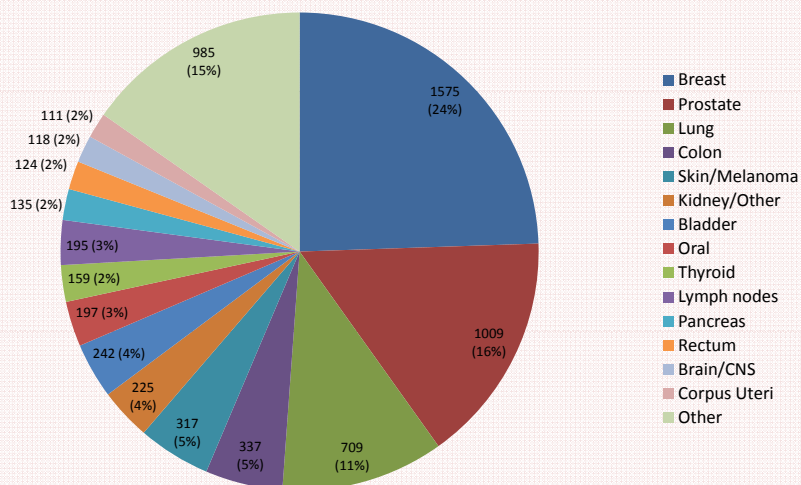
## EVMS / Sentara

- EVMS and Sentara Healthcare, along with other cancer care providers, coordinate care across a large geographic network recognized by the American College of Surgeons' Commission on Cancer as an accredited network cancer program
- Areas of specialization within oncology
  - Stereotactic radio surgery program with cyberknife
  - Head and Neck Program
  - Region wide comprehensive pancreatic program
  - Clinical proteomics research
  - Research in genitourinary (GU) cancers
  - Emphasis on translational research
    - 12+ years of NCI funding support for biomarker discovery research

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### 2010 Sentara Cancer Network Total Cancer Cases

Total Cases = 6,438



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# EVMS / Sentara

## Clinical Trials

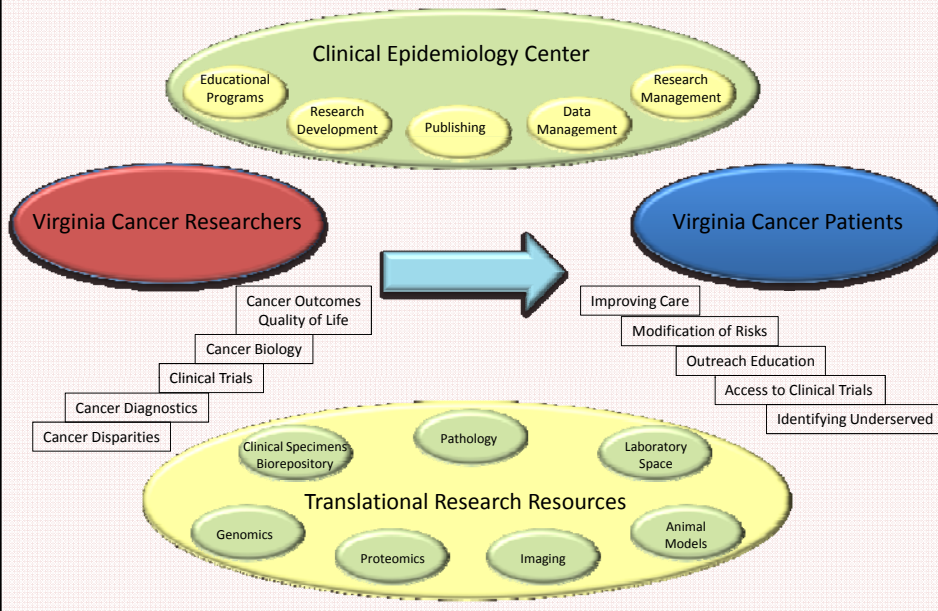
- 157 active clinical trials; Oral, Pediatric, GU, GI, Breast, Lung, Melanoma, GYN, etc.
- 854 patients accrued to clinical trials in 2009
- Second largest (behind Mayo) accrual site for participants in Southwest Oncology Group trials for GU cancers



Leroy T. Canoles Jr. Cancer Research Center at EVMS

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## The Leroy T. Canoles Jr. Cancer Research Center



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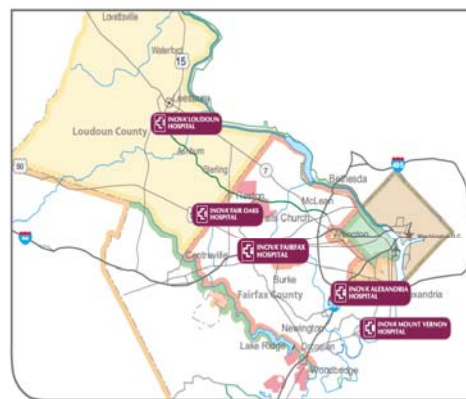
# INOVA

# INOVA

INOVA provides cancer care in multiple locations across Northern Virginia

**2010 Volume of Most Common Newly Diagnosed Cancer Patients at Inova**

Prostate (665)	Breast (1,152)
Lung (290)	Colorectal (277)
Colorectal (235)	Lung (254)
Leukemia/Lymph (204)	Thyroid (254)
Bladder (157)	Leukemia/Lymph (234)
Brain (Neuro Onc) (117)	Uterus (227)
Melanoma (109)	Ovarian (149)
Kidney (92)	Brain (Neuro-Onc) (134)
Thyroid (90)	Melanoma (63)
Pancreas (52)	Bladder (52)
All Other (565)	All Other (398)
<b>Subtotal = 2,521</b>	<b>Subtotal = 3,194</b>
<b>Overall = 5,715</b>	



Source: IHS Tumor Registry

# INOVA

- The INOVA Fairfax Hospital Cancer Center
  - Accredited by
    - The American College of Surgeons' Commission on Cancer as a teaching hospital, receiving outstanding achievement awards in 2008 and 2011
    - National Accreditation Program for Breast Centers in 2010
    - Foundation for Accreditation of Cellular Therapies for Bone Marrow Transplantation
  - Staffed by a combined private practice and employed physician model
  - Research collaborations:
    - George Mason University
    - University of Maryland
    - Johns Hopkins University
    - International Genomics Consortium
    - Walter Reed

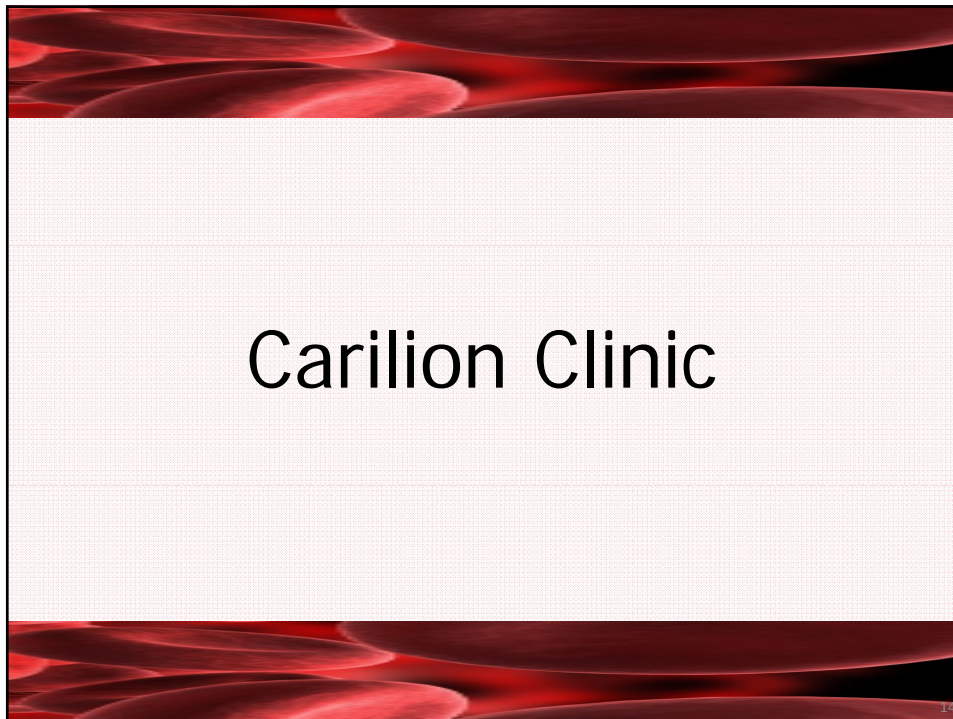
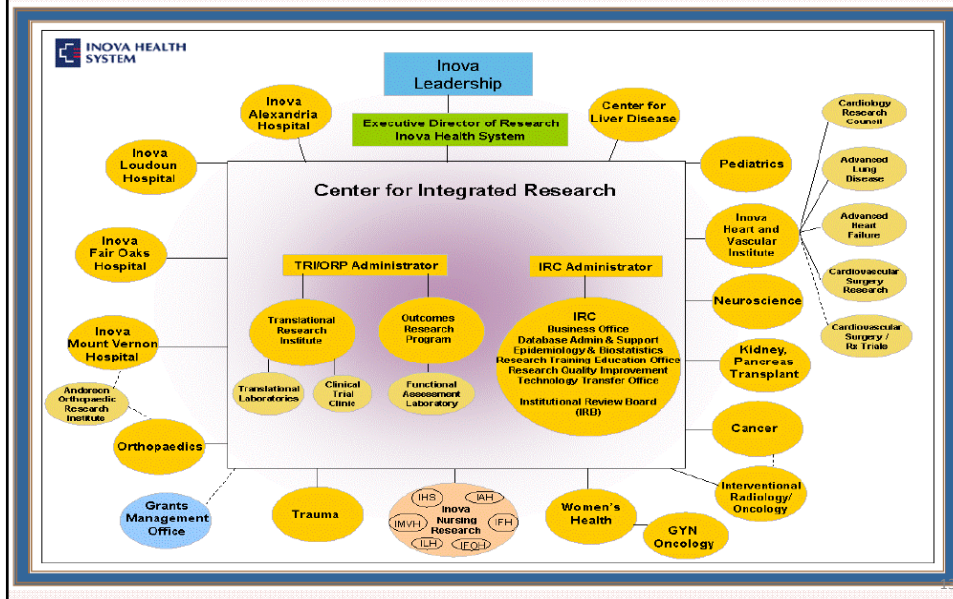
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# INOVA

- The INOVA Fairfax Hospital Cancer Center
  - Areas of specialization include programs in breast, thoracic, neuro-oncology, bone marrow transplantation, gynecologic and colorectal cancers, and interventional oncology
  - The Center's 2011 program includes research in proteomic expression, cell pathology, physician initiated pharmaceutical device trials, and cooperative group trials
    - A collaborative effort involving private practice physicians and 5 hospital-based clinical research coordinators and staff
    - 104 ongoing cancer research projects at INOVA's Fairfax Hospital and Fairfax Hospital for Children (IFH/IFHC)
    - In 2010, 12 percent of all IFH/IFHC patients were put on clinical trials (512 patients)

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# INOVA Research Center Infrastructure



# Carilion Clinic

## Carilion Clinic cancer services and research:

- Carilion Clinic Cancer Center is the largest provider of comprehensive cancer care services in western Virginia
- American College of Surgeons' Commission on Cancer Accredited, awarded Outstanding Achievement Award
- In addition to caring for cancer patients, Carilion's Cancer Center is involved in multiple clinical protocols/studies
- Staffed by Carilion and private practice physicians (Blue Ridge Cancer Center)
- Program offers technology and treatment options including:
  - CyberKnife radiosurgery
  - Intensity Modulated Radiation Therapy and IGRT capable linear accelerators
  - HDR (high dose rate) brachytherapy
  - da Vinci robotic technology
  - Large format pathology
  - State-of-the-art imaging technology
  - Access to current clinical trials

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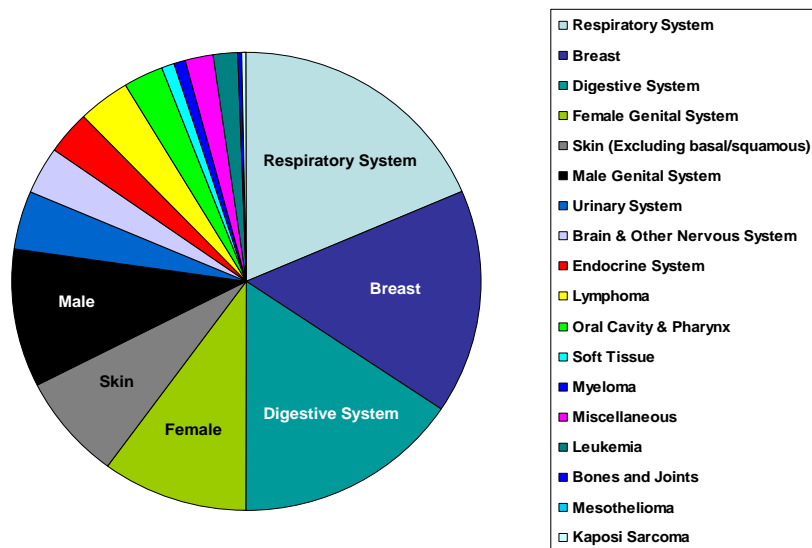
# Carilion Clinic

- Cancer care patient services at Carilion for FY 2011
  - Radiation Oncology: 15,062 treatments
  - CyberKnife: 340 treatments
  - Hematology/Oncology office visits: 721 (Sept 2010)
  - Breast Care Center: 29,000 screenings
- The Carilion Clinic Children's Hospital offers 30 NCI supported Children's Oncology Group clinical trials with 85 children enrolled
- Carilion Clinic currently has 26 NCI supported gynecology oncology clinical trials with 186 enrollees
- Carilion Clinic Tumor Registry
  - A repository of more than 51,000 new cancer cases collected
  - Of these, 44,000 diagnosed or treated at Carilion Medical Center in Roanoke
    - In 2010, the Carilion Medical Center accessioned approximately 1,900 newly diagnosed cases

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## Primary Site Oncology Diagnosis



Source: Tumor Registry

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## Carilion Clinic and Virginia Tech

Carilion Clinic's partnership with Virginia Tech provides opportunities in cancer Research. Current research initiatives include:

- Virginia Tech Carilion Research Institute Research
  - High resolution molecular imaging to determine new therapeutic targets for malignant brain tumors and breast cancer
- Virginia Tech College of Sciences Research
  - Cellular dynamics and controlling and regulating cell development
  - Nanoscale compounds for new methods of drug delivery including photo activated anticancer agents
  - Immune system functioning in fighting cancer
  - Nutritional therapy of cancer
  - Role of chromosome missegregation that enables tumor development
- Virginia Tech-Wake Forest Collaboration
  - Sensory data on taste perception for healthy and cancer patients
- Virginia-Maryland College of Veterinary Medicine Research
  - New therapies for treating malignant brain tumors

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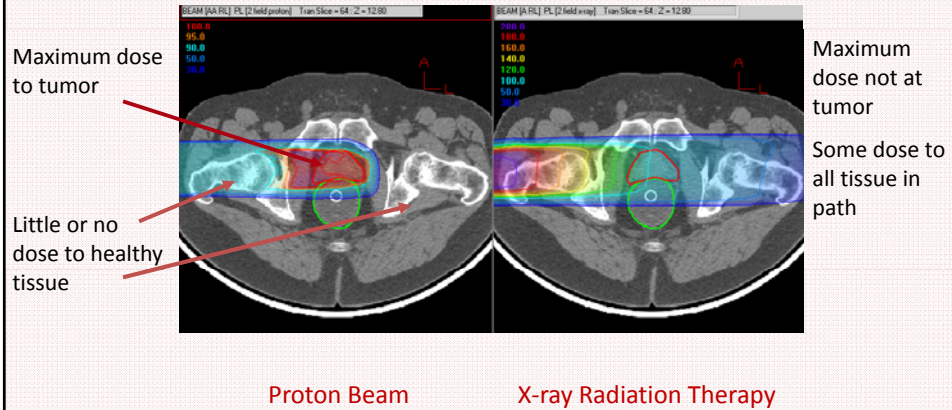
# Hampton University Proton Therapy Institute

## HUPTI



- The Institute opened in 2010 and is one of only nine proton therapy centers in the U.S.
- Provides the most effective external beam method in the selective destruction of cancer cells
  - Delivers lethal doses of radiation therapy to a tumor while minimizing or eliminating normal tissue injury
  - Reduces side effects and improves tumor control

# HUPTI

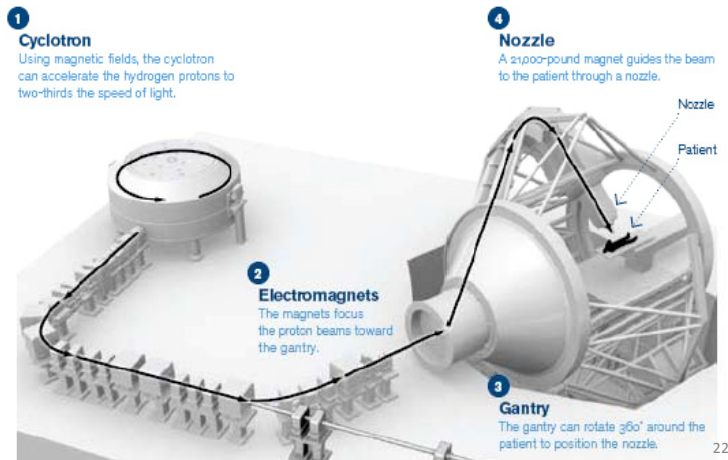


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At maximum capacity, the Institute will treat over 150 patients per day

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## HUPTI Research

- Radiation biology (Varian Medical Systems, Commonwealth Technology Research Fund, EVMS)
- PET imaging for range verification and dosimetry (Philips, Naval Health Research Center)
- On-board prompt gamma imaging (Ion Beam Applications, Jefferson Lab)
- Respiration gating using bellows (Philips)
- Advanced image processing and 3D reconstruction (Tesaro, Jefferson Lab)
- Motion and other phantom development
- Breast imaging, joint with HU's Center for Advanced Medical Instrumentation (DoD CDMRP\* Breast Cancer Research Program)
- Multiple clinical research projects including multi-seed implant management for prostate cancer, brain metastasis from breast cancer, mammary node involvement and pancreatic localization

\*Congressionally Directed Medical Research Programs

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## Economic Impact of Virginia's Cancer Centers

All four institutions are significant economic drivers in their region

- Job Creation
  - HUPTI created 120 highly trained staff positions in the Hampton area
  - EVMS/Sentara, INOVA and Carilion are all large employers in their regions. For example,
    - INOVA employees 16,000 individuals, including 3,500 physicians
    - Carilion employees 11,000 individuals and is the largest private employer west of Richmond
- Provision of cancer care across the state so most Virginians do not need to leave the Commonwealth for treatment; also treat out-of-state patients
  - HUPTI plans to treat over 150 patients per day (2,000 patients per year). Many come from out of state (as well as other countries) and stay in Hampton Roads for approximately 2 months
- Creation of spin-off and support companies
- Procurement of federal grant funding

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# Internet Address

Visit the Joint Commission on Health Care website:  
<http://jchc.virginia.gov>



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