Radiation Oncology: Integrating “High Tech” with “High Touch”

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HFHS RadOnc Pledge:

“To optimally combine, in a caring and compassionate setting, cutting-edge radiation technology with novel systemic or biologic strategies to achieve the highest quantity and quality of life for each individual patient”
HFHS RadOnc Pledge: “High Tech”

“To optimally combine, in a caring and compassionate setting, cutting-edge radiation technology with novel systemic or biologic strategies to achieve the highest quantity and quality of life for each individual patient”
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“To optimally combine, in a caring and compassionate setting, cutting-edge radiation technology with novel systemic or biologic strategies to achieve the highest quantity and quality of life for each individual patient”
Cutting-edge RT

- We’ve treated >4500 patients with stereotactic RT and >1800 with spine SRS
(great example of close collaboration bwn neurosurg, neuro-onc and radonc)
Radiosurgery of Spine Metastasis
Cutting-edge RT

-5 years ago, spine SRS was being tested in early phase I (safety) studies
Cutting-edge RT: National Role

- 5 years ago, spine SRS was being tested here in early phase I (safety) studies

- Now, a national randomized phase III landmark study has been opened by the NCI to test spine SRS vs. standard RT
HFH Radiosurgery

No. RS patients

2001 02 03 04 05 06 07 08 // 14

Brain
Spine

Spine Tumor Board
Stereotactic RT (4 days): >90%
Standard RT (7 wks): 40%

SRT 1 yr later

Tumor Control Rate
HFH Radiosurgery

No. RS patients

Brain
Spine
Other
Novel Technologies!
We now have the very first dedicated Varian stereotactic unit in North America.................
the EDGE........right here at......
Novel Technologies!

-Dedicated SRS unit (fully integrated)
-Treats SRS more rapidly (high intensity mode allows up to 2400 MU per minute!) so we can treat in 15-20 min (rather than taking > 1 hour!)
-Pioneering technology (taught by us in SRS course)
The Edge

- We have had site visits from Harvard, Cleveland Clinic, and many others

- Edge course was very well received! “Really great ‘hands on’ course”
Thanks to Herman Moore for joining us in the Game on Cancer!
The Edge

- So far, have treated >400 patients on Edge
- The breakdown of tumor sites treated with SRS/SBRT techniques were brain (31%), lung (29%), spine (23%), GI (9%), adrenal glands (7%), and other.
We have been pioneers of stereotactic radiation and have noninvasively treated tumors anywhere in the body (brain, spine, HN, lung, abdomen, etc)

In today’s health care environment, it’s critical to note that with such a SRS unit, one can accurately treat the 98% of what a proton center can at 2% of the cost of a proton unit.
A Case Study

- 63 year old male
- stage IV neuroendocrine carcinoma
- Orbital met
- Prescription: 8 Gy x3
- 7 noncoplanar fields
CBCT Localization
Case Study: Single Isocenter Multiple Brain Mets

- 46 year old male
- High grade metastatic bladder cancer
- Three mets in the left fronto-parietal region
- Prescription: 18 Gy @ 90%
- 3 partial arcs (0°, 30° and 60°)
The Edge

First published manuscripts on the Edge!

The Edge

Manuscripts:


QA: Accreditation

- There are 9 sites accredited in Michigan, 5 of which are HFHS sites!!!
Members of ACR National Guidelines

• Dr. Movsas (Chair of ACR Radonc)
• Dr. Elshaikh (Gynonc)
• Dr. Farzan Siddiqui (HN)
• Dr. Salim Siddiqui (Brain)
• Dr. Dragovic (Lymphoma)
• Dr. Walker (Breast)
• Dr. Chetty (Lung)

(MD reviewers for ASTRO also include Dr. Levin and Dr. Pradhan)
MRI simulation – use of MRI imaging for planning to leverage superior soft tissue contrast—using the open-MR scanner technology
Magnetic Resonance Imaging (MRI)-Simulation
Improved Target definition over CT
CT scanner

MR scanner on the “open” technology
RadOnc Mission/Pledge: “High Tech”

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Department of Radiation Oncology’s Translational Gene Therapy Program

Moving Ideas from Bench to the Bedside (& back!)

Idea → Cell culture → Animal models → Human trials
Prostate Cancer Clinical Trials

<table>
<thead>
<tr>
<th>Preclinical</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tbody>
<tr>
<td>Radio-Recurrent Prostate Ca</td>
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<tr>
<td>Newly-Diagnosed Prostate Ca + RT</td>
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<tr>
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<tr>
<td>Newly-Diagnosed Prostate Ca + RT (Randomized Controlled)</td>
<td>Completed</td>
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1st Generation Therapeutic Ad
- Ad5-CD/TKrep

2nd Generation Imaging Ad
- Ad5-yCD/mutTK\textsubscript{SR39}rep-hNIS

2nd Generation Therapeutic Ad
- Ad5-yCD/mutTK\textsubscript{SR39}rep-ADP

3rd Generation Therapeutic Ad
- Ad5-yCD/mutTK\textsubscript{SR39}rep-hIL12
• 5 yrs ago, we were doing phase I (safety) gene therapy clinical trials
• 5 yrs ago, we were doing phase I (safety) gene therapy clinical trials

• Now, we have published a landmark randomized gene therapy study (showing 40% lower + prostate biopsies)!
We were awarded a $1.5M NCI R01 grant to study combining gene and immune therapy!

This grant scored in the top 5% of all grants!
• Beyond this, our physics R01 grant (on enhancing image guidance) scored in the top 3% of all grants!!
“Image Registration and Dosimetric Consequences in IGRT”: $1.5M NIH/NCI R01 (PI: Zhong)

– has spawned collaboration with the Henry Ford Innovation Institute to develop a unique lung phantom

- this project has been chosen for commercialization!
HFHS Radonc Department

Radonc has several active NCI R01 grants, an R21 grant, and a NIH SBIR grant!

• R01: Dr. Svend Freytag
• R01: Dr. Hua Zhong (mentor: Dr. Chetty)
• R21: Dr. Jae Ho Kim
• SBIR: Dr. Ben Movsas (with Dr. Steve Brown)
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QOL/Outcomes

- Dr. Walker has successfully implemented unique acupuncture and exercise programs to enhance the quality of life (QOL) of the “whole” individual.

- Dr. Movsas has been Chair of the NCI RTOG QOL committee for over a decade.
ASCO Study: Exercise May Keep Breast Cancer Patients Healthier (Walker)

- United Press International (UPI)
- Breast Cancer Network News
- American Academy of Anti-Aging Medicine (World Health News)
- Health News Digest
- Times of India
- Edmonton Journal
- Better Health Research
- U.S. News & World Report
- HealthDay
- BusinessWeek
- Fox 12 (Idaho)
- Medicine Net
- The MedGuru
- Lincoln Courier
- Health Jockey
Acupuncture May Cure Hot Flashes, Boost Sex Drive in Breast Cancer Patients (Walker)

- Reuters Health UK
- Reuters (US)
- MedScape
- WebMD
- United Press International
- Yahoo News
- National Enquirer
- Science Blog
- WDIV-Ch. 4 Detroit
- MSN
- MSN India
- WWJ-950 AM
- Science Daily HealthDay:
  - HealthDay TV (via U.S. News)
  - Business Week
- Cancer Consultants
- Breast Cancer Network News
- Times of India:
- HemOnc Today
- Post Chronicle
- eMax Health
- BETTER Health Research
- Fox New York (local - state)
- Business Standard (India)
- Palm Beach Post
- Food Consumer (online)
- Health News
- Modern Medicine
- Science Blog
- Natural News
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Medical Practice Survey - Radiation Oncology

Peer Data - 300+ Providers, 3/10-8/10
RadOnc Mission/Pledge
“High Touch”

Thank you so much for giving us the precious gifts of hope, joy, and peace of mind.

We have been truly blessed to have your expertise, understanding, and kindness guiding us through treatment.
Wonderful Team Approach!

- Therapists
- Nurses
- Residents
- Senior staff MDs
- CSR
- Dosimetrists
- Physicists
- Researchers
- Administrators
- Neurosurgery/neuro-oncology
- JFCI Council

REVOLUTIONARY TEAM…..THANKS!!
RadOnc Mission/Pledge
“High Touch”

Thank you for your kindness and compassion

Thanks you for your dedication

Thank you for restoring our hope!
RadOnc Mission/Pledge

“High Touch”

You should be very proud of your staff in the Radiation Oncology department!

I was treated with warmth, kindness and professionalism every morning.