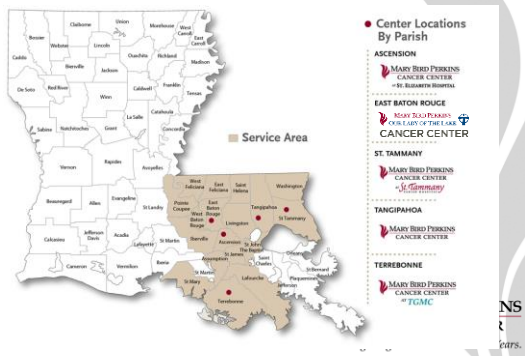


Training and Evaluation of Residents in a Distributed ("Hub and Spoke") Residency

John P. Gibbons
*Chief of Clinical Physics &
Residency Program Director*



Mary Bird Perkins Cancer Center



Medical Physics Program

Mary Bird Perkins Cancer Center - LSU Medical Physics Dept



Residency Program Description

Hub and Spoke Program Motivation

- LSU-MBPCC Medical Physics program graduates ~6 students per year, most with MS degrees

Question: Will these graduates be able to find a residency position after 2014?

- MBPCC goal to accommodate 6 new residents per year in time for the 2014 requirement
- Problem: There are not enough faculty to support these numbers. AAPM Report 90 recommended physicist-to-resident ratio of 2:1
 - 14 MBPCC physicists → 7 total residents maximum
 - 3-4 new residents per year (2-year program)



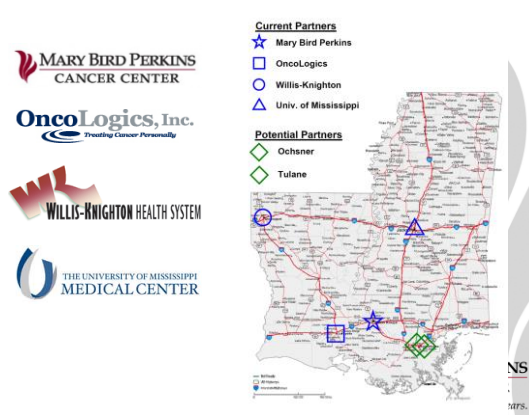
Residency Program Description

Introduction

How do we accommodate the other 3 needed positions per year?

- Solution was to develop partnerships with regional medical physics groups to provide clinical residency training
- Hub-and-spoke model (TG-133)
 - MBPCC responsible for accreditation, curriculum development, resident performance tracking, scheduling exams, etc.
 - Partner sites responsible for clinical training



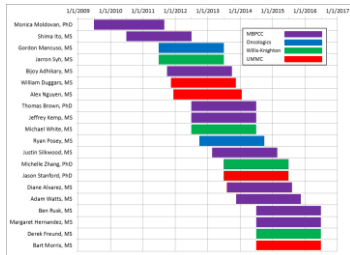


Resident Recruitment Residency Placement

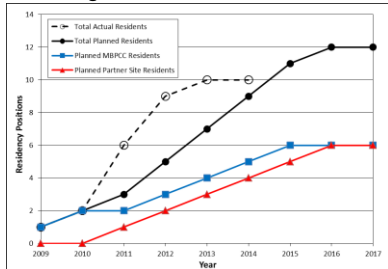
- LSU Medical Physics students/Post docs receive first priority
 - Residency position not guaranteed, only the opportunity
- Student assigned ~mid-January to training site based on internal match system using National Resident Matching Program (NRMP) algorithm
- Unfilled positions opened to outside applicants.



MBPCC Resident Timeline



Residency Program Description Strategic Plan for Resident Enrollment



Residency Program Description Program Status

- 10 residents have completed program. 10 residents currently in program (5 at MBPCC, 5 at affiliate sites)



Resident Training Individual Resident Rotation/Project Schedule

Thomas Brown, Ph.D.
Clinical Rotation and Project Schedule: July 2012 – June 2014

YEAR	MONTH	CLINICAL ROTATION	PROJECT	PROJECT MENTOR
2012	July	Orientation (CT & Accelerators)	Orientation	Gibbons
	August	Dosimetry	ISRT commissioning	Fontenot
	September	BR Clinic, IMRT	CT / PET acceptance and commissioning	Dugas
	October	BR Initial Checks	MU Check commissioning	Moldovan
	November	Tomotherapy, BR LDR	Dosimetric Systems	Dugas
	December	BR HDR Planning	Gantry-Static IMRT; Commissioning & QA	Gibbons
2013	January	SRS = Novalis + BR Initials	Daily / IMRT QA Device Commissioning	Perrin
	February	LDR = Seed implants + Tomo + BR Closeouts	LDR Program & TPS Commissioning	Chu
	March	HDR = HDR + BR Clinic + BR IMRT	HDR Program & TPS Commissioning	Guidry

Resident Training MBPCC Training & Responsibilities

- At MBPCC, residents credentialed after 1st year
 - Must demonstrate competency in areas of credentialing
 - Credentialed for duties of non-ABR physicist
- Two purposes:
 - More cost effective as resident is assigned ½ clinical rotation FTE
 - Resident becomes comfortable with independent work



Flex Maps Oral Exam



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Resident Evaluation Oral Exam Evaluation Form

Assessment Scale

- 5 – Excellent: Knowledge of examination material is exceptional in all areas on a consistent basis; examination performance is considered superior.
- 4 – Above Expectations: Examination results exceed expectations; performance is of consistent high quality.
- 3 – Meets Expectations: Competent level of performance that consistently meets high standards.
- 2 – Needs Improvement: Performance, results, and/or consistency is below standards in certain areas. Improvement is needed.
- 1 – Unsatisfactory: Performance, results, and/or consistency is below standard in most/all areas. Immediate improvement is required that results in “Meets Expectation” rating within 60 days.

Topic: *IMRT QA/TLDs*

Mentor: *Diago*

Score: *5*

Comments:

in vivo. Should know how curve p fading. Should know gamma equation & paper by Dan Low. Should know EDR2 preferred for IMRT QA. Should know relative speeds of TL, XV, EDR2 & typical doses to get OD=1

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CENTER**

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Resident Evaluation Oral Exams – Summary Report RESIDENCY ORAL EXAM EVALUATION NOVEMBER 28, 2012

IMRT QA/TLDs (Score*: 4.6):

1. Should know the shape of the glow curve before fading.
2. Should know the Gamma equation and paper by Dan Low (Med. Phys. 25(5), 656-661 (1998)).
3. Review dose difference and DTA concepts.
4. Should know that EDR is preferred over XV for IMRT QA.
5. Should know relative speeds of TL, XV and EDR2 film, along with approximate doses necessary to get OD=1 and where films saturate.
6. Very good knowledge of TLD theory and use demonstrated.
7. Understood very well IMRT QA – Calibration check and Setup check.
8. Good answer for clinical judgment if you have trouble with IMRT QA comparisons.

CT/PET Simulator Commissioning (Score: 4.4):

1. Should know typical doses from CT.
2. Should know why p is used for density conversion over ρ_c , and why.
3. Should be familiar with TG111 protocol (non-CTDI formalism for CT dose measurement)
4. Review CT # to density graph.
5. Seemed to understand well the tests for acceptance.
6. Great job explaining CTDI measurements.

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Conclusions

- A hub-and-spoke model residency program has been successfully established with MBPCC and three affiliate sites in Louisiana and Mississippi.
- The hub and spoke model offers more opportunities for resident training, with more residents, faculty and procedures than available at a single site.
- Resident performance is tracked by their written reports and their performance on periodical oral exams, such as.