The advent of formalizing training of Medical Physicists came to fruition in the mid-1990s. Necessary to ensure properly trained physicists entering the profession, with training beyond graduate and/or post-doctoral training. The AAPM published an initial training elements guide, which was recently updated. (Report 90, and ongoing Work Group on Periodic Review of Medical Physics Residency Training)
In light of the recent New York Times articles and subsequent Congressional Hearings, it is clear that well-trained physicists are vital to Radiotherapy.

Physicians were recently encouraged to hire only well-trained physicists, as evidenced by graduation from an accredited residency program. (ASTRONews Spring 2011)

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**NYT Series Included Medical Physicist Fraud**

**THE RADIATION BOOM**

*They Check the Medical Equipment, but Who Is Checking Up on Them*

By WALT BOGDANICH and KRISTINA REBELO

Published: January 26, 2010

*In the eyes of those who hired him, Norman Fenton was a model medical physicist — diligently protecting patients from the hazards of too much medical radiation or too little.*

*Patients Deserve the Best Trained Physicists = Residents*

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**ABR Oral Pass Rates**

- Typical pass rate is 60% Pass Rate
- ABR just starting to track Residents vs. others
- Pass Rates for Residents (~20% of takers) ranges from 85 to 100%
- Therefore non-Resident Graduates pass at ~50%
ABR Oral Pass Rates

• With resident pass rates very high, we can raise the bar for the exam.
• A good thing for our profession!

CAMPEP Accredited Residency Programs

Recent CAMPEP Numbers

<table>
<thead>
<tr>
<th></th>
<th>Therapy</th>
<th>Imaging</th>
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<tbody>
<tr>
<td>Accredited Programs</td>
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<td>Programs in CAMPEP vote</td>
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<tr>
<td>Projected by 2014</td>
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<td>14</td>
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<tr>
<td>Projected yearly graduates</td>
<td>135</td>
<td>20</td>
</tr>
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</table>
Assumptions - Positive Demand

- One half of all new cancer patients are treated with radiation therapy (ACS)
- The median number of new cancer patients managed by a FTE Radiation Oncology Physicists was measured as:
  - 424 in 1995
  - 325 in 2002, and
  - 304 in 2007
- A working ROP is assumed to spend ¾ time on clinical service. Therefore the ratio of working ROPs to Clinical FTEs is 1.33333 (Abt)

Projected Demand/Supply

- Currently ~100 Graduating Residents per Year
- Projected to 150 by 2014
- Currently ~250 Graduating Medical Physics Students
- Most Programs have not/will not Reduce
- Of the 250, 175 are MS Students

Simple Data (AAPM Salary Survey)

- 332 respondents began full-time employment during 2007.
Simple Data (AAPM Salary Survey)

- 332 respondents began full-time employment during 2007.
- 117 respondents began full-time employment during 2008.
- 96 respondents began full-time employment during 2010.
- 176 respondents began full-time employment during 2011, many resident graduates.
Advertisement c2000

POSITION: Faculty Radiation Oncology Physicists

LOCATION: Division of Physics
Department of Radiation Oncology
Washington University School of Medicine
Barnes Jewish Hospital
Mallinckrodt Institute of Radiology
St. Louis, Missouri

We are seeking applications for clinically-oriented radiation oncology physicists. The position requires an M.S. or Ph.D. with a minimum of three years of clinical experience. The candidate should have Board certification in radiation oncology physics or be in the certification process.

Responsibilities include …………………

What does it mean?

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  - Junior Physicist with no brachy or shielding experience
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Advertisement c2014

POSITION: Faculty Radiation Oncology Physicists
LOCATION: Division of Physics
Department of Radiation Oncology
Washington University School of Medicine
Siteman Cancer Center
Barnes-Jewish Hospital
St. Louis, Missouri

We are seeking applications from Graduating Physics Residents.
Responsibilities include ............
How do Residencies Affect Salaries?

In 2004, I received a “Head Hunter” cold call looking for Junior Physicists to fill some roles in the SE.
When I told him we had 2 graduating Physics Residents,
The reply: “Forget it, they will never pay Resident salaries”.

This and similar anecdotes spell indicates, the bar is being raised for entry level physicists – Residents.
This has to translate into higher salaries.
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Funding Options

Don’t Pay Them
Pay Two for the Price of One
Trade in Physics Position for Two Residents
Negotiate for a Hospital Residency Slot
Use Grants to Fund Research + 2 years of Residency
Use T-32 Training Grant
Increase Clinical Contract to Include Resident(s)
Establish CMS Funding via Paramedical Education
Establish CMS Funding via GME Route
CMS Funding

• An assured way to obtain funding is to obtain proper ACGME classification to allow for CMS reimbursement.
• Fortunately, the ASTRO Board recognizes this need and issued an important statement to SCAROP, supporting CMS reimbursement and asked Department Chairs to “lobby for sustained funding for physics residency programs within their institution.”

Funding Options: CMS Funding via GME Route:

In negotiating recognition by CMS, they were pleased to see the 2014 path.

Good News: Very positive in terms of recognition and funding.
Bad News: They don’t want to Fund before then (2013).

WE CANNOT CONSIDER POSTPHONING THE 2014 CHANGE
Is Medical Physics Coursework so necessary for a Physics Resident?

- A Berkeley doctoral graduate in Physics, who was published and referenced as best student ever, applied to our program in 2007.
  - No Medical Physics Coursework
  - Received in-house coursework on Radiotherapy Physics and Radiation Biology
  - Has since passed the Boards
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- Taken over Treatment Planning Coordination
- Received Commercial Grant

Does a Physicist have to be Board Certified to Perform Clinically Translatable Research?

- A Nuclear Chemistry Graduate performed a Post-Doctoral Fellowship in Radiotherapy
Does a Physicist have to be Board Certified to Perform Clinically Translatable Research?

- A Nuclear Chemistry Graduate performed a Post-Doctoral Fellowship in Radiotherapy
- WU Physics Residency
- Associate Professor @ UoFlorida including Board Certification
- Inventor, Founder, Member of Board of Directors, Secretary, & Chief Scientific Officer, ViewRay Incorporated.