

# The Changing Face Of The Medical Dosimetrist: How This Will Affect Your Department

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# Traveling through the World Of Medical Dosimetry

- Medical Physicist performed calculations/planning
- Physicist became too busy, started training Radiation Therapist to plan
- On the Job Training
- Certification Exam Developed
- Formal Education

# Qualified Dosimetrist

A Qualified Medical Dosimetrist is an individual who is competent to practice under the supervision of a qualified physician and qualified medical physicist. This individual uses critical thinking and problem solving skills as well as exercises discretion and judgment in the performance of medical dosimetry procedures.

It is expected that an individual will hold him/herself qualified to practice in medical dosimetry only when the knowledge and skills to perform dosimetric tasks has been established. An individual shall be considered eligible to practice if he/she is ***certified by the Medical Dosimetrist Certification Board***. The MDCB will require a Baccalaureate Degree to sit for their exam by the year 2017 and the AAMD fully supports that educational level for new candidates.

# The Present Medical Dosimetrist

- Many started out as Radiation Therapist and received “On the Job Training”
- Some have attended Medical Dosimetry Programs
- May not have college degree, just certificates
- Not as technologically advanced
  - Computer Programming
  - Spreadsheets

# The Future Medical Dosimetrist

- Graduates of an Accredited Dosimetry Program (JRCERT)
- Either hold a Masters or Bachelors Degree
- Will probably not have a background in Radiation Therapy
- Science Majors
- Excellent Computer Skills

# Board Certification Requirements

- Currently no Federal Law Requiring Medical Dosimetrist to be Board Certified
- Currently no Individual State Licensure Exist
  - The State of Massachusetts is introducing legislature right now.
    - <https://malegislature.gov/Bills/189/Senate/SI135>
  - All other specialties in Radiation Oncology require board certification.

# Certification Exam

- Medical Dosimetry Certification Board (MDCB) was incorporated in 1988
- Exam offered twice year (Late January & August)
- Exam fee \$375
- Application Fee \$200
- 155 Multiple Choice Questions
- Time allotted 3 hours 50 minutes

# MDCB Certification Exam Eligibility Routes

- 2015-2016
  - Route 1
    - Hold a Bachelors Degree and graduate of an JRCERT accredited program
  - Route 2
    - Minimum of a Bachelors Degree in Science or Applied Science Degree, 36 months clinical dosimetry experience, and 24 MDCB approved CE credits

# MDCB Certification Exam Eligibility Beginning in 2017

- **All** applicants for examination will be required to have a Bachelors Degree and have graduated from a formal dosimetry program accredited by JRCERT
- International candidates will be required to hold a Bachelor Degree or foreign equivalency and completed 1,000 clinical hours in treatment planning.

# Why All the Changes?

- MDCB Mission Statement
  - The mission of the Medical Dosimetrist Certification Board is to steer the advancement of the Medical Dosimetry profession by establishing certification and continuing education standards to enhance quality patient care.
- MDCB Vision Statement
  - ***Certification Making a Difference (CMD)***

# Will the Changes Make a Difference?

- **YES!**
  - Qualified Individuals Creating Treatment Plans
  - Highly Educated Individuals
    - Better Qualified to Participate in Clinical Research
    - Better Math and Science Skills
    - Higher Critical Thinking Skills
  - Patient Safety
  - Accreditation Requirements
  - Advanced Technology=Advanced Education

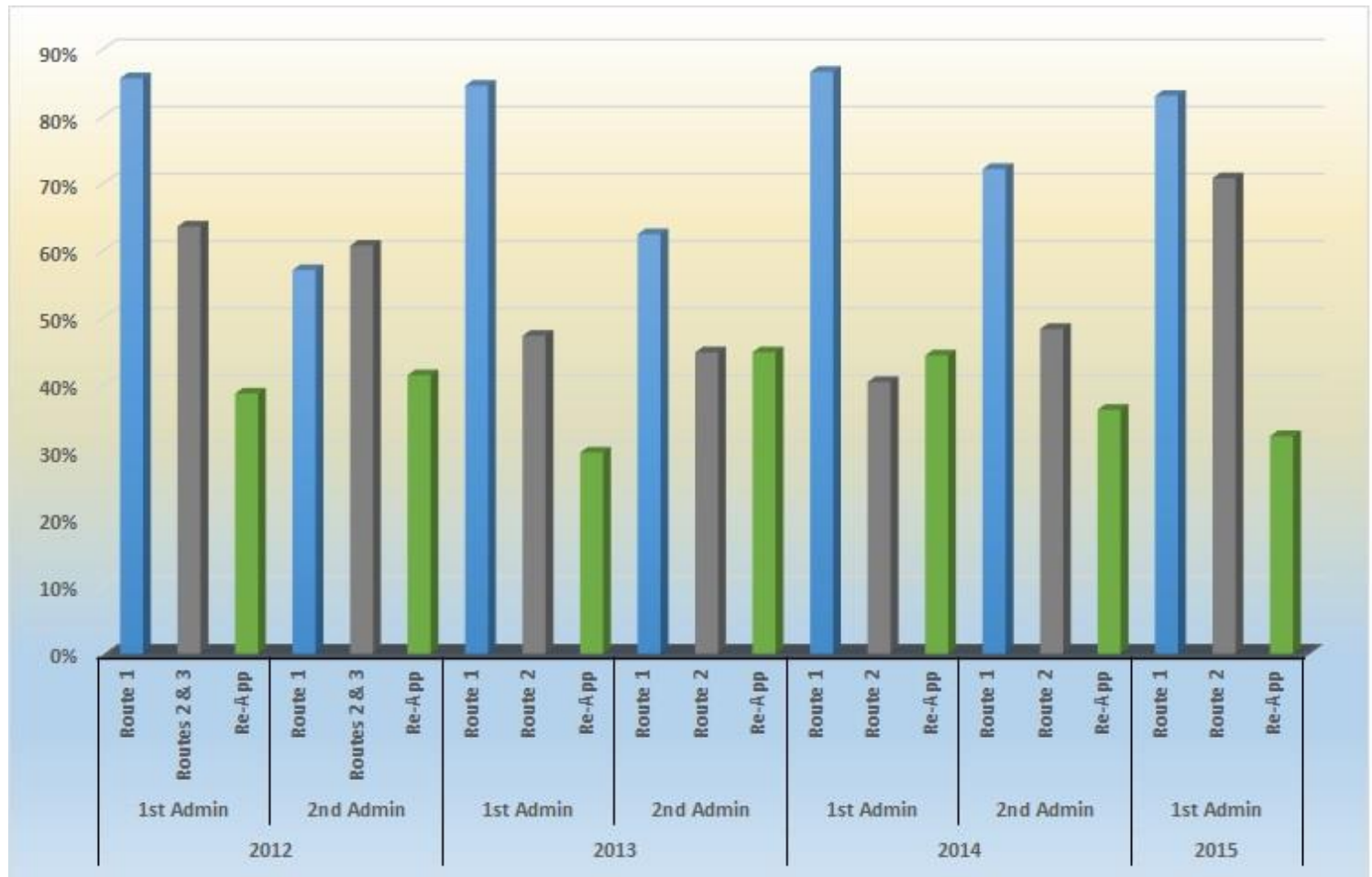
# Positive Changes Already!

- **MDCB Certification Exam Results**
  - Scaled raw cut score for passing is 600 of a total possible 800

<b>Year</b>	<b>Number of Candidates</b>	<b>Percent Pass</b>
2/2015	132	67%
8/2014	167	48%
1/2014	154	59%
8/2013	142	48%
1/2013	134	59%
8/2012	219	56%
3/2012	185	66%
2011	350	52%
2010	346	49%

MDCB-2015

# Medical Dosimetrist Program Graduates Perform Better on Exam



MDCB-2015

# Dosimetry Education Guidelines

- Medical Dosimetry Educational Program Curriculum Guidelines
  - Published in 2012 by the AAMD
  - Contributors consisted of Medical Dosimetrist, Medical Physicist, and Program Directors of JRCERT Accredited Medical Dosimetry Programs
  - This Free Document can be accessed at:  
[http://www.medicaldosimetry.org/publications/curriculum\\_guide.cfm](http://www.medicaldosimetry.org/publications/curriculum_guide.cfm)

# Didactic Areas of Study that Coincide with the More Advanced Technologies

- Cross Sectional Anatomy CT/MRI/PET
- Imaging for Radiation Oncology
- Acquisition of Patient Data and Treatment Preparation
- Computers and Computer Networking
- Dose Measurement-External Beam
- Image Guided Radiation Therapy (IGRT)
- Respiratory Motion Management
- Stereotactic Radiotherapy (SRT)/Stereotactic Radiosurgery (SRS)

# Joint Review Committee on Education in Radiologic Technology

- The Joint Review Committee on Education in Radiologic Technology (JRCERT) **Standards for an Accredited Educational Program in Medical Dosimetry** are designed to promote academic excellence, patient safety, and quality healthcare. The **STANDARDS** require a program to articulate its purposes; to demonstrate that it has adequate human, physical, and financial resources effectively organized for the accomplishment of its purposes; to document its effectiveness in accomplishing these purposes; and to provide assurance that it can continue to meet accreditation standards.
- The JRCERT accreditation process offers a means of providing assurance to the public that a program meets specific quality standards. The process helps to maintain program quality and stimulates program improvement through program assessment.

# JRCERT Dosimetry Standards

- Integrity
  - High Ethical Standards, equitable learning
- Resources
  - Provides resources for effective educational process
- Curriculum and Academic Practices
  - Prepare students for professional practice
- Health and Safety
  - Promote health and safety, optimal use of radiation for students and public
- Assessment
  - Evaluation of student learning and program effectiveness
- Institutional/Programmatic Data
  - Complies with all JRCERT policies, procedures and standards

# Accredited vs Applicant

- An accredited program is a program that has been found to meet or exceed the Standards for an Accredited Program in Radiologic Technology. Accreditation awards range from 18 months to 8 years. For the specific length of the accreditation award granted, please contact the program directly.
- An applicant program is a program that has applied for initial accreditation and is currently under review based on the Standards for an Accredited Program in Radiologic Technology. An applicant program has not been granted an accreditation status. Initial accreditation awards range from 18 months to three years.

# Medical Dosimetry Programs

- Joint Review Committee on Education in Radiologic Technology (JRCERT)
  - Accredited Programs in Medical Dosimetry
    - 17 Active Programs
      - **7** Require Applicants to have RTT Certification
      - **11** Do not require background in Radiation Therapy
  - Applicant Programs in Medical Dosimetry
    - 3 Programs

# Master Degree Accredited Medical Dosimetry Programs

- **Southern Illinois University Carbondale-  
Carbondale, IL**
  - Program capacity 46 students
  - RTT required
- **University of Oklahoma Health Sciences Center-  
Oklahoma City, OK**
  - Program capacity 11 students
  - RTT, May Accept BS in Physical Science
- **University of Wisconsin-La Crosse-LaCrosse, WI**
  - Program capacity 34 students
  - BS in Science, RTT not required

# Bachelor Degree Accredited Medical Dosimetry Programs

- **University of Texas M.D. Anderson Cancer Center-Houston, TX**
  - Program capacity 40 students
  - RTT not required
- **Bellevue College-Bellevue, WA**
  - Program capacity 10 students
  - RTT required
  - Earn a BAS degree or Already have a BS Degree
- **Thomas Jefferson University-Philadelphia, PA**
  - Program capacity 11 students
  - RTT not required

# Certificate Post-Baccalaureate Accredited Medical Dosimetry Programs

- **Indiana University School of Medicine-Indianapolis, IN**
  - Program capacity 16 students, RTT Required
- **Loma Linda University-Loma Linda, CA**
  - Program Capacity 4 students, RTT or BS in Physics or Math
- **Pitt Community College-Winterville, NC**
  - Program Capacity 5 students, RTT required
- **The Cleveland Clinic Foundation-Cleveland, OH**
  - Program Capacity 7 students, RTT required
- **University of Maryland Medical Center-Baltimore, MD**
  - Program capacity 2 students, RTT with 1 year experience or BS in Physical Science
- **Roswell Park Cancer Institute-Buffalo, NY**
  - Program Capacity 6 students, RTT with BS degree or BS in Science

# Certificate Post-Baccalaureate Accredited Medical Dosimetry Programs-Continued

- **University of North Carolina Hospitals-Chapel Hill, NC**
  - Program capacity 2 students, RTT Required
- **University of Texas Health Science Center at San Antonio-San Antonio, TX**
  - Program Capacity 6 students, RTT not Required
- **SUNY at Stony Brook University-Stony Brook, NY**
  - Program Capacity 10 students, RTT not Required
- **Suffolk University-Boston, MA**
  - Program Capacity 12 students, RTT not Required
- **21<sup>st</sup> Century Oncology, Inc.-Cape Coral, FL**
  - Program Capacity 34 students, RT(T) and RT(R) Required

# Applicant Medical Dosimetry Programs

- **Grand Valley State University-Grand Rapids, MI**
  - Master of Science
- **Radiological Technologies University VT-South Bend, IN**
  - Bachelor of Science
  - Master of Science
- **University of California Irvine-Orange, CA**
  - Certificate (Post-Baccalaureate)

# Programs at a Glance

- Most Programs didactic learning done by distance learning (on-line)
- Programs 12-24 months
- All clinical training done on site
- Tuition ranges from \$3,000-\$32,000
- Most Programs do not take capacity students because they do not have clinical sites for training
- Approximately 102 students graduating this year
  - 58 have an RTT license
  - 44 have no RTT background
  - 47 will Graduate with a Master in Science
  - 24 will Graduate with a Bachelor in Science
  - 31 will receive a Certificate Post-Baccalaureate

# Again, Why is This Important?

*To me there has never been a higher  
source of earthly  
honor or distinction than that  
connected with advances in science.*

*- Isaac Newton*

# Advancement in Radiation Oncology

SRS

SBRT/SART

CBCT

IGRT

VMAT

IMAGE FUSION (PET, MRI, CT)

ADAPTIVE PLANNING

GATING/BREATHING MANAGEMENT

# Technology Advancement and the Medical Dosimetrist

- How do all these technological changes affect the dosimetrist?
- What is the Department's interpretation of the Dosimetrist's role?
- Will the current Dosimetrist staffing model work?
- Is the computer going to replace the dosimetrist?
- More collaboration between Physician, Physicist and Dosimetrist

# What the Dosimetrist is Thinking

- **The technology is exciting!**
  - I will need to keep all my skills current
    - Planning Skills
    - Computer Skills
    - Anatomy Knowledge
    - Physics behind new technology
    - Continuing Education
    - Adequate Training on New Equipment

# Advanced Technology can cause “Stressed Dosimetrist”



# What Frustrates the Dosimetrist

- The technology is exciting, but.....
  - **I do not have enough time to complete plans**
    - Physician not completing contouring
    - Image fusion on many plans
    - Contouring multiple critical organs
    - Calculation times longer for advanced planning
    - Plans much more complicated
    - Completing EMR
    - Billing
    - Protocol Patients

# What is my Dosimetrist Doing?

- **Administrators Concerns**
  - Why are the plans taking so long to complete?
  - Why is my dosimetrist working overtime?
  - Should I hire a Board Certified Dosimetrist or a new Graduate?
  - Why can't the dosimetrist help treat?
  - Can the dosimetrist perform some physics duties?

# Medical Dosimetry has Evolved!



# Treatment Planning Evolution

- Early treatment planning-Calculations
- Wire and Plaster Contours
- Irregular field Calculations/Digitizers
- Single Plan Calculations
- CT Planning-3D Calculations
- Brachytherapy
- IMRT/VMAT
- SRS/SBRT Single Fraction Planning

# Time Intensive Planning

- Loading of Planning Images
- Fusion with other imaging (PET/CT/MRI)
- Contouring More Critical Organs
- Planning more complex-longer calculation times
- Creating/Preparing QA plans for physicist
- Meeting Protocol Constraints-many iterations
- Physician Response Time
- Completion of EMR

# Your Medical Dosimetrist

- **Linear Accelerator Experience**
  - Many have not operated in years
  - May have never operated an accelerator
- **Experienced Dosimetrist vs New Graduate**
  - Solo Dosimetrist should be experienced CMD
  - New Graduates-good training and suitable with supervision of experienced CMD
- **Cross training in Physics procedures**
  - Can perform some Physics Procedures
  - Future: Advanced Medical Dosimetrist

# The Future of Medical Dosimetry

- **Work Force**
- **Legislation**
- **AAMD ROLE**



- # Work Force

April 2012 Medical Dosimetry Workforce Study

AAMD funded a study of the medical dosimetry workforce.

The study was designed to guide future policy initiatives related to education, training, and credentialing of QMDs.

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- **Work Force**

What was learned from this?

**C**larification of Role

**Q**uantification of Value

**P**lan to Meet Demand

**E**ducation Model



- # Work Force

## Summary of Key and Critical Questions

- Is the AAMD primarily about medical dosimetrists or about medical dosimetry?
- How may medical dosimetrists defend their workload, and staffing?
- Under what set of circumstances medical dosimetrists might be trained remotely?
- What about training in other countries?
- What model of medical dosimetry training and practice best serves the interests of the patient?



- # Legislation

How is AAMD involved in Legislation?

1. Grassroots Advocacy: Morford Drulis Associates
2. EXPERTISE
3. Provide reliable information
4. AAMD GR SURVEY



# AAMD ROLE



American Association of  
Medical Dosimetrists



- **AAMD ROLE**

**Champion our profession –  
Promote interest in our Profession**

Encouragement

Education

Awareness

Communication/Networking



- **AAMD ROLE**

**Add Value to our Profession**

**Bureau of Labor Statistics/Standards  
of Classification**



- **AAMD ROLE**

**Highlights from the 2014 – 2015 Year**

**MEMBERSHIP**

**EDUCATIONAL OPPORTUNITIES**

**GOVERNMENT RELATIONS and PUBLIC AFFAIRS**

**OUTREACH and COLLABORATION**

**MEMBER COMMUNICATION**



- **AAMD ROLE**

# **Patient Safety**



- **AAMD ROLE**

Payment updates



# SUMMARY

- ☑ The Evolution of the Medical Dosimetrist
- ☑ Educational Requirements & Changes
- ☑ The Future Dosimetrist
- ☑ Work Force
- ☑ Legislation
- ☑ AAMD Role

**Thank you for attending**

***Enjoy Your Visit!***

