An Instructor's Guide to Improve Dosimetry Clinical Education

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Disclaimer

- The views and opinions expressed are my own and do not represent John Patrick University or Siemens Healthineers.
- Any clinical approaches, workflows, or recommendations discussed should be evaluated within the context of each institution's practice and policies.

Thank you

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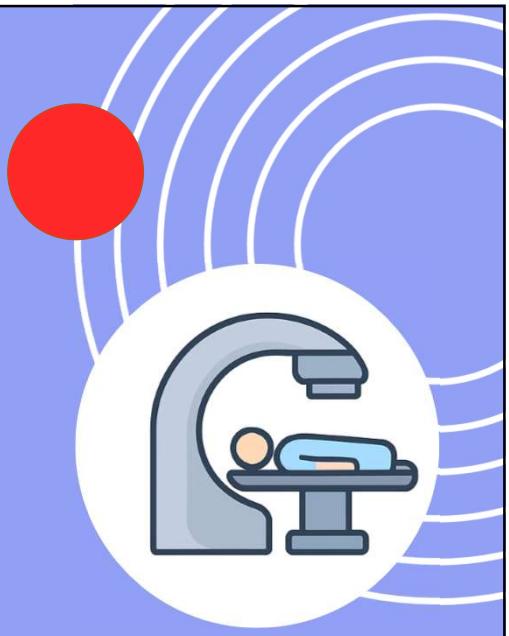
Purpose

Discuss practical ways programs and clinical sites can improve the transition from classroom to clinic.



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Key Learning Objectives

- Interviewing the Experts
- Project/Problem-Based Learning
- Promoting a Critical Thinking Atmosphere
- Communication & Time Management
- Clinical Applications

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Interviewing the Experts:

- **Cara M. Sullivan, BS, CMD, RT(T)-** Clinical Coordinator at Carolinas College/Dosimetry Manager Atrium Health
- **Victoria Olsen, MBA, CMD-** Program Director at Stony Brook University
- **Kristen Vu MS, CMD, RT(T) -** Program Director at Grand Valley State University
- **Bethany Marshall MS, CMD, RT(T) -** Clinical Coordinator at Grand Valley State/President of MDCB Board
- **Jeff Antone, CMD, MHA -** Program Director at Northwell Health

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The Experts: The Top 5 Ways Programs Can Ease the Transition to Clinic

1. **Programs should have an extensive interview process**
2. **Prepare students for clinic**
3. **Maintain communication with sites**
4. **Teach professionalism/life skills**
5. **Standardize expectations**

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The Experts: Key Opportunities for Clinical Development

- Optimization Strategies
- Re-irradiation scenarios
- Adaptive/Replan Cases
- Plan evaluation
- Fusions
- 3D Planning

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The Experts: Turning Struggles Into Superpowers

- Teach planning in layers
- Make critical thinking both visible and audible
- Normalize mistakes as learning tools
- Develop adaptive problem solvers
- Create independent dosimetrists

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Project-Based & Problem-Based Learning (PBL)

Overview:

- Active, inquiry-driven learning through real-world problems and projects
- Student-led and collaborative with instructor guidance
- Emphasizes reflection, feedback, and revision

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Project-Based Learning

Project-Based Learning: Students plan and create a tangible product, process, or proof of concept that solves a real-world challenge.

Example: The student is tasked with the creation of a new prostate rapid plan model to keep planning consistent and efficient

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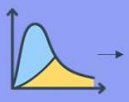
Problem-Based Learning



Problem-Based Learning: Students develop solutions to complex, ill-defined problems through scenarios or case studies.

Example:

A student is given a difficult sinus case with:

- Lens max dose exceeded
- The coverage is not ideal
- Physician is requesting tighter conformality

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Promoting a Critical Thinking Atmosphere

Critical Thinking Outline:

- Want to make the shift from passive to active learning quickly
- Time of self-study
- Time for exploration of individual methods
- Time of presentation

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Encouragement and Teaching Time Management

Time Management Outline:

- Clear understanding of workflows
- Prioritize a schedule but leave room for flexibility
- Avoid multitasking
- Take advantage of downtime
- Teach AI tools for efficiency

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Encouragement and Teaching Communication

Communication Outline:

- Model it clinically
- Teach structured communication
- Encourage presentation of clinical reasoning

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Application in Practice:

Encourage Departmental Rotations:

- Time to understand department workflows
- Attend chart rounds
- Spend time on the machine and CT Simulation
- Attend nursing rounds
- Participate in QA
- Study Billing
- Engage in the entire process

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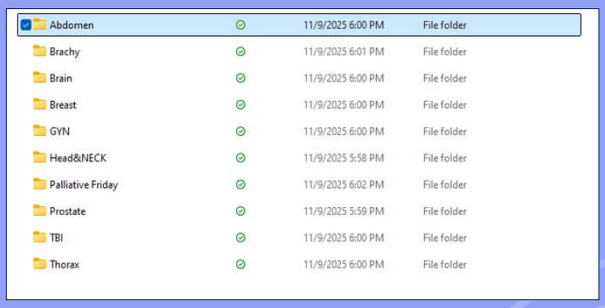
Application in Practice:

Create a Library of Learning Scenarios:



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Brachy	✓	11/9/2025 6:01 PM	File folder
Brain	✓	11/9/2025 6:00 PM	File folder
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GYN	✓	11/9/2025 6:00 PM	File folder
Head&NECK	✓	11/9/2025 5:58 PM	File folder
Palliative Friday	✓	11/9/2025 6:02 PM	File folder
Prostate	✓	11/9/2025 5:59 PM	File folder
TBI	✓	11/9/2025 6:00 PM	File folder
Thorax	✓	11/9/2025 6:00 PM	File folder

HEAD AND NECK CASE #1

LAST NAME: HeadNECK

First Name: Case #1

Task: Create and complete both a fixed field IMRT and VMAT treatment plan for a complex clinical Head and Neck case. Please avoid entry through the shoulders that are not included in the Field of view. Override high density and artifact as needed

RX: HN SIB 70,63, 56 in 35 Fx

Research: Look for prior cases treated to this regimen and research to find appropriate constraints.

Outcome: A full treatment plan including dose distributions, DVHs, clinical goal creation, isodose displays, and rationale.

Learning Focus: Planning workflow, optimization, trade-offs, and justification of dosimetry choices.

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Application in Practice:

Learning Scenario Tips

Dosimetry Treatment Planning	Physics	Physician	Therapy
Mix scheduled scenarios with spontaneous pop-up situations	Physics second check with known dosimetry mistake	Doctor requests a rescan for change in tumor volume	Asks for clarification on a plan
Have activities to explore specific optimization tools	MU calculations	Physician decides to discontinue bolus	Therapy request for a block cutout

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Application in Practice:

Allow Students To Assist you:

- Allow students to do some of the busy jobs
- Eager to help
- Always review work done by a student
- Take pride in Mentorship

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Q&A?

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References

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Thank You

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