

Professional Comportment: Professional is as Professional Does

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PURPOSE OF THE TALK

- George asked me...
 - "to look back on my career and try to answer the question of what attitudes and strategies have made you so successful as a voice of Medical Physics in the world of physicians."
 - "Do you attribute your success to ...
 - ways that you have approached the work,
 - to your choices of whom you have worked with,
 - blind good luck,
 - all of the above? "

The Modern Era: Image-based Conformation Radiation Therapy vs Managed Care

- Technological advances continue to move radiation oncology forward providing improved ability to deliver radiation dose to the target volume and/or concomitantly decreasing the doses to the surrounding normal tissues.



- However, in addition to these advanced technological changes, medicine overall is also part of a new era - Managed Care, in which lowest cost is the driving force rather than improved quality of care.

Back to George's Questions Some Background Information

- The information presented here reflects my opinions formed during my 20s and over 35+ years of experience as a medical physicist.
 - 1961-1964: Spent 3 years in the U.S. Marine Corps
 - 1967: Received B.S. degree (Physics), Lamar University (Beaumont, Texas)
 - 1971: Received Ph.D. degree in Nuclear Physics from the University of Texas
 - 1972: Post-doctoral Fellow in medical physics at M.D. Anderson Cancer Center



Some Background Information

- 1973: Joined Mallinckrodt Institute of Radiology (MIR), Washington University School of Medicine; (spent 31+ years there)
- 2004: Joined the University of California, Davis Dept. of Radiation Oncology as Vice-Chair and Head of Physics, and where I currently work.



Lessons Learned Over 35+ Year Career (#0)

- During my time at the University of Texas, I found a copy of this quotation (attributed to Calvin Coolidge) that I have kept on my office desk throughout my career.



*"Nothing in the world can take the place of persistence.
Talent will not; nothing is more common than the
unsuccessful man with talent.
Genius will not; unrewarded genius is almost a proverb.
Education will not; the world is full of educated derelicts.
Persistence and determination, alone, are omnipotent."*

Calvin Coolidge

Lessons Learned Over 35+ Year Career (#1)

- **Post-doctoral Fellow at M.D. Anderson Cancer Center 1972-73**
 - Looking back, I see how fortunate I was to have trained at M.D. Anderson during a period where I could learn from individuals such as Drs. Robert Shalek and Gilbert Fletcher.
 - They provided strong role models.
 - Most significantly, I learned the importance of the close interaction needed between physicists and physicians in a radiation oncology clinic as I saw how their partnership helped make the M.D. Anderson radiation therapy program one of the strongest in the world.



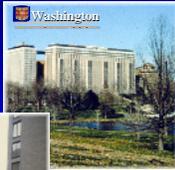
Lessons Learned Over 35+ Year Career (#2)

- **Importance of Strong Mentors:**
 - Already mentioned Dr. Robert Shalek
 - Others (Peter Almond, Walter Grant, Al Smith, N. Suntharalingam, Arnold Feldman)
 - Emphasized the importance of education and training of clinical medical physicists
 - solid didactic classes and "hands on" training
 - Emphasized the importance of board certification
 - ABR 1976
 - ABMP 1990, 2000, 2005
 - Emphasized the importance of continuing education

Lessons Learned Over 35+ Year Career

- I joined the Mallinckrodt Institute of Radiology at Washington University School of Medicine in 1973

- That understanding of the strong alliance needed between physician and physicist, working together as colleagues, has stayed with me through the years and has helped guide my actions throughout my career.



Lessons Learned Over 35+ Year Career (#3)

- Early Period at Mallinckrodt Institute of Radiology

- Involved in important clinical project (acceptance testing and commissioning the first Varian Clinac 35 installed in U.S.)
- Development of 1st generation multimodality linacs depended significantly on feedback from clinical users, e.g., multi-modality linac ATP, commissioning procedures, EB applicators, and QA programs needed to be developed.



Lessons Learned Over 35+ Year Career (#4)

- Early Period at MIR: Fortunate to be at institution where development of planning systems was valued so much

- First dedicated 2D RTP mini-computer system (forerunner of 3D RTP systems) grew out of efforts at Washington University's Biomedical Computer Laboratory (BCL) in 1965.
- Called "Programmed Console" or PC; external beam treatment planning program known as 'Superimposed Beams'.
- 12 PCs were manufactured by Spear, Inc. and were distributed to institutions in U.S. and Canada as a field trial of the first minicomputer RTP system in North America



Lessons Learned Over 35+ Year Career (#5)

- Early Period at MIR: Fortunate to be in a location (St. Louis) where commercial development of planning systems thrived

- Artronix Corporation, a St. Louis-based manufacturing company began producing a RTP system (PC-12) based on the Programmed Console and BCL software.
- CMS, Inc later formed and developed Modulex treatment planning system



Lessons Learned Over 35+ Year Career (#6)

• Early Period at MIR: Be ready for opportunity (NCI Treatment Planning Research Contracts)

- "Evaluation of Treatment Planning for Photon Beam Radiotherapy" 1984-88

Radiotherapy" 1984-88

- . Univ. of Pennsylvania School of Medicine
- . Memorial Sloan-Kettering Cancer Center
- . Massachusetts General Hospital
- . Washington University St. Louis

- "Evaluation of High Energy Electron Beam Treatment Planning" 1986-89

- . University of Michigan
- . M. D. Anderson - University of Texas
- . Washington University St. Louis

- "Radiotherapy Treatment Planning Tools" 1989-94

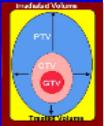
- . University of North Carolina
- . University of Washington Seattle
- . Washington University St. Louis



Lessons Learned Over 35+ Year Career (#7)

• Importance of being involved with international efforts that contributed to advancing our field (e.g., ICRU Report 50 introduced GTV, CTV, PTV).

- One of the most rewarding experiences I have had in my career and one of the truly important factors that has contributed to the success of the current 3D image-based planning process is the standardization of nomenclature and methodology for defining the volume of known tumor, suspected microscopic spread, and marginal volumes necessary to account for setup variations and organ and patient motion as published in the ICRU Reports 50 and 62.



Lessons Learned Over 35+ Year Career (#8)

• Learned a lot about managing change in clinical practice (e.g., transitioning from 2DRT to 3DCRT)

- Partnered with strong clinician advocate (Dr. Emami)

- Established weekly 3D treatment planning conference (was critical to success of MIR 3DCRT program).

- . Established consistency in target volume and critical structure specifications

- . Established consistency in prescription (target doses, critical organ tolerances)



Lessons Learned Over 35+ Year Career (#9)

• Early on recognized the importance of quality assurance and got involved with national efforts

- American Society of Therapeutic Radiologists, Scientific Exhibit Silver Plaque Award, 1978: "Linear Accelerator QA Program"
- Member, AAPM RTC TG 24 (Rpt. 13: Physical Aspects of Quality Assurance in Radiation Therapy), 1982 to 1984
- Member, AAPM RTC TG 25 (Electron Beam Dosimetry), 1984 to 1990
- Chairman, AAPM RTC TG 35 (Accelerator Safety), 1987 to 1991
- Member, AAPM RTC TG 40 (Comprehensive QA), 1988 to 1994
- Member, AAPM RTC TG 45 (AAPM Code of Practice for Radiotherapy Accelerators), 1989 to 1994

Lessons Learned Over 35+ Year Career (#10)

- **Early on recognized the importance of clinical trials and got involved with national efforts**

- Member, RTOG Medical Physics Committee, 1977 to present
- Chairman, RTOG Medical Physics Committee, 1987 to 1990
- Co-Chairman, RTOG Image-Guided Therapy Committee, 1991 to present



- Principal Investigator, NIH sponsored U24 grant "Advanced Technology QA Consortium (ATC)"



Lessons Learned Over 35+ Year Career (#11)

- **Early on recognized the importance of joining and supporting our field's Professional Societies**

- AAPM (member since 1973)
- ASTRO (member since 1973)
- ACR (member since 1976)
- ACMP (member since 1984)

Lessons Learned Over 35+ Year Career (#12)

- **I recruited well and did not micro-manage.**

- I have been extremely fortunate to have worked with great physicists, physicians, and biologists over the course of my career, several worked with me for over 20+ years.

Now Let Us Recall George's Questions

- Do you attribute your success to:
 - ways that you have approached the work?
 - your choices of whom you have worked with?
 - blind good luck?
 - all of the above?

Summary
Lessons Learned Over 35+ Year Career

0. Persistence
1. Learned importance of the close interaction needed between physicists and physicians in a radiation oncology clinic
2. Learned importance of Strong Mentors (training, certification, continuing education,...)
3. Fortunate to be involved in important project (Clinac 35).
4. Fortunate to be at an institution (Washington Univ.) where development of TPSs had its roots
5. Fortunate to be in a location (St. Louis) where commercial development of TPSs thrived

Summary
Lessons Learned Over 35+ Year Career

6. Be ready for opportunity
7. Importance of being involved with international efforts that contributed to advancing our field (e.g., ICRU Report 50 GTV, CTV, PTV).
8. Learned about managing change
9. Recognized the importance of QA and got involved with national efforts
10. Recognized importance of clinical trials and got involved with RTOG
11. Recognized importance of joining and supporting Professional Societies (AAPM, ASTRO, ACR, ACMP)
12. Recruited well and did not micro-manage.

Summary - Lessons Learned

- M.D. Anderson Cancer Center (a great institution to start a career in radiation oncology)
- Washington University (a great university that gave me the opportunity to grow)
- Interacted with individuals who worked hard and treated each other with a great deal of respect
- Persistence (Calvin Coolidge)

"Nothing in the world can take the place of persistence.

Talent will not; nothing is more common than the unsuccessful man with talent.

Genius will not; unrewarded genius is almost a proverb.

Education will not; the world is full of educated derelicts.

Persistence and determination, alone, are omnipotent."

Acknowledgements

- I want to acknowledge the strong support I received from my physician colleagues in St. Louis, particularly Dr. Carlos Perez, Chairman of the Mallinckrodt Institute's Radiation Oncology Center for 28+ years and Dr. Bill Powers, Chairman when I first started at Mallinckrodt. Carlos was not only a strong leader but also a very good friend and I thank him for his support and encouragement.
- Also, I have been very fortunate to have worked with so many outstanding physicists and physicians as members of the Mallinckrodt radiation oncology team and now the UCD team. I will not be able to acknowledge them by name, but many are at this meeting and I thank each of you.



Acknowledgements

And finally, I want to acknowledge the support given to me by a very special person in my life, my wife Marilyn. Through the years, she has always been there for me, totally giving of her time and support. She has accompanied me on many long trips and has shared with me many, many hours spent on issues associated with radiation oncology physics.



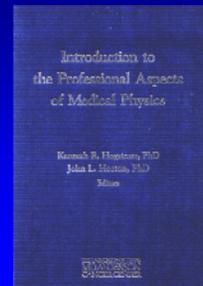
I clearly know that my career would not be the same were it not for the love and understanding (and good advice) given to me by this very special woman.

THANK YOU FOR YOUR ATTENTION

RECOMMENDED READING

Introduction to the Professional Aspects of Medical Physics

- Professional Organizations
- Professional Credentials
- Job opportunities
- Professional Job Skills
- Financial Issues
- Technical References



The Roles, Responsibilities and Status of the Clinical Medical Physicist

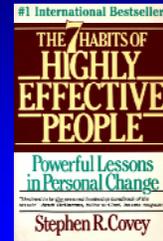
- 1985 Presidential Ad Hoc Committee appointed by J.A. Purdy: E.C. McCullough (chair), B.E. Bjarngard, J.A. Deye)

- Definition of a Clinical Medical Physicist
- Education and Training
- Responsibilities of the Clinical Medical Physicist
- Status and Organization of the Clinical Medical Physics Service



The 7 Habits of Highly Effective People Stephen R. Covey (1989)

1. Be Proactive
2. Begin with the End in Mind
3. Put First Things First
4. Think Win/Win
5. Seek First to Understand, Then to be Understood
6. Synergize
7. Sharpen the Saw



Who Moved My Cheese Spencer Johnson, M.D. (1998)

1. Four Characters
2. Finding Cheese
3. No Cheese!
4. The Mice: Sniff & Scurry
5. The Littlepeople: Hem & Haw
6. Meanwhile, Back In The Maze
7. Getting Beyond Fear
8. Enjoying The Adventure
9. Moving With The Cheese
10. The Handwriting On The Wall
11. Tasting New Cheese
12. Enjoying Change!

