Medical Physics 102: Effective Clinical Leadership

Mid-Atlantic Chapter
American Association of Physicists in Medicine

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Good Physics Joke?

- Rene Descartes is sitting at a bar. The bartender asks him: “Would you like another drink?” Descartes replies: “I don’t think ...” and poof he disappears!
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**MOTIVATION**

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Effective Clinical Leadership - Motivation

Quotes from Medical Physics Scope of Practice

- “This document summarizes the tasks for which medical physicists are uniquely qualified.”
- “The essential responsibility of the Qualified Medical Physicist's clinical practice is to assure the safe and effective delivery of radiation to achieve a diagnostic or therapeutic result as prescribed in patient care.”

(AAPM Policy No. PP 17-B)
Effective Clinical Leadership - Motivation

- How are we “uniquely qualified”?
  - Traits: rational, inquisitive, meticulous, creative
  - Education: science, mathematics, engineering

- “Upon successful completion ... you at least have proven that you are intelligent above average and that you have showed perseverance.”

  TU Delft, The Netherlands
Effective Clinical Leadership - Motivation

- **What other skills might we need?**
- **Quotes from Medical Physics Scope of Practice (continued)**
  - “The responsibilities of the medical physicist include: ... assistance to other health care professionals ...”
  - “The medical physicist is an essential member of the patient care team that includes Physicians, Nurses, ..., Engineers and QA personnel.”
- We need organizational, managerial, and communication skills - **leadership**
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ACHIEVING A BALANCE BETWEEN PHYSICS AND MANAGEMENT

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The Big (Clinical) Picture: Our Traditional Role

- How do we effectively manage this:

\[ p \left( \frac{a\sigma v}{\sqrt{n}} \leq \frac{R-R_n}{R_n} \leq \frac{b\sigma n}{\sqrt{n}} \leq \frac{R-R_n}{R_n} \right) \]

\[ = p \left( \frac{a\sigma v}{\sqrt{n}} + \frac{R-R_n}{R_n} \leq \frac{R-R_{\text{given}}}{R_{\text{given}}} \leq \frac{b\sigma n}{\sqrt{n}} + \frac{R-R_n}{R_n} \right) \]

\[ = PD \leq \frac{b\sigma n}{\sqrt{n}} + \frac{R-R_{\text{given}}}{R_{\text{given}}} \leq \frac{b\sigma n}{\sqrt{n}} + \frac{R-R_n}{R_n} \]

\[ = \int_a^b \frac{\Gamma(n/2)}{\sqrt{\pi(n-1)\Gamma((n-1)/2)}} \left( 1 + \frac{t^2}{n-1} \right)^{-n/2} dt \]

- Calculations
- Physics
- Brachytherapy
- Measurements
- External Beam
- Research
The Big (Clinical) Picture: Our Expanded Role

- **And this:**

- Team Collaboration
- Planning Oversight
- Compliance
- Teaching

- Regulatory
- The Patient!
- Organization
Our “Balancing Act”

The Detailed Picture
- Accuracy and precision
  - Both measurements and calculations
- Physics and Technology Quality Assurance (QA)
- Regulations
- The qualifications of individual team members
- Education

The Bigger Picture
- Effort versus value
  - What is best, versus what is acceptable
- Continued Quality Improvement (CQI)
- Standards of Practice
- The collective ability of the team
- Training
The Balancing Act: Master also “Softer” Skills

- Hard Sciences
  - Physics
  - Engineering
  - Mathematics
  - Technology
  - Information Systems
  - Analytics

- “Softer” Skills
  - Management
  - Organization
  - Interpersonal relations
  - Teamwork
  - Communication
  - Leadership
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THE MEDICAL PHYSICIST AS A CLINICAL LEADER

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The Medical Physicist as a Clinical Leader

- Identify what’s important
  - Attention to **detail**
    - In the context of the bigger picture
  - Prioritization
    - Make sure the Physics is correct before moving on
    - **Take care of 20% before 2%**
- Organize
  - It’s what we’re good at
  - It’s what needed

- Never forget about “values”
  - Identify them, talk about them, and live by them
    - **Code of Ethics**
    - **Quality / Safety**
- It’s all about “Team”
  - It really is ...
- Don’t be afraid to lead
  - Pilot, M.D.
  - **Navigator, Ph.D.**
The Medical Physicist as a Clinical Leader: Example

- An existing shortcoming in our profession: *How do we actively participate in patient treatment planning and delivery?*
  - Treatment plans are produced by dosimetrists
  - Physicists simply perform “initial chart checks”
  - At this point, physics’ input is limited

- One way of influencing treatment planning and delivery: development of Practice Guidelines
  - In conjunction with physicians, dosimetrists, and therapists
  - Site-specific
  - Address simulation, imaging, target definition, margins, planning, dose constraints, image guidance, etc.
The Medical Physicist as a Clinical Leader: Overview

- Leadership Tools
  - Leadership
    - Leadership principles and “rules”
  - Organizational and personal effectiveness
    - Personal effectiveness tools
    - Project management
  - Effective Communication

*Alexander the Great*
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LEADERSHIP PRINCIPLES
The Need for Leadership

- In best organizations, everyone is encouraged to act as a leader.
- Leaders act in ways to develop and grow people’s potential:
  - They condense issues, they communicate, they facilitate, they enable, they encourage.
  - This is what we should do!
- Leadership is not about who they are, but about what they do.
- Meeting the leadership challenge is a personal challenge:
  - If we have the will and the way to lead ... we will lead.
  - This is about developing the way ...
Leadership Development

- How do we develop leadership ...?
  - We equip our leaders with the proper tools, and
  - We teach and learn from each other

"Leaders aren’t born, they are made. And they are made just like anything else, through hard work. That’s the price we have to pay to achieve that goal or any goal.”
- Vince Lombardi

"Leadership and learning are indispensable to each other.
— John F. Kennedy

"There are two kinds of people, those who do the work and those who take the credit. Try to be in the first group; there is less competition there.”
- Indira Gandhi
Leadership Development

- The Leadership Challenge: How to Make Extraordinary Things Happen in Organizations
  - Kouzes and Posner, Leavey School of Business, Santa Clara University
  - Recommended text, UT MD Anderson Faculty Development

www.leadershipchallenge.com
The 5 Principles of Leadership

- According to the text, there are 5 “principles” of leadership
  - These are:
Principle 1: Model the Way

- Behavior earns respect
  - People first follow people
- Exemplary leaders must be models of the behavior that they expect of others
- “Clarify values by finding your voice”
  - Know your core values and affirm them by aligning your actions with these core values
Model the Way

- **Clarify Values**
  - Find your voice
    - Explore your inner self; discover what you care about
  - Affirm shared values
    - Ensure everyone is “aligned” with those values that we (all) hold

- **Set the Example**
  - Live the shared values
    - Ensure actions (e-mails, meetings, etc.) reflect what’s truly important
  - Seek feedback
  - Teach others to model the values
    - Reinforce through systems and processes
Principle 2: Inspire a Shared Vision

- Envision the future by imagining the possibilities
  - Have a clear vision

- Enlist others in this vision by appealing to their *shared aspirations*; ignite their passion
  - Why is this vision important to both you and them, how does this vision fulfill the common good?
  - Unity of purpose
Inspire and Shared Vision

- Envision the Future
  - Reflect on the past, attend to the present, but look to the future
- Find a common purpose
  - Listen deeply to others
  - What are the common goals

- Enlist Others
  - Appeal to common ideals
    - Align your dream with the people’s dream
  -Animate the vision
    - Think MLK’s “I have a Dream”
    - Create images of the future
    - Communicate positively
Principle 3: Challenge the Process

- Challenge the “status quo”
  - If it works, don’t fix it, but if it doesn’t, change it!
- Listen to what is being said
  - Innovation comes more from listening than from telling
- Create a climate in which good ideas are recognized and supported
  - Experiment; take risks; look outside boundaries for ways to improve
Challenge the Process

- **Search for Opportunities**
  - Take the initiative
    - Make things happen
    - Encourage initiative in others
  - Look outside your own experience
    - How would others do this, what have others done?

- **Experiment and Take Risks**
  - Generate small wins
    - Prepare yourself, break it down, then take one step at a time
  - Learn from experience
    - Create a climate for learning
Principle 4: Enable Others to Act

- **Empower** those around you and build trust
  - Trust that others can and will do their jobs
  - Trust others to build trust in you
- **Involve people in decision-making;** give them a voice
  - Assign responsibilities ... and give credit
- **Foster collaboration** by facilitating relationships
Enable Others to Act

- Foster Collaboration
  - Create a climate of trust
    - Be the first to trust
    - Show concern, share information
  - Facilitate relationships
    - Support face-to-face interactions
    - Develop cooperative goals, promote joint effort

- Strengthen Others
  - Enhance Self-determination
    - Empower others
    - Provide choices, foster accountability
  - Develop competence and confidence
    - Share information, foster self-confidence
  - Coach
Principle 5: Encourage the Heart

- Recognize contributions by **showing appreciation** for individual excellence
  - Recognition is the most powerful currency that we have
- **Create a climate** in which individuals feel truly appreciated
- Build a strong sense of collective identity through celebrations “from the heart”
Encourage the Heart

- **Recognize Contributions**
  - Expect the best
    - Be clear about goals and rules
    - Show them you believe
  - Personalize recognition
    - Get close to people
    - Be creative about incentives

- **Celebrate Values and Victories**
  - Create a spirit of community
    - Celebrate accomplishments ... in public
  - Get personally involved
    - Show you care
The Medical Physicist as Clinical Leader - Example

- Lead the Continued Quality Improvement Effort
  - Motivation’s there
  - Shared vision
  - Challenging the process is “win-win”
  - Opportunity to empower others

- Physician relationship will follow ...
  - Medical Director
  - Quality and Safety is a good introductory topic of discussion
  - Education and training is another

- Some “tips” ...
Leadership Tips: Some Things to Remember

- Colin Powell
  - Retired Army Four-Star General
  - National Security Advisor 1987-1989
  - Chairman Joint Chiefs of Staff 1989-1993
    - During Persian War
  - 65th U.S. Secretary State 2001-2005
  - His views on the use of the military as a foreign policy tool, greatly influenced by the Vietnam War, are described in his book “My American Journey”. 
Colin Powell’s Rules

1. It ain't as bad as you think. It will look better in the morning.
2. Get mad, then get over it.
3. Avoid having your ego so close to your position that when your position falls, your ego goes with it.
4. It can be done!
5. Be careful what you choose.
6. Don't let adverse facts stand in the way of a good decision.
7. You can't make someone else's choices. You shouldn't let someone else make yours.
8. Check small things.
9. Share credit.
11. Have a vision. Be demanding.
12. Don't take counsel of your fears or naysayers.
13. Perpetual optimism is a force multiplier.
But ... back to our ... Balancing Act

Organizational Skills

Medical Physics

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PERSONAL ORGANIZATION AND EFFECTIVENESS

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Personal Organization and Effectiveness

- Getting Things Done
  - The David Allen Company

- Five Organizational Steps
  - Capture - Collect
  - Clarify - Process
  - Organize - Categorize
  - Reflect - Review
  - Engage - Do

http://gettingthingsdone.com/
GTD

- Getting Things Done (GTD)
- Flow of information (stuff)
GTD: Info Flow

- **Capture**
  - Collect information
    - E-mails
    - Meeting action items
    - ‘Hall’ requests

- **Clarify**
  - Actionable or not ...
GTD: Info Flow

- Clarify
- **Actionable** – **No:**
  - File
  - Trash
  - Incubate
    - Someday / Maybe ...
GTD: Info Flow

- Clarify
- **Actionable – Yes:**
  - Can you take care of it quickly?
    - If so ...
    - **DO IT!!**
GTD: Info Flow

- Clarify
- **Actionable – Yes:**
  - Delegation
    - Keep track of who and when
  - Deferral
    - Priority
    - Due date
    - Calendar
GTD: Info Flow

- Actionable – Yes:
  - Complicated ...
  - PROJECT
GTD: Info Flow

- Projects
  - Project Plan
  - **PROJECT MANAGEMENT**
    - More on this later
Getting Things Done: Reality Framework

- Mind Sweep
  - Everything in one place
- To Do Lists
  - Master list, priorities, long term
  - Delegation
- Discuss with ...
  - Meeting agendas, discuss with people
- Projects

https://www.youtube.com/watch?v=8NPzLBSBzPI
Reasonable Tool:
Microsoft Office One Note

Clinical Physics Ops
Saturday, July 20, 2013
8:27 AM

New Business:
- Bolus Rx, plan, etc.
  - Summarize recommendations
- Distribute new ADCT Procedure (in Tech Ops folder)
- Pacemaker Care Path and Documentation
  - Christina and Yildirim
- Dosimetric Equivalence Group
- 2% Couch Attenuation - RapidArc
  - Status?
- Clinical Rotation Changes/Updates
  - Implement "George?"
  - Brachytherapy
    - Rotate MG back IN; SC off
    - MG train ML
    - Rotate ML into Brachy (SIRS - particular interest)

Standing Items:
- Safety Notices
- Project List

Items to Discuss in Physics
- White Machine weekend incident
  - Shut down procedure?
  - Ensure machine can operate in clinical mode before shut down
  - Engineering Support Policy and Procedure (Tony)
- CATPlan for Monthly CT QA
- Reiterate...Process for New Technology Implementation
- FAS Hardware Change
- RapidArc QA
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PROJECT MANAGEMENT

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What is a Project?

- It’s a **temporary** group activity designed to produce a **unique** product, service or result.
  - Project Management Institute Website: (http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx)

What is a Project?

- A project is **temporary**
  - It has a **defined beginning and end** in time, and therefore **defined scope**

- A project is **unique**
  - It is a specific set of operations designed to accomplish a **singular goal**
  - It often includes people who don’t usually work together

From: Jarret Horst, Project Manager, UMMC
Project Management Processes

- Initiation
  - Define the need, identify stakeholders, and clearly delineate deliverables

- Planning
  - Organize project components; create list of tasks, project schedule, and assign responsibilities

- Execution
  - Begin work on assigned tasks, communicate

- Monitoring and Controlling
  - Continually review progress versus objectives

- Closing
Project Management Processes (Groups)

http://staff.lib.uci.edu/departments/it/projects/docs/PrimeronProjectManagement.pdf
Project Management Forces

- The Scope Triangle
  - Competing forces
    - Increased project quality may require more time or resources; less time may result in less project quality
  - “Scope Creep” – accumulation of new project functionality
    - Increased time or resources
Project Management Communication

- The "Mythical Man Month"
  - Adding resources to a project does not necessarily speed it
    - Communication complexity
    - Potential Scope Creep

Nodes may be team members or groups

http://www.nickjenkins.net/prose/projectPrimer.pdf
Project Example: RayStation Implementation

**Initial Project Plan**
- Contract
  - Specifications
- Beam Data
  - Consolidate
- Acceptance
  - Functionality
- Commissioning
  - Clinical implementation
- Training
  - Large physics and dosimetry groups

**What happened?**
- Contract - OK
  - Small empowered group
- Beam Data
  - Became a project itself
- Acceptance - OK
  - Essentially 2-3 people
- Clinical Release
  - Initial goal, but delayed
- Training
  - Overwhelmed project initially
The (Physicist as) Project Manager

The Project Manager

- Identifies project requirements
- Establishes clear objectives
- Directs the project from start to finish
  - Lead teams to ensure cross-functionality, continuity, and cohesiveness
- The Project Manager’s roles include
  - Leader, Administrator, Facilitator, Arbitrator, Mediator, Liaison, Coordinator, Communicator

http://www.usbr.gov/excellence/Finals/FinalIntroPM.pdf
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COMMUNICATION: THE FINAL FRONTIER

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Effective Communication:
The True “Final Frontier”

- In my opinion ...
  - The No. 1 Challenge
    - Even harder for physicists
  - However, extremely important

Space, the final frontier. These are the voyages of the starship Enterprise. Its mission is to explore strange new worlds, to seek out new life and new civilizations, to boldly go where no man has gone before.

cit: Star Trek

I’ve been asked to explain our technical issue in terms you can understand. GOOD.

THE SOFTWARE, IT NO WORKY!!!
“The Great Communicator”

- Why was Reagan “The Great Communicator”?
  - Enormous optimism
    - During 1984 election campaign he talked about the future in space; his opponent talked about the cost
  - He stood for something
  - He used anecdotes
  - He paid attention to his audience’s reaction

Note: This is not about politics; it’s about communication!

Effective Communication: Guides

- **Know about yourself**
  - What effect do you have on others? How do others see you?
  - Keep yourself in check
    - Restrain your ego and emotions; work for the group

- **Know about others**
  - With whom are you communicating; what are the “rules”?
  - Verbal and non-verbal skills
    - Assertiveness vs. diplomacy vs. mediation, etc.

http://iloapp.myblackboard.co.uk/blog/mylesson?ShowFile&doc=1290459329.pdf
Effective Communication: Some Rules

- Observe yourself
  - How have you come across in the past?
- Listen to feedback
  - Feedback (-) can lead to positive change
- Learn from others
  - Who are good communicators
- Watch out for details
  - Communication “ticks”
    - Lots of “maybes”, “agains”
    - Annoying intonation
- Plan ahead
  - What is the goal of the communication?
  - Prepare in advance
Effective Communication: Brevity

- Information Overload
  - Attention span – 8 sec
  - Distraction at 15 min
  - Focus only 6 hrs/wk

- Common mistakes
  - Over explain
  - Under prepare
  - Miss the point completely
Effective Communication: Brevity

- The goal is clear, concise, compelling communication
- Get to the point!
  - Quickly
  - Effectively
- To make a ...
  "Long Story Short"

Keys to Brevity
- Map it
  - Prepare a brief outline
- Tell it
  - Frame it in a narrative
- Show it
  - Visual, pictures
- Talk it
  - Controlled conversations, not monologues
Effective Communication: Brevity

- Map it
  - Outline it
- The “BRIEF” Map:
  - Background
  - Reason (relevance)
  - Information (Key information)
  - Ending (conclusion)
  - Follow-up (Q&A)

- Tell it (like a journalist)
  - Strong headline
  - Compelling first paragraph
    - Personal voice
  - Consistent narrative
    - Logical sequence of events
  - Powerful conclusion
Effective Communication: Brevity

- Show it
  - *A picture is worth a thousand words* ...
    - Google “Images” related to topic
    - Short videos
    - Color code
    - Draw / use whiteboard
    - Insert “icons”

- Talk it
  - Encourage “controlled conversations”

The TALC track:
- **Talk** – let the other person talk
  - Be prepared to respond
- **AL** – active listening
- **Converse**
  - But maintain *one* conversation
Meetings

- How to run a dysfunction-free meeting
  - Set ground rules:
    - Silence = Acceptance
    - Be authors not editors
    - Las Vegas Rule
      - What happens in meeting stays ...
    - Just “spit it out:
      - What you say doesn’t have to be perfect
  - Leave “as a team”
    - Debate but support
  - Stay on time
  - Establish a “parking lot” for topics / ideas that don’t fit within the goal of the meeting
    - Examples: Ideas not fully matured, topics applying to few, etc.

Source: Georgia Public Broadcasting at http://www.gpb.org/blogs/working-and-career/2014/01/28/how-to-run-a-dysfunction-free-meeting
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**SUMMARY**

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The Medical Physicist as Clinical Leader: Summary

- Medical physicists can and should lead
  - It’s a natural role for us
  - It’s in our scope of practice
- To lead effectively, we need to acquire the appropriate skills:
  - 1. Model the Way
  - 2. Inspire a Shared Vision
  - 3. Challenge the Process
  - 4. Enable Others to Act
  - 5. Encourage the Heart
The Medical Physicist as Clinical Leader: Summary

- Prioritize
  - Start with ‘purely Physics’ responsibilities
    - Work from high-impact (10%+) to lesser-impact (2%) issues
  - Note grander scheme of things (the clinical practice)
  - Draw on personal organization skills and tools
The Medical Physicist as Clinical Leader: Summary

- Don’t be afraid to assume a leadership role
  - Begin with quality and safety
    - Areas of importance to all members of the practice
  - Continue with process improvement
    - Systematize, standardize as possible

- Become an effective team member
- Communicate effectively
- and ...
The Medical Physicist as Clinical Leader

- Thank you for your kind attention
- I hope that this was of some value to you all ...