Medical Physicist Leadership in Managing Projects - Large and Small

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Learning Objectives

1. Understand the importance of the medical physicist in the project manager role
2. Understand tools and strategies which can be used in project management
3. Understand project barriers and ways to avoid or overcome them

Preview

- The role of the medical physicist in project management
- Project leadership strategy and tools
- An example case: Quality Management Program for equipment
- Wrap Up

Objective 1: Understand the importance of the medical physicist in the project manager role

- Role of the Medical Physicist

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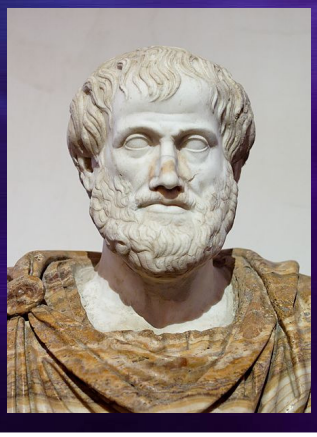
One of the first Medical Physicists said…

- "We are what we repeatedly do. Excellence then, is not an act, but a habit." – Aristotle
  (English trans.)

Greek philosopher, physicist, & physician (384 BC - 322 BC)



Aristotle; Roman copy after a Greek bronze original by Lysippus c. 330 BC.

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AAPM

- "The essential responsibility … to assure the safe and effective delivery of radiation to achieve a diagnostic or therapeutic result as prescribed in patient care…. development and direction of quality assurance programs…"

- AAPM Scope of Practice of Clinical Medical Physics, Professional Policy 17-B

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AAPM

- "The medical physicist works collaboratively with physician colleagues, biomedical engineers, radiologic technologists, radiation therapists, radiation dosimetrists, nurses and others, often providing supervision and oversight of non-physician professionals … The medical physicist's primary professional responsibility is to the patient's safety and welfare."

  -AAPM Position Statement on the Role of Medical Physicists in Providing Quality Medical Care, Professional Policy 22-B, 2008

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Create Trust

1. Credibility
   - Integrity (consistent, intent, agenda)
   - Capability (relevant, results, record)
2. Behavior
   - Communication (transparent, clear, listen),
   - Interaction (commitments, loyalty; private vs public disagreement, accountability)

-*Speed of Trust*, Stephen R. Covey

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A Second Chair Leader

Def: A person in a subordinate role whose influence with others adds value throughout the organization. (not the "lead" leader or 1st Chair)

Other characteristics:

- Core responsibilities
- Special Assignments
- Expected to be an initiator (in line organization and leadership goals)

-Leading from the Second Chair, Bonem/Patterson

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A Second Chair Leader

Requires special Tri-focal leadership lens:

- Relationships – subordinate-leader paradox
  - ability to lead without being at the top of the pyramid
- Work Habits – deep-wide paradox
  - specific role that is narrower and deeper; you also need to have a broad, organization-wide perspective
- Emotions – contentment-ambition paradox
  - mesh individual goals with the broader organizational vision

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Objectives 2 and 3

Understand tools and strategies which can be used in project management

Understand project barriers and ways to avoid or overcome them

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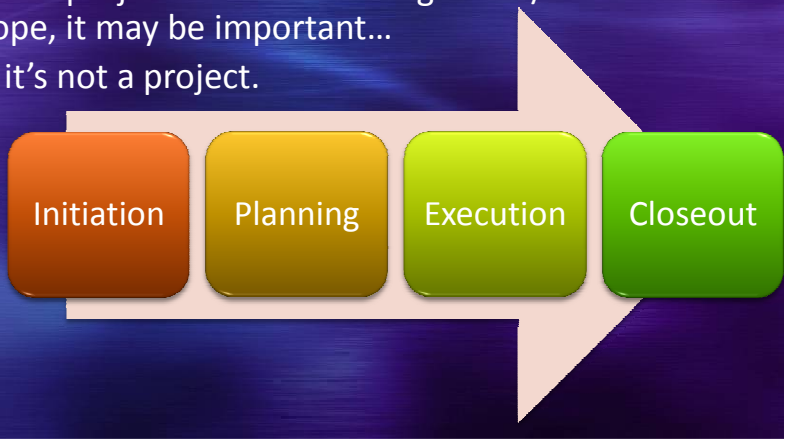
Project Leadership / Management

Project: a temporary endeavor with a specific result or objective.

- If your project has no end in sight and/or no clear scope, it may be important…

…but it's not a project.

Phases:



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Scale, Scope, and Shifters

- Smaller Scale/Scope
  - Commissioning a diode array for IMRT QA
  - Developing a "Time Out" procedure for treatment and treatment planning
- Medium-ish Scale/Scope
  - Writing a comprehensive, formal QM Program
  - Adding a new tx capability (SBRT, SRS)
- Larger Scale/Scope
  - New vault and treatment machine;
  - Site accreditation (depends on preparedness)

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Scale, Scope, and Shifters

- Continuum scale "Shifters"
  - Experience (time, effort, research)
  - Availability
  - Clinic culture (change)

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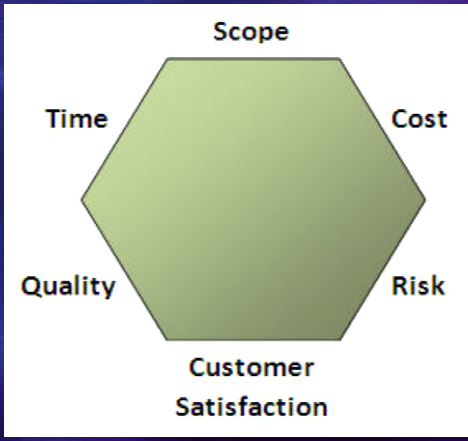
Starting the Project (Initiation)

- Trigger: Either a directive or preparing to present an initiative to the "1st Chair".
- 6 inter-related constraints



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In the initiate phase you define:

- Purpose or driver - Clearly state why
  - Develop a "business case"
- Objectives
  - How will you know when you are done?
- Project constraints (previous slide)
- Scope and deliverables
  - Agreed upon and documented; limited and finite
  - prevent creep

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In the initiate phase you define:

- Stakeholders.
  - Achieve buy-in and support before you start planning. This saves wasted time and headache
  - Ensure your project fits with the key organizational or departmental agenda
  - Involve finance in putting the business case together.
- Roles / responsibilities chart

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Items in your initiation phase:

- Why: purpose/driver
- What: objective
- When/Where: scope/deliverables
- Who: stakeholder, team roles
- Missing….?

How

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Planning (Lay the Foundation)

- Most failed projects don't fail in the end; they fail at conception.
- Set the plans needed to manage:
  - time, team, and cost
  - risks, change, and issues
  - quality
  - everything else that will be done during project execution

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Gathering the team and develop a plan:

- Give some thought to who should be in your team, THEN invite (based on roles needed)
- Hold a team and stakeholder kick off meeting and use the meeting to help develop the project definition statement .
  - It may seem to take longer to construct "in committee" but in the long run this will save time. You now have a foundation, contract and anchor.

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Warner Brothers

- Hint: Plan the whole project

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Include in the project document:

- A list of the activities you will need to undertake to deliver the project.
- Identify and document dependencies (or predecessors) of all activities.
- Estimate how long each activity will take.
  - Be aware that research points out humans *are notoriously bad* at estimating time

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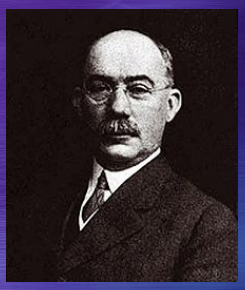
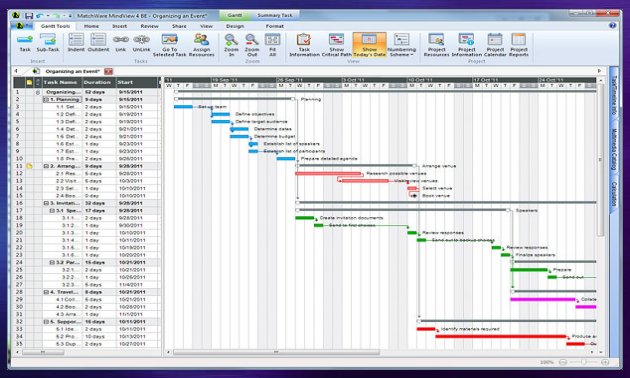
Your new best friend when working on any project

- A mechanical engineer who developed charts as a visual tool to show scheduled and actual progress of projects.



Henry Gantt (1861-1919)



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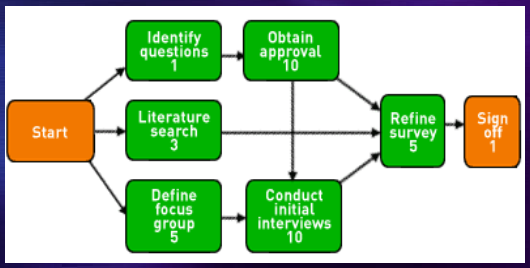
In the project document:

- Identify the critical path for the project.
  - The critical path identifies those activities which must be completed in order to move on; also called milestones.
- There may be several paths to achieve a milestone but you must achieve that milestone to move forward.



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Connect "How" with "Who"

- On your Gantt chart you will monitor progress against the plan
- Identify and document who fulfils which roles and responsibilities in your project
- Agree to a system for project changes – have an agreed system for monitoring and approving changes

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Minimize Risk: Plan for the Unexpected

- Preemptively focus on quality at three levels:
  - The technical level: build in checking and testing throughout the project to reduce errors.
  - The project level: work to prevent error by having clearly outlined activities and sequences.
  - The business level: include customers in testing
- Communications
  - Have a communications plan, and follow it
  - Facilitate the distribution of information so that others can make decisions and make progress

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Minimize Risk: Plan for the Unexpected

- Draw up a method to Monitor and Evaluate:
  - All events that could change the project schedule
  - All scope change requests
  - Review the effects of any change on all areas before making a decision, and then implement a revised plan.
  - If minor, communicate the change with the whole team
  - If major, it may mean revising the project plan from scratch

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Working on the Project (Execution)

- This is where the actual work of the project gets done and should be the longest and most costly phase
- Keep “the driver” in mind
- Monitor and document
  - Review the items on the critical path checking they are on schedule.

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Execution

- Communication
  - Create status reports aimed at the appropriate stakeholder audience
  - Meet as required (no more)
- Use every success and every error as a chance to learn to do a better job

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Meetings 101

- As few attendees as possible
- A clear agenda for every meeting
- An appointed note taker for every meeting
- A clear (and effective) facilitator for every meeting
- Meeting summary notes sent out promptly
- Schedule for shorter rather than longer periods of time
- Always start and end on time

Closeout

- Formally close your project and report the overall level of success to your stakeholders
- Focus your meeting on "lessons learned" – identifying what you can use on the next project
- If applicable hand over the project formally to another group (it is now their day job)
- Celebrate success with your team! Recognize achievement, it is highly motivating

Project Example:

Establishing a Standard Quality Management Program for Radiation Oncology Equipment

Initiate

- Note: I have included several additional references to support a QM program in the bibliography
- Use influence to achieve buy-in.
- Should you be the person who initiates this?

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Initiate

- AAPM Scope of Practice of Clinical Medical Physics, Professional Policy 17-B

  "The essential responsibility … development and direction of quality assurance programs…"

- Define purpose
  - In this case quality, safety and risk are strong factors (as will be the case for most of our projects)

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Initiate

- Define project objectives
  - Completed when the QM Program is defined, documented, training complete, implemented, and institutionalized using an ongoing annual review
  - An independent physicist should be able to understand and duplicate your QM process
- Define scope and deliverables
  - This depends on your site(s) capabilities and equipment
  - Choose a reviewed and respected standard

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Scope

- Quality Management Program for Radiation Oncology equipment
  - ACR and ACRO Accreditation require
  - AAPM and ASTRO recommend
- Definition:
  - Procedures ensuring a consistent and safe fulfillment of the dose prescription through an ongoing evaluation of functional performance characteristics.

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Scope

- Periodic QM tests must be developed for monitoring the baseline performance values
  - new , used, or equipment following major repair
- The protocols for QM testing will recommend:
  - equipment to be used
  - frequency of measurement
  - techniques to be followed
  - suggested performance criteria
  - action levels
  - routes of notification

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Scope

- Plan to review annually
  - The QM program
  - A written summary of activities and results
- Specific QM Program Categories
  - Measurement equipment
  - Calibration and QA of treatment machines and independent verification of output
  - Simulators, imaging/localization equipment, and treatment devices
  - Treatment planning systems
  - Electrical, mechanical, and radiation safety

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Scope

- Define and enlist stakeholders and the team needed to support and carry out the project
  - Physicians, Administration, Clinical Team
- Create a roles / responsibilities chart

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Plan

- When you have your team together present your vision and rationale and open it up to questions.
  - A common question will be “Why now? What has changed?” Be prepared. Do not be defensive but have a discussion around quality, safety, and patient care.
- Remember a realistic but aggressive timeline. Everyone is busy.

Plan

- When developing the plan delegate where appropriate
  - involving the team helps create a positive work environment, easier change adoption, and lays the foundation for future project success (hint start with a small project)
- You will be tempted to think you do not need to document small steps. Err on the side of detail.

Execute

- Create clear documentation of the QM Program
- When you perform activities described in your document follow the instructions exactly
  - If possible have a peer try to follow your instructions and make suggestions for sections that are not clear.
- Meet with the team and review the status report; compare to the projected timeline
  - Accountability
  - Be open to questions and critiques

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Closeout

- Hold a celebration and invite team and stakeholders
- Go over successes and what you have learned
- Look forward to future projects

Sun Tzu's Take-away

Statue of Sun Tzu in Yurihama, Tottori, Japan

- "When the general is weak and without authority; when his orders are not clear and distinct; when there are no fixed duties assigned to officers and men, and the ranks are formed in a slovenly haphazard manner, the result is utter disorganization".

- Sun Tzu, circa. 500 BCE

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Sun Tzu's Take-away

- "When the general is weak and without authority; when his orders are not clear and distinct; when there are no fixed duties assigned to officers and men, and the **ranks are formed in a slovenly haphazard manner**, the result is utter disorganization".
- Authority (perceived and supported by the organization)
- Clear communication and direction
- Specific and assigned roles for the team
- **Accountable reporting of timelines and checkpoints**

Good luck delivering your project!

Bibliography

- Tzu S, *Ancient Art of War*, circa. 500 BCE
- Kemp S, *Entrepreneur Magazine's Ultimate Guide to Project Management: Get It Done Right!*, Entrepreneur Press, 2005
- American Association of Physicists in Medicine, Professional Policy 1-H: *"Definition of a Qualified Medical Physicist,"* revised 2011. www.aapm.org/org/policies.
- American Association of Physicists in Medicine, Professional Policy 17-B: *"Scope of Practice of Clinical Medical Physics"* revised 2011. www.aapm.org/org/policies.
- American Association of Physicists in Medicine, Professional Policy 22-B: *"AAPM Position Statement on the Role of Medical Physicists in Providing Quality Medical Care"* revised 2008. www.aapm.org/org/policies.
- American Association of Physicists in Medicine, Professional Policy 24-A: *"Code of Ethics"* revised 2008. www.aapm.org/org/policies.
- ACR Practice Guideline for Communication: Radiation Oncology, revised 2009 (res 7). www.acr.org.

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- ACR Technical Standard for the Performance of Radiation Oncology Physics for External Beam Therapy, revised 2010 (res 7). www.acr.org.
- ACR Practice Guideline for Radiation Oncology, revised 2009 (res 8). www.acr.org.
- ACRO, Manual for ACRO Accreditation, July 2012
- Collins J, *Good to Great*, Harper, 2001
- Covey SMR, *The Speed of Trust*, Free Press, 2006
- Verzuh, E, *The Fast Forward MBA in Project Management*, John Wiley & Sons, Inc., 2012
- Lewis, JP, *The Project Manager's Desk Reference*, McGraw-Hill, 1999
- Bonem M, Patterson R, *Leading from the Second Chair*, Jossey-Bass, 2005
- Wysocki R, et. Al, *Effective Project Management*, John Wiley & Sons, Inc., 2000
- 72 Project Management Tips by Alec Satin http://blog.alecsatin.com/72-project-management-tips/
- Top 10 Characteristics of GREAT Project Managers by David C. Baker http://the99percent.com/tips/6946/Top-10-Characteristics-of-GREAT-Project-Managers

- Additional QM Program references:

- Bogdanich, W., *"Radiation offers new cures, and ways to do harm,"* New York Times, January 23, 2010. www.nytimes.com.
- Kapur, A, Potters, L, *"Six sigma tools for a patient safety-oriented, quality-checklist driven radiation medicine department,"* Practical Rad. Onc. 2011 (in press).
- Kohn, LT, Corrigan, JM, and Donaldson, MS, editors, *"To Err is Human: Building a safer health system"*. Report of the Committee on Quality of Health Care in America, Institute of Medicine, Washington, DC. National Academy Press.
- Hendee, WR, Herman, MG, *"Improving patient safety in radiation oncology,"* Practical Rad. Onc. 1:16-21, 2011.
- Gawande, A., *"The checklist manifesto: How to get things right,"* Metropolitan Books, New York, NY, 2009.

- Moran, JM, Dempsey, M, Eisbruch, A, *"Safety considerations for IMRT," ASTRO patient safety white paper*, Practical Rad. Onc. 1: 190-195, 2011.
- Pronovost, P., and Vohr, E., *"Safe patients, smart hospitals,"* Hudson Street Press, New York, NY, 2010.
- International Atomic Energy Agency, *"Lessons learned from accidental exposures in radiotherapy,"* Safety Reports Series No. 17, IAEA, Vienna, Austria, 2000.
- *"Towards safer radiotherapy,"* UK National Health Service, British Institute of Radiology, Institute of Physics and Engineering in Medicine, et.al., Royal College of Radiologists, London, UK, 2008.