The Evolving Clinical Medical Physicist

- How have we traditionally impacted patient care?
  - Implementing vendor-provided technologies
  - Performing equipment/patient-specific quality assurance

- Is this path sustainable?
  - Technologies and commercial products becoming more robust and automated
  - Quality assurance and commissioning becoming well characterized and automated

- Our profession must change
  - Need to utilize our unique skillsets to have a meaningful impact
  - Need to be willing to expand the scope of our profession

Learning from Radiation Oncologists

- Faced a dilemma of clinical practice in latter half of last century
- Often viewed merely as technicians that treated referrals
- Began to participate in tumor boards, multidisciplinary clinics, etc.
- Transformed from radiotherapist to radiation oncologist
Learning from Patients

- Access to the internet is increasing:
  - Adults online: 52% (2000) to 88% (2015)
  - Pew Research Center (2015)
- Trust in physicians is decreasing:
  - "Great confidence": 73% (1966) to 34% (2012)
  - Harris (1966-2012)

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- Online patient information is too complex for general population:
- Patient-related distress can negatively impact outcomes following RT:

Physics Direct Patient Care Initiative

- Establish an independent professional relationship with patients
- Meet with the patient at regularly scheduled appointments
- Take ownership of all technical aspects related to treatment
- Allow physicians to focus on other aspects of patient care
- Lay groundwork for future innovations and patient responsibilities
PATIENT INTERACTIONS

Physician

Consult  OTV  OTV  Follow-Up

Tx = Treatment  OTV = On-Treatment Visit

PATIENT INTERACTIONS

Physician

Consult  OTV  OTV  Follow-Up

Therapist

Simulation  Tx

Tx = Treatment  OTV = On-Treatment Visit

PATIENT INTERACTIONS

Physicist
Initial Observations

- Medical physicists easily integrated into care team
- Wide variety of patient "types"
  - Anxious, distrusting, scared and confused about radiation
  - Calm, thankful, fascinated by the therapy
- Most patients want to be included in the process
  - Want their questions heard and answered
  - Want to be a part of the decision-making
  - Want personalized information (to review and share)
- Rewarding experience as a medical physicist
Initial Observations

Unexpected Experiences
- Requested by returning patients (not just for RT)
- Thank you notes from patients after treatment
- Prompted new physician-physician interactions

Learning Experiences
- Deferring medical questions devalues the interaction
- Poorly chosen words can instantly derail a session
- Formal communication training is a necessity

Randomized Clinical Trial

**Phase 1**
Assess patient anxiety and satisfaction
- **Group 1**: Physics direct patient care group
- **Group 2**: Standard practice group
- Questionnaire given at 3 time points
  - After the simulation appointment
  - After the first treatment
  - After the last treatment

UC San Diego
Randomized Clinical Trial

Six questions related to patient anxiety
(Validated State-Trait Anxiety Inventory)

Four questions related to patient satisfaction and technical understanding
(Modified from validated questionnaires)

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Randomized Clinical Trial

- **Start with a lead-in phase**
  - Enroll 30 patients
  - Test overall process (consent, questionnaires, etc.)
  - Evaluate results from the physics direct patient care group
  - Test randomization process

- **Preliminary results**
  - 15 patients completed
  - 10 currently on study
  - All from physics direct patient care group

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Patient Anxiety

(15 patients, scale: 1 = Not at all, 4 = Very much)

- "I feel confident"
- "I am relaxed"
- "I feel calm"
Patient Satisfaction
(15 patients, scale: 1 = Not at all, 4 = Very much)

*How satisfied are you with your overall radiation oncology experience?*

*Do you feel that adequate time was devoted to explaining the technical aspects of your treatment?*

*How satisfied are you with your understanding of the technical aspects of your treatment?*

Next Steps
- Move to randomization on clinical trial
- Phase 2: evaluate physician time savings
- Begin to broaden the scope of the project

Establishing independent professional relationships with patients is expected of a clinical medical physicist.

But this is just the beginning…
Next we combine our technical expertise with direct patient care to establish new clinical responsibilities and expand the scope of our profession.

Managing knowledge-based systems/data
Shared decision-making with the patient
Determining optimal image combinations
Target volume definition

The possibilities are endless, but it all begins here.
Thank You

Collaborators:
Derek Brown, PhD
AJ Mundt, MD
Todd Pawlicki, PhD
Jim Murphy, MD
Kevin Moore, PhD