The Importance and Impact of Physicist-Patient Interactions

Todd Atwood, PhD
Associate Professor
Radiation Medicine & Applied Sciences

UC San Diego Health

RETHINKING MEDICAL PHYSICS
How did we get started with physicist-patient interactions?
More patients are searching for ways to be involved in their care


Available patient information is too complex for the general population


Patient related distress can negatively impact outcomes following radiation therapy

Faced a dilemma of clinical practice in the latter half of last century

Often viewed merely as technicians treating referrals

Began to participate in tumor boards, multidisciplinary clinics, etc.

Transformed from radiotherapist to radiation oncologist
Physics Direct Patient Care Initiative

Establish an independent professional relationship with the patient

Take ownership of all technical aspects related to the patient’s care

Meet with the patient at regularly scheduled appointments

Assess the impact this has on patient anxiety and satisfaction

Lay the groundwork for future innovations and patient responsibilities
Clinical Trial

Pilot

Determine:
Interaction Time Points
Clinical Workflow
Patient Materials
Data Collection
Initial Observations

+ Easily integrated into care team
+ Wide variety of patient “types”
+ Patients eager to know more
+ Unexpected interactions
+ Rewarding experience

− Some timepoints less beneficial
− Words should be chosen carefully
− Technical systems too complex
− Medical questions not deferred
− Communication training necessary
Clinical Trial

Pilot

Determine:
- Interaction Time Points
- Clinical Workflow
- Patient Materials
- Data Collection

Phase II

Assess:
- Feasibility
- Patient Anxiety
- Patient Satisfaction

30 Patients
No Randomization
Data Collection

- Medical Physicist:
  - First Physician-Patient Consult (Before Simulation)
  - First Questionnaire (After Simulation)
  - Second Physician-Patient Consult (Before First Tx)
  - Second Questionnaire (After First Tx)
  - Third Questionnaire (After Last Tx)

- Radiation Oncologist:
  - Initial Consult
  - OTV
  - OTV
  - OTV
  - Follow-Up
CT Simulation

CT Scanner → CT Slices → CT Images

UC San Diego Health

- Ribs
- Heart
- Esophagus
- Spinal Cord
- Lung
- Target
Patient Anxiety

Anxiety Score
State-Trait Anxiety Inventory (STAI)

Simulation
First Tx
Last Tx

High Anxiety
Low Anxiety

$p<0.0001$
Patient Technical Satisfaction

- "Very much" ④
- "Moderately" ③
- "Somewhat" ②
- "Not at all" ①

Simulation  First Tx  Last Tx

$p=0.0012$  $p=0.023$

Higher Satisfaction  Lower Satisfaction
Patient Overall Satisfaction

\[ p = 0.037 \]

- "Very much" (4)
- "Moderately" (3)
- "Somewhat" (2)
- "Not at all" (1)

Simulation, First Tx, Last Tx
Clinical Trials

Pilot
- Determine:
  - Interaction Time Points
  - Clinical Workflow
  - Patient Materials
  - Data Collection

Phase II
- Assess:
  - Feasibility
  - Patient Anxiety
  - Patient Satisfaction
- 30 Patients
- No Randomization

Phase III
- Assess:
  - Patient Anxiety & Satisfaction
  - Patient Health Literacy
  - Impact of Telemedicine
- 100 Patients
- Randomization
Patient Questions

- Treatment Planning and Delivery Questions: 61%
- General Radiation Questions or Concerns: 17%
- Safety and Quality Assurance Questions: 7%
- Medical Questions: 15%
What are the next steps?
Lay the groundwork for future innovations and patient responsibilities

The role of the medical physicist is constantly evolving to improve patient care
Provide more value to patients and the field of radiation oncology

Expanding the scope of the medical physics profession to include patient-facing responsibilities is a necessity.
Collaborators
Derek Brown, PhD
Titania Juang, PhD
Kevin Moore, PhD
James Murphy, MD
Todd Pawlicki, PhD
A.J. Mundt, MD

Clinical Trial
HRPP #161700X

References