

Beyond Satisfaction - What Patients Ask During on-Treatment Medical Physics Consults

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ABSTRACT

Purpose: Medical physics patient consults are increasingly used to support patient understanding during radiotherapy and yet there is no consensus in the medical physics community as to what communications methods are most effective. We characterized patient-generated questions from consults across a large population of patients (disease sites including prostate, pediatrics, complex head and neck, TBI, etc.) and treatment modalities (protons, photons, and electrons) to inform future strategies for patient communications.

Methods: Post-consult surveys collected free-text questions and comments from patients seen in on-treatment medical physics consults at our institution across multiple sites of practice, disease sites, and a broad range of modalities. Responses were sorted into themes and topics (allowing more than one theme per response). We report theme frequencies, and which questions patients find most valuable.

Results: Of 212 survey responses, 158 (74.5%) contained free-text questions/comments. The most frequent theme was Treatment Plan/Organ Sparing (101/158, 63.9%). Technology/Mechanics (49/158, 31.0%) and Logistics/Process (30/158, 19.0%) were next most common, while Modality/Comparisons (13/158, 8.2%) and Quality Assurance/Safety (8/158, 5.1%) were less frequent. The topics patients reported as most useful were seeing their individual treatment plans (91/158, 57.6%), followed by how organs are spared (34/158, 21.5%), and treatment mechanics/beam generation (24/158, 15.2%).

Conclusion: Patients’ questions during on-treatment physics consults were consistent across disease sites and modalities and were dominated by a desire to see and understand their individualized treatment plan. To our knowledge, this represents one of the largest and most diverse datasets on this topic. Although the sample is weighted towards prostate treatments, the findings suggest that standardizing consults around common themes may better align education with patient needs. It may also encourage greater patient engagement, particularly for treatments requiring active participation such as breath-hold, bladder/rectal filling, or immobilization-dependent treatments.

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INTRODUCTION

This work moves beyond the question of whether patients were satisfied with their physics consult by systematically capturing what patients ask and find important during on-treatment medical physics consults. By mapping patient-generated questions to reproducible themes, this study provides an evidence base for standardizing consult content around high-value topics such as individualized plan visualization and discussion around organ sparing.

METHODS AND MATERIALS

Post-consult surveys were collected from patients who participated in on-treatment medical physics consults at our institution. Consults occurred across multiple sites of practice, disease sites, and treatment modalities, including photon, proton, and electron treatments. Surveys included free-text prompts where patients could write questions, comments, or topics they found useful during the consult.

Free-text responses were reviewed and categorized into recurring patient-generated themes. Responses could be assigned to more than one theme when appropriate. Themes included Treatment Plan/Organ Sparing, Technology/Mechanics, Logistics/Process, Modality/Comparisons, and Quality Assurance/Safety. Descriptive statistics were used to report the number and percentage of responses in each theme and to identify which consult topics patients most frequently described as useful.

RESULTS

A total of 212 post-consult survey responses were collected, of which 158 responses contained free-text questions or comments. The most common theme was **Treatment Plan/Organ Sparing**, identified in 101 of 158 free-text responses (63.9%). This was followed by **Technology/Mechanics** in 49 responses (31.0%) and **Logistics/Process** in 30 responses (19.0%). Less frequent themes included **Modality/Comparisons** in 13 responses (8.2%) and **Quality Assurance/Safety** in 8 responses (5.1%). Figure 1 also shows Treatment Plan/Organ Sparing as the dominant patient-generated question theme, substantially exceeding all other categories.

The topics patients most often reported as useful were seeing their individual treatment plan (91/158, 57.6%), learning how nearby organs were spared (34/158, 21.5%), and understanding treatment mechanics or beam generation (24/158, 15.2%). Example questions reflected patients’ desire to understand both their own plan and the technology delivering treatment, including “Can you show me the treatment plan?”, “How does the machine optimize radiation to avoid damaging healthy tissue?”, “Where do the protons come from?”, and “How is everything lined up during treatment?” Sample questions for each theme can be seen in Table 1.

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Category	Example Questions
Treatment Plan/Organ Sparing	- Can you show me the treatment plan? - How does the machine optimize radiation to avoid damaging healthy tissue?
Technology/Mechanics	- What typically breaks on the machine? - Where do the protons come from?
Logistics/Process	- What are the roles of therapists, physicists, radiation oncologists? - How is everything lined up during treatment?
Modality/Comparisons	- What is the difference between electron and photon radiation therapy? - What are the differences between protons and photons?
Quality Assurance/Safety	- How do you verify the amount of radiation given? - How often do you check the calibration of the machine?

Table 1. Sample patient questions asked in each category evaluated in this work.

DISCUSSION

Patient questions during on-treatment medical physics consults were dominated by a desire to see and understand individualized treatment information, especially the treatment plan and how dose is shaped to spare nearby healthy organs. This suggests that physics consults may be most valuable when they move beyond general explanations of radiation therapy and use patient-specific plan visualization as the central teaching tool.

Although technology, mechanics, and logistics were also common, fewer patients asked about quality assurance and safety. This does not imply that QA and safety are unimportant. Instead, it suggests that patients may prioritize understanding what is happening to them personally during treatment. A standardized consult structure could therefore begin with the patient’s treatment plan, explain organ sparing and dose shaping, then address common mechanics, setup, modality comparison, and safety questions.

These findings may be especially useful for treatments that require active patient participation, such as breath-hold, bladder or rectal filling, pediatric immobilization, or complex head and neck positioning. When patients understand why setup, anatomy, and reproducibility matter, consults may support engagement as well as satisfaction. Limitations of this study include that this was a single-institution experience, survey participation depended on patient free-text responses, and the sample was weighted toward prostate treatments. Future work could evaluate whether standardized patient-centered physics consults improve understanding, confidence, or treatment engagement.

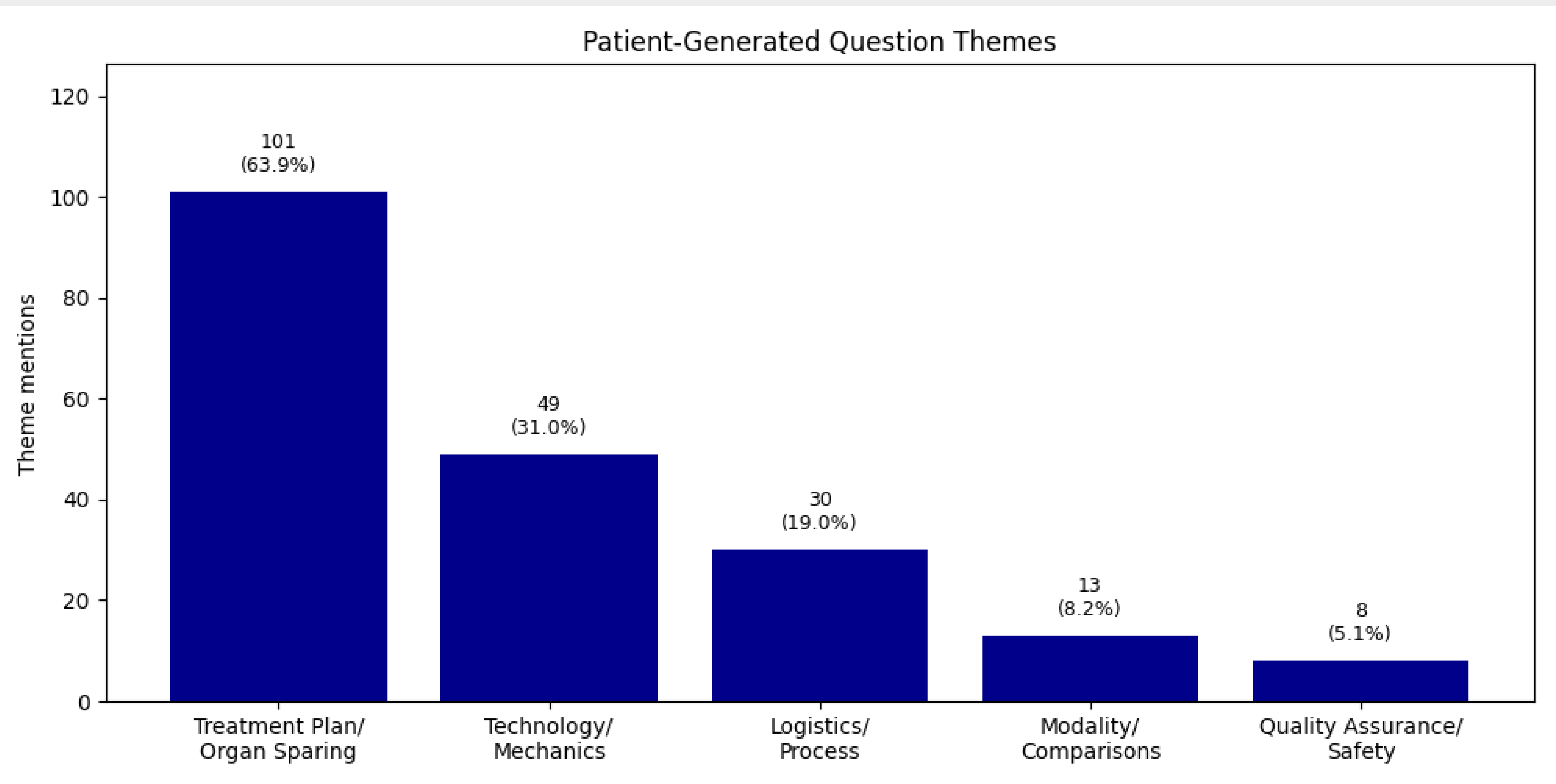


Figure 1. Themes that patients found useful during physics consults according to free-text survey responses.