6-8-2022

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Recommended Citation

Park J, Puckett LL, Katsoulakis E, Venkatesulu BP, Kujundzic K, Solanki AA, Movsas B, Simone CB, Sandler H, Lawton CA, Das P, Wo JY, Buchholz TA, Fisher CM, Harrison LB, Sher DJ, Kapoor R, Chapman CH, Dawes S, Kudner R, Wilson E, Hagan M, Palta J, and Kelly MD. Veterans Affairs Radiation Oncology Quality Surveillance Program and American Society for Radiation Oncology Quality Measures Initiative. Pract Radiat Oncol 2022.

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Practical Radiation Oncology® (2022) 000, 1–7

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Special Article

Veterans Affairs Radiation Oncology Quality Surveillance Program and American Society for Radiation Oncology Quality Measures Initiative

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Sources of support: This project was funded by the Veterans Affairs National Radiation Oncology Program. The Blue Ribbon Panel was selected by the American Society for Radiation Oncology (ASTRO) and were paid an honorarium for their participation from ASTRO from this funding source.

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Disclosures: John Park, MD: None; Lindsay L. Puckett, MD: Received an honorarium from Accuray. Evangelia Katsoulakis, MD: Has received grant funding from Candel Therapeutics, NIH, and Bankhead Coley. Has stock with Abbie, Intuitive Surgical, Pfizer, General Electric, Moderna, and Candel Therapeutics. Bhanu Prasad Venkatesulu, MD: Stocks in Immunitybio, 4D pharm, Karyopharm, Rover, Viewray, and Spectrum pharmaceuticals. Ksenija Kujundzic, BS: Employed by American Society for Radiation Oncology (ASTRO). ASTRO has a federal contract with the Department of Veterans Affairs. Abhishek A. Solanki, MD, MS: Has received research funding from the VA Office of Research & Development. He has received consulting fees from Blue Earth Diagnostics. He has received an honorarium for a 2-day lecture series to pharmaceutical companies as part of the ASCO Advantage Program, ASTRO registration covered for meeting faculty participation. He is an unpaid participant of the VA Precision Oncology Program for cancer of the Prostate (POPCaP) PATCH advisory board and POPCaP Localized Prostate Cancer advisory board. He is an unpaid councilor for the American College of Radiology's CARROS program and cochair of the ASTRO Multidisciplinary QA Subcommittee. Benjamin Movsas, MD: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. He received research support from Varian, Inc, ViewRay, Inc, and Philips, Inc. Charles B. Simone, II, MD: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. Howard Sandler, MD, MS: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. He received consulting fees from Janssen. He is a member of the ASTRO board of directors. He has stock options in Radiogel. Colleen A. Lawton, MD: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. Prajnan Das, MD, MS, MPH: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. Has received consulting fees from the National Cancer Institute and Adlai Nortye. Has received speaker fees for Conveners, LLC, Physicians Education Resource, and the American Society for Clinical Oncology. Jennifer Y. Wo, MD: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. Thomas A. Buchholz: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. He has received travel support from ASTRO. Christine Fisher, MD, MPH: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. Participates on a data safety monitoring board or advisory board at the Univ. of Colorado Cancer Center. Louis B. Harrison, MD: Blue Ribbon Panel member who was selected by the ASTRO and paid an honorarium for their participation from ASTRO from this funding source. David J. Sher, MD: Blue Ribbon Panel member who was selected by ASTRO and paid an honorarium for their participation from ASTRO from this funding source. Rishabh Kapoor, MS: The VA's National Radiation Oncology Program has a contract with Virginia Commonwealth University to provide medical physics services for some technical aspect of this work. Christina H. Chapman, MD, MS: Grants from the National Cancer Institute; ASCO Advantage Program, 2-day lecture series to pharma NCCN Elevating Cancer Equity Working Group, honoraria for grands rounds lectures from Mayo Clinic, University of California San Diego, University of Florida, Oregon Health and Science University, Virginia Chapter of the American College of Radiology. ASTRO registration covered for meeting faculty participation. Post-graduate section officer of the National Medical Association. Samantha Dawes, CMD: Employed by ASTRO. ASTRO has a federal contract with the Department of Veterans Affairs. Randi Kudner, MA: Employed by ASTRO. ASTRO has a federal contract with the Department of Veterans Affairs. Emily Wilson, BS: Employed by ASTRO. ASTRO has a federal contract with the Department of Veterans Affairs. Michael Hagan, MD, PhD: Has received support for attending meetings and/or travel from the Department of Radiation Oncology, MD Anderson Cancer Center, Houston, TX. Jatinder Palta, PhD: Has a leadership role as a member of the Board of American Association of Physicists in Medicine. Maria D. Kelly, MD: Has received support for attending meetings and/or travel from the Association of VA Hematology/Oncology.

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https://doi.org/10.1016/j.prro.2022.05.015
1879-8500/Published by Elsevier Inc. on behalf of American Society for Radiation Oncology.

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Received 13 May 2022; accepted 31 May 2022

Abstract

Purpose: Ensuring high quality, evidence-based radiation therapy for patients is of the upmost importance. As a part of the largest integrated health system in America, the Department of Veterans Affairs National Radiation Oncology Program (VA-NROP) established a quality surveillance initiative to address the challenge and necessity of providing the highest quality of care for veterans treated for cancer.

Methods and Materials: As part of this initiative, the VA-NROP contracted with the American Society for Radiation Oncology to commission 5 Blue Ribbon Panels for lung, prostate, rectal, breast, and head and neck cancers experts. This group worked collaboratively with the VA-NROP to develop consensus quality measures. In addition to the site-specific measures, an additional Blue Ribbon Panel comprised of the chairs and other members of the disease sites was formed to create 18 harmonized quality measures for all 5 sites (13 quality, 4 surveillance, and 1 aspirational).

Conclusions: The VA-NROP and American Society for Radiation Oncology collaboration have created quality measures spanning 5 disease sites to help improve patient outcomes. These will be used for the ongoing quality surveillance of veterans receiving radiation therapy through the VA and its community partners.

Published by Elsevier Inc. on behalf of American Society for Radiation Oncology.

Introduction

The Department of Veterans Affairs (VA) is considered the largest integrated health care system in the United States with 1293 health care facilities, which includes 171 VA medical centers and 1112 outpatient clinics providing care to around 9 million veterans.[1] In 2016, the VA launched the radiation oncology quality surveillance (VA-ROQS) program to assess the variation and quality of care of the radiation oncology centers in the VA hospitals.[2] In collaboration with the American Society for Radiation Oncology (ASTRO), quality measures (QM) were developed by disease-site expert panels to assess the care for intermediate and high-risk prostate cancers, as well as stage III non-small cell lung cancer.[3] Given that 50% of veterans are users of both VA and non-VA community care services, in 2019, the VA-ROQS set out to assess the performance of non-VA community care radiation oncology providers using the prostate cancer QM.[3] There were considerable challenges in obtaining the QMs, with only 28% of non-VA community care patient treatments able to be reviewed. To ensure the quality of care and adherence to common standards, the VA National Radiation Oncology Program (NROP) and

ASTRO initiated a collaborative team effort to form a framework of quality metrics for lung, prostate, rectal, breast, and head and neck cancers. The main aim is to ensure a comprehensive framework on the adequacy of initial consultation, work up, simulation, treatment planning, treatment delivery, and follow-up of patients with cancer. The underpinnings that govern this approach are to ensure compliance to a predefined framework of evidence-based quality metrics that are easy to follow and practically feasible to adhere to without undue time-consuming expectations that would potentially impede quality care. A Blue Ribbon Panel of content experts was established to form a consensus framework that could potentially ensure conformity in or of practice patterns across the radiation oncology community in both academic and private practice settings. The workflow is summarized in this article.

Methods and Materials

The NROP, in collaboration with ASTRO, formed 5 Blue Ribbon Panels of ASTRO-designated disease-site experts for lung, prostate, rectal, breast, and head and neck cancers. This group worked collaboratively with NROP to develop consensus quality measures. The groups developed comprehensive quality measures for each disease site. ASTRO staff performed an environmental scan to assess clinical practice guidelines, consensus recommendations, and existing measures to identify potential measure concepts. This included publicly available formal guidelines and resources (eg, Consumer Assessment of Healthcare Providers and Systems) to identify recommendations from reputable organizations (eg, National Comprehensive Cancer Network, Commission on Cancer, Medicare, and the International Consortium for Health Outcomes Measurement). Each panel developed an initial list of measures that required a prespecified threshold of ≥75% agreement by panelists.

Each panel then conducted a series of calls to discuss each measure and refine the measure specifications (eg, definitions of each numerator, denominator, inclusion criteria, and exclusions). Two VA radiation oncologists, serving as ex-officio members, participated and were available to answer questions related to workflows and patient populations unique to VA facilities. Each measure was categorized into 1 of 3 types. "Quality measures" assess current standards of care. A subset of these quality measures, felt to be of critical clinical importance, was identified as "high potential effect measures." The term "aspirational measures" was used to indicate those performance measures not currently standardized in common practice, but useful as ambitious goals for clinical practice. "Surveillance measures" focused on concepts addressing population health. After the completion of the 5 disease sites, a separate harmonization measure panel convened. It was comprised of the ASTRO staff and 2 members from each disease site (the chair and 1 other member). Overlapping measures and general concepts that were common to all disease sites were identified and a total of 18 harmonization measures were created.

Based on the draft measures, ASTRO staff created decision trees for each measure to depict the measure logic in a series of steps with a binary outcome (Supplementary Materials). These trees delineated the data element concepts and sequence of steps necessary to calculate the measure score. The tree begins with the trigger for measurement (eg, radiation oncology consult occurred), followed by narrowing to the appropriate patient population and removal of patients who met measure exclusions. Once the final patient population is identified, the numerator components result in either a "pass" or "fail" outcome. Every panel also contained a medical physicist who worked with ASTRO staff to develop draft dose volume histogram (DVH) metrics from published data and protocols. DVH metrics were either categorized as constraints or informational. Constraints are metrics used to evaluate the quality of the treatment plan and establish dosimetric performance goals. The remaining metrics, which help to characterize the general quality of radiation delivery, are recorded for informational purposes, similar to the surveillance measures.

Results

The 5 disease-site specific manuscripts contain further details of the process that were unique to each panel. After the completion of the disease-specific measures, it was decided to create a separate, final harmonized measure that included 18 measures that all sites had in common (Tables 1−3; see Supplementary Materials, which provides more details regarding these measures), thus the disease-specific recommendations contain only the measures that pertain to that site.

Discussion

Radiation oncology is quickly transforming to deliver personalized adaptive care in hopes of improving oncologic outcomes. Radiation treatment planning is highly individualized to the patient and thus there is considerable variability based on clinical practice preferences both within and across institutions. A vital part of the quality improvement effort will be ensuring the delivery of quality radiation therapy in clinics across the United States both inside and outside of the VA. The importance of this has been recognized for many years. A meta-analysis of 8 cooperative group trials found that radiation therapy

Table 1 Consultation and workup

Measure type	#	Measure	Measure details	Expected performance %	Exclusions
Quality measures	H1	*Performance status	All patients with a diagnosis of cancer with documentation of performance status using a standardized scale (ie, ECOG, WHO, KPS) at the time of consult	90	None
	H3	*Anatomic/pathologic stage documentation	Patients with documented evaluation of anatomic stage, before or at the time of simulation, that includes: 1. Primary tumor stage AND node stage AND metastasis staging OR 2. AJCC staging	100	None
	H4	*Pathology report review	Pathology report reviewed by the radiation oncologist before simulation	100	Patients receiving palliative care
	H5	Pregnancy screening	Documentation of pregnancy screening or refusal before simulation for patients of childbearing ability, between the ages of 15 and 55, with a diagnosis of cancer receiving external beam radiation therapy	100	Patients with a history of a hysterectomy; patients with documented history of menopause; negative onset of menarche
	H6	*Prior radiation	Patients with documentation of prior radiation status at the time of consult	100	None
	H7	Implantable cardiac device screening	All patients with a diagnosis of cancer receiving radiation therapy, screened for an implantable cardiac device before the simulation procedure	100	None
	H8	Smoking status	Patients with a documentation of current smoking status at the time of consult	90	None
Surveillance measures	H2	Enrolled clinical trial	Patients enrolled in a prospective oncology clinical trial	N/A	None
Aspirational measures	H9	Smoking cessation referral/counseling	Patients with a referral to a smoking cessation program OR documentation of smoking cessation counseling at the time of consult.	80	None

Abbreviations: AJCC = American Joint Committee on Cancer; ECOG = Eastern Cooperative Oncology Group; KPS = Karnofsky Performance Status; N/A = not available; WHO = World Health Organization.
* High potential effect measures

Table 2 Simulation, treatment planning, and treatment

Measure type	#	Measure	Measure details	Expected performance %	Exclusions
Quality measures	H12	*14 days from simulation to first treatment	All patients who started radiation treatment within 14 days after simulation	90	None
	H13	*Treatment plans peer reviewed	Patients with documentation of peer review of treatment plans by a radiation oncologist, which includes review of: 1. Dose to target volumes AND 2. dose to organs at risk before the sixth treatment day for conventional fractionation regimen OR before the first treatment day for short course regimen	90	Patients receiving palliative care
	H14	Pain assessment/ quantified	Patients with pain intensity quantified at an on-treatment visit using a standardized instrument	90	None
	H15	Plan of care for pain	Patients with a plan of care for pain at the on-treatment visit when pain was quantified	90	None
	H16	*Avoidance of treatment breaks	Patients with an unplanned treatment break of 5 or more treatments for conventional fractionation	90	Patients receiving palliative care
Surveillance measures	H10	28 days from diagnosis to any treatment	Patients who started radiation therapy OR systemic therapy OR surgery within 28 calendar d after confirmed diagnosis	90	Patients receiving palliative care
	H11	21 days from consult to any treatment	Patients who started radiation therapy OR systemic therapy OR surgery within 21 calendar days after oncology consult	90	Patients receiving palliative care

* High potential effect measures

Table 3 Follow-up

Measure type	#	Measure	Measure details	Expected performance %	Exclusions
Quality measures	H17	Treatment summary completion	Patients who have a treatment summary report completed within 30 days of completing treatment	100	None
Surveillance measures	H18	Follow-up with a radiation oncologist	Patients with 1 follow-up visit with a radiation oncologist during the first year postradiation therapy	N/A	Patients with metastatic disease

Abbreviations: N/A = not available.

protocol deviations were correlated with treatment failure and survival.[4]

Feasibility to perform widescale radiation therapy quality assurance has been shown in the United States through the efforts of the Quality Research in Radiation Oncology process and internationally through the work of the Global Clinical Trials Radiation Therapy Quality Assurance Harmonization Group, which included the European Organization for Research and Treatment of Cancer, Radiation Therapy Oncology Group, and the Trans-Tasman Radiation Oncology Group.[5,6] Automated quality assurance can streamline quality control processes along with efforts to collect patient-specific data and introduces standardized nomenclatures for structures and DVH metrics that improve patient safety.[7,8] The goal of automated processes is to improve standardization and heighten the quality of initial work up, treatment, and follow-up for the patients.

In 2013, ASTRO published the "Target Safely Campaign," including a series of safety white papers that emphasized not only reviews of radiation treatment plans but also the importance of peer review of the whole team, including action items for physicians, dosimetrists, therapists, and physicists.[9] The importance of quality control measures on lower gastrointestinal cancer has also been specifically noted and echoes recommendations from the Blue Ribbon Panel's guidance, including an extended quality control process starting at work up and including follow-up procedures.[10]

Previously, the VA has introduced quality metrics developed by disease-site experts designed to operate in the background of daily practice. These efforts have been pioneered through the establishment of the VA-ROQS program.[2] Moving forward, the main goal of the VA clinical audit algorithms in each cancer site will be assessment of performance-based indicators, specifically the use of evidence-based guidelines for patient-specific treatment decisions.

Significant challenges remain, however, as only 28% of the community care consults from the VA were available for QM assessment.[3] To overcome this challenge, the VA is now in the process of developing an electronic infrastructure called the "Health Information and Gateway Exchange" to collect patient-specific discrete values that will be used to easily access measures for quality surveillance, treatment effectiveness, outcomes, and quality of life assessment.

Conclusions

The VA has collaborated with ASTRO to develop QM to help better serve our veterans with cancer. As the largest integrated health system in the United States with 41 radiation oncology departments that also work closely with multiple community care partners across the country, it is imperative that all patients receive the highest level of care both within and outside the VA. With the development of these QM, published DVH constraints, and simultaneous development of the automated tracking Health Information and Gateway Exchange system, our aim is to ensure that veterans will be able to receive the highest quality of care, as they deserve, and that this framework will serve as a generalizable model for others to follow.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.prro.2022.05.015.

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