Unmet need for radiation therapy found among nearly half of eligible cancer patients in nine developing countries

Large international group finds unmet need in all nine middle-income countries, including eight in 10 patients in some countries not receiving needed treatment

BOSTON, September 26, 2016 -- Although approximately 50 percent of cancer patients in developing countries need radiation therapy (RT) to treat their disease, up to half of these patients do not have access to it, according to research presented today at the 58th Annual Meeting of the American Society for Radiation Oncology (ASTRO). Examining nine middle-income countries, researchers found that between 18 and 82 percent of patients who can benefit from RT in these countries do not receive the treatment.

Researchers at the International Atomic Energy Agency conducted this project to assess levels of optimal and actual RT utilization (RTU) and calculated unmet RT need in developing countries. This study is the first scientific analysis of RTU in middle-income countries. Findings reflect data from nine countries, including Costa Rica, Ghana, Malaysia, the Philippines, Romania, Serbia, Slovenia, Tunisia and Uruguay.

Optimal and actual RTU rates were determined for each country. The optimal RTU rate is the proportion of all newly diagnosed cases of cancer who have an indication for RT at least once in their lifetime. An indication for RT was defined as a clinical scenario for which RT is recommended as the treatment of choice because there is evidence of its superiority to alternative modalities and/or no treatment (e.g., better survival, local control or quality of life profiles). In clinical situations where RT was equivalent to other treatment options, all comparable modalities were included in the model, and a subsequent sensitivity analysis was conducted to determine the proportion of these patients who indicated for RT.

Indications for RT for each cancer site were derived from treatment guidelines published by
reputed national and international organizations. An evidence-based computation model was used based on data from high income countries, and researchers developed optimal RTU models for each cancer site by combining clinical scenarios and epidemiological data. The distribution of tumor types for each country was obtained from Globocan-2012, and patients were counted only once even if they subsequently developed repeated indications for RT.

Actual RTU rate was calculated dividing the total number of new cases of cancer treated with RT for the first time in 2012 (“new RT cases”), by the total number of new cases of cancer diagnosed in the same year (“incident cases”). The total number of new RT cases for each country was reported to the research team by the individual country coordinators who gathered the data from their own center, and all other RT centers in their respective countries. Incident cases were obtained from cancer incidence data from Globocan-2012.

The case-mix for each country was determined by prospectively registering 300 consecutive patients receiving RT at a leading RT center in each country and by capturing detailed data on patient, tumor and treatment characteristics from this sample.

The median optimal RTU for all countries was 52 percent. Optimal RTU rates ranged from a low of 47 percent for Costa Rica to a high of 56 percent for Tunisia. Differences in optimal RTU rates are attributable to varying incidence rates of cancer types in each country.

Median actual RTU rate was roughly half of optimal utilization, suggesting that nearly half of cancer patients across these nine countries combined may not be receiving adequate care for their disease. The median actual RTU rate was 28 percent, with a much broader range than for optimal RTU. The lowest rates of utilization were in Ghana (9 percent) and the Philippines (10.3 percent), while the highest utilization rates were in Tunisia (46 percent) and Uruguay (37 percent).

Actual RTU rates were lower than optimal RTU rates for all nine countries, with the smallest difference in Tunisia and the widest gap in Ghana at nearly 43 percentage points. Median level of unmet need was 47 percent for all countries combined.

Ghana and the Philippines had the highest levels of unmet need, at 82.3 and 80.5 percent, respectively. In the majority of cases in Romania (57.6 percent) and Serbia (54 percent), RT is not utilized, though indications for it exist. Costa Rica and Tunisia had the lowest levels of unmet need, at 25.5 and 18 percent, respectively. Unmet need in RT utilization indicates that RT is not administered when needed.

“Access to radiation therapy remains limited in low- and middle-income countries,” said Elena Fidarova, MD, a researcher at the International Atomic Energy Agency in Vienna and co-author of the study. “In Ghana and the Philippines, for example, about eight in 10 cancer patients who need radiation
therapy will not receive needed treatment. To eradicate this disparity, efforts should be made to improve access to radiation therapy. National radiation therapy strategy with realistic short-, mid- and long-term goals should be developed and incorporated into comprehensive national cancer control plans. Existing obstacles to RT access should be systematically addressed in the planning phase.”

The unmet need was particularly substantial (in the order of 80 percent) in countries with limited resources and a large population. The number of teletherapy machines per 1,000 cancer cases ranged from a high of 1.3 in Tunisia to a low of 0.19 in Ghana. The strong correlation between the actual RTU rates and the number of teletherapy machines per 1,000 cancer cases/year in each country confirms that, although other access factors may be at play, availability of RT machines is an important factor in RT utilization.

“Our findings strongly support the call for action from the Lancet Oncology Commission, which requires a worldwide effort to expand global access to radiation therapy,” said Dr. Fidarova. “Differences between optimal and actual RTU rates and the high percentage of unmet RT need likely stem from a number of complex reasons, although inadequate capacity for radiation therapy is the most obvious factor. As obstacles in access to existing RT services, such as inadequate referral patterns, affordability of treatment and geographical distribution of centers, differ by country, so does the ideal mix of solutions.”

The abstract, “Radiotherapy Utilization in Middle Income Countries,” will be presented in detail in a scientific session at ASTRO’s 58th Annual Meeting at 7:45 a.m. Eastern time on Monday, September 26, 2016. To speak with Dr. Fidarova, please contact ASTRO’s media relations team on-site at the Boston Convention and Exhibition Center on September 25-28, by phone at 703-286-1600 or by email at press@astro.org.

ATTRIBUTION TO THE AMERICAN SOCIETY OF RADIATION ONCOLOGY (ASTRO) ANNUAL MEETING REQUESTED IN ALL COVERAGE.

Full study abstract available on the final page of this release.

ABOUT ASTRO’S ANNUAL MEETING
ASTRO’s 58th Annual Meeting, the nation’s premier scientific meeting in radiation oncology, will be held September 25-28, 2016, at the Boston Convention and Exhibition Center in Boston. The 2016 Annual Meeting is expected to attract more than 11,000 attendees from across the globe, including oncologists from all disciplines and members of the entire radiation oncology team. Led by ASTRO president David C. Beyer, MD, FASTRO, the 2016 meeting will feature keynote addresses from Kathleen Sebelius, former U.S. Secretary of Health and Human Services; Thomas James Lynch Jr., MD, Chair and CEO, Massachusetts General Physicians Organization; and Jason Ragogna, general manager, SMS and Safety Alliances, Corporate Safety, Security, and Compliance, Delta Air Lines, Inc. The Presidential Symposium, “Prostate Cancer: Defining Value and Delivering It,” highlights the meeting’s theme of “Enhancing Value, Improving Outcomes” and will feature recent practice-changing studies and current developments in value-based care for prostate cancer. ASTRO’s four-day scientific meeting will feature a record
number of abstracts, including 368 oral presentations, 1,760 posters and 180 digital posters in more than 50 educational sessions and 20 scientific panels for 20 disease-site tracks. For more information about ASTRO’s 58th Annual Meeting, visit www.astro.org/AnnualMeeting. For press registration and news briefing information for ASTRO’s 58th Annual Meeting, visit www.astro.org/AMPrem.

ABOUT ASTRO
ASTRO is the premier radiation oncology society in the world, with more than 10,000 members who are physicians, nurses, biologists, physicists, radiation therapists, dosimetrist and other health care professionals who specialize in treating patients with radiation therapies. As the leading organization in radiation oncology, the Society is dedicated to improving patient care through professional education and training, support for clinical practice and health policy standards, advancement of science and research, and advocacy. ASTRO publishes three medical journals, International Journal of Radiation Oncology • Biology • Physics (www.redjournal.org), Practical Radiation Oncology (www.practicalradonc.org) and Advances in Radiation Oncology (www.advancesradonc.org); developed and maintains an extensive patient website, RT Answers (www.rtanswers.org); and created the Radiation Oncology Institute (www.roinstitute.org), a nonprofit foundation to support research and education efforts around the world that enhance and confirm the critical role of radiation therapy in improving cancer treatment. To learn more about ASTRO, visit www.astro.org.
Radiotherapy Utilization in Middle Income Countries

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Purpose/Objective(s): The planning of national radiotherapy services requires a thorough knowledge of the national cancer epidemiology profile, the radiotherapy utilization (RTU) rates and a realistic future projection of these data. The hypothesis is that optimal RTU rates are similar in middle income to those in high-income countries, while the actual utilization proportion is lower.

Materials/Methods: The IAEA conducted a project to establish the optimal and actual RTU rates in 9 middle-income countries. The optimal RTU rate is the proportion of all cancers with an indication for radiotherapy. An indication is defined as a clinical scenario where radiotherapy is the treatment of choice because it yields superior clinical outcomes as per published literature. The distribution of tumor types for each country was obtained from Globocan-2012. An evidence-based computation model was used based on data from high income countries (CCORE Australia). The actual RTU rate was determined by prospectively registering 300 consecutive patients receiving radiotherapy at a leading RT center in each country, capturing detailed data on patient, tumor and treatment characteristics from this sample. The total number of patients receiving RT in the index year (2012) was obtained from all RT departments in each country.

Results: The optimal and actual overall RTU rates for the 9 countries are shown (Table). There was a difference of 9% between the lowest optimal RTU in Costa Rica (47%) and the highest in Tunisia (56%) due to differences in the incidence of cancer types treatable with radiotherapy. The results show that the actual proportion of cancer patients receiving RT (median actual RTU rate = 28%) is lower than the optimal RTU rate for each country, with a difference between 10% (Tunisia) and 42.7% (Philippines). The median percent unmet need was 47%.

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(*) Percent unmet need = [(optimal RTU rate – actual RTU rate)/optimal RTU rate] x100

Conclusion: The optimal RTU rate in this group of middle-income countries did not differ significantly from that in high income countries. However, the actual RTU rates were consistently lower than optimal RTU rates. The gap between optimal and actual RTU rates as well as the calculated percent unmet need could be partially explained by obstacles to access to existing RT services.