

Scientific Letter

# Utilization of a Web-Based Conferencing Platform to Improve Global Radiation Oncology Education and Quality—Proof of Principle Through Implementation in India



Tyler P. Robin, MD, PhD,<sup>\*</sup> Surbhi Grover, MD, MPH,<sup>†</sup>  
Vijay Anand Reddy Palkonda, MD,<sup>‡</sup> Christine M. Fisher, MD, MPH,<sup>\*</sup>  
Brigitta Gehl, MPH,<sup>§</sup> Kausik Bhattacharya, MD,<sup>‡</sup> Indranil Mallick, MD,<sup>||</sup>  
Onita Bhattasali, MD, MPH,<sup>¶</sup> Akila N. Viswanathan, MD MPH,<sup>#</sup>  
Supriya Sastri (Chopra), MD,<sup>\*\*</sup> Umesh Mahantshetty, MD,<sup>\*\*</sup>  
and Patricia H. Hardenbergh, MD<sup>\*,††</sup>

<sup>\*</sup>Department of Radiation Oncology, University of Colorado Cancer Center, Aurora, Colorado;

<sup>†</sup>Department of Radiation Oncology, Hospital of the University of Pennsylvania, Philadelphia,

Pennsylvania; <sup>‡</sup>Department of Radiation Oncology, Apollo Cancer Hospital, Hyderabad, India; <sup>§</sup>Frank

H. Netter School of Medicine at Quinnipiac University, North Haven, Connecticut; <sup>||</sup>Department of

Radiation Oncology, Tata Medical Center, Kolkata, India; <sup>¶</sup>Department of Radiation Oncology, Kaiser

Permanente Los Angeles Medical Center, Los Angeles, California; <sup>#</sup>Department of Radiation Oncology

and Molecular Radiation Sciences, Johns Hopkins School of Medicine, Baltimore, Maryland;

<sup>\*\*</sup>Department of Radiation Oncology, Tata Memorial Hospital, Mumbai, India; and <sup>††</sup>Shaw Regional

Cancer Center, Edwards, Colorado

Received Jun 12, 2018, and in revised form Jun 12, 2018. Accepted for publication Jul 22, 2018.

## Summary

Chartrounds ([www.chartrounds.com](http://www.chartrounds.com)) is a free web-

**Purpose:** Chartrounds ([www.chartrounds.com](http://www.chartrounds.com)) was established in the United States in 2010 as a web-based platform for radiation oncologists to review cases with leading disease-site experts. However, the need for access to experts for peer review and

Reprint requests to: Tyler P. Robin, MD, PhD, Department of Radiation Oncology, University of Colorado Cancer Center, 1665 Aurora Ct, Suite 1032, MS F706, Aurora, CO 80045. Tel: (720) 848-0148; E-mail: [tyler.robin@ucdenver.edu](mailto:tyler.robin@ucdenver.edu)

Conflict of interest: S.S.C. receives research funding from Varian outside of the submitted work. All other authors have no conflicts of interest to disclose.

This work was supported in part by The Conquer Cancer Foundation of ASCO, Improving Cancer Care Grant funded by Susan G. Komen for the Cure (2010).

**Acknowledgments**—We thank the American Society of Radiation Oncology international education subcommittee for their support of this initiative. We also thank Dr Vijay Anand Reddy, the Association of Radiation Oncologists of India, and the faculty and trainees at the

Apollo Cancer Institute in Hyderabad for their enthusiasm and dedicated support of Chartrounds India. Finally, we would like acknowledge and thank the faculty that have volunteered their time to lead sessions for Chartrounds India: Dr Jai Prakash Agarwal, Dr Anil Kumar Anand, Dr Kausik Bhattacharya, Dr Sanjay Chandrasekhar, Dr Sanjoy Chatterjee, Dr Srinivas Chilukuri, Dr Debnarayan Dutta, Dr Reena Engineer, Dr Sarbani Ghosh-Laskar, Dr Jayant Sastri Goda, Dr Vineeta Goel, Dr Tejpal Gupta, Dr Manoj Gupta, Dr Rakesh Jalali, Dr Cessal Kainickal, Dr Sajal Kakkar, Dr Nehal Khanna, Dr Siddharth Laskar, Dr Umesh Mahantshetty, Dr Monica Malik, Dr Indranil Mallick, Dr Anusheel Munshi, Dr Vedang Murthy, Dr Vijay Anand Reddy, Dr Gagan Saini, Dr Supriya Sastri (Chopra), and Dr Kaustav Talapatra.

based platform for radiation oncologists to review cases with leading disease-site experts. Chartrounds has been well used in the United States since 2010 and is now expanding internationally. A dedicated site for India ([ind.chartrounds.com](http://ind.chartrounds.com)) was launched in June 2017. Herein, we report our initial experience with this initiative and demonstrate that an online platform for radiation oncology case review and education can be successfully implemented globally with use of local disease-site experts.

education is not unique to the United States, and the Chartrounds platform was therefore adapted for improved global reach. Chartrounds was first expanded to India, and herein we report our initial experience with this initiative.

**Methods and Materials:** The US Chartrounds platform was adapted to create Chartrounds India ([ind.chartrounds.com](http://ind.chartrounds.com)). Through collaboration with the Association of Radiation Oncologists of India, India-based specialists were recruited, and the association's membership list was used to announce sessions to potential participants.

**Results:** Between June 2017 and January 2018, 27 Chartrounds India sessions were completed, led by 21 different specialists (representing 10 centers in India) and covering 11 different disease sites/topics. A total of 240 members from 126 centers (private: 56%; teaching: 36%; public: 8%) across 24 states/territories participated in  $\geq 1$  session. Of the 240 members who participated in  $\geq 1$  session, 159 (66%) participated in  $\geq 2$  sessions and 60 (25%) participated in  $\geq 5$  sessions. The average number of participants per session was 34 (range, 13-72). On average, 80% of respondents rated the sessions as high or very high quality; 87% and 95% agreed or strongly agreed that the time was used effectively and that the sessions were relevant to daily practice, respectively. Seventy-six percent agreed or strongly agreed that the sessions will result in a change in their practice. The average feedback survey response rate was 32% (range, 17%-49%).

**Conclusions:** Chartrounds has proven to be an effective resource for US-based radiation oncologists, and our initial experience with Chartrounds India suggests that an online platform for radiation oncology case review and education can be successfully implemented globally with use of local disease site experts. © 2018 Elsevier Inc. All rights reserved.

## Introduction

Web-based tools are a potentially important mechanism to improve radiation oncology education and quality (1, 2). Chartrounds ([www.chartrounds.com](http://www.chartrounds.com)) is a free web-based virtual conferencing platform that was founded in the United States in 2010 with the goal of connecting radiation oncologists with leading disease site experts for review of complex cases. In response to growing international interest in Chartrounds (3) and with support of the American Society of Radiation Oncology international education subcommittee (4), we elected to launch dedicated sites for different global regions. The Chartrounds global health initiative first pursued dedicated sites for India, Africa, Latin America, and China. Chartrounds India was the first international site, launched in June 2017. Herein, we report our initial experience from this initiative and demonstrate how improvements in practice can be implemented through web-based learning.

## Methods and Materials

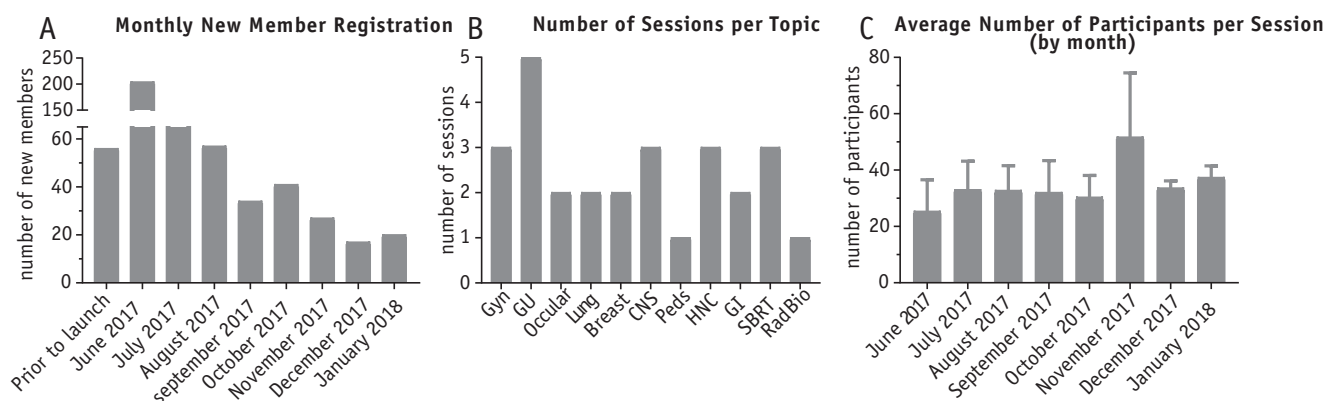
The US Chartrounds platform was adapted to create Chartrounds India ([ind.chartrounds.com](http://ind.chartrounds.com)). Through collaboration with the Association of Radiation Oncologists of India (AROI), India-based specialists were invited to lead sessions, and the potential Chartrounds India participants were made aware of the program through the AROI

membership email list. The Chartrounds India site serves as a mechanism for registering for and connecting to sessions that are conducted through a GlobalMeet (PGi, Alpharetta, GA) virtual conference room. The first Chartrounds India session took place in June 2017, and 1-hour sessions focused on disease sites or techniques have continued on a weekly basis. In September 2017, a survey was sent to all Chartrounds India members to collect initial feedback. The same 5-point Likert scale feedback questions from this initial survey were asked after each subsequent session from October 2017 onward. The Chartrounds India platform was additionally used to address a specific knowledge gap regarding the use of 3-dimensional image guided brachytherapy (3D-IGBT) for cervical cancer through a 2-part educational seminar led by one of the authors (U.M.). After these sessions, participants were asked to complete a more extensive survey that also collected information on demographics and current practice patterns as well as planned changes in practice based on the sessions.

## Results

### Implementation of Chartrounds India and initial participant feedback

Rates of new member registration are shown in Figure 1A. Between June 2017 and January 2018, 27 Chartrounds India sessions were completed, led by 21 different specialists (representing 10 centers in India) and covering 11



**Fig. 1.** (A) Number of new Chartrounds India members registered each month. (B) Number of sessions complete per disease site/topic. (C) Average number of participants per session by month.

disease sites/topics (Figs. 1B and 2A). Anecdotally, we have noticed that during Chartrounds India sessions it is common for multiple physicians to participate from a single registered login, which complicates tracking of attendees. Understanding this limitation in accurate accounting of participants, as of January 2018, we recorded that 240 members from 126 centers (private: 56%; teaching: 36%; public: 8%) across 24 states/territories had participated in at least 1 session, with an average of 34 participants per session (range, 13-72) (Figs. 1C and 2B). One hundred and fifty-nine (66%) participated in  $\geq 2$  sessions, and 60 (25%) participated in  $\geq 5$  sessions. The average feedback survey response rate was 32% (range, 17%-49%). On average, 80% of respondents rated the sessions as high or very high quality. Eighty-seven percent and 95% agreed or strongly agreed that the time was used effectively and that the sessions were relevant to daily practice, respectively. Seventy-six percent agreed or

strongly agreed that the sessions will result in a change in their practice (Table 1).

### Focused sessions on 3D-IGBT for cervical cancer

During this initial implementation period, the Chartrounds India platform was used for a 2-part educational seminar on 3D-IGBT for cervical cancer. Seventy-two physicians participated in the first session and 56 in the second session. Thirty-five participants completed the postsession survey (60% attended both sessions), and participant demographics are detailed in Figure 3. As outlined in Figure 4, 18 of 35 respondents (51%) reported that they currently use 2-dimensional techniques. After the session, 15 of 18 (83%) participants currently using 2-dimensional techniques planned to implement 3D-IGBT; 6 of 15 (40%) planned to use computed tomography (CT) because magnetic resonance imaging (MRI) is not



**Fig. 2.** Regional distribution of Chartrounds India (A) specialists and (B) participants. Pie chart depicts participant representation of different practice types. *Abbreviation:* RCC/GOC = regional cancer center/government oncology center.

**Table 1** Average percentage of participants responding 4 or 5 (on 5-point Likert scale) to postsession feedback surveys

Feedback survey responses (participants surveyed after sessions)	% Responded 4 or 5 (on 5-point Likert scale)
Please rate the overall quality of the session.	80% rated the sessions as high or very high quality
The time was used effectively during the session.	87% agreed or strongly agreed that the time was used effectively
The session was relevant to daily practice.	95% agreed or strongly agreed that the sessions were relevant to daily practice
As a result of the session I am planning to make a change in my practice.	76% agreed or strongly agreed that the sessions will result in a change in their practice

Data presented are from all Chartrounds India sessions completed between June 2017 and January 2018.

available or is too complicated to implement; and 9 of 15 (60%) planned to use MRI. Seventeen of 35 respondents (49%) currently use 3D-IGBT (4 [24%]) already use MRI, and 13 [76%] use CT); after the session, 6 of 13 (46%) currently using CT planned to use MRI. Ninety-seven percent of respondents rated the sessions as high or very high quality. Ninety-four percent and 97% agreed or strongly agreed that the time was used effectively and that the sessions were relevant to daily practice, respectively. Eighty-nine percent agreed or strongly agreed that the sessions will result in a change in their practice (Table 2).

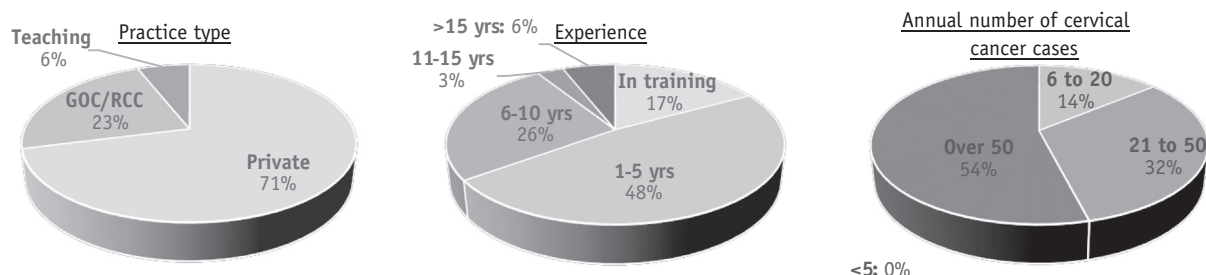
## Discussion

Chartrounds has been an effective web-based tool in the United States to connect radiation oncologists with disease-site specialists for peer review and education. Importantly, information and communication technologies, such as Chartrounds, have been identified as a key mechanism to foster collaborative global outreach in radiation oncology (4). Furthermore, a recent needs assessment survey of radiation oncologists in India highlighted the potential advantages of establishing a cross-institutional case review program (5). Chartrounds India has now been active for several

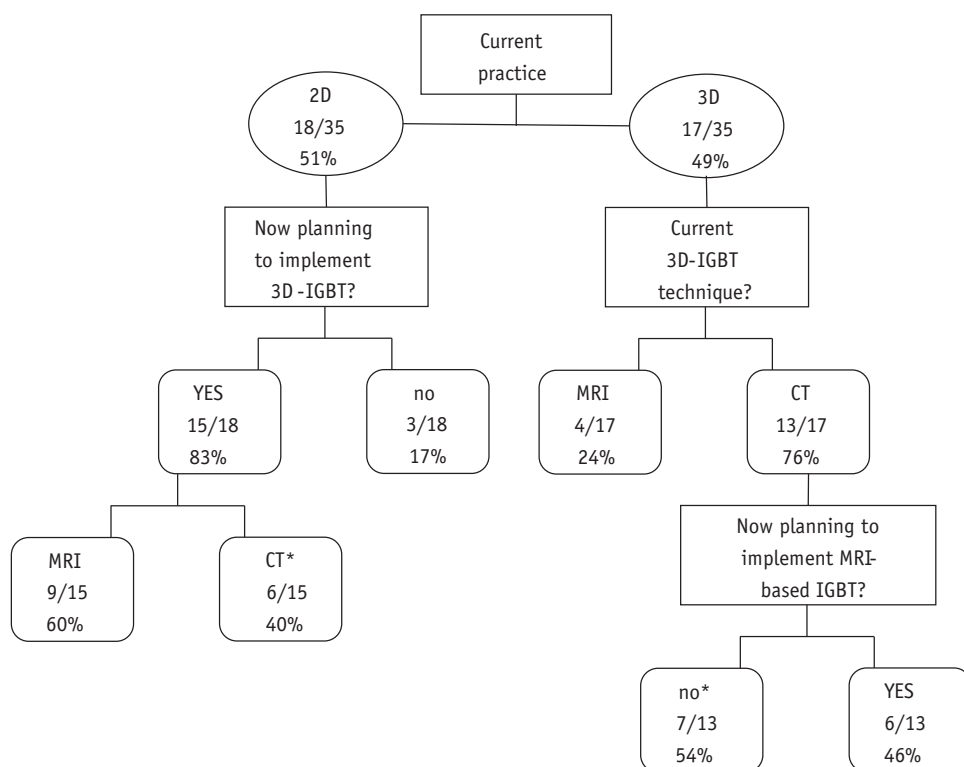
months, and our initial experience with this initiative supports the notion that web-based tools such as Chartrounds can be implemented worldwide with the potential to affect global radiation oncology education and quality.

With an estimated annual incidence of 1.72 million cancer cases by 2020, the majority of the Indian population lives in a rural setting, with a geographic disparity in distribution of linear accelerators, presenting unique challenges to achieving widespread excellence in oncologic care in India (6, 7). A strategic advantage to web-based tools is the ability to have an impact across the country with the main potential barriers being only Internet access and time. Importantly, both the Chartrounds India specialists and participants were distributed across the country. In this early period, the disease site specialists represented 10 major centers and the participants were from 24 states/territories and represented different practice environments.

Overall, early successes with Chartrounds India include the widespread interest in this program, as evidenced by the number of radiation oncologists who have participated, and the number of disease site specialists who have volunteered their time to this effort. In addition to successful implementation, there is also early evidence of efficacy as seen in the high percentage of participants reporting that the sessions are likely to result in a change in their practice, with specific changes planned highlighted in the sessions



**Fig. 3.** Demographics of survey respondents (n = 35) from 2-part web-based educational seminar on 3-dimensional image guided brachytherapy.



**Fig. 4.** Planned changes in practice of survey respondents (n = 35) from 2-part web-based educational seminar on 3D-image guided brachytherapy. \*Stated magnetic resonance imaging not available or too complicated to implement.

focused on 3D-IGBT. Much of the early success of Chartrounds India can be attributed to our ability to adapt an existing platform and more importantly to the active collaboration and support of AROI. These are important

lessons to keep in mind for additional efforts to use web-based tools to improve global radiation oncology education and quality.

## References

1. Gillespie EF, Panjwani N, Golden DW, et al. Multi-institutional randomized trial testing the utility of an interactive three-dimensional contouring atlas among radiation oncology residents. *Int J Radiat Oncol Biol Phys* 2017;98:547-554.
2. Hardenbergh PH, Gehl B, Lyons-Mitchell KA. Use of the internet to connect radiation oncologists and medical oncologists with disease site-specific experts: 3-year outcomes of chartrounds. *J Clin Oncol* 2013;31:241.
3. Hardenbergh PH, Gehl B, Kavanagh BD, et al. International health care transformation through web-based education. *Int J Radiat Oncol Biol Phys* 2016;96:E396.
4. Dad L, Royce TJ, Morris Z, et al. Bridging innovation and outreach to overcome global gaps in radiation oncology through information and communication tools, trainee advancement, engaging industry, attention to ethical challenges, and political advocacy. *Semin Radiat Oncol* 2017;27:98-108.
5. Grover S, Chadha M, Rengan R, et al. Education and training needs in radiation oncology in India: Opportunities for Indo-US collaborations. *Int J Radiat Oncol Biol Phys* 2015;93:957-960.
6. Indian council of medical research: Incidence, distribution, trends in incidence rates and projects of burden of cancer. Available at: <http://www.ncdirindia.org>. Accessed June 12, 2018.
7. Grover S, Gudi S, Gandhi AK, et al. Radiation oncology in India: Challenges and opportunities. *Semin Radiat Oncol* 2017;27:158-163.

**Table 2** Percentage of participants responding 4 or 5 (on 5-point Likert scale) to postsession feedback surveys

Feedback survey responses (participants surveyed after sessions)	% Responded 4 or 5 (on 5-point Likert scale)
Please rate the overall quality of the session.	97% rated the sessions as high or very high quality
The time was used effectively during the session.	94% agreed or strongly agreed that the time was used effectively
The session was relevant to daily practice.	97% agreed or strongly agreed that the sessions were relevant to daily practice
As a result of the session I am planning to make a change in my practice.	89% agreed or strongly agreed that the sessions will result in a change in their practice

Data presented are from dedicated 2-part series on image guided brachytherapy for cervical cancer.