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Editorial

Increasing global access to brachytherapy: The ABS 300 in 10 initiative and ongoing international efforts

In the fall of 2020, the *Journal* dedicated an entire issue to brachytherapy (BT) education and training to increase BT utilization. In this editorial I discuss how *300 in 10* is a natural progression of the ABS BT schools and other educational worldwide efforts – especially the work from the (GEC)-ESTRO/EMBRACE initiative, the Canadian approach and other groups.

The (GEC)-ESTRO/EMBRACE initiative for education and training to promote the dissemination and implementation of image guided adaptive brachytherapy (IGABT) for cervical cancer worldwide has been the most successful brachytherapy educational platform implemented as described by Tan and Potter [1]. Their sentinel work led to the development of CT and MRI compatible applicators including hybrid applicators to expand the dosimetric coverage with sparing of the OAR (organs at risk). Ultimately, this led to an increased rates of local control and survival for women with advanced cervical cancer with a reduction in late toxicities [1]. The impact of the implementation of IGABT from the GEC-ESTRO teaching courses is profound as demonstrated by several parameters including the decrease in point A utilization from 80% to less than 30% with an associated increase of dose to the HR CTV by 60%. The (GEC)-ESTRO/EMBRACE initiative have been a model for the rest of the world to implement high-quality IGABT. Lessons learned from their group are being applied to the 300 in 10 initiative. For his sentinel work in IGABT, Dr. Richard Potter was awarded the Madam Curie Gold Medal Award in San Francisco at the World Congress of BT in 2016. We in the brachytherapy world are most grateful to the vision and leadership of Dr. Richard Potter and his team.

Canadian Approach to BT Training and Competency

Canada has a rich and long history of developing worldwide experts in BT through BT fellowship training programs as described by Morton and Croke [2,3]. The Royal College has established a formal BT curriculum and fellowships. brachytherapists in practice apply for accreditation through the Practice Eligibility Route (PER); whereas, residents can undergo a 1 year training program and on completion are awarded a diploma in BT, also known as AFC (Area of Focused Competence). The University of Toronto fellowship program is one of the world's largest having trained fellows from all over the world numbering 42 since 2014 [3]. There will be an additional 5 to 6 Canadian universities training programs in the near future.

Elekta Brachy Academy

The Elekta Brachy Academy has conducted BT workshops since 2013. The workshops are open to any radiation oncologist/medical physicist who meet certain criteria as described on their website. https://www.brachyacademy.com/events/image-guided-adaptive-brachy-for-gynecology-26th-edition/. These workshops are held for 2 days and include an assessment of the participants' needs, lectures, contouring and treatment planning sessions, and time in the OR observing a live patient case. The total number of Brachy Academy workshops from 2013 to 2019 was 67 with 1000 participants with locations in the Tata Memorial Centre (Mumbai, India), Chulalongkorn University Hospital (Bangkok, Thailand). Future workshops are planned for Colombia, Argentina and Africa. The Elekta Brachy Academy has been a tremendous resource for training brachytherapists worldwide.

ABS Programs

Dr. Erickson and her team wrote an outstanding summary on the genesis and history of the ABS brachytherapy schools [4]. Over 25 years ago ABS president Dr. Arthur Porter clearly articulated the need for these schools as many US residents had inadequate brachytherapy training which unfortunately, is still ongoing. Dr. Porter discussed the importance of didactic sessions with hands-on workshops including BT phantoms. These schools have to include image guided brachytherapy, contouring workshops, partnerships with other societies, and dedicated disease-specific schools.

The ABS 300 IN 10 Vision

The 300 in 10 initiative is a natural progression of the ABS BT schools and is the ABS BOD 10 year vision to address the declining trends in BT utilization by training 30 competent brachytherapy teams per year over the next

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10 years through a multifaceted approach. The ABS board of directors (BOD) has shortened this to a 5 year strategy. This initiative, built on our "giants" who developed the ABS schools and workshops, formalizes a strategic approach for continuity as BOD members will change over the years. Low institutional BT volume for residents in training is a major contributing factor [5,6]. An editorial by 2019 Henschke award recipient, Dr. Gregory Merrick, "The Narrow Door of Success", details our "road map" to sustain the viability of BT [7]. The formal name for 300 in 10 is *six phases to establish brachytherapy competency* through developing a national BT curriculum, simulation based medical education (SBME), 2 month fellowships at designated ABS certified centers, competency evaluation by an ABS certified expert and/or proctorships, ABS brachytherapy certification, and ABS maintenance of certification. The entire program was developed to assist residents who want to establish a brachytherapy practice but lack sufficient experience. Phases I and II are already in place through the ABS schools and workshops. We also have developed a 300 in 10 GYN and prostate team with the goal of creating a more robust brachytherapy curriculum. From the ABS prostate workshops, 78% of the teams were performing prostate BT within 6 months of the workshop [8]. As a result, we are well on our way in reaching the goal of training 300 brachytherapy teams.

Since less than 2% of US residents were interested in a 1 year BT fellowship, according to an ARRO survey, the ABS solution is to offer 2 month "hands-on fellowships" for PGY-4 and 5 residents at 22 designated BT centers starting in the fall of 2021 [6]. These 2 month rotations will be offered for gynecologic and prostate cancer - using either LDR and/or HDR BT. Information can be found on the ABS website. The value of these "fellowships" was exemplified by Dr. Jill Remick who not only gained invaluable BT experience from Dr. Sushil Beriwal, but has electing to pursue a career in brachytherapy with the skills she acquired [9].

Mentorship is a cornerstone of the 300 in 10 initiative, leading to the development of a new ABS mentorship program: NextGen Brachy lead by Drs. Lisa Singer and Idalid Franco. Through NextGen Brachy, early career radiation oncologists are paired with experienced ABS brachytherapists and physicists in a 1 year mentorship program. A pilot study was recently completed with encouraging results demonstrating increased confidence in starting a BT practice [10].

Simulation based medical education has become another successful ABS education strategy to enhance residents' brachytherapy skills and confidence to achieve brachytherapy independence. These programs were discussed in separate articles last fall in the Journal by Drs. Donelly, Damast, Frank, Singer and Fernandez [8,11-14]. Dr. Golden has made substantial contributions to the 300 in 10 initiative in guiding the ABS research team to utilize his described model of curriculum development using a 6 step approach (ref)Fernandez and Golden [14]. Educational themes discussed in this article have become integrated into the 300 in 10 educational process.

Innovative Approaches

Worldwide, nearly 60% of newly diagnosed cancers (8M) occur annually in low-middle-income-countries LMICs, and account for 5.3M deaths [15,16]. The shortage of radiation services in LMICs is staggering with increased recognition to address these inequities as 70% of annual projected cancer deaths occur in LMICs [17,18]. Regarding the critical need for BT, 90% of the worldwide deaths from cervical cancer occur in these countries [17]. There is great need for radiation therapy with a shortage of approximately 5000 linear accelerators (LINACS) worldwide [19]. Both linear accelerators and adequate BT services are desperately needed. The International Cancer Expert Corp (ICEC) is an NGO whose vision is a "world in which everyone has access to interventions and to prevent and treat cancer and its symptoms using high-quality best practices for the local circumstances". The 2 overarching goals are a mentorship and/or twinning program and addressing technology gaps for access [20,21]. Interestingly, many brachytherapists in these LMICs have clinical BT experience that surpasses the brachytherapy experience of most of us in developed countries! The challenge is to implement IGABT in these resource limited countries to benefit the worldwide cervical cancer population.

In response to the global call for action to improve radiotherapy for cancer patients in LMICs, Dr. Benjamin Li founded Rayos Contra Cancer (RCC). Their mission is to create sustainable access to high-quality, timely, and affordable radiation treatment for cancer patients in limited-resource settings globally, that is achieved through clinic partnerships, cloud-based collaboration, and the coordination of volunteers, ranging from students to professionals. They recently published their results evaluating the efficacy of a telehealth training course on HDR BT for gynecologic cancers for clinicians in LMICs. Forty-six participants from 10 clinics attended the 12 week, 19 session course and demonstrated improved confidence in the domains assessed [22]. HDR BT training programs in Latin America and Africa are planned over the next year by targeting 20 more centers.

Programs available and/or in development to assist these brachytherapists including GEC-ESTRO initiatives in addition to e–learning and online contouring workshops, the RCC program, the Elekta Brachy Academy and ongoing ABS initiatives with the international committee. Most recently, Dr. Junzo Chino is leading a small working group within the ABS international committee to review BT cases with the radiation oncology team in Tanzania. The ICEC and ABS launched this recent initiative with ongoing mentorship and reverse mentorship continuing, as we have much to learn from our LMIC colleagues. Finally, Dr.

Surbhi Grover and others will be publishing ABS guidelines for establishing a HDR, gynecologic BT program in resource-limited settings in which they succinctly outline 14 essential steps (personal communication).

Conclusion

Although our subspecialty as brachytherapists is small in number, we have a tremendous opportunity to change the world both within the United States, and equally important, globally, through providing quality BT services that are lifesaving for millions of people. A primary goal of this editorial is to highlight national and international brachytherapy efforts so that we come together and provide this critical treatment modality for patients in need worldwide. For US residency program directors it should be a high priority to hire a competent brachy therapist (s) to train the next generation. All of the described initiatives, including 300 in 10, cannot replace inadequate training. To quote an African proverb: "If you want to go fast, go alone. If you want to go far, go together".

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