



International
Cancer
Expert Corps

Partnering to transform global cancer care



World Institute for
Nuclear Security

Fostering Collaboration Between Security and Cancer care-Focused Organizations

Inaugural Roundtable

Bethesda, MD October 24-25, 2023

Session II: The Need for Security and Radiotherapy–Focused Organizations to Work Together

**The International Cancer Expert Corps' experience
of working with security-organizations**

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International Cancer Expert Corps (ICEC)



Outline

- ICEC – An overview the When, What, Why, Where and How
 - a. The scope of the problem
 - b. Building sustainable capacity, capability and mentorship

- ICEC's introduction to Security organizations –
 - a. History,
 - b. Common goals and purpose,
 - c. Partnerships

- Think globally, mentor locally – the power of trusted networks

- Making it happen: ART Study



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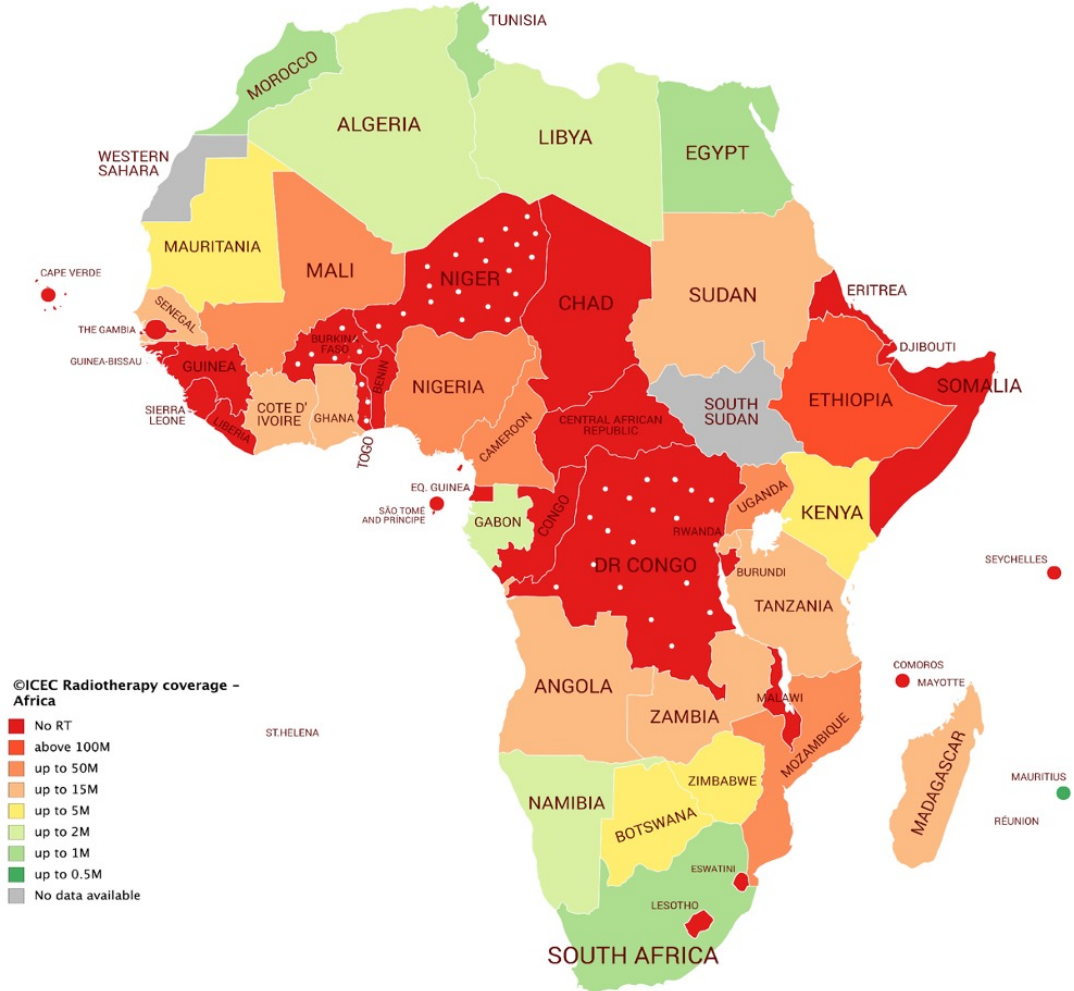
- With a decades-long interest of its founders in cancer care to the underserved in the US and globally, ICEC was formally founded in 2013 as a non-governmental organization 501(c)3 registered in the US
- Strong impetus was the recognition by the United Nations that the burden of non-communicable diseases, including cancer, is increasingly falling on low- and middle-income countries (LMICs). World Health Organization has charted the shortfall for many years
- Mission: to improve the outcomes of cancer care to the underserved LMICs and to geographically underserved regions in high-income countries (HICs) often involving indigenous populations
- Vision: a world in which everyone has access to interventions to prevent and treat cancer and its symptoms using high-quality best practices for the local circumstances

Recognizing and defining the problem

Dramatic Disparity in Access to LINACs

Map showing the number of people per functioning radiotherapy machine in countries in Africa

Country	LINACs	Population	People per LINAC
Ethiopia	1	115 M	115,000,000
Nigeria	7	206 M	29,000,000
Tanzania	5	59.7 M	11,900,000
Kenya	11	53.9 M	4,890,000
Morocco	42	36.9 M	880,000
South Africa	97	59 M	608,000
UK	348	67 M	195,000
Switzerland	72	8.6 M	119,000
US	3827	331 M	87,000

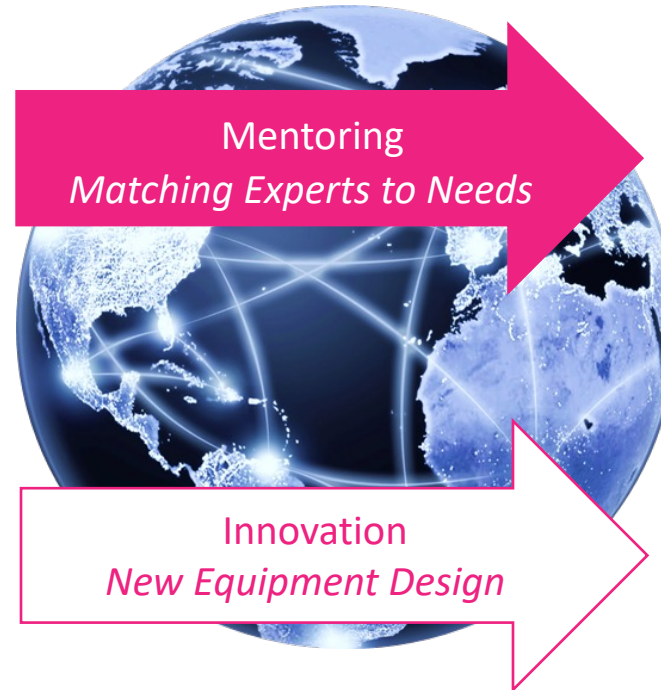


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Catalytic and disruptive innovation to transform global cancer care...

The State of Things...

- Underserved populations lack access to cancer care & expertise
 - Surge of interest in developed world to deliver high quality cancer care; but lack of effective strategies
 - Current environment encourages depletion of talent with brain drain from low- and middle-income countries (LMICs)
-
- Radioactive Cobalt-60 machines present possible environmental and security risks and lack the sophistication needed for modern radiotherapy
 - No practical, accessible, locally-reliable and affordable linear accelerator technology resources exist; HIC linacs unsuitable



ICEC Programs

- Promote expert mentoring through partnership program and some support for participants' career path dev.
- Transform cancer care by partnering with local communities which are committed to build sustainable infrastructure and programs
- Serve as a convener to engage stakeholders to promote innovation in new technologies, such as radiation therapy equipment design
- Obtain on-the-ground data to define the problem and solutions and measure impact

...reduces mortality and improves quality of life for people with cancer in LMICs and regions worldwide

Data African countries that have LINAC-based RT and from HICs

“Surveying the Challenges to Improve Linear Accelerator-based Radiation Therapy in Africa: a Unique Collaborative Platform of All 28 African Countries Offering Such Treatment” (as of 2021)

Country	Total number of LINACs surveyed
UK	25
USA	14
Canada	11
Switzerland	2
Jordan	1





ICEC's Introduction to Security Organizations

How and why did ICEC begin to work with Security organizations ?

ICEC's Twinning and Mentoring programs

- Feedback from ICEC programs reflected a lack of access to RT
- Where RT was available, often it was from a Co-60 RT EBRT machine

Nonproliferation focused meeting in Africa brought together radiation oncology and global policy

- In 2015, Miles Pomper and Ferenc Dalnoki-Veress from CNS introduced ICEC to the "Treatment, Not Terror" paradigm
- ICEC wanted to understand the barriers to the utilization of LINACs and investigate solutions to address these challenges
- Recognized that there was synergy in our goals and that our interests overlapped

ICEC founders have over 20+ years of expertise in health security from work within the Office of the Assistant Secretary for Preparedness and Response (now Administration for Strategic Preparedness and Response)



The ICEC perspective of the confluence among security and cancer care/radiotherapy-focused NGOs

“Treatment, Not Terror: Time for Unique Problem-Solving Partnerships for Cancer Care in Resource-Challenged Environments”¹

“The driving forces that bring the public health and security communities together are the real threat of dirty bombs (improvised explosive devices that include radioactive material) and other forms of nuclear and radiologic terrorism, and an enormous shortage of cancer care in LMICs.”

Both an unsecured or improvised radiological device, and cancer can generate substantial economic, social, and psychologic upheavals, including widespread fear and anxiety.

Security encompasses more than just radiological source security –

- Health security
- Economic security (workforce)
- Strong social infrastructure, etc.

The growing global cancer crisis threatens security worldwide.

¹ DOI: 10.1200/JGO.2016.007591 Published online on ascopubs.org/journal/jgo on January 11, 2017.

ICEC, security organizations and others working together

Addressing the problem:

- Workforce strengthening – twinning and mentoring programs
- Engagement with rad-sec orgs and others to combine resources (Ex. US DOE NNSA ORS, WINS, US DOS, CNS,
- Raising awareness - critical



Developing new solutions - Project STELLA (Smart Technology to Extend Lives with Linear Accelerators)

Promote innovation in new technologies

Stakeholder engagement with those who need a solution most – LMIC countries

- More robust, made specifically for LMIC challenges

Downstream benefit - The appeal to rad-security orgs:

Reducing reliance on Cobalt-60 for cancer treatment, while-addressing the growing global cancer crisis - A permanent threat-reduction program that saves lives



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Science and
Technology
Facilities Council

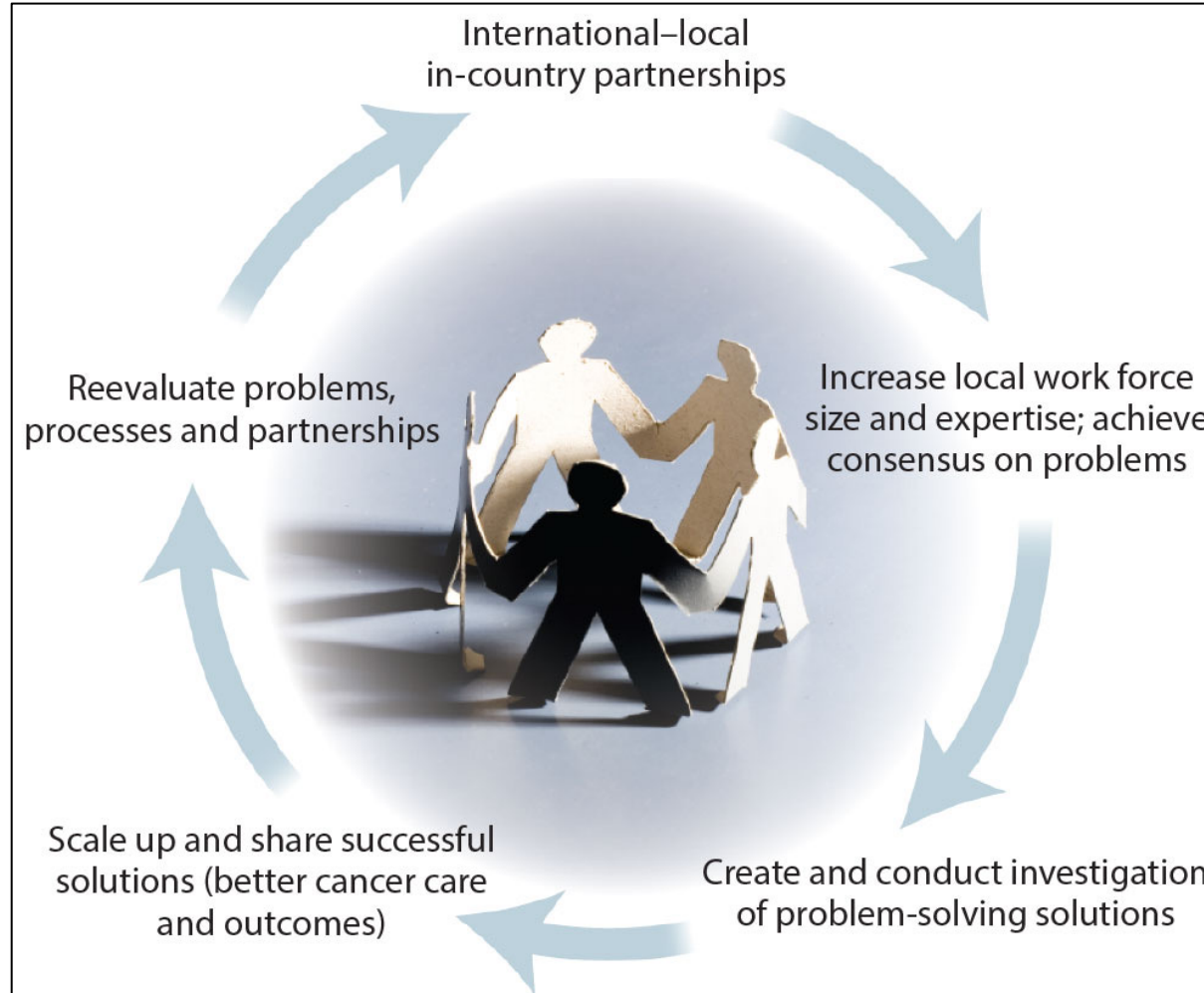


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Think globally, mentor locally: The power of trusted networks



Regional “ART” Study – Linking Health and Security

Access to Radiotherapy Technologies Study (ART) in the Baltics, Eastern Europe, Central Asia and the Caucasus

Armenia, Azerbaijan, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Tajikistan, Ukraine and Uzbekistan.

- Understand the level of access to LINAC-based RT
- Determine and understand barriers to and plans for the adoption of linacs with an aim to increase access to cancer care **and** reduce reliance on Co-60 EBRT in these regions.
- Included participation by:
 - Regulators of RT equipment
 - Physicians,
 - Physicists and
 - Research scientists



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Regional “ART” Study – Linking Health and Security



Results provided unique insights to the challenges and barriers faced in the adoption of LINACs, and identified excellent opportunities for engagement

- Education and training for all disciplines to support the adoption of LINAC technologies – which will reduce reliance on Co-60 EBRT machines
- Assistance with source security and disposal (transport) and bunker modifications (if LINAC is acquired)
- National advocacy efforts to encourage financial and administrative support for RT
- Establishing cancer registries
- Development of National Radiation Therapy Societies
- Staffing: radiation oncologists, RTTs, medical physicists, nurses, engineering and IT support
- Education and training resources - consideration of language needs and preferences



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ICEEC relationships with security organizations

STELLA and the ART Study are examples of impactful global health programs that serve as permanent threat-reduction programs that can have substantial global health and societal benefits.



Middlebury Institute of
International Studies at Monterey
James Martin Center for Nonproliferation Studies



Wilton Park





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“We are at the early stages of a stimulating crossroads for the prevention of nuclear and radiologic terrorism and for the support of global health. This is a transformational opportunity not to be missed.”

With appreciation and gratitude to those individuals at security organizations who have provided ICEC with their insight, knowledge and support.

Thank you