

# Global Health Rotation in Low- and Middle- Income Countries during Medical Physics Residency Training Program

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# Acknowledgements & Disclosures

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- Grateful for advice from Eric Ford, PhD
- No conflicts of interest



# Learning Objectives

- Articulate some of the challenges for radiotherapy in LMICs compared to HICs
- Understand the potential benefits of a GHR during the medical physics training program
- Apply this pilot program's roadmap for a GHR elsewhere, and take-away ideas for fostering collaborations between LMICs & HICs

# Collaborators



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# Motivation

- >80% of children with cancer live in LMICs where access to radiotherapy is reduced (ACS 2018, Zubizarreta *et al* 2015)
- How can we improve the care of these and other cancer patients globally?



# Proposal


- GHR within the CAMPEP-accredited MP residency program focusing on LMICs
- Mobilize a future workforce with a global perspective that seeks to reduce global health disparities
- Very few residency programs offer a GHR

# Partnership

## To Pilot the GHR we chose to collaborate with AUBMC

### Biomedical Physics & Engineering Express

Low- and middle-income countries can reduce risks of subsequent neoplasms by referring pediatric craniospinal cases to centralized proton treatment centers

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Children in developing countries can benefit from proton therapy

22 Feb 2018



Collaborators at the American University of Beirut Medical Center

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# Background

- Academic hospital in the middle east with focus on patient care, research, and education
- Provide excellent care in an under-resourced setting



<https://www.mapsofworld.com/lebanon/lebanon-location-map.html>







# Patient Care Team

- 4 Radiation Oncologists
- 3 Physicists
- 2 Radiation Oncology Residents
- 2 Medical Physics Residents
- 8 Therapists
- 3 Nurses
- Well trained, & many are board-certified





# Technology

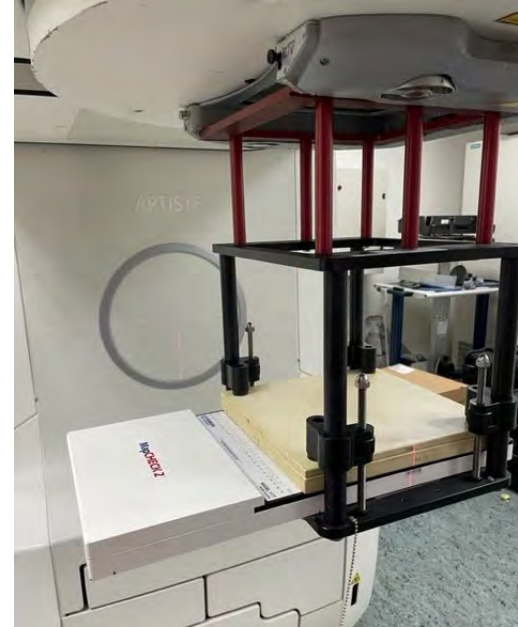
- 2 Siemens Artiste Linacs
- Siemens Somatom Sensation CT
- GammaMed HDR Afterloader
- Panther Prowess TPS (3DCRT)
- Eclipse TPS (IMRT)
- iPlan TPS (Cranial SRS)
- Velocity
- VisionRT
- Mosaiq R&V
- Epic EMR
- Satellite Clinic in the South (one Linac)





# Techniques

- 3D-CRT & IMRT
- SBRT, SRS, & IGRT
- TBI
- HDR GYN Brachytherapy
- Eye Plaque LDR
- Provide excellent patient care with less resources





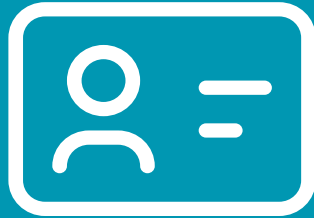
# Global Health Rotation

1. Integrated into the clinic at AUBMC
2. Complete a short clinical development project
  - Optimize treatment planning technique for pediatric patients
  - Often in LMICs, resources are limited & 3DCRT is used instead of IMRT due to lack of financial reimbursement (Gallagher *et al* 2021, Waxer *et al* 2022)

# Global Health Rotation Schedule

## Week 1

- Intro to the clinic
- Join AUBMC MP residency training
- Start clinical research project



## Week 2

- Shadow the "Physicist of the day"
- Continue clinical development project



## Week 3

- Shadow any special procedures (BT, SRS)
- Conclude the clinical development project





# Outcomes

- Resident received diverse training & mentorship
- Resident gained hands-on experience working in a LMIC
- Resident gained relationships & connections with AUBMC team
- Career trajectory with focus on helping cancer patients globally
- Encourage & refresh LMICs faculty



# Challenges

- Prolonged downtime of equipment
- External stress (economic crisis, political instability, regional tension/conflict, etc.)
  - ~1 hr of electricity per day
  - Gasoline shortage prevented travel to southern clinic
  - Faculty retention & supply shortages
    - Challenge to recruit
  - Many patients travel from Syria/Iraq for treatment
    - Quick planning
    - Re-irradiation setting





# Lessons Learned

- Length GHR
- Clinical development project
- Cultural exchange
- Importance of good collaborators
- Garner funding & institutional support
- Seek to grow partnership





# Future Directions

- Bi-directional residency exchange
- Guide MP trainee research projects
  - Treatment planning study for eFLASH radiotherapy
- Continue to strengthen partnership with AUBMC (clinical, research, & education)



# Vision And Mission

## Vision

Mobilize a future workforce with a global perspective that reduces healthcare disparities world-wide

## Mission

Establish a global health training framework in residency that is sustainable and scalable across institutions



# Rotation goals



## Clinical

Learn new clinical workflows in a fast-paced environment



## Research

Initiate a well-defined research project that can be completed remotely



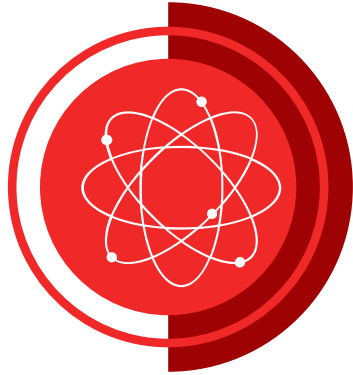
## Relationships

Build and strengthen relationships between UNMC and AUBMC



The main  
takeaway:  
it's worth it!

# Benefits



## Research collaborations

Widen your collaboration network and fuel future research directions



## Resident wellness

Gain a wider perspective on why we do what we do.



## The connection to rural health

Learn how to do more with less





# Keys to success



## Garner support

It is a significant time investment for both the host and visiting institutions. Strong administrative and financial support can help reduce your logistical headaches.



## Build on existing relationships

You don't need to reinvent the wheel. Does anyone in your group have international collaborators?



## Set achievable goals

Planning out realistic goals will help you organize your limited time wisely.



## Say yes!

You learn more by stepping outside of your comfort zone.

# Call to action

Global Data and Information Exchange Committee (GDIEC) under International Council in AAPM is developing a database of volunteers to address global needs worldwide.



[https://aapm.org/memb/profile/gdiec\\_volunteer.asp](https://aapm.org/memb/profile/gdiec_volunteer.asp)

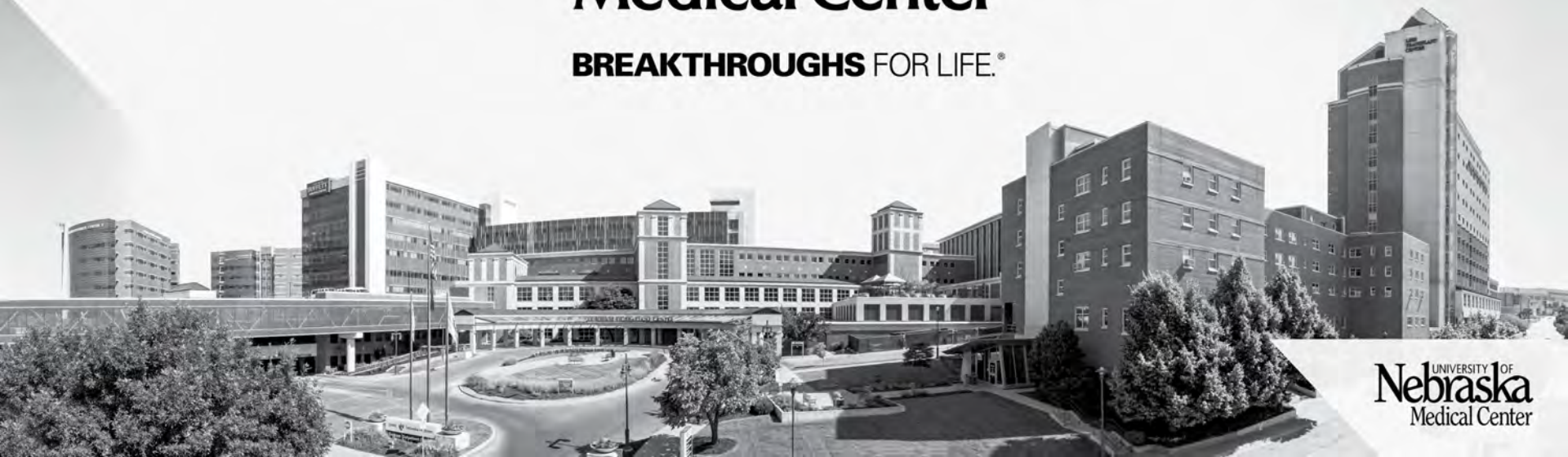
**Thank you!**





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