

# Gynecologic Cancer InterGroup Cervix Cancer Research Network

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- Physician- **Dr. Brandon Fisher**
  - Born in Utah- USA
  - Radiation Oncology with Gamma West Cancer Service in Utah
- Philanthropist
  - President -Radiating**Hope**
  - Board of Directors - Above and Beyond Cancer
- Mountain climber
  - Weber County Search and Rescue
  - Rock and High Altitude climbing
- **Motto-** Our well-being is a product of meaning we create!



## Topic:

### – *Global Oncology*

- Implementation of Cervical Brachytherapy in Developing Countries
  - Implementation of HDR brachytherapy in Senegal



# Senegal Project: HDR machine

International Journal of  
Radiation Oncology  
biology • physics

[www.redjournal.org](http://www.redjournal.org)



## GLOBAL HEALTH

### Radiation Oncology in Africa: Improving Access to Cancer Care on the African Continent

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## GLOBAL HEALTH

### Implementation of a High-Dose-Rate Brachytherapy Program for Carcinoma of the Cervix in Senegal: A Pragmatic Model for the Developing World

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# RADIATING HOPE



## RadiatingHope

### **Mission:**

Provide and update radiation equipment in developing countries and advance cancer care in those countries.



## HDR Brachytherapy in Senegal

- West Africa has one of the highest incidence rates of **carcinoma of the cervix** in the world.
- Senegal, a country of 13 million people, had a single 60-Cobalt teletherapy unit.
- No brachytherapy capabilities.

**Goal:** Radiating Hope- provide first brachytherapy machine.

- **Provide curative cervical cancer treatments.**



Institut Joliot-Curie Cancer Center in Dakar, Senegal

# Implementation of HDR brachytherapy -Senegal, West Africa



## The Institut Curie:

- 1 Cobalt machine
- 1 Conventional Simulator
- No HDR

## Faculty:

- 2 Rad Oncs
- 3 physicists
- 3 therapists
- no nurse

## The cancer center:

- treats 30-40 patients per day
- only treatment facility within a 500-km radius
- provides services to several neighboring countries.



# Cervical Cancer in Senegal



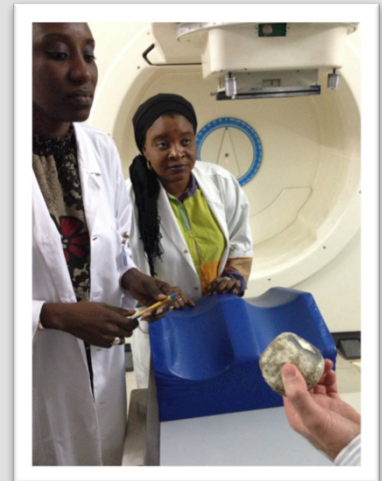
Waiting room in Senegal- 40% Cervical Cancer

Most common cancer:  
**-40% cervical**

-Cervical cancer treatment in Senegal prior to HDR:  
1) External beam, 45 Gy  
2) Boost gross disease with external beam  
3) Surgery

Outcomes:  
• **Mostly Palliative**

**Need HDR brachytherapy**





# Arrival of HDR machine

GYNECOLOGIC  
CANCER INTERGROUP

International Cooperative  
Groups in Gynecologic Cancers



Cervix Cancer Education Symposium, January 2016, Bangkok, Thailand



# Program Design- obstacles



- First- The HDR afterloader
  - Acquire, Ship, Install, HDR license, Radiation License
  - Bunker -had to be located in the 60 Co treatment vault.
- Second-Placement of the applicators
  - Train physicians and physicists
- Third- Treatment delivery
  - Long travel distances,
  - Need for hypofractionation
- Fourth- Treatment Planning- Oncentra treatment planning system (Nucletron, Elekta Medical Systems) was supplied with the afterloader, it could not be used to perform real-time treatment planning.

- There are 3 reasons:

- First: lack of necessary infrastructure and equipment: No computed tomography (CT) images. No digitizer was available to reconstruct the applicator geometries from 2-dimensional orthogonal images.
- Second: large up-front training requirement for physics.
- Third: significant risk of misadministration of treatment when using a real-time treatment planning technique.



# Overcoming the Obstacles

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## HDR Brachytherapy plans:

Used a fixed-geometry applicator and a library of treatment plans to safely deliver treatment without the requirement for computerized treatment planning

We developed a preplanned treatment technique involving design of an innovative system of fixed-geometry applicators (tandem and ring), preplanned dosimetry with a library of plans loaded directly into the afterloader control system, and isodose overlays (isodose curves printed on transparencies) for use with orthogonal simulator images to confirm that doses to International Commission on Radiation Units and Measurement (ICRU) rectal and bladder points were within tolerance



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## RadHope GHOS

- Join Radiating Hope in Africa
- GHOS= Greater Horn Oncology Symposium
  - Annual meeting in Tanzania
- Sign up: [RadiatingHope.org](http://RadiatingHope.org)



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**GYNECOLOGIC  
CANCER INTERGROUP**

An Organization of International Cooperative  
Groups for Clinical Trials in Gynecologic Cancers



Cervix Cancer Education Symposium, January 2016, Bangkok, Thailand



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## Thanks You!



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Thanks You!

