Global Evolution

Projected Needs in LMICs-2020
Projected Needs in LMICs-2020

Professional Development goes both ways

Building Capacity from Palliative to Curative Cure
Building Capacity from Palliative to Curative Cure

Varian Halcyon Systems Expand Access to Cancer Care at Three Centers in Africa

- Clinique le Littoral Casablanca, Morocco
- Centre d'Oncologie Nakhil Rabat, Morocco
- Busamed Oncology Center- Hillcrest, South Africa

Radiation Machines in Africa

Distribution of 293 Radiation Machines in Africa

16%

84%

By courtesy of Dr. Surbhi Grover
Career Paths in Global Health

BIGGEST - UPenn/Botswana Partnership

Implementation of Radiation Therapy
- Continued training and improvement (Industry, clinical partners)
- Data collection to demonstrate improved outcomes (NCI)
- Continued advocacy and patients education (NGOs)
- Strengthening health system for cancer care (MOH/NCCP)
- Retention of staff (MOH)
- Development of training program (MOH, IAEA, clinical and educational partners)

By courtesy of Dr. Surbhi Grover
Implementation of Radiation Therapy

- Purchase of equipment (MOH/IAEA/PACT)
- Hiring of staff (MOH/MPWB)
- Commissioning an Quality Assurance (IAEA, MPWB, clinical partners, industry)
- Training (IAEA, industry, professional societies, clinical partners)
- Clinical implementation (Professional societies, clinical partners)
- Workflow
- Checklists

By courtesy of Dr. Surbhi Grover

BIGGER - What we hope to accomplish?

- Medical Physics education and training programs in Tanzania
  - Master’s degree program
  - Short education courses
- Regional Training Hub

The Education Team

- Ocean Road Cancer Institute
  - Dr. Julius Mwaiselage
  - Dr. Khamza Maunda
- Muhimbili University
  - Dr. Twalib Ngoma
- University of Pennsylvania
  - Stephen Avery, PhD
- Harvard University
  - Wilfred Ngwa, PhD
## MUHAS Curriculum

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### Writing and Submission

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Projects which benefit LMICs

MLC for Co-60 treatments

Credit: P. E. Deb, M. R. Frangakis, J. A. S. Chakraborty

Auto-Contouring tools for cervical cancer

Credit: Lawrence Cost, MD Anderson

BIG – Global Health Activities

Current Trends and Technologies in Medical Physics, Cancer Imaging & Treatment

SPEM Scientific Conference 2010

March 16-18, 2010

BSS, USA

Schedule: Jan. 3-7, 2010

Arcon Conference on the Role of Basic Cancer Research in Understanding Clinical Oncology

2nd Annual Meeting, Nov 12-13, 2009

Amsterdam, The Netherlands

Schedule: Feb. 3-7, 2010

International Conference on Radiation Biology and Medicine" in Cancer Treatment

April 30 at the University of California, San Francisco

Schedule: Apr. 30, 2010

Penn Radiation Oncology

Penn Medicine
Grant submission – NIH R21

- **AIM 1.** Develop the *practical* USA-Africa Radiation Oncology Core (PROC) through a co-mentored research/training based program in radiological sciences.
  - Establish a research-based MSc. Degree Program in medical physics at MUHAS. Research co-mentors will include faculty from the USA and Africa. The program will enhance the ability of trainees to develop, implement and conduct low-cost radiation medicine technologies.
  - Partner with Ocean Road Cancer Institute to create a program, for cervical cancer patients, which automatically identifies pathologically enlarged lymph nodes on non-contrast simulation CT images. This program would be used for radiation treatment planning in low-resource environments where diagnostic imaging isn’t readily available.
- **AIM 2.** Develop and test a *virtual* USA-Africa ICT-powered Radiation Oncology Core (IROC). This ICT-powered core facility/platform will provide imaging and radiation oncology quality assurance (QA) services and provide a Radiation Oncology Incident Learning or error reporting system that is voluntary and confidential.

Foundations for Global Health
Internal Funds

Medical Physics Program in Bangladesh

DAAD- PAGEL: Objectives

- The aim of the program is to offer medical training and further education opportunities in the medical field for partner universities, which are cutting-edge and suit the local context.
- In addition, development-related professional networks between students, alumni, and experts in the health sector are to be established. Sustainable development structures are expected to also develop between the participating universities.
- With the PAGEL partnerships, German higher education institutions are expected to significantly expand their expertise in development cooperation.

Medical Physics Program in Bangladesh

Activities of Mannheim Pagel project 2014-2017

- 4 students from Bangladesh attended 3-2 semesters of Mannheim Masters Course Med.Phys.
- Support of 8 graduated med. physicists from Bangladesh (2 per year) for:
  - 3-month practical trainings at hospitals in Germany
  - Augsburg, Aachen, Brandenburg, Celle, Frankfurt, Dortmund, Kiel, Mannheim
- Support of 5 PhD students from Bangladesh for experimental parts of their thesis in Germany.
- Exchange of 2-3 teachers /scientists per year to/from Bangladesh.
- Support of 2 Bangladesh students per year to participate in a Mannheim medical physics workshop.
Medical Physics Program in Bangladesh

Study fees covered through donations by industrial partners

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Medical Physics Program in Bangladesh

What is planned for 2018-2021?

Support of medical physics education in Bangladesh
- Support practical training
- Improve mathematical skills and technical knowledge
- Provide access to e-learning

Support of south-south co-operations and networking
- Joint activities of universities and scientific institutions in teaching and workshops
  - Key role for South Asia Center for Medical Physics and Cancer Research (SOMPCR)
- Future goals:
  - Joint med. phys. and GA laboratory library
  - Research program for Master and PHD work

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Medical Physics Program in Bangladesh

What is planned for 2018-2021?

Support of medical physics education in Bangladesh
- Exchange of teachers
- Internship of teachers and graduated medical physicists to advanced med. phys. schools in Germany
- Invitation of students to exchange semesters in Germany
- Support of PhD students

Support of south-south co-operations and networking
- Med Phys. schools and hands-on workshops in Bangladesh and Southern Asia
- Organised by South Asia Center for Medical Physics and Cancer Research (SOMPCR)
- Support of teachers and instructors
- Support of students attending teaching and workshops
- Training of senior medical physicists
- 3-month practical visits in Germany
Final Thoughts

• Be respectful; build and maintain trust.
• Be open to change
• Be creative with funding opportunities

Thank you!!