Professional Symposium: Monday 30 July 2018
Medical Physicists and the Global Health Challenge

Medical Physics for World Benefit (MPWB)

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Disclosures

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Overview

• What is the problem?
• Why another organization?
• What is Medical Physics for World Benefit (MPWB)?
  • Vision, Mission, Objectives, Values
• How does MPWB function?
• Example activities
• Uniqueness of MPWB
• Summary
The Problem

• Fast facts about cancer
  • Cancer causes 1 in 8 deaths worldwide
  • WHO ... the toll of cancer & other chronic diseases is greater in LMICs where they occur “at younger ages, suffer longer – often with preventable complications – and die sooner than those in HICs”.
  • More than 70% of all cancer deaths occur in LMICs
The Cancer Problem ... in LMICs

Cancer kills more than HIV/AIDS, TB, & malaria combined

Funding for prevention & treatment of cancer is 2% of total for other diseases

Moten et al. J Global Health 4: 1;2014
The Problem

Reduction by $\frac{1}{3}$ in premature mortality from non-communicable diseases, including cancer, by 2030

Enhance international support for implementing effective and targeted capacity-building
Radiation Therapy ... a Key Element

- Main methods of cancer treatment

- Surgery: 49%
- Radiotherapy: 40%
- Chemotherapy: 11%

WHO 2016
Global Medical Physics Activities

Radiotherapy ~75%

Radio-diagnostics ~14%

Nuclear medicine ~6%

Radiation Protection/Health Physics ~3%

Other ~2%
The Medical Physics Gap

• Lancet Oncology, Sept 2015
  • Projection ... by 2035 in LMICs for RT
    • 22,000 MPs needed
  • Call for action ... by 2025 in LMICs
    • 6,000 MPs to be trained
• This is for RT only ...  
  • Add other MPs: another \(~25\%\)
    • i.e., 7,500 MPs to be trained by 2025

LMICs = Low-to-Middle Income Countries

Atun Lancet Oncol 16: 1153-1186; 2015
Medical Physics Disparities

• Medical Physics growth more rapid in LMICs than HICs
  • Improved health care
  • Ageing populations
• Less available education/training programs in LMICs than HICs
  • Lack of experienced educators
  • Lack of equipment
  • Infrastructure takes time to be developed
• Concerns about education abroad
  • Different diseases
  • Different infrastructure
  • Different technologies
  • Potential for “brain drain”
How to deal with disparities

Expansion of cancer care and control in countries of low and middle income: a call to action


A recalibrated global response could transform cancer care and control, but will need coordinated efforts and synergy among international organisations, such as WHO, the World Bank and regional development banks, bilateral donors, national research funding bodies, nongovernmental agencies, governments, and local, regional, and global civil society organisations. New funding from private, bilateral, and multilateral donors...
Coordination, collaboration, partnering ... Multiple organizations

... Typical approaches suggested by multiple reports addressing the global cancer problem
What to do?

• Partnerships and collaborations
  • MPs in HICs and LMICs
    • Education programs
    • Training programs
      • Residency
      • Continuing education
    • Joint on the job mentoring support
      • Locally
      • Remotely
  • Development of user friendly on-line education and training materials

... only a partial solution
Factors Impacting Training in LMICs

• In society
  • Weak/dysfunctional health systems
  • Corruption and lack of transparency
  • Lack of enabling infrastructure

• In education ... need ...
  • Local desire in LMICs for MP mobilization
  • Basic infrastructure allowing MP mobilization
  • Resources available for MP mobilization
  • Local individuals
    • Seeking MP expertise advancement
  • Collaboration and partnering
    • Through enriching organizations
  • Clear understanding of local circumstances
    • By mentors and collaborating organizations
Multiple Enriching Organizations

- >35 RT enriching organizations\textsuperscript{1}
  - Professional societies
  - Volunteer organizations
  - Government Organizations
  - NGOs
- Coordination is crucial!
  - ... but how?

\textsuperscript{1} Van Dyk & Meghzifene, Semin Radiat Oncol 27:124-135; 2017
Closing the MP Gap – How?

• MPs at any career stage can provide partnering & mentoring support through enriching organizations
  • Still working?
    • Short term ... vacation, summer breaks, time between jobs
    • Longer term ... sabbatical, unpaid leave
  • Retired?
    • Have more experience and time
    • More flexibility
  • Lasting sustainable change
    • On-going periodic visits
    • Regular contact
• Employers should encourage this altruistic outreach
  • Great benefits
    • To the individuals
    • To the institutions contributing support
    • To the institutions receiving support
• Philosophical and real support by employers ...
  • Would be a tremendous incentive
  • Would go a long way to addressing the Medical Physics gap
• Those in HICs should encourage management to allocate a small percentage of time to this type of outreach

HICs = High Income Countries
Medical Physics for World Benefit

- Young organization
- Grass roots support
  - Education
  - Training
  - Mentoring
- Involvement in Medical Physics activities
- Other support activities as appropriate
MPWB Vision

• A world with access to effective and safe applications of physics and technology in medicine
  • Note:
    • Not just radiation therapy
    • Also other areas of Medical Physics
MPWB Mission

- To support activities which will yield effective and safe use of physics and technologies in medicine through advising, training, demonstrating and/or participating in medical physics-related activities, especially in low-to-middle income countries.
  - Largely intellectual support through education, training, mentoring, collaborating
  - Not into equipment donations
    - But will support related training initiatives as appropriate
MPWB Objectives

- To provide Medical Physics support
- To advise/support/guide/train
- To participate in activities related to MP technologies
- To build database of QMPs in support of vision/mission/objectives of MPWB
- To develop website for communications
- To solicit funding to support MPWB Vision/Mission/Objectives
- To maintain close communications with relevant/related organizations
MPWB Values

- Equal Access
- Open Communication
- Spirit of Collaboration
- Mutual Respect
- Evidence-Based
- Integrity
- Safety & Security
- Skills & Knowledge Sharing
- Public Relations
- Financial Transparency
- Confidentiality
Partnering!

- Partnering in education and training
- Partnering in technology and facility design
- Partnering in technology acquisition
- Partnering in QA/QC
- Partnering in technology commissioning
- Partnering in safety-related activities
Example Activities

- Have folders on 15 LMIC countries ... variety of activities/communications
- Communications link for recruitment
  - Ethiopia, Botswana, Tanzania
- Collaborating with AAPM/IOMP Equipment Donation Program ...
  - Dosimetry systems
    - Training of recipients of dosimetry systems
    - Continued communication/mentoring
- Open syllabus
  - Provide on-line links to IAEA Clinical Training programs
- Collaborator on CERN/STFC/ICEC initiative to develop low cost, robust RT technologies
- Requested to help with development of a Medical Physics Master’s degree programs in Zimbabwe, Kenya, and Ethiopia
- Fundraising to perform above
Uniqueness of MPWB

• Why does MPWB not work within IOMP or AAPM or ...?
  • MPWB has a unique, focussed mandate
    • Including education/training/mentoring support at the grass-roots level
  • Other organizations have a much broader scope
    • Multiple priorities
    • Generally at the regional or national level
    • International outreach is very small % of total activity/budget
  • MPWB is registered as a charitable organization
    • Allows fundraising for its objectives
      • Difficult to do within other organizations
      • Competing priorities
  • MPWB seeks to work in collaboration with other organizations
    • MoU with AAPM
    • Supported by COMP ... MoU under review
    • Working on becoming an Affiliate Organization of IOMP
    • Collaborating/communicating with IAEA
    • Collaborating with International Cancer Experts Corp (ICEC)
Summary

• MPWB is:
  • A membership organization
    • Devoted to a world with access to effective and safe applications of physics and technology in medicine
  • Registered as a charitable organization
    • In US and Canada
• MPWB members ...
  • Have a passion
    • For reducing global health disparities
    • For supporting activities that will yield safe and effective use of technologies
    • For partnering with MPs in challenging environments
• For more information, go to www.mpwb.org

... membership/visitors meeting on Tuesday 12:15 in Omni Nashville Hotel Room: Music Row 6, Level 2
... See AAPM Committee Schedule
Medical Physics for World Benefit

**MPWB**

MPWB is focused on partnerships between Medical Physicists in income-challenged contexts and those in better resourced environments to provide sustainable educational and mentoring support. Any Medical Physicist with a passion for organizational, mentoring and partnering support is encouraged to review the MPWB website, to become a member and to provide support in terms of time, talent and money.

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**Overview of MPWB Activities**

- Education and training
- QA/QC
- Technology commissioning
- Safety-related activities
- Technology acquisition
- Technology & facility design

Contact us! We would love to hear from you!

**E-mail:** medphyswb@gmail.com

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**BETTER TOGETHER**

Partnersing for safe and effective use of physics in medicine.