Addressing the Cancer Challenge: International Cancer Expert Corps.

AAPM Symposium:
The Global Cancer Challenge: What Can We Do?

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FACP, FACR, FASTRO, FASCO
International Cancer Expert Corps
(working to enhance efforts of NCI and NIH)

• No financial conflict of interest
• **Views expressed are those of the presenter.**
• No endorsement by NCI, NIH, ASPR, DHHS or any other U.S. Government agencies has been given or inferred
The Global Cancer Challenge: What can we do?

- **Challenges** and **opportunities** in moving toward alternative technologies

1. Defining the aggregate problems that can be addressed.
2. Unique confluence of issues and expertise- don’t miss a great opportunity!
3. Technology- what we have and alternative technologies for Rx and networking.
4. Cancer care: achieving capacity, capability and credibility
5. Qualified people- recruiting, retaining and sustaining
Defining the Problem:

WHO Global Burden of Disease


LMIC cancer death
% of global total
2015- 70%
2030- 75%
Defining the problem for example

ACCESS TO RADIOTHERAPY: Radiotherapy is an essential part of the treatment of cancer

There is a shortfall of over 5000 radiotherapy machines in the developing world

Over 30 African and Asian countries have no access to radiotherapy
1. Defining the aggregate problems that can be addressed.
   - It is a public health and NCD problem with very little cancer care being available in LMICs.
   - Shortage of radiation therapy equipment in LMICs; radiation therapy is needed for cure and palliation of many cancers.
   - Securing sources and public safety necessary.

2. Unique confluence of issues, expertise and interest—don’t miss a great opportunity!

3. Technology—what we have and alternative technologies for Rx and networking.


5. Qualified people—recruiting, retaining and sustaining.
The state of global health in 2014

<table>
<thead>
<tr>
<th>YLL- years of life lost</th>
<th>Low income</th>
<th>Lower middle income</th>
<th>Upper middle income</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS</td>
<td>YLL</td>
<td>DAH</td>
<td>YLL</td>
</tr>
<tr>
<td></td>
<td>7.6%</td>
<td>41.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Malaria</td>
<td>11.2%</td>
<td>14.3%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>3.1%</td>
<td>3.3%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Maternal, newborn, and child health</td>
<td>37.8%</td>
<td>17.1%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Noncommunicable diseases</td>
<td>20.7%</td>
<td>0.2%</td>
<td>34.0%</td>
</tr>
<tr>
<td>Other</td>
<td>19.7%</td>
<td>23.5%</td>
<td>21.9%</td>
</tr>
</tbody>
</table>

"Need" "Investment"
After the windfall: Plateauing budgets for global health sharpen the focus on what really works


Skewed funding For NCDs
The diseases that cause the highest burden—expressed in disability-adjusted life years, or DALYs—don’t get most of the international largesse. In 2010, HIV/AIDS
The generic challenges in moving to just health care: “Public Health Oncology”*

- Weak underlying health systems
- Financing - for infrastructure and staff
- Transparency
- Governance (selecting right people)
- Workforce (manpower) - capacity and capability
- Incomplete knowledge about diseases, patient/host factors and cost-effective interventions
- Sustainability
- “Brain-drain” from resource-poor to resource-rich
- Top-down approaches from developed nations often not applicable to the local situation

1. Defining the aggregate problems that can be addressed.

2. Unique confluence of issues, expertise and interest—don’t miss a great opportunity!
   - Investment in NCDs must increase globally
   - Evidence-based projects
   - Health care issues are part of a larger set of problems.
   - But there are multiple sectors who now can be involved

3. Technology- what we have and alternative technologies for Rx and networking.

4. Cancer care: achieving capacity, capability and credibility

5. Qualified people- recruiting, retaining and sustaining
GLOBAL HEALTH

Cobalt, Linac, or Other: What Is the Best Solution for Radiation Therapy in Developing Countries?

Brandi R. Page, MD, * Alana D. Hudson, MSc, † Derek W. Brown, PhD, † Adam C. Shulman, MS, ‡ May Abdel-Wahab, MD, § Brandon J. Fisher, DO, ||•|| and Shilpen Patel, MD#

### Advantages of linac
- Better quality dosimetry
- Security concerns for an active source
- Radiation safety
  - Sophisticated treatment
  - Hypofractionation
  - Continuity with advances learned during training
  - Issue of new, refurbished and transition from lower to higher tech

### Advantages of cobalt
- Dependability
- Simplicity of repair
- Less sophisticated to manage safely
- Cost (not include replacement and costs for security)
- Easier to learn
- Potential (IMRT)
  - Consider mix of equipment and phase in complexity
1. Defining the aggregate problems that can be addressed.

2. Unique confluence of issues, expertise and interest—don’t miss a great opportunity!

3. **Technology**—what we have and alternative technologies for Rx and networking.
   - There are technical pros and cons of cobalt and linac
   - Advanced Rx planning and telecommunications may improve Rx in general & enhance collaboration
   - Highly trained personnel may need equipment capable of advanced treatment approaches to remain enthusiastic (staff retention)?

4. Cancer care: achieving capacity, capability and credibility

5. Qualified people—recruiting, retaining and sustaining
Think globally, mentor locally.

International-local
in-country partnerships

Reevaluate problems,
processes and partnerships

Increase local work force
size and expertise; achieve
consensus on problems

Scale up and share successful
solutions (better cancer care
and outcomes)

Create and conduct investigation
of problem-solving solutions

CN Coleman and RR Love.
Sci Transl Med 2014;6:259
**Translating intention into action.**

**Capacity, capability, credibility - sustainable system**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Goals</th>
<th>The health care system</th>
<th>Tools and methods</th>
<th>Accomplishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expertise</td>
<td>Capability capacity; sustainable “in-country” cancer program</td>
<td>Underserved community</td>
<td>Mentorship; New career path; Tap into wisdom of retirees</td>
<td>Transform health care value system; Catalytic innovation</td>
</tr>
<tr>
<td>Resource-poor (LMICs)</td>
<td></td>
<td>Mentor corps</td>
<td>Quality data bases; Appropriate metrics; Shared learning</td>
<td>Improvements are data driven; Shared solutions; New economic models</td>
</tr>
<tr>
<td>Resource-rich</td>
<td></td>
<td>New health care models</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation science</td>
<td>Effective use of knowledge; New systems-solutions to hard problems</td>
<td>At cancer center</td>
<td>Novel IT technology; Cell phone for remote outreach</td>
<td>Better health; New Jobs; New markets</td>
</tr>
<tr>
<td>Technology</td>
<td>Best use of personnel; Remote outreach and improved access to care</td>
<td>Outreach, remote sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>Understand diseases; Targeted therapeutics and prevention</td>
<td>Regional hospital as needed</td>
<td>Clinical epidemiology, translational and basic mechanistic research</td>
<td>New knowledge; Better prevention and treatment agents and strategies</td>
</tr>
<tr>
<td>Cancer and health</td>
<td>Expandable; Exportable models; Shared resources</td>
<td>Ultimate goal: Reduced cancer burden</td>
<td>Shared knowledge; Economic models that support more investment</td>
<td>Common ground; Diplomacy; Shared accomplishments</td>
</tr>
<tr>
<td>(applicable to NCDs)</td>
<td></td>
<td></td>
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4. Cancer care: achieving capacity, capability and credibility
   - Spectrum of healthcare responsibilities is changing.
   - Issues require broad range of expertise
   - Effective and innovative integration among sectors
   - Built from the ground-up and inside-out (local ideas/people)

5. Qualified people—recruiting, retaining and sustaining
There are things each can and cannot do (well)

Non-Government Organization (NGO)

- A US based, NGO
- Global from outset
- Associate Member: Union International for Cancer Control (UICC)
- Partner: Consortium of Universities for Global Health (CUGH)

www.iceccancer.org
Goals (1)

• **Build capacity and capability** to reduce the burden of cancer through mentoring local champions so they can conduct stage- and region-appropriate protocols.

• **Mentoring** - some on-site visiting, mostly through weekly teleconferencing using carefully crafted “bottom up/top-down” multi-year plans so Centers in LMICs could join the international community of clinical and translational research.
Goals (2)

• **Implementation science**: Innovative approaches to cancer health disparities built on person-to-person sustainable mentoring and shared among projects.

• **Cultural change, big vision and sustainable accomplishments**: Multi-national partnership would create a *critical mass and spectrum of experts*, increase the likelihood of success, allow rapid response to opportunities and demonstrate the value of altruistic service.
ICEC – what it would uniquely accomplish

Multi-national corps of experts, ready for assignment

Coordination and pooling of efforts, protocols, SOPs

Innovative approaches: capacity and capability to change outcomes

Critical mass & international teams. Visible, effective

Experts from Hub 1

Hub 1

ICEC Center 1A & project

ICEC Center 1B & project

Experts from Hub 2

Hub 2

ICEC Center 2A & project

ICEC Center 2B & project

Experts from Hub 3

Hub 3

ICEC Center 3A & project

ICEC Center 3B & project

- Reduced burden of cancer
- Shared results and approaches
- Bona fide academic accomplishment
- Innovative social and business models
- Effective place to attract investment
- Career path for individuals
- Sustainable overall program in long-term
**ICEC Expert Panels:**

**Broad spectrum of expertise for complex systems solution**

<table>
<thead>
<tr>
<th>Medical</th>
<th>Science, non-MD</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation oncologists</td>
<td>Prevention and screening</td>
<td>Educational tools</td>
</tr>
<tr>
<td>Medical oncologists</td>
<td>Epidemiologists</td>
<td>Finance</td>
</tr>
<tr>
<td>Pediatric oncologists</td>
<td>Medical physicists</td>
<td>Clinic administration</td>
</tr>
<tr>
<td>Surgical oncologists</td>
<td>Technologists</td>
<td>International policy</td>
</tr>
<tr>
<td>Nurses</td>
<td>Basic &amp; translational scientists</td>
<td>Patient advocacy</td>
</tr>
<tr>
<td>Pathologists</td>
<td>Treatment guidelines</td>
<td>Economists</td>
</tr>
<tr>
<td>Radiologists</td>
<td>Statisticians</td>
<td>Social workers</td>
</tr>
<tr>
<td>Surgeons - general</td>
<td>Social scientists</td>
<td>Communications</td>
</tr>
<tr>
<td>Surgical subspecialists</td>
<td>Regulatory Affairs specialists</td>
<td>Cancer survivors</td>
</tr>
<tr>
<td>Pharmacologists</td>
<td>Pharmacists</td>
<td>Information tech (IT)</td>
</tr>
<tr>
<td>Psychologists</td>
<td></td>
<td>Data-management</td>
</tr>
<tr>
<td>Public health</td>
<td></td>
<td>Legal</td>
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   - Need new approaches building from various ongoing efforts
   - International collaboration and exchange of ideas, cultures and science
   - Local investment – part of community NCD effort
   - Altruistic service *must be* recognized, valued and rewarded
So, what to consider from a radiation oncologist perspective: (personal opinion)

1. Paradigm shift- *mission of improving global care* – is not second rate use of professional time
   - major social/medical healthcare issue
2. Sustainable partnerships
   - Person-to-person relationships
   - Single course or periodic visit not sufficient
3. Training, education, research,
   - joint projects; not top-down solutions
4. Creative solutions to a complex set of problems
   - Implementation science
“It always seems impossible until it's done.”

Nelson Mandela
Want further yakking?

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ICEC Website (in evolution)
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