Disclosure of Relevant Financial Relationships

USCAP requires that all planners (Education Committee) in a position to influence or control the content of CME disclose any relevant financial relationship WITH COMMERCIAL INTERESTS which they or their spouse/partner have, or have had, within the past 12 months, which relates to the content of this educational activity and creates a conflict of interest.

Pathology and Global Health: Why?

We can do it…
There is no reasonable argument against it.

Connecting Patients to Oncologists…
Anatomic Diagnosis = Treatment = Survival

Providing Diagnostic Services
Support for gaps in coverage
Bridge to self-sufficient units
Training tool for existing units
Assessing the infrastructure for improvement

The Continuum of Care and Services

Education
Screening
Early Detection Care

Prevention
Diagnostics

Treatment
Survivorship
Palliative Care

Patient Care Work Flow

Repeat Biopsy

Surgery
Dermatology
GI
GYN

Biopsy
Pathologist
Cytologist

Inadequate
Insufficient
Correlation

Clinical
Stage
Excision

Internist
Oncologist
Surgeon

Special Stains
IHC

Results

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Number of People Served By Each Pathologist in Sub-Saharan Africa

<table>
<thead>
<tr>
<th>Population Range</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Active Pathologist</td>
<td></td>
</tr>
<tr>
<td>&gt;5.0 million</td>
<td></td>
</tr>
<tr>
<td>2.5-5.0 million</td>
<td></td>
</tr>
<tr>
<td>1.0-2.5 million</td>
<td></td>
</tr>
<tr>
<td>200,000-500,000</td>
<td></td>
</tr>
<tr>
<td>500,000-1 million</td>
<td></td>
</tr>
<tr>
<td>Data Not Available</td>
<td></td>
</tr>
</tbody>
</table>

*Royal College of Pathologists, 2012
**Anatomic and Clinical Pathologists, AAMC, 2007
Important Features for a Successful Outcome in This Case...

Clinical photographs
Best margins possible
Tissue placed in appropriate amount of formalin
Wide sampling of tumor
Access to immunohistochemistry

Final Anatomical Diagnosis
Dermatofibrosarcoma protuberans
Very close but negative margins
IHC + CD34, mitoses present, “fibrosarcomatous areas” present
Small recurrence at 6 months with local excision of typical DFSP

University of Malawi College of Medicine Surgical Pathology Data 1997-2007

Infectious, 4159, 28%
Non-infectious, 10801, 72%

University of Malawi College of Medicine Surgical Pathology Data 1997-2007

Acute Inflammation, 238, 7%
Chronic Inflammation, 1937, 58%
Tuberculosis, 1776, 44%
Schistosomiasis, 262, 6%
Infection (non-TB, non-Schistosomiasis), 214, 5%
University of Malawi College of Medicine Surgical Pathology Data 1997-2007

Female Genital Tract, 138, 38%
Bladder, 127, 35%
Other
Male Genital Tract
GI Tract, 37, 10%
Ovary, Fallopian Tube, Uterus, Cervix, Vagina, Vulva

Assessment of Malawi Pathology

Infectious diagnoses make up less than 5% of total
HIV-related cancers predominate
Kaposi Sarcoma (LCD)
Cervical Cancer
Cancers present MUCH later
(T4 very common)
No pulmonary resections? -> no ventilator support!
Aggressive cancers in younger patients
HIV related?
Nutrition?
Environmental?

Site Assessment for Pathology Preparedness

Site has...
Nothing
- Lab, pathologist but understaffed
  - Visiting pathologists
  - Telepathology
- Lab, sufficient staff, but not meeting standard of care
  - Visiting pathologists
  - Telepathology
- Lab, sufficient staff, and meets standard of care
  - Model for other labs

Note:
1. “Site” could be any geographical area
2. Presence/absence of Oncologist/Surgeon

Entity Partnerships

Example: Partners in Health -> DFCI/BWH
Multiple sites with limited access to pathology
Clinicians/surgeons biopsy (by discretion)
Paid field workers of PIH
Pathologists review and report cases
Pro bono and absorb costs of processing
Clinical Oncologists provide therapy (as needed)
Pro bono and donate therapeutics

Rwanda – 11.78 M
Population-specific Solutions

Entity Partnerships

<table>
<thead>
<tr>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to highest quality care</td>
<td>Sustainability</td>
</tr>
<tr>
<td>Cutting edge diagnostic</td>
<td>Volunteer fatigue</td>
</tr>
<tr>
<td>Serial follow up</td>
<td>Under utilization</td>
</tr>
<tr>
<td>Continuity of information</td>
<td>Capacity building?</td>
</tr>
</tbody>
</table>

COSTS: $$$$$$

Success in Entity Partnership

Requirements

- Country commitment
- Functioning, self-sustaining laboratory
- Permanent, highly skilled pathologist(s)

Pathways to success

- Data on outcome improvement, cancer statistics, morbidity/mortality
- QA/QI, compliance, inspection
- External/internal training with restrictions

Individual Volunteers

Volunteers travel to foreign site

- 2 weeks to 6 weeks
- Requires vacation time or departmental leave
- Airfare, miscellaneous costs by volunteer
  - Tax deductible if through 501(c)(3)
- Foreign site provides workspace, caseload, administrative support
  - Requires working laboratory with technicians and supplies to produce slides and/or trainees ready to be trained

Individual Volunteers - Malawi

Personal Experience

Site situation in 2010 (Blantyre)

Two functioning pathologist
- First is head of department, does all teaching of pathology in the medical school
  - vice-principal of the college of medicine, runs the national cancer registry, etc...
- Second is listed as 10% clinical service

Arrive January 3
Cases are from August

Depart January 24
Last case signed out is from January
Individual Volunteers - Malawi

Plan and Outcome

Five to Seven permanent pathologists after 5 years
Two recruited and now at QECH (Blantyre)
Four additional being recruited (funded)

Volunteers from US/Europe/Canada visited from 2011 to 2016
Continuous coverage = improved turn around time
Continuous results = “retraining” of non-pathologist physicians
Restructuring flow of specimens with redistribution

PROS

Access to highest quality care
Improved turn around time
- With continuous volunteers
Increased volume
Needs assessment
Teaching resources

CONS

Sustainability
- Bridge to ?
Capacity building
- Trainees ?
- Physical Resources ?

Success in Individual Volunteers

Requirements:
- Financial support
- Local plan for permanent pathologists to be placed

Pathways to success
- Fundraising
- Local pathologists empowered to trained new pathologists through sponsored programs (MEPI/Afrohealth)

Costs: $$$$
Initiatives – Integrated Partnership Approach

- ASCP initiated because of pathology need
- Partners include:
  - Care and treatment
  - Medical Education
  - Radiology/Radiation Oncology
  - Diagnostics, Technology, and Therapeutics
  - Industry

Initiatives – Integrated Partnership Approach

- Each country requires:
  - Assessment
  - Implementation Plan with roles for partners
  - Project leads (champions) to run each plan component
  - “Silos” become “Industrial Complexes”
  - Starting with one disease (common) quickly requires collaboration to cover all diseases

Locations

1. Haiti
2. Mali
3. Liberia
4. Ivory Coast
5. Ghana
6. Ethiopia
7. Kenya
8. Uganda
9. Mozambique
10. Tanzania
11. Congo
12. Zambia
13. Malawi
14. Swaziland
15. Lesotho
16. South Africa
17. Botswana

Lessons Learned

- Country Readiness Assessment
- Collaboration with Ministries
- Expand Partners Network
- Funding

Our Partners
Thank You!