
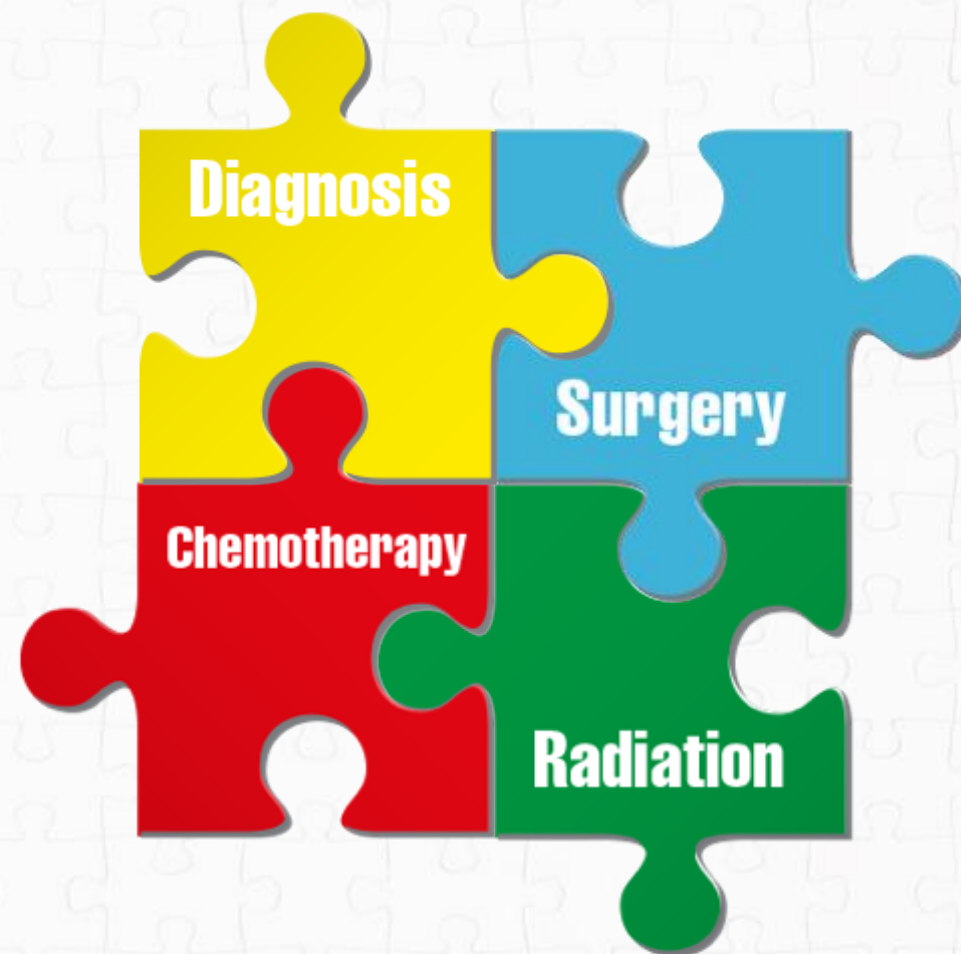


**Diagnostics are Essential for Healthcare:
Challenges in LMICs and How to Overcome
Them**
Pathological Diagnosis: The Center of Cancer Management No Matter
Where You Are!

Dan Milner, MD, MSc
ASCP, Chicago, IL





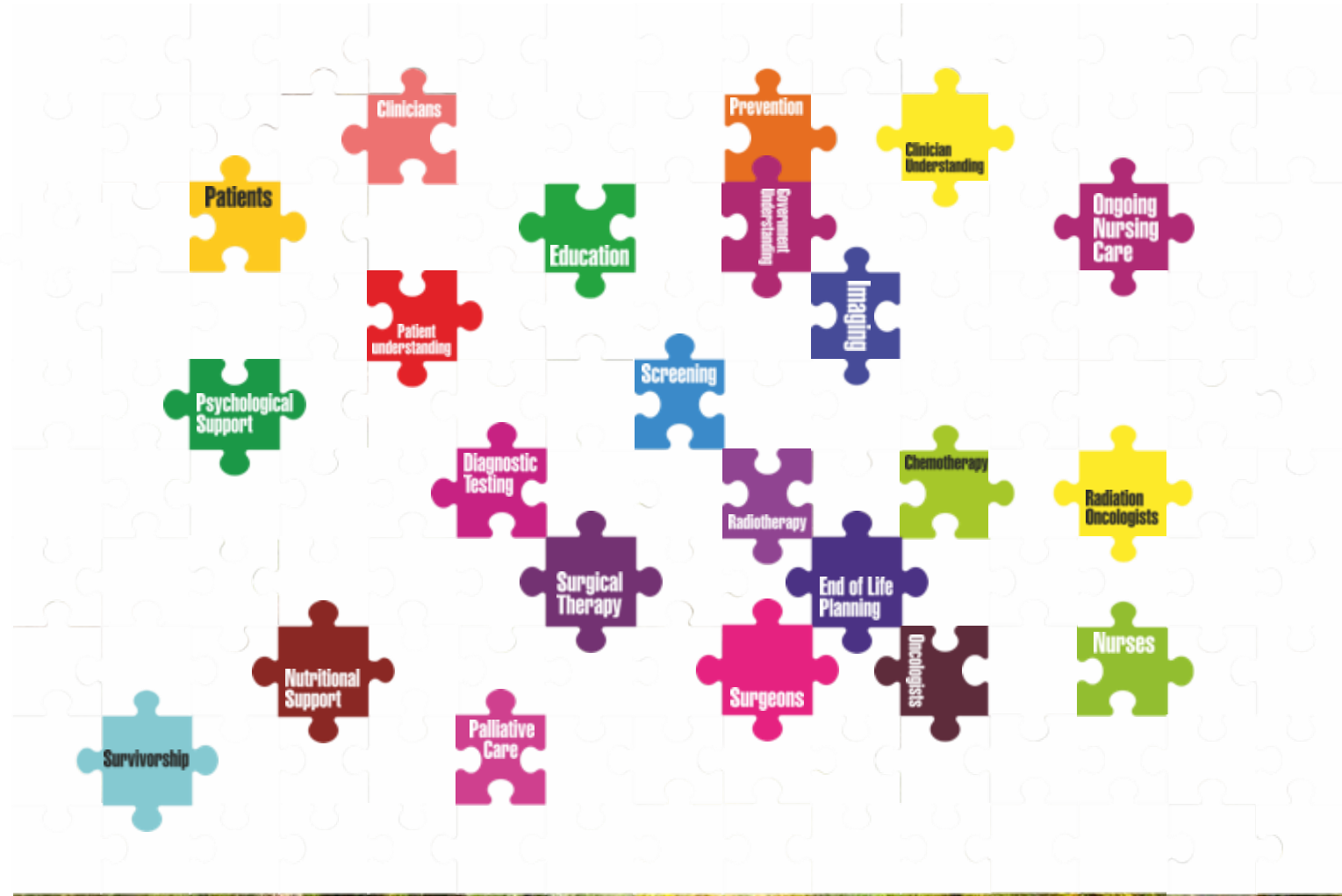


Diagnosis

Surgery

Chemotherapy

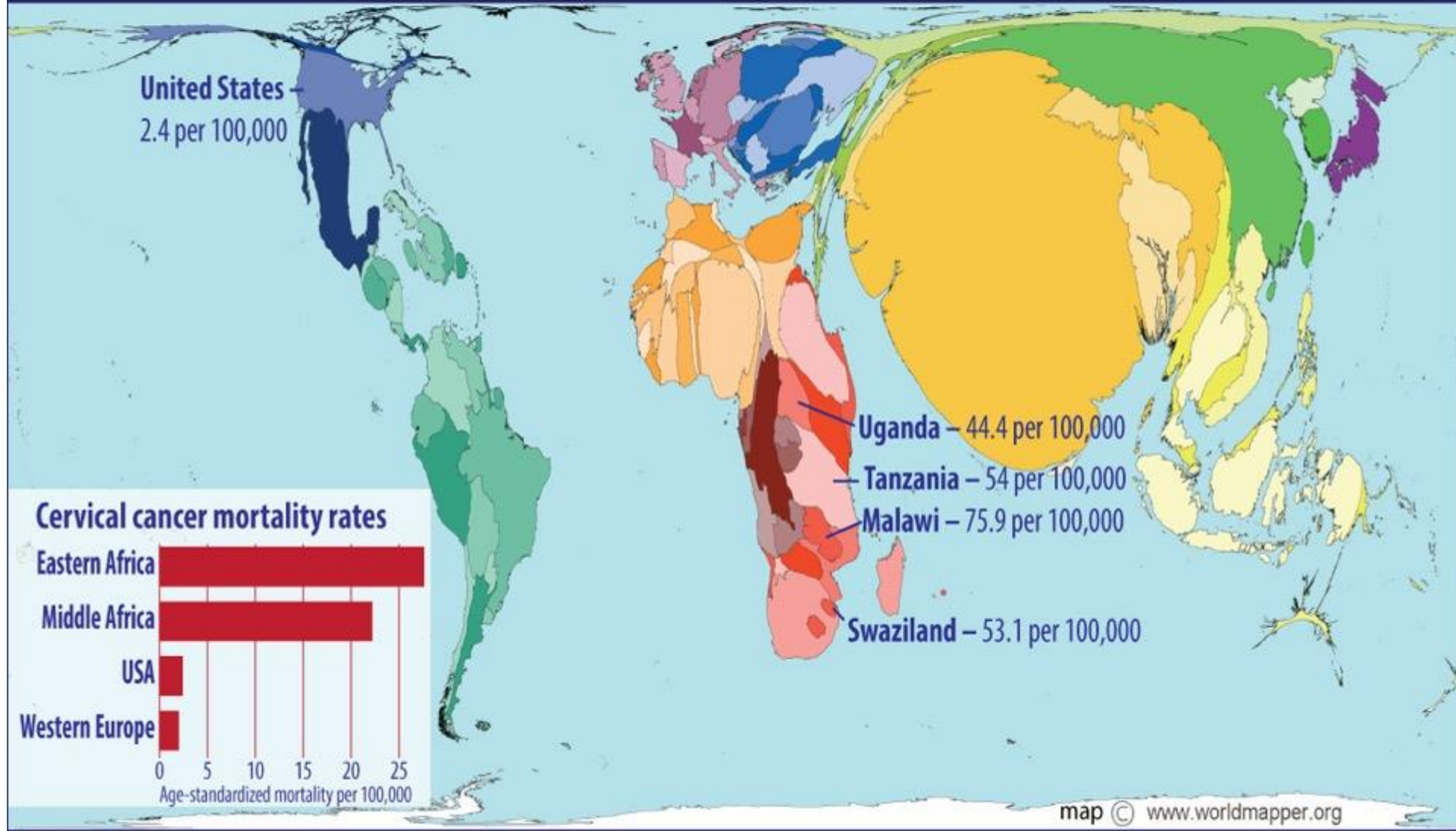
Radiation





Cervical cancer – disparities in mortality from a preventable disease

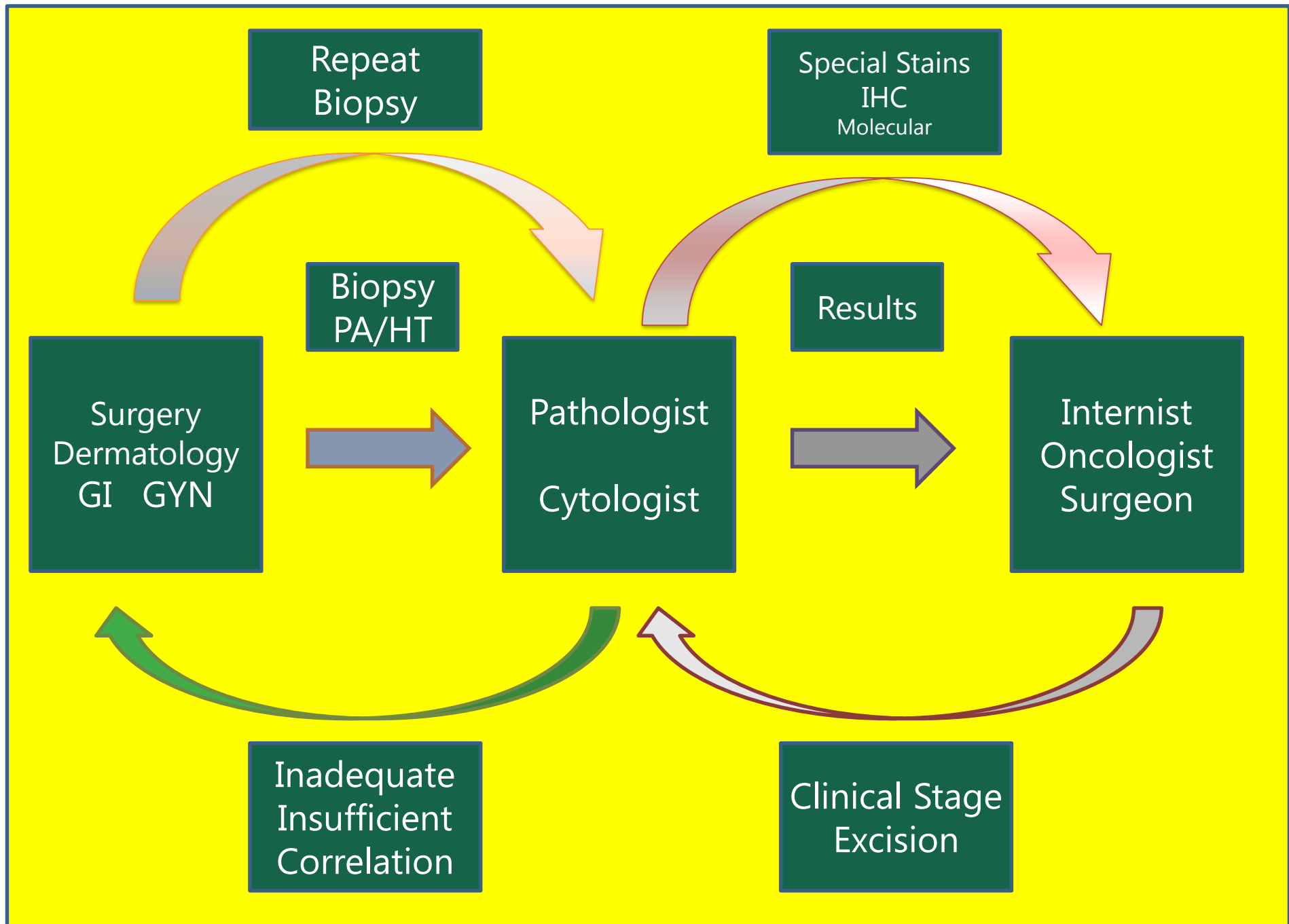
(Map shows countries sized by number of cervical cancer deaths. Numbers represent age-standardized mortality rates.)



NCDs in LMICs

2015-2035

\$21.3 Trillion



Adapted from Larry Shulman, Penn

Sources of Delay & (Solutions) In Pathology Value Chain

- Patient presentation
 - ⑩ Not aware of cancer as a disease (Education, public awareness)
 - ⑩ Fear of death, loss of body image (CHW outreach, Survivor Stories)
 - ⑩ Lack of resources for accessing system (Insurance schemes and donor programs)
- Clinical acumen
 - ⑩ Not aware of cancer as a disease (National Cancer Control Plans)
 - ⑩ No guiding documentation (Tiered Training across health sector)
 - ⑩ Lack of resources for diagnosis (Clinical network procurement plans)

Sources of Delay & (Solutions) In Pathology Value Chain

- Biopsy tools
 - ⑩ No simple tools (FNA) available (Training in FNA/FNB + essential tools)
 - ⑩ No biopsy tools (surgical) available (Training in Biopsy + essential tools)
- Specimen Transportation
 - ⑩ No formalin available (Defined specimen transport network)
 - ⑩ No specimen containers/requisitions (Supplies exchange program)
 - ⑩ Unclear referral network (Public-private partnerships)

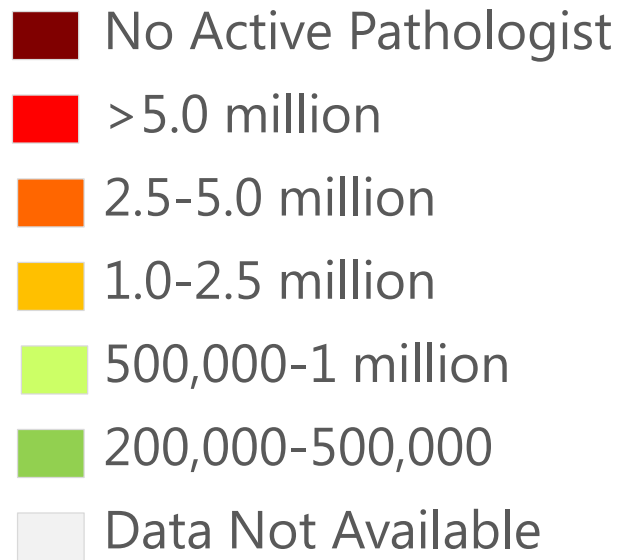
Sources of Delay & (Solutions) In Pathology Value Chain

- Personnel
 - ⑩ ***No pathologist***
 - ⑩ No trained or poorly trained technical staff (On site and remedial training with support)
 - ⑩ Management issues (Laboratory management training)
- Reagents and Supplies
 - ⑩ No reliable supply of standard reagents (Defined role of laboratory in network)
 - ⑩ No supply of special reagents (Central support for recurring procurement)
 - ⑩ Delays in procurement (Public-private partnerships)

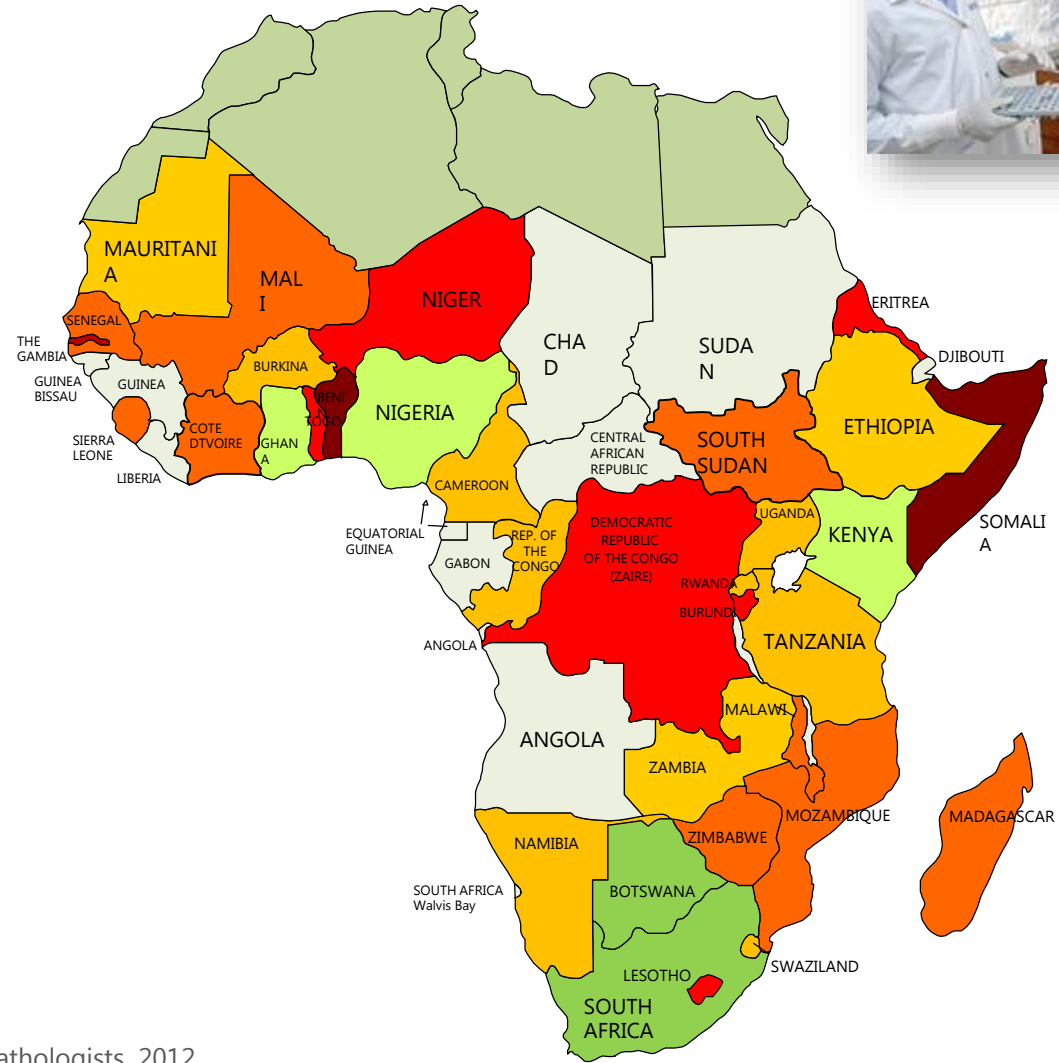
Sources of Delay & (Solutions) In Pathology Value Chain

- Reporting Process
 - ⑩ On paper reporting (APLIS with networking across system)
 - ⑩ No laboratory information system (APLIS with networking across system)
 - ⑩ No standardize reporting (Synoptic reporting to international standards)
 - ⑩ No electronic reporting systems (APLIS with networking across system)
- Communications
 - ⑩ Difficult channels between pathology and clinicians
 - (Synoptic reporting)
 - (Interdisciplinary teams)

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



Number of People Per Pathologist:
 UK*: 15,108 US**:
 19,232



*Royal College of Pathologists, 2012,
 **Anatomic and Clinical Pathologists, AAMC, 2007

Site Assessment for Pathology Preparedness

Site has...

Nothing

Site has...

Pathologist(s) but no lab

-Build a lab

Site has...

Lab but no pathologist(s)

-Transport specimens

-Visiting pathologists

-Telepathology

Site has...

Lab, pathologist but understaffed

-Visiting pathologists

-Telepathology

Site has...

Lab, sufficient staff, but not meeting standard of care

-Visiting pathologists

-Telepathology

Site has...

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/Surgeons

Telepathology as a solution...

Static image

Transfer of still images from MD to MD

Dynamic image

Transfer of live images from slide to MD

Whole Slide image

Transfer of whole image from server to MD

Automated Histology

Computer-assisted/directed slide review





Partners for Cancer Diagnosis
and Treatment in Africa



Crowdsourcing

- Leveraging our 8,000 anatomic pathologist members to provide diagnostic services.
- Pathologists are recruited via meetings, email and social media as well as focused searches for collaborating academic centers already in country
 - Duke/UCSF – Tanzania
 - UW/MGH – Uganda
 - UNC - Malawi
- Intake via a special web site that captures screening and subspecialty data.
- Assigned based on anticipated work demand by country.
- Volunteers can read as many or as few slides as they choose.



Planned Telepathology Deployments

- 7 Countries (Malawi, Rwanda, Tanzania, Haiti, Ghana, Liberia, DRC)
- 10 Sites (Blantyre, Butaro, Moshi, Dar es Salaam, Mirebalais, Tamale, Kumasi, Accra, Monrovia, Kinshasa)
- Whole slide imaging system with server
- US-based collaboration software (any scanner)
- Teams of 15 ASCP member volunteers per country (virtual consultants)
- As teams come online, additional interventions including onsite training in grossing, histotechnology, special stains, and IHC as needed (gap analysis)

Planned Anatomic Pathology Laboratory Information System

- Web-based program for accessioning, processing, and reporting tissue samples
- Provided to all Partners sites free of charge
- Include hardware for maximum utility
 - barcode readers, barcode printers, etc.
- Allows remote anonymous monitoring of data for measuring impact

Our Partners





Thank You!