

Improving Global Health Care Delivery Through Collaboration & Partnership



Michelle Niescierenko MD

Global Health Program Director

Pediatric Emergency Medicine Attending

Boston Children's Hospital



Disclosures

- No financial disclosures
- No conflicts of interest
- All photos unless otherwise cited taken for use in teaching with parental verbal consent



Objectives

- Country Background: Liberia
- Program development timeline
 - Quality improvement initiatives
 - Interventional & research projects
- Challenges

Why Liberia?

- I was a senior pediatrics resident
- A new project was starting in Liberia
- The project lead asked me “you have experience in Africa – can you work in Liberia?”





Liberia



- 150 years of close US relations
- Charter member of United Nations
- Former tertiary referral & training center for all of North/West/South Africa
- 4.1 million people



Liberia

1989-2003: Disastrous Civil War from

2005: Democratic election of the first women president in Africa

2011: Re-election

2014:

Reconstruction





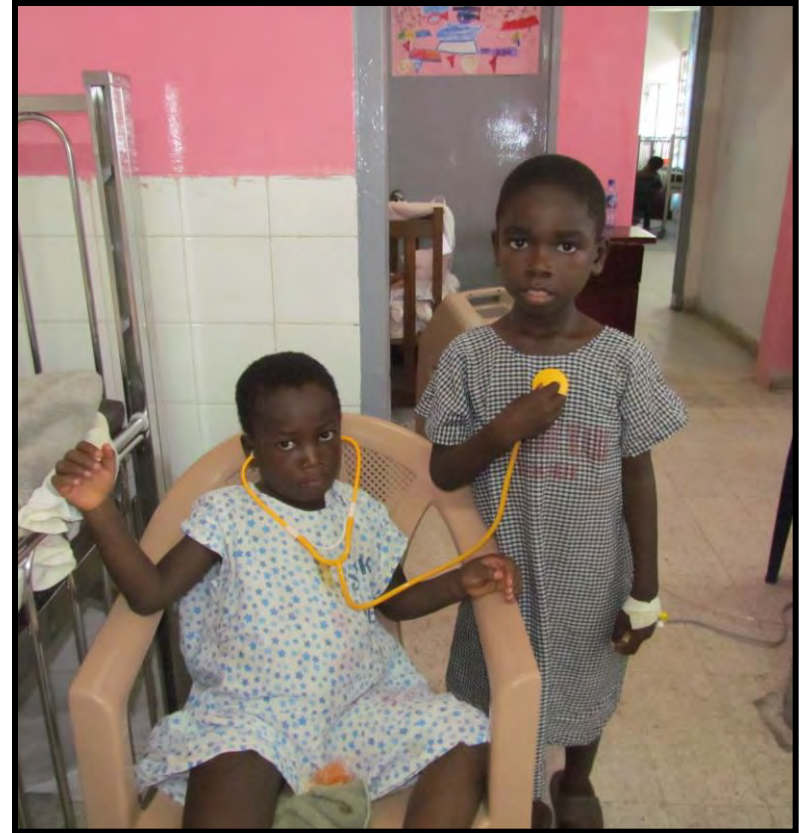
Effect of Civil War on Child Health



Statistics	2003	2009-2011
Population (Millions)	3.03	3.9
Population < 15y (%)	44	44
Mortality		
Under 5 (per/1,000)	164	78
Under 1 (per/1,000)	112	58
Malnutrition		
Stunting (%)	45	38
Underweight (%)	23	20
Immunization		
Measles	47	64
DPT	39	64

Health Status

- 50% of the population is <15 yrs
- Under 5 mortality in the top 5
- Stunting due to malnutrition
- HIV prevalence 6%
- 224 physicians in the country
- 2 Pediatricians



Evolution of an Academic Collaborative



2006



HEARTT
Formed





2006

2008

HEARTT
Formed

Pediatrics



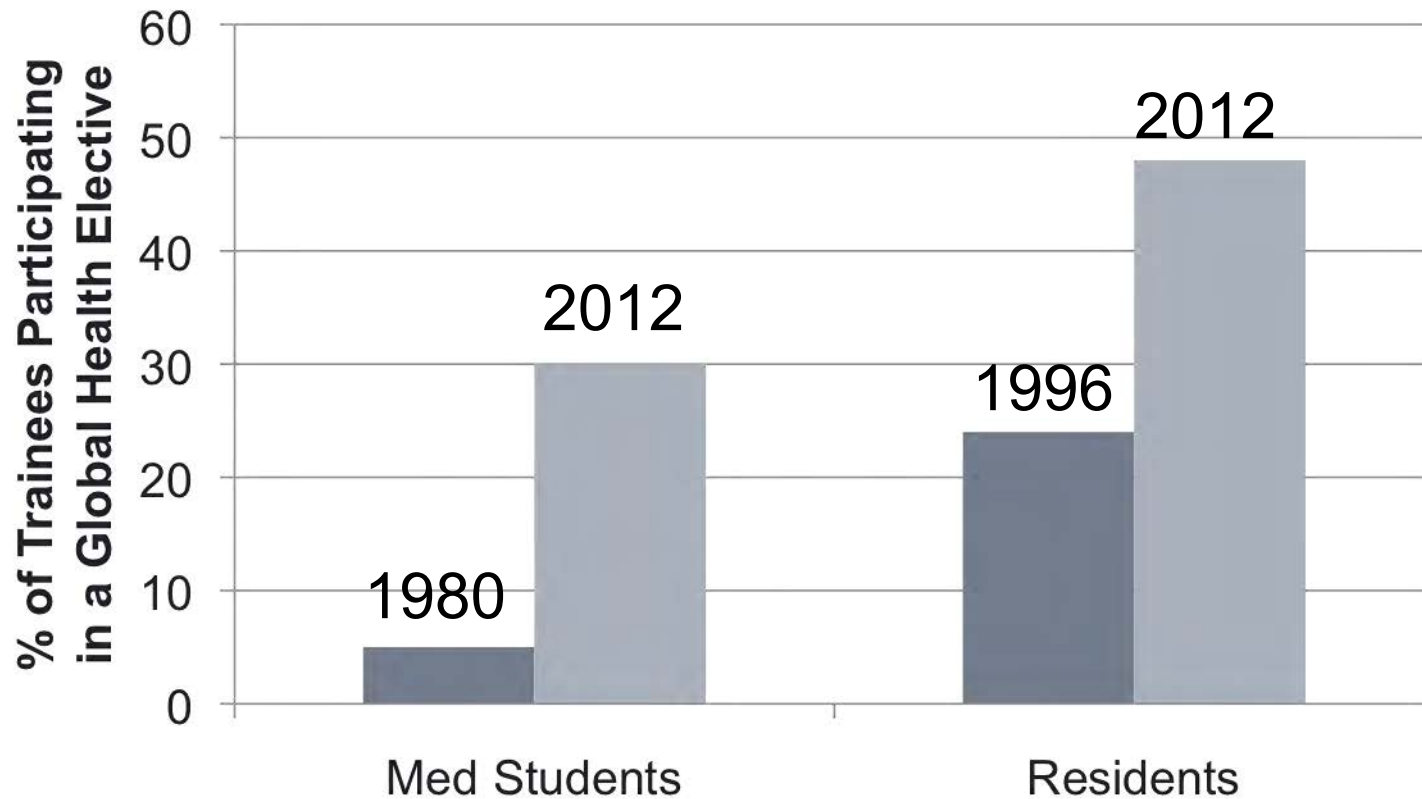
Roles of Visiting Clinicians

- US Faculty Responsibilities
 - Give didactic lectures
 - Teach on clinical rounds
 - Support Liberian Trainees
 - Orient/Supervise US residents
- US Resident Responsibilities
 - Model good clinical practice
 - Work alongside Liberian interns and SMO
 - Clinical teaching
 - Supplement medical student teaching



**Residents sent in teams with at least one faculty mentor for the first 2 weeks*

Frequency of US Trainee Global Health Electives



Resident Global Health Electives

Perceived Benefits:

- Improved clinical skills
- Greater appreciation of public health
- Enhanced resident recruitment

Criticisms/ Ethical Concerns:

- Premature responsibility given to trainees
- Burden imposed on host countries to provide housing, food, etc.
- Lack of defined learning objectives
- Inadequate supervision

AAP Consensus Guidelines

American Academy of Pediatrics (AAP) develops consensus guidelines for international child health electives during residency training

4 Principles:

- (1) prerequisite training
- (2) adequate supervision
- (3) pre-departure orientation
- (4) formal evaluation

Resident Elective

1. Prerequisite training

Only 3rd year pediatrics residents

Have completed supervisory, NICU, ED & ICU rotations

2. Adequate Supervision

All US residents supervised by US faculty

Residents perform duties alongside US faculty

3. Pre-Departure Orientation

Two day pre-departure meeting

Didactic Lectures & Discussion

Simulation Cases

Orientation Manual

4. Formal Evaluation

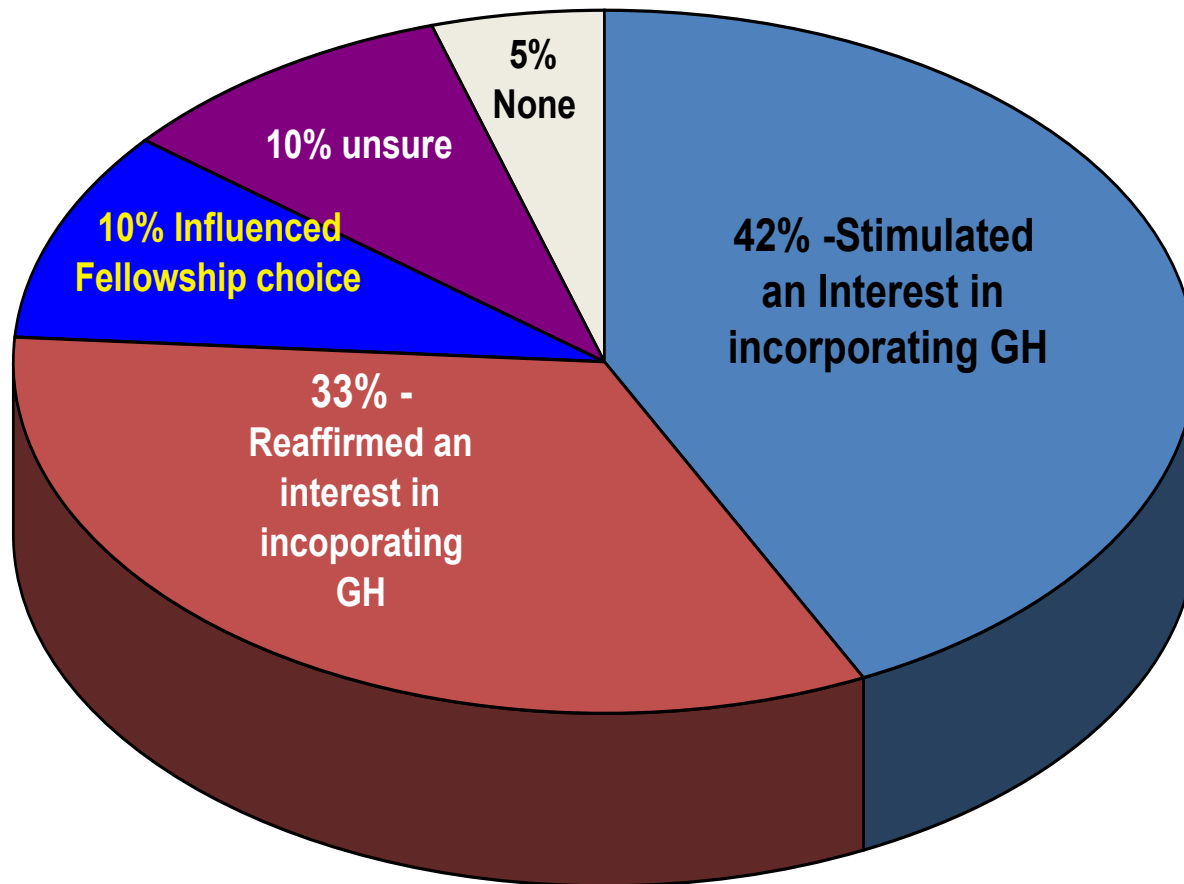
Residents are evaluated by US faculty

Residents evaluate the rotation

US Pediatric Workforce in Liberia

	2008	2009	2010	2011	Total	% Repeating
Resident	4	10	11	16	41	12%
Fellow	2	5	5	2	14	50%
Faculty	3	5	7	11	26	42%

Liberia Rotation and Impact on Resident's Career Choices



2006

2008

2009

HEARTT
Formed

Pediatrics

Long-term
Pediatrician

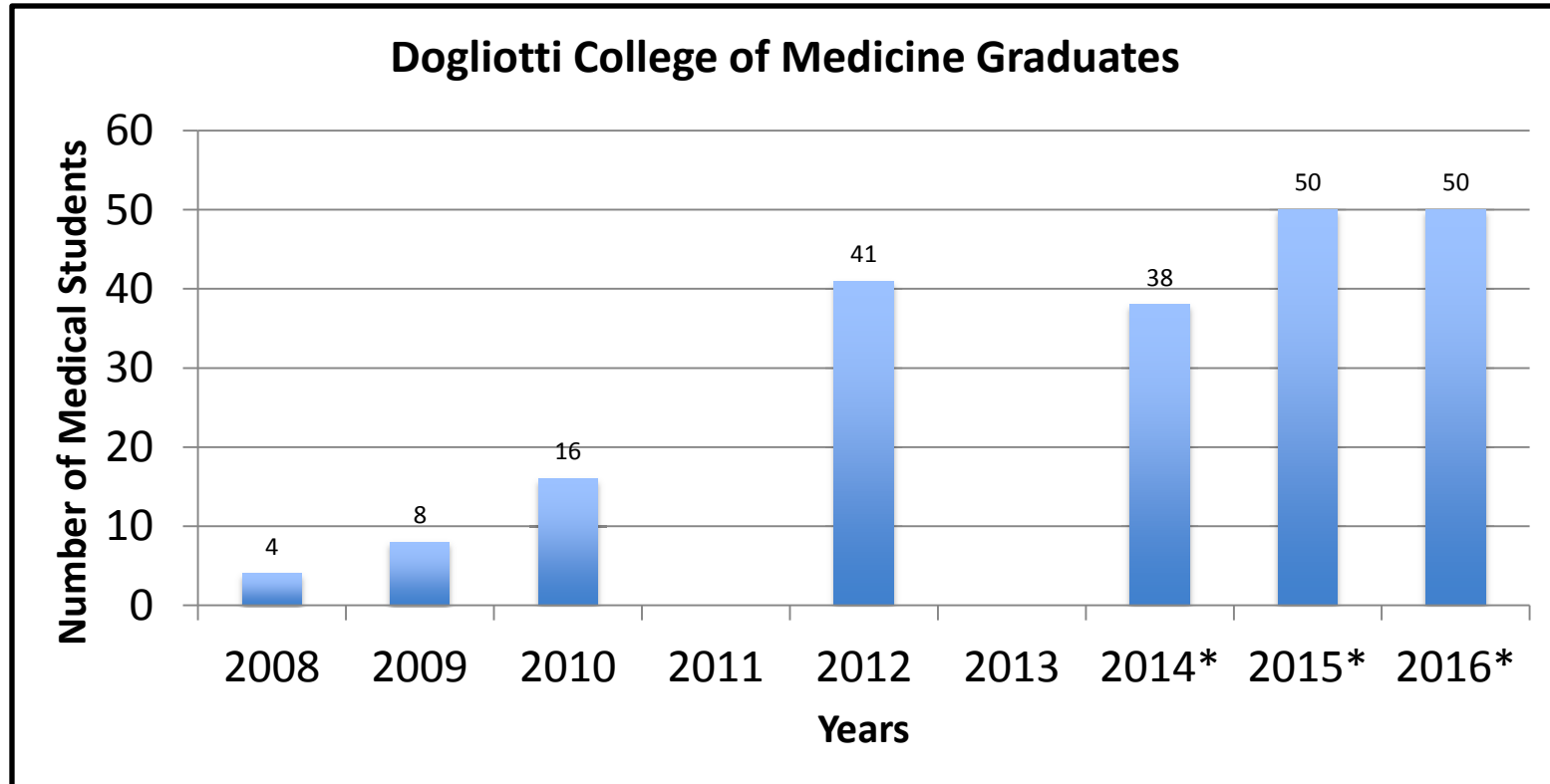


Collaborative Medical Education

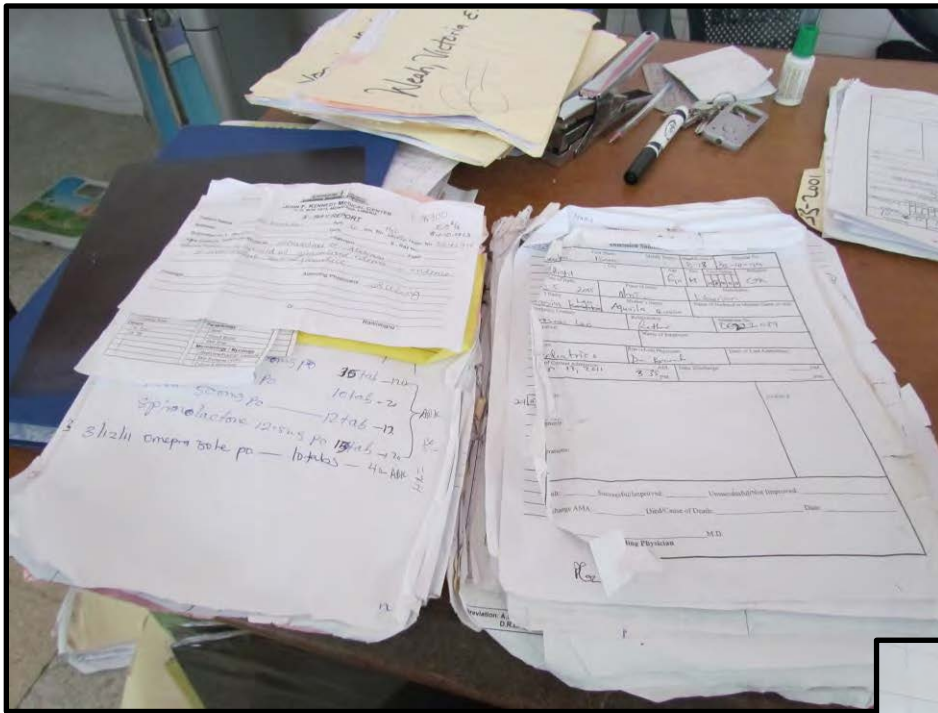
Clinical Pediatric Teaching	Curriculum Design
Clinical Practice Guideline	Revision of Pediatric Clerkship Curriculum
Case Conferences	Pediatric Graduate Medical Education
Journal Clubs	Board Review Course – WACP*
Grand Rounds	
Didactic Teaching	Administration of Pediatric Exams
3 rd year Medical Student Curriculum	Preparation of written exams
4 th year Medical Student Curriculum	Oral exams

*WACP: West African College of Physicians

Liberian Physician Pipeline



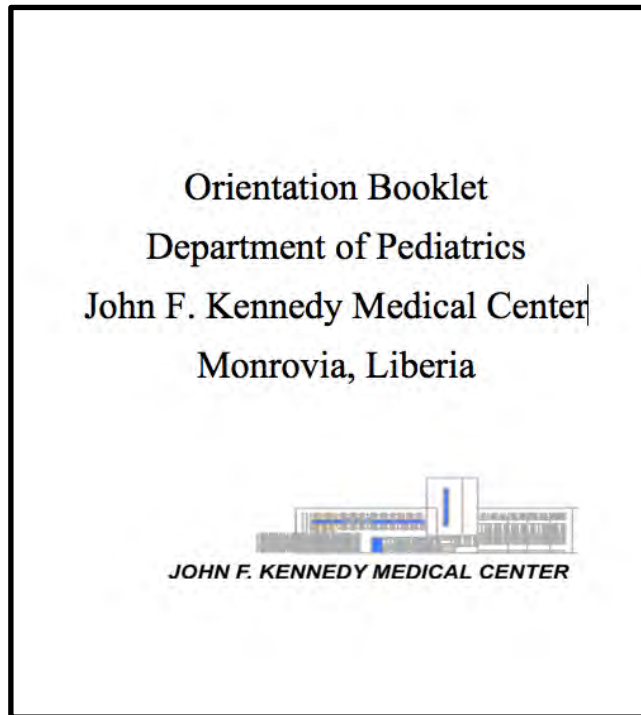
** Expected graduates based upon current class size*



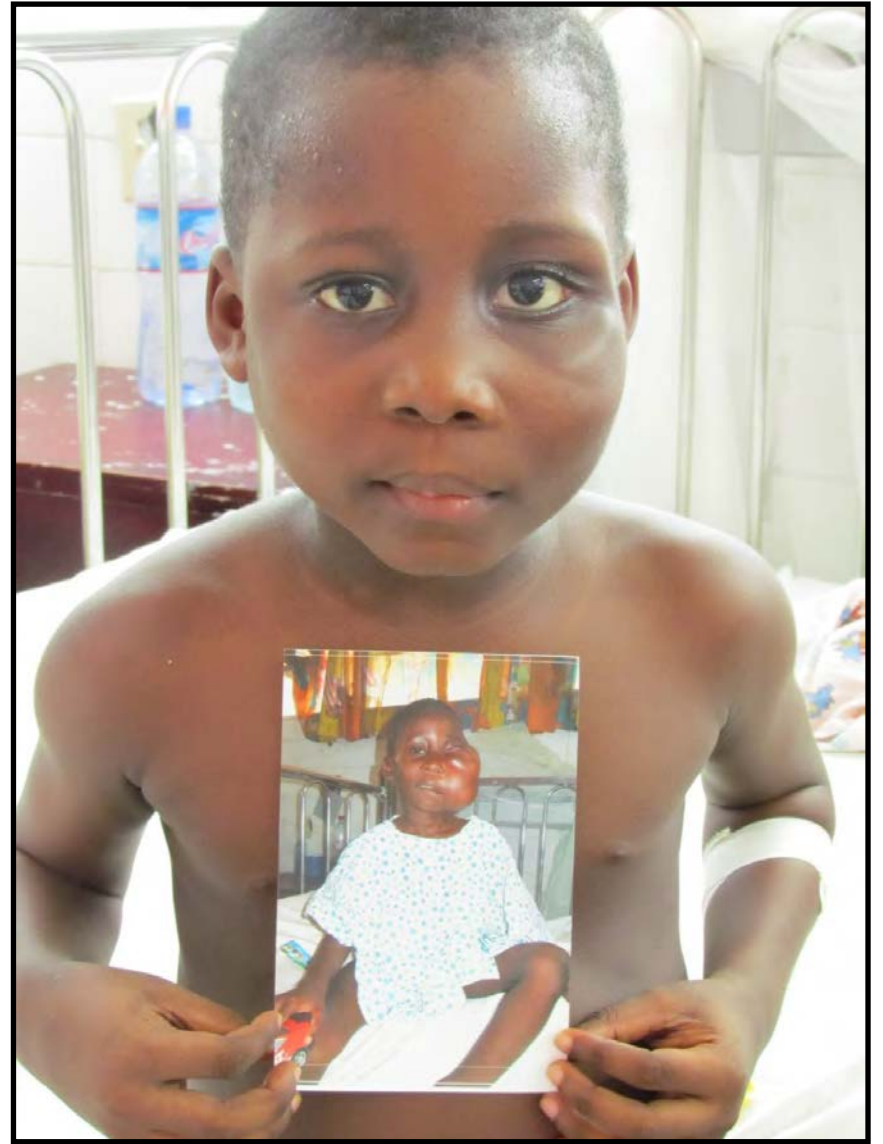
Quality Improvement



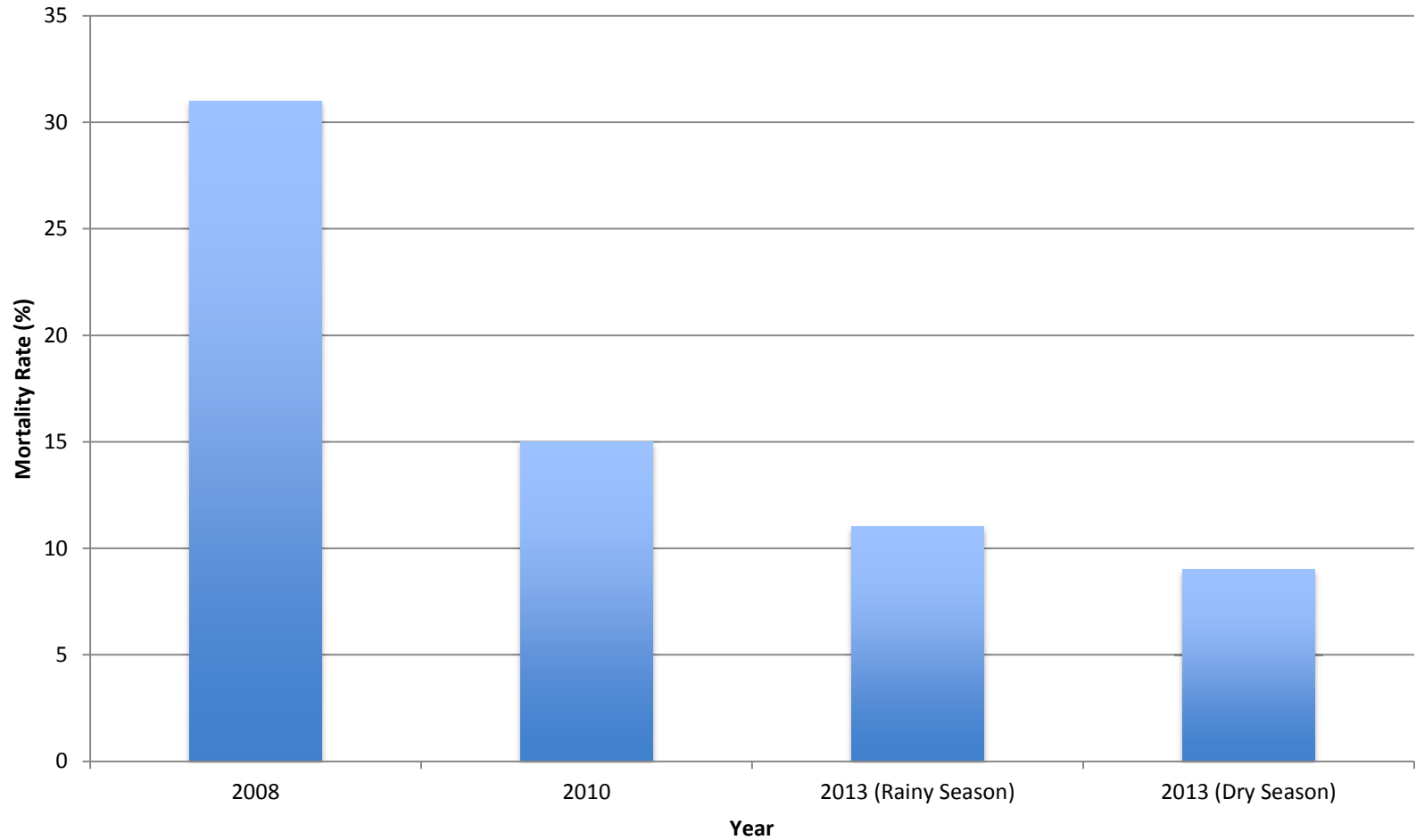
Clinical Practice Guidelines



- Anemia
- Burkitt's Lymphoma
- DKA
- Malaria
- Malnutrition
- Neonatal Sepsis
- Seizure management
- Tuberculosis
- Tetanus
- HIV



Overall Pediatric Ward Mortality Rate



2006

2008

2009

2010

HEARTT
Formed

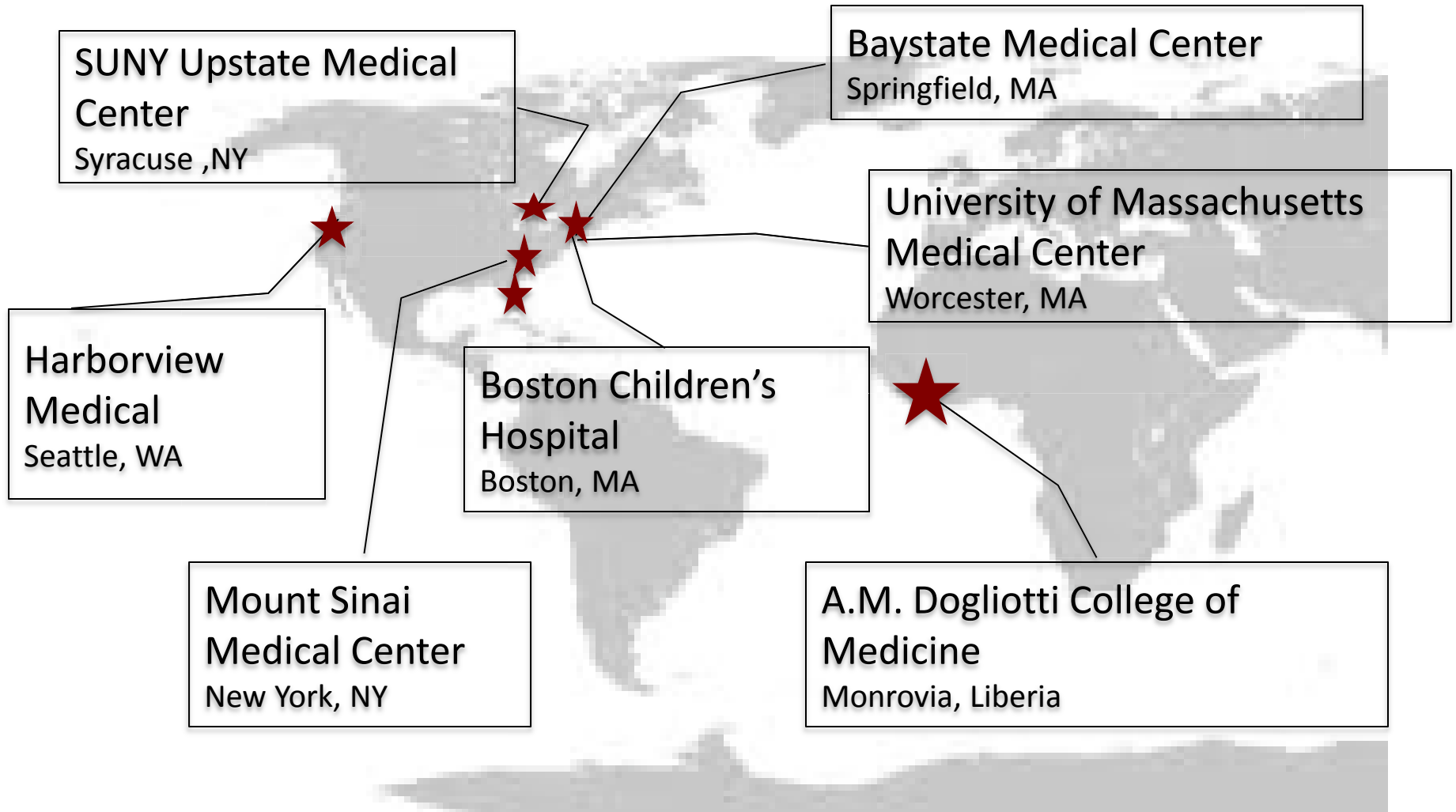
Pediatrics

World Bank
Pediatrician

ACSMEL
NCD Clinic

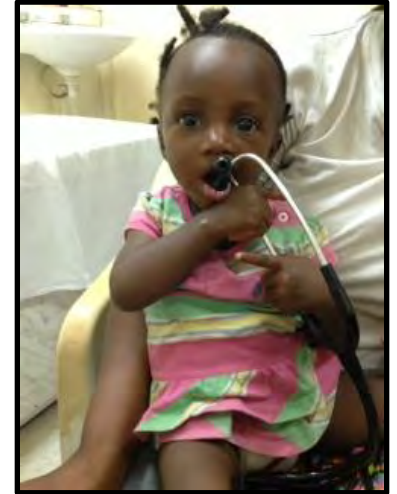


Academic Collaborative to Support Medical Education in Liberia



Chronic Care Clinic

- Over a million children world wide suffer from non-communicable diseases (NCDs)
- 29 million people die annually due to NCD
- Low/middle-income countries – 80% of deaths
- ½ million children with diabetes
- 1/120 born with congenital heart disease
- 15 million DALYs lost to asthma annually





Clinic Operations

- Funded by a three year I-CATCH grant from the AAP
- Patients with NCD enrolled from the ward
- Charts are pulled the day before, eliminates waiting in line
- Patients receive a reminder phone call
- Patients seen by local pediatrician or visiting pediatric faculty or residents
- Management guided by disease-specific protocols
- Future appointments are scheduled and entered into log book



CCC Outcomes

- 338 total patients
- 73% under age 5 years
- 25% had more than one admission prior to enrollment
- 48 unique diagnoses

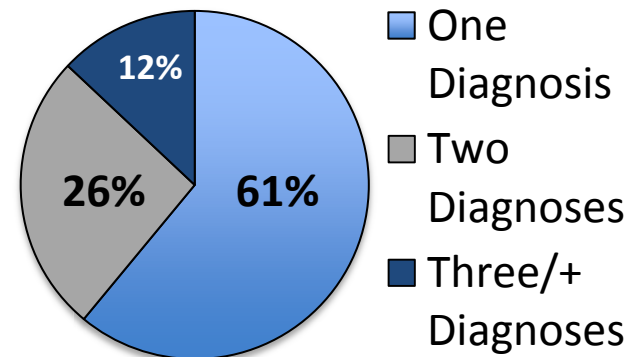


62%



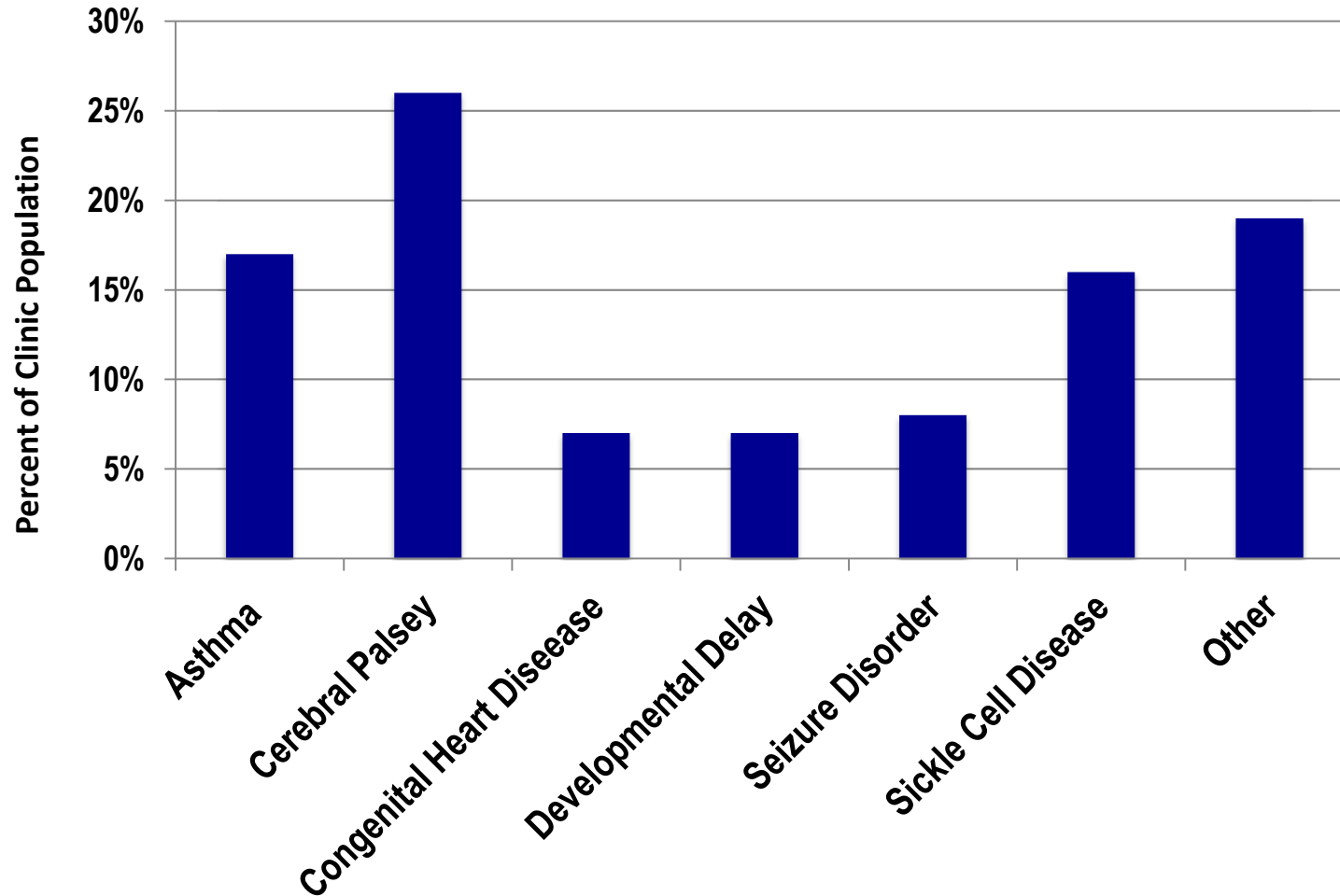
38%

Diagnoses per Patient



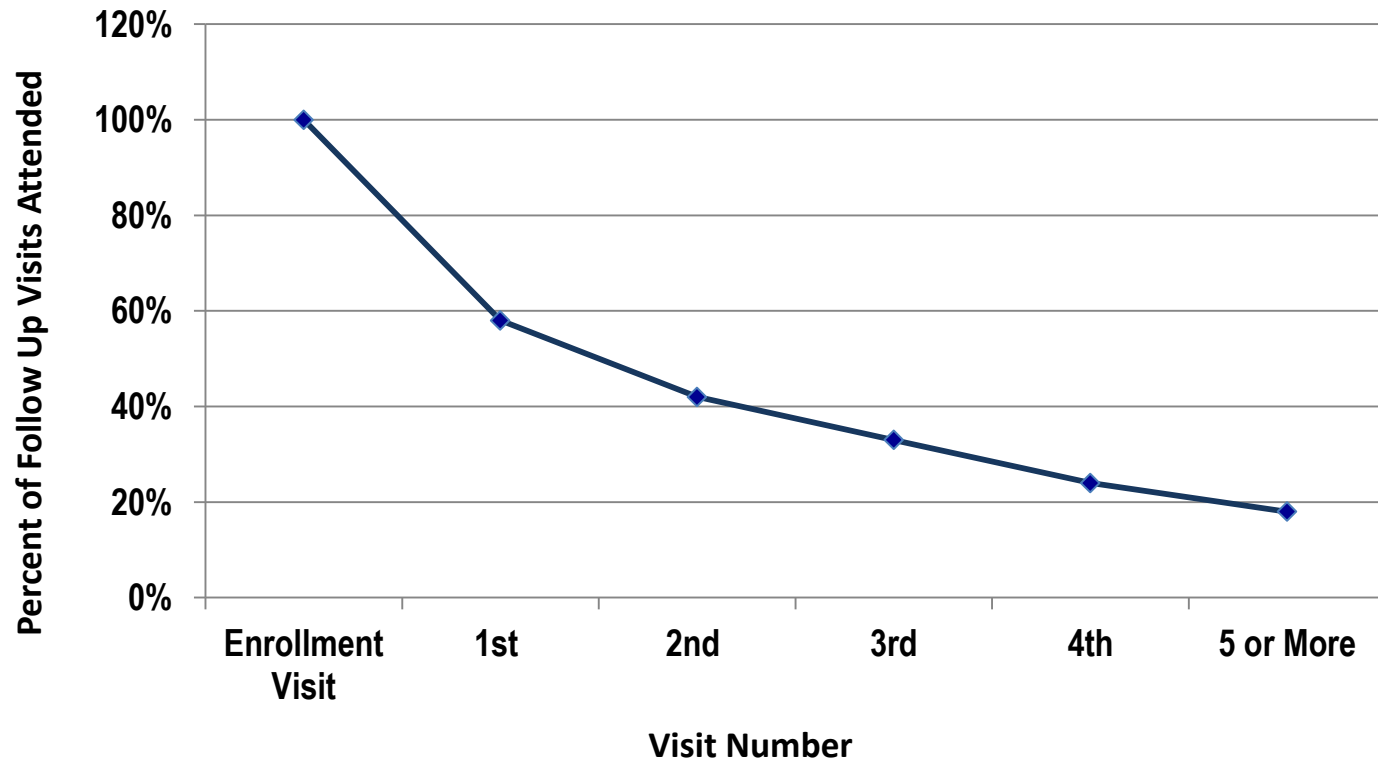
CCC Outcomes

Burden of Types of NCDs Among Clinic Population



CCC Outcomes

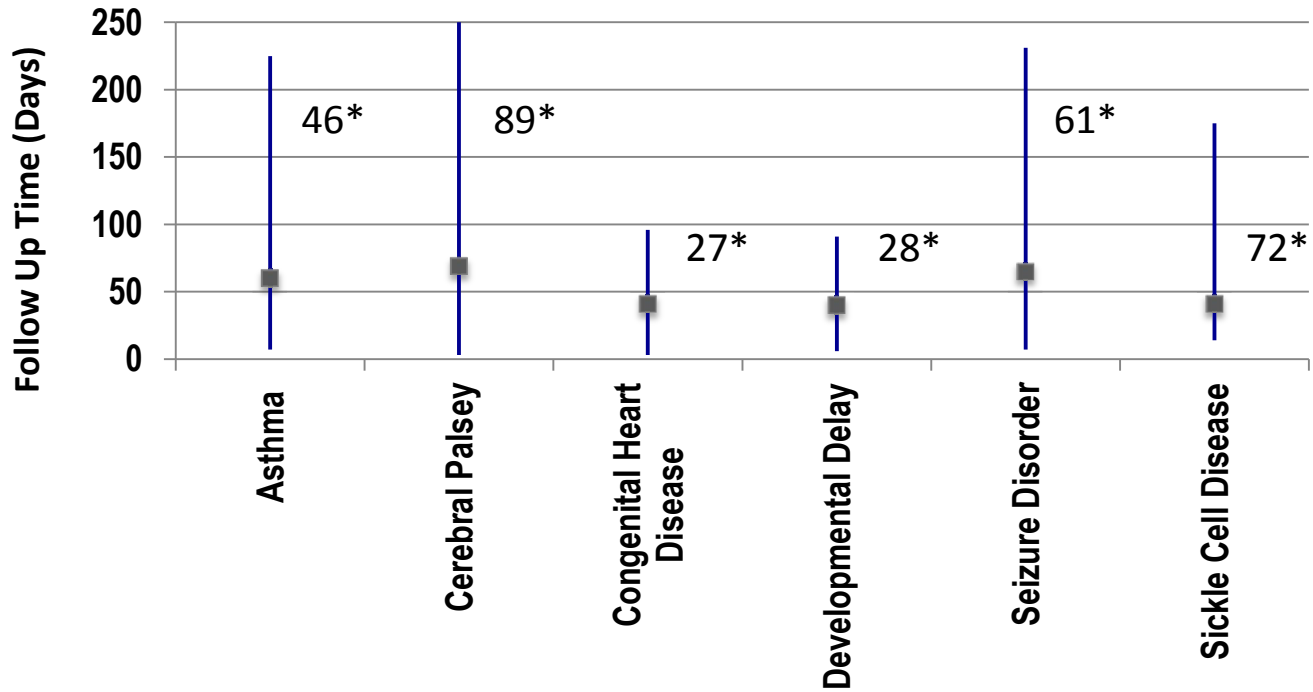
Follow Up Visit Attendance*



**Mean follow up 60 days, std 70 days, range 1 - 553 days*

CCC Outcomes

Follow Up Visit Compliance by Disease



Post clinic enrollment admission rate:

- 11% (22/196 patients),
- mean 130 days
- range 2-445 days
- Standard deviation 137 days



2006

2008

2009

2010

2011

HEARTT
Formed

Pediatrics

World Bank
Pediatrician

NCD Clinic
ACSMEL

Liberian
Pediatricians



2006

2008

2009

2010

2011

2012

HEARTT
Formed

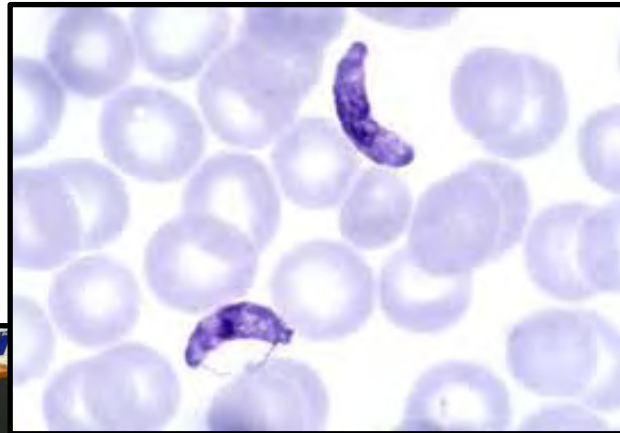
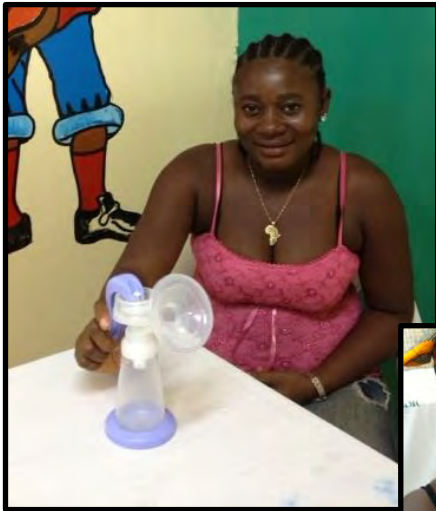
Pediatrics

World Bank
Pediatrician

NCD Clinic
ACSMEL

Liberian
Pediatricians

NICU Clinic
Malaria, GME

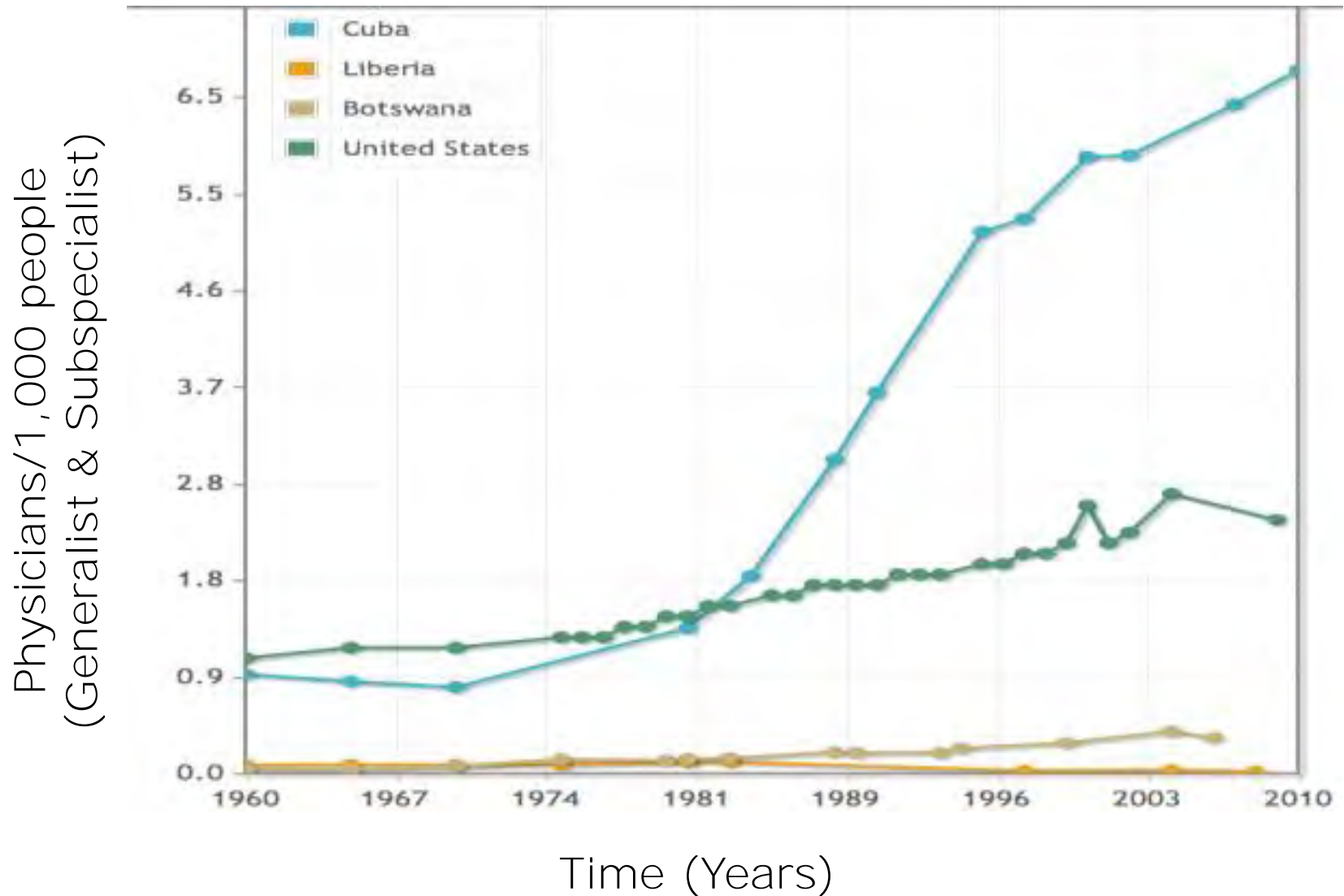


Civil War and Physician Work Force

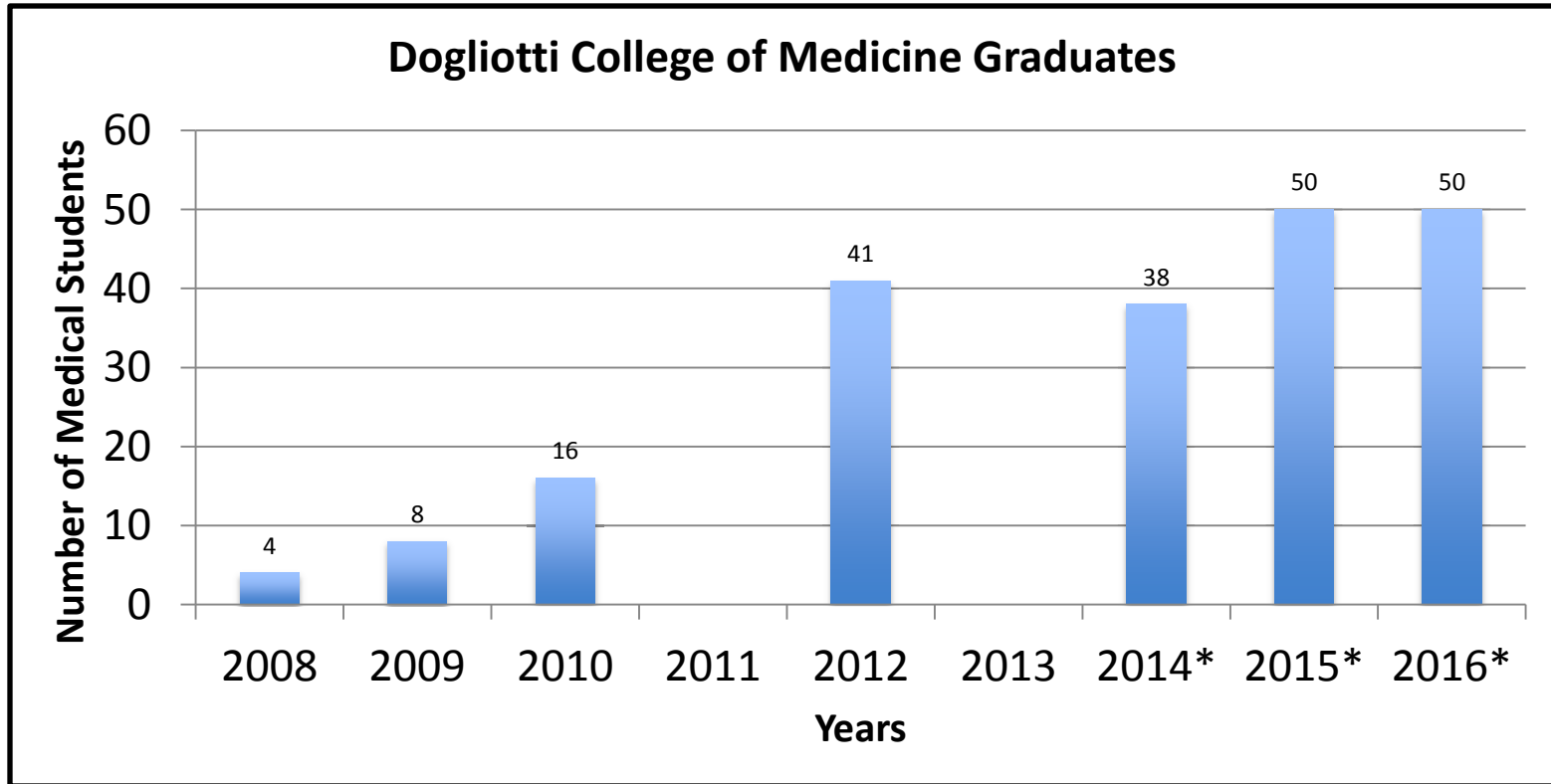
	2003	2012
Total Physicians	100	200
Practicing Physicians	50	150
Pediatricians*	0	2
General Surgeons	2	3
Anesthesiologists	0	0

*44% population 0-14 years of age

Global Physician Workforce



Liberian Physician Pipeline



** Expected graduates based upon current class size*

Liberian Physician Pipeline

- Internship
 - 1 year graduate medical training
 - Pediatrics, OB/GYN, Surgery, Medicine
 - 24 spots available per year
- Rural Service
 - Posting in a district hospital
 - 2 years service required
- Senior Medical Officer
 - Clinical service in area of interest (e.g. pediatrics)
 - No additional training in that area
- Residency/Graduate Medical Education
 - Not previously available in Liberia

Liberian Pediatric Health Care Work Force Needs

- Limited generalist faculty
 - Pediatrics 2
 - Medicine 4
 - Surgery 1
 - OB/GYN 2
- No subspecialty faculty

**Academic Collaborative to Support Medical Education
in Liberia (ACSMEL)**

Supporting GME Development

- Work with the Liberian Post Graduate Medical Council
- Serve as support faculty for the Liberian faculty
- Assist with GME as requested
 - Curriculum review & design
 - Preparation of residency candidates
 - Examination writing
 - Faculty staffing



2009

2010

2011

2012

2013

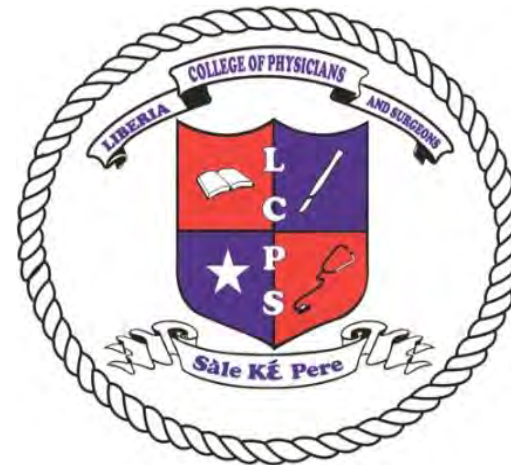
World Bank
Pediatrixian

NCD Clinic
ACSMEL

Liberian
Pediatrixians

NICU Clinic
GME

Teen Moms
Residencies



Liberian Residency Training

- Inaugural class started September 2013
- Pediatrics, OB/GYN, Medicine, Surgery
- Decentralized training around Liberia
- Equipment Procurement
- First 6 months of generalist time at JFKMC
- Need for resuscitation training



Pediatric Resuscitation & Life Support

- PALS administered by the American Heart Association
- No AHA training center in West African
- Appropriateness
 - 6 years of experience
 - Knowledge of the trainees
- AHA permission to use validated assessment tools

Methods

- September 2013
 - Setting appropriate simulation cases written
 - Curriculum adapted into site appropriate delivery format (lecture)
- October 2013 PALS Pretest given
 - Pediatric residents took it
 - Surgery residents did not
 - After pretest study guides given out

Methods

- November 2013
 - 4 lecture series on respiratory cases
- December 2013
 - 4 lecture series on shock cases
- January 2014
 - In person 3 day course
 - Taught by myself and one assistant

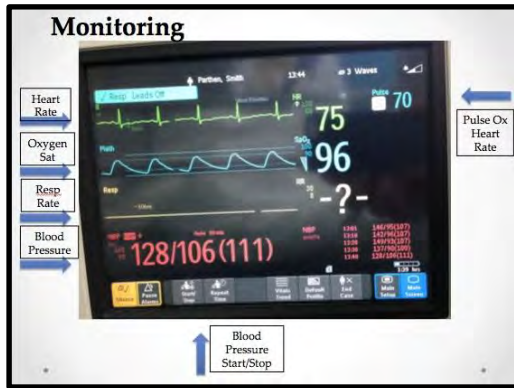
Course Schedule

Time	Day 1
10a-11a	Pre-test
11a-11:30a	Course Overview/ PALS Approach
11:30-12:30p	Primary Assessment & Interventions
12:30-1:30p	Lunch
1:30-2:30	Respiratory and Shock Cases
2:30p-3:15p	Monitoring
3:15p-5p	CPR

Course Schedule

Time	Day 2
10a-12p	Cardiac Rhythm Interpretation
12p-1p	Lunch
1p-2p	Resuscitation Team Concept
2p-3p	PALS Algorithm Review
3:30 – 5p	Simulation Scenarios

Time	Day 3
10a-12:30p	Practice Scenarios
1:30p-3:30p	Testing on Scenarios
3:30p-5p	Written Exam



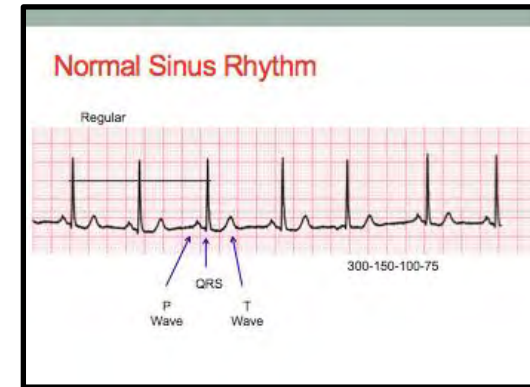
Primary Assessment

- Airway
- Breathing
- Circulation
- Disability
- Exposure

Cardio Pulmonary Resuscitation

Michelle Niescierenko

Interactive Lectures



Types of Respiratory Illness

Upper Airway Obstruction	Lower Airway Obstruction
Disordered Control of Breathing	Lung Tissue Disease

+ Positions During Resuscitation

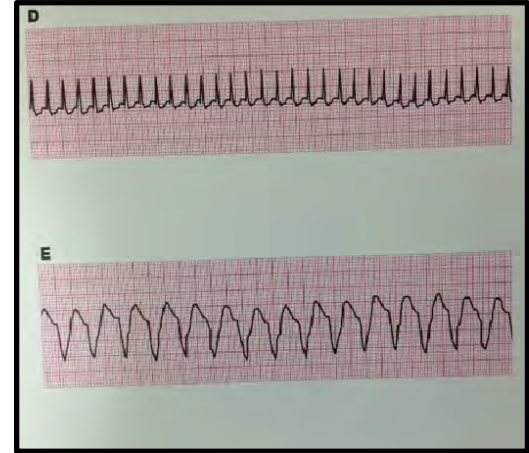
Effective Resuscitation Team Dyn

- Airway
- Compressor
- Observer/Recorder
- TEAM LEADER
- Responder
- Responder

Lectures



Barriers to Simulation

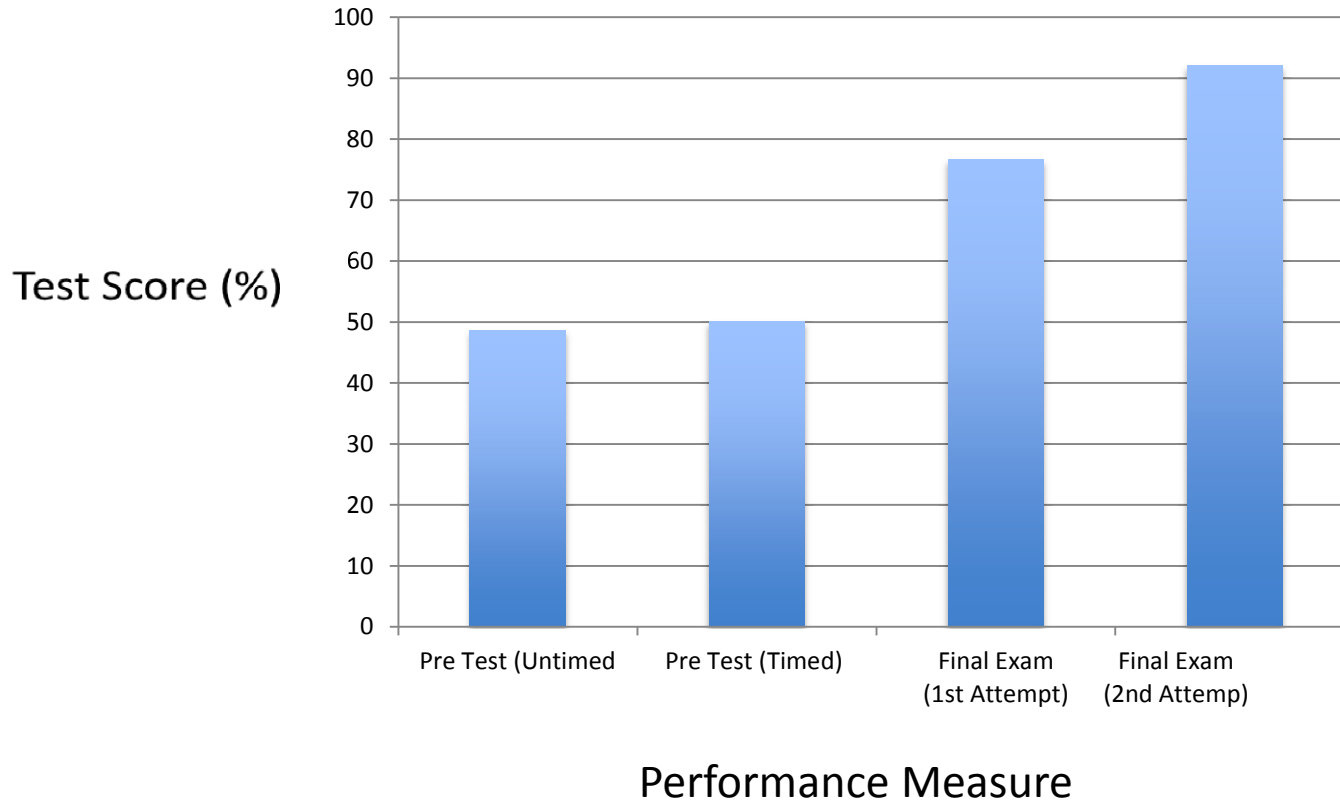


Simulation



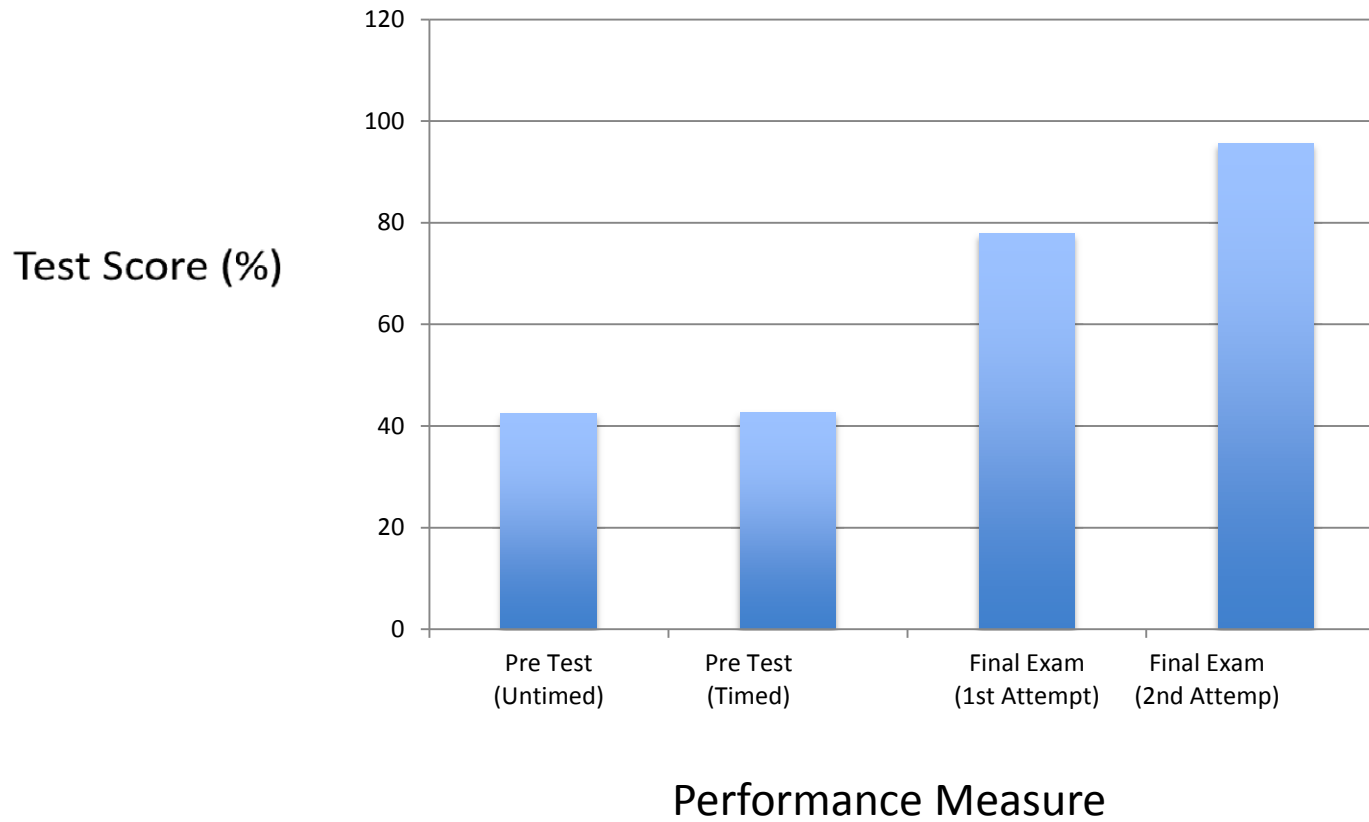
Performance

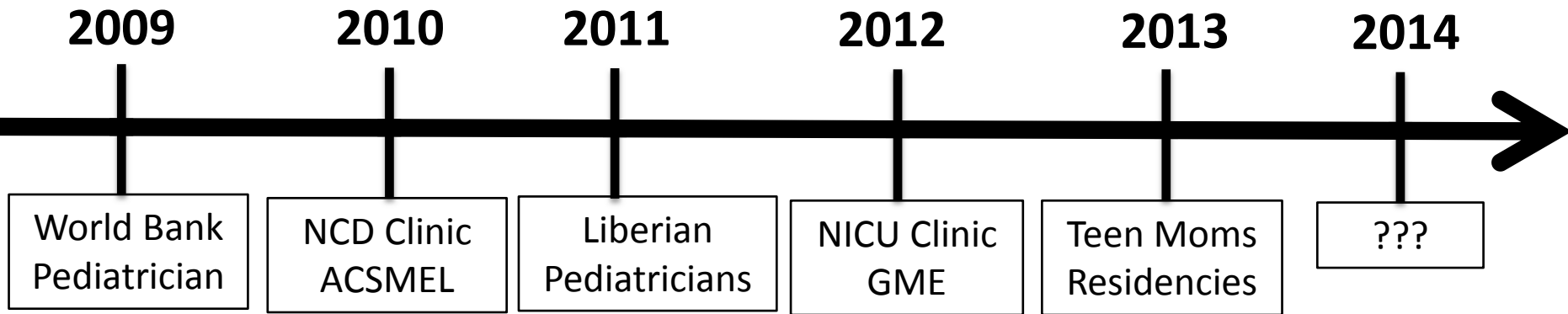
Pediatrics Residents



Performance

Surgical Residents





- Residency educational needs
- Country wide trauma study
 - Large database
 - Public policy



Challenges

- Meeting the needs
 - Staffing
 - Identified clinical needs
 - Supply chain
- Communication
 - Monthly phone calls
 - Frequent emails
 - Team sign-outs
 - Skype with Liberian colleagues



Challenges

- Funding
 - Institutions
 - Project specific
 - Larger funders
- Cultural
 - Shared decision making
 - Prioritization
 - Cultural competency



From the Liberian side...

- Consistent group of faculty members
 - Longer stays preferred
- Overwhelmed by resident numbers
- Temper enthusiasm of volunteers
- Transparency
- Supported decision making



A sunset over the ocean with a beach in the foreground. The sky is filled with golden and orange clouds, and the sun is low on the horizon. The ocean is dark with white foam from the waves washing onto the beach. The text "Questions & Thanks!" is overlaid in the center of the image.

Questions & Thanks!