

I-TECH



INTERNATIONAL  
TRAINING &  
EDUCATION  
CENTER ON HIV

# Experiences in Strengthening Health Laboratories in Resource Limited Countries

UBC Program Office  
Laboratory Quality Management Conference  
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Robert Martin, MS, MPH, DrPH  
Lucy Perrone, MSc, PhD  
Jean-Frederic Flandin, PhD  
Debbie Confer,



# Overview

- I-TECH
- Where we work
- Identifying the needs
- Experiences
  - WHO/EMRO Countries
  - Cambodia and Laos
  - Kazakhstan
  - South Africa



# + I-TECH at the University of Washington



**W**  
UNIVERSITY of  
WASHINGTON

UW Medicine  
SCHOOL OF MEDICINE



SCHOOL OF PUBLIC HEALTH  
UNIVERSITY of WASHINGTON



**W**  
DEPARTMENT OF GLOBAL HEALTH  
UNIVERSITY of WASHINGTON

**UCSF**

University of California  
San Francisco



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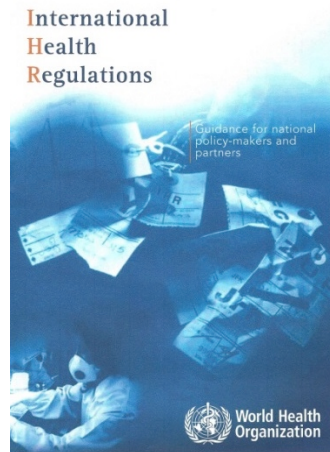
# Millennium Development Goals



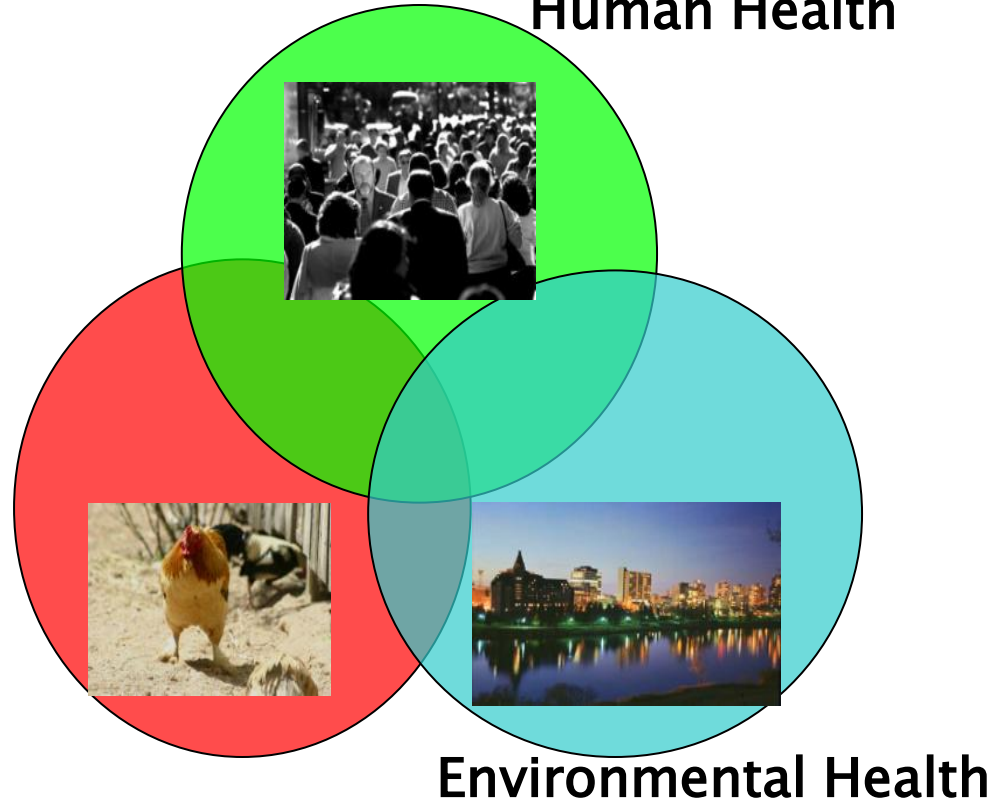
## One World – One Health

Human Health

## International Health Regulations 2005



Animal Health



Environmental Health

# Millennium Development Goals



- **Eradicate extreme poverty and hunger**
- **Achieve universal primary education**
- **Promote gender equality and empower women**
- **Reduce child mortality**
- **Improve maternal health**
- **Combat HIV and AIDS, malaria, and other diseases**
- **Ensure environmental sustainability**
- **Develop a global partnership for development**

# WHO International Health Regulations

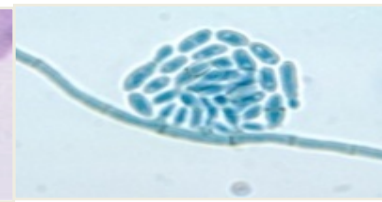
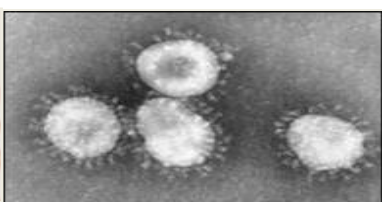
IHR(2005) adopted by all Member States and entered into force on 15 June 2007 and fully compliant by 2012

The national public health system should establish the **laboratory capacity to identify, monitor and report to the health authorities on agents that may cause epidemics and emergencies, including those of international importance** in a safe, timely and reliable manner.



# Health System Building Blocks:

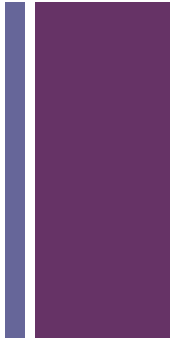
Laboratory services





# + US Agencies Involved in Laboratory Capacity Development and Global Disease Surveillance

- **Agency for International Development**
- **Department of Agriculture**
- **Department of Defense**
- **Department of Energy**
- **Department of Health and Human Services**
- **Department of State**



# Our Mental Image of a Laboratory:





# + Clinical Laboratory Improvement Amendments (CLIA)

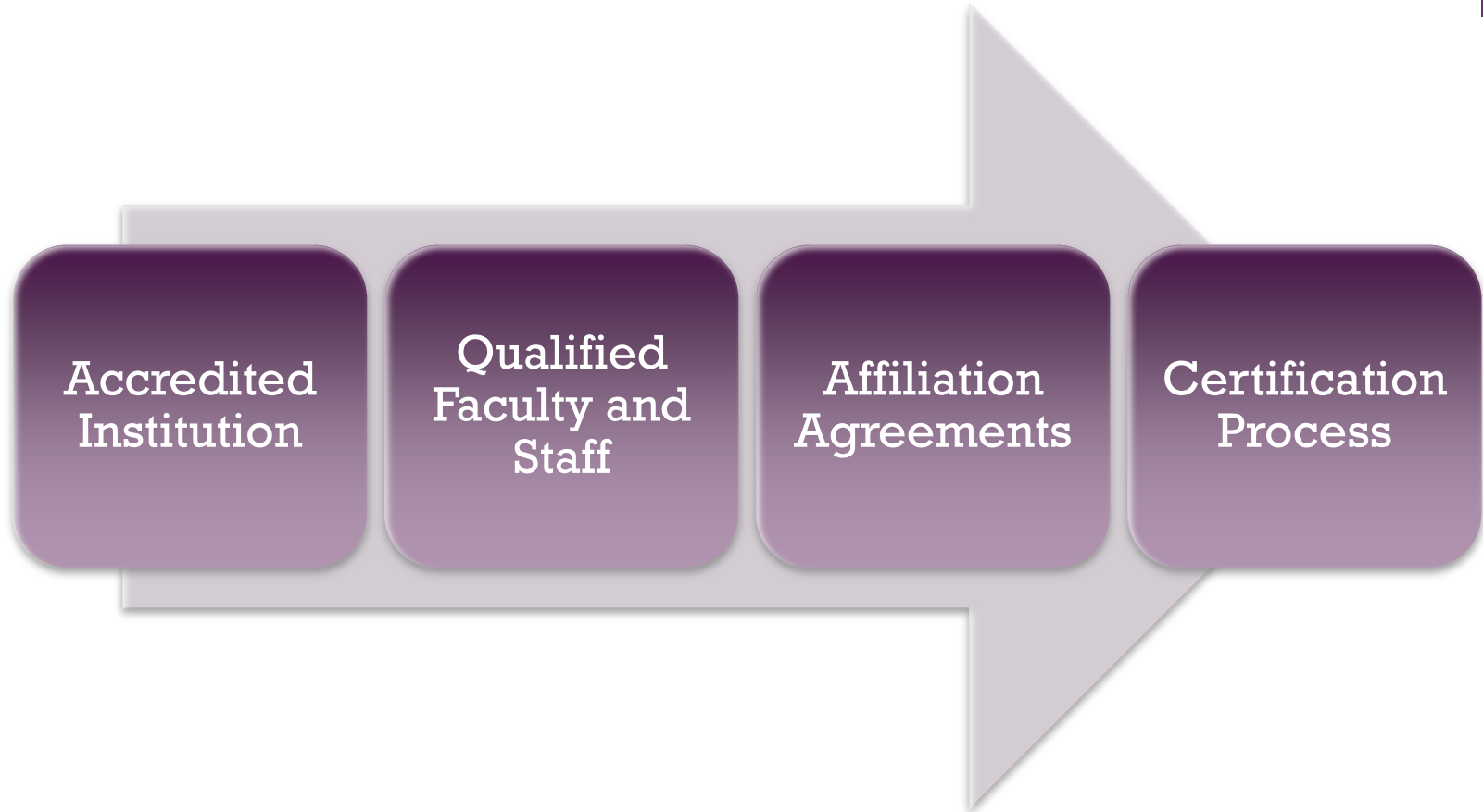
Centers for Medicare & Medicaid Services (CMS) regulates all laboratory testing



- Objective - ensure quality laboratory testing.
- Standards based on complexity of testing.
- Law applies to virtually all US clinical and public health laboratories (about 225,000).



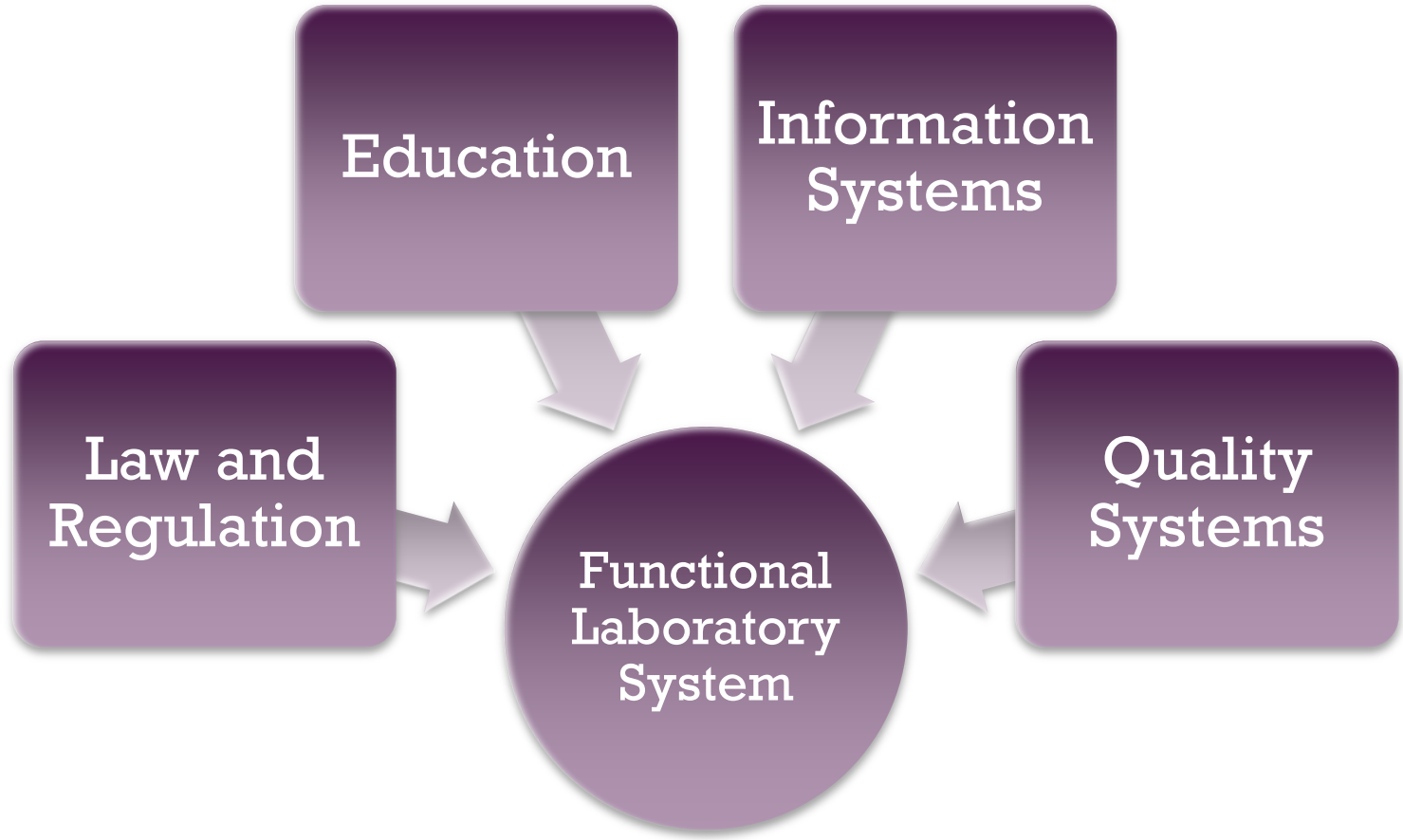
# + Key Elements of Education, Training and Certification of Laboratory Professionals



# + Regulatory Agencies and Professional Organizations



College of American Pathologists





# Most Resource-Limited Countries:



- Limited or no gov't. oversight
- Few or no national policies
- No or weak laboratory network
- No registration of labs, no accreditation of laboratories
- No process for procurement of laboratory reagents/kits
- Few professional organizations
- Limited testing menu
- Weak academics for lab medicine





## ■ Goal 1: Sustainable Programs

- Must be **country-owned** and **country driven**, and
- in a broad health and development context



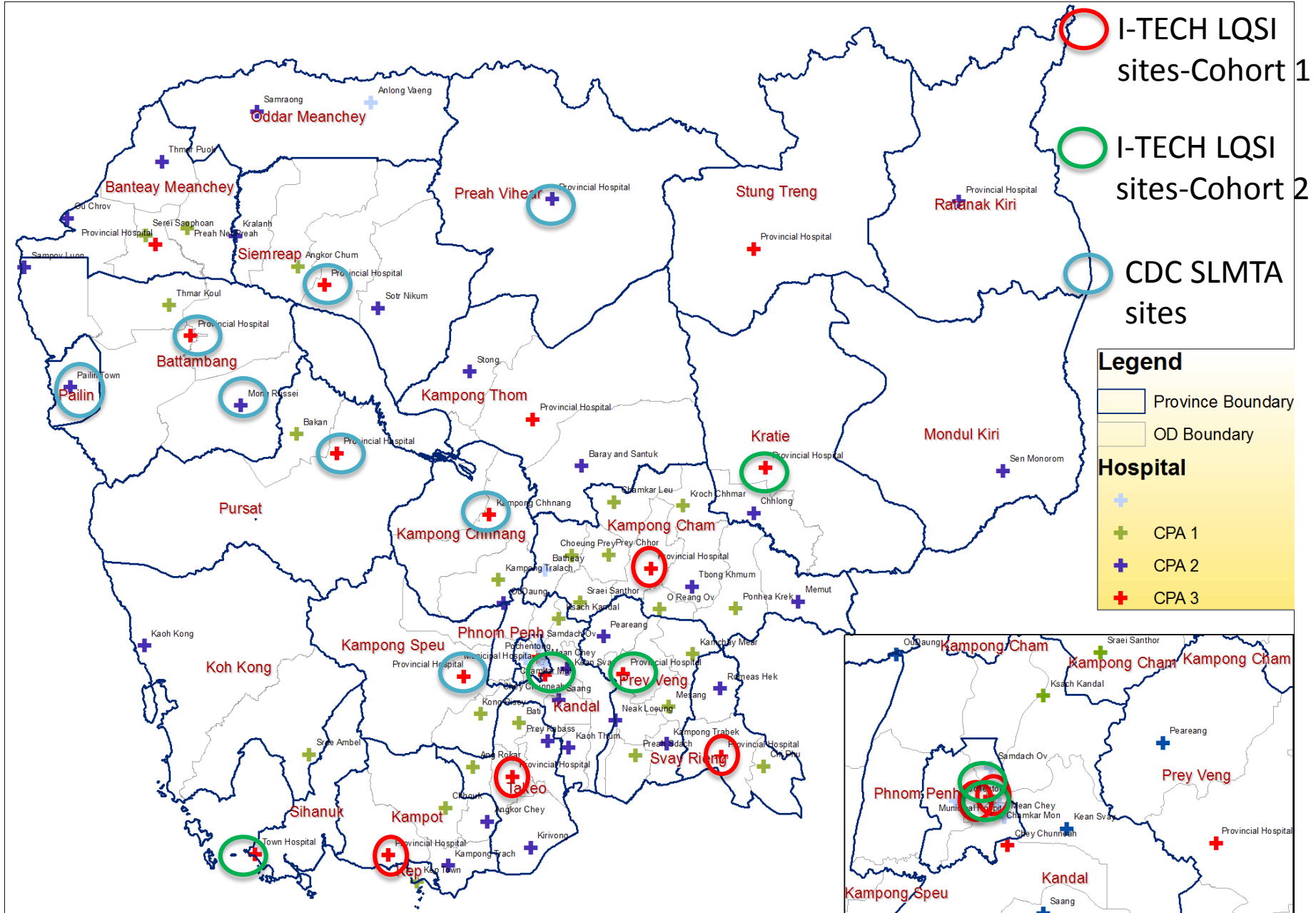
## ■ Goal 2:

- To improve laboratory operations for patient care and for biosurveillance and biosecurity **through improved laboratory quality assurance and management practices for the entire laboratory.**



# Implementation of Laboratory Capacity Strengthening in Cambodia

# I-TECH Implementation Sites



# The I-TECH team

- Cambodia:

- Vireak Veourng, PharmD. MSc. PhD, Project Coordinator
- Sophat Sek, Senior Laboratory QI Mentor
- Sophanna Song, Senior Laboratory QI Mentor
- Tous Chansamrach, Laboratory QI Mentor
- Nora Vong, Laboratory QI Mentor



- Seattle:

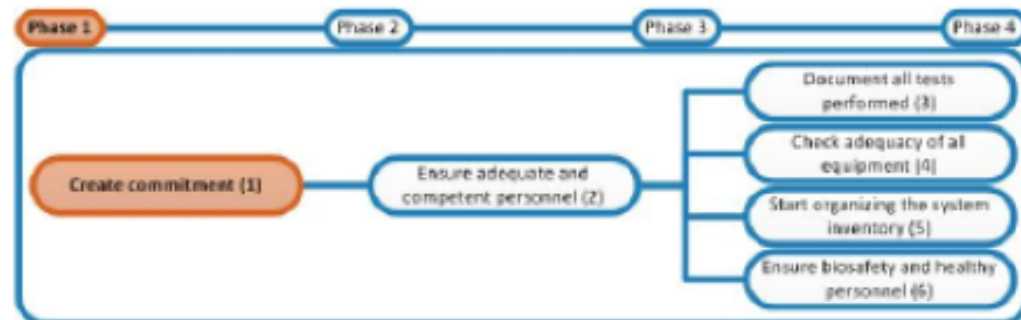
- Robert Martin, MPH, DrPH, Project PI, Professor of Global Health
- Lucy Perrone, MSPH, PhD, Assistant Professor of Global Health
- Jean-Frederic Flandin, PhD, Laboratory Systems Specialist
- Debbie Confer, Program Manager

# The LQSI Process

## Laboratory Quality Stepwise Implementation

- A tool to assist laboratories in the implementation of a quality management system that meets international standards.
- LQSI translates the requirements of ISO 15189 into step-by-step activities divided in 4 phases, structures them in an interactive roadmap, and provides many user-modifiable support materials such as document templates and SOPs available online.

### Activities Phase 1 - Create commitment

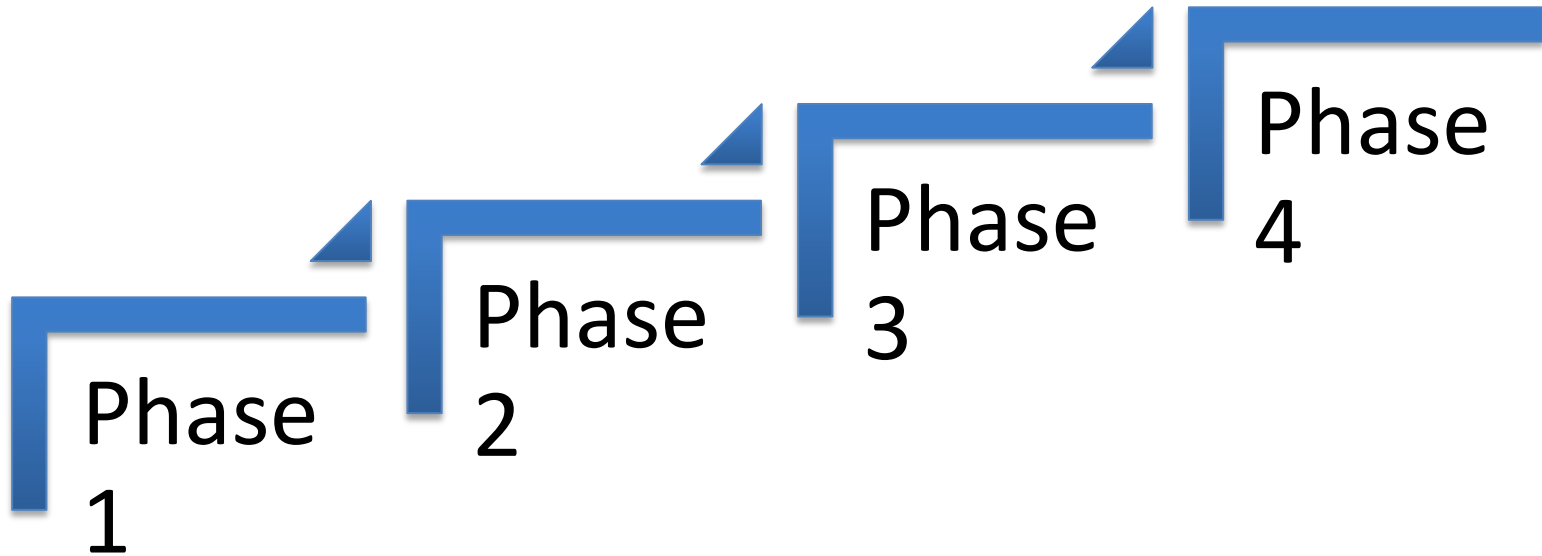


TOOLKIT VERSION: 0.3

#### ICONS

-  Tool
-  Background information
-  Template

# Laboratory Quality Stepwise Implementation (LQSI) Process



Phase 1: Assure technical competency of testing

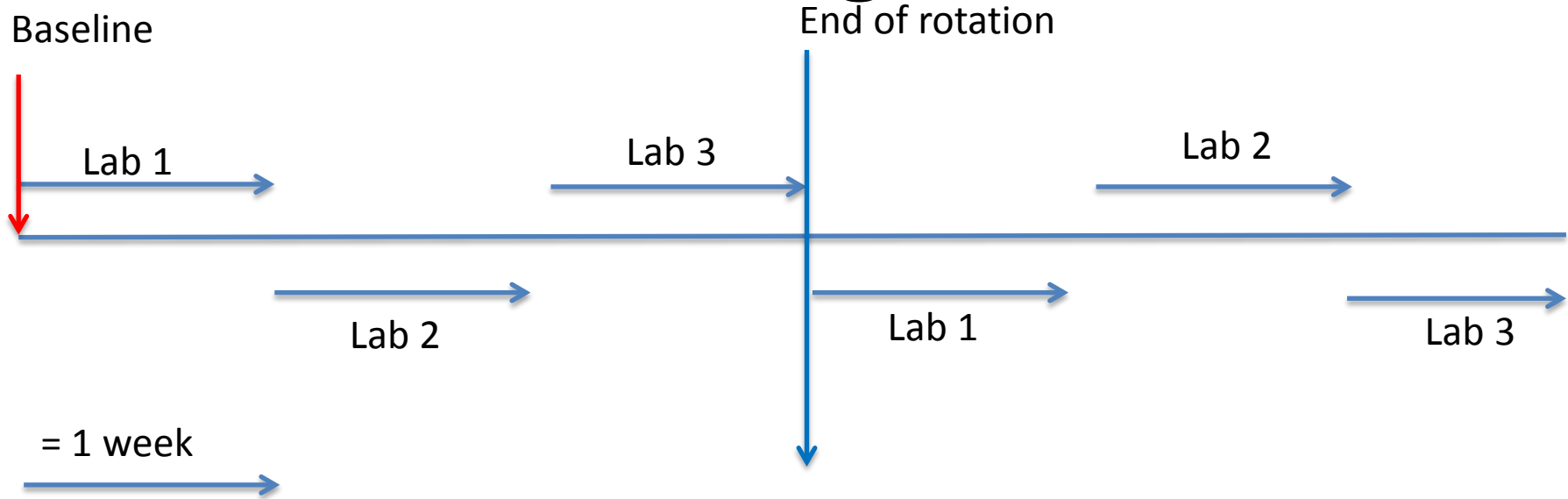
Phase 2: Implement QC measures, create traceability

Phase 3: Establish the policy cycle with proper management, leadership and planning

Phase 4: create CQI, document progress



# The Mentoring Process:



- Multiple mentor calls to labs every week
- Mentor meets with Lab Manager daily and Hospital Director weekly
- Weekly team call
- Weekly progress reports
- Monthly progress reports
- Bi-monthly team meetings in PP



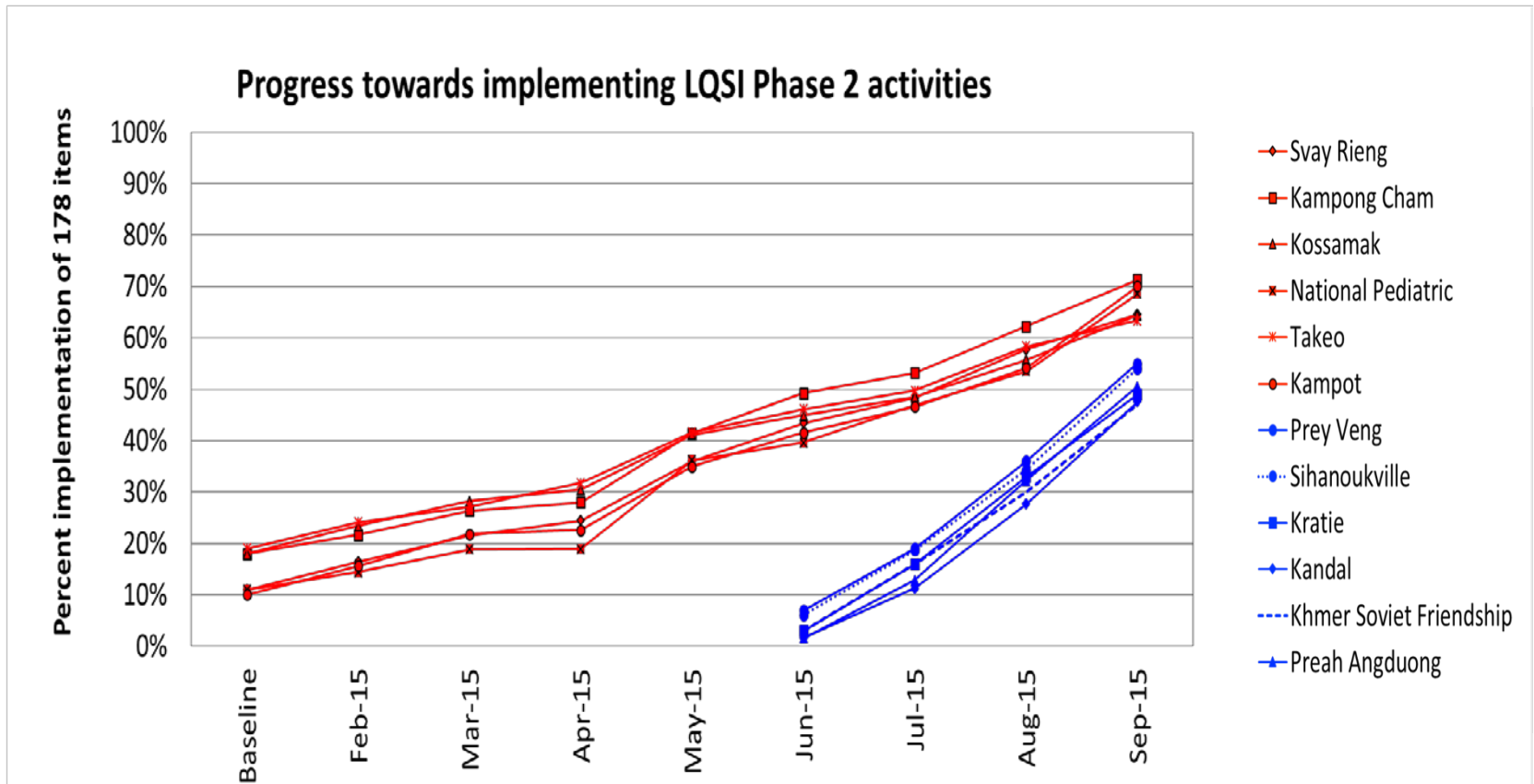


# Mentors follow an action plan, use a daily checklist (in Khmer) and measure progress weekly

Checklist Phase 1		QSE		How	How (How)	Indicator	Indicator
1	Have the staff adequately been instructed on the symptoms of infection with pathogens worked with in the laboratory?	Facilities and Safety	Activity	<ol style="list-style-type: none"> <li>1. Identify the pathogens most frequently worked with in the laboratory.</li> <li>2. Identify the symptoms of diseases caused by these pathogens.</li> <li>3. Present and discuss the symptoms of the diseases caused by these pathogens with all staff. And explain to the staff members what they should do when they have these symptoms.</li> <li>4. Develop policy to allow staff to be vaccinated; and regular check of TB.</li> <li>5. Vaccinate to staff against Hepatitis B and organize regular checks for TB.</li> </ol>	<ol style="list-style-type: none"> <li>1. ...</li> <li>2. ...</li> <li>3. ...</li> <li>4. ...</li> </ol>	<ol style="list-style-type: none"> <li>1. Presence of the list for pathogens and its symptoms for the most pathogens frequently worked with in the laboratory.</li> <li>2. Presence of the minute of meeting/record on the discussion and explanation of the symptoms of the diseases caused by these pathogens with all staff; and explain to the staff members what they should do when they have these symptoms.</li> <li>3. Presence of policy that staff need to be vaccinated and regular check for TB.</li> <li>4. Presence of the certificate of vaccination of staff against Hepatitis B.</li> </ol>	<ol style="list-style-type: none"> <li>1. ...</li> <li>2. ...</li> <li>3. ...</li> <li>4. ...</li> </ol>
2	Is there a written procedure on how to act in case of a suspected laboratory associated infection/laboratory accident whereby a	Facilities and Safety	Activity	<ol style="list-style-type: none"> <li>1. Write/develop/collect the procedure on what to do when staff members (potentially) have become infected in the laboratory, including the administration of PEP and visiting of medical services (pre-exposure prophylaxis and post-exposure prophylaxis)</li> </ol>	<ol style="list-style-type: none"> <li>1. ... pre-exposure prophylaxis post-exposure prophylaxis.</li> </ol>	<ol style="list-style-type: none"> <li>1. Presence of pre-exposure prophylaxis and post-exposure prophylaxis. And put the its flow charts at the place that all staff could see it easily.</li> </ol>	<ol style="list-style-type: none"> <li>1. ... pre-exposure prophylaxis post-exposure prophylaxis</li> </ol>

Cohort 1 (blue) and 2 (red) – Phase 1

# Cohort 1 (blue) and 2 (red) – Phase 2



# Strengths of approach

- **Detailed action plans** for each phase in Khmer
- **Regular mentor schedule and embedding of mentors**
- **Establishing a culture of CQI**
- **MoH (BLMS) support**
- **Maintaining weekly contact with mentors**
- **Teambuilding!!**



# Challenges

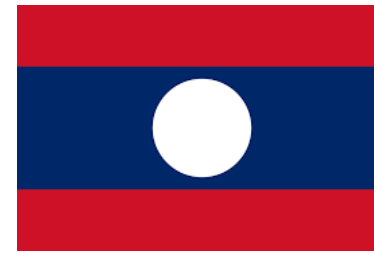
- Culture of professionalism
- Economics (country and individual)
- Leadership support
- Law and Regulation
- Education
- Procurement



# Clinical utilization of laboratory

Improve  
Laboratory  
Utilization by  
Clinicians

- Survey doctors and nurses on lab utilization-discuss results with the TWG for clinical education
- Design intervention strategies:
  - Lab Medicine rounds/case studies
  - Lab Medicine CME
  - Medical education –Lab Med elective at UHS
  - Tablet based learning?



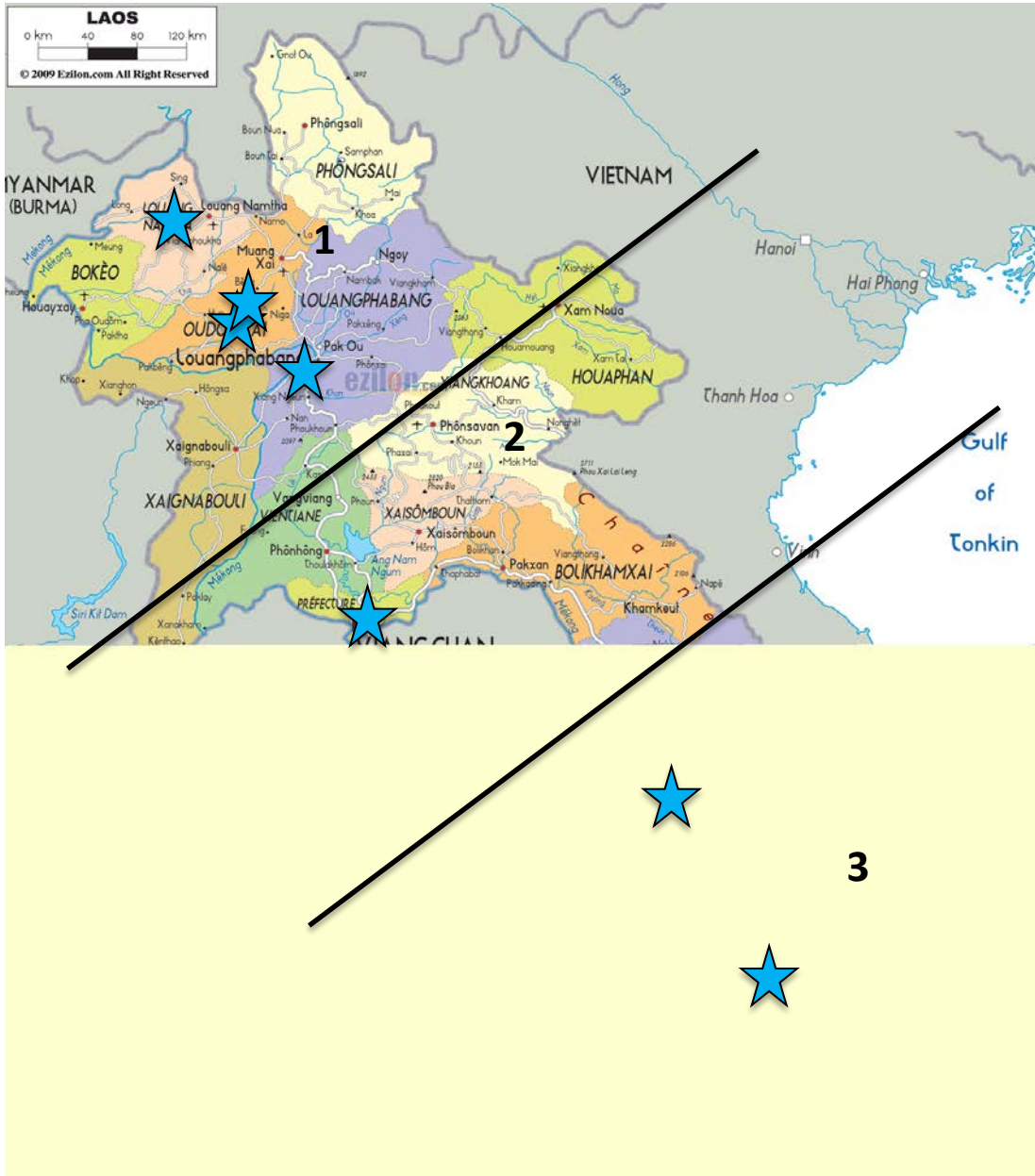
Started February, 2015

- MOH engagement
- Site selection
- LQSI tool being translated
- 2 job advertisement (Project coordinator and mentor)





# LQSI in Laos PDR



Cohort 1 Sites: (n=12)

## Zone 1

Louang Namtha Prov. Hosp.  
Oudomxai Prov. Hosp.

Luang Prabang Mil. Hosp. #107  
Luang Prabang Hospital (1)

## Zone 2

NLCE (1)

IPL (1)

Vientiane Mil. Hosp. #103 (1)

LOMWRU Micro lab (1)

Mahosot Hospital (1)

Mother and Child Hosp. (1)

Mitaphab Hosp.(1)

Settha Hosp.(1)

CICML/Merieux (1)

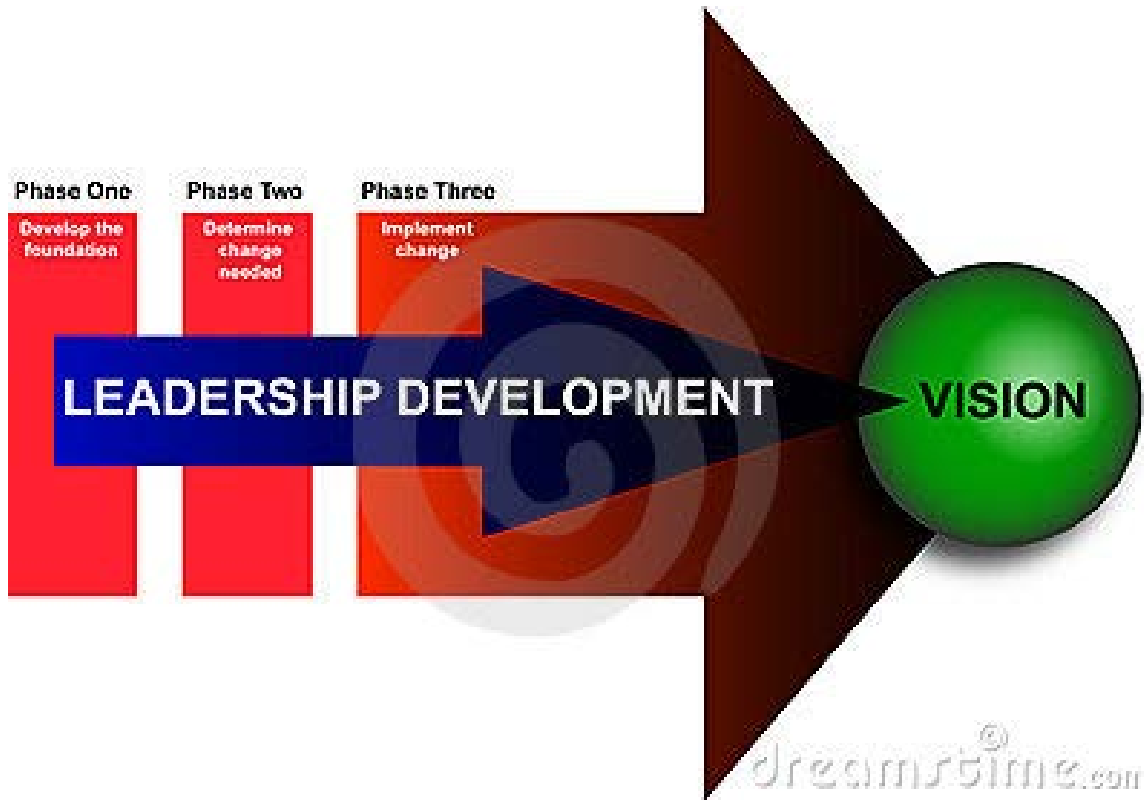
NAHL (1)

## Zone 3

Savannakhet Prov. Hosp.(1)

Champasak Prov. Hosp.





# Laboratories Need Leaders

- Many laboratory Directors have ascended to their position through seniority or a strong grounding in technical skills, but have limited skills in leadership and management.



# Certificate Program in Laboratory Leadership and Management

- Collaboration with WHO-EMRO
- Laboratory Directors from both private and public sectors



# Participants and Mentors:

- Proficiency in English
- Good Computer Skills
- Participants envision a career with increasing leadership role
- Mentors: Senior level scientist with experience in laboratory management.
  - Motivate, encourage and challenge
  - Support work on Capstone projects



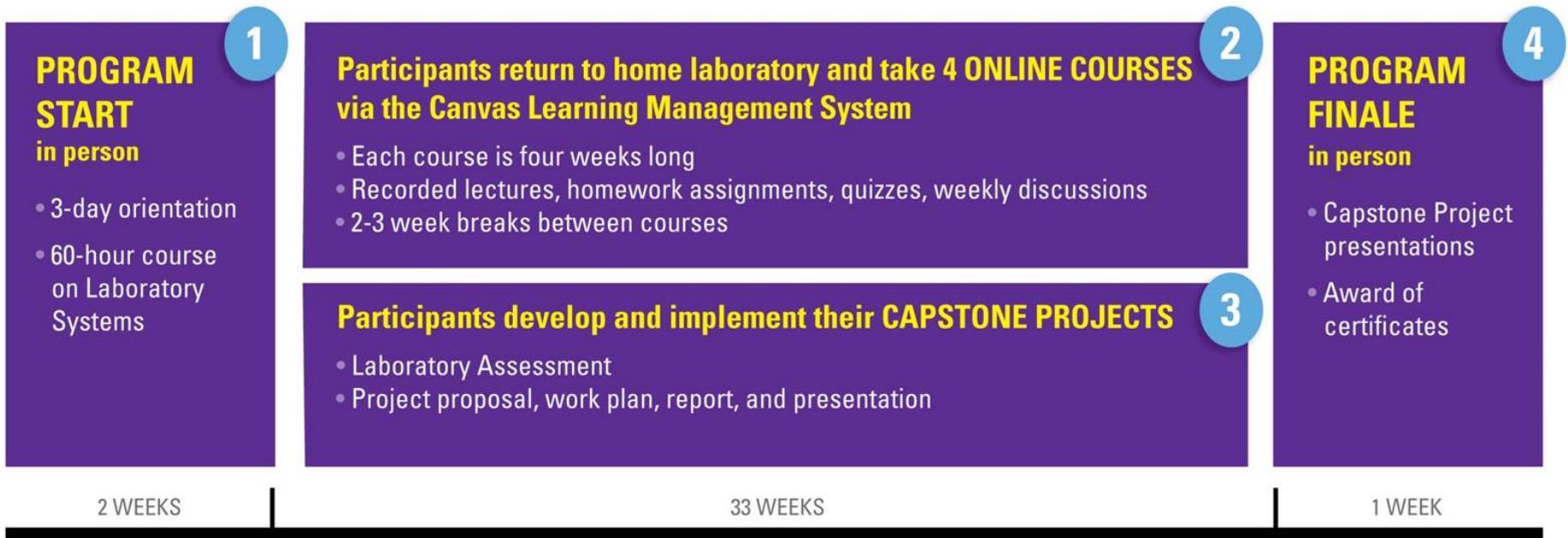
# Learning Goals:

- **Apply** leadership and management skills
- **Implement** quality assurance practices
- **Apply** critical analyses to laboratory data and communicate results and interpretations in an impactful way.





# Program Elements:



**9-MONTH PROGRAM**



# Strategic Planning for the Clinical Laboratory Sector in Kazakhstan



Booz | Allen | Hamilton



DEPARTMENT OF GLOBAL HEALTH

UNIVERSITY of WASHINGTON





**NATIONAL HEALTH  
LABORATORY SERVICE**



INTERNATIONAL  
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CENTER ON HIV

# Strengthening the Clinical Laboratory Profession in South Africa

## Core Group Meeting

### August 20, 2015







## I-TECH-CDC-PEPFAR grant (2014-19) Laboratory Project Goal:

Support South Africa's laboratory workforce development activity through strengthened pre-service and in-service education and training of laboratory professionals.



# Core Group Representatives

- Universities of Technology
- Academic Universities
- Private Laboratories
- Health Professions Council of South Africa
  - Medical Technologists
  - Medical Scientists
- SANAS
- Department of Education
- NHLS





# Conclusions



- Assess current curriculum against appropriate standards.
- Reduce variability among university programs through stronger accreditation process.
- Provide faculty development opportunities.
- Strengthen training laboratories (curriculum, education, training).
- Strengthen affiliate agreements (e.g., require Technical Program Coordinators and assurance of professional participation in educational process)
- Examine process for development and ongoing review of board exam.



# Observations from our work:

- Strengthening laboratories is **one of many competing priorities** for countries
- **Limited resources** available for implementing key components of laboratory quality
- **Cultural changes** in the work environment
- Less reliance on a **disease specific approach** to strengthen laboratories.
- Quality Laboratory Practice – **Unrealistic expectations** of funders
- Law, regulation, education, management – requires **more attention and long-term commitment**





**KEEP  
CALM  
AND  
CARRY  
ON**