AFRICAN HEALTH PROFESSIONS

Regional Collaborative for Laboratory Technologists and Technicians

1st Learning Session

Dar es Salaam August 2016

SECOND REPORT YEAR 1

PEPFAR

EMORY NELL HODGSON WOODRUFF SCHOOL OF NURSING

Commonwealth Nurses and Midwives Federation

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AFRICAN HEALTH PROFESSIONS REGIONAL COLLABORATIVE

PARTNERSHIP FOR EXCELLENCE IN AFRICA'S HEALTH WORKFORCE

Dar es Salaam Tanzania August 2016

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LIST OF ABBREVIATIONS

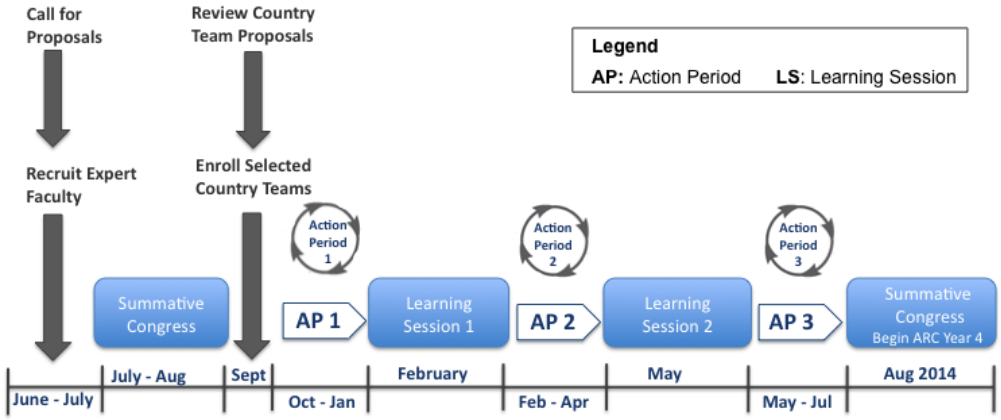
AIDS	Acquired Immune Deficiency Syndrome
ARC	African Health Professions Regulatory Collaborative
ART	Antiretroviral therapy
ARV	Antiretroviral
BLIS	Basic Laboratory Information System
BPA	Business Process Analysis
BPM	Business Process Mapping
CAB	Community advisory body (Malawi)
CAG	Community ART group (Malawi)
CDC	USA Centers for Disease Control and Prevention, Atlanta, Georgia
CDRM	Collaborative Requirement Development Methodology
CMM	Capability Maturity Model
CNMF	Commonwealth Nurses and Midwives Federation
CPHL	Central Public Health Laboratory (Uganda)
CQI	Continuous quality improvement
DBS	Dried blood spots
DMAIC	Define, measure, analyse, improve, control
ECSA-HC	East, Central and Southern Africa Health Community
EGPAF	Elizabeth Glaser Paediatric AIDS Foundation
EID	Early infant diagnosis
EMR	Electronic medical record
HESIB	Health Economics, Systems and Integration Branch
HIV	Human Immunodeficiency Virus
HOP	Headquarters Operational Plan
HVL	High viral load
ICAP	International Centre for AIDS Care and Treatment Programs
IHI	Institute for Healthcare Improvement
ILB	International Laboratory Branch CDC
LARC	African Regional Collaborative for Laboratory Technicians and Technologists
MCH	Maternal and child health
MOH	Ministry of Health
PDSA	Plan, do, study, act
PEPFAR	United States President's Emergency Plan for AIDS Relief
PMTCT	Preventing mother to child transmission (of HIV)
PSC	Patient support centre (Kenya)
QI	Quality improvement
SOP	Standard Operating Procedures
TA	Technical assistance
TB	Tuberculosis
UNAIDS	United Nations and AIDS
VL	Viral load
VLT	Viral load testing
VOC	Voice of community
WHO	World Health Organisation

1. EXECUTIVE SUMMARY

In 2011, the United States Centers for Disease Control and Prevention (CDC) under the US President's Emergency Plan for AIDS Relief (PEPFAR); Emory University's Lillian Carter Center for Global Health and Social Responsibility; the East, Central and Southern Africa Health Community (ECSA-HC), and the Commonwealth Nurses and Midwives Federation established a collaboration titled: *The African Health Professions Regulatory Collaborative* (ARC), which created an innovative south-to-south partnership to engage and build on the capacity of Africa's health professional regulatory leadership for nursing and midwifery. The aim of the collaborative was to improve health professional standards and practice in the region using local solutions and peer-based learning. The initial focus for the ARC initiative was on the seventeen countries in the east, central and southern Africa region: Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, South Africa, South Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

The ARC conceptual framework was adapted from the Institute for Healthcare Improvement (IHI) Breakthrough Series© which is a short-term (6-15 month) learning system for breakthrough organisational change in which organisations learn from each other, as well as from recognised experts, about an area needing improvement. The structure of the IHI model is a series of alternating learning sessions and action periods (see figure 1).

Figure 1: IHI Breakthrough Improvement Model (adapted for ARC)



The objectives of ARC Phase 1 (2011-2015) were aimed at sustaining the scale-up of HIV services through strengthened nursing and midwifery regulatory frameworks and developing a sustained regional network of nursing and midwifery leaders to facilitate south-to-south exchange of best practices. Over the four years of ARC Phase 1 for east, central and southern Africa, 32 small grants were awarded for nursing and midwifery quality improvement projects. For more information about these projects, go to: http://africanregulatorycollaborative.com/ARC%20ECSA%20Grants.html.

In 2015, ARC West and Central was established involving three countries: Cameroon, Cote d'Ivoire, and the Democratic Republic of the Congo. For more information about ARC West and Central projects, go to: http://africanregulatorycollaborative.com/ARC%20WCA%20Grants.html.

In February 2016, ARC Phase II was launched with a focus on meeting the UNAIDS 90-90-90 goals that by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people with diagnosed HIV infection will receive sustained ART; and 90% of all people receiving ART will have viral suppression. Through ARC Phase II, countries will conduct projects to identify bottlenecks at high HIV volume site and apply for quality improvement grants to address those bottlenecks.

In February 2016, an exciting extension of the African Regional Collaborative for Nurses and Midwives was launched in Johannesburg South Africa. The new initiative, the African Regional Collaborative for Laboratory Technologists and Technicians (LARC), is aimed at improving communication between laboratory technologists and technicians, and nurses and midwives. Integral to achieving the UNAIDS 90-90-90 goals is identification and referral for viral load testing; efficient specimen collection and processing; timely and accurate testing; and result reporting and interpretation by clinicians that leads to appropriate patient management.

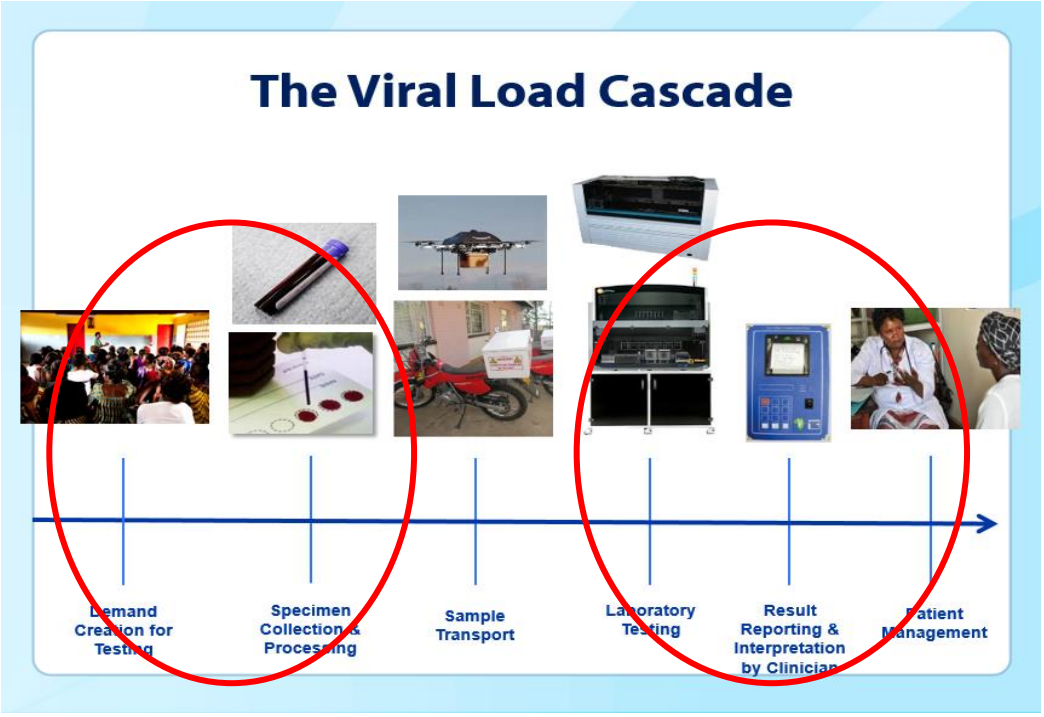
Laboratory services play a key role in the diagnoses and management of people living with HIV and AIDS. The WHO consolidated guidelines on the use of antiretroviral drugs for preventing and treating HIV infection recommend viral load testing as the preferred monitoring tool for diagnosis and confirmation of the failure of antiretroviral therapy. As countries move toward the 90-90-90 goals, HIV testing services will have to be expanded with high quality and accurate reporting of HIV status to ensure correct HIV results are given to all individuals.

Optimizing the use of HIV diagnostics (first '90'), accelerating access of HIV-infected adults, adolescents and children to ART (second '90'), and achieving and maintaining HIV viral load (VL) suppression (third '90') is necessary to control the HIV epidemic. To effectively achieve accurate HIV testing, treatment and viral load suppression scale-up targets, there needs to be continuous quality improvement (CQI) in laboratory systems, early diagnosis of HIV and TB, and timely linkage to treatment with a monitoring strategy to ensure that treatment is effective. Uptake of best practices, government commitments along with strong leadership and partnerships is also necessary.

The overall goal of the LARC initiative is to achieve and maintain HIV VL suppression (the 3rd 90) by:

- Increasing the uptake of VL testing by improving the elements in the viral load cascade.
- Improving institutional capacity and inter-cadre effectiveness through team building, evidence based problem solving, normative guidance, and progress measurement.

Figure 2: The Viral Load Cascade



Ellenberger D. *Viral Load presentation.* ARC Summative Congress Namibia February 2015

The International Laboratory Branch (ILB) Headquarters Operational Plan (HOP) of the CDC developed a project which adapts the highly successful, continuous quality improvement (CQI) problem-solving regional collaborative used by nurses and midwives (ARC) to the laboratory workforce.

More specifically, LARC will engage national teams of laboratory technologists and technicians and nursing and midwifery leaders from the six viral load countries: Kenya, Malawi, Mozambique, Swaziland, Tanzania, and Uganda, to identify and address health systems barriers that impede the integration of viral load testing within patient care, especially HIV care provided by mid-level providers (eg: nurses and midwives) who are responsible (through task sharing) for managing patient treatment on first-line of antiretroviral therapy (ART).

The LARC initiative will provide 12 month time limited grants to the targeted countries to work on projects to improve communication and understanding between these two critical groups of health professionals. The interventions developed by each country team will be supported by grants of up to US$10,000.The projects will be developed by the respective country collaborative (comprised of national laboratory technologists, technicians and nursing and midwifery leaders) and submitted by each team for project review conducted by Emory University.

The review and approval of these short-term 'winnable' projects will engage CDC (HESIB and ILB) and Emory University staff. Each project interventions must address system impediments illustrated at either the end of the viral load cascade (see figure 2). LARC's evaluation will incorporate a Capability Maturity Model designed specifically for assessing laboratory health systems improvement that has been used to assess the progress of the ARC initiative.

During the term of the projects there will be two LARC learning sessions that will allow country teams to report on their viral load health systems projects and share related success and challenges with project implementation. The learning sessions are also designed to foster 'south-to-south' learning and provide expert technical sessions relative to the projects and capacity building of the country teams.

The inaugural LARC meeting was held in Johannesburg South Africa 18-19 February 2016. Representatives from Kenya, Malawi, Mozambique, Swaziland, Tanzania and Uganda attended the meeting. Representatives included the CDC laboratory adviser for each viral load country, laboratory technologists and technicians, nurses and midwives, members of the LARC and ARC faculty, and invited guests with technical expertise.

2. LARC YEAR 1 FIRST LEARNING SESSION

The First LARC Learning Session was held in Dar es Salaam, Tanzania, 2-4 August 2016. The learning session was attended by representatives from the six viral load countries: Kenya, Malawi, Mozambique, Swaziland, Tanzania, and Uganda. The aim of the meeting was to support viral load scale up across sub-Saharan Africa. The specific objectives were:

- To present, inform, and discuss the six LARC viral load (VL) activities being implemented by project teams in the six viral load countries.
- To incorporate improvement methodologies in LARC country projects to ensure successful outcomes.
- To introduce the LARC Capability Maturity Model (CMM) and receive feedback from the six VL country teams.
- To have each LARC country team benchmark their initial (CMM) stage.
- To develop plans for the next action period.

3. OFFICIAL WELCOME AND GREETINGS

The meeting was officially opened by Dr Maestro Evans, CDC Tanzania Deputy Country Director and currently Acting Country Director. Dr Evans welcomed participants to Tanzania and said that enhancing the communication and working relationships between laboratory and nursing and midwifery personnel, who make up the LARC Dyad, is extremely important for achieving viral load suppression and the UNAIDS 90-90-90 goals. Dr Evans said nurses and midwives play an important role in coordinating care between all other health care cadres and linking the crucial work of laboratory personnel to the patient. Dr Evans encouraged participants to make the most of this opportunity of their time together.

Professor Yoswa Dambisya, Director General of the East, Central and Southern Africa Health Community (ECSA-HC) told participants he was delighted to be a part of the LARC initiative. Professor Dambisya said meeting the UNAIDS 90-90-90 goals was a mandate for ECSA-HC from the East, Central and Southern Africa Health Ministers. The LARC initiative and the LARC projects will make an important contribution to achieving this mandate. Professor Dambisya wished participants fruitful deliberations during their time together.

Ms Patricia Riley, Team Lead from the CDC Atlanta International Laboratory Branch welcomed all participants particularly the new members of the teams. The LARC initiative, Ms Riley said, was a small but critically important project. The first learning session represents the beginning of the work. Projects have been decided, contracts signed, and now the work begins. The purpose of the learning session is to consolidate the learning from the last meeting about Business Process Mapping (BPM) and to introduce, discuss and refine, the evaluation tool for the initiative based on a Capability Maturity Model (CMM). This model was successfully used, Ms Riley explained, to evaluate the ARC initiative and has been adapted for LARC. Ms Riley said the learning session is a time to share with and learn from each other and emphasised that the personnel from the ILB are available to country teams to assist with their project planning. Ms Riley concluded by introducing Ms Agnes Waudo and Ms Nancy Ruto who organise the LARC and ARC meetings (travel logistics, transport, reimbursements) and Ms Jill Iliffe who is the meeting transcriber, photographer and maintains the LARC and ARC website.

4. OPENING REMARKS

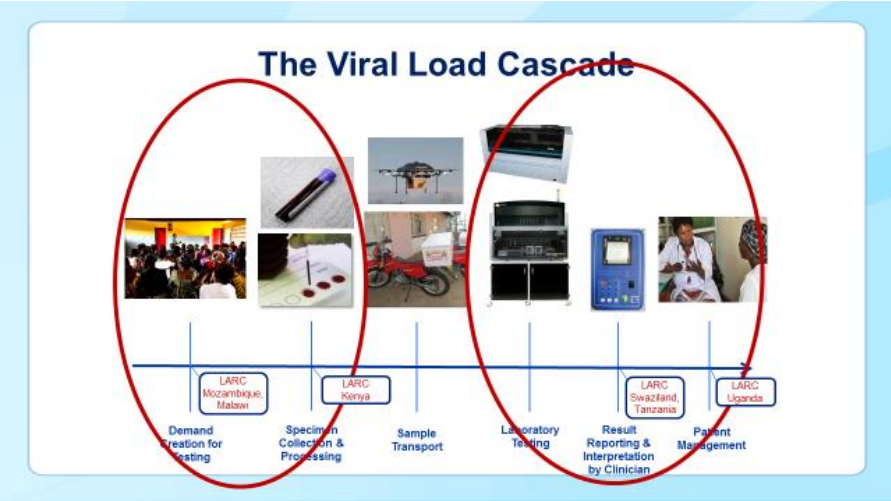
Dr Shirley Lecher, Associate Chief and Viral Load Co-Lead, from the CDC International Laboratory Branch, Atlanta

Dr Lecher explained that the LARC initiative was focused at present on six countries: Kenya, Malawi, Mozambique, Swaziland, Tanzania and Uganda. The reason those countries were selected was because they had already made a large investment in treatment and PMTCT programs; they had the ability to optimize prior investments in laboratory system strengthening; they could leverage on existing viral load platforms; and they had the ability to access other partner resources.

Dr Lecher stressed the importance of viral load testing. The viral load measures the amount of virus in the blood. Virological failure is the first indication that ART is not working making viral load monitoring the strategy of choice because failure is identified early, drug resistance is avoided, as are unnecessary switches to second line treatment. The viral load cascade starts with demand creation for testing; specimen collection and processing; transport; laboratory testing; results reporting and interpretation; and patient management. All these processes must be working effectively together, Dr Lecher said, if we are to achieve the UNAIDS 90-90-90 goals and an AIDS-free generation.

The country projects addressed three of the six steps in the viral load cascade. Malawi and Mozambique are focusing on demand creation for testing. The focus for the Kenya, Swaziland and Tanzania projects are addressing results reporting; while the Uganda project is focusing on results interpretation and patient management.

Figure 3: The position of country projects on the Viral Load Cascade



The LARC initiative, Dr Lecher said, provides a unique opportunity for laboratory technologists, technicians, nurses and midwives to develop a model of working together and communicating effectively with each other which can be scaled-up to other sites in the country. Achieving the UNAIDS goals will require vigorous effort and working smartly to use resources – human, financial and material – efficiently and effectively. Dr Lecher said the CDC ILB Branch is very committed to the project and thanked participants for their interest and enthusiasm.

Following Dr Lecher's presentation, Mr David Cross, Health Scientist from the CDC ILB, Atlanta, facilitated the introduction of team members to each other and welcomed new members to each team. Mr Cross also introduced LARC faculty members, members of the CDC International Laboratory Branch, and special guests.

Group Photograph: Country Team Dyads and LARC Faculty

5. SESSION ONE: COUNTRY PRESENTATIONS – PROJECT PROGRESS

Moderated by Mr David Cross, Health Scientist, CDC ILB

KENYA

Ernest Makokha; Nancy Bowen; Linet John; Rose Kuria; Rosemary Okova; Edna Tallam; Barack Odindo

The Kenya project report was presented by Mr Ernest Makokha, Senior Laboratory Adviser, CDC Kenya. The broad objective of the Kenya project is to improve HIV viral load results reporting and management by 90% at Homa Bay County Referral Hospital by April 2017. Homa Bay Hospital has 300 beds; 20 doctors; 130 nurses; 21 laboratory technicians; 7,103 patients on ART; and 2,000 specimens collected for VL testing each month. The focus of the Kenya project is on specimen collection and processing.

The team identified delayed results reporting which jeopardised patient treatment at the hospital's Patient Support Centre (PSC) and also at the laboratory. Collection of the specimen from the patient and submission to the reference laboratory could take two weeks and more than a month for the results to be received at the PSC to initiate a clinical decision.

The team also wanted to:

- Assess the existence of job aids or SOPs relevant to results management.
- Identify barriers within the facility for prompt results management using a checklist and BPM.
- Determine the proportion of patients on ART whose results were delayed more than one month.
- Provide facility based mentorship on patient result reporting and management.

The planning process for the Kenya team included two site visits to Homa Bay Hospital; interviews with key stakeholders; document review of registers, logs, SOPs, job aids; and conducting Business Process Mapping with local staff. The team were able to leverage on existing VL in-country national initiatives for resources and tools, eg from EGPAF (Elizabeth Glaser Paediatric AIDS Foundation).

The team collected baseline data through examination of medical records over a period of one month to determine the number of patient charts with missing or delayed viral load results. The challenges the team experienced were difficulties in arranging face to face meetings with conflicting schedules and understanding the new concepts of Business Process Mapping.

The way forward for the Kenya team is disseminating the findings to local and national stakeholders; seek more partnerships; and provide interventions at facility level throgh mentorships and advocacy for better result management systems. The team also intended to form local partnerships to scale-up the project to other facilities.

MALAWI

Geoffrey Chipungu; Reuben Mwenda; Linvell Chirwa; Isaac Chauwa; Thokozire Lipato

The Malawi project report was presented by Mr Isaac Chauwa, monitoring and evaluation specialist. The broad objective of the Malawi project is to increase access to quality VLT services at Mitundu Community Hospital by 80% through a strengthened identification process of eligible clients and demand creation. The planning process undertaken by the Malawi team began with identifying the problem; developing the goal and objectives; developing project activities and strategies; and developing the budget. Their specific activities include:

- Consultations with facility personnel,
- Baseline assessment – data collection,
  - Current on ART
  - Proportion of eligible clients accessing VLT
  - Number of VL samples collected /week
  - Percent of ART clients with at least 95% adherence.
  - Sample rejection rate.

Figure 4: Malawi baseline metric and target metric

Indicator	Baseline	Target
Number of adults and pediatrics current on ART.	5000	5500
Proportion of ART clients accessing VLT	38%	80%
Number of VL samples collected per week	40	84
Percent of ART clients with at least 95% adherence	95%	100%
VL sample rejection rate	10%	<1%

Mr Chauwa explained that the Malawi project is supplementary to other already existing interventions such as the VL national scale-up plan 2015-2018; sample collection and preparation project being conducted by Lighthouse; sample transportation project through Bikers for Health; and development of a VL data system.

Stragegies to be implemented in the next action period include:

- Orientating facility level personnel to the project.
- Formulating a Community Advisory Body (CAB) with terms of reference and orienting the CAB about VLT and other related ART areas.
- Formulating Community Art Groups (CAGs) and orienting the CAGS on their roles including VLT algorithm.
- Identifying 'expert' clients and training them on their roles in community awareness and the VLT algorithm.
- Facilitating community sensitisation meetings.
- Formulating a Mitundu ART teen club and facilitating monthly meetings for the teen club.

The team would also be conducting monthly supportive supervision visits and collecting data on project performance indicators; conducting data quality assessments; conducting quarterly review meetings; preparing quarterly reports; and preparing monthly financial reports.

The team anticipated their challenges would be increased workload at testing facilities leading to a longer than anticipated turn around time; a weak supply chain system which may result in reagents stock out; and a higher than anticipated loss to follow up.

MOZAMBIQUE

Lucia Muamdo; David Turgeon; Laura Williamo Simbine; Luciana Kohatsu; Isobel Pinto

The Mozambique project report was presented by Ms Isabel Pinto, Head of the National Laboratory Department, Ministry of Health. The aim of the Mozambique project was to increase the percentage of viral load tests ordered according to the national algorithm for the maternal and child health (MCH) population (pregnant and breastfeeding women) from 0%-30% by 29 July 2016 (short term aim) and from 30%-80% by 31 October 2016 (long term aim). The project is based at the Bagamoio Health Centre which has 6,914 patients in treatment. The demand for VL testing in Bagamoio is low with only one clinician trained in VL monitoring. Health facility staff attending patients with HIV are not trained in VL monitoring.

The team reported that they had:

- Oriented clinicians at the Bagamoio Health Centre about the project.
- Identified and confirmed their laboratory personnel and nurse and midwife project personnel.
- Assessed and identified weaknesses in the viral load cascade at the Health Centre.
- Engaged laboratory leadership, nursing leadership, and leadership at the Health Centre.
- Finalised their project proposal.
- Conducted viral load process mapping.

The Mozambique team had also trained clinicians in the proper implementation of the national algorithm and created a data collection log to capture baseline and ongoing data. The team noted that their baseline data was 0%. Twenty five patient records were anlaysed: 11 out of 25 patients qualified for a VL test but no VL tests had been requested. Two weeks after their intervention there was a 95% compliance rate: 43 patient records were analysed; 22 out of 43 patients were identified correctly as not needing a VL test; 19 out of 43 were correctly identified as needing a VL test and the test was requested; and one patient who required a VL test was not identified and the test was not requested.

During the next action period, the team planned to partner with a CDC communication expert to design patient engagement materials to increase VL demand/requests by patients; disseminate the project model throughout Maputo City; and strengthen clinician training on interpretation of the VL algorithm and test results.

The challenges they faced included a lack of VL request forms; lack of time to implement the project; implementing multiple tasks at the same time; and a lack of human resources requiring work outside of normal working hours. The tea felt that communication between clinicians and laboratories had improved and all involved had gained a better understanding of the laboratory workflow.

SWAZILAND

Glory Msibi; Sindisiwe Dlamini; Dan Gama; Nokulunga Dlamini; Gladys Thebisile Khumalo

The Swaziland project report was presented by Ms Sindisiwe Dlamini, Chief Laboratory Technologist, Swaziland Health Laboratory Services. The overall aim of the Swaziland project was to increase the percentage of patients with high VL test results with documented appointments for timely clinical intervention and follow-up from 12% to 50% by July 30, 2016; and from 50% to 80% by November 2016. The Swaziland team project was based at Motshane Clinic. Through process mapping the team had identified that there was no system to track high viral load results and consequently there were delayed clinical interventions.

The strategies implemented by the team include:

- Development of a high VL tracking log.
- Undertaking baseline data collection.
- Reviewing and analysing the preliminary data.
- Facilitating national algorithm training for facility staff.

To capture baseline data, the criteria established for follow-up were patients with high VL results of over 1000 copies/ml. The baseline was determined by examining the previous data of HVL results received in the facility from 1 January to 8 July against the number of HVL tests that were actioned within 3 days (n=25). The number of high VL patients who met the follow-up criteria were three, giving a baseline measure of 12%. The projected target is 80% following the intervention.

Challenges experienced by the Swaziland team were difficulties experienced by members in attending regular meetings and delayed results return due to a backlog at the reference laboratory. The team planned to continue weekly visits to the project facility to review data with facility staff.

TANZANIA

Paul Magesa; Victor Muchunguzi; Nassania Humphrey Shango; Anitha Magango; Dickson Majige, Michael Mwasekaga; Samwel Ligmas

The Tanzania project report was presented by Mr Ligmas Samel, Registered Nurse at the Tanzania Ministry of Health, Community Development, Gender, Elderly and Children. The Tanzania project was focused on the results reporting and interpretation step in the viral load cascade and aimed to assess and improve viral load results reporting and interpretation by clinicians. The Tanzania project was based at two high volume HIV sites, Shinyanga Regional Hospital and Kahama District Hospital. Two staff from each facility were invited to become part of the Tanzania project team. The project is working closely with the Quality Improvement teams in the respective facilities to complement initiatives already existing.

The activities planned by the Tanzania team include:

- Conducting a baseline assessment.
- Training clinicians on proper documentation of VL results.
- Coaching and mentoring clincians on the proper interpretation of VL results and utilisation in patient management.
- Establishing a clinical data review team.
- Developing a standing operating protocol (SOP) for clinical data management and utilisation.

The team will measure the number of patients visiting in a quarter with properly recorded viral road results in the appropriate register and the number of clinicians trained over six months on the proper interpretation and utilisation of VL results to improve patients management. The target is to ensure that each project element is attaining 100% quality improvement compared to its baseline data. A challenge experienced by the Tanzania team was limited in-country awareness of the LARC project. As a mitigating strategy the team conducted six consultative meetings with in-country stakeholders. They also found that communication by email between team members worked better for them than trying to organise face to face meetings.

UGANDA

Joseph Kabanda; Martin Zziwa; Florence Tugumisirize; Catherine Odeke; Cuthbert Agolor; Judith Nanyonjo; Mercy Mwanja; Harriet Nambozo

The Uganda project report was presented by Dr Martin Zziwa. The main objective of the Tanzania project is to improve VL results utilisation for patients on ART in Masaka Regional Referral Hospital hub area and specifically to:

- Increase the proportion of patients managed according to national VL guidelines to 95%.
- Increase the proportion of promptly documented viral load results on patient ART cards among the 18 functional ART sites within the Masaka hub to 95%.
- Compile guidelines and standards on facility based VL results flow, which can be later on scaled up country wide.

The Uganda team advised that routine VL testing in Uganda was commenced in August 2014. The facilities collect samples and sen to a district hub which sends them on for testing centrally at the Central Public Health Laboratory (CPHL) which tests around 50,000-60,000 tests each month. The PEPFAR Site Improvement Monitoring System (SIMS) visits in the Masaka Region between July and September 2015 noted that 35% of the facilities in the Masaka region performed poorly (between yellow-20% and red-15%) with insufficient documentation of monitoring parameters. Masaka Region is a high volume area with high HIV prevalence and mature generalized epidemic however the Masaka Regional Referral Hospital while being a high volume site is also a center of excellence for QI.

The project was able to leverage on existing VL in-country initiatives such as:

- National VL testing is available to 100% of districts in Uganda.
- Facilities use the Ministry of Health HMIS tools for laboratory and clinical monitoring of VL.
- Electronic Medical Records (EMR) flags patients due for VL testing.
- Baseline data on VL testing is available through the national VL data base (test coverage and number of patients not-suppressed).

The Uganda team activities include:

- Development and pre-testing of a VL testing site assessment tool.
- Conducting a baseline assessment of 22 facilities in the Masaka and Kalungu districts.
- Commencement of data analysis.
- Dissemination of baseline assessment to facilities.
- Development of facility LARC teams to conduct CQI activities.

The focus of the data assessment is to measure how many patients are on ART currently in the facility; how many have accessed VL test; how many have received their results; how many have had an intervention based on the results; and how many facilities have SOPs for VL monitoring.

Challenges experienced by the Uganda team were poor access and availability of required data during the assessment; facilities were out of stock of DBS cards and request forms; QI teams at facilities are dormant and lack adequate skills; and low staffing rates with limited knowledge on viral load monitoring across cadres at health facilities especially for enhanced adherence counselling. The team noted that multi-professional collaboration enabled professional learning and implementation in unity without differences and dissemination to multiple facilities provided an opportunity toward change of attitude in service delivery.

The next steps for the team include finishing the data analysis; conducting follow-up visits to each facility to initiate QI activities; providing sufficient VL commodities to all the facilities surrounding the hub; and support the facilities to follow-up patients who are not virally suppressed.

6. SESSION TWO: IMPROVEMENT METHODOLOGIES TO ENSURE SUCCESSFUL OUTCOMES

Dr Barbara Chase McKinney, Consultant, Emory University, CDC Atlanta

Dr McKinney said the focus of her presentation is on how to utilise improvement methodologies to ensure a successful outcome for projects. The most important question to ask yourself, Dr McKinney said, is 'Why'. Start with 'why', and then go and see what is happening and what needs to change. Dr McKinney commenced her presentation with two case studies where patients 'fell through the cracks'. Examining 'why' these patients 'fell through the cracks', made it possible to see where change is needed and to focus efforts on change that is going to make a difference to the outcome for the patient.

In the first case study, after one year no action had been taken after detection of a high viral load. A viral load test was requested, the result returned, and a high viral load detected; however at two subsequent appointments, there is no mention of a high viral load result in the patient notes. It was not until an appointment eleven months later that the high viral load results were noted and the patient referred for 2nd line therapy. In the second case study it took three months for a high viral load result to be translated into action.

When change is required, Dr McKinney said, there is no substitute for 'going and seeing' why things are not working. In the first case study, it was found that training was inadequate. Only one person was trained with no transmittal of training to other staff. The algorithm being used was unclear as to when VL testing should be ordered and it was only in draft format. There was no register to track when the VL was required, ordered, or results received. And there was no patient engagement information to encourage the patient to demand a viral load test or ask questions.

Dr McKinney said clinical competence must be developed through examination of case studies, mentoring, coaching, and demonstration of competence. Map the process to identify where failure occurred so everyone who is affected by change understands why change is necessary.

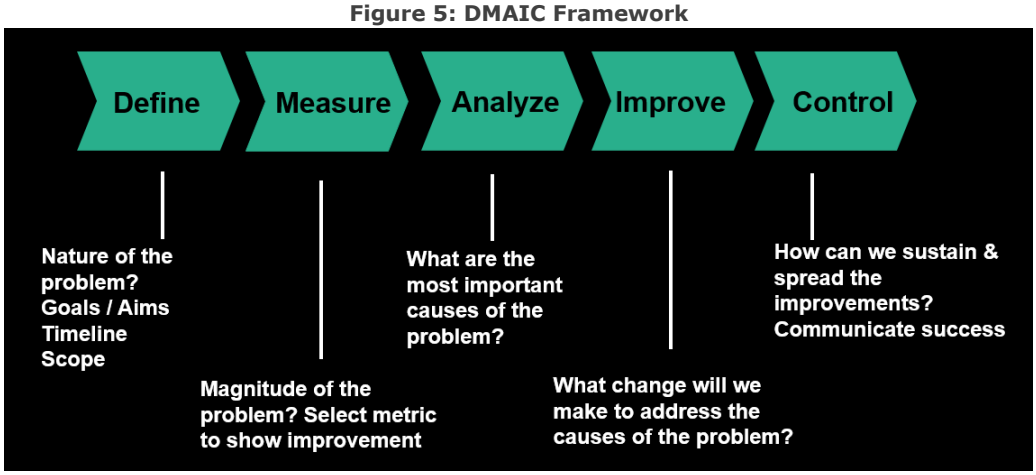
In the second case study there were multiple registers. The more times the same thing has to be recorded the more chance there is that it will not be recorded in every place. The VL test results were recorded in the laboratory register, but not in the patient notes. The printed copy of the VL test results were available, but not filed, in fact, three months of VL tests were waiting to be filed. Examination of the process led to the discovery that no single person was responsible in their job description for acting on high viral load results.

Dr McKinney shared with participants a range of quality improvement tools for successful project implementation.

a) DMAIC framework
b) Impact Effort Grid: a tool for prioritizing multiple opportunities or suggestions for improvement.
c) Aim Statement and metrics
d) Three questions
e) Voice of Customer survey
f) Elevator speech
g) PDSA
h) Communication to stakeholders
i) Fishbone
j) Pareto Chart
k) 5S
l) Visual Management

(a) The DMAIC framework is a useful model for improvement. DMIAC (define, measure, analyse, improve, and control).
- Define: What is the gap? Write down your aim which addresses the gap with timeline.
- Measure: What is the baseline measure? What is the data source? What is the sample size?
- Analyse: What are the contributing factors that will lead to or threaten success?
- Improve: What is your intervention to make an improvement?
- Control: Who is the project owner? What is you control plan? How are you going to communicate? What lessons have been learned?

Figure 5: DMAIC Framework



- **Define the problem:** determine specifically the nature of the problem (defects, waste, variation, etc) and identify project scope, goals, resources, timeline.

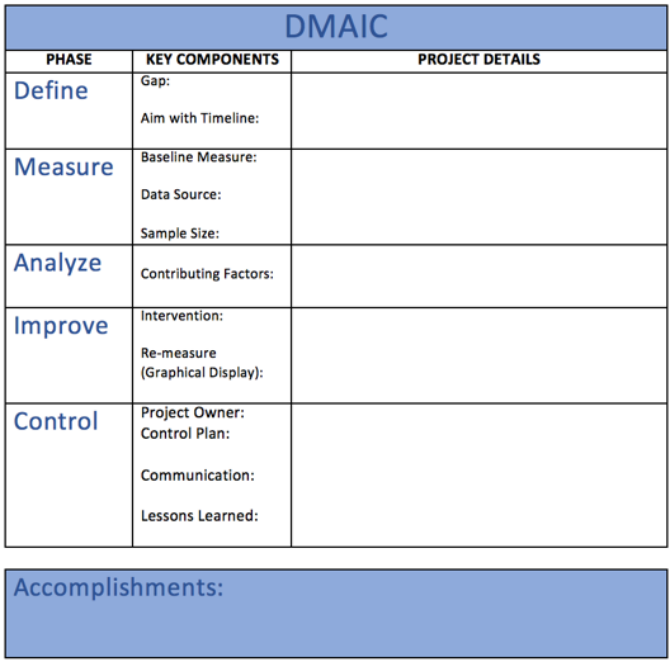
- **Measure the process**: confirm the current state performance, how bad is the problem, what are some potential causes.

- **Analyze process**: Are there causes that influence the problem more than others, looking beyond just the symptoms.

- **Improve the process:** eliminate or reduce defects, waste, variability, confirm changes have actually improved process.

- **Control the process**: make sure that the fixes we make stick long term, develop plan for operational handoff, project closure.

Figure 6: Using the DMAIC framework



DMAIC		
PHASE	**KEY COMPONENTS**	**PROJECT DETAILS**
Define	Gap: Aim with Timeline:	
Measure	Baseline Measure: Data Source: Sample Size:	
Analyze	Contributing Factors:	
Improve	Intervention: Re-measure (Graphical Display):	
Control	Project Owner: Control Plan: Communication: Lessons Learned:	
Accomplishments:		

Country teams were provided with a project checklist which they can use to make sure they covered all aspects of define, measure, analyse, improve and control.

1. Define and measure
   - Identify stakeholders,
   - Map the process (what is the current state),
   - Identify and prioritize opportunities
   - Develop a project outline
   - Develop an action plan
   - Establish baseline metrics and a data collection plan
   - Voice of community (VOC) information – what are the patient's saying
   - Be able to deliver an 'elevator speech' (explained later in the presentation)
   - Develop a communication plan
   - Start with one rapid test of change (Plan, Do, Study, Act - PDSA)

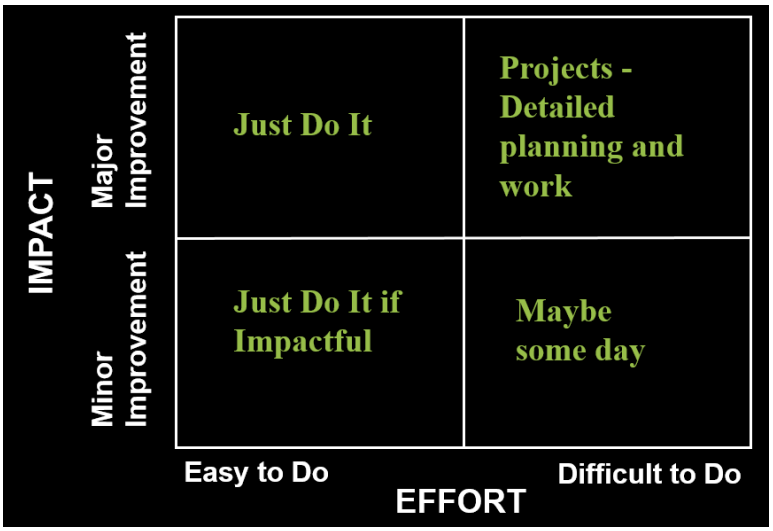
2. Analyse and improve
   - Do a root cause analysis (Fishbone Diagram, 5 Whys, or Pareto Chart),
   - Update aim statement, if necessary,
   - 1 Rapid Test of Change (PDSA),
   - 1 5s Exercise (explained later in presentation)
   - 1 visual management application
   - Create future state map (if ready)

3. Control
   - Update aim statement, if necessary
   - Modify solution(s) where necessary by additional Rapid Test of Change (PDSA)
   - Create control plan
   - Transfer to Operational Owner

Dr McKinney shared a quote from W Edwards Deming (1990-1993): *"The first step in any organization is to draw a flow diagram (process map) to show how each component depends on others. Then everyone may understand what their job is. If people do not see the process, they cannot improve it."*

b) The next step after mapping the process, is prioritizing the opportunities for improvement. Dr McKinney explained that, after the site visit with the teams in the two countries of her case studies, multiple opportunities for improvement were generated. An 'Impact Effort' grid can be used to prioritise opportunities. Some may be easy to do and result in a major improvement so they should be done immediately. Some may be easy to do but only result in a minor improvement so they should only be done if they have an impact. Others may be difficult to do but have a major impact so worth doing but they will require development of a project and detailed planning and work. Then there will be others that are difficult to do and only result in a minor improvement so they will not be a priority.

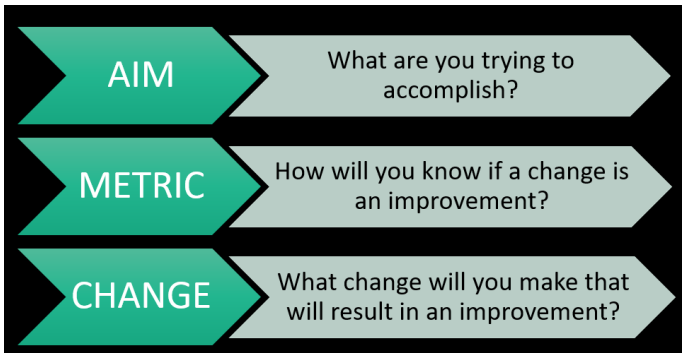
Figure 7: Impact Effort grid



c) Dr McKinney said that a critical step was developing your aim statement. Your aim is to improve (increase or decrease) _____(metric) from _____ to _____ by _____ (date). Do what, by when. Dr McKinney encouraged participants to present their data, their metrics, visually using graphs or charts. Nothing is more boring than a list of numbers. A visual display gets the message across quickly and clearly.

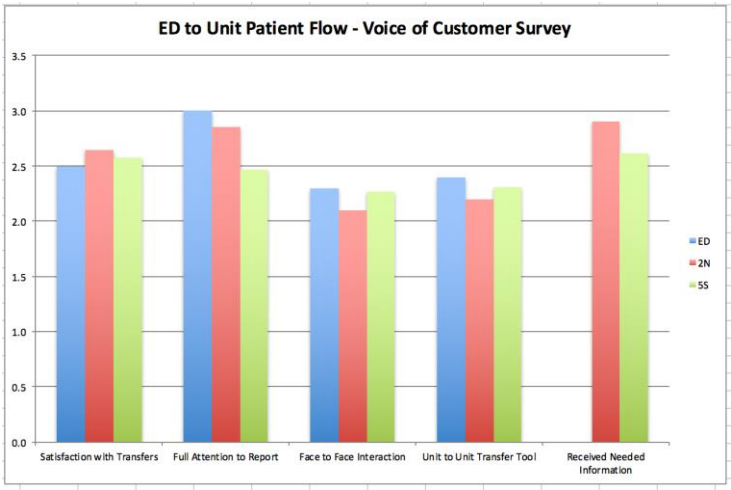
d) Another Model for Improvement is the 'Three Questions': What are you trying to accomplish (your aim)? How will you know if a change is an improvement (your metric)? What change will you make that will result in an improvement (your change)? Countries were encouraged to answer the three questions in relation to their project.

Figure 8: Three questions



e) Dr McKinney asked country teams to consider surveying their clients or customers as part of their project to find out what their perspective of the identified issue is. The 'voice of the customer' (VOC) is very powerful when 'selling' the project to government officials. Who are your customers? What are they saying about the project? Do they share your aim? Are they happy with your proposed strategies? How can they help?

Figure 9: Voice of customer survey



f) All country teams should develop a short, succinct but comprehensive description of their project that can be quickly shared with stakeholders. Called an 'elevator speech', that is, something that can be delivered in a couple of minutes, the elevator speech captures what is important and why it is important and how the stakeholder can contribute.

This project is about _____. As a result of these efforts _____.
It is important because we are concerned about _____ and _____.
Success will be measured by showing an improvement in _____ and _____.
What we need from you is _____ and _____.

Sample elevator speech:
This project is about *increasing the demand for HIV viral load testing at XXX Health Facility.*
As a result of these efforts, *all pregnant and breastfeeding women, meeting the country criteria, will have their VL ordered*.
The project is important because we are concerned about:

- *Reduction in vertical transmission from mother to child*
- *Early detection of treatment failure*

Success will be measured by showing improvement in *the percentage of viral load tests ordered for all algorithm-eligible pregnant and breastfeeding women*.
What we need from you (*variable answers depending on audience*).

Improvement techniques, Dr McKinney said, are formal and reliable methods to test changes in the steps of a process and seek to achieve greater process reliability more efficiently and at less cost: a set of steps that when performed repeatedly achieves the same result with minimum variation over time. The likelihood that a process will achieve its desired outcome is dependent on the variability of each step and the total number of steps. Reliability goes down as the number of steps increase and as the variability of the steps increases

g) A test of change alters a step in a process and evaluates the impact of that alteration. The steps in the 'test of change' are: Plan, Do, Study, Act (PDSA). There are three questions to ask prior to a test of change:
   - What are we trying to accomplish?
   - How will we know that a change is an improvement?
   - What change can we make that will result in improvements?

PDSA's do not result in success or failure, they generate learning, Dr McKinney said. The four components are:

Plan: develop an action plan to run the cycle. Predict the expected result: who, what, where, and when. Keep it simple, only one change at a time.
Do: perform the action plan.
Study: evaluate the change, and whether it performed as predicted.
Act: Reflect on what happened and use the learning to begin planning for the next test of change.

How to determine what test of changes to do
First have a clear aim, which means the team knows what to work towards. Reflect on the major factors or drivers that will influence achieving the goal. This helps to focus the group's efforts and decreases the likelihood that unnecessary work will occur. Determining the major factors or drivers helps to limit the interventions or actions to the few that are most likely to help achieve the goal.

Plan
- State the objective of the cycle, what are we trying to accomplish?
- Make predictions
- Generate solutions
- Develop the plan to carry out the cycle (who, what, where, when)

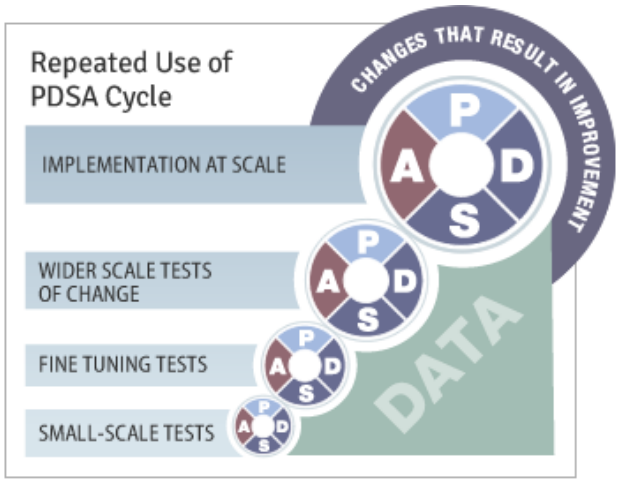
Do
- Test the change
- Document problems and unexpected observations
- Analysis the data

Study
- Complete the analysis
- Compare the data to predictions
- Summarize learning's

Act
- Make changes to the process
- Standardize the process
- Select the next cycle
- What change can we make that will result in improvement?

The PDSA cycle is not done once only. From small scale tests, tests are fine-tuned, wider scale tests of change are undertaken and then implementation at scale.

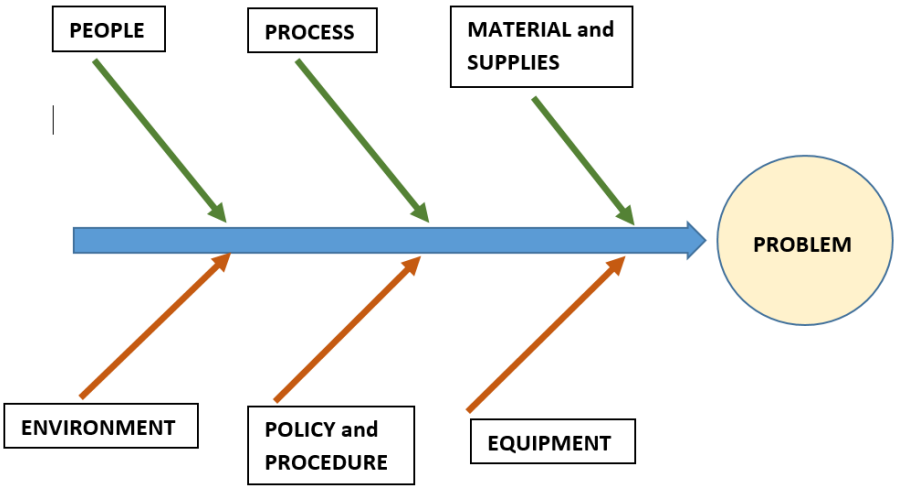
Figure 10: Repeated use of PDSA cycle



h) Communication plan: Communicating with all stakeholders regularly and appropriately is essential for success. The communication plan should include: method (how); timing (when); content (what); responsibility (who).

i) Fishbone diagram: Participants were encouraged to use a fishbone diagram for a root cause analysis of the issue they were trying to address.

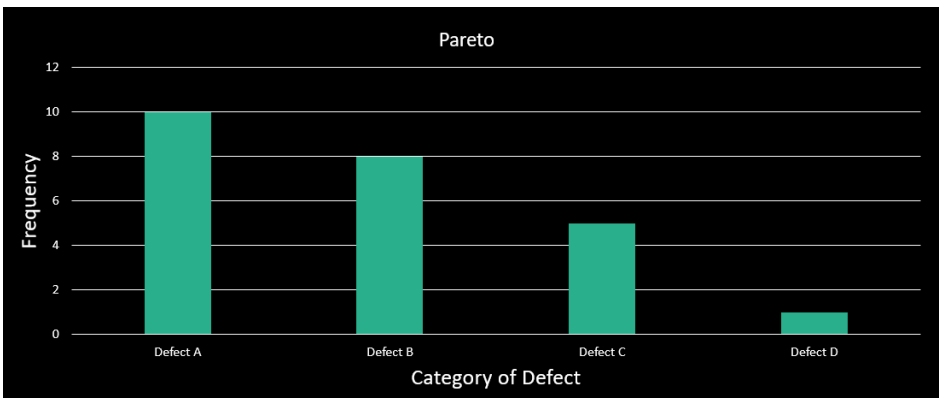
Figure 11: Fishbone diagram



j) Pareto Chart: list defects and ascribes frequency or percentage which can then be graphed to demonstrate which defects are the highest priority to remedy.

Figure 12: Pareto Chart

Defect	Frequency	%
Wrong order	10	45
Wrong side	8	36
Missing labels	3	14
Wrong patient	1	



k) 5s exercise: select an area to audit
S – sort: identify and eliminate what is not needed.
S – set in order: a place for everything and everything in its place.
S – shine: an effective, organised environment.
S – standardise: develop standards and stick to them.
S – sustain: 5s is a way of life.

7. SESSION THREE: ACTION PLANNING

Breakout by country teams

Following Dr McKinsey's presentation, countries worked together to plan their strategies for the next action period. Dr McKinsey provided countries with handouts which covered some of the methodologies she had been discussing for them to refine their projects.

Kenya

Malawi

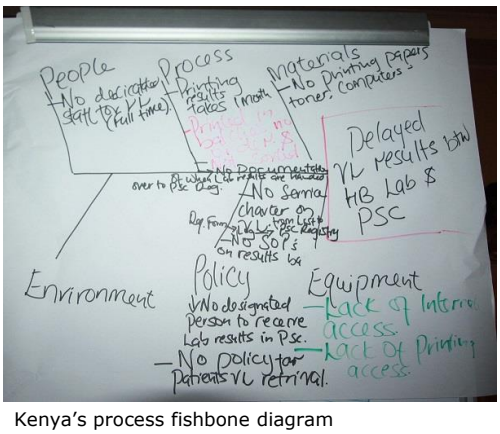
Mozambique

Swaziland

Tanzania

Uganda

Kenya



Kenya's process fishbone diagram

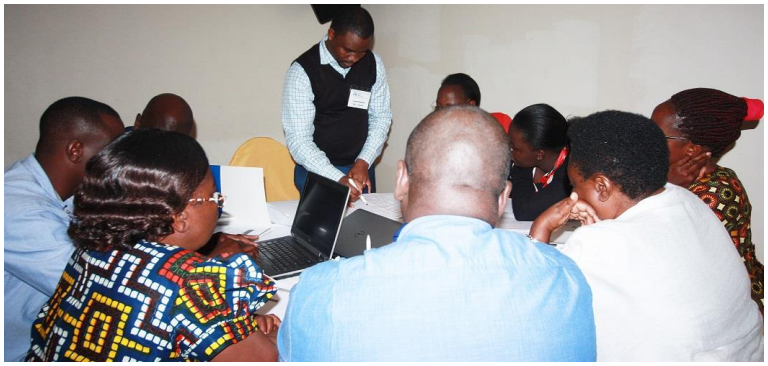
Malawi

Uganda

Swaziland's fishbone diagram

Swaziland

Tanzania's process map



Uganda

8. SESSION FOUR: PROJECT REPORTING AND MONITORING

Professor Kenneth Hepburn, ARC and LARC Principal Investigator, Emory University

Professor Hepburn revised and reinforced the reporting process for projects. There are three reporting periods: one for each action period. The first action period is the period from when the contract is signed until the first learning session. The second action period is between the first learning session and the second learning session; and the third action period is between the second learning session and the following Summative Congress.

Professor Hepburn explained that both a narrative report and a financial report are required but that templates are provided for reporting purposes. The narrative report asks a range of questions, including:

- the activities conducted during the action period against each project objective,
- a description of any products produced,

- a list of meetings held of the country dyad, a dyad plus, technical working group meetings, or stakeholder meetings,
- a record of any collaboration with another country team either to receive assistance or support or to provide assistance or support,
- any tools or survey instruments used during the action period and where they were sourced from and whether tools were shared with another country,
- any activities undertaken by the team as a team that were not part of the LARC project (eg an application for another project).

The narrative report also asks country teams to rate, on a five point scale from very strong to very weak, the level of teamwork within the dyad giving examples; the teams experiences of building relationships between their respective organisations; the teams experiences of building relationships with other organisations in the country; and their opportunities for networking with like organisations in other countries. The last part of the narrative report asks country teams to list any challenges or barriers encountered and what they did to address or overcome them. There is also an opportunity to request technical assistance or support from the ARC Faculty.

The financial reporting template asks country teams to list their actual expenditure during the action period against each objective as outlined in their budget. There is also an opportunity to highlight any budget variances or ask for budget adjustments. Professor Hepburn reminded countries that members of the ARC Faculty are available to assist or answer any questions.

9. SESSION FIVE: BUSINESS PROCESS MAPPING REVIEW

Dr Kelley Chester, Consultant, Public Health Informatics Institute

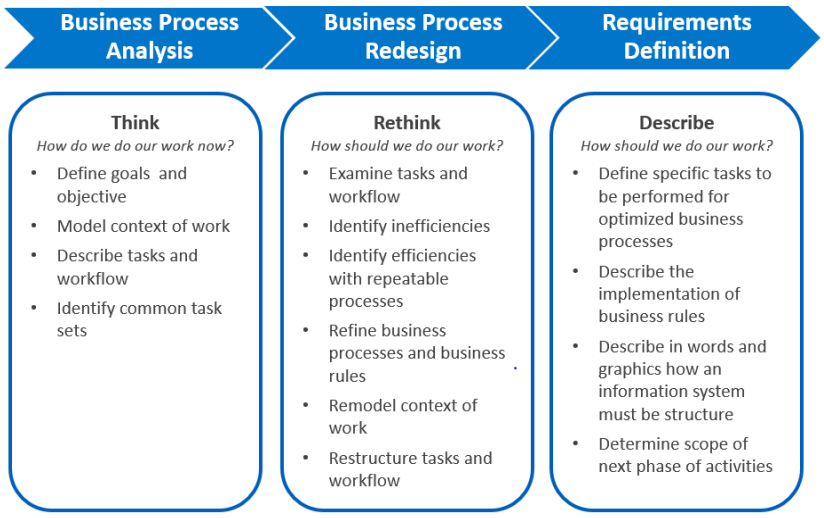
Dr Kelley Chester said her presentation would review important concepts relating to Business Process Mapping and Collaborative Requirements Development Methodology (CRDM). She would also look briefly at Business Process Analysis Tools. Dr Chester said her review of BPA was to reinforce the lessons learned at the LARC inaugural meeting in Johannesburg in February 2016. Dr Chester said a business process is a set of activities and tasks that logically group together to accomplish a goal or produce something of value for the benefit of the organisation, stakeholder or customer (for example: entering data into a database, transporting a specimen, writing a grant proposal, or hiring a new employee).

Collaborative Requirements Development Methodology (CRDM) is an approach for analysing business processes, re-thinking them, and defining requirements for an information system that automates the work. It moves from the abstract (think) to the concrete (describing definitions), leading to design. Like a jigsaw puzzle, we start with looking at all the pieces, finding the boundaries, and finally finishing when there are no more pieces that do not fit. One difference is that the boundaries are not clearly defined in our efforts — we must define them ourselves.

Understanding your business processes, Dr Chester said, is the key to doing your work more effectively and more efficiently. How do we do our work now? How should we do our work? To understand your work, you first must analyse a business process. In non technical terms – you think through the tasks that are performed to meet specific public health objectives. Second, you rethink the tasks to increase effectiveness and efficiency. This is called business process redesign. And third, you describe what the information system must do to support those tasks, in other words, define system requirements.

Business Process Redesign is the effort to improve the performance of an organization's business processes and increase customer satisfaction. Business process redesign seeks to restructure tasks and workflow to be more effective and more efficient.

Figure 13: Collaborative Requirements Development Methodology



The effort to understand an organization and its purpose while identifying the activities, participants and information flows that enable the organization to do its work is called Business Process Analysis (BPA). Two tools of BPA are the Business Process Matrix which is a text tool that allows for an 'at a glance' view of the business process; and the Task Flow Diagram which is a graphical tool that shows the activities of the process in a linear fashion.

The first step is to generate data about business processes.

- What do we do and what does that look like?
- Who is involved in this process? How do they relate to each other?
- What activity takes place based on this transaction?

The next step is to document the work in both narrative and graphic form. Some tools are: context diagrams (graphic); task flow diagrams (graphic), and business process matrix (narrative). The last step is to validate the work. This may be through observation or by obtaining review and approval by appropriate stakeholders. What validation are you seeking from your stakeholders? That critical business processes, tasks, and relationship have been identified and you have enough information to proceed to Business Process Redesign.

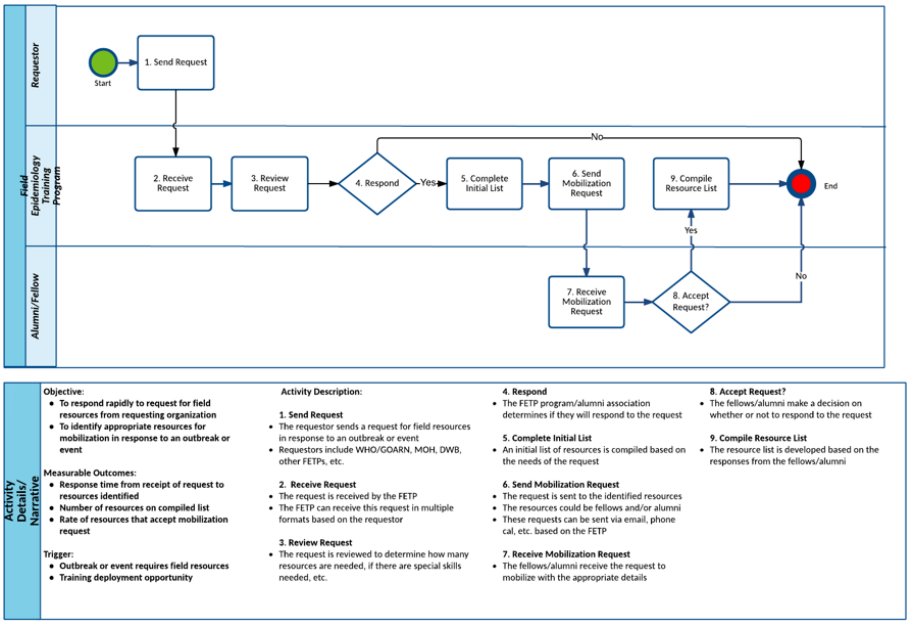
Figure 14: Business Process Matrix

Goal	Objective	Business Rules	Trigger	Task Set	Inputs	Outputs	Outcomes
The major goal in terms of benefits to population health that is supported by the business process.	A concrete statement describing what the business process seeks to achieve. A well-worded objective will be SMART: Specific, Measurable, Attainable/ Achievable, Realistic, and Timebound.	A set of criteria that defines or constrains some aspect of the business process.	Event, action, or state that initiates the first course of action in a business process.	The set of required activities or steps that are carried out in a business process.	Information received by the business process from sources outside of the process.	Information transferred out of a business process.	The result of performing a business process, which indicates the objective has or has not been met.

The Business Process Matrix is an example of a 'text tool'. For your business it is a good idea to have a good clear picture of your objectives and outcomes. This helps to:

- provide an 'at-a-glance' view of all business processes being analyzed,
- determine if something is really a process, rather than a task (processes have all characteristics in the matrix),
- help figure out when two or more business processes share enough characteristics that they should be combined,
- check whether the outcomes are measurable? If the outcomes showed improvement over a baseline measurement of those elements, would the objective be met?

Figure 15: Task Flow Diagram



Collaboration, Dr Chester said, is the cornerstone of successful Business Process Redesign. The benefits of collaboration she said are that there is common vocabulary and definitions to describe business processes. Collaboration gives us a better understanding of the processes that need to be redesigned to be more effective and more efficient.

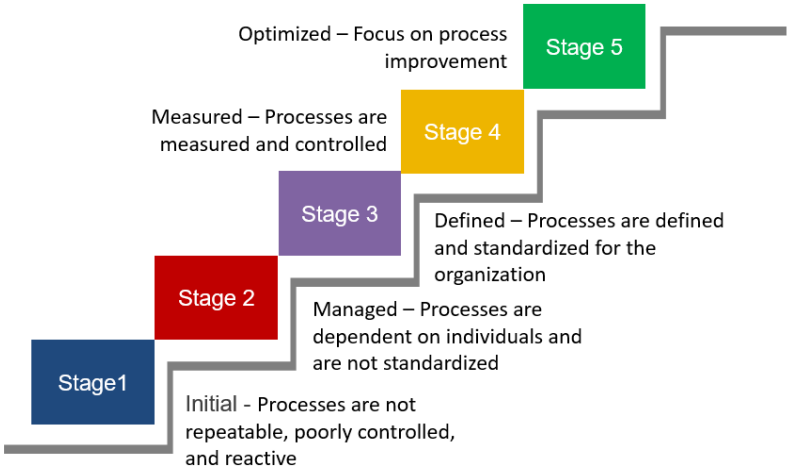
10. SESSION SIX: PROJECT EVALUATION – CAPABILITY MATURITY MODEL

Dr Kelley Chester, Consultant, Public Health Informatics Institute

Dr Chester said the purpose of her presentation was to introduce the Capability Maturity Model (CMM) as the evaluation framework for LARC. Dr Kelley Chester said The Capability Maturity Model (CMM) was developed by Carnegie-Mellon University Software Engineering Institute in 1987. The model introduced a process for assessing software capability through a structured, sequential manner, describing the maturation of each function according to a linear scale of increasing capability. The model can be adapted to evaluate an organisation's capability (or the capability of a regional initiative).

The develop a CMM evaluation framework for LARC, the first step is to establish the core functions in which capability is required; identify the essential functions; and describe sequential stages of maturity of each function. Progression is step-wise and linear with characteristics that define each maturational stage. Progress from one stage to the next reflects a meaningful improvement in a key function and sets a clear path of achieving maturational goals

Figure 16: Five stages of the Capability Maturity Model



The core functions for the LARC CMM evaluation framework have been based on the Viral Load Cascade. The first draft has been populated with the essential functions for each core function. The next step is validation through stakeholder vetting using focus or large group discussion. The final step is to pilot the draft tool to test if countries can indicate their stage on each of the five core functions. Finalisation of the tool follows the piloting stage. Dr Chester shared with participants the draft framework and invited comment.

Figure 17: Demand Creating for Testing

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Clinicians unaware of access to viral load testing and have not been educated on its role in ART monitoring Community leaders/CSOs unaware of access to viral load testing and have not been educated on its role in ART monitoring	Increased awareness of VL testing in clinicians and CSOs, however minimal information is shared with patients and community Clinicians occasionally order viral load testing for patients	Viral load testing and education polices and procedures are established Clinician routinely educates patients about viral load testing and its benefits Clinician routinely orders viral load testing in-line with national guidelines	Established policies and procedures for ordering viral load tests and educating patients about viral load testing and its benefits are implemented and measured throughout the organization CSOs play an active role in educating community and patients about knowing their viral load status	Organization uses rigorous evaluation procedures and findings to demonstrate effectiveness of demand creation All stakeholders (e.g., clinicians, patient groups, community leaders, etc.) play active role in community education about VL testing and promote campaigns for all patients to know their VL

Figure 18: Specimen Collection and Processing

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
No patient access to viral load testing No standard supply chain system for specimen collection commodities (e.g., DBS bundles, syringes) so supplies limit ability to collect specimens Clinicians not trained to complete specimen requisition forms	Viral load specimens are collected occasionally and only on certain days, limiting patient access to testing and increasing burden for patients to return for VL sample collection Standard supply chain system for specimen collection commodities Increased awareness for properly completing requisition forms	Viral load specimens are collected routinely with few barriers for patients Viral load specimen collection policies and procedures are established Clinicians complete specimen requisition forms accurately and completely	Established policies and procedures for specimen collection and processing based on standard guidelines are implemented and measured throughout the organization	Organization uses rigorous evaluation procedures and findings to demonstrate effectiveness of specimen collection and processing

Figure 19: Laboratory Testing

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Inadequate lab infrastructure for viral load testing (i.e. storage/ equipment/reagents /kits for viral load testing) Laboratory staff are not properly trained nor competent to test viral load specimens	Improved laboratory infrastructure, however, laboratory is only able to receive and test viral load specimens occasionally or must refer to another laboratory Laboratory staff are trained, however, competencies are minimal	Laboratory is able to regularly receive and test viral load specimens in timely manner Laboratory has appropriately trained and competent staff	Established policies and procedures for viral load specimen testing are based on standard guidelines implemented and measured throughout the organization	Organization uses rigorous evaluation procedures and findings to demonstrate effectiveness of specimen testing

Figure 20: Results Reporting

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Results are not received in a timely manner at the clinic from the laboratory No process in place for ensuring results are documented in patient chart and conveyed to the patients so results often not received by clinician	Results received by the clinic and occasionally documented in chart but often not returned to patients	Results are regularly received by the clinic and documented in the patient's chart in a timely manner Results reporting policies and procedures are established	Established clinic procedures that ensure a facility-based person is accountable for timely documentation of VL results in patient charts and notification of patients with VL>1000 to return to clinic prior to scheduled appointment	Organization uses rigorous evaluation procedures and findings to demonstrate effectiveness for results reporting

Figure 21: Results Interpretation and Patient Management

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Viral load results are difficult to read and interpret – requires laboratory assistance Clinicians are not properly trained to interpret viral load results Clinicians are uncomfortable integrating viral load results into ART care Clinicians have no backup person to call to discuss difficult cases or patients who require 2nd line treatment	Viral load results are readable and interpretable Increased awareness of result interpretation Few clinicians are comfortable integrating viral load results into ART care Intermittent availability of consultation for 2nd line treatment	Clinicians are adequately trained in viral load result interpretation Clinicians regularly discuss VL results with patients Standardized system in which all providers have a designated POC/referral system in place to consult for management of VL results and switch to 2nd line	Established policies and procedures for managing patients are based on standard guidelines implemented and measured throughout the organization	Organization uses rigorous evaluation procedures and findings to demonstrate effectiveness in patient management Ability to identify missed opportunities for ensuring VL results are integrated with patient management

Following the presentation of the draft LARC CMM, countries broke into their teams to work through the CMM and provide critical comment. Country teams were asked to take each core function and assess their validity. They were then asked to map themselves as a country against each of the core functions and the essential functions in each stage. All of the essential functions must be met for a country to move to the next stage, even though some of the essentials functions of the next stage may already be met. Countries were asked to assess their stage of development in each core function to share with the larger group.

Tanzania

Uganda

Malawi

Mozambique

Swaziland

Kenya

11. SESSION SEVEN: USING INFORMATICS TOOLS

Mr Amitabh Adhikari, International Laboratory Branch, CDC Atlanta

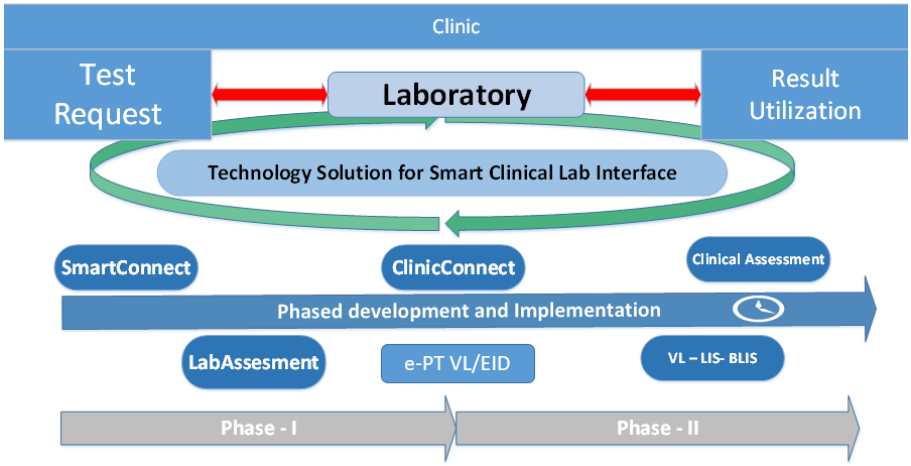
Mr Adhikari said that with the rapid scale-up of viral load testing in order to reach the third 90 (viral suppression) of the 90-90-90 goals, paper based systems would not be able to cope. Using informatics tools for viral load scale-up was the way of the future and a lot of research and development work was occurring to make sure that the informatics tools that will be required are not only readily available but simple, effective, and inexpensive.

Using information technology, the answer to important questions such as those below will be available with a few clicks of the keyboard.

- Are there particular sites which have particularly poor rates of virologic suppression?
- Do virologic suppression rates vary by regimen?
- As a measure of quality of viral load services, what percent of samples collected are rejected due to improper or insufficient collection?

- What percent of samples collected are rejected due to incomplete/incorrectly filled out requisition forms?
- What percent of pregnant or breastfeeding women on ART are virologically suppressed?
- Are there sample backlogs at a given VL test site?
- Are there any reagent shortages in a given VL test site?
- Are there differences in VL suppression rates between plasma and DBS samples?
- Are there any delays on specific sites/routes during sample transport?
- Are there any specific causes of sample rejections at VL labs?
- Are there large numbers of tests being re-ordered due to rejected samples?

Figure 22: Technology solution for smart clinical laboratory interface

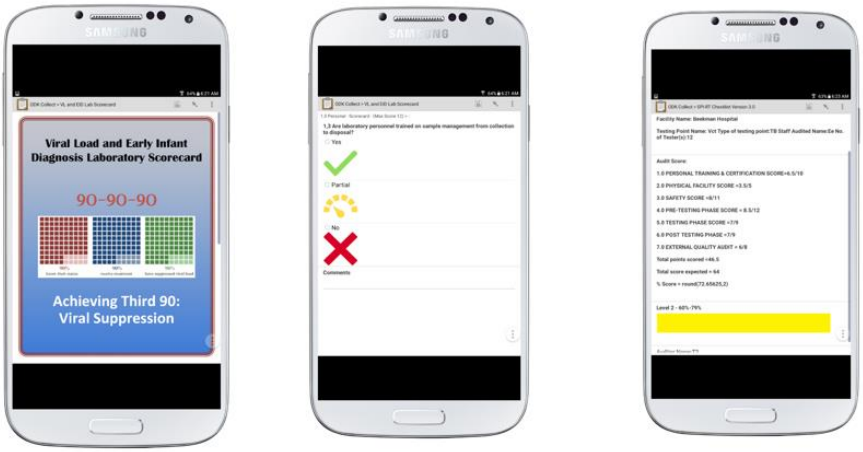


Mr Adhikari shared with country teams some of the developments which are being undertaken to improve and enhance the clinical and laboratory interface. SmartConnect is currently under development, connecting the laboratory, the clinic, and the program manager. The development site can be accessed at: http://www.vlsmartconnect.com.

Being tested is an information technology program, a web based data management tool, specifically for a viral load early infant diagnosis (EID) program. The testing site can be accessed at https://ept.vlsmartconnect.com.

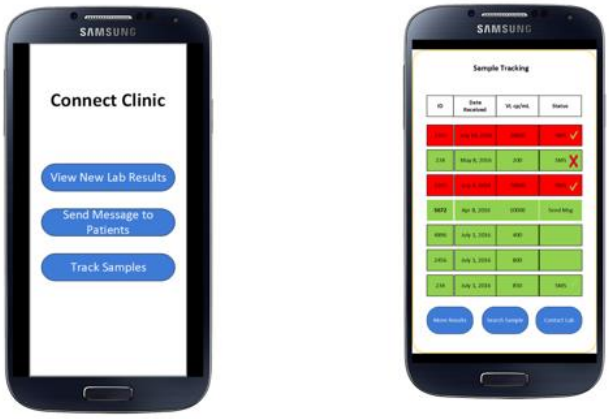
Being implemented is a viral load early infant diagnosis laboratory scorecard, using a tablet to assess laboratories to support viral load testing for early infant diagnosis for continuous quality improvement.

Figure 23: VL / EID Laboratory Scorecard



Clinic Connect is in the design phase using mobile phones to reach patients.

Figure 24: Clinic Connect on mobile phones



Also being tested is an affordable, simplified management system for VL laboratories and enhancing the Basic Laboratory Information System (BLIS) to support VL testing as well as instrument automation and linking BLIS with the electronic medical record (EMR) for result reporting. Another initiative is creating an interface between SmartConnect and ClinicConnect for laboratory/clinic interface.

Being planned are tools to support clinical assessment for VL scale-up; a dashboard for analysis of assessment to assist in corrective action; and program support to identify bottlenecks in viral suppression.

Mr Adhikari said developing simple, effective and cost effective information technology software was an essential element in the fight against HIV. Having access to secure, reliable, inexpensive internet access and electricity supply was also essential. Information technology will in the future provide critical support in all health care settings to all health care workers making them more effective in providing better care.

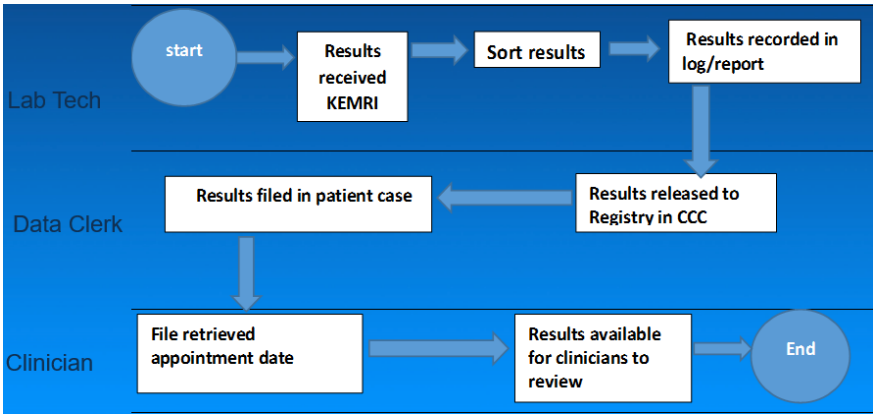
12. SESSION EIGHT: COUNTRY PRESENTATIONS – CMM MAPPING

Kenya, Malawi, Mozambique, Swaziland, Tanzania and Uganda

The Kenya report was presented by Ms Edna Tallam, Registrar of the Nursing Council of Kenya. The Kenya project addressed results reporting. Kenya assessed themselves as being at Stage 1: *Initial – processes are not repeatable, poorly controlled, and reactive*. Kenya noted that results are not received in a timely manner at the PSC from the Homa Bay Laboratory; printing of results takes more than a month; there are no designated staff to handle results; there is lack of equipment (toner, computers); poor access to the internet; poor access to printers; and no order and sorting.

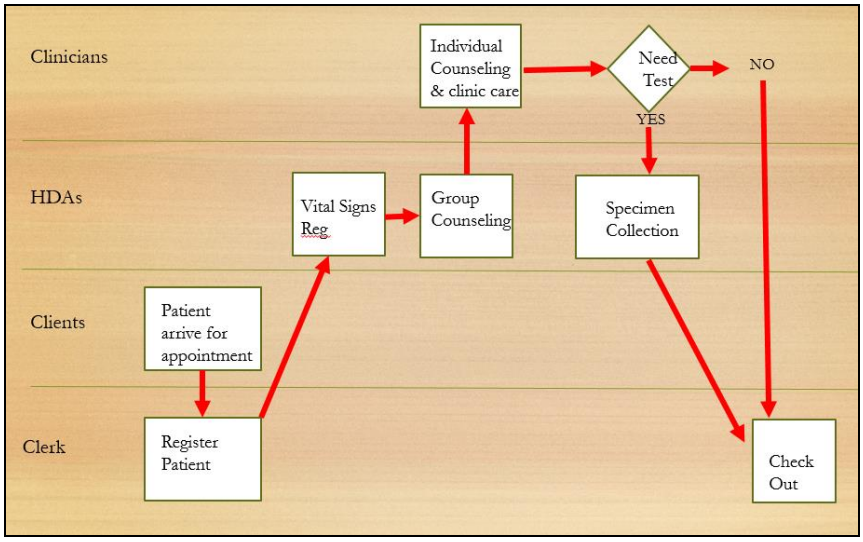
Some activities are at Stage 2: *Managed – processes are dependent on individuals and are not standardised.* Results received by the PSC are occasionally documented in the chart but often not returned to the patient. The process is in place, but not standardised. Because the results are not always documented in the chart, results are sometimes not reviewed by the clinician. There is a lack of a SOP for the receiving and dispatch of results.

Figure 25: Kenya's flow chart for results reporting



The Malawi report was presented by Ms Linvell Chirwa, Acting Deputy, Nursing and Midwifery Manager. The Malawi project addressed demand creation for testing. Malawi identified themselves as being at Stage 1 of the LARC CMM.

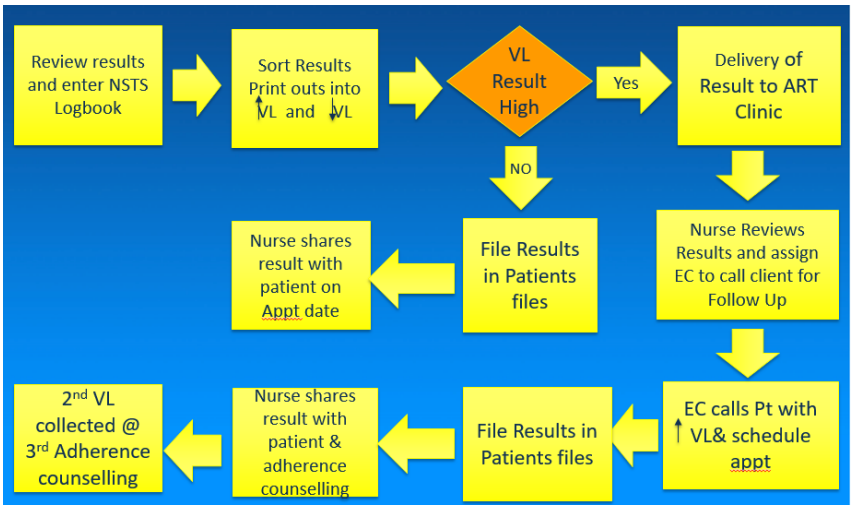
Figure 26: Malawi's flow chart for demand creation and testing



The Mozambique report was presented by Ms Isobel Pinto, Head of the National Laboratory Services Department. The Mozambique project addressed demand creation and testing. Mozambique assessed themselves as being at Stage 1 of the CMM: *Initial – processes are not repeatable, poorly controlled, and reactive.* They did note however that they had some strengths in Stage 1: guidelines for VL testing were available; they had a cadre of community educators who met daily; and there was a cafè available where patients and health workers could meet in a non-threatening environment.

The Swaziland report was presented by Ms Glory Msibi, Registrar of the Swaziland Nursing Council. The Swaziland project addressed results reporting. Swaziland assessed themselves as being at Stage 1: *Initial – processes are not repeatable, poorly controlled, and reactive.* Swaziland conducted a 'go and see' site visit and noted that there are no processes in place for ensuring results are documented in patient files and no action taken for high VL results.

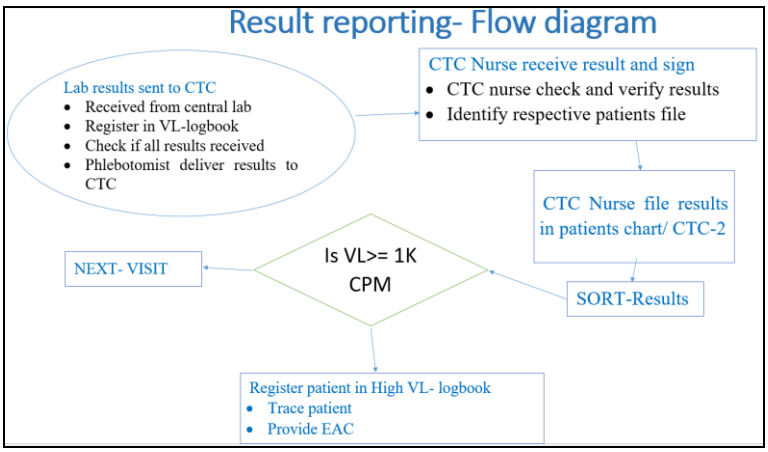
Figure 27: Swaziland's flow chart for results reporting



The Tanzania report was presented, by Mr Nassania Humphrey Sango, Training Coordinator, Nursing and Midwifery Training Section, Tanzania Ministry of Health. The Tanzania project addressed results reporting. Tanzania assessed themselves as being at Stage 1: *Initial – processes are not repeatable, poorly controlled, and reactive.* They noted there were no processes in place for ensuring results are documented in patient charts, conveyed to the patient, or received by the clinician.

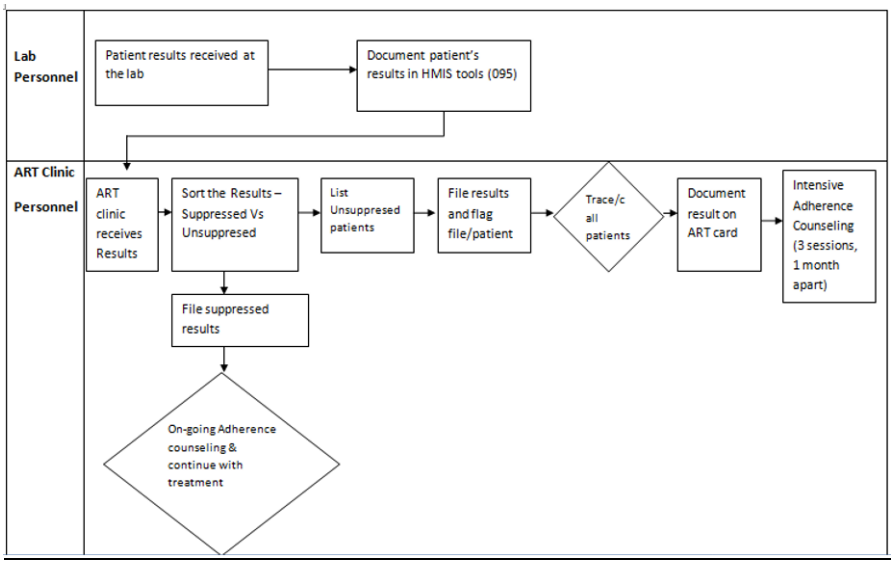
However they do have policies and procedures established which is part of Stage 3, however these are not widely distributed, understood, or applied within the organisation.

Figure 28: Tanzania's flow chart for results reporting



The Uganda report was presented by Ms Mercy Mwanja, from the Uganda Nurses and Midwives Council. The Uganda project addressed results interpretation and patient management. The Uganda team assessed themselves at Stage 1: *Initial – processes are not repeatable, poorly controlled, and reactive.* The team noted there are no processes in place for ensuring results are documented in the patient chart and conveyed to the patients so results often not received by clinicians and clinicians not properly trained to interpret viral load results.

Figure 29: Uganda's flow chart for results interpretation and patient management



13. NEXT STEPS

Ms Patricia Riley, Team Lead, International Laboratory Branch, CDC

Ms Patricia Riley summed the two and a half day meeting by saying how pleased she was by the enthusiasm of the country teams and the progress they had already made with their projects. Ms Riley acknowledged that many of the concepts, such as Business Process Mapping, were new to many participants and encouraged them to review their learning together as a team when they returned home. Ms Riley commented that there were many new members in the LARC country teams and stressed the need for continuity, not just in learning and participating in the meetings, but also in conducting successful projects.

Ms Riley said the LARC faculty will be conducting regular technical assistance (TA) visits, both by phone and on site, between now and the next LARC meeting which is scheduled for November 2016. Outside the regular TA visits, Ms Riley reminded participants that the LARC faculty were always available to provide advice and support and were just an email or a phone call away.

Finally, Ms Riley reminded participants of the importance of their projects in contributing to the achievement of the UNAIDS 90-90-90 goals and an AIDS free generation. She thanked participants for their commitment during the meeting and the open and constructive way they shared their experiences both positive and negative. She wished them a safe journey home and said how much she was looking forward to hearing of their progress in November.

14. CLOSING REMARKS

Dr Shirley Lecher, Associate Chief and Viral Load Co-Lead, from the CDC International Laboratory Branch, Atlanta

Dr Lecher congratulated country teams for their hard work, input, and commitment during the meeting. She said it had been inspiring to see the work that is being undertaken and felt very confident that, as a result of the projects, processes would be examined, improved and patient care enhanced as a result. She also said that all the projects lent themselves to national scale-up. Dr Lecher acknowledged the difficulties country teams experienced in finding time to meet together and work on their projects and encouraged them to persevere despite the difficulties. She said she had enjoyed being a part of the meeting and wished country teams well for the future progress of their projects.

Ken Hepburn, Alphonce Kalula, Agnes Waudo, David Cross, Patricia Riley, Amitabh Adhikari, Katy Ayo, Nancy Ruto, David Turgeon, Shirley Leber

African HEALTH PROFESSIONS Regional Collaborative
FOR LABORATORY TECHNOLOGISTS & TECHNICIANS

Laboratory African Regional Collaborative (LARC)
First Learning Session
Dar-es-Salaam, Tanzania, Best Western Plus Colosseum Hotel
2-4 August 2016

Supporting viral load scale up across sub-Saharan Africa

Overarching Meeting Goal:

- To achieve and maintain HIV VL suppression (the third 90) by:
  - Increasing the uptake of VL testing by improving the elements in the viral load cascade
  - Improving institutional capacity and inter-cadre effectiveness through team building, evidenced-based problem-solving, and progress measurement

Meeting Objectives: The objectives for this Learning Session are:

1. To present, inform, and discuss the six LARC Viral Load (VL) activities being implemented by project teams in Kenya, Malawi, Mozambique, Swaziland, Tanzania, and Uganda.
2. To incorporate improvement methodologies in LARC country projects to ensure successful outcomes.
3. To introduce the LARC Capability Maturity Model (CMM) and receive feedback from the six VL country teams.
4. To have each LARC country team benchmark their initial (CMM) stage at the launch of this initiative.
5. To develop an Action Plan for the next four months.

****

DAY 1 - AUGUST 2nd

9:00 am
Official Greetings
Moderator: Ken Hepburn, Emory University Principal Investigator for the LARC Initiative

- Maestro Evans, Deputy Country Director and currently Acting Country Director, CDC Tanzania Welcome remarks
- Pat Riley – Overview of LARC's first Learning Session
- Nancy Ruto/Agnes Waudo - Meeting Organizers: travel logistics, reimbursements, transport, tickets, etc.
- Jill Iliffe – Meeting transcriber, photographer, website designer

Welcome remarks
Shirley Lecher, Associate Chief and Viral Load Co-Lead, International Laboratory Branch (ILB) – ILB and the PEPFAR's Viral Load Initiative

9:30 am
Introductions

9.45 am
Project presentations
Moderator: David Cross, Health Scientist, ILB, CDC
Each country will present their LARC presentation for 15 minutes followed by 15 minutes Q&A
Kenya, Malawi, Mozambique, Swaziland, Tanzania, Uganda

10:45 am-11:00 am – TEA BREAK

11.00 am
Project presentations
Moderator: Katy Yao, ILB, CDC
Mozambique, Swaziland

12.00 noon
Group and team photographs

12:30-1:30 pm - LUNCH

1.30 pm
Project presentations
Moderator: Pat Riley
Tanzania, Uganda

2.30 pm
Improvement methodologies that ensure successful outcomes in LARC country projects
Dr Barbara Chase McKinney
Moderator: Katy Yao

4.30 pm
LARC website – demonstration and participant feedback
Ms Jill Iliffe, Executive Secretary, Commonwealth Nurses and Midwives Federation
Moderator: David Cross

4:30 pm –TEA BREAK

****

DAY 2 – AUGUST 3rd

9.00 am
Project Management Tools: *LARC quarterly project narratives and budget reporting requirements*
Professor Ken Hepburn, ARC and LARC Principal Investigator, Emory University
Moderator: David Cross

9.30 am
Review of Business Process Mapping
Dr Kelley Chester
Moderator: Pat Riley

10:30-11:00 – TEA BREAK

11:00 am
Review of the Capability Maturity Model (CMM)
Dr Kelley Chester

12:30 pm – 1:30 pm – LUNCH

1:30 pm
Country team work
Finalization of LARC CMM: LARC project measurement – Documenting project impact

3:30 pm
Using informatics tools for measuring viral load scale-up
Mr Amitabh Adhikari

4:30 pm – TEA BREAK

****

Day 3 - AUGUEST 4th

9.00 am
Country presentations: Country position on CMM
Kenya, Malawi, Mozambique, Swaziland, Tanzania, Uganda
Moderator: Ken Hepburn/Kelley Chester

10:30 am – TEA BREAK

11.00 am
Next steps
November LARC Learning Session; Scheduling LARC TA visits; Meeting evaluation
Moderator: Pat Riley

11.30 am
Closing comments
Shirley Lecher, ILB Associate Chief, and Viral Load Co-Lead

12:00 noon – ADJOURN

AFRICAN HEALTH PROFESSIONS REGIONAL COLLABORATIVE

PARTNERSHIP FOR EXCELLENCE IN AFRICA'S HEALTH WORKFORCE

Dar es Salaam, Tanzania 2-4 August 2016

LIST OF ATTENDEES

Mr Ernest MAKOKHA	CDC Kenya, Senior Laboratory Advisor	Kenya
Mr Barack ODINDO	Laboratory Technologist in Charge Homa Bay County Referral Hospital	Kenya
Ms Linet JOHN	Deputy Nursing Officer in Charge Homa Bay County Referral Hospital	Kenya
Ms Nancy BOWEN	Laboratory Technologist, Head National HIV Reference Laboratory	Kenya
Ms Rose Wangechi KURIA	Acting Director Nursing Services Ministry of Health	Kenya
Ms Edna TALLAM	Registrar, Nursing Council of Kenya	Kenya
Dr Rosemary Mando OKOVA	Senior Lecturer, Head of Midwifery, Mt. Kenya University	Kenya
Mr Geoffrey Akuzike CHIPUNGU	CDC Malawi, Laboratory Advisor	Malawi
Mr Isaac CHAWA	Monitoring and Evaluation Specialist	Malawi
Mr Reuben MWENDA	Deputy Director of Health Technical Support Services (Diagnostics)	Malawi
Ms Linvell CHIRWA	Acting Deputy, Nursing and Midwifery Manager	Malawi
Mrs Thokozire Tendai LIPATO	Acting Registrar, Nurses and Midwives Council	Malawi
Ms Lucia MUAMDO	CDC	Mozambique
Ms Asina de OLIVEIRA	Head of Midwives, Bagamoio Health Centre	Mozambique
Ms Laura Williamo SIMBINE	Head of Laboratory, Bagamoio Health Centre	Mozambique
Ms Isabel Dinis PINTO	Head of the National Laboratory Services Department	Mozambique

Ms Luciana KOHATSU	Laboratory Advisor CDC	Mozambique
Mr Dan GAMA	Laboratory Practitioner CDC	Swaziland
Ms Nokulunga DLAMINI	Nurse in Charge	Swaziland
Ms Sehlephi Millicent DLAMINI	Senior Laboratory Advisor (ICAP)	Swaziland
Ms Sindisiwe Susan Zinhle DLAMINI	Chief Laboratory Technologist Ministry of Health	Swaziland
Ms Glory MSIBI	Registrar, Swaziland Nursing Council	Swaziland
Mrs Gladys Thembisile KHUMALO	Chief Nursing Officer Ministry of Health	Swaziland
Mr Michael MWASEKAGA	CDC Tanzania, Laboratory Advisor	Tanzania
Mr Simon Samwel LIGMAS	Senior Nurse Ministry of Health and Social Welfare	Tanzania
Mr Victor MUCHUNGUZI	Deputy Manager, National Health Laboratory	Tanzania
Mr Paul Magesa MASHAURI	The President, Tanzania National Nurses Association	Tanzania
Ms Anitha MAGANGO	Laboratory Technologist	Tanzania
Mr Nassania Humphrey SHANGO	Training Coordinator, Nursing and Midwifery Training Section Ministry of Health	Tanzania
Mr Dickson MAJIGE	Head Laboratory Services	Tanzania
Ms Mercy MWANGJA	Uganda Nurses and Midwives Council	Uganda
Ms Florence TUGUMISIRIZE	Masaka Regional Referral Hospital	Uganda
Ms Catherine Betty ODEKE	Acting Commissioner Health Services-Nursing, Ministry of Health and Social Welfare	Uganda
Mr Joseph KABANDA	CDC	Uganda
Ms Hariet NAMBOZO	Mildmay HIV and AIDS Hospital	Uganda
Mr Martin ZZIWA	Central Public Health Laboratories, Ministry of Health	Uganda
Ms Judith NANYONJO	Masaka Regional Referral Hospital	Uganda
Mr Samwel WASIKE	CDC	Uganda

Mr Jonathan NTALE	Laboratory Information Management Systems	CDC Uganda
Ms Patricia RILEY	Lead, Health Systems and Program Integration Team, ILB CDC Atlanta	ARC Faculty
Professor Kenneth HEPBURN	ARC and LARC Principal Investigator, Emory University	ARC Faculty
Mr David CROSS	International Lab Branch, CDC Atlanta	ARC Faculty
Ms Muadi MUKENGE	ARC Project Director, Emory University	ARC Faculty
Professor Yoswa DAMBISYA	Director General	ECSA Health Community
Ms Jill ILIFFE	Executive Secretary, Commonwealth Nurses and Midwives Federation	ARC Faculty
Mr Alphonce KALULA	Senior Program Officer ECSACON	ARC Faculty
Ms Agnes WAUDO	Director, ARC Secretariat	ARC Faculty
Ms Nancy RUTO	ARC Events Coordinator	ARC Faculty
Dr Maestro EVANS	Deputy Country Director and Acting Country Director	CDC Tanzania
Dr Shirley LECHER	Associate Chief and Viral Load Co-Lead, from the International Laboratory Branch	CDC Atlanta
Dr Katy YAO	Public Health Educator, International Laboratory Branch	CDC Atlanta
Mr Amitabh ADHIKARI	Computer Scientist	CDC Atlanta
Mr David TURGEON	Health Scientist	CDC Atlanta
Dr Barbara McKINNEY	Consultant	CDC Atlanta and Emory University
Dr Kelley CHESTER	Consultant	Public Health Informatics Institute

APPENDIX 3

AFRICAN HEALTH PROFESSIONS REGIONAL COLLABORATIVE

PARTNERSHIP FOR EXCELLENCE IN AFRICA'S HEALTH WORKFORCE

Dar es Salaam, Tanzania 2-4 August 2016

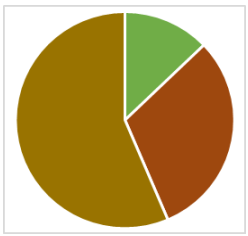
EVALUATION REPORT

PLEASE RATE THE USEFULNESS TO YOU OF THE FOLLOWING PRESENTATIONS

Key

Kenya Project Report

		No	%
1.	Not at all useful	0	0.0
2.		0	0.0
3.	Somewhat useful	5	12.8
4.		12	30.8
5.	Very useful	22	56.4

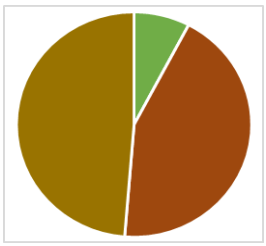


Comments

- Good presentation.
- Project is very advanced, very little to learn for start-up.
- They do weekly project discussions.
- We have learnt from all countries and we hope to use the lessons learnt.

Malawi Project Report

		No	%
1.	Not at all useful	0	0.0
2.		0	0.0
3.	Somewhat useful	3	7.7
4.		17	43.6
5.	Very useful	19	48.7

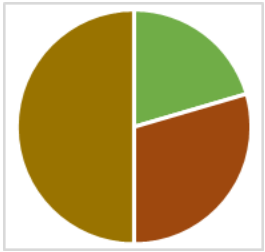


Comments

- Learnt that we are trying to solve issues but not in the process/sequential order.
- Good presentations.
- Good presentation.
- It was good in that they conduct meetings with community members to get feedback.

Mozambique Project Report

		No	%
1.	Not at all useful	0	0.0
2.		0	0.0
3.	Somewhat useful	9	20.5
4.		13	29.5
5.	Very useful	22	50.0

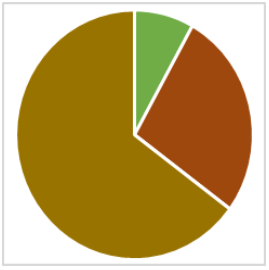


Comments

- Language barrier, even with translators it is difficult to follow.
- Good presentation.
- Needs to be improved in some areas.
- Choice of site not great.
- Challenge with the language could not get everything from the interpreter.

Swaziland Project Report

		No	%
1.	Not at all useful	0	0.0
2.		0	0.0
3.	Somewhat useful	3	8.1
4.		10	27.0
5.	Very useful	24	64.9

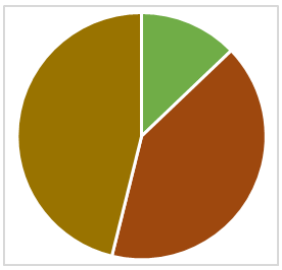


Comments

- Good presentation.
- It was very specific, I hope its impact in entire quality of care is felt.

Tanzania Project Report

		No	%
1.	Not at all useful	0	0.0
2.		0	0.0
3.	Somewhat useful	5	12.8
4.		16	41.0
5.	Very useful	18	46.2

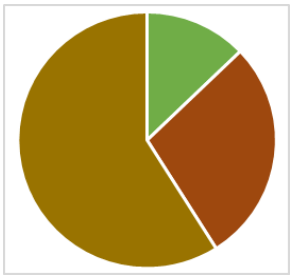


Comments

- Good presentation.

Uganda Project Report

		No	%
1.	Not at all useful	0	0.0
2.		0	0.0
3.	Somewhat useful	5	12.8
4.		11	28.2
5.	Very useful	23	59.0



Comments

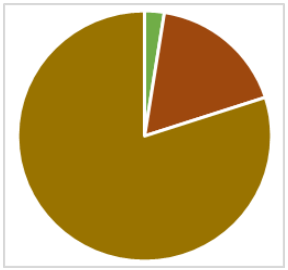
- Many lessons to learn from Uganda.
- Good presentation.
- Consider reducing the number of facilities.
- The presentation is very, very useful.

GENERAL COMENTS ON COUNTRY PRESENTATIONS

- The PPT format should be followed by all countries in the upcoming LARC meeting.
- Too much diversity in presentations.
- It was useful to have peer review of each other's thoughts and plans.
- Kindly let all participants be paid same rates, possibly by one funder.

Review of Business Process Mapping (Kelley Chester)

		No	%
6.	Not at all useful	0	0.0
7.		0	0.0
8.	Somewhat useful	1	2.5
9.		7	17.5
10.	Very useful	32	80.0

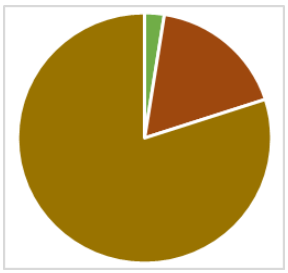


Comments

- Very enlightening. I am glad that I came.
- More on flow chart utilization.
- It shows the project flow of activities.
- It is very useful as it stipulates clear role of team players in a pictorial manner which helps.
- Problem identification through to prioritization was very useful.
- No better way of showing the processes and responsibilities of different persons in the clinics.
- We were able to practice in our teams using concepts from presentation.

Review of Capability Maturity Model (CMM) (Kelley Chester)

	No	%
11. Not at all useful	0	0.0
12.	0	0.0
13. Somewhat useful	1	2.5
14.	7	17.5
15. Very useful	32	80.0

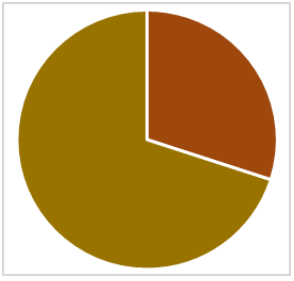


Comments

- Very good.
- It shows/reflects the stages of the project.

The draft LARC CMM (Kelley Chester)

	No	%
16. Not at all useful	0	0.0
17.	0	0.0
18. Somewhat useful	0	0.0
19.	12	30.0
20. Very useful	28	70.0

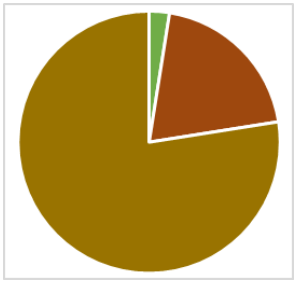


Comments

- Very good
- It shows/reflects the stages of the project.

Team presentations: current position of CMM

	No	%
21. Not at all useful	0	0.0
22.	0	0.0
23. Somewhat useful	1	0.0
24.	8	30.0
25. Very useful	31	70.0



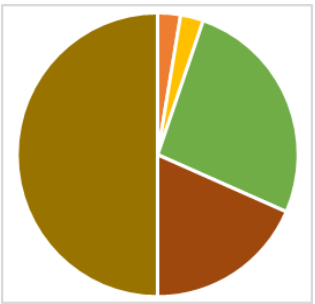
Comments

- Teams came up with their areas of focus and managed to share understanding level of CMM.
- Would standardize expectations for presentations (template perhaps) to include next steps, summary reminder of aim and metrics.
- It really highlighted where countries are on the model and why and helps in identifying improvement strategies.
- Team presentations were useful from beginning of research.
- It was showing us reflecting the project direction and way of improvement.

WE WOULD APPRECIATE YOUR EVALUATION OF THE LOGISTICAL ELEMENTS OF THE CONGRESS

Conference accommodation

	No	%
26. Not at all acceptable	1	2.6
27.	1	2.6
28. Moderately acceptable	10	26.3
29.	7	18.4
30. Highly acceptable	19	50.0

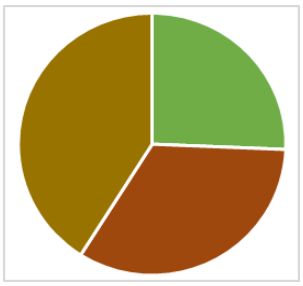


Comments

- Hotel is infested with cockroaches!
- Smelly bathrooms.
- Microphone/speaker audio sometimes not clear because of echo.
- The rooms are smelly and stuffy; too much noise from the gym and trains.
- Rooms are good but bathrooms have a smell that is not comfortable.

Conference venue

		No	%
31.	Not at all acceptable	0	0.0
32.		0	0.0
33.	Moderately acceptable	10	25.6
34.		13	33.3
35.	Highly acceptable	19	41.0

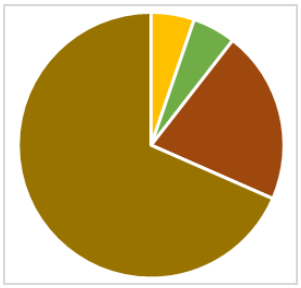


Comments

- A bit squeezed and very small tables.
- Microphone/speaker audio sometimes not clear because of echo.

Conference logistics

		No	%
36.	Not at all acceptable	0	0.0
37.		2	5.3
38.	Moderately acceptable	2	5.3
39.		8	21.1
40.	Highly acceptable	26	68.4



Comments

- Kenya Airways was a nightmare.
- There is need to increase the meeting logistics.
- Kenya Airways delayed but transportation from the airport was fine.
- Kindly send invitation letters and agenda timely to PS office.
- Return ticket at the end of the conference creates a lot of inconvenience.
- Please send invitation letters, itineraries and draft agenda four weeks before meeting.

PLEASE PROVIDE SUGGESTIONS FOR TOPICS AND/OR SPEAKERS FOR FUTURE MEETINGS

- Lobbying for political and government leaders to take on board the LARC teams initiatives for scale up.
- Tool for swim lanes
- PDSA and QI Tools
- More about 5s through total care
- Kindly increase per diem (out of pocket) to $200 per day
- More on 5s through Total Quality Management and Kaizen
- More time in practical demonstration
- Interpreting results by a nurse midwife -by a nurse presenter
- BPM. Kelley Chester's presentation needs more time
- Meeting is very useful in sharing ideas and helped to work together for successful outcome.
- Meeting shouldn't coincide with ASLM Cape Town meeting.
- Very organized. Provide some topics on leadership of project management skills.
- Lack/inadequate internet access
- More group work and discussion rather than lecture
- The presentations made by Amitabh and Kelly were well informative in the entire process of viral load cascading.
- More time for country presentations and interactions south to south sharing.
- Use three full days for meeting not easy to get the teams together for interaction and learning.
- Need to emphasize the need to have actionable action plan for the next 3-months, which should be a key deliverable/outcome of each learning conference. Design the agenda to fulfill that requirement.
- Overall, a good conference.
- The meeting was very successful, thanks to the organizer for the meeting special thanks to Nancy and Agnes, job well done!
- Project monitoring and Evaluation.
- Data analysis both quantitative and qualitative.
- I suggest the meeting in Entebbe should be mid-November 2016.
- For team Swazi please send invitation letters addressed to PS, program and air tickets four weeks before the date of travel for approval by cabinet.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