COVID-19 ECHO Session #10 _May 14, 2020: Best Practices in Implementing a Structured Quality Assured COVID-19 Testing Program

SN	Questions	Answer/ Response / Comments
Sample management		
1.	Where do we get true positive and negative sample for SARSCov-2 which is traceable?	Please check with your national reference lab and check with the suggested EQA providers in question number 10 below. Standards and controls available from Bio-Rad laboratories. More info can be found at http://www.exactdiagnostics.com/
2.	For how long must we retain negative specimens in our laboratory? is there any guiding document or policy?	Currently there is no guidance on the retention times for COVID samples whether negative or positive. It should be based on site's ability to contain and retain the samples safely without compromising the safety of the lab users. Please refer also to WHO and CDC for more guidance.
3.	What is the stability of virus on swabs at room temperature? Considering delays in sample transportation to central laboratories	The knowledge on the stability of the virus in swabs, different temperatures and conditions is still evolving. Please be sure to follow manufacturers' instructions and guidance on this one.
4.	Is it true that the different sample types, NP, OP, blood and sputum give different results for the same patient? How can this be dealt with?	There are reported cases where this has happened. The key is in making sure that all staff collecting samples are trained properly and are competent and following the guidance from the manufacturers with regards to sample collection and transportation.
5.	Please can you share your opinion on 'sample pooling, before testing, the merits and demerits if any?	I cannot comment on this as I do not have enough knowledge on how this can be done with COVID-19. Some studies show that - pooling can increase test capacity with existing equipment and test kits and detects positive samples with sufficient diagnostic accuracy. https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30362-5/fulltext https://www.who.int/bulletin/online_first/20-257188.pdf
Biosafety measures		
6.	In absence of BSL 2/3, is it possible to use specimen heat inactivation, automated Nucleic acid extraction plus PPE for COVID-19 testing?	Please refer to CDC guidance on the following link: https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html and also WHO guidance on: https://www.who.int/publications-detail/laboratory-biosafety-guidance-related-to-coronavirus-disease-2019-(covid-19)

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7.	What are the procedures for waste management for COVID-19 testing Lab?	On waste management please refer to CDC guidance on the following link: https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html and also WHO guidance on: https://www.who.int/publications-detail/laboratory-biosafety-guidance-related-to-coronavirus-disease-2019-(covid-19)
8.	Do you recommend Decontamination check essays for COVID-19 LABORATORIES?	Again please refer to CDC guidance on the following link: https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html and also WHO guidance on: https://www.who.int/publications-detail/laboratory-biosafety-guidance-related-to-coronavirus-disease-2019-(covid-19)
Quality control / External Quality Assessment		
9.	Is there any reference lab providing known positives for COVID-19? This could be one way to do QA	Please refer to country specific reference labs for any characterized COVID-19 positive samples. It may be difficult to transport positive samples across borders.
10.	Do you know any PT provider which can supply PT for EQA purpose to African countries?	Here are some links shared during the session. 1. WHO has sent out a EQA panel to the labs that usually participate in the Influenza PT 2. Helvetica Health Care provides various COVID 19 controls c/o info@sepsci.co.za in South Africa 3. https://www.randox.com/coronavirus-qcmd/ 4. Thistle - For coronavirus proficiency testing: TQA.Accounts@LGCGroup.com 5. https://www.news-medical.net/news/20200409/LGC-launches-new-proficiency-testing-program-for-SARS-CoV-2-detection.aspx
11.	Please further explain the issues of positive and negative controls in POCT	Most of the rapid test kits on the market use the lateral flow method and come with an in-built control bar. This may not adequate as a positive control or negative control. It is advisable to run a known positive/negative control with a daily batch/run to be sure that the devices are still working as intended.
12.	I would like to know what is the frequency for quality Control (Internal and External) and that of competency assessment	Frequency of IQC should also be determined by the test volume. If you identify a problem with the assay be IQC, how many tests might you need to go back and repeat (back to the last successful QC)
13.	Are there any third party controls on the market that can be used to control day to day testing?	Please refer to the manufacturers and IQC providers for this question.
14.	If an EQA is produced, will it be attenuated or infection because some EQA ISO	I believe the EQA material should be attenuated to prevent passing on the infection to participating laboratories. The EQA provider should also be able to indicate the nature of the sample to the users.

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	accredited facility are have that plan of getting an EQA programme for COVID (new strain	
Diagnosis		
15.	Why have non lab staffs perform lab tests?	Just as in the case of HIV, there are instances in which scale-up of testing have been hindered by shortage of laboratory personnel and non-lab personnel have been trained to conduct the basic screening test and in many cases this has been successful. I am sure lab staff continue to be in demand and the same scenario will be applied in COVID-19. The key to the success of such a strategy will still remain with the proper training and ensuring their competence before testing.
16.	Centres are now discharging patient with the first negative test results. What are the chances that a false negative result at that stage may throw an infectious patient into the community?	Depending on the specificity and sensitivity of the tests being used, false negatives or positives cannot be ruled out. That is why in this presentation we emphasized the need to use tests that have a high verified specificity and sensitivity.
17.	Why do limit ourselves to molecular testing in Africa. While the rest of world combine molecular with serological tests?	Molecular methods are better in detecting the infected early as opposed to serological tests that can pick the antibodies at least from 2 weeks. Also, a positive antibody test does not indicate whether current or active infection. Someone who has been exposed and developed antibodies does not need any intervention which is the reason why testing is being promoted now.
18.	Is it possible to have algorithms testing like for HIV to make sure we have better diagnosis?	I am sure it is possible, especially with the advent of new point of care antibody kits that are coming on the market and also the high cost of PCR testing. Since all is still under emergency authorization, it may be prudent to wait until we have test kits that have full approval and have one that we can call a gold standard.
Test System/ Procedures		
19.	Can a system that is validated for HIV viral load testing can be used for COVID-19 testing without validating?	Not necessarily. The platform is validated for HIV viral load testing and will also need to be validated for COVID-19 testing. This platform is being used outside of the intended scope therefore validation for the new scope is required.
Method Validation/ Verification and Evaluation of Kits		
20.	During verification of a kit. What is the standard deviation acceptable from the results (sensitivity. specificity etc.) from the manufacturer?	For the deviations on the sensitivity and specificity it will be guided by the Manufacturers info and protocols developed by the laboratory. However, best practice published should be referenced by the laboratories followed by statistical rule of thumb.

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21.	Where and how to get panels of samples in Africa for verification of tests?	Please refer to national reference labs, where EQA or PT is available, they can also be used in place of reference samples. National reference labs should be able to keep some known characterized positives and negative samples to us. Some countries have already started collecting samples and building biobanks for this purpose.
22.	for RDT which will be used in the field (e.g. at community testing sites), is verification enough if the test has been validated for lab use	The principle is that is a test method is validated and the results are available to the users, the users will only need to verify. So yes, verification is enough in this case.
23.	With the current emergency use approval of covid-19 kits, don't we need to validate kits?	We do need to validate kits in emergency situations like this. However, the assumption at lab level is that the emergency use approval was data with some preliminary validation data and all we will need to do is to verify that the kits perform according to that preliminary validation specifications.
24.	How many samples (sample size) do you recommend for validation as well as for verification?	For validation the sample size must be bigger and inclusive of the different populations by regions, age etc. Verification results are only specific to a laboratory and cannot be used in another laboratory. Please refer to CLSI documents like EP19, EP12, EP17, EP5 and EP6.
25.	Can a Laboratory validate a test outside the validated tests by the manufacturer?	Any testing on a platform that has not been validated by the manufacturer will need to be validated by the user before being implemented.
26.	Is there a gold standard test for verifying new COVID-19 tests?	This is the challenge major challenge with COVID-19 testing – there is no established gold standard test. There are many PCR platforms that identify the antigen but no gold standard yet.
27.	There are instances that you may get different company package for testing of Coronavirus 19 in your lab. The kits are emergent kits that may not satisfy test requirements. How to validate and verify in such condition?	It is important that as the lab community we don't just use whatever comes our way. However, each test kit that we receive we should verify that it is fit for use before we start testing on patients.
28.	How do we know that most of the new COVID-19 tests being hawked around are truly EUD approved?	The supplier/manufacturer should be able to provide evidence or information for the test approvals. Don't be shy to request for the information.
29.	Since these tests were released to address the emergency, what should be done if subsequent verification studies in	So, before you start validation/verification you should set your rejection criteria upfront e.g. if in your lab you set sensitivity and specificity at 95% or higher. If the test meets this criterion you accept and if not, you reject. There is nothing wrong with rejecting a test that fails to meet your rejection criteria. Better to reject a non-

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	specific labs reveals that the test is not fit for use?	performing test that using it and face the dilemma of false positive and false negatives.
30.	Would you remind me which document supports verification using 10 positives and 10 negatives?	10 samples are minimal threshold riding on availability of reagents to support your verification but you can increase the sample size
Sensitivity/ Specificity/ Detection limit/ PPV and NPV		
31.	What are the range of sensitivity of available molecular tests?	There is no one sensitivity range that fits all for the molecular tests available on the market. The higher the better, each lab can determine their acceptance range.
32.	What role will positive predictive value and negative predictive value play in that case?	The role for PPV and NPV will be the same as that for specificity and sensitivity – a higher PPV and NPV can be interpreted as indicating the accuracy of the test method.
Surveillance		
33.	Did you have the Opportunity to compare the Corona virus genes in Africa with those in European countries?	I don't know of any studies conducted or being conducted to answer this question.
Cross cutting		
34.	Elaborate on what emergency use approval means	Emergence Use authorization or approval is when the FDA or WHO allow the use of unapproved medical products to diagnose or treat life threatening diseases when certain criteria are met, including that there are no adequate, approved, and available alternatives. When the emergency is over, the authorization is terminated. If the devices need to continue being used beyond the emergency, it has to go through the normal channel of approval.
35.	Does COVID present a good opportunity to resource laboratory services across the continent?	Yes, I believe COVID-19 presents a new normal for all labs regardless of how well resourced they are. We do have an opportunity to put systems in place for the safe working environment as well as better our processes from pre- to post examination.
36.	Is there any support for quality training to reduce casualties from professionals	This should be determined on a country to country basis. Biosafety/safety training of healthcare professionals should not be responsive but proactive. Early days we were taught to "treat every sample as infectious" and this should never be forgotten. Such trainings should be continual and scheduled.
37.	What is your advice to countries that releases results performed for COVID -19 test in NEWLY EXTABLISHED LAB THAT HAVE NEVER implemented QMS.	Ensure the following: • Using validated/verified test methods • Competent and trained personnel • Proficiency/EQA testing where available • Running daily internal quality control • Using calibrated equipment and reagents within their expiry dates.

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38.	How do we handle stigma of COVID 19 and quality of performance of from line staff	Awareness campaigns and availing information to those infected or affected by the pandemic will help. However, stigma cannot be eliminated, it can only be managed.
39.	Please guide us on the level of confidentiality required for COVID-19 testing	I am not sure if we need to expand much on confidentiality with COVID-19 because once someone is positive, they will have to be under quarantine for a defined period of time.
40.	Do you have guidelines to rule out false test to prevent false testing kits	I believe the following will also help in reducing or preventing getting false positives or negatives: • Using validated/verified test methods • Competent and trained personnel • Proficiency/EQA testing where available • Running daily internal quality control Using calibrated equipment and reagents within their expiry dates.
41.	COVID 19 being of zoonotic origin, would you consider a bigger one health concept approach? Ensuring QMS observed across board.	This is the more reason why the One Health concept needs to be taken seriously because the human interaction with animals will continue to cause health problems. Therefore, QMS must be implemented across the human and animal testing or care facilities.