Question and Answers: SARSCov-2 ECHO Session April 14, 2020

SN#	Question	Answer/ Response / Comment	
		BD Max Systems	
Sample management			
1.	Can saline solution be used if no viral transport media is available? How long can we keep the sample in saline?	Studies are being done by the Gates Foundation on the use of saline with swabs. BD is closely engaged with The Gates Foundation. We will share reportable data once available. Laboratories can self-validate alternate transport media such as saline with the BD SARS-CoV-2 reagents.	
2.	What is the appropriate storage temperature for collected samples as they are transported to the testing labs?	CDC recommendations 2-8 C for 72 hours. -70 frozen for over 72	
3.	Why are sputum samples not tested?	BD SARS CoV-2 Reagent for BD MAX is not cleared with sputum specimens. BD's view is collecting sputa may increase risk of transmission to HCW given high VL in sputa and patients have to cough.	
4.	Are there any rejection criteria for sample collection?	Please refer to the Product Insert for specimen collection.	
5.	What are the most common mistakes health workers are making when collecting samples (naso, oro or nasal)? Any recommendations? What are BD thoughts on self-collection by patients?	Data is emerging that nasal collection via swabs is as good as other collection methods. We are not aware of any issues with this type of collection method. For self-collection, there are initiatives trying to evaluable self-collection by patients and transport to labs. We have not received data from these studies nor have these been approved by any regulatory body.	

6.	Is there any pretreatment of the sample before loading it into the cartridge? How is the viral material eluted out of the swabs before pipetting into the cartridge?	Current instructions include: place the Swab into the UVT and transfer fluid from UVT to sample buffer tube.	
7.	This virus is zoonotic, how can animals be handle for sample collection	There are preliminary studies with infection in animals. We are not able to make recommendations	
8.			
9.	Does the open system architecture of the BD instrument allow one to use "home-made" reagents for Cov-2 detection, given the current issues with shipping and shortages of reagent kits?	Yes. The objective of the BD MAX™ open system reagent suite is to provide an easy-to-use, automated solution for labs performing user-defined protocols (UDPs), with the flexibility to respond to evolving needs. Several laboratories have successfully migrated their UDPs for SARS-CoV-2 on the BD MAX. Additionally BD MAX offers a wide menu of tests including Healthcare Associated Infections, Sexually Transmitted Infections and Enterics.	
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11.	What kind of swabs are used - are they provided with the kit? One per test? In case we need to repeat can we use a different swab?	The BD SARS-CoV-2 Reagent has been validated with Copan UTM and the BD branded VTM collection kits. Laboratories will need to self-validate alternate transport media recommended by the FDA. https://www.fda.gov/medical-devices/emergency-situations-medical-devices/faqs-diagnostic-testing-sars-cov-2 Swabs are not provided with the BD test.	
12.	What is your take on using RDT for diagnosis in this pandemic especially with several limitations of RDT? Also, when will your Antigen based RDT be available. Which is your preference for	BD is developing a rapid lateral flow antigen based test. These tests are typically faster, less expensive and can be delivered at the point of care. It is believed that the value of this kind of test would related to the positive predictive value of a positive result.	

	clinical and epidemiology purpose and not just research		
13.	What is the shelf life the cartridge considering the time of purchase and delivery?	There is currently no stability data yet for the BD SARS-CoV-2 reagents for BD MAX. We will provide this information as we gather data.	
14.	What are some of the consumables needed when using BD max system that are needed but not proprietary to BD?	From Package Insert: • Vortex Genie 2 /Multi-Tube Vortex Mixer or equivalent • Rack compatible with multi-tube vortexer (e.g., Cryogenic Vial Holder or equivalent) • Variable Volume Calibrated Pipettor (up to 750 µL) • Aerosol resistant micropipette tips • Disposable gloves, powderless	
15.	Does the kit come with controls?	No. BD recommends SARS-CoV-2 and RNAse P controls manufactured by BioGX, Microbiologics and Integrated DNA Technologies (IDT). BD has developed a whitepaper for preparation and use of external positive controls with the BD SARS-CoV-2 reagents for BD MAX.	
16.	Why didn't you use the S protein	There are two different COVID-19 tests available for the use on the BD MAX outside the US. One is the Certest assay which has been CE marked. This assay uses the S gene. The other test was developed by BD and is available both inside the US and outside the US and it has FDA EUA clearance and CE-mark. That assay was designed in accordance with the CDC recommended design and is positive when either the N1 gene or N2 genes are amplified.	
17.	What are the differences between tests manufactured for the US and those manufactured for the rest of the world.	Please see the answer to question 16. BD distributes both the Certest assay and the BD-developed COVID-19 BD MAX assay. They are both	

		CE-marked and available outside the US. The BD MAX assay is also available inside the US. A third assay was developed by BioGX and is available only inside the US and has a design that is similar to the BD developed assay and targets both the N1 and N2 genes.	
18.	Do you recommend that the sample is added to the card in a BSL2 cabinet? Does your SARS-COV-2 PCR Test require a Bio Safety Level 2 lab to conduct the test or can it be done in a Smear Microscopy Center? What are the safety recommendations for performing SARS-CoV-2 for our laboratory personnel?	BD recommends that laboratories follow the guidance provided by the CDC and the WHO. This Information regarding biosafety practices for COVID-19 testing can be found on the following websites: https://www.cdc.gov/coronavirus/2019-ncov/lab/biosafety-faqs.html World Health Organization (WHO): Coronavirus disease (COVID-19) technical guidance: Laboratory testing for 2019-nCoV in humans https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/laboratory-guidance	
19.			
20.	What challenges do you foresee for rolling out of these tests in resource-limited settings?	• Right infrastructure • Trained HCWs • Alignment of supply and demand	
21.	What is the throughput of the system per 8 hours work schedule keeping in mind that we need to ramp up testing in all the community settings	The BD Max can run 24 Tests per run or 96-120 tests in an 8 hour shift	
22.	What are the turn-around time for both BD and Cepheid testing?	For BD MAX, It takes 90 minutes if you are running between 1-4 specimens and as long as 3 hours to	

		run a test from start to result if you are running and 24 tests at the same time Hands on tech time is approximately 15 minutes for 24 specimens	
23.	How like to hear the presenter's thoughts about the role of their diagnostics systems in the context of COVID-19 passports? These tests are in the position to rule in with high PPV the presence of Abs in the general community?	The clinical utility and appropriate use of COVID-19 serology assays is still evolving as new information emerges each day. BD does not have an opinion on the topic of COVID-19 passports as this is more in the area of public health policy.	
24.	How soon can BD detect SARS COV-2 virus after the onset of infection? Can Xpress SARS-COV2 be used to monitor recovery?	Viral load for COVID-19 peaks at around the time of symptom onset. Therefore best sensitivity is around then, however, because PCR assays are especially sensitive, there are numerous reports of PCR tests remaining positive for a prolonged period of time after the date of symptom onset.	
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26.	Do samples have to be batched? If just three tests are run (90mins), are the other reagents wasted? 2) How many controls are in each batch	A lab can run anywhere from 1 up to 24 tests per run. Q1. Specimens do not need to be batched. Q2. Each specimen is tested in a Unitized Reagent Strip which has individual snap-in reagent tubes. This minimizes reagent wastage if only a few specimens are tested. Q3. The BD SARS-CoV-2 package insert recommends that one (1) External Positive Control and one (1) External Negative Control be run at least daily until adequate process validation is achieved on the BD MAX System.	
27.	Are they recommending local validation of testing methods prior to use?	According to CAP and ASM laboratories must verify the performance of a manufactured diagnostic test kit prior to implementing for patient testing and reporting results. The basic requirement is to verify	

		the accuracy and reproducibility of the assay, using well characterized positive or negative specimens. BD has developed performance verification guidelines for the BD SARS-CoV-2 reagents to assist laboratories. However, it's the laboratory's decision which verification strategy to follow according to standard lab procedures, CAP and ASM guidance and local regulations for COVID-19 testing.	
28.	Any experience using either the Cepheid or BD systems for pooled testing please?	Pooled testing has not been performed for BD MAX	
29.	Does the system incorporate controls and if so how many?	The BD SARS-CoV-2 package inserts recommends that one (1) External Positive Control and one (1) External Negative Control be run at least daily until adequate process validation is achieved on the BD MAX System in each laboratory setting. Several options for external positive and negative controls are provided.	
30.	How can we ensure and maintain the quality of tests in emergency situation? What are the recommendations for local validation of testing methods prior to use?	Q1. Recommendations regarding the minimum testing to be performed to ensure analytical and clinical validity for COVID-19 diagnostic assays, as well as the templates for EUA submissions are provided on FDA's website. The FDA has reviewed the BD BioGx SARS-CoV-2 and the BD MAX SARS-CoV-2 products. EUAs were granted for both tests. Q2. According to organizations like CAP and ASM, laboratories must verify the performance of a manufactured diagnostic test kit prior to implementing for patient testing and reporting results. The basic requirement is to verify the accuracy and reproducibility of the assay, using well	

		characterized positive or negative specimens. BD has developed performance verification guidelines for the BD SARS-CoV-2 reagents to assist laboratories. However, it's the laboratory's decision which verification strategy to follow according to standard lab procedures, CAP and ASM guidance or local regulations for COVID-19 testing.	
31.			
32.	Do your testing platforms support remote test request and return of results to support paperless system between lab and clinic/ surveillance teams	This is possible but is dependent on the technology that is in place at the clinic and lab.	
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34.	How do you interpret the results if N1 is positive and N2 is Negative or vice versa?	N1 or N2 positive and corresponding RNase P positive for the N1 or N2 negative of the same sample then report as positive. Amplification of either N1 or N2 targets are consistent with presence of SARS-CoV-2.	
35.	What can lead to presumptive positive turning to true positive from the sample?	Positive results are indicative of the presence of SARS-CoV-2 RNA; clinical correlation with patient history and other diagnostic information is necessary to determine patient infection status. There is no “presumptive positive” result from a BD MAX COVID-19 assay.	
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37.	What is the limit of viral detection for the test?	40 GE/mL of UVT	
38.	What is the sensitivity and Specificity for the IgM/IgG in the first week of infection?	The Biomedomics/BD serology assay has not been characterized in a longitudinal fashion to allow for a determination of sensitivity at varying time points from the date of symptom onset. Studies are currently ongoing to further understand this.	

39.	What is Sensitivity and Specificity of the Serology Testing? Are there going to be Testing algorithm for PCR and Serology testing?	The sensitivity and specificity of various serology tests and how they compare to each other is currently being explored in a number of studies. Per FDA FAQs: Serology tests are of limited value in the immediate diagnosis or screening of a patient where COVID-19 infection is suspected because they cannot rule out presence of the virus. But positive results from appropriately validated serology tests that are designed to be very specific to the SARS-CoV-2 virus can confirm either that a patient has (for IgM antibodies), or more likely has recovered from (for IgG antibodies) a COVID-19 infection. In addition, although not everyone who is infected will develop an antibody response, appropriately validated serology tests, when used broadly, can be useful in understanding how many people have been infected or exposed and how far the pandemic has progressed. Serology tests can play a critical role in the fight against COVID-19 by helping healthcare professionals identify individuals who have been exposed to SARS-CoV-2 virus and have developed an immune response. In the future, this may potentially be used to help determine, together with other clinical data, whether these individuals may be less susceptible to infection. In addition, these test results can aid in determining who may donate a part of their blood called convalescent plasma, which may serve as a possible treatment for those who are seriously ill from COVID-19.	

		At this time, FDA's FAQ's response for serology kits states that the manufacturer should include the following in their Instructions For Use (IFU): • Negative results do not rule out SARS-CoV-2 infection, particularly in those who have been in contact with the virus. Follow-up testing with a molecular diagnostic should be considered to rule out infection in these individuals. • Results from antibody testing should not be used as the sole basis to diagnose or exclude SARS-CoV-2 infection or to inform infection status. • Positive results may be due to past or present infection with non-SARS-CoV-2 coronavirus strains, such as coronavirus HKU1, NL63, OC43, or 229E	
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41.			
42.	What is the timing and volume availability of the Covid cartridges in Africa (where will supply be manufactured? subject to export restrictions?)	Supply/demand situation needs to be examined case by case given the overwhelming orders on hand currently.	
43.	Is it true that the cartridges cannot be available for use in Africa until May? Or is there any way to FastTrack procurement?	All efforts are being made to allocate to regions across the world. Specific queries will be looked into on a case by case basis.	
Cross cutting questions			

44.	BD: how many platforms do we have in Africa?	BD MAX has significant presence across North America, Europe and Japan and has just been approved for use by the Global Fund ERPD system. In South Africa there are 9 BD Max platforms and we will soon be scaling across the continent.	