

ASNC Webinar: Restarting your Nuclear Lab as the COVID-19 Pandemic Recedes Questions and Answers

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Restarting your Nuclear Lab Operations as the COVID-19 Pandemic Recedes

The discussion was recorded April 30, 2020 with ASNC leaders and global leaders in China, South Korea and Singapore. They discussed their unique experiences relating to restarting their nuclear medicine laboratories.

- How to prioritize your backlog – the more urgent cases first
- Patient screening. How about the patient who had COVID-19 and recovered?
- How to maximize time efficiency to limit exposure and to work through the backlog
- How to continue to protect staff in the post COVID era?

Faculty

USA	China	South Korea	Singapore
Tara Lawson, BS, RT(R)(CT) Manager Cardiology Imaging, St. Luke's Mid America Heart Institute, Kansas City, MO	Hongcheng Shi, MD, PhD Zhongshan Hospital Fudan University, Shanghai	Hee-Seung Bom, MD, PhD Chonnam National University Hwasun Hospital, Hwasun	Felix Keng, MBBS, FASNC National Heart Center
Arthur Iain McGhie, MD St. Luke's Mid America Heart Institute, Kansas City, MO	Xiaoli Lan, MD, PhD Huazhong University of Science and Technology, Wuhan		
Randall Thompson, MD, FASNC St. Luke's Mid America Heart Institute, Kansas City, MO	Xiaoli Zhang, MD, PhD Beijing Anzhen Hospital, Beijing		
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United States

Abbreviations:

AGP, aerosol-generating procedures

BMI, body-mass index

CTA, computed tomography angiogram

EF, ejection fraction

IgG, (Immunoglobulin G) antibody

IgM, (Immunoglobulin M) antibody

PCR, polymerase chain reaction

PPE, personal protective equipment

SPECT, Single Photon Emission Computed Tomography

TID, *ter in die*, three times a day

TMX, treadmill exercise stress test

Questions and Answers

Resuming and evaluating risk benefit of cardio testing

- **If a patient is positive for active (acute) COVID-19 infection, would you still perform stress MPI or delay stress testing until the patient has recovered from COVID-19 and is no longer at risk for spreading infection to the laboratory staff?**

Dr. Keng, Singapore: As always, determine the urgency by thorough discussion with the ordering physician. If deemed necessary, a full aerosol-generating procedure PPE is required.

- **How are you encouraging your at-risk, worsening patients to have the sense of urgency to come in for testing?**

Dr. Bom, So Korea: Usually, it depends on the patient's symptoms. My outpatient lab is outpatient based, where most patients come via referrers.

- **How soon after known infection with recovery do you perform stress test?**

Dr. Keng, Singapore: I would think swab test [that is] negative two times over 2 consecutive days. In Singapore that means the patient is discharged from the isolation ward.

Dr. Bom, So Korea: I have no experience of patients who recovered from infection and requested for a stress test.

- **We do not have CTA availability. The patients are generally below the age of 65. Given the information that the risk of morbidity increases in individuals aged over 65, or with comorbidities, and not all areas are experiencing the same infection rates, why would it not be acceptable for patients and staff to wear appropriate PPE and these tests be performed? We have patients waiting for 3 months for these tests.**

Dr. Keng, Singapore: I think if there is no issue of availability and costs, the best way to proceed with testing in the future would be the use of adequate PPE to protect all. Unfortunately, there are no studies or guidelines for such protection at present, so what is "appropriate" is at best a guesstimate.

- **What suggestions/guidelines are being considered for resuming the performance of exercise for myocardial perfusion studies?**

Dr. McGhie, USA: For now, we are only performing exercise testing on a very small number of patients where there is no alternative. We will re-assess the situation going forward and make a decision based on how the COVID-19 outbreak develops.

Stress testing during COVID

- **Can you comment on stress-first versus same-day protocol? Which is preferred in the current situation?**

Dr. Keng, Singapore: I prefer single day, so the patient does not come to the imaging center two times to complete everything. Always stress first.

Dr. McGhie, USA: We prefer stress first as many patients do not require rest imaging which results in lower radiation exposure but in the setting of COVID, a much shorter time is spent in the testing facility.

- **If the lab is doing stress first, are they all equipped with attenuation correction?**

Dr. McGhie, USA: About 75% have attenuation correction available. We do exercise stress testing in our lab.

- **Are all labs avoiding treadmill-stress modality and using pharmacologic stress?**

Dr. Keng, Singapore: I still do TMX in Singapore in the appropriate low-risk COVID patients.

- **Can you comment if stress-first, two-day protocol is preferred versus same-day protocol in current situation?**

Dr. McGhie, USA: This is preferred by us as many patients do not need rest imaging, which shortens the time in the testing facility. If rest imaging is required, we feel it is better that the patient comes back on a separate day, as this minimizes total time in the facility, rather than have the patient wait for an additional 4 to 5 hours in the facility.

- **Why not do low-dose, stress-first studies in those with BMI <35, and do high-dose rest the same day if needed?**

Dr. McGhie, USA: See above comment.

- **Do you have any issues with converting SPECT studies to PET studies for safety concerns? Is there an issue with insurance coverage?**

Dr. McGhie, USA: No safety concerns switching from SPECT to PET, in fact PET is safer given the lower radiation exposure. If the patient is an outpatient and has private insurance, we will always get preauthorization.

- **I found it very interesting how you pointed out PET in view of COVID-19. Will it become the standard as we gradually open back the nuclear labs?**

Dr. McGhie, USA: In my opinion, I think PET is preferred over SPECT in almost all circumstances. Hopefully, we will see it get utilized more after COVID-19 pandemic.

- **For patients who can and should do treadmill exercise, are you still suggesting they do pharmacological instead, even if not suspected to have COVID?**

Dr. McGhie, USA: Yes. For those who need to undergo exercise stress, we will perform testing for COVID-19 72 hours prior to testing.

- **What is the data on increased droplets for exercise stress? Do masks with exercise help at all?**

Ms. Lawson & Dr. Thompson, USA: I think the answer here is obvious, as well. During exercise, the patient exhales more forcefully and produces more droplets.

COVID testing

- **What time frame is required for COVID testing relative to the imaging appointment?**

Dr. McGhie, USA: Within 72 hours.

- **How long after contracting COVID-19 does an antibody test show positive?**

Dr. McGhie, USA: This is more a question for an Infectious Diseases specialist, but I guess we can ask Dr. Lan, because they test antibodies routinely

- **Please clarify that Dr. Lan is requiring COVID-19 testing prior to nuclear testing. I think this is mandatory to allow the U.S. to safely ramp up nuclear imaging.**

Dr. Keng, Singapore: I think this question was answered clearly by Dr. Lan. She said that testing is mandatory.

- **Are labs in the U.S.A. screening with PCR and serology testing?**

Dr. McGhie, USA: Not routinely.

- **Are you testing for Covid-19 before the patient is brought to the lab?**

Dr. McGhie, USA: Only patients who we are going to perform exercise stress.

- **If you are not testing patients [for Covid], how do you protect against asymptomatic carriers?**

Dr. Bom, So Korea: Asymptomatic carriers, especially young people, have become a problem now in Korea. In Korea we totally depend on a public-screening system managed by the Korean CDC. With any case of suspicion, the Korean government provides PCR tests in any screening labs for free. If we have any suspicious patients or staff members, we send them to the screening lab in my hospital. But we do not do PCR tests in my lab.

- **Because patients referred for vasodilator SPECT imaging typically perform low-level treadmill exercise during vasodilator stress, and because some patients might require acute bronchodilator therapy for bronchospasm, wouldn't it be appropriate to require COVID testing prior to all nuclear stress tests (i.e., exercise SPECT as well as pharmacologic stress SPECT and PET MPI)?**

Dr. Keng, Singapore: If testing is widely available, we would test the suspected cases only. Rigorous screening of all cases is essential, and there is a very low pickup rate for

asymptomatic people, anyway. But the situation is fluid, and in the future when testing is highly sensitive and specific (which it is not at present), we can think about testing everybody. We should be mindful of the cost-effectiveness of such measures, and governments will have difficulty financing widespread testing in the long run.

- **Please confirm, if you have antibodies, can you still get infected?**

Dr. Keng, Singapore: This is a question for an Infectious Diseases specialist, and the answer is not clear currently.

- **If COVID antigen is positive, then you would not perform nuclear testing, correct?**

Dr. Keng, Singapore: Dr. Lan answered this question clearly. The answer is "No."

Logistics, insurance, and other concerns

- **Are there possible shortages of, for example, aminophylline, tracers, etc., due to COVID-19 pandemic?**

Dr. Bom, So Korea: Almost 80% of labs in Asia experienced shortages of tracers during the early phase of the pandemic. One third of labs shut down due to lack of radioisotope supply. Now the situation is becoming better, day by day. Fortunately, Korean labs did not experience shortage of tracers because we had a domestic supply chain.

- **Is it safe to use UV light in between cases? If there is no window, what is the risk of ozone?**

Dr. Keng, Singapore: I would not use UV robots in between cases because logistically it takes too long, and we have to clear everyone out of the facility. We would consider its use at the end of the day when all clinical activities have ceased, with good ventilation. There are usually windows that can be opened somewhere in the lab.

- **By not exercising patients, do you lose an enormous amount of information?**

Dr. McGhie, USA: I think you do lose some prognostic information, but I think "enormous" is an over statement, and in the current climate, benefits outweigh the risks.

- **How have the new daily procedures impacted the number of patients St. Luke's can see each day? Are you finding you need to extend weekday and/or weekend hours to maintain the new procedures, while also managing the patients on your schedule?**

Ms. Lawson, USA: We are currently seeing about 50% of our normal volumes. Our current challenge is patients not wanting to come in for their procedures. We still have stay-at-home orders in place, so many patients are hesitant to schedule their testing. Once the stay-at-home orders have been lifted, I think we will see this volume change, and we will extend our days, and may even extend into weekend testing.

- **For places that are seeing dramatic decreases in productivity due to patient rescheduling, etc., how are they maintaining their nuclear departments? Does staff cut hours in order to stay in the green or is management accepting the decline in productivity?**

Dr. McGhie, USA: We are fortunate that our healthcare system is accepting a reduction in productivity, although some staff have been temporarily assigned to work in other areas.

- **Who is taking the verbal consent?**

Ms. Lawson, USA: The technologist or nurse is obtaining verbal consent.

- **[What about] Pre-authorizations, and if they expire by deferring tests?**

Ms. Lawson, USA: We have found that most commercial carriers are extending their authorizations out for 6 months.

Dr. McGhie, USA: Pre-authorizations can expire, although some radiology benefit managers are extending the time period. We always check the status of the pre-authorization before scheduling and re-submit if required.

- **Are these recommendations for outpatient facilities? If yes, is the outpatient office responsible for obtaining the tests?**

Answer: I think this question is non-specific

Safety and Personal Protective Equipment

- **I would like to know, in more detail, what PPE is being used with patients with known COVID, as well as those who are unlikely to be infected.**

Dr. Keng, Singapore: After adequate screening at multiple levels, we stratify the risk of infection of the patient. For low-risk patients, we suggest surgical masks, gowns, gloves, regardless of type of stress. On high-risk suspects and COVID-19 patients we try our best not to perform the test. But if necessary, full PPE (i.e., N95, gown, gloves, eye shield, hairnet) for aerosol-generating procedures (AGP) are indicated. We are mindful of the disadvantages of using full AGP PPE all the time, due to comfort, lack of PPE, usefulness, etc.

- **What PPE is recommended for staff and physicians conducting exercise testing in a patient without suspicion for COVID?**

- **Please detail PPE used by staff at St. Luke's and in Wuhan.**

Ms. Lawson, USA: Our PPE Guidelines are as follows: PPE- All patients wear a level-1 mask while in our hospitals. If the patient has unknown infection or risk status, staff don a Level-3 mask, with a level-1 over it, face shield, or eye protection and gloves. If the patient is COVID positive or in an aerosolizing procedure, staff don N95 fit-tested mask, with a level-1 over it, eye protection (face shield), gown, and gloves.

- **Should the tech change their gown after each patient?**

Ms. Lawson, USA: I think the answer here is obvious: Yes. Gown, gloves, level-1 mask, face shield are replaced after each patient. The N95 can be worn until visibly soiled or contaminated while doffing.

- **If exercise is considered an aerosolizing procedure, should techs and patient use N95 mask?**

Ms. Lawson, USA: All staff entering the room don fit-tested N95 mask, Level-1 mask over the N95, eye protection (we use a face shield in our department), gown, and gloves.

- **Does the patient have to wear a mask if doing treadmill stress testing? Does the MD and the Technologist wear N-95 masks, as well as Face shield and Gowns and gloves?**

Ms. Lawson, USA: The patient is in a Level-1 mask. All staff, upon entering the room, don fit-tested N95 mask, Level-1 mask over the N95, eye protection (we use a face shield in our department), gown and gloves.

- **How do your Technologist practice safe distancing in the imaging room? Does leaving the patient in the room become a safety hazard?**

Ms. Lawson, USA: It really depends on what camera the patient is being imaged on. We are able to distance 6 ft from the D-SPECT camera, while still watching the patient. With the SPECT/CT or PET/CT, the patient is alone in the room due to radiation exposure. We also limit the number of staff who has contact with the patients while in our care.

- **I am a technologist who is supposed to return to work (outpatient private office). I have concerns on what proper PPE we should be provided, screening procedures, and volume limits. I was notified today that my schedule on Monday is back to regular volume, and I typically have 3 to 4 patients in some stage of the test.**

- **What is the proper PPE for the patient and/or technologist, when the patient is normal, suspected, and positive?**

- **What PPE does staff use during stress testing?**

Ms. Lawson, USA: I think you should work with your administration to see what guidelines they will have in place in order to practice safe social distancing, and what that will look like for your daily workflow. Our volume is 80% outpatient and 20% inpatient volume. We currently spread out our outpatients in order to practice social distancing and to limit the amount of people in our waiting rooms. We also have removed some of our chairs in the waiting room and have spread them out to be 6 ft apart.

Our PPE Guidelines are as follows: PPE: All patients while in our hospital wear a level-1 mask. If the patient has unknown infection or risk status, staff don a Level-3 mask, with a level-1 over it, face shield or eye protection and gloves. If the patient is COVID positive or in an aerosolizing procedure, staff don N95 fit-tested mask, with a level-1 over it, eye protection (face shield), gown and gloves.

Our screening guidelines are as follows: Outpatients are all screened a total of three times prior to entering our lab. They are screened at the time of scheduling their appointment:

1. In the last 14 days, have you been exposed to someone with COVID-19 or have you tested positive for COVID-19?
2. In the past 14 days, do you have any of the new following symptoms (fever greater than 100, new cough, shortness of breath, loss of smell or taste, diarrhea, sore throat, or body aches)?
3. They are screened again the night before the test (same questions).

They are then asked to take their temperature at home and report if it's above 100 degrees prior to coming in. Once they arrive to the hospital the same questions are asked, and their temperature is taken. They are also given a mask. If they answer yes to any of the questions, then they are asked to hold off on their testing until symptoms resolve.

- **Is there any certain disposal procedures for the IVs and syringes or are they the same?**
Ms. Lawson, USA: These procedures in our lab are the same for disposal. Staff sanitize the coffin and exchange pad after each use. They also sanitize the lead syringe holder between each use with hospital-approved disinfectant wipes.
- **Are most labs allowing patients to stay in the waiting room during tracer circulation period? Are labs sending pharmacologically stressed patients outside to wait? Are there concerns about possible adverse events while outside? Are patients allowed to eat and drink during waiting period if waiting in the waiting room?**
Ms. Lawson, USA: We allow the patient to wait in one of our patient-prep rooms or in the waiting room. We have changed our protocol to limit the amount of time the patient is in our lab. They are stressed on the first day and asked to return if need be the next day for resting images.
- **Are disposable gowns recommended for staff in outpatient settings? Or for COVID-positive patients only?**
Ms. Lawson, USA: For exercise treadmill stress testing or during a CODE, staff don gowns.
- **Just wanted to clarify that treadmill test require patient and staff to wear N95 mask? And staff with eye protection, etc. just as with an intubation?**
Ms. Lawson, USA: The patient is in a Level-1 mask. All staff, upon entering the room, don fit-tested N95 mask, Level-1 mask over the N95, eye protection (we use a face shield in our department), gown and gloves.
- **What practical process do you use to clean the treadmill equipment, including the belt between patients?**
Ms. Lawson, USA: Once the patient exits the room, the room is closed for 30 minutes (to allow air droplets to settle). Then staff don appropriate PPE and clean the entire room. They use a system-approved disinfectant to clean the belt and all surfaces.