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

Insights from China, Singapore, South Korea and the USA

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CMS Communication

- CMS Administrator Seema Verma. “Today, some areas of the country are experiencing fewer cases and lower incidence of the virus, necessitating a more tailored and flexible approach. Every state and local official will need to assess the situation on the ground,... but these guidelines provide a gradual process for restarting non-COVID-19 essential care…”

- Downward trajectory, robust testing, adequate resources
CMS Communication

- Gradual transition
- Coordinate with local and state public health officials
- Review the availability of PPE etc, workforce availability, facility readiness, and testing capacity.
- In coordination..., evaluate the incidence and trends for COVID-19 in the area
- Prioritize surgical/procedural care and high-complexity chronic disease management; however, select preventive services may also be highly necessary.
CMS Recommendations

- Clinical judgement
- Proper screening
- Engineering and process to keep patients apart
- Surgical mask for patients and staff
- Consider Covid Free Zones
- Avoid visitors, etc
CMS Issues Recommendations to Re-Open Health Care Systems in Areas with Low Incidence of COVID-19

As the United States continues to face the unprecedented public health emergency from the COVID-19 pandemic, the tide is turning and some areas throughout the country are seeing a decline in cases. As states and localities begin to stabilize, the Centers for Medicare & Medicaid Services (CMS) is issuing guidance on providing essential non-COVID-19 care to patients without symptoms of COVID-19 in regions with low and stable incidence of COVID-19. This is part of Phase 1 in the Trump Administration’s Guidelines for Opening Up America Again.

“By complying with our recommendations to postpone non-essential elective surgeries, our healthcare system has made a tremendous sacrifice. We owe both those on the frontlines and those who postponed procedures for the sake of their colleagues a profound debt of gratitude,” said CMS Administrator Seema Verma. “Today, some areas of the country are experiencing fewer cases and lower incidence of the virus, necessitating a more tailored and flexible approach. Every state and local official will need to assess the situation on the ground to determine the best course forward, but these guidelines provide a gradual process for restarting non-COVID-19 essential care while keeping patients safe.”


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Coming Back to Normal Clinic—
the Recovery of Nuclear Medicine Department in Wuhan

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• Before getting back to work, all medical staff are needed to test the antigen and antibody of SARS-CoV-2.
• All staff are required to learn the information about COVID-19 and the prevention measurements.
• Because of the patient backlog in the early stage, we extend our working time, and group into teams working in separate shifts.
• All the staff need to use the personal protective equipment (PPE) appropriately, and keep the social distance.
• In order to shorten the unnecessary contact time with the patients, the clinical and epidemiological history could be obtained through online or telephone consultation in advance.
• Moreover, video can be used to observe the patients’ condition during the whole imaging procedures.
For Patients

• Before performing radionuclide imaging, all patients and accompanies are demanded to test antigen and antibody of SARS-CoV-2.

• If the patient needs to be hospitalized for radionuclide therapy, additional lung CT examination is required.

• The patients with positive results should be reported to the relevant infection or medical management departments, and further diagnosis or treatment will be arranged. Patients with negative results could proceed to examination reservation.

• Appointments are made online.

• All patients are scheduled with different time section.
Key points of protection measurements in each step of the whole procedures of nuclear medical imaging

- The patients and the accompanies are required to test antigen and antibody SARS-CoV-2 testing before radionuclide imaging.
- Make appointment online.
- Schedule the patients with different time section.
- Measure body temperature for each patient and accompanies.
- Pay attention to double protection: radiation and infection.
- All patients and accompanies should wear mask.
- All other waiting patients need to keep an appropriate distance (no less than 1 meter).
- Observe the patients with video surveillance.
- Observe the patient during the scanning with video.
- Pay attention to double protection: radiation and infection.
- Disinfect the machine and environment every day (Air sterilizer).
How to prioritize your backlog – the more urgent cases first

Henry Bom, MD, PhD
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Korean Policy for suspected patients: **Screen outside of the hospital**

Korea Center for Disease Control (KCDC), local governments and media announced the public repeatedly:

*Please don’t come to the hospital. Please call #1339 first, and visit screening place. Then they will guide you for further treatment.*

We actively tested using rapid PCR diagnostic kits, and tried to minimize the number of unknown virus carriers entering the hospital. When we have confirmed COVID patients we triaged them into 3 groups:
- Asymptomatic pts – stay home
- Mildly symptomatic pts – stay at nursing hospitals
- Severely symptomatic pts – treated at specialized hospitals
We had a brief period of shortages in PPEs, RIs, and staffs. Some staffs worked at screening centers, or at nursing hospitals to take care of COVID patients.

In case of shortages, we prioritize work list. urgent case, usually in-patients, first

Some out-patients canceled or postpones their reservations by themselves because they scared to visit hospitals and because of social distancing policy.

Now we came back to our routine works but disinfection and personal protection still continue. Remote phone calls for consulting and prescribing increase.
How to maximize time efficiency to limit exposure and to work through the backlog

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Risk Categorization During COVID-19

1. **Urgent inpatient or outpatient (to be performed upon request):** In-patient or out-patient with a clinical scenario suggesting a moderate to high likelihood of short-term major adverse cardiac events, in whom the results of testing would have high-likelihood of modifying management.

2. **Higher priority (deferred for 1 – 2 months):** In-patient or out-patient who meets AUC criteria for testing, but with a clinical scenario suggesting a low likelihood for short-term major adverse cardiac events.

3. **Lower priority (deferred for 2 – 3 months):** Out-patient, who meets AUC criteria for testing, and who is clinically stable, expected to have normal or low-risk findings that would not be expected to effect short-term management. Some examples are pre-operative testing for elective surgery; surveillance testing such as in asymptomatic patients with prior history of PCI or CABG, a patient already on class 1C anti-arrhythmic, a patient post cardiac transplant; asymptomatic patient with an elevated coronary artery calcium score.

4. **Elective (deferred for 4 – 6 months):** Screening or wellness tests such as coronary artery calcium scans and treadmill exercise tests.
Operational Changes During COVID-19
Containment

- **Adequate staffing**
  - Redeployed staff

- **Adequate supplies**
  - PPE
  - Radiopharmaceuticals

- **Space**
  - Social distancing
Operational Changes During COVID-19

Containment

• Prioritizing the patient backlog
• Reducing risk of exposure
  o screening of patients prior to testing
  o importance of patient workflow
  o PPE utilization by staff
  o increased utilization of PET
  o stress-first SPECT protocols
  o avoidance of exercise stress
• Optimizing lab efficiency
  o protocol changes
  o hours of operation
How to continue to protect staff in the post COVID era – At the time of arrival

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At the time of patient arrival

- Screening Process of utmost importance
- First level screening before entry to building, with temperature and legal self declaration, of both the patient and care-giver
- Second level screening with more direct questions, surgical masks given to all entering institution, if not already masked
- Patients/Care-givers allowed to register for testing at auto-registration machines to minimize contact and duration in institution
- Payment at self-payment machines to minimize contact and duration
- Consent taking, decision on type of stress and tracer
Screening Area before entry into Institution
Results of Social Distancing and Hygiene Safety Measures

- Increased throughput time resulting in reduced numbers of patients that can be stressed & imaged per day.

- Backlog of cases who have deferred testing to a later date, resulting in a longer duration required to clear the backlog.

- Increased duration of operational hours, weekend & holiday operations, resulting in fatigue of staff.

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Personal protection in Dep. of Nuclear Medicine after the Outbreak of COVID-19

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Everyone is requested to wear mask in any public place
Everyone is required to measure temperature when enter hospital
Keeping distance, no gathering and washing hands using disinfection solution
Pts with fever need to visit fever clinic first to exclude coronavirus infection
Any suspected Pt stay in isolated waiting area or room and disinfectant on time.
Actions taken in some important sites to prevent virus spread in Zhongshan Hospital Fudan University

- Pts were requested to measure temperature on site and provide epidemic information when they enter hospital.
- Chair distributed in one meter distance from each other.
- Air disinfectant spray in public area.
- Clean the keyboard using disinfecting wipes.
- Fresh air system and air conditioning system disinfection every other day.
- Disinfectant in waiting room after injection.
How to continue to protect staff post COVID-19

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What has changed since COVID? Screening procedures implemented

**Patients-screened X 3**
- At time of scheduling their procedure.
- Phone call day before procedure.
- As they enter the hospital
  - Given a mask
  - Temperature is checked
  - *No Visitor* policy

**Staff**
- Staff as they enter and exit the hospital have their temperature taken
- Travel bans

If they answer, "yes" to any of the screening questions they’re not scheduled and the referring physician is contacted.
How to continue to protect staff post COVID-19

What has changed since COVID? Daily workflow

**Time**
- Allow time between patients.
- Patients are escorted directly to the procedure room, bypassing the waiting room
- Time for staff to clean the equipment and area properly.

**Distance**
- Practice social distancing between staff and patients.
- Limit time and amount of staff in the room with the patient.
- Verbal consent

**Shielding**
- Personal Protective Equipment (PPE)
- Education on how to don and doff PPE.
- Education on which PPE to use for different procedures
How to continue to protect staff post COVID-19

What has changed since COVID? Cleaning procedures

**Patient(s) with Negative COVID-19 Diagnosis**
Follow the Enhanced Respiratory Isolation for cleaning. Use gown, gloves, and Level-1 mask and follow routine cleaning with approved cleaner/disinfectant.

**For Exercise Treadmill Patients (considered to be an aerosolizing procedure)**
Follow the Enhanced Respiratory Isolation for cleaning. Allow 30 minutes after patient discharge to enter the room. Use gown, gloves, and Level-3 mask, and approved cleaner/disinfectant.
Workflow of Nuclear Cardiology Procedures after outbreak of COVID-19

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Many out-patients canceled or delayed their studies, especially patients from the other cites due to 14-days isolation policy

Priority for in-patients, but most of patients were out-patients from Beijing, due to significantly reduction of in-patients and only emergency surgery was performed

On-patients were gradually increased recently (50% of as before)

Phone consulting
- Epidemiological history, travel history, fever, or other symptoms
- Clinical angina symptoms, history, et al

Patients needs to sign a confirmation letter

With no or only one accompany person (old pts)

Separate time appointment
Reduced pharmacological or exercise stress studies (<12 pts/per day)
- 3 studies/ per hour
- About 20 pts were performed per day (30-40% of our routine studies)
- Stress MPI normal, no rest MPI and pts can get their report at the same day
- Pulmonary ventilation study was stopped, now restarted
- Cardiac PET for viability study was stopped, now restarted
- Animal study was stopped, not yet
- Disinfection and personal protection
Discussion, Question and Answer
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