ELEVATING RADIOLOGY
GEHC CT ADDRESSES COVID-19

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Disclaimers

Notice 1 Knowledge and information related to the novel coronavirus disease (COVID-19) and care pathway (e.g. diagnosis, and management) is emerging rapidly. Thus, there are uncertainties on the use of technologies and services in this care pathway.

Notice 2 To address the need for information in these unprecedented circumstances, a number of organizations are focused on gathering the scientific literature and knowledge globally on COVID-19. It is acknowledged that no one source at any point in time is complete and all are evolving. GEHC is providing the information in this document to assist the health care community and responding to questions regarding the COVID 19 care pathway.

Notice 3 This document may include scientific information that is being made available to assist healthcare professionals in understanding the current state of research into medical technologies and clinical applications related to COVID-19. Information accessible within publicly available sources may include analyses, recommendations or conclusions regarding unapproved uses of medical devices. GE Healthcare does not attest to the accuracy of the research or endorse the uses, conclusions or recommendations contained in articles unless otherwise stated in the specific article. Always refer to the manufacturers labeling, including Instructions for Use, on use of any medical product .

Abbreviations

- COVID-19: Coronavirus disease 2019
- ACR: American College of Radiology
- RT-PCR: Reverse transcription polymerase chain reaction
- GGO: Ground glass opacity
- DMPR: Direct multi-planar reformat

ROLE OF CT IMAGING

Role of CT imaging

- The role of CT in the setting of COVID-19 is emerging. Initial publications in the literature show that CT may provide relevant information to clinicians during diagnosis, as well as in disease monitoring/characterization/staging

- The American College of Radiology (ACR), however, does not recommend the use of CT to screen for, or as a first line test for diagnosis of COVID-19. In some locales, however, CT has been used as a tool to aid in the initial diagnosis of COVID-19 due to the lack of availability of RT-PCR testing and other local resource constraints and practices.[1]

1. https://www.acr.org/Advocacy-and-Economics/ACR-Position-Statements/Recommendations-for-Chest-Radiography-and-CT-for-Suspected-COVID19-Infection

Considerations in the role of CT during COVID-19 diagnosis

- The primary recognized diagnostic tool for COVID-19 is reverse transcription polymerase chain reaction (RT-PCR) testing

- A growing body of peer reviewed literature evaluates the performance of CT imaging in identifying COVID-19. Several publications compare the interpretation of CT images to RT-PCR testing. These publications have identified the following:

  - Some publications found instances of patients who had initial negative RT-PCR testing but positive CT findings. Some of whom were later confirmed positive with follow-on RT-PCR testing.

  - Additionally, these publications show that although CT imaging may be highly sensitive to COVID-19 findings, it has a low specificity and findings associated with CT may overlap with other infections.

Monitoring, characterization and staging

- There is an emerging body of publications on the presentation of COVID-19 on CT exams
- Among the most common features observed in CT imaging are ground glass opacifications (GGO), consolidation and a bilateral, peripheral distribution of nodules
- Some researchers have noted that serial CT imaging may be useful in charactertizing the extent of the disease and in monitoring its progression, as changes in the presentation of the disease may be observed over time

Standardized reporting of CT findings

The RSNA has published recommendations[1] on reporting in the setting of COVID-19 to standardize interpretation. The recommendations propose using 4 different categories to assess COVID-19 pneumonia:

- Typical – commonly reported imaging features of greater specificity for COVID-19 pneumonia (ie. Peripheral, bilateral, GGO)
- Indeterminate appearance – nonspecific imaging features of COVID-19 pneumonia
- Atypical appearance – uncommonly or not reported features of COVID-19 pneumonia
- Negative for pneumonia – no features of pneumonia

1. Radiological Society of North America Expert Consensus Statement on Reporting Chest CT Findings Related to COVID-19. Endorsed by the Society of Thoracic Radiology, the American College of Radiology, and RSNA, Litt, H, Radiology: Cardiothoracic Imaging 2020

OPERATIONAL GUIDANCE FOR ROUTINE CHEST CT IMAGING

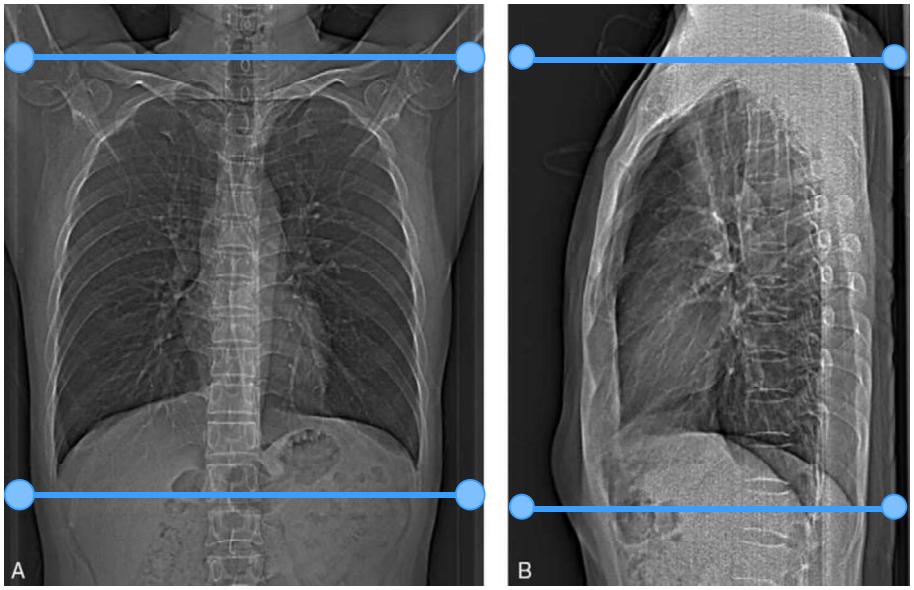
Scan setup for routine chest CT imaging

- GE Healthcare has received many questions around how to do scan setup in these circumstances. The key factor to consider here is to continue to follow local practice that governs when CT is indicated for a patient. Based on this, current literature and publications indicate that routine chest imaging setup and protocols are generally applicable. The next pages provide some detail around routine chest CT imaging for GE Healthcare CT systems.

Scan setup for routine chest CT imaging

- Pre-Scan Instructions
  - Practice breathing instructions
- Patient Position
  - Position patient supine, feet first/head first with both arms above head
- Field of View
  - Small as appropriate including all of breasts and chest wall
- Scan Description
  - Series 1: AP and lateral scout from lower neck to diaphragm on inspiration
  - Series 2: Helical on inspiration
  - Scan phase: Start just above the lung apices and extend through the lung bases

Acquisition parameters
Scout – applicable for all GE CT systems



Scout Plane	0 and 90
Start/End Location	Adjustable per patient
kV	120
mA	10
WW/WL	500/100

Acquisition Parameters

Detector Coverage (mm)	80 mm and above	40 mm (HD/Frontier)	40 mm (CT660/670/680/EVO/Maxima)	20 mm	10 mm
Scan Type	Helical	Helical	Helical	Helical	Helical
SFOV	Large Body	Large Body	Large Body	Large Body	Large Body
Pitch	0.992	1.375	1.375	1.375	1.675
Rotation Time (s)	0.5	0.4	0.5	0.8 or 1	1
Slice Thickness (mm)	2.5	5	5	5	5
kV	120	120	120	120	120
mA[1]	Smart mA (80mA–500mA) NI = 19.32	Smart mA (50mA–500mA) NI = 19.32	Smart mA (50mA–500mA) NI = 16.7/18.3	Smart mA (100mA – max mA) NI = 11	Smart mA (30mA – 180 mA) NI = 11
Recon Type	Standard	Standard	Standard	Standard	Standard
ASiR/ASiR-V	50	40/50	40/50	40	40
Scan Range (mm)*	320	320	320	300	300
Phantom (cm)	Body 32	Body 32	Body 32	Body 32	Body 32

1. Scan parameters needed to be adjusted according to patient's size and condition. The mA is recommended based on medium size patient. Radiologist needs to review the images to make sure the dose is adequate.
*. The range is patient dependent, should be adjusted accordingly.

Acquisition parameters
Additional reconstruction for lung parenchyma

Coverage	80 mm detector and above	40 mm detector	20 mm detector	10 mm detector
Recon Type	Lung or Bone+	Lung or Bone+	Lung or Bone+	Lung or Bone+
WW/WL	1500/-700	1500/-700	1500/-700	1500/-700
Recon Mode	Full	Full	Full	Full
ASiR/ASiR-V Setup	50%	50%	50%	50%
Slice Thickness (mm)	2.5	5	5	5
Interval (mm)	2.5	5	5	5

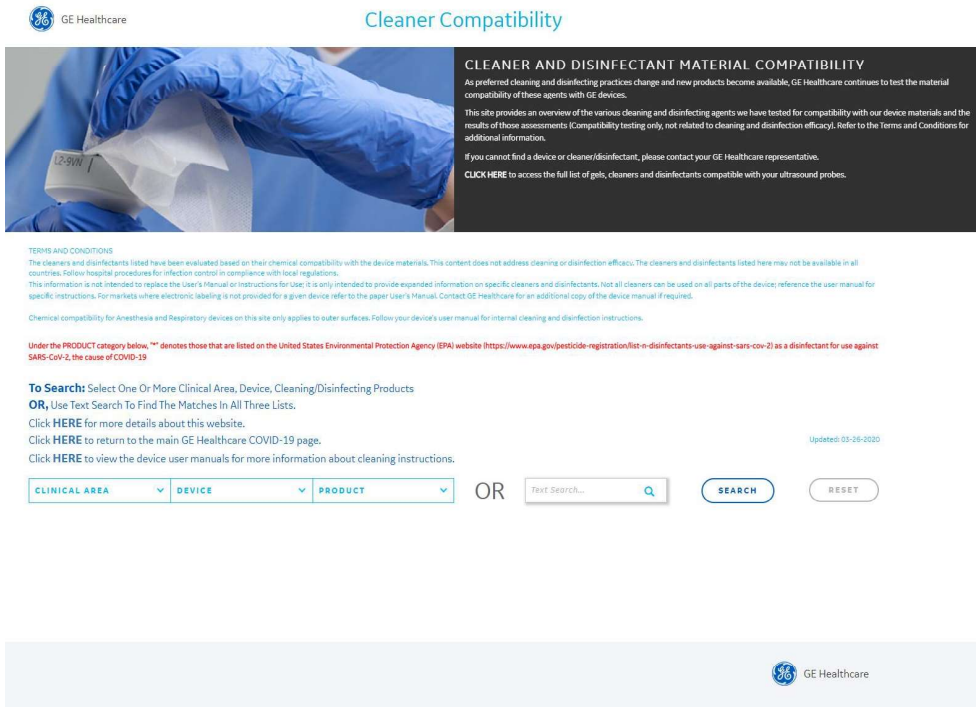
Acquisition parameters
Additional reconstruction for MPR

Coverage	80 mm detector and above	40 mm detector	20 mm detector	10 mm detector
Recon Type	Lung or Bone+	Lung or Bone+	Lung or Bone+	Lung or Bone+
WW/WL	1500/-700	1500/-700	1500/-700	1500/-700
Recon Mode	Full	Full	Full	Full
ASiR/ASiR-V Setup	50%	50%	50%	50%
Slice Thickness (mm)	0.625	0.625	1.25	1.25
Interval (mm)	0.625	0.625	1.25	1.25

CLEANING AND DISINFECTION

Cleaning and disinfection

- The system user manual contains recommended surface cleaning procedures, please consult these instructions and refer to your procedures and local government authorities for cleaning/disinfecting guidelines
- GE Healthcare has not tested any cleaning agents for disinfecting effectiveness against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the novel coronavirus that causes COVID-19
- The U.S. Environmental Protection Agency (EPA) has released a list of disinfectants that claim to be effective for use against SARS-CoV-2. GE Healthcare has cross referenced the disinfectants from the EPA list with the cleaning agents identified in our product user manuals, which have undergone compatibility testing with our products. The cross-referenced list is posted on our website https://cleaning.gehealthcare.com



Cleaning and disinfection – additional considerations

- Keep the equipment clean. Remove body fluids and/or IV spills to prevent a health risk and damage to internal parts
  - Also refer to the cleaning agent manufacturer's instructions for specific consideration for the cleaning agent
  - Apply disinfectant/cleaning solutions to a cloth or wipe. **Do not spray directly onto the system**
- Additional GEHC cleaning facts can be found at:
  - https://www.gehealthcare.com/corporate/covid-19-faq-cleaning-and-disinfection