COVID19 XR Solutions

ZINC # JB77308XX

X-Ray Systems

Discovery XR656 HD

Relevant features:

- **FlashPad HD:** double resolution to render fine chest details. Slim design, easy to clean
- **Helix:** Up to 40% increase in detectability of fine structures
- **Autopositioning:** decreases risk of contamination
- **AutoRAD:** faster examinations
- **VolumeRAD:** removes overlapping/overlying structures and enhances the conspicuity of structures in the different slices.
- **Dual Energy:** Dual Energy has significant potential for improving the conspicuity of chest pathology by removing the bone structures

https://cleaning.gehealthcare.com/

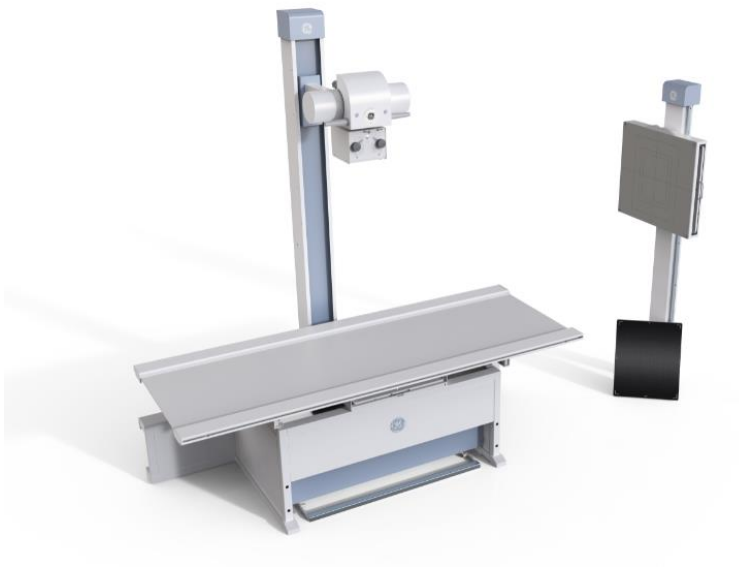
Optima XR646 HD

Relevant features:

- **FlashPad HD:** double resolution to render fine chest details. Slim design, easy to clean
- **Helix:** Up to 40% increase in detectability of fine structures
- **AutoRAD:** faster examinations
- **Dual Energy:** Dual Energy has significant potential for improving the conspicuity of chest pathology by removing the bone structures

https://cleaning.gehealthcare.com/

XR6000 + Definium XR120 (Available with CE Mark)



Relevant features:

- **Basic floor mount X Ray system with wireless flat panel detector:** A simple digital X Ray solution with high reliable X Ray system.
- **Full Clinical Coverage:** Provide all coverage of X Ray procedures with easy and quick access.
- **Cutting Edge Wireless Flat Panel Detector:** Light weighted, flexible and reliable 14X17 and 17X17.
- **Small Footprint:** Minimal room space requirement, 250cm (h) X 400cm (l) X 530cm (w), including the control room.
- **Easy & Quick Installation:** Minimum construction needs for easy and fast installation.

Not available in all countries –Not available for sale in USA

Optima XR240/220amx

Relevant features:

- **FlashPad HD:** double resolution to render fine chest details. Slim design, easy to clean
- **Helix:** Up to 40% increase in detectability of fine structures
- **AutoRAD:** faster examinations
- **Dual Energy:** Dual Energy has significant potential for improving the conspicuity of chest pathology by removing the bone structures
- **AutoGrid:** one less accessory to disinfect, faster examinations
- **Quality care suite**: Intelligent Auto Rotation, intelligent protocol check, Intelligent Filed of View

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Traveller (Available with CE Mark)

Relevant features:

- **Generator Power for CXR:** High-frequency 32 kW generator
- **Smaller Footprint:** Ergonomic and intuitive to use. Compact design and light
- **Easy Brake:** QuickStop brake (handle)
- **Large Storage:** Expansive storage bin for 5 cassettes (35 x 43cm)
- **XR 120 CsI Detector** with 128 microns pixels & 70% DQE

Not available in all countries –Not available for sale in USA

https://cleaning.gehealthcare.com/

Brivo XR115

Relevant features:

- 4kW, 100mA – **Ultra High Frequency** Mobile X-Ray
- 200kHz UHF for **low dose and Radiation**
- Runs on 15Amps Electric Supply
- **<2 Kg Push force** with small turning radius
- **XR 120 CsI Detector** with 128 microns pixels & 70% DQE
- **32Gb Inbuilt Storage** with Manual Stitching Software

Not available in all countries –Not available for sale in USA

https://cleaning.gehealthcare.com/

Definium **XR120** **(Available with CE Mark)**

Relevant features:

- **Cutting Edge Wireless Flat Panel Detector:** Light weighted, reliable and available in multiple size 10X12, 14X14 and 17X17.
- **Advance features:** Advanced stitching capabilities let you merge up to four images, With 50 advanced measurement tools for Chiropractic with smart guide
- **Durability:** IPX6, 300kg distributed & 150kg point load
- **Flexibility:** Unique Easy Drive mobile image preview with 200 image storage ideal to share between Fix & Mobile system
- **Easy & Quick Installation:** Easy and fast installation.

Not available in all countries –Not available for sale in USA

Discovery RF180

Relevant features:

- **Radiography and Fluoroscopy:** seamlessly switch form rad to fluoro functions
- **High Resolution and DQE detector:** 148u pixel and 70%V DQE
- **Integrated tube with 180cm(72in) SID:** Complies with guidelines for chest imaging SID with no additional equipment
- **Auto positioning and remote positioning:** decreases risk of contamination
- **Integrated optical camera and microphone:** Enables remote viewing and communication
- **Wireless detectors available**
- **Autofocusing Grid:** one less accessory to disinfect, faster examinations

https://cleaning.gehealthcare.com/

Clinical Information

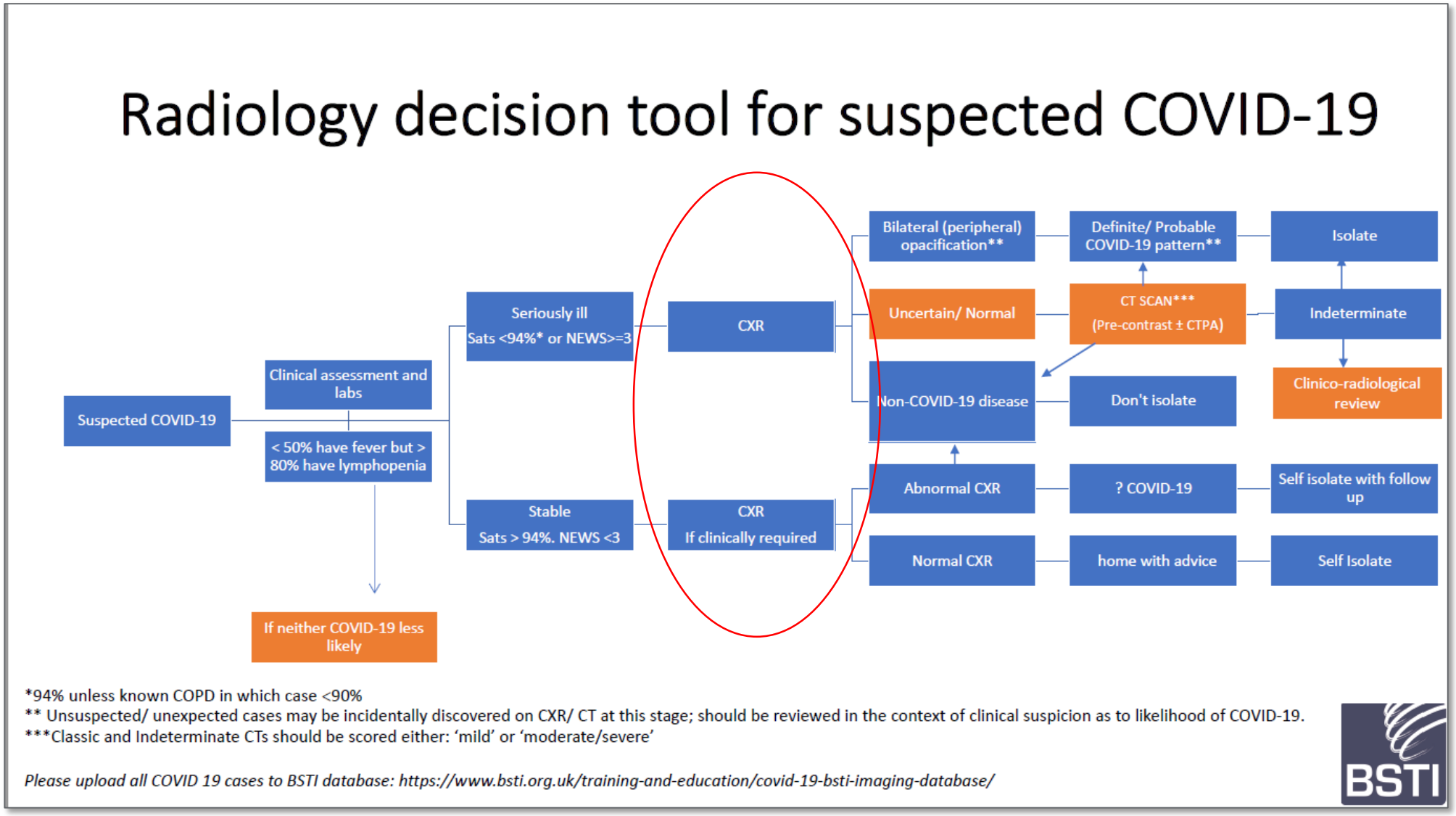
ACR Recommendations

…the ACR recommends:

- CT should not be used to screen for or as a first-line test to diagnose COVID-19
- CT should be used sparingly and reserved for hospitalized, symptomatic patients with specific clinical indications for CT. Appropriate infection control procedures should be followed before scanning subsequent patients.
- Facilities may consider deploying portable radiography units in ambulatory care facilities for use when CXRs are considered medically necessary. The surfaces of these machines can be easily cleaned, avoiding the need to bring patients into radiography rooms.
- Radiologists should familiarize themselves with the CT appearance of COVID-19 infection in order to be able to identify findings consistent with infection in patients imaged for other reasons.

3/16/2020: https://www.acr.org/Advocacy-and-Economics/ACR-Position-Statements/Recommendations-for-Chest-Radiography-and-CT-for-Suspected-COVID19-Infection

Position Statement BSTI (British Society of Thoracic Imaging) – Radiology decision Tool



Source: https://www.bsti.org.uk/standards-clinical-guidelines/clinical-guidelines/bsti-nhse-covid-19-radiology-decision-support-tool/

Chest Radiographic and CT Findings of the 2019 Novel Coronavirus Disease (COVID-19...

Objective: This study presents a preliminary report on the chest radiographic and computed tomography (CT) findings of the 2019 novel coronavirus disease (COVID-19) pneumonia in Korea.

Materials and Methods: As part of a multi-institutional collaboration coordinated by the Korean Society of Thoracic Radiology, we collected nine patients with COVID-19 infections who had undergone chest radiography and CT scans. We analyzed the radiographic and CT findings of COVID-19 pneumonia at baseline. Fisher's exact test was used to compare CT findings depending on the shape of pulmonary lesions.

Results: Three of the nine patients (33.3%) had parenchymal abnormalities detected by chest radiography, and most of the abnormalities were peripheral consolidations. Chest CT images showed bilateral involvement in eight of the nine patients, and a unilobar reversed halo sign in the other patient. In total, 77 pulmonary lesions were found, including patchy lesions (39%), large confluent lesions (13%), and small nodular lesions (48%). The peripheral and posterior lung fields were involved in 78% and 67% of the lesions, respectively. The lesions were typically ill-defined and were composed of mixed ground-glass opacities and consolidation or pure ground-glass opacities. Patchy to confluent lesions were primarily distributed in the lower lobes ($p = 0.040$) and along the pleura ($p < 0.001$), whereas nodular lesions were primarily distributed along the bronchovascular bundles ($p = 0.006$).

Conclusion: COVID-19 pneumonia in Korea primarily manifested as pure to mixed ground-glass opacities with a patchy to confluent or nodular shape in the bilateral peripheral posterior lungs. A considerable proportion of patients with COVID-19 pneumonia had normal chest radiographs. Keywords: Coronavirus; Pneumonia; COVID-19; Chest X-ray; Computed tomography

Source https://www.kjronline.org/DOIx.php?id=10.3348/kjr.2020.0132

Potentially Relevant Papers

Multi-Institutional Evaluation of Digital Tomosynthesis, Dual-Energy Radiography, and Conventional Chest Radiography for the Detection and Management of Pulmonary Nodules
[1]Dobbins III, J. T., McAdams, H. P., Sabol, J. M., Chakraborty, D. P., Kazerooni, E. A., Reddy, G. P., Vikgren, J. and Båth, M.
Radiology. 2017 Jan;282(1):236-250. doi: 10.1148/radiol.2016150497. Epub 2016 Jul 19.
Conclusion: Tomosynthesis outperformed conventional chest radiography for lung nodule detection and determination of case management; DE imaging did not show significant differences over conventional chest radiography or tomosynthesis alone. These findings indicate performance likely achievable with a range of reader expertise.
https://pubs.rsna.org/doi/10.1148/radiol.2016150497

Chest Tomosynthesis: Technical Principles and Clinical Update
Dobbins III, J. T., & McAdams, H.
Eur J Radiol. 2009 Nov; 72(2): 244–251. doi: 10.1016/j.ejrad.2009.05.054
Conclusion: Compared to conventional chest radiography, chest tomosynthesis results in improved visibility of normal structures such as vessels, airway and spine. By reducing visual clutter from overlying normal anatomy, it also enhances detection of small lung nodules.
https://www.ejradiology.com/article/S0720-048X(09)00356-8/fulltext

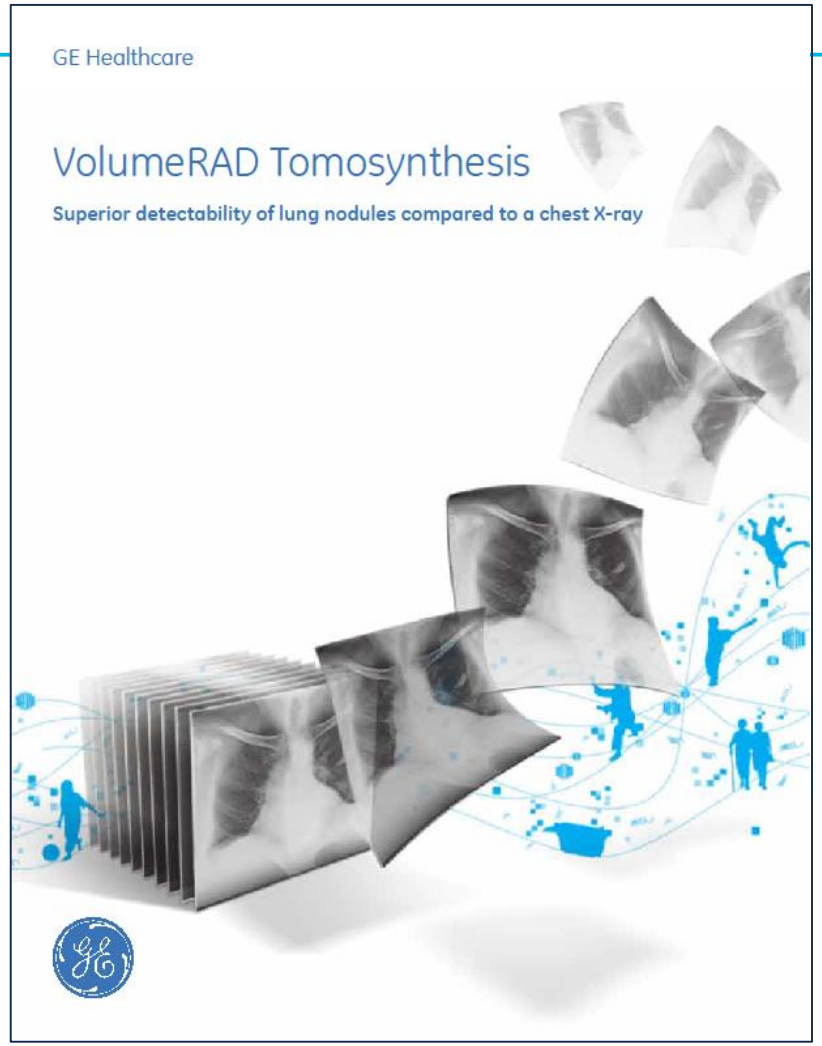
Overview of Two Years of Clinical Experience of Chest Tomosynthesis at Sahlgrenska University Hospital
Johnsson, Å. A., Vikgren, J., Svalkvist, A., Zachrisson, S., Flinck, A., Boijsen, M., Kheddache, S., Månsson, L.G. & Båth, M.
Radiat Prot Dosimetry. 2010 Apr-May;139(1-3):124-9. doi: 10.1093/rpd/ncq059. Epub 2010 Feb 24.
Conclusion: chest tomosynthesis is an improved chest radiography method, which can be used to optimise the use of CT resources, thereby reducing the radiation dose to the patient population.
https://academic.oup.com/rpd/article-abstract/139/1-3/124/1599638?redirectedFrom=fulltext

Sensitivity of Thoracic Digital Tomosynthesis (DTS) for the Identification of Lung Nodules
Langer, S. G., Graner, B. D., Schueler, B. A., Fetterly, K. A., Kofler, J. M., Mandrekar, J. N., & Bartholmai, B. J.
J Digit Imaging. 2016 Feb;29(1):141-7. doi: 10.1007/s10278-015-9818-0.
Conclusion: Thoracic digital tomosynthesis has the potential to provide a practical method for thoracic imaging at a higher sensitivity for lung lesions as compared to traditional radiography, with a minimal increase in radiation, exam time, and cost. This technique has the potential to provide earlier diagnosis of lung lesions in patients who would not typically go to CT for initial work-up and therefore could significantly decrease the radiation dose for screening, follow-up, and surveillance in patients at high risk for or with known pulmonary disease.
https://link.springer.com/article/10.1007%2Fs10278-015-9818-0

Potentially Relevant Papers

Diagnostic Accuracy and Added Value of Dual-Energy Subtraction Radiography Compared to Standard Conventional Radiography Using Computed Tomography as Standard of Reference
Martini, K., Baessler, M., Baumueller, S., & Frauenfelder, T.
PLoS One. 2017 MAR;12(3), e0174285 doi:10.1371/journal.pone.0174285
Conclusion: DESR increases significantly the sensibility without affecting the specificity evaluating chest radiographs, with emphasis on the detection of interstitial lung diseases.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0174285

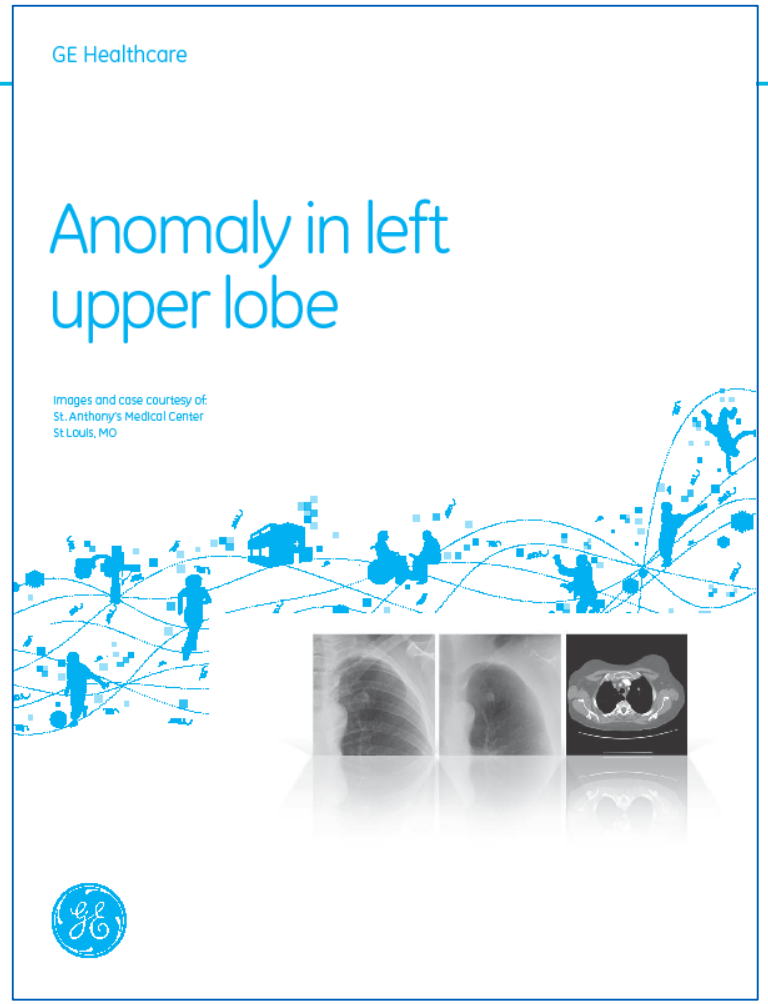
Volume Rad Digital Tomosynthesis



Tomosynthesis has been shown to have superior detectability of lung nodules vs. chest X-ray. This technique has not yet been tested for COVID19.

This runs on:
Discovery XR656 Plus
Discovery XR656 HD
Definium 8000

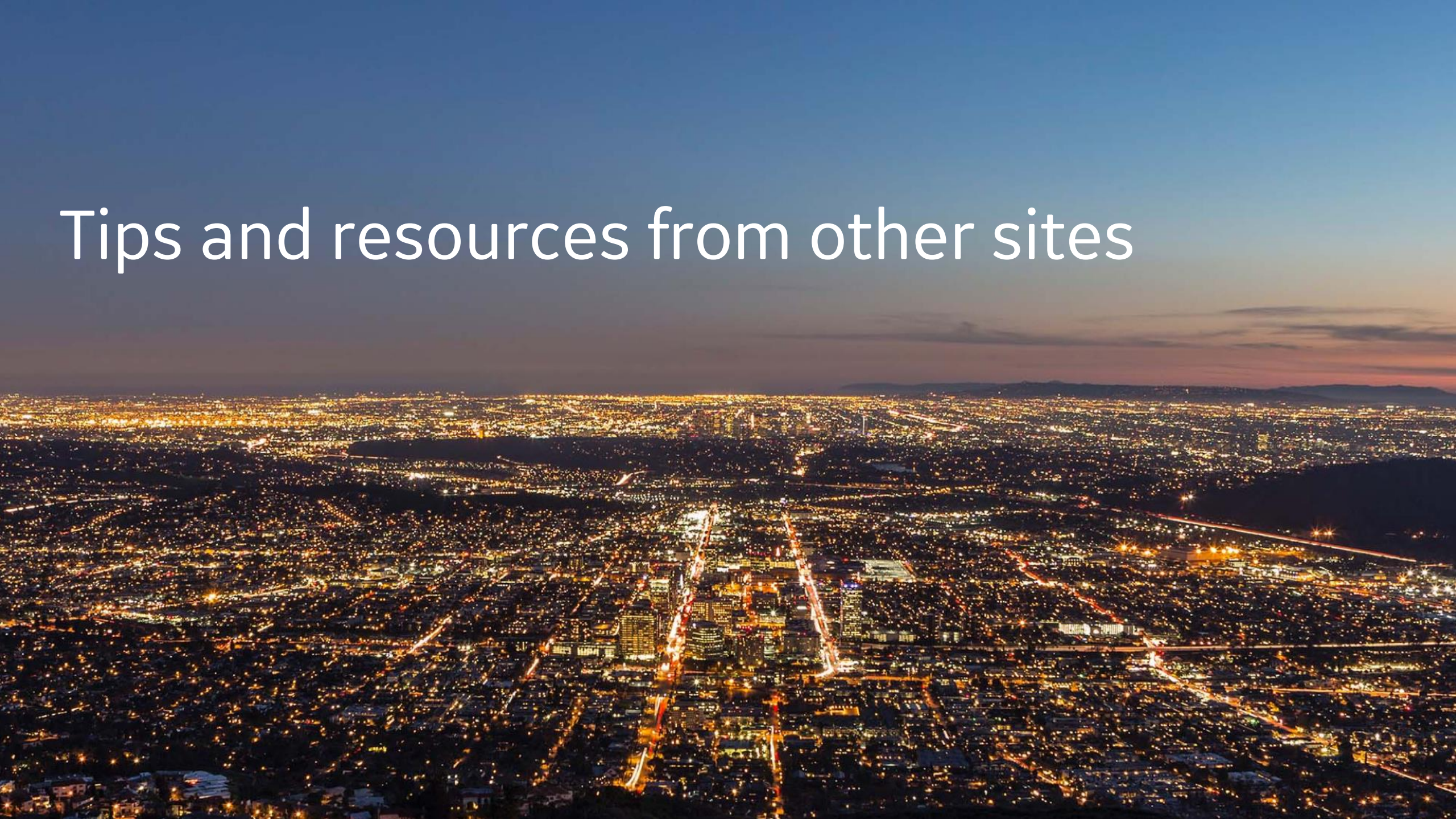
Dual Energy Subtraction



Significant potential for improving the conspicuity of chest pathology by removing the bone structures. This technique has not yet been tested for COVID19.

This runs on:
Discovery XR656 Plus
Discovery XR656 HD
Optima XR646
Optima XR646 HD
Definium 8000

Tips and resources from other sites



Ideas that may be helpful at this moment

1. Follow all of your infection control procedures.

2. A few things we have seen others doing:

- Hygienic plastic wrapping of touchscreens https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4152284/
- Shooting XR in isolation rooms, without entering the room https://em.uw.edu/faculty/intensive-care-units
- Wrapping cassette or detector in plastic during portable imaging https://www.semanticscholar.org/paper/%5BWrapping-of-X-ray-Cassette-by-a-Plastic-Bag-in-For Nakano/5b50d6436d7369a3f2cb4bb016891e2d1cf8c431
- Exam table roll paper used to cover the X-ray exam table
- Remote controls or long exposure cables allow technologists to stay further away
- Use of grid software vs. physical grids where practical, so there is physically less to clean
- Considering the time it takes to terminal clean the CT after CV19 patient use, digital tomosynthesis for chest may helpful where available. https://pubs.rsna.org/doi/10.1148/radiol.2016150497

Helpful Resources

CLINICAL

- CDC recommendations on managing anxiety and stress
- CMS Healthcare Providers Fact Sheet
- AMA guide to telemedicine in practice
- Mental Health America resources
- Centers for Disease Control
- Department of Health and Human Services
- State Health Departments
- BMJ provides free coronavirus resources to support healthcare workers

EMPLOYEE

- Food companies are giving away free meals for medical workers
- Planet Fitness offering free streaming workouts
- Core Power Yoga offering free streaming workouts
- Headspace offering free meditation subscription to healthcare workers
- Ten Percent Happier offering free meditation subscription to healthcare workers
- Care.com offering one month free premium subscription to healthcare workers

Appendix & FAQ’s

Frequently Asked Questions

What GE Healthcare products are being used during the diagnosis and monitoring of COVID-19?

GE Healthcare's products are used daily in the diagnosis and care of many conditions. GE Healthcare has experienced an increase in demand of some CT scanners, ultrasound devices, mobile X-ray systems, patient monitors and ventilators and is increasing capacity, where possible to meet this demand. Healthcare professionals across the globe are responding to this clinical need and caring for their patients with numerous diagnostic and care tools. We recommend reviewing guidance from local clinical organizations for the most current information.

What is GE's business continuity plan to continue manufacturing and order fulfillment? Do you expect any delays to deliveries? Which products are affected?

GE has comprehensive crisis management and business continuity programs underway. We are committed to fulfilling customer orders and regularly adjust our manufacturing output to respond to market demands, while ensuring our operations and service capabilities continue safely.

GE is also in regular contact with its suppliers regarding their business continuity plans to help minimize disruption of the flow of materials into our factories. The size and scale of our services organization allows us to draw on resources across geographical areas, which helps us respond to local demands and continue serving our customers to the best of our ability.

Where can I get a list of the Country of Origin for any of GE's supplies and accessories?

GE Healthcare has a global network of suppliers and a robust supply chain and manufacturing footprint for our full portfolio of products.

https://www.gehealthcare.com/corporate/covid-19-faq

Frequently Asked Questions

Are there any supply shortages of materials or finished goods coming from or routed through logistics hubs in impacted areas?

We're diligently working with our suppliers and taking action to mitigate shortages in order to meet customer demand and minimize impact on our global customers. Due to our size and scale, we're able to work with our logistics carrier partners to secure the space we need to keep products and materials flowing in and out of affected areas

What is GE's business continuity plan to continue service delivery? What if large numbers of your technicians fall ill or need to self-isolate?

GE has comprehensive crisis management and business continuity programs underway. We are committed to ensuring our operations and service capabilities continue safely.

The size and scale of our services organization allows us to draw on resources across different geographical areas, which helps us respond to local demands and continue serving our customers to the best of our ability. We are also monitoring the health of our field service engineers and providing personal protective equipment for them when servicing equipment.

As a hospital, we have confirmed cases of COVID-19 on site. Will the GE Healthcare field engineers or personnel who are based long-term at our site be able to continue?

The health and safety of field-based employees is extremely important to us. GE employees may ask customers to share their infection control procedures with us. We expect customers to share hazard and safety information with all employees and contractors onsite.

GE employees are not allowed to work in a healthcare facility's isolation epidemic room or an area where a patient is actively being treated. We will be in touch with our customers directly to communicate any change to normal procedure.

https://www.gehealthcare.com/corporate/covid-19-faq

Frequently Asked Questions

Can you provide us a document certifying that you will continue your support service at our organization and describing the measures you have in place to continue support service?

Maintaining normal levels of customer service is a priority. We will be in touch with our service customers directly to communicate any change to normal procedure.

What are your guidelines to suppliers/partners who need to travel to affected areas to complete jobs?

We expect them to follow their own company and applicable government guidelines.

Can you provide a document certifying the health of your technicians?

Please contact your local GE representative who will be able to advise.

Can you provide any discount on your products in this urgent situation?

Please speak to your local GE representative

Can you help us transport equipment from one hospital to another?

Please speak to your local GE representative.

https://www.gehealthcare.com/corporate/covid-19-faq

Fixed Rad Marketing Links – External Use Materials

- Discovery XR656 HD Overview Brochure
- Optima XR646 HD Overview Brochure
- Discovery XR656 HD One Page Brochure
- Optima XR646 HD One Page Brochure
- Discovery XR656 HD Sales Presentation
- Optima XR646 HD Sales Presentation
- Discovery XR656 HD Updated Web Page
- Optima XR646 HD Updated Web Page
- Advanced Applications Updated Web Page
- Dual Energy Dose Slide
- Dual Energy Subtraction Case Review
- System Photographs
- RRF Bibliography
- Virtual Demo iPad/iPhone application
- Radiography Buyer's Guide
- VolumeRAD Cambridge University Hospitals Case Study – Scaphoid Displacement – NEW
- VolumeRAD Cambridge University Hospitals Case Study – Scaphoid Fracture – NEW
- VolumeRAD Cambridge University Hospitals Case Study – 5th MCPJ Instability – NEW
- VolumeRAD Cambridge University Hospitals Case Study – Triggering Finger – NEW
- VolumeRAD Bonnyville Health Case Study
- VolumeRAD Capital Region Orthopedics Case Study
- VolumeRAD 2019 US Reimbursement Brochure