

Cios mobile C-arms – an option for lung imaging

The clinical overlay is not that of the individual pictured.
It was modified for better visualization.



Current literature suggests chest radiography as a staging or triaging option in COVID-19 patients.¹ Mobile C-arms are not specifically designed for COVID-19 diagnosis. Cios Alpha and Cios Spin can provide high-quality chest digital radiography (DR) images² when portable X-ray is not available. Cios mobile C-arms can be positioned flexibly

according to the imaging needs in standing, sitting or lying patients. The systems offer antimicrobial coating, smooth and closed surfaces and approved cleaning and draping protocols for infection control.

[siemens-healthineers.com/cios](https://www.siemens-healthineers.com/cios)

¹ Pan et al. *Intensive Care Med* 2020;46:573-575;
<https://doi.org/10.1007/s00134-020-05964-0>

² Gildea et al. *J Bronchol Intervent Pulmonol* 2020;27:153-155;
<https://www.ncbi.nlm.nih.gov/pubmed/32209919>

2D chest imaging

Cios Alpha and Cios Spin provide chest images to visualize lung anatomy. The systems provide a resolution of max. 1,952 x 1,952 pixels. The Cios C-arms are equipped with a large flat detector of 30 cm x 30 cm / 12" x 12" that could cover the lung in one image in most

patients. In cases the coverage is not enough a four-segment imaging is possible. The Cios mobile C-arms can be operated with organ program, for chest imaging we suggest to use "CARD Standard".

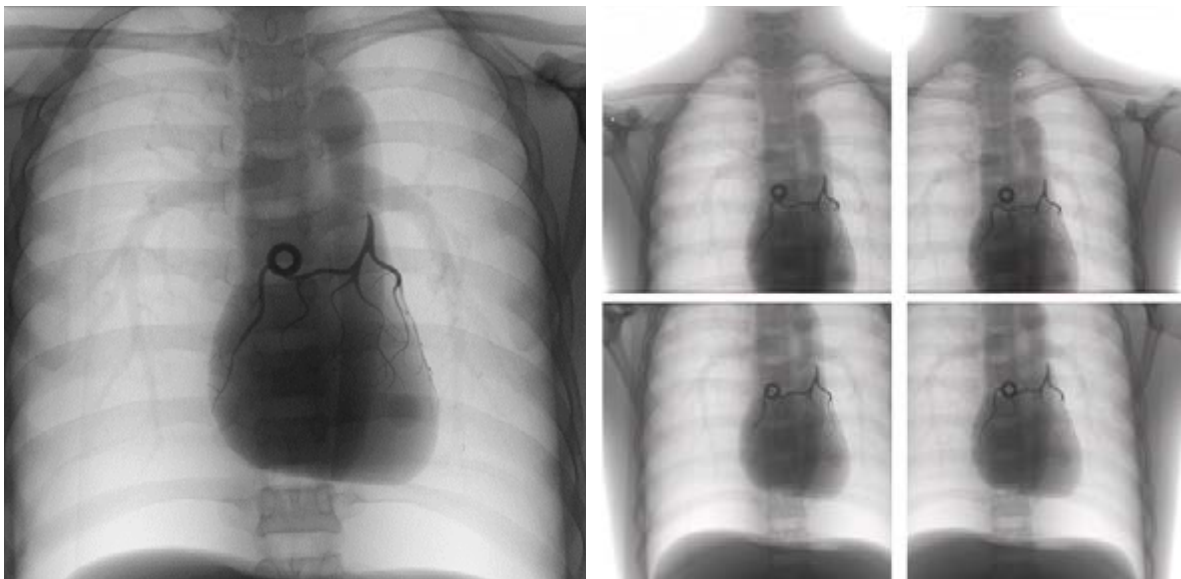


Figure 1: Single image of a chest phantom, acquired with Cios Spin; the small circle was inserted for orientation purpose

3D chest imaging

In addition, Cios Spin provides 3D imaging that may be used for guidance during pulmonary interventions. A 3D volume of 16 cm / 6.3" and a resolution of 512 pixel in each direction can be acquired.

Gildea et al. J Bronchol Intervent Pulmonol 2020;27:153-155; <https://www.ncbi.nlm.nih.gov/pubmed/32209919>

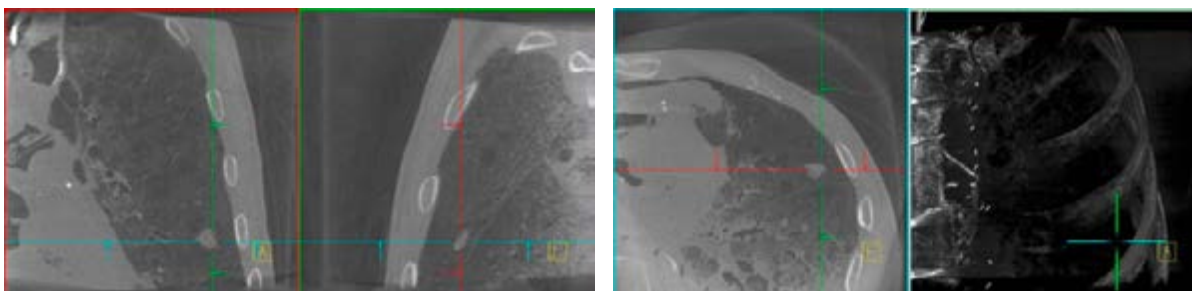


Figure 2: 3D lung visualization of a human, acquired with Cios Spin; here depicting airways and a lung nodule; courtesy of R. Casal, MD Anderson

Gateway to intervention

Cios Alpha and the Cios Spin can image lung volume in a single image for potential image-guided assistance in:

- Visualization of pneumothorax
- Confirmation of needle placement
- Support of intubation tube placement

Inverse contrast settings

Contrast settings for bones can be adjusted according to users' preferences (black or white).

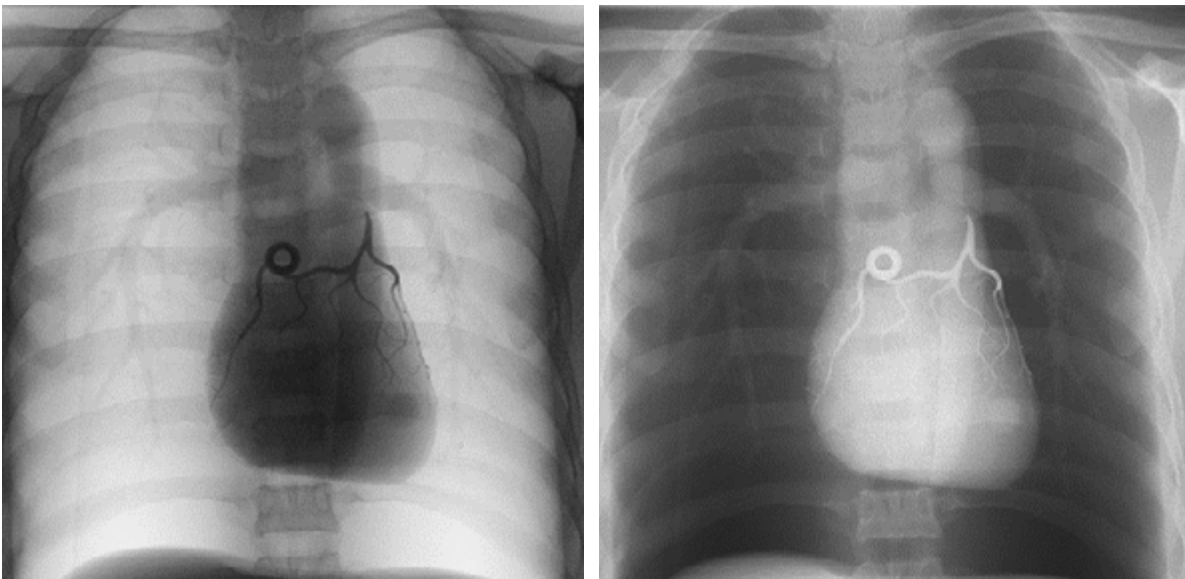


Figure 3: Image example of inverse contrast settings

Scale Zoom

Digital zoom and pan function enable magnification with no degradation in image quality as a post processing tool.

Patient positioning

Cios mobile C-arms can be positioned flexibly according to the imaging needs in standing, sitting or lying patients. Cios Alpha and Cios Spin have large free space between tube and detector (SID of Cios Alpha: 107 cm / 42.1", SID of Cios Spin: 116 cm / 45.8") and allow for easy positioning around a patient table.

For best image quality, the detector should be placed as close to the patient as possible. This reduces radiation scatter and provides larger field of view. In lying position, a radiolucent patient table should be used.

1. **Standing:** The C-arm may be placed horizontally in AP position with the detector close to the thoracic region and the X-ray tube facing the back of the patient.



2. **Sitting:** The C-arm may be placed horizontally in AP position with the detector close to the thoracic region and the X-ray tube facing the back of the patient. If the patient is sitting on a chair, the back of the chair should face to the side as to avoid interference with the X-ray image.



3. **Lying:** The C-arm may be placed in AP position. If feasible, table should be lifted to bring the detector as close as possible to the patient when in the supine position.

Please note: a radiolucent patient table must be used.



4. **Lying: Alternative positioning**

- a. Radiolucent table, lifted and bended
- b. Tilted C-arm
- c. Detector positioned above thoracic region



Bring the imaging to the patient and prevent contamination

Mobile C-arms can be moved easily into external staging units or ICUs. This may help to alleviate burden on resources required to handle patient movement/cleaning of rooms and reduce likelihood of contamination. In addition, the mobile C-arms may be used outside the hospital in critical care scenarios given appropriate power supply.



Figure 5: Example picture of Cios Spin's maneuverability

Infection control

For infection control Cios Spin/Alpha have approved cleaning and draping protocols. In addition, Cios Spin/Alpha have antimicrobial coating (not tested for COVID-19 virus, significant antimicrobial effects on non-sporulating microorganisms) and are designed with smooth and

closed surfaces to facilitate the cleaning process. Many hospitals and healthcare institutions already have sterile drapes in stock. If additional drape supplies are needed, please contact your local Siemens Healthineers sales representative.



How-to-Use Cios mobile C-arms, videos and tips for rad techs

[System start-up Video](#)

[System movements Video](#)

[System transport Video](#)

[Clean Guide PDF](#)

More information

For more information on our mobile C-arm portfolio, please click on this [link](#).



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