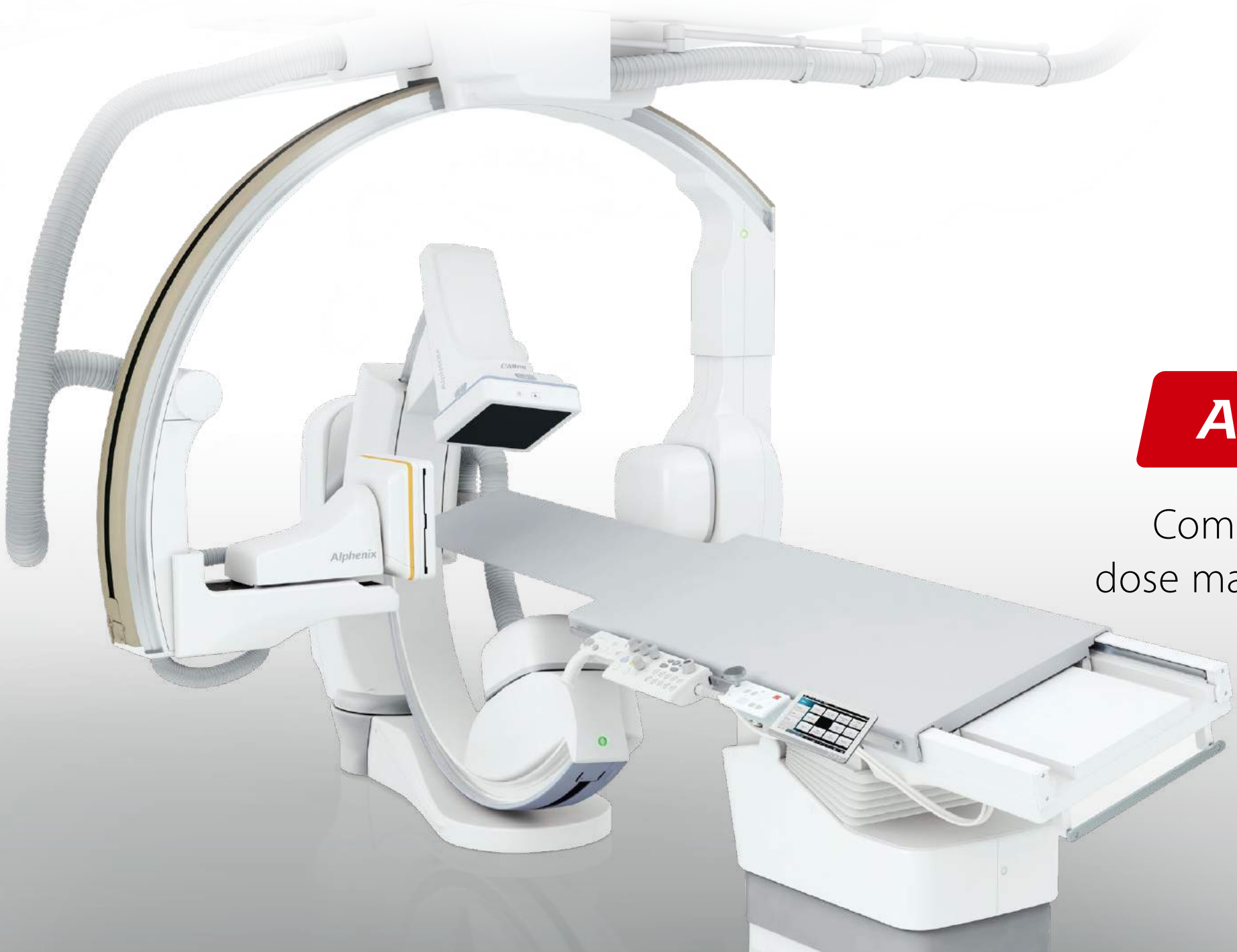
Canon



Alphenix

Comprehensive
dose management
solutions

Your concerns, are our concerns

In general, medical radiation is known to possibly cause a variety of diseases. There has been increased concern by clinical staff and those in the healthcare industry, to better manage or minimize the amount of radiation necessary for diagnosis and treatment.

A study*[1] showing radiation effects on patient hair and skin has shown radiobiology effects of the skin and the relationship between radiation dose and skin effects in interventional fluoroscopy. Residual effects from radiation therapy and from previous procedures influence the skin response and subcutaneous tissues to subsequent procedures.

Ionizing radiation is a very serious threat to patients, as well as clinical staff. One study*[2] has shown radiological technologists who assisted with fluoroscopically-guided interventional procedures (FGIP) were of increased risk for cataract diagnosis compared to technologists who never assisted with FGIP*[2].

For both patients and clinical staff, radiation dose does induce effects on them. Proper dose management to prevent unnecessary exposure is essential.

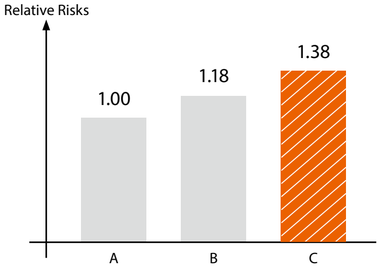


Fig. Radiation exposure-related work history and Relative Risk of cataract*[2]

A: Radiologic technologists who never assisted with FGIP
B: Radiologic technologists who assisted with FGIP
C: Radiologic technologists who assisted with >5,000 cumulative FGIP

Solutions for you

DoseRite

DoseRite technologies provide a comprehensive dose management suite of tools designed to help you minimize patient X-ray exposure while maintaining optimum image quality, enabling you to prioritize safe operating conditions for patients and clinical staff.

PF

Dose Adjustment Filter

F-Rec

F-Store

Live Zoom

Virtual Filter/
Virtual Collimator

Position

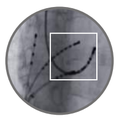
Reverse Geometry

Auto Pixel Shift

3D Road Map

Spot ROI

Spot Fluoro



DTS

Report

A unique level of flexibility

Reverse geometry of the ceiling-suspended Ω-arm

The biplane system's ceiling-suspended Ω-arm makes it easier for you to minimize scatter radiation with its left/right inversion capabilities. Both positions can be registered to the auto-positioning function, and the X-ray source can be positioned either side of the patient with simple table-side operation.

Normal position

Reverse

Position that minimizes exposure for the operator

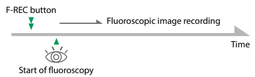
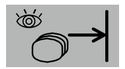
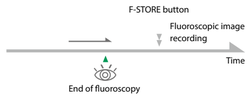
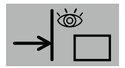
Lateral and vertical motion

While the system's lateral motion lets you place the detector as close as possible to your patient, the vertical motion helps you adjust the detector position without changing the table height. This would help to decrease unnecessary exposure risk and to increase efficiency.

Advanced dose management tools.

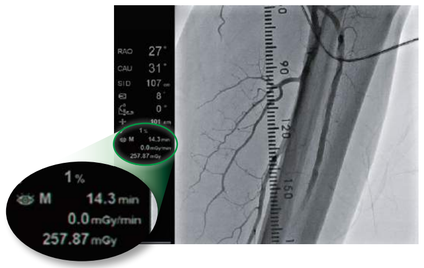
Fluoroscopic acquisition

Using the footswitch, the operator can capture still and dynamic images for future reference.

F-REC		Fluoroscopic images acquired after pressing the fluoroscopy start button are recorded. Images can be recorded for up to 90 seconds or 1020 frames. (Dynamic image recording) 
F-STORE		Fluoroscopic images acquired in the last 10 seconds are recorded. Press the F-STORE button after fluoroscopy is completed to save the run as part of the patient file. (Dynamic image recording) 
F-REC (S)		The single image acquired in fluoroscopy is recorded. (Still image recording) 

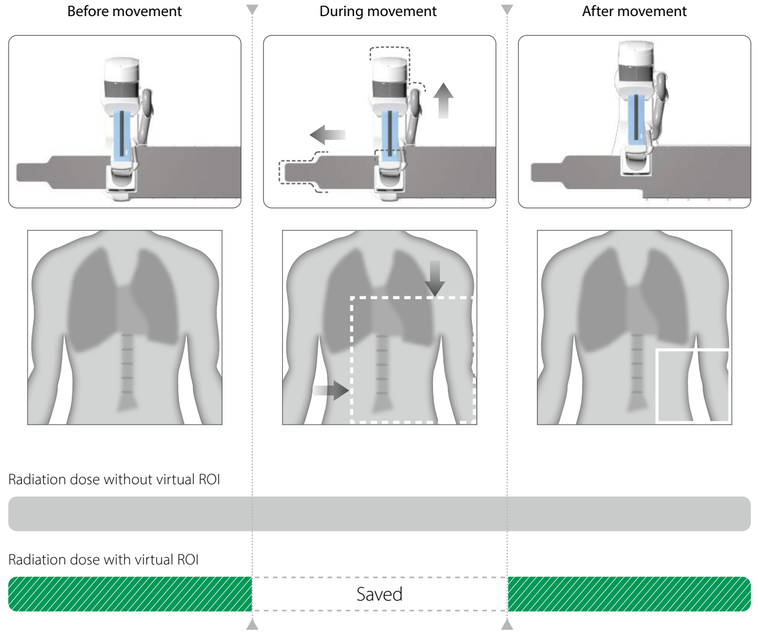
Real time display of exposure dose

The operator can observe real time dose levels on a digital display in the examination and control rooms.



Virtual position

By applying a graphical outline to the LIH image, virtual regions of interest (ROI) can help you accurately position your patient after the c-arm or tabletop is moved. This can also help minimize unnecessary exposure dose before, during, and after c-arm or tabletop movement.



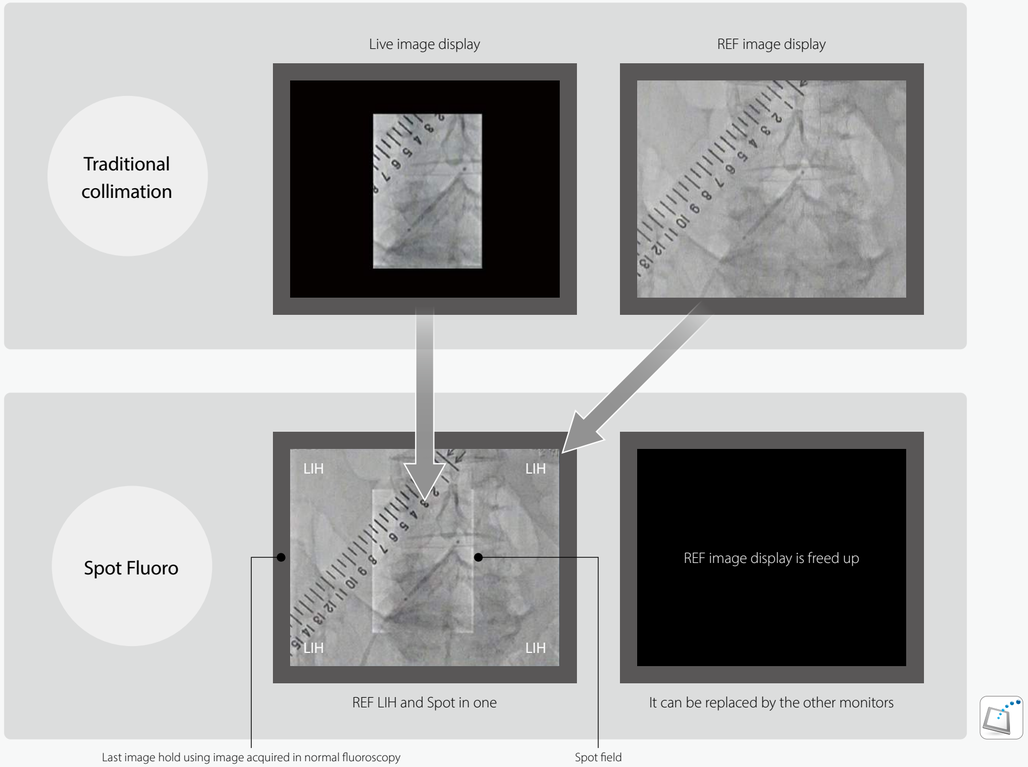
Asymmetric collimation for additional reductions in radiation dose

Leading-edge spot fluoroscopy

Canon Medical's spot fluoroscopy technology can reduce the cumulative dose area product by up to 50%*[3].
What's more, scatter radiation can also be reduced by more than 50%*[3], enabling a safer procedure for both you and your patient.

What is Spot Fluoro?

Spot Fluoro, enables the operator to collimate a rectangular or square region of interest anywhere within the general field of view. The collimated, rectangular area can be resized and/or repositioned easily and as often as necessary to obtain an optimal FOV. This has potential advantages over conventional collimation, which is limited to symmetric collimation centered over the field of view.



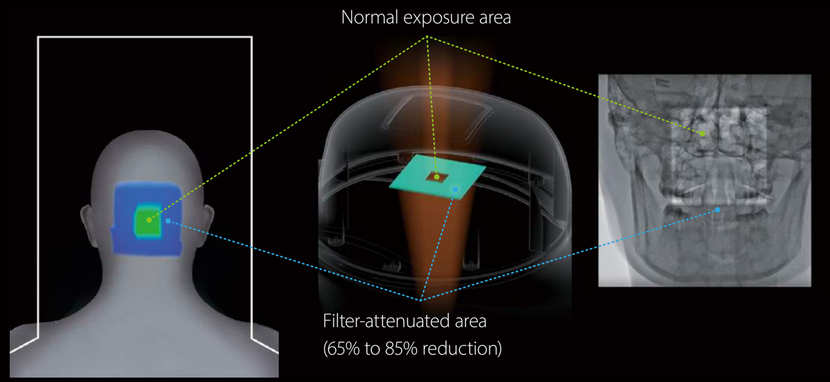
See more of interest, with less exposure

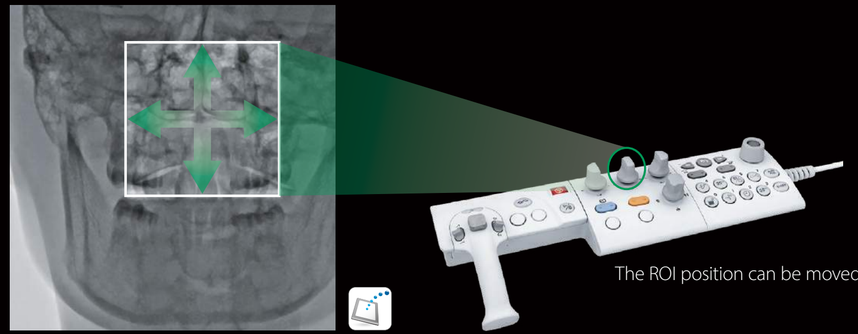
What is Spot ROI?

Spot region of interest (Spot ROI) is a novel functionality that has been developed for reduction of radiation dose during interventional procedures. The feature, as well as Spot fluoro is integrated into the commercially available Alphenix angiographic system*. Spot ROI permits a ROI exposure with normal dose, while the dose to the surrounding anatomy is significantly reduced thanks to the higher attenuation of the additional copper filter. This enables the operator to conveniently position the ROI always over the vascular structure of interest, independently of its location within the FOV selected.

A promising dose-saving technology

Spot ROI's greatest benefit is its ability to always keep the entire Field of View (FOV) information visible. Spot ROI is a promising dose-saving technology as it can be applied in fluoroscopy, DSA and digital angiography acquisition. A combination of using Spot fluoro and Spot ROI is potentially useful for obtaining an visual information while reducing radiation dose.





* Only for Alphenix Core+ and Alphenix Biplane

Visualize estimated peak skin dose in realtime

Dose Tracking System* (DTS)

Enhanced dose tracking tools allow realtime peak skin dose monitoring and archiving. Displayed as a 3D color map, on a realistic patient graphic, this data can be used to avoid regions of previous high exposure during subsequent procedures.

Guide the procedure safely

Each patient's estimated peak skin dose is represented on a 3D color map. Realtime estimated skin dose is displayed live. It allows you to avoid regions of previous high exposure. During long procedures, such as PCO, CTO, EP and cerebral aneurysm coiling, you can choose alternative approaches to optimize patient radiation dose while continuing treatment.

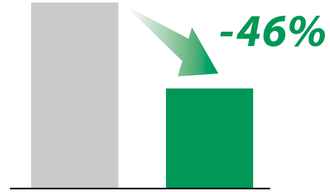
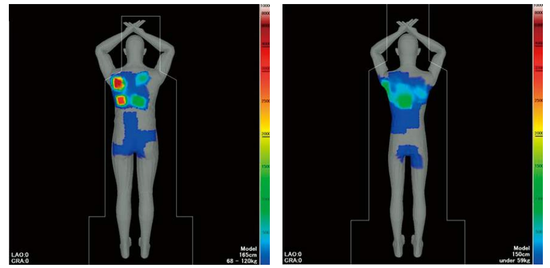


Fig. DTS reduced peak skin dose almost half (46%) in PCI patients[#1]

Multiple 3D patient models based on patient's height and weight are defined in advance and a patient model is selected for each study.

Operator blinded to DTS

Operator with informed DTS



With DTS, the operator can chose different angulations during long procedures, such as CTO, to avoid over exposure to various anatomy. Visualize the accumulated estimated peak skin dose on the patient's model.

* option

References

*1: Stephen B, John W. H, Donald L. M, et al. Fluoroscopically Guided Interventional Procedures: A Review of Radiation Effects on Patients' Skin and Hair. Radiology 2010; 254(2)

*2: Raquel V, David B, Ethel S. G, et al. Cataract risk in US radiologic technologists assisting with fluoroscopically-guided interventional procedures: a retrospective cohort study. Occup Environ Med. 2019; 56(5); 317-325.

*3: Wilson S, Prasan AM, Virdi A, et al. Real- time colour pictorial radiation monitoring during coronary angiography: effect on patient peak skin and total dose during coronary angiography. EuroIntervention 2016;12:939–47

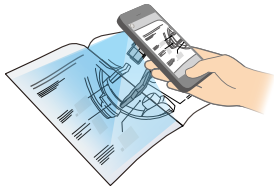
*4: Borota L, Jangland L, Åslund PE, et al. Spot fluoroscopy: a novel innovative approach to reduce radiation dose in neurointerventional procedures. Acta Radiol. 2017;58(5):600-608.

How to Use the medicalAR App

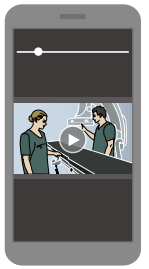
Images with the icon can be viewed in motion.

To download the app, scan the QR code or visit our website:
https://global.medical.canon/about/medicalAR

① Launch the app and start AR Camera.



② Scan a page that includes image with the icon.



③ When a trigger image is captured, linked content will be displayed.

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