R/F

FLEXAVISION F3 package

Portable FPD Package

USERS' VOICE

Minamigaoka Hospital (Ishikawa Prefecture)

14 × 17-Inch Flat Panel Detector Offers Wide Field of View and Excellent Image Quality, Supporting Diverse Examinations

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■ Prefect match to the requirements of our hospital that offers medical treatment, nursing care, and social welfare

Located in a residential area in the south of Kanazawa, Ishikawa, Japan, the Minamigaoka Hospital is a general hospital that offers medical treatments, nursing care, and social welfare. The hospital provides comprehensive medical and welfare care, including acute and chronic nursing care, in collaboration with nearby clinics, university hospitals, and specialized medical institutions to act as a core facility for community medicine.

When upgrading our I.I.-type X-ray R/F system, we compared and investigated FPD-type systems from several manufacturers. A table elevating function is essential, as we have a lot of elderly patients at this hospital. The FLEXAVISION F3 package was the system that matched our budgetary requirements and the need for a 14 × 17-inch flat panel detector (FPD) to provide an adequate field of view. Oblique fluoroscopy is essential for nerve blocking during orthopedic procedures and for knee radiography in the standing posture. Systems without this feature were not considered.

■ Supports applications from upper gastrointestinal series to VF

An upper gastrointestinal series is the most common type of examination we perform with the F3 package. We conducted health screening for Kanazawa City between April and October, which has resulted in a large number of examinations. In addition to barium enema examinations after colonoscopy, we use the F3 package for orthopedic applications. Three speech therapists (ST) continuously perform VF examinations, and endoscopic procedures, such as ERCP, are also quite common. The system is also used for PTC examinations using echo and for DIP. Health screening is mainly conducted in the morning, followed by orthopedic and other examinations in the afternoon. The system is used for a diverse range of applications throughout the day.

Spacious examination room supports various applications

■ 14 × 17-inch FPD offers a large field of view and high-definition images

This hospital handles a wide range of examinations, and the 14 × 17-inch FPD is effective for both orthopedic and gastrointestinal examinations, such as barium enema examinations. It is particularly helpful for DIP. Unlike image intensifiers, the FPD allows images to be produced without any missing parts at their edges, making it possible to observe a large field of view.

The high image quality offered by the FPD is a great advantage. After seeing the F3 package, visitors from other hospitals confirmed that it is superior to any other system. Even surgeons who previously rarely ordered barium enema examinations have now started to order them after being impressed by the F3 images. Halation rarely occurs in upper gastrointestinal series. Even if it occurs, it can safely be handled by digital image processing. High image quality is essential, as the screening images taken for Kanazawa City are all transferred to the medical association for interpretation by other doctors.

■ Digitalization significantly reduces examination workload and times

Operation is quick and easy. No patient registration is necessary as orders are received over the network. Once the technique is selected, the radiography parameters are set automatically. System operations are extremely simple and cause no problems.

I expected the FPD system to take long to start up, but the actual wait time was almost the same as the PC startup time. The wait time is said to be quite long at some hospitals, but it is much shorter than I expected.

Even after other modalities went filmless two or three years ago, we still had a developing machine available for the R/F table. This current digitalization has completely eliminated the workload demanded for management of film and the developing machine. This makes a big difference. It has also reduced the time that the patients and surgeons wait for films.

Another good point is that we can now immediately observe the images. We used to find that the patient had moved only after the images were developed, and the barium was no longer any use in such a case. Now the fluoroscopic images can be checked, so images can be re-taken immediately, if necessary.

This has probably reduced the total time by one-third. Also, no space is now required to store the films. Digital operation is undoubtedly superior.

■ VF examinations of patients sitting in a wheelchair

By extending the X-ray tube 150 cm with the table vertical and lowering the X-ray tube, VF examinations can be reliably performed from the front of patients sitting in a wheelchair. These examinations are also comfortable for the patients. Previously, setting up such examinations was difficult, as the patient had to be transferred onto a stretcher in order to adjust the height. It was also not possible to take images from the front.

Both speech therapists and doctors seem to prefer to examine video images. During a VF examination, we ensure that analog images are output and saved to DVD using a commercially available recorder, together with speech captured by an attached microphone. Other systems require a separate device for image conversion, which carries a significant cost. Although digital image storage usually places a great burden on the server, our storage method ensures a small amount of data. The speech therapists can edit and save required portions of the data themselves for use in conference presentations, for example.

■ FPD rotation is convenient for general radiography

We also use the F3 package for general radiography as needed. The F3 package allows positioning under fluoroscopy and is definitely faster, especially in cases where radiography is difficult and there is a high likelihood that re-imaging will be required. For example, radiography with the F3 package is more reliable for scapula (Y) radiography, which often fails to produce clear images.

For radiography of the pelvis, we orient the FPD transversely. Turning the FPD like this is also convenient when taking images of the elbow or hand with the patient sitting next to the table, especially for children, whose arms are usually not long enough to fully reach the field of view.

The system can be used in the examination room as the second X-ray tube for radiography. It can support lateral radiography and decubitus radiography if the FPD is removed, although we do not use this function at present. Removing the FPD also improves orthopedic radiography on the table, as it reduces the magnification.

■ Compact design allows effective use of the examination space

The more compact table with fewer cabinets behind it creates 1.5 times more examination space than before. It ensures extensive and adequate space around the table for examinations, with only the hospital server computer behind the table. When performing endoscopy with our previous system, the examination space was too small to accommodate both the endoscope and the nursing staff.

■ Don't forget about X-ray exposure

We use pulsed fluoroscopy to minimize the X-ray exposure dose. The frame rate is set to match the type of examination: 15 fps for diagnosis from video, such as VF, and 10 fps for upper gastrointestinal series, which involve diagnosis from radiographic images. We are very comfortable with the fluoroscopic image quality.

Advice to Doctors Considering Introducing this system

The most appealing feature of the F3 package is the high image quality obtained by the 14 × 17-inch FPD. Another benefit is its ability to support the many types of examinations performed at our hospital. Its compact design is also an advantage in achieving a wide examination space.