

# X-rays become visible

Asklepios digitizes dose management and protects patients and employees with DOSE

Since the revision of the German Radiation Protection Act (StrlSchG) and the Radiation Protection Ordinance (StrlSchV), operators of X-ray units are obliged to document the radiation dose of the modalities. Asklepios has taken this as an opportunity to implement a dose management system and ultimately opted for DOSE.

"Regardless of legal requirements, we have always aimed to examine our patients with the lowest possible radiation dose and have regularly monitored this accordingly", says Prof. Dr. Roman Fischbach, Head Physician of the Institute of Radiology and Neuroradiology at Asklepios Klinik Altona. With dose management, every

examination can be recorded and evaluated in order to detect irregularities that would not be noticed in everyday clinical practice. "We also achieve a generally higher awareness of the issue of radiation exposure", adds Prof. Fischbach.

The Asklepios clinics not only record high-dose devices such as computed tomography, fluoroscopy and interventional, but all other imaging devices as well. This is necessary due to the German legislation, which states that the radiation protection officer must regularly evaluate and analyse the exposure figures with regard to dose. "With the dose management system, we can easily meet these requirements. The regular evaluations also serve the safety of patients

and employees", emphasizes Dr. Manfred Mascheck, medical physics expert (MPE) at Asklepios.

## Client-capable, individual and flexible

The project was initiated by Prof. Fischbach and supported by the enterprise IT team. "We were looking for a system that was easy to use and could be adapted to our requirements. It also had to be location-independent and multi-client capable, as we wanted to use it in all facilities. And last but not least, it had to be able to integrate all modalities", says Sebastian Prokop, Team Leader Medical Systems at Asklepios Service IT GmbH, summarizing the selection criteria.





The team: Stefan Licht, Nadine Vermeerbergen, Sebastian Prokop, Dr. Manfred Mascheck (from left to right)

On this basis, those responsible initially opted for a different system for piloting - and soon realized that it did not fit.

A project group made up of IT staff and radiology chief physicians from several Asklepios clinics then looked closely at different systems. "In the end, we opted for DOSE because the system met exactly the criteria that were important to us: multi-client capability, individual configurability and a training team to accompany the introduction of the system. In addition, with Dedalus HealthCare we have gained a strong partner who knows its way around our IT cosmos", says Prokop, explaining the decision.

After a successful pilot DOSE is now being used in almost all 44 clinics. Currently, around 450 modalities are integrated into DOSE, but this number is continually changing due to the Group's constant growth. In addition to DeepUnity, dose management

interacts with four other image management systems (PACS).

#### Overlooked things become visible

Before the rollout, the project team first informed the radiation protection officers in the individual facilities about the project. The key users in the specialist departments were then trained so that they could configure the system independently. "The first task was to set up the basic configuration. The key users linked the different examination types to the corresponding dose reference values via mapping protocols. At the same time, the system was integrated by IT", explains project manager Nadine Vermeerbergen. All users were then gradually trained.

Dr. Mascheck emphasizes that it was important to convince the employees of DOSE: "Our employees are now extremely involved in the process.

Before the introduction of DOSE, dose management, for which they are responsible, was a time-consuming additional task that involved a lot of paperwork and was sometimes carried out manually. The new dose management system largely frees them from this task. In the event of large reference value overruns or significant incidents, those responsible are automatically informed by e-mail and can act accordingly."

During the regular documentations, things are often discovered that need to be adjusted. Prof. Fischbach cites standard protocols for the timing of perfusion scans, the number of cycles or the dose setting for CT interventions as examples. "We receive valid feedback, even on points that are often ignored because they are not diagnostically relevant", says the head radiologist.



” DOSE is characterized by its multi-client capability, individual configurability and a training team that accompanies the introduction of the system.

Sebastian Prokop  
Asklepios Service IT GmbH

#### Maximum transparency

DOSE automatically provides all data and prepares it for the responsible MPE. The report contains all relevant information such as examination ID, patient data and the protocol performed. "We can use this information to determine the causes of a dose reference value being exceeded. This is often due to incorrect operation, for example if the wrong protocol was selected or the modality was not operated correctly. If there are other reasons, we can usually rectify them remotely", says Dr. Mascheck. At the Institute of Radiology and Neuroradiology at Asklepios Klinik Altona, senior consultant Dr. Raphael Gübitz is also the radiation protection officer. He follows up every report immediately and clarifies any discrepancies directly with the employees concerned. „We also receive quarterly evaluations from the

medical physicists who look after us with a summarized report. These are also sent to the respective device managers, who make any necessary protocol or sequence adjustments", explains Prof. Fischbach.

He and his colleagues can confirm that DOSE creates maximum transparency for every radiation application. "We adjusted outdated device parameters at a very early stage and standardized the dose values for the same systems. We didn't have to change much, but transparency is a decisive factor for us to improve", emphasizes the head radiologist.

DOSE enables Asklepios to benchmark across all facilities, allowing one clinic to learn from another. "We are continuously comparing identical devices.", says Dr. Mascheck. „There are many parameters that make up an examination such as the pre-filtering,

the pulse duration or the image reproduction frequency. With DOSE, we can easily analyse these parameters, define the ideal combination and make the corresponding settings to the basic parameters."

#### Expectations fully met

DOSE not only relieves doctors and medical physicists of time-consuming tasks, but also makes a significant contribution to improving image quality thanks to its transparent and reliable documentation. A further advantage is the direct access to the image archives through integration into all PACS.

"For example, we can easily clarify retrospectively whether an examination was just a diagnostic procedure or whether an intervention was performed and a stenosis was treated", explains Dr. Mascheck.

Another strength of DOSE lies in the history-based analysis of the entire patient course, which also allows conclusions to be drawn about past examinations.

The conclusion about DOSE is correspondingly positive. "After parameterization and mapping, the system operates with high stability and reliability. In everyday life - and this is very positive - it increasingly takes a back seat and does its job. In short, it has completely fulfilled our expectations", says Dr. Manfred Mascheck, who is more than satisfied. DOSE is a very powerful tool with a wide range of functions that gives users an overview of the performance of the modalities with just a few mouse clicks.

Prof. Dr. Roman Fischbach also praises the collaboration with Dedalus HealthCare: "We find it a really pleasant partnership and perceive the employees, from sales to application support, as extremely competent and solution-oriented." Sebastian Prokop underlines this and goes one step further: "The good cooperation with Dedalus HealthCare was a very important component in the successful completion of the project. DOSE is a complex system that covers many legal aspects and would not have led to such a good rollout result without close cooperation." ■



## Asklepios Service IT GmbH

- " One of the largest private hospital operators in Germany
- " 170 facilities in 14 federal states
- " A total of 44 hospitals, six of which provide maximum care
- " Largest hospital cluster in Europe with seven clinics in Hamburg
- " More than 31,000 beds
- " More than 3.5 million patients per year