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# User Report

**More information and higher diagnostic reliability thanks to AI**

*Isala overcomes daily challenges with contextflow ADVANCE Chest CT*

Health economists predict that the number of patients in Western Europe will double in the next 20 to 25 years. This will of course affect radiology, which will have to prepare for a corresponding increase in the number of examinations and findings. "If the predictions come true, we will have to become more efficient in what we do - as I do not expect the same growth in the number of radiologists. I see artificial intelligence (AI) as part of the possible solution. This applies not only to radiology, but to all activities along the care process," says Dr. Martijn F. Boomsma, Radiologist at Isala in Zwolle. The Isala hospital group also operates smaller facilities in Meppel, Steenwijk, Kampen and Heerde. The group has a total of 1,200 beds and is one of the largest non-academic teaching hospitals in the Netherlands. The department of Medical Imaging at Isala examines over 1,200 radiological examinations per day.

The Dutch Radiological Society has also defined AI as one of the four most important developments for the next decade, and indeed radiology is already a pioneer in the application of this technology. And that's a good thing, says Dr. Boomsma: "AI, in combination with an experienced radiologist, increases diagnostic accuracy because it can effectively support and relieve radiologists in certain aspects." However, clinics and manufacturers would have to prove that the algorithms have a concrete positive impact on health outcomes. This could greatly improve clinical adoption as it would make a clear case for reimbursement for AI and getting AI into national guidelines. Dr. Boomsma believes his discipline is on the right track, even if it still faces a number of hurdles.

**Committed partnership at eye level**

The department of Medical Imaging has been using diagnostic AI applications for four years and has been using contextflow ADVANCE Chest CT since the end of 2022. Isala runs the solution on its own servers and has integrated it with its image data management system (PACS) from Sectra.

Implementing the AI algorithms was not a plug-and-play process. The hurdle was not only the vendors, but also internal processes. "We had to convince several parties and get the go-ahead from many echelons before we could start. It took a year before the application was really ready for operation, fully integrated, reliable, and with an uptime of 97 percent. The technical integration was then very simple and straightforward," says Dr. Boomsma. This process requires a lot of commitment and perseverance from everyone involved. But it is also the point at which trust is built. "This is where true partnership shows itself, and we are still experiencing this with contextflow," the radiologist is pleased to say.

Dr. Boomsma also notes contextflow's effort to continuously develop its solution in close cooperation with its users in order to optimize the workflow and thus increase diagnostic value. "This was also a decisive reason for us to choose contextflow. We see a high level of professionalism and agility, as well as the company's vision to get the best out of AI in thoracic imaging," he reports. This is also evident in their day-to-day interactions. "Employees respond promptly to inquiries and problems by phone or email. To this end, they always think in terms of solutions and work to solve problems as quickly as possible," the radiologist elaborates. ADVANCE Chest CT itself stands out because it can be operated without much training. "With a little practice, you can use the software very quickly; it's user-friendly. But it also changes the way you look at things," Dr. Boomsma says.

**Valuable support for the findings**

Dr. Boomsma has developed his own approach to using the AI software. First, he looks at the key images and obtains a global overview. Then he reads the scan, incorporating the referring physician's specific questions into the findings and preparing his report. "ADVANCE Chest CT helps me identify and quantify nodules. This allows me to clearly identify whether the disease is progressive or stable. Of course, I can also discard or change individual results I don't consider relevant, as they are false positives or do not relate to the specific question," says Dr. Boomsma, explaining his workflow. Not only does

he use the AI for pulmonary nodules, but also for the detection and quantification of emphysema.

Meanwhile, ADVANCE Chest CT is an important support for reporting at Isala. "On an CT image without contrast, it is very difficult to find a four-millimeter lesion in the perihilar region. But the system reliably shows it to me. It allows me to make sure I haven't missed anything. It also helps us in our daily work. For example, it is reassuring to know that the AI is always by your side during a nighttime emergency scan and to be sure that everything important can be reported," says Dr. Boomsma. He also sees the potential to speed up the reporting of findings, citing scans without significant findings as an example. The algorithm can mark these as such, so that the radiologist only has to check them once and can then concentrate on more complex cases.

**More than other AI algorithms**

"ADVANCE Chest CT gives me much more information than AI solutions from other vendors. It detects and quantifies nodules, emphysema and also fibrosis. The precise information on the extent of manifestation of suspected pathology adds real value to the findings because it can be indicative and correlate with the patient's condition and may guide the need for therapy," emphasizes Dr. Boomsma. Consistency of findings in general remains a challenge, due to different scan settings, inspiration etc. He highlights ADVANCE Chest CT's SEARCH feature as another unique selling point. With a single mouse click, an overview of similar cases opens from an extensive database, which radiologists can use to support their diagnosis.

The TIMELINE module is a further facilitator. It clearly visualizes the changes in the detected nodules over time showing the percentage of growth as well as the time of volume doubling. This is particularly helpful when preparing for tumor boards and multidisciplinary meetings. The integration with the Sectra PACS gives the potential to seamlessly incorporate the results into the report.