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How artificial intelligence spells real change for patients

"At Affidea, the scale of our operation gives us unique capabilities in AI, including rich data sets which we can use to drive forward innovations in patient care both internally and with our partners. We want to help create a future where healthcare professionals can devote their time to doing what they do best – delivering the best possible care for patients."

Giuseppe Recchi
CEO Affidea

The world's population is expected to increase by one billion people by 2025, with nearly a third expected to be aged 65 and over. It is a testament to medical science that we are all living for longer, but whilst these advances have enabled us to spend more time enjoying retirement, Europe will increasingly be left with an ageing population – and this brings with it a set of challenges for healthcare systems and the patients they look after.

Across Europe, there are a growing number of older people whose complex healthcare needs will have to be met. Cancer, in particular, presents a major concern. The data of the WHO (World Health Organization) show that in Europe, there are more than 3.7 million new cases and 1.9 million deaths from cancer each year[1].

The global cancer burden is rising, with more people receiving cancer diagnoses than ever before. Getting it diagnosed early is crucial, because it provides the patient with the best chance of a good outcome. However, two thirds of people on the planet do not have access to basic radiology services, such as x-rays or ultrasounds.

So how can we improve the situation for patients?

The advent of artificial intelligence (AI) is a promising way of solving the problem of medical capacity as well as the impact of human error on patient outcomes. New digital technologies allow not only higher automation and productivity, but enable clinicians to analyse enormous amounts of imaging data, which otherwise would not be possible with current staffing structures.

As the leading European provider of advanced diagnostic imaging, outpatient and cancer care services, Affidea is uniquely positioned to help realise the potential of AI and big data in the benefit of patients and doctors. From teleradiology to radiation therapy, we are looking into applying advances in AI to radically transform patient care and shape best practice across Europe.

We are the only healthcare operator in Europe to sit on the Imaging Advisory Boards of IBM Watson Health, and we also sit on the board of Microsoft Cloud. We are trusted with important amounts of data – 13 million scans every year in our 246 centres, located in 16 countries across Europe. These rich datasets can help analyse and benchmark, to work out what works best for patients and clinicians.

We want patients to have better access to advanced diagnostic imaging, diagnostic performed with state of the art technology and the best medical professionals. Ultimately, our goal at Affidea is to improve outcomes for patients and ensure good health for all. No small task, but we believe that AI innovation offers the greatest possibility yet of facing up to the challenges of the European health systems today.

Why is this important? Because demand for MRI and CT exams has increased across a range of countries over the past ten years, although the number of exams carried out per capita varies significantly. This disparity is reflected in the number of radiologists per 100,000 of the population, from 31 radiologists per 100,000 people in Greece, 12 radiologists per 100,000 people in Spain and Portugal and just 3 per 100,000 people in Italy.

Even when patients do have access to diagnostics, erroneous interpretations may occur. Some studies have demonstrated differences in interpretation between radiologists reading the same scan as high as 30%. Some AI can already achieve an

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accuracy of around 90-95% which is very high. Add to this the fact that nearly half (48%) of radiologists report symptoms of burnout, likely caused by inadequate staffing, it's not surprising that errors may occur.

AI-powered medical imaging systems can produce scans that help radiologists identify patterns – and help them treat patients with serious conditions more quickly. The result is clear and more accurate.

I see AI as a powerful tool which can enable us to become stronger and more productive than ever before, with more visibility into operational issues, from equipment maintenance to scheduling, to reading and analysing data. Through this data we can gain information and insight into what is happening, using these learnings to design healthcare services and improve patient care. AI solutions offer further input, predicting what will happen and enabling healthcare professionals to better respond to this.

For diagnostic imaging in particular, AI has the potential to help transform the industry.

AI will help radiologists identify patterns. A CT scan generates data about tissue density, and in human tissue about 3000 different density levels can be differentiated and converted in tones of grey; a standard monitor can display 256 tones, whereas the human eye can only detect about 30. This means that just by displaying imaging data in a format a radiologist can read, information is lost. That is why we should do everything we can to increase the capacity of the radiologist to read all the available data. That's where AI will improve things – it will read through a lot more data than is physically available to radiologists.

It will offer radiologists enhanced productivity, increased diagnostic accuracy, more personalised treatment planning, and ultimately, improved clinical outcomes, which means healthier, happier patients.

It's no wonder, then, that the AI market is booming. The world market for AI and machine learning in medical imaging is set for a period of robust growth and is forecasted to top $2 billion by 2023, while the AI healthcare market is expected to hit $6.6 billion by 2021[2] .

And the benefits for patients could be enormous. Freeing up time for clinicians to be able to focus more valuable time on patients is just one. In many European countries, pressure on health services is leading to shorter consultation times with less doctor-patient interaction. In Italy for example, the average GP consultation time is only around ten minutes. AI and machine learning have the power to speed up diagnostic processes, allowing doctors to spend more time with patients.

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But these advances won't replace people with machines; it's about creating a more accurate and more efficient patient pathway. Currently, physicians spend just around 30% of their office day on direct clinical face time with patients, and over 40% of their time doing paperwork[3]. AI has the potential to change that. At Affidea, the scale of our operation gives us unique capabilities in AI, including rich data sets which can help drive forward innovations in patient care both internally and with our partners. We want to help create a future where healthcare professionals can devote their time to doing what they do best – delivering the best possible care for patients. ■

Affidea at a glance:

- Present in 16 countries across Europe, 246 centres, over 7,500 professionals, producing 13 million scans every year
- European healthcare provider sitting on the Imaging Advisory Boards of both IBM Watson Health and Microsoft Cloud
- 50% of the European winning centres awarded by the European Society of Radiology belong to Affidea

References

[1]World Health Organization – www.who.int

[2]Accenture: AI – an engine for growth

[3]Annals of Internal Medicine: Allocation of Physician time in ambulatory practice: A time and motion study in 4 specialties

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