Artificial intelligence in your daily practice—Are we already there?

The Oxford English Dictionary defines artificial intelligence (AI) as "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages". But what does AI mean, really? And how can this tech trend affect the dental practice?

Only a few years ago, AI was considered to be pure science fiction, and nobody was really considering the possibility of using it in the dental office. Today, AI is found everywhere in consumer technology—many of us can find it in our own smartphones—and is also present in the dental office, as was shown at the International Dental Show in Cologne in Germany in March this year.

Let’s consider a few examples of the use of AI in dentistry. Algorithms support computed tomography (CT) diagnostic tools such as the one from Diagnocat (which we covered in CAD/CAM 1/2019). Diagnocat uses multiple algorithms, which turn raw outputs from the neural nets into reports and imagery that are easy for dentists to understand. In this software, AI analyses 3D dental studies in DICOM format. The innovative solutions of Diagnocat save a dentist effort and time when analysing CT images and allow him or her to concentrate on treatment, offering the patient the best solution and retaining control of the outcome.

Straumann uses AI to simulate treatment outcomes, and this can be highly effective in motivating patients to comply with treatment. In the new DenToGo, a comprehensive suite of AI-based software solutions for tablets and smartphones, not only is patient choice facilitated by prior simulation, but progress is monitored and documented throughout the treatment period.

Artificial intelligence is also used in digital smile design and there are already applications available to help practitioners choose the best smiles for their patients.

I am quite sure that this is only the beginning of a new era in dentistry. However, at the end of the day, AI is only a branch of computer engineering, designed to create machines that behave like humans. Although it has come far in recent years, AI still lacks an essential aspect of human behaviour, namely human emotion. And dentistry is so much more than just analysing the data (although that is very helpful); it is about bringing healthy smiles to patients.

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