

Driving Care Pathways into the Future

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ARTIFICIAL intelligence could one day form the backbone of healthcare, but with such a powerful technology looming on our horizon, what exactly does this mean for patients? This was the subject that guided the “Clinic of the Future & Digital Care Pathways” session held during the 10th European Conference on Rare Diseases & Orphan Products (ECRD), 15th May 2020.

The presentation by Prof Daniel Hommes, Leiden University Medical Centre, Leiden, the Netherlands, which discussed a model for future digital care was of particular interest. To emphasise his main point, he quoted: “By far, the greatest danger of artificial intelligence (AI) is that people conclude too early that they understand it.” Prof Hommes noted that in the future we are certain to apply AI use in medical devices, software, and in image analysis, the key question however is how this will be implemented and when?

Factors that rely on the emotional quotient are an integral part of clinical care, especially for shared decision making, determining the appropriateness of care, and communication between the physician and the patient and their loved ones. While we know that AI will be an important and helpful tool, Prof. Hommes is a firm believer that within the daily clinical practice, clinical coaching will continue to be integral and cannot be replaced by AI. It makes sense, then, that AI’s place in the healthcare system lies

primarily in the tasks that require the intelligence quotient; that is the recommendation accuracy, therapies, tests, and procedures.

Prof Hommes compared the use of AI in healthcare pathways to self-driving cars: just like the passengers in the cars, patients will be skilfully navigated towards their desired outcome, taking the quickest and safest possible route as advanced software quickly interprets the vast amount of data fed into it by sensors around the car.

The term ‘care pathway’ is defined as a complex intervention for the mutual decision-making and organisation of care processes for a specific group of patients during a well-defined period.¹ Within Prof Hommes’ analogy, the patient is the driver, the care pathway is the vehicle, sensors could consist of questionnaires and tests, and the software could involve cognitive behavioural therapy, adherence strategies, and nutrition plans. Together these would navigate around obstacles such as disease relapse, medication side effects, hospitalisations, etc. to the desired goal such as disease control and improved quality of life.



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It is here that AI holds promise: the more data that is fed into the software, the higher the accuracy of the navigation, resulting in a higher probability of reaching the desired goal – provided that data is relevant and helpful. Complex AI systems are needed to accurately interpret that data and convert it into meaningful information. The system can be stratified according to risk profiles to make it even more helpful.

When asked how much data is required for AI to be successful in healthcare, Prof Hommes replied that there is no absolute number but rather it depends on where the data is obtained (electronic health records, insurance data claims), what the data model is, and if it is relevant for

the specific disease in focus. In summary: quality trumps quantity.

To conclude, Prof Hommes highlighted the promising potential of AI in care pathways. He conceded that AI cannot rival nor replace the emotional intelligence of a physician, but emphasised the importance of gathering data to improve the accuracy of future decision making and reaching target outcomes. In Prof Hommes’ words: “We are still at the beginning of our journey in AI in healthcare.”

References

1. Schrijvers G et al. The care pathway: concepts and theories: an introduction. *Int J Integr Care*. 2012;12(Spec Ed Integrated Care Pathways):e192.

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