# For A Better Health Outcome: Bringing together AI and Physicians for an Augmented Intelligence

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**The pharma industry has a decisive role in the ongoing digitalization process, being one of the main drivers of health innovation. By using Artificial Intelligence (AI) wisely and in close cooperation with doctors and patients, the industry can help patients and their health much better: It brings the different players in the healthcare sector closer together – and also enables physicians to put a stronger focus on "talking medicine".**

Why is that needed? Let's look at two examples: First, the diagnosis of the Attention Deficit Hyperactivity Disorder (ADHD) does not have much reliability. Currently, the same patient is diagnosed differently by different doctors. Furthermore, the diagnoses are often biased. Boys are diagnosed with ADHD up to twice more often than girls. Secondly, studies show that asthma and Chronic Obstructive Pulmonary Disease (COPD) are often misdiagnosed; with COPD that can happen in up to 73 % of the cases. Both diseases, asthma and COPD, show close similarities with regard to their symptoms, which makes it difficult for physicians to make a reliable diagnosis. These are just two examples of false diagnoses. Many medical procedures are not the correct ones or are not necessary at all – and this is just due to the patient's condition not being understood correctly.

**False incentives lead to physicians having less time for the individual patient**

Furthermore, the healthcare system has misguided incentives which make the physician focus increasingly on the economic goals of a hospital and thus push a patient's health into the background. Physicians also face an increasing amount of documentation work, which is for instance required for any kind of reimbursement from the health insurance companies. Studies found that physicians spend almost half their time in their office, working on filling out forms and other desk work. Ironically, this means that while healthcare costs keep increasing, physicians spend less time with their patients.

Empathy and an understanding of the patient as well as his personal history are a physician's or a human physician's particular strengths. A disease can never be considered independently of a person's medical history. With ADHD , for example, questions about traumatic experiences, how the patient's birth took place or what kind of relationship he had with his parents or teachers must also be taken into account. This context, however, has to be established by the physician – no diagnosis device or AI algorithm can do this so far. It

requires a personal communication between doctor and patient, empathy as well as the wish to really understand the patient. All these elements require a lot of the doctor's time.

**Why is Artificial Intelligence needed?**

We have to combine the strengths of computers and of people. AI is fast, accurate but unfeeling. Humans are slow and inaccurate – but they can be empathic. Since machines will soon be able to tackle many tasks better than humans, those humans should concentrate on the advantage that they have: They should remember to be more human. For physicians, that means conducting conversations with patients in order to understand their personal therapy experiences and to determine the next steps. The patient should help with that as far as possible, he should be allowed the final decisions over his own treatment. AI can support diagnostic decisions by providing an overall view on a patient's data, thereby also helping to avoid errors like a misdiagnosis or unnecessary procedures. It might also be consulted for recommending a suitable treatment.

Involving doctors and patients – achieving a better health outcome
AI is able to learn from cases, from data and medical literature. Though, the increase of multimorbidity leads to combinations of diseases that haven't been studied or emerged enough for an algorithm to be trained sufficiently for them. Additionally, the human biology as a whole is too complex for AI to be the simple solution – nevertheless, the combination of doctors and AI is very promising.

AI can help patients get a better health outcome – that is what makes it so valuable for them and that's why we need to bring together AI and physicians. The result of this combination is Augmented Intelligence. This enhanced form of intelligence does not replace humans, but it can ensure that doctors and patients benefit from the combination of data and human intelligence with regard to any decision-making. The pharmaceutical industry has the opportunity to take a leading role in this process, offering digital solutions, e.g. diagnosis apps – or companion apps for doctors and patients that help them to build a trusting relationship. Digitalization in healthcare will only be successful if we involve doctors and patient in the whole process.