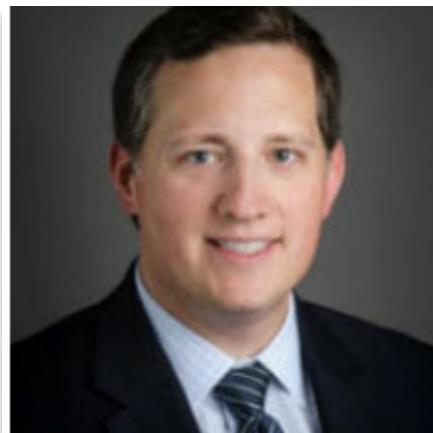


Advancing precision medicine into everyday practice



John Carew, Managing Director and Health Industry Data Science Lead at Accenture, spoke to Information Age about precision medicine and its potential to impact the everyday practice of medicine.



Precision medicine is [defined](#) by the Precision Medicine Initiative as "an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person". This contrasts a one-size-fits-all approach, in which disease treatment and prevention strategies are developed for the average person, with less consideration for the differences between individuals.

Even though the potential benefits are high, precision medicine has yet to reach mainstream status. In fact, [recent research](#) conducted by [Accenture](#), which surveyed oncologists in the US and Europe, found that less than 20% are making use of precision medicine components such as molecular tumour boards (14%) and clinical decision support tools (18%).

Commenting on the Accenture oncology study, Managing Director and Health Industry Data Science Lead, [John Carew](#), said: "Much of how a physician practices medicine often depends on their training, the data available and evaluation of evidence.

"When you think about the medical research that's out there, it's estimated that it takes [an average of 17 years](#) before new a medical discovery becomes commonplace within standards of care."

Companies such as Accenture and [Avanade](#), a joint venture between Accenture and [Microsoft](#), are working to raise awareness within the health and life sciences industries around what is possible with the right technology, and how to get the best use of precision medicine for each patient.

Turning to Life Sciences

Outside of the traditional medical practice, there is growing potential for life sciences organizations to take innovative precision medicine approaches in areas such as immune and inflammatory, central nervous system, metabolic, oncology and other diseases.



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Future trends

When it comes to the future of precision medicine, a term Carew sometimes refers to as "precision health", the Accenture managing director believes the ability to exchange data and make recommendations on demand from the point of decision, along with explainability, will help make precision medicine a permanent role in the practice of medicine.

"It is also important that physicians can use precision medicine tools as part of their day-to-day practice via electronic health record systems as opposed to a separate application."

Additionally, Carew sees the collection of genomic data in the coming years, along with further evidence, continuing to grow and make tailoring of treatments more efficient as opposed to a one-treatment-fits-all approach.

"There has been an emergence of real-world evidence studies in life sciences that look to analyze the impact of medicines in a real-world setting, which are useful due to how expensive and narrowly defined clinical trials tend to be," said Carew.

"The goal of a pharmaceutical company is to show efficacy, safety, and get the medication approved. Approved medications do not always work well for everyone, so these real-world studies help to personalize treatments."

"You can look for real world efficacy using observational studies, but there's always a question of whether or not findings are just an association, rather than a causal relationship. These studies can generate hypotheses for an effect, but a prospective clinical trial is still the gold standard."

Leveraging data outside the 'black box'

No matter the industry, when it comes to precision medicine having the right data accessible at the right time is key. Accenture and Avanade provide physicians with the strategy, data science and technical expertise necessary to help them explore a concept that has previously been seen as a black box due to a lack of visibility into the methods and limited scope of data used.

Data analytics platforms are used to organize data sets so they can enable the discovery and activation of healthcare insights. Accenture and Avanade have invested in an intelligent patient platform for ingesting healthcare data and conforming data to clinical standards that can be clearly translated for the user.

"The use of this kind of data platform is what we've been facilitating for clients across the healthcare ecosystem, including life science companies, payers and providers.

"When it comes to leveraging data, clinicians also need to consider the patient's social determinants and other related factors outside of a doctor's office or hospital as treatments can also depend on this," said Carew.

Applying artificial intelligence and machine learning

Accenture and Avanade are working with clients to explore AI-based approaches to precision medicine. Said Carew, "We use machine learning (ML) operations or MLOps to help improve the quality of production ML. This is particularly important in a field like precision medicine where large amounts of data are available.

"We also need to make sure that the models we produce are free from bias and monitor them to ensure they are getting the intended effect."

Using more advanced analytics has helped expand the role of precision medicine for healthcare and life science clients in multiple ways to include:

- Defining the intended outcome that needs to be measured, such as treatment for diabetes, which can involve measuring hemoglobin A1C over time.
- Looking at different treatment effects among the population, as well as prior medications, test results, labs, demographics, comorbidities, and prior healthcare utilization.
- Testing for certain genetic mutations that may be driving health issues and help to inform more effective treatments.