Syapse Looks to Dive Deeper Into Large Health Systems for Data-Driven Cancer Insights

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CHICAGO – Fresh off a $68 million funding round, Syapse is moving quickly to expand its network of partnerships with life sciences companies, health systems, molecular laboratories, and regulators.

"We're right in the middle of growth mode right now," CEO Ken Tarkoff said of the 13-year-old company. The San Francisco-based maker of software to support precision oncology care and drug discovery also raised $30 million in a round that closed in May 2020.

Tarkoff, who has been with Syapse for four years, said that the firm operates at the nexus of precision medicine and real-world evidence.

To power its analytics, the company aggregates genomic and clinical data from clients into a deidentified collection of the Syapse Learning Health Network, a Syapse-run data aggregation platform that allows healthcare providers to share real-world clinical, molecular, treatment, and outcomes data in order to improve understanding of the efficacy and safety of cancer treatments in patients who are clinically and molecularly similar. It grew from the remnants of the Oncology Precision Network (OPeN) consortium that had been driven by Syapse customers including Henry Ford Health System, Advocate Aurora Health, and AdventHealth.

The firm actually derives the majority of its revenue from selling insights mined from that dataset to pharmaceutical companies including Pfizer and Amgen, according to Tarkoff. Syapse offers four categories of insights: research; commercial, including understanding unmet needs and testing disparities to identify opportunities; control datasets for regulatory testing; and to support clinical trials at health system as well as pharma companies.

"The money that we have is to invest in accelerating the sales in those categories, leveraging the relationships we already have with large health systems, and expanding to more pharma organizations, and deeper into the organizations that we're already in," Tarkoff said.

Tarkoff said that that Syapse will soon be rolling out a sales "theme" that the company is trying to "extinguish the fear of cancer."

Explained Tarkoff, "When people actually get cancer, there's so much fear about what can happen and there's so much variability in outcomes that we have to do a better job at." He pointed to the effects socioeconomic factors as well as doctor choice can have on outcomes.

"We've got to do better, and we believe that there is a massive opportunity to add value there," Tarkoff said. He believes that this opportunity comes from the fact that large community health systems take care of so many patients across a wide range of races, ethnicities, and social classes. This opportunity includes identifying candidates for genomic testing to assure that they get on the right therapies.

While Syapse primarily operates in North America, it has expanded into Asia, specifically with Ajou University Hospital and Seoul National University Hospital, both in South Korea. Tarkoff said that the new capital will allow the company to enter additional markets, though he did not elaborate.

Data and disparities

Syapse aggregates data on behalf of its provider clients from sequencing labs, whether at the health system or a third party, and some of the planned expansion would be to additional sequencing and other molecular laboratories.

Tarkoff said that Syapse assists its customers by collecting real-world data from clinical genomics and medical records, then translating the information into clinical insights. The company then helps providers put that evidence into practice.

For example, in breast cancer, not only have Syapse and Henry Ford worked together to identify patients and populations who had not been appropriately tested, they looked for reasons why, then fed those insights back to breast cancer quality-assurance committees within the health system to help improve care in the future.

"It's not just enough to identify a problem. You actually have to help them make an impact, measure that impact, and then help them learn off of that," Tarkoff said.

Syapse accomplishes this by accessing comprehensive, longitudinal data from its customers, which tend to be large nonacademic health systems, where more than half the cancer care in the US takes place. Tarkoff noted that such organizations have moved in recent years toward employing physicians and aggregating data in common electronic health records, while independent hospitals still rely on medical staff who are largely in private practice.

"We get the information before the patient was diagnosed with cancer, during their journey, and also what else happens to them in their journey," such as comorbidities and other experiences not directly related to cancer, Tarkoff said.

Tarkoff called Roche-owned Flatiron Health Syapse's chief competitor, which made a previously forged precision medicine partnership with Roche untenable. In late 2019, Roche terminated the relationship after less than two years.

Syapse did not publicly comment at the time and Roche was vague about the details of the breakup. This month, Tarkoff noted that the partnership, which started in January 2018, predated Roche's acquisition of Flatiron Health by three months. "Flatiron is our biggest competitor in the space, and it just didn't make sense," he said.

Tarkoff said that Flatiron Health deals more with oncology-specific patients at academic and independent oncology practices and a more narrowly focused electronic medical record, its own OncoEMR.

For its part, a Flatiron spokesperson said that that company works with more than 280 cancer care clinics, covering some 800 care sites across the US. Like Syapse, the independently run Roche subsidiary is able to integrate data from institutions that use other systemwide EHRs like those from Cerner and Epic Systems.

Flatiron has built a research network in which 75 percent of available patient records come from community practices and 25 percent from academic cancer centers, according to the spokesperson.

COVID concerns

The COVID-19 pandemic has provided some new opportunities for Syapse and its clients.

The bioinformatics company is in the midst of a four-year collaboration with the US Food and Drug Administration's Oncology Center of Excellence to incorporate real-world evidence into regulatory decision-making. That relationship was expanded in August to include COVID-19.

Tarkoff said that the newly raised capital will allow the company to participate in more research collaborations that will include the development of journal articles and conference presentations. He said that these kinds of activities give Syapse a seat at the table in modernizing regulatory policy.

He said that COVID-19 has brought Syapse's pharma customers some clarity about the importance of community health systems because the pandemic has shined new light on health disparities and the role real-world data can play in closing such gaps.

"We play right in the center of that with our customers, and a lot of the challenge of getting clinical trials out to the different populations," he said. "You really need to look at these health systems that are taking care of the patients to get it out there."

"The use of real-world data and real-world evidence has become acutely important because you can't rely on trials to the same extent," Tarkoff explained. He likened it to the adoption of telehealth, which COVID-19 has also accelerated.

"You couldn't get people to come in for their trials, but you still have to find ways to take care of patients. You still have to find ways to get new therapies to market," Tarkoff added.

Using Syapse technology, Henry Ford Cancer Institute has started looking at the impact COVID-19 has had on cancer testing. While testing declined across the board, it dropped most precipitously for lower-income and minority populations, according to Tarkoff.

Syapse thus gave Henry Ford a "chase list" of patients to follow up with to try to address the disparity, he said. "That's a really important component of what we do."

Shirish Gadgeel, chief of hematology/oncology and associate director of patient experience and clinical care at Henry Ford presented a case study at the July 2020 American Association for Cancer Research (AACR) virtual conference on COVID-19 and cancer.

This work analyzed the outcomes of patients at Henry Ford and Advocate Aurora who had been diagnosed with cancer in the previous five years who also had developed COVID-19. It covered the whole spectrum of cancer, not just specific types.

The outcomes of cancer patients with COVID-19 were worse than those who did not test positive for SARS-CoV-2, and the outcomes were worse for "active" cancer cases, or those who had been diagnosed or treated within the preceding 12 months, Gadgeel said.

Cancer patients with COVID-19 had higher rates of preexisting cardiopulmonary, cardiovascular, and renal conditions, plus elevated risks of hospitalization, mechanical ventilation, and death than those who did not have the coronavirus. Hospitalization and ventilation were even more likely among the study group for non-Hispanic Black patients and those with annual household incomes of no more than $30,000.

The study period initially ran from Feb. 15 to May 13, 2020, early on in the pandemic when COVID-19 treatment was still largely trial and error. Testing was less accurate and not as widely available then, too. Henry Ford eventually extended the research to August and submitted a manuscript based on six months of data for journal peer review, according to Gadgeel.

He said that the health system would not have been able to compile the research from three large health systems in time for AACR in last July without the help of Syapse, since some cancer data predates the 2018 merger of Advocate Health Care in Illinois and Aurora Health Care in Wisconsin, and the two have not fully integrated information systems yet.

Gadgeel, who joined Henry Ford in May 2020, said that the work on COVID-19 and cancer opened his eyes to several future collaborations he might have with Syapse. One collaboration he is working on with Syapse now is to try and define the effect of chemotherapy agents in lung cancer patients. Gadgeel said that his department generated some data with the vendor and submitted a proposal for the 2021 American Society of Clinical Oncology meeting.

"We found very interesting results that are different than what has been observed in clinical trials," said Gadgeel, whose primary interest is lung cancer, an area that is rapidly turning to immunotherapy.

Gdgeel discussed the diversity of the health system's patient pool across urban, suburban, and rural communities in Southeast Michigan. "We feel that a health system like ours can generate very valuable real-world data," making it relevant to the Syapse partnership, he said.

He said that having the data and the technology to analyze it can address access to care and health disparities while improving outcomes for all patients, regardless of their backgrounds.

"Syapse can easily abstract data from EHRs and then can integrate it with other similar or diverse health systems and can give a very quick readout as to what are the outcomes of patients, what sort of patients are suffering from particular cancers, how are they responding to different treatments?" Gadgeel said.

He called it "extremely valuable" to Henry Ford to help the health system better allocate resources and to the wider research community for post-approval drug surveillance. "What the drugs really end up doing in the real world is something that is very difficult to ascertain," Gadgeel said.

The new Brigitte Harris Cancer Pavilion, a 187,000-square-foot facility at Henry Ford Cancer Institute – Detroit opened last month, putting outpatient cancer treatment across multiple specialties, precision medicine, research, clinical trials, and support services under one roof. It is connected to the main Henry Ford Hospital.

Gadgeel said that the new facility will allow for more granular research and treatment in pursuit of precision medicine. He said that the partnership with Syapse is going to be valuable here to help researchers better define the proportions of gene alterations in tumors among different populations and the implications of those mutations on patient outcomes.

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