2bPrecise™

**CLIENT**

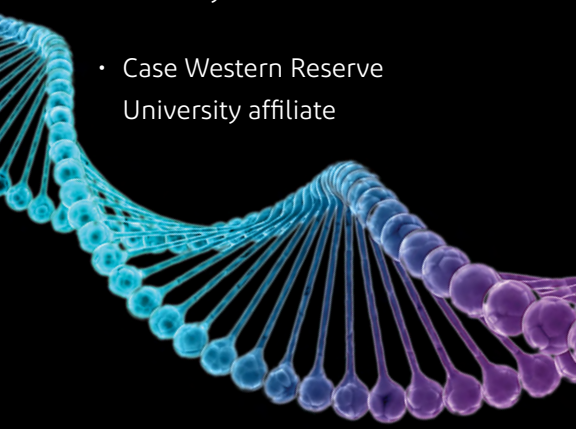
University Hospitals Cleveland

**LOCATION**

Cleveland, serving Northeast Ohio

**DETAILS**

- Main campus
  - UH Cleveland Medical Center
  - UH Rainbow Babies and Children's Hospital
  - Seidman Cancer Center
- 18 regional hospitals, 40+ health centers, extensive physician practice network
- 20,000+ physicians
- 10.8 million outpatient procedures/annually
- 142,000 inpatient discharges/ annually
- Case Western Reserve University affiliate



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# Client Story: University Hospitals Cleveland

## Precision medicine speeds and enhances patient care.

Use of genomic information for patient care is not a new concept for University Hospitals Cleveland (UH), especially at its Seidman Cancer Center.

But several years ago, leadership sought to improve how this genomic information could be leveraged by bringing it into the clinical workflow and making it accessible to providers across the enterprise.

In 2017 UH Cleveland began evaluating software that would help it achieve its mission – and enable its 20,000 providers to use genomic information to which they previously had no access. Ultimately, it elected to implement 2bPrecise™, first in the cancer center and then throughout the organization.

## Seeking better access to critical insights.

According to Dr. Christopher Hoimes, assistant professor of medicine at Case Western Reserve University, genitourinary/phase I oncologist, and director of genomics and precision medicine at UH Cleveland Seidman Cancer Center, physicians have been ordering molecular tests on cancer patients for years. Somatic results (representing the molecular profile of the tumor tissue) would come back in voluminous PDFs. "Our staff would manually scrape the reported genetic variants into a text-based format," he said. The information would often be saved in the summary section of the pathology report, which could be challenging to find later. Alternatively, to view the full genomics report, physicians could leave their workflow and log into a web-based portal provided by the commercial lab that processed the genomic test.

"Either way, it was a clumsy process," Dr. Hoimes said. "Information

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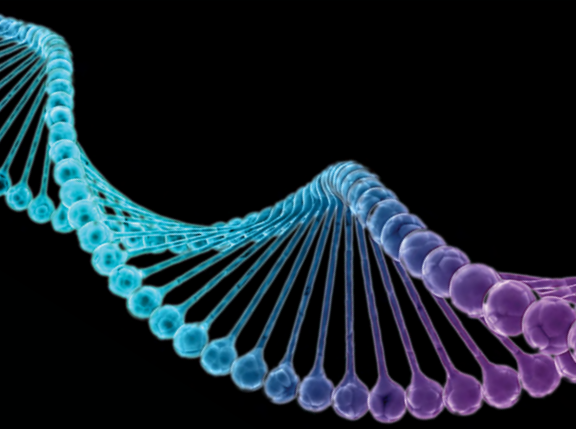
**DR. CHRISTOPHER HOIMES, MEDICAL ONCOLOGIST**



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wasn’t readily available in the medical record. And we work with multiple labs, each with its own forte, each with its own user name and password. You’d have to remember who processed the test, as well as those specific log-in credentials: Foundation Medicine? Tempus? Our in-house lab? It was difficult to keep track of it all.”

The issue – and resulting frustration – was compounded when physicians needed to share the report. If results indicated a BRCA mutation, for example, the oncologist might refer the patient to a genetic counselor. “Weeks later when the patient and counselor were scheduled to meet, we’d get a call asking for the report, which we had sent over with the original referral. Because the report wasn’t available in the medical record, we’d end up in a paper chase trying to locate it again.”

Dr. Hoimes and his colleagues recognized that making the data readily available would represent a tremendous advance in both care quality and efficiency. But, he noted, EHRs alone don’t have the robust functionality required to consume genomic data, integrate it with existing clinical information about the patient and then present it in a comprehensive manner so physicians could use it in real time.

## Reducing inefficiency for better care

“We knew that if we could achieve this level of access to the data, we would be equipped to help patients sooner,” Dr. Hoimes noted. “There is tremendous time lost when physicians have to go outside their system or hunt around gathering information to make the best decision possible. Precision medicine helps us target the most effective therapy or clinical trial quickly and the sooner we have that information during the process, the better.”

UH Cleveland determined that the 2bPrecise platform held the most potential to support its objectives. 2bPrecise went live to small pilot group in UH Seidman Cancer Center in 2018 and soon was rolled out to 200 oncologists. Early in 2019, all physicians across UH Cleveland gained access.  “The basic inefficiency UH physicians previously experienced is solved beautifully by 2bPrecise,” Dr. Hoimes said.

**"Think of how important full germline results could be to primary care physicians, neonatologists and OB/Gyns, for example. They will have a much deeper understanding of how the individual patient's genomics impact care across multiple diseases and conditions. All of this information needs to be easily accessible, interpretable and actionable at the point of care, and 2bPrecise provides that solution in a brilliant way."**

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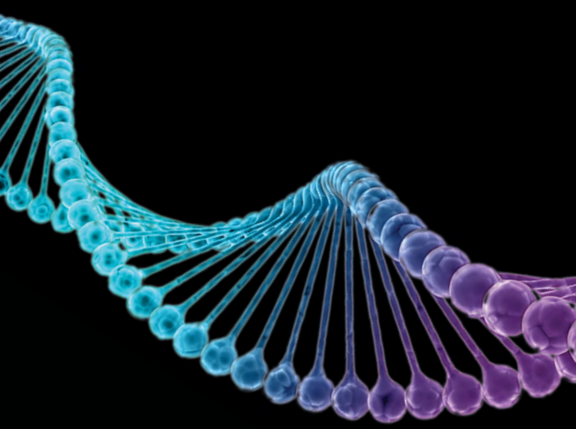

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## Empowering physicians with greater detail

"The entire oncology team saw value right away," noted Dr. Hoimes. "With one solution within our workflow, we have immediate access to comprehensive genomic data that could impact medical oncology, radiology and surgical oncology."

For example, he said, the somatic results might reveal a patient has specific DNA repair deficiencies, which might cause the oncology team to consider new immunotherapies such as PARP inhibitors. Similarly, the genomic tests might reveal a patient with melanoma has a BRAF mutation, indicating an aggressive form of the disease that might respond well to a recently approved checkpoint inhibitor. "It would be important to have this information captured and integrated into the workflow so the interdisciplinary team could collaborate and determine the best course of treatment," Dr. Hoimes explained.

2bPrecise gave UH Cleveland a more detailed genomic view than physicians were able to access previously, he continued. "Reports from our testing lab had not given us a good summary of allele frequency, which can be crucial information to help us understand the primary driving mutation of the patient's cancer."

This information, in turn, equips Seidman oncologists with better information to match patients with relevant clinical trials. "Cancer is not a simple disease," he points out. "There may be multiple mutations affiliated with a specific tumor. But if we can identify the primary driver, we can determine which of many possible clinical trials holds the greatest opportunity for a better patient outcome."

The 2bPrecise solution enables Seidman oncologists to better understand other factors such as microsatellite instability (MSI) and molecular tumor burden (MTB). Dr. Hoimes relayed the story of a patient diagnosed with urothelial cancer exhibiting a TSC1 mutation, ERBB2 amplification, POLE mutation, and a high tumor mutational burden (TMB). The patient met the criteria for five clinical trials and Dr. Hoimes needed further insights to direct him to the best option. With this detailed information at his fingertips, Dr. Hoimes was able to identify the appropriate clinical trial and that patient achieved positive outcomes.

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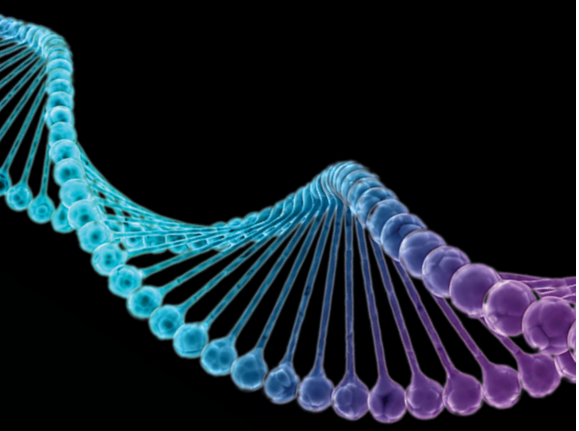
## ABOUT 2bPRECISE

2bPrecise ingests fully interpreted genetic and genomic tests results in discrete form from molecular labs, and extracts relevant clinical data from the patient record. These data elements are brought together within the 2bPrecise clinical-genomic data model that allows intelligent insights to be derived. Providers likewise can query evidence-based knowledge sources or care guidelines as they relate to the patient's integrated record. The platform serves as a foundation for enterprise-spanning clinical-genomic workflows, and is flexible enough to allow organizations to get started in one area (like UH Cleveland did with oncology) and scale.



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# Discovering value across the entire health system

While 2bPrecise is currently hosting only somatic data, non-oncologists across UH Cleveland are utilizing the insights as well.

"When we made this information available to the full cohort of physicians across the UH system, which serves 18 hospitals across 16 counties in Northern Ohio, we saw a lot of utilization of 2bPrecise by those who are not accustomed to ordering the test, such as pathologists and radiologists," Dr. Hoimes said. "That indicates there is a great deal of interest in how we can integrate genomics to gain a better understanding and truly implement precision medicine for improved care across the board."

The broader interdisciplinary value of bringing genomic results to the point of care – beyond somatic insights – is clear as well. "Think of how important full germline results could be to primary care physicians, neonatologists and OB/Gyns, for example," he said. "They will have a much deeper understanding of how the individual patient's genomics impact care across multiple diseases and conditions.

"All of this information needs to be easily accessible, interpretable and actionable at the point of care, and 2bPrecise provides that solution in a brilliant way."

Bringing genomic data into the clinical system as discrete data where it can become part of the full compendium of patient information is the first step, Dr. Hoimes said. "I'm looking forward to further integrating 2bPrecise with order sets and additional clinical decision support tools. That is the next stage of superior clinical decision making, with such a wealth of insights at our fingertips.

"These advances are truly making an impact on efficiency and quality, and allowing physicians like me to take even better care of our patients," he added.