IBM Watson Health: The Power of Data in the Fight Against Cancer

Cancer researchers and oncologists are increasingly aware that speeding up the quest for cures may hinge on the ability to make sense of vast, complex, and ever-changing information. Cancer treatment, too, requires a tremendous understanding of medical literature, population health trends, patient histories, genetics and more. It's too much for any one person to digest.

This is why researchers and clinicians alike are turning to technology to help access, analyze and draw insights from the data.

Consider this: researchers have made groundbreaking discoveries on the genetic drivers of cancer – which often turn out to be the best indicator for the right treatment. Yet, even if a patient's genome is mapped, doctors don't always have access to the tools they need to turn that information into treatment decisions. IBM Watson Health leverages cognitive systems to provide insights to oncologists so they can deliver these genetic insights to their patients – faster and easier than it can now be done. Whether for cancer treatment or research, Watson gives experts the power to tap into massive amounts of information about cancer by:

Supporting Evidence-Based Cancer Treatment:

One of the most promising ways IBM is contributing to the fight against cancer is by working with world-class cancer institutions to apply IBM Watson Health's cognitive computing technology to the data challenges of cancer treatment. IBM and its partners are currently working to:

- Use this emerging technology to help clinicians identify evidence-based, personalized treatment options for patients, and match up patients with clinical trials.
- Jointly develop and introduce a Watson application that helps oncologists personalize cancer treatment decisions.

Advancing Genomic Treatment:

IBM is collaborating with 16 leading cancer institutes to apply the cognitive computing power of Watson to help clinicians quickly translate DNA insights into personalized treatment options for patients. Watson can help reduce DNA analysis time from weeks to minutes in many cases.

Speeding Clinical Trials:

Clinical trials are the gold standard in medical evidence and are crucial for developing new treatment options for the 13.8 million Americans currently battling cancer. They can also provide hope for patients when traditional therapies do not work. However, matching patients with clinical trials is a significant challenge. Finding and enrolling people in clinical trials costs $1.2 billion a year, yet only 3 percent of cancer patients ever participate in a trial. Now, Watson is working to bring more patients and researchers together in an effort to speed the development of new cancer therapies. For one organization, Watson is helping doctors match patients to relevant clinical trials, and for another, Watson is working to improve the success and speed of trials.

Spurring Hypothesis Generation:

A retrospective, peer reviewed study recently demonstrated a new path for generating scientific questions that may be helpful in the development of new medical treatments. In just weeks, biologists and data scientists used Watson-based technology to accurately identify proteins that modify p53, an important protein related to many cancers. A feat that would have taken researchers years to accomplish without Watson's cognitive capabilities, Watson analyzed 70,000 scientific articles on p53 to predict proteins that turn on or off p53's activity. This automated analysis led cancer researchers to identify six potential proteins to target for new research, while during the past 30 years, scientists averaged one similar target protein discovery per year.

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