

This is a sixth newsletter in a series of ONCORG Community Conversations. They're focused on relationships between doctors and patients, and the complexity of treating cancer.

March 2026 – Late Edition: Welcome to Oncology Information and Analytics – ‘Information Integration is King.’



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Mr. Thomas is a military veteran who served 8 years in the USAF. He also spent 11 years in the automotive industry, 10 years in healthcare and 8 years with Apple Inc. supporting customer needs.

So he has a unique insight into what it takes to enhance the customer experience and obtain strong customer feedback, which is essential to a company's reputation. He also understands how to maximize performance from a team by encouraging collaboration.

In our last newsletter we talked about how clinicians use technology to manage your treatment. Although inseparable, let's talk about how clinicians use information to manage your survivorship journey.

In AI, there is a branch called Natural Language Processing (NLP,) which helps technology to understand and interpret human language. This helps create a bridge between human language/communication and machine understanding. So what's the big deal about this? Because NLP does all of this, it helps analyze text or speech data and turn it into meaningful usefulness.

At Apple there is/was an application (I was part of a pilot) that interpreted emotions and conversation quality to determine how successful a customer interaction was. It focused on stuff like 'Did we talk over each other?' 'Raise our voices?' 'Or answered questions when asked.'

Information or data by itself is unstructured. With oncology, NLP takes unstructured data and make it unstructured. We studied this in one of my ML classes at MIT.

Pathology reports or clinical notes are examples of information, and NLP turns them into structured and usable data. By doing this doctors create actionable insights, which allows for faster patient identification for clinical trials, or the development of personalized treatment plans.

I once worked in healthcare within acute care facilities where we extracted disparate systems, normalized it and created standardized information. By doing these labor (programming) intensive tasks, healthcare professionals could perform analytics and other types of data modeling. Integrated and trained information is king.

How does healthcare use NLP to improve clinical outcomes?

Now that information can be 'intelligized' quicker and more elegantly, let's look at some of the benefits of NLP:

- **Match patients to Clinical Trial opportunities:** There are 30,000 to over 40,000 oncology clinical trials ongoing at any time. And the principal investigator (PI) is always seeking candidates. NLP helps match the patient to the specific clinical trial. This is a big deal because oncology represents over 40% of all clinical trials; driven by pharmaceutical or rare cancer research. This is a big deal when considering one's survivorship journey.
- **Predictive Analytics:** Huge data sets such as genomics (study of organism DNA), electronic health records and images can be analyzed to improve patient outcomes, treatment options, or predict how a disease will progress. Armed with such innovative technologies, clinicians can be more proactive treating their patients.
- **Neural networks and Convolutional Neural Networks (CNN):** In my previous newsletter, we discussed CNN as a type of deep learning algorithm that process 'grid-like' data such as images and photographs. By combining CNN and NLP, healthcare professionals can track tumors in real-time to improve therapies and diagnosis. They can predict how the tumor will react, which is a significant improvement over manual analysis and valuable time.

Putting it all together:

Years ago, when I transitioned to healthcare, we extracted enormous amounts of healthcare data and built intelligence behind it. CNN and NLP were not conceived at that time. This is a big deal especially when data originates from multiple disparate systems.

Thinking about it, I can only imagine the billions of \$ saved, decades of development time reduced, or the operations labor savings. This means clinicians can focus more effectively on the care of the patient. Automation of data modeling alleviated the significant manual workload for cancer staging, histology, and biomarkers. It helps reduce the amount of time clinicians spends searching through electronic health records (EHRs) because NLP can summarize patient journeys and retrieve pertinent information from clinical notes.

Hospitals should always continue to improve the NLP algorithms because new unstructured data is always being introduced. Information is king.

In our next April article, I'll surprise you with a special newsletter. Be sure to check back.

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