CTI DATA

Enhancing Physician Engagement in Clinical Trials: A Data-Driven Approach

A CTI White Paper

Recruiting Patients for Drug Development

Recruiting patients to participate in a clinical trial, by which I mean you and me, the public, is one of those exciting and nerve-racking phases of drug development. The drug is ready to be trialed for its potential efficacy (and potential adverse effects). Observing how the drug performs isn't the only nerve-racking aspect. Finding the necessary patients to participate is equally fraught.

That's where clinical trial recruitment comes in, with a mission to acquire enough diverse people with the relevant diseases and demographics to ensure the trial is representative; sometimes, this means hundreds of people, sometimes thousands. And with it comes substantial costs. According to numerous articles, approximately 40% of a clinical trial cost is recruitment – usually in the form of outside fees. Furthermore, recruiting delays are endemic, further increasing drug development costs.

Most recruitment targets patients directly. But there is an inherent human paradox in play. The one person most patients would like to hear from about research into a new drug for their condition is their doctor. Yet most doctors need to be better informed; some may even prefer such to avoid complicating their patient relationships with the unknowns of a trial drug. Further compounding this awareness gap is the drug firm's compliance office, which reflexively restrains physician communication, leaving it to outside parties and public information sources.

Leveraging the Power of Numbers

Despite these hurdles, some fraction of physicians are willing trailblazers, ready to absorb new science that may benefit their patients and share this knowledge with them.

That "fraction" is where the numbers game comes into play. Consider this example. Data tells us that around 45,000 HCPs specialize in cardiology in the US. Approximately 45% will be physicians, another 45% nurse/nurse practitioners, and the remaining technician and support staff (the data has the definitive breakouts).

Suppose a new drug that is a potential breakthrough for severe arrhythmia affecting about 1 million people in the USA alone is ready to be trialed. The trial is set to be conducted at 32 sites across the country, with a heavy concentration in Florida. The data shows that 35% of the target HCPs reside within 25 miles of these sites. Indeed, that is why these specific sites were preferred.

What if we could inform all the physicians and nurse practitioners in cardiology near one of those sites? If just 5% pay attention, we have seven hundred specialists aware of our trial. If each has 25 patients with severe arrhythmia, that's 17,500 patients.

Imagine the potential of 17,500 people conversing with their cardiologist about a nearby clinical trial for a drug that could change their quality of life. Therein lies the power of numbers.

To make this work systematically and at scale, we need a clever mix of data, algorithms, analytics and automation that all come together via a model and an integrated set of technologies. The model describes how the process will work and the technologies do the work.

Follow the Data Story, and the Model Emerges

Various data sources allow us to "itemize" every physician across the country, their specialty, years of experience, places of practice, and tenure at the location. Other data offers their prescription writing and, by correlation, their patient statistics. None of the data is great by itself, but when blended and sanitized, it becomes fit for purpose.

For example, we construct profiles of doctors versus nurses or older physicians versus younger. We group physicians into clinics where they probably know each other. We can deduce that many prescriptions written by a nurse in the clinic are likely in support of their doctors. We segment physicians by their frequency of prescription refills. This creates a picture of "who we are working with."

When we later communicate the clinical trial background to a physician, we want to know if there was "interest" or not. We do this by structuring the content with progression triggers we track – was it opened? Was it read to the end? Was a "send me more information" requested? If we "see" no engagement with the content, we send a thoughtful reminder, which again is tracked.

We also use different versions of the content to sort out what works better. For example, longer, more comprehensive content versus less?

The content includes a referral card for the physician to give to potentially interested patients that conveys trial information in a manner suitable for the patient. Again, we want to know if there was "interest" and track the activity of this content. Remember, we don't know anything about the patient; we know that "one of the physician's patients had interest," and by distinguishing each referral card, we get a sense of "how many patients" had interest.

Finally, the referral card is also set up for scanning at the clinical trial site, which we track. Whenever that occurs, we then know that a specific anonymous patient of a particular physician attended the site. This represents success and "closes" the process.

As you can see, along the way, we have captured valuable data regarding the effectiveness of a given series of outreaches to a given profile of physicians. With this "process" data, we continuously provide feedback on the parameters that increase success and pair down the ones that do not.
The model provides the structure that supports the entire end-to-end "story":

- Organizing physicians into profiles with accurate "itemization."
- Creating a target list of physicians based on their profile and trial site proximity.
- Sending a series of profile-specific communication outreaches
- Tracking their corresponding engagement activity and that of their patients
- Feeding back parameters that are more effective at advancing the process.

Those with a data-driven marketing background will recognize the similarity with campaign management. Indeed, the model is based on CTI's Customer Journey framework, which employs "smart segmentation" and "next best action" algorithms across numerous business domains. The nuance here is we are driving influence (the physician talking to their patient) while maintaining rigorous anonymity to meet privacy needs.

Furthermore, we must avoid deduction of the relationship with a specific patient by employing anonymity-in-numbers. To illustrate the point, we do not want to engage with an HCP that appears to have only 2 patients. If one of those patients applies for the trial, there is a 50% chance we can deduce their physician relationship.

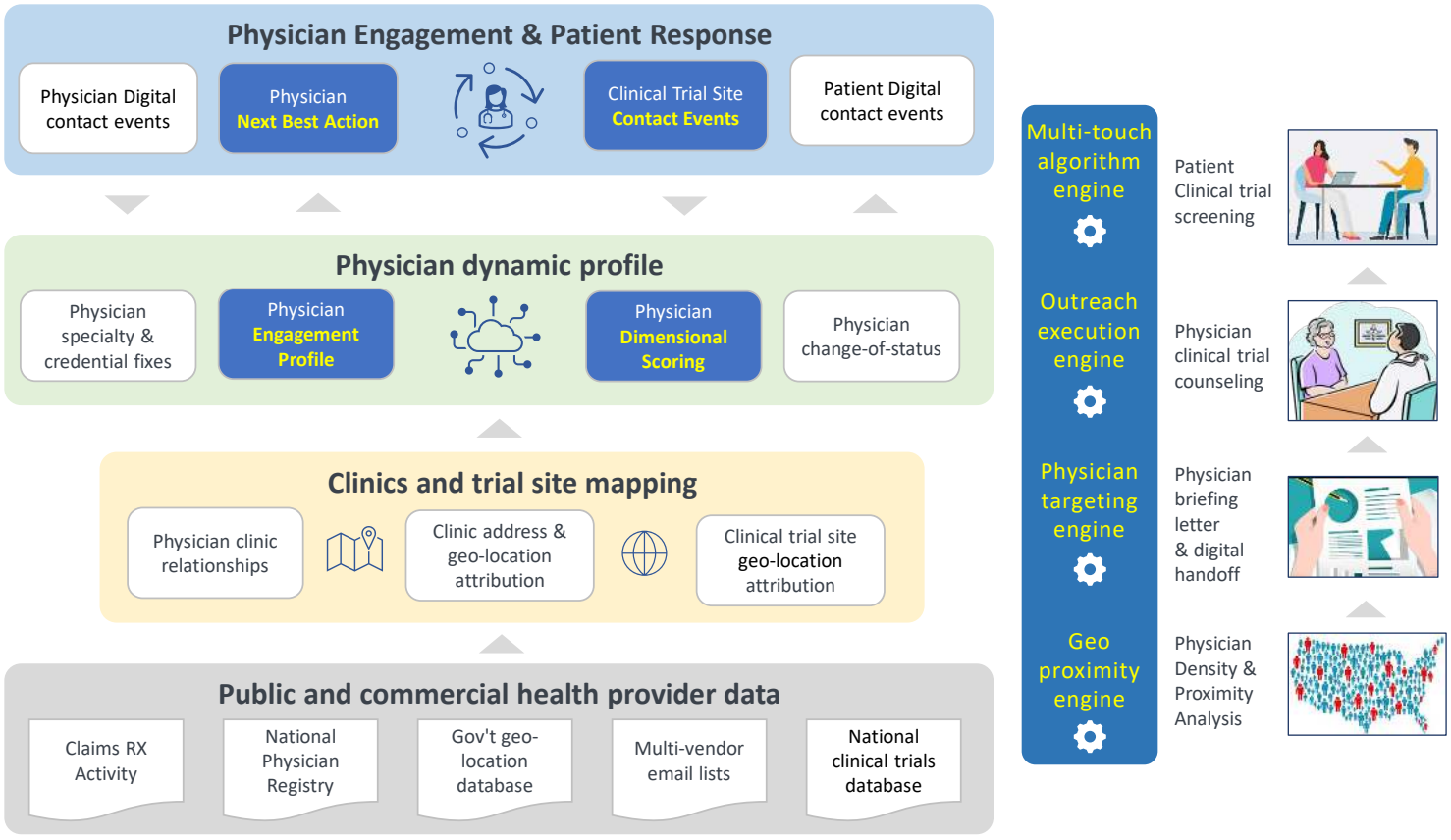
A final point of note: the progression of this process can cut over to other pharmaceutical teams, for example, providing MSLs with "interested" physicians to follow up. Or recruiters with "interested" HCPs that "stalled."

Analytics, Algorithms, and Automation

Analytics is where the "fun" work happens. We use the model to explore physicians to target iteratively, maybe experimenting with proximity and patient counts. Or examine how certain outreach content drives better engagement with nurses and go back to prior "outreach targets" that did not progress using this more compelling content.

Algorithms help sift through large permutations to automatically discover relevant patterns, identifying which profiles engage best with what content and outreach cycle. For example, upstate New York and northern New England physicians respond better to postal letters than email.

Automation mechanizes the end-to-end pipeline, providing scale, integrity, and repeatability: from ingesting the source data, scrubbing, and standardizing the data, enriching it with better credentials and location attributes, developing target outreach cohorts, executing the digital and physical/paper outreach, and capturing the engagement activity. The logical depiction of the system is as follows.



Clinical Trial Site Planning

A preferred clinical trial site will be an established facility for conducting similar trials. There may be hundreds of possible sites, even when reduced to those that have undertaken similar studies.

The ability to identify physicians by specialty with geo-location accuracy blended with clinical trial site location data underpins the targeting process – for both physician candidates and the trial site candidates.

By applying the Haversine formula, we tag every relevant physician with the names of the nearest three sites to their places of practice. We then run a density-proximity analysis to rank how many physicians are within, say, 20 miles of a given site and the corresponding patient pool.

Suppose the site planning team needs to identify 30 of the best sites nationwide. This invaluable capability enables them to prioritize sites and offer a total potential physician capture ratio. Or recruiters with "interested" HCPs that "stalled."

Deployment

The technology is entirely cloud-based, composed of:

- External data ingestion, data cleansing and database
- High-volume nationwide dynamic content print-and-mail services
- High-volume email delivery with webhook event triggers
- Digital content delivery with webhook event triggers
- Interactive analytic density-proximity national map dashboard

CTI's customer journey framework executes the necessary rules that marshal the entire process.

The entire solution is available "as a service" (i.e., CTI provisions and runs the operations) or may be deployed with the customer's cloud tenants.

Return on Investment

The platform delivers "push-button" outreach to tens of thousands of HCPs with "as-it-happens" visibility into the engagement activity. The result is orders of magnitude superior to recruiters cold-calling prospective patients as measured by speed to pipeline, cost/patient, and site attendance numbers.

What Comes Next?

Much information defines the clinical trial that needs to be explained to the prospective patient. While this is best handled person-to-person – typically at the point of trial screening – integration of LLM chatbots into the digital content to help the "curious" become "committed to learning more" is likely.

The chatbot's goal would be to make it easy for the prospective patient to connect with the trial site coordination team and book the screening appointment.

The same approach could be applied to the physician, with the chatbot armed with more scientific facts and offering to connect the physician with an MSL for person-to-person follow-up. However, this may lead to thorny compliance issues, and it's questionable that physicians will engage with such an experience, preferring to read and then decide.

Contact us to learn more about our Customer Journey Framework and to explore our real-world case studies showing how we have helped our pharmaceutical clients better engage physicians in their clinical trial recruitment.