SMARTER DRUG DEVELOPMENT: TRANSFORMING YOUR CLINICAL OPERATING MODEL

WHY NOW? THE URGENCY TO CHANGE THE CLINICAL OPERATING MODEL...

While today is an exciting time for the biopharma industry in terms of scientific innovation (e.g. immuno-oncology, targeted therapies, RNAi, stem cells), growing R&D pipelines, and the increasing number of FDA approvals, a consistent challenge remains – the rigorous and costly clinical development effort required to bring a new product to market.

Clinical development is the lengthiest, most operationally complex, and most expensive part of the R&D lifecycle. During this phase, key activities and critical decisions take place that largely determine total program investment, probability of success, and time to market for a particular drug therapy. Failure to efficiently execute a clinical development program can mean a significant loss of market share, cost overruns, FDA labeling restrictions, increased patient burden, shortened patent life, or product rejection.

Consequently, the ability to efficiently execute clinical programs on a consistent basis is a true source of competitive advantage and is necessary to realize the full potential of today’s promising R&D pipelines.

Despite this, many companies today are experiencing sub-optimal performance in clinical trial execution. We believe there are several reasons for this:

- Excessive use of “decision by committee” resulting in a lack of clear accountability, compounded by multiple layers of review and approval and ultimately longer cycle times
- R&D functional silos [extending across scientific and operational communities and externally with vendors and key partners] that impede operational efficiency
- Bloated organizational structures and duplicative functions due to repeated mergers and acquisitions
- Excessive risk aversion (i.e. a “cover every base” approach not fully recognizing the negative impact on cycle time and cost)

“The clinical trial business model has not kept pace with potential for efficiency gains through technological advances or centralized coordination.”

“2015 pipeline estimated at $493B per EvaluatePharma® World Preview 2015
“50 FDA NME and biologic approvals in 2014, per EvaluatePharma® World Preview 2015
• Evolving industry regulations
  o More risk averse FDA less likely to approve a drug with any safety issues unless there are clear medical benefits that significantly outweigh the risks
  o Increased requirement for large Phase III outcomes trials, greatly increasing development cost and time
  o Greater compliance burden associated with changing technology and data standards

WHAT DOES TRANSFORMING CLINICAL OPERATIONS LOOK LIKE?

In response to the above challenges, leading companies are moving away from legacy operating models that do not incorporate the flexibility, agility, and innovation needed to be successful in today’s dynamic drug development environment. These companies have restructured their clinical R&D operations organizations, developed innovative new approaches to trial design and execution, increased the level of external partnering and collaboration, and applied standardization across processes, data and technologies.

Each organization needs to assess their unique situation to determine how best to move forward (e.g. how much change to implement, where, when, how fast, etc.). A comprehensive capabilities and situation assessment should include questions such as:

• How confident are we that our current capabilities are sufficient to meet all of our pipeline objectives for clinical development over the next 5- or 10-year period?
• How do we compare to our industry peers on key metrics such as protocol complexity, site performance, cost per patient, regulatory approval time, etc.?
• Are there innovative processes and technologies we could take advantage of to accelerate clinical data collection and analysis while ensuring top quality and compliance?
• How effectively do we interface with key partners from academic research centers, other biopharma or medical device companies, industry consortiums, contract research organizations (CROs), government, nonprofit research networks, and patient advocacy groups?

Extensive planning and coordination is required to transform from a legacy structure with fragmented processes and technologies into a cohesive end-to-end operating model. A successful transformation is best implemented as an integrated program rather than a series of unrelated or loosely related initiatives. The planning phase should include a detailed assessment of interdependencies, risk, and change management across the entire anticipated program. In addition, clear governance structures should be put in place at the appropriate time, both for program implementation and for ongoing “future state” operations.

Furthermore, a transformation effort needs to involve all key stakeholders in addition to operations – therapeutic areas, data management, biostatistics, early development, regulatory, IT, etc., and include regional representation for companies with global operations.

A CLOSER LOOK AT THE COMPONENTS OF THE “NEW” CLINICAL OPERATING MODEL

Transformation of the Clinical Operating Model centers around three core elements:

1. Organizational Structure
2. Business Processes & Methodologies
3. Clinical Operations Data & Technology

Core Element 1: Organizational Structure

Transformation Focus: Break down functional and political barriers to enhance interactions and improve coordination internally between scientific and operational communities, and engage more effectively with external partners.

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<th>Operating Model Dimension</th>
<th>Legacy Operating Model</th>
<th>Transformed Operating Model</th>
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| Organizational Structure  | • Silos based on scientific, operational, therapeutic area or geographic orientation  
                           • Trials mostly run by in-house teams, opportunistic outsourcing across large vendor base  
                           • Difficulty in sharing information due to disparate tools and inefficient organizational alignment  
                           • Delayed handoffs with key suppliers and partners  
                           • Underperforming investigator sites  
                           • Inefficient and inflexible geographic footprint  
                           | • Integrated scientific and operations communities clear points of contact and handoff accountability  
                           • Strategic CRO and external vendor partnerships, outsourcing at both program and functional level, tailored to particular needs of program and product development stage  
                           • Strong governance across representative business functions that provides strong oversight, decision making, and guiding principles  |
## Core Element 2: Business Processes & Methodologies

**Transformation Focus:** Innovate, streamline, and simplify operations to improve quality, productivity, and cycle-time performance.

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| **Business Processes & Methodologies** | • Lack of / slow uptake of innovative methodologies due to perspective that current processes are working adequately  
• Disparate, "bloated" processes with unclear governance  
• Processes that have evolved due to independently operating organizational silos and/or mergers and acquisitions  
• Complex protocol designs, lengthy site qualification and set-up timelines, inefficient study monitoring, slow patient recruitment, randomization with a high cost-per-patient | • Accelerated implementation of innovative processes such as adaptive trials and risk-based monitoring  
• Streamlined, integrated global processes with clear and effective governance  
• Improved Investigator relationships and patient recruitment/retention  
• Decreased study complexity, cost-per-patient, development cycle times  
• A quality and compliance focus that is data-driven and balances retrospective auditing with proactive, risk-based monitoring |

## Core Element 3: Clinical Operations Data & Technology

**Transformation Focus:** Define an end-to-end data management strategy to improve data quality and compliance in response to current business processes and regulatory trends. Select technology platform(s) to support this strategy, replacing disparate legacy systems where appropriate.

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| **Clinical Operations Data & Technology** | • Sub-optimization, with different tools used by different parts of the organization  
• Heavy dependence on internal infrastructure  
• Heavy investment in cumbersome legacy systems, slow uptake of innovative tools and technology  
• Different versions and/or unclear location of source data  
• Multiple data repositories that don’t integrate and contain duplicative or conflicting data | • Clear, documented view of the organization’s data eco-system  
• Selective and thoughtful implementation of new tools and processes (e.g. cloud-based CTMS, eTMF, RTSM)  
• Automated workflow that creates efficiencies through a unified and highly scalable architecture  
• Seamless dataflow across platforms to ensure data integrity, speed and efficiency through the development process  
• Enhanced use of data visualization and analytics to improve drug development, knowledge management and decision making |
HOW DO YOU GET FROM HERE TO THERE?

Transforming your organization’s clinical operating model, while also “keeping the pipeline flowing” can be a daunting task. Given the size and complexity of the business functions, processes, tools, and data flows involved, it is important to understand how each of these components tie-into and impact one another. Furthermore, each organization must understand, address, and eventually overcome potential barriers to transformation, such as:

- Unclear or outdated perspective on how the organization’s clinical development performance compares to peers in industry
- Complexity of learning and adopting new eClinical tools and development processes
- Incomplete view of technical and organizational interdependencies and how they impact one another
- Lack of understanding of how to migrate from legacy platforms to new technologies (e.g., data mapping, cutover timing, validation, decommissioning, etc.)
- Insufficient employee capacity to push through a transformation while concurrently performing ongoing operations tasks
- Limited resources with key skill sets needed to drive transformation (e.g., business analysis/planning, business process design, IT design, program management, organizational change management, etc.)

These barriers are best overcome by taking a comprehensive approach that includes all three core elements of transformation, as further described below.

**Organizational Structure**

The organizational structure needs to evolve so that it can best support the transformation goals of operational efficiency, agility and innovation. These efforts should focus on driving improved decision making by removing unnecessary handoffs and review cycles, providing clear accountability, and establishing strong governance. The organization should be designed to establish an optimal level of engagement between operations teams and internal therapeutic area partners, Medical Affairs, and other functional scientific groups.

The development of the organizational design must also consider how to best engage with key external partners, such as CROs, staffing agencies, and technology vendors. Traditionally, outsourcing decisions have been made in an isolated manner, optimized only for the needs of a given trial or perhaps therapy program, or at best for a given therapeutic area. Today’s complex environment requires a strategic approach that can leverage and balance opportunities for improvements in cycle time, cost performance, and quality across the entire R&D organization. This typically involves applying both functional and programmatic outsourcing, considering both scientific and operational needs.

A strategic outsourcing model typically includes moving to a smaller, more manageable number of preferred partners. In conjunction with this, the workload can be more actively managed so that the “peaks” can be externalized and a more stable in-house staff level can be matched to the baseline demand.

Introducing a new organizational design typically involves changes to individual roles and responsibilities, as well as to the underlying structure of the organization. Supporting employees through this aspect of transformation demands particular attention to organizational change management.
Business Processes & Methodologies

The clinical operations organization at many pharmaceutical companies today has been impacted significantly via one or more mergers, acquisitions, and/or consolidations. As a result, many business processes are not harmonized or executed consistently across the various functions and/or geographic regions. Also, business processes may have evolved to be overly complex, with major gaps or areas of duplication, and with unclear accountability, governance, and compliance oversight. Process training and support is often limited and not updated in concert with ongoing changes.

In addition to streamlining business processes, clinical operations groups should invest in developing new tools and methods that can drive additional development value. For example, adaptive trial design and structured protocol authoring are innovative approaches that can be supported by eClinical tools to increase patient enrollment and retention, reduce regulatory risk, speed data collection and analysis, and decrease cost-per-patient.

In the study execution area, transitioning to risk-based monitoring can significantly reduce the overall monitoring effort (e.g. fewer site visits with targeted source document verification). Implementing mobile device based monitoring can drive additional cost reduction and also can reduce the travel burden on patients.

Clinical Operations Data & Technology

Replacing disconnected legacy systems and data/document repositories with integrated platforms based on robust data standards will improve data flow, cycle time and quality. The first step is a comprehensive assessment, with all impacted functions having a seat at the table. Rushing the selection of a new technology solution (e.g. a new CTMS or eTMF system) based on a past relationship or incomplete requirements can result in design and functionality gaps, compliance risks, and challenges to user adoption. A clear understanding of business needs must drive decisions such as “keep vs. replace” for legacy systems and selection for new technology solutions. When the technology strategy and roadmap is based on a thorough understanding of business needs, subsequent phases (e.g. defining functional requirements and system architecture) can proceed more smoothly.

Successfully implementing the technology side of a transformation requires more than just new platforms and systems. Teams must also focus on various complementary activities that are critical to ensure clinical data quality, and accessibility, at a reasonable cost. Examples of such activities include defining end-to-end clinical data standards, mapping and consolidating data repositories, and establishing a data governance model. To minimize the potential for delays, re-work and compliance issues, these activities should be planned and implemented as part of a coordinated program. The program scope should encompass all relevant data domains, elements, consumers, and sources. Particular attention should be focused on how to best align with current Health Authority regulations, industry standards, and reference models.

“Drug developers understand that substantial operational improvements will more likely flow from new approaches that increase the probability of success, rather than from actions which merely seek to reduce or prevent failures.”

Ken Getz, Tufts CSDD Senior Research Fellow

**“Drug Developers Actively Improving Efficiency of Clinical Trials” by Sandra Peters, Tufts Center for the Study of Drug Development, April 26, 2011**
CONCLUSION

Today, there is great excitement about recent scientific breakthroughs that will lead to dramatic improvements in human health. Nonetheless, the overall environment remains one in which bringing a new drug to market is a risky and challenging endeavor. Despite recent improvements in the number of FDA approvals, the Phase III-to-FDA approval success rate remains only about 65%, with less than half of the approved drugs (~40% in 2014) being first-in-class.\(^6\) At the same time, the cost and complexity of clinical development continues to rise.

In response to this situation, leading biopharma companies are transforming their legacy clinical operating models to become leaner, more agile, and more innovative organizations. These companies understand the imperative to better align scientific and operational communities, streamline and standardize their business processes, integrate innovative technology solutions, and strengthen governance and decision-making processes.

Having successfully led several clinical transformation efforts, North Highland understands how to overcome organizational barriers to change. Equipped with the necessary leadership skills, strategic R&D perspectives, and hands-on execution experience, we are ready to partner with you to catalyze your clinical transformation program. We are fully focused on helping our clients identify and realize tangible business benefits; since we guarantee our work, our success depends on your success.

\(^6\)FDA/CMS Summit, CDER New Drug Review 2014 Update

ABOUT NORTH HIGHLAND

North Highland is a global management consulting firm that delivers unique value, relevant big ideas and strategic business capabilities to clients around the world. The firm solves complex business problems for clients in multiple industries through an integrated approach and offers specialty services via its Data and Analytics, Managed Services, and Sparks Grove divisions. North Highland is an employee-owned firm that has been named as a “Best Firm to Work For” every year since 2007 by Consulting Magazine. The firm is a member of Cordence Worldwide [www.cordenceworldwide.com], a global management consulting alliance. For more information, visit [northhighland.com](http://northhighland.com) and connect with us on LinkedIn, Twitter and Facebook.

To learn more or have a discussion, please contact:

Terry Mellon  
Principal, R&D Client Lead  
terrence.mellon@northhighland.com  
+1 215.880.2664

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