



Driving Greater Efficiency Through Modular Trial Design

By Medical Research Network

As the complexity of therapeutic development grows and patient expectations evolve, traditional clinical trial models — heavily reliant on centralized sites, rigid protocols, and manual processes — are beginning to demonstrate their limitations. To keep pace with the evolving, intricate demands of today's clinical trial landscape, these legacy systems must adapt commensurately, incorporating new technologies, services, and strategies to enable more streamlined, connected clinical ecosystems.

Numerous studies underscore the systemic challenges plaguing traditional clinical trials. Patient recruitment remains one of the most persistent bottlenecks, with up to 85% of trials failing to meet enrollment timelines and 30% of participants dropping out before study completion¹. Geographic limitations, excessive site visits, logistical challenges, and protocol complexity all contribute to participant burden, especially for indications requiring frequent monitoring or affecting rare populations with limited access to trial sites. These obstacles not only serve to delay timelines but also inflate costs and jeopardize data quality.

In response, the industry is pursuing emerging technologies and novel operational models that enable more flexible, scalable approaches to trial delivery. From decentralized and hybrid trial designs to advanced data capture platforms and patient concierge services, sponsors now have tools to reduce friction and broaden access. This technology integration, combined with right-sized and synergistic support solutions, can transform trial management, improve efficiency, enhance the participant experience, and accelerate the journey from bench to bedside.

Where Traditional Trial Management Falls Short

Clinical trial management today is fraught with persistent, well-documented challenges. Chief among them is patient recruitment: despite advances in digital outreach and awareness campaigns, most trials fail to meet enrollment timelines, and more than one-third of trials are terminated due to enrollment shortfalls.²

This recruitment crisis is compounded by underrepresentation of diverse populations, which compromises the generalizability and equity of research outcomes.³ Budget overruns remain another chronic concern: trials frequently exceed initial cost projections due to protocol amendments, site delays, and unforeseen logistical hurdles.⁴ In parallel, many sponsors rely on outdated or inflexible technologies to manage trial workflows, leading to fragmented communication, duplicative efforts, and missed opportunities for automation or real-time optimization.

Perhaps more perniciously, a lack of institutional knowledge or continuity, especially in smaller biotech companies, can lead to gaps in strategy, compliance, and operational resilience. While the temptation to solve every challenge internally is understandable, it often stretches teams thin and results in missed regulatory, operational, or patient-centric milestones. The reality is that no single organization can be an expert in every facet of study strategy, execution, and global logistics, especially in today's increasingly decentralized and complex clinical research environment.

Another underappreciated piece of the clinical trial puzzle is the relationship between sponsors and trial sites: in an environment where experienced, high-performing sites are in high demand, the competition among sponsors can be fierce. Unfortunately, this has not always led to better alignment or collaboration, as many sponsors may invest heavily in their trial design and technology platforms without truly understanding the operational burdens and limitations faced by sites. The disconnect between the expectations of trial sponsors and the capacity or willingness of sites can derail even the most well-funded or scientifically sound studies.⁵

Moreover, sites frequently face an overwhelming number of study opportunities and must weigh each against staffing capacity, patient population fit, and anticipated support from the sponsor. When support structures are unclear, communication is sporadic, or trial protocols are overly complex, sites may decline participation or deprioritize studies, resulting in a widening gap between trial sponsors and the very partners they rely on for execution.

The Case For Modular Trial Design

To overcome the entrenched issues many clinical programs face, early and strategic planning is paramount. Often, sponsors who succeed do so by embracing innovative delivery models from the outset — models that are more decentralized, technology-enabled, and patient-centric. Hybrid trials, virtual visits, and condition-matching platforms are no longer fringe tools but essential components of a modern trial portfolio.

More importantly, forward-thinking sponsors integrate these innovations during the planning phase, rather than retrofitting them midstream. By considering site feedback early, leveraging real-world data to inform feasibility assessments, and building flexible protocol frameworks, they can reduce burdens, improve patient access, and ensure better alignment between stakeholders.

In response to the persistent inefficiencies of traditional trial execution, the industry is increasingly turning to modular, service-based models to enhance flexibility, accelerate timelines, and reduce operational burdens. Unlike rigid, monolithic frameworks, modular trial strategies empower sponsors to scale resources, tailor patient engagement approaches, and integrate geographically diverse sites with greater precision.

This model delivers multiple tangible benefits, including:

- **Faster start-up** through pre-qualified, research-ready networks that reduce the time and complexity of site selection and activation.
- **Improved patient experience** by enabling in-home visits and remote monitoring, which not only minimizes the travel burden but also allows patients to participate on their terms.
- **Increased inclusivity and reach**, particularly for patients in underserved or rural areas who have historically been excluded from centralized site-based trials.

- **Lower dropout rates and improved protocol adherence**, supported by consistent engagement, simplified procedures, and flexible visit schedules.
- **Strategic operational support** for clinical operations teams, enabling consistent implementation across countries or regions while freeing internal teams from executional overload.

At the heart of modular trial delivery is a flexible suite of decentralized tools designed to meet the demands of modern studies, particularly those that span geographies, require rapid scale-up, or aim to engage more diverse and distributed patient populations. These tools are not monolithic solutions; rather, they function as adaptable building blocks that can be deployed independently or in combination based on a trial's unique requirements.

One of the most transformative tools in this space is Home Trial Support (HTS), which allows for clinical visits to take place in the patient's own home. This model involves trained healthcare professionals (HCPs) traveling to patients to conduct study procedures, collect samples, administer investigational products, and record critical endpoints. This not only reduces the logistical burden on patients but also helps to capture real-world data in a setting that more closely reflects everyday life, enhancing both compliance and data quality.

Another foundational element is the use of site networks, which enable sponsors to tap into pre-qualified groups of research-ready institutions and investigators, significantly reducing study start-up timelines by bypassing the traditional labor-intensive site identification process. These networks often share harmonized operating procedures, centralized contracting and training, and access to dedicated support teams — leading to more consistent execution across sites and faster enrollment. This is where MRN's Site Network stands apart: in addition to working with experienced, research-ready institutions, MRN partners with under-resourced community sites and trial-naïve centers that may require additional infrastructure, training, and operational support to participate. By enabling these underserved, previously untapped communities to take part in research, the network expands not only access to qualified sites but also opens the door to a broader and more diverse population of patients.

Site and patient support services further enhance this ecosystem by addressing many of the ancillary needs that can become major operational roadblocks during trial execution. These services range from patient travel coordination and translation services to digital engagement tools, eConsent platforms, and 24/7 helplines for participant questions or adverse event reporting. This infrastructure can reduce friction for participants and site staff alike, ensuring smoother engagement throughout the trial life cycle.

Medical Research Network (MRN), an innovative clinical trial delivery company, has developed a community-centered approach that brings research directly to patients, driving recruitment and consistently achieving retention rates exceeding 95%. Through its global Site Network and in-home trial capabilities, enhanced with regulatory approved eClinical systems, MRN strengthens community site engagement, expands patient access, and supports the enrollment and retention of diverse populations. These solutions are designed to streamline clinical trial execution while making research more inclusive, efficient, and globally accessible.

Conclusion

The scientific breakthroughs driving innovation in areas like oncology, gene therapy, and rare diseases are paralleled by rising demands on trial design, execution, and compliance. Yet even the most promising therapies can be delayed — or derailed entirely — by operational inefficiencies, limited patient access, and fragmented execution models. In this environment, logistical challenges are not peripheral; they are often the defining barriers between novel medicines and the patients who need them.

Addressing these obstacles requires more than reactive problem-solving. It demands proactive strategic planning that embeds executional excellence into the study blueprint from day one. Implementing fit-for-purpose solutions early rather than retrofitting them mid-trial can significantly accelerate timelines, improve data integrity, and reduce overall cost. For sponsors, this means faster return on investment, fewer protocol deviations, and a smoother path to regulatory approval.

MRN offers a uniquely integrated set of capabilities that align with these needs. From Home Trial Support that reduces the patient burden and boosts retention to a global Site network that cut start-up timelines and site and patient support services that enhance engagement and consistency, MRN brings modular, scalable solutions to bear, with demonstrable successes across more than 100 indications and for various phases of development. When these services are deployed in tandem, they don't just solve isolated problems; they form a coordinated strategy for delivering trials with greater speed, flexibility, and operational clarity.

References

1. Tufts Center for the Study of Drug Development (2013). *Tufts CSDD Impact Report: 89% of clinical trials experience delays, largely due to patient recruitment and retention issues*. Tufts University.
2. Razuvayevskaya O, et al. *Genetic factors associated with reasons for clinical trial stoppage*. *Nat Genet*. 2024 Sep;56(9):1862-1867. doi: 10.1038/s41588-024-01854-z.
3. Gottesman R, et al. *Recruiting Diverse Populations in Clinical Trials*. *Neurology*, 96, 509 - 510. <https://doi.org/10.1212/WNL.00000000000011639>. Last accessed June 2025.
4. Griessbach A, et al. *Resource use and costs of investigator-sponsored randomised clinical trials in Switzerland, Germany and the United Kingdom: a meta-research study*. *Journal of clinical epidemiology*, 111536 (2021). (2024). <https://doi.org/10.1016/j.jclinepi.2024.111536>. Last Accessed June 2025.
5. Jefferson T. *Sponsorship bias in clinical trials: growing menace or dawning realisation?* *Journal of the Royal Society of Medicine* (2020), 113, 148 - 157. <https://doi.org/10.1177/0141076820914242>. Last Accessed June 2025.

About MRN


MRN accelerates patient recruitment and improves patient engagement and retention through site-centric and patient-centric solutions.



As an innovative market-leader, MRN provides customized solutions to optimize each individual protocol and create more flexible, efficient and accessible clinical trials that deliver accelerated timelines.


Through integrated in-home visit delivery and a vast global network of trained, research ready sites, all empowered by MRN's digital solutions, MRN engages with and empowers diverse communities around the world to participate in and advance medical research.

Our offices


 **UK**
Medical Research Network Ltd
Talon House
Presley Way
Milton Keynes
Buckinghamshire
MK8 0ES
United Kingdom

 **USA**
Medical Research Network Inc.
540 Lake Cook Road
Suite 400
Deerfield, IL 60077
USA

 enquiries@themrn.co.uk
 www.themrn.io

 **Germany**
Medical Research Network Germany GmbH
Zettachring 12A
70567 Stuttgart
Deutschland

 **Spain**
Calle Francos Rodriguez
N:51 Chalet 25
28039
Madrid
España

 **Japan**
32F Shinjuku Nomura Building
1-26-2 Nishi Shinjuku
Shinjuku-ku Tokyo
163-0532 Japan

