How Sponsors Can Achieve Operational Efficiency with RTSM

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Inside This Whitepaper

When your trials rely on an investigational product (IP), your study timeline, budget, and overall success are closely tied to having the right product available at the right time and site. Once randomization is added in, sponsors can struggle to maintain an increasingly complex supply chain.

Randomization & Trial Supply Management (RTSM) aims to alleviate these pain points by solving high-risk and high-cost trial needs through an intelligent approach to operational management. Due to the inherently changing nature of randomized trials, both adaptive designs and master protocols require a highly sophisticated RTSM solution to swiftly and efficiently introduce mid-study protocol adjustments.

Benefits of Incorporating a Robust RTSM

An effective RTSM can help sites, sponsors, and study managers avoid common pitfalls associated with a complex supply chain, including:

- **IP Waste & Overages at Sites**—Reduce waste associated with site oversupply due to lack of supply chain control. RTSM applies a demand-driven approach based on awareness of subject randomization and site activity.
- **Lack of Supply Visibility**—Each IP is subject to unique maintenance requirements during its journey from production to dispensation. RTSM offers visibility over your IP throughout its entire lifecycle with enforced tracking data to enable proactive decisions and increase patient safety.
- **Responding Quickly to Changes**—When there are rapid changes in standard-of-care treatments or unexpected kinks in the supply chain, RTSM offers flexibility through connecting technology, services, and facilities. Gain visibility to make rapid, data-supported decisions.

When a master supply strategy is created and executed through a robust, integrated RTSM solution, it can become a powerful tool to achieve operational efficiency. It can also help your clinical teams detect an IP's effectiveness with better accuracy and gain a better understanding of the dose-response relationship.

But in an era of increased regulations and growing complexity, sponsors need to integrate RTSM throughout the entire IP development lifecycle—from initial production through final IP destruction—to realize its full potential. We will break down best practices sponsors can take to incorporate RTSM into their study operations.

1. Establish a Master Supply Strategy

A lot can go wrong in your attempts to deliver products to hundreds of remote sites and dispersed teams around the world. Much like a game of dominoes, any disruption to the supply chain has a ripple effect that can result in lengthy and costly delays to sponsors.

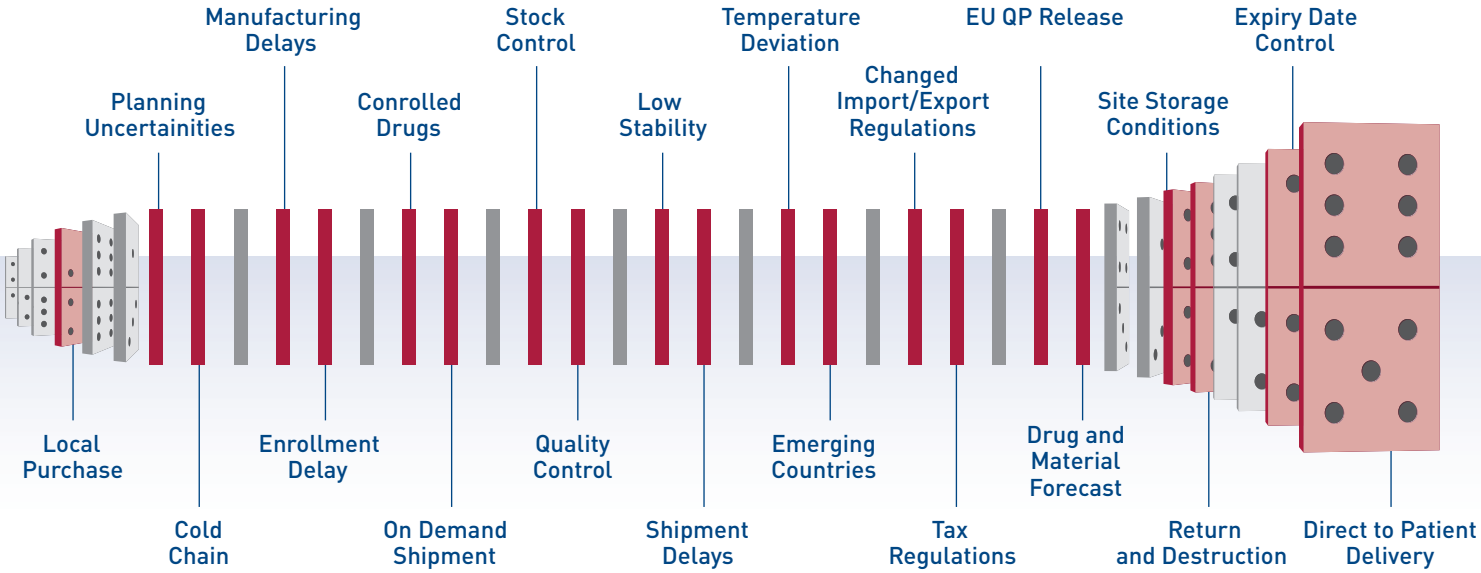

Figure 2. Challenges in the clinical supply chain

Image Source[1]

Getting RTSM right means early involvement of logistics experts in the clinical trial planning process to create a unified supply strategy. In tandem with drafting the study protocol, a master supply strategy should be created that integrates with your RTSM system from initial production, to packaging and labeling, through to final disposal.

No two trials are the same and each unique site requires different logistical considerations. A master supply strategy takes an intelligent and flexible approach to supply management so teams don't need to develop new, trial-specific protocols as they scale and expand.

When developing your strategy, sponsors should consider:

- Engaging with local compliance experts on regulatory updates and distribution issues.
- Forecasting the supply chain to predict IP inventory requirements based on clinical events and patient activity.
- Developing rules for a demand-driven site supply process
- Establishing a preferred randomization design schema.

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- Creating a plan for monitoring and maintaining temperature needs of IP during transit.
- Planning for site logistics including IP tracking to patients, preparation of ePRO/eCOA forms, kit assembly, and onsite data management.
- Enabling a standard for site inventory, resupply, and reconciliation that reduces IP waste.
- Determining if depot-to-depot shipments will be needed.
- Planning for IP return and destruction, as well as study closures and data transfers.

There are many considerations that go into planning your master supply strategy; but if executed in tandem with building out your RTSM system, it can help sponsors achieve operational synergy through one single solution.

2. Enable Real-Time Clinical Data Management

A Tufts Center for the Study of Drug Development study found that despite the growing number of clinical data sources, only one third of sponsors currently have a data strategy in place. Even worse, it's estimated that 15 - 30% of data collected during clinical trials was never used in new drug applications. This has contributed to longer database lock cycle times that cause downstream delays in drug and IP development.

In addition to being a helpful tool for supply chain management, RTSM can be a powerful clinical data source when leveraged correctly. A clinical trial supply may rely on multiple systems—one to control randomization and dispensation, another to track shipment and environmental factors, and a separate EDC to funnel clinical data into. Without a unified integration between these systems, data transfer delays and reconciliation requirements can occur between dispersed sites and teams.

A delay in data exchange could prevent a clinical team from determining if an IP is approved for dispensation or confirm if a kit's temperature has been properly maintained in transit.

And each day a drug is delayed could end up costing a sponsor between $600,000 to $8 million. By seeing your RTSM as a critical source of clinical data, and integrating it with your eClinical suite, sponsors and study managers can enable live data exchanges and streamline their end-to-end operations.

When successfully integrated into a study's supply operations, RTSM can help sponsors access:

- Real-time data exchanges across depots, sites, and sponsors without the need for IT support.
- Customizable, filterable reports to stay on top of live study progress and IP dispensation.
- Better site oversight and just-in-time clinical supply to help reduce IP overages by 20-40%.
- Automatic downstream data validation through unified solutions that help reduce reconciliation efforts.
- A combination of enforced and integrated tracking data to enable visibility and help supply chains go truly lean.

3. Conduct Risk-Based Monitoring

Before finalizing your master supply strategy and executing it through your RTSM, sponsors should consider including a comprehensive risk-based monitoring (RBM) assessment. The risk assessment scans for higher risk areas in your trial supply and randomization and lower risk areas that can be adapted or simplified. Sponsors should focus their risk assessment on maintaining IP quality, prioritizing patient safety, and ensuring data integrity and compliance.

Risk assessments should evaluate the impact, probability, and detectability measures for a myriad of categories including:

- Safety of each study phase
- Complexity of study and regulations
- Subject population size and patient burden
- Technology supporting the trial
- Investigational product
- Endpoints, data collection, and CRF sources
- IP logistics and trial supply chain
- Blinding / unblinding measures

To decrease the cost of clinical trials and increase patient adherence, sponsors should establish an ongoing risk-based monitoring plan within their RTSM. Monitoring continues to plague sponsors, driving up 25-30% of most trial costs. But risk-based monitoring is helping sponsors identify risks proactively, resulting in fewer risks in later-stage development that result in costly delays. With proper risk-based monitoring in place, sponsors can mitigate risks quickly, effectively maintaining the quality of a study and the safety of participants, while collecting high-quality, reliable data.

4. Streamline Trial Supply

Incorporating RTSM into your operational management should be considered early in your planning process. Since trials are beholden to ensuring the trial materials arrive at the right site at the right time, it's crucial to involve RTSM early.

Trial supply covers five major areas:

- Production and packaging
- IP delivery to and from depot to site or patient
- IP receipt and approval for allocation to subjects
- IP returns and resupply orders
- IP destruction

Without proper planning, a single disruption to the supply chain—from regulations and approvals, to packaging and labeling, to temperature-controlled transport, and more specialized logistics—can significantly affect the budget and timeline of your trials.

Sponsors should consult with experts along every stage of their supply chain to ensure proper planning of the product life cycle, while identifying ways to reduce waste. Core supply decisions must be made about IP packaging, storage requirements and expiry, dosing instructions, visit schedules, resupply, and data management. Once decisions are set, the protocol can be tested and forecasted within your RTSM as part of your UAT process.

RTSMs help streamline trial supply management by providing visibility across the entire supply chain. Sponsors and study managers can achieve operational efficiency by relying on a single system to track inventory, ensure IP integrity, and minimize IP waste at their sites.

5. Enable Lean, Demand-Driven Fulfillment to Reduce IP Waste

Once your supply strategy and data management strategies are finalized, be sure to consider your resupply strategy. RTSM connects your operational and clinical teams together on one single system so you have visibility over your inventory and randomization needs and can determine the best dispensing and resupply patterns for your trials. For many sponsors, this means feasibility for a lean, demand-driven fulfillment approach.

If the average rate of patient dropouts in clinical trials is 30%, it can be risky to give a patient a dedicated 10-week supply of an assigned treatment. If that patient withdraws from the study a few weeks in, the remaining supply is wasted and a new kit must be procured for the next patient assignment. Imagine how much IP can get wasted when 10-pack kits are accidentally damaged by the site, patient, or during delivery and storage. Instead of relying on bulk packaging or wasteful supply practices, RTSM is helping sponsors keep the right supply on-site and enable JIT trial supply.

Ways that RTSM supports demand-driven fulfillment:

- Real-time visibility over inventory status, location, and integrity.
- Full-control over data and products from depot to site, subject, and back.
- Immediate incident alerts if an IP fell outside of pre-set safety measures.
- Unified IP tracking, shipment approvals, and expiry logs ensures only approved IP is dispensed.
- Automated resupply orders and batch releases reduce site burden with a demand-driven supply.

6. Strengthen Participant Compliance

Participation in randomized trials can be demanding, with patients reporting higher levels of psychological, physical, and financial burdens than traditional trials. The cost of patient recruitment and retention continues to demand sponsors, as well, costing an average of $41,117 per patient.

RTSM can help sponsors alleviate burdens associated with randomized clinical trials by establishing workflows that increase patient adherence and compliance.

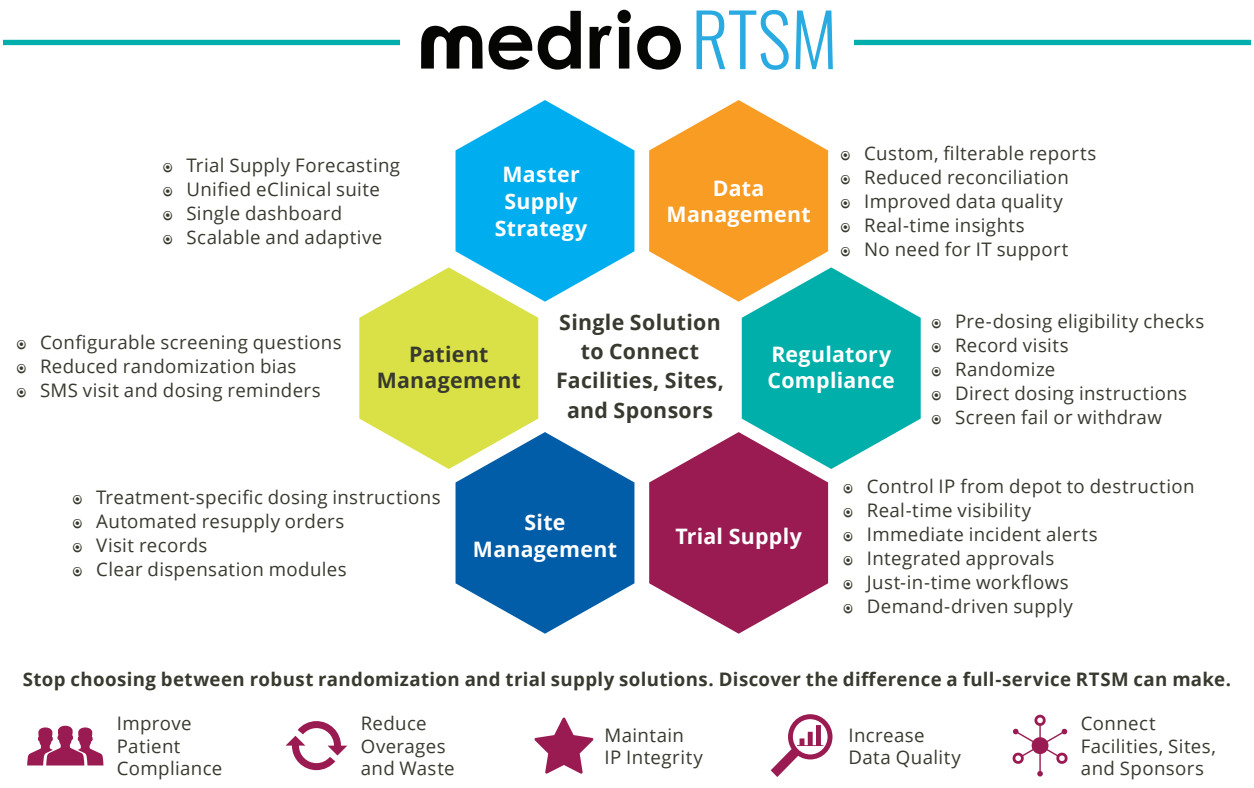
- **Streamline Patient Screening**—Reduce mid-study drop-outs and patient burden from the screening process by viewing live updates and adding configurable questions that capture eligibility criteria prior to randomization and treatment assignment.
- **Empower Sites for Better Patient Management**—Allow sites to access treatment-specific dosing schedules. Pre-dosing eligibility checks can be included as part of the study setup to streamline dispensing doses and achieve quicker FPI.
- **Cohort Management**—Empower your team to open, close, and extend cohorts based on the study's needs without IT or technical support. Segregate cohorts based on pre-set inclusion criteria at the time of screening and reduce patient burden.
- **Maintain IP Integrity for Patient Safety**—By enabling an RTSM-controlled fulfillment system, sponsors can maintain visibility over their IP at all times and prioritize patient safety. This allows them to ensure integrity and minimize waste from human-error associated with oversupplying sites.
- **Minimize Patient Burden**—Schedule automatic SMS messages containing visit or treatment-specific instructions to strengthen patient adherence and compliance.
- **Reduce Randomization Bias**—Full-service RTSM leverages dynamic randomization schema and algorithms to improve the blinding process and prevent bias when assigning treatments.

7. Adopt an Agile Approach with One Integrated System

Many RTSM solutions offer robust randomization or robust trial supply, but rarely both. The supply chain is deeply interconnected and randomization assignments directly impact your trial supply and vice versa. With an integrated solution of feature-rich randomization, trial supply, and EDC integration options, Medrio RTSM is the only solution equipped to support your end-to-end trial operations.

As Christine Hurley, COO at 4G Clinical, told Clinical Leader, "Over the years, it became apparent that supply management was just as critical as randomization and the combined action of them together elevates the function of this system. They are synergistic and need to co-exist."

An efficient and cost-effective clinical trial supply chain requires the right systems and personnel are in place so that the right materials arrive at the right site at the right time. When all of the pieces come together, sponsors can realize a comprehensive, end-to-end solution that reduces costs and delays by streamlining supply logistics. These streamlined logistics help sponsors achieve operational efficiency, while prioritizing patient safety and IP efficacy.



Let us show you how Medrio RTSM can fully support your trial supply and randomization needs. Learn more about our robust solution or sign up for a demo today.

About the Author

Ian is an established clinical trial technology professional with a background in developing innovative solutions as well as supporting established IVR and web technologies. Prior to founding HMD Clinical (acquired by Medrio in 2021), Ian spent 25 years in clinical research where he managed technology solutions for clinical operations and supply management. His work took him throughout the EU, as well as Africa, where he spent 4 years in South Africa modernizing and integrating clinical trial companies into a global CRO.

Ian received his BSc in Biology from the University of Edinburgh and Ph.D. in Neuroscience from the University of Bristol. His work has helped him travel the world, but he is currently home-based (like many of us) at his home in Scotland where he enjoys hobbies like Krav Maga.

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About Medrio

At Medrio, we believe that clinical trial technology shouldn't be difficult to use. That's why our full-service eClinical Data Management suite helps streamline your research and unify your solutions so you have more time to focus on your patients, rather than multiple vendors. Since 2005, our flexible technology has evolved alongside our customers to include an integrated suite of EDC, DDC, eConsent, RTSM and ePRO/eCOA solutions that support your teams and sites, while reducing patient burden.

Let our solutions put you back in the driver's seat with adaptive technology that easily powers mid-study changes and accelerates your trials, without compromising data quality. Or lean on our global team of experts who are available 24/7 to support you where you need it most. We've worked alongside Sponsors, CROs, and sites—spanning all therapeutic areas and trial phases—to secure over 375 approvals, because we know it takes a village to achieve a healthier world. Discover the Medrio difference today by visiting us at medrio.com.

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