Drug–Drug Interaction Studies: **Demonstrating Agility and Recruitment Excellence**

Introduction

Drug–drug interaction (DDI) studies represent a foundational component of clinical pharmacology, offering essential data on the pharmacokinetic and pharmacodynamic behavior of investigational compounds when co-administered with other therapeutic agents. Understanding these interactions is critical for optimizing dosage regimens, mitigating adverse effects, and ensuring the safe and effective use of new treatments in real-world settings. Regulatory authorities such as the U.S. FDA and the EMA require comprehensive DDI evaluations as part of early-phase and pivotal drug development programs to inform labeling, clinical guidance, and post-marketing surveillance.

For sponsors, DDI studies also play a pivotal role in characterizing metabolic pathways, identifying potential inhibitors or inducers of key enzymes and transporters, and determining the need for contraindications or dose adjustments. These studies demand precise execution, well-controlled conditions, and the ability to manage complex dosing schedules and sampling requirements, factors that make experienced CROs indispensable partners.

AXIS Clinicals has established a robust track record in conducting multifaceted DDI programs with a high degree of scientific rigor, operational efficiency, and compliance. Leveraging deep pharmacological expertise, comprehensive analytical infrastructure, and access to diverse volunteer populations, AXIS consistently delivers high-quality data aligned with regulatory expectations.

This case study presents AXIS Clinicals' successful execution of a series of DDI trials for a tricyclic small molecule under development for the treatment of Hepatitis D. These studies exemplify the organization's ability to design and implement complex protocols, maintain enrollment balance across sexes, and mobilize specialized populations on accelerated timelines without compromising data integrity or participant safety.

Study Overview

Drug:

Tricyclic small molecule for the treatment of Hepatitis D

Design:

Multiple single-site, open-label DDI studies assessing potential interactions with a range of co-administered agents.

Study Combination	Contract Signed	Screening Start	Subjects Dosed	Dosing Start	Clinic Completion
Fexofenadine / Rosuvastatin	April 26, 2018	June 19, 2018	36	July 13, 2018	July 25, 2018
Midazolam / Pitavastatin	May 1, 2018	July 5, 2018	34	July 28, 2018	August 8, 2018
Fexofenadine / Midazolam	March 20, 2019	March 26, 2019	36	April 17, 2019	April 29, 2019
Diflucan	June 30, 2021	July 07, 2021	23	August 1, 2021	August 23, 2021
Carvedilol	September 5, 2023	September 28, 2023	22	October 13, 2023	November 2, 2023
Oral Contraceptive	December 12, 2023	2 Jan 2024	22	January 29, 2024	February 27, 2024

Each study required multiple in-house stays to achieve steady-state medication levels, a design demanding tight coordination, high participant retention, and continuous safety monitoring.

Recruitment and Population Management

AXIS achieved timely and balanced enrollment for all studies, meeting sponsor expectations and maintaining proportional representation of male and female participants.

The population included:

- **Males** and **surgically sterile or post-menopausal females**, depending on study requirements
- A targeted balance between sexes to optimize generalizability of pharmacokinetic findings
- Rapid identification and enrollment of special populations, such as post-menopausal women, even under compressed recruitment timelines

These results highlight the importance of extensive access to a prequalified, diverse volunteer database and its experienced recruitment team capable of responding to sponsor needs with agility.

Outcomes and Performance

Across all six DDI trials:

- **Primary and secondary objectives** were successfully met
- **Study timelines** were achieved as contracted, with no delays in dosing or clinic completion
- **Data quality** met regulatory standards for submission to health authorities

Key Takeaways

This series of studies reinforces several operational strengths:

- **Agility:** Rapid initiation and smooth execution of multiple overlapping DDI studies
- **Recruitment Excellence:** Proven ability to enroll specific subgroups, such as post-menopausal women, on short notice
- **Regulatory and Scientific Rigor:** Consistent delivery of high-quality data aligned with FDA and EMA bioanalytical and pharmacokinetic expectations
- **Reliability:** On-time study completion across multiple sponsors and therapeutic combinations

Broader Implications for Clinical Development

The successful completion of these drug–drug interaction (DDI) studies extends beyond the immediate development of a tricyclic compound for Hepatitis D. It highlights best practices that are increasingly vital for sponsors navigating today's complex regulatory and operational landscape.

First, these results reaffirm the importance of **strategic study design and operational adaptability** in early-phase clinical research. As drug pipelines diversify and combination therapies grow more common, sponsors require partners who can integrate multiple studies under tight timelines while maintaining regulatory compliance. Axis's coordinated approach, leveraging in-house bioanalytical expertise, controlled clinical environments, and seamless project management, demonstrates how efficiency can coexist with scientific rigor.

Second, the consistent enrollment of balanced and well-characterized populations supports **regulatory expectations for representativeness and data reliability**. Inclusion of post-menopausal women in DDI research is particularly noteworthy, as these populations are often under-represented despite their clinical relevance. Axis's ability to rapidly identify, screen, and retain such volunteers ensures that resulting data have both statistical robustness and translational value.

Third, the reproducibility of outcomes across multiple studies illustrates **a scalable, quality-driven framework**. This framework integrates real-time monitoring, standardized pharmacokinetic assessments, and rigorous quality-control processes, key elements in ensuring that DDI results withstand global regulatory scrutiny.

Finally, the success of these programs demonstrates how agile CROs contribute directly to development efficiency and decision-making. Reliable early-phase data accelerate downstream clinical and regulatory milestones, enabling sponsors to make informed "go/no-go" determinations and reduce overall development risk.

Collectively, these findings reinforce that operational excellence in DDI studies is a strategic enabler of safer, faster, and more cost-effective drug development.

Conclusion

AXIS Clinicals' proven capability to conduct complex DDI studies under compressed timelines reflects both scientific precision and operational efficiency. By maintaining a balance between speed and rigor, Axis continues to demonstrate why agile, scientifically driven CROs are critical partners in early-phase clinical development.

Through its robust volunteer network, skilled clinical teams, and disciplined project management, Axis ensures that sponsors can rely on timely, high-quality DDI data to advance promising therapies safely and efficiently toward approval.