

Clinical Trial Operations Dashboard

Overview

This dashboard was developed as part of the Novartis Case Study Competition to address operational risk management in clinical trials. It transforms complex trial data into prioritized, actionable insights for Clinical Research Associates (CRAs) and Data Quality Teams.

What This Dashboard Does

- **Identifies high-risk subjects** automatically across all active studies
- **Calculates a Data Quality Index (DQI)** that scores each subject's operational risk
- **Detects risk signals** like missing data, overdue visits, and unresolved queries
- **Prioritizes work** so teams focus on what matters most
- **Maintains compliance** with full audit trails for regulatory requirements

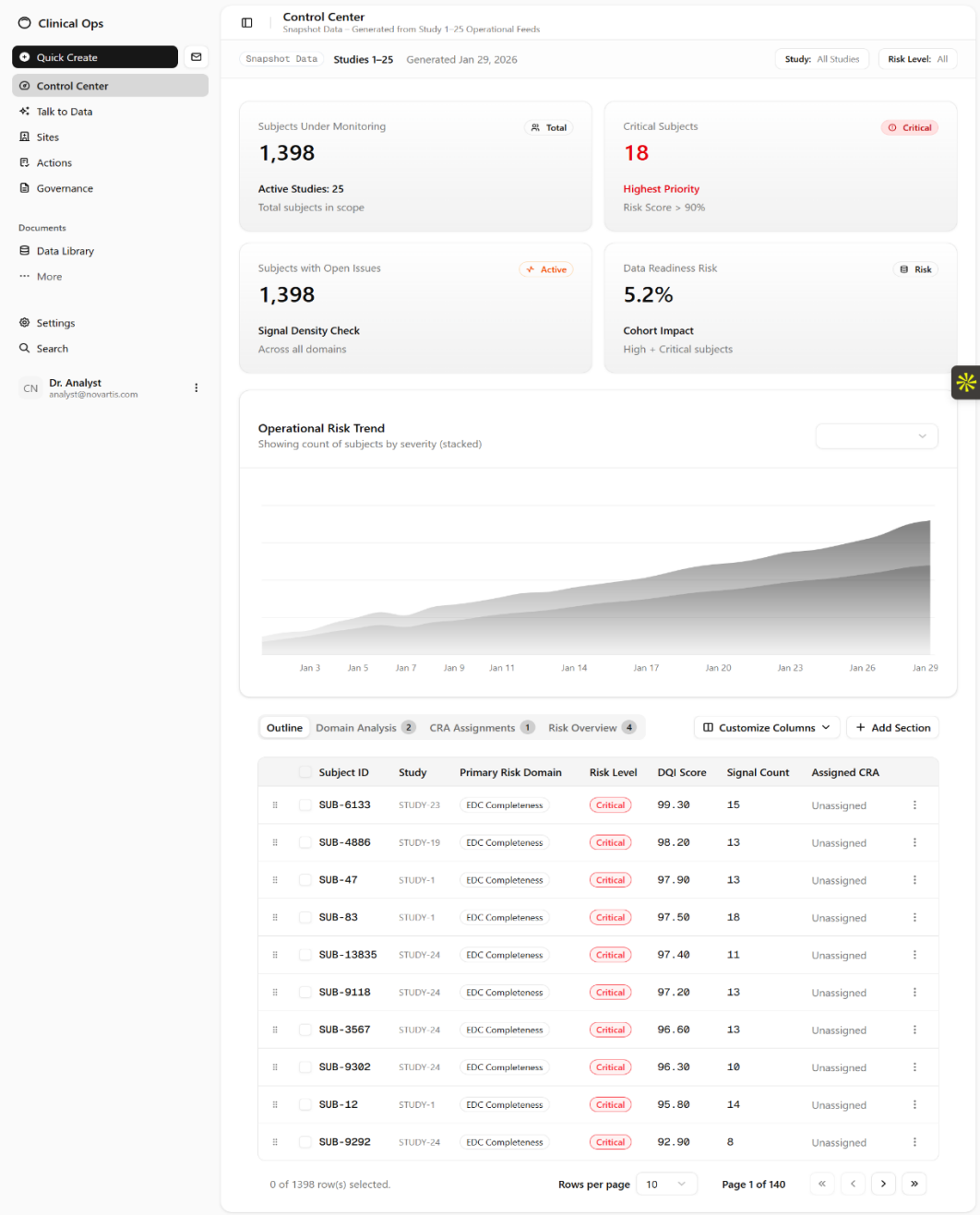
Live Demo

- **Landing Page:** <https://novartis-landing-page.vercel.app/>
- **Dashboard Application:** <https://novartis-app.vercel.app/>

Dashboard Sections Guide

The following pages provide detailed descriptions of each dashboard section with screenshots showing how to navigate and use the platform.

1. Front Page – Control Center



(Your main dashboard showing real-time portfolio health and high-priority subjects that need attention.)

2. Detailed Analysis on clicking the subject ID on the front page

Control Center
Snapshot Data - Generated from Study 1-25 Operational Feeds

Snapshot Data Studies 1-25 Generated Jan 29, 2026

Subjects Under Monitoring: 1,398
Active Studies: 25
Total subjects in scope

Critical Subjects: 18
Highest Priority Risk Score > 5

Subjects with Open Issues: 1,398
Signal Density Check: Across all domains

Operational Risk Trend
Showing count of subjects by severity (stacked)

Outline Domain Analysis 2 CRA Assignments 1 Risk Overview 4

Subject ID	Study	Primary Risk Domain	Risk Level	DQI Score
SUB-6133	STUDY-23	EDC Completeness	Critical	99.30
SUB-4886	STUDY-19	EDC Completeness	Critical	98.26
SUB-47	STUDY-1	EDC Completeness	Critical	97.96
SUB-83	STUDY-1	EDC Completeness	Critical	97.56
SUB-13835	STUDY-24	EDC Completeness	Critical	97.46
SUB-9118	STUDY-24	EDC Completeness	Critical	97.26
SUB-3567	STUDY-24	EDC Completeness	Critical	96.66
SUB-9302	STUDY-24	EDC Completeness	Critical	96.36
SUB-12	STUDY-1	EDC Completeness	Critical	95.86
SUB-9292	STUDY-24	EDC Completeness	Critical	92.96

0 of 1398 row(s) selected. Rows per page 10

SUB-6133 DQI: 99.30
Study ID: STUDY-23 **Critical Risk**

Risk Contribution by Domain
EDC Completeness 67% Contrib.
Visit Compliance 33% Contrib.

Active Signals (Grouped)
EDC COMPLETENESS (10 ISSUES)

- Form 'Form 1' is missing for 87 days. **Critical**
Signal ID: 2785eb67 • Trace: 877b6852...
View Evidence →
- Form 'Form 2' is missing for 87 days. **Critical**
Signal ID: 574b714f • Trace: fe70443b...
View Evidence →
- Form 'Form 3' is missing for 87 days. **Critical**
Signal ID: c8b8996a • Trace: 1b037cc4...
View Evidence →
- Form 'Form 4' is missing for 87 days. **Critical**
Signal ID: 3b4bd81d • Trace: be72fcb4...
View Evidence →
- Form 'Form 5' is missing for 87 days. **Critical**
Signal ID: 1f5c573c • Trace: 6c961bf3...
View Evidence →
- Form 'Form 7' is missing for 87 days. **Critical**
Signal ID: abaca256 • Trace: 68d5420d...
View Evidence →
- Form 'Form 8' is missing for 87 days. **Critical**
Signal ID: c5afeda0 • Trace: 0c3520e8...
View Evidence →
- Form 'Form 9' is missing for 87 days. **Critical**
Signal ID: a476ad57 • Trace: bddc084a...
View Evidence →
- Form 'Form 10' is missing for 87 days. **Critical**
Signal ID: 18a7613c • Trace: bd97fc75...
View Evidence →
- Form 'Form 11' is missing for 87 days. **Critical**
Signal ID: 99e4d4ce • Trace: 31a0c5fa...
View Evidence →

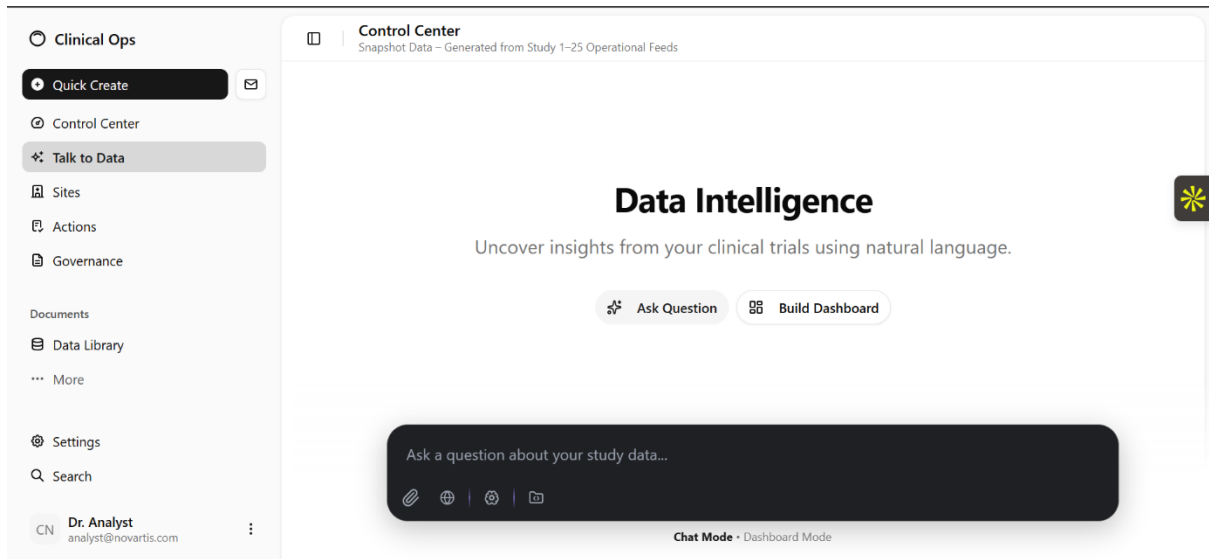
VISIT COMPLIANCE (5 ISSUES)

- Visit 'EP1_Day2' is outstanding for 85 days. **Critical**

Save Review
Close

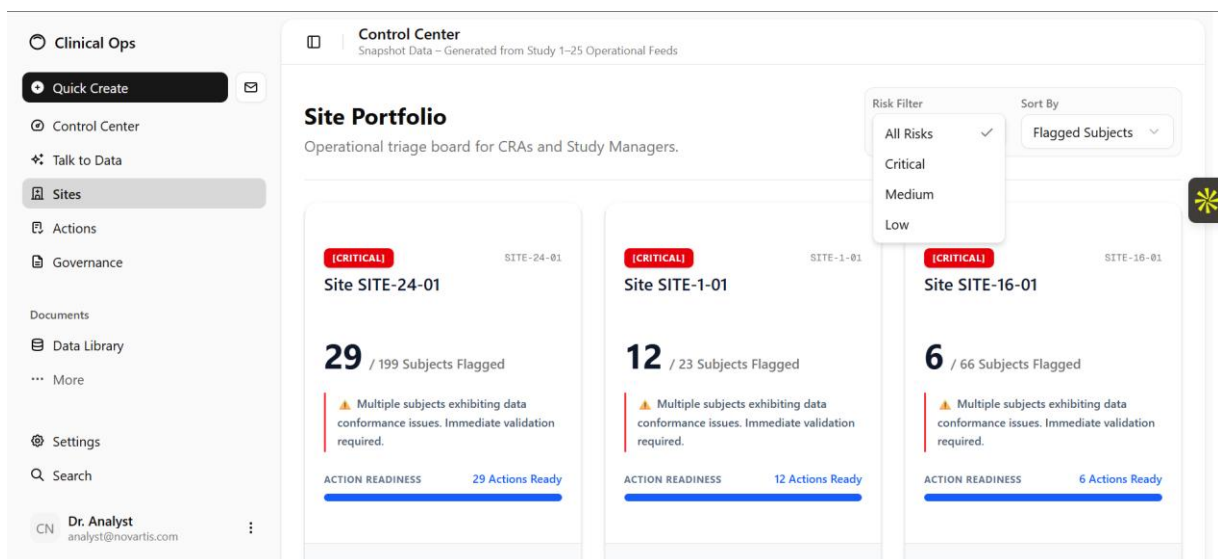
Detailed view of a single subject showing their DQI score (say 99.30 for SUB 6133), risk breakdown by domain, and all active signals with evidence links.

3. Talk to Data – Chatbot

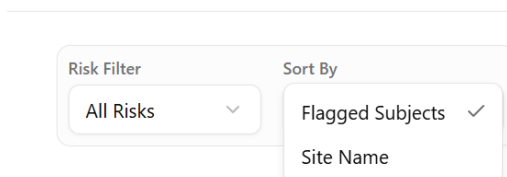


Natural language query interface to ask questions about your trial data and get instant answers without writing code or reports.

4. Sites



Site-level performance monitoring showing flagged subjects per site, risk status, and action readiness with filters to identify sites needing attention.



5. Page that opens up on clicking “review and approve actions”

Clinical Ops

Quick Create

Control Center

Talk to Data

Sites

Actions

Governance

Documents

Data Library

More

Settings

Search

Dr. Analyst
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Control Center

Snapshot Data – Generated from Study 1-25 Operational Feeds

Back to Site Portfolio

Site SITE-21-01 (SITE-21-01)

Medium Risk

62 Subjects Enrolled

4 Flagged

4 Pending Actions

ACTION READINESS

HIGH

PATTERN CONFIDENCE

89%

EVIDENCE

100%

SELECT SUBJECT FOR ANALYSIS:

SUB-25553 (Flagged)

Operational Insight for SUB-25553

AI analysis indicates data anomalies consistent with other subjects at this site. Review the evidence below before approving actions.

AI Operational Analysis

Generated Draft

Automated analysis of signal patterns for Subject SUB-25553

Narrative

Pattern

Hypotheses

Operational Summary

Subject SUB-25553 has a critical data quality issue with Form 10 missing for an extended period, ranging from 903 to 979 days. This persistent absence indicates a significant gap in EDC completeness that requires immediate attention to ensure data integrity.

SUB-25553 Form 10

EVIDENCE DENSITY

High Confidence

Domains Analyzed

EDC, Visits

Records Traced

37 records

Time Span

21 days

Missing Data

None

Analysis based on form.csv and visit.csv ingestions.

Recommended Actions

Review Required

Select All Drafts

EMAIL

Request for Immediate Action on Missing Form 10

High

Draft an email to the site coordinator to address the missing Form 10 for subject SUB-25553.

Subject: Urgent: Missing Form 10 for Subject SUB-25553

Dear [Site Coordinator's Name],

I hope this message finds you well. We have identified

Expected Impact: Reduce open visit queries by ~20% (Est.)

Why this action?

Edit Reject Approve

TASK

Review Site Training and Workload

Medium

Assign a task to review the site's training records and workload to identify potential causes for the missing form.

Conduct a thorough review of the site's training records and current workload to determine if there are any gaps or overloads that could have contributed to the missing Form 10 for subject SUB-25553. This review should include checking for any recent staff changes or

Expected Impact: Clarify protocol deviation within 24h

Why this action?

Edit Reject Approve

QUERY

Query Site for Additional Information

Medium

Draft a query to the site to gather more information about the missing form and any potential barriers to completion.

Please provide additional information regarding the missing Form 10 for subject SUB-25553. Specifically, we are interested in understanding any barriers that may have prevented the completion and submission of this form. This information will help us address any

Expected Impact: Instant resolution expected for missing fields

Why this action?

Edit Reject Approve

ESCALATION

Escalate to Study Management

High

Prepare an escalation to study management due to the critical nature of the missing form.

Due to the critical risk level associated with the missing Form 10 for subject SUB-25553, it is necessary to escalate this issue to study management. The form has been missing for over 900 days, and immediate intervention is required to mitigate any potential

Expected Impact: Improve site compliance score

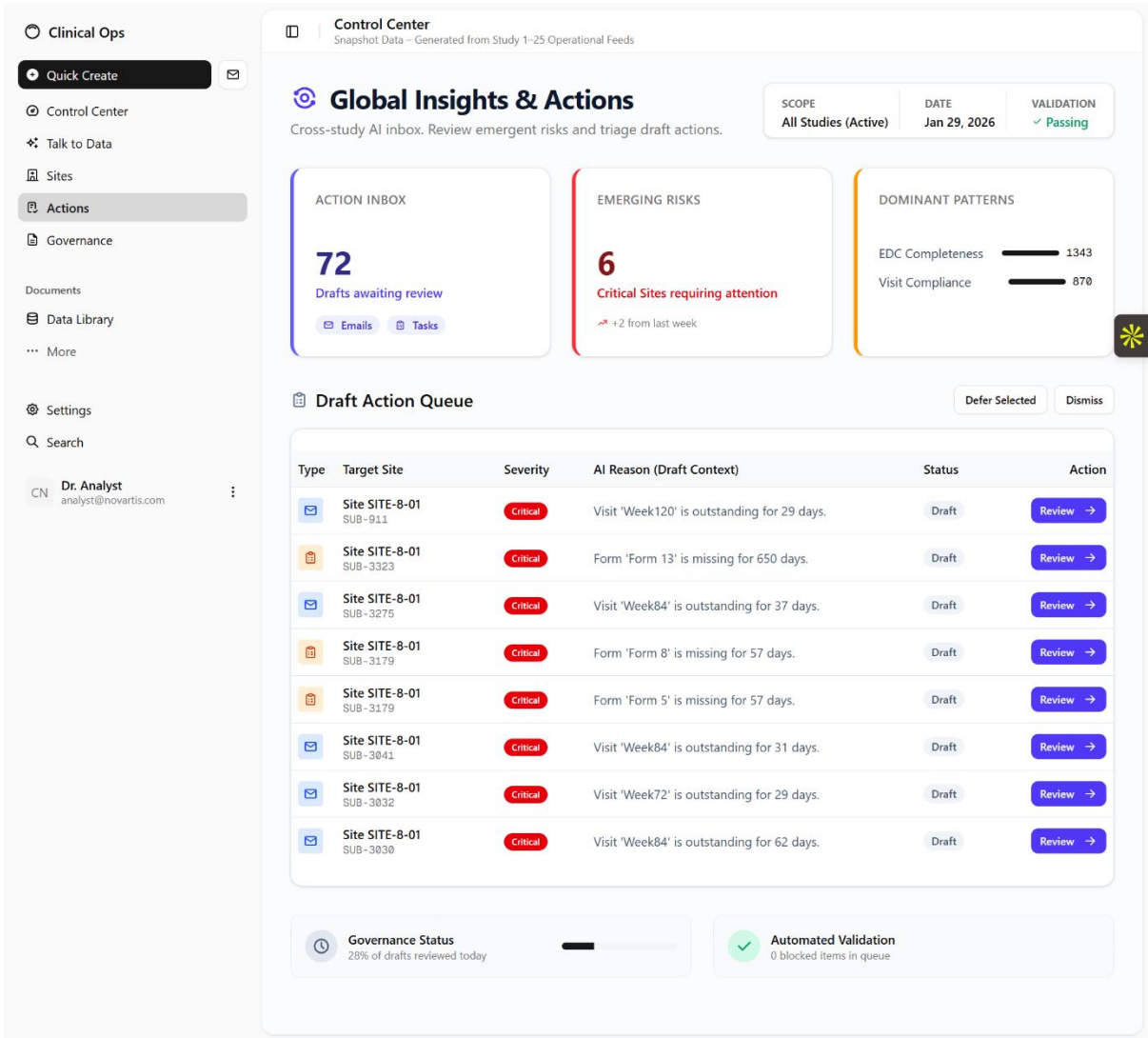
Why this action?

Edit Reject Approve

All actions are logged in the immutable audit trail. No external communication is sent without explicit approval.

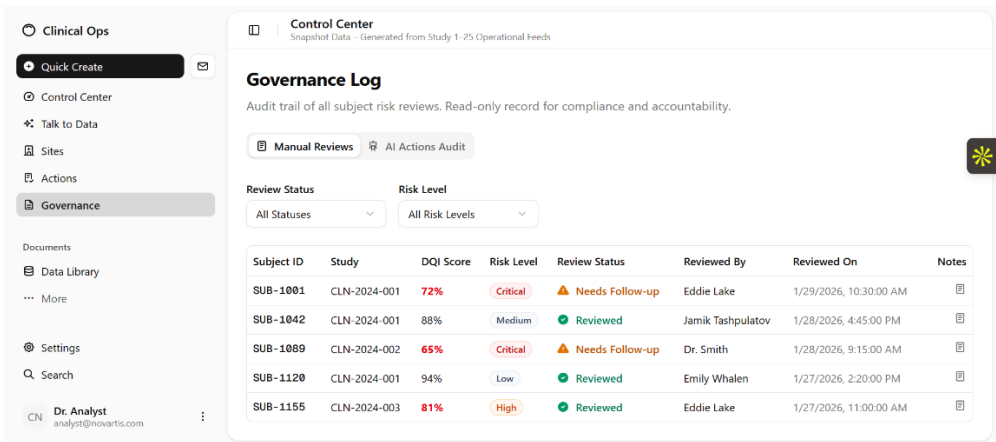
Deep dive into a specific site showing AI-generated operational insights, recommended actions with expected impact, and workflows for review and approval. (This is where Human-in-loop comes in)

6. Actions (Global insights and actions)



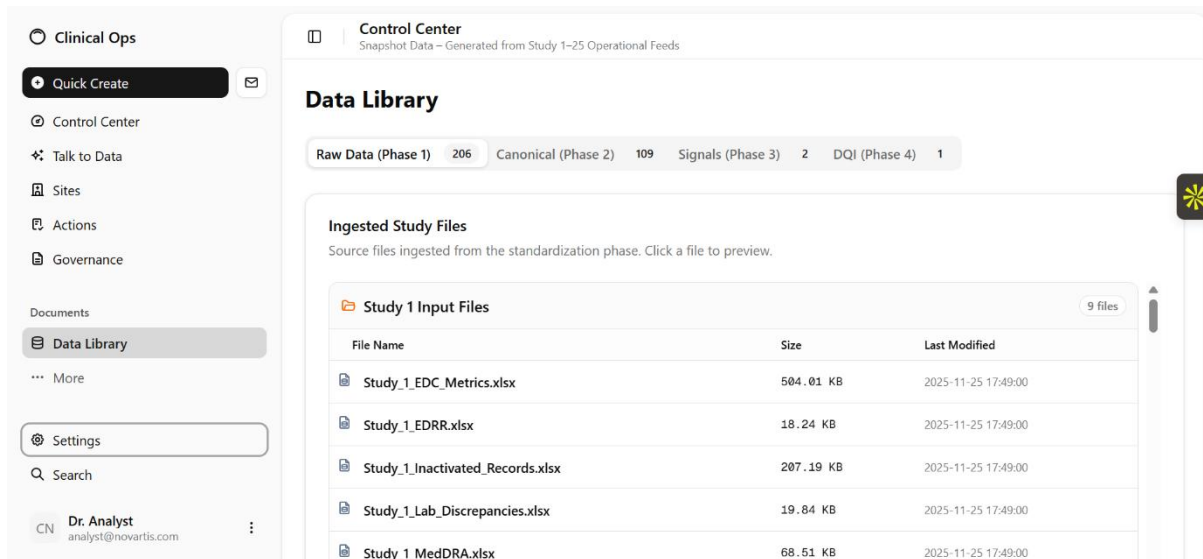
AI-powered cross-study action inbox showing 72 draft actions awaiting review, 6 critical sites requiring attention, and dominant risk patterns across the portfolio.

7. Governance



Complete audit trail of all subject risk reviews showing who reviewed what, when, and their decision status for regulatory compliance and accountability.

8. Data Library



Control Center
Snapshot Data - Generated from Study 1-25 Operational Feeds

Data Library

Raw Data (Phase 1) 206 Canonical (Phase 2) 109 Signals (Phase 3) 2 DQI (Phase 4) 1

Ingested Study Files
Source files ingested from the standardization phase. Click a file to preview.

Study 1 Input Files 9 files

File Name	Size	Last Modified
Study_1_EDC_Metrics.xlsx	504.01 KB	2025-11-25 17:49:00
Study_1_EDRR.xlsx	18.24 KB	2025-11-25 17:49:00
Study_1_Inactivated_Records.xlsx	207.19 KB	2025-11-25 17:49:00
Study_1_Lab_Discrepancies.xlsx	19.84 KB	2025-11-25 17:49:00
Study_1_MedDRA.xlsx	68.51 KB	2025-11-25 17:49:00

Repository of all ingested study files organized by processing phase (Raw Data, Canonical, Signals, DQI) with file previews and metadata.

Conclusion

This dashboard demonstrates a comprehensive approach to clinical trial risk management by combining automated risk detection, AI-powered insights, and governed workflows. By prioritizing subjects based on data quality metrics and providing clear evidence trails, the platform enables clinical operations teams to focus their efforts where they matter most, ultimately improving data quality, reducing monitoring burden, and ensuring regulatory compliance throughout the trial lifecycle.

For Questions or Feedback:

Contact the development team or refer to the detailed methodology report accompanying this submission.