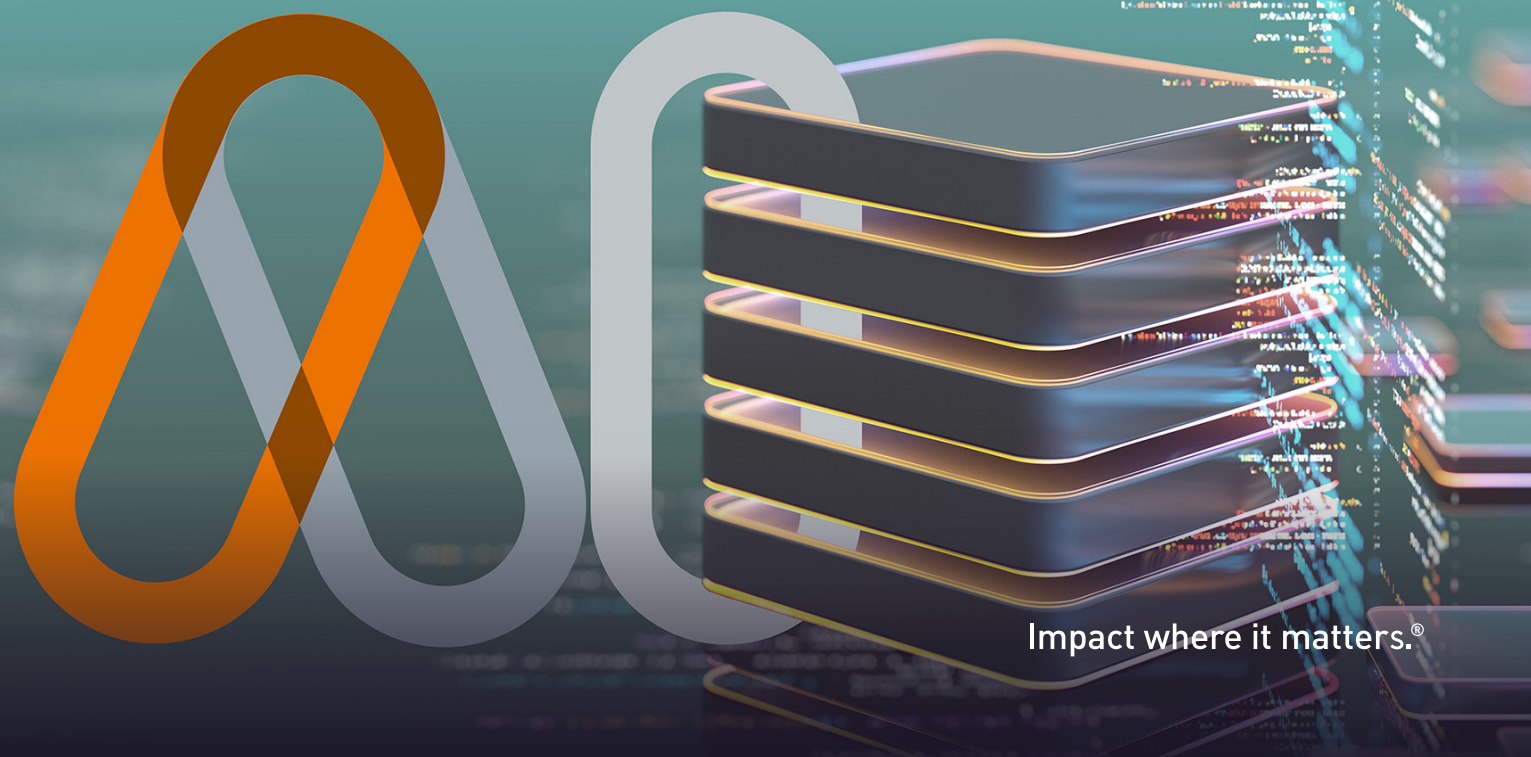


# Data quality: A strategic imperative for biopharma success

By Anshul Bery, Abhijeet Ghosh, Biswadeep Ghosh, Jatin Rai



In today's data-driven pharmaceutical environment, where operational efficiency and regulatory compliance are critical, the integrity and reliability of data are a strategic necessity. Pharmaceutical organizations must manage a complex ecosystem of internal systems, third-party data sources, manual files (e.g., HUBs and specialty pharmacies [SPs]) and external vendors—all under strict regulatory scrutiny. Given data's vital role in decision-making, data quality is no longer a mere technical requirement but a strategic imperative.

At its core, data quality refers to the condition of data based on factors such as accuracy, completeness, consistency, timeliness and accessibility. It's crucial for patient safety, regulatory submissions, commercial analytics and effective patient support programs. Every piece of information for pharma—whether it originates from source systems like Veeva CRM, SP and HUB aggregators or third-party vendors—must be trustworthy, actionable and compliant with industry standards.

This white paper outlines our approach to data quality management and how the [ZAIDYN®](#) platform allows companies to realize data quality excellence.

## Key goals of a data quality program

A structured approach to data quality starts at data generation and extends through integration, processing, analysis and reporting. This process includes defining data standards, implementing validation rules, monitoring data flows and continuously improving based on feedback and incident analysis. It means a commitment to not only meeting but also exceeding industry expectations and recognizing that data integrity directly affects patient outcomes, business decisions and stakeholder trust.

The primary objective of a robust data quality program then is to ensure that data can support both operational needs and strategic goals.

The key goals of a data quality program include:

**Accuracy.** All input data must be captured exactly as intended, and downstream systems must reflect the true information.

**Completeness.** Every required data field must be populated, and all necessary data views must be available. Missing data can lead to incomplete analysis, regulatory gaps or missed opportunities for patient engagement.

**Consistency.** Data must maintain uniform formats and values across all systems and processes. This is particularly critical in a multisource environment, where even minor discrepancies can cause significant reconciliation challenges.

**Timeliness.** Data must be available when needed. Delays can affect patient services and field stakeholders' ability to make appropriate decisions. Meeting (or exceeding) service-level agreements (SLAs) for data delivery and reporting is a key performance indicator.



## Data quality challenges

Ensuring data quality in a multistakeholder environment is complicated by the diversity of data sources, lack of standardization and regulatory requirements. Here are some of the challenges that can result:

**Delayed file delivery.** Timely data transfer is crucial for accurate reporting and patient management. Delays can disrupt workflows, slow decision-making and hinder timely interventions for patients.

**Inconsistent data formats and structures.** Data from multiple sources often arrives in varying formats and structures, lacking uniform standards. This inconsistency complicates data integration, increases the risk of errors and creates significant operational inefficiencies.

**Incorrect information in input files.** Errors in the source data, such as incorrect patient mastering, can propagate through systems, leading to misleading metrics and undermining confidence in analytics.

**Incorrect information in reporting dashboards.** These errors can lead to misleading insights, poor decision-making and eroded stakeholder trust. Ensuring accurate and timely data helps dashboards deliver reliable insights that support effective business decisions.

When these challenges balloon to become problems, they can disrupt downstream reporting, patient management and ultimately affect both clinical outcomes and business performance.

## A robust data quality framework in 5 dimensions

Designing a robust data quality framework requires a multidimensional approach. There are five key dimensions into which these can be split, and within each of these, we'll outline specific actions companies can take that make a difference.

### Dimension 1: Methodology

**Proactive checks:** Implement data quality checks as soon as new data feeds are integrated, allowing issues to be detected and addressed before they impact downstream systems.

**Reactive checks:** Apply business rule checks after processes are completed to catch errors or inconsistencies that may only become apparent during or after data processing.

**Continuous improvement:** Regularly refine the framework by adding new checks and updating existing ones as new edge cases are discovered.

### Dimension 2: Orchestration

**Manual checks:** Decide which checks require human intervention to ensure quality, such as emails sent successfully and [PDRP](#) checks.

**Automated checks:** Automate and integrate quality checks into your workflows, enabling real-time or scheduled alerts.

### Dimension 3: Management

**One-time onboarding checks:** Before onboarding new data sources, conduct data profiling and validation to ensure the incoming data meets quality standards.

**Operational monitoring:** After data is onboarded, perform regular quality control (QC) checks to monitor data integrity continuously and identify any deviations from expected norms quickly.

### Dimension 4: Governance

**Internal audits:** Conduct periodic internal audits to identify gaps in data quality and process adherence, providing opportunities to enhance the overall framework.

**SLA and threshold tracking:** Establish and monitor SLAs and data quality thresholds to measure the effectiveness of quality controls and to flag critical data issues for timely resolution.

## Dimension 5: Communication and tracking

**Email alerts:** Send personalized email notifications to stakeholders, providing detailed analyses and context for any data quality incidents that occur.

**Dashboard:** Leverage data quality dashboards to present statistical and visual summaries of data quality metrics, making it easy to monitor trends and overall system health at a glance.

**Ticketing tools:** Use incident management tools, such as ServiceNow, to log, track and resolve data quality issues, ensuring accountability and complete documentation throughout the incident life cycle.

## Issue identification enabled via ZAIDYN

The ZAIDYN platform can bring your data quality framework to life by enabling you to monitor and report through the following tools:

### Data Quality Management (DQM) dashboard

The DQM dashboard serves as the nerve center for data quality management, with the key focus on the following:

- Source file check
- Data warehouse checks across layers
- Business checks

The DQM dashboard provides both high-level summaries and deep dives into all QC checks, from source file integrity to the calculation of business-critical KPIs. This holistic view enables rapid issue identification and supports informed decision-making.



FIGURE 1:

## How the ZAIDYN QC Framework ensures end-to-end validations as well as reports

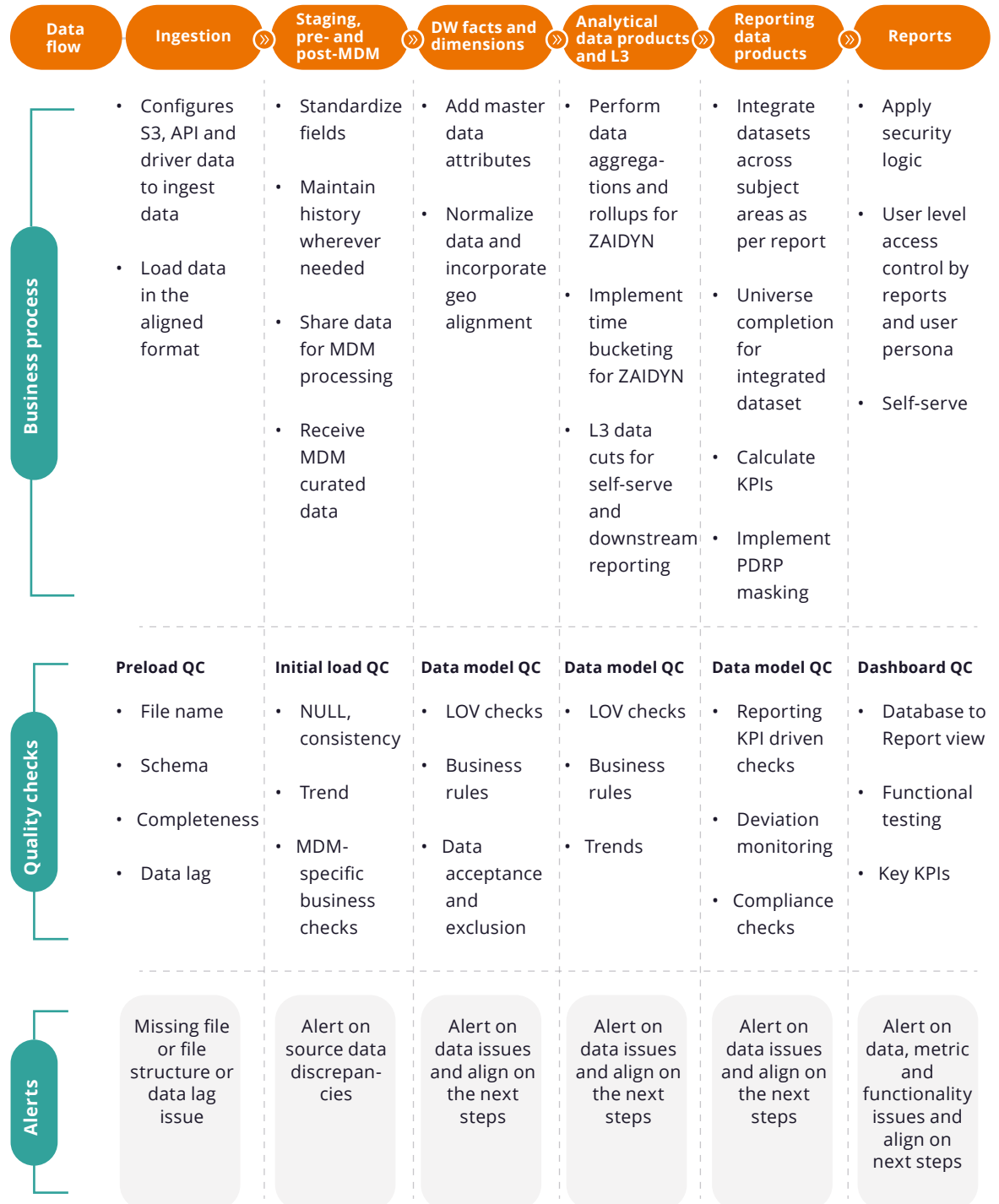


FIGURE 2:

## A screenshot of the DQM dashboard interface at the Source File Accuracy screen

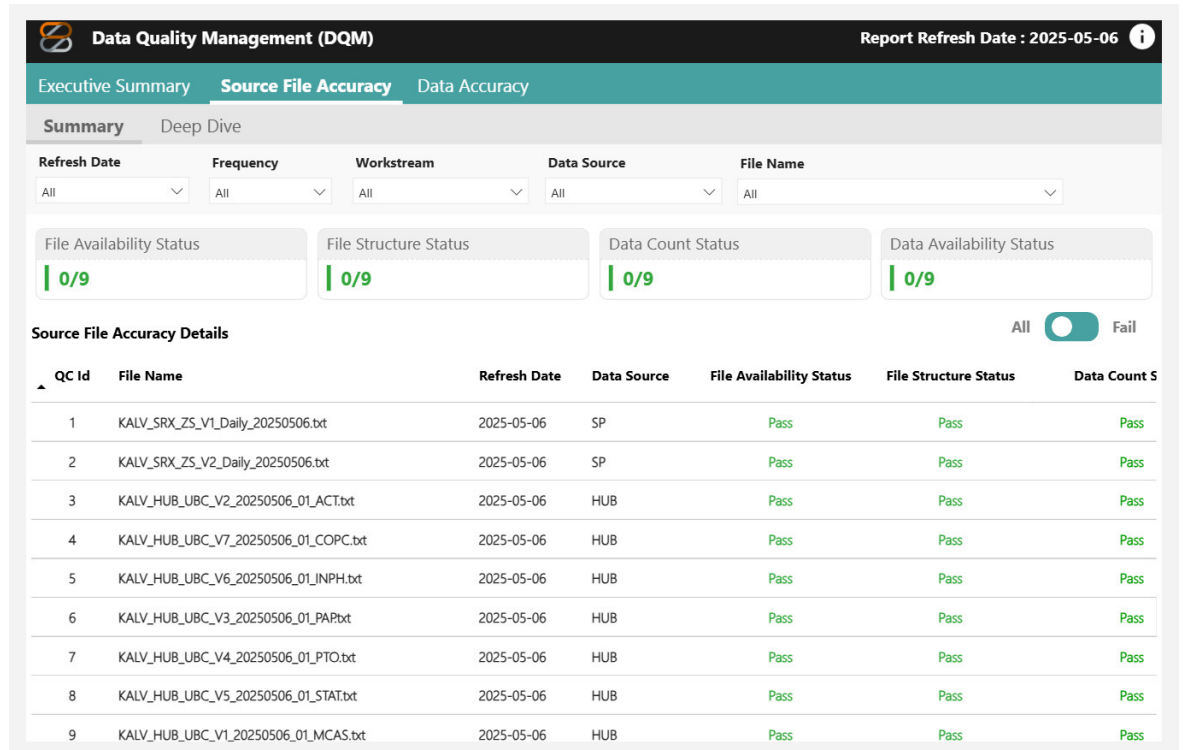
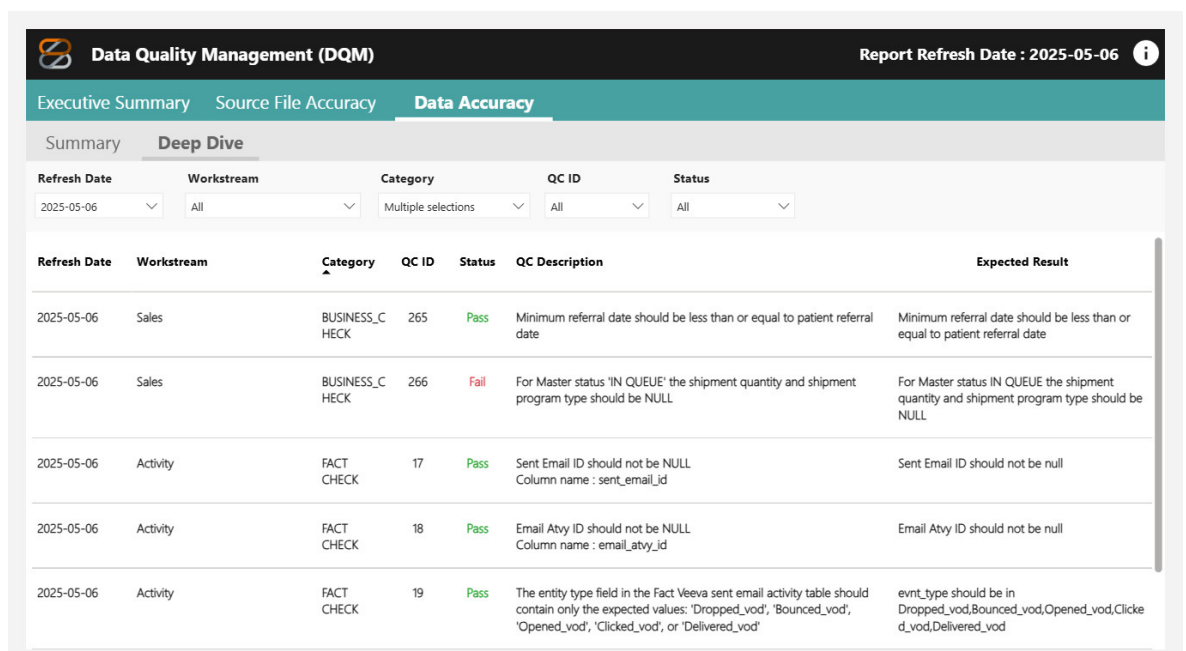


FIGURE 3:

## A screenshot of the DQM dashboard interface at the Data Accuracy screen



### Data Gap reporting tool

The Data Gap reporting tool enables companies to identify any discrepancies between backend reporting data and what is presented in front-end reports. By validating these connections, stakeholders always see accurate and up-to-date information on dashboards, reducing the risk of misinformed decisions.

### Ops Observatory tool

Ops Observatory offers a bird's-eye view of end-to-end operations, tracking process flows, execution status and alert failures. This operational transparency is key to proactive intervention and continuous process optimization.

## How ZAIDYN enables a smooth remediation process

ZAIDYN enables structured remediation processes to cater to each of the key identified issues:

- Delayed file delivery
- Inconsistent data formats and structures
- Incorrect information in input files
- Incorrect information in reporting dashboards

Each issue is assigned to stakeholders through ticketing tools integrated into ZAIDYN, with logs maintained for root cause analysis and SLA adherence.



FIGURE 4:

**Remediation use cases**

Case ID	Use case	Mitigation plan	Criticality	Impact and action
1	SLA not met: Delay in source files from vendors	<ul style="list-style-type: none"> <li>• Vendor should notify ZS, PharmSight and client at least 30 minutes prior to the defined SLA and provide an expected ETA proactively.</li> <li>• ZS will track vendor SLA summaries and discuss critical observations during the weekly status report.</li> <li>• If the file arrives by 1:30 p.m.ET, ZS will reschedule the refresh and communicate the late refresh. Otherwise, the respective files will be incorporated into the next day's refresh.</li> <li>• ZS to publish any refresh delays on the iRIS landing page.</li> </ul>	HIGH	<p>Impact: Delay in the refresh of dashboards to the same day or next day.</p> <p>Communication: Client team to send communication to the broader group based on the delay.</p>
2	<p>Interface specification issue: Inconsistent data structure and format in files</p> <p>(Example: Hub file has different arrangement of columns)</p>	<ul style="list-style-type: none"> <li>• ZS to notify the source vendor and client team with details about the issue</li> <li>• If the corrected files arrive by 1:30 p.m. ET, ZS will reschedule the refresh and communicate the late refresh. Otherwise, the respective files will be incorporated into the next day's refresh.</li> </ul>	HIGH	<p>Impact: Delay in the refresh of dashboards to the same day or next day.</p> <p>Communication: Client team to send communication to the broader group based on the delay.</p>

Case ID	Use case	Mitigation plan	Criticality	Impact and action
3	Data quality issue: Incorrect data	<ul style="list-style-type: none"> <li>Critical check failure: If the issue is limited to a few records, drop the erroneous records and proceed with the refresh. Otherwise, halt the entire processing and inform the source vendor.</li> <li>Noncritical check failure: Proceed with the refresh and notify the source vendor and client with the observation summary.</li> </ul>	HIGH	Critical check impact: Delay in the refresh of dashboards to the next day.
	(Critical check example: Month information is missing in status date)			Communication: Client team to send communication to the broader group based on the delay.
	(Noncritical check example: Total units are 9,999 [sudden spike])			Noncritical check Impact: Certain dashboard metrics may be affected.  Communication: Client team to send communication to the broader group with the callouts for those metrics.
4	Data quality issue: Missing data	<ul style="list-style-type: none"> <li>ZS to notify the source vendor and client team with details about the issue</li> <li>If the corrected files arrive by 1:30 p.m. ET, ZS will reschedule the refresh and communicate the late refresh. Otherwise, the respective files will be incorporated into the next day's refresh.</li> </ul>	HIGH	Impact: Delay in the refresh of dashboards to the same day or next day.
	(Example: Status date is missing)			Communication: Client team to send communication to the broader group based on the delay.
5	Code issue or bug: L3 or ZS Reports (Field, Launch Tracker)  (Example: Never start patient count is incorrect)	<ul style="list-style-type: none"> <li>Critical failures: ZS to define a rollback strategy and refresh the dashboard with the last valid data version.</li> <li>Noncritical failures: ZS to refresh the dashboard and post announcements on the landing page regarding any incorrect data or metrics displayed.</li> <li>A detailed RCA report will be shared with the client along with the revised remediation to avoid such incidents in the future.</li> </ul>	HIGH	Impact: Dashboards will be rolled back to the previous day's data or show the latest data but incorrect calculation for the affected metric.  Communication: Client team to send communication to the broader group based on the decision taken.

Case ID	Use case	Mitigation plan	Criticality	Impact and action
6	Network issues: Connectivity, infrastructure problems	<ul style="list-style-type: none"> <li>ZS team to notify client and raise an immediate support ticket for further investigation.</li> </ul>	HIGH	<p>Impact: Network issues can delay data processing and report generation.</p> <p>Communication: Client team to send communication to the broader group based on the delay.</p>
7	<p>Data integration issues: Mismatched data from multiple sources</p> <p>Example: Master patient ID is different across sources</p>	<ul style="list-style-type: none"> <li>Communicate the observation across client, downstream systems for visibility.</li> </ul>	MEDIUM	<p>Impact: Cross-screen mismatched data won't match.</p> <p>Communication: Client team to send communication to the broader group for the affected metrics.</p>
8	<p>Data de-duplication: Duplicate records in source files</p> <p>Example: Same dispense record flowing previous day and today</p>	<ul style="list-style-type: none"> <li>Data de-duplication is managed only on primary columns. In case duplicates are identified beyond the same, ZS will notify the same as an observation.</li> </ul>	MEDIUM	<p>Impact: Potential duplicate records can lead to inflated metrics and inaccurate reports.</p> <p>Communication: Client team to send communication to the broader group for the impacted metrics.</p>
9	<p>Performance issues: Slow dashboard, self-serve</p> <p>(Example: Screen is taking more than five seconds to open)</p>	<ul style="list-style-type: none"> <li>ZS to perform regular monitoring and tuning.</li> </ul>	MEDIUM	<p>Impact: This can affect the user experience.</p>
10	Change management: Planned or unplanned changes to data processing	<ul style="list-style-type: none"> <li>ZS will notify client and implement a change management process with proper documentation and approvals.</li> <li>Communicate changes to all stakeholders in advance.</li> </ul>	MEDIUM	<p>Impact: Planned and unplanned changes can impact scheduled data processing and reporting workflows.</p> <p>Communication: Client team to send communication to the broader group for delay in reports refresh.</p>

Case ID	Use case	Mitigation plan	Criticality	Impact and action
11	<p>Third-party integration issues: Problems with external systems (Veeva, etc.)</p> <p>(Example: Veeva connection not working)</p>	<ul style="list-style-type: none"> <li>ZS to communicate with third-party vendors (Veeva) and implement monitoring and alert systems for integration issues.</li> </ul>	MEDIUM	<p>Impact: Integration issues can disrupt data flow and impact report accuracy.</p> <p>Communication: Client team to send communication to the broader group for the affected metrics.</p>
12	<p>Report formatting issues: Inconsistent report layouts (UI/UX)</p> <p>(Example: Sorting of table isn't working as expected)</p>	<ul style="list-style-type: none"> <li>ZS will work on the highlighted observations and rectify the same in the next refresh.</li> <li>Regular reviews to ensure consistency will be performed.</li> </ul>	LOW	<p>Impact: Inconsistent report layouts can affect readability and user experience. However, the data will remain accurate.</p> <p>Communication: Client or ZS team to inform the end user when resolved.</p>
13	<p>User training issues: Lack of user knowledge</p> <p>(Example: How is the metric calculated based on time-period selection?)</p>	<ul style="list-style-type: none"> <li>In case of user queries flagged as issues, ZS will clarify the same during India business hours.</li> </ul>	LOW	<p>Impact: Lack of user knowledge can lead to misinterpretation of data.</p> <p>Communication: Client or ZS team to share the explanation of the metric calculation.</p>
14	<p>Report access issues: Incorrect link or missing access</p>	<ul style="list-style-type: none"> <li>ZS will impersonate the issue and provide necessary guidelines to access report during India business hours.</li> </ul>	LOW	<p>Impact: Delayed access to the report.</p>

## Communicating through the remediation process

Throughout the remediation process, effective communication is paramount. Each incident is tracked via a ticketing system, with clear documentation of severity, priority and progress. Two key checkpoints are enforced: The time to initial response (acknowledgment and assessment) and the time to full resolution (including all remediation steps and root cause analyses).

It's equally important to ensure that the right parties are informed at the right time. Depending on where the issue occurs—whether with an SP, HUB or data vendor like IQVIA—appropriate stakeholders are engaged promptly to facilitate resolution.

Transparent communication not only accelerates problem-solving but also builds trust among all parties, reinforcing the client's reputation as a reliable and responsive partner.

## Data quality is more than a one-time project

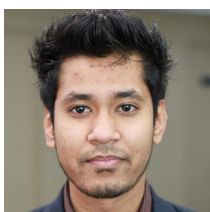
Data quality is an ongoing journey that requires vigilance, adaptability and a culture of continuous improvement. For pharma, investing in robust data quality processes is as important as a compliance exercise; it's a strategic differentiator that enhances patient outcomes, supports business growth and ensures long-term success in an increasingly complex healthcare environment.

By combining proactive methodologies, advanced tools like those found on the ZAIDYN platform and a commitment to transparency, companies are well positioned to navigate the challenges of HUB, SP and other sources data management, setting a standard for excellence in the pharmaceutical industry.

## About the authors



**Anshul Bery** is a business technology solutions manager and a key member of ZS's Eureka space. Anshul brings over a decade of experience in the pharmaceutical industry, specializing in leading and executing commercial launches for pharmaceutical companies introducing their first products to market. He possesses strong expertise in data and analytics, reporting, data warehousing and master data management, successfully applying these skills across multiple pharmaceutical companies to drive overall brand success.



**Abhijeet Ghosh** is a platform services manager at ZS's Pune office with nearly a decade of consulting expertise. He leads the platform services team in deploying ZAIDYN solutions for pharmaceutical clients, specializing in business intelligence (BI), data warehousing and master data management. Abhijeet has collaborated with a diverse portfolio of pharma clients—from emerging companies to industry leaders—shaping BI roadmaps, spearheading report rationalization and transformation initiatives, and delivering user-centric dashboards aligned with UI/UX best practices. His deep expertise spans information management, enterprise reporting platform management and the oversight of complex data warehouse operations.



**Biswadeep Ghosh** is an associate principal in our ZS India Pune office. He has more than 16 years of experience in areas like data and analytics, business intelligence, reporting, sales planning and CRM.



**Jatin Rai** is a ZS principal who leads ZAIDYN, AI designed for life sciences and healthcare. With over 20 years of experience, Jatin helps companies globally drive growth with AI and analytics. Jatin specializes in delivering transformation programs and supporting emerging and midsize pharma clients in their commercial launches.



## About ZS

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