DATA INTEGRITY

View of the Manufacturer

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Presentation Name: Data Integrity
Preamble:

This Presentation:

- Highlights causes of Data Integrity issues and challenges.
- Describes essentials to be in place in a Pharmaceutical Organisation, to meet Data Integrity and cGMP requirements.
- Learning from regulatory inspections.

Disclaimer: Content presented are my professional views based on the experience gained over the years.
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- Causes of Data Integrity Issues and Challenges
- Essentials to Meet Data Integrity
- Learning from Regulatory Inspections
Introduction

- What is Data
- Data Pre-requisites
- What is Data Integrity
Consumer expects, the drugs they consume to be safe and effective.

To ensure this, regulatory authorities have set the standards, typically referred to as Good Manufacturing Practices (cGMP).

cGMP assures proper design, monitoring and control of manufacturing processes and facilities for various systems. This is supported by the evidence of manufacturing process (Batch records), that the drugs have been manufactured as per agreed protocols.
**Data**

Information derived/ or obtained from raw data (e.g. a reported analytical result)

**Raw Data**

Original records and documentation, retained in the format in which they were originally generated (i.e. paper or electronic), or as a ‘true copy’. Raw data must be contemporaneously and accurately recorded by permanent means. In the case of basic electronic equipment which does not store electronic data, or provides only a printed data output (e.g. balance or pH meter), the printout constitutes the raw data.

**Source Data**

Includes all information in original records and certified copies of original records used for reconstructing and evaluating the investigation.
Metadata is data, that describes the attributes of other data, and provide context and meaning. Typically, these are data that describe the structure, data elements, interrelationships and other characteristics of data. It also permits data to be attributable to an individual.

FDA regulations define an electronic record as any combination of text, graphics, data, audio, pictorial, or other information represented in digital form that is created, modified, maintained, archived, retrieved, or distributed by a computer system.

A 'Hybrid System' is defined as an environment consisting of both Electronic and Paper-based Records (Frequently Characterized by Handwritten Signatures Executed on Paper).
<table>
<thead>
<tr>
<th>Term</th>
<th>EXPECTATION/GUIDANCE REQUIREMENT</th>
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<tbody>
<tr>
<td><strong>Data</strong></td>
<td><em>Data must be:</em></td>
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<tr>
<td>A</td>
<td>Attributable to the person generating the data</td>
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<tr>
<td>L</td>
<td>Legible and permanent</td>
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<td>C</td>
<td>Contemporaneous</td>
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<tr>
<td>O</td>
<td>Original record (or ‘true copy’)</td>
</tr>
<tr>
<td>A</td>
<td>Accurate</td>
</tr>
<tr>
<td><strong>Raw Data</strong></td>
<td><em>Raw data must:</em></td>
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<tr>
<td></td>
<td>Be legible and accessible throughout the data lifecycle.</td>
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<td></td>
<td>Permit the full reconstruction of the activities resulting in the generation of the data.</td>
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<td><strong>Electronic record</strong></td>
<td>Must maintain authenticity, integrity and confidentiality of electronic records which shall be</td>
</tr>
<tr>
<td></td>
<td>trustworthy, reliable and equivalent to paper records and handwritten signatures.</td>
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Integrity
Data Integrity – A Lifecycle Approach

- The degree to which a collection of data is complete, consistent and accurate.
- Compliance to data integrity starts from:
  - Development → Manufacturing → Packing → Distribution
- Data integrity refers to maintaining and assuring the accuracy and consistency of data over the entire data life-cycle. i.e. from:

  **A** Data Collection
  **B** Data Processing
  **C** Data Review
  **D** Data Reporting
  **E** Data Archival
“If it isn’t written down, it never happened”
“In God we trust, all others bring data”

Quality Means,
“Doing Right When No One Is Looking”

Integrity is telling myself the truth.
Honesty is telling the truth to other people
Introduction

Causes of Data Integrity Issues and Challenges

Essentials to Meet Data Integrity

Learning from Regulatory Inspections
## Causes Of Data Integrity Issues And Challenges

### Shortage of manpower
- Shortage of staff and excessive work pressure can lead to inaccurate and incomplete documentation.

### Quantity over quality
- Employees may compromise the acceptable quality levels in order to meet production targets or dispatch timelines.

### Lack of awareness
- Inadequate training to Employees on cGMP, may lead to inappropriate understanding causing employees to consider activities as a chore rather than understanding their relevance in light of cGMP.

### Training Effectiveness
- Ineffective / inappropriate training may lead to Operations not adhering to procedures and requirements.

#### Unknown Causes

#### Known Causes

- **Intentional / Fraudulent**
Causes Of Data Integrity Issues And Challenges

Challenges of Data Integrity

✓ Retaining Competent / Trained technical staff
✓ Effective training to new entrants
✓ Cultural training, mind-set corrections and moulding of newly recruited staff from other organisations into Quality Culture of company
✓ Adherence to procedures and policies in place
✓ Awareness and correct interpretation of regulations and cGMP requirements
Introduction

Causes of Data Integrity Issues and Challenges

Essentials to Meet Data Integrity

Learning from Regulatory Inspections
Key Performance Indicators to have compliance to data integrity

A] Management Support
B] Robust Quality System
C] Cultural Enrichment
D] Effective Training

These key performance indicators (KPIs) to be embedded in the culture and shall be excelled in each of them for compliance to the data integrity requirements.
A] Management Support

- Zero Tolerance.
- Oath from each employee.
- No falsification of data
- Good Documentation Practices.
- Reconciliation of Issuance, Archival and Destruction.
- Contemporaneous documentation.
- Secured computerised / non-computerised systems.
- Periodic audit to detect data integrity issues.
- Investigation, impact assessment & CAPA for any data integrity issues identified.

- Respect to the quality functions and decisions, high degree of acknowledgement.
- Adequate no. of staff.
- Software support to reduce / eliminate manual interventions for QMS.
- Controlled Systems for data storage and archival.
A] Management Support

Resources and Infrastructure

- Adequate Manufacturing and Laboratory facilities
- Advanced, Automated Machineries and Instruments
- Competent Corporate team to support and focus on key functions.
- Adequate manpower resources
B] Robust Quality System

Comprehensive Corporate Quality Policies and Harmonised Quality System
- Effective guidance
- Adherence to cGMP requirements
- Ease of operations
- Implementation of changes across units.

Precise & Detailed Specifications / Operating procedures
- Specifications and Operating procedures for effective functions as intended

Automated Inst. / Equipment
- Reduce Manual interventions
- Access control
- Privilege controls
- Security functions
- Backup and restorations

Effective Escalation / Reporting Mechanism
- For timely investigations and actions

Validated / Qualified
- System
- Process
- Procedures
- Equipment
Control Measures for the Computerised Systems

**Regulatory Requirement**
- 21 CFR part 11
- ICH Q7
- MHRA
- Eudralex Annex-11
- MCC
- USP <1058>
- PIC / S 2011
- GAMP 5

**Security Functions**
- Privileges
- Password Controls
- Domain Policies
- Data Management
- Electronic signature
- Audit Trails
- Backup and Restoration

**Validation / Qualification**
- Software Validations
- Qualification of IT Infrastructure

**Computerized System**
- SAP
- LIMS
- DMS (Documents)
- QMS
- LMS (Learning)
C] Cultural Enrichment

- Willingness to adopt technology and initiatives for betterment
- Highly motivated talent pool of People
- Access to knowledge by “No Cabin/Designation” barriers
- Immense Opportunity for Growth of Employee
- Use of Validated / Qualified procedure, process, system & equipment
- Continual support to achieve higher milestones
- Healthy Environment for employee benefits
- Ownership and Accountability Through Responsibility
- Reward and Recognition System for Good Performance

QUALITY CULTURE
D] Effective Trainings

- Training to technical as well as non-technical operating staff
- Effective training to new entrants
- Enrichment through external training from consultants, seminars, etc.
- Cultural training, mind-set corrections and moulding of new staff
- Develop subject matter experts
- Pre and post training assessment
Introduction

Causes of Data Integrity Issues and Challenges

Essentials to Meet Data Integrity

Learning from Regulatory Inspections
Regulatory authorities across the Globe have imparted lot of learning to the organisations-

- Objective of regulatory investigators is to provide assurance of acceptable product quality, purity, safety, identity and effectiveness for intended application by,
  - assessing cGMP
  - ensuring data accuracy and
  - reliability of results
Regulatory investigators have helped in
- Strengthening quality standards,
- Generating high level of assurance / trust in the products as well as organisation.

It is always a challenging task for the organisations to align procedures, policies and processes to regulatory expectations.

e.g. Procedures and systems once found adequate, were required revision based on further assessments and expectations, which is a true sense of cGMP.
Regulators have always corrected organisations to adhere cGMP requirements and regulations.

e.g. use of a common test data sheet to record observation of individual test makes practically difficult for multiple analysts, analysing same sample lot at same time to record observations contemporaneously, which is against cGMP requirement. Acknowledging the requirement, system has been corrected with provision for separate data sheet for individual tests.
Global correction through standardized security controls:

- Regulatory authorities expect the use of compliant instruments / equipment, with security functions for traceability and accountability of operations.

Therefore, vendors should be enforced to distribute instruments / equipment that are compliant, at **affordable cost**, which will help in global compliance to data integrity requirements.
Thank You