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**DOCUMENT NUMBER:** COMM-QA-079

**DOCUMENT TITLE:**

Data Integrity

**DOCUMENT NOTES:**

## Document Information

| | |
|---|---|
| **Revision:** 01 | **Vault:** COMM-QA-rel |
| **Status:** Release | **Document Type:** COMM-QA |

## Date Information

| | |
|---|---|
| **Creation Date:** 31 Jan 2019 | **Release Date:** 19 Jul 2019 |
| **Effective Date:** 19 Jul 2019 | **Expiration Date:** |

## Control Information

| | |
|---|---|
| **Author:** RB232 | **Owner:** RB232 |
| **Previous Number:** None | **Change Number:** COMM-CCR-091 |

# COMM-QA-079
# DATA INTEGRITY

## 1 PURPOSE

1.1 This standard operating procedure (SOP) describes controls required to maintain the integrity of data and records (both paper and electronic) generated and maintained for GMP purposes.

## 2 INTRODUCTION

2.1 A formal procedure is necessary to establish internal guidelines with the goal of maintaining compliance with FDA current guidance on data integrity.

## 3 SCOPE AND RESPONSIBILITIES

3.1 This SOP applies to data and records, including electronic records, generated and maintained for critical systems utilized in GMP purposes. Critical systems subject to this procedure include, but may not be limited to, systems that are utilized to make assessments about manufactured products, generate data for batch records associated with manufacturing, and/or maintain original, raw data for product quality decisions. Systems used only for business or other non-GMP purposes are not subject to these requirements unless deemed necessary by MC3 Management and QSU.

3.2 All Employees engaged in GMP Operations and who fall under the purview of the Marcus Center for Cellular Cures (MC3) Quality Systems Unit must be trained on and follow this procedure. Employees overseeing the activity of third party personnel must ensure this SOP is followed.

## 4 DEFINITIONS/ACRONYMS

4.1 **ALCOA**: Attributable, Legible, Contemporaneous, Original, and Accurate. All Employees (including Consultants / Contractors) employed in GMP Operations must be trained on and follow this procedure. Employees overseeing the activity of third party personnel must ensure this SOP is followed.

4.2 **Audit Trails**: An audit trail means a secure, computer-generated, time-stamped electronic record that allows for reconstruction of the course of events relating to the creation, modification, or deletion of an electronic record. An audit trail facilitates the reconstruction of the history of such events relating to the record regardless of its medium, including the "who, what, when and why" of the action.

4.3 **Certified Copy**: A copy (irrespective of the type of media used) of original information that has been verified (i.e. by a dated signature or by generation through a validated process) as an exact (accurate and complete) copy having all of the same attributes and information as the original. The copy may be verified by dated signature or by a validated electronic signature. A certified copy may be retained in a different electronic file format to the original record, if required, but must retain the equivalent static/dynamic nature of the original record.

4.4 **CFR**: Code of Federal Regulations; the codification of the general and permanent rules and regulations published by the executive departments and agencies of the United States Government.

4.5 **Data**: Facts, figures and statistics collected together for reference or analysis. All original records and true copies of original records, including source data and metadata and all subsequent transformations and reports of these data, that are generated or recorded at the time of the GMP activity and allow full and complete reconstruction and evaluation of the GMP activity.

4.6 **Data Integrity**: Data integrity refers to the completeness, consistency, and accuracy of data. Complete, consistent, and accurate data should be attributable, legible, contemporaneously recorded, original or a true copy, and accurate (ALCOA).

4.7 **Electronic Signatures**: A signature in digital form (bio-metric or non-biometric) that represents the signatory. This should be equivalent in legal terms to the handwritten signature of the signatory.

4.8 **GMP**: Abbreviation used to refer to the regulations and guidelines governing Good Manufacturing Practices (GMP).

4.9 **Meta Data**: Metadata is the contextual information required to understand data. A data value is by itself meaningless without additional information about the data. Metadata is often described as data about data. Metadata is structured information that describes, explains, or otherwise makes it easier to retrieve, use, or manage data. For example, the number "23" is meaningless without metadata, such as an indication of the unit "mg." Among other things, metadata for a particular piece of data could include a date/time stamp documenting when the data were acquired, a user ID of the person who conducted the test or analysis that generated the data, the instrument ID used to acquire the data, material status data, the material identification number, and audit trails.

4.10 **Original Record**: Data as the file or format in which it was originally generated, preserving the integrity (accuracy, completeness, content and meaning) of the record, e.g., original paper record of manual observation, or electronic raw data file from a computerized system.

## 5 MATERIALS

5.1 NA

## 6 EQUIPMENT

6.1 Computer access

## 7 SAFETY

7.1 NA

## 8 PROCEDURE

8.1 Data Governance

8.1.1 As applicable, records should be made available for inspection and review by regulatory agencies.

8.2 All data and records generated and/or maintained must meet ALCOA (Attributable, Legible, Contemporaneous, Original, Accurate) principles:

8.2.1 **Attributable**

8.2.1.1 Data, records, actions, and events, including review and approval of records, must be uniquely attributable to the person or person(s) completing the data, records, actions, or events.

8.2.1.1.1 Sharing of passwords or other credentials to access computerized systems is prohibited.

8.2.2 **Legible**: For paper records, Good Documentation Practices should be followed as outlined in *COMM-QA-068 Good Manufacturing Practices - GMP - Referred to as Current Good Manufacturing Practices – cGMP* and facility specific Records Management procedures

8.2.2.1.1 Computerized systems must be maintained to ensure that complete and accurate electronic records may be accessed and viewed in human readable form.

8.2.3 **Contemporaneous**

8.2.3.1 Staff will strive to ensure that data and records are completed at the date and time at which the activity or event has occurred.

8.2.3.2 Date and time stamps for computerized systems must be controlled to prevent unauthorized changes.

8.2.4 **Original**

8.2.4.1 All original records, or true or certified copies, must be maintained for the required record retention period. See facility-specific SOPs or Records Management SOPs.

8.2.4.2 For electronic records, raw data, audit trails, and other meta data must be specified within validation documentation and/or Standard Operating Procedures pertaining to the computerized system that generates the original record.

8.2.4.3 True or certified copies of original paper records should be initialed/signed and dated by the person certifying that the copy is an accurate and complete copy of the original. If copies of an original paper record are associated with an electronically routable document, such as a deviation in MasterControl, the electronic signature of the person originally providing the document indicates it is an accurate and complete copy.

8.2.4.4 Migration of electronic records from one system to another must be validated to ensure complete and accurate records are migrated to the new system or database.

8.2.5 **Accurate**

8.2.5.1 Controls must be established to ensure that all data that is generated is complete and accurate.

8.2.5.2 Discarding original data generated for GMP purposes is prohibited.

8.2.5.3 Data or records which are damaged (e.g., hazardous chemical spilled on the record, record burned, etc.) may be transcribed. However, the transcription must be verified by an independent person that did not create or review the original record.

8.2.5.4 All computerized systems which generate electronic data and/or records should be validated for their intended use and the ability to discern invalid or altered records.

8.2.5.5 Audit trails will be established, as feasible, to ensure that all data changes are contemporaneous and attributable to the person making the change. Data changes will not obscure the original entry.

8.2.6 Additional Attributes for Electronic Records

8.2.6.1 Controls should be established to ensure that all records and data are accurate, complete, and consistent throughout the required record retention period.

8.2.6.2 Controls for electronic records may include, backup, restore, archival, and/or disaster recovery processes, as applicable, per current Duke IT policies.

8.2.6.3 Controls should be established to ensure that all records are enduring and available for the required record retention time period.

8.3 Record Review

8.3.1 If electronic records are generated, the original (or true or certified copy) record should be reviewed and approved by appropriately trained reviewers.

8.3.2 Requirements for review of records should be incorporated into applicable SOPs.

8.4 Prevent and Detect Data Integrity Issues

8.4.1 Controls to prevent and detect data integrity issues must be maintained.

8.4.2 Mechanisms to prevent and detect data integrity issues may include, but are not be limited to:

8.4.2.1 Documented risk assessments based on review of data flows and controls to identify and establish controls to mitigate potential data integrity risks.

8.4.2.2 Validation of computerized systems that generate electronic data and records. See associated procedures that may include but are not limited to *GMP-QA-017 Computerized System Applicability Assessment, COMM-QA-044 Approaches to Validation, CCBB-QA-049 EMMES Verification* and *COMM-PAS-008 Electronic Record Systems for Clinical Programs.*

8.4.2.3 Separation of duties shall be established wherever possible to ensure data owners do not have system administration responsibilities.

8.4.2.4 Physical and logical security controls to prevent loss and/or unauthorized access.

8.4.2.5 Official GMP records, such as forms, worksheets, notebooks, and logbooks, must be reconciled or reviewed to prevent and detect data loss.

8.5 Reporting of Potential Data Integrity Issues

8.5.1 All personnel must report any suspected data integrity issues to their immediate management and/or Quality Assurance.

8.5.2 A formal investigation will be conducted in response to any reported or suspected data integrity issue per *COMM-QA-042 Deviations and Investigations.*

8.6 Electronic Records and Electronic Signatures

8.6.1 Adherence to 21 CFR Part 11 requirements may include:

8.6.1.1 Documenting Part 11 requirements as part of Requirements Specifications for software applications.

8.6.1.2 Verification of appropriate user access controls are in place to ensure the trustworthiness and reliability of records.

8.6.1.3 Verification that records are in a readily retrievable, human readable form.

## 9 RELATED DOCUMENTS/FORMS

9.1 CCBB-QA-049 EMMES Verification

9.2 COMM-PAS-008 Electronic Records Systems for Clinical Programs

9.3 COMM-QA-042 Deviations and Investigations

9.4 COMM-QA-044 Approaches to Validation

9.5 COMM-QA-068 Good Manufacturing Practices - GMP - Referred to as Current Good Manufacturing Practices – cGMP

9.6 GMP-QA-017 Computerized System Applicability Assessment

## 10 REFERENCES

10.1 21 CFR Part 11, Electronic Records; Electronic Signatures

10.2 21 CFR 210, Current Good Manufacturing Practice in Manufacturing, Processing, Packing, or Holding of Drugs; General

10.3 21 CFR 211, Current Good Manufacturing Practice for Finished Pharmaceuticals

10.4 21 CFR 312, Investigational New Drug Application

10.5 21 CFR 314, Applications for FDA Approval to Market a New Drug

10.6 Data Integrity and Compliance with Drug CGMP Questions and Answers FDA Guidance for Industry; December 2018.

## 11 REVISION HISTORY

| Revision No. | Author | Description of Change(s) |
|---|---|---|
| 01 | R. Bryant | New procedure. |

## Signature Manifest

**Document Number:** COMM-QA-079 **Revision:** 01
**Title:** Data Integrity

All dates and times are in Eastern Time.

### COMM-QA-079 Data Integrity

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| Joanne Kurtzberg (KURTZ001) | | 11 Jul 2019, 02:57:33 PM | Approved |

#### Quality

| Name/Signature | Title | Date | Meaning/Reason |
|---|---|---|---|
| Amanda Parrish (AKB8)<br>Patrick Killela (PK37) | | 12 Jul 2019, 07:30:28 PM | Approved |

#### Document Release

| Name/Signature | Title | Date | Meaning/Reason |
|---|---|---|---|
| Sandy Mulligan (MULLI026) | | 12 Jul 2019, 07:43:51 PM | Approved |

### COMM-QA-079 Data Integrity

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| Name/Signature | Title | Date | Meaning/Reason |
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| Richard Bryant (RB232) | | 15 Jul 2019, 03:00:40 PM | Approved |

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| Name/Signature | Title | Date | Meaning/Reason |
|---|---|---|---|
| Joanne Kurtzberg (KURTZ001) | | 15 Jul 2019, 03:07:01 PM | Approved |

## Quality

| Name/Signature | Title | Date | Meaning/Reason |
|---|---|---|---|
| Patrick Killela (PK37) | | 15 Jul 2019, 03:34:21 PM | Approved |

## Document Release

| Name/Signature | Title | Date | Meaning/Reason |
|---|---|---|---|
| Sandy Mulligan (MULLI026) | | 15 Jul 2019, 05:02:11 PM | Approved |