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| **Organisationand Personnel**  **You should list how roles and responsibilities in relation to the lab activities being undertaken are agreed and documented e.g. job descriptions, standard CV templates, SOPs or other documents.**   * Consider organograms or documenting structures in SOPs or working instructions. | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| Roles and responsibilities within a laboratory should be established and documented prior to the initiation of analytical work. These will include but not be limited to identifying personnel that are responsible for:   * laboratory management * quality assurance * scientific analysis * reporting * archiving |  |  |
| It is the responsibility of laboratory management to ensure that laboratory personnel are appropriately trained to perform the roles and responsibilities assigned to them. Laboratory management should ensure that each individual involved in the analysis of clinical trial samples is provided with a current job description detailing the individual’s role and responsibilities within the laboratory. |  |  |
| Laboratory management should ensure that there is a Quality Assurance programme with designated personnel and ensure that the quality assurance responsibility is being performed in accordance with regulatory requirements. | . |  |
| The analysis or evaluation of clinical trial samples should be overseen by a named individual(s) who assumes responsibility for the conduct and reporting of the work. This individual(s) should ensure that all laboratory work is performed in compliance with:   * the clinical trial protocol, * clinical trial protocol amendments, * the contract, * any associated work instruction * standard operating procedures. | . |  |
| Prior to the initiation of any analysis, the persons designated as “laboratory management” should make provision to ensure that sufficient resources are available for the timely and proper conduct of the analysis in accordance with the clinical trial protocol, work instructions, associated methods and standard operating procedures. |  |  |
| Prior to the initiation of analytical work, lines of communication should be established and documented between the sponsor or their representative and the individual who is responsible for coordinating the laboratory analysis. | . |  |
| All staff involved in the analysis or evaluation of clinical trial samples should receive GCP training commensurate with their roles and responsibilities. Such training is especially important following changes to statutory regulations and associated guidance documents. |  |  |
| Laboratory personnel should receive an appropriate level of technical training prior to their participation in the analysis or evaluation of clinical trial samples. Specifically, laboratory management should ensure that staff are competent to perform the techniques required by the protocol, work instructions or associated methods. Training records should be maintained | . |  |
| **Facilities**   * **Consider space and practicalities where equipment may be shared by other groups and ways to mitigate against cross contamination** * **Consider maintenance contracts, servicing and maintenance records** * **Consider validation SOPs for relevant equipment** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| The design of the facility should provide an adequate degree of separation of different activities to assure the proper conduct of the work. |  |  |
| Facility personnel should ensure that appropriate procedures are in place for waste storage, collection and disposal. Procedures for decontaminating laboratories and their equipment should be considered where relevant. |  |  |
| All equipment used to conduct clinical analysis should be fit for its intended purpose. As a minimum, equipment should be regularly maintained by suitably qualified persons and any maintenance documented. Prior to use, analytical equipment should be subject to an appropriate level of user acceptance testing, by a suitably qualified person to demonstrate that the equipment is fit for its intended purpose | . |  |
| Apparatus should be periodically inspected, cleaned, maintained and calibrated according to standard operating procedures or the manufacturer’s manuals. Records of these activities should be maintained. Calibration should, where appropriate, be traceable to national or international standards of measurement. |  |  |
| **SOPs and Policies**   * **Standard operating procedures or documented policies should cover all key activities.** * **A laboratory should have written procedures that are designed to underpin the quality and integrity of the data it generates.** * **Revisions to procedures should be documented appropriately.** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| Each area of the laboratory should have access to the procedures relevant to the activities being conducted within that area. Published textbooks, analytical methods and manuals may be used to supplement procedures written by the laboratory. However, consideration should be given to the retention of these documents for historical reconstruction and verification purposes. The requirement for peer review and quality control checks prior to the acceptance and release of results should be established. |  |  |
| **Contracts and Agreements**   * **If the lab work relates to a University of Glasgow sponsored or co-sponsored study the laboratory work will be defined in either the co-sponsorship agreement or a stand-alone contract. As such, come of this section may not be relevant.** * **Consider periodic review of all relevant contracts- define in an SOP** * **Laboratories should not subcontract without involving the University legal department and the research governance office** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| Contractual agreements between relevant parties should be in place prior to the initiation of any work. This will usually take the form of a legally binding contract which is signed by the sponsor (or their delegated representative) and laboratory management. Contracts should align with the trial protocol |  |  |
| If a laboratory performs analysis or evaluation of samples associated with more than one clinical trial for the same sponsor, it may be appropriate to conduct the work under a master service level agreement. |  |  |
| In cases where the contract is provided by the sponsor, the laboratory’s quality system should include procedures for agreement and review of contracts. |  | . |
| Agreements should stipulate the nature of the service(s) provided. Examples may include companies that provide maintenance services for analytical equipment through to scientific experts who are contracted to read pathology slides. | . |  |
| **Quality Assurance**   * **Consider QA personnel and sponsor communication** * **Consider Quality Assurance SOPs and to describe data, assay and equipment quality standards and validation procedures** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| QA programmes should always be designed to assure compliance with the Clinical Trials Regulations and the facility’s internal policies and SOPs.  Facilities should assess and document their approach to the implementation of quality assurance processes. Factors to consider in this assessment include, but are not limited to:   * the nature of the work performed * the number of studies conducted (or samples analysed)   the resources available to support the laboratory’s operations. |  |  |
| It is recommended that quality assurance activities include, but are not limited to the following:   * Regular facility audits to ensure that the laboratory and associated equipment used to conduct analysis or evaluation of clinical trial samples remain fit for purpose. * Periodic review of the laboratory’s quality systems, including control of standard operating procedures and / or laboratory policies, archiving and the maintenance of training records. * The audit of technical procedures and methodologies used to conduct the analysis or evaluation of clinical trial samples. * The audit of critical analytical phases if not covered above. * Audits performed to assess the conduct of routine and repetitive processes which are common to all trials such as; sample receipt, sample storage, temperature monitoring, pipette and balance calibration and cleaning procedures. The most robust audit schedules will ensure that all key functions, personnel and procedures are reviewed over the course of one audit cycle. * The audit of documentation generated during the validation of computerised systems or analytical equipment. | . |  |
| **Serious Breaches**   * **Consider SOPs to manage communication with sponsors in relation to non-compliance potential serious breaches** * **Consider SOPs to inform regulatory authority directly if required** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| It is the responsibility of the sponsor of a clinical trial to notify the licensing authority in writing of any serious breach of the conditions and principles of GCP or of the clinical protocol. If the laboratory becomes aware of circumstances that may potentially constitute a breach, the relevant information must be communicated to the sponsor or, if appropriate, directly to the MHRA. For example, in cases were fraudulent activity is suspected. | . |  |
| **Blinding / Unblinding**   * **Consider unblinding SOPs and policies** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| The sponsor is responsible for ensuring that appropriate measures are implemented to ensure blinded individuals are not party to information which will compromise the blinding. |  |  |
| Laboratories that perform the analysis or evaluation of clinical trial samples should exercise due diligence to ensure they do not inadvertently compromise the blinding process. |  |  |
| In situations where samples from blinded trials are supplied to a laboratory and the data generated by the laboratory may unblind the trial, it is important that data is only sent to an established point of contact. |  |  |
| It is not uncommon for analytical laboratories to be asked to unblind trials so that analysis is not performed on samples collected from trial subjects who have been given a placebo treatment. In such cases, it is imperative that the laboratory has a documented policies detailing how results will be communicated to the sponsor or their representative. Such policies may cover the reblinding of samples and safeguards that have been implemented to ensure that unblinded results are not disseminated in a manner that may comprise the integrity of the trial. |  |  |
| If laboratories are supplied with the codes necessary to unblind trial samples, the sponsor or its representative should ensure that the unblinding procedures are discussed and agreed with the laboratory personnel. This information should be stored securely and only be accessed by authorised laboratory personnel. |  |  |
| **Trial Conduct**   * **Consider sponsor communication- trial group meetings** * **Formal communication with sponsor** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| Laboratories should be provided with a copy of the full clinical protocol (and amendments). Laboratories should also establish management of protocol amendments with the sponsor. |  |  |
| Prior to the initiation of sample analysis or evaluation, it is often necessary to prepare a work instruction detailing the procedures which will be used to conduct the analysis or evaluation. Sponsors should confirm that they have reviewed the work instruction and it does not exceed or contradict the requirements set out in the full clinical protocol. |  |  |
| It is critical that the work instruction only includes work that is covered by the informed consent given by the trial subjects. Once a work instruction has been agreed it should not be amended without the agreement of the sponsor or their representative. Checks should be made to ensure that the work instructions do not conflict with or exceed the requirements detailed in the clinical protocol (including amended protocols where relevant). |  |  |
| Appropriate procedures should be implemented to ensure effective and timely communication with the sponsor or their representative, regarding any serious deviations from the work instruction, clinical protocol or contract / agreement. The impact of any deviations from the laboratory’s standard operating procedures or documented policies should be assessed and documented. |  |  |
| Where there is potential for a deviation to impact on the integrity or reliability of the trial data, patient or subject confidentiality, consent or safety, appropriate procedures should be implemented to ensure the issue is reported immediately to the sponsor or their representative and, if appropriate, to the investigator. |  |  |
| Laboratories should not perform any work on clinical trial samples that is not specified in the clinical trial protocol. If additional work is requested by the sponsor or their representative all relevant documentation must be amended prior to the initiation of the additional analysis or evaluation.  The laboratory should seek assurance from the sponsor that the additional work does not conflict with the requirements of the clinical trial protocol, compromise the informed consent given by the trial subjects or impact on the ethics committee approval and / or the authorisation given by the competent authority |  |  |
| It should be noted that patient safety is of primary importance. Consequently, if unscheduled analysis or evaluation is required for urgent clinical reasons, for example, as a result of adverse events, then it should not be delayed because it is not stipulated in the work instruction or the contract. |  |  |
| Prior to the initiation of laboratory work, lines of communication should be established with the sponsor, or their representative, and with the investigators. These may include, but are not limited to, the reporting of unexpected or out of range results and significant deviations from the protocol or work instructions. |  |  |
| Under most circumstances normal ranges should be established for safety tests prior to the start of analysis. If these ranges are exceeded a mechanism must be established to communicate this information to the study sponsor or their representative as quickly as possible | . |  |
| **Informed Consent**   * **Consider a consent SOP** * **Consider withdrawal of consent SOP** * **Consider communication with CTU or PM** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| Prior to the initiation of a clinical study, informed consent must be obtained from all trial subjects or their legal representatives. It may also be appropriate to include a clause in the contractual agreement between the sponsor and the laboratory which stipulates the need for informed consent to cover any laboratory analysis or evaluation. | . |  |
| There should be a mechanism to ensure that the laboratory is informed in a timely manner of what actions to implement if consent is withdrawn. While the responsibility for providing this information primarily resides with the sponsor, the laboratory should exercise due diligence. |  |  |
| **Sample Management**   * **Consider storage in the lab environment** * **Consider transport and storage SOPs** * **Consider freezer/fridge and temperature monitoring SOPs** * **Consider SOPS for missing or damaged samples** * **Consider in transit monitoring systems** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| Each sample received at the laboratory should be appropriately and uniquely identified. A robust mechanism to track the movement of each sample from arrival to analysis or evaluation should be implemented and maintained. |  |  |
| Samples should be transported in such a way that their integrity and viability remain unaffected. Particular attention should be paid to the following:   * the time samples remain in transit * temperature monitoring during transit * if not refrigerated or frozen, the climatic conditions samples are exposed to during transit. |  |  |
| Where there is a requirement for samples to be refrigerated or frozen during transportation, measures should be taken to positively confirm that the samples were maintained at an appropriate temperature for the duration of time they were in transit. |  |  |
| All samples received by the laboratory should be assessed on arrival to check their physical integrity. If samples have been compromised in transit the sponsor or their representative, or the investigator, should be notified promptly. If samples are poorly labelled, missing or if unexpected samples are received, the study sponsor or their representative should be contacted in order to investigate and resolve the issues. |  |  |
| It is imperative that samples are not analysed until their identity is confirmed. Policies for dealing with missing, unexpected or poorly labelled samples should be documented. |  |  |
| It is strongly recommended that sample receipt is subject to regular quality control checks. Additionally, it is advisable to include an audit of the sample receipt processes as part of the QA programme to ensure it is performed in accordance with laboratory policy. |  |  |
| On arrival, or prior to processing, each sample and requisition form should be examined to ensure that its label does not display information which reveals the full identity of the trial subject. |  |  |
| The sponsor or their representative and / or the investigator should be notified of all instances of inappropriate labelling of clinical trial samples as soon as is practically possible. | . |  |
| Refrigerators or freezers used for the storage of clinical samples should be monitored to ensure they are operating within acceptable parameters.  The required sample storage conditions as specified by the clinical trial protocol should be included in the work instruction or associated documentation. Laboratory staff should monitor storage conditions in order to provide evidence that the samples have been stored in a way that ensures they remain fit for purpose. | . |  |
| Procedures should be implemented to ensure that prompt action is taken if the acceptable parameters are breached. Evidence of monitoring and action taken in the event of any excursions from the specified ranges should be documented and retained. | . |  |
| Adequate provision should be made to ensure that laboratories have sufficient spare capacity for the storage of chilled and frozen samples, should a refrigerator or freezer malfunction. |  |  |
| **Method Validation**   * **Each individual assay should be validated Consider methods of assay validation documentation** * **Consider lab manuals for studies and or assays** * **Consider reporting forms** * **Consider SOPs for final reports review and sign off** * **Consider data integrity SOPs and secure systems** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| In all but exceptional circumstances, analysis should be performed using appropriately validated methods with defined acceptance criteria, where appropriate. The validation of methods should be documented. On completion, this documentation should be archived. |  |  |
| Routine system suitability tests should be considered and included in the analytical methodology as required. It is important that analytical factors that may potentially affect clinical trial results are considered. |  |  |
| Acceptance criteria for each method of analysis and the circumstances that allow repeat analysis should be clearly defined and documented. It is never acceptable to selectively report data; consequently, the rationale for performing the repeat analysis and the reason for the selection of the data points that will be reported should be transparent and must be documented. |  |  |
| It is good practice to implement a quality control procedure to ensure that all data generated in a laboratory during the course of a trial is accurate and complete. |  |  |
| Any change to the data should be made so as not to obscure the previous entry. If data is generated, recorded, modified, corrected and stored or archived electronically, it is recommended that an audit trail is electronically maintained rather than manually, whenever possible. |  |  |
| The way in which data will be reported and the number of reports that will be generated should be agreed with the sponsor or their representative prior to initiation of the work. This agreement should be documented in the contract or the work instructions. | . |  |
| Data may be sent to the sponsor or their representative and to the investigator as hard paper copy or electronically. Whichever method is used, it is recommended that the means by which data are transferred are checked to ensure that the data sets sent have been received in their entirety, especially if results are sent using, for example, e-mail attachments or internet portals. |  |  |
| **Preparation and Distribution of Clinical Kits**   * **Consider purchase and ordering SOPs** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| A documented agreement should be implemented between the sponsor and the laboratory which includes:   * information on the content of each kit * shipment details (destination names and address) * number of kits required | . |  |
| Kit components must be stored in conditions that assure the integrity of any active ingredients Particular attention should be paid to expiry dates. | . |  |
| **Computer Systems**   * **Consider dedicated computer space** * **Consider SOPs to ensure computational procedures are documents and software validated at source (commercial or in house where appropriate)** * **Consider storage and retention of validation certificates** * **Consider disaster recovery and back up SOPs** * **Consider methods of defining recording and storing source data** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| All computerised systems used for the capture, processing, manipulation, reporting and storage of data should be developed, validated and maintained in ways which ensure the validity, integrity and security of the data. Access to computerised systems should be controlled. The identity of those with specific access rights to computerised systems should be documented and subject to periodic review to ensure that the access restrictions remain current and appropriate. |  |  |
| A responsible person should be identified who will act as the administrator for each computerised system. |  |  |
| For each computerised system, the components (e.g. hardware and software) which constitute the system should be clearly defined. It may be appropriate to document this information with the associated validation package. If additional functionality is utilised which is beyond the scope of the original validation the need to perform additional validation must be considered and, in most cases, will be required. |  |  |
| If additional computerised systems are interfaced with an existing laboratory information management system (LIMS) the impact of the new equipment on the functionality of the LIMS should be assessed. |  |  |
| Following changes to computer software such as a system upgrade, or the installation of “patches”, the need to re-validate the computerised system should be determined. It may be appropriate to perform a documented risk assessment which will determine what level of re-validation is required. |  |  |
| If a computerised system has been in use for some time, but has never been subject to any formal validation, a retrospective assessment of its suitability should be performed. The scope of any retrospective validation will vary but should always be justified and documented. |  |  |
| If the validation of a computerised system has been performed at a remote location it will usually be necessary for laboratory management or their designated representative to review the validation records to confirm that the system is fit for purpose. |  |  |
| In most situations, an appropriate level of validation should be performed to ensure that the system operates appropriately, following its installation in the laboratory. This assessment should be documented and retained. |  |  |
| On completion, all records associated with the validation of a computerised system should be archived. |  |  |
| Computerised systems should be sited in appropriate locations. |  |  |
| Disaster recovery procedures should be considered for all computerised systems. In most cases it will be necessary to maintain documented policies which will describe the procedures that would be followed in the event of a system failure. Such procedures may, for example, describe the measures that would be taken to recover data. |  |  |
| Laboratory policies should clearly define what constitutes source data. Source data may take a number of forms including electronic primary source data or paper hard copies. Source data must always be archived and be sufficiently detailed to ensure it can be used to reconstruct the analysis, and any subsequent manipulation of data performed, during or after the analysis. |  |  |
| **Retention of Data**   * **Consider data management/storage SOPs and retention policies** | | |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| A dedicated archivist should be appointed.  Documents should be retained in accordance with the requirements of GCP and national legislation. Facilities should be available for the secure storage of clinical trial data (including source data). |  |  |
| All archive facilities should be secure to prevent unauthorised access to the retained materials |  |  |
| Non-trial-specific data such as equipment validation and maintenance records, staff training records, quality assurance reports, SOPs etc. should be retained in a secure archive to facilitate the reconstruction of clinical trials and also provide evidence of compliance, with the GCP regulations, during regulatory inspections. Access to the archive should be restricted to designated member(s) of staff. Procedures for the removal of material from the archive and its subsequent return should be documented. | . |  |
| Requirements for the archiving of electronic records are the same as those for other record types. Consideration should be given to archive format and future utility | . |  |

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| **MHRA Data Integrity Guidance**   * **Consider data and data storage, transfer and usage SOPs** * **Definitions of raw and source data should be clearly defined** * **Audit trails and retained records should allow reconstruction of all data** |  |  |
| **Requirement** | **Initial Assessment** | **Gap Description /**  **Action Recommended** |
| The laboratory must take responsibility for the systems used and the data they generate. The organisational culture should ensure data is complete, consistent and accurate in all its forms, i.e. paper and electronic |  |  |
| The laboratory data governance policy (or equivalent) must be in line with current University of Glasgow policies that relate to date storage and usage. |  |  |
| Organisations are expected to implement, design and operate a documented system that provides an acceptable state of control based on the data integrity risk with supporting rationale. |  |  |
| Where the data generated is captured by a scan (or other media), the requirements for storage of that format throughout its lifecycle should follow the same considerations as for the other formats | . |  |
| The selected method should ensure that data of appropriate accuracy, completeness, content and meaning are collected and retained for their intended use. |  |  |
| When used, blank forms (including, worksheets, laboratory notebooks, and master production and control records) should be controlled. For example, numbered sets of blank forms may be issued and reconciled upon completion. |  |  |
| Data transfer should be validated and appropriate processes should be in place to facilitate it. Data transfer / migration procedures should include a rationale and be robustly designed and validated to ensure that data integrity is maintained during the data lifecycle. |  |  |
| Data may only be excluded where it can be demonstrated through valid scientific justification that the data are not representative of the quantity measured, sampled or acquired. In all cases, this justification should be documented and considered |  |  |
| Where the data obtained requires manual observation to record (for example results of a manual titration, visual interpretation of environmental monitoring plates) the process should be risk assessed and depending on the criticality, justify if a second contemporaneous verification check is required or investigate if the result could be captured by an alternate means. Where manual transcriptions occur, these should be verified by a second person or validated system |  |  |
| Data must be retained in a dynamic form where this is critical to its integrity or later verification. If the computerised system cannot be maintained e.g., if it is no longer supported, then records should be archived according to a documented archiving strategy prior to decommissioning the computerised system | . |  |
| It is conceivable for some data generated by electronic means to be retained in an acceptable paper or electronic format, where it can be justified that a static record maintains the integrity of the original data. However, the data retention process must be shown to include verified copies of all raw data, metadata, relevant audit trail and result files, any variable software/system configuration settings specific to each record, and all data processing runs (including methods and audit trails) necessary for reconstruction of a given raw data set |  |  |
| Where computerised systems are used to capture, process, report, store or archive raw data electronically, system design should always provide for the retention of audit trails to show all changes to, or deletion of data while retaining previous and original data. It should be possible to associate all data and changes to data with the persons making those changes, and changes should be dated and time stamped (time and time zone where applicable). The reason for any change, should also be recorded. |  |  |
| Routine data review should include a documented audit trail review where this is determined by a risk assessment. |  |  |
| The approach to reviewing specific record content, such as critical data and metadata, crossouts (paper records) and audit trails (electronic records) should meet all GCP/GCLP requirements and be risk-based. |  |  |
| There should be a procedure that describes the process for review and approval of data. |  |  |
| Where summary reports or information are supplied by a different organisation, the organisation receiving and using the data should evaluate the data provider’s data integrity controls and processes prior to using the information. |  |  |
| Periodic audit of the data generated (encompassing both a review of electronically generated data and the broader organisational review) might verify the effectiveness of existing control measures and consider the possibility of unauthorised activity at all interfaces |  |  |
| For systems generating, amending or storing GXP data shared logins or generic user access should not be used. Where the computerised system design supports individual user access, this function must be used. System administrator access should be restricted to the minimum number of people possible taking account of the size and nature of the organisation |  |  |
| System Administrator rights (permitting activities such as data deletion, database amendment or system configuration changes) should not be assigned to individuals with a direct interest in the data (data generation, data review or approval). | . |  |
| Computerised systems should comply with regulatory requirements and associated guidance. These should be validated for their intended purpose which requires an understanding of the computerised system’s function within a process. For this reason, the acceptance of vendor supplied validation data in isolation of system configuration and users intended use is not acceptable. In isolation from the intended process or end-user IT infrastructure, vendor testing is likely to be limited to functional verification only and may not fulfil the requirements for performance qualification. |  |  |
| Where ‘cloud’ or ‘virtual’ services are used, attention should be paid to understanding the service provided, ownership, retrieval, retention and security of data. | . |  |
| The responsibilities of the contract giver and acceptor should be defined in a technical agreement or contract. This should ensure timely access to data (including metadata and audit trails) to the data owner and national competent authorities upon request. Contracts with providers should define responsibilities for archiving and continued readability of the data throughout the retention period (see archive). |  |  |
| Appropriate arrangements must exist for the restoration of the software/system as per its original validated state, including validation and change control information to permit this restoration. |  |  |