



AFRICAN MALARIA NETWORK TRUST

Training Workshop on Data Management for Malaria Vaccine Trials

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Workshop Report

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A training workshop on Data Management for malaria vaccine trials was organised by the African Malaria Network Trust (AMANET), hosted by the Malaria Research and Training Centre (MRTC), University of Bamako, Mali, starting Monday 26 to Friday 30 September 2005. It was attended by 21 participants (3 females and 18 males) from 13 countries in Africa, coming from various research institutions currently involved or planning to be involved in malaria vaccine trials. The aim of the workshop was to build capacity in data management using Microsoft ACCESS Database Management System in hands-on practical training. The meeting focused on malaria vaccine trials as an area of current attention by AMANET.

Introduction

It has been noted that Data Managers play a critical role in clinical trials. However, in the past, their role has been limited to being of a consultative nature rather than being involved right from the study planning stages. In view of this anomaly, this workshop was designed as a step towards redressing this situation by building capacity of Data Managers to facilitate their full participation and understanding of clinical trials. It was noted that a clinical trial could only be deemed successful if the GCP guidelines have been adhered in the way the data management are managed.

Participants were randomly allocated an identity number for linking their results and then a pre-workshop test was given to ascertain the level of knowledge of participants regarding clinical trials database management and to guide the organisers and facilitators on how to fashion their presentations and lessons in order to suit the needs of the participants.

The workshop discussed a number of questions on the use of MS ACCESS as a data management system with special emphasis on:

- What tools are available for collecting clinical data, and ways of improving them
- How to use these tools in designing databases for managing clinical trials

Workshop Activities

Day One

Professor Ogobara Doumbo, opened the workshop by welcoming all participants and then called upon Dr Issaka Sagara (MRTC) to facilitate in the introduction of participants and facilitators present.

In his introductory address, Professor Charles Mgone stressed the point that Data Managers must be involved among the decision makers in the team of clinical trials personnel right from the planning stage to the end.

Dr Roma Chilengi, in his session on “the role of Data Management in the clinical trial process”, also made some never-to-be-forgotten remarks that should always guide and guard the Clinical Trials Data Manager;

- Errors are inevitable in CTDM but they must be reduced to the barest minimum.
- The Data Manager should be up-to-date with the GCP guidelines
- There is no single activity referred to as Data Management. It is a whole process from the collection of the sample to the archiving of the report/data
- Hence the DM should be involved in the whole process to ensure GCP requirements according to ICH-1.46
- Training and re-training is another very vital aspect of GCP.
- The centre’s DM process should be ready and welcome audits at any time.

Dr Chilengi further stressed the point that data managers should push to be involved in all the operational stages of the trial and provide their input as data managers. It was observed that there has been a tendency for data managers to work as data clerks, and/or physically fixate on their computers to build databases and not provide input throughout the whole stages of the trial. “Data managers start managing”, were the words of Dr Chilengi enforcing the point for the need for data managers to be involved in the whole process of trial planning, data collection, data entry supervision, cleaning, analysis and reporting.

On the other hand during a lesson on Principles of data management, Mr Gerald Feldman emphasized the importance of data managers to involve the whole scientific study personnel of the trial during the process of logical planning and physical designing of the databases. He also added that designing a database should always be preceded with the logical planning on a paper, avoiding the rush to the physical designing activity. In his concluding remarks, Mr Gerald said... “Start small, keep it simple and be flexible”.

Dr Allasane Dicko, head of DM at the MRTTC, presented the Sample Protocol. This was based on one of the drug trials conducted at the centre and set the scene for later practical work on active reviews of sample CRFs by participants. The participants critically analysed the CRF and discussed findings in terms of questions and field allocations in view of data management requirements.

During the afternoon sessions, Mr Feldman laid the foundation for the hands-on practical lessons when he presented an overview on the use of MS ACCESS in data management. He gave insights into what MS Access offers, giving advantages and disadvantages, and terminologies relevant to the course. Mr Ismaila Thera, then took the participants through practical lessons on designing the data base starting with the creation of data entry screens in using MS ACCESS. The day’s activities ended with home work in which each participant was to design and create several screens on his/her database.

Day Two

The second day began with a review on the homework resolving the difficulties that participants faced by themselves. Then the day focused on the tasks of creating tables using the test the provided CRFs. This was a hands-on practical session in which setting relationships and production of a data Dictionary were tackled. The participants were all building on their data bases with support from the facilitators.

Mr Feldman gave a presentation on CRF Processing/Entry and Filing. He added that this process involves steps such as receiving CRF, entering data, cleaning data, coding data, reconciliation and transferring data or filing.

NB: to help everybody remember the difference between ‘filling’ and ‘filing’ (since both can be done with CRFs) I would suggest the following: ‘filling’ = completing, whereas ‘filing’= archiving.

Further homework tasks were given for exercising creation of relationships and coding of data.

Day Three

The next day began with Mr Thera checking the homework from the previous day. Some participants had some problems, which were discussed and resolved. Dr Jan Bart Hak, of Xendo Pharma Design then gave a lecture in which he raised important points on data outliers that brought very interesting discussions. He clarified issues pertaining to databases as they relate to inclusion and exclusion criteria set out in the protocol.

The day’s activities continued in two phases interspersed with presentations on “Generating, Tracking, Reviewing, and Resolving Queries” also by Dr Hak discussed the role of the data management in the process of generating and resolving queries. Pointing correction of mistakes as the intent of raising queries, he emphasised the need for quality control checks in the process of designing the forms, data collection and entry. Major causes of errors were identified and sample data query resolution form discussed. Furthermore, he emphasized that the role of the data manager is not only related to building the database and ensuring that data is entered in it, but that this role is also includes being in contact with the other team members responsible for conducting the trial. The data manager should ideally be involved in the design of the study, preparation of the CRF and that he/she interacts with the persons analysing the data. This helps to improve data quality and limit the number of queries issued, thereby effecting positively the through put time and budget of the data management activities and thus the clinical project.

Dr Mahamadou Thera discussed “GCP and Data Management” where he highlighted the principles of GCP and how they overlap with those of good data management practices. Several references were made for the document of the Society for Clinical Data Management (SCDM) emphasising the minimum standard on data acquisition, privacy, validation and data quality. Best practices were also elaborated as being desirable in these areas.

Phase I: Hands-on Training Session in the areas of

- Designing the Double Data Entry System
- Designing the Audit Trail System and
- Designing Queries

Phase II: Open Discussion

Dr. Hildur Blythman of the European Malaria Vaccine Initiative (EMVI) coordinated the presentations from participants. Representatives of each centre were called upon to explain issues relating to their centre's infrastructure, Software system, problems encountered, experience in clinical trials and relate future expectations. The following is the summary of the major discussion points from the centres represented.

- The common Softwares that are in use at the participating centres are EpiInfo, MS Access, Visual Foxpro, SPSS, SAS and STATA.
- The data management infrastructure situation varied widely from some which have adequate facilities to others who have no specific room to accommodate data management. Only four of the participating centres reported having their own data servers.
- Most of the participants reported that they were being involved in clinical trials data management for the first time hence the workshop was very opportune.
- Problems encountered were mostly related to recognition. All participating centres, except two, indicated a less than desirable level of coordination between them and their Principal Investigators (PIs). Typically, their Principal Investigators would "do their own thing" and only bring them CRFs and databases (already designed, in some of the cases) to manage. Thus there is no "team work" in existence in the true sense of the word at most of the centres. However, all the participants had strong hopes for the future, as they were now feeling confident at being able to handle database issues.

At the end of the experience-sharing session, there was a brief period of question time and discussions. During this period, Dr Blythman made some important comments regarding the designing of SOPs as regulatory boards are very keen on these. She urged participants to consider the following points when writing SOPs.

- Decide how to work, and document the procedures of your decision
- Make sure to follow what you stipulated
 - Do not write out what you are not going to do
 - Do not write out what you cannot do

The day's activities were ended with yet again another home assignment.

Day Four

The day began with a presentation of a brief summary of the first three-day's activities by the report-writing team presented by Mr David Mensah. To get participants to appreciate more of the entire process of clinical trials and why the role of the Data Manager is very important, Dr Blythman made a presentation on "Steps taken in Drug Development and the role of the clinical Data Manager". She spoke about pre-clinical trials and clinical trials, elaborating what the objectives of each step involve in product development.

Mr Feldman gave a talk on protections and data base security providing available options for protecting databases. He began with the physical security, limiting access to facilities and focussed on available firewall barricades that one can install. The need for backing up databases was also discussed. The lecture was followed by an example from the participant from Manhica, Mozambique who shared his specific experience on how he set up a security system at his site.

Mr Thera then presented on “Importing and Exporting Files”. He led the participants through the process of importing and then exporting data into and from the database. Samples were provided for the participants to practice. Dr Hak then spoke about the need of validation of imported and exported data by using some basic statistics, such as the mean and standard deviation, on both the source data and the exported one to ensure that they are the same.

Dr Sagara (MRTC) made a presentation on “The role of the BioStatistician”. He said the Statistician’s role also starts from the very beginning to the end and that sampling and data analysis are his/her main roles. He must be involved in articulating the hypothesis and sampling strategies. Further, the analysis plan must be worked out before the study starts and included in the protocol indicating all planned interim analyses. On the issue of error checking and specification, he emphasised that Biostatistician should collaborate with the Data Manager to generate queries. The talk was followed by discussions related to blinded randomised controlled trials and activities related to database lock/freeze and query resolution.

The last lecture was also given by Dr Sagara on “Quality Control and Assurance in Clinical Trials”. His talk included the following;

- In the process of randomisation, the investigator must be particular about selection bias, the major reason why the Biostatistician is very much needed on the team.
- Blinding is also a part of QA and it is important especially where end-points are subjective. Adequate measures must be taken to ensure true blinding.
- Development of CRF should ensure unambiguous formulation of questions.

There was then a brief tour of the MRTC DM facilities. They were at three different points on the Faculty of Medicine and Pharmacy. Participants were taken through the various stages of CRF handling as it arrives from the field, the log in procedures shown, data entry, quality checks, and independent audit checks and data storage. Participants visited the data entry room, the data managers’ offices and the archival room where the storage cabinets are housed for archiving.

Day Five

Day five began with checking and completing of the participants homework.

The same test questions undertaken on the first day were given as post workshop test. A simple analysis of the results for the distribution of the scores and a paired T-Test indicated that there was a significant gain from the workshop.

Distribution of marks (out of 20)

Score	Pre-test	Post-test
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Mean	12	15
Max	15	18
Min	8	11

Paired T-Test for gain in mean score

	Mean gain Post-Pret	T- value	p
3	8.35		<0,0001

Professor Doumbo, Professor Mgone and Dr Thera each gave closing remarks. Mr David Yao Mensah and Ms Akaragwe Ateh Isabel thanked the organisers, for a well organised and thoroughly enjoyable workshop. They emphasised that these are worthwhile events, and participants hoped to be able to attend other workshops in the near future where their Principal Investigators and other players in the study would be involved to openly address the marginalisation issue.

The closing ceremony included the handing out of certificates with all the facilitators and organisers present.