

Supplementary Information

Data entry and management: Study data will be collected and managed using REDCap (Research Electronic Data Capture). REDCap is a secure, web application designed to support data capture for research studies, providing user-friendly web-based case report forms, real-time data entry validation (e.g. for data types and range checks), audit trails and a de-identified data export mechanism to common statistical packages (SPSS, SAS, Stata, R/S-Plus). The system was developed by a multi-institutional consortium at Medical University of South Carolina (MUSC) and Vanderbilt University. The database is hosted at the MUSC Data center. The system is protected behind a login and Secure Sockets Layer (SSL) encryption. Data collection will be customized for each study, or clinical trial based on a study-specific data dictionary defined by the research team with guidance from the SCTR Informatics REDCap administrator at MUSC.

Neuroimaging archiving AIMS software: Images from neuro-radiology will be stored on compact discs and transferred to Ibadan for central storage. Interpretation of neuro-images will be done across sites using the AIMS software.

Laboratory management: 35ml of blood will be collected from cases and controls using a vacutainer system. Samples will be distributed into collection tubes for separation of sera, plasma, buffy coat and red blood cell fractions and stored at -80C until further analysis as required.

Freezerworks: Freezerworks Basic is a powerful and flexible database program for sample management in clinics and laboratories. It accommodates all freezers and tanks, offers features for assigning freezer positions, efficiently tracks what is being stored and moved down to precise location in the freezer, and importing and exporting data. Freezerworks combines the flexibility of a user-definable information management system with the solid foundation of a relational database. It is available as a standalone or Client/Server product.

It allows for management of all sample data with a Sample ID, Sample Date, Sample Type and additional user-define field and a notes field. The relational database links

aliquots (vials) to samples in many-to-one relationship. It also tracks number of thaws for each aliquot. As vials are pulled, Freezerworks updates the number of vials and volume totals automatically. It is easy to search and move through freezer using the “Explorer” tree structure.

Levels of Security: Freezerworks Basic allows for three types of security:

- I. System Administration (full access).
- II. Data Entry (can do everything except set up users and configure the screen).
- III. View only (cannot do anything except viewing the data).

Bar Code Functionality: Freezerworks Basic features the ability to create and print bar codes for either samples or aliquots. Bar codes can be created that are unique to the sample, and/or unique to the aliquot. Bar code can be used to positively identify a specimen to ensure that the proper record in the database is selected for that specimen and for scanning a batch of aliquots to bring up a selection of their corresponding records in the database. It provides ability to verify that the correct samples are pulled for shipping (Freezerworks Unlimited).

Sample Batch Processing: Freezerworks Basic allows for the import of sample data from external files to add, update, and/or delete batches of records in a single process. You can also reassign freezer positions, create transactions, and process shipments using batch procedures.

Data Integration / Modular Functionality: Freezerworks Basic has a built –in SQL database engine that greatly improves the performance of the database. Data can be retrieved via open SQL through an ODBC connection and you can set indexing parameters for faster search. Data searches are highly efficient.

Batch Entry: Freezerworks Basic has a feature called CLIP (Clinical Lab Inventory Program) which is very useful for the quick entry of vials for short-term storage. Users can take a batch of tubes and scan each one into a precise location in a container, filling the container in a matter of minutes to place into refrigerator or freezer, where they will sit for set amount of time. Little or no data is entered for each tube beyond its identifier, location, and discard date. If an additional test is requested on a tube, it can be located quickly. Freezerworks Basic is adept at handling both long-term and short-term storage. Batch Entry in Freezerworks

Unlimited is more designed for anticipating samples and aliquots that will come in for storage, and therefore need labels and perhaps container “reservation” for different kinds of sample/aliquot types. **(Ref <http://www.freezerworks.com/index.php/support/documents.html>)**