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To: ACTG and IMPAACT CTU PIs, CRS Leaders, Study Coordinators, Lab Directors and/or Lab Managers

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Re: ACTG and IMPAACT Bar coding Implementation

Implementation of LDMS Barcode at ACTG Network Laboratories

Beginning October 1, 2008 all laboratories in the ACTG and IMPAACT Networks will be required to label specimens using the two-dimensional LDMS generated barcode label. Sites should start training and implementing barcoding at their specimen processing laboratories for all current and future ACTG and IMPAACT protocols.

By way of background, the LDMS Barcode Working Group was created in January 2007 with a mission to test LDMS barcode specimen labels for ACTG and IMPAACT studies and to identify any barriers to the successful generation and scanning of these labels at processing and receiving laboratories. The group consisted of members from several processing laboratories as well as the ACTG/IMPAACT Central Repository in Rockville (BRI, LDMS Lab 999). These labs used a variety of label stock as well as several different printers and barcode scanners (all recommended and published for use with LDMS).

An example of the two-dimensional LDMS generated barcode label is below:



240V07000016
E7200KXG-01
0012345L A5175
07/May/2007 07:15
BLD EDT PL2 N/A
0.50 ML Q PE
12 Fst

Row 1: LDMS Specimen ID
Row 2: Global Specimen ID
Row 3: Patient Identifier (ID1) and Study/Protocol Identifier (ID2)
Row 4: Specimen Date or Harvest Date and Specimen Collection Time
Row 5: Primary Type, Additive Type, Derivative Type and Sub Additive/Derivative Type
Row 6: Volume/Volume Unit and Visit/Visit Unit (VID)
Row 7: Time/Time Unit

Over the course of a five-month period, the participating laboratories generated 8,081 LDMS barcode specimen labels and collected data on the visual inspection and scanability of these labels in various storage and processing conditions. Based on their collective experience and findings, the following steps are recommended for all ACTG/IMPAACT labs when printing barcode labels.

- After LDMS barcode labels are printed, they must be visually inspected to ensure that the barcode is not cut-off on any side, that all printed items are readable and intact, that no lines or crimps affect the barcode or printed items and that the barcode is not covered by a label tail, either by using a label size with a short tail or by applying the label to the tube tail-first. If the label does not pass inspection, it must be discarded and reprinted, which may involve making printer alignment or configuration adjustments.
- Labels should then be scanned to check the quality of the barcode. This can be done by either scanning the specimens to assign storage locations in the LDMS Storage Management module or by scanning into any text editor program such as Word or Notepad. The scanability must be verified for all barcode labeled specimens prior to shipment to the BRI Repository. Labels that are unable to be scanned must be discarded and reprinted, which may involve making printer alignment or configuration adjustments.
- During initial implementation, each technician should scan 100% of all labels generated (approximately one box or more as needed) to ensure that they are comfortable with the scanning technique.
- Laboratories should print a set of test labels after printer alignment or calibration, or after changing printer components, such as label stock or ribbons, to verify the scan prior to generating labels for specimen tubes.

The pilot laboratories acknowledged that there is a technique to successfully scan a barcode labeled tube, including the angle of the scanner and the distance between the scanner and the tube. Initially a technician may have a harder time getting the reader to scan successfully until they have mastered the technique. Please see the following suggestions for procedures that have been used successfully at the Repository and pilot laboratories to scan LDMS barcoded specimens.

- Hold the top of the tube with the thumb and index finger, placing the remaining fingers directly behind the tube to darken the background and provide a contrast while scanning.
- For tubes that do not scan immediately using the technique described above, release the trigger on the scanner and depress it a second time (i.e. a double trigger) or pull the scanner away from the barcode on the tube and then bring it close while keeping the laser on the barcode.
- For tubes that may have minor smudges or accumulated ice covering the barcode, wipe the tube with gauze immersed in 70% alcohol prior to scanning.

The pilot labs also noted that sloppy label placement, longer tailed labels, overlap of the label over the barcode and barcodes that were cut-off due to printer alignment issues all contributed to decreased scanability of the barcodes. Based on these findings the longer tailed labels were removed from the list of recommended label stock.