D3005
(Rev. 140, Issued: 05-29-15, Effective: 05-29-15, Implementation: 05-29-15)

§493.1101 Standard: Facilities

(a)(3) Molecular amplification procedures that are not contained in closed systems have a uni-directional workflow. This must include separate areas for specimen preparation, amplification and product detection, and, as applicable, reagent preparation.

Interpretive Guidelines §§493.1101(a)(2)-(a)(3)

The laboratory should establish contamination prevention procedures to minimize contamination of patient specimens, equipment, instruments, reagents, materials, and supplies.

Determine if the laboratory performs wipe tests of areas where radioactive material or amplification procedures are used in order to monitor and prevent contamination.

Laboratories performing molecular amplification procedures should have a mechanism to detect cross-contamination of patient specimens. This may be accomplished by including a "blank" control with each run of patient specimen testing (use D5425).

The “blank” control refers to a no-template control (N.T.C) or a control sample containing all reagents except the target template.

An example of a “closed system” would be an FDA-cleared or FDA-approved test system that contains amplification and detection steps in sealed tubes that are never opened or re-opened during or after the testing process and that is used as directed or suggested by the manufacturer (i.e., without any modifications).

Unidirectional workflow refers to the manner in which testing personnel and patient specimens move through the molecular testing process to prevent cross-contamination, and consists of separate areas for the following:

- Reagent preparation (as applicable);
- Pre-amplification area for specimen preparation and amplification reaction set up; and
- Post-amplification area for specimen amplification, product detection, and storage or disposal of amplified products.

Reagents must be prepared in an area that is separate (as applicable) from where specimens are processed, prepared, “amplified” and detected to prevent contamination. Once a specimen enters the amplification and product detection area it should not be brought back to the reagent or specimen preparation areas. The laboratory should store amplified specimens separately from test reagents and patient specimens. All equipment (e.g., reagents, supplies, pens, pipettes and tips, laboratory coats) should remain in designated areas.

Sources of potential cross-contamination in molecular testing include:

- Patient specimen (i.e., genomic contamination);
- Amplified patient specimen (i.e., amplicon contamination); and
- Testing personnel.