Coagulation

SPECIMENS

The specimen of choice for coagulation is plasma, although some coagulation tests require whole blood. When the test calls for plasma, draw it off a spun-down sodium citrate (blue-top) tube.

It is very important to prevent clotting if your test calls for a plasma specimen. Even the smallest clot can cause erroneous results in coagulation testing since some clotting factors will be used in the clot's formation. To help prevent a clot, be sure to mix the tube well by gently inverting it end-to-end 10 times immediately after it is filled. Draw one tube before the blue-top tube, or tissue fluids could contaminate the specimen and cause incorrect results.

When filling a sodium citrate tube, be sure that the proper blood/anti-coagulant ratio is reached. If not, test results will be inaccurate. When drawing a blue-top tube, try to fill it to its maximum capacity (where the vacuum stops pulling in blood.) If this is not possible, check the tube after drawing to see if the blood is up to the minimum fill line. (Check with manufacturer's recommendations to find out how many milliliters of blood is the minimum required for a proper ratio.)

If a blue-top tube does not contain the minimum amount of blood, discard it and redraw the specimen. To prevent the problem of insufficient specimens, fill a blue-top tube to the minimum fill line with colored water and post it at the drawing station for the convenience of the phlebotomist.

CONTROLS

Run two levels of controls at least every eight hours during each day of testing and whenever there is a change of reagents. Record control results when they are run and review results to detect problems. The laboratory director or technical consultant should review and initial all quality control (QC) results once a month. Quantitative controls (those for which the result is a number) should be plotted on a Levy-Jennings chart, or similar graph. If you would like guidance on preparing these charts, refer to COLA's LabFacts 50 *Quality Control Primer.*

If a control is "out of limits," it must be repeated. Be sure to plot both the original and repeat results on your chart. It is acceptable for a control to be out of range once every 20 times it is run, although it still must be repeated. In other words, according to statistics, 95 percent of results will fall within two standard deviations of the mean, while the other 5 percent (or one in 20) will be out. If the repeat is still out, you will need to take corrective action. Reconstitute a new control and/or reagents and perform the routine troubleshooting steps recommended by your manufacturer.

If this does not solve the problem, recalibrate if the manufacturer recommends it. Record on a log the date and initials of the person doing any corrective actions. Maintain the log for at least two years along with any instrument printouts. Do not report out any patient results until all controls are in range.

Sometimes calibration will drift on an instrument between regularly-scheduled calibrations. Recalibration will often correct the QC problem, but if this doesn't work, it is time to request a service call on the instrument.

MANUAL COAGULATION

Run patient specimens in duplicate and average the results. You should establish a criterion which tells how far apart the two results can be and still be acceptable, such as a difference of 10 percent. If the difference between the two results meets this criterion, the results may be averaged and reported. If not, the specimen must be rerun in duplicate.

AUTOMATED COAGULATION

Establish a schedule for the maintenance of your instrument by using a maintenance log which contains data from function checks, such as electronic self-tests, internal temperature measurement, etc. The log should also chart all necessary preventive maintenance procedures. Perform preventive maintenance according to manufacturer's instructions and record.

Perform calibration, recalibration, and/or calibration verification at least every six months and when quality control results show any shifts or trends. When recording these activities, include the date and initials of the person who performed the procedure.

Requirements for good laboratory practice and COLA Laboratory Accreditation programs are underlined.