

3-5: Troubleshooting, service repair and retiring equipment

What is the source of the problem?

Problems with equipment may present in many ways. The operator may notice subtle changes such as drift in quality control or calibrator values, or obvious flaws in equipment function. Sometimes, the equipment fails to operate. It is important to teach operators to troubleshoot equipment problems in order to quickly get the equipment functioning and resume testing as rapidly as possible.

When an operator observes instrument drift, it is important to repeat the preventive maintenance procedures as a first step to resolve the problem. If this does not work, proceed with troubleshooting processes.

Troubleshooting

Manufacturers frequently provide a flowchart that can help determine the source of problems. Some of the questions to consider are listed below.

- Is the problem related to a poor sample? Has the sample been collected and stored properly? Are factors such as turbidity or coagulation affecting instrument performance?
- Is there a problem with the reagents? Have they been stored properly, and are they still in date? Have new lot numbers been introduced without updating instrument calibration?
- Is there a problem with the water or electrical supply?
- Is there a problem with the equipment?



Make one change at a time based on symptoms. If the equipment is the problem, review the manufacturer's instructions to verify that all procedures are being followed correctly.

When problems cannot be corrected

If problems cannot be identified and corrected in-house, attempt to find a way to continue testing until the equipment can be repaired. Some ways to achieve this are as follows.

- Arrange to have access to backup instruments. It is often too costly for the laboratory to have its own backup instruments, but sometimes a central stores agency can maintain backup instruments to be shared throughout the local area or country.
- Ask the manufacturer to provide a replacement instrument during repairs.
- Send the samples to a nearby laboratory for testing.

Be sure to notify the appropriate providers that there are problems and that there will probably be delays in completing the testing.



Service and repair

Do not use faulty equipment! Seek help from the manufacturer or other technical expert. Place a note on the equipment so all staff are aware that it is not in use.

Manufacturers may provide service and repair of equipment that is purchased from them. Be sure to set up a procedure for scheduling service that must be periodically performed by the manufacturer. When instruments need repair, remember that some warranties require that repairs be handled only by the manufacturer. Large facilities sometimes have biomedical service technicians in-house who perform equipment maintenance and repair.



Retiring and disposing of equipment

Routine service should be scheduled so as not to interrupt the flow of work.

It is very important to have a policy and procedure for retiring older laboratory equipment. This will usually occur when it is clear that the instrument is not functioning and is not repairable, or when it is outmoded and should be replaced with new equipment.

Once a piece of equipment is fully retired and it has been determined that it has no further use, it should be disposed of in an appropriate manner. This last step is often neglected in laboratories and old equipment accumulates, taking up valuable space and sometimes creating a hazard.

When disposing of equipment, salvage any usable parts, particularly if the equipment is being replaced with another similar one. Then consider any potential biohazards and follow all safety disposal procedures.