Health problem addressed

Devices that measure the clotting mechanisms of hemostasis; used primarily to detect clotting deficiencies related to thromboembolic disease, thrombocytopenia, impaired liver function, hemophilia, von Willebrand disease, and other conditions. They are also used to monitor the effect of drugs such as heparin, oral anticoagulants, and thrombolytic and antiplatelet agents on whole blood, as well as the effects of blood component therapy.

Product description

Handheld device or benchtop device, sometimes placed on a cart, with a display (usually LCD), a keypad to enter information, and a slot to insert a test strip or sample tube. Some models may have alarms, memory functions, touchpens, USB ports to transfer data to a computer, and/or a small storage compartment for reagents.

Principles of operation

One of three methods may be used: Mechanical impedance uses blood viscosity changes to determine clotting time. Instruments using the photometric principle monitor changes in the specimen’s optical density to detect the beginning of clot formation. The electromagnetic uses a magnet in the test tube aligned with a magnetic detector in the cuvette and remains locked in position with the detector while the test tube rotates. When a clot forms, it entangles the magnet, breaking the electromagnetic coupling and allowing the magnet to rotate with the tube, terminating the test.

Operating steps

Whole blood samples are placed in tubes, on reaction cuvettes, or on test strips, and loaded into the analyzer. The operator may select the tests being performed on the sample using a keypad or connected computer.

Reported problems

Operators should be aware of the risk of exposure to potentially infectious bloodborne pathogens during testing procedures and should use universal precautions, including wearing gloves, face shields or masks, and gowns.