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Synopsis from the article: [Misra M. The basics of hemodialysis equipment. *Hemodialysis International* 2005; 9:30-6.](#)

In hemodialysis (HD), the blood and dialysate are separated from each other by the dialyzer membrane, permitting solute and water transfer. The HD machine pumps the patient's blood as well as the dialysate through the dialyzer. The machine possesses a variety of detectors, controllers, monitors, and safety devices to ensure a safe dialysis. The blood and dialysate compartments are carefully monitored and controlled. The use of sophisticated, computerized safety monitors and built-in alarms notwithstanding, an intricate knowledge of the HD machine is vital to the work of practicing nephrologists. This article underscores the important essentials of the machine.

The operation of the machine can be broadly divided into the 'blood-side' and the 'dialysate-side' aspects, to simplify understanding. The function and significance of the 'blood-side' components such as pumps, monitors, detectors, etc are discussed with a practical approach to problem-solving. Similarly, discussion of the 'dialysate-side' components emphasizes the importance of the various aspects of online dialysate preparation and the importance of monitoring various safety devices in a hands-on approach.

Commentary by Todd S. Ing, MD

Dr. Misra was successful in explaining the basic principles of the hemodialysis machine in a simple and readily understandable fashion. This article is required reading for those who wish to understand hemodialysis.