BLOOD TREATMENT SYSTEMS AND METHODS

Abstract

The present invention generally relates to hemodialysis and similar dialysis systems, including a variety of systems and methods that would make hemodialysis more efficient, easier, and/or more affordable. One aspect of the invention is generally directed to new fluid circuits for fluid flow. In one set of embodiments, a hemodialysis system may include a blood flow path and a dialysate flow path, where the dialysate flow path includes one or more of a balancing circuit, a mixing circuit, and/or a directing circuit. Preparation of dialysate by the preparation circuit, in some instances, may be decoupled from patient dialysis. In some cases, the circuits are defined, at least partially, within one or more cassettes, optionally interconnected with conduits, pumps, or the like. In one embodiment, the fluid circuit and/or the various fluid flow paths may be at least partially isolated, spatially and/or thermally, from electrical components of the hemodialysis system. In some cases, a gas supply may be provided in fluid communication with the dialysate flow path and/or the dialyzer that, when activated, is able to urge dialysate to pass through the dialyzer and urge blood in the blood flow path back to the patient. Such a system may be useful, for example, in certain emergency situations (e.g., a power failure) where it is desirable to return as much blood to the patient as possible. The hemodialysis system may also include, in another aspect of the invention, one or more fluid handling devices, such as pumps, valves, mixers, or the like, which can be actuated using a control fluid, such as air. In some cases, the control fluid may be delivered to the fluid handling devices using an external pump or other device, which may be detachable in certain instances. In one embodiment, one or more of the fluid handling devices may be generally rigid (e.g., having a spheroid shape), optionally with a diaphragm contained within the device, dividing it into first and second compartments.

No Suitable Figure