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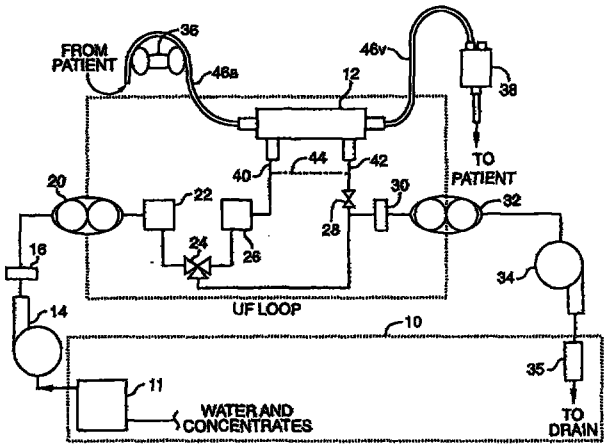
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(54) Title: METHODS AND APPARATUS FOR PERFORMING CONTROLLED ULTRAFILTRATION DURING HEMODIALYSIS



(57) Abstract

A preferred embodiment of the disclosed apparatus comprises a hydraulic "UF loop" comprising first (14) and second (34) positive displacement pumps that pump dialysate or an analogous liquid to and from, respectively, a dialysate compartment of a hemodialyzer (12) located within the UF loop. Between each pump (14, 34) and a respective port of the hemodialyzer (12) is a respective flowmeter (20, 32) that determines the flowrate of the respective pump (14, 34). The hemodialyzer (12) is also connected to a conduit (46a, 46v) routing a physiological liquid (e.g., blood) extracorporeally from a source (e.g., a patient) through a blood-compartment of the hemodialyzer (12) and back to the source. Depending upon the relative pumping rates of the first (14) and second (34) pumps, an ultrafiltration (UF) condition can be achieved yielding a net flow of liquid either from the dialysate to the physiological liquid or from the physiological liquid to the dialysate. A "reverse UF" condition characterized by a net liquid flow from the dialysate to the physiological liquid is especially useful for priming the blood compartment of the hemodialyzer (12). The flowmeters (20, 32) perform liquid metering and thus allow ultrafiltration at high accuracy without the need for a separate UF metering pump in the UF loop.