Infectivity from Hydraulic Circuits of Individual Dialysate Supply Systems

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Dear Sir,

Prevention of the transmission of infections, notably viral ones, through haemodialysis is a constant concern. Hepatitis C virus transmission is not yet well understood [1-3], blood transfusion being accountable for only 65% of the cases [4]. Contamination between haemodialysis patients through dialysate supply systems may be limited by strict adherence to universal precautions. Present recommendations are disinfection of the individual dialysate supply systems after each session and surface decontamination [5]. However, these measures alone cannot be sufficient [6]. The elaboration of a new type of hydraulic circuit for individual dialysate supply systems would allow total efficiency in preventing any risk of patient-to-patient contamination through the haemodialysis machines. There are hardly any recirculating systems left in which the dialysate is being recirculated until saturation of the bath; the efficiency was decreasing along with the duration of the dialysis session, and this design carried a risk of bacterial contamination. Single-pass run-to-waste systems do not recirculate the dialysate. The liquid goes through the dialyzer and then is directly discarded to waste. It does not flow back into the incoming circuit after having been in contact with the dialyzer (and, therefore, with the patient's blood). This system involves no risk of contamination of the incoming circuit during sessions. Besides, the incoming and outgoing circuits make a loop when being disinfected to allow the recirculation of the sterilizing agent (physical or chemical), thus ensuring its diffusion. When disinfection is ineffective, or when some areas are unreachable, there is a risk of contamination of the incoming circuit by the liquid that has been in contact with the outgoing circuit. Single-pass individual dialysate supply systems should be sterilizable without the incoming and outgoing circuits making a loop during disinfection, thus avoiding any contact between the outgoing liquid, potentially contaminated, and the incoming circuit. The two parts of the circuit, especially the latter, should have no cul-de-sac, and as few connections and bumps as possible. It is around these conditions, which to our knowledge no machine gathers today, that future individual dialysate supply systems should be designed.

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