

Quality and risk management in dialysis

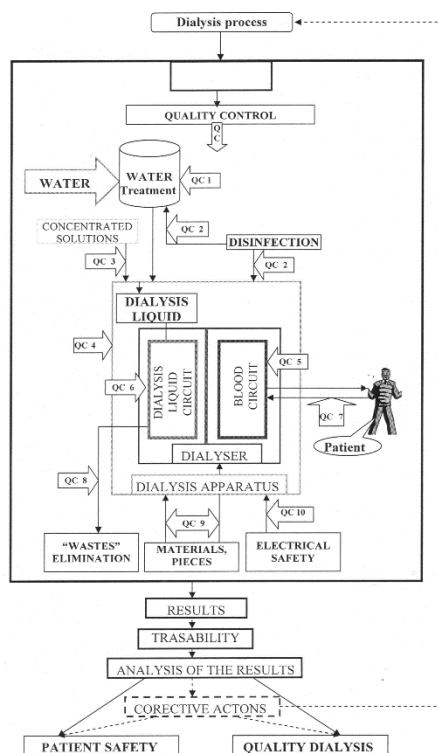
In case of chronic renal failure the normal renal functions are affected and it is necessary to apply a medical treatment, called dialysis process, or realize a renal transplantation. Dialysis is a medical treatment applied to the patient with kidney deficiencies. It consists in the epuration of the blood by the toxic substances (urea, creatinine) resulted from the metabolic process.

The dialysis process is going on in the dialysis sittings (with a duration of four to five hours, usually in three sittings weekly) using a specialized apparatus (dialysis apparatus).

The epuration of the blood during the dialysis process is happening outside of the human body in the dialyzer, which is connected, to the dialysis apparatus and to the patient by an extracorporeal circuit (see Fig.1).

During dialysis the patients are exposed to a permanent risk because their blood is circulated and filtered outside from their body, therefore it is very important to identify the risks for the patients and implement a quality management system and realize a permanent quality control to avoid these risks.

The basic constituents of the dialysis process [2] are:



- the water treatment system,
- the dialysis apparatus
- the chosen treatment parameters (type of dialyzer, hydraulic parameters of the flowing liquids, duration of the dialysis sitting).

For this reasons the risks for the patients treated by dialysis can be classified as following:

- risks coming from the water quality;
- risks coming from the inadequate working of the dialysis apparatus;
- risks coming from the chosen treatment.

The prevention of the identified risks can be made only with a permanent and systematical quality control in the entire dialysis process, with an implementation of a quality management system.

In Fig. 2 a schema is proposed which realize a synthesis of the quality control points (QC) in the dialysis process for the implementation of the quality and risk management system.

Conclusions:

The research makes a synthesis of the basically risks for the patients treated by dialysis and justify the importance and the necessity of the quality and risk control in the dialysis process proposing a schema with the quality control points in the dialysis process.

The most important specific technical parameters needed to controlling are also identified which can help to implement an adequate quality control and risk management system in the dialysis process.

Selected publications on the topic:

1. Ianos Endre: Risk minimization systems and methods in the suppliance of renal function - Interdisciplinarity in Engineering, *Proceedings of the International scientific conference Inter-Eng 2012, 4-5 Oct. 2012*, Tirgu Mures, pp. 199-202, ISSN 2285- 0945.
2. Ianos Endre: Quality and risk management in dialysis, *EHB 2011 Iasi, 24-26 Nov. 2011*, pp. 519-523, ISBN 978-1-4577-0292-1, WOS: 000304806300050, IEEE Xplore - ISI indexed.
3. Ianos Endre: Métrologie et Qualité en dialyse (Metrology and quality in dialysis) – Université de Technologie de Compiègne, France – 2001.