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Dialysis

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Current status of water treatment system for hemodialysis in Korea, 2015

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Background: Recently, in Korea, because, the number of dialysis patients, centers, machines, and the number of hospital care were increasing rapidly, dialysis water quality management is more important for proper dialysis. The purified water for HD would be essential for high quality of HD. In particular, the high-flux HD and hemodiafiltration were required ultrapure dialysate and more stringent water purification system. KSHDF(Korean Society of HDF) in 2015 investigated the water purification and delivery system that were installed on hemodialysis centers nationwide to ensure the domestic situation and the differences of regional and size of hospital.

Methods: The researchers were confirmed HD water production system from a company technical staffs. They visited at HD centers directly to see the specifications or duration of each unit supplied. The other required information was received through the survey. Research assistants collected the data of questionnaire by direct visits or phone visit. This was conducted for 6 months, 2015. All HD centers were divided 4 groups according to size of hospital (hospital of more than 500 beds, hospital less than 500 beds, nursing hospital, and private centers). Regional differences of water purification system were found between Seoul, Gyeonggi, Chungcheong, Gyeongsang, Cholla, Gangwon and Jeju regions. Water purification system included 3 steps such as pretreatment facilities (multi-layer filter, softener, and carbon filters), reverse osmosis water purifier, and then distribution system. The current specifications, the exchange period, and the quality of generated water were concerned in. 711 centers nationwide accepted the investigation.

Results: As the raw water used for HD, city water was 98.5%, but it is not recommended to use, the groundwater or surface water, etc. were also corresponds to 1.5%. The method of supplying dialysates was still only about 4.8% through central delivery, and others were supplied to the individual machines directly. Bicarbonate supply was used as the powder type at 78.3% mainly. Salt is used as a softener resins. Rock salt or solar salt used by 15.8% that were not recommended to use. Water reservoir tanks are not used in 75.0%. Hemoclean was most common used 65.4% for disinfection of water tank or piping system. In materials of pipe for delivery system, clean PVC was the most used in 65.2% and PEX is common to 23.5%. Heat disinfection was performed only 30.5%, and there were no differences among 4 groups. The quality of water that has passed through the reverse

osmosis purifier (RO) was not different according to size of hospitals. Water bacteriological examinations were significantly frequently measured in the individual center

Conclusion: Installed equipment and methods were suitable for the AAMI guidelines. However, it was considered the water quality of the water produced is conventional HD method, and for high-flux or HDF, it would be lack of suitable.

Keywords: Delivery system, hemodialysis, Reverse osmosis purifier, water quality, water treatment system