

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
PUBLIC HEALTH SERVICE  
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Use of Fluoridated Water in Hemodialysis

Recently, we have received inquiries concerning the significance of optimal water fluoridation relative to the well-being of kidney disease patients. Some of the inquiries refer to the suitability of fluoridated water supplies for use in the operation of artificial kidney equipment (hemodialysis).

The following information has been supplied to the Division of Dental Health by the National Institute of Arthritis and Metabolic Diseases, which administers a national program of research on artificial kidney development and clinical use.

"An estimated 1800 persons in the United States depend upon hemodialysis by artificial kidney equipment for the preservation of life. These are persons who have suffered critical failure of natural kidney function through disease or accident. In hemodialysis, the blood of the patient with kidney failure is passed through a unit containing permeable tubing or membranes immersed in a water solution of special composition so that blood impurities will be removed. During this process, there is also transfer of solutes from the water solution into the blood. The dialysis techniques that have been developed permit patients to continue such treatments for years. Therefore, intense study is being made of the detrimental effects that may be caused by excessive amounts of solutes being absorbed from the approximately 900 litres of water to which the blood of the patient is exposed to for 18-25 hours each week. In some parts of the country, it has long been necessary to deionize tap water to remove iron, calcium, magnesium, and other natural or added solutes before its use in dialysis.

"The desirable fluoride content of water to be used in dialysis has not been finally determined. Some clinicians have suggested that a small quantity of fluoride may counteract to a degree, the bone demineralization that inevitably occurs in the patient with kidney failure. There are also some indications that the absorption of fluoride during dialysis from the approximately 900 litres of water used each week, an amount of water 50 to 100 times the amount of fluid consumed by the average person, can result in accumulations of fluoride in the skeleton, and that accumulations of fluoride from such excessive amounts of water may intensify the bone abnormalities associated with chronic kidney failure. Because of the medical problems that may arise during dialysis from excessive amounts of various solutes absorbed from the water as it is normally supplied, most water used in dialysis is now being deionized.

"The need to process some water supplies before therapeutic use in large quantities in artificial kidneys has no bearing on the normal ingestion by anyone of optimally fluoridated water from community water supplies, recommended by health authorities as a medically safe procedure for the reduction of dental caries."

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