

Nutrient Chart No. 1

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D&T proudly introduces a new monthly feature: a tear-out easy-reference guide to various nutrients which can be used as a wall chart or kept in a binder.

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NUTRIENT NAME: Zinc			
PHYSIOLOGIC FUNCTIONS	SITE OF ABSORPTION/ EFFICIENCY OF ABSORPTION	METABOLISM/ EXCRETION	KNOWN PHYSIOLOGIC ALTERATIONS IN RENAL DISEASE
Growth and cell replication Sexual maturation Fertility and reproduction Night vision Immune defenses Taste acuity	Zinc is absorbed in the duodenum, jejunum primarily; to a lesser degree in the ileum. From a meal, the efficiency of absorption of zinc (fractional absorption) is 10%-40%.	Zinc is circulated on albumin (nutritional pool) and on alpha-macroglobulin (non-transport pool). At the tissue level it participates in zinc metalloenzymes, in cell membrane stabilization, and in ribosome function. The major route of excretion of endogenous zinc from the body is in pancreatic and intestinal secretions. About 0.5 mg of zinc is excreted daily into the urine. Depending on ambient temperature or presence of fever, up to 1 mg of zinc can be lost per liter of sweat.	Circulating (plasma or serum) zinc levels are generally low in renal failure. Hair zinc content is often reduced in uremia. Urinary zinc output is determined by the degree of muscle wasting and influenced by the level of polyuria. Erythrocyte zinc concentrations are universally elevated in renal failure, independent of dialysis status. Zinc-responsive manifestations of impotence, impaired taste acuity, poor wound healing, and skin lesions are present in uremia. Immune deficits of uremia do not relate to zinc status.
NUTRIENT INTAKE RECOMMENDATIONS (Oral Route)		INFLUENCE OF EXTRACORPOREAL DIALYSIS ON ZINC METABOLISM	
Children up to six months up to one year one to 10 years 10 to 14 years Adults males and females pregnant women lactating women	 3 mg/day 5 mg/day 10 mg 15 mg 15 mg 20 mg 25 mg	Chronic Peritoneal Dialysis Zinc levels have been normal or low in patients on continuous ambulatory peritoneal dialysis (CAPD). Zinc metabolism is identical in CAPD and in non-dialyzed chronic azotemic patients, and peritoneal dialysis is not a differential factor in zinc metabolism in uremia. Chronic Hemodialysis A rapid rise in circulating zinc occurs from zinc released from disposable coils. Zinc release varies from coil to coil and from dialysis to dialysis. Hair zinc levels increase over the course of dialysis. The use of aluminum hydroxide during hemodialysis has been associated with low plasma zinc.	
METHODS OF EVALUATING NUTRITIONAL STATES			
CLINICAL SIGNS		TESTS	
Growth retardation (children only) Delayed sexual maturation (children) Hypogonadism and hypospermia (adults) Alopecia Skin rashes Immune deficiencies (granulocytes and lymphocytes) Behavioral disturbances (apathy, depression) Night blindness Impaired taste acuity Impaired wound healing		Evaluation of zinc nutritional status Measurement Zinc content of: Serum* Red cell White cell* Salivary (pure parotid) Sweat Skin Nail Hair* 24-hr urine* Reported ranges of normal <	