DRUG NAME	NUTRIENTS AFFECTED	ADVERSE REACTIONS	BIOCHEMICAL FACTORS	NUTRITIONAL CARE NCA © 02/13
FRUSEMIDE *Diuretic (loop)*	K[121] Mg[2, 17, 121] Zn[121] Ca[1, 121] Na[16, 17, 121] Cl[16]	Nausea[2] Vomiting[2] Constipation[2] Diarrhoea[2] ↓Appetite[2] Dry mouth[2]	hyperglycaemia[1, 17] hyperuricaemia[1, 2] hyponatraemia[1, 2, 17, 78] hypokalaemia[1, 2, 17] hypochloraemia[1, 2] hypocalcaemia[2] hypomagnesaemia[2, 17] hypertriglyceridaemia[2] hypercholesterolaemia[2]	**Pharmacokinetics** • Binding of drug to plasma proteins, primarily albumin, ~ 99%[1] and 91-99%[2]. • Combination of hypoproteinaemia and drug is associated with ototoxicity[2]. • Food effect on rate and extent of drug absorption variable - advisable to administer when fasted[2]. • Administration with food associated with 30% decrease in drug availability, decreased urinary excretion of drug, and non-attainment of diuretic threshold[129]. • Inhibits sodium taurocholate cotransporting polypeptide (NTCP), and consequently affects hepatic bile acid uptake[130]. • Administration of high dose frusemide to people with CRF may decrease secondary oxalaemia through decreased tubular resorption[131]. • Increased risk of hypocalcaemic tetany if concurrent hypoparathyroidism[1]. • May increase risk of glucose intolerance[1, 2], and diabetes[2]. • May increase total cholesterol, LDLs, and triglycerides, and minimally affect HDLs[17]. **Drug Food Interactions** • Concurrent administration of theophylline increases risk of hypokalaemia[1] - food sources of theophylline include tea[66]. • Drug interacts with high dose salicylates[2]. Foodstuffs containing salicylates include: -*very high levels* - vegetables such as broad bean[87], cauliflower[87], broccoli[87], mushroom[87], spinach[87], tomato[72, 87]; fruits such as grapefruit[87], orange[72, 87], pineapple[87], grape[87], plum[72, 87], dried fruits[87]; some processed meat products such as devon[87], meat pies[87], sausages[87]; alcoholic beverages such as beer[87], wine[87], port[87], brandy[87]; herbs[87], spices[87] and condiments[87]; - *high levels* - vegetables such as capsicum[87], corn[87], cucumber[72, 87], onion[87], zucchini[87]; fruits such as apples[72, 87], apricots[72, 87], cherries[72, 87], nectarines[72, 87], peaches[72, 87], watermelon[87]; vegetable oils such as olive[87], coconut[87], walnut[87]; nuts[87] and snackfoods[87]. **Drug Nutrient Interactions** • Inhibits sodium transport in the renal medulla and prevents generation of a maximal osmotic gradient[17]. • Strict dietary sodium restriction not advisable as it may cause hyponatraemia and hypokalaemia[2]. • Impedes renal reabsorption of magnesium by up to 400%[122]. • Magnesium supplementation has been associated with resolution of refractory thiamine deficiency (Mg is an essential co-factor in the activation of thiamine)[122]. • Those with congestive heart failure at increased risk of thiamine deficiency[122, 123]. • Thiamine supplements may resolve sub-clinical thiamine deficiency, which may exacerbate left ventricular systolic dysfunction and decreased functional capacity, in those with moderate-to-severe heart failure[124]. • The acute effects of frusemide on thiamine excretion continues to gain recognition; whether there is renal adaptation to chronic frusemide intake remains unknown; whilst the benefits of prophylactic administration of thiamine remains contentious[125, 126, 127, 128]. • Increased urinary excretion of calcium[1, 121], magnesium[2, 121], potassium[121] and sodium[121]. **Continued next page.**

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FRUSEMIDE *Diuretic (loop)* **Continued.**				**Continued from previous page.** • High potassium diet recommended[2]. • IV frusemide administration in conjunction with maximal water diuresis has been found to increase the urinary excretion of vitamin B6, vitamin C, and oxalic acid[131]. • Neither carnitine transport nor uptake inhibited[10]. • Neither folate transport nor uptake inhibited[25].