

many pamphlets and books recommending megavitamin self medication with minimal medical caution or disclaimers. One book recommended safe doses but suggested that vitamins should be kept on the table "next to the cereals" rather than in a medicine cupboard; it made no attempt to suggest specific symptoms that would respond to specific vitamins, describing only severe clinical deficiency syndromes. Another recommended vitamin A in doses of 50 000-250 000 IU for "allergies, chills, colds, cystitis, diabetes, eczema, hair problems, heart disease . . . varicose veins" and said that the toxic dose had not been determined. None made any reference to the toxicity of vitamin B₆ first reported in 1982.

Clinicians should be aware that patients may take abnormal doses of vitamins as a pathological feature of a psychiatric illness (perhaps typically an eating disorder) or that they may take them with insight in a misguided attempt to treat a psychiatric illness. In either case the toxicity of the vitamin may exacerbate the psychiatric disorder and introduce new features. Muentner *et al* reported that six of 17 patients with chronic vitamin A intoxication showed evidence of psychiatric complications.¹² They commented: "Psychiatric manifestations have been prominent in several cases and may lead to social isolation of the patient; in mild cases they presented as depression or irritability." They described symptoms developing with daily doses ranging from 41 000 IU for eight years to 200 000 IU for two months. We recently saw a patient who had taken 1 000 000 IU of vitamin A a day for several weeks after earlier daily doses of around 80 000 IU for a month. This self medication appeared to have exacerbated his depression and malaise and to have led to confusion, rapid weight gain, and distorted thinking. These features remitted on discontinuing self medication.

Physicians and psychiatrists should familiarise themselves with the protean complications that may result from megavitamin treatment (appendix II). Many patients would probably not regard vitamins as "medicines" and may not volunteer that they are taking them on routine questioning. Specific questions should be asked about vitamins whenever complications of vitamin overdosage might be a possible diagnosis.

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APPENDIX I—Conditions for which treatment with megadoses of vitamins appears well supported

	Conditions for which megavitamin treatment justified
Vitamin B ₆ (pyridoxine)	Pyridoxine dependency (an enzymatic deficit) Infantile convulsive disorders Sideroblastic anaemia Urinary oxalate stones Homocystinuria Cystathioninuria
Folic acid	Congenital megaloblastic anaemia Homocystinuria and homothioninuria Formiminotransferase deficiency Malabsorption with megaloblastic anaemia
Vitamin B ₁₂	Juvenile pernicious anaemia Transcobalamin II deficiency Methylmalonic aciduria Homocystinuria, hypomethioninaemia
Vitamins A, D, E, K	Definite fat malabsorption syndromes
Vitamin K	Coagulopathies of liver disease after parturition

APPENDIX II—Toxic effects of vitamin overdoses modified from Davidson⁹

	Toxic effects
Vitamin A	Raised intracranial pressure ("pseudotumour cerebri") Chronic liver disease Skin changes, including dryness, maculopapular rash, fissures, depigmentation, pruritus Hair loss Ingrowing toenails resistant to treatment Tenderness of bones Psychiatric symptoms (?)
Vitamin B ₃ (Niacin, nicotinamide)	Peptic ulcer Alopecia Pruritus Hepatotoxicity Arrhythmias Hypotension
Vitamin B ₆ (pyridoxine)	Dependency Peripheral sensory neuropathy and ataxia Decrease in therapeutic effect of levodopa
Vitamin C (ascorbic acid, ascorbates)	Oxalate stones in predisposed individuals Possible teratogenesis and carcinogenesis in very high doses Multiplicity of minor idiosyncratic symptoms
Vitamin D	Hypercalcaemia Hypertension Renal calcinosis Metastatic calcification
Vitamin E	Increased anticoagulant action of warfarin
Vitamin K	Haemolytic anaemia Neonatal jaundice

Correction

Getting the balance right

We regret that an error occurred in this leading article by Dr Stephen Lock (15 February, p 428). The second quotation from the *Drug and Therapeutic Bulletin's* notes for authors should have read: "in general, trials should be included only if they are scientifically acceptable. . . ."