Vitamins have long been recognized for their unique role in human nutrition. Most of these low-molecular weight, organic substances are precursors of coenzymes, and adequate amounts to meet the known nutritional needs of healthy persons of all ages have been defined by the Food and Nutrition Board of the National Academy of Sciences as the “Recommended Dietary Allowances” (RDA). The consistent opinion of the Committee on Nutrition of the American Academy of Pediatrics has been that normal children receiving a normal diet do not need vitamin supplementation over and above RDA levels.

However, there are a variety of clinical entities in which the daily intake of vitamins needs to be significantly increased. This is true, for example, with the fat-soluble vitamins A, D, E, and K in the steatorrheas and in the autosomally recessive selective malabsorption of vitamin B₁₂. Rarely, children treated with isoniazid require increased pyridoxine; and, when treated with diphenylhydantoin sodium (Dilantin), they need increased folic acid and vitamin D. Finally, there are a number of rare inborn errors of metabolism affecting the apoenzyme at the cofactor binding site or involving the metabolism of the vitamin itself to its biologically active derivative. In these so-called dependency syndromes, the metabolic defect may completely or partially be overcome by greatly increasing vitamin or cofactor availability.

Set against a background of wide public belief in the benefits of vitamins, the accounts of dramatic amelioration of deficiency states, the easy and relatively inexpensive availability of these substances, and the occasional, remarkable benefit of large doses (both in the dependency syndromes and in certain other clinical situations), it is not surprising that a cult developed in the use of large doses of water-soluble vitamins to treat a wide spectrum of disease states. In particular, “megavitamin” therapy came to be applied to
the use of large amounts of nicotinic acid or
nicotinamide in the treatment of schizophrenia.
Pauling, in 1968, coined the term “orthomolecu-
lar medicine,” meaning the treatment or prevent-
on of diseases by altering body concentrations of
certain normally occurring substances. Pauling’s
term now encompasses the additional use of
nicotinamide adenine dinucleotide (NAD), ribo-
flavin, ascorbic acid, pyridoxine, calcium panto-
tenate, vitamin B₁₂, folic acid, and trace minerals
in doses considerably in excess of the RDA for a
wide range of problems including arthritis,
neuroses, geriatric problems, hyperlipidemia, and
depression.

This “orthomolecular” approach has been used
in children primarily in the treatment of nonspe-
cific mental retardation, psychoses, autism,
hyperactivity, dyslexia, and other learning disor-
ders reminiscent of an earlier advocacy of large
doses of glutamic acid for Down’s syndrome. The
substantially anecdotal evidence of thera-
peutic benefit in these and other conditions
should be viewed with skepticism until vigorous
evidence of benefit has been obtained and
published in peer reviewed journals.

As an example of this approach, Cott reports
giving niacin (1 to 2 gm/24 hr), ascorbic acid (1 to
2 gm/24 hr), pyridoxine (200 to 400 mg/24 hr),
and calcium pantothenate (400 to 600 mg/24 hr)
to more than 500 children with psychoses and
learning disabilities. The author claims that the
treatment shows promise and is sometimes
dramatic; however, no precise data are given on
which objective assessment of results can be
made.

Although no comparable evaluation has been
carried out on children for autism and learning
disabilities, the claims of orthomolecular psychia-
trists in the treatment of adult schizophrenia have
recently been carefully examined in a report to
the American Psychiatric Association by a Task
Force on Vitamin Therapy in Psychiatry. Their
conclusions were emphatic that orthodox,
properly controlled, and well-standardized trials
found nicotinic acid therapy to be without value.
Moreover, there is some evidence that long-term
administration of high doses of nicotinic acid in
man may lead to persistent skin erythema, pruri-
tis, tachycardia, liver damage, hyperglycemia,
and hyperuricemia.

There are a number of situations in pediatric
practice where a specific vitamin deficiency can
be demonstrated by biochemical tests and
increased amounts of vitamins can be shown to
resolve these conditions. Vitamin therapy under
these conditions is justified, and it is reasonable to
expect that other conditions of this type will be
identified. In contrast, megavitamin therapy as a
treatment for learning disabilities and psychoses
in children, including autism, is not justified on
the basis of documented clinical results.

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REFERENCES
1. Committee on Nutrition: Proposed changes in Food and
Drug Administration regulations concerning formula
2. Silverman A, Roy CC, Cozzetto FJ: Pediatric Clinical
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