four months. After four months, the mean serum 25-hydroxyvitamin D concentrations in the daily, weekly, and monthly groups were 69.9, 67.2, and 53.1 nmol/L, respectively. The mean increase in 25(OH)D level over baseline was significantly greater in the daily group than in the weekly and monthly groups.

**Comment:** The results of this study indicate that daily administration of vitamin D improves vitamin D status more effectively than giving seven times the daily dose once a week or 30 times the daily dose once a month. While that finding would seem obvious in the case of water-soluble vitamins, some practitioners have assumed that because fat-soluble nutrients are stored in the body, they can be effectively administered on a weekly or monthly basis. The difference in vitamin D status resulting from daily vs. weekly administration was relatively small, but monthly dosing appears to much less effective than the other modes of administration.

Chel V. et al. Efficacy of different doses and time intervals of oral vitamin D supplementation with or without calcium in elderly nursing home residents. Osteoporos Int. 2008;19:663-671.

**A spoonful of honey makes the mucositis go down**

Forty patients with head and neck cancer requiring radiation to the oropharyngeal mucosa were randomly assigned to receive, in single-blind fashion (examiner blind) honey or no honey during radiation therapy. The patients were instructed to take 20 ml of honey 15 minutes before radiation therapy and again at intervals of 15 minutes and six hours after radiation. The honey was rinsed in the mouth and then swallowed gradually in order to coat the oral and pharyngeal mucosa. The control group rinsed with 20 ml of saline before and after radiation. Patients were evaluated weekly for progression of mucositis using the Oral Mucositis Assessing Scale. Throughout the six-week study, the mucositis score was at least 75% lower (indicating less severe mucositis) in the honey group than in the control group.
Glutathione inhalation for cystic fibrosis

Thirteen patients (aged 1-27 years) with cystic fibrosis who were receiving a combination of oral and inhaled glutathione were followed for 5.5 months. The dosage regimen in most cases was 40 mg per kg of body weight per day orally and 1,800 mg per day by inhalation. Inhaled glutathione was given at a starting dose of 30 mg twice a day; this was increased progressively over a 45-day period to 900 mg twice a day. Inhaled glutathione was buffered to produce a relatively neutral pH. The mean forced expiratory volume in one second (FEV1) percent predicted improved by 5.8 percentage points (p < 0.0001), mean weight percentile increased by 8.6 points (p < 0.001), and mean body mass index percentile increased by 1.22 points (p < 0.001). All patients showed improvements in FEV1, and body mass index; 12 of 13 improved in weight percentile. The number of positive sputum cultures declined from 13 to 5 (p < 0.03), with sputum cultures of Pseudomonas aeruginosa becoming negative in four of five patients previously culturing positive, including two of three patients chronically infected with Pseudomonas.

Comment: The mutation that causes cystic fibrosis also causes systemic deficiency of glutathione, which may contribute to the pathophysiology of the disease. The results of the present study suggest that treatment with glutathione can improve lung function, increase body weight, and decrease the frequency of pulmonary infections. The beneficial effects were probably due mainly to the inhaled glutathione, because orally administered glutathione appears to be poorly absorbed. Orally administered N-acetylcysteine in combination with L-glutamine may also increase systemic glutathione levels. However, inhalation of glutathione via a nebulizer may be the preferred method of administration in patients with chronic lung disease, such as those with cystic fibrosis.
