



Appetite Stimulants Use in Cystic Fibrosis

Samya Z. Nasr, M.D.
Professor of Pediatrics
Director, Cystic Fibrosis Center
Coordinator, MI CF NBS Program
University of Michigan Health System
Ann Arbor, MI

Due to the disease process, CF patients require significantly higher caloric intake than recommended for other individuals. The nutritional goal for individuals with CF is to achieve normal growth and development and, once genetic potential is reached, to maintain good nutritional status throughout life. Evidence has shown that lung function is closely associated with nutritional status in CF. Also, nutritional status is an independent predictor of survival. Most CF patients are on a high calorie diet to help achieve normal growth and development and maintain normal nutritional status and good lung function. Inadequate caloric intake in CF can lead to malnutrition and weight loss. Malnutrition in CF requires careful, multidisciplinary history taking, physical exam, and overall patient/family assessment. Only by determining the actual cause of the malnutrition can appropriate and safe therapies be used to treat it. Appetite stimulants, although effective in treating malnutrition in CF, should only be prescribed if decreased food intake secondary to inadequate appetite is the principal cause of the malnutrition and all other contributing factors have been assessed, ruled-out or treated. In this review, we attempted to summarize the use of several appetite stimulants used in CF and other diseases to improve appetite and maximize caloric intake.

There are several factors that contribute to poor appetite or poor food intake. Some of these factors are CF related and some can occur in people with CF but not necessarily related to CF.

1. Issues that are related to CF include:

- Acute pulmonary or respiratory exacerbation or infection, distal intestinal obstruction syndrome (DIOS) or constipation leading to abdominal pain and nausea
- Taking large doses of pancreatic enzymes
- Avoidance of foods mistakenly thought to be “bad” for CF. Examples include: “carbohydrates causing CF-related diabetes”, “fats causing abdominal pain”, “milk/milk products causing increased secretion”, etc
- Burden of therapies on time and energy to prepare and eat nutritious high caloric diet
- Poor gastric emptying and/or gastroesophageal reflux
- Nasal polyps which may impair taste or the ability to eat and breathe comfortably and the same time
- Sinusitis which may be associated with pain with chewing, or altered taste

2. Issues that can occur in CF patients include:

- Eating disorders or disordered eating behaviors
- Appetite neuro-transmitter abnormality (insulin, ghrelin, leptin, peptide Y)
- Depression, anxiety, stress or sadness
- Inflammatory bowel disease
- Abdominal pain, bloating or other symptoms of malabsorption
- Economic issues

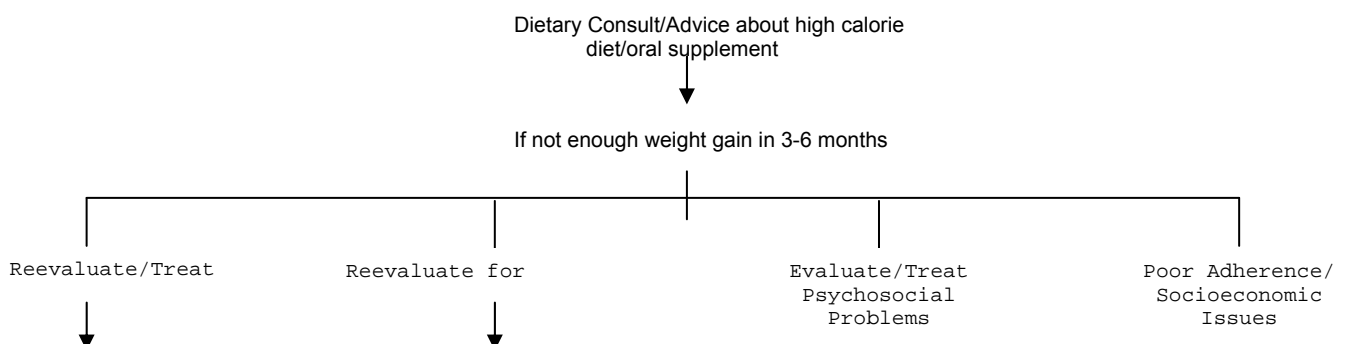
The table below provides a summary of some of the available medications that can cause increase in appetite (appetite stimulants):

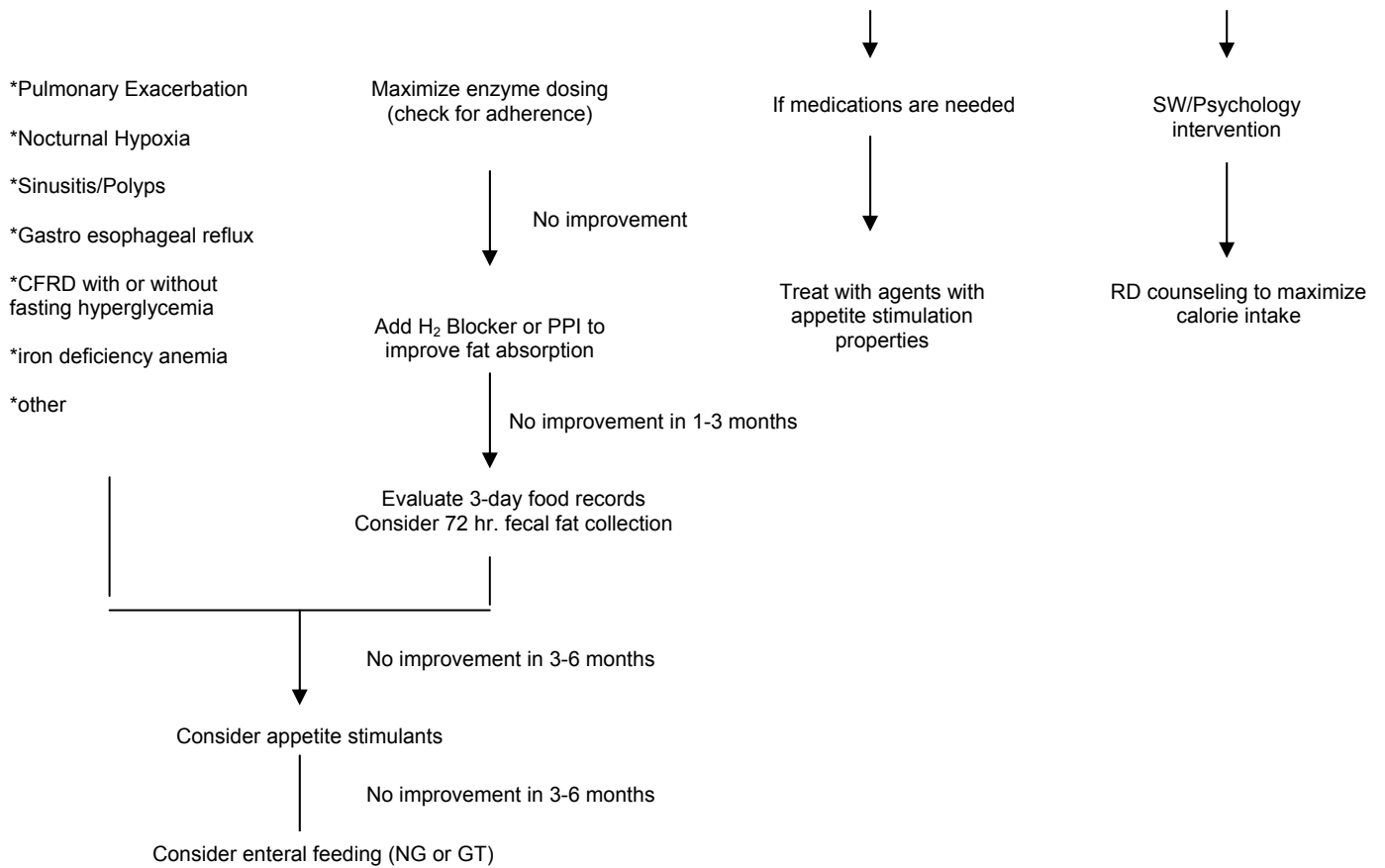
Drug	Dosage	Side effects
Megestrol acetate (MA)	400–800 mg/day or 7.5–15 mg/kg/day orally	Glucosuria, insomnia hyperactivity, irritability,



		reversible adrenal suppression
Cyproheptadine hydrochloride (CH)	4 mg BID–QID or 0.5 mg/kg/day orally	Transient mild sedation
Dronabinol (Marinol®)	2.5 mg qd–5 mg BID orally	Anxiety, confusion, euphoria, somnolence
Antipsychotic		
Olanzapine	5–20 mg qd orally	Liver dysfunction, sleepiness, hyperglycemia
Risperidone	0.5–5 mg qd orally	Glucose dysregulation, dyslipidemia
Antidepressants		
Mirtazapine (Remeron®)	15–45 mg qd orally	Mild sedation, dry mouth, somnolence
Recombinant human growth hormone (rhGH)	4–6 mg qd SC injection	Mild edema, arthralgia, carpal tunnel syndrome, gynecomastia, insulin resistance, glucose intolerance. In children, slipped capital femoral epiphysis, acromegaly, leukemia
Anabolic androgenic steroids (AAS)		
Oxandrolone	0.1 mg/kg/day BID, orally	Hepatic dysfunction, androgenic effects in females (alopecia, hirsutism, deep voice, clitoromegaly), development of primary and secondary sexual features in males. Not studied in CF

Below is a suggested algorithm for CF patients at risk of nutritional failure (Children: BMI ≤ 25 percentile, Adults: BMI < 19kg/m² or poor weight gain for at least 3 months)





Summary: In view of the burden and demands on CF patients to achieve normal growth and development, appetite stimulants could be offered to help increase caloric intake. Appetite stimulants should be used only after all other causes of weight loss and growth failure have been excluded. They should be limited to patients in whom conventional measures fail. Choice of appetite stimulants should be made according to physician, and CF care team experience, patient's age, severity of CF disease and known side effects. In addition, the choice of appetite stimulant should be discussed with the patient/family prior to starting treatment. Side effects of the appetite stimulant of choice should be monitored closely. Appetite stimulants can be used prior to resorting to invasive means of treating CF patients at nutritional risk.

Appetite Stimulants Use in Cystic Fibrosis. Samya Z. Nasr, MD and Donna Drury, MSc, RD, State of the Art, Pediatric Pulmonology 43:209–219 (2008)