

Ellyn Satter Institute Position Statement Eating Management as a Part of Medical Nutrition Therapy for Children with Diabetes and Impaired Glucose Tolerance Inés Anchondo, Dr PH, RD, LD, CSP, MPH, Edie Applegate, MS, RD, LDN, CDE, Patty Nell Morse, RD, LDN, CDE, and Ellyn Satter, MS, RD, BCD, LCSW

Nutrition therapy is an integral part of the treatment of diabetes mellitus and patient self-management. The goals of nutrition therapy are to 1) improve or maintain quality of life, nutritional status, and physiological health, 2) prevent and treat the acute and long-term complications of diabetes and associated comorbid conditions, and 3) support children in taking stage-appropriate responsibility for managing their own condition. In all aspects of child diabetes mellitus management, parents provide structure, support and opportunities—with eating, with activity and with learning about diabetes care.

Medical nutrition therapy for children with diabetes and for those with impaired glucose tolerance is best achieved through knowledgeable application of the Satter Feeding Dynamics Model (fdSatter) and accommodating insulin therapy to the lifestyle of the child. fdSatter looks to parents to take leadership with feeding and to allow their child autonomy in responding to internal cues for eating by observing a division of responsibility in feeding: parents decide the *what, when* and *where* of family meals and sit-down snacks and the child decides *how much* or *if* he will eat the foods offered at those structured times. Parents also observe a division of responsibility in activity by providing structure, safety and opportunities to move and letting children choose *how much* and *whether* to move and the *manner* of moving. The table below compares fdSatter with the conventional approach in managing child diabetes.

Properly attended to and supported, the child's internal cues of hunger, appetite and satiety, in dynamic equilibrium with tendencies for movement and the broader environment, combine to produce a consistent growth trajectory that is appropriate for the child. Blood sugar monitoring and insulin adjustment support this dynamic equilibrium. Even a weight trajectory above or below standard cutoff points for overweight and/or failure to thrive is considered appropriate as long as it is consistent; weight flattening, acceleration or faltering are not.

From the fdSatter perspective, the priority for food management for the child with diabetes is avoiding extremes of food intake by providing structured, regular, reliable and rewarding opportunities to eat, offering meals and snacks that include protein, fat and carbohydrate, and allowing the child to manage food intake in accordance with internal cues of hunger, appetite and satiety. Giving the child autonomy with eating avoids power struggles between parents and child. Offering meals and snacks that include all the food groups supports the child's nutritional status. To help parents sustain the considerable task of maintaining meals and snacks, they must be encouraged to use food that they find rewarding to plan, prepare and eat.

Positive parenting with food allows the child to gradually achieve adult eating competence, as defined by the Satter Eating Competence Model (ecSatter). According to ecSatter, competent eaters, 1) have positive attitudes about eating and about food, 2) have food acceptance skills that support eating an ever-increasing variety of the available food, 3) have internal regulation skills that allow intuitively consuming enough food to give energy and stamina and to support stable body weight, and 4) have skills and resources for managing the food context and orchestrating family meals. Throughout the growing-up years, children maintain their ability to internally regulate food intake. Depending on temperament and mastery opportunities, they gradually learn to like a greater variety of foods and take increasing responsibility for self care of diabetes. During the high school years, parents play a central role in building a child's food-management and diabetes-management skills for after he leaves home. At the same time, even the older child who does his own food selection away from home benefits greatly from consistently participating in family meals.

MANAGEMENT OF TYPE 1 DIABETES IN CHILDHOOD

Issue	Conventional approach	Satter Feeding Dynamics Model
Calorie level	Prescribed number of calories calculated from standard formulas for age, size, activity, and gender, which may or may not reflect <i>actual</i> energy needs.	Energy intake governed by child's own hunger, appetite and satiety.
Day-to-day calorie variation	None. Intended to be consistent and in accordance with pattern, portion sizes.	Governed internally and varies as a result of day-to-day and long-term fluctuation in activity and growth rate.
Food pattern: Intake of specific foods	Prescribed servings, portions from food groups for each meal and snack. Meal and snack times prescribed.	Child chooses from family menu, eats or doesn't eat. Family meals at reliable times adapted to family lifestyle. Menu includes 4-5 foods; protein, fat and carbohydrate; high, medium, and low fat foods.
Macronutrient intake	Relative percentages calculated and prescribed.	Daily proportions vary depending on the child's hunger and appetite.
BMI determination	Varies. Health policy recommends maintaining BMI $\leq 85^{\text{th}}$ percentile.	Child's BMI proceeds on a consistent trajectory regardless of whether it is high, medium or low.
Managing activity	Prescribed amounts and types of exercise.	Provide opportunities for the child to be active including family activities. Let child choose activity and level. Limit sedentary activities.
Approach to insulin/energy balance	Meal plan matched to insulin.	Insulin matched to carbohydrate intake.
Blood glucose monitoring	Values used to adjust food intake and insulin levels.	Values used to monitor and adjust insulin levels.
Child's eating capability	Low. Child follows prescribed plan. Hunger, appetite and satiety likely overridden or denied. Food variety depends on adherence to prescribed pattern. Attitudes about food and eating may be impaired.	High. Child supported in retaining internal regulation of food intake and developing food acceptance capabilities. Attitudes about food and eating are likely to be positive.
Responsibility for child's dietary adherence	Parents. Child pressured to eat certain foods in certain amounts whether or not he or she likes them and wants to eat them.	Child. The child's jobs are to participate pleasantly in family meals and sit-down snacks, to eat as much or as little as desired from what's on the table, and to gradually learn to eat the foods that parents and other adults eat.
Division of responsibility in feeding	Control model. Parents determine what, how much child eats, give little autonomy.	Trust model. Parents provide leadership with food management, give child autonomy in determining what and how much to eat of what parents provide.

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