Pediatric Nutrition Internship Rotation

 Intern: Margery Swan

*Subjective:*

1. Physical Appearance: 11 YOF Arab-American, accompanied by her immediate family members. She presented at the IDEAL clinic 4/9/13 for obesity evaluation and again for a follow up 05/14/13, where I had the pleasure of meeting her.
2. Diet History Prior to admission
	1. Feeding History:
		1. During initial assessment, LE reported meal regularity, however during follow-up; LE reported skipping breakfast occasionally due to decreased appetite in AM. At most recent follow-up, LE reported consuming all meals and good appetite.
	2. Method of Feeding: Po intake - independently feeds self.
	3. Oral/Enteral Intake:
		1. Specific formula: N/A
		2. Mixing procedures: N/A
		3. Caloric density: N/A
		4. Schedule
* LE reported the following usual feeding schedule. 7am: breakfast, 12pm: lunch, 4pm: early dinner, 7pm: small snack, 8 pm: snack, and occasionally additional snacking throughout the day.
	+ 1. Fluid flushes: N/A, LE not receiving enteral nutrition
		2. WIC: N/A, LE not receiving WIC benefits
		3. 24 hour recall/typical day

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| Initial Dietary Recall: January 11th, 2013  |  Follow Up Recall: April 4th, 2013 | Follow Up Recall: May 14th, 2013 |
| Breakfast: 2% milk, biscuit | Breakfast: 2% milk with cereal | 1C 2% milk, 1 slice of bread with 1/3 reduced fat cream cheese |
| Lunch: chicken and rice with vegetables/salad and fruit | Lunch: shrimp, rice, and low-fat yogurt  | Lunch: vegetables, chicken meat balls  |
| Dinner: noodles and soup  | Dinner: salad, and spaghetti with meat sauce | Dinner: salad and nuts |
| Snack: apple and water | Snack: glass of milk  | Snack: fruits or cabbage soup  |
| Additional Snacks: almonds and regular iced tea | Additional Snacks: 1-2 C 100% juice with aloe vera and strawberries | Additional Snacks: None reported  |

* + 1. Tolerance issues (nausea/vomiting/diarrhea/constipation)
* During initial assessment, bowel habits were WNL and occasional emesis was noted d/t recent illness. During follow- ups, no bowel issues were reported (constipation, diarrhea, nausea/vomiting)
	+ 1. Activity Reported: During initial assessment, LE reported walking casually to school and PE gymnastics 2 Xs week.
	1. Vitamin or Mineral Supplements: None reported
	2. Food Allergies: According to initial assessment, LE allergic to hot dogs.

*PES:*

1. Nutrition-Related Diagnosis: Obesity related to high intake of sugary beverages and sedentary lifestyle as evidenced by > 99th percentile BMI for age and initial diet recall.
	1. Justify nutritional significance
		1. Since LE is >99th percentile BMI for age she is obese and therefore at great risk for developing multiple chronic diseases such as: cardiovascular disease, sleep apnea, and type II diabetes mellitus. To decrease the patient’s likelihood for obesity-related complications it is important to provide nutrition support and counseling to her and her family. This is because focusing on healthy well-balanced meals and emphasizing physical activity can contribute to a healthy weight loss or around one-two pounds per week.
	2. Give brief natural history of the diagnosis
		1. In the United States, 17% of children and adolescents are obese, a number which has doubled over the past decades. The epidemic of childhood obesity is likely due to a variety of environmental, cultural and social factors including:

- Sugary drinks and less healthy foods on school campuses

- Increasing portion sizes

- Lack of daily, quality physical activity in all schools

- Television and media

- Limited access to healthy affordable foods

Obesity is typically diagnosed when a child is found to be ≥ 95th percentile BMI for age. The Expert Panel on Obesity recommended support from a registered dietitian and a multi-disciplinary team approach to promote and encourage healthy weight loss. If obesity is not addressed, patients are at an increased risk for developing additional health issues.

1. Diet Order: N/A, pt currently not on specific diet
2. Age
	1. Corrected age: N/A, LE > 2 years old
	2. Justify use of corrected age: N/A, LE > 2 years old
3. Weight
	1. Percentile: >99th percentile
	2. Corrected weight percentile: N/A for reasons stated above
	3. Weight age: Weight - 84.8kg (at May follow-up)
4. Height
	1. Percentile: ~97th percentile
	2. Corrected height percentile: N?A
	3. Height age: Height – 157cm
5. Head Circumference: N/A
6. Weight/Height Percentile
	1. Justify rationale for use of this number: This measurement not necessary because it is used only in younger children. Instead, the BMI for age is recommended by the AAP and CDC after age two to screen for obesity/overweight.
7. Body Mass Index/Percentile : > 99th percentile
8. Plot patient on growth chart
	1. Justify choice of growth chart: For this LE, I chose to use the CDC BMI for age growth charts as they were created specifically to screen for obesity and overweight and identify weight problems in children and adolescents.
	2. Evaluate patient’s growth: According to the CDC BMI for age growth chart, LE is >99th percentile, however has been decreasing over four months due to lifestyle modifications. Specifically, at the initial assessment LE had a BMI of 37 (>99th %ile), at the first follow-up at the IDEAL clinic, LE’s BMI was 35.78 (99.52%ile) and during the most recent visit had a BMI of 34.4 (99.4%ile). During this time, pt also grew 0.8cm, which would have minimally contributed to decrease in BMI.
9. Estimated Requirements
	1. Kcals/kg: Using IBW (52kg) and DRI, kcals/kg = 40kcals/kg
	2. Grams protein/kg: Using IBW (52kg) and DRI g protein/kg = 49.5g protein
	3. mL/day to meet maintenance fluid needs = 2,796mL Segar Method.
	4. Justify how you determined these numbers: The Kcals/kg and grams protein/kg were determined using the IBW and the DRIs. To calculate the IBW, the BMI at the 85th%ile was multiplied by ht (m)2. The IBW was then multiplied by the DRI for age to obtain the final estimation. The maintenance fluids were determined using the LE’s actual weight and Holliday Segar Method.
10. Nutrition Related Medications Reviewed: LE currently not on any medications
11. Pertinent Labs Reviewed
	1. Include labs available when assessing this patient:
		1. Available Labs (fasting), taken 8/24/12: TC 129, TG 138, HDLK-C 40 (low), LDL-C 61, AST/ALT 15/18, TSH 0.899, BUN/Cr 11/0.41, FHB 83, Hgb 12.1, MCH 25.3, Platelet Count 373K
	2. Note labs deemed to be nutritionally significant and justify why
		1. Lipid Panel: Total Cholesterol: 129 (normal), TG 138 (high for age), HDL-C 40 (low), LDL-C 61 (normal). Since the fasting TG value is high and the HDL-C is low, LE was diagnosed with dyslipidemia which increases the risk of cardiovascular disease. Important to note, LE has significant family history relating to cardiovascular health. LE’s mother has hypertension and her father passed away from a massive stroke in 2011 s/p 2 MI’s and history of CVD.
		2. Liver Function Test: AST/ALT 15/18 (normal)
			1. Due to LE’s obesity, LE is at risk for non-alcoholic fatty liver disease, which can cause elevated liver enzymes. However, LE’s levels were normal and thus she is negative for NAFLD.
		3. Endocrine: TSH 0.899 (normal), FBG: 83 (normal)
			1. Since LE presented with acanthosis nigricans (associated with insulin resistance), and obesity, LE is at an increased risk for developing type II DM, therefore important to test FBG occasionally.
			2. The TSH was measured to rule out hypothyroidism as weight gain is a symptom of the condition.

*Assessment:*

1. Nutrition Risk Level: Basic
	1. Justify choice of risk level: Although LE is at an increased risk for certain chronic conditions long-term, she is not in any immediate danger requiring constant medical interventions. In addition, LE has been consistently losing weight, and therefore would recommend following up within 2-3 months to assess improvements and any weight changes.
2. Pertinent Lab Values
	1. Justify their relationship to nutrition/hydration status: see above lab values and nutritional implications.
3. IV fluids: N/A, LE not receiving IV hydration or fluids
4. Growth
	1. Rate of weight change: Documented during follow-up, LE underwent five-year period of rapid weight gain when 6 years old and continued until seen at by RD. Since initial obesity evaluation, LE has lost 12 pounds in four months and has grown 0.8cm.
	2. Appropriateness of growth: In the past five years, LE has experienced an inappropriate amount of weight gain. LE’s height, however, has been increasing appropriately as she is now in the 95th%ile stature for age.
	3. Justify assessment: Assessment was based on LE’s recent weight and height trends. Per report, LE had experienced an accelerated amount of weight gain for the past five years causing her to have a BMI of 37 initially. Since LE has been losing weight, her BMI is also slowly decreasing (now at 34.4) which is leading to more appropriate weight for age.
5. Diet Prior to Admission:
	1. Adequacy of macro and micronutrients
		1. During initial RD visit, LE’s diet history reflected a diet high in carbohydrates and somewhat low in protein. This was also the case during LE’s first follow-up at the IDEAL clinic, where it was reported that LE still consumed juice daily and other high carbohydrate foods throughout the day. According to RD visit in April, LE consuming on average two fruits/day and 1-2 vegetables/day which along with a lack of nutrient-dense foods suggests inadequacies with some micronutrients.
	2. Adequacy of fluid: According to January and April appointments, LE is not consuming the recommended 4 bottles/day of water.
	3. Appropriateness of supplements: N/A, LE not receiving supplements
	4. Contribution of supplements to overall intake: N/A
	5. Justify your assessment: Based on diet histories, LE’s diet is adequate for kcals, however appears to be slightly imbalanced specifically with carbohydrates and protein. This is because; LE has been consuming high-calorie beverages and a lower amount of high protein food sources.
6. Diet Order:
	1. Adequacy of macro and micronutrients: For LE, recommended limiting sugary-beverages to around 6-8oz/day or less to help decrease the total calories and excess carbohydrate intake. Also, discussed adding a high protein food to after-school snacks to improve satiety and increase protein at April appointment. To decrease kcals further, goal was set at last appointment to switch to 1% milk.
	2. Adequacy of fluid: N/A, didn’t discuss fluid needs at last appointment, however according to most recent diet recall, appears to consume an inadequate amount of fluid.
	3. Appropriateness of supplements: N/A, no supplements recommended
	4. Contribution of supplements to overall intake: N/A
	5. Appropriateness of administration : N/A
	6. Justify your assessment: Recommendations were based on most recent 24 hour recall. Incorporating protein with afternoon snack was recommended to increase daily protein intake. The juice was limited to decrease CHO intake and overall calorie intake.
7. Accuracy of data available: Believe data was somewhat accurate, although 24-hour recalls are not always the best reflection of usual intake and food frequency. Despite potential for error, RD was able to help family make small goals at last session to further improve LE’s dietary intake and physical activity.

*Plans/Goals:*

1. Oral Nutrition:
	1. Goals:
		1. Switch to 1% milk instead of 2%
		2. Limit juices to 6-8oz/day
		3. Look into summer camps/programs
		4. Move at least 60 minutes/day, 7 days/week
		5. Implement reward system using behavior changes, not based on number of pounds lost
2. Enteral Nutrition: N/A – not appropriate candidate for nutrition support
3. Parenteral Nutrition: N/A – not appropriate candidate for nutrition support
4. Labs/Studies: Recommend if weight loss continues to re-check lipid panel and fasting blood glucose within 6 months. If LE begins to regress, would recommend obtaining blood-work in the next three months.
5. Growth: Continue healthy weight loss of 1-2 pounds/week with goal eventually being <85th percentile BMI for age.
6. Additional Information Needed: None
7. Follow Up: Plan in place for follow up within the next 2-3 months in order to reassess goals and LE’s progress.
8. Justify your Plan/Goals: The plan is for LE to continue experiencing steady weight loss. This is because the research suggests that obesity will likely carry on into adulthood if left untreated along with the increased risks for developing various chronic conditions (Biro and Wien, 2010). Specifically, for her goals, we worked with the family to create realistic and small goals to increase physical activity and modify dietary behaviors. In order to decrease LE’s total caloric intake, it was recommended to switch from 2% to skim milk. A goal to limit juice to 6-8oz/day was also set because studies have linked fruit juice to an increased risk of excess adipose in those already overweight or obese (Faith et al., 2006). For the activity goals, the focus was on increasing the amount of continuous movement to match the recommended guidelines of 60 minutes/day. Studies have suggested that this paired with dietary modifications may improve changes of long-term sustained weight loss (Nemet et al., 2005). The last recommendation made was to base a reward system on behaviors, not pounds loss. This is because if LE is following the lifestyle recommendations there could be possible weeks where she doesn’t lose weight, however we still want to reward the good behavior and healthy eating and physical activity habits.

References:

Biro, Frank and Michelle Wien. "Childhood Obesity and Adult Morbidities ." *American Journal of Clinical Nutrition* (2010): 14995-15055.

Myles, Faith, et al. "Fruit Juice Intake Predicts Increase Adiposity Gain in Children From Low-Income Families." *Pediatrics: Journal of the American Academy of Pediatrics* (2006): 2066-2075.

Nemet, Dan, et al. "Short- and Long-Term Beneficial Effects of a Combined Dietary–Behavioral–Physical Activity Intervention for the Treatment of Childhood Obesity." *Pediatrics: Journal of the American Academy of Pediatrics* (2005): 2004-2172.