



# From Clinic to the Kitchen:

## Putting the Modified Atkins Diet into Practice

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February 24, 2016

# Disclosures

- Seed funding: Epilepsy Foundation of Greater Los Angeles and The Charlie Foundation
- Programmatic funding: The Carley Eissman Foundation

# Objectives

By the end of this presentation, participants will be able to:

- Identify the key differences between the Classic Ketogenic Diet and the Modified Atkins Diet
- Assess individual patients educational needs in order to develop appropriate objectives and intervention
- Translate interventions to practical skills in the kitchen



# In the beginning...

## Pioneer Patients at John Hopkins<sup>1</sup>

### •9 year old boy

- Classic ketogenic diet since 5 years old
- Classic ketogenic diet was efficacious but difficult due to behaviors
- Mother independently switched to the Atkins Diet and they found:
  - Maintained ketosis and thus seizures remained under control
  - Less battles around food and less cheating

### •7 year old girl

- Patient history:
  - 70-80 seizures daily
  - Failed 8 anticonvulsants
- 1 month away from week-long admission for diet initiation
- John Hopkins suggested: reduce highly concentrated carbohydrates
- Mother requested: additional information on reducing carbohydrates
- John Hopkins provided *Dr. Atkins' New Diet Revolution* on Friday → by Monday her seizures had completely stopped

# This brought up a couple of questions

Liberalize without jeopardizing efficacy?

Liberalize reducing risk for side effects?

Reduce cheating with improved palatability?

Improve adherence with more autonomy?

Choosing one over the other?

# Side-by-Side



## Ketogenic<sup>2,3</sup>

- Efficacy
  - >50%: 50-75%
  - >90%: 25-35%
- Retention: 63% (8mo)
- Early Termination:
  - Inefficacy: 63-84%
  - Restrictive: 18-25%
  - Illness: 7-12%



## Modified Atkins<sup>4,5</sup>

- Efficacy
  - >50%: 45-64%
  - >90%: 28-35%
- Retention: 47% (6mo)
- Early Termination:
  - Inefficacy: 56%
  - Restrictive: 38%

# Side-by-Side



## Ketogenic<sup>6</sup>

- Initiation: inpatient
- Ketosis: yes
- kCal: controlled
- Macronutrients
  - Protein: RDA
  - Ketogenic Ratio:
    - $\text{Fat(g)} \div [\text{Protein(g)} + \text{Net CHO(g)}]$
    - Regulates ketosis



## Modified Atkins<sup>4,5</sup>

- Initiation: outpatient
- Ketosis: yes
- kCal: no restriction
- Macronutrients
  - Fat: encouraged
  - Protein: no restriction
  - CHO:
    - 1<sup>st</sup> month: 10-15g
    - After: 20-30g

# Side-by-Side



## Ketogenic

- Pros:
  - Concrete instructions
  - Detailed instructions
- Cons:
  - Reliance on gram scale
  - Restrictive
  - Limited autonomy
  - Limited creativity



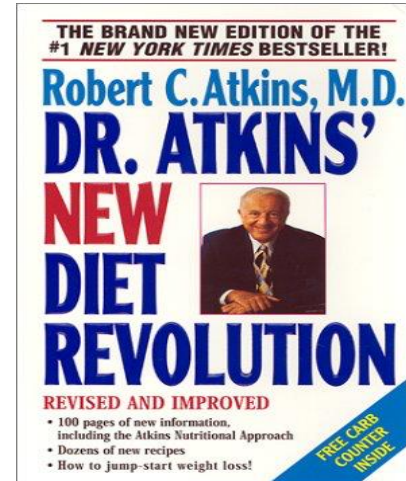
## Modified Atkins

- Pros:
  - Autonomy
  - Creativity
  - More CHO allotted
  - Family meals
- Cons:
  - Self-monitoring
  - Less guidance



# Johns Hopkins MAD Protocol<sup>4</sup>

- Book: *Dr. Atkins' New Diet Revolution*
- Carbohydrates in 1<sup>st</sup> month:
  - Restricted to 10g per day
  - Low-carbohydrate, store-bought products discouraged
- Fats: encouraged
- Fluids: clear, carbohydrate-free, not restricted
- Vitamin and mineral supplementation:
  - Multivitamin
  - Calcium with vitamin D
- Keeping a calendar:
  - Daily seizure activity
  - Semi-weekly urinary ketones
  - Weekly weights
- Medications: unchanged for at least the 1<sup>st</sup> month
- Follow-Up: 1, 3 and 6 months on the diet
- Laboratory monitoring:
  - Baseline, 3 and 6 months: CBC, CMP, fasting lipid profile
  - 3 and 6 months: urine Ca<sup>++</sup> and urine creatinine



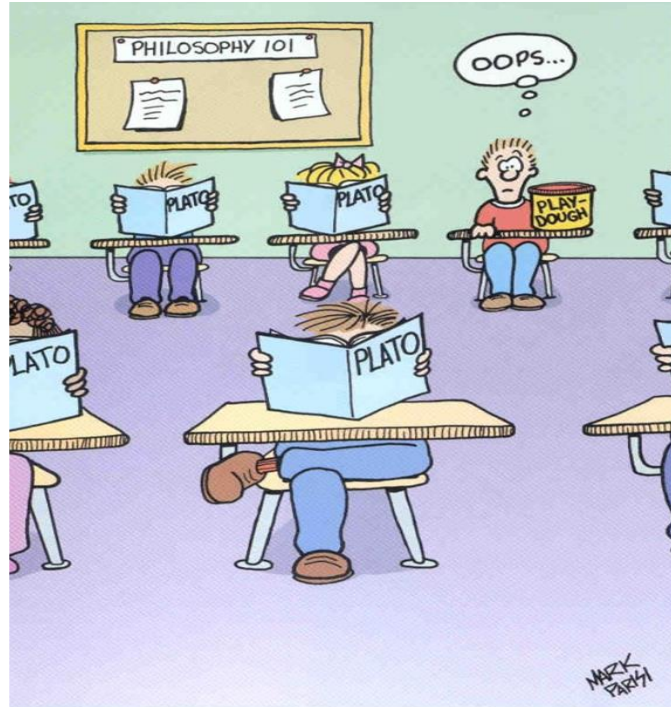
# Putting it into Practice: the clinic

- Step 1: Pre-MAD
  - Expectations for seizure control
  - Discuss nutrition goals
  - Encourage eliminating concentrated CHO food sources
- Step 2: Educate on MAD
  - Macronutrients: what comes from where?
  - Counting carbohydrates:
    - Total versus net carbohydrates
    - Reading a nutrition label
    - Relevant and reputable apps and websites
  - Fluids: what can I drink?
  - Examples: standard daily menus
  - Recommend vitamin/mineral supplementation
  - Preventing, recognizing and treating side-effects
  - Sick day and admission protocols

# Imagine: you were just educated



# Translation: clinic to kitchen



# Translation: confounding variables<sup>7</sup>

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Skill set in the kitchen</li> <li>• Time to prepare meals</li> </ul> | <ul style="list-style-type: none"> <li>• Additional expenses</li> <li>• Food and identity</li> </ul> |
|---|--|

**Table 2 Trends in Time Spent Cooking for US adults from 1965–1966 to 2007–2008\*\*†**

	Proportion cooking (%)												Change 1965–2007
	MCTRP		AUTP		AUTP		NHAPS/NTDS		ATUS		ATUS		
	1965–1966		1975–1976		1985–1986		1992–1995		2003–2004		2007–2008		
Gender	%	SE <sup>‡</sup>	%	SE	%	SE	%	SE	%	SE	%	SE	%
Male	28.6	1.6	29.1	1.3	46.8 <sup>ab</sup>	1.6	38.3 <sup>a</sup>	0.9	37.9 <sup>a</sup>	0.5	41.7 <sup>ab</sup>	0.6	+13.7
Female	92.3	0.8	88.4 <sup>ab</sup>	0.8	84.7 <sup>ab</sup>	1.1	67.3 <sup>ab</sup>	0.8	69.0 <sup>a</sup>	0.4	67.7 <sup>a</sup>	0.6	–24.6
Income													
Low	67.6	3.2	69.8 <sup>c</sup>	3.2	65.5	3.0	58.1	3.2	55.6 <sup>a</sup>	0.8	55.6 <sup>a</sup>	1.1	–12.0
Middle	62.7	1.6	61.7	1.4	67.1 <sup>b</sup>	1.5	53.1 <sup>ab</sup>	3.0	53.1 <sup>a</sup>	0.5	53.6 <sup>a</sup>	0.7	–9.1
High	59.3	2.1	58.2 <sup>c</sup>	1.7	68.4 <sup>ab</sup>	1.8	49.6 <sup>ab</sup>	3.0	53.9	0.7	56.4 <sup>b</sup>	0.8	–2.9

# Translation: kitchen skills

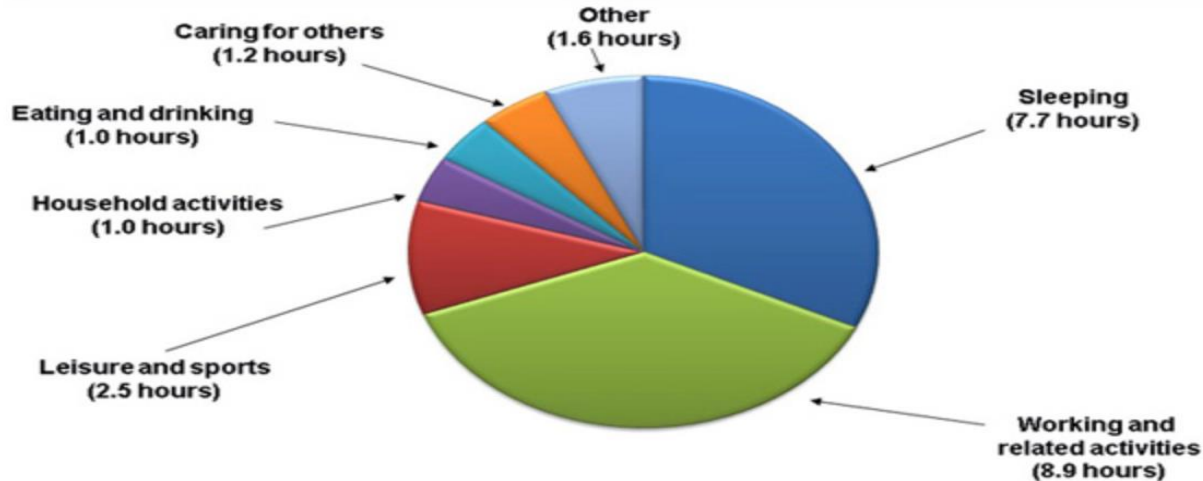
- Not well-studied, but we do know:
  - In UK, 10% cite that not knowing how to cook limits their food choices<sup>8</sup>
  - Survey NAMI, 1996<sup>9</sup>
    - Less knowledge: 53%
    - Same knowledge: 30%
    - More more knowledge: 16%
- Possible etiology<sup>8-10</sup>:
  - The rise of convenience foods
  - 2 working parents or single parent
  - Decline of ‘home economics’



# Translation: time<sup>11</sup>

Time use on an average work day for employed persons ages 25 to 54 with children

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NOTE: Data include employed persons on days they worked, ages 25 to 54, who lived in households with children under 18. Data include non-holiday weekdays and are annual averages for 2014. Data include related travel for each activity.

SOURCE: Bureau of Labor Statistics, American Time Use Survey

# Translation: time<sup>7</sup>

**Table 2 Trends in Time Spent Cooking for US adults from 1965–1966 to 2007–2008\*\*†**

	Proportion cooking (%)												Change 1965-2007
	MCTRP		AUTP		AUTP		NHAPS/NTDS		ATUS		ATUS		
	1965-1966		1975-1976		1985-1986		1992-1995		2003-2004		2007-2008		
	Mean time spent cooking, of those cooking (min/day)												
	min/day	SE	min/day	SE	min/day	SE	min/day	SE	min/day	SE	min/day	SE	min/day
Gender													
Male	36.7	2.1	37.8	1.8	36.1	1.6	39.8	1.2	43.0 <sup>ab</sup>	0.7	45.0 <sup>a</sup>	0.9	+8.3
Female	112.8	2.2	100.6 <sup>ab</sup>	2.0	82.8 <sup>ab</sup>	2.1	64.7 <sup>ab</sup>	1.3	67.1 <sup>ab</sup>	0.6	65.6 <sup>ab</sup>	0.8	-47.2
Income													
Low	98.7	5.1	85.8	5.2	73.4 <sup>a</sup>	4.5	57.6 <sup>ab</sup>	3.9	63.5 <sup>ac</sup>	1.2	64.0 <sup>ac</sup>	1.7	-34.7
Middle	98.0	2.8	83.6 <sup>ab</sup>	2.4	68.5 <sup>ab</sup>	2.3	58.8 <sup>a</sup>	4.0	57.0 <sup>a</sup>	0.8	55.5 <sup>a</sup>	0.9	-34.5
High	92.6	3.8	91.9	3.3	65.9 <sup>ab</sup>	3.1	63.4 <sup>a</sup>	5.4	55.8 <sup>ac</sup>	0.9	56.5 <sup>ac</sup>	1.0	-36.1

- Most-cited reasons for not cooking regularly<sup>12,13</sup>:
  - Spouse/partner cooks: 51%
  - Not want to clean afterwards: 25%
  - Not having enough time: 21%



# Translation: expense<sup>14-16</sup>

Food	Amount	Expense
Cheerios	1 cup	\$0.15 (\$3.70/box)
Milk, 2%	1 cup	\$0.18 (\$2.89/gallon)
Banana	1 small	\$0.15 (\$0.69/lb)

Calories: 331  
 Fat: 7.1g  
 Protein: 12.2g  
 CHO: 54.7g  
 Ratio: 0.1:1

**Cost: \$0.48**

Food	Amount	Expense
Heavy Cream, 36%	20g	\$0.14 (\$3.18/pint)
Sausage, Johnsonville Original Breakfast Link	10g	\$0.20 (\$5.19/package)
Egg, raw, mixed well	32g	\$0.22 (\$4.09/dozen)
Butter	20g	\$0.32 (\$3.59/package)
Mango (10% Fruit)	17g	\$0.22 (\$2.79/fruit)

Calories: 300  
 Fat: 29.01g  
 Protein: 6.76g  
 CHO: 2.9g  
 Ratio: 3:1

**Cost: \$1.01**

# Translation: food & identity

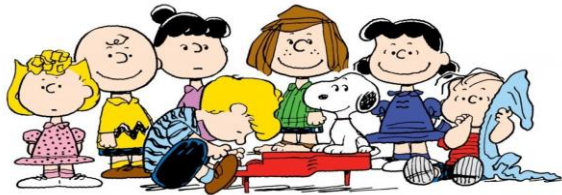
“Tell me what you eat and I’ll tell you who you are.”

-- Jean Anthelme Brillat-Savarin, 1825

- Anthropological perspective<sup>17</sup>:
  - Ethnic
    - Relating to a populations subgroup with a common national or cultural tradition
  - Religious
    - Communicating with God
    - Demonstrating faith
    - Developing discipline
  - Social class
    - Studies suggest that energy-dense foods and energy-dense diets may predispose the consumer to overeating

# Translation: food & identity

- Social perspective<sup>18</sup>:
  - Adults
    - Social events (i.e. marriages, meetings)
    - Developing social rapport (i.e. friends)
    - Personal expression (i.e. parent, business, leisure)
  - Children
    - Influencers (i.e. admired adults, fictional characters)
    - Social conscious (i.e. peer pressure)



# Translation: food & identity

- Webster, M & Gabe, J. (2016). Diet and identity: being a good parent in the face of contradictions presented by the ketogenic diet. *Appetite*, 38(1): 123-136.
  - Population: 12 parents from 10 families
  - Findings → “themes”
    - Food as medicine
    - Fat as good
    - Food as a symbol of inclusion
    - Food as a symbol of love
  - Limitations:
    - Small sample size
    - Qualitative
    - Population:
      - Good response to diet
      - Top quartile earners from two-parent families



# Transitioning to the Kitchen



Connecting Families



Kitchen Gadgets



Comfort Foods

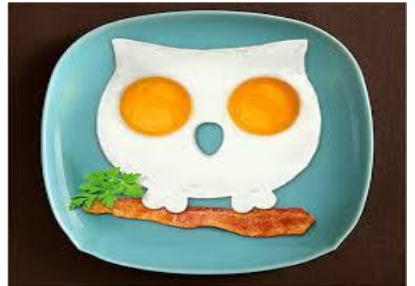
# Transition to the Kitchen: connections

- Patient-to-Patient:
  - Receive permission
  - Like families; similar ages and situations
- Online Support Groups: Yahoo!
- Foundations:
  - The Charlie Foundation
  - The Carley Eissman Foundation
  - The Carson Harris Foundation
- Ultimate goal:
  - Decrease isolation
  - Provide support



# Transition to the Kitchen: kitchen gadgets

- Why?
  - Save time for food preparation
  - Takes the annoyance out of mundane tasks
  - Help keep kitchen clean and in order
  - Fun, interactive and buy-in
- Downside = additional expense



# Transition to the Kitchen: kitchen gadgets

- Small appliances
  - Blender
    - To make:
      - Smoothies
      - Sauces
      - Nut butters
  - Food Processor
    - To make:
      - Faux rice
      - Faux mashed potatoes





# Transition to the Kitchen: kitchen gadgets

- Slicers
  - To make:
    - Noodles
    - Strips
    - Thin slices
    - Finely chopped
  - Tools:
    - Spiralizer
    - Mandoline



# Transition to the Kitchen: kitchen gadgets

- Molds
  - To make:
    - Fat bombs
    - Candies
    - Popsicles
  - Tools:
    - Silicone ice cube molds
    - Popsicle molds
    - Mini cupcake tray



# Transition to the Kitchen: kitchen gadgets

- Storage – lunch
  - Bento box  
(resembles Lunchables)
    - Multi-compartment containers
    - Silicone cupcake molds
    - Tooth picks
    - Cookie cutters
    - Boiled egg molds\*
    - Sandwich stamp\*
    - Vegetable cutters\*
  - Fun lunch boxes

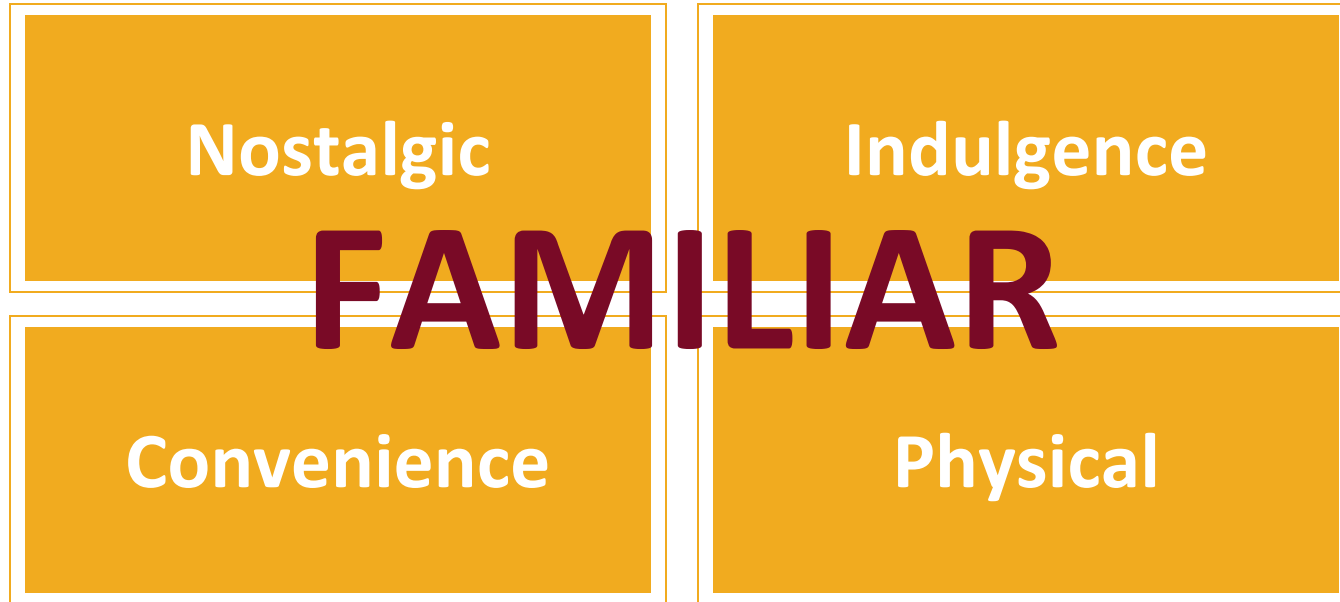


\*Brands: CuteZCute, Bambino Love, BentoUSA,

# Transition to the Kitchen: comfort foods

- Question - why do we eat?
- Comfort foods<sup>20</sup>:
  - Foods that people consume in order to attain psychologically comfortable or pleasant state
  - Classically high in sugar and fat
- What we know:
  - Social context<sup>18</sup>: often consumed when specific circumstances elicit a desire for consumption
  - Physiological context<sup>21</sup>: activates hypothalamic-pituitary-adrenal axis

# Transition to the Kitchen: comfort foods<sup>22</sup>



# Transition to the Kitchen: comfort foods

- Sauces and Dips
  - Easy way to incorporate fat
  - Ideas:
    - Alfredo
    - Ranch
    - Aioli
    - Pesto
    - Browned Butter
    - Hollandaise
    - Tartar
    - Cheese



# Transition to the Kitchen: comfort foods

- Versatile vegetables: low carb
  - Cauliflower
    - Rice
      - Pizza crust
      - Tater tots
      - Risotto
    - Mashed potatoes
      - Hummus
    - Buffalo wings
    - Hominy



# Transition to the Kitchen: comfort foods

- Versatile vegetables: low carb
  - Zucchini
    - Noodles
      - Scampi
      - Spaghetti
      - Lasagna
      - Pad Thai
    - Pizza crust
    - Enchiladas
    - Fries
    - Chips





# Transition to the Kitchen: comfort foods

- Familiar foods
  - Pizza crust
    - Base<sup>15</sup>
      - Cauliflower (1 cup = 3.5g net CHO)
      - Zucchini (1 cup = 3.0g net CHO)
      - Flax seed (1/4 cup = 2.7g net CHO)
      - Cream cheese (2oz = 2.0g net CHO)
    - Binding agents
      - Parmesan cheese
      - Eggs



# Transition to the Kitchen: comfort foods

- Familiar foods
  - Tacos
    - Lettuce
    - Cheese taco shells
  - Tamales or Pupusas
    - Baby corn masa<sup>15</sup>
      - Baby corn, 2 cans (12.2g net CHO)
      - Coconut flour, ¼ cup (6 net CHO)
      - Lard or Coconut oil, >2tbsp
      - Spices



# Transition to the Kitchen: comfort foods

- Familiar foods
  - Desserts
    - Jell-O
    - Sherbet
    - Cheesecake
    - Popsicles
    - Ice pops
    - Nut butter cups
    - Chocolate cake
    - Chocolate covered nuts



# Transition to the Kitchen: comfort foods

- Making life easier: snacks
  - Pork rinds:
    - Sour cream (or crème fraiche)
    - Guacamole
  - Celery:
    - Nut butters
    - Cream cheese
  - String cheese
    - Wrapped in bacon
    - Ranch dip
  - Moon cheese
  - Olives
  - Nuts



# Transition to the Kitchen: comfort foods

- Making life easier: low carbohydrate products
  - Breads
    - Sandwiches
      - Grilled cheese
      - BLTs
      - PB&J
    - Breakfast
      - French toast
    - Dessert
      - Bread pudding



Mahler's CA Lifestyle<sup>23</sup>

1g net CHO per slice  
\$4.99/24oz

Julian's Paleo Bread<sup>24</sup>

1g net CHO per slice  
\$8.99/24oz

# Transition to the Kitchen: comfort foods

- Making life easier: low carbohydrate products
  - Tortillas
    - Tostadas
    - Tacos
    - Taquitos
    - Quesadilla
    - Wraps
    - Pizza
    - Chips
      - Nachos
      - Guacamole



# Transition to the Kitchen: comfort foods

- Making life easier: low carbohydrate products



Cheeky Chia Seed Chocolate<sup>25</sup>

1g CHO per square



Lily's Dark Chocolate<sup>26</sup>

1g CHO per 10 morsels



SugarLeaf: 1tsp = 3.6g CHO<sup>27</sup>

Pure raw cane sugar, Stevia



Swerve: 1tsp = 5g CHO<sup>28</sup>

Erythritol, Oligosaccharides,  
Natural flavors

# We should also be asking...

Accessibility to food and grocery stores?

Comfort level and skill in the kitchen?

What is important to the family?



# Putting it into Practice: the clinic

- Additional education & materials to provide:
  - How much?
    - Net carbohydrate in grams
    - Fat in tablespoons
    - Estimate proteins using “rule of thumb”
      - Proteins in exchanges, but disregard lean/medium/high fat
  - “Knowledge is no value unless you put it into practice” – *Anton Chekhov*
    - Provides patient specific daily meal plan examples
    - Practice developing simple meal plans
  - Ideas for non-food rewards
  - Recipes
    - Social gathering
    - Special occasions
  - Grocery list
    - Variety of fats
    - Low CHO products; include CHO counts
    - Stores near home with specialty products

# Challenges & Solutions

- Limiting factor = RD time
  - Billable v non-billable
  - FTEs
    - Multiple clinics
    - Multiple jobs
  - Patient load
- Resolution = sharing
  - Recipes
  - Education materials
  - Seminars and journal clubs



# Take Home Messages

“You never really understand a person until you consider things from his point of view – until you climb into his skin and walk around in it.”

-- *Harper Lee*

- Visiting caregiver and child perspective is important to:
  - Optimize our educational practices
  - Build rapport with families
- Modified Atkins Diet can be a fun and palatable option in an effort to pursue seizure control



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