



From Clinic to the Kitchen: Putting the Modified Atkins Diet into Practice

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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 Hopkins¹

• 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^{2,3}

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



Modified Atkins^{4,5}

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

Side-by-Side



Ketogenic⁶

- 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^{4,5}

- Initiation: outpatient
- Ketosis: yes
- kCal: no restriction
- Macronutrients
 - Fat: encouraged
 - Protein: no restriction
 - CHO:
 - 1st 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

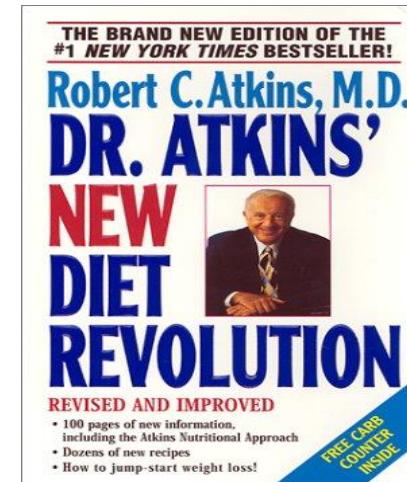


Modified Atkins

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

Johns Hopkins MAD Protocol⁴

- Book: *Dr. Atkins' New Diet Revolution*
- Carbohydrates in 1st 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 1st 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++ and urine creatinine



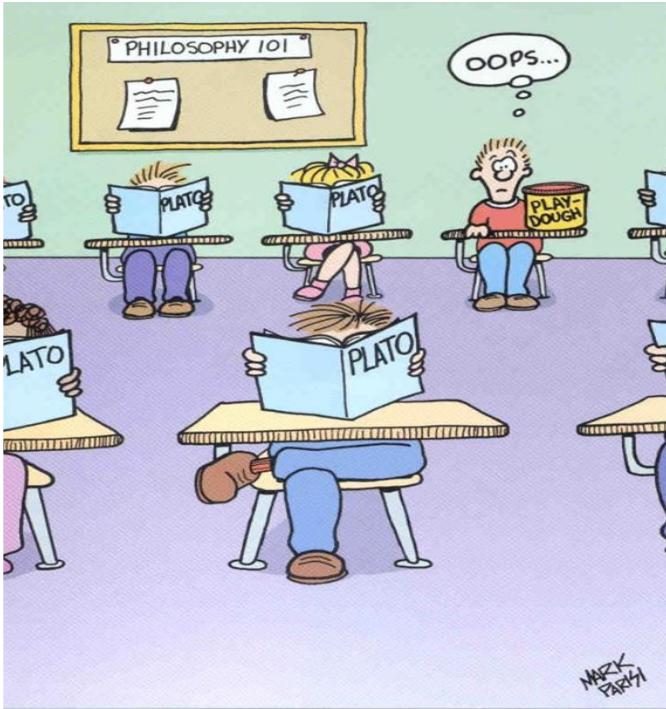
Putting it into Practice: the clinic

- 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 variables⁷

- Skill set in the kitchen
- Time to prepare meals
- Additional expenses
- Food and identity

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

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

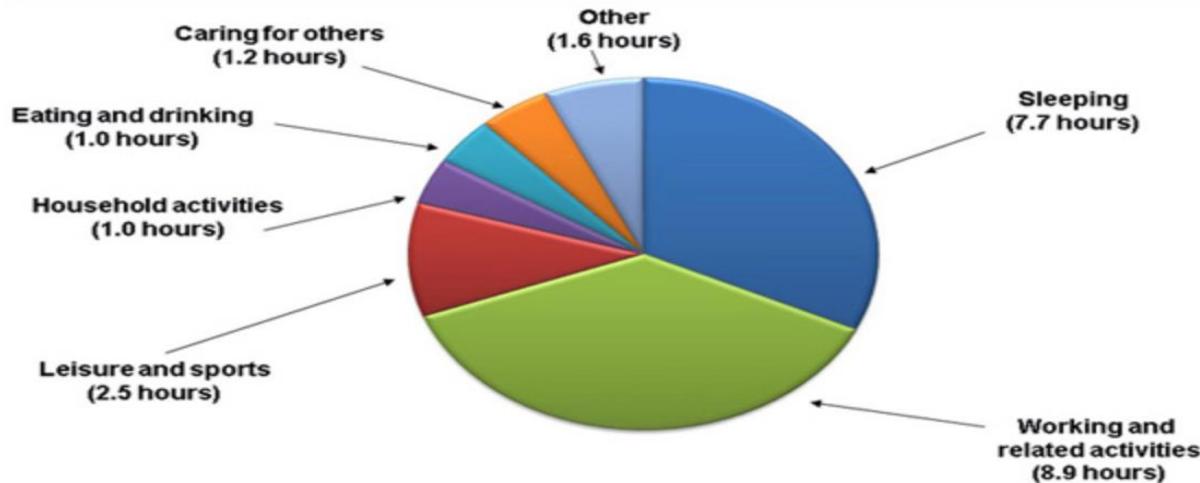
Translation: kitchen skills

- Not well-studied, but we do know:
 - In UK, 10% cite that not knowing how to cook limits their food choices⁸
 - Survey NAMI, 1996⁹
 - Less knowledge: 53%
 - Same knowledge: 30%
 - More knowledge: 16%
- Possible etiology⁸⁻¹⁰:
 - The rise of convenience foods
 - 2 working parents or single parent
 - Decline of ‘home economics’



Translation: time¹¹

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



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: time⁷



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

	Proportion cooking (%)												Change 1965–2007	
	MCTR P		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)														
Gender	min/day	SE	min/day	SE	min/day	SE	min/day	SE	min/day	SE	min/day	SE	min/day	
Male	36.7	2.1	37.8	1.8	36.1	1.6	39.8	1.2	43.0 ^{a,b}	0.7	45.0 ^a	0.9	+8.3	
Female	112.8	2.2	100.6 ^{a,b}	2.0	82.8 ^{a,b}	2.1	64.7 ^{a,b}	1.3	67.1 ^{a,b}	0.6	65.6 ^{a,b}	0.8	-47.2	
Income														
Low	98.7	5.1	85.8	5.2	73.4 ^a	4.5	57.6 ^{a,b}	3.9	63.5 ^{a,c}	1.2	64.0 ^{a,c}	1.7	-34.7	
Middle	98.0	2.8	83.6 ^{a,b}	2.4	68.5 ^{a,b}	2.3	58.8 ^a	4.0	57.0 ^a	0.8	55.5 ^a	0.9	-34.5	
High	92.6	3.8	91.9	3.3	65.9 ^{a,b}	3.1	63.4 ^a	5.4	55.8 ^{a,c}	0.9	56.5 ^{a,c}	1.0	-36.1	

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

Translation: expense¹⁴⁻¹⁶

Food	Amount	Expense	
Cheerios	1 cup	\$0.15 (\$3.70/box)	Calories: 331 Fat: 7.1g Protein: 12.2g CHO: 54.7g Ratio: 0.1:1
Milk, 2%	1 cup	\$0.18 (\$2.89/gallon)	
Banana	1 small	\$0.15 (\$0.69/lb)	Cost: \$0.48

Food	Amount	Expense	
Heavy Cream, 36%	20g	\$0.14 (\$3.18/pint)	Calories: 300 Fat: 29.01g Protein: 6.76g CHO: 2.9g Ratio: 3:1
Sausage, Johnsonville Original Breakfast Link	10g	\$0.20 (\$5.19/package)	
Egg, raw, mixed well	32g	\$0.22 (\$4.09/dozen)	Cost: \$1.01
Butter	20g	\$0.32 (\$3.59/package)	
Mango (10% Fruit)	17g	\$0.22 (\$2.79/fruit)	

Translation: food & identity

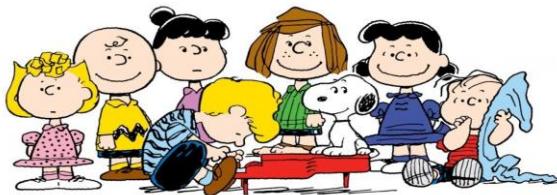
“Tell me what you eat and I'll tell you who you are.”

-- *Jean Anthelme Brillat-Savarin, 1825*

- Anthropological perspective¹⁷:
 - 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 perspective¹⁸:
 - 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

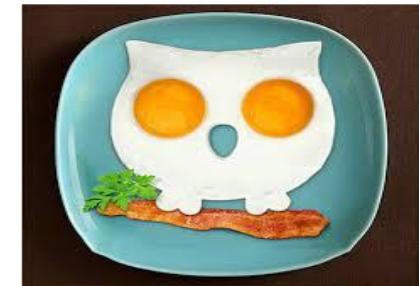
Transition to the Kitchen: connections

- 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

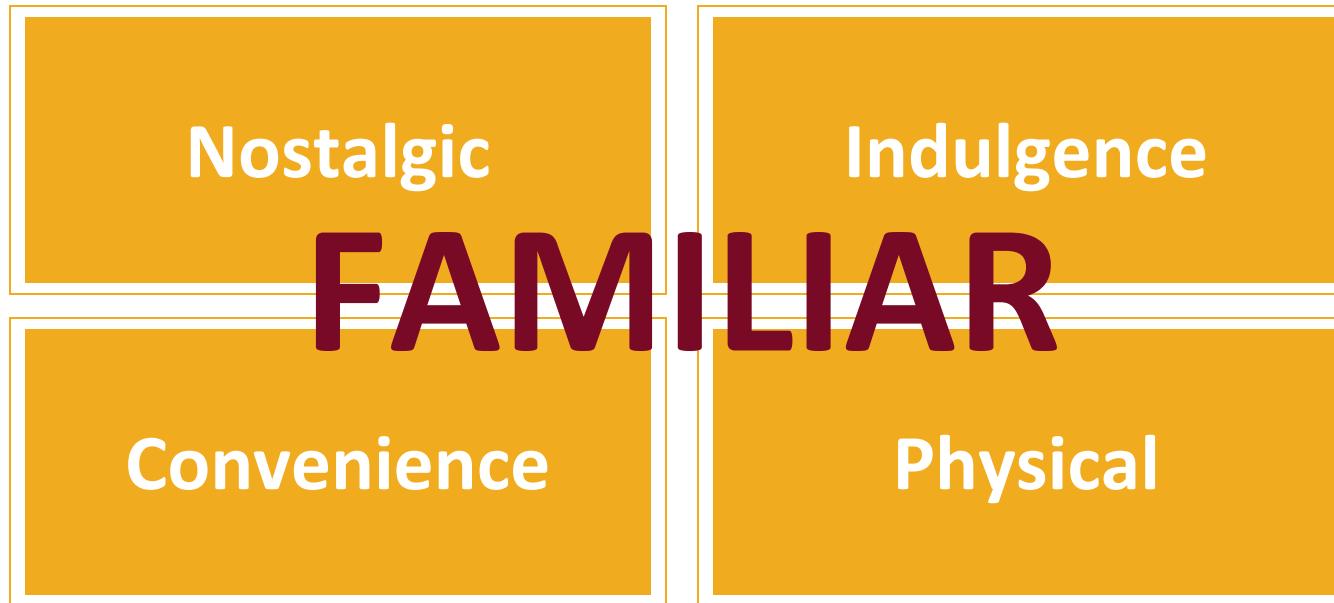


*Brands: CuteZCute, Bambino Love, BentoUSA,

Transition to the Kitchen: comfort foods

- Question - why do we eat?
- Comfort foods²⁰:
 - Foods that people consume in order to attain psychologically comfortable or pleasant state
 - Classically high in sugar and fat
- What we know:
 - Social context¹⁸: often consumed when specific circumstances elicit a desire for consumption
 - Physiological context²¹: activates hypothalamic-pituitary-adrenal axis

Transition to the Kitchen: comfort foods²²



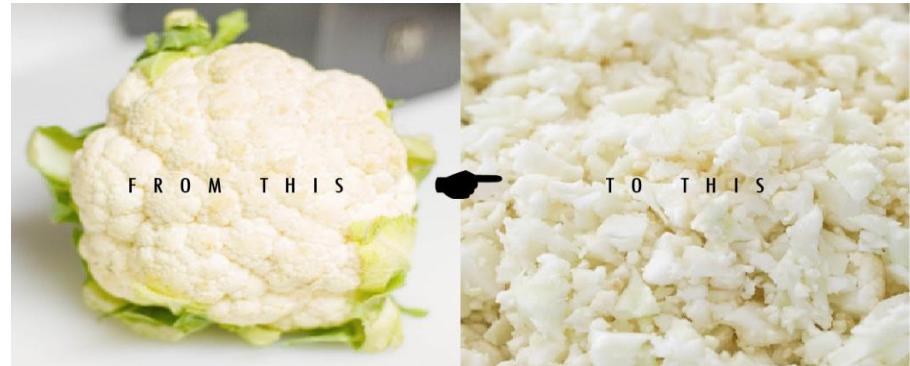
Transition to the Kitchen: comfort foods

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



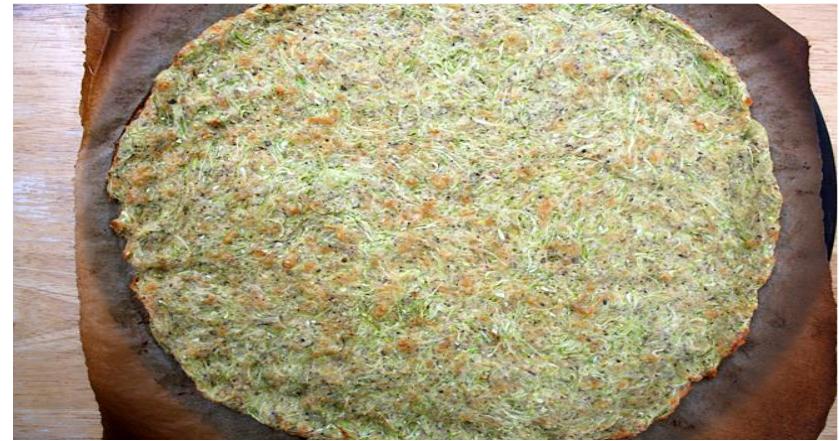
Transition to the Kitchen: comfort foods

- 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
 - Base¹⁵
 - 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 masa¹⁵
 - Baby corn, 2 cans (12.2g net CHO)
 - Coconut flour, $\frac{1}{4}$ 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 fraîche)
 - 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 Lifestyle²³

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

Julian's Paleo Bread²⁴

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 Chocolate²⁵

1g CHO per square

Lily's Dark Chocolate²⁶

1g CHO per 10 morsels



SugarLeaf: 1tsp = 3.6g CHO²⁷

Pure raw cane sugar, Stevia

Swerve: 1tsp = 5g CHO²⁸

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

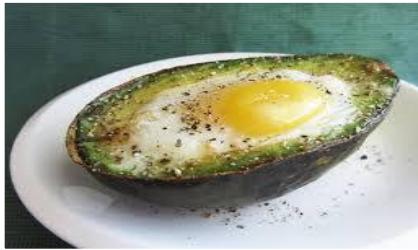


Take Home Messages

“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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