

# DEVELOPING NUTRITION GUIDELINES FOR OUTPATIENT ADULTS ON ORAL KETOGENIC DIETS AT HARBORVIEW MEDICAL CENTER

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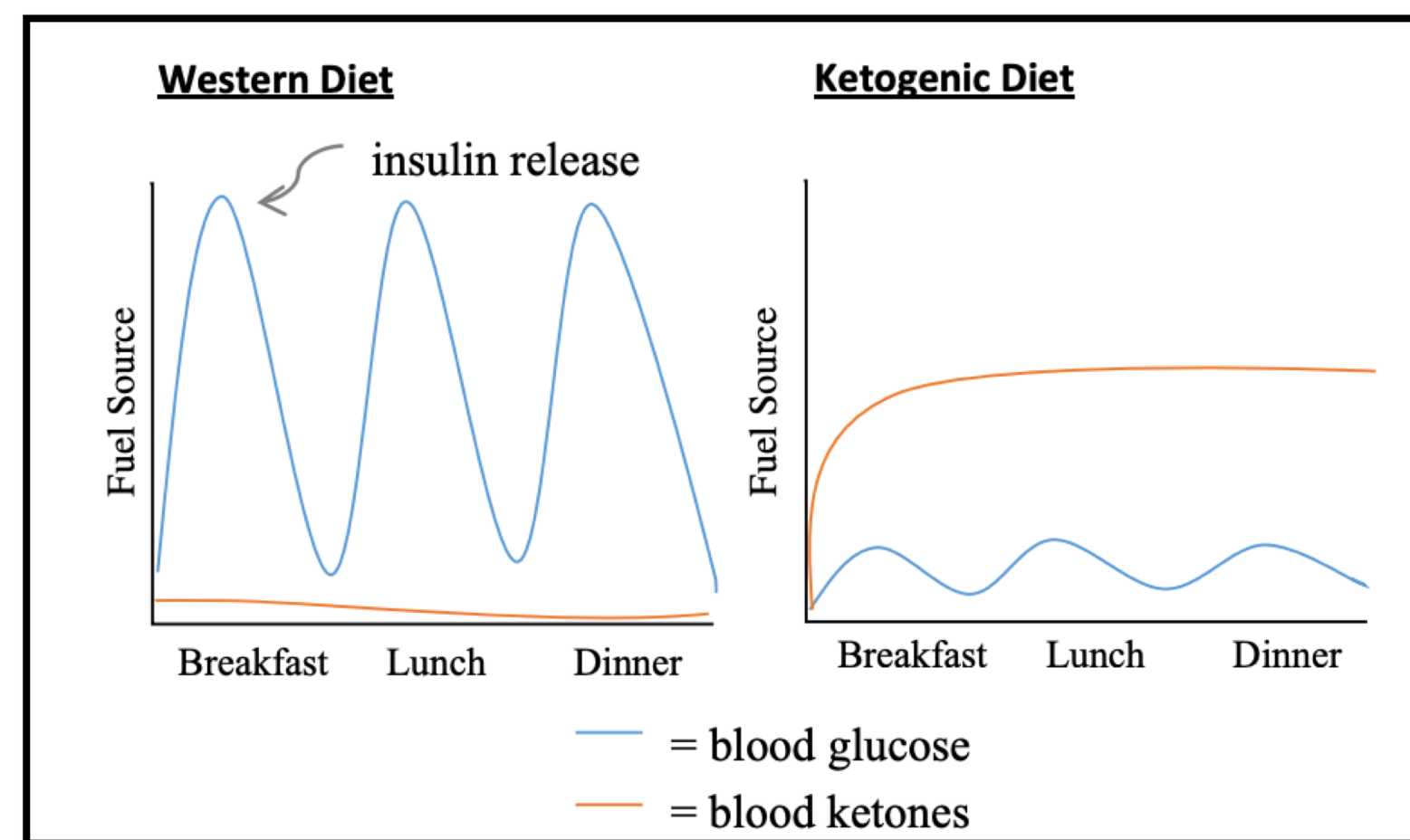
## BACKGROUND

There is an increasing demand for ketogenic diet therapy access in adult populations for treatment of epilepsy:

- Children on the KD transitioning into adult clinics
- Adults with adult-onset epilepsy refractory to standard medical treatment
- Adults wishing to reduce antiseizure drug use due to side effects

## WHAT IS THE KETOGENIC DIET (KD)?

Any diet therapy in which the dietary composition would be expected to result in a ketogenic state of human metabolism.



Source: Roehl K, Sewak S. *JAND*. 2017;117(8):1279-1292.

## WHAT IS THE EVIDENCE?

In a summary of 17 observational studies:

- Classic KD (2-4:1 ratio) reduced seizures by >50% in 22-70% of adult patients; >90% in up to 52% of patients
- MAD saw seizure reduction in 12-67% of patients; up to 67% had >90% seizure reductions
- Combined compliance rate: 38% for classic KD, 56% for MAD

There are no randomized controlled trials and there is limited understanding of long-term adherence.

Williams TJ, Cervenka MC. *Clin Neurophys Pract*. 2017;2:154-160

## METHODS

- Conducted literature review to identify best practices, evidence-based guidelines, and protocols at other facilities
- Reviewed Harborview Medical Center's existing nutrition guidelines for inpatient KD therapy
- Compiled findings into an outline of proposed nutrition guidelines

## HIGHLIGHTS OF PROPOSED GUIDELINES

- **Assessments prior to initiation of KD therapy:** 3-day food record, weight history, food allergies/intolerances, food availability, pre-diet seizure frequency, labs ( $\beta$ -hydroxybutyrate, lipid panel, liver function tests, and many more...)
- **Initiation of KD therapy:** advance MAD/LGIT as tolerated over the course of few days/weeks; recommend planned hospital admission for classic KD (4:1 ratio) with 1-2 days of fasting
- **Standard supplementation:** multivitamin with minerals and trace elements, calcium with vitamin D, others as needed
- **Follow-up:** 1-3 months after initiation – fine-tune diet to enhance efficacy, then every 3 months until stable, then every 6-12 months or based on patient need to enhance compliance and tolerability
- **Monitoring and evaluation:** home ketone monitoring, daily seizure activity, daily dietary intake, weight trends, labs, side effects (constipation, lethargy, hypoglycemia, acidosis, etc.), changes in medications, and many more...

Scan this QR Code to read the complete outline of proposed guidelines.



## RECOMMENDATIONS FOR NEXT STEPS

- Contact John Hopkins Adult Diet Epilepsy Center to understand dietitian workload in maintaining a KD program.
- Consult with multidisciplinary healthcare team at Harborview Medical Center for input.
- Consider creation of separate sets of guidelines for adolescents on KD therapy transitioning into adult care and adults new to KD therapy.
- Determine if it is possible to dedicate sufficient resources to provide ambulatory classic KD therapy, or if focus should be on just MAD/LGIT.
- Develop appropriate patient education materials and resources.

## TYPES OF KETOGENIC DIETS

### Classic Ketogenic Diet

- 4:1 ratio of grams of fat to combined grams of carbohydrate and protein
- Can also be 3:1, 2:1 or 1:1
- Total calories from carbohydrate: 2-10%
- All foods and drinks must be calculated on a gram scale

### Modified Atkins Diet (MAD)

- Daily net carbohydrate intake: 20g (excluding fiber)
- Liberal fat intake until satiety achieved

### Low Glycemic Index Treatment (LGIT)

- Daily net carbohydrate intake: 40-60g from foods with glycemic index < 50
- Liberal fat intake until satiety achieved

### Medium-Chain Triglyceride (MCT) Diet

- 60% of total calories from MCTs
- Less common due to side effects – nausea/vomiting, diarrhea, gas
- Usually small amounts of MCT supplements added to other diets to enhance ketosis