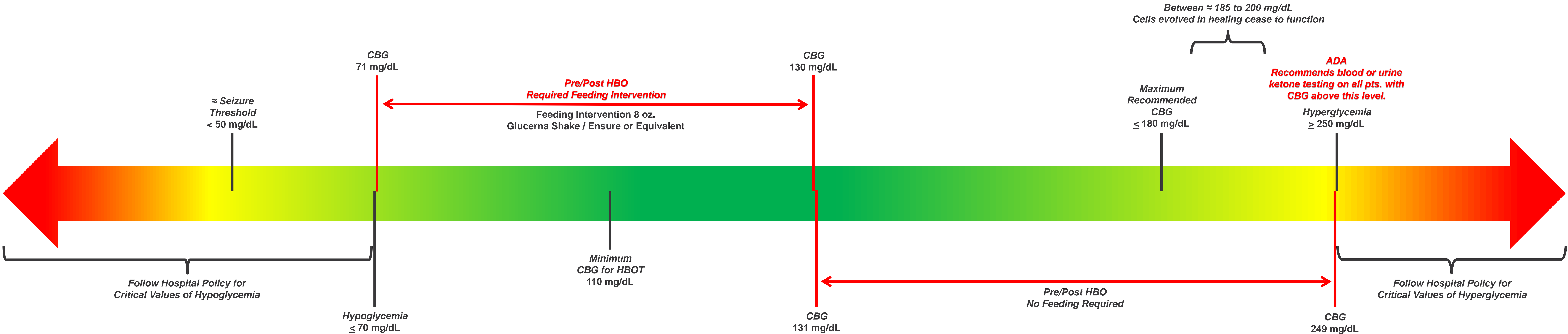


# Reducing the Risk of Hyperbaric-Induced Hypoglycemic Seizure Activity

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## Abstract

### Reducing the Risk of Hyperbaric-Induced Hypoglycemia Seizure Activity

**Introduction/Background:** Diabetic limb salvage management presents a significant challenge to wound care providers; one of the numerous approaches to encourage healing in these difficult wounds is the use of hyperbaric oxygen therapy. One of the challenges in treating hyperbaric diabetic patients is managing blood glucose at levels that don't impair healing while reducing the risk of dramatic reductions in capillary blood glucose (CBG) levels which commonly result in seizure activity.

**Materials and Methods:** We searched Medline and Cumulative Index to Nursing and Allied Health Literature databases using the following search terms; diabetes mellitus, glucose, keratinocytes, fibroblast, wound healing, re-epithelialization, HBO, and hyperbaric oxygen therapy. Surprisingly, no articles related to diabetic limb salvage and recommended capillary blood glucose levels with or without hyperbaric oxygen therapy were found.

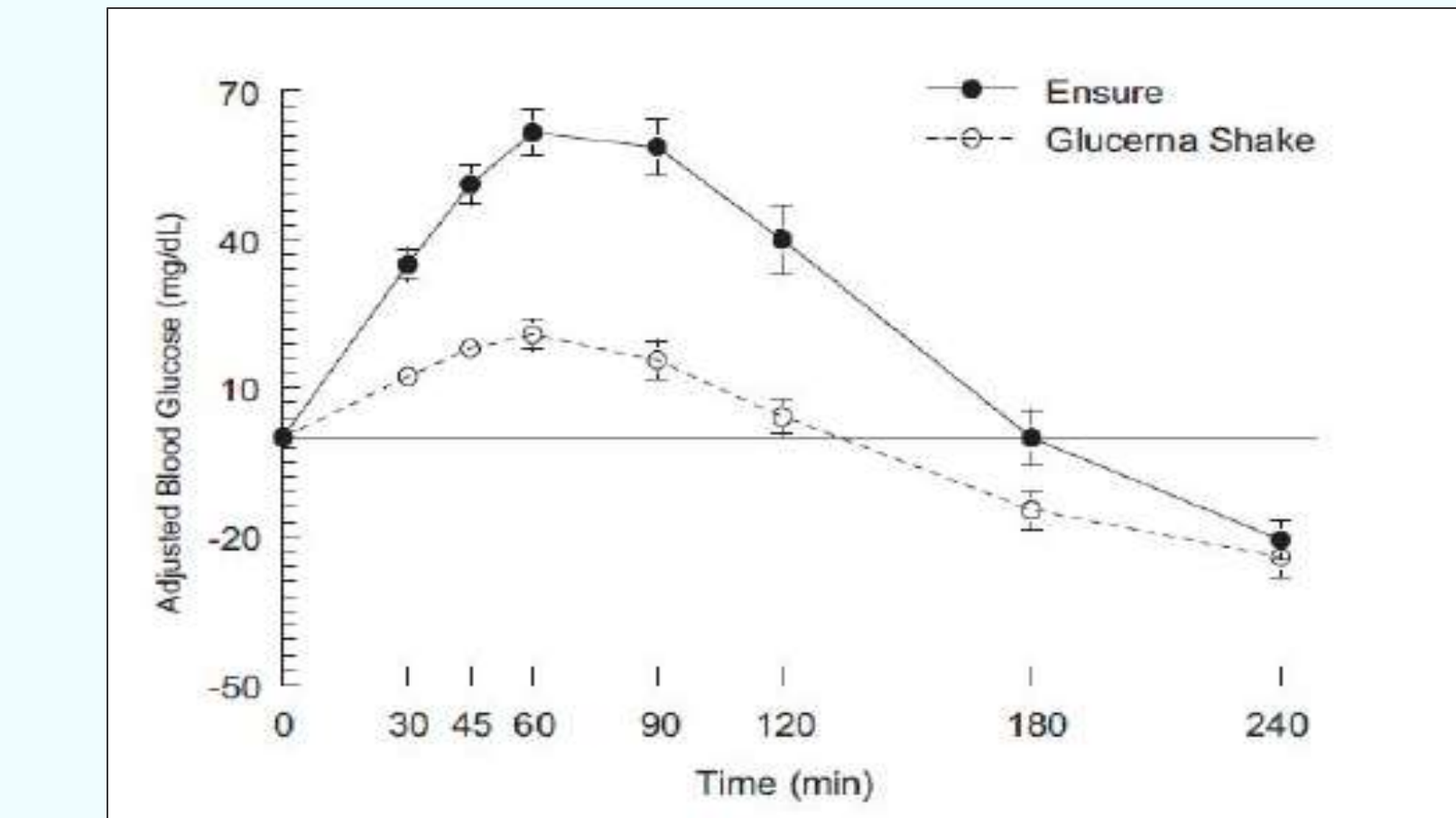
**Results:** We reduce the risk associated with by using a new protocol that reduced the incidence of seizure activity in the diabetic population undergoing HBO therapy. In 2012 Healogics Centers reports 24 seizures during 386,605 HBOT (14,283 Pts.). During 2013 they reported 14 seizures for 410,651 HBOT (15,346 Pts.). This new protocol resulted is a 50% decrease in seizure activity.

**Summary/Conclusions:** Careful glucose control is one of the most important actions health care providers can take to normalize healing and reduce seizure risks in diabetic patients. Poorly controlled diabetics experience delayed healing and when hyperbaric oxygen therapy is used, it often results in dramatic drops in capillary blood glucose levels. We will discuss a new protocol that improves healing and reduces seizure activity to an incidence rate of 0.003% per 10,000 treatments; far below any reported incidence rate to date.

PRE-HBO GLYCEMIA INTERVENTIONS	
ACTION	INTERVENTION
Obtain post HBO capillary blood glucose (ensure physician order is in chart).	
If result is 70 mg/dl or below:	A. Notify HBO physician and await physician orders. B. If the result meets the hospital definition of a critical result, follow hospital policy.
If result is 71 mg/dl to 130 mg/dl:	A. Give patient an 8 ounce Glucerna Shake®, an 8 ounce Ensure®, or 8 ounces of a Glucerna/Ensure equivalent dietary supplement. B. Wait 15 minutes. C. Retest patient's capillary blood glucose (CBG). D. If result ≥110 mg/dl, proceed with HBO. If result <110 mg/dl, notify HBO physician and consider holding HBO.
If result is 131 mg/dl to 249 mg/dl:	A. Proceed with HBO.
If result is 250 mg/dl or greater:	A. Notify HBO physician and await physician orders. B. It is recommended to do blood/urine ketone testing. C. If the result meets the hospital definition of a critical result, follow hospital policy.

POST-HBO GLYCEMIA INTERVENTIONS	
ACTION	INTERVENTION
Obtain post HBO capillary blood glucose (ensure physician order is in chart).	
If result is 70 mg/dl or below:	A. Notify HBO physician and await physician orders. B. If the result meets the hospital definition of a critical result, follow hospital policy.
If result is 71 mg/dl to 130 mg/dl:	A. Give patient an 8 ounce Glucerna Shake®, an 8 ounce Ensure®, or 8 ounces of a Glucerna/Ensure equivalent dietary supplement. B. Wait 15 minutes. C. Retest patient's capillary blood glucose (CBG). D. If result ≥100 mg/dl, discharge patient. If result <100 mg/dl, notify HBO physician.
If result is 131 mg/dl to 249 mg/dl:	A. Discharge patient.
If result is 250 mg/dl or greater:	A. Notify HBO physician and await physician orders. B. It is recommended to do blood/urine ketone testing. C. If the result meets the hospital definition of a critical result, follow hospital policy.

## Why a Glucerna Shake®



- Why a Glucerna Shake /Ensure or Equivalent:**
- Abbott Laboratories Data:
- One 8 oz. Glucerna Shake provides:
    - 200 calories
    - 7 g of protein
    - 27 g carbohydrates
    - 6 g sugars
  - Increases CBG ≈ 50 mg/dL in ≈ 15 minutes
  - Holds CBG for ≈ 120 minutes

## References

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