

MEND: Metabolic Enhancement for NeuroDegeneration

The Therapeutic System 1.0

([Dale E. Bredesen](#). Reversal of cognitive decline: A novel therapeutic program. [Aging \(Albany NY\)](#). 2014 Sep; 6(9): 707–717.)

GOAL	APPROACH	RATIONALE and REFERENCES
Optimize diet: minimize simple carbohydrates, minimize inflammation.	Patients given choice of several low glycemic, low inflammatory, low grain diets.	Minimize inflammation, minimize insulin resistance.
Enhance autophagy, ketogenesis	Fast 12 hr each night, including 3 hr prior to bedtime.	Reduce insulin levels, reduce A β .
Reduce stress	Personalized—yoga or meditation or music, etc.	Reduction of cortisol, CRF, stress axis.
Optimize sleep	8 hr sleep per night; melatonin 0.5mg po qhs; Trp 500mg po 3x/wk if awakening. Exclude sleep apnea.	[36]
Exercise	30-60' per day, 4-6 days/wk	[37, 38]
Brain stimulation	Posit or related	[39]
Homocysteine <7	Me-B12, MTHF, P5P; TMG if necessary	[40]
Serum B12 >500	Me-B12	[41]

GOAL

APPROACH

RATIONALE and REFERENCES

Fasting insulin <7; HgbA1c <5.5	Diet as above	Type II diabetes-AD relationship
Hormone balance	Optimize fT3, fT4, E2, T, progesterone, pregnenolone, cortisol	[5 , 42]
GI health	Repair if needed; prebiotics and probiotics	Avoid inflammation, autoimmunity
Reduction of A-beta	Curcumin, Ashwagandha	43-45
Cognitive enhancement	Bacopa monniera, MgT	[46 , 47]
25OH-D3 = 50-100ng/ml	Vitamins D3, K2	[48]
Increase NGF	H. erinaceus or ALCAR	[49 , 50]
Provide synaptic structural components	Citicoline, DHA	[51].
Optimize antioxidants	Mixed tocopherols and tocotrienols, Se, blueberries, NAC, ascorbate, α -lipoic acid	[52]
Optimize Zn:fCu ratio	Depends on values obtained	[53]
Ensure nocturnal oxygenation	Exclude or treat sleep apnea	[54]

GOAL

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RATIONALE and REFERENCES

Increase focus

Pantothenic acid

Acetylcholine synthesis requirement

Increase SirT1 function

Resveratrol

[32]

Exclude heavy metal toxicity

Evaluate Hg, Pb, Cd; chelate if indicated

CNS effects of heavy metals

MCT (medium chain triglyceride) effects
Coconut oil or Axona

[56]