

BONE HEALTH IN EPILEPSY CLINIC CARD

Role of the epilepsy provider: screen and initiate first-line vitamin D / calcium; refer to PCP or endocrinology for established bone disease or refractory deficiency. Companion pages give evidence, mechanisms, and full references.

1 - ANTISEIZURE MEDICATION BONE-RISK TIER → ACTION

Risk	ASM(s)	Key Bone Effect	Action
HIGH	Phenytoin, Phenobarbital, Primidone, Carbamazepine, Valproate	BMD ↓ 5–15% / 2 yrs; fracture ↑ 1.5–4×. Valproate: risk even if Vit D normal	Baseline DXA + 25-OH-D (lab); FRAX at baseline; DXA q2–5 yr; 25-OH-D q6–12 mo; Ca 1200 mg + D3 ≥2000 IU/d
MODERATE	Oxcarbazepine, Eslicarbazepine, Topiramate, Zonisamide	Modest BMD ↓. CAI agents (TPM/ZNS): acidosis, hypercalciuria, stone risk	Baseline 25-OH-D (± bicarb, Ca for CAI); treat acidosis; DXA after 3–5 yr or with added risk; Ca + D3
LOWER	Levetiracetam, Brivaracetam, Lamotrigine, Lacosamide	No significant BMD ↓ in trials; preferred when bone is a priority	Routine age-based screening; annual 25-OH-D; escalate if combined with enzyme-inducer
LIMITED DATA	Perampanel, Cenobamate	No BMD signal to date; cenobamate data evolving (partial CYP3A4 at high dose)	Annual 25-OH-D; consider baseline DXA for cenobamate ≥200 mg

Polytherapy is additive: any bone-safe ASM combined with a high-risk agent → monitor at the higher tier. Other ASMs not listed: no usable bone data was identified on review.

2 - WHO TO SCREEN → WHAT TO ORDER

Test	Should Do	Should Consider
25-OH-D (lab)	≥1 risk factor (any)	–
DXA	≥1 high-risk factor, OR ≥3 secondary factors	1–2 secondary factors
FRAX	–	Age ≥50, or <50 with ≥1 risk factor
Vertebral fx assessment	–	Height loss, prior fragility fx, or chronic high-risk ASM

High-risk factors: high-risk/enzyme-inducing ASM · impaired mobility / wheelchair · prior fragility fracture · women ≥65 · men ≥70 · ketogenic diet >1 yr.

Secondary factors: moderate/lower-risk ASM · ≥2 ASMs · ≥2 yr ASM use · sedentary/low sun · disability · institutionalized · frequent falls · smoking · alcohol · post-menopause · endocrine/GI/liver/renal disease, eating disorder, RA · concurrent glucocorticoids, aromatase inhibitors/ADT, benzodiazepines.

3 - VITAMIN D - TREAT TO TARGET (ADULTS)

25-OH-D level	Adult Dosing	Follow-up
Sufficient ≥30 ng/mL	D3 800–2000 IU/d maintenance	Annual recheck
Insufficient 20–29	D3 2000–4000 IU/d × 8–12 wk	Recheck 8–12 wk
Deficient <20	D3 50,000 IU weekly × 8 wk, then 2000 IU/d	Recheck 8–12 wk
Osteopenia / osteoporosis	2000–4000 IU/d (may need more)	Endocrinology referral

Target 25-OH-D ≥40 ng/mL for PWE on ASMs; aim ≥50 ng/mL for enzyme-inducing ASMs.

4 - REFER TO ENDOCRINOLOGY

Adults & Children	refractory / recurrent vitamin D deficiency · DXA Z-score ≤ –2.0 · any fragility fracture.
Children also:	growth failure, delayed puberty, or suspected metabolic bone disease.

FRAX calculator: <https://fraxplus.org/calculation-tool>

Abbreviations

BMD = Bone Mineral Density
DXA = Dual-energy X-ray Absorptiometry
FRAX = Fracture Risk Assessment Tool
ASM = Antiseizure Medication
RA = Rheumatoid Arthritis