



Atkinson Morley Regional Neuroscience centre

St George's Healthcare 
NHS Trust

Bone health management in an adult epilepsy service: Re-audit of practice and influence of national guidance

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Aims

To determine the extent to which bone health is appropriately managed in patients attending a secondary/tertiary epilepsy service as compared to

- NICE guidelines (2004,2012)
 - “vitamin D levels, and other tests of bone metabolism...every 2-5 years”
- MHRA guidance (2009)
 - “long term use of Carbamazepine, Phenytoin, Primidone and Sodium valproate.....Vitamin D supplementation should be considered for at-risk patients”
- Previous audit (2008)

Why is this important?

- Bone health is of great public health importance
 - osteoporotic # in 1:2 ♀, 1:5 ♂ >50years in UK¹
- AED use an established independent risk factor²
- Epilepsy population under-informed
 - USA population survey, PWE less informed than rest³
 - 16.7% documented advice/discussion 2008 Audit
 - 33% any documentation USA AAN survey 2012⁴
- Local information sheet & MHRA guidance 2009
- Vitamin D supplementation safe and effective in including in patients with epilepsy⁵

1) National Osteoporosis society UK <http://www.nos.org.uk>; 2) Cock HR, Bone health in epilepsy Chapter 40, 2011 www.epilepsysociety.org.uk; 3) Elliott et al, Ep & Behaviour 2008; 4) Wasade et al, Ep & Behaviour, 2012; 5) Mikati et al, Neurology 2006

Methods

- All patients attending the adult epilepsy clinic at St. George's epilepsy clinic were prospectively identified over 5 weeks
 - Inclusion: any appointment within last 2 years of index appointment (3 consultants, GPSI, 2 SEN)
 - Exclusion: first fit, new patient, not epilepsy
- Notes & letters retrospectively reviewed using a pro-forma containing 28 questions
 - Service use/logistics (4)
 - Demographics, epilepsy & comorbidities, falls (18)
 - Bone health advice/Ix/results (6)
- Excel & Graphpad Prism analysis
 - Chi² and Fishers exact

Results (1)

- 95 notes reviewed, of which 77 met criteria

Patient Characteristics

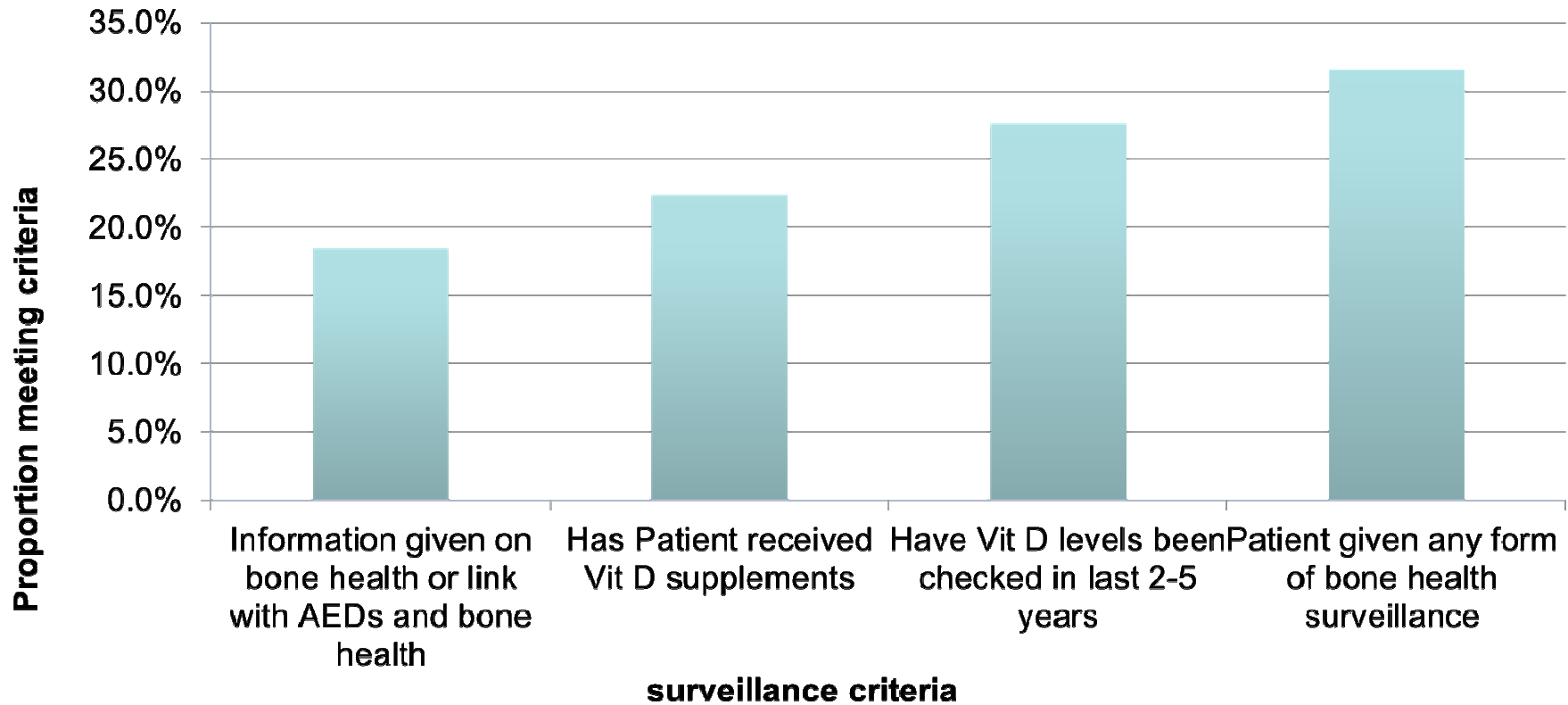
Ethnicity (%)	
Asian	13.3
Asian Other	2.7
Black African/Carribbean	12
Other/ Mixed	9.3
White British	50.7
White Other	12%

Age (years, %)	
18-25	26
26-30	14.3
31-40	18.2
41-50	22
51-60	9.1
>60	10.4

Clinical features (%)	
Learning disability	30
On MHRA listed AED	38
Any seizure types associated with falls	79
Any fragility fracture	10

Results (2)

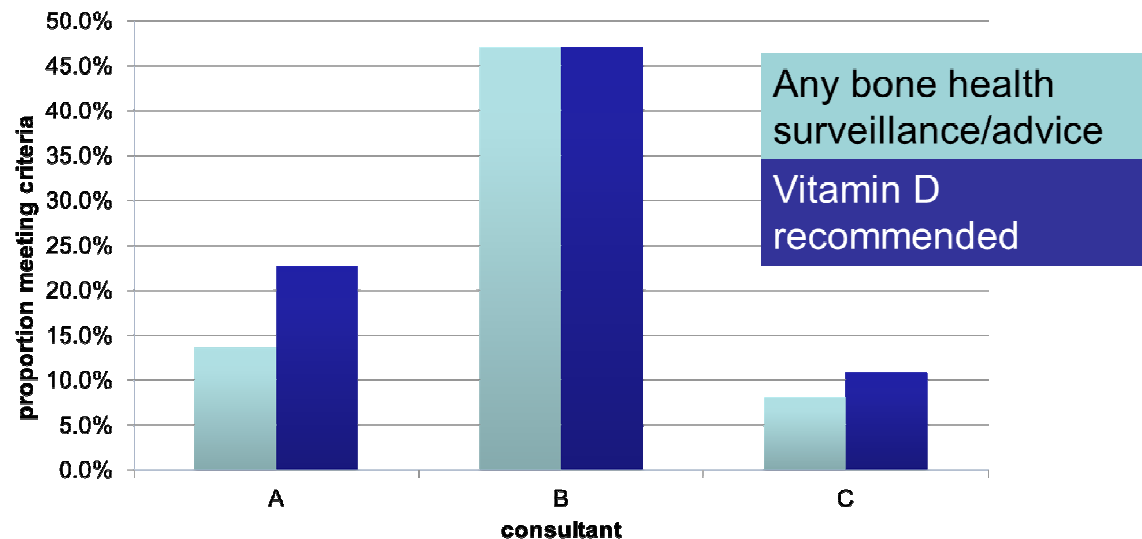
- Significant improvement in proportion patients receiving appropriate advice (31.6% vs 16.7% 2008, $p=0.02$)
- Still suboptimal and variable in nature



Results (3)

- Significant variation between consultants

$p=0.04$



- Significant association with:
 - Age: Middle(31-50) > younger(18-30), older (>50), $p=0.003$
 - Ethnicity: African/Black < caucasian/asian, $p = 0.02$
- No significant association with gender, OPD frequency, being on MHRA specified drug, LD, sz types with falls

Conclusions

- Bone health awareness approximately doubled between 2008 and 2012@SGH
 - Circulation previous audit result
 - Local information sheet
 - Increased awareness in general
 - MHRA guidance (?)
- Substantial room for further improvement
 - More uniform approach (patient and staff groups)

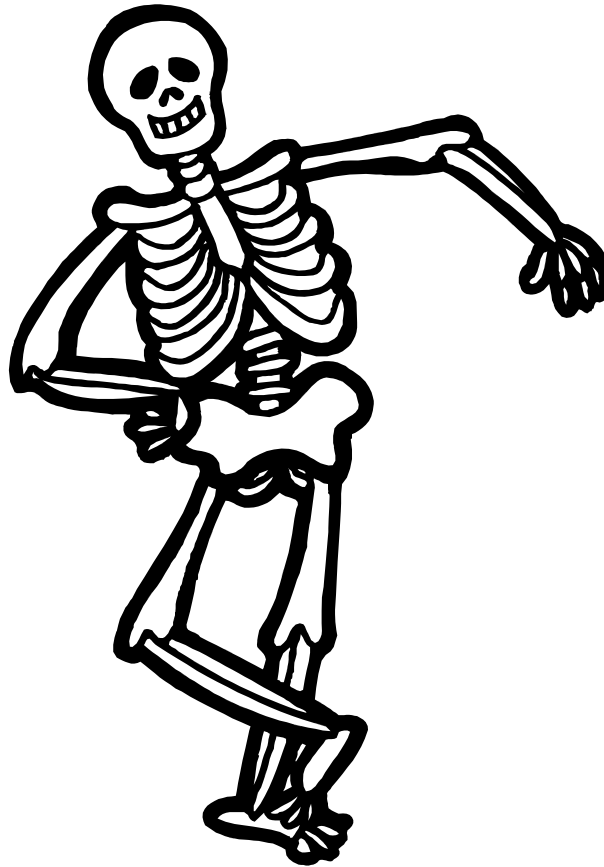
Limitations

- Small study sample
- only evidence documented in the medical records or clinic letter assessed
- Will not have captured
 - Discussions which took place but were not documented
 - Bone health interventions taking place elsewhere (community, other secondary care, GP)

Recommendations

- Circulation within internal epilepsy group
- Uniform internal guidance/approach
 - Bone health information to all
 - Vitamin D at least 5 yearly
 - Supplementation where required
 - Increased collaboration with local bone health team
- Nominated responsibility within team
- Re-audit in future

THANKYOU



Eloise Hazeldene, Epilepsy Group Secretary, SGH for retaining notes
Dr Laura Mantoan, SpR Neurology, SGH for assistance during data collection

Vitamin D formulations

- BNF 2012, and St George's Pharmacy

Formulation	Strength	Fq	Daily IU	Annual Cost £
Adcal-D ₃ ®	10mcg	1/day	400	25
D2/ ergocalciferol*	250mcg	2/wk	2800	25
	1.25mg	1/wk	7100	16
D3 / Colecalciferol*	25mcg	2/day	2000	40 (OTC); 140 (SGH)
	500mcg	1/wk	2800	35 (SGH)
		2/wk	5600	70 (SGH)
AlfaCalcidol	1mcg caps	1/day	n/a	262
	1mcg drops	1/day	n/a	410

*May be difficult to obtain

UK Hip # cost ~£30,000/person

So – what should we do

- Bone health advice to all
- Ensure adequate Calcium & vitamin D
 - Adcal (1000mg & 400 IU/day) early on
 - Levels 2-5 yearly (£16, NHS)
 - Supplement and recheck if <30ng
 - High dose (20,000u X2/wk) for 3m?
 - Maintenance dose 2000/day?
- Qfracture tool >40y, DEXA if fragility # or >10%
- Prospective long term, multicentre data collection/audit in epilepsy populations

List of Proforma questions

Logistics/service use

1. New patient or follow up
2. Main consultant
3. Last Seen by whom
4. How many appointments in the past 12 months

Epilepsy and demographics

5. Is adult being treated for epilepsy
6. Age
7. Gender
8. If female- pre or post menopausal
9. Ethnicity
10. Do they have a learning disability
11. Mobility
12. Are there any other risk factors for osteoporosis
13. Relevant Family history
14. Smoking (pack years)
15. Alcohol (units)

16. AED duration (months/ years)
17. Long term use of: carbamazepine, primidone, phenytoin, sodium valproate
18. How many and which AEDs has Px ever taken
19. How many and which drugs in current regime
20. Record of any fractures
21. Type of epilepsy
22. Fall or no fall?

Bone health information

23. Px Ever given info on AED and bone health
24. Has Vit D been checked in last 5 years? If yes result
25. Is Px on Vit D
26. Have they been given any bone health advice at all
27. Has a dexa been performed
28. Other things to note